Haverford Township - Planning Commission

Meeting: Thursday, September 11, 2025

Time: 7:00 p.m.

Location: Commissioners Meeting Room -1014 Darby Rd., Havertown PA, 19083

Members:
Maggie Dobbs, Chairperson
E. David Chanin, Vice-Chairperson
Stephen Welsh, Secretary
Angelo Capuzzi
Louis D. Montresor
Kim Jusczak
Victor Cortese
Others in Attendance:
Charles Faulkner, Pennoni Associates, Township Engineer
Jaime Jilozian, Director of Community Development

Regular Meeting Agenda

1. Opening of Meeting
Roll Call

Pledge of Allegiance

2. 38 Fulmer, Cadence Development Partners – Minor Subdivision Plan

D.C. Folio No. 22-02-00345-00

The Applicant, Cadence Development Partners, proposes to subdivide the existing 0.2484-acre site into two (2) new lots at the referenced property. The existing dwelling is proposed to remain on Lot 1, and a new single-family dwelling and driveway are proposed to be constructed on Lot 2. The property is within the R-6 Residential Zoning District and is served by public water and sewer.

3. 1039 Sproul Road, Sproul Road Development Partners, LLC- Preliminary/ Final Subdivision Plan

D.C. Folio No. 22-04-00661-00

The applicant, Sproul Road Development Partners, LLC, proposes to subdivide an existing 2.80-acre site into four (4) new lots at the referenced property. A new single-family dwelling and driveway are proposed for each lot. A common driveway is proposed for access to the proposed dwellings from Sproul Road (SR 320). Individual stormwater facilities on each lot are proposed for stormwater management. The property is within the R-1A Residential Zoning District. The proposed dwelling will be served by public water service and a proposed new sanitary sewer extension in Sproul Road.

Adjournment

SEWAGE FACILITIES PLANNING MODULE
APPLICATION MAILER



pennsylvania
DEPARTMENT OF ENVIRONMENTAL
PROTECTION

For more information, visit DEP's website at
www.depweb.state.pa.us, keyword: Act 537.

INSTRUCTIONS FOR COMPLETING SEWAGE FACILITIES PLANNING MODULE APPLICATION MAILER

(remove before sending mailer to the approving agency (the Department of Environmental Protection (DEP) or delegated local agency))

Please read the following instructions carefully before completing the application mailer. This information will be used to determine if sewage facilities planning is necessary for your project, and, if it is, which forms are appropriate.

Act 537 Sewage Facilities' planning is the duty of local municipalities. The responsibility of meeting the sewage disposal needs of the municipality rests with the municipality. Each municipality is required to have an Act 537 Official Sewage Facilities Plan to adequately address these needs. Adoption by resolution of a planning module is the vehicle for legally amending the municipality's Official Plan. It is imperative that the municipality receives all of the information required in order to make informed decisions.

Upon completion, submit this Mailer / Application form to the approving agency (DEP or delegated local agency). Additionally, provide a copy of the completed form to the County Health Department having jurisdiction over the area in which the proposed project is located.

Unless your project qualifies for one of the planning exemptions provided in Act 537, a package of sewage facilities planning forms appropriate for the project will be sent to the return address indicated on the mailer, or instructions for obtaining the appropriate forms from DEP's website (www.depweb.state.pa.us) will be issued. Each form includes detailed instructions that explain the use of the form and how to complete it. The package of completed forms and its supporting documentation is called a **sewage facilities planning module**, or "planning module." Once the planning module is complete, it must be submitted to the municipality in which the project is located for review and, if acceptable, adoption.

After adoption by the municipality, complete planning modules are submitted to either DEP or, if appropriate, to the delegated agency for review and final action. Some municipalities (or groups of municipalities working together) have requested and received DEP approval to review and take final action on planning modules. These are known as **delegated agencies**. To find out if your project is located in an area served by a delegated agency, contact the municipality or DEP's regional office serving your area.

Please note that both DEP and delegated agencies are required by law to charge fees for the review of planning modules. The fees DEP must charge are set by law in Act 537, while delegated agencies may set fees which can be the same or different from those in Act 537. For more information on review fees for your particular project, see the planning module documents or contact the approving agency (DEP or delegated agency) serving the area of your project.

NOTE: DEP will provide all planning module forms, however, if your project is a **minor subdivision** (defined as a subdivision of 10 lots or less, intended for single family residential homes served by individual onlot sewage disposal systems) you may also contact the municipality in which your project is located for a "Component 1" minor subdivision planning module form.

1. Print the name of the proposed development and name, address, telephone number and email address of the person who is proposing the project. If planning module components are to be sent to a different person or address, include this information on the front of the mailer in the return address block.

2. a. Enter the county in which the project is located.

   b. Enter the municipality in which the project is located.

   c. Enter the road or address (if available) or street coordinates (example - west side of T-235, 1 mile south of intersection of Rt 15 and T-235).

   d. Enter the appropriate tax parcel identification number (if available) of the parcel proposed for subdivision.

   e. Enter the name of the U.S. Geological Survey (USGS) 7.5-minute quadrangle map which contains the project area, and the location of the project area on that map in inches up and over from the lower right corner of the map to the approximate center of the project. (Example - Centerville West quad, 7 inches up and 2.5 inches over from lower right corner of map.) Alternatively, include an original or a copy of the USGS quad map with the project area outlined on it.

   f. If the proposed project is located within a special protection watershed, (i.e., watersheds with a stream classification of High Quality or Exceptional Value), check "yes." If not located in special protection watershed, check "no."

3. Check the box that best describes the intended use of the proposed land development project. **Residential** refers to single-family lots. **Multi-residential** includes apartments, condos, etc. **Commercial** includes retail centers, office

parks, industrial development, etc. **Institutional** refers to schools, hospitals and the like. **Brownfield** Site Redevelopment refers to projects proposing to recycle land. Some developments will involve more than one type of use, or will not fit comfortably into any of the classifications given. If this is the case, choose more than one category or explain under **Other**.

4. a. Enter the number of single family residential lots or Equivalent Dwelling Units (EDUs) proposed. An EDU is defined as that part of a multi-family dwelling or nonresidential project with flows equal to 400 gallons per day (gpd) (the assumed flow, for planning purposes, of a single family residential lot). To determine the number of EDUs, divide the proposed sewage flow of the project by 400 gpd.

   b. Enter the total number of lots created from this parcel of land since May 15, 1972, including the lots being proposed at this time. (Onlot disposal proposals only.)

   c. Enter the total project acreage and the acreage of any remaining land (land not proposed for development but under the same ownership and adjacent to the project area).

5. Enter the proposed total sewage flow from the project in gpd. See Title 25 of the Pennsylvania Code, Chapter 73, Section 73.17, (www.pacode.com), or DEP's *Domestic Wastewater Facilities Manual*, DEP ID: 362-0300-001 available on DEP's website at www.depweb.state.pa.us, keyword: wastewater.

6. Choose the category (a, b, c or d) that describes the method of sewage disposal planned to serve the project and enter the information requested. Since this information could have an effect on the planning requirements for your project, be as accurate as possible. If more than one method of sewage disposal is planned, or if an interim method is planned, indicate it here.

   a. Sewerage System

      If an existing system is being extended to serve the proposed project, or if lots are to connect directly to an existing sewage collection system, check all boxes that describe the project. Write in the names of the existing collection systems that will be used, the interceptor sewer which will be used for conveyance and the treatment facility where the sewage flows will be treated. Include the National Pollutant Elimination Discharge System (NPDES) permit number for the treatment facility, where applicable.

   b. Construction of Sewage Treatment Facility (with stream discharge or with spray irrigation as final disposal option)

      Check the box corresponding to the chosen final disposal option (stream discharge or spray irrigation field). This category does **NOT** include individual residence spray irrigation systems (IRSIS) which are considered onlot sewage disposal systems ((c), below). For stream discharges, name the receiving waterbody. If the proposed facility is intended to replace an existing, malfunctioning onlot system, check the box marked "repair."

   c. Onlot Sewage Disposal Systems (individual, community, or large-volume)

      Check the box corresponding to the type of onlot sewage disposal systems proposed to serve the project. An **individual onlot sewage disposal system** is a system of piping, tanks or other facilities used for collecting, treating and disposing of sewage into a subsurface absorption area. This category also includes IRSIS. A **community onlot system** is a facility either publicly or privately owned which will collect and dispose of sewage from two or more lots or EDUs into a subsurface absorption area. A **large-volume onlot system** is an individual or community onlot system which is designed to treat flows in excess of 10,000 gpd.

      The approving agency must be notified at least 10 days in advance of all soil testing activities (including those related to planning exemption requests - see 7(b)(5)(v)), so that its staff have the option of observing the tests.

   d. Retaining Tanks (holding tanks or privies)

      If retaining tanks are proposed as the method of sewage disposal, enter the number of holding tanks or privies which are proposed to serve the project.

7. Check this box if you desire to obtain your sewage facilities planning module forms from DEP's website. You will be provided with appropriate instructions, website addresses and DEP coding information in a letter rather than a package of paper forms.

8. Requests for Planning Exemption under the Sewage Facilities Act

You may request to be exempt from Act 537 planning requirements. Effective December 15, 1995, certain classes of subdivisions are no longer subject to the planning requirements of the Sewage Facilities Act. Completing Section 8 will help you and the approving agency determine if your project fits into one of these categories.

a. Protection of rare, endangered or threatened species.

DEP's technical guidance document "Policy for Pennsylvania Natural Diversity Inventory (PNDI) Coordination During Permit Review and Evaluation," (400-0200-001) requires DEP to ensure that requests for authorizations, are coordinated with the Department of Conservation and Natural Resources' (DCNR) Pennsylvania Natural Diversity Inventory (PNDI).

Conducting a search of the PNDI database and providing a copy of a "PNDI Project Environmental Review Receipt" for the proposed project and, if potential impacts are identified by the search, clearance or recommendation letters from the jurisdictional agency responsible for the particular species identified by a search, satisfies this requirement.

To avoid project delay, self-explanatory, self-conducted "PNDI Project Planning Environmental Review" searches are initiated at www.naturalheritage.state.pa.us. This interactive, online search will ask questions about the proposed project and provide the appropriate receipt, instructions or additional information regarding coordination with jurisdictional agencies.

As an alternative to the self-conducted search, project sponsors may request DEP staff to conduct the search by providing a completed "PNDI Project Planning & Environmental Review Form" (PNDI Form). The form is available at www.naturalheritage.state.pa.us. Individuals making this request should be aware that, due to the nature of the search software, DEP staff may need to contact them for additional information to successfully complete the search and that exclusive of any other items, their sewage planning exemption request is considered incomplete by DEP, until the appropriate receipt, clearance or recommendation letters are received.

For more information, see the "Policy for Pennsylvania Natural Diversity Inventory (PNDI) Coordination During Permit Review and Evaluation," (400-0200-001), available online in the eLibrary at DEP's website address www.depweb.state.pa.us.

b. Attach a plot plan for the proposed project. The plan must depict anticipated lots to be created, either estimated sewer line runs (public sewer proposals), or site suitability test locations and Site Investigation and Percolation Test Reports (onlot proposals).

c. Projects proposing use of onlot sewage disposal systems

(1) Information Required from the Municipality

The municipality in which the project is located (identified in Item 2.b. of the mailer) should determine if the municipality's Official Sewage Facilities Plan shows that the area planned for the project is to be served by onlot sewage disposal systems. If it is, the municipality should indicate this by having an authorized municipal official sign and date the form in the space provided. The official's name and title should be printed on the line below.

(2) Information Required from the Municipal Sewage Enforcement Officer (SEO)

The municipality's SEO must conduct personally, observe or otherwise confirm in a manner approved by DEP, site testing on each proposed lot in the subdivision (including any remaining land) to determine that separate sites are available for both a permitted primary onlot sewage disposal system and a replacement system (to be used if the original system fails in the future). If the SEO finds that each lot has been tested properly and fulfills these criteria, the SEO must indicate this by signing and dating the form in the space provided. His/her name and certification number should be printed on the line below.

(3) Information Required from the Applicant

The person proposing the subdivision, or his/her authorized agent, must determine if each lot in the subdivision (including the remaining land, if any) is at least one (1) acre in size. If they are, the applicant or his/her agent must indicate this by signing and dating the form in the space provided.

(4) Determinations Made by the Approving Agency

When the above listed information is received, the approving agency will determine the following:

(a) If the geology of the project area is conducive to nitrate-nitrogen contamination of groundwater (determined from the topographic map location information); or

(b) If elevated levels of nitrate-nitrogen are known to exist within one-quarter (1/4) mile of the proposed development (determined from agency groundwater sampling records in existence at the time of the application); or

(c) If the area proposed for development is within an identified High Quality (HQ) or Exceptional Value (EV) watershed (determined from the topographic map location).

Following this investigation, the approving agency will render a decision on the exemption request within 10 working days of receiving the request for exemption. Both the applicant and municipality will be notified of the decision. If the request cannot be granted, the person named in the return address block will receive the proper planning module component forms (or instructions to obtain them from the DEP website) along with the notification of the decision, including the reason(s) that the request cannot be granted.

d. Projects proposing use of public sewerage facilities (i.e., ownership by municipality or authority)

(1) Information Required from the Municipality

The municipality in which the proposed project is located (identified in Item 2.b. of the mailer) will determine the following from written documentation requested and obtained by the applicant from the facility permittee. ***This documentation MUST also be sent to the approving agency (DEP or delegated local agency) for evaluation.***

(a) Certification from the permittees of the collection, conveyance and treatment facilities proposed for use that capacity is available in these facilities to receive and treat the sewage flows from the proposed project; and

(b) That these added flows will not cause an overload or 5-year projected overload in the facilities.

If the facilities proposed for use are owned and operated by an authority, or authorities, then attach a letter from each to the mailer.

If this written certification has been submitted by the applicant, an authorized municipal official should sign and date the form and print his/her name and title and the municipality name in the spaces provided.

NOTE: Since planning is a municipal responsibility, sewer authorities involved should make required information available but should **NOT** sign the mailer as the authorized municipal official.

(2) Determinations Made by the Approving Agency

When the above listed information is received by the approving agency, the approving agency will determine the following (from DEP records):

(a) That the existing collection, conveyance and treatment facilities are in compliance;

(b) That the existing facilities have no existing or 5-year projected overload;

(c) That the municipality has a currently approved Official Sewage Facilities Plan which is being implemented; and

(d) That the project does not propose service by facilities needing a new or modified permit from DEP under the Clean Streams Law.

Following this investigation, the approving agency will render a decision on the exemption request within 10 working days of receiving the request for exemption. Both the applicant and the municipality will be notified of the decision. If the request cannot be granted, the person named in the return address block will receive the proper planning module component forms (or instructions to obtain them from DEP's website) along with the notification of the decision, including the reason that the request cannot be granted.

If unsure of which local DEP office to contact, the following DEP regional offices will assist you in determining the appropriate local DEP office that serves your specific municipality.

If you need more information or assistance, please contact your local DEP office.

DEP REGIONAL OFFICES

Southeast Region
2 E. Main St.
Norristown, PA 19401
Main Telephone: 484-250-5900
24-Hour Emergency: 484-250-5900

Counties: *Bucks, Chester, Delaware, Montgomery and Philadelphia*

Southwest Region
400 Waterfront Drive
Pittsburgh, PA 15222-4745
Main Telephone: 412-442-4000
24-Hour Emergency: 412-442-4000

Counties: *Allegheny, Armstrong, Beaver, Cambria, Fayette, Greene, Indiana, Somerset, Washington and Westmoreland*

Southcentral Region
909 Elmerton Ave.
Harrisburg, PA 17110
Main Telephone: 717-705-4700
24-Hour Emergency: 1-877-333-1904

Counties: *Adams, Bedford, Berks, Blair, Cumberland, Dauphin, Franklin, Fulton, Huntingdon, Juniata, Lancaster, Lebanon, Mifflin, Perry and York*

Northwest Region
230 Chestnut St.
Meadville, PA 16335-3481
Main Telephone: 814-332-6945
24-Hour Emergency: 1-800-373-3398

Counties: *Butler, Clarion, Crawford, Elk, Erie, Forest, Jefferson, Lawrence, McKean, Mercer, Venango and Warren*

Northeast Region
2 Public Square
Wilkes-Barre, PA 18711-0790
Main Telephone: 570-826-2511
24-Hour Emergency: 570-826-2511

Counties: *Carbon, Lackawanna, Lehigh, Luzerne, Monroe, Northampton, Pike, Schuylkill, Susquehanna, Wayne and Wyoming*

Northcentral Region
208 W. Third St., Suite 101
Williamsport, PA 17701
Main Telephone: 570-327-3636
24-Hour Emergency: 570-327-3636

Counties: *Bradford, Cameron, Clearfield, Centre, Clinton, Columbia, Lycoming, Montour, Northumberland, Potter, Snyder, Sullivan, Tioga and Union*

1. **Development Information**

Name of Development 38 Fulmer Avenue
Developer Name Cadence Development Partners, LLC
Address 409 Smithbridge Road
Glen Mills, PA 19342
Telephone # 610-505-2281

Email sean@cadencedp.com

2. **Location of Development**

a. County Delaware County
b. Municipality Haverford Township
c. Address or Coordinates 39.973370, -75.303409

d. Tax Parcel # 22020034500
e. USGS Quad Name Lansdowne
inches up 18.0 over 7.2
from bottom right corner of map.
f. Located in a High Quality/Exceptional Value watershed?
☐ Yes ☒ No

3. **Type of Development Proposed** (check appropriate box)

☒ Residential ☐ Multi-Residential
Describe New single family dwelling

☐ Commercial ☐ Institutional
Describe

☐ Brownfield Site Redevelopment
☐ Other (specify)

4. **Size**

a. # of lots 2 # of EDUs 2 (1 existing)
b. # of lots since 5/15/72 1
c. Development Acreage 0.25
d. Remaining Acreage 0.00

5. **Sewage Flows** 525 (262.5 existing) gpd

6. **Proposed Sewage Disposal Method** (check applicable boxes)

a. ☒ Sewerage System
☒ Existing (connection only) ☐ New (extension)
☐ Public ☐ Private
☐ Pump Station(s)/Force Main ☒ Gravity
Name of existing system being extended

Interceptor Name

Treatment Facility Name Philadelphia Southwest Pollution Control Plant via Upper Darby

NPDES Permit #

b. ☐ Construction of Treatment Facility
☐ With Stream Discharge
☐ With Land Application (not including IRSIS)
☐ Other
☐ Repair?
Name of waterbody where point of discharge is proposed (if stream discharge)

c. ☐ Onlot Sewage Disposal Systems
(check appropriate box)
☐ Individual onlot system(s) (including IRSIS)
☐ Community onlot system
☐ Large-Volume onlot system
d. ☐ Retaining tanks

Number of Holding Tanks
Number of Privies

7. ☐ **Request Sewage Facilities Planning Module forms in electronic format**

8. **Request for Planning Exemption**

a. Protection of rare, endangered or threatened species
Check one:
☒ The "PNDI Project Environmental Review Receipt" is attached.
or
☐ A completed "PNDI Project Planning & Environmental Review Form," (PNDI Form) is attached. I request DEP staff to complete the required PNDI search for my project. I realize that my planning exemption will be considered incomplete and that the DEP processing of my planning exemption request will be delayed, until a "PNDI Project Environmental Review Receipt" and all supporting documentation from jurisdictional agencies (when necessary) is/are received by DEP.

Applicant or Consultant Initials

b. ☒ Plot Plan Attached ☐ Site Reports Attached

c. Onlot Disposal Systems

(1) I certify that the Official Plan shows this area as an onlot service area.

(Signature of Municipal Official) Date

Name (Print) Title

Municipality (must be same as in 2.b.)

Telephone #

(2) I certify that each lot in this subdivision has been tested and is suitable for both a primary and replacement sewage disposal system.

Signature of SEO) Date

Name (Print) Certification #

Telephone #

(3) I certify that each lot in this subdivision is at least 1 acre in size

(Signature of Project Applicant/Agent) Date

d. Public Sewerage Service (i.e., ownership by municipality or authority)

Based upon written documentation, I certify that the facilities proposed for use have capacity and that no overload exists or is projected within 5 years. (Attach documents.)

(Signature of Municipal Official) Date

Name (Print) Title

Haverford Township
Municipality (must be same as in 2.b.)

Telephone #

Return Correspondence/Forms to:

_____

_____

_____

_____

DEPARTMENT OF ENVIRONMENTAL PROTECTION

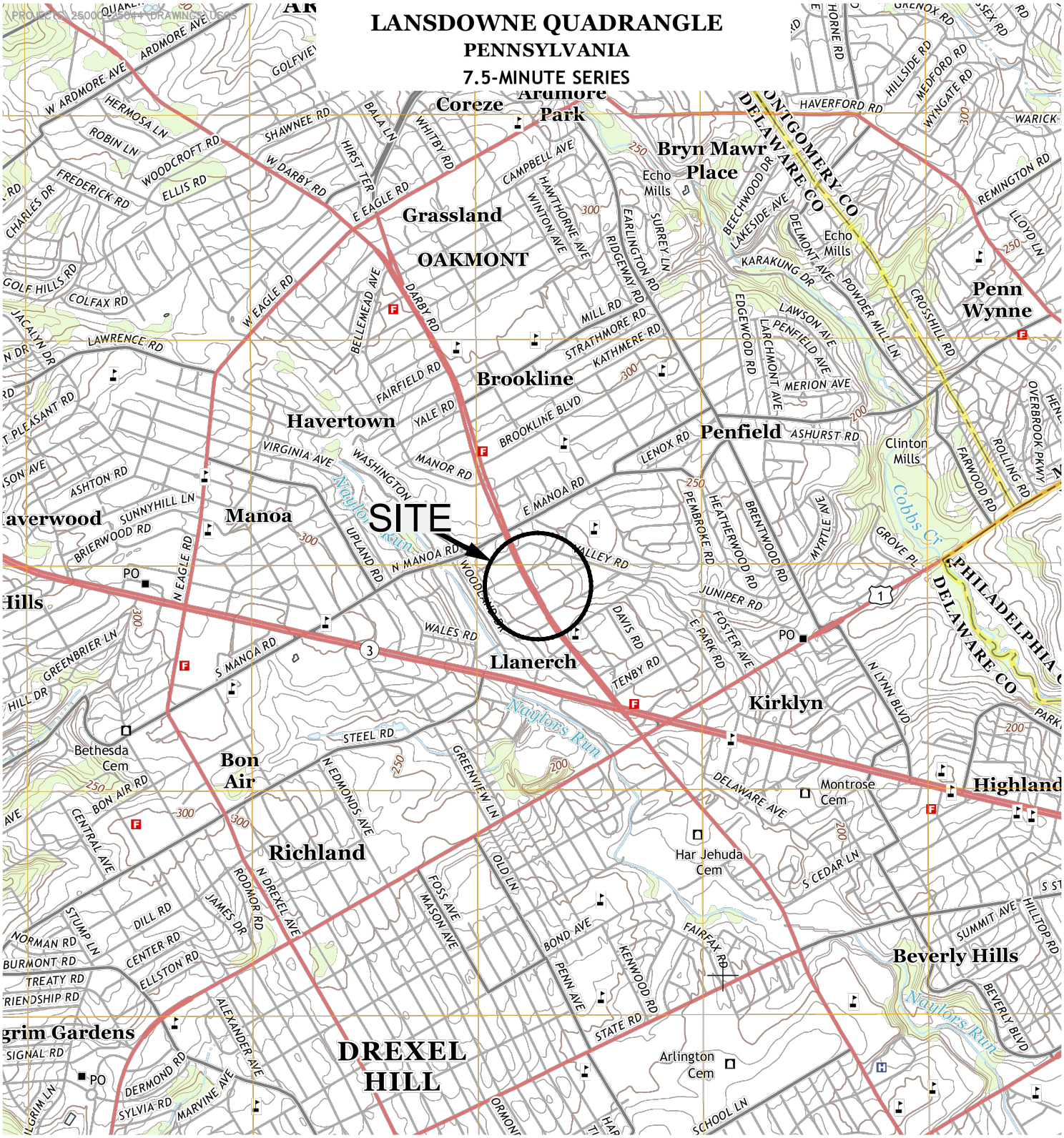
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DEP USE
Components Sent
Onlot Disposal ☐
Collection and Treatment ☐
Planning Agency Review ☐
Exempt from Planning ☐
Code _____
Date _____

"Fold Here"



CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

1. PROJECT INFORMATION

Project Name: **38 Fulmer Avenue**
Date of Review: **7/31/2025 12:20:29 PM**
Project Category: **Development, Residential, subdivision which will contain 1-2 lots with 1-2 single family living units**
Project Area: **0.25 acres**
County(s): **Delaware**
Township/Municipality(s): **Haverford Township**
ZIP Code:
Quadrangle Name(s): **LANSDOWNE**
Watersheds HUC 8: **Lower Delaware**
Watersheds HUC 12: **Cobbs Creek**
Decimal Degrees: **39.973370, -75.303409**
Degrees Minutes Seconds: **39° 58' 24.1313" N, 75° 18' 12.2721" W**

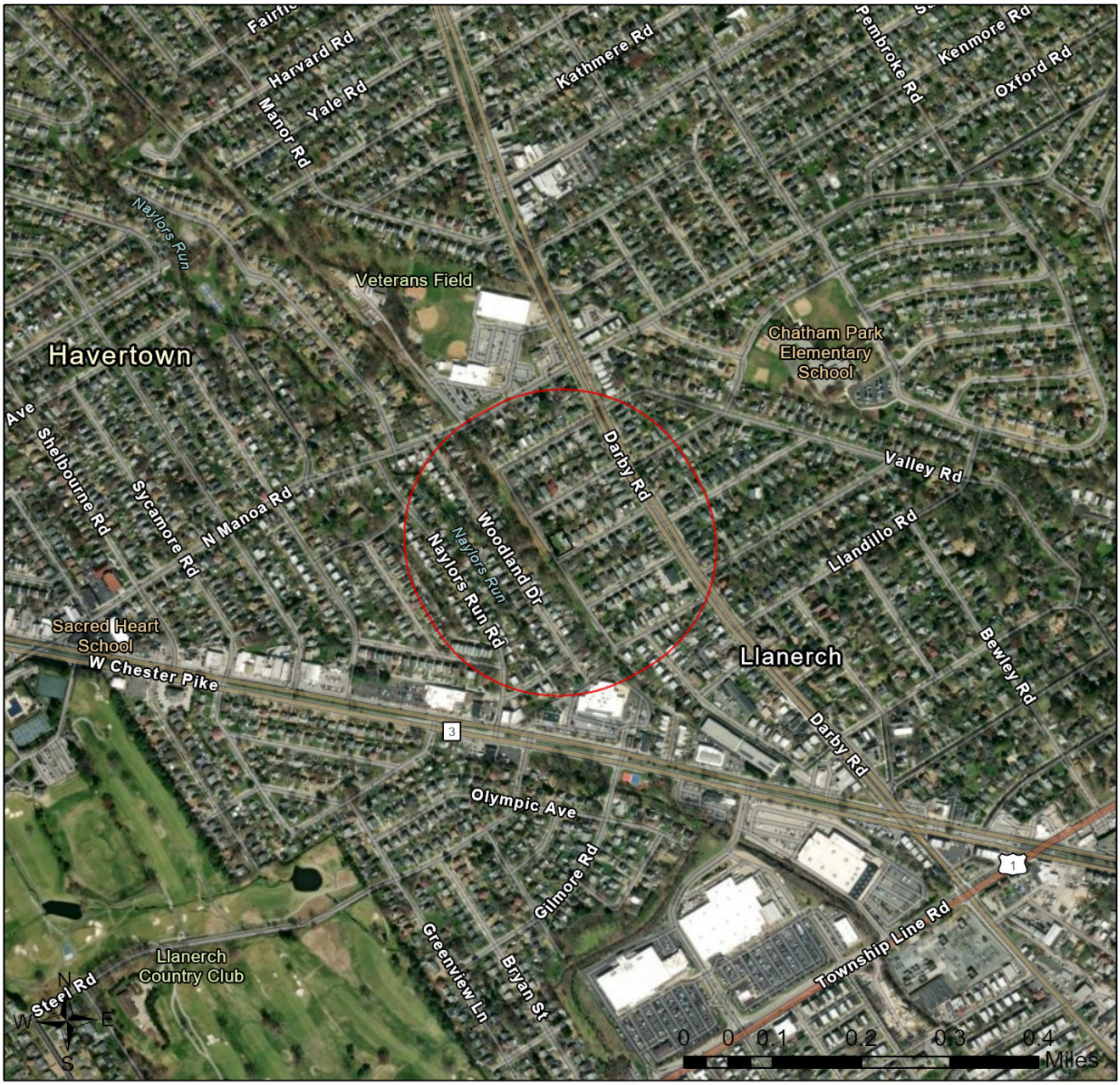
This is a draft receipt for information only. It has not been submitted to jurisdictional agencies for review.

2. SEARCH RESULTS

Agency	Results	Response
PA Game Commission	**Conservation Measure**	**No Further Review Required, See Agency Comments**
PA Department of Conservation and Natural Resources	No Known Impact	No Further Review Required
PA Fish and Boat Commission	No Known Impact	No Further Review Required
U.S. Fish and Wildlife Service	**Potential Impact**	**MORE INFORMATION REQUIRED, See Agency Response**

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate there may be potential impacts to threatened and endangered and/or special concern species and resources within the project area. If the response above indicates "No Further Review Required" no additional communication with the respective agency is required. If the response is "Further Review Required" or "See Agency Response," refer to the appropriate agency comments below. Please see the DEP Information Section of this receipt if a PA Department of Environmental Protection Permit is required.

38 Fulmer Avenue



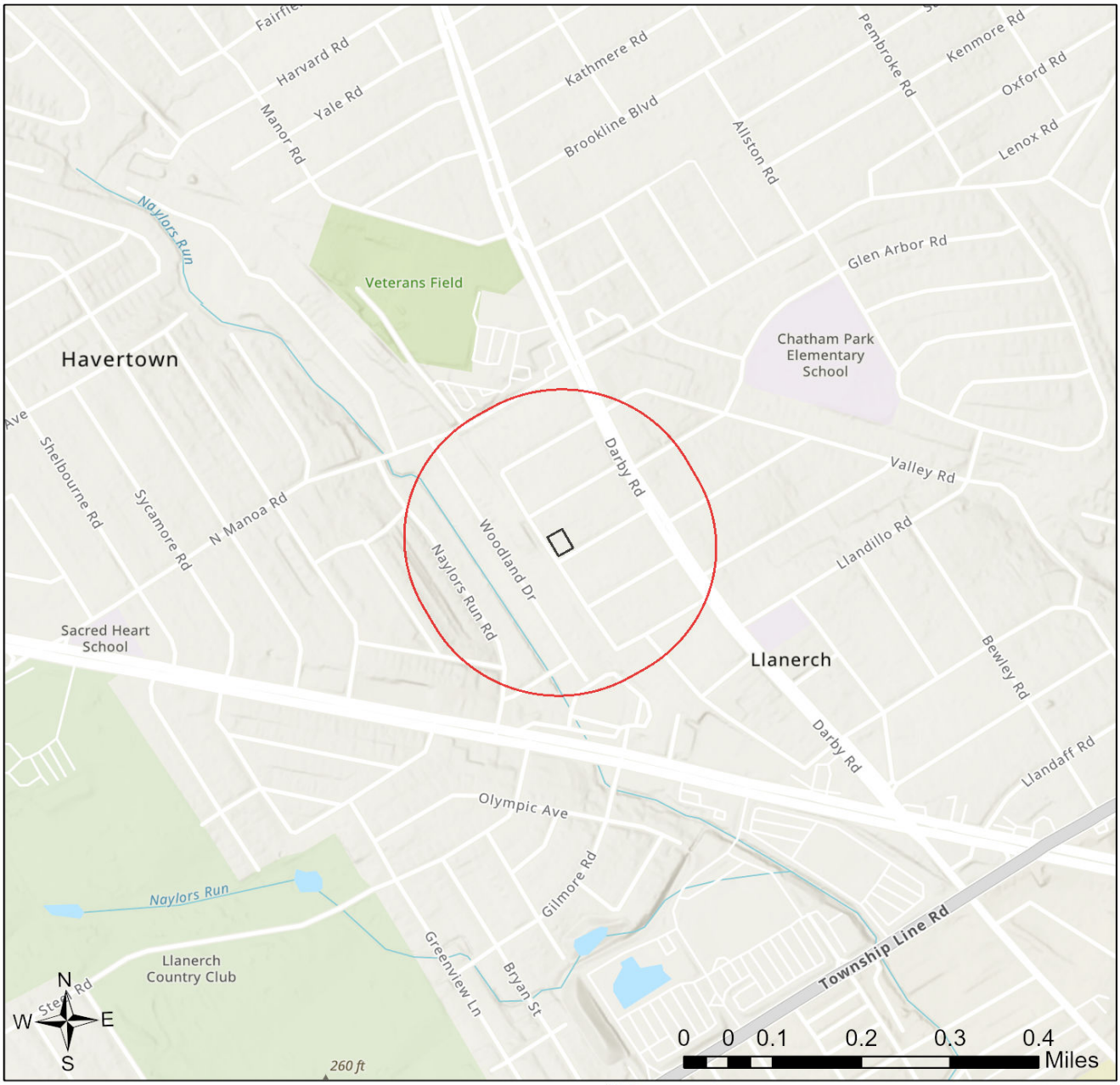
Buffered Project Boundary

Project Boundary



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

38 Fulmer Avenue



Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community
Sources: Esri, Maxar, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA,

RESPONSE TO QUESTION(S) ASKED

Q1: Will the action include disturbance to trees such as tree cutting (or other means of knocking down, or bringing down trees, tree topping. or tree trimming), pesticide/herbicide application or prescribed fire?
Your answer is: Yes

Q2: Does the action area contain any caves (or associated sinkholes, fissures, or other karst features), mines, rocky outcroppings, culverts, or tunnels that could provide habitat for hibernating bats?
Your answer is: No

3. AGENCY COMMENTS

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

These agency determinations and responses are **valid for two years** (from the date of the review), and are based on the project information that was provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the following change: 1) project location, 2) project size or configuration, 3) project type, or 4) responses to the questions that were asked during the online review, the results of this review are not valid, and the review must be searched again via the PNDI Environmental Review Tool and resubmitted to the jurisdictional agencies. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt. The jursidictional agencies **strongly advise against** conducting surveys for the species listed on the receipt prior to consultation with the agencies.

PA Game Commission

RESPONSE:

Conservation Measure: Potential impacts to state and federally listed species which are under the jurisdiction of both the Pennsylvania Game Commission (PGC) and the U.S. Fish and Wildlife Service may occur as a result of this project. As a result, the PGC defers comments on potential impacts to federally listed species to the U.S. Fish and Wildlife Service. No further coordination with the Pennsylvania Game Commission is required at this time.

PA Department of Conservation and Natural Resources

RESPONSE:

No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Fish and Boat Commission

RESPONSE:

No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

U.S. Fish and Wildlife Service

RESPONSE:

Information Request: Your project is within the range of the federally listed Indiana bat. Enter project information into IPaC (http://ecos.fws.gov/ipac/). Follow the step-by-step process to review this project's potential effect on federally listed species. For step-by-step instructions, please see our Project Review Page (https://www.fws.gov/office/pennsylvania-ecological-services/project-revi...)

WHAT TO SEND TO JURISDICTIONAL AGENCIES

If project information was requested by one or more of the agencies above, upload* or email the following information to the agency(s) (see AGENCY CONTACT INFORMATION). Instructions for uploading project materials can be found here. This option provides the applicant with the convenience of sending project materials to a single location accessible to all three state agencies (but not USFWS).
*If information was requested by USFWS, applicants must submit their project using IPaC, following the USFWS Project Submission Instructions. USFWS will not accept or review project materials uploaded via the Conservation Explorer.

Check-list of Minimum Materials to be submitted:
____Project narrative with a description of the overall project, the work to be performed, current physical characteristics of the site and acreage to be impacted.
____A map with the project boundary and/or a basic site plan(particularly showing the relationship of the project to the physical features such as wetlands, streams, ponds, rock outcrops, etc.)
In addition to the materials listed above, USFWS REQUIRES the following
____**SIGNED** copy of a Final Project Environmental Review Receipt

The inclusion of the following information may expedite the review process.
____Color photos keyed to the basic site plan (i.e. showing on the site plan where and in what direction each photo was taken and the date of the photos)
____Information about the presence and location of wetlands in the project area, and how this was determined (e.g., by a qualified wetlands biologist), if wetlands are present in the project area, provide project plans showing the location of all project features, as well as wetlands and streams.

4. DEP INFORMATION

The Pa Department of Environmental Protection (DEP) requires that a signed copy of this receipt, along with any required documentation from jurisdictional agencies concerning resolution of potential impacts, be submitted with applications for permits requiring PNDI review. Two review options are available to permit applicants for handling PNDI coordination in conjunction with DEP's permit review process involving either T&E Species or species of special concern. Under sequential review, the permit applicant performs a PNDI screening and completes all coordination with the appropriate jurisdictional agencies prior to submitting the permit application. The applicant will include with its application, both a PNDI receipt and/or a clearance letter from the jurisdictional agency if the PNDI Receipt shows a Potential Impact to a species or the applicant chooses to obtain letters directly from the jurisdictional agencies. Under concurrent review, DEP, where feasible, will allow technical review of the permit to occur concurrently with the T&E species consultation with the jurisdictional agency. The applicant must still supply a copy of the PNDI Receipt with its permit application. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. The applicant and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at https://conservationexplorer.dcnr.pa.gov/content/resources.

5. ADDITIONAL INFORMATION

The PNDI environmental review website is a preliminary screening tool. There are often delays in updating species status classifications. Because the proposed status represents the best available information regarding the conservation status of the species, state jurisdictional agency staff give the proposed statuses at least the same consideration as the current legal status. If surveys or further information reveal that a threatened and endangered and/or special concern species and resources exist in your project area, contact the appropriate jurisdictional agency/agencies immediately to identify and resolve any impacts.

For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page (www.naturalheritage.state.pa.us). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

Serial Number:

CALL BEFORE YOU DIG!

PENNSYLVANIA LAW REQUIRES 3 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE AND 10 WORKING DAYS IN DESIGN STAGE–STOP CALL

Pennsylvania One Call System, Inc.

1–800–242–1776

811

ALL LOCATIONS OF EXISTING UTILITIES, SHOWN ON THIS PLAN, HAVE BEEN DEVELOPED FROM FIELD LOCATIONS OF VISIBLE ABOVE GROUND UTILITY STRUCTURES AND/OR INFORMATION FURNISHED BY THE UTILITY COMPANIES.

ALL LOCATIONS SHOULD BE CONSIDERED APPROXIMATE. COMPLETENESS OR ACCURACY OF THE LOCATIONS AND DEPTH OF ALL STRUCTURES CANNOT BE GUARANTEED. CONTRACTORS MUST VERIFY ALL LOCATIONS AND DEPTHS OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE THE START OF ANY WORK.

AS PER ACT 187 HOUSE BILL 2627, BEFORE THE START OF ANY EXCAVATION WORK THE CONTRACTOR SHALL NOTIFY THE AFFECTED UTILITY COMPANIES THROUGH THE PENNSYLVANIA "ONE CALL SYSTEM" 1–800–242–1776 ACCORDING TO THE FOLLOWING SCHEDULE:

- PRELIMINARY NOTICE: MORE THAN 90 DAYS FROM THE START OF CONSTRUCTION
- FINAL NOTICE: 10–90 DAYS FROM THE START OF CONSTRUCTION
- ROUTINE NOTICE: 3–10 DAYS FROM THE START OF CONSTRUCTION

REFERENCE PLANS:

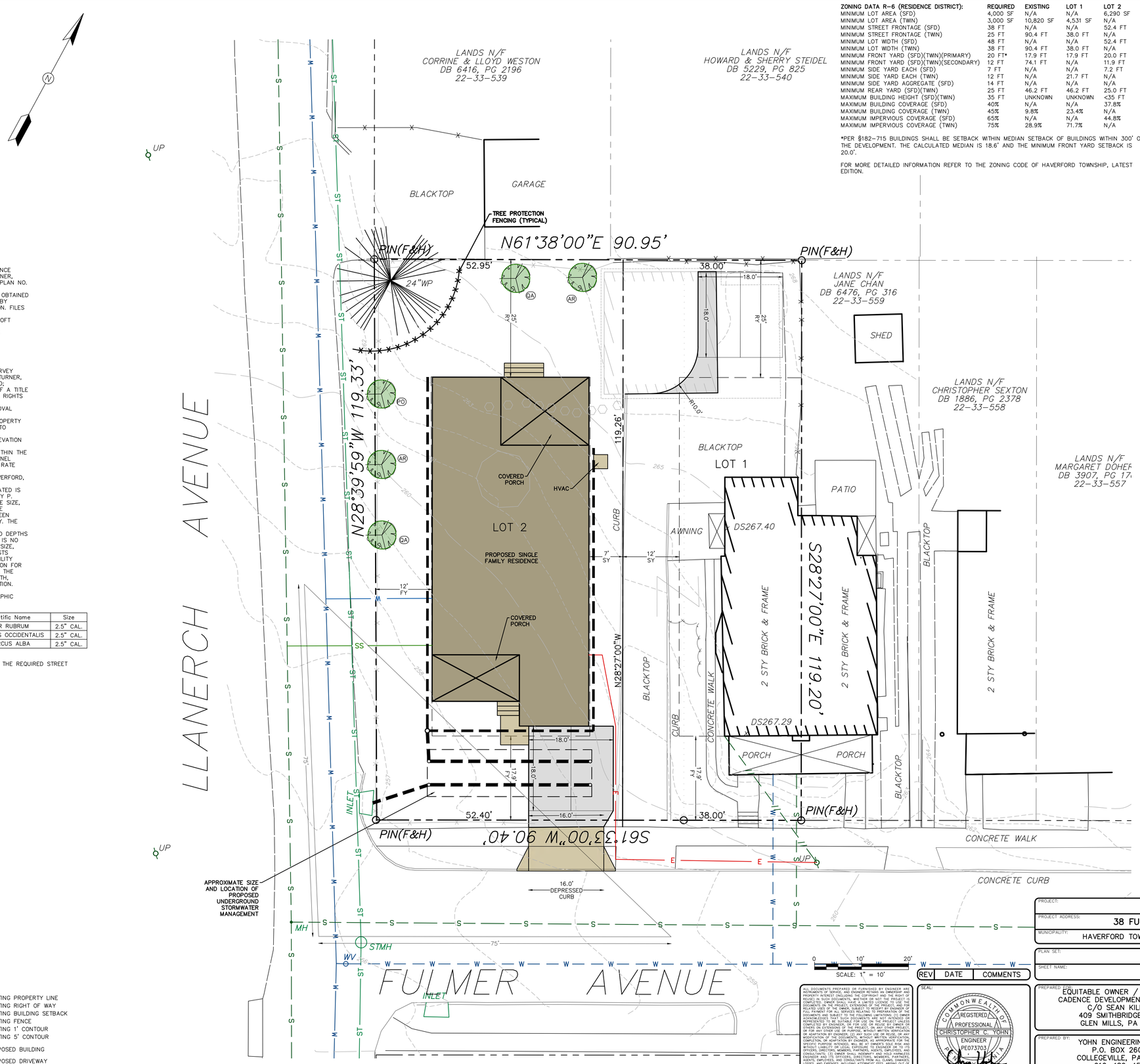
1. TOPOGRAPHIC SURVEY PLAN PREPARED FOR CADENCE DEVELOPMENT PARTNERS, LLC BY JEFFREY P. TURNER, P.L.S., COLLEGEVILLE, PA. DATED JULY 29, 2025. PLAN NO. D–22–38–560.
2. LIDAR TOPOGRAPHY AND OTHER GIS INFORMATION OBTAINED ELECTRONICALLY FROM SHAPE FILES DISTRIBUTED BY DELAWARE VALLEY REGIONAL PLANNING COMMISSION. FILES WERE OBTAINED VIA WWW.PASDA.PSU.EDU.
3. AERIAL PHOTOGRAPH OBTAINED FROM THE MICROSOFT CORPORATION BING MAPS.
4. SOILS INFORMATION VIA THE NATURAL RESOURCES CONSERVATION SERVICE WEB SOIL SURVEY (WEBSOILSURVEY.SC.EGOV.USDA.GOV.)

REFERENCE PLAN #1 NOTES:

1. OUTLINE DESCRIPTION AND LOCATION SHOWN IN ACCORDANCE WITH ACTUAL FIELD INSTRUMENT SURVEY CONDUCTED UPON THE GROUNDS BY JEFFREY P. TURNER, PLS FROM VARIOUS DEEDS AND PLANS OF RECORD; SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A TITLE REPORT; PROPERTY MAY BE SUBJECT TO CERTAIN RIGHTS OF OTHERS.
2. THIS SURVEY IS NOT TO BE USED FOR TREE REMOVAL ALONG PROPERTY LINES. TREE LOCATIONS ARE APPROXIMATE. FOR TREE REMOVAL PURPOSES, PROPERTY LINES MUST BE FIELD MARKED WITH STAKES SET TO ESTABLISH EXACT TREE OWNERSHIP.
3. CONTOURS PLOTTED FROM FIELD RUN SURVEY. ELEVATION BASED ON NAD88.
4. THERE IS NO IDENTIFIABLE FLOOD PLAIN AREAS WITHIN THE PROJECT SITE AS ILLUSTRATED ON COMMUNITY PANEL NUMBER 42045C0106F OF THE FLOOD INSURANCE RATE MAP AS PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY FOR THE TOWNSHIP OF HAVERFORD, PENNSYLVANIA.
5. EXISTING SUBSURFACE UTILITY INFORMATION INDICATED IS BASED UPON VISUAL FIELD INSPECTION BY JEFFREY P. TURNER, PLS. SUCH INFORMATION CONCERNING THE SIZE, LOCATION, DEPTH, QUANTITY, ETC. OF SUBSURFACE UTILITIES IS APPROXIMATE IN NATURE AND HAS BEEN OBTAINED AS A SUPPLEMENT TO THE SITE SURVEY. THE INFORMATION PROVIDED IS REPRESENTATIVE OF SUBSURFACE CONDITIONS ONLY AT LOCATIONS AND DEPTHS WHERE SUCH INFORMATION WAS OBTAINED. THERE IS NO EXPRESSED OR IMPLIED AGREEMENT THAT UTILITY SIZE, LOCATION, DEPTH, QUANTITY, ETC. AS SHOWN EXISTS BETWEEN EXPLORED LOCATIONS. ACCORDINGLY, UTILITY INFORMATION SHOWN SHOULD NOT BE REPLIED UPON FOR CONSTRUCTION PURPOSES. IT IS INCUMBENT UPON THE CONTRACTOR TO VERIFY THE SIZE, LOCATION, DEPTH, QUANTITY, ETC. OF ALL UTILITIES BEFORE EXCAVATION.
6. PLANS REFERENCED: DELAWARE VALLEY REGIONAL PLANNING TOPOGRAPHIC MAPS.

Symbol	Quantity	Common Name	Scientific Name	Size
AR	2	RED MAPLE	ACER RUBRUM	2.5" CAL.
PO	1	AMERICAN SYCAMORE	PLATANUS OCCIDENTALIS	2.5" CAL.
QA	2	WHITE OAK	QUERCUS ALBA	2.5" CAL.

REPLACEMENT TREE NOTE:
THE APPLICANT PROPOSES TO PAY A FEE IN LIEU OF THE REQUIRED STREET TREES AND REPLACEMENT TREES NOT PROVIDED.



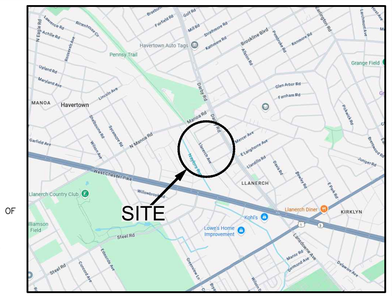
LINETYPE LEGEND

- EXISTING PROPERTY LINE
- EXISTING RIGHT OF WAY
- EXISTING BUILDING SETBACK
- EXISTING FENCE
- 379 EXISTING 1' CONTOUR
- 380 EXISTING 5' CONTOUR
- PROPOSED BUILDING
- PROPOSED DRIVEWAY
- PROPOSED IMPERVIOUS WALKS, WALLS, ETC.

ZONING DATA R–6 (RESIDENCE DISTRICT):	REQUIRED	EXISTING	LOT 1	LOT 2
MINIMUM LOT AREA (SFD)	4,000 SF	N/A	N/A	6,290 SF
MINIMUM LOT AREA (TWIN)	3,000 SF	10,820 SF	4,531 SF	N/A
MINIMUM STREET FRONTAGE (SFD)	38 FT	N/A	N/A	52.4 FT
MINIMUM STREET FRONTAGE (TWIN)	25 FT	90.4 FT	38.0 FT	N/A
MINIMUM LOT WIDTH (SFD)	48 FT	N/A	N/A	52.4 FT
MINIMUM LOT WIDTH (TWIN)	38 FT	90.4 FT	38.0 FT	N/A
MINIMUM FRONT YARD (SFD)(TWIN)(PRIMARY)	20 FT*	17.9 FT	17.9 FT	20.0 FT
MINIMUM FRONT YARD (SFD)(TWIN)(SECONDARY)	12 FT	74.1 FT	N/A	11.9 FT
MINIMUM SIDE YARD EACH (SFD)	7 FT	N/A	N/A	7.2 FT
MINIMUM SIDE YARD EACH (TWIN)	12 FT	N/A	21.7 FT	N/A
MINIMUM SIDE YARD AGGREGATE (SFD)	14 FT	N/A	N/A	N/A
MINIMUM REAR YARD (SFD)(TWIN)	25 FT	46.2 FT	46.2 FT	25.0 FT
MAXIMUM BUILDING HEIGHT (SFD)(TWIN)	35 FT	UNKNOWN	UNKNOWN	<35 FT
MAXIMUM BUILDING COVERAGE (SFD)	40%	N/A	N/A	37.8%
MAXIMUM BUILDING COVERAGE (TWIN)	45%	9.8%	23.4%	N/A
MAXIMUM IMPERVIOUS COVERAGE (SFD)	65%	N/A	N/A	44.8%
MAXIMUM IMPERVIOUS COVERAGE (TWIN)	75%	28.9%	71.7%	N/A

*PER §182–715 BUILDINGS SHALL BE SETBACK WITHIN MEDIAN SETBACK OF BUILDINGS WITHIN 300' OF THE DEVELOPMENT. THE CALCULATED MEDIAN IS 18.6' AND THE MINIMUM FRONT YARD SETBACK IS 20.0'.

FOR MORE DETAILED INFORMATION REFER TO THE ZONING CODE OF HAVERFORD TOWNSHIP, LATEST EDITION.



LOCATION MAP
SCALE: 1" = 2,000'

EXISTING LOT DATA:

RECORD OWNER:	LIAM & JOAN SMYTH 38 FULMER AVENUE HAVERTOWN, PA 19083
PARCEL ID:	22–02–00345–00
TAXMAP ID:	22–33–560: 000
DEED BOOK & PAGE NO:	0088 & 0528
GROSS LOT AREA:	10,820 SF (0.2484 AC)

EXISTING IMPERVIOUS COVERAGE:

BUILDING	1,058 SF (9.8%)
GARAGE	622 SF (5.7%)
DRIVEWAY	1,820 SF
WALLS, WALKS, ETC.	297 SF
TOTAL	3,797 SF (35.1%)

IMPERVIOUS COVERAGE TO BE REMOVED:

GARAGE	622 SF
DRIVEWAY	50 SF
TOTAL	672 SF (6.2%)

PROPOSED LOT 1 DATA:

GROSS LOT AREA:	4,531 SF (0.1040 AC)

IMPERVIOUS COVERAGE TO BE ADDED:

DRIVEWAY	125 SF (2.8%)

PROPOSED IMPERVIOUS COVERAGE:

BUILDING	1,058 SF (23.4%)
DRIVEWAY	1,895 SF
WALLS, WALKS, ETC.	297 SF
TOTAL	3,250 SF (71.7%)
NET INCREASE	125 SF (2.8%)
MAXIMUM ALLOWED	2,945 SF (65.0%)

PROPOSED LOT 2 DATA:

GROSS LOT AREA:	6,290 SF (0.1444 AC)

IMPERVIOUS COVERAGE TO BE ADDED:

BUILDING	2,377 SF (37.8%)
DRIVEWAY	359 SF
WALLS, WALKS, ETC.	81 SF
TOTAL	2,817 SF (44.8%)

PROPOSED IMPERVIOUS COVERAGE:

BUILDING	2,377 SF (37.8%)
DRIVEWAY	359 SF
WALLS, WALKS, ETC.	81 SF
TOTAL	2,817 SF (44.8%)
NET INCREASE	2,817 SF (44.8%)
MAXIMUM ALLOWED	4,089 SF (65.0%)

GENERAL NOTES:

1. THE INTENT OF THIS PLAN IS TO ILLUSTRATE THE SUBDIVISION OF THE EXISTING LOT AND THE CREATION OF A NEW LOT FOR A NEW SINGLE FAMILY DWELLING.
2. THE DEVELOPMENT BE SERVICED BY NEW INDIVIDUAL PRIVATE, GRAVITY SEWER LATERALS AND WATER LATERALS, WHICH WILL CONNECT TO THE EXISTING TOWNSHIP SEWER MAIN AND AQUA WATER MAIN WITHIN CENTRAL AVENUE.

ALL DOCUMENTS PREPARED OR FURNISHED BY ENGINEER ARE INSTRUMENTS OF SERVICE, AND ENGINEER RETAINS AN OWNERSHIP AND PROPERTY INTEREST (INCLUDING THE COPYRIGHT AND THE RIGHT OF REUSE) IN SUCH DOCUMENTS, WHETHER OR NOT THE PROJECT IS COMPLETED. OWNER SHALL NOT RELY IN ANY WAY ON ANY OF THE DOCUMENTS ON THE PROJECT, EXTENSIONS OF THE PROJECT, AND FOR RELATED USES OF THE OWNER, SUBJECT TO RECEIPT BY ENGINEER OF PAYMENT IN FULL FOR SERVICES RELATING TO PREPARATION OF THE DOCUMENTS AND SUBJECT TO THE FOLLOWING LIMITATIONS: (1) OWNER ACKNOWLEDGES THAT SUCH DOCUMENTS ARE NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE ON THE PROJECT UNLESS COMPLETED BY ENGINEER, (2) OWNER SHALL NOT USE OR PERMIT OTHERS ON EXTENSIONS OF THE PROJECT, OR ANY OTHER PROJECT, OR FOR ANY OTHER USE OR PURPOSE, WITHOUT WRITTEN VERIFICATION OR ADAPTATION BY ENGINEER, AS APPROPRIATE FOR THE SPECIFIC MODIFICATION OF THE DOCUMENTS, WITHOUT WRITTEN VERIFICATION, COMPLETION, OR ADAPTATION BY ENGINEER, AS APPROPRIATE FOR THE SPECIFIC PURPOSE INTENDED, WILL BE AT OWNER'S SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO ENGINEER OR TO ITS OFFICERS, DIRECTORS, MEMBERS, PARTNERS, AGENTS, EMPLOYEES, AND CONSULTANTS, AND OWNER SHALL INDEMNIFY AND HOLD HARMLESS ENGINEER AND ITS OFFICERS, DIRECTORS, MEMBERS, PARTNERS, AGENTS, EMPLOYEES, AND CONSULTANTS FROM ALL CLAIMS, DAMAGES, LOSSES, AND EXPENSES, INCLUDING ATTORNEYS' FEES, ARISING OUT OF OR RESULTING THEREFROM, AND (3) ANY USE OR REUSE OF THE DOCUMENTS WITHOUT WRITTEN VERIFICATION, COMPLETION, OR ADAPTATION BY ENGINEER, AND (4) SUCH LIMITED LICENSE TO OWNER SHALL NOT CREATE ANY RIGHTS IN THIRD PARTIES.

SEAL: COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL — CHRISTOPHER C. YOHN — ENGINEER — PE073703

REV	DATE	COMMENTS

PROJECT: RESIDENTIAL SUBDIVISION

PROJECT ADDRESS: 38 FULMER AVENUE, HAVERTOWN, PA 19083

MUNICIPALITY: HAVERFORD TOWNSHIP | COUNTY: DELAWARE COUNTY

PLAN SET: MINOR SUBDIVISION PLANS

SHEET NAME: ILLUSTRATIVE SITE PLAN

PREPARED FOR: EQUITABLE OWNER / APPLICANT
CADENCE DEVELOPMENT PARTNERS
C/O SEAN KILLEEN
409 SMITHBRIDGE ROAD
GLEN MILLS, PA 19342

DATE: JULY 30, 2025
SCALE: 1" = 10'
ONE CALL NUMBER:
DRAWN BY: CCY
PROJECT NUMBER: 25–044

PREPARED BY: YOHN ENGINEERING, LLC
P.O. BOX 26094
COLLEGEVILLE, PA 19426
610–489–4580
WWW.YOHNENGINEERING.COM

YOHN Engineering, LLC

SHEET: 1 OF 3

Serial Number:

CALL BEFORE YOU DIG!

PENNSYLVANIA LAW REQUIRES 3 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE AND 10 WORKING DAYS IN DESIGN STAGE–STOP CALL

Pennsylvania One Call System, Inc.
1–800–242–1776

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6. PLANS REFERENCED:
   DELAWARE VALLEY REGIONAL PLANNING TOPOGRAPHIC MAPS.

COMMONWEALTH OF PENNSYLVANIA

COUNTY OF _____

ON THIS THE __ DAY OF _____, 20__, BEFORE ME, THE UNDERSIGNED PERSONALLY APPEARED SEAN KILLEEN, MEMBER OF CADENCE DEVELOPMENT PARTNERS, LLC, WHO BEING DULY SWORN ACCORDING TO LAW DEPOSES AND SAYS THAT CADENCE DEVELOPMENT PARTNERS, LLC IS THE EQUITABLE OWNER OF THE PROPERTY SHOWN ON THIS PLAN, THAT THE LAND DEVELOPMENT PLAN WAS MADE AT HIS DISCRETION AS SUCH MEMBER AND THAT HE ACKNOWLEDGES THE SAME TO BE THE ACT AND PLAN OF CADENCE DEVELOPMENT PARTNERS, LLC AND DESIRES THE SAME TO BE RECORDED AS SUCH ACCORDING TO LAW.

CADENCE DEVELOPMENT PARTNERS, LLC

BY: _____
NAME: SEAN KILLEEN
TITLE: MEMBER

WITNESS MY HAND AND SEAL THE DAY AND YEAR AFORESAID.

_____
NOTARY SIGNATURE

_____
MY COMMISSION EXPIRES:

I HEREBY CERTIFY THAT THE PLANS SHOWN HERETO WERE REVIEWED BY THE HAVERFORD TOWNSHIP ENGINEER.

_____ _____
HAVERFORD TOWNSHIP ENGINEER DATE

I HEREBY CERTIFY THAT THE PLANS SHOWN HERETO WERE REVIEWED AND APPROVED BY THE HAVERFORD TOWNSHIP BOARD OF COMMISSIONERS.

_____ _____
PRESIDENT DATE

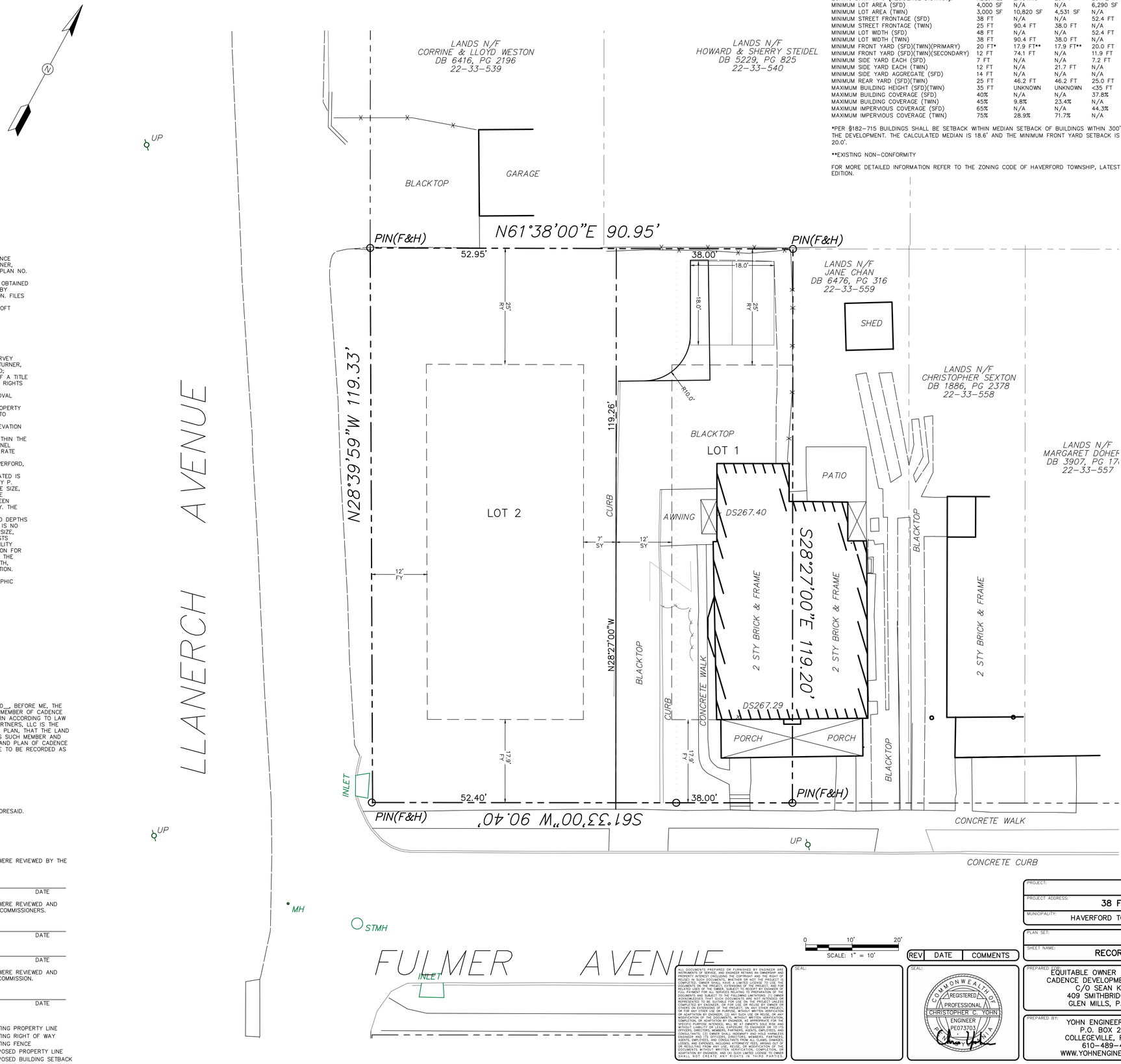
_____ _____
SECRETARY DATE

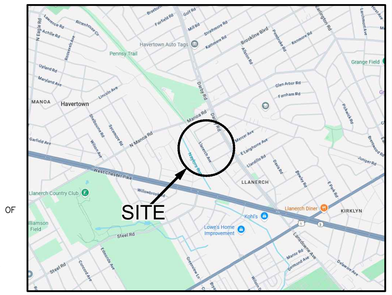
I HEREBY CERTIFY THAT THE PLANS SHOWN HERETO WERE REVIEWED AND APPROVED BY THE HAVERFORD TOWNSHIP PLANNING COMMISSION.

_____ _____
PLANNING COMMISSION MEMBER DATE

LINETYPE LEGEND

- EXISTING PROPERTY LINE
- EXISTING RIGHT OF WAY
- EXISTING FENCE
- PROPOSED PROPERTY LINE
- PROPOSED BUILDING SETBACK





LOCATION MAP
SCALE: 1" = 2,000'

ZONING DATA R–6 (RESIDENCE DISTRICT):	REQUIRED	EXISTING	LOT 1	LOT 2
MINIMUM LOT AREA (SFD)	4,000 SF	N/A	N/A	6,290 SF
MINIMUM LOT AREA (TWIN)	3,000 SF	10,820 SF	4,531 SF	N/A
MINIMUM STREET FRONTAGE (SFD)	38 FT	N/A	N/A	52.4 FT
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*PER §182–715 BUILDINGS SHALL BE SETBACK WITHIN MEDIAN SETBACK OF BUILDINGS WITHIN 300' OF THE DEVELOPMENT. THE CALCULATED MEDIAN IS 18.6' AND THE MINIMUM FRONT YARD SETBACK IS 20.0'.

**EXISTING NON–CONFORMITY

FOR MORE DETAILED INFORMATION REFER TO THE ZONING CODE OF HAVERFORD TOWNSHIP, LATEST EDITION.

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PARCEL ID:	22–02–00345–00
TAXMAP ID:	22–33–560: 000
DEED BOOK & PAGE NO:	0088 & 0528
GROSS LOT AREA:	10,820 SF (0.2484 AC)

EXISTING IMPERVIOUS COVERAGE:

BUILDING	1,058 SF (9.8%)
GARAGE	622 SF (5.7%)
DRIVEWAY	1,820 SF
WALLS, WALKS, ETC.	297 SF
TOTAL	3,797 SF (35.1%)

IMPERVIOUS COVERAGE TO BE REMOVED:

GARAGE	622 SF
DRIVEWAY	50 SF
TOTAL	672 SF (6.2%)

PROPOSED LOT 1 DATA:

GROSS LOT AREA:	4,531 SF (0.1040 AC)

IMPERVIOUS COVERAGE TO BE ADDED:

DRIVEWAY	125 SF (2.8%)

PROPOSED IMPERVIOUS COVERAGE:

BUILDING	1,058 SF (23.4%)
DRIVEWAY	1,895 SF
WALLS, WALKS, ETC.	297 SF
TOTAL	3,250 SF (71.7%)
NET INCREASE	125 SF (2.8%)
MAXIMUM ALLOWED	2,945 SF (65.0%)

PROPOSED LOT 2 DATA:

GROSS LOT AREA:	6,290 SF (0.1444 AC)

IMPERVIOUS COVERAGE TO BE ADDED:

BUILDING	2,377 SF (37.8%)
DRIVEWAY	359 SF
WALLS, WALKS, ETC.	48 SF
TOTAL	2,784 SF (44.3%)

PROPOSED IMPERVIOUS COVERAGE:

BUILDING	2,377 SF (37.8%)
DRIVEWAY	359 SF
WALLS, WALKS, ETC.	48 SF
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GENERAL NOTES:

1. THE INTENT OF THIS PLAN IS TO ILLUSTRATE THE SUBDIVISION OF THE EXISTING LOT AND THE CREATION OF A NEW LOT FOR A NEW SINGLE FAMILY DWELLING.
2. THE DEVELOPMENT BE SERVICED BY NEW INDIVIDUAL PRIVATE, GRAVITY SEWER LATERALS AND WATER LATERALS, WHICH WILL CONNECT TO THE EXISTING TOWNSHIP SEWER MAIN AND AQUA WATER MAIN WITHIN CENTRAL AVENUE.

ALL DOCUMENTS PREPARED OR FURNISHED BY ENGINEER AND INSTRUMENTS OF SERVICE, AND ENGINEER RETAINS AN OWNERSHIP AND PROPERTY INTEREST (INCLUDING THE COPYRIGHT AND THE RIGHT OF REUSE) IN SUCH DOCUMENTS, WHETHER OR NOT THE PROJECT IS COMPLETED. OWNER SHALL HAVE A LIMITED LICENSE TO USE THE DOCUMENTS ON THE PROJECT, EXTENSIONS OF THE PROJECT, AND RELATED USES OF THE OWNER, SUBJECT TO RECEIPT BY ENGINEER OF FULL PAYMENT FOR ALL SERVICES RELATING TO PREPARATION OF THE DOCUMENTS AND SUBJECT TO THE FOLLOWING LIMITATIONS: OWNER ACKNOWLEDGES THAT SUCH DOCUMENTS ARE NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE ON THE PROJECT UNLESS COMPLETED BY ENGINEER, OR FOR USE OR REUSE BY OWNER OR OTHERS ON EXTENSIONS OF THE PROJECT, ON ANY OTHER PROJECT, OR FOR ANY OTHER USE OR PURPOSE, WITHOUT WRITTEN VERIFICATION OR ADAPTATION BY ENGINEER; ANY REUSE WITHOUT WRITTEN VERIFICATION OR MODIFICATION OF THE DOCUMENTS, WITHOUT WRITTEN VERIFICATION, COMPLETION, OR ADAPTATION BY ENGINEER, AS APPROPRIATE FOR THE SPECIFIC PURPOSE INTENDED, WILL BE AT OWNER'S SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO ENGINEER OR TO ITS OFFICERS, DIRECTORS, MEMBERS, PARTNERS, AGENTS, EMPLOYEES, AND CONSULTANTS; (3) OWNER SHALL INDEMNIFY AND HOLD HARMLESS ENGINEER AND ENGINEER'S OFFICERS, DIRECTORS, MEMBERS, PARTNERS, AGENTS, EMPLOYEES, AND CONSULTANTS FROM ALL CLAIMS, DAMAGES, LOSSES, AND EXPENSES, INCLUDING ATTORNEYS' FEES, ARISING OUT OF OR RESULTING FROM ANY USE, REUSE, OR MODIFICATION OF THE DOCUMENTS BY OWNER OR PERSONS OTHER THAN ENGINEER WITHOUT ADAPTATION BY ENGINEER; AND (4) SUCH LIMITED LICENSE TO OWNER SHALL NOT CREATE ANY RIGHTS IN THIRD PARTIES.

SEAL:

SEAL:

COMMONWEALTH OF PENNSYLVANIA
REGISTERED
PROFESSIONAL
CHRISTOPHER C. YOHN
ENGINEER
PE073703

SCALE: 1" = 10'

REV	DATE	COMMENTS

PROJECT: RESIDENTIAL SUBDIVISION

PROJECT ADDRESS: 38 FULMER AVENUE, HAVERTOWN, PA 19083

MUNICIPALITY: HAVERFORD TOWNSHIP | COUNTY: DELAWARE COUNTY

PLAN SET: MINOR SUBDIVISION PLANS

SHEET NAME: RECORD PLAN (SHEET 1 OF 1 FOR RECORDING)

PREPARED FOR:
EQUITABLE OWNER / APPLICANT
CADENCE DEVELOPMENT PARTNERS
C/O SEAN KILLEEN
409 SMITHBRIDGE ROAD
GLEN MILLS, PA 19342

DATE:	JULY 30, 2025
SCALE:	1" = 10'
ONE CALL NUMBER:	
DRAWN BY:	CCY
PROJECT NUMBER:	25–044

PREPARED BY:
YOHN ENGINEERING, LLC
P.O. BOX 26094
COLLEGEVILLE, PA 19426
610–489–4580
WWW.YOHNENGINEERING.COM

YOHN Engineering, LLC

SHEET: 2 OF 3

Serial Number:

CALL BEFORE YOU DIG!

PENNSYLVANIA LAW REQUIRES 3 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE AND 10 WORKING DAYS IN DESIGN STAGE–STOP CALL

Pennsylvania One Call System, Inc.
1–800–242–1776

ALL LOCATIONS OF EXISTING UTILITIES, SHOWN ON THIS PLAN, HAVE BEEN DEVELOPED FROM FIELD LOCATIONS OF VISIBLE ABOVE GROUND UTILITY STRUCTURES AND/OR INFORMATION FURNISHED BY THE UTILITY COMPANIES.

ALL LOCATIONS SHOULD BE CONSIDERED APPROXIMATE. COMPLETENESS OR ACCURACY OF THE LOCATIONS AND DEPTH OF ALL STRUCTURES CANNOT BE GUARANTEED. CONTRACTORS MUST VERIFY ALL LOCATIONS AND DEPTHS OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE THE START OF ANY WORK.

AS PER ACT 187 HOUSE BILL 2627, BEFORE THE START OF ANY EXCAVATION WORK THE CONTRACTOR SHALL NOTIFY THE AFFECTED UTILITY COMPANIES THROUGH THE PENNSYLVANIA "ONE CALL SYSTEM" 1–800–242–1776 ACCORDING TO THE FOLLOWING SCHEDULE:

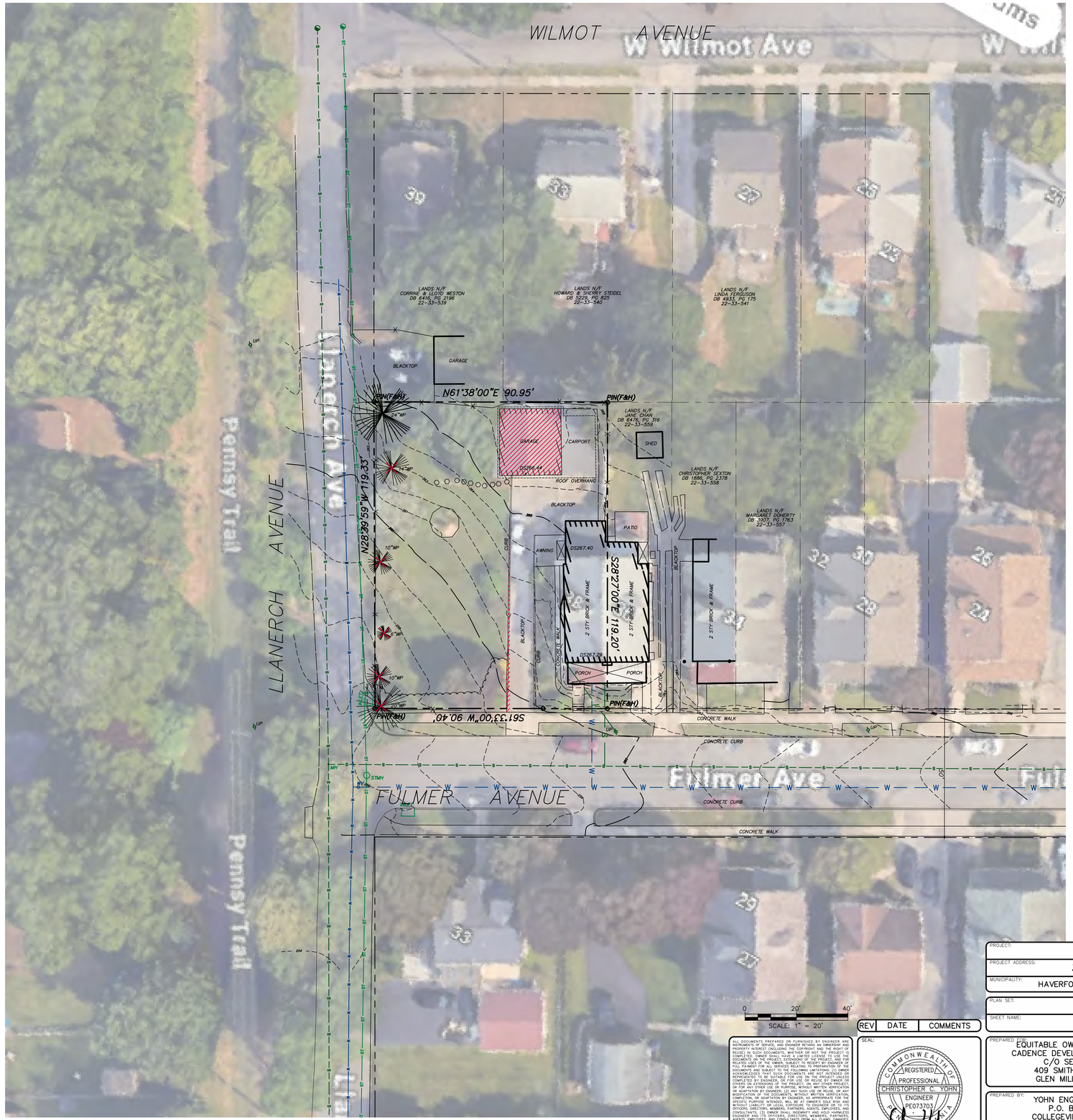
- PRELIMINARY NOTICE: MORE THAN 90 DAYS FROM THE START OF CONSTRUCTION
- FINAL NOTICE: 10–90 DAYS FROM THE START OF CONSTRUCTION
- ROUTINE NOTICE: 3–10 DAYS FROM THE START OF CONSTRUCTION

REFERENCE PLANS:

1. TOPOGRAPHIC SURVEY PLAN PREPARED FOR CADENCE DEVELOPMENT PARTNERS, LLC BY JEFFREY P. TURNER, P.L.S., COLLEGEVILLE, PA. DATED JULY 29, 2025. PLAN NO. D–22–38–560.
2. LIDAR TOPOGRAPHY AND OTHER GIS INFORMATION OBTAINED ELECTRONICALLY FROM SHAPE FILES DISTRIBUTED BY DELAWARE VALLEY REGIONAL PLANNING COMMISSION. FILES WERE OBTAINED VIA WWW.PASDA.PSU.EDU.
3. AERIAL PHOTOGRAPH OBTAINED FROM THE MICROSOFT CORPORATION BING MAPS.
4. SOILS INFORMATION VIA THE NATURAL RESOURCES CONSERVATION SERVICE WEB SOIL SURVEY (WEBSOILSURVEY.SC.EGOV.USDA.GOV.)

REFERENCE PLAN #1 NOTES:

1. OUTLINE DESCRIPTION AND LOCATION SHOWN IN ACCORDANCE WITH ACTUAL FIELD INSTRUMENT SURVEY CONDUCTED UPON THE GROUNDS BY JEFFREY P. TURNER, PLS FROM VARIOUS DEEDS AND PLANS OF RECORD; SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A TITLE REPORT; PROPERTY MAY BE SUBJECT TO CERTAIN RIGHTS OF OTHERS.
2. THIS SURVEY IS NOT TO BE USED FOR TREE REMOVAL ALONG PROPERTY LINES. TREE LOCATIONS ARE APPROXIMATE. FOR TREE REMOVAL PURPOSES, PROPERTY LINES MUST BE FIELD MARKED WITH STAKES SET TO ESTABLISH EXACT TREE OWNERSHIP.
3. CONTOURS PLOTTED FROM FIELD RUN SURVEY. ELEVATION BASED ON NAD88.
4. THERE IS NO IDENTIFIABLE FLOOD PLAIN AREAS WITHIN THE PROJECT SITE AS ILLUSTRATED ON COMMUNITY PANEL NUMBER 42045C0106F OF THE FLOOD INSURANCE RATE MAP AS PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY FOR THE TOWNSHIP OF HAVERFORD, PENNSYLVANIA.
5. EXISTING SUBSURFACE UTILITY INFORMATION INDICATED IS BASED UPON VISUAL FIELD INSPECTION BY JEFFREY P. TURNER, PLS. SUCH INFORMATION CONCERNING THE SIZE, LOCATION, DEPTH, QUANTITY, ETC. OF SUBSURFACE UTILITIES IS APPROXIMATE IN NATURE AND HAS BEEN OBTAINED AS A SUPPLEMENT TO THE SITE SURVEY. THE INFORMATION PROVIDED IS REPRESENTATIVE OF SUBSURFACE CONDITIONS ONLY AT LOCATIONS AND DEPTHS WHERE SUCH INFORMATION WAS OBTAINED. THERE IS NO EXPRESSED OR IMPLIED AGREEMENT THAT UTILITY SIZE, LOCATION, DEPTH, QUANTITY, ETC. AS SHOWN EXISTS BETWEEN EXPLORED LOCATIONS. ACCORDINGLY, UTILITY INFORMATION SHOWN SHOULD NOT BE REPLIED UPON FOR CONSTRUCTION PURPOSES. IT IS INCUMBENT UPON THE CONTRACTOR TO VERIFY THE SIZE, LOCATION, DEPTH, QUANTITY, ETC. OF ALL UTILITIES BEFORE EXCAVATION.
6. PLANS REFERENCED: DELAWARE VALLEY REGIONAL PLANNING TOPOGRAPHIC MAPS.





LOCATION MAP
SCALE: 1" = 2,000'

EXISTING LOT DATA:

RECORD OWNER:	LIAM & JOAN SMYTH 38 FULMER AVENUE HAVERTOWN, PA 19083
PARCEL ID:	22–02–00345–00
TAXMAP ID:	22–33–560:000
DEED BOOK & PAGE NO:	0088 & 0528
GROSS LOT AREA:	10,820 SF (0.2484 AC)

EXISTING IMPERVIOUS COVERAGE:

BUILDING	1,058 SF (9.8%)
GARAGE	622 SF (5.7%)
DRIVEWAY	1,820 SF
WALLS, WALKS, ETC.	297 SF
TOTAL	3,797 SF (35.1%)

IMPERVIOUS COVERAGE TO BE REMOVED:

GARAGE	622 SF
DRIVEWAY	50 SF
TOTAL	672 SF (6.2%)

TREES TO BE REMOVED (REPLACEMENT REQUIRED)				
NO.	SIZE / SPECIES	COUNT	STATUS	HEALTH
1	6" PINE	1	REMOVED	HEALTHY
2	10" PINE	1	REMOVED	HEALTHY
3	10" PINE	1	REMOVED	HEALTHY
4	14" PINE	1	REMOVED	HEALTHY
5	20" PINE	1	REMOVED	HEALTHY
	TOTAL	5		
TREES TO REMAIN				
NO.	SIZE / SPECIES		STATUS	HEALTH
6	24" PINE	1	NOT REMOVED	HEALTHY
	TOTAL	1		

DIAMETER TO BE REMOVED	60 INCHES
REQUIRED REPLACEMENT DIAMETER	1 INCH PER 4 INCHES REMOVED
TOTAL DIAMETER REQUIRED	60 / 4 = 15 INCHES
TOTAL 2.5" TREES REQUIRED	6 TREES

APPLICANT AND TOWNSHIP TO DETERMINE SPECIES, SIZE AND LOCATION OF REPLACEMENT TREES.

LINETYPE LEGEND

- EXISTING PROPERTY LINE
- EXISTING RIGHT OF WAY
- EXISTING BUILDING SETBACK
- EXISTING FENCE
- EXISTING 1' CONTOUR
- EXISTING 5' CONTOUR
- EXISTING OVERHEAD ELECTRIC
- EXISTING ELECTRIC LINE
- EXISTING GAS LINE
- EXISTING TELECOMMUNICATION LINE
- EXISTING WATER LINE
- EXISTING SANITARY LINE
- EXISTING STORM PIPES
- IMPERVIOUS TO BE REMOVED
- 15%–25% SLOPES (REGULATED)
- >25% SLOPES (UNREGULATED) (REGULATED AS 15%–25%)
- VIABLE TREE TO BE REMOVED
- NON–VIABLE TREE TO BE IMPACTED

SOILS INFORMATION					
SYMBOL	NAME	%SLOPE	HYDROLOGIC GROUP	DEPTH TO SH WATER	DEPTH TO BEDROCK
UmB	URBAN LAND–WHEATON COMPLEX	NOT RATED	C	6.6+	6.6+

NOTES: IF THE PROPOSED EROSION AND SEDIMENTATION CONTROL MEASURES ARE INSTALLED AND MAINTAINED PROPERLY, NO UNFORESEEN SOIL LIMITATIONS OR PROBLEMS ARE LIKELY. NEVERTHELESS, IF A PROBLEM DOES DEVELOP, THE DEVELOPER MUST TEMPORARILY SEED AND MULCH THE DISTURBED AREA. SUITABLE TOPSOIL SHALL BE IMPORTED TO SITE IF INADEQUATE QUANTITIES OF SUITABLE TOPSOIL EXIST ON SITE. ADEQUACY OF SOIL TO BE DETERMINED BY SITE GEOTECHNICAL ENGINEER IN CONJUNCTION WITH THE LANDSCAPE ARCHITECT. SOIL AMENDMENTS SHALL BE ADDED AS REQUIRED. ALL UNSUITABLE MATERIAL SHALL BE DISPOSED OF PROPERLY. SITE GEOTECHNICAL ENGINEER SHALL ALSO BE CONSULTED DURING WINTER GRADING OPERATIONS.

REV	DATE	COMMENTS

ALL DOCUMENTS PREPARED OR FURNISHED BY ENGINEER AND INSTRUMENTS OF SERVICE, AND ENGINEER RETAINS AN OWNERSHIP AND PROPERTY INTEREST (INCLUDING THE COPYRIGHT AND THE RIGHT OF REUSE) IN SUCH DOCUMENTS, WHETHER OR NOT THE PROJECT IS COMPLETED. OWNER SHALL NOT REUSE OR MAKE ANY MODIFICATION TO THE DOCUMENTS ON THE PROJECT, EXTENSIONS OF THE PROJECT, AND FOR RELATED USES OF THE OWNER, SUBJECT TO RECEIPT BY ENGINEER OF A WRITTEN AUTHORIZATION AND ACCEPTANCE BY ENGINEER OF SUCH DOCUMENTS AND SUBJECT TO THE FOLLOWING LIMITATIONS: (1) OWNER ACKNOWLEDGES THAT SUCH DOCUMENTS ARE NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR REUSE BY OWNER OR OTHERS ON THE PROJECT COMPLETED BY ENGINEER, OR FOR USE OR REUSE BY OWNER OR OTHERS ON EXTENSIONS OF THE PROJECT, ON ANY OTHER PROJECT, OR FOR ANY OTHER USE OR PURPOSE, WITHOUT WRITTEN VERIFICATION OR ADAPTATION BY ENGINEER; (2) ANY SUCH USE OR REUSE, OR ANY MODIFICATION OF THE DOCUMENTS, WITHOUT WRITTEN VERIFICATION, COMPLETION, OR ADAPTATION BY ENGINEER, AS APPROPRIATE FOR THE SPECIFIC PURPOSE INTENDED, WILL BE AT OWNER'S SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO ENGINEER OR TO ITS OFFICERS, DIRECTORS, MEMBERS, PARTNERS, AGENTS, EMPLOYEES, AND CONSULTANTS; (3) OWNER SHALL INDEMNIFY AND HOLD HARMLESS ENGINEER AND ITS OFFICERS, DIRECTORS, MEMBERS, PARTNERS, AGENTS, EMPLOYEES, AND CONSULTANTS FROM ALL CLAIMS, DAMAGES, LOSSES, AND EXPENSES, INCLUDING ATTORNEYS' FEES, ARISING OUT OF OR RESULTING FROM SUCH USE OR REUSE OF THE DOCUMENTS OR OF ANY DOCUMENTS WITHOUT WRITTEN VERIFICATION, COMPLETION, OR ADAPTATION BY ENGINEER; AND (4) SUCH LIMITED LICENSE TO OWNER SHALL NOT CREATE ANY RIGHTS IN THIRD PARTIES.

SEAL:

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
CHRISTOPHER C. YOHN
ENGINEER
PE073703

PROJECT: RESIDENTIAL SUBDIVISION

PROJECT ADDRESS: 38 FULMER AVENUE, HAVERTOWN, PA 19083

MUNICIPALITY: HAVERFORD TOWNSHIP | COUNTY: DELAWARE COUNTY

PLAN SET: MINOR SUBDIVISION PLANS

SHEET NAME: EXISTING CONDITIONS PLAN

PREPARED FOR:
EQUITABLE OWNER / APPLICANT
CADENCE DEVELOPMENT PARTNERS
C/O SEAN KILLEEN
409 SMITHBRIDGE ROAD
GLEN MILLS, PA 19342

DATE:	JULY 30, 2025
SCALE:	1" = 20'
ONE CALL NUMBER:	
DRAWN BY:	CCY
PROJECT NUMBER:	25–044

PREPARED BY:
YOHN ENGINEERING, LLC
P.O. BOX 26094
COLLEGEVILLE, PA 19426
610–489–4580
WWW.YOHNENGINEERING.COM

YOHN Engineering, LLC

SHEET: 3 OF 3

DELAWARE COUNTY PLANNING COMMISSION
2 W. Baltimore Avenue – Suite 202
Media, PA 19063
(610) 891-5200
Email: planning_department@co.delaware.pa.us

GINA BURRITT
DIRECTOR
Planning Department

August 22, 2025

Mr. David R. Burman
Haverford Township
1014 Darby Road
Havertown, PA 19083

RE: Name of Dev't: 38 Fulmer Avenue
DCPD File No.: 20-8201-25
Developer: Cadence Development Partners
Location: Northeast corner of Fulmer and Llanerch Avenues
Recv'd in DCPD: August 1, 2025

Dear Mr. Burman:

In accordance with the provisions of Section 502 of the Pennsylvania Municipalities Planning Code, the above described proposal has been sent to the Delaware County Planning Commission for review. At a meeting held on August 21, 2025, the Commission took action as shown in the recommendation of the attached review.

Please refer to the DCPD file number shown above in any future communications related to this application.

Very truly yours,

For Gina Burritt
Director

cc: Cadence Development Partners
Yohn Engineering, LLC

DELAWARE COUNTY PLANNING DEPARTMENT
2 W. Baltimore Avenue – Suite 202
Media, PA 19063-3740
Phone: (610) 891-5200
Email: planning_department@co.delaware.pa.us

Date: August 22, 2025
File No.: 20-8201-25

PLAN TITLE:	38 Fulmer Avenue
DATE OF PLAN:	July 31, 2025
OWNER OR AGENT:	Cadence Development Partners
LOCATION:	Northeast corner of Fulmer and Llanerch Avenues
MUNICIPALITY:	Haverford Township
TYPE OF REVIEW:	Final Subdivision
ZONING DISTRICT:	R-6 Residential
SUBDIVISION ORDINANCE:	Local
PROPOSAL:	Subdivide 0.2484 acre into two lots
UTILITIES:	Public
RECOMMENDATIONS:	Approval, with consideration given to staff comments
STAFF REVIEW BY:	Noelle Mlynarczyk

REMARKS:

CURRENT PROPOSAL

The plan proposes to subdivide one 0.2484 acre lot into two lots.

SITE CHARACTERISTICS

The site's existing conditions include one single family semi-detached residence, a garage building, and a carport overhang. There appear to be steep and very steep slopes on the parcel.

REMARKS (continued):

APPLICABLE ZONING

The proposal is located within the R-6 Residential district and is subject to applicable regulations set forth by the Municipal zoning code.

NONCONFORMITIES

Zoning - Existing Nonconformities: The following aspect of the site currently does not comply with zoning requirements: front yard setback. The above listed existing nonconformity is not exacerbated by the current proposal.

COMPLIANCE

The proposal appears to comply with the Municipal zoning and SALDO code provisions.

TREE PRESERVATION/REPLACEMENT

Section 170-4B(2) of the Township Code states that any person desiring to remove or relocate a tree associated with subdivision or land development, and not otherwise exempted, must first apply to the Township Manager for a tree removal permit. The Township Manager and Shade Tree Commission should provide guidance to the applicant as to whether replacement trees are required.

RECORDING

In accordance with Section 513(a) of the Pennsylvania Municipalities Planning Code (MPC), final plans must be recorded within ninety (90) days of municipal approval.

HAVERFORD TOWNSHIP
APPLICATION FOR
SUBDIVISION AND LAND DEVELOPMENT
REVIEW

Type of Application: Sketch ☐ Preliminary ☐ Final ■
Minor Subdivision ■ Major Subdivision ☐ Land Development ☐

Developer/Applicant Information

Name: Cadence Development Partners c/o Sean Killeen Phone: 610-505-2281

Address: 409 Smithbridge Road, Glen Mills, PA 19342 Email: sean@cadencedp.com

Name of Development: 38 Fulmer Avenue

Location of Development/ Tax Folio #: 38 Fulmer Avenue, Havertown, PA 19083 / 22-33-560:000

Ownership Interest: ☐ Owner of Record ■ Equitable Ownership

Narrative Summary of the Project:
The Applicant proposes to subdivide the existing lot and construct a new single family detached dwelling.

All plan submissions should be in accordance with the Township Subdivision and Land Development Ordinance, Section 160-4, Plan procedures and requirements. Any waivers to the SLD Ordinance must be submitted in writing at the time of the application.

List waiver(s) sought from Chapter 160 Subdivision and Land Development Ordinance:
N/A

Application will NOT be accepted as complete without the following:

- ■ SIGNED and Completed Application for Haverford Township
- ■ Completed Application for Act 247 Review, Township will sign and return to Applicant for submission to County
- ☐ Two (2) copies of storm water analysis
- ■ Ten (10) copies of plan set (half-size)
- ■ One (1) electronic copy of all submitted materials
- ☐ Two (2) copies of Traffic Impact Study, for any development involving 10 or more new residential units or *any* nonresidential development.
- ■ Required escrow deposit and township review fees (2 separate checks)
- ■ Copy of Deed or Agreement of Sale for proof of standing

Date submitted:_____ By:_____

Accepted as complete by Haverford Township:

_____ Date: _____
Signature

TOWNSHIP OF
HAVERFORD
DELAWARE COUNTY
1014 DARBY ROAD
HAVERTOWN, PA 19083-2551
(610) 446-1000

JUDY TROMBETTA, PRESIDENT
KEVIN MCCLOSKEY, ESQ., VICE PRESIDENT
DAVID R. BURMAN, TWP MANAGER/SECRETARY
AIMEE CUTHBERTSON, CPA, ASS'T TWP MANAGER
JOHN F. WALKO, SOLICITOR
PENNONI ASSOCIATES INC., ENGINEER

WARD COMMISSIONERS
1ST WARD BRIAN D. GONDEK, ESQ.
2ND WARD SHERYL FORSTE-GRUPP, PHD.
3RD WARD KEVIN MCCLOSKEY, ESQ.
4TH WARD JUDY TROMBETTA
5TH WARD LAURA CAVENDER
6TH WARD LARRY HOLMES, ESQ.
7TH WARD CONOR QUINN
8TH WARD GERARD T. HART, MD
9TH WARD MICHAEL MCCOLLUM

August 28, 2025

HAVTT 30272

Jaime Jilozian, Director of Community Development
Haverford Township
1014 Darby Road
Havertown, PA 19083-2251

RE: Minor Subdivision Plan
Cadence Development Partners- 38 Fulmer Avenue

Dear Ms. Jilozian:

As requested, we have reviewed the following prepared by Yohn Engineering, LLC in connection with the referenced property:

- "*Minor Subdivision Plans- 38 Fulmer Avenue"* (three sheets) dated July 30, 2025.
- Supporting Documentation

The applicant, Cadence Development Partners, proposes to subdivide the existing 0.2484-acre site (Folio No. 22-02-00345-00) into two (2) new lots at the referenced property. The existing dwelling is proposed to remain on Lot 1, and a new single-family dwelling and driveway are proposed to be constructed on Lot 2. A subsurface infiltration facility is proposed for stormwater management. The property is within the R-6 Residential Zoning District and is served by public water and sewer.

This application was reviewed in accordance with the simplified procedures and requirements of a Minor Subdivision (§160-4.G). We offer the following comments:

1. After submitting the preliminary plan, the applicant shall be responsible for notifying all property owners within 200 feet of the boundaries of the subject lot that a preliminary plan proposed for the subject lot has been filed, no less than 10 days prior to the first Planning Commission meeting for which the plan has been scheduled for review. (§160.4.E(7)) Notice shall be made by certified mail, return receipt requested, or by other proof of notification satisfactory to the Township. Proof of such notification shall be presented to the Planning Commission at the first meeting for which the plan has been scheduled for review. (§160.4.E(8))

2. Right-of-way and cartway widths should be indicated on the plan. (§160-5.B(3)[j](1))

3. The proposed driveway apron is in close proximity to the adjacent driveway apron. Some level of separation is necessary for the adjacent driveway apron. It may be prudent to relocate the driveway/apron a few feet to the west, and/or reduce the length of the depressed curb.

4. Curb and sidewalk are required to be provided for Llanerch Avenue. (§160-5.B(4)[a,c])

5. Stormwater management calculations are to be provided that address infiltration, water quality, and peak rate control. (§78-26.A(3))

6. Monumentation for the proposed property line is to be indicated on the Record Plan. (§160-5.B(8))

7. A tree removal permit is required for removal of the existing tree on site. (§170-4.B) All proposed landscaping and tree replacement should be reviewed by the Township Shade Tree Commission.

8. A Pennsylvania Department of Environmental Protection Sewage Facilities Planning module or exemption is required. (§160-4.E(5)(d)).

9. The inlet on the north side of Fulmer Avenue should be indicated on the plan in addition to the size/material and route of the piping between the existing inlets.

10. A note should be included on the plan indicating that any substandard curb and sidewalk is to be replaced.

11. A note should be added to the plan that all new utilities shall be installed underground.

12. A Township Road Opening Permit will be required for the proposed driveway on Bewley Road and associated utility installations, and the connection of the stormwater management system to the existing inlet.

13. A Grading, Drainage, Soil Erosion and Sedimentation Control Permit will be required should Lot 2 be developed.

Should you have any further questions or comments, please contact the undersigned.

Sincerely,

PENNONI

Charles Faulkner

Charles Faulkner, PE
Senior Engineer

CF/brg

cc: Chris Yohn, PE, Yohn Engineering, LLC
Sean Killeen, Cadence Development Partners

TOWNSHIP OF
HAVERFORD
DELAWARE COUNTY
1014 DARBY ROAD HAVERTOWN, PA 19083
(610) 446-1000

September 3, 2025, 2025

Jamie Jilozian, Director of Community Development
Haverford Township
1014 Darby Rd.
Haverford Township, Pa. 19083

RE: Resubmittal for Subdivision & Land Development at 1039 Sproul Rd.

Dear Director Jilozian,

As requested, I have reviewed the revised plans prepared by Cornerstone for the subdivision & land development proposed for 1039 Sproul Rd. and the fire protection and fire apparatus access identified in the original plan submittal remain in effect. Specifically:

Fire hydrant installation. A fire hydrant shall be installed on Sproul Rd. at the entrance to the new development to provide adequate fire protection coverage.

Access Road. The designated access road shall be constructed and maintained at a minimum of twenty feet to ensure proper access for fire apparatus and emergency vehicles.

Should you have any further questions or comments, please contact me.

Sincerely,

Steven Poole
Chief Fire Code Official
Haverford Township

Cornerstone Consulting
Engineers & Design Services, Inc.

213 West Main Street Lansdale, PA
Tel 610.820.8200 ◆ Fax 610.820.3706

Leesburg - VA ◆ Orlando - FL
New York - NY ◆ Dallas - TX
Lansdale - PA

1176 N. Irving Street . Allentown, PA
Tel 610.820.8200 ◆ Fax 610.820.3706

July 31, 2025
VIA: Electronic Delivery

Haverford Township
1014 Darby Road
Haverford, PA 19083

Attn: Jaime Jilozian,
Director of Community Development

RE: Prelim / Final Subdivision Plan Application
Sproul Development Partners, LLC
1039 Sproul Road
Haverford, PA 19010

Dear Jaime,

Our office is in receipt of the Township Engineer's Review letter of January 29, 2025 concerning the referenced project. The development team has reviewed the comments and have revised the plan set to address the comments. Enclosed with the submission are the following documents:

- One (1) copy (24"x36") of the Revised Subdivision Plan set
- Nine (9) copies (11"x17") of the Revised Subdivision Plan Set
- Two (2) copies of the PCSWM Report

The following is a detailed response to Township Engineer's review:

Pennoni Associates, Inc. Review Letter, January 29, 2025

ZONING

1. Proposed Lot 4 does not appear to meet the requirement for lot width. (§182-203.C(3), §182-106)

Response: The lot width for Lot 4 complies with the requirement. Additional dimensions have been added to the subdivision plan for clarity.

2. The applicant should confirm conformity of proposed setback lines with the median setback lines of existing structures on the same side of the street and within 300 feet of the proposed new construction. (§182-715)

Response: Zoning relief was granted by the Zoning Hearing Board and the relief has been added to sheet 1.

3. The area of proposed very steep slope disturbance exceeds the maximum allowable set forth in §154A-5.

Response: Zoning relief was granted by the Zoning Hearing Board and the relief has been added to sheet 1.

4. Cut and fill is prohibited within very steep slopes. (§182-720.C(3)[a])

Response: Zoning relief was granted by the Zoning Hearing Board and the relief has been added to sheet 1.

5. It appears that a portion of the proposed dwelling on Lot 2 may be within steep slopes. Building construction within steep slopes is not permitted. (§182-720.C(6))

Response: The building area shown within the steep slopes is intended to be designed in order that the building area encroaching will be cantilevered over the slopes. Based on the Zoning Officer's initial review, we believe the plan is compliant and zoning relief is not necessary.

6. Driveways within steep slopes are permitted when authorized as a special exception by the Zoning Hearing Board. (§182-720.C(5)[c]

Response: The special exception was granted by the Zoning Hearing Board and the relief has been added to sheet 1.

7. Walls may not extend into the street right-of-way, nor split any division or boundary lines. (§182-727.B) Walls greater than 30-inches in height are not permitted within the front yard. (§182-727.C) Top and bottom of wall elevations should be provided.

Response: The walls have been redesigned to comply with the maximum height of 30" for each section.

8. The proposed side yards indicated in the zoning data table are inconsistent with the dimensions identified on the plan.
Response: The side yard dimensions on the plan and in the zoning table have been corrected as necessary.

SUBDIVISION AND LAND DEVELOPMENT

9. After submitting the preliminary plan, the applicant shall be responsible for notifying all property owners within 200 feet of the boundaries of the subject lot that a preliminary plan proposed for the subject lot has been filed, no less than 10 days prior to the first Planning Commission meeting for which the plan has been scheduled for review. (§160.4.E(7)) Notice shall be made by certified mail, return receipt requested, or by other proof of notification satisfactory to the Township. Proof of such notification shall be presented to the Planning Commission at the first meeting for which the plan has been scheduled for review. (§160.4.E(8))

Response: Notifications have been sent to the property owners within 200 feet. Proof of notification will be provided to the Township.

10. The location, names and widths of streets, curbs and pavement (public or private), all property lines and names of owners of tracts or parcels located within 200 feet of the site should be provided. (§160-4.E(5)[e](3))

Response: The additional existing plan information has been provided within 200'.

11. All storm drainage, sanitary sewer and public water supply lines or facilities within 400 feet of the site and ownership or maintenance responsibilities for the same should be provided. (§160-4.E(5)[e](4))

Response: A waiver from this ordinance requirement has been added to the waiver list.

12. Curb is required to be provided for all existing streets. (§160-5.B(4)[a])

Response: A waiver from this ordinance requirement has been included in the waiver list.

13. Sidewalk is required to be provided for all existing streets. (§160-5.B(4)[c])

Response: A waiver from this ordinance requirement has been included in the waiver list.

14. Regarding the horizontal sight distance for the proposed driveway, the applicant should address the following:

a. The sight distance to the right of the driveway is indicated by distance but not depicted on the plan. Subsequent submissions should identify the full length of the required sight distance on the plan including existing features near the line of sight. (§160-4.E(5)[e](12)).

Response: The sight distance has been shown on the plan and a PennDOT permit has been submitted to PennDOT for approval of the sight distance and improvements as shown.

b. The sight distance to the left encroaches onto three (3) of the proposed properties. The applicant should address how these areas will be protected from any future obstructions that could impact the sight distance. and confirm with PennDOT the acceptability of such measures.

Response: The area within the sight distance will be protected from any future modifications with a restrictive covenant.

c. Perpetual maintenance of the area established for the sight distance below the proposed retaining wall shall be addressed on the plan.

Response: The maintenance of the retaining wall and preservation of the sight distance will be provided in an agreement as part of the final approval.

15. The Applicant is proposing an ultimate right-of-way consisting of an additional 13.5-feet beyond the existing right-of-way line for the entire length of the property. Much of the area between the existing right-of-way and the proposed ultimate right-of-way consists of very steep slopes. The applicant should review the need for any additional right-of-way with PennDOT.

Response: We have submitted to PennDOT for a Highway Occupancy Permit and it is under review. Our office will address the need for additional right-of-way if required by PennDOT.

16. In each residential district involving the creation of two (2) or more new building lots, land shall be required to be set aside for open space and/or parks and recreational facilities, or a fee-in-lieu requested. (§160-5.C(2,4))

Response: The applicant will be requesting to pay a fee in lieu of dedicating the required open space.

17. A Sewage Facilities Planning module will be required. (§160-4.E(5[d])

Response: A sewage facilities planning module is in process and will be required as part of the final approval.

18. A signature block for the Township Planning Commission is required. (§160-4.H(1)[e])

Response: A signature block for the Planning Commission will be added to the plan.

STORMWATER MANAGEMENT

19. A Drainage Plan Application and Checklist are required to be provided. (§78-26.A(7))

Response: A drainage plan application and checklist will be submitted to the Conservation District with copies to the Township.

20. A justification is to be provided if stormwater facilities other than green infrastructure methods and LID practices are proposed to achieve the volume, rate, and water quality requirements. (§78-26.A(6))

Response: The justification has been added to the stormwater management narrative.

21. A tabulation of existing and proposed impervious surface should be provided on the plan. (§78-25.B(7))
Response: An impervious surface tabulation has been provided for each lot on the Subdivision Plan.

22. Infiltration test results are required to be submitted. (§78-34.B(2))

Response: Infiltration Testing has been conducted on the property and has been incorporated in the revised stormwater management design.

23. The infiltration volume to be captured and infiltrated shall be the net 2-year, 24-hour volume. For modeling purposes, existing (pre-development) non-forested pervious areas must be considered meadow in good condition or its equivalent, and twenty (20) percent of existing impervious area, when present, shall be considered meadow in good condition. (§78-36.A(2)[a])

Response: Infiltration Testing has been conducted on the property and has been incorporated in the revised stormwater management design.

24. The water quality volume is to be addressed as set forth in §78-37.D(1).

Response: The water quality volume has been addressed based on the revised design.

25. Areas proposed for infiltration are to be protected from compaction during construction. (§78-34.F(1)

Response: The proposed infiltration areas will be protected during construction.

26. Pretreatment is required prior to infiltration. (§78-36.A(1)[d])

Response: Pretreatment to the infiltration basins has been added to the plans.

27. Existing utilities should be indicated on the plan. (§78-26.B(5))

Response: The existing utilities are shown in the plan submission.

28. A statement, signed by the applicant, acknowledging that any revisions to the stormwater management plan must be approved by the Township, is required. (§78-26.B(22))

Response: The required acknowledgements has been added to the PCSM Plan.

29. The designer's certification in accordance with §78-26.B(23) is required to be included on the plan.

Response: The required certifications has been added to the plan.

30. The municipal signature block as set forth in §78-26.B(24) is required to be included on the plan.

Response: The required signature blocks will be added to the plan.

31. The bottom of bed elevations for the proposed stormwater facilities should be identified on the details and reviewed for consistency with the elevations indicated in the calculations.

Response: The basin bed elevations has been updated in the design for the re-submission.

32. The lengths of the proposed stormwater management facilities for Lots 2 and 4 are inconsistent with the stormwater calculations.

Response: The stormwater management design has been modified due to the infiltration testing.

33. Pipe conveyance calculations should be provided. (§78-25.A(3))

Response: The pipe conveyance calculations have been added to the PCSM narrative report.

34. A BMP Maintenance Agreement shall be executed and a contribution of $2,200.00 per lot to the Township Stormwater Control and BMP Operation and Maintenance Fund shall be made. (§78-49, §78-51)

Response: The applicant acknowledges that a BMP Maintenance Agreement will be required.

GENERAL
35. A list of requested waivers should be included on the plan. (§160-4.E(5)[c])

Response: A list of waivers was included with the submission, however, the waiver list has been amened and is included on the plan.

36. Highway Occupancy Permits will be required for the driveway, proposed sewer, and utility installations on Sproul Road. (§160-5.B(3)[k])

Response: The applicant acknowledges that an HOP is required for the project, and it has been submitted.

37. Evidence of approval of an NPDES permit from the Delaware County Conservation District is required prior to construction. (§160-4.F(2)[b])

Response: The applicant acknowledges that the project will require submission of a NPDES application.

38. A tree removal permit is required for removal of the existing trees on site. (§170-4.B) All proposed landscaping and tree replacement should be reviewed by the Township Shade Tree Commission.

Response: A tree removal permit will be provided for any trees to be removed.

39. Details for the proposed retaining walls are to be provided in future submissions.

Response: Retaining wall designs will be provided for building permit review prior to construction.

40. Spot elevations shall be provided to confirm the required 20-foot leveling area at a grade no greater than 4 percent is provided at the end of the proposed driveway (Township design Standards)

Response: Sport elevations have been added to the grading plan for the retaining walls.

41. Regarding the proposed sanitary sewer system:
a. Approval from Radnor-Haverford-Marple Sewer Authority will be required for the connection to the existing manhole.

Response: Approvals will be obtained from the Sewer Authority for the proposed sanitary sewer system.

b. The applicant shall indicate the responsibility for ownership/maintenance of the on-site portion of the system.

Response: The plans will be revised to show an easement associated with the sanitary sewer and it will be indicated as a protected feature in the Restrictive Covenants Documentation or within appropriate documentation recorded against the Property.

c. Further details for various aspects of the sewer extension will be required on subsequent submissions.

Response: Approvals will be obtained from the Sewer Authority for the proposed sanitary sewer system and any detailing required will be provided.

d. Future submissions shall depict all existing utilities within the Sproul Road right-of-way. Based on these utilities, modifications to the alignment of the proposed sewer main may be required.

Response: The existing utilities within Sproul Road have been added to the plans for the sewer extension area.

e. A manhole shall be provided at the legal right-of-way line to delineate responsibility for ownership of the new system.

Response: The manhole will be added to the sewer network.

42. The proposed stormwater management facilities and associated storm sewer piping should be indicated on the grading/utility plan (Sheet 3).

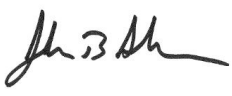
Response: The stormwater piping and facilities have been shown in the grading/utility plan.

43. Roadway restoration details shall be provided for all work proposed within the cartway of Sproul Road.

Response: The road restoration details have been added to the plan set.

The preceding responses to the Engineer's review have been provided in for the revised plan submission to provide clarity with regards to compliance with the Township Ordinances. Should you have any questions or wish to discuss the project, please feel free to contact our office at your convenience.

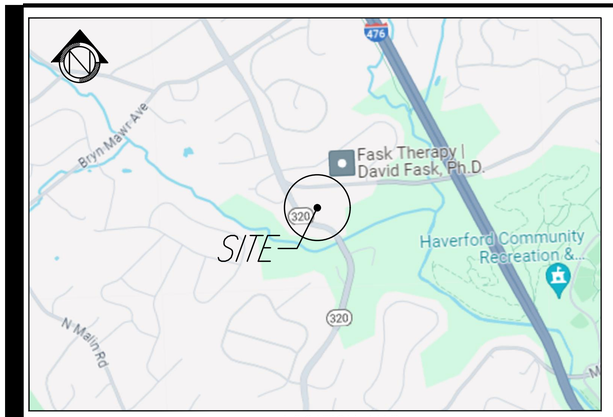
Sincerely,
Cornerstone Consulting
Engineers & Design Services, Inc.



John Anderson, P.E.
Principal

CC: Applicant

Attorney



LOCATION MAP

SHEET INDEX

1	SITE PLAN
2	EXISTING FEATURES PLAN
3	EXISTING FEATURES TREE INVENTORY
4	UTILITY PLAN
5	GRADING PLAN
6	STORM WATER AND DRAINAGE PLAN
7	LANDSCAPE PLAN
8	SANITARY SEWER PLAN AND PROFILE
9	SANITARY SEWER PLAN AND PROFILE
10	EROSION & SEDIMENTATION CONTROL PLAN
11	EROSION & SEDIMENTATION CONTROL NOTES
12	EROSION & SEDIMENTATION CONTROL DETAILS
13	LANDSCAPE DETAILS
14	GENERAL SITE DETAILS
15	GENERAL SITE DETAILS
16	TRUCK TURNING PLAN

IMPERVIOUS COVER CHART

SURFACE TYPE	EXISTING CONDITIONS (SF)	PROPOSED CONDITIONS (SF)			
		LOT 1	LOT 2	LOT 3	LOT 4
BUILDING	2,642	2,060	2,052	2,060	2,060
DRIVEWAY	5,212	6,875	389	1,526	1,526
DECKS / PATIO	221	475	216	500	520
WALKWAY	60	261	252	261	212
MISC STORM STRUCT.		10	35	35	20
TOTAL	7,914	9,681	2,944	4,382	4,338

LIST OF VARIANCES GRANTED, MAY 29, 2025:

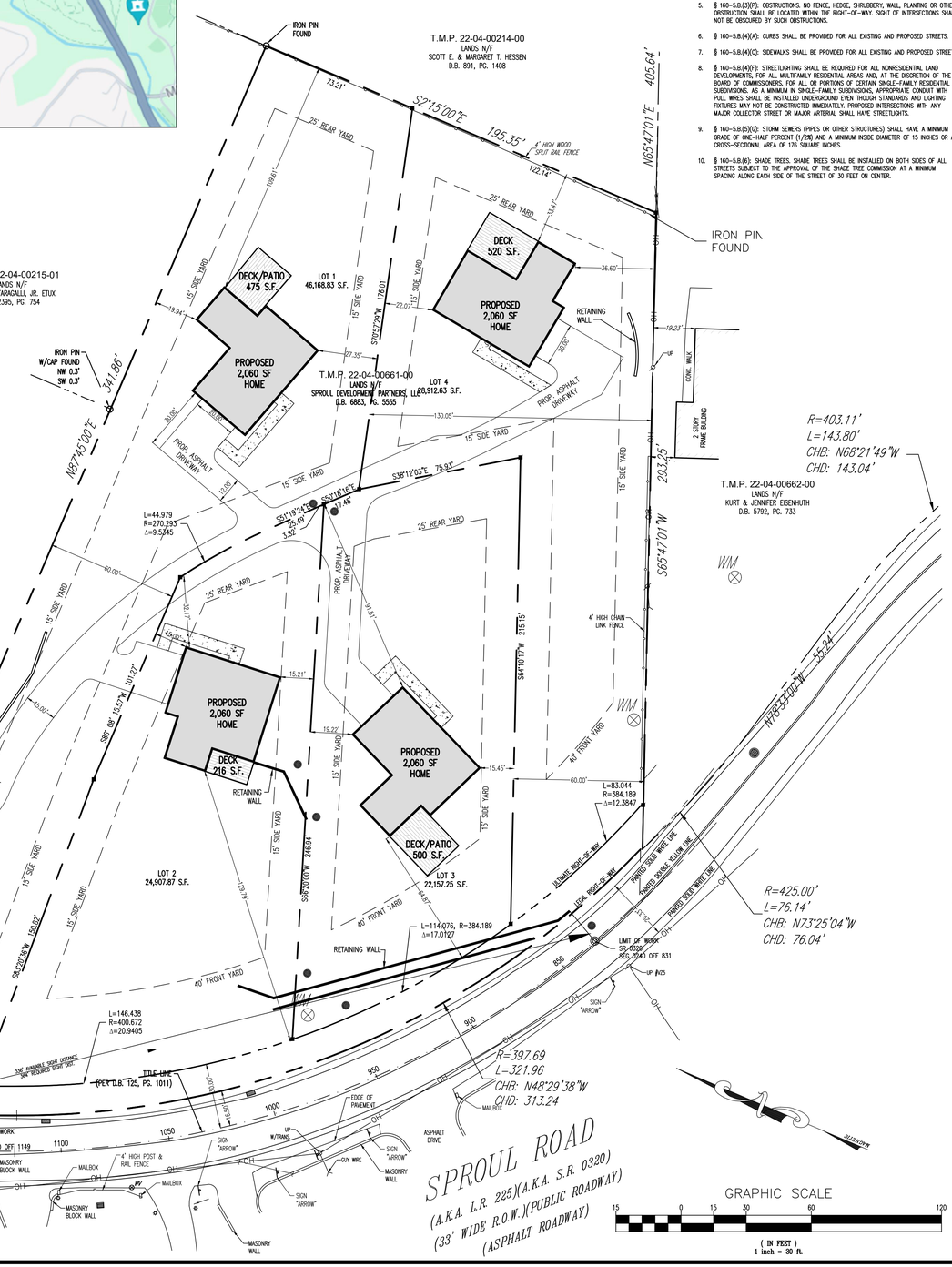
1. § 154A-5, TO PERMIT A MAXIMUM OF 22.3% OF VERY STEEP SLOPE AREA WHERE A MAXIMUM OF 5% IS REQUIRED.
2. § 182-720.C(3)[a], TO PERMIT CUT AND FILL WITHIN VERY STEEP SLOPES.
3. § 182-720.C(1), TO PERMIT SANITARY SEWER AND STORMWATER MANAGEMENT FACILITIES WITHIN VERY STEEP SLOPES.
4. § 182-715, TO ALLOW THE PROPOSED BUILDING SETBACKS FOR EACH SINGLE-FAMILY HOME AS SHOWN ON THE ZONING PLAN, WHICH COMPLY WITH THE R-1A DISTRICT REGULATIONS, RATHER THAN ADHERING TO THE MEDIAN SETBACK LINES OF EXISTING STRUCTURES WITHIN 300 FEET ON THE SAME SIDE OF THE STREET.

SPECIAL EXCEPTIONS:

5. § 182-720.C(5)[b] TO ALLOW THE INSTALLATION OF SANITARY SEWER FACILITIES WITHIN STEEP SLOPES.
6. § 182-720.C(5)[c], TO ALLOW FOR THE INSTALLATION OF ACCESS DRIVEWAY FOR SINGLE-FAMILY DETACHED DWELLINGS WITHIN STEEP SLOPES.

LIST OF WAIVERS REQUESTED:

1. § 160-3.B: PRELIMINARY PLAN: A PRELIMINARY MAP OR PLAN OF SUBDIVISION OR LAND DEVELOPMENT AS DEFINED IN § 160-2, PRELIMINARY PLANS ARE NOT REQUIRED FOR A PROPOSED SUBDIVISION OR LAND DEVELOPMENT INVOLVING NOT MORE THAN THREE DWELLING UNITS WHERE NO CHANGE TO EXISTING OR PROPOSED NEW PUBLIC IMPROVEMENTS IS PROVIDED.
2. § 160-4.A: PROCEDURES. THERE ARE TWO STAGES IN THE PROCEDURE FOR APPROVAL OF SUBDIVISION AND LAND DEVELOPMENT PLANS. THESE STAGES ARE NECESSARY TO ENABLE THE PLANNING COMMISSION AND THE BOARD OF COMMISSIONERS TO HAVE ADEQUATE OPPORTUNITY TO REVIEW THE SUBMISSION AND TO ENSURE THAT THEIR FORMAL RECOMMENDATIONS ARE INCORPORATED IN THE FINAL PLANS. THE SEPARATE STAGES OF APPROVAL INCLUDE THE SUBMISSION OF A PRELIMINARY PLAN AND A FINAL PLAN. THESE PLANS DIFFER IN THEIR PURPOSE AND LEVEL OF DETAIL. SUBMISSION REQUIREMENTS FOR EACH OF THE THREE STAGES ARE DESCRIBED IN § 160-3
3. §160-4.E(5)(E)(4): ALL STORM DRAINAGE, SANITARY SEWER AND PUBLIC WATER SUPPLY LINES OR FACILITIES WITHIN 400 FEET OF THE SITE AND OWNERSHIP OR MAINTENANCE RESPONSIBILITIES FOR THE SAME, SHALL BE ADDED TO THE PLANS.
4. § 160-5.B.(3)(J)(1) RIGHT-OF-WAY AND PAVING WIDTHS. MINIMUM WIDTH OF RIGHT-OF-WAY AND PAVING SHALL NOT BE LESS THAN 60 FEET OF RIGHT-OF-WAY AND 38 FEET OF PAVING FOR MAJOR COLLECTOR STREETS.
5. § 160-5.B.(3)(P): OBSTRUCTIONS. NO FENCE, HEDGE, SHRUBBERY, WALL, PLANTING OR OTHER OBSTRUCTION SHALL BE LOCATED WITHIN THE RIGHT-OF-WAY. SIGHT OF INTERSECTIONS SHALL NOT BE OBSCURED BY SUCH OBSTRUCTIONS.
6. § 160-5.B.(4)(A): CURBS SHALL BE PROVIDED FOR ALL EXISTING AND PROPOSED STREETS.
7. § 160-5.B.(4)(C): SIDEWALKS SHALL BE PROVIDED FOR ALL EXISTING AND PROPOSED STREETS.
8. § 160-5.B.(4)(F): STREETLIGHTING SHALL BE REQUIRED FOR ALL NONRESIDENTIAL LAND DEVELOPMENTS, FOR ALL MULTIFAMILY RESIDENTIAL AREAS AND, AT THE DISCRETION OF THE BOARD OF COMMISSIONERS, FOR ALL OR PORTIONS OF CERTAIN SINGLE-FAMILY RESIDENTIAL SUBDIVISIONS. AS A MINIMUM IN SINGLE-FAMILY SUBDIVISIONS, APPROPRIATE CONDUIT WITH PULL WIRES SHALL BE INSTALLED UNDERGROUND EVEN THOUGH STANDARDS AND LIGHTING FIXTURES MAY NOT BE CONSTRUCTED IMMEDIATELY. PROPOSED INTERSECTIONS WITH ANY MAJOR COLLECTOR STREET OR MAJOR ARTERIAL SHALL HAVE STREETLIGHTS.
9. § 160-5.B.(5)(G): STORM SEWERS (PIPES OR OTHER STRUCTURES) SHALL HAVE A MINIMUM GRADE OF ONE-HALF PERCENT (0.25%) AND A MINIMUM INSIDE DIAMETER OF 15 INCHES OR A CROSS-SECTIONAL AREA OF 176 SQUARE INCHES.
10. § 160-5.B.(6): SHADE TREES. SHADE TREES SHALL BE INSTALLED ON BOTH SIDES OF ALL STREETS SUBJECT TO THE APPROVAL OF THE SHADE TREE COMMISSION AT A MINIMUM SPACING ALONG EACH SIDE OF THE STREET OF 30 FEET ON CENTER.



GENERAL NOTES

1. THIS PLAN REFERENCES A SURVEY PLAN BY: BLUE MARSH ASSOCIATES, INC. 551 EASTON ROAD, SUITE A WARRINGTON, PA 18976-2370 SURVEY TITLED: "BOUNDARY & TOPOGRAPHIC SURVEY" DATED: 6/9/2022
2. OWNER / APPLICANT: SPROUL DEVELOPMENT PARTNERS, LLC 884 BRIARWOOD ROAD, NEWTOWN SQUARE, PA 19073
3. PROJECT LOCATION INFORMATION: 1039 SPROUL ROAD HAVERFORD TOWNSHIP, PA 19010 DELAWARE COUNTY, PENNSYLVANIA T.M.P. 22-04-00661-00 DEED BOOK 6883 PAGE 5555
4. ZONING INFORMATION: ZONING DISTRICT: R-1A LOW-DENSITY RESIDENTIAL EXISTING USE: SINGLE FAMILY RESIDENTIAL HOME PROPOSED USE: FOUR (4) LOT SUBDIVISION; SINGLE FAMILY HOMES
5. ZONING BULK AND AREA REQUIREMENTS:

DESCRIPTION	REQUIRED	EXISTING	PROPOSED (LOT 1)	PROPOSED (LOT 2)	PROPOSED (LOT 3)	PROPOSED (LOT 4)
MIN. LOT AREA	0.5 AC (21,780 SF)	122,146 SF (NET) 127,840 SF (GROSS)	46,168 SF	24,907 SF	22,157 SF	28,912 SF
MIN. LOT WIDTH	85'	439.92'	94.74'	135.01'	117.20'	130.04' *
MIN. STREET FRONTAGE	75'	424.98'	79.98'	146.45'	114.07'	83.04'
MIN YARD SETBACKS						
FRONT	40'	123.86'	323.63'	131.80'	65.90'	257.14'
SIDE	15' MIN./30' AGG.	80.76'/193.97'	19.94'/47.29'	15.00'/30.21'	15.45'/34.67'	22.07'/58.67'
REAR	25'	216.38'	109.61'	32.17'	93.11'	33.47'
MAX IMPERVIOUS. SURFACE RATIO	30%	6.8% (8,014 SF)	21.0% (9,681 SF)	11.8% (2,944 SF)	19.7% (4,382 SF)	15.0% (4,338 SF)
MAX BUILDING COVERAGE	15%	2.2% (2,642 SF)	4.5% (2,060 SF)	8.2% (2,052 SF)	9.3% (2,060 SF)	7.1% (2,060 SF)
MAX BUILDING HEIGHT	35'	<35'	<35'	<35'	<35'	<35'

* § 182-106: PANHANDLE LOT. A TRACT OR PARCEL OF LAND IN WHICH THE MAJORITY OF THE LOT IS REMOTE FROM ANY PUBLIC STREET AND IN WHICH ACCESS TO A PUBLIC STREET IS PROVIDED BY A NARROW STRIP OF LAND WHICH, AT ANY POINT, IS LESS IN WIDTH THAN 80% OF THE STREET FRONTAGE REQUIRED IN ITS RESPECTIVE DISTRICT. LOT WIDTH AT NARROW STRIP IS 60.0'

6. OFF-STREET PARKING REQUIREMENTS: (SINGLE-AND TWO-FAMILY DWELLINGS)
   REQUIRED: TWO (2) SPACES PER DWELLING UNIT.
   PROVIDED: TWO (2) SPACES PER DWELLING UNIT
7. THE WORD "CERTIFY" OR "CERTIFICATE" AS SHOWN AND USED HEREON MEANS AN EXPRESSION OF PROFESSIONAL OPINION REGARDING THE FACTS OF THIS PLAN AND REFERENCED SURVEY AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE, EXPRESSED OR IMPLIED.
8. THE DRAWING IS PREPARED BY CORNERSTONE ENGINEERS AND DESIGN SERVICES, INC. AND NO PART OF THIS DRAWING MAY BE REPRODUCED BY PHOTOCOPYING, RECORDING OR BY ANY OTHER MEANS, OR STORED, PROCESSED, OR TRANSMITTED IN OR BY ANY COMPUTER OR OTHER SYSTEMS WITHOUT THE PRIOR WRITTEN PERMISSION OF THE SURVEYOR, ENGINEER, ARCHITECT, OR DESIGN PROFESSIONAL. COPIES OF THIS PLAN WITHOUT A RAISED IMPRESSION OR COLOR SEAL ARE NOT VALID.
9. LOCATIONS OF ALL UNDERGROUND UTILITIES ARE APPROXIMATE. ALL LOCATIONS AND SIZES ARE BASED ON UTILITY MARK-OUTS, ABOVE GROUND STRUCTURES THAT WERE VISIBLE & ACCESSIBLE IN THE FIELD, AND THE MAPS LISTED IN THE REFERENCES AVAILABLE AT THE TIME OF THE SURVEY. AVAILABLE AS-BUILT PLANS AND UTILITY MARKOUT DOES NOT ENSURE MAPPING OF ALL UNDERGROUND UTILITIES AND STRUCTURES. BEFORE ANY EXCAVATION IS TO BEGIN, ALL UNDERGROUND UTILITIES SHOULD BE VERIFIED AS TO THEIR LOCATION, SIZE AND TYPE BY THE PROPER UTILITY COMPANIES.
10. NEITHER THE PROFESSIONAL ACTIVITIES OF CORNERSTONE ENGINEERS AND DESIGN SERVICES, INC., NOR THE PRESENCE OF CORNERSTONE ENGINEERING & DESIGN SERVICES, INC., OR ITS EMPLOYEES AND SUB CONSULTANTS AT A CONSTRUCTION/PROJECT SITE, SHALL RELIEVE THE GENERAL CONTRACTOR OF ITS OBLIGATIONS, DUTIES AND RESPONSIBILITIES INCLUDING, BUT NOT LIMITED TO, CONSTRUCTION MEANS, METHODS, SEQUENCE, TECHNIQUES OR PROCEDURES NECESSARY FOR PERFORMING, SUPERINTENDING AND COORDINATING THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND ANY HEALTH OR SAFETY PRECAUTIONS REQUIRED BY ANY AUTHORITY TO EXERCISE ANY CONTROL OVER ANY CONSTRUCTION CONTRACTOR OR ITS EMPLOYEES IN CONNECTION WITH THEIR WORK OR ANY HEALTH OR SAFETY PROGRAMS OR PROCEDURES. THE GENERAL CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR JOBSITE SAFETY. CORNERSTONE CONSULTING, INC. SHALL BE INDEMNIFIED BY THE GENERAL CONTRACTOR AND SHALL BE MADE ADDITIONAL INSURED UNDER THE GENERAL CONTRACTOR'S POLICIES OF GENERAL LIABILITY INSURANCE.
11. CORNERSTONE ENGINEERS AND DESIGN SERVICES, INC. SHALL REVIEW AND APPROVE OR TAKE OTHER APPROPRIATE ACTION ON THE CONTRACTOR SUBMITTALS, SUCH AS SHOP DRAWINGS, PRODUCT DATA, SAMPLES AND OTHER DATA, WHICH THE CONTRACTOR IS REQUIRED TO SUBMIT, BUT ONLY FOR THE LIMITED PURPOSE OF CHECKING FOR CONFORMANCE WITH THE DESIGN CONCEPT AND THE INFORMATION SHOWN IN THE CONSTRUCTION MEANS OR METHODS, COORDINATION OF THE WORK WITH OTHER TRADES OR CONSTRUCTION SAFETY PRECAUTIONS, ALL OF WHICH ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. CORNERSTONE CONSULTING'S REVIEW SHALL BE CONDUCTED WITH REASONABLE PROMPTNESS WHILE ALLOWING SUFFICIENT TIME TO PERMIT ADEQUATE REVIEW. REVIEW OF A SPECIFIC ITEM SHALL NOT INDICATE THAT CORNERSTONE CONSULTING, INC. HAS REVIEWED THE ENTIRE ASSEMBLY OF WHICH THE ITEM IS A COMPONENT. CORNERSTONE CONSULTING, INC. SHALL NOT BE RESPONSIBLE FOR ANY DEVIATIONS FROM THE CONSTRUCTION DOCUMENTS NOT BROUGHT TO THE ATTENTION OF CORNERSTONE CONSULTING, INC. IN WRITING BY THE CONTRACTOR. CORNERSTONE CONSULTING, INC. SHALL NOT BE REQUIRED TO REVIEW PARTIAL SUBMISSIONS OR THOSE FOR WHICH SUBMISSIONS OF CORRELATED ITEMS HAVE NOT BEEN RECEIVED.
12. IN AN EFFORT TO RESOLVE ANY CONFLICTS THAT ARISE DURING THE DESIGN AND CONSTRUCTION OF THE PROJECT OR FOLLOWING THE COMPLETION OF THE PROJECT, CORNERSTONE ENGINEERS AND DESIGN SERVICES, INC. AND THE CONTRACTOR MUST AGREE THAT ALL DISPUTES BETWEEN THEM ARISING OUT OF OR RELATING TO THIS AGREEMENT OR THE PROJECT SHALL BE SUBMITTED TO NON-BINDING MEDIATION UNLESS THE PARTIES MUTUALLY AGREE OTHERWISE. THE CONTRACTOR MUST INCLUDE A MEDIATION PROVISION IN ALL AGREEMENTS AND REQUIRE ALL INDEPENDENT CONTRACTORS AND CONSULTANTS RETAINED FOR THE PROJECT A SIMILAR MEDIATION PROVISION IN ALL AGREEMENTS WITH THEIR SUBCONTRACTORS, SUB CONSULTANTS, SUPPLIERS AND FABRICATORS, THEREBY PROVIDING FOR MEDIATION AS THE PRIMARY METHOD FOR DISPUTE RESOLUTION BETWEEN THE PARTIES TO ALL THOSE AGREEMENTS.
13. THE PROPERTY OWNER SHALL HAVE THE RESPONSIBILITY FOR THE PERPETUAL MAINTENANCE OF THE STORMWATER MEASURES AND CONVEYANCE PIPES WHICH ARE LOCATED ON THEIR PROPERTY. NO CHANGES SHALL BE MADE TO THE STRUCTURES, PIPES OR FINISH GRADING WITHOUT PRIOR WRITTEN APPROVAL FROM THE TOWNSHIP.
14. THE STORMWATER BEST MANAGEMENT PRACTICES (BMPS) AND CONVEYANCES OPERATION AND MAINTENANCE AGREEMENT SHALL BE FULLY EXECUTED AND RECORDED AT THE DELAWARE COUNTY RECORDER OF DEEDS.
15. DURING SITE CONSTRUCTION, ALL INFILTRATION PRACTICE COMPONENTS SHALL BE PROTECTED FROM COMPACTION DUE TO HEAVY EQUIPMENT OPERATION OR STORAGE OF FILL OR CONSTRUCTION MATERIAL. INFILTRATION AREAS SHALL ALSO BE PROTECTED FORM SEDIMENTATION. AREAS THAT ARE ACCIDENTALLY COMPACTED OR GRADED SHALL BE REMEDIATED TO RESTORE SOIL COMPOSITION AND POROSITY. ADEQUATE DOCUMENTATION TO THIS EFFECT SHALL BE SUBMITTED TO THE MUNICIPAL ENGINEER FOR REVIEW. ALL AREAS DESIGNATED FOR INFILTRATION SHALL NOT RECEIVE RUNOFF UNTIL THE CONTRIBUTORY DRAINAGE AREA HAS ACHIEVED FINAL STABILIZATION.
16. GUTTER GUARDS AND LEAF FILTERS ARE REQUIRED ON ALL GUTTERS AND DOWNSPOUTS ENTERING THE INFILTRATION TRENCH.
17. CONCRETE MONUMENTS SHOWN THUS (■) SHALL BE PLACED WHERE INDICATED, IRON PINS SHOWN THUS (●) SHALL BE PLACED WHERE INDICATED. IN INSTANCES WHERE IRON PINS CANNOT BE SET AT LOT CORNERS DUE TO INLET OR MANHOLE STRUCTURE PLACEMENTS, A PERMANENT MARKING SHALL BE MADE ON SAID STRUCTURE FOR LOT DEEDS TO REFERENCE.
18. A HIGHWAY OCCUPANCY PERMIT IS REQUIRED FOR THE DRIVEWAY, PROPOSED SEWER, AND UTILITY INSTALATIONS ON SPROUL ROAD.
19. AN NPDES PERMIT WILL BE REQUIRED FROM THE DELAWARE CONSERVATION DISTRICT PRIOR TO CONSTRUCTION.
20. A TREE REMOVAL PERMIT FROM THE TOWNSHIP SHADE TREE COMISSION IS REQUIRED FOR REMOVAL OF EXISTING TREES ON SITE.

APPROVAL / BLOCK

REVIEWED BY THE HAVERFORD TOWNSHIP ENGINEER.
THIS _____ DAY OF _____, 2025.

TOWNSHIP ENGINEER _____

SURVEYOR'S STATEMENT

I HEREBY CERTIFY THAT THE PLAN SHOWN AND DESCRIBED HEREON, AS WELL AS ALL OTHER DRAWINGS WHICH ARE A PART OF THIS PLAN SET, ARE TRUE AND CORRECT TO THE ACCURACY REQUIRED BY THE HAVERFORD TOWNSHIP SUBDIVISION AND LAND DEVELOPMENT ORDINANCE AND WERE PREPARED BY ME OR UNDER MY DIRECTION. THE EXISTING PERIMETER MONUMENTS SHOWN HEREON HAVE BEEN LOCATED AS PART OF THE SURVEY AND ALL OTHER PROPOSED PERIMETER MONUMENTS SHALL BE SET.

_____
STEVEN J. ROMICH, P.L.S. NO. SU057592E DATE

PLAN PREPARER'S STATEMENT

I CERTIFY THAT THIS PLAN IS IN CONFORMITY WITH ZONING, BUILDING, SANITATION, SUBDIVISION AND OTHER APPLICABLE TOWNSHIP ORDINANCES AND REGULATIONS. IN ANY INSTANCE WHERE SUCH PLANS DO NOT CONFORM, EVIDENCE HAS BEEN PRESENTED THAT AN EXCEPTION OR WAIVER HAS BEEN AUTHORIZED.

_____
JOHN B. ANDERSON, P.E. NO. PE055536 DATE

DELAWARE COUNTY PLANNING COMMISSION STAMP

HAVERFORD TOWNSHIP

THIS IS TO CERTIFY THE TOWNSHIP PLANNING COMMISSION HAS APPROVED THIS LAND DEVELOPMENT PLAN FOR 1039 SPROUL ROAD. ON THE _____ DAY OF _____, 20_____. FOR RECORDING AT THE RECORDER OF DEEDS OF DELAWARE COUNTY, MEDIA PENNSYLVANIA, OFFERS OF DEDICATION HAVE BEEN ACCEPTED/REJECTED, BONDS, FUNDS OR SECURITIES IN ESCROW HAVE BEEN FILED WITH THE TOWNSHIP AND ACCEPTED TO COVER ALL IMPROVEMENTS SHOWN ON THE PLAN AND REQUIRED UNDER THE SUBDIVISION/LAND DEVELOPMENT AGREEMENT.

APPROVED THE _____ DAY OF _____ 20_____.

BOARD OF COMMISSIONERS SIGNED THIS _____DAY OF _____, 20_____.

_____
CHAIRMAN

_____
MEMBER

ATTEST:_____
MANAGER

HAVERFORD TOWNSHIP

THIS IS TO CERTIFY THE BOARD OF COMMISSIONERS HAS APPROVED THIS LAND DEVELOPMENT PLAN FOR 1039 SPROUL ROAD. ON THE _____ DAY OF _____, 20_____. FOR RECORDING AT THE RECORDER OF DEEDS OF DELAWARE COUNTY, MEDIA PENNSYLVANIA, OFFERS OF DEDICATION HAVE BEEN ACCEPTED/REJECTED, BONDS, FUNDS OR SECURITIES IN ESCROW HAVE BEEN FILED WITH THE TOWNSHIP AND ACCEPTED TO COVER ALL IMPROVEMENTS SHOWN ON THE PLAN AND REQUIRED UNDER THE SUBDIVISION/LAND DEVELOPMENT AGREEMENT.

APPROVED THE _____ DAY OF _____ 20_____.

BOARD OF COMMISSIONERS SIGNED THIS _____DAY OF _____, 20_____.

_____
CHAIRMAN

_____
MEMBER

ATTEST:_____
MANAGER

OWNER'S STATEMENT

ON THE _____ DAY OF _____ 2025, BEFORE ME, THE UNDERSIGNED NOTARY PUBLIC OF THE COMMONWEALTH OF PENNSYLVANIA, THE UNDERSIGNED PROPERTY OWNER PERSONALLY APPEARED, _____, WHO ACKNOWLEDGES HIMSELF TO BE THE OWNER OF THE PROPERTIES PROPOSED TO BE DEVELOPED IN THE SUBJECT PLAN BEING AUTHORIZED TO DO SO, ACKNOWLEDGED THIS PLAN TO BE THE OFFICIAL PLAN OF THE PROPERTIES SHOWN THEREON, SITUATED IN THE TOWNSHIP OF HAVERFORD, DELAWARE COUNTY, PENNSYLVANIA AND DESCRIBED THAT THIS PLAN IS MADE WITH THE OWNERS FREE CONSENT AND INTENDED TO BE RECORDED ACCORDING TO LAW.

WITNESS MY HAND AND NOTARY SEAL THE DAY AND YEAR AFORESAID.

_____
NOTARY

_____
OWNER

RECORDER OF DEEDS

RECORDED IN THE OFFICE OF THE RECORDER OF DEEDS OF DELAWARE COUNTY, PENNSYLVANIA IN THE

PLAN BOOK _____ PAGE _____ ON THE _____ DAY OF _____. 20_____

_____
RECORDER OF DEEDS

CLIENT DATA

Cornerstone
Consulting Engineers & Design Services, Inc.
213 West Main Street . Lansdale . PA 19446
Phone: 215-362-2600 . Fax: 215-362-8400
WWW.CORNERSTONENET.COM
Philadelphia Region 215-362-2600
Lehigh Valley Region 610-820-8200
Pocono Region 570-839-1770

REVISIONS

NO	BY	DESCRIPTION	DATE
1	EMR	REVISED EXISTING CONDITIONS PLAN	5/16/2025
2	EMR	REVISED PER TC COMMENTS	5/1/2025
3	EMR	REVISED PER ZONING HEARING BOARD	7/31/2025

PENNSYLVANIA ONE CALL SYSTEM, INC.
925 Irwin Run Road
West Mifflin, Pennsylvania
15122 - 1078
811
BEFORE YOU DIG ANYWHERE IN PENNSYLVANIA! CALL 1-800-242-1776

J.B. ANDERSON
PROFESSIONAL ENGINEER
COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA LICENSE No. PE 55836
DELAWARE LICENSE No. PE 055536
MARYLAND LICENSE No. 29313
NEW JERSEY LICENSE No. 24GE05520400
VIRGINIA LICENSE No. 0402 045725
FLORIDA LICENSE No. 75184
NEW YORK LICENSE No. 093667-1

PROJECT LOCATION

PRELIM/ FINAL RESIDENTIAL SUBDIVISION PLAN
1039 SPROUL ROAD
TOWNSHIP OF HAVERFORD
DELAWARE COUNTY
PENNSYLVANIA

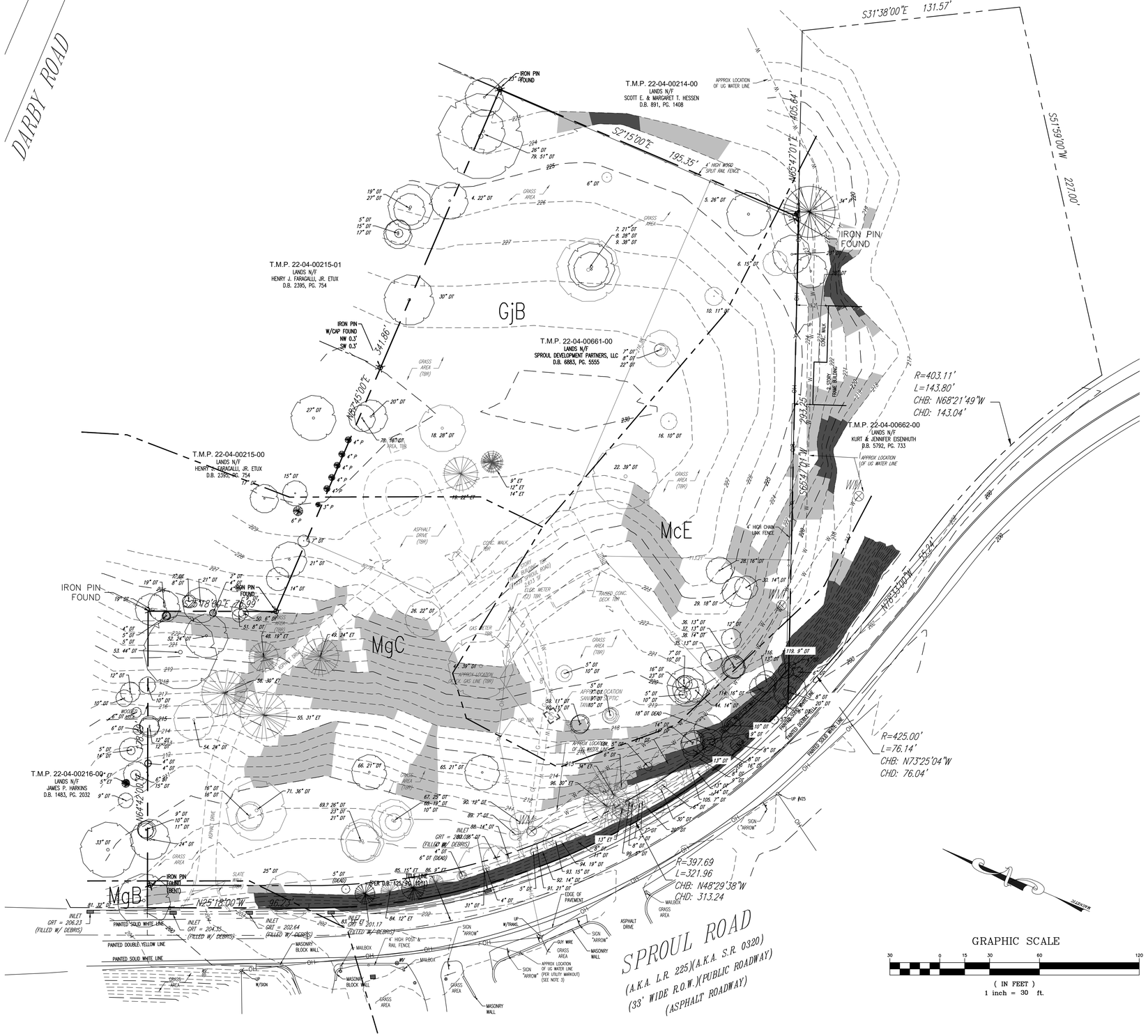
TITLE

SUBDIVISION PLAN

PROJ. #	23-0220	DATE	1-2-2025
CAD ID.	23-0220	DRN BY	SCC
SCALE	AS NOTED	CHK BY	JBA

SHEET 1 OF 16

REVISION 3



LEGEND & ABBREVIATIONS

- PROPERTY BOUNDARY
- ADJOINER BOUNDARY
- RIGHT OF WAY LINE
- BUILDING SETBACK LINE
- EXISTING CONTOUR
- EXISTING SPOT ELEVATION
- EXISTING TREE
- EXISTING TREELINE
- EXISTING FENCE
- EXISTING SIGN
- EXISTING UTILITY POLE (UP)
- C – T: CONDUIT – TRANSFORMER
- L – M: LIGHT – METER
- OH: EXISTING OVERHEAD WIRE
- G: APPROXIMATE GAS LINE
- W: APPROXIMATE WATER LINE
- C: APPROXIMATE TELCO LINE
- E: APPROXIMATE ELECTRIC LINE
- EXISTING CURB
- EXISTING DEPRESSED CURB (DC)
- 15% TO 25% STEEP SLOPES (28,878 SF)
- 25%+ STEEP SLOPES (21,726 SF)
- TP: ROCK TEST PIT LOCATIONS
- INFILTRATION TEST PIT LOCATIONS
- EXISTING EVERGREEN TREE
- EXISTING DECIDUOUS TREE
- EXISTING EVERGREEN TREE, TBR
- EXISTING DECIDUOUS TREE, TBR

CLIENT DATA

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PROJECT LOCATION

PRELIM/ FINAL RESIDENTIAL SUBDIVISION PLAN
1039 SPROUL ROAD
TOWNSHIP OF HAVERFORD
DELAWARE COUNTY
PENNSYLVANIA

TITLE

EXISTING FEATURES

PROJ. #	23-0220	DATE	1-2-2025
CAD ID.	23-0220	DRN BY	SCC
SCALE	AS NOTED	CHK BY	JBA

SHEET 2 OF 16

REVISION 3

NO.	DECID./ EVG.	DBH (4.5')	BOTANICAL NAME	COMMON NAME	NOTES
1	D	21"	*Malus sp*	Crabapple	To Remain
2	D	21"	*Malus sp*	Crabapple	To Remain
3	D	21"	*Malus sp*	Crabapple	To Remain
4	D	12"	*Fagus grandifolia*	American beech	To be removed
5	D	27"	*Liriodendron tulipifera*	Tulip Poplar	To Remain
6	D	16"	*Prunus serotina*	Black cherry	To Remain
7	D	37"	*Cercidiphyllum japonicum*	Katsura Tree	To be removed
8	D	36"	*Cercidiphyllum japonicum*	Katsura Tree	To be removed
9	D	36"	*Cercidiphyllum japonicum*	Katsura Tree	To be removed
10	D	11"	*Cornus florida*	Flowering Dogwood	To be removed
11	D	25"	*Acer rubrum*	Red Maple	To Remain
12	D	16"	*Malus sp*	Crabapple	To be removed
13	D	8"	*Malus sp*	Crabapple	To be removed
14	D	8"	*Malus sp*	Crabapple	To be removed
15	D	8"	*Acer rubrum*	Red Maple	To be removed
16	D	10"	*Malus sp*	Crabapple	To be removed
17	D	5"	*Cornus Florida*	Flowering Dogwood	To be removed
18	D	28"	*Quercus palustris*	Swamp Spanish Oak	To be removed
19	E	22"	*Ilex opaca*	American holly	To be removed
20	E	23"	*Ilex opaca*	American holly	To be removed
21	E	23"	*Ilex opaca*	American holly	To be removed
22	D	35"	*Acer saccharinum*	Silver Maple	To be removed
23	E	11"	*Ilex opaca*	American holly	To Remain
24	D	13"	*Acer rubrum*	Red Maple	To be removed
25	D	16"	*Acer rubrum*	Red Maple	To be removed
26	D	20"	*Magnolia x soulangeana*	Saucer Magnolia	To be removed
27	D	10"	*Quercus rubra*	Northern Red Oak	To Remain
28	D	16"	*Prunus serotina*	Black cherry	To Remain
29	E	20"	*Picea abies*	Norway spruce	To Remain
30	D	13"	*Robinia pseudoacacia*	Flowering Dogwood	To Remain
31	D	9"	*Cornus florida*	Flowering Dogwood	To Remain
32	D	9"	*Cornus florida*	Flowering Dogwood	To Remain
33	D	18"	*Prunus serotina*	Black cherry	To Remain
34	D	27"	*Prunus serotina*	Black cherry	To Remain
35	D	14"	*Prunus serotina*	Black cherry	To Remain
36	D	10"	*Acer rubrum*	Red Maple	To Remain
37	D	10"	*Acer rubrum*	Red Maple	To Remain
38	D	10"	*Acer rubrum*	Red Maple	To Remain
39	D	24"	*Robinia pseudoacacia*	Flowering Dogwood	To be removed
40	E	7"	*Chamaecyparis pisifera*	Sawara cypress	To be removed
41	E	10"	*Chamaecyparis pisifera*	Sawara cypress	To be removed
42	E	10"	*Chamaecyparis pisifera*	Sawara cypress	To be removed
43	E	5"	*Chamaecyparis pisifera*	Sawara cypress	To be removed
44	E	13"	*Chamaecyparis pisifera*	Sawara cypress	To be removed
45	D	16"	*Cornus florida*	Flowering Dogwood	To be removed
46	D	16"	*Cornus florida*	Flowering Dogwood	To be removed
47	D	40"	*Quercus palustris*	Swamp Spanish oak	To be removed
48	E	19"	*Picea abies*	Norway spruce	To be removed
49	E	25"	*Picea abies*	Norway spruce	To be removed
50	D	5"	*Quercus rubra*	Northern Red Oak	To Remain
51	D	8"	*Sassafras albidum*	Sassafras	To Remain
52	D	24"	*Quercus palustris*	Swamp Spanish oak	To Remain
53	D	44"	*Quercus rubra*	Northern Red Oak	To be removed
54	D	24"	*Carya tomentosa*	Mockernut hickory	To be removed
55	E	31"	*Pinus strobus*	Eastern white pine	To be removed
56	E	30"	*Pinus strobus*	Eastern white pine	To be removed
57	D	12-	*Quercus rubra*	Northern Red Oak	To Remain
58	D	14"	*Quercus rubra*	Northern Red Oak	To Remain
59	D	11"	*Cornus florida*	Flowering Dogwood	To Remain
60	D	11"	*Cornus florida*	Flowering Dogwood	To Remain
61	D	24"	*Magnolia x soulangeana*	Saucer Magnolia	To be removed
62	D	11"	*Acer rubrum*	Red Maple	To Remain
63	D	11"	*Acer rubrum*	Red Maple	To Remain
64	D	23"	*Quercus rubra*	Northern Red Oak	To be removed
65	D	22"	*Quercus palustris*	Swamp Spanish oak	To Remain
66	D	23"	*Acer rubrum*	Red Maple	To Remain
67	D	27"	*Acer rubrum*	Red Maple	To be removed
68	D	18"	*Acer rubrum*	Red Maple	To be removed
69	D	48"	*Acer rubrum*	Red Maple	To be removed
70	E	16"	*Pinus strobus*	Eastern white pine	To be removed
71	D	36"	*Acer.rubrum*	Red Maple	To be removed
72	D	31"	*Acer.rubrum*	Red Maple	To be removed
73	D	12-	*Acer rubrum*	Red Maple	To be removed
74	D	14"	*Acer rubrum*	Red Maple	To be removed
75	D	12-	*Acer rubrum*	Red Maple	To be removed
76	D	12-	*Acer rubrum*	Red Maple	To be removed
77	D	11"	*Acer rubrum*	Red Maple	To be removed
78	D	16"	*Phellodendron amurense*	Amur cork	To Remain
79	D	48"	*Phellodendron amurense*	Amur cork	To Remain
80	D	22"	*Acer rubrum*	Red Maple	To Remain
81	D	34"	*Prunus avium*	Sweet Cherry	To be removed
82	D	29"	*Quercus palustris*	Swamp Spanish oak	To be removed

NO.	DECID./ EVG.	CALIPER	BOTANICAL NAME	COMMON NAME	NOTES
83	E	13"	*Picea abies*	Norway spruce	To Remain
84	E	11"	*Picea abies*	Norway spruce	To be removed
85	E	15"	*Picea abies*	Norway spruce	To be removed
86	E	8"	*Picea abies*	Norway spruce	To Remain
87	D	16"	*Juglans nigra*	Eastern black walnut	To be removed
88	D	14"	*Fagus grandifolia*	American beech	To be removed
89	D	7"	*Acer rubrum*	Red Maple	To be removed
90	D	12"	*Acer rubrum*	Red Maple	To be removed
91	D	20"	*Carya ovata*	Shagbark Hickory	To be removed
92	D	14"	*Sassafras albidum*	Sassafras	To be removed
93	D	15"	*Juglans nigra*	Eastern black walnut	To be removed
94	D	19"	*Fraxinus sp*	Ash	To be removed
95	D	11"	*Ulmus americana*	American elm	To be removed
96	E	30"	*Picea abies*	Norway spruce	To be removed
97	D	36"	*Liriodendron tulipifera*	Tulip tree	To Remain
98	D	15"	*Quercus palustris*	Swamp Spanish oak	To be removed
99	D	5"	*Sassafras albidum*	Sassafras	To Remain
100	D	16"	*Juglans nigra*	Eastern black walnut	To Remain
101	D	6"	*Carya ovata*	Shagbark Hickory	To Remain
102	D	6"	*Phellodendron amurense*	Amur cork	To Remain
103	D	16"	*Juglans nigra*	Eastern black walnut	To Remain
104	D	6"	*Sassafras albidum*	Sassafras	To Remain
105	D	8"	*Sassafras albidum*	Sassafras	To Remain
106	D	5"	*Celtis occidentalis*	Hackberry	To Remain
107	D	24"	*Fraxinus sp*	Ash	To Remain
108	D	12"	*Sassafras albidum*	Sassafras	To Remain
109	D	10"	*Quercus palustris*	Swamp Spanish oak	To Remain
110	D	10"	*Quercus palustris*	Swamp Spanish oak	To Remain
111	D	4"	*Acer rubrum*	Red Maple	To Remain
112	D	4"	*Acer rubrum*	Red Maple	To Remain
113	D	12"	*Fraxinus sp*	Ash	To Remain
114	D	16"	*Quercus palustris*	Swamp Spanish oak	To Remain
115	D	2"	*Fagus grandifolia*	American beech	To Remain
116	D	14"	*Acer rubrum*	Red Maple	To Remain
117	D	18'	*Acer rubrum*	Red Maple	To Remain
118	D	2"	*Fagus grandifolia*	American beech	To Remain
119	D	8"	*Fagus grandifolia*	American beech	To Remain

CLIENT DATA

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Consulting Engineers & Design Services, Inc.
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WWW.CORNERSTONENET.COM
Philadelphia Region 215-362-2600
Lehigh Valley Region 610-820-8200
Pocono Region 570-839-1770

REVISIONS

NO	BY	DESCRIPTION	DATE
1	ESR	REVISED EXISTING CONDITIONS PLAN	1/16/2025
2	ESR	REVISED PER TC COMMENTS	5/1/2025
3	ESR	REVISED PER ZONING HEARING BOARD	7/31/2025

PENNSYLVANIA
ONE CALL SYSTEM, INC.
925 Irwin Run Road
West Mifflin, Pennsylvania
15122 - 1078

811

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J.B. ANDERSON
PROFESSIONAL ENGINEER
CERTIFICATE OF AUTHORIZATION
PENNSYLVANIA LICENSE No: PE 15438
MARYLAND LICENSE No: 29313
NEW JERSEY LICENSE No.: 24GE04529400
VIRGINIA LICENSE No. 0402 045725
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PROJECT LOCATION

PRELIM/ FINAL RESIDENTIAL SUBDIVISION PLAN
1039 SPROUL ROAD
TOWNSHIP OF HAVERFORD
DELAWARE COUNTY
PENNSYLVANIA

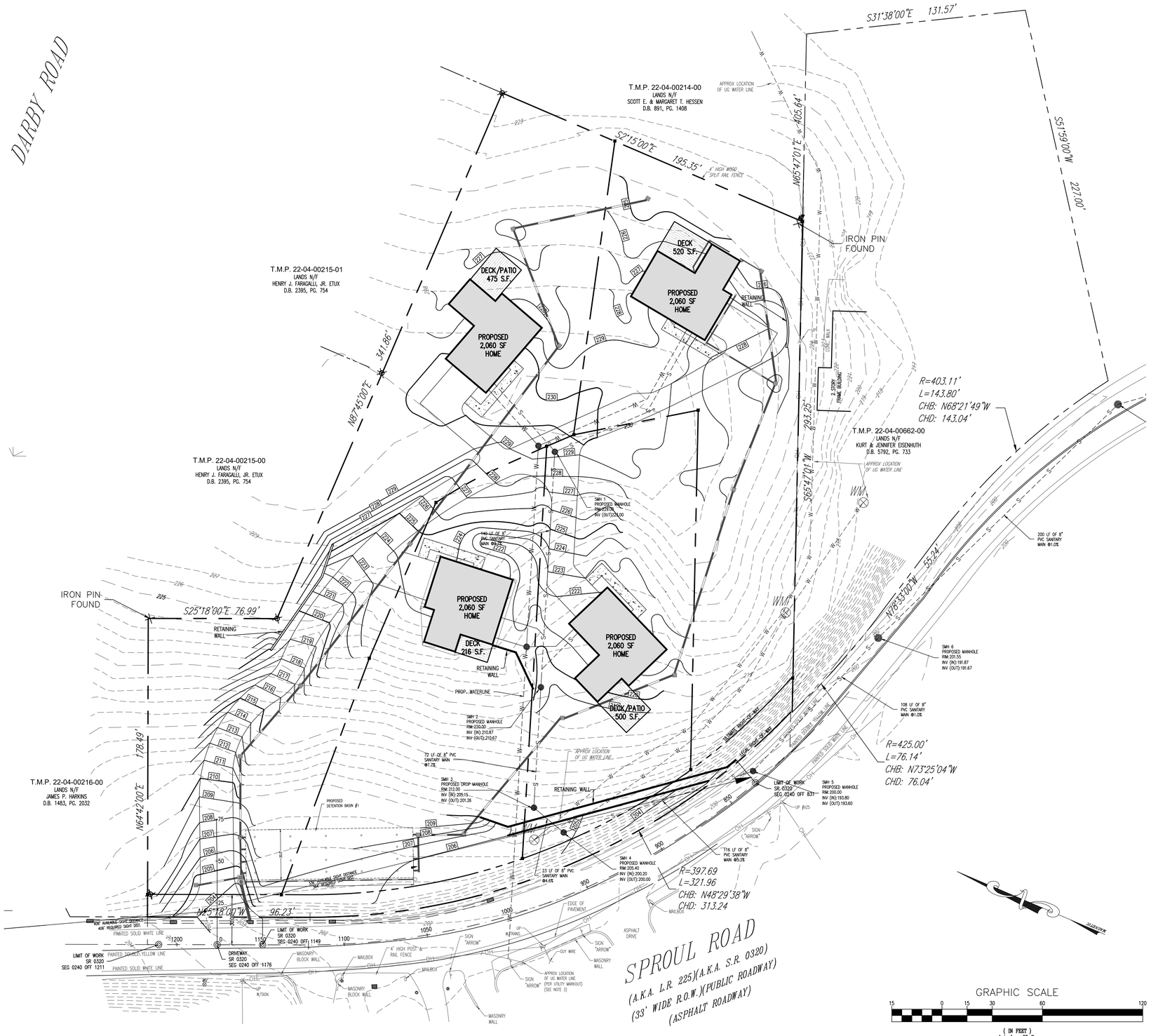
TITLE

EXISTING FEATURES TREE INVENTORY

PROJ. #	23-0220	DATE	1-2-2025
CAD ID.	23-0220	DRN BY	SCC
SCALE	AS NOTED	CHK BY	JBA

SHEET 3 OF 16

REVISION 3



GENERAL NOTES

1. COORDINATE LOCATIONS AND TIE-IN POINTS OF PROPOSED MECHANICAL AND ELECTRICAL SYSTEMS WITH THE APPROPRIATE CONSULTANTS PLANS, AND / OR THE APPROPRIATE GOVERNMENTAL AGENCY HAVING JURISDICTION AT THE TIME OF CONSTRUCTION.
2. ALL TRENCHES SHALL BE SHORED IN ACCORDANCE WITH OSHA STANDARDS.
3. PA ONE CALL SERIAL NO. 20161682749.
4. ALL ELECTRICAL LINES TO LIGHT POLES SHALL BE INSTALLED IN 1 1/2" PVC CONDUIT WITH NECESSARY PULL/JUNCTION BOXES.
5. CLEANOUTS AND CURB BOXES WITHIN PAVED AREAS MUST HAVE TRAFFICE LOADING FRAMES AND COVERS MEETING HS-25 LIVE LOAD.
6. CONTRACTOR SHALL NOT CONNECT PIPES INTO THE CORNER OF INLET BOXES.

WATER NOTES

1. ALL WATER PIPES SHALL HAVE A MINIMUM COVER OF FOUR (4) FEET. A MINIMUM VERTICAL CLEARANCE OF EIGHTEEN (18) INCHES OR A MINIMUM HORIZONTAL SEPARATION OF TEN (10) FEET SHALL BE MAINTAINED AT ALL CROSSINGS OF WATER LINES WITH SANITARY OR STORM SEWERS. IF 18" VERTICAL CLEARANCE CANNOT BE MAINTAINED, THE SANITARY SEWER, SEWER LATERAL OR WATER LINE IF NECESSARY SHALL BE CONCRETE ENCASED, IN ACCORDANCE WITH PA. D.E.P. REQUIREMENTS.
2. ALL WATER SYSTEM MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH AQUA PENNSYLVANIA STANDARDS AND SPECIFICATIONS.

SANITARY SEWER NOTES

1. ALL SANITARY PIPE WITHIN THE TOWNSHIP R.O.W. SHALL BE CLASS 52 DUCTILE IRON PIPE.
2. ALL SANITARY SYSTEM MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LOCAL SEWER AUTHORITY STANDARDS AND SPECIFICATIONS.
3. ALL PROPOSED SANITARY SEWER SERVICES SHALL BE COORDINATED WITH THE MECHANICAL/ PLUMBING CONSTRUCTION DOCUMENTS.
4. SANITARY SEWER LINES AND STORM SEWER CROSSINGS SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF EIGHTEEN (18) INCHES OR A MINIMUM HORIZONTAL SEPARATION OF TEN (10) FEET. IF 18" VERTICAL CLEARANCE CANNOT BE MAINTAINED, THE SANITARY SEWER OR SEWER LATERAL SHALL BE CONCRETE ENCASED, IN ACCORDANCE WITH PA D.E.P. REQUIREMENTS.
5. WITHIN EXISTING OR PROPOSED SEWER EASEMENTS, THERE SHALL NOT BE BUILT, INSTALLED, CONSTRUCTED, PLANTED , OR LOCATED ANY TEMPORARY OR PERMANENT BUILDINGS OR STRUCTURES, OR ANY TREES, SHRUBS, OR OTHER LANDSCAPING, EXCEPT TREES, SHRUBS, AND OTHER LANDSCAPING WHICH WILL NOT GROW MORE THAN SIX FEET (6') IN HEIGHT.
6. A MINIMUM SLOPE OF 2% SHOULD BE PROVIDED FOR SEWER LATERALS, UNLESS OTHERWISE NOTED.
7. ALL SEWER LATERAL CONNECTIONS TO THE GRAVITY MAIN SHALL UTILIZE A WYE AND A 45 DEGREE ELBOW.
8. CONTRACTOR SHALL RESTORE TO EXISTING CONDITIONS ALL SURFACE AREA WITHIN THE RIGHT-OF-WAY OVER THE PROPOSED SANITARY LATERAL. ALL PAVEMENT ENCOUNTERED SHALL BE REPLACED IN KIND.

LEGEND

- PROPERTY BOUNDARY
- EXISTING UTILITY POLE
- EXISTING OVERHEAD WIRE
- EXISTING CURB
- EXISTING CONTOURS
- EXISTING TREES
- EXISTING WATER MAIN
- EXISTING ELECTRICAL LINE
- EXISTING SANITARY LINE
- EXISTING GAS LINE
- PROPOSED STORM SEWER
- PROPOSED FORCEMAIN
- PROPOSED SANITARY SEWER
- PROPOSED WATER LINE
- PROPOSED ELECTRICAL LINE
- PROPOSED TELEPHONE LINE
- PROPOSED SANITARY SEWER CLEANOUT
- PROPOSED STORM DRAINAGE INLET
- PROPOSED MANHOLE
- PROPOSED HYDRANT

CLIENT DATA

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REGISTERED PROFESSIONAL ENGINEER
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PROJECT LOCATION

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1039 SPROUL ROAD
TOWNSHIP OF HAVERFORD
DELAWARE COUNTY
PENNSYLVANIA

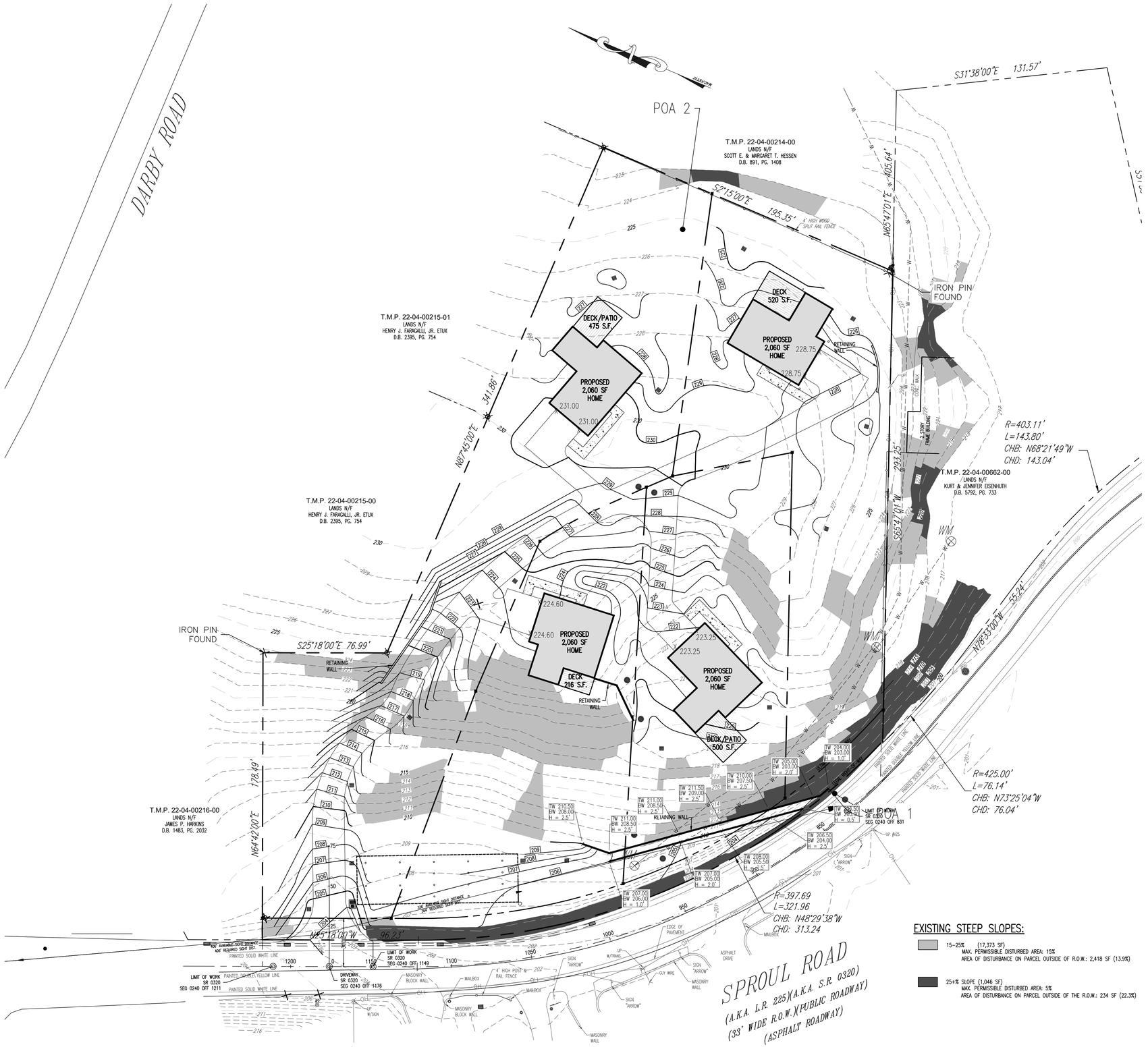
TITLE

UTILITY PLAN

PROJ. #	23-0220	DATE	1-2-2025
CAD ID.	23-0220	DRN BY	SCC
SCALE	AS NOTED	CHK BY	JBA

SHEET 4 OF 16

REVISION 3



GRADING AND DRAINAGE NOTES

1. SITE GRADING SHALL BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS AND THE RECOMMENDATIONS SET FORTH IN THE SOILS REPORT REFERENCED IN THIS PLAN SET. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND REPLACING ALL SOFT, YIELDING OR UNSUITABLE MATERIALS AND REPLACING WITH SUITABLE MATERIALS AS SPECIFIED IN THE SOILS REPORT. ALL EXCAVATED OR FILLED AREAS SHALL BE COMPACTED TO 95% OF MODIFIED . MOISTURE CONTENT AT TIME OF U.A.S.T.M. TEST D-1557 PROCTOR MAXIMUM DENSITY PER PLACEMENT SHALL NOT EXCEED 2% ABOVE NOR 3% BELOW OPTIMUM. CONTRACTOR SHALL SUBMIT A COMPACTION REPORT PREPARED BY A QUALIFIED SOILS ENGINEER, REGISTERED WITHIN THE STATE WHERE THE WORK IS PERFORMED, VERIFYING THAT ALL FILLED AREAS AND SUBGRADE AREAS WITHIN THE BUILDING PAD AREA AND AREAS TO BE PAVED HAVE BEEN COMPACTED IN ACCORDANCE WITH THESE PLANS AND SPECS AND THE RECOMMENDATIONS SET FORTH IN THE SOILS REPORT.
2. CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF EXISTING TOPOGRAPHIC INFORMATION AND UTILITY INVERT ELEVATIONS PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION. CONTRACTOR TO ENSURE 1% MIN. SLOPE AGAINST ALL ISLANDS GUTTERS, CURBS AND 2.0% ON ALL CONCRETE SURFACES, AND 2.0% MIN. ON ASPHALT, EXCEPT AS NOTED ON PLANS. ANY DISCREPANCIES THAT MAY EFFECT THE PUBLIC SAFETY OR PROJECT COST, MUST BE IDENTIFIED TO THE ENGINEER IN WRITING IMMEDIATELY. PROCEEDING WITH CONSTRUCTION WITH DESIGN DISCREPANCIES IS DONE SO AT THE CONTRACTOR'S OWN RISK.
3. SUBBASE MATERIAL FOR SIDEWALKS, CURB, OR ASPHALT SHALL BE FREE OF ORGANICS AND OTHER UNSUITABLE MATERIALS. SHOULD SUBBASE BE DEEMED UNSUITABLE, SUBBASE IS TO BE REMOVED AND FILL MATERIAL COMPACTED TO 95% OPTIMUM DENSITY (AS DETERMINED BY MODIFIED PROCTOR METHOD).
4. IN CASE OF DISCREPANCIES BETWEEN PLANS, THE SITE PLAN WILL SUPERCEDE IN ALL CASES. NOTIFY ENGINEER OF RECORD OF ANY CONFLICT.
5. LOCATION OF ALL EXISTING AND PROPOSED SERVICES ARE APPROXIMATE AND MUST BE CONFIRMED INDEPENDENTLY WITH LOCAL UTILITY COMPANIES PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION OR EXCAVATION, SANITARY SEWER AND ALL OTHER UTILITY SERVICE CONNECTION POINTS SHALL BE CONFIRMED INDEPENDENTLY BY THE CONTRACTOR IN FIELD PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. ALL DISCREPANCIES SHALL BE REPORTED IMMEDIATELY IN WRITING TO THE ENGINEER. CONSTRUCTION SHALL COMMENCE BEGINNING AT THE LOWEST INVERT (POINT OF CONNECTION) AND PROGRESS UP GRADIENT. INTERFACE POINTS (CROSSINGS) WITH EXISTING UNDERGROUND UTILITIES SHALL BE FIELD VERIFIED BY TEST PIT PRIOR TO COMMENCEMENT OF CONSTRUCTION.
6. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY UTILITY "ONE-CALL" NUMBER 72 HOURS PRIOR TO ANY EXCAVATION ON THIS SITE. CONTRACTOR SHALL ALSO NOTIFY LOCAL WATER AND SEWER DEPARTMENTS TO MARK OUT THEIR UTILITIES.
7. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT BUILDING UTILITY CONNECTION LOCATION. WHERE CONFLICTS EXIST WITH THESE SITE PLANS, ENGINEER IS TO BE NOTIFIED PRIOR TO CONSTRUCTION TO RESOLVE SAME. SERVICE SIZES TO BE DETERMINED BY ARCHITECT.
8. ALL PAVEMENT SLOPES WITHIN HANDICAP PARKING AREAS SHALL NOT EXCEED 2% IN ANY DIRECTION AS WELL AS ON ALL SIDEWALK CROSS SLOPES.
9. ALL EXISTING CAPS, LIDS, RIMS, ETC. TO REMAIN SHALL BE RESET FLUSH WITH PROPOSED GRADE.
10. SITE IS LOCATED OUTSIDE OF THE 100 YR. AND 500 YR. FLOOD ZONE.
11. THE CONTRACTOR SHALL ADHERE TO ALL TERMS AND CONDITIONS AS OUTLINED IN THE GENERAL NPDES PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES.
12. THE PROPOSED FINISHED GRADING SHOWN ON THIS PLAN HAS BEEN USED TO DESIGN THE STORMWATER MANAGEMENT FACILITIES. THE CONTRACTOR SHALL COMPLY WITH THE GENERAL GRADING SCHEME INDICATED UNLESS OTHERWISE APPROVED BY THE TOWNSHIP ENGINEER.
13. INLETS SHALL BE PENNDOT TYPE M. OR TYPE C. INLETS EXCEEDING 5 FT. IN DEPTH SHALL BE EQUIPPED WITH STEPS IN ACCORDANCE WITH PENNDOT PUB. 408.
14. CONTRACTOR SHALL NOT ENCROACH ONTO ADJOINING PROPERTIES UNLESS A TEMPORARY CONSTRUCTION EASEMENT HAS BEEN GRANTED BY THE ADJOINING PROPERTY OWNER. CONTRACTOR SHALL HAVE PROPERTY LINES CLEARLY MARKED AND SHALL CONSTRUCT SUCH BARRIERS WHICH ARE NECESSARY TO PREVENT ENCROACHMENT ONTO ADJOINING PROPERTIES.
15. NO EXCAVATION OR FILL ON LOTS SHALL BE MADE WITH A FACE STEEPER THAN THREE (3) HORIZONTAL TO ONE (1) VERTICAL (3:1). SPECIAL SLOPE REQUIREMENTS APPLY TO THE DETENTION POND. SEE APPLICABLE DETAILS.
16. ALL CONTRACTORS WORKING ON THIS PROJECT SHALL BE RESPONSIBLE FOR INSURING THAT ALL CONSTRUCTION ACTIVITIES RELATED TO THIS PROJECT ARE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE OSHA (OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION) STANDARDS.
17. THE PROPOSED CONCRETE CURB REVEAL IS 6" (INCH).
18. RAINWATER CONDUCTORS (RWC) SHALL BE HIGH DENSITY POLYETHYLENE (HDPE) FOR PIPING BEYOND PLUMBING CONTRACTOR'S LIMIT OF WORK. ALL DOWNSPOUTS SHALL BE DIRECTED TO GRASS LINED SWALES LEADING TOWARDS THE DETENTION BASINS, UNLESS OTHERWISE SHOWN.
19. ALL STORMPIPE SHALL BE SMOOTH BORE HIGH DENSITY POLYETHEYLENE PIPE UNLESS OTHERWISE SHOWN. MINIMUM PIPE SIZE SHALL BE 18" EXCEPT FOR ROOF LEADERS.
20. CLEANOUTS AND CURB BOXES WITHIN PAVED AREAS MUST HAVE TRAFFIC LOADING FRAMES AND COVERS MEETING HS-25 LIVE LOAD.
21. CONTRACTOR SHALL NOT CONNECT PIPES INTO THE CORNER OF INLET BOXES.

LEGEND

- PROPERTY BOUNDARY
- EXISTING UTILITY POLE
- EXISTING OVERHEAD WIRE
- EXISTING CURB
- PROPOSED CONTOURS
- EXISTING CONTOURS
- EXISTING TREES
- EXISTING WATER MAIN
- EXISTING ELECTRICAL LINE
- EXISTING SANITARY LINE
- EXISTING GAS LINE
- PROPOSED STORM SEWER
- PROPOSED FORCEMAIN
- PROPOSED SANITARY SEWER
- PROPOSED WATER LINE
- PROPOSED ELECTRICAL LINE
- PROPOSED TELEPHONE LINE
- PROPOSED SANITARY SEWER CLEANOUT
- PROPOSED STORM DRAINAGE INLET
- PROPOSED MANHOLE
- PROPOSED HYDRANT

EXISTING STEEP SLOPES:

15-25% (17,373 SF)
MAX. PERMISSIBLE DISTURBED AREA: 15%
AREA OF DISTURBANCE ON PARCEL OUTSIDE OF R.O.W.: 2,418 SF (13.9%)

25+% SLOPE (1,046 SF)
MAX. PERMISSIBLE DISTURBED AREA: 5%
AREA OF DISTURBANCE ON PARCEL OUTSIDE OF THE R.O.W.: 234 SF (22.3%)

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

CLIENT DATA

Cornerstone
Consulting Engineers & Design Services, Inc.
213 West Main Street . Lansdale . PA 19446
Phone: 215-362-2600 . Fax: 215-362-8400
WWW.CORNERSTONENET.COM
Philadelphia Region 215-362-2600
Lehigh Valley Region 610-820-8200
Pocono Region 570-839-1770

REVISIONS

NO	BY	DESCRIPTION	DATE
1	EMR	REVISED EXISTING CONDITIONS PLAN	5/16/2025
2	EMR	REVISED PER PC COMMENTS	5/1/2025
3	EMR	REVISED PER ZONING HEARING BOARD	7/31/2025

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925 Irwin Run Road
West Mifflin, Pennsylvania
15122 - 1078
811
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J.B. ANDERSON
COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL ENGINEER
DELAWARE LICENSE No. PE 13438
PENNSYLVANIA LICENSE No. PE055536
MARYLAND LICENSE No. 29313
NEW JERSEY LICENSE No. 24GE04520400
VIRGINIA LICENSE No. 0402 045725
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PROJECT LOCATION

PRELIM/ FINAL RESIDENTIAL SUBDIVISION PLAN
1039 SPROUL ROAD
TOWNSHIP OF HAVERFORD
DELAWARE COUNTY
PENNSYLVANIA

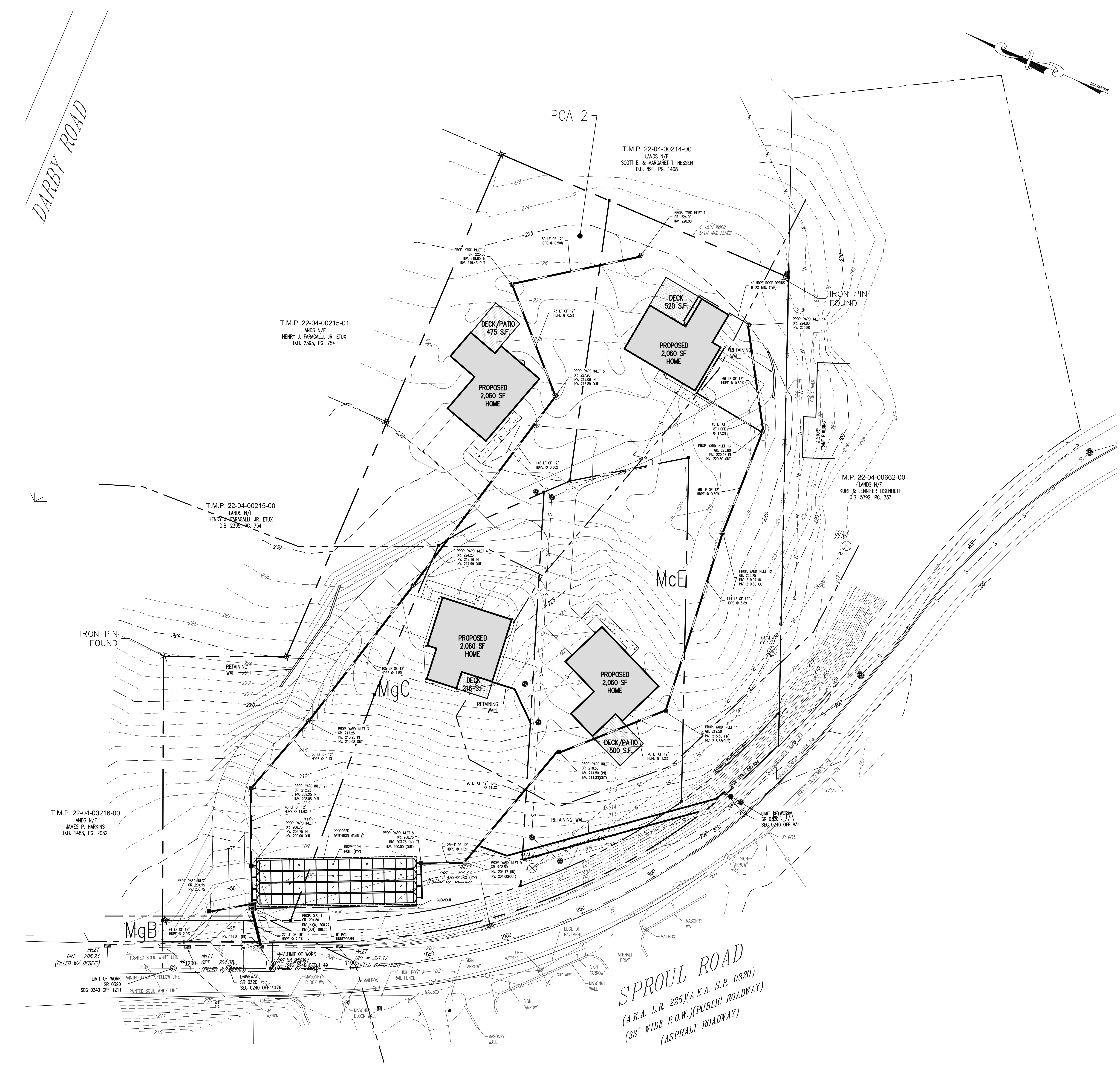
TITLE

GRADING PLAN

PROJ. #	23-0220	DATE	1-2-2025
CAD ID.	23-0220	DRN BY	SCC
SCALE	AS NOTED	CHK BY	JBA

SHEET 5 OF 16

REVISION 3



GRADING AND DRAINAGE NOTES

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LEGEND

- PROPERTY BOUNDARY
- EXISTING UTILITY POLE
- EXISTING OVERHEAD WIRE
- EXISTING CURB
- PROPOSED CONTOURS
- EXISTING CONTOURS
- EXISTING TREES
- EXISTING WATER MAIN
- EXISTING ELECTRICAL LINE
- EXISTING SANITARY LINE
- EXISTING GAS LINE
- PROPOSED STORM SEWER
- PROPOSED FORCEMAIN
- PROPOSED SANITARY SEWER
- PROPOSED WATER LINE
- PROPOSED ELECTRICAL LINE
- PROPOSED TELEPHONE LINE
- C.O. PROPOSED SANITARY SEWER CLEANOUT
- PROPOSED STORM DRAINAGE INLET
- PROPOSED MANHOLE
- PROPOSED HYDRANT

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

CLIENT DATA

Cornerstone
Consulting Engineers & Design Services, Inc.
213 West Main Street . Lansdale . PA 19446
Phone: 215-362-2600 . Fax: 215-362-8400
WWW.CORNERSTONENET.COM
Philadelphia Region 215-362-2600
Lehigh Valley Region 610-820-8200
Pocono Region 570-839-1770

REVISIONS

NO	BY	DESCRIPTION	DATE
1	EMR	REVISED EXISTING CONDITIONS PLAN	1/16/2025
2	EMR	REVISED PER PC COMMENTS	5/1/2025
3	EMR	REVISED PER ZONING HEARING BOARD	7/31/2025

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925 Irwin Run Road
West Mifflin, Pennsylvania
15122 - 1078

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J.B. ANDERSON
PROFESSIONAL ENGINEER
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PENNSYLVANIA LICENSE No. PE 055536
MARYLAND LICENSE No. 29313
NEW JERSEY LICENSE No. 24GE04520400
VIRGINIA LICENSE No. 0402 045725
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NEW YORK LICENSE No. 093667-1

PROJECT LOCATION

PRELIM/ FINAL RESIDENTIAL SUBDIVISION PLAN
1039 SPROUL ROAD
TOWNSHIP OF HAVERFORD
DELAWARE COUNTY
PENNSYLVANIA

TITLE

STORM WATER AND DRAINAGE PLAN

PROJ. #	23-0220	DATE	1-2-2025
CAD ID.	23-0220	DRN BY	SCC
SCALE	AS NOTED	CHK BY	JBA

SHEET 6 OF 16

REVISION 3



GENERAL NOTES:

1. THIS PLAN TO BE UTILIZED FOR LANDSCAPE PURPOSES ONLY.

2. ALL PLANT MATERIAL SHALL BE GUARANTEED FOR A PERIOD OF TWELVE (12) MONTHS.

3. ALL SIGHT TRIANGLES SHALL REMAIN CLEAR AND ANY PLANT, WHICH WOULD ENDANGER SAFETY SUCH AS UNSTABLE LIMBS, SHALL BE REMOVED AND THE PLANT MATERIAL REPLACED. IT SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER AND SUCCESSIVE PROPERTY OWNERS TO ENSURE ALL PLANTINGS AND ARCHITECTURAL ELEMENTS ARE MAINTAINED TO PROVIDE A SAFE ENVIRONMENT.

4. THE LOCATION OF ALL UNDERGROUND UTILITIES SHALL BE VERIFIED BY THE CONTRACTOR AND MARKED IN THE FIELD, PRIOR TO ANY DIGGING OPERATIONS.

5. ALL PLANT MATERIALS AND PLANTING PRACTICES SHALL BE IN ACCORDANCE WITH THE "AMERICAN STANDARD FOR NURSERY STOCK" BY THE AMERICAN ASSOCIATION OF NURSERYMEN.

6. ALL PLANTS SHALL BE WATERED THOROUGHLY BY THE CONTRACTOR AT LEAST THREE (3) TIMES IN THE FIRST MONTH AFTER PLANTING. ADDITIONAL WATERING MAY BE REQUIRED DURING THE SUMMER MONTHS, DEPENDING ON RAINFALL AMOUNTS.

LEGEND

- PROPERTY BOUNDARY
- EXISTING UTILITY POLE
- EXISTING OVERHEAD WIRE (OH)
- EXISTING CURB
- PROPOSED CONTOURS (250)
- EXISTING CONTOURS (250)
- EXISTING TREES
- EXISTING WATER MAIN (W)
- EXISTING ELECTRICAL LINE (OH)
- EXISTING SANITARY LINE (S)
- EXISTING GAS LINE (G)
- PROPOSED STORM SEWER
- PROPOSED FORCEMAIN (FM)
- PROPOSED SANITARY SEWER (S)
- PROPOSED WATER LINE (W)
- PROPOSED ELECTRICAL LINE (E)
- PROPOSED TELEPHONE LINE (T)
- PROPOSED SANITARY SEWER CLEANOUT (C.O.)
- PROPOSED STORM DRAINAGE INLET
- PROPOSED MANHOLE
- PROPOSED HYDRANT

PLANT SCHEDULE

SYMBOL	CODE	BOTANICAL / COMMON NAME	SIZE	CONTAINER	QTY
TREE REPLACEMENT					
	PK	Prunus serrulata `Kwanzan` / Kwanzan Japanese Flowering Cherry	2" Cal.	B&B	37
	QA	Quercus alba / White Oak	2" Cal.	B&B	23
	TS	Tilia tomentosa `Sterling` / Sterling Silver Linden	2" Cal.	B&B	3
	UP	Ulmus americana `Princeton` / Princeton American Elm	2" Cal.	B&B	22

HAVERFORD TOWNSHIP – LANDSCAPE COMPLIANCE CHART	REQUIRED	PROVIDED
ZONING DISTRICT: R-1A; LOW-DENSITY RESIDENTIAL		
CHAPTER 170-2 DEFINITIONS: TREE REPLACEMENT FORMULA A. WHEN IT'S IMPOSSIBLE TO RETAIN EXISTING TREES WHICH ARE LESS THAN 30 INCHES IN DIAMETER, TREES SHALL BE REPLANTED ONE INCH OF NEW TREE DIAMETER FOR EVERY ONE INCH OF EXISTING TREE DIAMETER REMOVED. REPLACEMENT TREES SHALL BE MIN. TWO INCH DIAMETER.		
TOTAL DBH INCHES OF TREES TO BE REMOVED: 405 IN TOTAL CALIPER INCHES OF TREES TO BE PLANTED: 405 IN / 4 = 102 / 2 = 51	51 TREES	51 TREES
B. WHEN IT'S IMPOSSIBLE TO RETAIN EXISTING TREES WHICH ARE 30 INCHES OR GREATER IN DIAMETER, TREES SHALL BE REPLANTED ONE INCH OF NEW TREE DIAMETER FOR EVERY ONE INCH OF EXISTING TREE DIAMETER REMOVED. REPLACEMENT TREES SHALL BE MIN. TWO INCH DIAMETER.		
TOTAL DBH INCHES OF TREES TO BE REMOVED: 68 IN TOTAL CALIPER INCHES OF TREES TO BE PLANTED: 68 IN / 1 = 68 / 2 = 34	34 TREES	34 TREES
CHAPTER 170-3.C(6) STREET TREES ON ALL NEW BUILDING SITES, THE OWNER OR CONTRACTOR SHALL PLANT ON SAID BUILDING SITE ABUTTING THE PUBLIC RIGHT-OF-WAY AT LEAST ONE PUBLIC SHADE TREE FOR EVERY 30 FEET OF STREET FRONTAGE OR FRACTION THEREOF.		
SPROUL ROAD: 418.2 LF 418.2 / 30 = 14 TREES	14 STREET TREES	14+ STREET TREES

CLIENT DATA

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REVISIONS

NO	BY	DESCRIPTION	DATE
1	EABR	REVISED EXISTING CONDITIONS PLAN	1/16/2025
2	EABR	REVISED PER PC COMMENTS	5/1/2025
3	EABR	REVISED PER ZONING HEARING BOARD	7/31/2025

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DANA H. MILLER
PENNSYLVANIA REGISTERED LANDSCAPE ARCHITECT
PENNSYLVANIA LICENSE No. 661-E

PROJECT LOCATION

PRELIM/ FINAL RESIDENTIAL SUBDIVISION PLAN
1039 SPROUL ROAD
TOWNSHIP OF HAVERFORD
DELAWARE COUNTY
PENNSYLVANIA

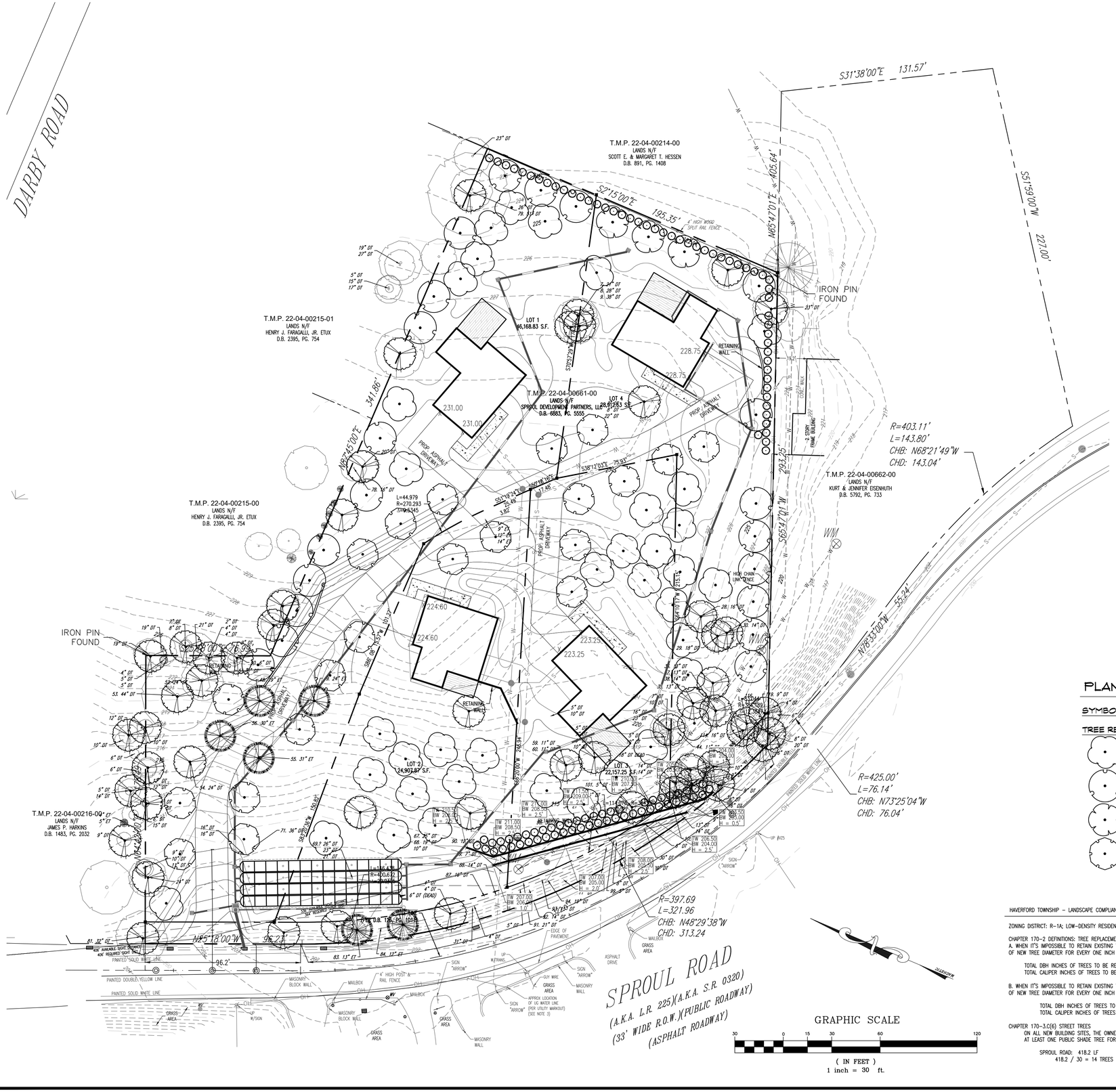
TITLE

LANDSCAPE PLAN

PROJ. #	23-0220	DATE	1-2-2025
CAD ID.	23-0220	DRN BY	SCC
SCALE	AS NOTED	CHK BY	JBA

SHEET 7 OF 16

REVISION 3



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- PROPOSED SANITARY SEWER CLEANOUT
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- PROPOSED MANHOLE
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CHAPTER 170-2 DEFINITIONS: TREE REPLACEMENT FORMULA A. WHEN IT'S IMPOSSIBLE TO RETAIN EXISTING TREES WHICH ARE LESS THAN 30 INCHES IN DIAMETER, TREES SHALL BE REPLANTED ONE INCH OF NEW TREE DIAMETER FOR EVERY ONE INCH OF EXISTING TREE DIAMETER REMOVED. REPLACEMENT TREES SHALL BE MIN. TWO INCH DIAMETER.		
TOTAL DBH INCHES OF TREES TO BE REMOVED: 405 IN TOTAL CALIPER INCHES OF TREES TO BE PLANTED: 405 IN / 4 = 102 / 2 = 51	51 TREES	51 TREES
B. WHEN IT'S IMPOSSIBLE TO RETAIN EXISTING TREES WHICH ARE 30 INCHES OR GREATER IN DIAMETER, TREES SHALL BE REPLANTED ONE INCH OF NEW TREE DIAMETER FOR EVERY ONE INCH OF EXISTING TREE DIAMETER REMOVED. REPLACEMENT TREES SHALL BE MIN. TWO INCH DIAMETER.		
TOTAL DBH INCHES OF TREES TO BE REMOVED: 68 IN TOTAL CALIPER INCHES OF TREES TO BE PLANTED: 68 IN / 1 = 68 / 2 = 34	34 TREES	34 TREES
CHAPTER 170-3.C(6) STREET TREES ON ALL NEW BUILDING SITES, THE OWNER OR CONTRACTOR SHALL PLANT ON SAID BUILDING SITE ABUTTING THE PUBLIC RIGHT-OF-WAY AT LEAST ONE PUBLIC SHADE TREE FOR EVERY 30 FEET OF STREET FRONTAGE OR FRACTION THEREOF.		
SPROUL ROAD: 418.2 LF 418.2 / 30 = 14 TREES	14 STREET TREES	14+ STREET TREES

CLIENT DATA

Cornerstone
Consulting Engineers & Design Services, Inc.
213 West Main Street . Lansdale . PA 19446
Phone: 215-362-2600 . Fax: 215-362-8400
WWW.CORNERSTONENET.COM
Pocono Region 570-839-1770
Lehigh Valley Region 610-820-8200
Philadelphia Region 215-362-2600

REVISIONS

NO	BY	DESCRIPTION	DATE
1	EABR	REVISED EXISTING CONDITIONS PLAN	1/16/2025
2	EABR	REVISED PER PC COMMENTS	5/1/2025
3	EABR	REVISED PER ZONING HEARING BOARD	7/31/2025

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925 Irwin Run Road
West Mifflin, Pennsylvania
15122-1076
811
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DANA H. MILLER
PENNSYLVANIA REGISTERED LANDSCAPE ARCHITECT
PENNSYLVANIA LICENSE No. 661-E

PROJECT LOCATION

PRELIM/ FINAL RESIDENTIAL SUBDIVISION PLAN
1039 SPROUL ROAD
TOWNSHIP OF HAVERFORD
DELAWARE COUNTY
PENNSYLVANIA

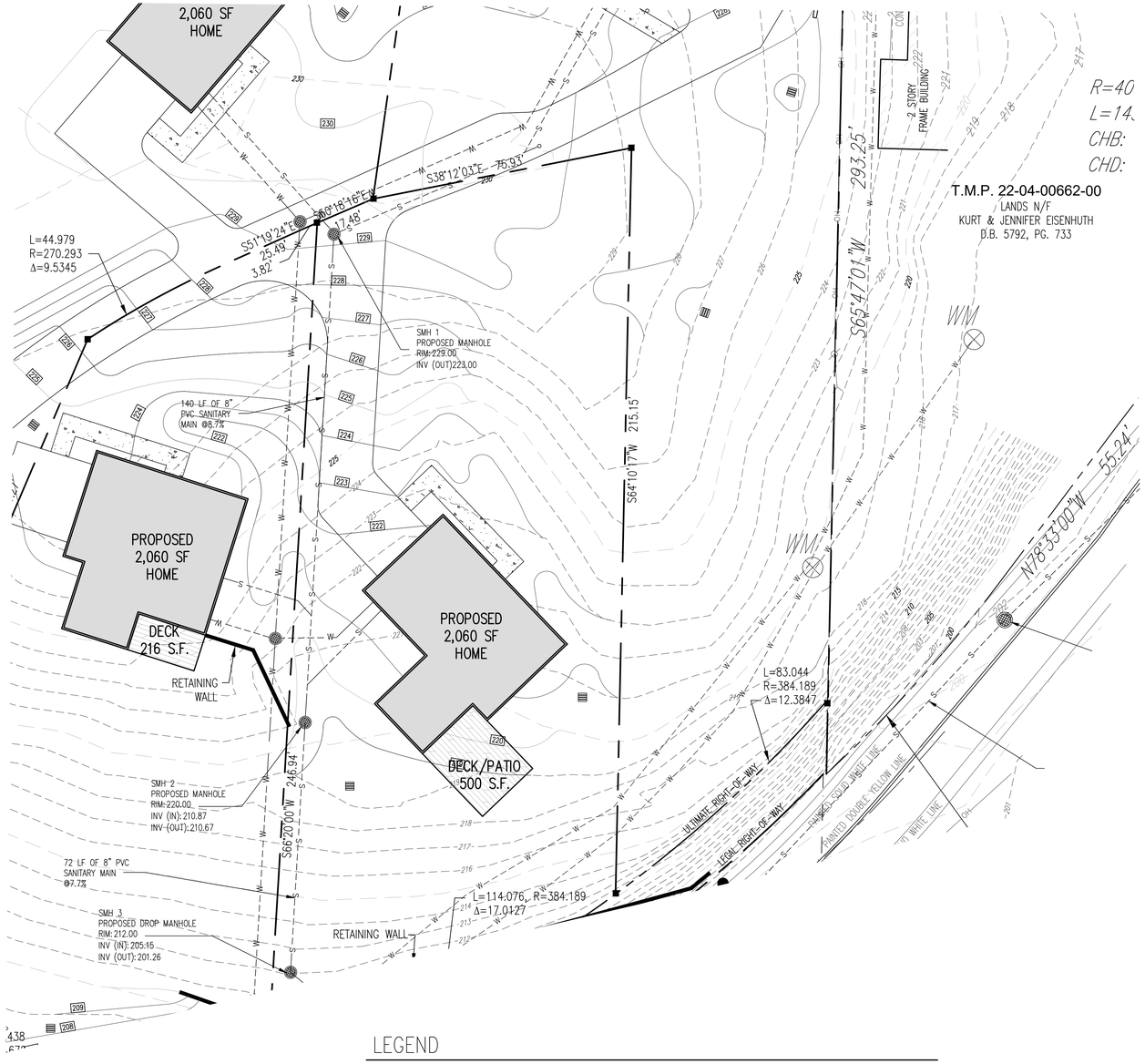
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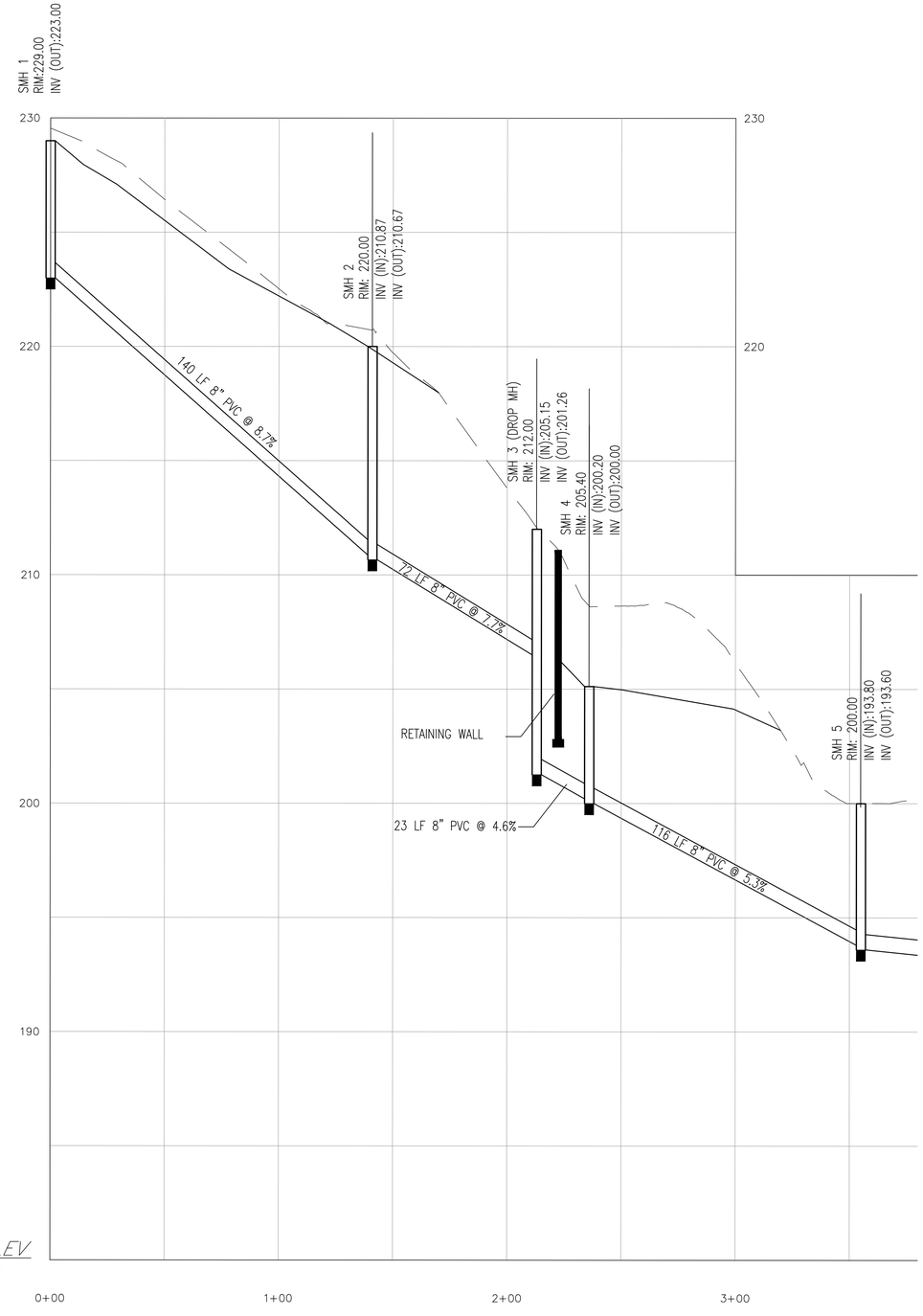
LANDSCAPE PLAN

PROJ. #	23-0220	DATE	1-2-2025
CAD ID.	23-0220	DRN BY	SCC
SCALE	AS NOTED	CHK BY	JBA

SHEET 7 OF 16

REVISION 3





SANITARY PROFILE
STATION 0+00.00 TO 3+50.00

LEGEND

- PROPERTY BOUNDARY
- BUILDING SETBACK LINE
- EXISTING UTILITY POLE
- OH — EXISTING OVERHEAD WIRE
- EXISTING CURB
- W — W — EXISTING WATER MAIN
- OH — EXISTING ELECTRICAL LINE
- S — S — EXISTING SANITARY LINE
- G — G — EXISTING GAS LINE
- PROPOSED STORM SEWER
- FM — PROPOSED FORCEMAIN
- S — S — PROPOSED SANITARY SEWER
- W — W — PROPOSED WATER LINE
- E — E — PROPOSED ELECTRICAL LINE
- T — T — PROPOSED TELEPHONE LINE
- C.O. PROPOSED SANITARY SEWER CLEANOUT
- PROPOSED STORM DRAINAGE INLET
- PROPOSED MANHOLE
- PROPOSED HYDRANT



GRAPHIC SCALE

15 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

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MARYLAND LICENSE No: 29313
NEW JERSEY LICENSE No. 24GE04520400
VIRGINIA LICENSE No: 0402 045725
FLORIDA LICENSE No. 75184
NEW YORK LICENSE No: 093667-1

PROJECT LOCATION

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1039 SPROUL ROAD
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PENNSYLVANIA

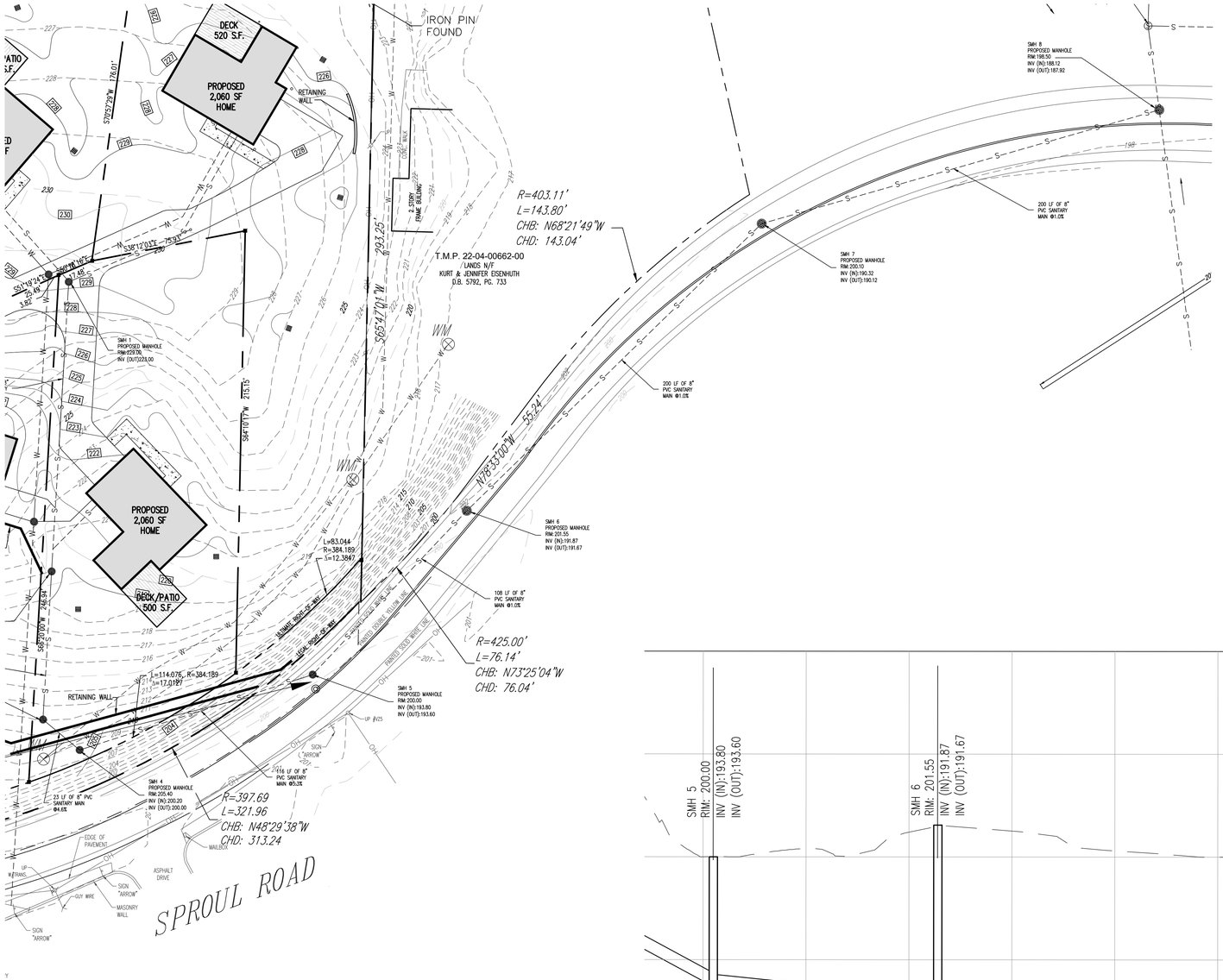
TITLE

SANITARY SEWER PLAN & PROFILE STA. 1+00 TO 4+00

PROJ. #	23-0220	DATE	1-2-2025
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REVISION 3





GRAPHIC SCALE

15 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

LEGEND

- PROPERTY BOUNDARY
- BUILDING SETBACK LINE
- EXISTING UTILITY POLE
- OH — EXISTING OVERHEAD WIRE
- EXISTING CURB
- W — W — EXISTING WATER MAIN
- OHE — EXISTING ELECTRICAL LINE
- S — S — EXISTING SANITARY LINE
- G — G — EXISTING GAS LINE
- PROPOSED STORM SEWER
- FM — PROPOSED FORCEMAIN
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- E — E — PROPOSED ELECTRICAL LINE
- T — T — PROPOSED TELEPHONE LINE
- C.O. PROPOSED SANITARY SEWER CLEANOUT
- PROPOSED STORM DRAINAGE INLET
- PROPOSED MANHOLE
- PROPOSED HYDRANT

SANITARY PROFILE
STATION 3+50.00 TO 8+65.41

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PROJECT LOCATION

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1039 SPROUL ROAD
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DELAWARE COUNTY
PENNSYLVANIA

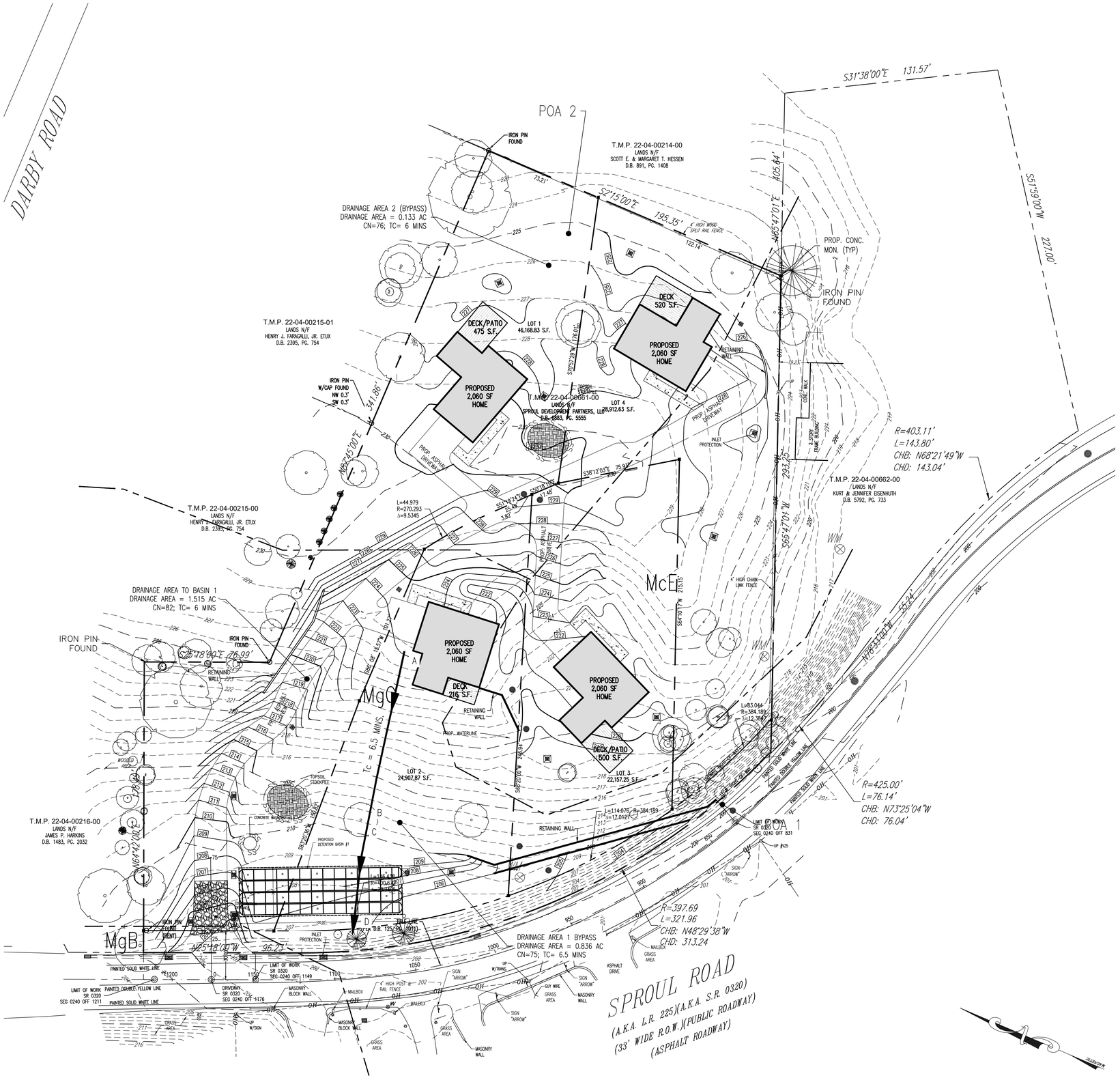
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SANITARY SEWER PLAN & PROFILE STA. 4+00 TO 9+77

PROJ. #	23-0220	DATE	1-2-2025
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REVISION 3



EROSION AND SEDIMENT CONTROL NOTES:

1. ALL EARTH DISTURBANCES, INCLUDING CLEARING AND GRUBBING AS WELL AS CUTS AND FILLS SHALL BE DONE IN ACCORDANCE WITH THE APPROVED E&S PLAN. A COPY OF THE APPROVED DRAWINGS MUST BE AVAILABLE AT THE PROJECT SITE AT ALL TIMES. ANY CHANGES SHALL BE APPROVED PRIOR TO IMPLEMENTATION. THE REVIEWING AGENCY MAY REQUIRE A WRITTEN SUBMITTAL OF THOSE CHANGES FOR REVIEW AND APPROVAL AT ITS DISCRETION.
2. AT LEAST 7 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, INCLUDING CLEARING AND GRUBBING, THE OWNER AND/OR OPERATOR SHALL INVITE ALL CONTRACTORS, THE LANDOWNER, APPROPRIATE MUNICIPAL OFFICIALS AND THE E&S PLAN PREPARER FOR A PRE-CONSTRUCTION MEETING.
3. AT LEAST 3 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, OR EXPANDING INTO AN AREA PREVIOUSLY UNMARKED, THE PENNSYLVANIA ONE CALL SYSTEM INC. SHALL BE NOTIFIED AT 1-800-242-1776 FOR THE LOCATION OF EXISTING UNDERGROUND UTILITIES.
4. AREAS TO BE FILLED ARE TO BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL.
5. CLEARING, GRUBBING, AND TOPSOIL STRIPPING SHALL BE LIMITED TO THOSE AREAS DESCRIBED IN EACH STAGE OF THE CONSTRUCTION SEQUENCE. GENERAL SITE CLEARING, GRUBBING AND TOPSOIL STRIPPING MAY NOT COMMENCE IN ANY STAGE OR PHASE OF THE PROJECT UNTIL THE E&S BMPS SPECIFIED BY THE BMP SEQUENCE FOR THAT STAGE OR PHASE HAVE BEEN INSTALLED AND ARE FUNCTIONING AS DESCRIBED IN THIS E&S PLAN.
6. AT NO TIME SHALL CONSTRUCTION VEHICLES BE ALLOWED TO ENTER AREAS OUTSIDE THE LIMIT OF DISTURBANCE BOUNDARIES SHOWN ON THE PLAN MAPS. THESE AREAS MUST BE CLEARLY MARKED AND FENCED OFF BEFORE CLEARING AND GRUBBING OPERATIONS BEGIN.
7. TOPSOIL REQUIRED FOR THE ESTABLISHMENT OF VEGETATION SHALL BE STOCKPILED AT THE LOCATION(S) SHOWN ON THE PLAN MAPS(S) IN THE AMOUNT NECESSARY TO COMPLETE THE FINISH GRADING OF ALL EXPOSED AREAS THAT ARE TO BE STABILIZED BY VEGETATION. EACH STOCKPILE SHALL BE PROTECTED IN THE MANNER SHOWN ON THE PLAN DRAWINGS. STOCKPILE HEIGHTS SHALL NOT EXCEED 35 FEET. STOCKPILE SLOPES SHALL BE 2H:1V OR FLATTER.
8. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO MINIMIZE THE POTENTIAL FOR EROSION AND SEDIMENT POLLUTION AND NOTIFY THE APPROVAL AGENCY.
9. ALL BUILDING MATERIALS AND WASTES SHALL BE REMOVED FROM THE SITE AND RECYCLED OR DISPOSED OF IN ACCORDANCE WITH THE DEPARTMENT'S SOLID WASTE MANAGEMENT REGULATIONS AT 25 PA. CODE 260.1 ET SEQ., 271.1, AND 287.1 ET. SEQ. NO BUILDING MATERIALS OR WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURNED, BURIED, DUMPED, OR DISCHARGED AT THE SITE.
10. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ANY MATERIAL BROUGHT ON SITE IS CLEAN FILL. FORM FP-001 MUST BE RETAINED BY THE PROPERTY OWNER FOR ANY FILL MATERIAL AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE BUT QUALIFYING AS CLEAN FILL DUE TO ANALYTICAL TESTING.
11. ALL PUMPING OF WATER FROM ANY WORK AREA SHALL BE DONE ACCORDING TO THE PROCEDURE DESCRIBED IN THIS PLAN, OVER UNDISTURBED VEGETATED AREAS.
12. UNTIL THE SITE IS STABILIZED, ALL EROSION AND SEDIMENT BMPS SHALL BE MAINTAINED PROPERLY. MAINTENANCE SHALL INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENT BMPS AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, REGRADING, RESEEDING, REMULCHING AND RENETTING MUST BE PERFORMED IMMEDIATELY. IF THE E&S BMPS FAIL TO PERFORM AS EXPECTED, REPLACEMENT BMPS, OR MODIFICATIONS OF THOSE INSTALLED WILL BE REQUIRED.
13. A LOG SHOWING DATES THAT E&S BMPS WERE INSPECTED AS WELL AS ANY DEFICIENCIES FOUND AND THE DATE THEY WERE CORRECTED SHALL BE MAINTAINED ON THE SITE AND BE MADE AVAILABLE TO REGULATORY AGENCY OFFICIALS AT THE TIME OF INSPECTION.
14. SEDIMENT TRACKED ONTO ANY PUBLIC ROADWAY OR SIDEWALK SHALL BE IMMEDIATELY RETURNED TO THE CONSTRUCTION SITE AND DISPOSED OF IN THE MANNER DESCRIBED IN THIS PLAN. IN NO CASE SHALL THE SEDIMENT BE WASHED, SHOVELED, OR SWEPT INTO ANY ROADSIDE DITCH, STORM SEWER, OR SURFACE WATER.
15. ALL SEDIMENT REMOVED FROM BMPS SHALL BE DISPOSED OF IN THE MANNER DESCRIBED ON THE PLAN DRAWINGS.
16. AREAS WHICH ARE TO BE TOPSOILED SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 3 TO 5 INCHES -- 6 TO 12 INCHES ON COMPACTED SOILS -- PRIOR TO PLACEMENT OF TOPSOIL. AREAS TO BE VEGETATED SHALL HAVE A MINIMUM 4 INCHES OF TOPSOIL IN PLACE PRIOR TO SEEDING AND MULCHING. FILL OUTSLOPES SHALL HAVE A MINIMUM OF 2 INCHES OF TOPSOIL.
17. ALL FILLS SHALL BE COMPACTED AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED PROBLEMS. FILL INTENDED TO SUPPORT BUILDINGS, STRUCTURES AND CONDUITS, ETC. SHALL BE COMPACTED IN ACCORDANCE WITH LOCAL REQUIREMENTS OR CODES
18. ALL EARTHEN FILLS SHALL BE PLACED IN COMPACTED LAYERS NOT TO EXCEED 9 INCHES IN THICKNESS.
19. FILL MATERIALS SHALL BE FREE OF FROZEN PARTICLES, BRUSH, ROOTS, SOD, OR OTHER FOREIGN OR OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY FILLS.
20. FROZEN MATERIALS OR SOFT, MUCKY, OR HIGHLY COMPRESSIBLE MATERIALS SHALL NOT BE INCORPORATED INTO FILLS.
21. FILL SHALL NOT BE PLACED ON SATURATED OR FROZEN SURFACES.
22. SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED IN ACCORDANCE WITH THE STANDARD AND SPECIFICATION FOR SUBSURFACE DRAIN OR OTHER APPROVED METHOD.
23. ALL GRADED AREAS SHALL BE PERMANENTLY STABILIZED IMMEDIATELY UPON REACHING FINISHED GRADE. CUT SLOPES IN COMPETENT BEDROCK AND ROCK FILLS NEED NOT BE VEGETATED. SEEDED AREAS WITHIN 50 FEET OF A SURFACE WATER, OR AS OTHERWISE SHOWN ON THE PLAN DRAWINGS, SHALL BE BLANKETED ACCORDING TO THE STANDARDS OF THIS PLAN.
24. IMMEDIATELY AFTER EARTH DISTURBANCE ACTIVITIES CEASE IN ANY AREA OR SUBAREA OF THE PROJECT, THE OPERATOR SHALL STABILIZE ALL DISTURBED AREAS. DURING NON-GERMINATING MONTHS, MULCH OR PROTECTIVE BLANKETING SHALL BE APPLIED AS DESCRIBED IN THE PLAN. AREAS NOT AT FINISHED GRADE, WHICH WILL BE REACTIVATED WITHIN 1 YEAR, MAY BE STABILIZED IN ACCORDANCE WITH THE TEMPORARY STABILIZATION SPECIFICATIONS. THOSE AREAS WHICH WILL NOT BE REACTIVATED WITHIN 1 YEAR SHALL BE STABILIZED IN ACCORDANCE WITH THE PERMANENT STABILIZATION SPECIFICATIONS.
25. PERMANENT STABILIZATION IS DEFINED AS A MINIMUM UNIFORM, PERENNIAL 70% VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED EROSION. CUT AND FILL SLOPES SHALL BE CAPABLE OF RESISTING FAILURE DUE TO SLUMPING, SLIDING, OR OTHER MOVEMENTS.
26. E&S BMPS SHALL REMAIN FUNCTIONAL AS SUCH UNTIL ALL AREAS TRIBUTARY TO THEM ARE PERMANENTLY STABILIZED OR UNTIL THEY ARE REPLACED BY ANOTHER BMP APPROVED BY THE REGULATORY AGENCY.
27. UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, THE OWNER AND/OR OPERATOR SHALL CONTACT THE TOWNSHIP REPRESENTATIVE FOR AN INSPECTION PRIOR TO REMOVAL/CONVERSION OF THE E&S BMPS.
28. AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, TEMPORARY EROSION AND SEDIMENT BMPS MUST BE REMOVED OR CONVERTED TO PERMANENT POST CONSTRUCTION STORMWATER MANAGEMENT BMPS. AREAS DISTURBED DURING REMOVAL OR CONVERSION OF THE BMPS SHALL BE STABILIZED IMMEDIATELY. IN ORDER TO ENSURE RAPID REVEGETATION OF DISTURBED AREAS, SUCH REMOVAL/CONVERSIONS ARE TO BE DONE ONLY DURING THE GERMINATING SEASON.
29. UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, THE OWNER AND/OR OPERATOR SHALL CONTACT THE APPROVING AGENCY TO SCHEDULE A FINAL INSPECTION.
30. FAILURE TO CORRECTLY INSTALL E&S BMPS, FAILURE TO PREVENT SEDIMENT-LADEN RUNOFF FROM LEAVING THE CONSTRUCTION SITE, OR FAILURE TO TAKE IMMEDIATE CORRECTIVE ACTION TO RESOLVE FAILURE OF E&S BMPS MAY RESULT IN ADMINISTRATIVE, CIVIL, AND/OR CRIMINAL PENALTIES BEING INSTITUTED BY THE DEPARTMENT AS DEFINED IN SECTION 602 OF THE PENNSYLVANIA CLEAN STREAMS LAW. THE CLEAN STREAMS LAW PROVIDES FOR UP TO $10,000 PER DAY IN CIVIL PENALTIES, UP TO $10,000 IN SUMMARY CRIMINAL PENALTIES, AND UP TO $25,000 IN MISDEMEANOR CRIMINAL PENALTIES FOR EACH VIOLATION.
31. CONTRACTOR SHALL COORDINATE ANY CHANGE OF WASHOUT LOCATION WITH TOWNSHIP.
32. SEDIMENT FROM E&S BMP SHALL BE PLACED IN LANDSCAPED AREA THAT ARE NOT BMP'S AND STABILIZED WITH SEED AND MULCH IMMEDIATELY. IF PLACED ON SLOPES GREATER THAN 3:1, APPLY EROSION CONTROL MATTING OR HYDRO SEED.

SOILS LEGEND AND TABLE OF LIMITATIONS & RESOLUTIONS
BASED ON U.S.D.A. - N.R.C.S. SOILS SURVEY (WEBSOILSURVEY.NRCS.USDA.GOV) 10/7/2024
LIMITATIONS FOR SITE DEVELOPMENT

SYMBOL	NAME	SLOPE	CAPABILITY UNIT	LIMITATIONS FOR SITE DEVELOPMENT				
				DEPTH TO SEASONAL HIGH WATER TABLE	DEPTH TO BEDROCK	HAZARD OF EROSION	PERMEABILITY	HYDROLOGIC SOIL GROUP
GjB	GLENELG CHANNERY LOAM	3-8%	3e	>80 INCHES	40-51 INCHES	MEDIUM	MODERATELY LOW	C
McE	MANOR CHANNERY LOAM	25-35%	6e	>80 INCHES	>80 INCHES	MEDIUM	MODERATELY LOW	C
MgB	MANOR LOAM	3-8%	6e	>80 INCHES	>80 INCHES	MEDIUM	MODERATELY LOW	C
MgC	MANOR LOAM	8-15%	6e	>80 INCHES	>80 INCHES	MEDIUM	MODERATELY LOW	C

E&S CONTROL PLAN DESIGN NOTES

THE E&S PLAN HAS BEEN DESIGNED TO ACHIEVE THE FOLLOWING;
1. MINIMIZE THE EXTENT AND THE DURATION OF EARTH DISTURBANCE
2. MAXIMIZE THE PROTECTION OF EXISTING DRAINAGE FEATURES AND VEGETATION
3. MINIMIZE SOIL COMPACTION
4. UTILIZE CONTROL MEASURES THAT PREVENT OR MINIMIZE THE GENERATION OF INCREASED STORMWATER RUNOFF

LEGEND

- PROPERTY BOUNDARY
- EXISTING OVERHEAD WIRE
- EXISTING CONTOUR
- EXISTING SPOT ELEVATION
- EXISTING TREE TO REMAIN
- SOIL BOUNDARY /IDENTIFIER
- PROPOSED CONTOUR
- PROPOSED STORM PIPE
- PROPOSED CONCRETE
- PROPOSED ASPHALT
- CONSTRUCTION ENTRANCE
- TOPSOIL STOCKPILE
- EROSION CONTROL MATTING
- INLET PROTECTION
- TEMPORARY ORANGE CONSTRUCTION FENCE
- COMPOST FILTER SOCK
- TREE PROTECTION FENCE
- LIMIT OF DISTURBANCE LINE

CLIENT DATA

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PENNSYLVANIA

TITLE

EROSION & SEDIMENTATION CONTROL PLAN

PROJ. #	23-0220	DATE	1-2-2025
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SHEET 10 OF 16

REVISION 3

TEMPORARY STABILIZATION & PERMANENT STABILIZATION

1. MULCH WITH MULCH CONTROL NETTING OR EROSION CONTROL BLANKETS MUST BE INSTALLED ON ALL SLOPES 3:1 AND STEEPER.
2. STRAW MULCH SHALL BE APPLIED IN LONG STRANDS, NOT CHOPPED OR FINELY BROKEN.
3. UNTIL THE SITE IS STABILIZED, ALL EROSION AND SEDIMENT BMPS MUST BE MAINTAINED PROPERLY. MAINTENANCE MUST INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENT CONTROL BMPS AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, REGARDING, RESEEDING, REMULCHING, AND RENETTING MUST BE PERFORMED IMMEDIATELY. IF EROSION AND SEDIMENT CONTROL BMPS FAIL TO PERFORM AS EXPECTED, REPLACEMENT BMPS, OR MODIFICATIONS OF THOSE INSTALLED WILL BE REQUIRED. E&SPCPM P168
4. SEDIMENT REMOVED FROM BMPS SHALL BE DISPOSED OF IN LANDSCAPED AREAS OUTSIDE OF STEEP SLOPES, WETLNADS, FLOODPLAINS OR DRAINAGE SWALES AND IMMEDIATELY STABILIZED, OR PLACED IN TOPSOIL STOCKPILES.

TEMPORARY SEEDING SPECIFICATIONS

ALL DISTURBED EARTH SURFACES OR TOPSOIL SHALL BE STABILIZED AND SEEDED WITH A CONTRACTOR'S MIX IN ACCORDANCE WITH PADEP EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL MARCH 2012, CURRENT EDITION, AS FOLLOWS:

MIXTURE 1– ANNUAL RYEGRASS, SPREAD AT A SEEDING RATE OF 10 LB. PER 1,000 SQ. YDS.
MIXTURE 2– PERENNIAL RYEGRASS SPREAD AT A SEEDING RATE OF 15 LBS PER 1,000 SQ. YDS.

OTHER MIXTURES PER TABLE 11.4 MAY BE USED WITH CONSERVATION DISTRICT APPROVAL

LIME AND FERTILIZER AND MULCH SPECIFICATIONS
TEMPORARY SEEDING –
- LIME 2000 LB PER ACRE
- FERTILIZER 10–10–10 500 LB PER ACRE
- MULCH, HAY OR STRAW – 3 TONS PER ACRE (AFTER TEMPORARY SEEDING HAS BEEN PERFORMED)

PERMANENT SEEDING SPECIFICATIONS

IMMEDIATELY UPON FINAL GRADING OF ANY PHASE OR SECTION, TOPSOIL SHALL BE BROUGHT BACK OVER THE DISTURBED AREAS WHICH ARE NOT TO BE PAVED OR BUILT UPON. THIS TOPSOIL SHALL BE SPREAD TO A SMOOTH FINISH GRADE WITH A MINIMUM DEPTH OF SIX (6) INCHES. THE TOPSOIL SHALL THEN BE:

A. RAKED FREE OF STONES;
B. LIMED AND FERTILIZED AS NECESSARY;
C. PLANTED WITH GRASS OR OTHER SPECIFIED SEED, AND
D. MULCHED TO PROTECT THE SEED FROM DRYNESS AND EROSION. (STRAW OR HAY AT 1240 LB. PER 1000 SQ. YDS.)

PERMANENT SEEDING SHALL BE UNDERTAKEN IN ACCORDANCE WITH PADEP EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL MARCH 2012, CURRENT EDITION, AS FOLLOWS:

MIXTURE 2– PRIMARILY KENTUCKY BLUEGRASS, SPREAD AT A SEEDING RATE OF 25 LB. PER 1000 SQ. YDS.
MIXTURE 6– CROWNVETCH AND ANNUAL RYEGRASS (45% – 55%) SPREAD AT A RATE OF 20 LB. PER 1000 SQ. YDS. ON ALL SLOPES 2 HORIZONTAL TO 1 VERTICAL OR STEEPER.

OTHER MIXTURES PER TABLE 11.4 MAY BE USED WITH CONSERVATION DISTRICT APPROVAL

NOTE: SLURRY APPLICATIONS MUST INCLUDE A STRAW MULCH BINDER AT A RATE OF 3.0 TONS PER ACRE.
LIME AND FERTILIZER SPECIFICATIONS
PERMANENT SEEDING –
–PULVERIZED AGR. LIMESTONE– 410 LBS. PER 1,000 S.Y.
–10–10–20 ANALYSIS COMMERCIAL– 140 LBS. PER 1,000 S.Y.
MULCHED TO PROTECT THE SEED FROM DRYNESS AND EROSION. (STRAW OR HAY AT 1240 LB. PER 1000 SQ. YDS.)

SEQUENCE OF CONSTRUCTION

NOTES:

A. CONTRACTOR SHALL COORDINATE A PRE–CONSTRUCTION MEETING WITH RADNOR TOWNSHIP, PROPERTY OWNER AND/OR DEVELOPMENT REPRESENTATIVE, DESIGN ENGINEER, AND CONSTRUCTION REVIEW PROFESSIONALS.

B. THE CONTRACTOR IS ADVISED TO FULLY REVIEW THE SEQUENCE OF CONSTRUCTION AND ENSURE PROPER SEQUENCING CAN BE MAINTAINED WITH THE ANTICIPATED CONTRACTOR WORK METHODS. SHOULD THE CONTRACTOR FEEL THAT MODIFICATIONS ARE DESIRED, HE SHALL PROVIDE THE MODIFIED SEQUENCE IN WRITING FOR APPROVAL.

C. TO PREVENT SOIL COMPACTION, CONTRACTOR TO ENSURE THAT CONSTRUCTION EQUIPMENT DOES NOT TRAVEL OVER THE AREAS OF THE PROPOSED INFILTRATION BED. ORANGE CONSTRUCTION FENCING SHALL BE INSTALLED AROUND THE AREA OF THE INFILTRATION BASINS FOR BOTH LOTS 1 AND 2 TO PREVENT CONSTRUCTION VEHICLES FROM COMPACTING THE AREA.

1. INITIATE THE START OF CONSTRUCTION BY INSTALLING TREE PROTECTION FENCING, TEMPORARY CONSTRUCTION FENCING, SILT SOXX, AND CONSTRUCTION ENTRANCE.
2. CONTRACTOR SHALL COMMENCE BUILDING DEMOLITION, CLEARING THE VEGETATION FOR THE SITE, AND STRIPPING THE TOPSOIL. CONTRACTOR TO STOCKPILE TOPSOIL AND INSTALL THE ASSOCIATED SILT SOXX. CONTRACTOR TO STABILIZE THE STOCKPILE WITH TEMPORARY SEEDING AS DIRECTED IN FERTILIZATION OF ALL BMPS SHALL BE COMPLETED BEFORE ANY MASS GRADING TO THE SITE OCCURS.
3. CONTRACTOR CAN BEGIN GRADING FOR THE BUILDING CONSTRUCTION. CONTINUE GRADING THE SITE TO NEAR FINAL GRADE.
4. UPON COMPLETION OF THE FOUNDATION, CONSTRUCTION OF THE BUILDING CAN COMMENCE AND CONTINUE TO COMPLETION.
5. INSTALL DRAINAGE PIPE OUTLINED ON THE PLAN. ALL PIPING SHALL BE INSTALLED FROM THE LOWEST INVERT ELEVATION AND PROGRESS UPSLOPE. INSTALL INLET PROTECTION IMMEDIATELY ON ALL INLETS. ADS FLEXSTORM INLET FILTERS SHOULD BE ADDED TO THE YARD DRAINS. INFILTRATION BASINS SHALL BE INSTALLED PRIOR TO THE COMPLETION OF THE ROOF LEADERS. SEE SPECIFIC SEQUENCE OF CONSTRUCTION FOR THE INFILTRATION BASIN INSTALLATION. ONCE THE ROOF LEADERS ARE ADDED TO THE STRUCTURES, THEY SHALL DISCHARGE DIRECTLY TO THE PIPING/DETENTION BED. SEE DETAIL FOR INFILTRATION BED CONSTRUCTION. ALL INLETS SHALL BE COVERED WITH PLYWOOD UNTIL THE SITE REACHES FINAL STABILIZATION. SEDIMENTATION IS NOT TO ENTER THE DETENTION BASIN.
6. INSTALL WATER, SEWER, ELECTRIC AND GAS UTILITIES. INSTALLATIONS SHALL BE COMPLETED FROM THE LOWEST INVERT UPSLOPE.
7. FINISH GRADING SITE TO SUBGRADE. AT THIS POINT ALL RUNOFF SHOULD BE DIRECTED TO INLETS.
8. UPON COMPLETION OF THE BUILDING, THE CONTRACTOR WILL INSTALL THE REMAINING DRIVEWAY, CONCRETE AREAS, AND RE–DRESS THE EXISTING DRIVEWAY.
9. FINAL SEED DISTURBED AREAS.
10. ONCE THE SITE HAS BEEN STABILIZED AND APPROVED BY THE TOWNSHIP, EROSION AND SEDIMENT CONTROLS CAN BE REMOVED. AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS A MINIMUM UNIFORM 70% PERENNIAL VEGETATIVE COVER OR OTHER PERMANENT NON–VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED SURFACE EROSION AND SUBSURFACE CHARACTERISTICS SUFFICIENT TO RESIST SLIDING AND OTHER MOVEMENTS, ETC.
11. UPON ACHIEVEMENT OF FINAL STABILIZATION, CONTRACTOR SHALL COORDINATE A FINAL INSPECTION WITH THE APPROVING AGENCY.

SUBSURFACE DETENTION BASIN CONSTRUCTION SEQUENCE

1. INSTALL AND MAINTAIN ADEQUATE EROSION AND SEDIMENT CONTROL MEASURES (AS PER THE PA E&SPC PROGRAM MANUAL) DURING CONSTRUCTION. UNFILTERED RUNOFF SHALL NOT BE PERMITTED TO ENTER THE BASIN UNTIL SUCH TIME AS THE ENTIRE CONTRIBUTORY DRAINAGE AREA HAS ACHIEVED FINAL STABILIZATION PER DEP STANDARDS.
2. EXCAVATE BASIN. INSTALL IMPERMEABLE LINER IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION STANDARDS AND SPECIFICATIONS. LINER AND BASE AGGREGATE SHOULD BE PLACED IMMEDIATELY AFTER APPROVAL OF SUBGRADE PREPARATION AND INSTALLATION OF STRUCTURES.
3. PLACE GEOTEXTILE FABRIC ON BASE AGGREGATE, THEN INSTALL STORMWATER CHAMBER STORAGE SYSTEM. ENSURE ENTIRE CHAMBER SYSTEM IS WRAPPED BY GEOTEXTILE PRIOR TO PLACING BACKFILL.
4. INSTALL DOWNSTREAM CONTROL STRUCTURES, PIPING, AND ALL OTHER NECESSARY STORMWATER STRUCTURES INCIDENTAL TO THE BASIN. ALL PIPE, STRUCTURE AND BASIN JOINTS SHALL BE WATERTIGHT.
5. UPON APPROVAL OF THE BASIN INSTALLATION, THE DETENTION SYSTEM CAN BE BACKFILLED. CLEAN–WASHED, UNIFORMLY GRADED AGGREGATE BACKFILL SHOULD BE PLACED, TO THE WIDTH AND DEPTH INDICATED, IN MAXIMUM 8–INCH LIFTS. EACH LAYER SHOULD BE LIGHTLY COMPACTED.
6. APPROVED BACKFILL SHOULD BE PLACED OVER BASIN IN MAXIMUM 6–INCH LIFTS TO ACHIEVE FINAL SITE GRADES.
7. DO NOT REMOVE INLET PROTECTION OR OTHER EROSION AND SEDIMENT CONTROL MEASURES UNTIL SITE IS FULLY STABILIZED.

PCSM BMP OPERATIONS AND MAINTENANCE REQUIREMENTS

BMP TYPE: SUBSURFACE INFILTRATION BASIN

APPLIED AREAS: THIS BMP APPLIES TO SUBSURFACE INFILTRATION BASINS.

EQUIPMENT: VISUAL INSPECTION, VAC TRUCK AS NEEDED

RECORD KEEPING: THE HOMEOWNER SHOULD KEEP LOGS OF WHEN THE FACILITY IS CLEANED AND FILE THE RECEIPTS OR LOGS FOR THEIR RECORDS SHOULD THE MUNICIPALITY OR PADEP REQUIRE DOCUMENTATION OF THE BMP IMPLEMENTATION.

RESPONSIBLE PARTY: THE OWNER, OR AUTHORIZED OWNER REPRESENTATIVE, IS RESPONSIBLE FOR MAINTENANCE AND INSPECTION OF BMP'S ONCE CONSTRUCTION IS COMPLETED.

VISUAL INSPECTION
THE SUBSURFACE BASINS AND LEVEL SPREADER SHALL BE INSPECTED AT THE END OF THE WINTER SEASON, AT LEAST ONCE EVERY SIX MONTHS, AND 72 HOURS AFTER A RAINFALL EVENT GENERATING MORE THAN 0.8–INCHES TO ENSURE THAT THE BASIN HAS DRAINED. SHOULD THE VISUAL INSPECTION REVEAL THAT THERE IS PONDED WATER, OR THERE HAVE BEEN CONTINUOUS RAIN EVENTS, ALLOW AN ADDITIONAL 24 HOURS FOR DRAWDOWN.
THE BASIN SHALL BE INSPECTED AT THE OUTLET STRUCTURE, MAINTENANCE RISERS/INSPECTION PORTS AND UNDERDRAIN CLEANOUTS. THE BASIN OUTFALL LEVEL SPREADER SHALL BE INSPECTED FOR EROSION AT THE DISCHARGE POINT OR ANY AREA DOWNSTREAM OF THE DISCHARGE.
LOG BOOK ENTRIES SHALL NOTE THE DATE, TIME, APPROXIMATE NUMBERS OF DAYS AFTER A RAINFALL EVENT, AND NAME OF PERSON INSPECTING THE FACILITY. INSPECTIONS DO NOT NEED TO BE COMPLETED BY A PROFESSIONAL AND CAN BE COMPLETED BY ON–SITE STAFF.

BASIN MAINTENANCE
OWNER SHALL FIELD VERIFY DRAW DOWN TIME AFTER EACH MAJOR STORM. SHOULD IT BE DETERMINED THAT THE BASIN IS NOT DRAINING PROPERLY, THEN THE BASIN SHALL BE DRAINED BY USE OF A PUMP AND THE BOTTOM CLEANED WITH A VACUUM TRUCK OR SIMILAR EQUIPMENT. IT IS IMPERATIVE THAT IF THIS OCCURS, THAT A MORE STRINGENT MAINTENANCE REGIME OCCUR IN THE UPSTREAM DRAINAGE AREAS AND BMP'S. IF THE BASIN CONTINUES TO NOT COMPLETELY DRAIN WITHIN 72 HOURS THE REMAINING WATER SHALL BE PUMPED TO A STABLE OUTFALL AND THE BASIN INSPECTED FOR SEDIMENT BUILD–UP. SEDIMENT BUILD–UP AND CLOGS SHALL BE REMOVED IMMEDIATELY. IF THE BASIN CONTINUES TO HOLD WATER FOR GREATER THAN 72 HOURS A PROFESSIONAL ENGINEER AND THE TOWNSHIP SHOULD BE CONSULTED FOR FURTHER INVESTIGATION AND REMEDIATION AS NECESSARY.

CLIENT DATA

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WWW.CORNERSTONENET.COM
Pocono Region 570-839-1770
Philadelphia Region 215-362-2600
Lehigh Valley Region 610-820-8200

REVISIONS

NO	BY	DESCRIPTION	DATE
1	EMR	REVISED EXISTING CONDITIONS PLAN	1/16/2025
2	EMR	REVISED PER PC COMMENTS	5/1/2025
3	EMR	REVISED PER ZONING HEARING BOARD	7/31/2025

PENNSYLVANIA
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925 Irwin Run Road
West Mifflin, Pennsylvania
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MARYLAND LICENSE No. 20513
NEW JERSEY LICENSE No. 24GE04520400
VIRGINIA LICENSE No. 0402 045725
FLORIDA LICENSE No. 75184
NEW YORK LICENSE No. 093607-1

PROJECT LOCATION

PRELIM/ FINAL RESIDENTIAL SUBDIVISION PLAN

1039 SPROUL ROAD
TOWNSHIP OF HAVERFORD
DELAWARE COUNTY
PENNSYLVANIA

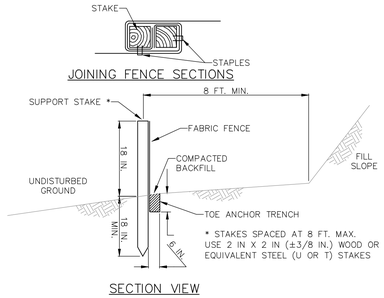
TITLE

EROSION AND SEDIMENTATION CONTROL NOTES

PROJ. #	23-0220	DATE	1-2-2025
CAD ID.	23-0220	DRN BY	SCC
SCALE	AS NOTED	CHK BY	JBA

SHEET 11 OF 16

REVISION 3

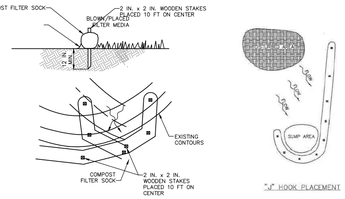


SECTION VIEW

NOTES:

– FABRIC SHALL HAVE THE MINIMUM PROPERTIES AS SHOWN IN TABLE 4.3 OF THE PA DEP EROSION CONTROL MANUAL.
– FABRIC WIDTH SHALL BE 30 IN. MINIMUM. STAKES SHALL BE HARDWOOD OR EQUIVALENT STEEL (U OR T) STAKES.
– SILT FENCE SHALL BE PLACED AT LEVEL EXISTING GRADE. BOTH ENDS OF THE FENCE SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT.
– SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH HALF THE ABOVE GROUND HEIGHT OF THE FENCE.
– ANY SECTION OF SILT FENCE WHICH HAS BEEN UNDERMINED OR TOPPED SHALL BE IMMEDIATELY REPLACED WITH A ROCK FILTER OUTLET (STANDARD CONSTRUCTION DETAIL # 4–6).
– FENCE SHALL BE REMOVED AND PROPERLY DISPOSED OF WHEN TRIBUTARY AREA IS PERMANENTLY STABILIZED.

STANDARD CONSTRUCTION DETAIL #4-7
STANDARD SILT FENCE (18" HIGH)



NOTES:

SOCK FABRIC SHALL MEET STANDARDS OF TABLE 4.1 OF THE PA DEP EROSION CONTROL MANUAL. COMPOST SHALL MEET THE STANDARDS OF TABLE 4.2 OF THE PA DEP EROSION CONTROL MANUAL.

COMPOST FILTER SOCK SHALL BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE BARRIER SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN BARRIER ALIGNMENT. MAXIMUM SLOPE LENGTH ABOVE ANY BARRIER SHALL NOT EXCEED THAT SPECIFIED FOR THE SIZE OF THE SOCK AND THE SLOPE OF ITS TRIBUTARY AREA.

TRAFFIC SHALL NOT BE PERMITTED TO CROSS COMPOST FILTER SOCKS.

UPON STABILIZATION OF THE AREA TRIBUTARY TO THE SOCK, STAKES SHALL BE REMOVED. THE SOCK MAY BE LEFT IN PLACE AND VEGETATED OR REMOVED. IN THE LATTER CASE, THE MESH SHALL BE CUT OPEN AND THE MULCH SPREAD AS A SOIL SUPPLEMENT.

MAINTENANCE ITEMS:

ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/2 THE ABOVE GROUND HEIGHT OF THE BARRIER AND DISPOSED IN THE MANNER DESCRIBED ELSEWHERE IN THE PLAN.

COMPOST FILTER SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.

BIODEGRADABLE COMPOST FILTER SOCKS SHALL BE REPLACED AFTER 6 MONTHS; PHOTODEGRADABLE SOCKS AFTER 1 YEAR. POLYPROPYLENE SOCKS SHALL BE REPLACED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

STANDARD CONSTRUCTION DETAIL #4-1
COMPOST FILTER SOCK

TABLE 4.1
Compost Sock Fabric Minimum Specifications

Material Type	3 mil HDPE	5 mil HDPE	5 mil HDPE	Multi-Filament Polypropylene (MFPP)	Heavy Duty Multi-Filament Polypropylene (HDMFPP)
Material Characteristics	Photo-degradable	Photo-degradable	Bio-degradable	Photo-degradable	Photo-degradable
Sock Diameters	12" 18"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"
Mesh Opening	3/8"	3/8"	3/8"	3/8"	1/8"
Tensile Strength		26 psi	26 psi	44 psi	202 psi
Ultraviolet Stability % Orginal Strength (ASTM G-155)	23% at 1000 hr.	23% at 1000 hr.		100% at 1000 hr.	100% at 1000 hr.
Minimum Functional Longevity	6 months	9 months	6 months	1 year	2 years
Two-ply systems					
Inner Containment Netting	HDPE biaxial net Continuously wound Fusion-welded junctures 3/4" X 3/4" Max. aperture size				
Outer Filtration Mesh	Composite Polypropylene Fabric (Woven layer and non-woven fleece mechanically fused via needle punch) 3/16" Max. aperture size				
Sock fabrics composed of burlap may be used on projects lasting 6 months or less.					

Filtrexx & JMD

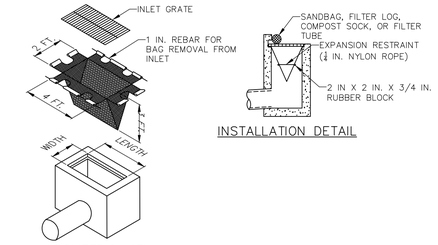
Compost should be a well decomposed, weed-free organic matter derived from agriculture, food, stump grindings, and yard or wood/bark organic matter sources. The compost should be aerobically composted. The compost should possess no objectionable odors and should be reasonably free (<1% by dry weight) of man-made foreign matter. The compost product should not resemble the raw material from which it was derived. Wood and bark chips, ground construction debris or reprocessed wood products are not acceptable as the organic component of the mix.

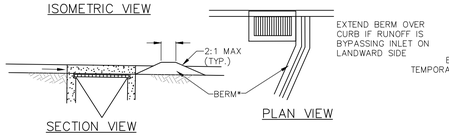
The physical parameters of the compost should comply with the standards in Table 4.2. The standards contained in the PennDOT Publication 408 are an acceptable alternative.

TABLE 4.2
Compost Standards

Organic Matter Content	80% - 100% (dry weight basis)
Organic Portion	Fibrous and elongated
pH	5.5 - 8.0
Moisture Content	35% - 55%
Particle Size	98% pass through 1" screen
Soluble Salt Concentration	5.0 dS/m (mmhos/cm) Maximum

Filtrexx





NOTES:

MAXIMUM DRAINAGE AREA = 1/2 ACRE.

INLET PROTECTION SHALL NOT BE REQUIRED FOR INLET TRIBUTARY TO SEDIMENT BASIN OR TRAP. BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS NOT WITHIN THE PUBLIC RIGHT–OF–WAY.

ROLLED EARTHEN BERM SHALL BE MAINTAINED UNTIL ROADWAY IS STONED. ROAD SUBBASE BERM SHALL BE MAINTAINED UNTIL ROADWAY IS PAVED. SIX INCH MINIMUM HEIGHT ASPHALT BERM SHALL BE MAINTAINED UNTIL ROADWAY SURFACE RECEIVES FINAL COAT. BERMS SHALL NOT BE INSTALLED IN THE PUBLIC RIGHT–OF–WAY.

AT A MINIMUM, THE FABRIC SHALL HAVE A MINIMUM GRAB TENSILE STRENGTH OF 120 LBS, A MINIMUM BURST STRENGTH OF 200 PSI, AND A MINIMUM TRAPEZOIDAL TEAR STRENGTH OF 50 LBS. FILTER BAGS SHALL BE CAPABLE OF TRAPPING ALL PARTICLES NOT PASSING A NO. 40 SIEVE.

INLET FILTER BAGS SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER EACH RUNOFF EVENT. BAGS SHALL BE EMPTIED AND RINSED OR REPLACED WHEN HALF FULL OR WHEN FLOW CAPACITY HAS BEEN REDUCED SO AS TO CAUSE FLOODING OR BYPASSING OF THE INLET. DAMAGED OR CLOGGED BAGS SHALL BE REPLACED. A SUPPLY SHALL BE MAINTAINED ON SITE FOR REPLACEMENT OF BAGS. ALL NEEDED REPAIRS SHALL BE INITIATED IMMEDIATELY AFTER THE INSPECTION. DISPOSE OF ACCUMULATED SEDIMENT AS WELL AS ALL USED BAGS ACCORDING TO THE PLAN NOTES.

DO NOT USE ON MAJOR PAVED ROADWAYS WHERE PONDING MAY CAUSE TRAFFIC HAZARDS.

* BERMS SHALL NOT BE PLACED WITHIN THE PUBLIC RIGHT–OF–WAY.

STANDARD CONSTRUCTION DETAIL #4-15
FILTER BAG INLET PROTECTION - TYPE C INLET

TEMPORARY STABILIZATION & PERMANENT STABILIZATION

1. MULCH WITH MULCH CONTROL NETTING OR EROSION CONTROL BLANKETS MUST BE INSTALLED ON ALL SLOPES 3:1 AND STEEPER.
2. STRAW MULCH SHALL BE APPLIED IN LONG STRANDS, NOT CHOPPED OR FINELY BROKEN.
3. UNTIL THE SITE IS STABILIZED, ALL EROSION AND SEDIMENT BMPS MUST BE MAINTAINED PROPERLY. MAINTENANCE MUST INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENT CONTROL BMPS AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, REGARDING, RESEEDING, REMULCHING, AND RENETTING MUST BE PERFORMED IMMEDIATELY. IF EROSION AND SEDIMENT CONTROL BMPS FAIL TO PERFORM AS EXPECTED, REPLACEMENT BMPS, OR MODIFICATIONS OF THOSE INSTALLED WILL BE REQUIRED. E&SPCPW P168
4. SEDIMENT REMOVED FROM BMPS SHALL BE DISPOSED OF IN LANDSCAPED AREAS OUTSIDE OF STEEP SLOPES, WETLNADS, FLOOPLAINS OR DRAINAGE SWALES AND IMMEDIATELY STABILIZED, OR PLACED IN TOPSOIL STOCKPILES.

TEMPORARY SEEDING SPECIFICATIONS

ALL DISTURBED EARTH SURFACES OR TOPSOIL SHALL BE STABILIZED AND SEEDED WITH A CONTRACTOR'S MIX IN ACCORDANCE WITH PADEP EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL MARCH 2012, CURRENT EDITION, AS FOLLOWS:

MIXTURE 1– ANNUAL RYEGRASS, SPREAD AT A SEEDING RATE OF 10 LB. PER 1,000 SQ. YDS.
MIXTURE 2– PERENNIAL RYEGRASS SPREAD AT A SEEDING RATE OF 15 LBS PER 1,000 SQ. YDS.

OTHER MIXTURES PER TABLE 11.4 MAY BE USED WITH CONSERVATION DISTRICT APPROVAL

LIME AND FERTILIZER AND MULCH SPECIFICATIONS
TEMPORARY SEEDING –
– LIME 2000 LB PER ACRE
– FERTILIZER 10–10–10 500 LB PER ACRE
– MULCH, HAY OR STRAW – 3 TONS PER ACRE (AFTER TEMPORARY SEEDING HAS BEEN PERFORMED)

PERMANENT SEEDING SPECIFICATIONS

IMMEDIATELY UPON FINAL GRADING OF ANY PHASE OR SECTION, TOPSOIL SHALL BE BROUGHT BACK OVER THE DISTURBED AREAS WHICH ARE NOT TO BE PAVED OR BUILT UPON. THIS TOPSOIL SHALL BE SPREAD TO A SMOOTH FINISH GRADE WITH A MINIMUM DEPTH OF SIX (6) INCHES. THE TOPSOIL SHALL THEN BE:

A. RAKED FREE OF STONES;
B. LIMED AND FERTILIZED AS NECESSARY;
C. PLANTED WITH GRASS OR OTHER SPECIFIED SEED, AND
D. MULCHED TO PROTECT THE SEED FROM DRYNESS AND EROSION. (STRAW OR HAY AT 1240 LB. PER 1000 SQ. YDS.)

PERMANENT SEEDING SHALL BE UNDERTAKEN IN ACCORDANCE WITH PADEP EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL MARCH 2012, CURRENT EDITION, AS FOLLOWS:

MIXTURE 2– PRIMARILY KENTUCKY BLUEGRASS, SPREAD AT A SEEDING RATE OF 25 LB. PER 1000 SQ. YDS.

OTHER MIXTURES PER TABLE 11.4 MAY BE USED WITH CONSERVATION DISTRICT APPROVAL

NOTE: SLURRY APPLICATIONS MUST INCLUDE A STRAW MULCH BINDER AT A RATE OF 3.0 TONS PER ACRE.

LIME AND FERTILIZER SPECIFICATIONS
PERMANENT SEEDING –

–PULVERIZED AGR. LIMESTONE– 410 LBS. PER 1,000 S.Y.
–10–10–20 ANALYSIS COMMERCIAL– 140 LBS. PER 1,000 S.Y.

MULCHED TO PROTECT THE SEED FROM DRYNESS AND EROSION. (STRAW OR HAY AT 1240 LB. PER 1000 SQ. YDS.)

PCSM BMP OPERATIONS AND MAINTENANCE REQUIREMENTS

BMP TYPE: SUBSURFACE BASIN

APPLIED AREAS: THIS BMP APPLIES TO SUBSURFACE BASIN

EQUIPMENT: VISUAL INSPECTION, VAC TRUCK AS NEEDED

RECORD KEEPING: THE SITE OPERATOR/MANAGER SHOULD KEEP LOGS OF WHEN THE FACILITY IS CLEANED AND FILE THE RECEIPTS OR LOGS FOR THEIR RECORDS SHOULD THE MUNICIPALITY REQUIRE DOCUMENTATION OF THE BMP IMPLEMENTATION.

RESPONSIBLE PARTY: THE OWNER, OR AUTHORIZED OWNER REPRESENTATIVE, IS RESPONSIBLE FOR MAINTENANCE AND INSPECTION OF BMP'S ONCE CONSTRUCTION IS COMPLETED.

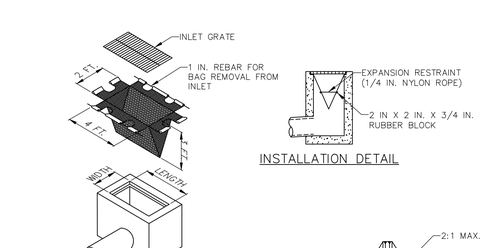
VISUAL INSPECTION

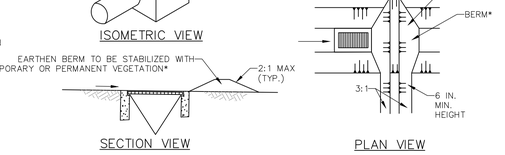
THE UNDERGROUND BASINS SHALL BE INSPECTED AT THE END OF THE WINTER SEASON, AT LEAST ONCE EVERY THREE MONTHS AND AFTER ANY MAJOR RAINFALL EVENT TO ENSURE THAT THE BED HAS DRAINED. SHOULD THE VISUAL INSPECTION REVEAL THAT THERE IS PONDED WATER, OR THERE HAVE BEEN CONTINUOUS RAIN EVENTS, ALLOW AN ADDITIONAL 24 HOURS FOR DRAWDOWN.

THE BED SHALL BE INSPECTED AT THE POP–UP EMITTER. LOG BOOK ENTRIES SHALL NOTE THE DATE, TIME, APPROXIMATE NUMBERS OF DAYS AFTER A RAINFALL EVENT, AND NAME OF PERSON INSPECTING THE FACILITY. INSPECTIONS DO NOT NEED TO BE COMPLETED BY A PROFESSIONAL AND CAN BE COMPLETED BY ON–SITE STAFF.

BED MAINTENANCE

OWNER SHALL FIELD VERIFY DRAW DOWN TIME AFTER EACH MAJOR STORM. SHOULD IT BE DETERMINED THAT THE BASIN IS NOT DRAINING PROPERLY, THEN THE BASIN SHALL BE DRAINED BY USE OF A VAC TRUCK AND THE BOTTOM CLEANED ACCORDINGLY. IT IS IMPERATIVE THAT IF THIS OCCURS, THAT A MORE STRINGENT MAINTENANCE REGIME OCCUR IN THE UPSTREAM DRAINAGE FACILITIES. SEDIMENT BUILD–UP AND CLOGS SHALL BE REMOVED IMMEDIATELY. IF THE BASIN CONTINUES TO HOLD WATER A PROFESSIONAL ENGINEER AND THE CONSERVATION DISTRICT SHOULD BE CONSULTED FOR FURTHER INVESTIGATION AND REMEDIATION AS NECESSARY.





NOTES:

MAXIMUM DRAINAGE AREA = 1/2 ACRE.

INLET PROTECTION SHALL NOT BE REQUIRED FOR INLET TRIBUTARY TO SEDIMENT BASIN OR TRAP. BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS NOT WITHIN THE PUBLIC RIGHT–OF–WAY.

ROLLED EARTHEN BERM IN ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS STONED. ROAD SUBBASE BERM ON ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS PAVED. EARTHEN BERM IN CHANNEL SHALL BE MAINTAINED UNTIL PERMANENT STABILIZATION IS COMPLETED OR REMAIN PERMANENTLY. BERMS SHALL NOT BE INSTALLED IN THE PUBLIC RIGHT–OF–WAY.

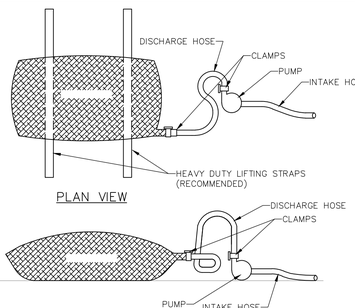
AT A MINIMUM, THE FABRIC SHALL HAVE A MINIMUM GRAB TENSILE STRENGTH OF 120 LBS., A MINIMUM BURST STRENGTH OF 200 PSI, AND A MINIMUM TRAPEZOIDAL TEAR STRENGTH OF 50 LBS. FILTER BAGS SHALL BE CAPABLE OF TRAPPING ALL PARTICLES NOT PASSING A NO. 40 SIEVE.

INLET FILTER BAGS SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER EACH RUNOFF EVENT. BAGS SHALL BE EMPTIED AND RINSED OR REPLACED WHEN HALF FULL OR WHEN FLOW CAPACITY HAS BEEN REDUCED SO AS TO CAUSE FLOODING OR BYPASSING OF THE INLET. DAMAGED OR CLOGGED BAGS SHALL BE REPLACED. A SUPPLY SHALL BE MAINTAINED ON SITE FOR REPLACEMENT OF BAGS. ALL NEEDED REPAIRS SHALL BE INITIATED IMMEDIATELY AFTER THE INSPECTION. DISPOSE ACCUMULATED SEDIMENT AS WELL AS ALL USED BAGS ACCORDING TO THE PLAN NOTES.

DO NOT USE ON MAJOR PAVED ROADWAYS WHERE PONDING MAY CAUSE TRAFFIC HAZARDS.

* BERMS SHALL NOT BE PLACED WITHIN THE PUBLIC RIGHT–OF–WAY.

STANDARD CONSTRUCTION DETAIL #4-16
FILTER BAG INLET PROTECTION - TYPE M INLET



NOTES:

LOW VOLUME FILTER BAGS SHALL BE MADE FROM NON–WOVEN GEOTEXTILE MATERIAL SEWN WITH HIGH STRENGTH, DOUBLE STITCHED "J" TYPE SEAMS. THEY SHALL BE CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS. HIGH VOLUME FILTER BAGS SHALL BE MADE FROM WOVEN GEOTEXTILES THAT MEET THE FOLLOWING STANDARDS:

PROPERTY	TEST METHOD	MINIMUM STANDARD
AVG. WIDE WIDTH STRENGTH	ASTM D–4884	60 LB/IN
GRAB TENSILE	ASTM D–4632	205 LB
PUNCTURE	ASTM D–4833	110 LB
MULLEN BURST	ASTM D–3786	350 PSI
UV RESISTANCE	ASTM D–4355	70%
AOS % RETAINED	ASTM D–4751	80 SIEVE

A SUITABLE MEANS OF ACCESSING THE BAG WITH MACHINERY REQUIRED FOR DISPOSAL PURPOSES SHALL BE PROVIDED. FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME 1/2 FULL OF SEDIMENT. SPARE BAGS SHALL BE KEPT AVAILABLE FOR REPLACEMENT OF THOSE THAT HAVE FAILED OR ARE FILLED. BAGS SHALL BE PLACED ON STRAPS TO FACILITATE REMOVAL UNLESS BAGS COME WITH LIFTING STRAPS ALREADY ATTACHED.

BAGS SHALL BE LOCATED IN WELL–VEGETATED (GRASSY) AREA, AND DISCHARGE ONTO STABLE, EROSION RESISTANT AREAS. WHERE THIS IS NOT POSSIBLE, A GEOTEXTILE UNDERLAYMENT AND FLOW PATH SHALL BE PROVIDED. BAGS MAY BE PLACED ON FILTER STONE TO INCREASE DISCHARGE CAPACITY. BAGS SHALL NOT BE PLACED ON SLOPES GREATER THAN 5%, FOR SLOPES EXCEEDING 5%, CLEAN ROCK OR OTHER NON–ERODIBLE AND NON–POLLUTING MATERIAL MAY BE PLACED UNDER THE BAG TO REDUCE SLOPE STEEPNESS.

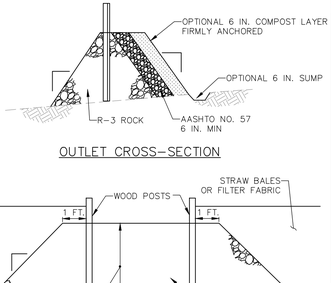
NO DOWNSLOPE SEDIMENT BARRIER IS REQUIRED FOR MOST INSTALLATIONS. COMPOST BERM OR COMPOST FILTER SOCK SHALL BE INSTALLED BELOW BAGS LOCATED IN HQ OR EV WATERSHEDS, WITHIN 50 FEET OF ANY RECEIVING SURFACE WATER OR WHERE GRASSY AREA IS NOT AVAILABLE.

THE PUMP DISCHARGE HOSE SHALL BE INSERTED INTO THE BAGS IN THE MANNER SPECIFIED BY THE MANUFACTURER AND SECURELY CLAMPED. A PIECE OF PVC PIPE IS RECOMMENDED FOR THIS PURPOSE.

THE PUMPING RATE SHALL BE NO GREATER THAN 750 GPM OR 1/2 THE MAXIMUM SPECIFIED BY THE MANUFACTURER, WHICHEVER IS LESS. PUMP INTAKES SHALL BE FLOATING AND SCREENED.

FILTER BAGS SHALL BE INSPECTED DAILY. IF ANY PROBLEM IS DETECTED, PUMPING SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL THE PROBLEM IS CORRECTED.

STANDARD CONSTRUCTION DETAIL #3-16
PUMPED WATER FILTER BAG

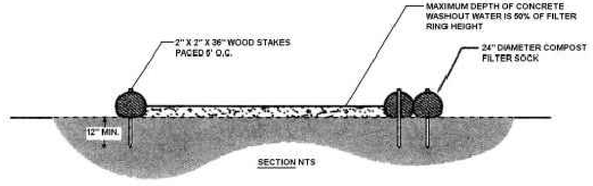


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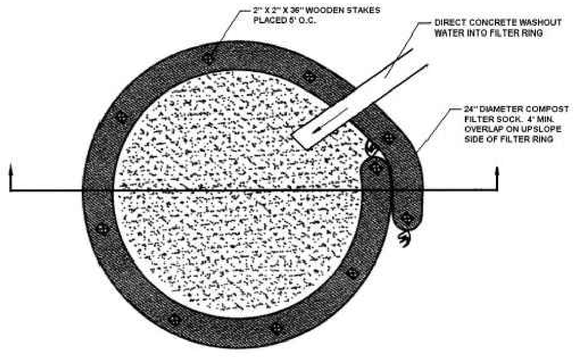
A ROCK FILTER OUTLET SHALL BE INSTALLED WHERE FAILURE OF A SILT FENCE OR STRAW BALE BARRIER HAS OCCURRED DUE TO CONCENTRATED FLOW.
ANCHORED COMPOST LAYER SHALL BE USED ON UPSLOPE FACE IN HQ AND EV WATERSHEDS.
SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH 1/3 THE HEIGHT OF THE OUTLET.

STANDARD CONSTRUCTION DETAIL #4-6
ROCK FILTER OUTLET

FIGURE 3.18
Typical Compost Sock Washout Installation



NOTES:
1. INSTALL ON FLAT GRADE FOR OPTIMUM PERFORMANCE
2. 18" DIAMETER FILTER SOCK MAY BE STACKED ONTO DOUBLE 24" DIAMETER SOCKS IN PYRAMIDAL CONFIGURATION FOR ADDED HEIGHT.

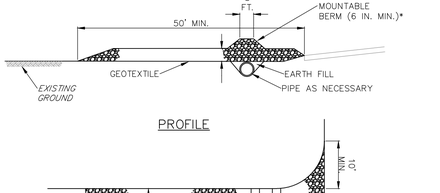


1. A SUITABLE IMPERVIOUS GEOMEMBRANE SHALL BE PLACED AT THE LOCATION OF THE WASHOUT PRIOR TO INSTALLING THE SOCKS.
2. ALL CONCRETE WASHOUT FACILITIES SHOULD BE INSPECTED DAILY. DAMAGED OR LEAKING WASHOUTS SHOULD BE DEACTIVATED AND REPAIRED OR REPLACED IMMEDIATELY.
3. ACCUMULATED MATERIALS HSOULD BE REMOVED WHEN THEY REACH 75% CAPACITY.
4. PLASTIC LINERS SHOULD BE REPLACED WITH EACH CLEANING OF THE WASHOUT FACILITY.

NOTES:
1. CONCRETE TRUCKS SHALL BE EQUIPPED WITH AT LEAST 50 GALLONS OF WATER TO CLEAN THE TRUCK AND HOPPER, PLUS AT LEAST 7 GALLONS OF WATER TO CLEAN CONCRETE CHUTE.

MAINTENANCE:
1. ALL CONCRETE WASHOUT FACILITIES SHALL BE INSPECTED DAILY. DAMAGED OR LEAKING WASHOUTS SHOULD BE DEACTIVATED AND REPAIRED OR REPLACED IMMEDIATELY.
2. ACCUMULATED MATERIALS SHOULD BE REMOVED WHEN THEY REACH 75% CAPACITY.
3. ANY PLASTIC LINERS USED SHOULD BE REPLACED WITH EACH CLEANING OF THE WASHOUT FACILITY.

CONCRETE WASHOUT DETAIL



NOTES:

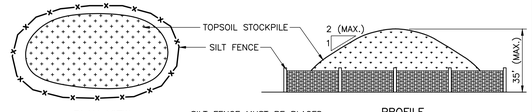
REMOVE TOPSOIL PRIOR TO INSTALLATION OF ROCK CONSTRUCTION ENTRANCE. EXTEND ROCK OVER FULL WIDTH OF ENTRANCE.

RUNOFF SHALL BE DIVERTED FROM ROADWAY TO A SUITABLE SEDIMENT REMOVAL BMP PRIOR TO ENTERING ROCK CONSTRUCTION ENTRANCE.

MOUNTABLE BERM SHALL BE INSTALLED WHEREVER OPTIONAL CULVERT PIPE IS USED AND PROPER PIPE COVER AS SPECIFIED BY MANUFACTURER IS NOT OTHERWISE PROVIDED. PIPE SHALL BE SIZED APPROPRIATELY FOR SIZE OF DITCH BEING CROSSED.

MAINTENANCE: ROCK CONSTRUCTION ENTRANCE THICKNESS SHALL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSIONS BY ADDING ROCK. A STOCKPILE SHALL BE MAINTAINED ON SITE FOR THIS PURPOSE. ALL SEDIMENT DEPOSITED ON PAVED ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE IMMEDIATELY. IF EXCESSIVE AMOUNTS OF SEDIMENT ARE BEING DEPOSITED ON ROADWAY, EXTEND LENGTH OF ROCK CONSTRUCTION ENTRANCE BY 50 FOOT INCREMENTS UNTIL CONDITION IS ALLEVIATED OR INSTALL WASH RACK. WASHING THE ROADWAY OR SWEEPING THE DEPOSITS INTO ROADWAY DITCHES, SEWERS, CULVERTS, OR OTHER DRAINAGE COURSES IS NOT ACCEPTABLE.

STANDARD CONSTRUCTION DETAIL #3-1
ROCK CONSTRUCTION ENTRANCE



SILT FENCE MUST BE PLACED AROUND THE PERIMETER OF ALL STOCKPILES. IMMEDIATELY APPLY TEMPORARY SEEDING TO ALL STOCKPILES WHICH WILL BE IN PLACE FOR 20 DAYS OR MORE.

SOIL STOCKPILE AREA DETAIL
NOT TO SCALE

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PROJECT LOCATION

PRELIM/ FINAL RESIDENTIAL SUBDIVISION PLAN
1039 SPROUL ROAD
TOWNSHIP OF HAVERFORD
DELAWARE COUNTY
PENNSYLVANIA

TITLE

EROSION AND SEDIMENTATION CONTROL DETAILS

PROJ. #	23-0220	DATE	1-2-2025
CAD ID.	23-0220	DRN BY	SCC
SCALE	AS NOTED	CHK BY	JBA

SHEET 12 OF 16

REVISION 3

LANDSCAPE MAINTENANCE PLAN

1. LANDSCAPING REQUIRED SHALL BE MAINTAINED IN A HEALTHY GROWING CONDITION AT ALL TIMES. IT SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER OF RECORD OR HIS DELEGATED REPRESENTATIVE TO PROPERLY MAINTAIN AND CARE FOR ANY LANDSCAPED AREAS.
2. THE REQUIRED PLANT MATERIAL SHALL BE MAINTAINED FOR THE LIFE OF THE DEVELOPMENT TO ACHIEVE THE REQUIRED VISUAL EFFECT OF THE BUFFER OR SCREEN. IS SHALL BE THE ULTIMATE RESPONSIBILITY OF SUCCESSIVE PROPERTY OWNERS TO ENSURE THAT THE REQUIRED PLANTINGS ARE PROPERLY MAINTAINED.
3. DEAD OR DISEASED PLANT MATERIAL SHALL BE REMOVED OR TREATED PROMPTLY BY THE PROPERTY OWNER AND REPLACED AS SOON AS SOON AS POSSIBLE, BUT NO LATER THAN THE NEXT GROWING SEASON.
4. ALL TREES SHALL BE STRUCTURALLY PRUNED, WATERED AND MULCHED ACCORDING TO ISA (INTERNATIONAL SOCIETY OF ARBORICULTURE) BEST MANAGEMENT PRACTICES UNTIL THEY ARE WELL ESTABLISHED.
5. ALL SIGHT TRIANGLES SHALL REMAIN OPEN AND CLEAR, AND ANY PLANT MATERIAL THAT COULD ENDANGER THE SAFETY, SUCH AS UNSTABLE LIMBS, SHALL BE REMOVED AND THE PLANT MATERIAL REPLACED IF NECESSARY. IT SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER TO MAINTAIN ALL PLANTINGS TO ENSURE A SAFE ENVIRONMENT.
6. MAINTENANCE GUIDELINES FOR THE PLANTINGS ARE ENCOURAGED TO BE PROVIDED ALONG WITH THE PLANTING PLAN TO THE GROUNDS MAINTENANCE PERSONNEL TO ENSURE THAT THE DESIGN INTENT IS CONTINUED.
7. ALL PLANTING BEDS ARE TO BE KEPT FREE FROM LITTER AND DEBRIS.
8. TREE LIMBS MUST BE KEPT HIGH ENOUGH TO PREVENT A HAZARD WITH PEDESTRIAN OR VEHICULAR TRAVEL.
9. ANY THORNED PLANTS MUST BE KEPT FROM BECOMING PEDESTRIAN HAZARDS.
10. LEAF LITTER, DOWNED BRANCHES, AND OTHER VEGETATION SHALL BE CLEANED UP AS NEEDED.
11. ANY ANNUAL PLANTS SHALL BE WATERED FREQUENTLY IN THE ABSENCE OF IRRIGATION.
12. ALL LANDSCAPE BEDS SHALL BE KEPT FREE OF WEEDS AND MULCHED ANNUALLY OR AS NEEDED.
13. ALL LAWN AREAS SHALL BE KEPT NEATLY MOWED.
14. CHEMICAL HERBICIDE OR INSECTICIDE IS DISCOURAGED, BUT IF USED, SHALL BE IN ACCORDANCE WITH APPLICABLE LAWS AND REGULATIONS AND APPLIED BY A LICENSED PROFESSIONAL.

LANDSCAPE NOTES:

1. LOCATION OF ALL UNDERGROUND UTILITIES SHALL BE VERIFIED AND MARKED IN THE FIELD, PRIOR TO ANY DIGGING OPERATIONS.
2. PLANT MATERIAL SHALL BE FURNISHED AND INSTALLED AS INDICATED INCLUDING ALL LABOR, MATERIALS, PLANTS, EQUIPMENT, AND CLEAN-UP WHICH ARE INCIDENTAL TO LANDSCAPE INSTALLATION.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PLANTING AT THE CORRECT GRADES AND ALIGNMENTS. ALL PLANTS SHALL BE SET PLUMB AND STRAIGHT. LANDSCAPING SHALL BE INSTALLED IN THE CENTER OF THE PIT.
4. ANY NYLON ROPE USED IN BALLING THE TREE MUST BE CUT AND REMOVED FROM THE ROOT BALL
5. ALL PLANTS SHALL CONFORM WITH THE MOST CURRENT VERSION OF THE "AMERICAN STANDARD FOR NURSERY STOCK" OF THE AMERICAN NURSERY AND LANDSCAPE ASSOCIATION.
6. ALL PLANT MATERIAL SHALL BE GUARANTEED FOR A PERIOD OF EIGHTEEN MONTHS. ANY TREES, SHRUBS, HEDGES, OR GROUND COVER THAT DIE OR ARE DESTROYED SHALL BE REPLACED WITHIN SIX MONTHS.
7. CONTRACTOR SHALL REPAIR ANY SOIL OR SUBSURFACE DRAINAGE WHICH MAY BE DETRIMENTAL TO GROWTH OF THE PLANT MATERIAL.
8. ALL TREES SHALL BE PROVIDED WITH A 3" DEEP SAUCER, CONSISTING OF SHREDDED OAK BARK MULCH.
9. ALL SHRUB BEDS SHALL BE PROVIDED WITH A 3" DEEP LAYER OF SHREDDED OAK BARK MULCH.
10. INSOFAR AS PRACTICAL, PLANT MATERIAL SHALL BE PLANTED ON THE DAY OF DELIVERY. IN THE EVENT THAT THIS IS NOT POSSIBLE THE CONTRACTOR PROTECT THE LANDSCAPING NOT PLANTED AND ENSURE IT RECEIVES ADEQUATE WATERING. UNDER NO CIRCUMSTANCES SHALL LANDSCAPING REMAIN UNPLANTED FOR MORE THAN THREE (3) DAYS.
11. ALL PLANTS SHALL BE PLANTED IN TOPSOIL THAT IS THOROUGHLY WATERED AND TAMPED AS BACKFILLING PROGRESSES.
12. INSTALLATION OF PLANTS SHALL OCCUR WITHIN THE PLANTING SEASON WHEN WEATHER AND SOIL CONDITIONS ARE SUITABLE.
13. ALL PLANTS SHALL BE THOROUGHLY WATERED BY THE CONTRACTOR AT LEAST THREE (3) TIMES (IN THE ABSENCE OF NATURAL RAINFALL), PRIOR TO ACCEPTANCE OF PLANTING BY THE OWNER.
14. ALL DISTURBED AREAS ARE TO BE FINE GRADED, RAKED, MULCHED AND SEEDED.
15. STRAW MULCH SHALL BE USED FOR GRASS SEED MIX, EXCEPT THAT SLOPES STEEPER THAN 3 TO 1 SHALL USE EROSION CONTROL BLANKETS/MATS.
16. EXISTING TREES NEAR PROPOSED IMPROVEMENTS SHALL BE PROTECTED WITH TREE PROTECTION FENCE. REFER TO THE E&S PLAN FOR THE GENERAL LOCATION.

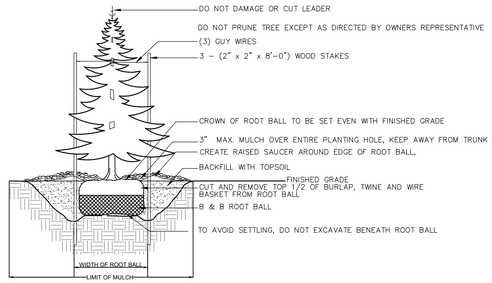
ERNMX-113 ERNST COMMERCIAL CONSERVATION LAWN MIX SPECIFICATION:

%	Common Name	Scientific Name
25.0%	Festuca rubra	Creeping Red Fescue
25.0%	Lolium multiflorum	Annual Ryegrass
25.0%	Lolium perenne	Perennial Ryegrass, 'Blackcat II'(turf type)
25.0%	Lolium perenne	Perennial Ryegrass, 'Fastball RGL'(turf type)

Total: 100%

Notes:

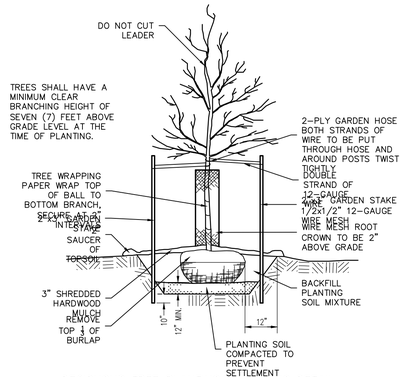
1. Recommended coverage is 15lbs per acre.
2. Seed mix can be purchased from Ernst Conservation Seeds, Meadville PA 16335, 1 (800) 873-3321
3. Hand seeding is recommended and should take place between April 1st and May 15th or between September 1st and October 15th.
4. Immediately prior to seeding the soil is to be prepared so as to be free of large clods, evenly smooth, and level. A shallow tilling to a depth of 2 inches is acceptable to break up soils in which the surface has become crusted.
5. Planting areas shall be soaked to maintain a consistent level of moisture for at least four (4) to six (6) weeks after seeding.
6. After hand seeding, each area is to be rolled to push the seeds into firm contact with the soil and firm the seedbed. A firm seedbed is critical to proper seedling growth. Do not roll the site when the soil is wet. Wait until the soil is drier to avoid compaction. Alternatively a cultipaker could be used to ensure soil to seed contact. If seeding in the fall, this step is not required as the cumulative effect of rain and snow with numerous freeze/thaw cycles will provide the necessary soil to seed contact.
7. The seeding is to be mulched with North American Green S-150 BN (biodegradable erosion blanket) and secured with Bio-stakes (biodegradable anchors).



SPECIFICATIONS:
1. DO NOT DAMAGE MAIN ROOTS OR DESTROY ROOT BALL WHEN INSTALLING TREE STAKE.
2. WATER THOROUGHLY AFTER INSTALLATION.
3. REMOVE STAKES TWO YEARS OR LESS AFTER INSTALLATION.

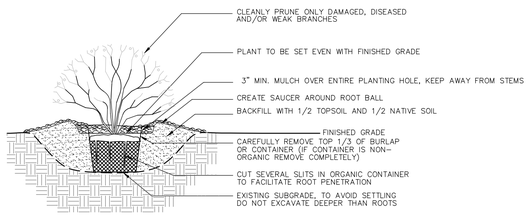
TYPICAL EVERGREEN TREE PLANTING DETAIL

NOT TO SCALE



DECIDUOUS TREE PLANTING & STAKING DETAIL

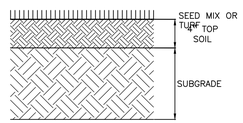
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NOTES:
1. WATER THOROUGHLY AFTER INSTALLATION.
2. FOR PLANTING BED INSTALLATION EXCAVATE ENTIRE SHRUB BED AS SHOWN ON PROJECT DRAWINGS.

TYPICAL SHRUB PLANTING DETAIL

NOT TO SCALE



LAWN DETAIL

NTS

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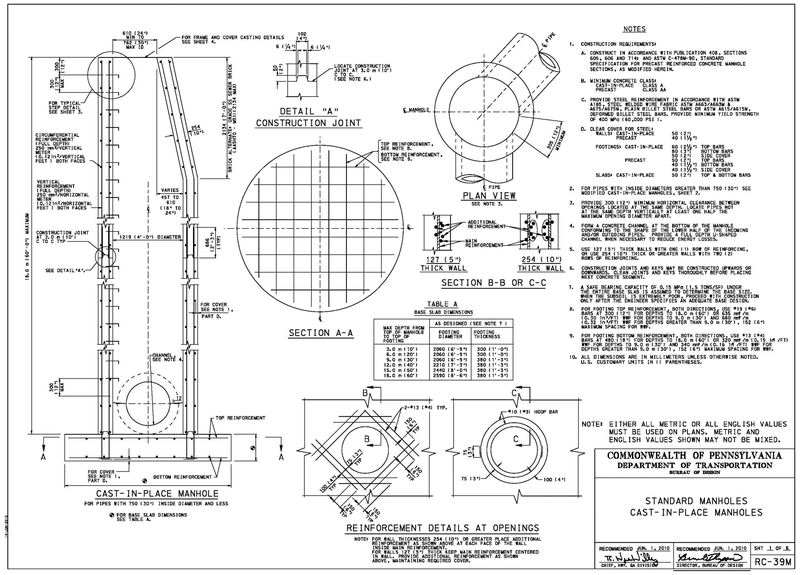
LANDSCAPING DETAILS AND NOTES

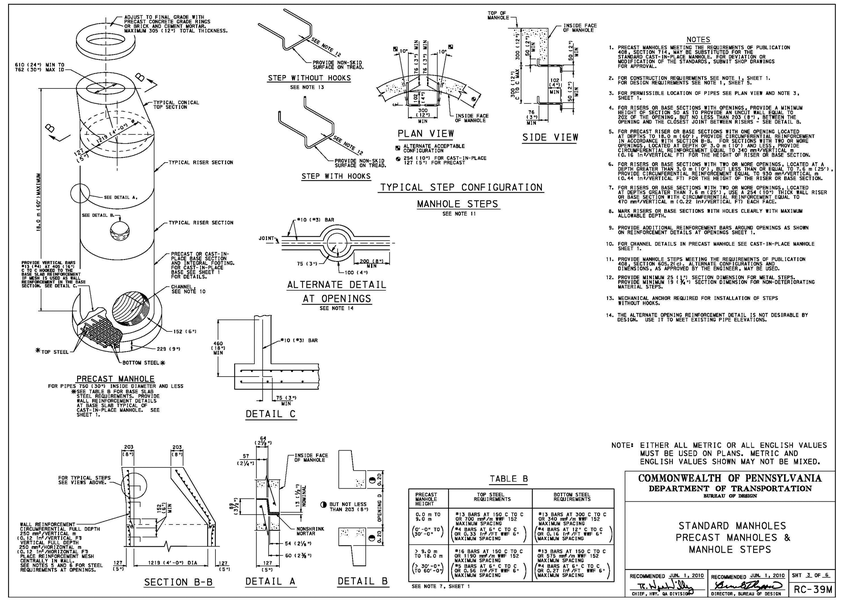
PROJ. #	23-0220	DATE	1-2-2025
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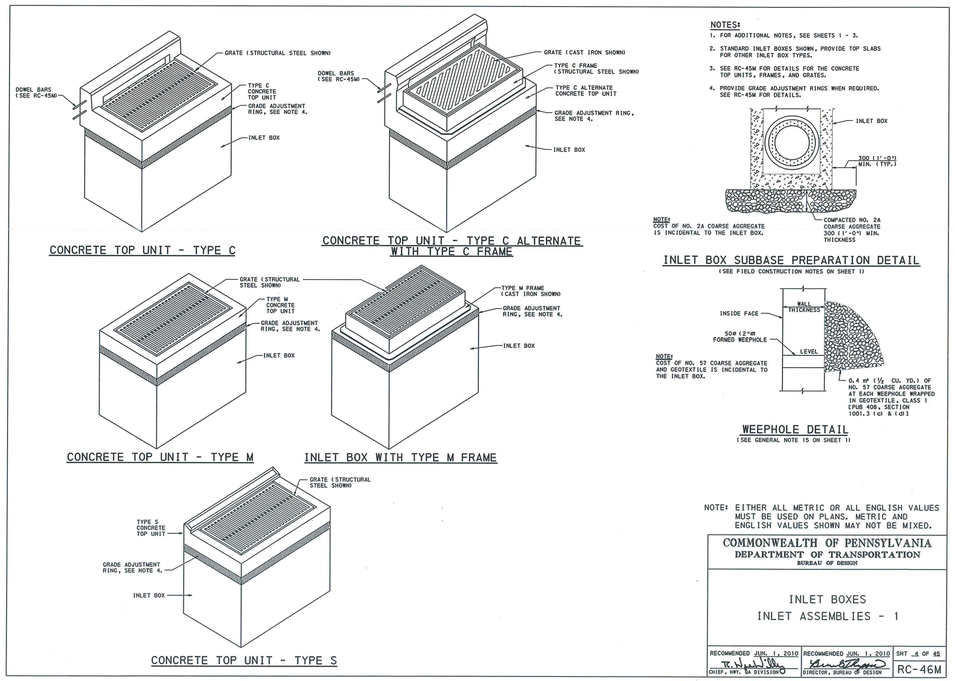
SHEET 13 OF 16

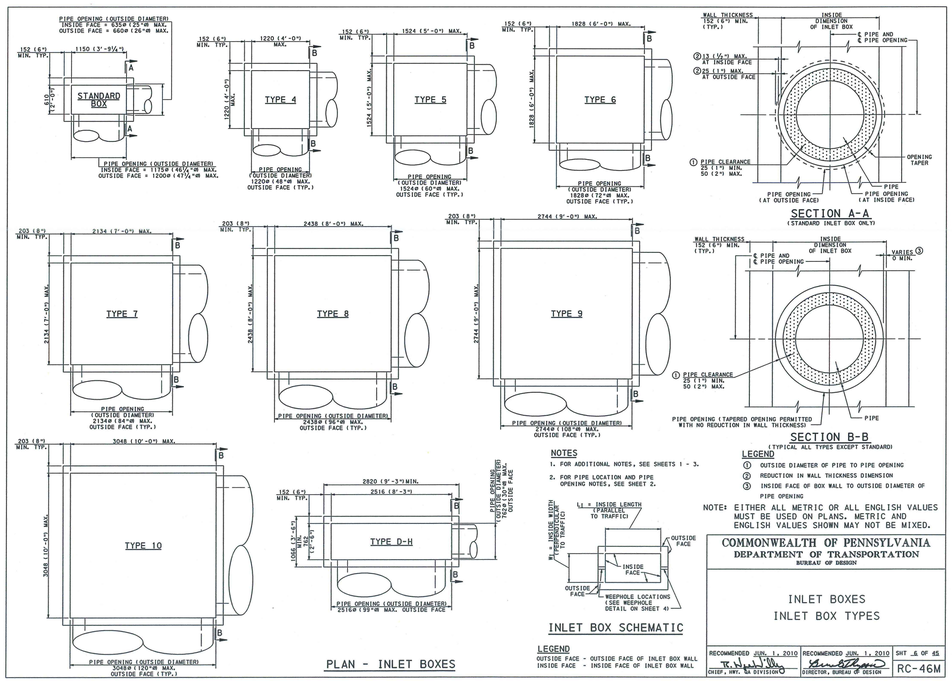
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*FOR ADDITIONAL DETAILS AND NOTES REFER TO PENNDOT PUB. 72M, DETAILS RC-39M SERIES, LATEST EDITION.









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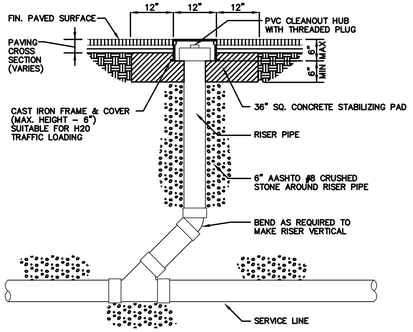
TITLE

GENERAL SITE DETAILS

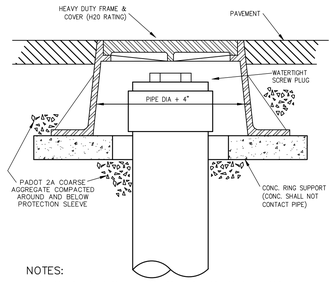
PROJ. #	23-0220	DATE	1-2-2025
CAD ID.	23-0220	DRN BY	SCC
SCALE	AS NOTED	CHK BY	JBA

SHEET 14 OF 16

REVISION 3



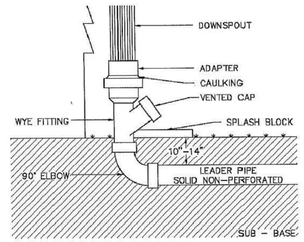
PVC CLEANOUT DETAIL
NOT TO SCALE



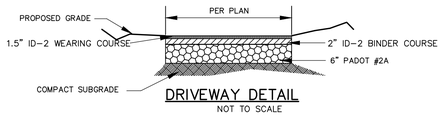
NOTES:

1. FRAME AND COVER SHALL BE NEENAH FOUNDRY COMPANY MODEL R-1976 OR APPROVED EQUAL
2. CLEAN-OUT PROTECTION SLEEVES ARE TO BE INSTALLED FOR CLEAN-OUTS LOCATED IN PAVED AREAS, OR LESS THAN 3 FEET FROM A PAVED AREA.

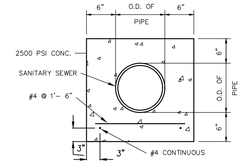
CLEAN-OUT PROTECTION SLEEVE
(FOR USE IN OR NEAR PAVED AREAS)
N.T.S.



DOWNSPOUT DETAIL
NTS



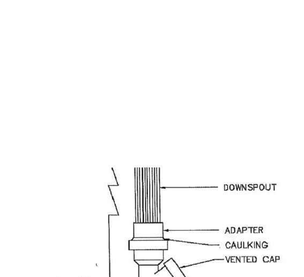
DRIVEWAY DETAIL
NOT TO SCALE



ENCASEMENT SECTION

PROVIDE REINFORCEMENT AT UTILITY CROSSINGS OR AS DIRECTED BY THE AUTHORITY'S ENGINEER

CONCRETE ENCASEMENT
N.T.S.

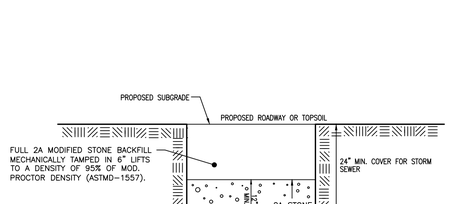


COLOR: LEGEND AND BORDER — WHITE (REFLECTORIZED)
BACKGROUND — RED (REFLECTORIZED)

SIGN SIZE	DIMENSIONS A	B	C	SERIES	BORDER	BLANK STUD
24 x 24	24	8	10	C	3/4"	B1-24
30 x 30	30	10	12 1/2	C	1"	B1-30
36 x 36	36	12	15	C	1 1/4"	B1-36
48 x 48	48	16	20	C	1 1/2"	B1-48

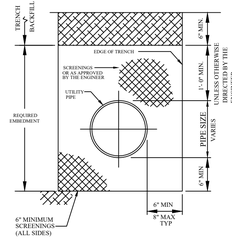
* REDUCE SPACING BY 40%

"STOP" (R1-1) SIGN DETAIL
NOT TO SCALE



NOTE:
ALL UTILITY TRENCHES WITHIN EXISTING ROADWAYS, PROPOSED ROADWAYS, ALL RIGHT OF WAYS, EASEMENTS, PROPOSED DRIVEWAYS, APRONS AND SIDEWALKS MUST, WITHOUT EXCEPTION, BE BACKFILLED WITH FULL DEPTH 2A STONE AFTER TOP SCREENING. ALL UTILITY TRENCHES MUST BE COMPACTED (MECHANICALLY TAMPED) IN 6" LIFTS.

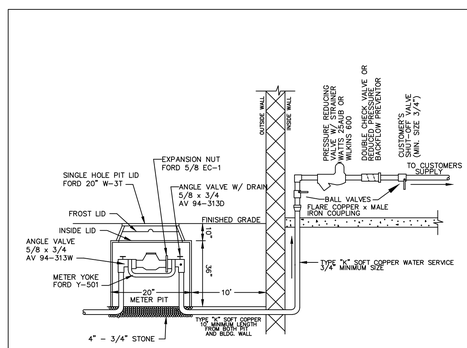
TYPICAL HDPE PIPE TRENCH DETAIL



PIPE O.D. PLUS 1" TO 1'-4"

COPPER PIPE

PIPE EMBEDMENT
NOT TO SCALE



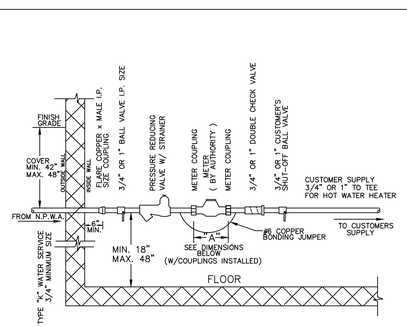
NOTES

1.) CUSTOMER TO PLACE STAKE MARKED "WATER" IN YARD AT DESIRED LOCATION FOR SERVICE LINE
2.) NO SOLDER JOINTS ALLOWED UNDERGROUND OR AHEAD OF FIRST BALL VALVE
3.) METER TO BE FURNISHED AND INSTALLED BY AUTHORITY
4.) WATER METER WILL NOT BE SET IF PIPING DOESN'T CONFORM TO SPECIFICATIONS
5.) THE USE OF LEAD-FREE SOLDER, FLUX AND OTHER PLUMBING MATERIALS IS REQUIRED BY FEDERAL LAW. SOLDER AND FLUX MAY NOT BE GREATER THAN 0.2% LEAD. PIPE AND FITTINGS MAY NOT BE GREATER THAN 8% LEAD.
6.) ANY SERVICE LINE OVER 200' MAY USE PVC 165 PSI, TO WITHIN 10 ' OF THE STRUCTURE AND THE PIT BEFORE BEING CONNECTED TO TYPE "K" SOFT COPPER
7.) BACKFLOW PREVENTION DEVICES ARE REQUIRED ON ALL WATER SERVICE LINES. THEREFORE, IT IS RECOMMENDED THAT A THERMAL EXPANSION TANK BE INSTALLED ON THE SUPPLY SIDE OF THE HOT WATER SYSTEM.

SPECIFICATIONS

1.) SERVICE LINE – COPPER TYPE K SOFT W/FLARED FITTINGS.
2.) ALL SERVICE LINE FITTINGS TO BE COPPER OR BRASS.
3.) BALL VALVE – 200 PSI, BRASS
4.) PRESSURE REDUCING VALVE – WATTS 25AUB, WILKINS 600 OR APPROVED EQUAL
5.) CHECK VALVE –SPRING LOADED DOUBLE CHECK 3/4" – WATTS NO. 723, 7U–22, WILKINS 700F OR APPROVED EQUAL
1" – WATTS NO. 72O OR WILLINS 700F OR APPROVED EQUAL

TYPICAL 3/4" AND 1" METER DETAIL
N.T.S.



NOTES

1.) THIS SPECIFICATION IS FOR BASEMENT METER INSTALLATIONS ONLY
2.) CUSTOMER TO PLACE STAKE MARKED "WATER" IN YARD AT DESIRED LOCATION FOR SERVICE LINE.
3.) NO SOLDER JOINTS ALLOWED UNDERGROUND OR AHEAD OF FIRST BALL VALVE.
4.) METER FLANGES WILL BE FURNISHED BY AUTHORITY (TO CUSTOMERS PLUMBER).
5.) CUSTOMERS PLUMBER TO INSTALL A #6 COPPER BONDING JUMPER ACROSS METER
6.) THE USE OF LEAD-FREE SOLDER, FLUX AND OTHER PLUMBING MATERIALS IS REQUIRED BY FEDERAL LAW. SOLDER AND FLUX MAY NOT BE GREATER THAN 0.2% LEAD. PIPE AND FITTINGS MAY NOT BE GREATER THAN 8% LEAD.
7.) WATER METER WILL NOT BE SET IF PIPING DOESN'T CONFORM TO SPECIFICATIONS.
8.) BACKFLOW PREVENTION DEVICES ARE REQUIRED ON ALL WATER SERVICE LINES. THEREFORE, IT IS RECOMMENDED THAT A THERMAL EXPANSION TANK BE INSTALLED ON THE SUPPLY SIDE OF THE HOT WATER SYSTEM.

SPECIFICATIONS

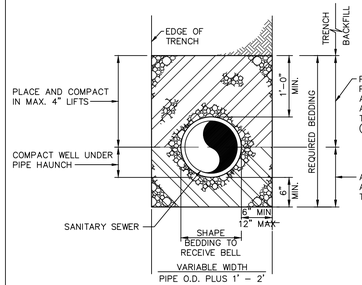
1.) SERVICE LINE – COPPER TYPE K SOFT W/FLARED FITTINGS.
2.) ALL SERVICE LINE FITTINGS TO BE COPPER OR BRASS.
3.) BALL VALVE – 200 P.S.I. , BRASS
4.) PRESSURE REDUCING VALVE – WATTS 25AUB, WILKINS 600 OR APPROVED EQUAL
5.) CHECK VALVE –SPRING LOADED DOUBLE CHECK 3/4" – WILKINS 700F, WATTS NO. 723, 7U–22 OR APPROVED EQUAL
1" – WILKINS 700F, WATTS NO. 729 OR APPROVED EQUAL

METER DIMENSIONS

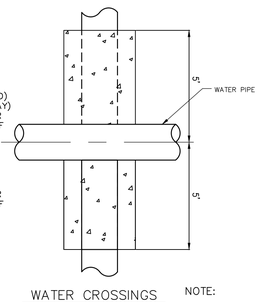
SIZE	"A" SPACING	MIN. DISTANCE FROM WALL
5/8"	7 1/2"	8"
1"	10 3/4"	10"

(FACE TO FACE OF COUPLINGS)

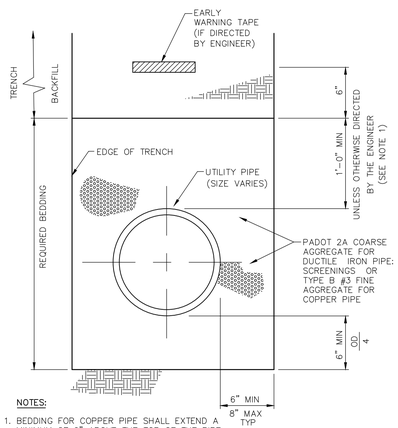
TYPICAL 3/4" AND 1" METER DETAIL
(INSIDE METER)
N.T.S.



P.V.C. PIPE EMBEDMENT



WATER CROSSINGS NOTE:



NOTES:

1. BEDDING FOR COPPER PIPE SHALL EXTEND A MINIMUM OF 6" ABOVE THE TOP OF THE PIPE.

STANDARD PIPE BEDDING
NOT TO SCALE

CLIENT DATA

Cornerstone
Consulting Engineers & Design Services, Inc.
213 West Main Street, Lansdale, PA 19446
Phone: 215-362-2600 Fax: 215-362-8400
WWW.CORNERSTONENET.COM

Pocono Region 570-839-1770
Lehigh Valley Region 610-820-8200
Philadelphia Region 215-362-2600

REVISIONS

NO	BY	DESCRIPTION	DATE
1	EMR	REVISED EXISTING CONDITIONS PLAN	11/6/2025
2	EMR	REVISED PER PC COMMENTS	5/1/2025
3	EMR	REVISED PER ZONING HEARING BOARD	7/31/2025

UNLESS OTHERWISE DIRECTED BY THE ENGINEER

PENNSYLVANIA ONE CALL SYSTEM, INC.
925 Irwin Run Road
West Mifflin, Pennsylvania 15122 - 1076

811

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J.B. ANDERSON
PROFESSIONAL ENGINEER
DELAWARE LICENSE No. PE 15484
PENNSYLVANIA LICENSE No. PE 055536
MARYLAND LICENSE No. 29313
NEW JERSEY LICENSE No. 24GE04526400
VIRGINIA LICENSE No. 0402-045725
FLORIDA LICENSE No. 75184
NEW YORK LICENSE No. 093667-1

PROJECT LOCATION

PRELIM/ FINAL RESIDENTIAL SUBDIVISION PLAN
1039 SPROUL ROAD
TOWNSHIP OF HAVERFORD
DELAWARE COUNTY
PENNSYLVANIA

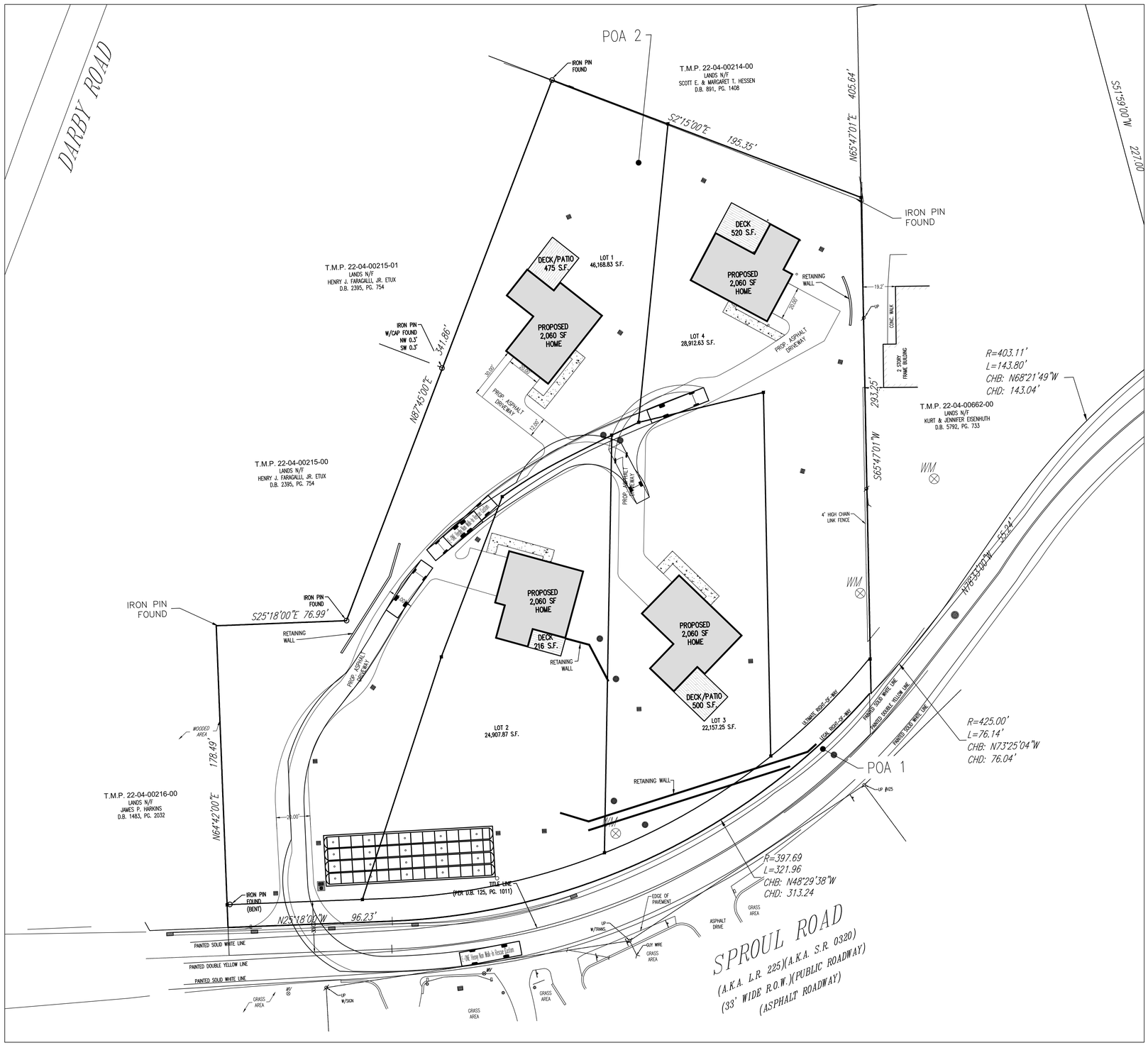
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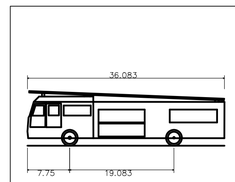
GENERAL SITE DETAILS

PROJ. #	23-0220	DATE	1-2-2025
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SCALE	AS NOTED	CHK BY	JBA

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REVISION 3





E-ONE Heavy Non Walk-In Rescue Custom

Overall Length	36.083ft
Overall Width	8.333ft
Overall Body Height	10.000ft
Min Body Ground Clearance	1.393ft
Track Width	8.333ft
Lock-to-lock time	6.00s
Max Wheel Angle	45.00°

CLIENT DATA

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Consulting Engineers & Design Services, Inc.
213 West Main Street, Lansdale, PA 19446
Phone: 215-362-2600 Fax: 215-362-8400
WWW.CORNERSTONENET.COM
Philadelphia Region 215-362-2600
Lehigh Valley Region 610-820-8200
Pocono Region 570-839-1770

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COMMONWEALTH OF PENNSYLVANIA LICENSE No. PE 055536
MARYLAND LICENSE No. 20533
NEW JERSEY LICENSE No. 24GE04520400
VIRGINIA LICENSE No. 0402 045725
FLORIDA LICENSE No. 75184
WASHINGTON D.C. LICENSE No. 995665-1

PROJECT LOCATION

PRELIM/ FINAL RESIDENTIAL SUBDIVISION PLAN
1039 SPROUL ROAD
TOWNSHIP OF HAVERFORD
DELAWARE COUNTY
PENNSYLVANIA

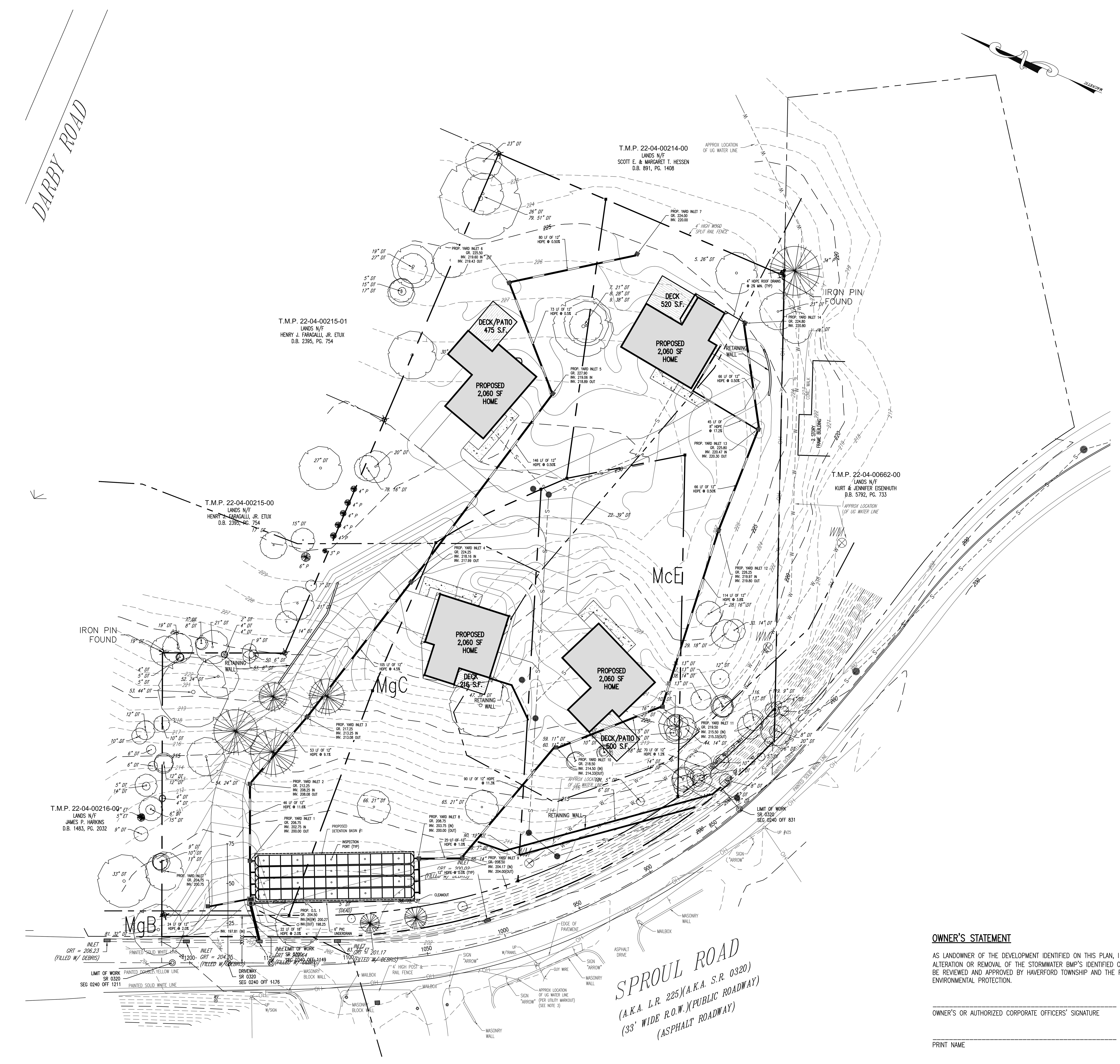
TITLE

TRUCK TURNING PLAN

PROJ. #	23-0220	DATE	1-2-2025
CAD ID.	23-0220	DRN BY	SCC
SCALE	AS NOTED	CHK BY	JBA

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REVISION 3



POST CONSTRUCTION STORMWATER MANAGEMENT BMP'S PROPOSED FOR THIS PROJECT:

STRUCTURAL BMP's:
BMP 001: DRY EXTENDED DETENTION BASIN

POST CONSTRUCTION STORMWATER MANAGEMENT NOTES:

1. LIMIT OF DISTURBANCE IS 1.96 ACRES.
2. PROJECT SITE BOUNDARY FOR THE PROJECT INCLUDES THE DRAINAGE AREA WITHIN THE PROPERTY BOUNDARY AND OFFSITE DRAINAGE AREAS BEYOND THE PROPERTY LIMITS. TOTAL NPDES PROJECT AREA IS 2.48 ACRES.
3. SITE IS LOCATED IN THE DARBY–COBBS CREEK WATERSHED, WHICH HAS A CHAPTER 93 CLASSIFICATION OF CWF, MF (COLD WATER FISHES, MIGRATORY FISHES).
4. PROJECT IS LOCATED AT 1039 SPROUL ROAD, ON THE NORTH SIDE OF SPROUL ROAD. COORDINATES 40.2608, –75.4077.
5. ALL SITE DISCHARGE POINTS CONVEY RUNOFF TO OFFSITE AREAS THEN TO DARBY CREEK. DISCHARGE POINT 1 FROM MRC BASIN 1 DISCHARGES TO HAVERFORD TOWNSHIP STORM SEWER SYSTEM, THEN TO DARBY CREEK.
6. THESE PCSM PLANS SHALL BE RECORDED WITH THE NPDES PERMIT PRIOR TO CONSTRUCTION.
7. THIS PROJECT PROPOSES BMP'S THAT ARE CRITICAL TO THE POST CONSTRUCTION STORMWATER MANAGEMENT OF THE SITE AND THE INSTALLATION OF THESE BMP'S REQUIRES REVIEW BY A DESIGN PROFESSIONAL DURING CONSTRUCTION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT ALL REVIEWS ARE SCHEDULED IN ADVANCE AND INCORPORATED INTO THE CONSTRUCTION SCHEDULE. PLEASE REFER TO THE SEQUENCE OF CONSTRUCTION FOR INSTALLATION REVIEW OF CRITICAL BMP'S.
8. NO RIPARIAN BUFFERS ARE PROPOSED. THE PROJECT IS NOT LOCATED WITHIN A SPECIAL VALUE WATERSHED.
9. THE PLAN HAS BEEN DESIGNED TO MINIMIZE IMPERVIOUS AREAS.
10. THE PLAN MAXIMIZES THE PROTECTION OF EXISTING DRAINAGE FEATURES AND VEGETATION.
11. THE PLAN HAS BEEN DESIGNED TO MINIMIZE LAND CLEARING AND GRADING.
12. THE PLAN MINIMIZES SOIL COMPACTION.
13. THE PLAN UTILIZES OTHER STRUCTURAL AND NON–STRUCTURAL BMP'S THAT PREVENT OR MINIMIZE GENERATION OF INCREASED STORMWATER RUNOFF.
14. THIS PROJECT WILL REQUIRE AN NPDES NOTICE OF TERMINATION. THE PERMIT HOLDER SHALL ARRANGE TO HAVE ALL CONSTRUCTION REVIEWS, AS–BUILT PLANS, AND FORMS COMPLETED BY THE PARTY CONDUCTING THE CRITICAL BMP INSTALLATION REVIEWS.
15. THE LONG TERM OPERATION AND MAINTENANCE OF THESE BMP'S IS THE RESPONSIBILITY OF THE PROPERTY OWNER AND/OR HOME OWNER'S ASSOCIATION. THE OWNER OR ITS REPRESENTATIVE SHALL KEEP A LOG OF BMP INSPECTIONS AS OUTLINED IN THE MAINTENANCE SCHEDULE.
16. ANY CHANGES AFTER THE NOTICE OF TERMINATION IS COMPLETED ARE SUBJECT TO APPROVAL BY HAVERFORD TOWNSHIP, THE DELAWARE COUNTY CONSERVATION DISTRICT, AND THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION.

OWNER'S STATEMENT

AS LANDOWNER OF THE DEVELOPMENT IDENTIFIED ON THIS PLAN, I ACKNOWLEDGE THAT ANY ALTERATION OR REMOVAL OF THE STORMWATER BMP'S IDENTIFIED ON THESE PLANS MUST BE REVIEWED AND APPROVED BY HAVERFORD TOWNSHIP AND THE PA DEPARTMENT OF ENVIRONMENTAL PROTECTION.

____
OWNER'S OR AUTHORIZED CORPORATE OFFICERS' SIGNATURE

____
PRINT NAME

LEGEND

- PROPERTY BOUNDARY
- EXISTING UTILITY POLE
- EXISTING OVERHEAD WIRE
- EXISTING CURB
- PROPOSED CONTOURS
- EXISTING CONTOURS
- EXISTING TREES
- EXISTING WATER MAIN
- EXISTING ELECTRICAL LINE
- EXISTING SANITARY LINE
- EXISTING GAS LINE
- PROPOSED STORM SEWER
- PROPOSED FORCEMAIN
- PROPOSED SANITARY SEWER
- PROPOSED WATER LINE
- PROPOSED ELECTRICAL LINE
- PROPOSED TELEPHONE LINE
- PROPOSED SANITARY SEWER CLEANOUT
- PROPOSED STORM DRAINAGE INLET
- PROPOSED MANHOLE
- PROPOSED HYDRANT

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

CLIENT DATA

Cornerstone
Consulting Engineers & Design Services, Inc.
213 West Main Street . Lansdale . PA 19446
Phone: 215-362-2600 . Fax: 215-362-8400
WWW.CORNERSTONENET.COM
Philadelphia Region 215-362-2600
Lehigh Valley Region 610-820-8200
Pocono Region 570-839-1770

REVISIONS

NO	BY	DESCRIPTION	DATE
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15122 - 1078
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FLORIDA LICENSE No. 75184
NEW YORK LICENSE No. 093667-1

PROJECT LOCATION

POST CONSTRUCTION STORMWATER MANAGEMENT PLAN:
1039 SPROUL ROAD
TOWNSHIP OF HAVERFORD
DELAWARE COUNTY
PENNSYLVANIA

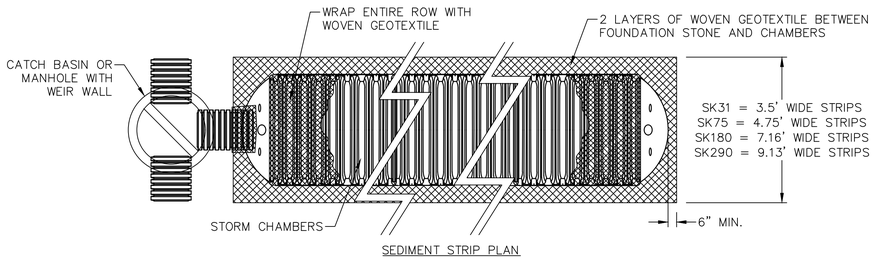
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PCSM PLAN

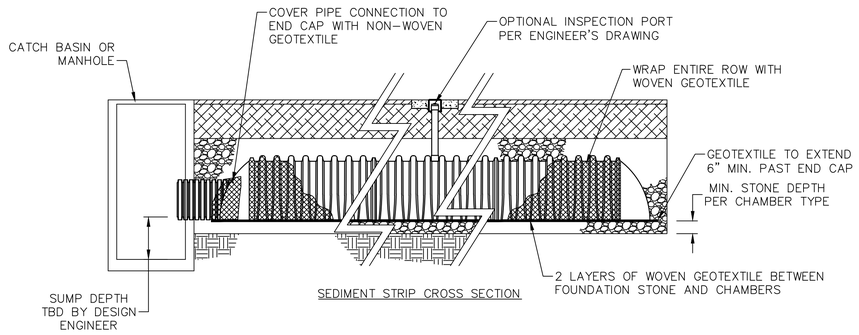
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CAD ID.	23-0220	DRN BY	SCC
SCALE	AS NOTED	CHK BY	JBA

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REVISION 3



SEDIMENT STRIP PLAN



SEDIMENT STRIP CROSS SECTION

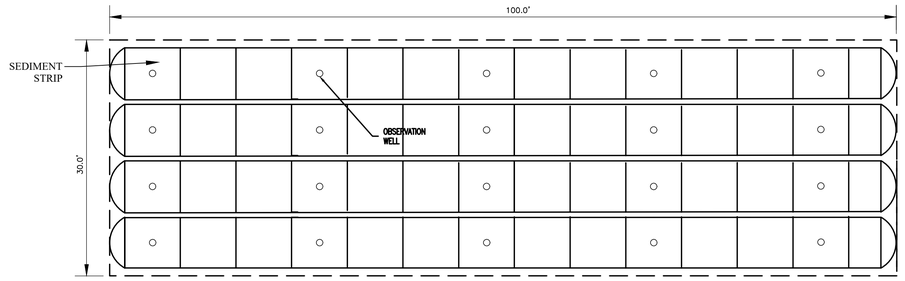
ALL WOVEN GEOTEXTILE THIS SHEET TO BE AASHTO M288 CLASS I.

BMP 001 DETENTION BASIN FABRICATION NOTES

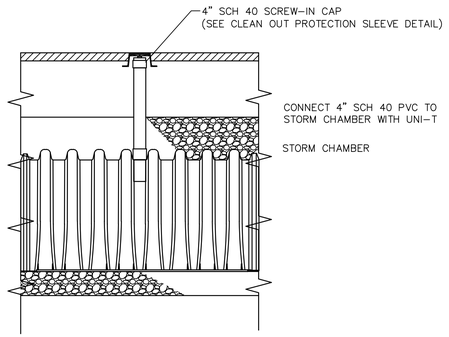
1. CONTRACTOR SHALL PROVIDE DETAILED SHOP DRAWINGS AND SPECIFICATIONS FOR THE STORMWATER BASIN PRIOR TO CONSTRUCTION.
2. THE DESIGN ENGINEER AND THE TOWNSHIP ENGINEER MUST APPROVE ALL SHOP DRAWINGS PRIOR TO CONSTRUCTION.
3. FABRICATION DRAWINGS SHALL PROVIDE DETAILS AND DIMENSIONS FOR ALL PIPE STUB CONNECTIONS FOR BASIN INLET PIPES AT THE SIDE AND/OR TOP STUB LOCATIONS.
4. DRAINAGE PIPING BEYOND STUB CONNECTIONS TO THE BASIN SHALL BE HDPE.

BMP 001 DETENTION BASIN CONSTRUCTION SEQUENCE

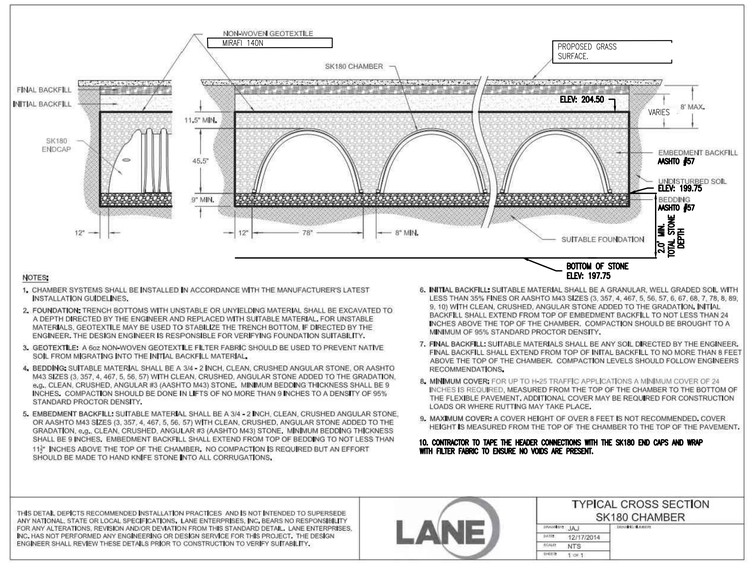
1. INSTALL AND MAINTAIN ADEQUATE EROSION AND SEDIMENT CONTROL MEASURES (AS PER THE PA E&SPC PROGRAM MANUAL) DURING CONSTRUCTION. CONTRACTOR SHALL USE A LOW EARTHEN BERM OR 12" COMPOST FILTER SOCK ANCHORED AT THE PERIMETER OF THE BASIN TO PREVENT SEDIMENT FROM ENTERING THE EXCAVATION. UNFILTERED RUNOFF SHALL NOT BE PERMITTED TO ENTER THE BASIN UNTIL SUCH TIME AS THE ENTIRE CONTRIBUTORY DRAINAGE AREA HAS ACHIEVED FINAL STABILIZATION PER DEP STANDARDS.
2. EXCAVATE BASIN. INSTALL GEOTEXTILE LINER IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION STANDARDS AND SPECIFICATIONS. GEOTEXTILE AND BASE AGGREGATE SHOULD BE PLACED IMMEDIATELY AFTER APPROVAL OF SUBGRADE PREPARATION AND INSTALLATION OF STRUCTURES. INSTALL UNDERDRAIN WITHIN THE STONE BASE AT THE BOTTOM OF THE BASIN.
3. PLACE GEOTEXTILE FABRIC ON BASE AGGREGATE, THEN INSTALL STORMWATER CHAMBER STORAGE SYSTEM. ENSURE ENTIRE CHAMBER SYSTEM IS WRAPPED BY GEOTEXTILE PRIOR TO PLACING BACKFILL.
4. INSTALL DOWNSTREAM CONTROL STRUCTURES, PIPING, AND ALL OTHER NECESSARY STORMWATER STRUCTURES INCIDENTAL TO THE BASIN. ALL PIPE, STRUCTURE AND BASIN JOINTS SHALL BE WATERTIGHT.
5. UPON APPROVAL OF THE CHAMBER INSTALLATION, THE DETENTION SYSTEM CAN BE BACKFILLED. CLEAN-WASHED, UNIFORMLY GRADED AGGREGATE BACKFILL SHOULD BE PLACED, TO THE WIDTH AND DEPTH INDICATED, IN MAXIMUM 8-INCH LIFTS. EACH LAYER SHOULD BE LIGHTLY COMPACTED.
6. APPROVED BACKFILL SHOULD BE PLACED OVER BASIN IN MAXIMUM 6-INCH LIFTS TO ACHIEVE FINAL SITE GRADES.
7. DO NOT REMOVE INLET PROTECTION OR OTHER EROSION AND SEDIMENT CONTROL MEASURES UNTIL SITE IS FULLY STABLIZED.



INFILTRATION BED #1
PLAN VIEW
NOT TO SCALE



INSPECTION PORT/ CLEANOUT OUT OF STORM CHAMBER TOP DETAIL
NOT TO SCALE



NOTES:

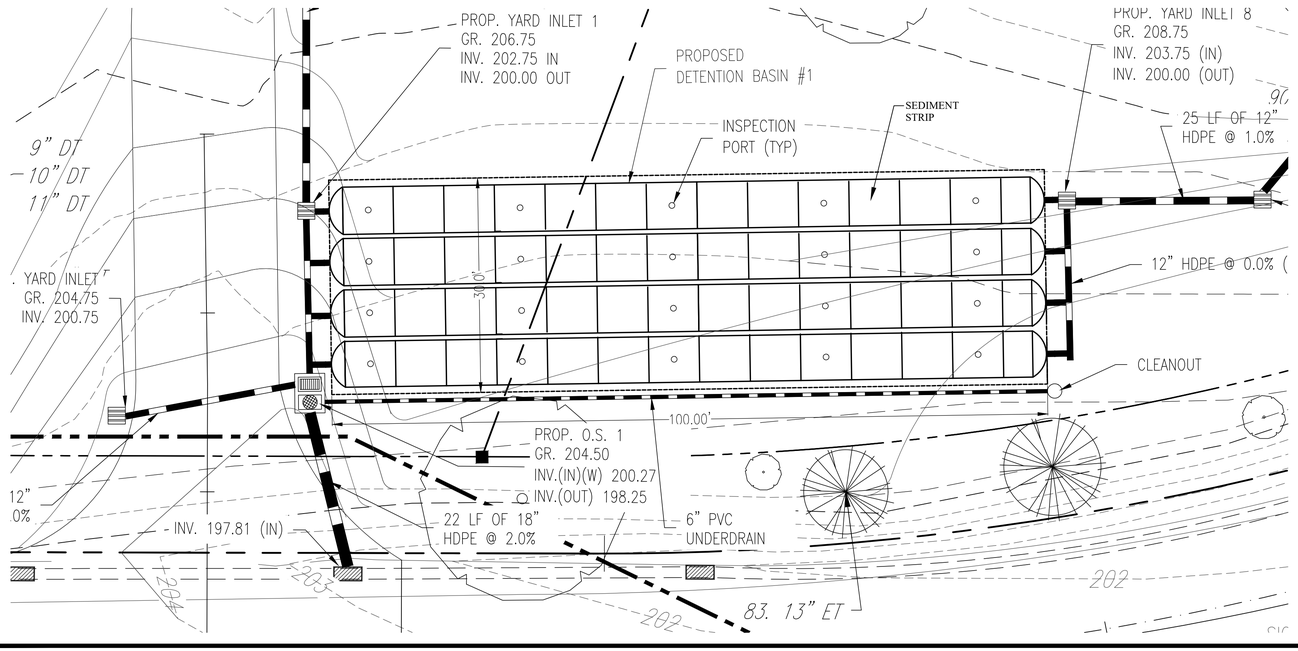
1. CHAMBER SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S LATEST INSTALLATION GUIDELINES.
2. **FOUNDATION:** TRENCH BOTTOMS WITH UNSTABLE OR UNYIELDING MATERIAL SHALL BE EXCAVATED TO A DEPTH DIRECTED BY THE ENGINEER AND REPLACED WITH SUITABLE MATERIAL. FOR UNSTABLE MATERIALS, GEOTEXTILE MAY BE USED TO STABILIZE THE TRENCH BOTTOM, IF DIRECTED BY THE ENGINEER. THE DESIGN ENGINEER IS RESPONSIBLE FOR VERIFYING FOUNDATION SUITABILITY.
3. **GEOTEXTILE:** A 6oz NON-WOVEN GEOTEXTILE FILTER FABRIC SHOULD BE USED TO PREVENT NATIVE SOIL FROM MIGRATING INTO THE INITIAL BACKFILL MATERIAL.
4. **BEDDING:** SUITABLE MATERIAL SHALL BE A 3/4 - 2 INCH, CLEAN, CRUSHED ANGULAR STONE, OR AASHTO M43 SIZES (3, 357, 4, 467, 5, 56, 57) WITH CLEAN, CRUSHED, ANGULAR STONE ADDED TO THE GRADATION, e.g., CLEAN, CRUSHED, ANGULAR #3 (AASHTO M43) STONE. MINIMUM BEDDING THICKNESS SHALL BE 9 INCHES. COMPACTION SHOULD BE DONE IN LIFTS OF NO MORE THAN 9 INCHES TO A DENSITY OF 95% STANDARD PROCTOR DENSITY.
5. **EMBEDMENT BACKFILL:** SUITABLE MATERIAL SHALL BE A 3/4 - 2 INCH, CLEAN, CRUSHED ANGULAR STONE, OR AASHTO M43 SIZES (3, 357, 4, 467, 5, 56, 57) WITH CLEAN, CRUSHED, ANGULAR STONE ADDED TO THE GRADATION, e.g., CLEAN, CRUSHED, ANGULAR #3 (AASHTO M43) STONE. MINIMUM BEDDING THICKNESS SHALL BE 9 INCHES. EMBEDMENT BACKFILL SHALL EXTEND FROM TOP OF BEDDING TO NOT LESS THAN 1½" INCHES ABOVE THE TOP OF THE CHAMBER. NO COMPACTION IS REQUIRED BUT AN EFFORT SHOULD BE MADE TO HAND KNIFE STONE INTO ALL CORRUGATIONS.
6. **INITIAL BACKFILL:** SUITABLE MATERIAL SHALL BE A GRANULAR, WELL GRADED SOIL WITH LESS THAN 35% FINES OR AASHTO M43 SIZES (3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10) WITH CLEAN, CRUSHED, ANGULAR STONE ADDED TO THE GRADATION. INITIAL BACKFILL SHALL EXTEND FROM TOP OF EMBEDMENT BACKFILL TO NOT LESS THAN 24 INCHES ABOVE THE TOP OF THE CHAMBER. COMPACTION SHOULD BE BROUGHT TO A MINIMUM OF 95% STANDARD PROCTOR DENSITY.
7. **FINAL BACKFILL:** SUITABLE MATERIALS SHALL BE ANY SOIL DIRECTED BY THE ENGINEER. FINAL BACKFILL SHALL EXTEND FROM TOP OF INITAL BACKFILL TO NO MORE THAN 8 FEET ABOVE THE TOP OF THE CHAMBER. COMPACTION LEVELS SHOULD FOLLOW ENGINEERS RECOMMENDATIONS.
8. **MINIMUM COVER:** FOR UP TO H-25 TRAFFIC APPLICATIONS A MINIMUM COVER OF 24 INCHES IS REQUIRED, MEASURED FROM THE TOP OF THE CHAMBER TO THE BOTTOM OF THE FLEXIBLE PAVEMENT. ADDITIONAL COVER MAY BE REQUIRED FOR CONSTRUCTION LOADS OR WHERE RUTTING MAY TAKE PLACE.
9. **MAXIMUM COVER:** A COVER HEIGHT OF OVER 8 FEET IS NOT RECOMMENDED. COVER HEIGHT IS MEASURED FROM THE TOP OF THE CHAMBER TO THE TOP OF THE PAVEMENT.
10. **CONTRACTOR TO TAPE THE HEADER CONNECTIONS WITH THE SK180 END CAPS AND WRAP WITH FILTER FABRIC TO ENSURE NO VOIDS ARE PRESENT.**

THIS DETAIL DEPICTS RECOMMENDED INSTALLATION PRACTICES AND IS NOT INTENDED TO SUPERSEDE ANY NATIONAL, STATE OR LOCAL SPECIFICATIONS. LANE ENTERPRISES, INC. BEARS NO RESPONSIBILITY FOR ANY ALTERATIONS, REVISION AND/OR DEVIATION FROM THIS STANDARD DETAIL. LANE ENTERPRISES, INC. HAS NOT PERFORMED ANY ENGINEERING OR DESIGN SERVICE FOR THIS PROJECT. THE DESIGN ENGINEER SHALL REVIEW THESE DETAILS PRIOR TO CONSTRUCTION TO VERIFY SUITABILITY.

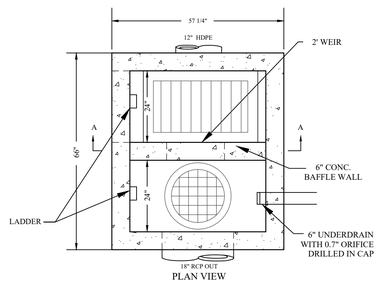
LANE

TYPICAL CROSS SECTION
SK180 CHAMBER

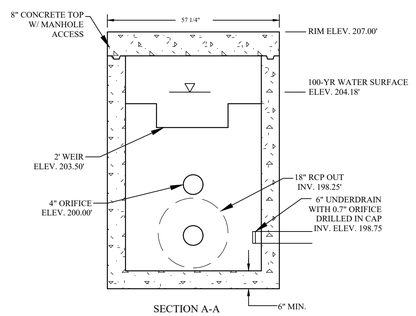
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DATE	12/17/2014
SCALE	NTS
SHEET	1 OF 1



INFILTRATION BED #1
NOT TO SCALE



PLAN VIEW



SECTION A-A

BASIN #1 OUTLET STRUCTURE
NO SCALE

CLIENT DATA

Cornerstone
Consulting Engineers & Design Services, Inc.
213 West Main Street . Lansdale . PA 19446
Phone: 215-362-2600 . Fax: 215-362-8400
WWW.CORNERSTONENET.COM

Pocono Region 570-839-1770
Lehigh Valley Region 610-820-8200
Philadelphia Region 215-362-2600

REVISIONS

NO	BY	DESCRIPTION	DATE
1	ESBR	REVISED EXISTING CONDITIONS PLAN	5/16/2025
2	ESBR	REVISED PER PC COMMENTS	5/1/2025
3	ESBR	REVISED PER ZONING HEARING BOARD	7/31/2025

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J.B. ANDERSON
PROFESSIONAL ENGINEER
PENNSYLVANIA LICENSE No. PE 055536
MARYLAND LICENSE No. 29533
NEW JERSEY LICENSE No. 24GE05520400
VIRGINIA LICENSE No. 0402 045725
FLORIDA LICENSE No. 75184
NEW YORK LICENSE No. 093667-1

PROJECT LOCATION

POST CONSTRUCTION STORMWATER MANAGEMENT PLAN:
1039 SPROUL ROAD
TOWNSHIP OF HAVERFORD
DELAWARE COUNTY
PENNSYLVANIA

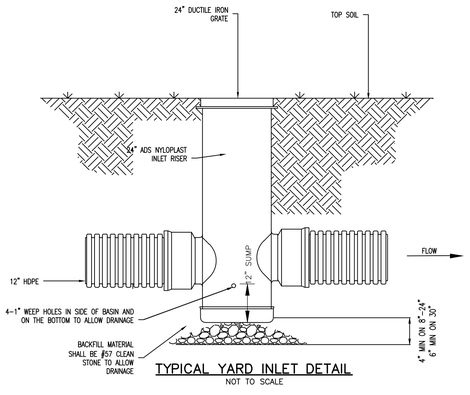
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PCSM DETAILS

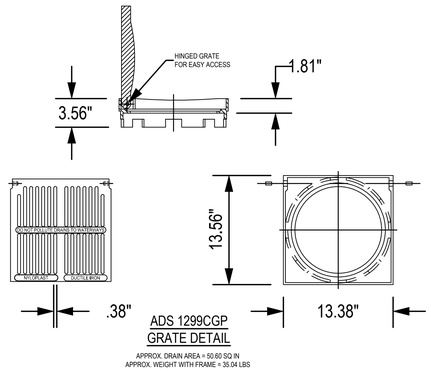
PROJ. #	23-0220	DATE	1-2-2025
CAD ID.	23-0220	DRN BY	SCC
SCALE	AS NOTED	CHK BY	JBA

SHEET 2 of 3

REVISION 3



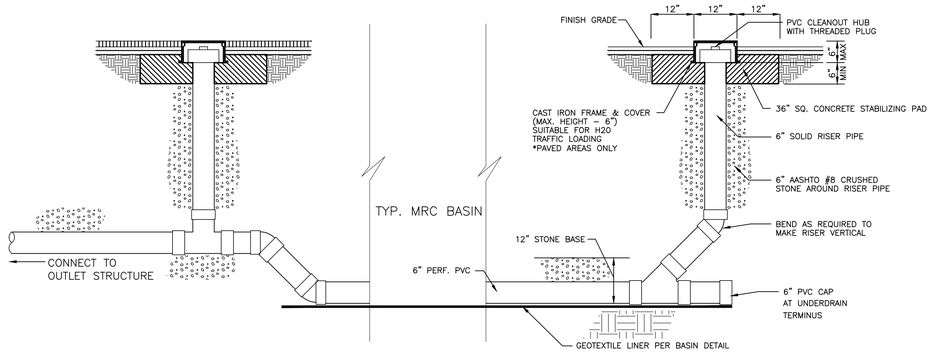
TYPICAL YARD INLET DETAIL
NOT TO SCALE



ADS 1299CGP GRATE DETAIL
APPROX. DRAIN AREA = 50.60 SQ IN
APPROX. WEIGHT WITH FRAME = 35.04 LBS

UNDERDRAIN SPECIFICATION

1. UNDERDRAIN SHALL CONSIST OF SIX (6") INCH DIAMETER PVC WITH PERFORATIONS ON ALL SIDES OF THE PIPE.
2. PERFORATIONS SHALL CONSIST OF CIRCULAR HOLES WITH A NOMINAL DIAMETER NOT LESS THAN 3/16 INCH OR GREATER THAN 3/8 INCH. PROVIDE SIMILAR ROWS OF PERFORATIONS ON BOTH SIDES OF THE PIPE'S VERTICAL CENTERLINE, WITH THE LOWER MOST ROWS SEPARATED BY AN ARC OF 60 DEGREES MINIMUM.
3. MINIMUM PIPE STIFFNESS SHALL BE 35 PSI AT 5% DEFLECTION ACCORDING TO ASTM D2412, CAPABLE OF BEING FLATTENED TO 40% OF THE ORIGINAL DIAMETER WITHOUT SPLITTING, CRACKING, OR BREAKING.
4. PERFORATIONS SHALL PROVIDE A MINIMUM INFILTRATION RATE OF 10 GALLONS PER MINUTE PER LINEAR FOOT OF PIPE, AS DETERMINED ACCORDING TO AASHTO M 176M.
5. A 6" PVC CLEANOUT SHALL BE PROVIDED AT THE TERMINUS OF EACH UNDERDRAIN, AND AS INDICATED ON THE PLAN.
6. DRILLED ORIFICES IN THE OUTLET CAP SHALL BE CLEAN, SMOOTH AND SANDED SO THAT NO BURS OR IRREGULARITIES ARE PRESENT. THE ORIFICE SHALL BE ON A CAP OF SUFFICIENT THICKNESS, AND THE EDGES OF THE ORIFICE SHOULD BE GROUND SO THAT FLOW THROUGH THE ORIFICE IS SMOOTH. ORIFICES SHOULD BE VERTICAL. THE ORIFICE CAP SHALL BE WATERTIGHT AND ACCESSIBLE FOR MAINTENANCE.



BMP 001 DETENTION BASIN UNDERDRAINS & CLEANOUT DETAIL
NOT TO SCALE

NOTE: REFER TO PLAN FOR LOCATION OF MRC BASIN UNDERDRAINS.

THERMAL IMPACTS NOTE:

IN AN ATTEMPT TO ELIMINATE THERMAL IMPACTS TO THE RUNOFF BEING CONVEYED IN THE BASIN, MEASURES HAVE BEEN TAKEN TO COOL SURFACE RUNOFF THAT WILL DISCHARGE TO THE STREAM DURING AND AFTER CONSTRUCTION. THIS INCLUDES FILTERING AND DETAINING RUNOFF BELOW GROUND AND DISCONNECTING ROOF AND PAVEMENT AREAS FROM THE RECEIVING STREAM TO ALLOW COOLING OF RUNOFF FROM HEATED IMPERVIOUS SURFACES. EXISTING DRAINAGE SWALES AND EXISTING VEGETATION IS TO BE PRESERVED AND UTILIZED THROUGHOUT THE PROJECT TO PROVIDE SHADE, EVAPOTRANSPIRATION AND INFILTRATION ALONG DISCHARGE PATH TO FURTHER COOL OR REMOVE SURFACE RUNOFF ENTERING THE RECEIVING STREAM.

CRITICAL STAGES OF IMPLEMENTATION OF THE PCSM PLAN FOR WHICH DESIGN PROFESSIONAL REVIEW SHALL BE COMPLETED:

DRY EXTENDED DETENTION BASIN (BMP 001)

THE INSTALLATION OF THE SUBSURFACE MRC DETENTION BASIN IS A CRITICAL COMPONENT TO THE PCSM OF THE SITE. THEREFORE, THE INSTALLATION OF THE FACILITY IS TO BE REVIEWED BY DESIGN PROFESSIONALS IN ORDER TO CONFIRM DESIGN PARAMETERS. THE INSTALLATION OF THE SUBSURFACE MRC BASIN SHALL BE REVIEWED AT A MINIMUM, AS FOLLOWS:

- SITE REVIEW – THIS REVIEW SHALL BE CONDUCTED BY A PROFESSIONAL ENGINEER, GEOTECHNICAL ENGINEER, OR LICENSED SURVEYOR, AND SHALL REVIEW THE GENERAL EXCAVATION OF THE BASIN TO CONFIRM APPROXIMATE DEPTH AND LOCATION ARE IN ACCORDANCE WITH PLANS. THIS REVIEW WILL ALSO CONFIRM PLACEMNT OF GEOTEXTILE AND IMPERMEABLE MEMBRANE AS REQUIRED BY EACH BASIN DETAIL. THIS REVIEW WILL ALSO VERIFY CORRECT SIZE, TYPE, LOCATION AND CONFIGURATION OF THE BASIN UNDERDRAINS.
- BASIN DEPTH AND CONFIGURATION VERIFICATION – THIS REVIEW WILL VERIFY PIPE INVERTS AND BASIN ELEVATIONS. INFORMATION WILL BE RECORDED BY A FIELD SURVEY CREW AND THE INFORMATION REVIEWED BY A PROFESSIONAL ENGINEER. STONE CAN BE INSTALLED, BUT PIPES OR CHAMBERS MUST BE VISIBLE AT EACH CORNER AND THREE LOCATIONS IN THE MIDDLE OF RUNS FOR INSPECTION AND VERIFICATION. CONTRACTOR TO SCHEDULE THE REVIEW A MINIMUM THREE DAYS IN ADVANCE. THIS INFORMATION WILL BE USED IN THE AS-BUILT SURVEY.
- FINAL BACKFILL – THIS REVIEW WILL OCCUR BY EITHER A GEOTECHNICAL ENGINEER OR PROFESSIONAL CIVIL ENGINEER. THE PROFESSIONAL SHALL OBSERVE THE PLACEMENT OF STONE BACKFILL OVER THE PIPES OR CHAMBERS AND VERIFY THAT FILTER FABRIC INSTALLATION HAS BEEN COMPLETED AROUND THE STONE AREAS. THE REVIEW SHOULD ALSO BE DOCUMENTED BY THE CONTRACTOR WITH USE OF PHOTOGRAPHS TO DOCUMENT STONE BACKFILL AND PLACEMENT OF FILTER FABRIC.
- AS-BUILT PLAN – UPON COMPLETION OF THE BASIN THE AREA SHALL BE SURVEYED BY A LICENSED SURVEYOR TO RECORD BASIN INFORMATION, INCLUDING BUT NOT LIMITED TO INLET LOCATIONS AND ELEVATIONS, PIPE SIZE, DEPTH AND LOCATION, ETC. THIS WILL UTILIZE PRIOR MEASUREMENTS UNDER REVIEW ITEMS ABOVE. THE AS-BUILT IS TO VERIFY THAT CONSTRUCTION COMPLIES WITH THE PLANS, THEREFORE IT IS RECOMMENDED THE CONTRACTOR CONDUCT THEIR OWN ANALYSIS TO ENSURE THE WORK SCOPE IS PROPERLY COMPLETED.

GENERAL STORMWATER MAINTENANCE NOTES

THE OWNER AND ALL FUTURE OWNERS OF THE PROPERTY, (COLLECTIVELY, THE 'OWNER') SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF THE STORMWATER FACILITIES IN ACCORDANCE WITH THE TOWNSHIP'S ORDINANCES AND THE PA DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP), AND SHALL KEEP ALL FACILITIES IN A GOOD, SAFE AND ATTRACTIVE CONDITION, AND IN A CONDITION SUFFICIENT TO MEET OR EXCEED THE DESIGN STANDARDS AND SPECIFICATIONS SET FORTH ON THE PLAN. THE STORMWATER FACILITIES SHALL BE IMPLEMENTED AND MANTAINED TO THE MINIMUM STANDARDS AND REQUIREMENTS AS SET FORTH IN THE ORDINANCE INCLUDING ANY BEST MANAGEMENT PRACTICES (BMPS) AS DEEMED NECESSARY TO MEET THE PURPOSE OF THE STORMWATER ORDINANCE. SAID MAINTENANCE SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:

A. OWNER SHALL REGULARLY PERFORM ALL INSPECTION AND MAINTENANCE OF THE STORMWATER FACILITIES AS IS NECESSARY AND DESIRABLE TO INSURE THE PROPER FUNCTIONING OF THE STORMWATER FACILITIES.
B. OWNER SHALL NOT ALTER THE AREA OF THE STORMWATER FACILITY IN A MANNER WHICH WOULD CAUSE THE FACILITY TO DIFFER FROM WHAT IS SHOWN ON THE PLAN WITHOUT WRITTEN APPROVAL OF THE TOWNSHIP AND DEP.
C. OWNER SHALL REMOVE DEBRIS AND SILT FROM THE FACILITY TO ENSURE THAT THE FACILITY REMAINS IN GOOD WORKING ORDER.
D. OWNER SHALL MAKE ALL REPAIRS NECESSARY TO ENSURE THE CONTINUED PROPER OPERATION OF THE FACILITY.
E. OWNER SHALL LIME AND FERTILIZE THE VEGETATED CHANNELS AND OTHER AREAS ACCORDING TO THE SPECIFICATIONS IN 'THE PENN STATE AGRONOMY GUIDE.'
F. OWNER SHALL REESTABLISH VEGETATION BY SEEDING AND MULCHING OR SODDING SCOURED AREAS WHERE VEGETATION HAS NOT BEEN SUCCESSFULLY ESTABLISHED OR WHERE THE VEGETATION HAS BEEN DAMAGED OR DESTROYED.
G. OWNER SHALL MOW AS NECESSARY TO MAINTAIN ADEQUATE STRANDS OF GRASS AND TO CONTROL WEEDS. CHEMICAL WEED CONTROL MAY BE USED IF FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS ARE MET.
H. OWNER SHALL REMOVE THE SILT FROM ALL PERMANENT STRUCTURES WHICH TRAP SILT OR SEDIMENT IN ORDER TO KEEP THE MATERIAL FROM BUILDING UP IN GRASS WATERWAYS, PIPES, DETENTION OR RETENTION BASINS, INFILTRATION STRUCTURES, BMPS AND/OR OTHER FACILITIES, AND THUS REDUCING THEIR CAPACITY.
I. OWNER SHALL KEEP ALL PIPES, SWALES, DETENTION FACILITIES AND OUTLET STRUCTURES FREE OF ANY DEBRIS OR OTHER OBSTRUCTION.
J. OWNER SHALL IMPLEMENT THE OPERATION AND MAINTENANCE SCHEDULE IN ACCORDANCE WITH THIS PLAN.

BMP MATERIAL DISPOSAL REQUIREMENTS

MATERIALS REMOVED FROM BMP'S DURING MAINTENANCE AND REPAIR ACTIVITIES SHALL BE DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS AT EITHER A PROPERLY LICENSED LANDFILL OR A COMPOSTING FACILITY. MORE SPECIFICALLY:

- IF MOWING ACTIVITIES OCCUR WITHIN ABOVE GRADE BMP'S, THE OPERATOR IS REQUIRED TO COLLECT ALL GRASS CLIPPINGS AND DISPOSE OF THE CLIPPINGS IN A LANDFILL OR COMPOSTING FACILITY.
- ANY SEDIMENT TAKEN FROM BMP'S SHALL BE DISPOSED OF IN A LANDFILL.
- TRASH SHALL BE PROPERLY DISPOSED OF BY A TRASH CARRIER OR BROUGHT DIRECTLY TO A LANDFILL. APPROPRIATE MATERIALS SHALL BE RECYCLED BY A RECYCLING CARRIER OR BROUGHT TO A RECYCLING CENTER.
- ANY WEEDS OR DETRITUS TAKEN FROM ABOVE GRADE BMP'S SHALL BE DISPOSED OF IN A LANDFILL OR BROUGHT TO A COMPOSTING CENTER.

PCSM BMP OPERATIONS AND MAINTENANCE REQUIREMENTS

BMP TYPE: DRY EXTENDED DETENTION BASIN (BMP 001)

APPLIED AREAS: THIS BMP APPLIES TO THE SUBSURFACE MRC BASIN 1

EQUIPMENT: VISUAL INSPECTION, VAC TRUCK AS NEEDED

RECORD KEEPING: THE OWNER/HOMEOWNER'S ASSOCIATION OR DESIGNATED OPERATOR SHOULD KEEP LOGS OF WHEN THE FACILITY IS CLEANED AND FILE THE RECEIPTS OR LOGS FOR THEIR RECORDS SHOULD THE MUNICIPALITY OR PADEP REQUIRE DOCUMENTATION OF THE BMP IMPLEMENTATION.

RESPONSIBLE PARTY: THE OWNER, OR AUTHORIZED OWNER REPRESENTATIVE, IS RESPONSIBLE FOR MAINTENANCE AND INSPECTION OF BMP'S ONCE CONSTRUCTION IS COMPLETED.

VISUAL INSPECTION

THE SUBSURFACE BASIN SHALL BE INSPECTED AT THE END OF THE WINTER SEASON, AT LEAST ONCE EVERY SIX MONTHS, AND 7 DAYS AFTER A RAINFALL EVENT GENERATING MORE THAN 0.8-INCHES TO ENSURE THAT THE BASIN HAS DRAINED. SHOULD THE VISUAL INSPECTION REVEAL THAT THERE IS PONDED WATER, OR THERE HAVE BEEN CONTINUOUS RAIN EVENTS, ALLOW AN ADDITIONAL 24 HOURS FOR DRAWDOWN AND RE-INSPECT.

THE BASIN SHALL BE INSPECTED AT THE OUTLET STRUCTURE, MAINTENANCE RISERS/INSPECTION PORTS AND UNDERDRAIN CLEANOUTS. THE BASIN OUTFALL SHALL BE INSPECTED FOR EROSION AT THE DISCHARGE POINT OR ANY AREA DOWNSTREAM OF THE DISCHARGE.

THE UNDERDRAIN OUTFALL LOCATED WITHIN THE OUTLET STRUCTURE MUST BE INSPECTED FOR CLOGGING OR DAMAGE TO THE SMALL ORIFICE DRILLED IN THE PVC CAP.

UPGRADIENT CATCH BASINS AND INLETS SHOULD BE INSPECTED AND CLEANED ANNUALLY, OR MORE OFTEN IF HISTORICAL MAINTENANCE RECORDS SUGGEST A MORE FREQUENT CLEANING.

VEGETATION (ABOVE THE MRC BASIN AND WITHIN THE CONTRIBUTING DRAINAGE AREA) SHOULD BE MAINTAINED IN GOOD CONDITION, AND ANY BARE SPOTS REVEGETATED.

INSPECT AT LEAST TWO TIMES PER YEAR AFTER RUNOFF EVENTS GREATER THAN 0.8 INCHES, AND MAKE SURE THAT RUNOFF DRAINS DOWN WITHIN 7 DAYS. AT LEAST TWO TIMES PER YEAR, OR MORE IF HISTORICAL MAINTENANCE INDICATE IT IS NECESSARY, INSPECT FOR ACCUMULATION OF SEDIMENT, DAMAGE TO OUTLET CONTROL STRUCTURES, EROSION, SIGNS OF WATER CONTAMINATION/SPILLS, AND INSTABILITY.

ENSURE THE UNDERDRAINS ARE CLEAR OF SEDIMENT AND OBSTRUCTIONS AT ALL TIMES. FLUSH UNDERDRAINS AS NECESSARY TO MAINTAIN DESIGN CAPACITY. ENSURE THERE IS NO EROSION AT THE DOWNSTREAM PIPE DISCHARGES FROM THE BASIN.

ENSURE THE BASIN BACKFILL SHOWS NO SIGNS OF SLIDING, SLUMPING OR SETTLEMENT.

ALL MRC BMP COMPONENTS SHOULD BE MAINTAINED AS INDICATED IN THE STORMWATER BMP MANUAL.

FOLLOWING VISUAL INSPECTION, TAKE FURTHER ACTION WHEN NECESSARY AS OUTLINED BELOW.

LOG BOOK ENTRIES SHALL NOTE THE DATE, TIME, APPROXIMATE NUMBERS OF DAYS AFTER A RAINFALL EVENT, AND NAME OF PERSON INSPECTING THE FACILITY. INSPECTIONS DO NOT NEED TO BE COMPLETED BY A PROFESSIONAL AND CAN BE COMPLETED BY OWNER OR HIRED CONTRACTORS.

SUBSURFACE BASIN MAINTENANCE

THE FOLLOWING ITEMS ARE TO BE COMPLETED SHOULD VISUAL INSPECTION REVEAL FURTHER ACTION IS NEEDED. MAINTENANCE ACTIVITIES SHALL UTILIZE EQUIPMENT THAT WILL NOT CAUSE DAMAGE TO THE SUBSURFACE BASIN COMPONENTS. MAXIMUM LOADING OVER THE BASIN CHAMBERS SHALL NOT BE EXCEEDED.

STANDING WATER – THIS BASIN IS MEANT TO DRAIN COMPLETELY WITHIN 7 DAYS AFTER A RAINFALL EVENT. IT IS NORMAL FOR UP TO 12 INCHES OF STANDING WATER TO BE OBSERVED WITHIN THE UNDERDRAIN SYSTEM AT ANY TIME. IF HIGHER STANDING WATER IS OBSERVED, THEN THE BASIN SHALL BE DRAINED BY USE OF A PUMP AND/OR VAC TRUCK AND THE BOTTOM CLEANED BY A VACUUM TRUCK OR SIMILAR EQUIPMENT. THE UNDERDRAIN SHALL BE FLUSHED AND THE UNDERDRAIN OUTFALL CAP WITHIN THE JELLYFISH STRUCTURE SHALL BE CREARED OR PREPLACED IF DAMAGED.

SEDIMENT AND CLOGS SHALL BE REMOVED IMMEDIATELY*. IT IS IMPERATIVE THAT IF THIS OCCURS, A MORE STRINGENT MAINTENANCE REGIME IS ENACTED IN THE UPSTREAM DRAINAGE AREAS TO PREVENT SEDIMENT FROM ENTERING THE BASIN.

IF THE BASIN CONTINUES TO HOLD WATER FOR GREATER THAN 7 DAYS, A PROFESSIONAL ENGINEER AND THE CONSERVATION DISTRICT SHOULD BE CONSULTED FOR FURTHER INVESTIGATION AND REMEDIATION AS NECESSARY.

VEGETATIVE COVER – IF SOILS WITHIN THE BASIN DRAINAGE AREA APPEAR TO BE DRY, OR IF WEATHER IS IN DROUGHT CONDITION, PROVIDE ADDITIONAL IRRIGATION/WATERING FOR GROUND COVER AND PLANTS. IF SOIL IS WET AND NOT DRAINING ADDITIONAL GRADING, LANDSCAPING, OR SOIL REMEDIATION SHOULD BE CONDUCTED TO ENSURE WELL DRAINING SOILS THROUGHOUT THE PROPERTY. REPLACE PLANTINGS THAT ARE NOT THRIVING. DETRITUS SHALL BE REMOVED EVERY YEAR TO PREVENT SEDIMENTATION AND CLOGGING OF THE BASIN.

OUTLET STRUCTURE CONDITION – ENSURE THAT THE STRUCTURE IS NOT CRACKED AND IS SEALED AT ALL JOINTS AND PIPE CONNECTIONS.

SEDIMENT ACCUMULATION IN STRUCTURE SUMP – CLEAN OUT THE STRUCTURE SUMP AND FURTHER REVIEW ITEMS ABOVE TO DETERMINE THE CAUSE OF SEDIMENT.

EROSION – FOR UPGRADIENT AREAS, IMMEDIATELY REPLACE TOPSOIL, SEED AND STABILIZE IN ACCORDANCE WITH DEP REQUIREMENTS. SLOPES IN EXCESS OF 3:1 WHICH EXHIBIT EROSION SHOULD BE HYDROSEEDED OR STABILIZED WITH EROSION CONTROL MATTING, PROPERLY ANCHORED/STAPLED PER THE MANUFACTURERS INSTRUCTIONS.

THE OUTFALL PIPE AND ENDWALL SHALL BE KEPT CLEAR OF VEGETATION AT ALL TIMES. SEDIMENT SHALL BE CLEANED FROM THE RIP-RAP APRONS. APRONS SHALL BE RESTORED TO PLAN DIMENSIONS AS NECESSARY. IF EROSION IS OCCURRING DOWNSTREAM OF PIPE OUTFALLS, RIP-RAP APRONS SHALL BE INCREASED IN SIZE, OR ADDITIONAL ENERGY DISSIPATION PRACTICES SHALL BE IMPLEMENTED. CONSULT THE CONSERVATION DISTRICT AND A PROFESSIONAL ENGINEER FOR GUIDANCE.

LOG BOOK ENTRIES FOR MAINTENANCE ACTIVITIES SHALL NOTE THE DATE, TIME, APPROXIMATE NUMBERS OF DAYS AFTER A RAINFALL EVENT, AND NAME OF PERSON(S) MAINTAINING THE FACILITY AND WORK COMPLETED.

*SEE BMP MATERIAL DISPOSAL REQUIREMENTS

CLIENT DATA

Cornerstone
Consulting Engineers & Design Services, Inc.
213 West Main Street . Lansdale . PA 19446
Phone: 215-362-2600 . Fax: 215-362-8400
WWW.CORNERSTONENET.COM
Philadelphia Region 215-362-2600
Lehigh Valley Region 610-820-8200
Pocono Region 570-839-1770

REVISIONS

NO	DESCRIPTION	BY	DATE
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MARYLAND LICENSE No: 29313
NEW JERSEY LICENSE No. 24GE04520400
VIRGINIA LICENSE No. 0402 045725
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PROJECT LOCATION

POST CONSTRUCTION STORMWATER MANAGEMENT PLAN:
1039 SPROUL ROAD
TOWNSHIP OF HAVERFORD
DELAWARE COUNTY
PENNSYLVANIA

TITLE

PCSM DETAILS & NOTES

PROJ. #	23-0220	DATE	1-2-2025
CAD ID.	23-0220	DRN BY	SCC
SCALE	AS NOTED	CHK BY	JBA

SHEET 3 of 3

REVISION 3

TOWNSHIP OF
HAVERFORD
DELAWARE COUNTY
1014 DARBY ROAD
HAVERTOWN, PA 19083-2551
(610) 446-1000

JUDY TROMBETTA, PRESIDENT
KEVIN MCCLOSKEY, ESQ., VICE PRESIDENT
DAVID R. BURMAN, TWP MANAGER/SECRETARY
AIMEE CUTHBERTSON, CPA, ASS'T TWP MANAGER
JOHN F. WALKO, SOLICITOR
PENNONI ASSOCIATES INC., ENGINEER

WARD COMMISSIONERS
1ST WARD BRIAN D. GONDEK, ESQ.
2ND WARD SHERYL FORSTE-GRUPP, PHD.
3RD WARD KEVIN MCCLOSKEY, ESQ.
4TH WARD JUDY TROMBETTA
5TH WARD LAURA CAVENDER
6TH WARD LARRY HOLMES, ESQ.
7TH WARD CONOR QUINN
8TH WARD GERARD T. HART, MD
9TH WARD MICHAEL MCCOLLUM

August 28, 2025

HAVTT 30263

Jaime Jilozian, Director of Community Development
Haverford Township
1014 Darby Road
Havertown, PA 19083-2251

RE: Preliminary/Final Subdivision Plan
Sproul Development Partners, LLC- 1039 Sproul Road- 2nd Review

Dear Ms. Jilozian:

As requested, we have reviewed the following prepared by Cornerstone Consulting Engineers & Design Services, Inc. in connection with the referenced property:

- "*Preliminary/Final Residential Subdivision Plan"* (20 sheets) dated January 2, 2025, last revised July 31, 2025.

- *"Post-Construction Stormwater Management Report for Sproul Road Development Partners, LLC"* dated January 2, 2025, last revised July 31, 2025.

- Supporting Documentation

The applicant, Sproul Road Development Partners, LLC, proposes to subdivide an existing 2.80-acre site (Folio No. 22-04-00661-00) into four (4) new lots at the referenced property. A new single-family dwelling and driveway are proposed for each lot. A common driveway is proposed for access to the proposed dwellings from Sproul Road (SR 320). Individual stormwater facilities on each lot are proposed for stormwater management. The property is within the R-1A Residential Zoning District. The proposed dwelling will be served by public water service and a proposed new sanitary sewer extension in Sproul Road.

The applicant has requested the following waivers:

- From §160-3.B requiring a preliminary plan.
- From §160-4.A requiring a two-step preliminary/final plan approval procedure.
- From §160-4.E(5)[e](4) requiring all storm drainage, sanitary sewer and public water supply lines or facilities within 400 feet of the site and ownership or maintenance responsibilities for the same be provided.
- From §160-5.B(3)[j](1)requiring a minimum right-of-way width of 60 feet and a 38 foot cartway for major collector streets.

- From §160-5.B(3)[p] requiring that no fence, hedge, shrubbery, wall, planting or other obstruction be located within the right-of-way.
- From §160-5.B(4)[a] requiring curbs for all existing streets.
- From §160-5.B(4)[c] requiring sidewalks for all existing streets.
- From §160-5.B(4)[f] requiring streetlights for multifamily residential areas at the discretion of the Board of Commissioners.
- From §160-5.B(5)[g] requiring a minimum grade of 0.5% and a minimum inside diameter of 15 inches for proposed storm sewers.
- From §160-5.B(6) requiring shade trees to be installed on both sides of the street.

The applicant was granted the following variances by the Zoning Hearing Board on May 29, 2025:

- From §154A-5 to permit a maximum of 22.3% of very steep slope area where a maximum of 5% is required.
- From §182-720.C(3) to permit cut and fill within very steep slopes.
- From §182-720.C(1) to permit sanitary sewer and stormwater management facilities within very steep slopes.
- From §182-715 to allow the proposed building setbacks for each single-family home as shown on the zoning plan, which comply with the R-1A district regulations, rather than adhering to the median setback lines of existing structures within 300 feet on the same side of the street.

The following Special Exceptions were authorized by the Zoning Hearing Board on May 29, 2025:

- §182-720.C(5)[b] to allow the installation of sanitary sewer facilities within steep slopes.
- §182-720.C(5)[c] to allow for the installation of access driveway for single-family detached dwellings within steep slopes.

The following comments remaining outstanding from our January 29, 2025 review letter:

ZONING

1. Proposed Lot 4 does not appear to meet the requirement for lot width. (§182-203.C(3), §182-106) **Addressed.**

2. The applicant should confirm conformity of proposed setback lines with the median setback lines of existing structures on the same side of the street and within 300 feet of the proposed new construction. (§182-715) **The applicant was granted a variance from this requirement.**

3. The area of proposed very steep slope disturbance exceeds the maximum allowable set forth in §154A-5. **The applicant was granted a variance to permit a maximum disturbance of 22.3%.**

4. Cut and fill is prohibited within very steep slopes. (§182-720.C(3)[a]) **The applicant was granted a variance from this requirement.**

5. It appears that a portion of the proposed dwelling on Lot 2 may be within steep slopes. Building construction within steep slopes is not permitted. (§182-720.C(6)) **Addressed.**

6. Driveways within steep slopes are permitted when authorized as a special exception by the Zoning Hearing Board. (§182-720.C(5)[c] **The applicant was granted a Special Exception from this requirement.**

7. Walls may not extend into the street right-of-way, nor split any division or boundary lines. (§182-727.B) Walls greater than 30-inches in height are not permitted within the front yard. (§182-727.C) Top and bottom of wall elevations should be provided. **Addressed.**

8. The proposed side yards indicated in the zoning data table are inconsistent with the dimensions identified on the plan. **Addressed.**

SUBDIVISION AND LAND DEVELOPMENT

9. After submitting the preliminary plan, the applicant shall be responsible for notifying all property owners within 200 feet of the boundaries of the subject lot that a preliminary plan proposed for the subject lot has been filed, no less than 10 days prior to the first Planning Commission meeting for which the plan has been scheduled for review. (§160.4.E(7)) Notice shall be made by certified mail, return receipt requested, or by other proof of notification satisfactory to the Township. Proof of such notification shall be presented to the Planning Commission at the first meeting for which the plan has been scheduled for review. (§160.4.E(8)) **Addressed.**

10. The location, names and widths of streets, curbs and pavement (public or private), all property lines and names of owners of tracts or parcels located within 200 feet of the site should be provided. (§160-4.E(5)[e](3)) **Partially addressed. It appears that additional features will be necessary along the route of the proposed sanitary sewer.**

11. All storm drainage, sanitary sewer and public water supply lines or facilities within 400 feet of the site and ownership or maintenance responsibilities for the same should be provided. (§160-4.E(5)[e](4)) **The applicant has requested a waiver from this requirement.**

12. Curb is required to be provided for all existing streets. (§160-5.B(4)[a]) **The applicant has requested a waiver from this requirement.**

13. Sidewalk is required to be provided for all existing streets. (§160-5.B(4)[c]) **The applicant has requested a waiver from this requirement.**

14. Regarding the horizontal sight distance for the proposed driveway, the applicant should address the following:

    a. The sight distance to the right of the driveway is indicated by distance but not depicted on the plan. Subsequent submissions should identify the full length of the required sight distance on the plan including existing features near the line of sight. (§160-4.E(5)[e](12)). **Addressed.**
    b. The sight distance to the left encroaches onto three (3) of the proposed properties. The applicant should address how these areas will be protected from any future obstructions that could impact the sight distance. and confirm with PennDOT the acceptability of such measures. T**he applicant indicates the area within the sight distance will be protected**

from future modifications via a restrictive covenant. This covenant shall be submitted to the Township for review.

c. Perpetual maintenance of the area established for the sight distance below the proposed retaining wall shall be addressed on the plan. **The applicant has indicated that the perpetual maintenance of the retaining wall and preservation of the sight distance will be provided in an agreement as part of final approval.**

15. The Applicant is proposing an ultimate right-of-way consisting of an additional 13.5-feet beyond the existing right-of-way line for the entire length of the property. Much of the area between the existing right-of-way and the proposed ultimate right-of-way consists of very steep slopes. The applicant should review the need for any additional right-of-way with PennDOT. **The applicant has indicated that the Highway Occupancy Permit and additional right-of-way are currently under review by PennDOT.**

16. In each residential district involving the creation of two (2) or more new building lots, land shall be required to be set aside for open space and/or parks and recreational facilities, or a fee-in-lieu requested. (§160-5.C(2,4)) **The applicant has indicated that a fee-in-lieu of open space/recreational facilities will be requested.**

17. A Sewage Facilities Planning module will be required. (§160-4.E(5[d])

18. A signature block for the Township Planning Commission is required. (§160-4.H(1)[e]) **The signature block could not be located on the plan.**

STORMWATER MANAGEMENT

19. A Drainage Plan Application and Checklist are required to be provided. (§78-26.A(7)) **The Drainage Plan Application and Checklist were not included with this submission.**

20. A justification is to be provided if stormwater facilities other than green infrastructure methods and LID practices are proposed to achieve the volume, rate, and water quality requirements. (§78-26.A(6)) **Addressed.**

21. A tabulation of existing and proposed impervious surface should be provided on the plan. (§78-25.B(7)) **Addressed.**

22. Infiltration test results are required to be submitted. (§78-34.B(2)) **Addressed.**

23. The infiltration volume to be captured and infiltrated shall be the net 2-year, 24-hour volume. For modeling purposes, existing (pre-development) non-forested pervious areas must be considered meadow in good condition or its equivalent, and twenty (20) percent of existing impervious area, when present, shall be considered meadow in good condition. (§78-36.A(2)[a]) **The applicant has indicated that site conditions are unfavorable for infiltration. Based on our review of the infiltration testing report, infiltration is feasible in various locations on site. The applicant should consider alternate areas for infiltration to meet the infiltration volume requirement.**

24. The water quality volume is to be addressed as set forth in §78-37.D(1). **Additional information should be provided to confirm the required water quality volume has been provided.**

25. Areas proposed for infiltration are to be protected from compaction during construction. (§78-34.F(1) **Construction fence should be indicated around the perimeter of the proposed infiltration facility.**

26. Pretreatment is required prior to infiltration. (§78-36.A(1)[d]) **Addressed.**

27. Existing utilities should be indicated on the plan. (§78-26.B(5)) **Addressed.**

28. A statement, signed by the applicant, acknowledging that any revisions to the stormwater management plan must be approved by the Township, is required. (§78-26.B(22)) **Addressed.**

29. The designer's certification in accordance with §78-26.B(23) is required to be included on the plan. **The certification could not be located on the plan.**

30. The municipal signature block as set forth in §78-26.B(24) is required to be included on the plan. **The signature block could not be located on the plan.**

31. The bottom of bed elevations for the proposed stormwater facilities should be identified on the details and reviewed for consistency with the elevations indicated in the calculations. **Addressed.**

32. The lengths of the proposed stormwater management facilities for Lots 2 and 4 are inconsistent with the stormwater calculations. **Addressed.**

33. Pipe conveyance calculations should be provided. (§78-25.A(3)) **Pipe conveyance calculations do not appear to have been included in the stormwater management report.**

34. A BMP Maintenance Agreement shall be executed and a contribution of $2,200.00 per lot to the Township Stormwater Control and BMP Operation and Maintenance Fund shall be made. (§78-49, §78-51)

GENERAL

35. A list of requested waivers should be included on the plan. (§160-4.E(5)[c]) **Addressed**

36. Highway Occupancy Permits will be required for the driveway, proposed sewer, and utility installations on Sproul Road. (§160-5.B(3)[k])

37. Evidence of approval of an NPDES permit from the Delaware County Conservation District is required prior to construction. (§160-4.F(2)[b])

38. A tree removal permit is required for removal of the existing trees on site. (§170-4.B) All proposed landscaping and tree replacement should be reviewed by the Township Shade Tree Commission.

39. Details for the proposed retaining walls are to be provided in future submissions. **Not addressed.**

40. Spot elevations shall be provided to confirm the required 20-foot leveling area at a grade no greater than 4-percent is provided at the end of the proposed driveway (Township design Standards) **Not addressed.**

41. Regarding the proposed sanitary sewer system:

    a. Approval from Radnor-Haverford-Marple Sewer Authority will be required for the connection to the existing manhole.
    b. The applicant shall indicate the responsibility for ownership/maintenance of the on-site portion of the system.
    c. Further details for various aspects of the sewer extension will be required on subsequent submissions.
    d. Future submissions shall depict all existing utilities within the Sproul Road right-of-way. Based on these utilities, modifications to the alignment of the proposed sewer main may be required.
    e. A manhole shall be provided at the legal right-of-way line to delineate responsibility for ownership of the new system.

42. The proposed stormwater management facilities and associated storm sewer piping should be indicated on the grading/utility plan (Sheet 3). **Addressed.**

43. Roadway restoration details shall be provided for all work proposed within the cartway of Sproul Road.

The following comments are based on the most recent submission:

1. **The building envelope as identified for proposed Lot 2 does not provide the required 25-foot rear yard setback. (§182-203.C(7))**

2. **The building envelope as identified on the plan for proposed Lot 1 does not provide the required 15-foot side yard setback at the southeastern portion of the lot. (§182-203.C(6))**

3. **The stormwater management design relies on conveyance of overland flow from impervious surfaces, including roof drains to the various yard drains. We have concerns that over time, the individual property owners may add new and/or modify existing features that could alter or interrupt this drainage pattern. We recommend that roof drains be connected to the inlet structure.**

4. **Several trees are proposed on the south side of the driveway overtop of the stormwater piping.**

5. **The proposed grate for the yard inlet is smaller than the 24-inch ductile iron grate indicated on the plan. In addition, the small surface openings appear to make is susceptible to clogging during low flows, and unable to capture higher velocity flows. Alternative inlets/grate should be considered.**

6. **The retaining wall across from the proposed house on Lot 2 is approximately 5 to 6 feet high. Fall protection should be addressed for the top of this wall.**

Should you have any further questions or comments, please contact the undersigned.

Sincerely,

PENNONI

Charles Faulkner, PE
Senior Engineer

CF/brg

cc: Sproul Road Development Partners, LLC
John Anderson, PE, Cornerstone Consulting Engineers & Design Services, Inc.

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POST CONSTRUCTION STORMWATER MANAGEMENT REPORT

FOR

SPROUL ROAD DEVELOPMENT PARTNERS, LLC

RESIDENTIAL SUBDIVISION

1039 SPROUL ROAD
HAVERFORD TOWNSHIP
DELAWARE COUNTY
PENNSYLVANIA

January 2, 2025
Revised July 31, 2025

PREPARED BY



John B. Anderson, P.E.
License Number: PE055536

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STORMWATER MANAGEMENT SUMMARY

PROPOSED FOUR LOT RESIDENTIAL SUBDIVISION
1039 SPROUL ROAD
HAVERFORD TOWNSHIP, DELAWARE COUNTY, PA

Introduction

The purpose of this report is to identify the existing and proposed conditions concerning the stormwater management issues for the subject development. Outlined in the body of this document is a stormwater management design that is intended to comply with the Township of Haverford's Stormwater Management Ordinance. The area of total earth disturbance within the property is 1.96 acres and the total new or replacement impervious coverage is 23,083 sf (0.53 acres). The proposed subdivision results in an overall increase of 13,940 sf (0.32 acres) impervious area for the overall development.

Existing Conditions

The subject property is located at 1039 Sproul Road in Haverford Township, Delaware County, Pennsylvania. The site is bordered by residential properties. It consists of one lot totaling approximately 2.934 acres within the R-1A Residential zoning district. The existing lot contains a single-family house, and an asphalt driveway from Sproul Road.

Currently, there is no stormwater management on site. Runoff from the site flows via sheet flow in a northerly direction to adjoining residential properties and a southerly direction to Sproul Road. The site is located within the Darby – Cobbs Stormwater Management District and specifically in the Darby Creek Watershed Sub-district B1.

Proposed Conditions

The existing dwelling and a portion of the existing driveway is to be demolished and removed. The four (4) lot subdivision will provide for the development of four (4) new single-family residences and associated improvements. The grading of the property is held consistent from pre- to post- development and proposed stormwater management infiltration facilities are to be constructed on each lot to mitigate the increase in stormwater runoff.

To manage the post development stormwater, an underground detention basin consisting of manufactured storage chambers is proposed to collect most of the runoff generated by the proposed improvements to the site, including all roof runoff and all driveway runoff to the extent feasible.

Soil testing conducted throughout the site determined that the existing soils underlying the site are unsuitable for infiltration practices due to low depths to rock and very limited infiltration rates at depths necessary for the installation of subsurface storage practices. Surface storage practices are not feasible on the site due to limitations of surface area available. It is the goal of the developer and the Township is to minimize the disturbance of the existing site beyond those areas necessary to construct the planned improvements. Much of the site also contains existing vegetation and steep slopes areas that are not ideal

for locating surface stormwater management facilities. As such, the proposed basin has been designed in accordance with PADEP Managed Release Concept (MRC) standards. The design of the basin is contained within the body of this report.

Managed runoff from the developed site will discharge to the existing storm sewer within Sproul Road, which discharges to the south of the site to Darby Creek. Darby Creek has a Chapter 93 designated use of CWF (Cold Water Fish) and MF (Migratory Fish).

Soil Conditions

The site is entirely made up of Made land, gabbro and diabase materials. This is based on the USDA-NRCS Soils Survey of Delaware County, from the USDA web soil survey.

Soil	HSG	Slope	Depth to Seasonal High Water Table	Depth to Bedrock	Hazard of Erosion	Permeability
GjB	C	3-8%	>80 inches	40-51 inches	Medium	Moderately Low
McE	C	25-35%	>80 inches	>80 inches	Medium	Moderately Low
MgB	C	3-8%	>80 inches	>80 inches	Medium	Moderately Low
MgC	C	8-15%	>80 inches	>80 inches	Medium	Moderately Low

The following resolutions are proposed for soil limitations that may be encountered: For construction within areas where ground water is encountered, drainage channels or underdrains should be provided. Fill for the area should be obtained from other site areas and an appropriate seed mixture should be planted. For construction within areas where bedrock is encountered, a revised design should be considered first to relocate the construction and if relocation is not possible, ripable rock shall be excavated. The site has been designed to avoid soil limitations when possible.

1.0 Township Ordinance Requirements, Chapter 78

Section 78-35 Non-Structural Project Design

The layout for the site, including the proposed grading, was designed to limit the area of disturbance necessary to install the proposed improvements. Much of the site contains sensitive areas of existing vegetation, mature trees, and steep slopes. These areas are to be preserved to the extent possible. The construction sequence has been developed to limit the extent and time of exposed soils during construction of the project.

Runoff from most of the proposed impervious surfaces will drain to a detention basin to provide management of the runoff prior to discharge from the site. The remaining uncontrolled runoff will discharge via sheet flow over vegetated areas to the site boundaries as in the existing condition. Uncontrolled bypass runoff rate and volume discharges to downstream properties will be reduced in the post construction condition.

Section 78-36 Infiltration Volume Requirements

Soil testing conducted throughout the site determined that the existing soils underlying the site are unsuitable for infiltration practices due to low depths to rock and very limited infiltration rates at depths necessary for the installation of subsurface storage practices.

Surface storage practices are not feasible on the site due to limitations of surface area available. It is the goal of the developer and the Township is to minimize the disturbance of the existing site beyond those areas necessary to construct the planned improvements. Much of the site also contains existing vegetation and steep slopes areas that are not ideal for locating surface stormwater management facilities.

As such, the proposed basin has been designed in accordance with PADEP Managed Release Concept (MRC) standards. The MRC Basin is designed to manage the increased rate and volume of runoff generated by storm events up to and including the 2-year/24-hour design storm. The design of the basin is contained within the body of this report.

Section 78-37 Water Quality Requirements

The proposed MRC Basin has been designed to treat water quality for runoff from the 1.2-inch/2-hour PADEP water quality design storm. Additionally, low impact development practices are proposed on the site including protection of existing vegetation and sensitive natural features downstream of disturbed areas, minimization of areas disturbed for grading and building, and disconnection of impervious surfaces to the extent possible. Driveways and roof drains are to be discharge to grass areas prior to reaching the proposed MRC Basin and discharging from the site.

Section 78-38 Stream Bank Erosion Requirements

In addition to controlling the water quality volume (in order to minimize the impact of stormwater runoff on downstream stream bank erosion), the primary requirement to control stream bank erosion is to design a BMP to detain the proposed conditions two-year, twenty-four-hour design storm to the existing conditions one-year flow using the SCS Type II distribution. Additionally, provisions shall be made to release the proposed conditions one-year storm for a minimum of 24 hours from a point in time when the maximum volume of water from the one-year storm is stored in a proposed BMP.

Point of Interest #1
Pre-Development 1-year Runoff Rate = 1.31 cfs
Post-Development 2-year Runoff Rate = 1.27 cfs

Point of Interest #2
Pre-Development 1-year Runoff Rate = 0.32 cfs
Post-Development 2-year Runoff Rate = 0.22 cfs

1-year storm release time from Basin 1 = 115 hours

Section 78-39 Stormwater Peak Rate Control and Management Districts

The site is located within District B-1 of the Darby – Cobbs Creek Watershed. As required by Chapter 78 of the Ordinance, existing pervious ground cover used in determining the existing conditions flow rates for the disturbed portion of the site was modeled as meadow in good condition. Additionally, 20 percent of existing impervious surfaces were modeled as meadow in good condition. The rate control calculations contained herein demonstrate compliance with the runoff peak rate reductions required in the Darby-Cobbs Creek watershed.

Section 78-40 Calculation Methodology

The peak rate and volume of runoff generated by the site has been calculated using the TR-20 NRCS Method. Runoff has been calculated using *HydroCAD* version 10.10-3a stormwater modeling software.

The following is a summary chart of the results from stormwater runoff modeling contained herein, showing the rate reduction for each design storm to each Point of Analysis.

Point of Analysis #1

Post Development Design Storm	Total Runoff per Routing of Post Development conditions (cfs)	Pre-Development Design Storm	Total Runoff per Pre-development conditions (cfs)	Difference (cfs)
2-year	1.27	1-year	1.31	-0.04
10-year	2.73	5-year	3.06	-0.33
25-year	3.49	10-year	3.92	-0.43
50-year	4.06	25-year	5.09	-1.03
100-year	6.69	100-year	6.96	-0.27

Point of Analysis #2

Post Development Design Storm	Total Runoff per Routing of Post Development conditions (cfs)	Pre-Development Design Storm	Total Runoff per Pre-development conditions (cfs)	Difference (cfs)
2-year	0.22	1-year	0.32	-0.10
10-year	0.39	5-year	0.86	-0.47
25-year	0.49	10-year	1.14	-0.65
50-year	0.56	25-year	1.51	-0.95
100-year	0.64	100-year	2.09	-1.45

2.0 HYDROGRAPH SUMMARIES

Events for Subcatchment 1S: Pre-Development DA to POA 1

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
1-yr	2.72	1.31	5,296	0.77
2-yr	3.27	2.01	7,613	1.10
5-yr	4.11	3.06	11,578	1.68
10-yr	4.82	3.92	15,228	2.20
25-yr	5.83	5.09	20,758	3.00
50-yr	6.69	6.04	25,698	3.72
100-yr	**7.62**	**6.96**	**31,219**	**4.52**

Events for Subcatchment 2S: Pre-Development DA to POA 2

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
1-yr	2.72	0.32	1,284	0.60
2-yr	3.27	0.53	1,955	0.92
5-yr	4.11	0.86	3,121	1.47
10-yr	4.82	1.14	4,208	1.98
25-yr	5.83	1.51	5,866	2.76
50-yr	6.69	1.80	7,356	3.46
100-yr	**7.62**	**2.09**	**9,027**	**4.25**

Events for Subcatchment 3S: Post Development DA 1 to Basin 1

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
1-yr	2.72	2.44	7,064	1.28
2-yr	3.27	3.26	9,322	1.70
5-yr	4.11	4.37	13,006	2.36
10-yr	4.82	5.22	16,281	2.96
25-yr	5.83	6.31	21,119	3.84
50-yr	6.69	7.12	25,358	4.61
100-yr	**7.62**	**7.92**	**30,033**	**5.46**

Events for Subcatchment 4S: Post Development Bypass to POA 1

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
1-yr	2.72	0.83	2,496	0.82
2-yr	3.27	1.25	3,579	1.18
5-yr	4.11	1.85	5,414	1.78
10-yr	4.82	2.32	7,087	2.34
25-yr	5.83	2.95	9,602	3.16
50-yr	6.69	3.42	11,836	3.90
100-yr	**7.62**	**3.89**	**14,322**	**4.72**

Events for Subcatchment 5S: Post Development Bypass to POA 2

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
1-yr	2.72	0.15	432	0.89
2-yr	3.27	0.22	608	1.26
5-yr	4.11	0.31	906	1.88
10-yr	4.82	0.39	1,175	2.43
25-yr	5.83	0.49	1,580	3.27
50-yr	6.69	0.56	1,938	4.01
100-yr	**7.62**	**0.64**	**2,336**	**4.84**

Events for Subcatchment 8S: Pre-Development MRC DA 1 to Basin 1

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
1-yr	2.72	1.07	4,316	0.79
2-yr	3.27	1.63	6,173	1.12
5-yr	4.11	2.47	9,344	1.70
10-yr	4.82	3.16	12,259	2.23
25-yr	5.83	4.08	16,671	3.03
50-yr	6.69	4.83	20,610	3.75
100-yr	**7.62**	**5.56**	**25,009**	**4.55**

Events for Pond 6P: Basin 1

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-yr	2.44	0.22	200.41	4,045
2-yr	3.26	0.37	200.86	5,138
5-yr	4.37	0.54	201.67	7,041
10-yr	5.22	0.66	202.43	8,685
25-yr	6.31	1.46	203.71	10,738
50-yr	7.12	2.66	203.94	11,005
100-yr	**7.92**	**4.29**	**204.18**	**11,291**

Events for Link 7L: Post Development Total to POA 1

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
1-yr	0.84	0.84	**0.00**
2-yr	1.27	1.27	0.00
5-yr	2.13	2.13	0.00
10-yr	2.73	2.73	0.00
25-yr	3.49	3.49	0.00
50-yr	4.06	4.06	0.00
100-yr	**6.69**	**6.69**	0.00

3.0 EXISTING CONDITION HYDROGRAPHS

Summary for Subcatchment 1S: Pre-Development DA to POA 1

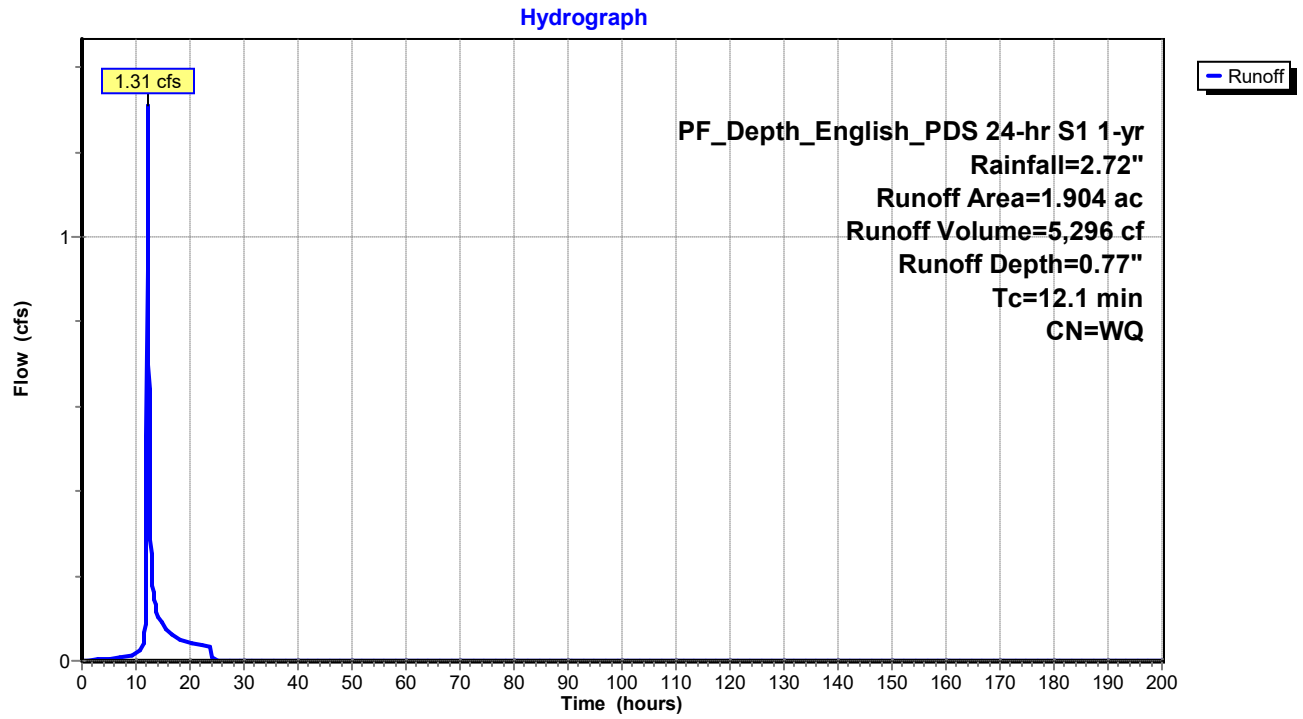
Runoff = 1.31 cfs @ 12.14 hrs, Volume= 5,296 cf, Depth= 0.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 1-yr Rainfall=2.72"

	Area (ac)	CN	Description
*	0.165	98	
*	0.089	70	
*	1.609	71	
*	0.041	71	
	1.904		Weighted Average
	1.739		91.33% Pervious Area
	0.165		8.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1					**Direct Entry,**

Subcatchment 1S: Pre-Development DA to POA 1



Summary for Subcatchment 1S: Pre-Development DA to POA 1

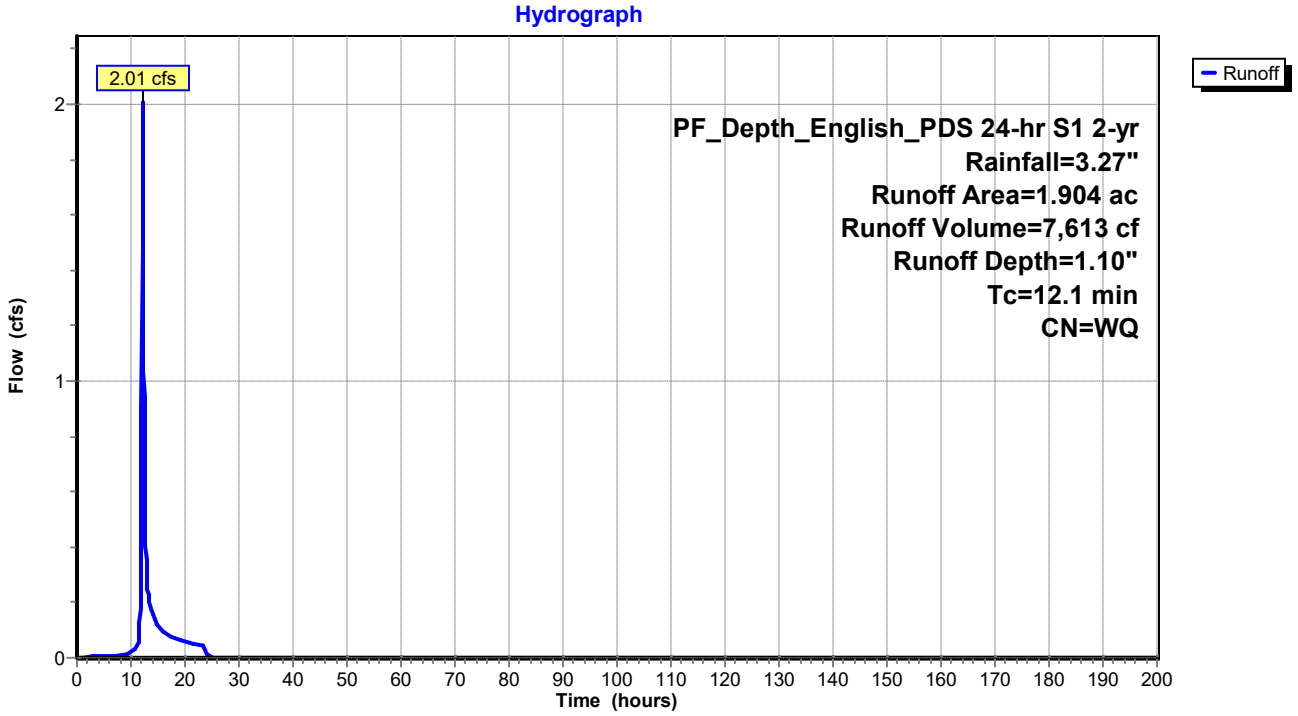
Runoff = 2.01 cfs @ 12.14 hrs, Volume= 7,613 cf, Depth= 1.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 2-yr Rainfall=3.27"

	Area (ac)	CN	Description
*	0.165	98	
*	0.089	70	
*	1.609	71	
*	0.041	71	
	1.904		Weighted Average
	1.739		91.33% Pervious Area
	0.165		8.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1					**Direct Entry,**

Subcatchment 1S: Pre-Development DA to POA 1



Summary for Subcatchment 1S: Pre-Development DA to POA 1

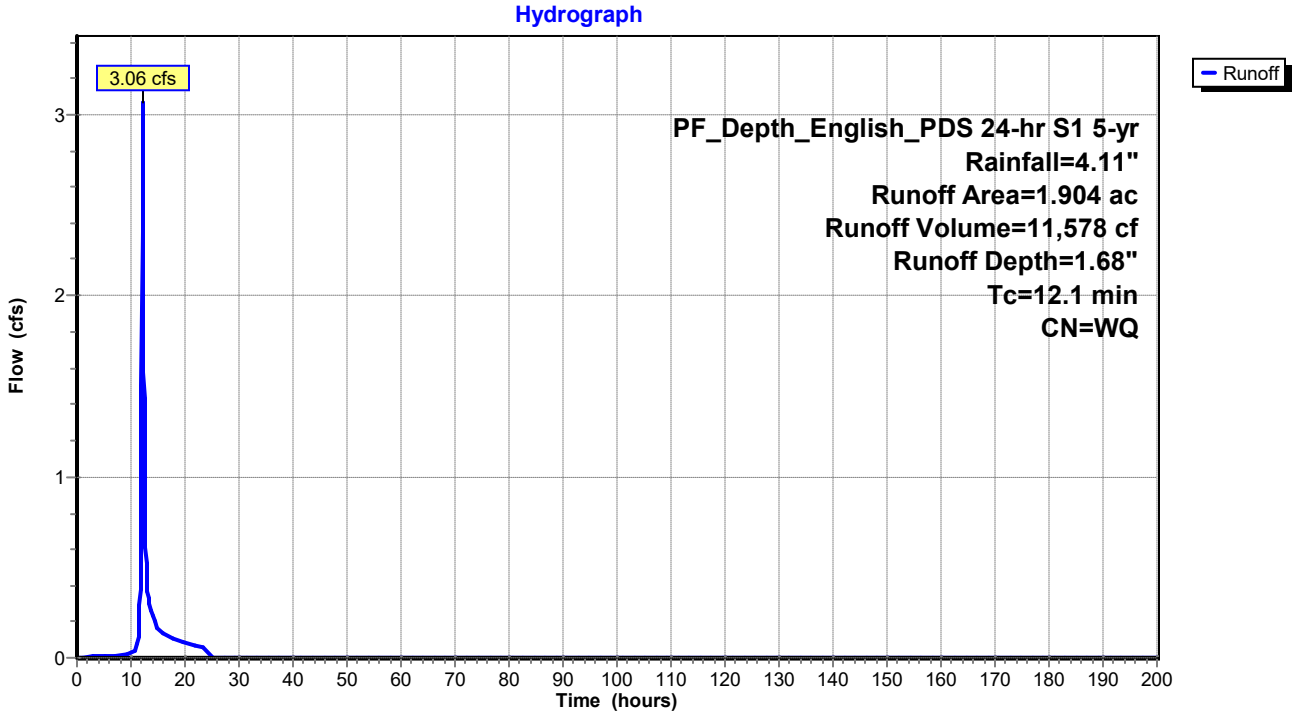
Runoff = 3.06 cfs @ 12.13 hrs, Volume= 11,578 cf, Depth= 1.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 5-yr Rainfall=4.11"

	Area (ac)	CN	Description
*	0.165	98	
*	0.089	70	
*	1.609	71	
*	0.041	71	
	1.904		Weighted Average
	1.739		91.33% Pervious Area
	0.165		8.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1					**Direct Entry,**

Subcatchment 1S: Pre-Development DA to POA 1



Summary for Subcatchment 1S: Pre-Development DA to POA 1

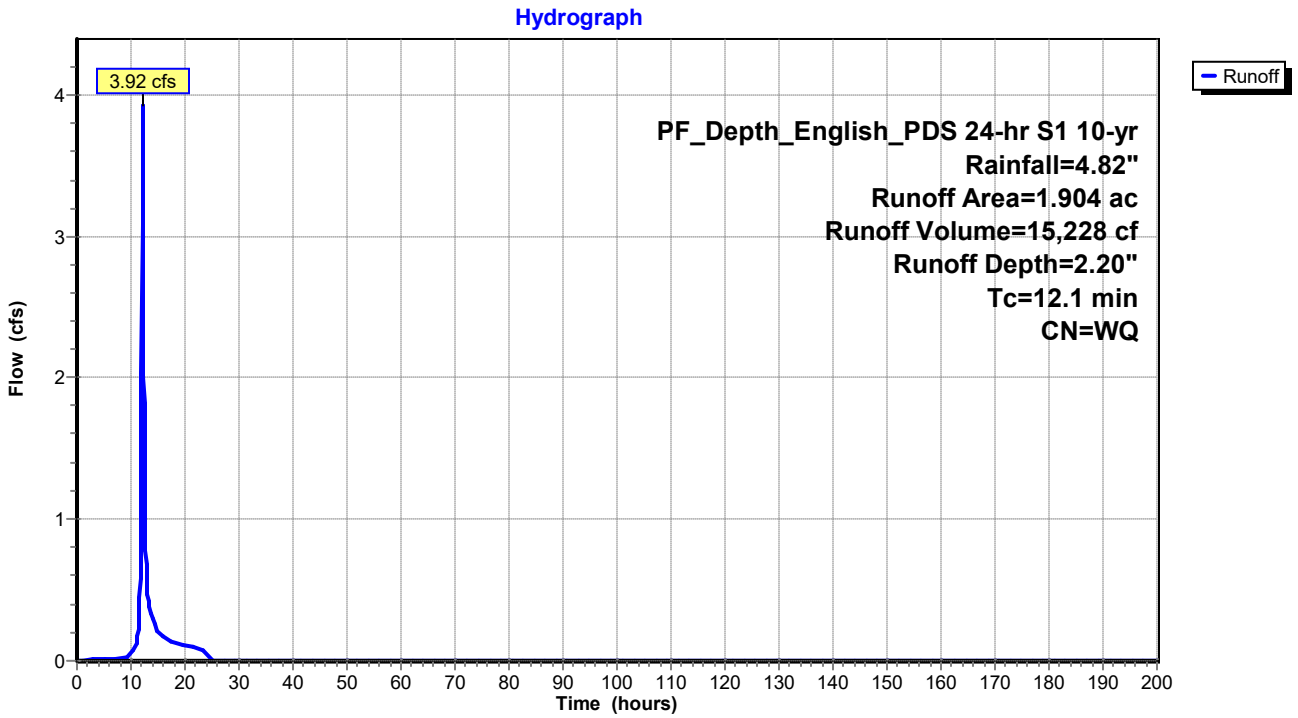
Runoff = 3.92 cfs @ 12.13 hrs, Volume= 15,228 cf, Depth= 2.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 10-yr Rainfall=4.82"

	Area (ac)	CN	Description
*	0.165	98	
*	0.089	70	
*	1.609	71	
*	0.041	71	
	1.904		Weighted Average
	1.739		91.33% Pervious Area
	0.165		8.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1					**Direct Entry,**

Subcatchment 1S: Pre-Development DA to POA 1



Summary for Subcatchment 1S: Pre-Development DA to POA 1

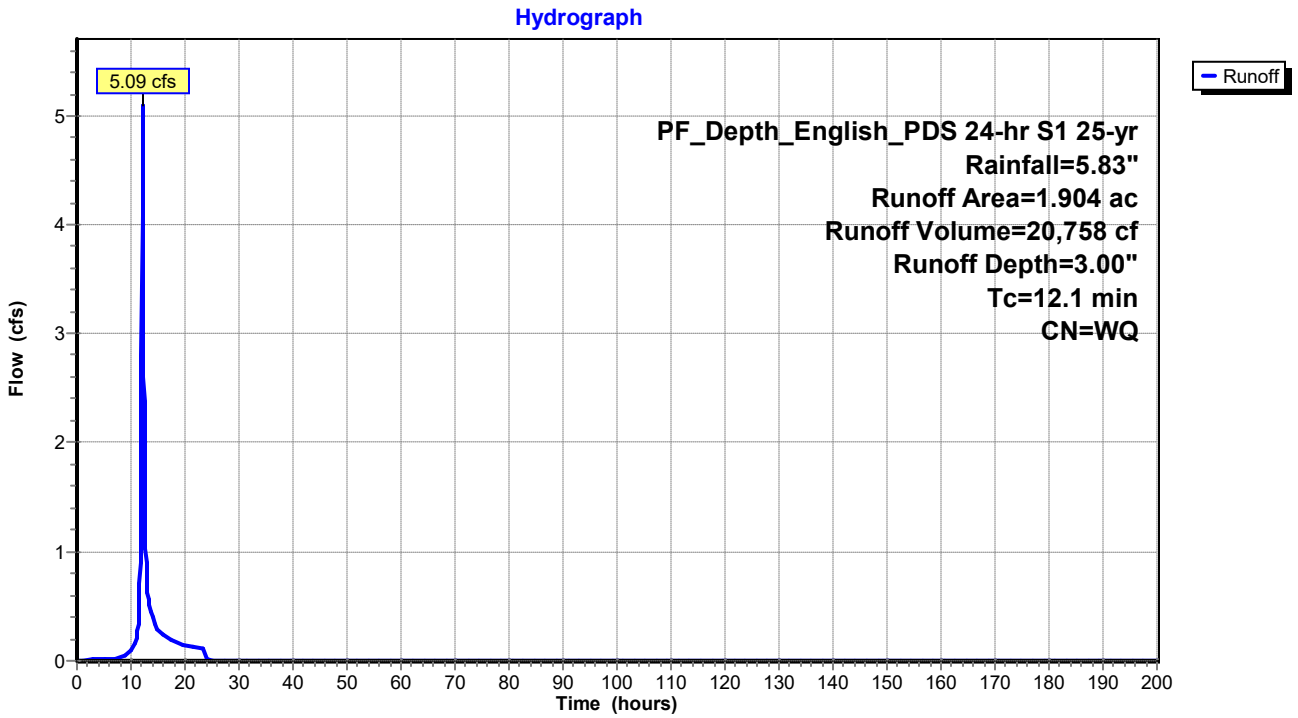
Runoff = 5.09 cfs @ 12.13 hrs, Volume= 20,758 cf, Depth= 3.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 25-yr Rainfall=5.83"

	Area (ac)	CN	Description
*	0.165	98	
*	0.089	70	
*	1.609	71	
*	0.041	71	
	1.904		Weighted Average
	1.739		91.33% Pervious Area
	0.165		8.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1					**Direct Entry,**

Subcatchment 1S: Pre-Development DA to POA 1



Summary for Subcatchment 1S: Pre-Development DA to POA 1

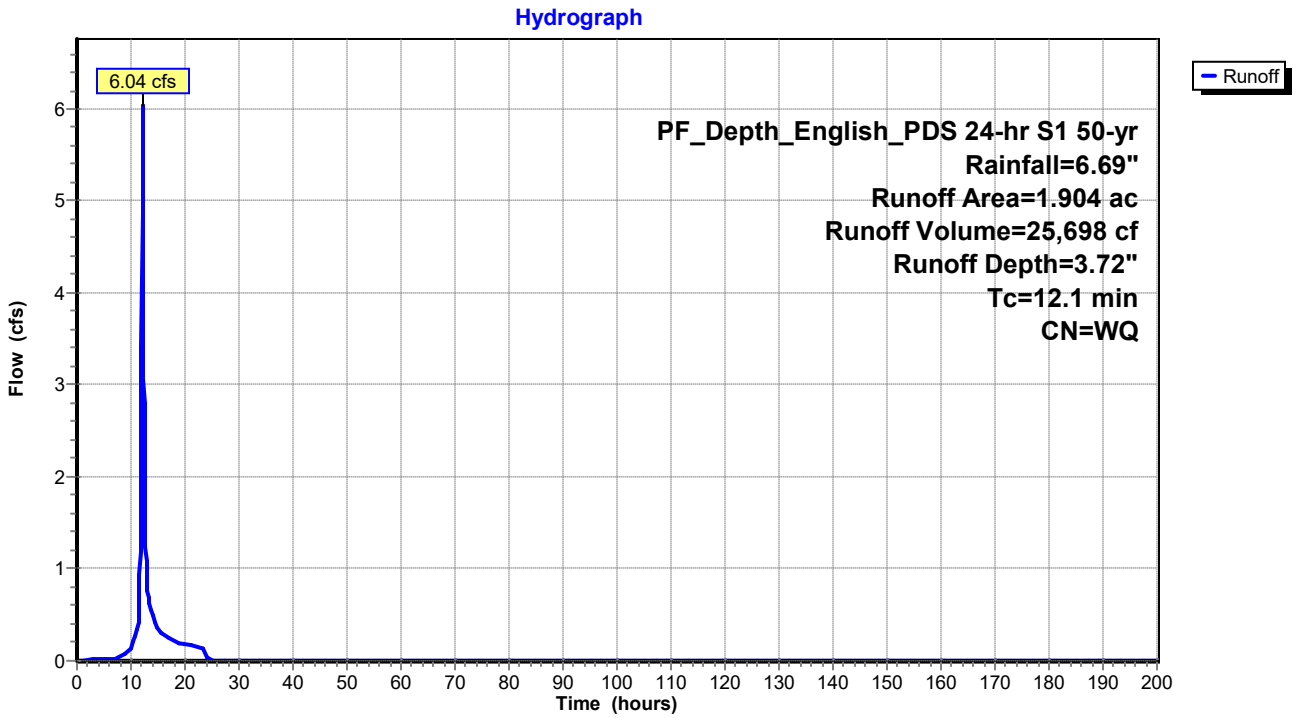
Runoff = 6.04 cfs @ 12.12 hrs, Volume= 25,698 cf, Depth= 3.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 50-yr Rainfall=6.69"

	Area (ac)	CN	Description
*	0.165	98	
*	0.089	70	
*	1.609	71	
*	0.041	71	
	1.904		Weighted Average
	1.739		91.33% Pervious Area
	0.165		8.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1					**Direct Entry,**

Subcatchment 1S: Pre-Development DA to POA 1



Summary for Subcatchment 1S: Pre-Development DA to POA 1

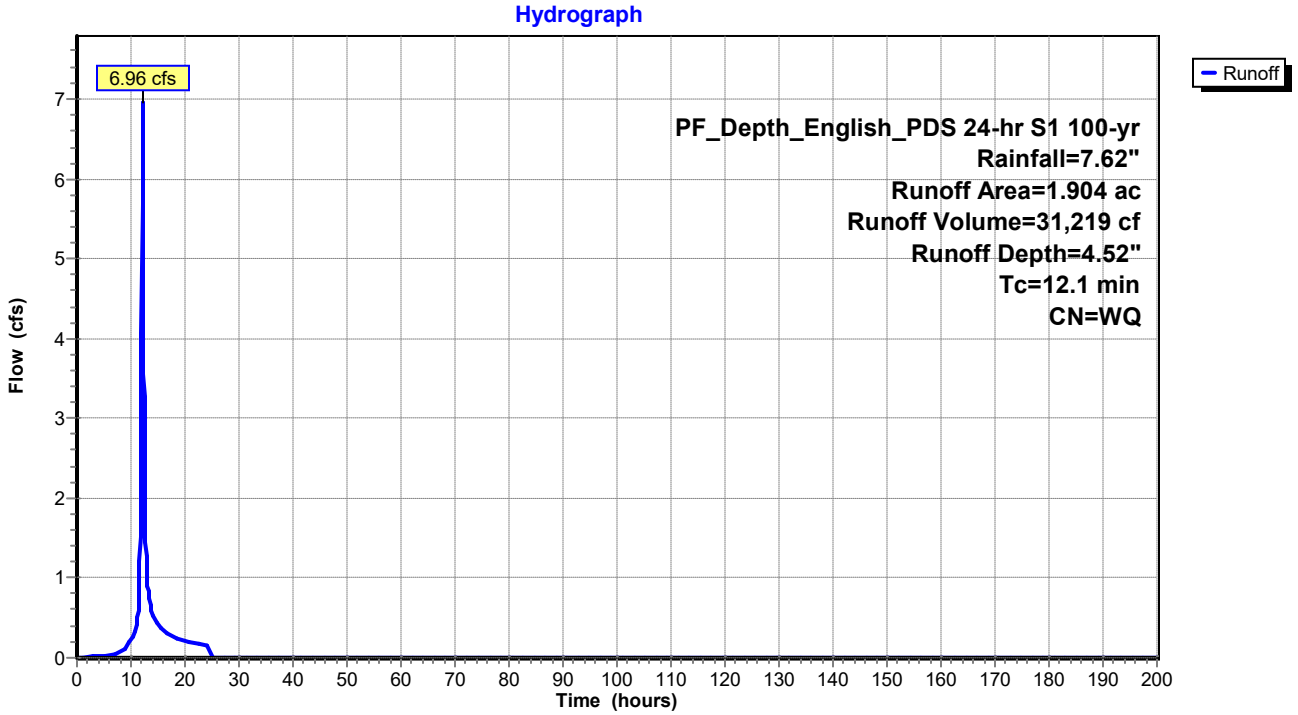
Runoff = 6.96 cfs @ 12.12 hrs, Volume= 31,219 cf, Depth= 4.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 100-yr Rainfall=7.62"

	Area (ac)	CN	Description
*	0.165	98	
*	0.089	70	
*	1.609	71	
*	0.041	71	
	1.904		Weighted Average
	1.739		91.33% Pervious Area
	0.165		8.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1					**Direct Entry,**

Subcatchment 1S: Pre-Development DA to POA 1



Summary for Subcatchment 2S: Pre-Development DA to POA 2

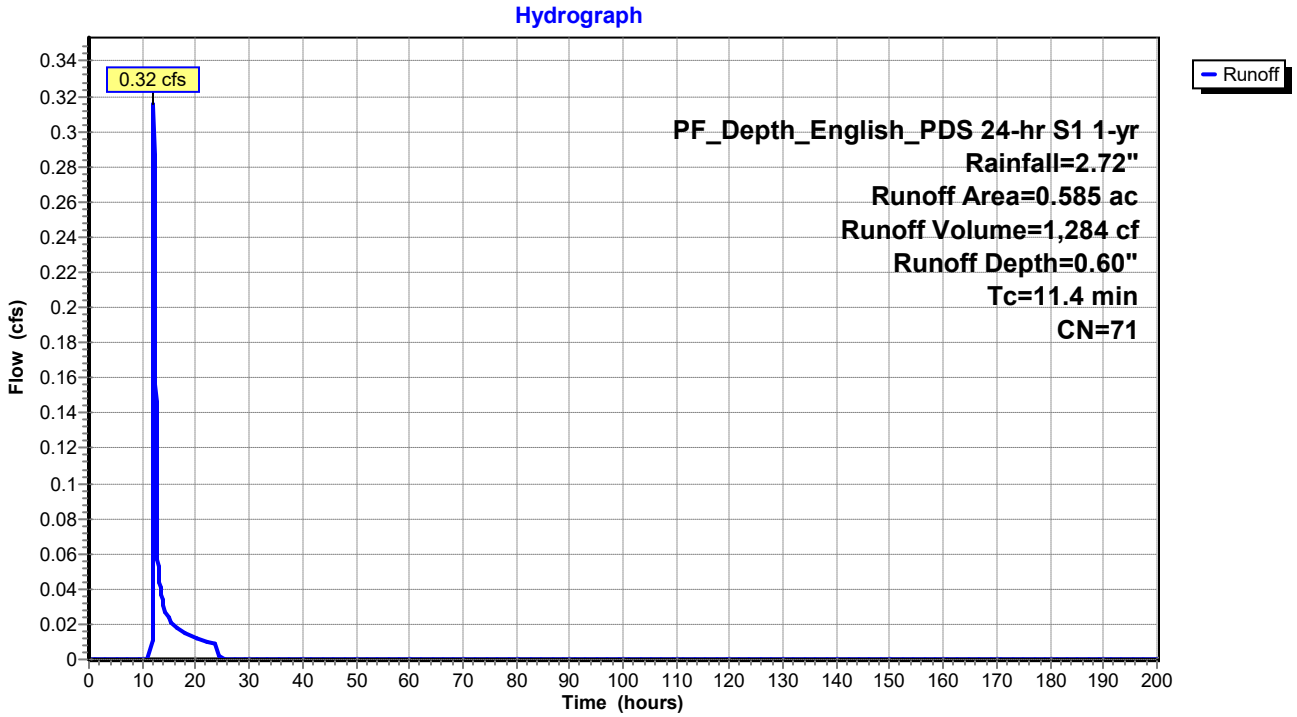
Runoff = 0.32 cfs @ 12.14 hrs, Volume= 1,284 cf, Depth= 0.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 1-yr Rainfall=2.72"

	Area (ac)	CN	Description
*	0.585	71	
	0.585		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4					**Direct Entry,**

Subcatchment 2S: Pre-Development DA to POA 2



Summary for Subcatchment 2S: Pre-Development DA to POA 2

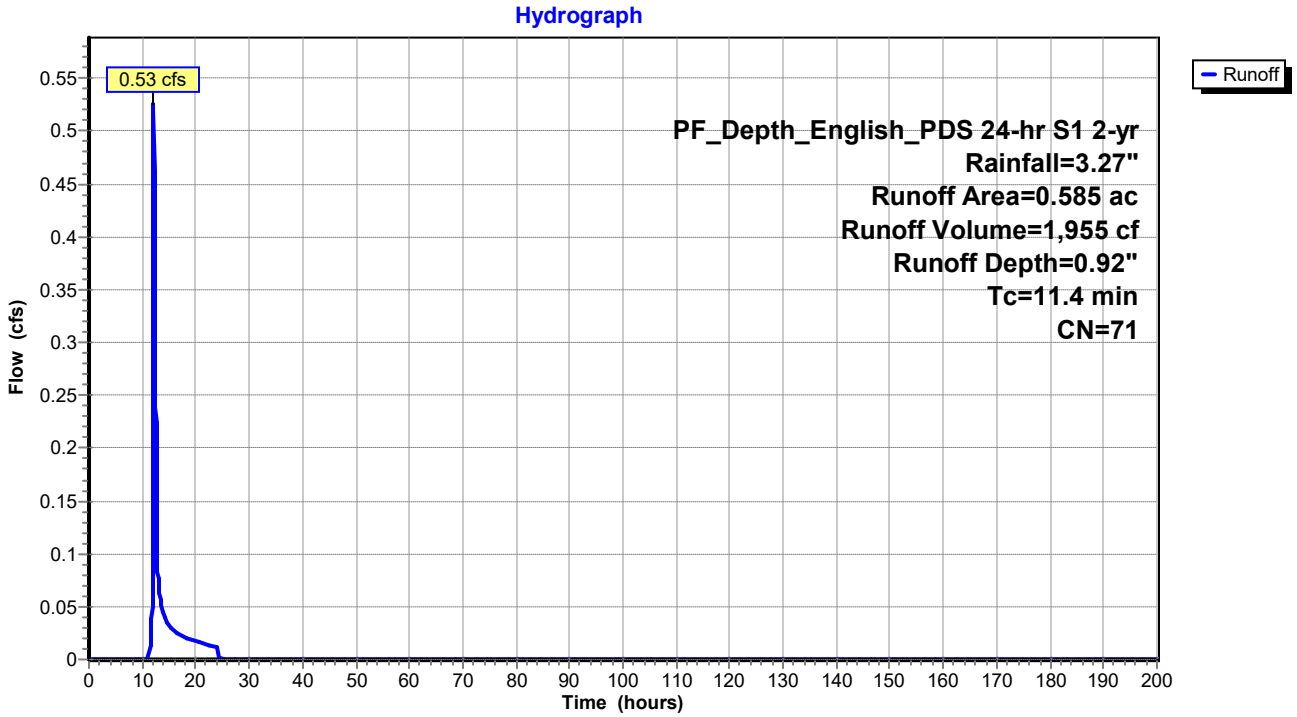
Runoff = 0.53 cfs @ 12.13 hrs, Volume= 1,955 cf, Depth= 0.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 2-yr Rainfall=3.27"

	Area (ac)	CN	Description
*	0.585	71	
	0.585		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4					**Direct Entry,**

Subcatchment 2S: Pre-Development DA to POA 2



Summary for Subcatchment 2S: Pre-Development DA to POA 2

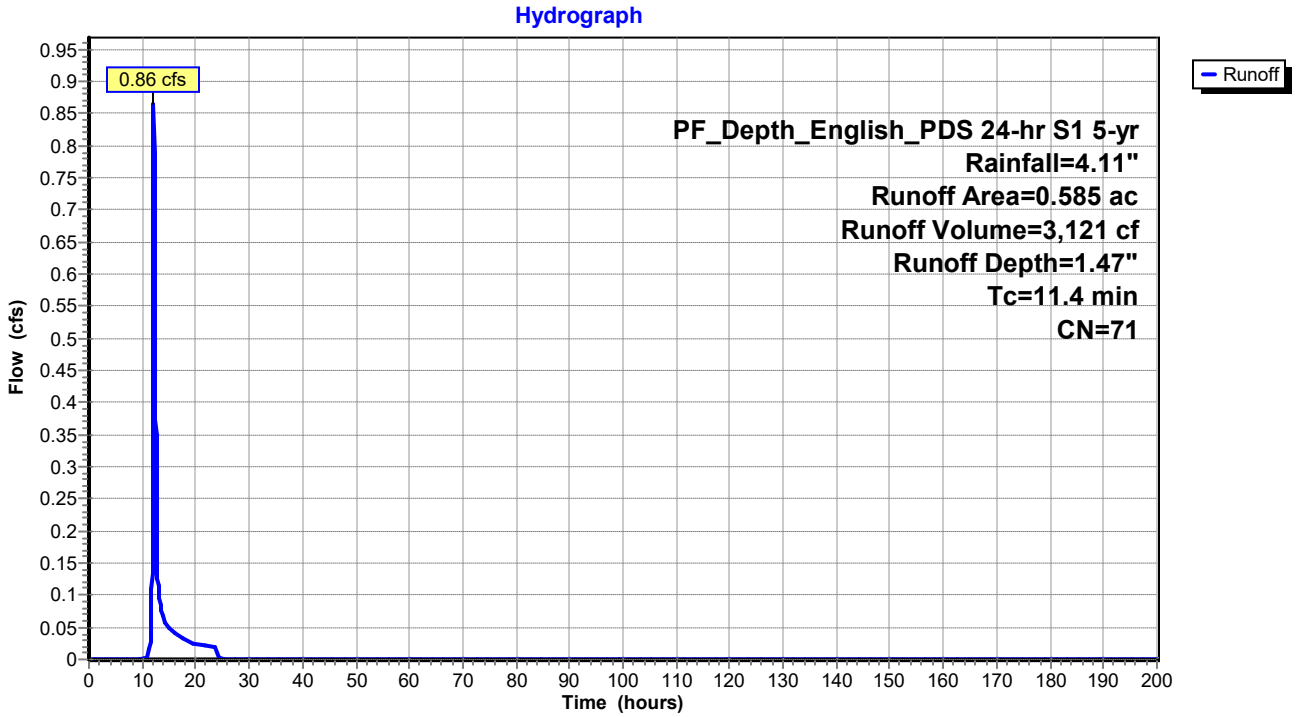
Runoff = 0.86 cfs @ 12.12 hrs, Volume= 3,121 cf, Depth= 1.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 5-yr Rainfall=4.11"

	Area (ac)	CN	Description
*	0.585	71	
	0.585		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4					**Direct Entry,**

Subcatchment 2S: Pre-Development DA to POA 2



Summary for Subcatchment 2S: Pre-Development DA to POA 2

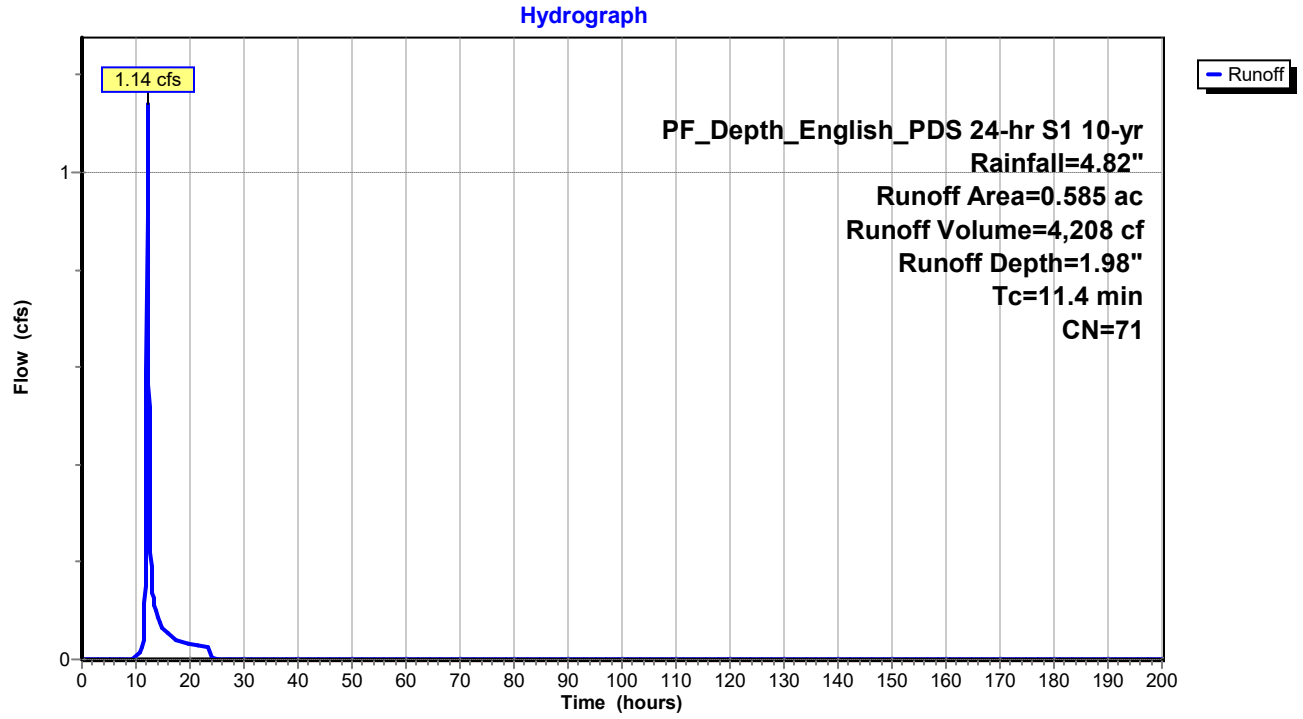
Runoff = 1.14 cfs @ 12.12 hrs, Volume= 4,208 cf, Depth= 1.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 10-yr Rainfall=4.82"

	Area (ac)	CN	Description
*	0.585	71	
	0.585		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4					**Direct Entry,**

Subcatchment 2S: Pre-Development DA to POA 2



Summary for Subcatchment 2S: Pre-Development DA to POA 2

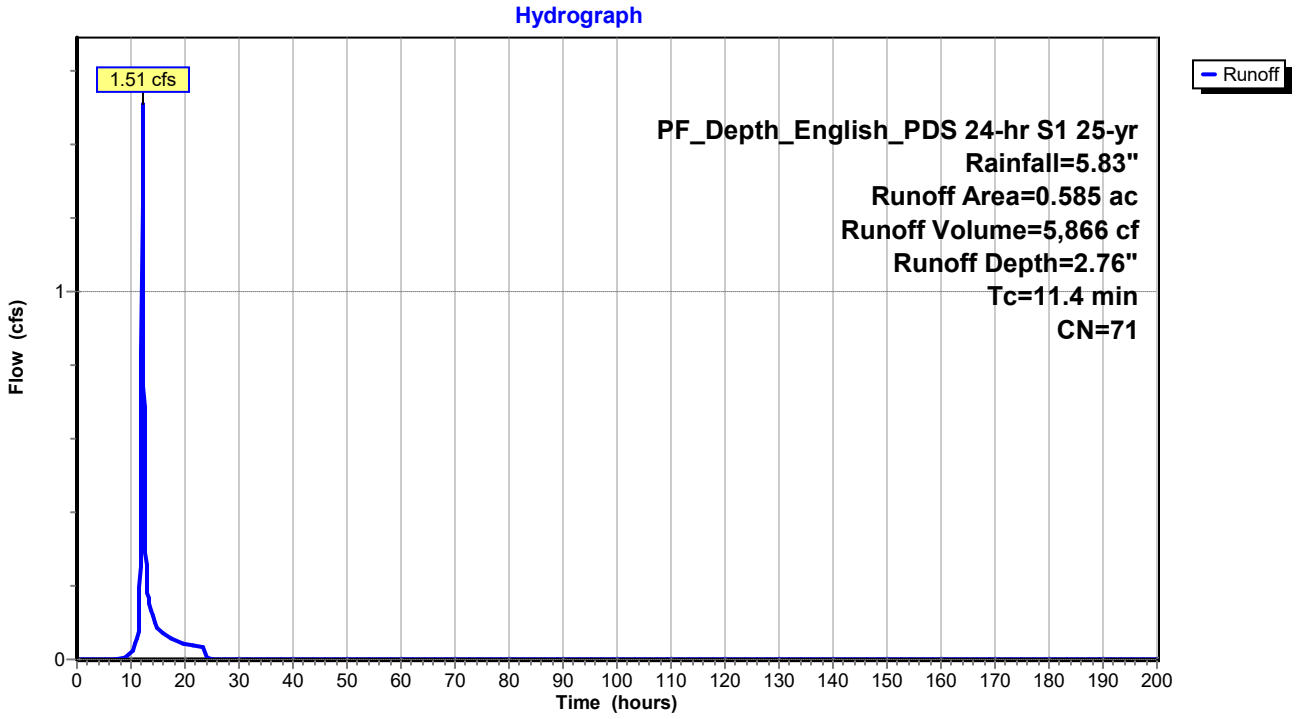
Runoff = 1.51 cfs @ 12.12 hrs, Volume= 5,866 cf, Depth= 2.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 25-yr Rainfall=5.83"

	Area (ac)	CN	Description
*	0.585	71	
	0.585		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4					**Direct Entry,**

Subcatchment 2S: Pre-Development DA to POA 2



Summary for Subcatchment 2S: Pre-Development DA to POA 2

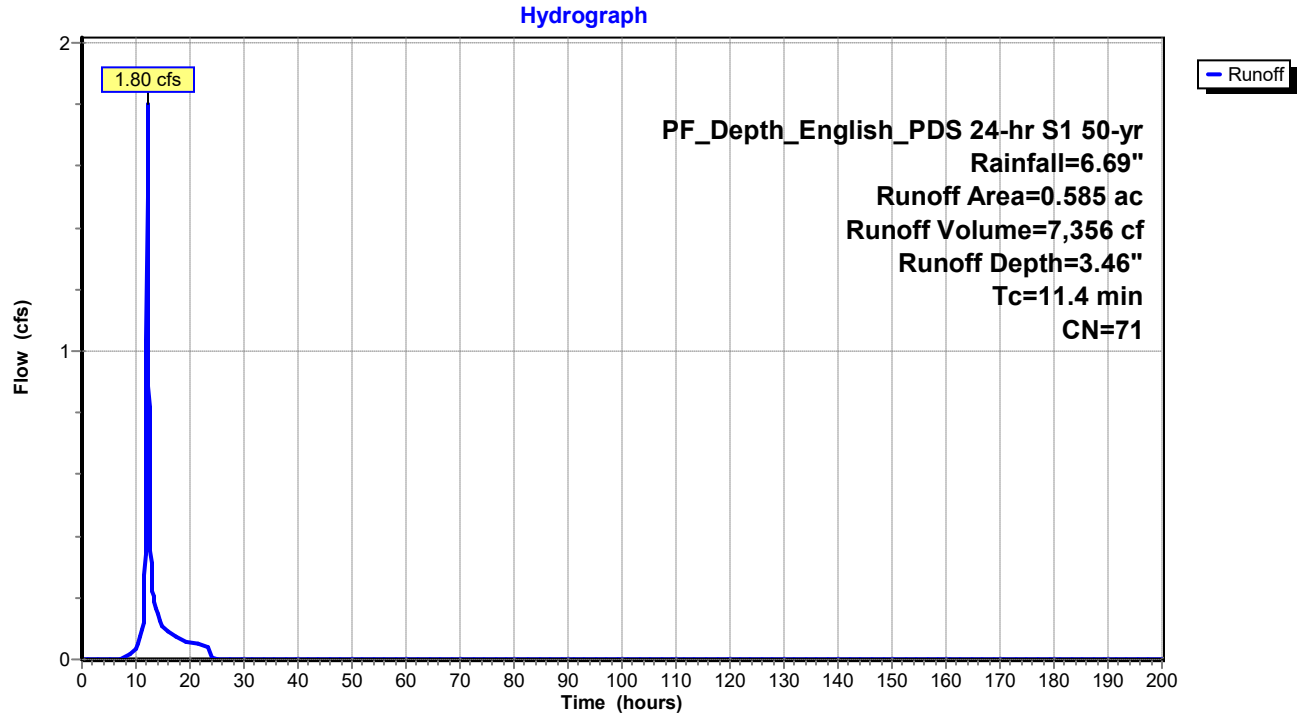
Runoff = 1.80 cfs @ 12.12 hrs, Volume= 7,356 cf, Depth= 3.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 50-yr Rainfall=6.69"

	Area (ac)	CN	Description
*	0.585	71	
	0.585		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4					**Direct Entry,**

Subcatchment 2S: Pre-Development DA to POA 2



Summary for Subcatchment 2S: Pre-Development DA to POA 2

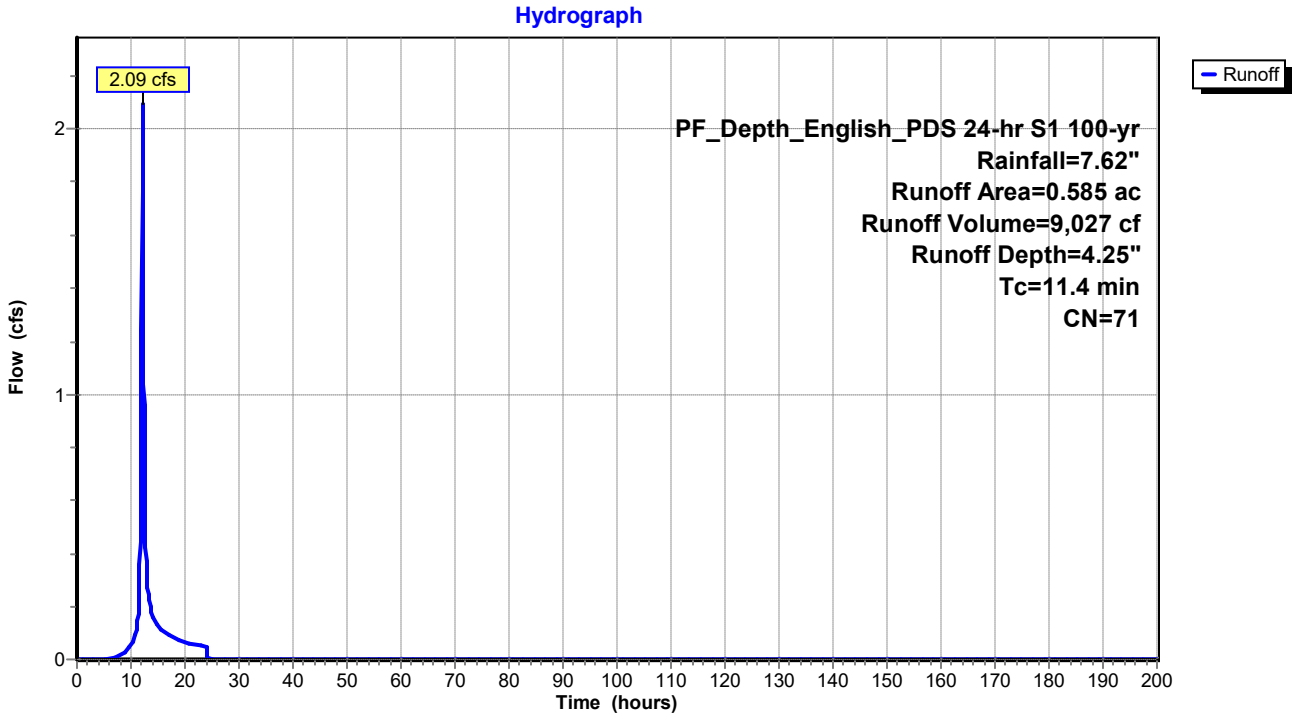
Runoff = 2.09 cfs @ 12.12 hrs, Volume= 9,027 cf, Depth= 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 100-yr Rainfall=7.62"

	Area (ac)	CN	Description
*	0.585	71	
	0.585		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4					**Direct Entry,**

Subcatchment 2S: Pre-Development DA to POA 2



4.0 PROPOSED CONDITION HYDROGRAPHS

Summary for Subcatchment 3S: Post Development DA 1 to Basin 1

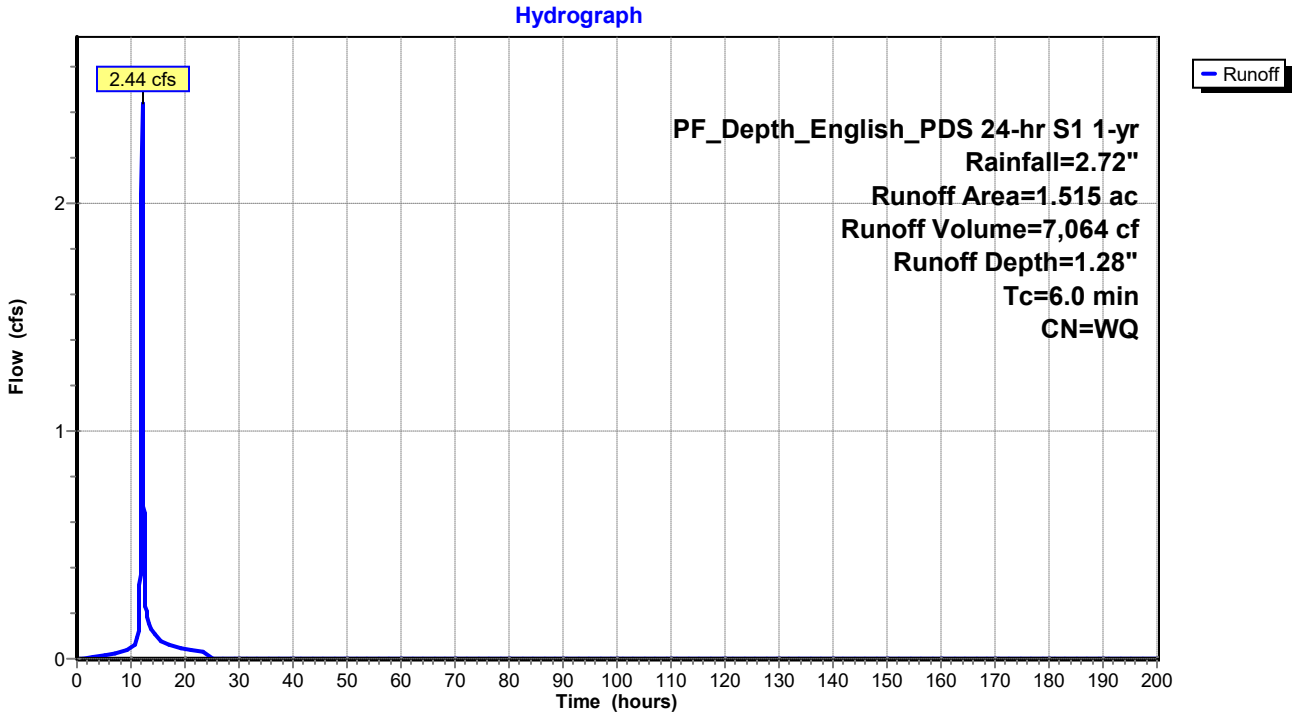
Runoff = 2.44 cfs @ 12.05 hrs, Volume= 7,064 cf, Depth= 1.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 1-yr Rainfall=2.72"

	Area (ac)	CN	Description
*	0.474	98	
*	1.041	74	
	1.515		Weighted Average
	1.041		68.71% Pervious Area
	0.474		31.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 3S: Post Development DA 1 to Basin 1



Summary for Subcatchment 3S: Post Development DA 1 to Basin 1

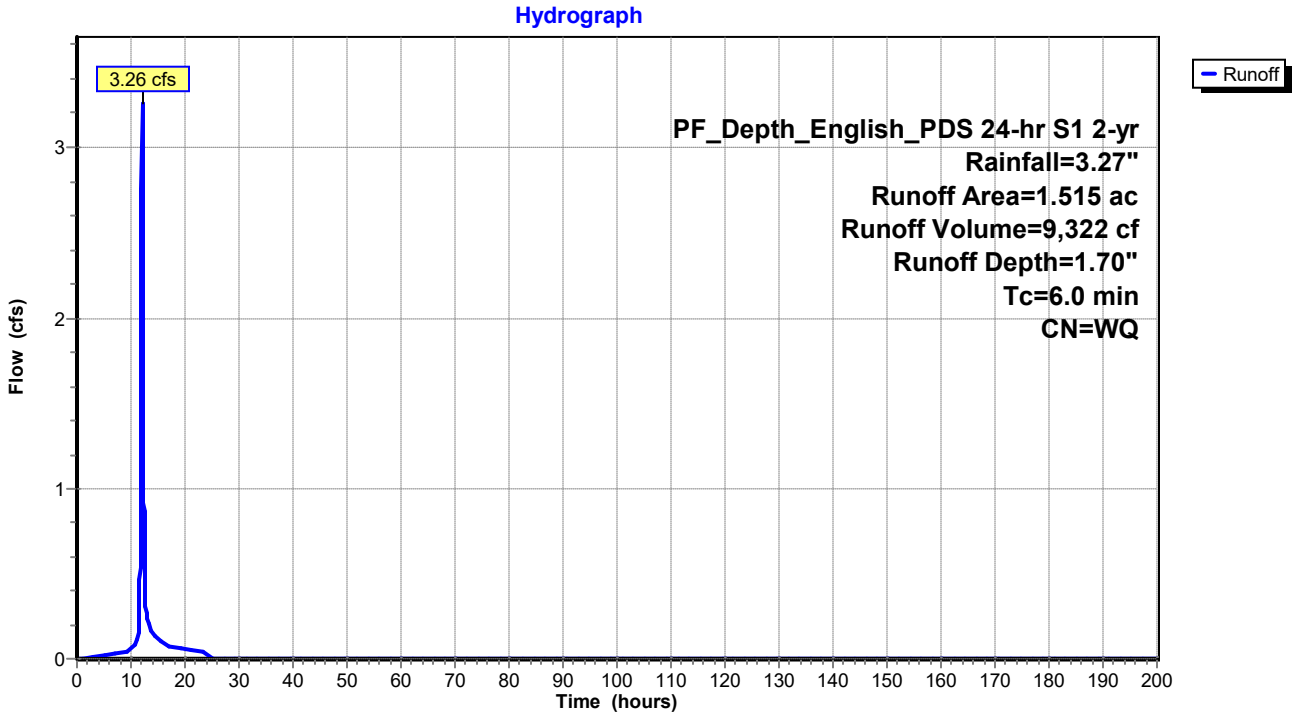
Runoff = 3.26 cfs @ 12.04 hrs, Volume= 9,322 cf, Depth= 1.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 2-yr Rainfall=3.27"

	Area (ac)	CN	Description
*	0.474	98	
*	1.041	74	
	1.515		Weighted Average
	1.041		68.71% Pervious Area
	0.474		31.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 3S: Post Development DA 1 to Basin 1



Summary for Subcatchment 3S: Post Development DA 1 to Basin 1

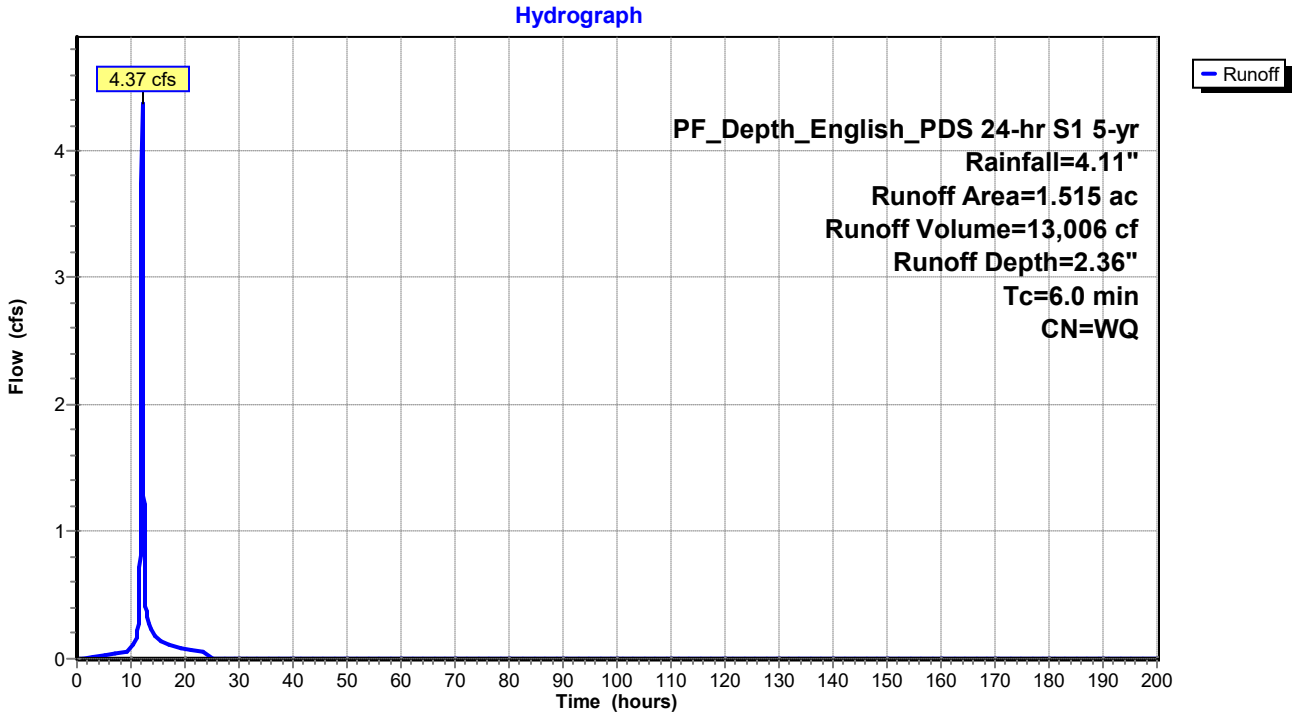
Runoff = 4.37 cfs @ 12.04 hrs, Volume= 13,006 cf, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 5-yr Rainfall=4.11"

	Area (ac)	CN	Description
*	0.474	98	
*	1.041	74	
	1.515		Weighted Average
	1.041		68.71% Pervious Area
	0.474		31.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 3S: Post Development DA 1 to Basin 1



Summary for Subcatchment 3S: Post Development DA 1 to Basin 1

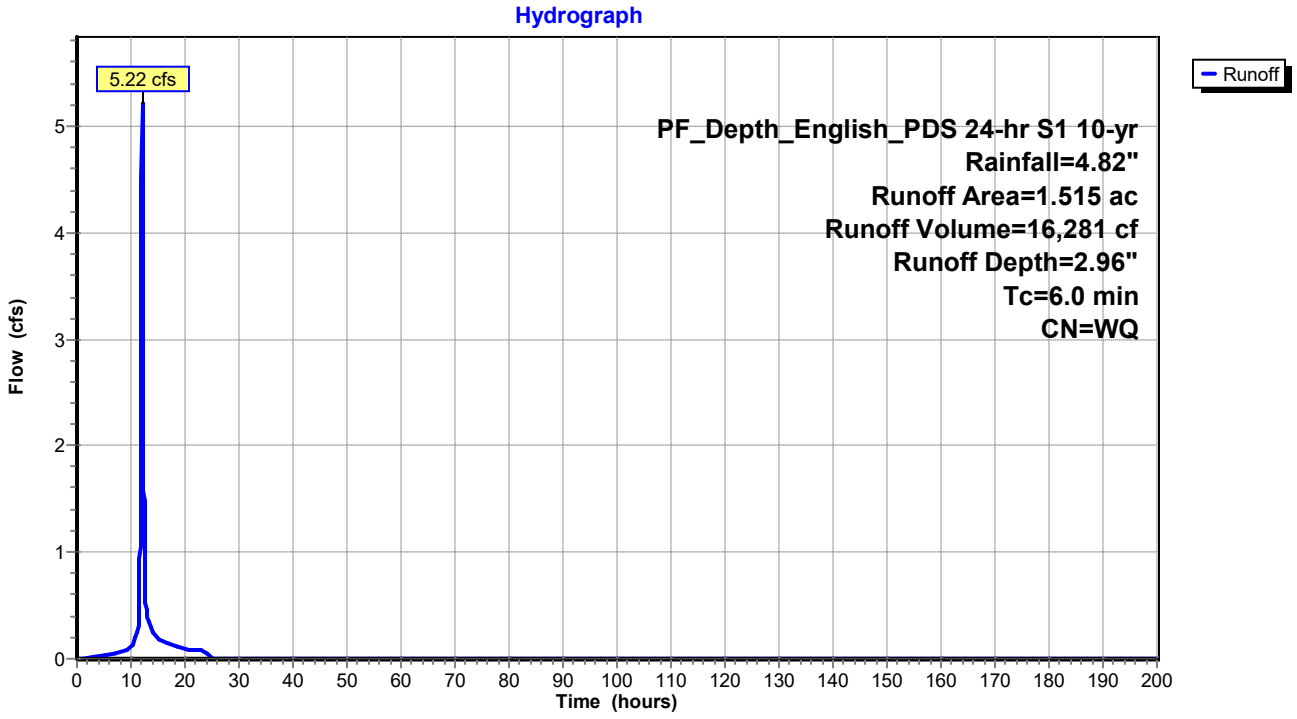
Runoff = 5.22 cfs @ 12.04 hrs, Volume= 16,281 cf, Depth= 2.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 10-yr Rainfall=4.82"

	Area (ac)	CN	Description
*	0.474	98	
*	1.041	74	
	1.515		Weighted Average
	1.041		68.71% Pervious Area
	0.474		31.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 3S: Post Development DA 1 to Basin 1



Summary for Subcatchment 3S: Post Development DA 1 to Basin 1

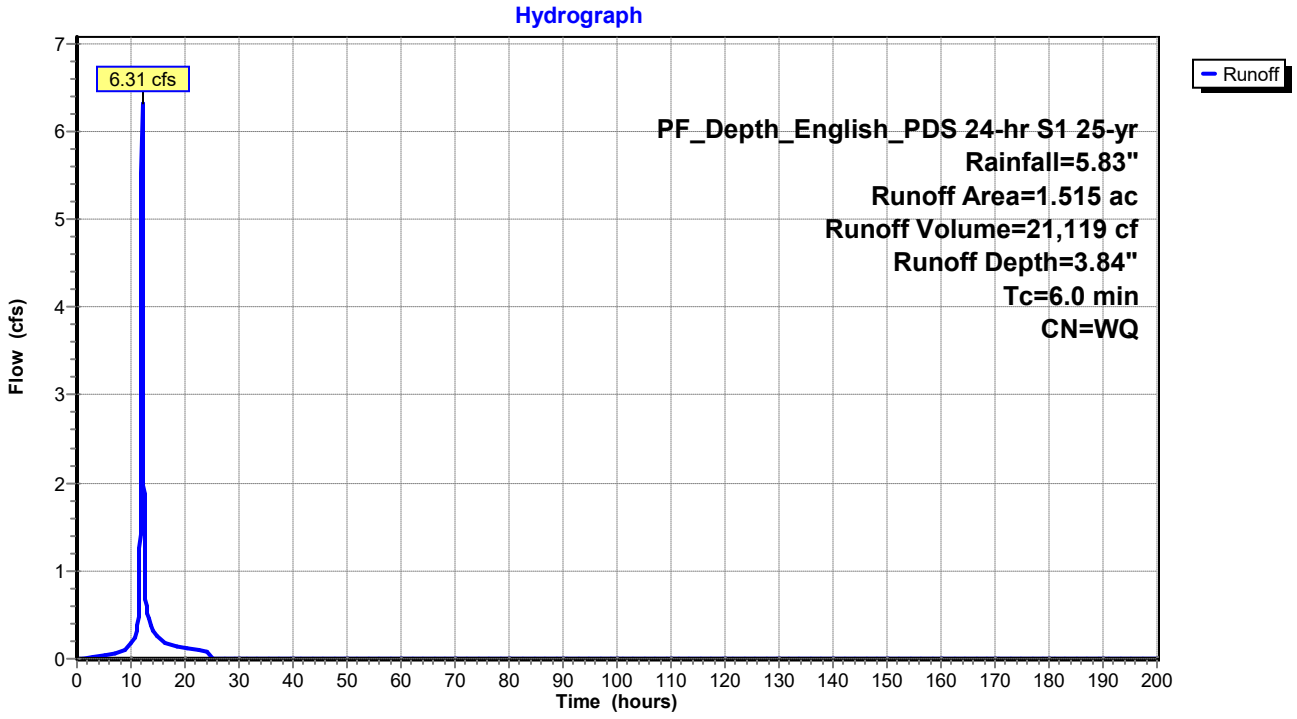
Runoff = 6.31 cfs @ 12.04 hrs, Volume= 21,119 cf, Depth= 3.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 25-yr Rainfall=5.83"

	Area (ac)	CN	Description
*	0.474	98	
*	1.041	74	
	1.515		Weighted Average
	1.041		68.71% Pervious Area
	0.474		31.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 3S: Post Development DA 1 to Basin 1



Summary for Subcatchment 3S: Post Development DA 1 to Basin 1

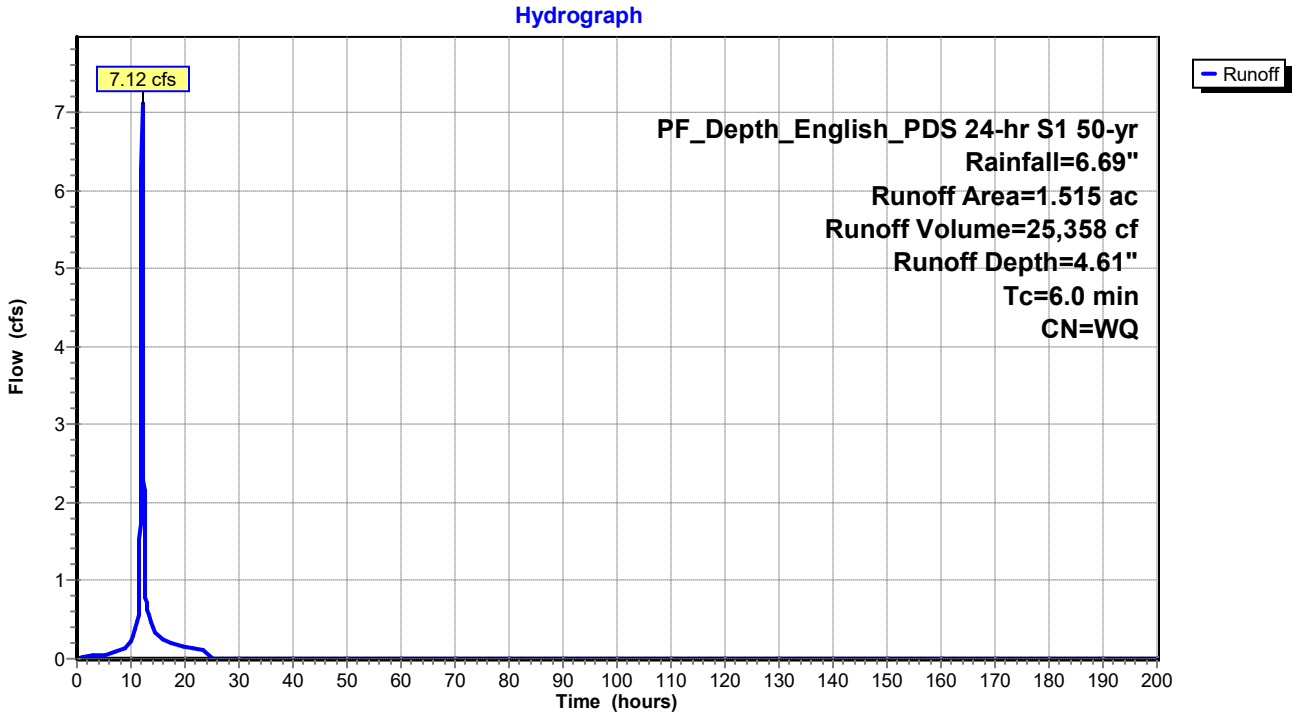
Runoff = 7.12 cfs @ 12.04 hrs, Volume= 25,358 cf, Depth= 4.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 50-yr Rainfall=6.69"

	Area (ac)	CN	Description
*	0.474	98	
*	1.041	74	
	1.515		Weighted Average
	1.041		68.71% Pervious Area
	0.474		31.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 3S: Post Development DA 1 to Basin 1



Summary for Subcatchment 3S: Post Development DA 1 to Basin 1

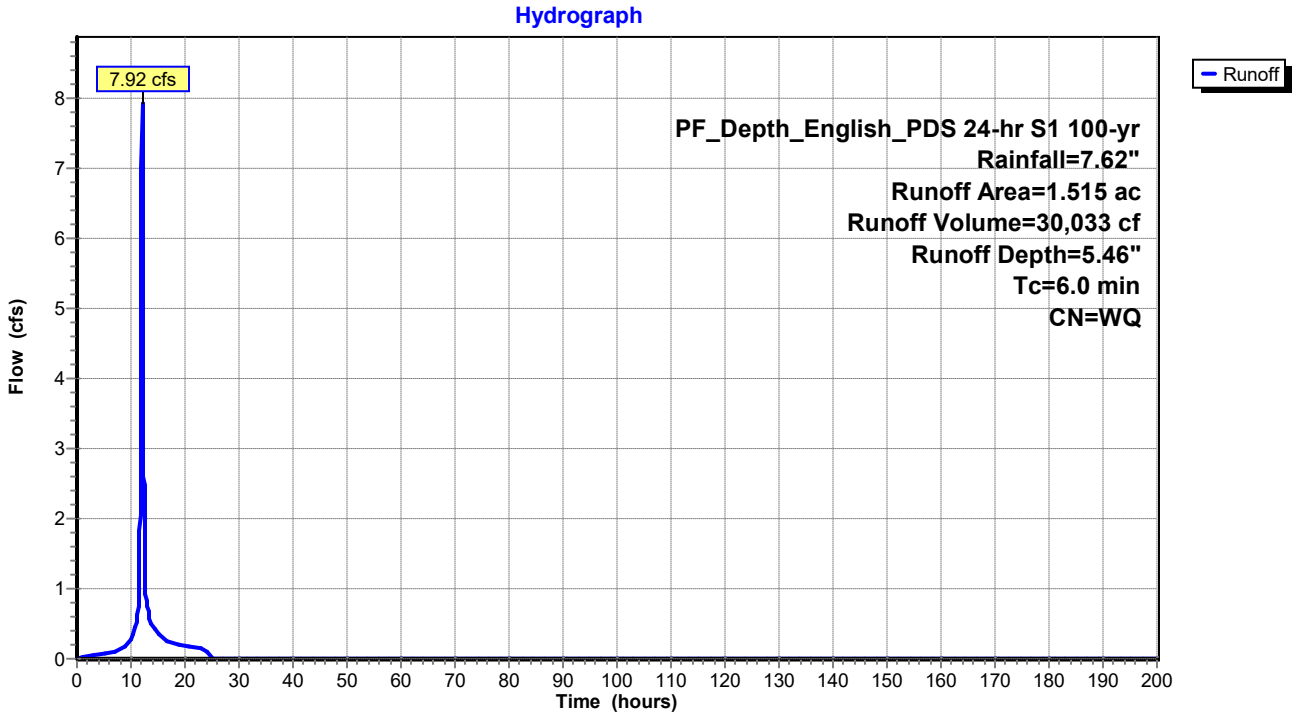
Runoff = 7.92 cfs @ 12.04 hrs, Volume= 30,033 cf, Depth= 5.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 100-yr Rainfall=7.62"

	Area (ac)	CN	Description
*	0.474	98	
*	1.041	74	
	1.515		Weighted Average
	1.041		68.71% Pervious Area
	0.474		31.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 3S: Post Development DA 1 to Basin 1



Summary for Subcatchment 4S: Post Development Bypass to POA 1

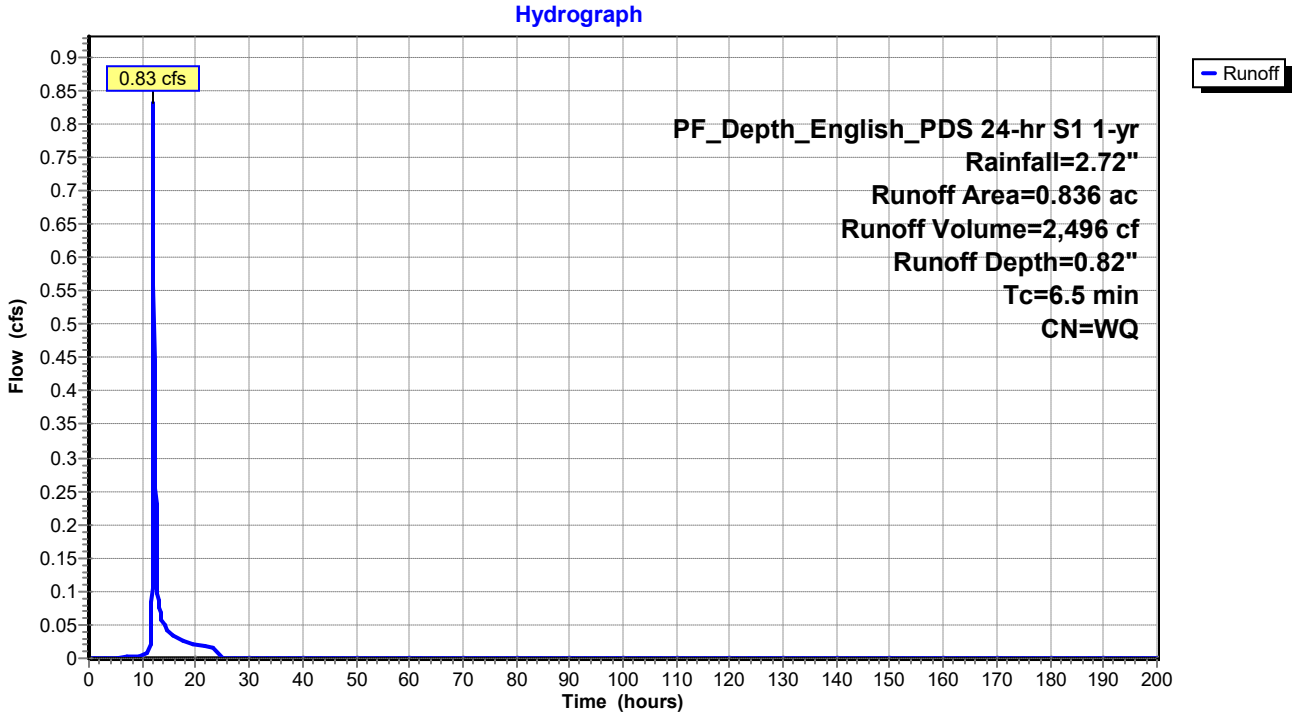
Runoff = 0.83 cfs @ 12.06 hrs, Volume= 2,496 cf, Depth= 0.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 1-yr Rainfall=2.72"

	Area (ac)	CN	Description
*	0.044	98	
*	0.028	70	
*	0.764	74	
	0.836		Weighted Average
	0.792		94.74% Pervious Area
	0.044		5.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5					**Direct Entry,**

Subcatchment 4S: Post Development Bypass to POA 1



Summary for Subcatchment 4S: Post Development Bypass to POA 1

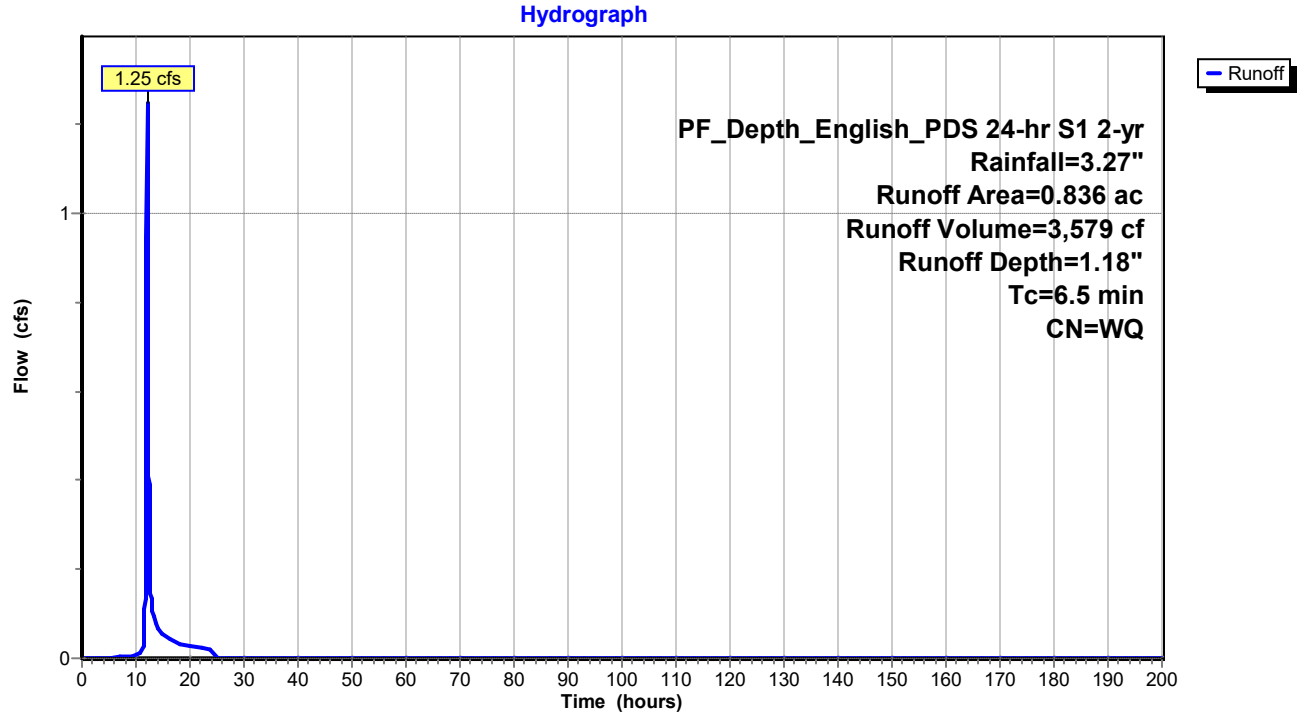
Runoff = 1.25 cfs @ 12.05 hrs, Volume= 3,579 cf, Depth= 1.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 2-yr Rainfall=3.27"

	Area (ac)	CN	Description
*	0.044	98	
*	0.028	70	
*	0.764	74	
	0.836		Weighted Average
	0.792		94.74% Pervious Area
	0.044		5.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5					**Direct Entry,**

Subcatchment 4S: Post Development Bypass to POA 1



Summary for Subcatchment 4S: Post Development Bypass to POA 1

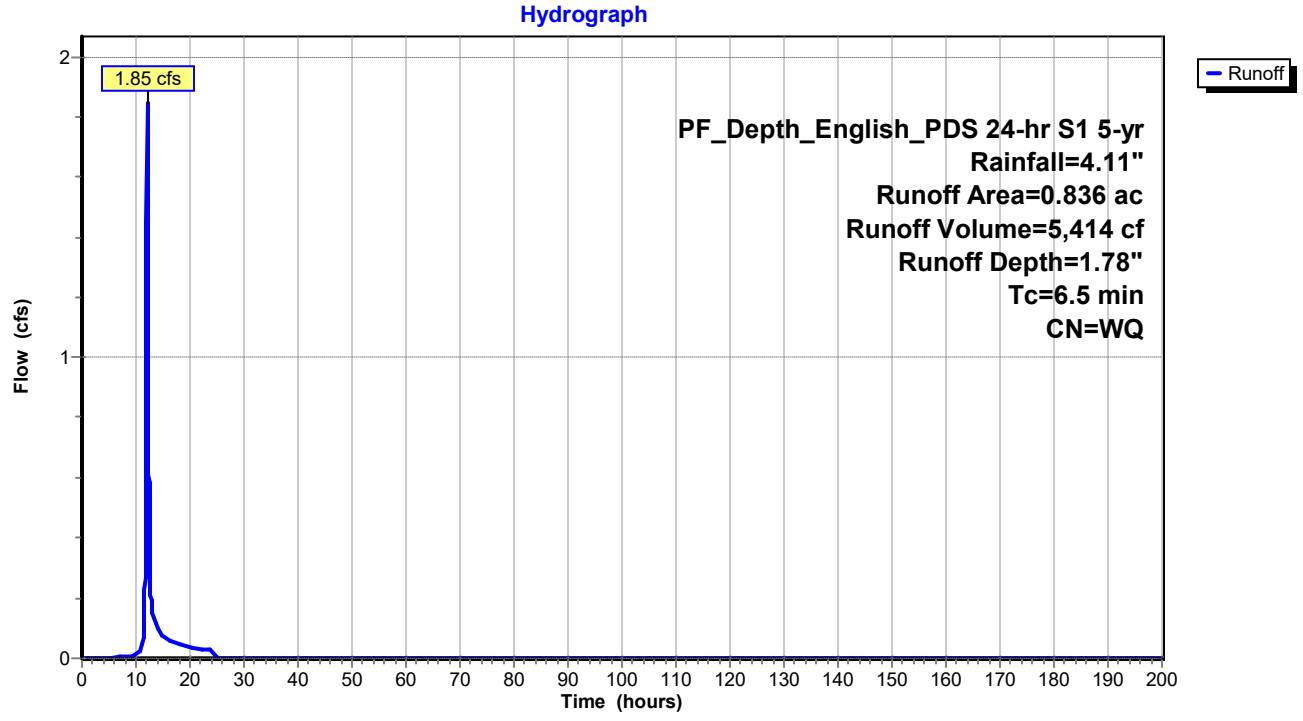
Runoff = 1.85 cfs @ 12.05 hrs, Volume= 5,414 cf, Depth= 1.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 5-yr Rainfall=4.11"

	Area (ac)	CN	Description
*	0.044	98	
*	0.028	70	
*	0.764	74	
	0.836		Weighted Average
	0.792		94.74% Pervious Area
	0.044		5.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5					**Direct Entry,**

Subcatchment 4S: Post Development Bypass to POA 1



Summary for Subcatchment 4S: Post Development Bypass to POA 1

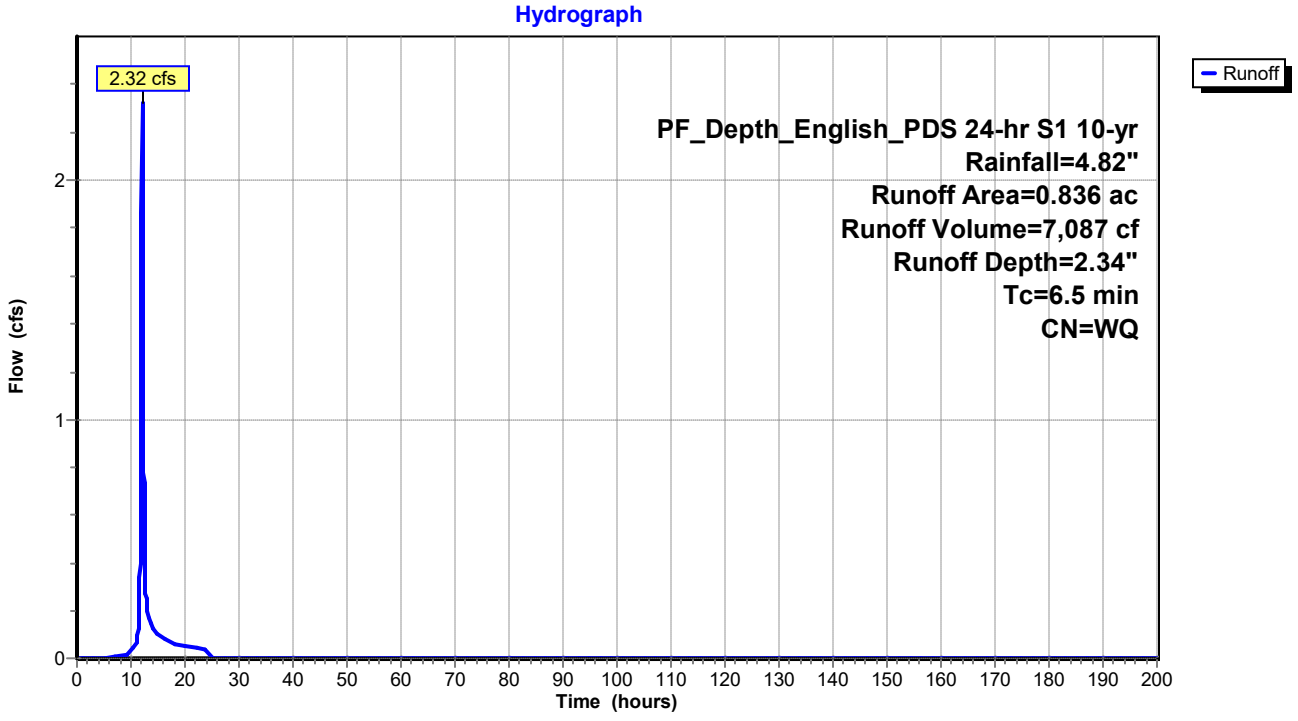
Runoff = 2.32 cfs @ 12.05 hrs, Volume= 7,087 cf, Depth= 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 10-yr Rainfall=4.82"

	Area (ac)	CN	Description
*	0.044	98	
*	0.028	70	
*	0.764	74	
	0.836		Weighted Average
	0.792		94.74% Pervious Area
	0.044		5.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5					**Direct Entry,**

Subcatchment 4S: Post Development Bypass to POA 1



Summary for Subcatchment 4S: Post Development Bypass to POA 1

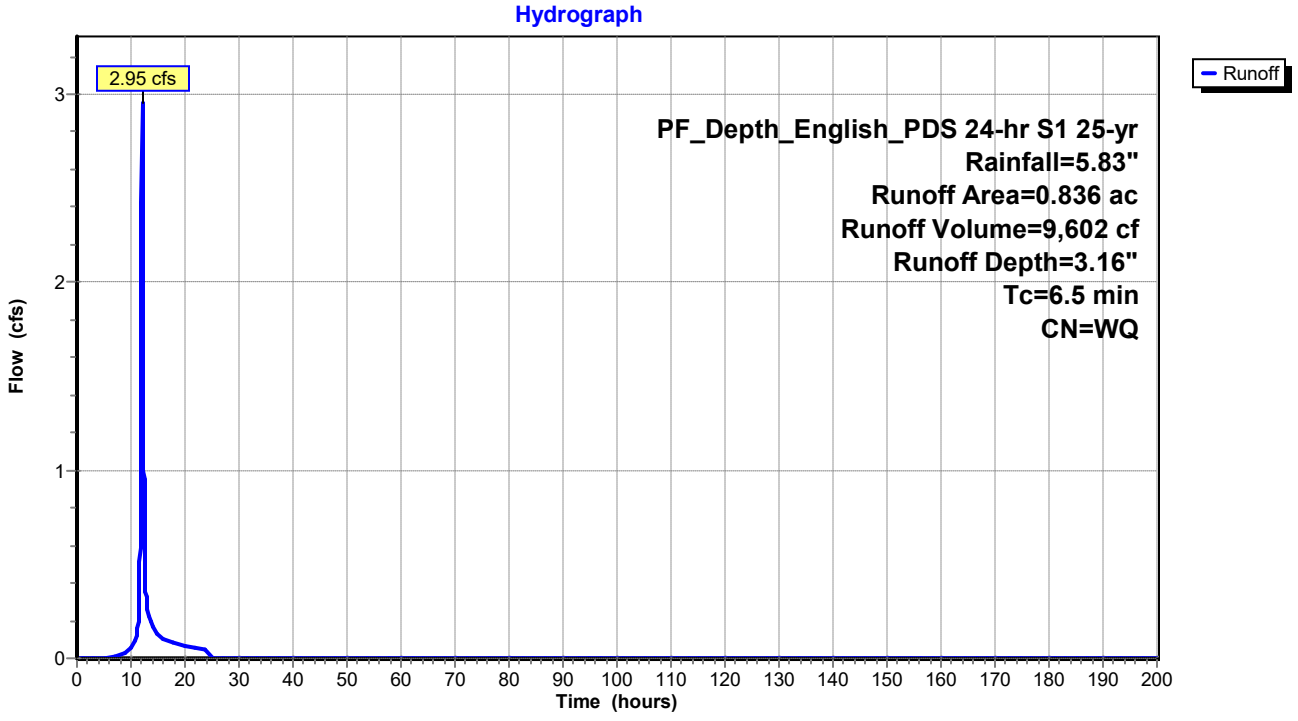
Runoff = 2.95 cfs @ 12.05 hrs, Volume= 9,602 cf, Depth= 3.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 25-yr Rainfall=5.83"

	Area (ac)	CN	Description
*	0.044	98	
*	0.028	70	
*	0.764	74	
	0.836		Weighted Average
	0.792		94.74% Pervious Area
	0.044		5.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5					**Direct Entry,**

Subcatchment 4S: Post Development Bypass to POA 1



Summary for Subcatchment 4S: Post Development Bypass to POA 1

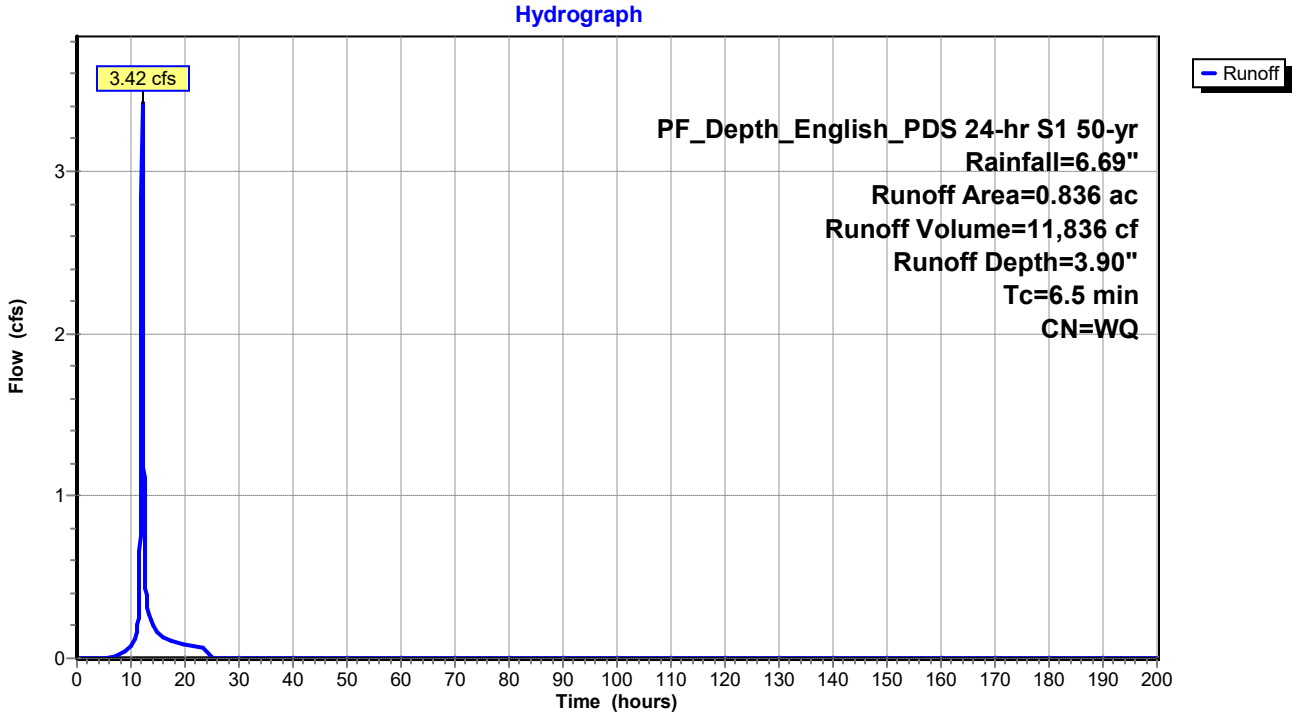
Runoff = 3.42 cfs @ 12.05 hrs, Volume= 11,836 cf, Depth= 3.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 50-yr Rainfall=6.69"

	Area (ac)	CN	Description
*	0.044	98	
*	0.028	70	
*	0.764	74	
	0.836		Weighted Average
	0.792		94.74% Pervious Area
	0.044		5.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5					**Direct Entry,**

Subcatchment 4S: Post Development Bypass to POA 1



Summary for Subcatchment 4S: Post Development Bypass to POA 1

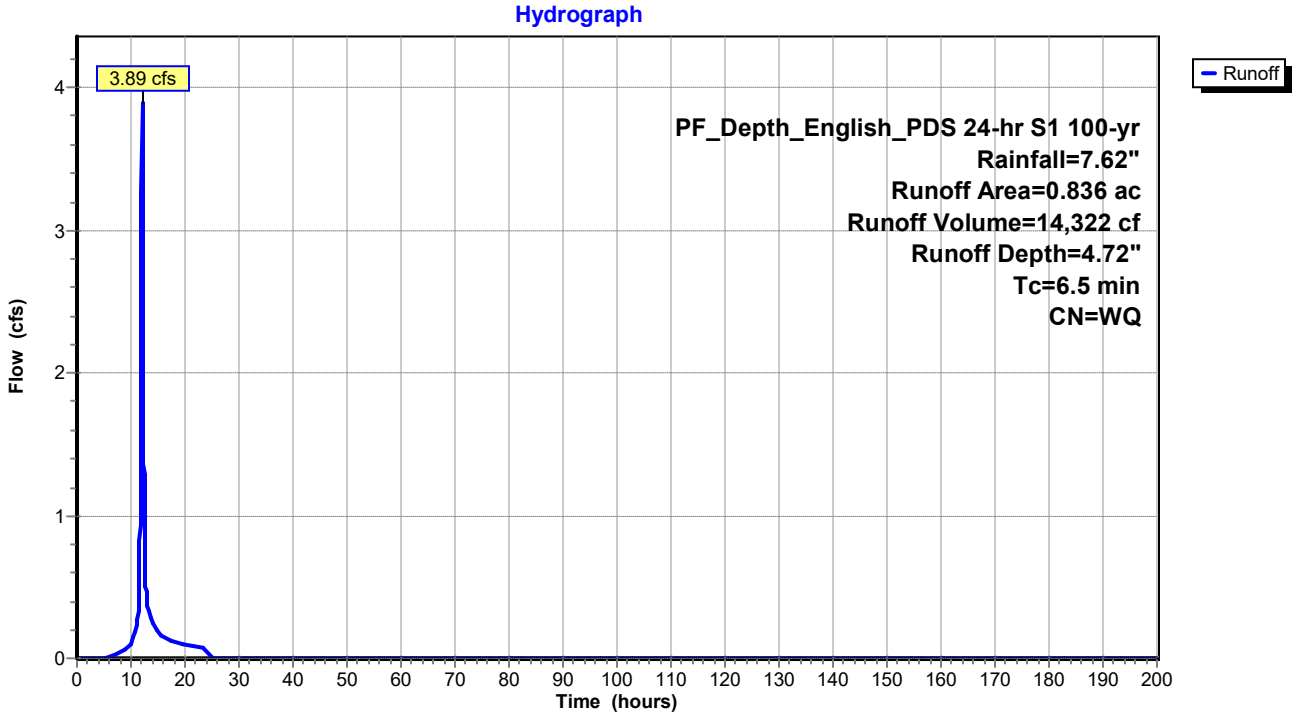
Runoff = 3.89 cfs @ 12.05 hrs, Volume= 14,322 cf, Depth= 4.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 100-yr Rainfall=7.62"

	Area (ac)	CN	Description
*	0.044	98	
*	0.028	70	
*	0.764	74	
	0.836		Weighted Average
	0.792		94.74% Pervious Area
	0.044		5.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5					**Direct Entry,**

Subcatchment 4S: Post Development Bypass to POA 1



Summary for Subcatchment 5S: Post Development Bypass to POA 2

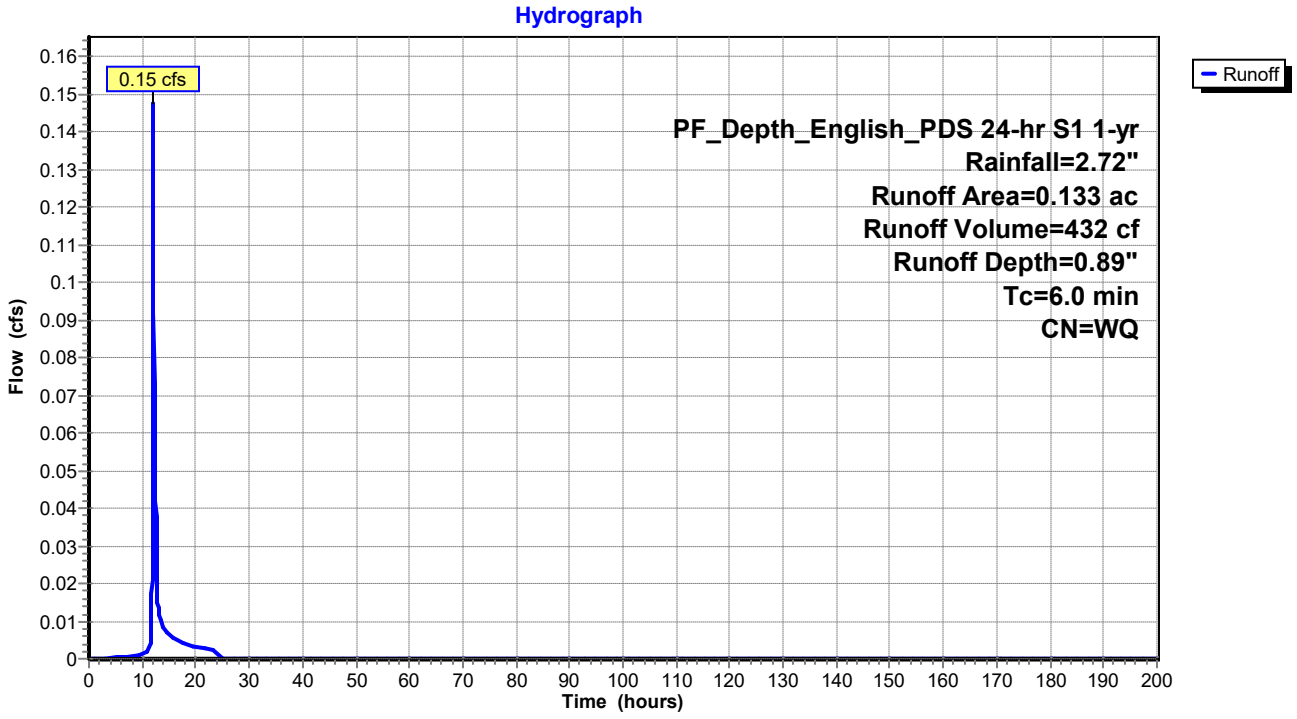
Runoff = 0.15 cfs @ 12.05 hrs, Volume= 432 cf, Depth= 0.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 1-yr Rainfall=2.72"

	Area (ac)	CN	Description
*	0.012	98	
*	0.121	74	
	0.133		Weighted Average
	0.121		90.98% Pervious Area
	0.012		9.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 5S: Post Development Bypass to POA 2



Summary for Subcatchment 5S: Post Development Bypass to POA 2

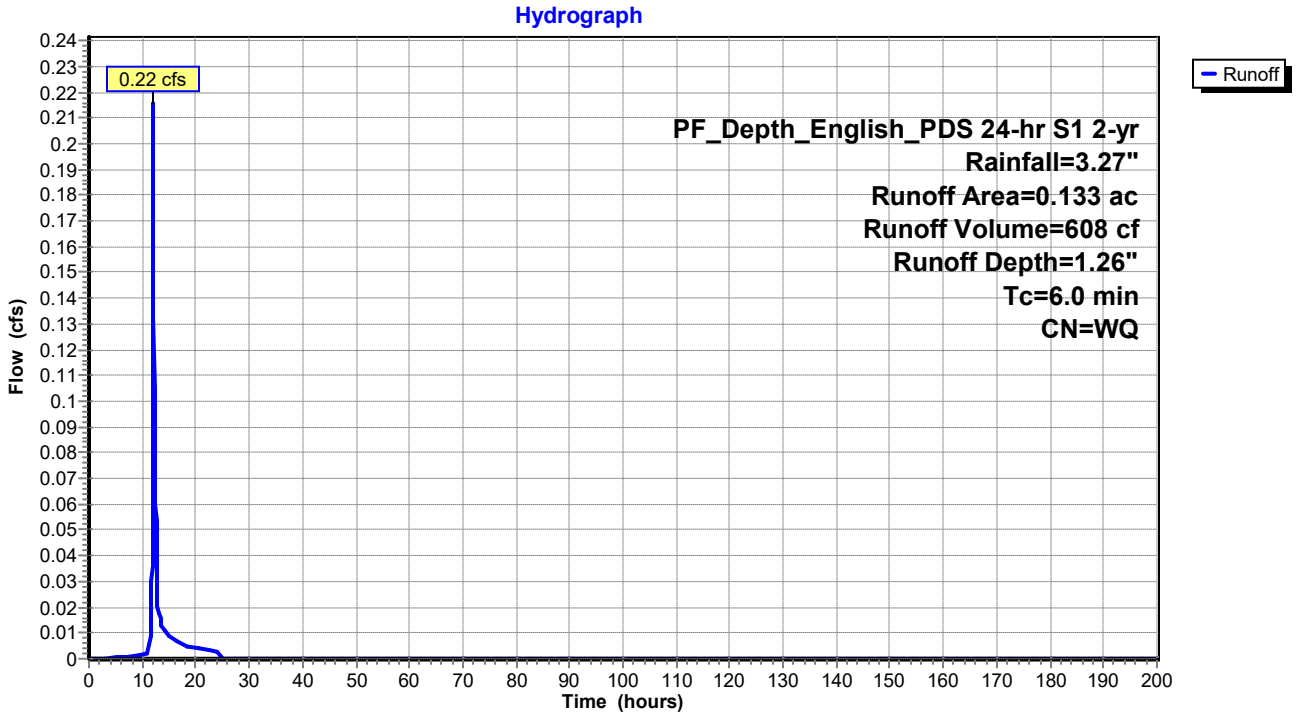
Runoff = 0.22 cfs @ 12.05 hrs, Volume= 608 cf, Depth= 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 2-yr Rainfall=3.27"

	Area (ac)	CN	Description
*	0.012	98	
*	0.121	74	
	0.133		Weighted Average
	0.121		90.98% Pervious Area
	0.012		9.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 5S: Post Development Bypass to POA 2



Summary for Subcatchment 5S: Post Development Bypass to POA 2

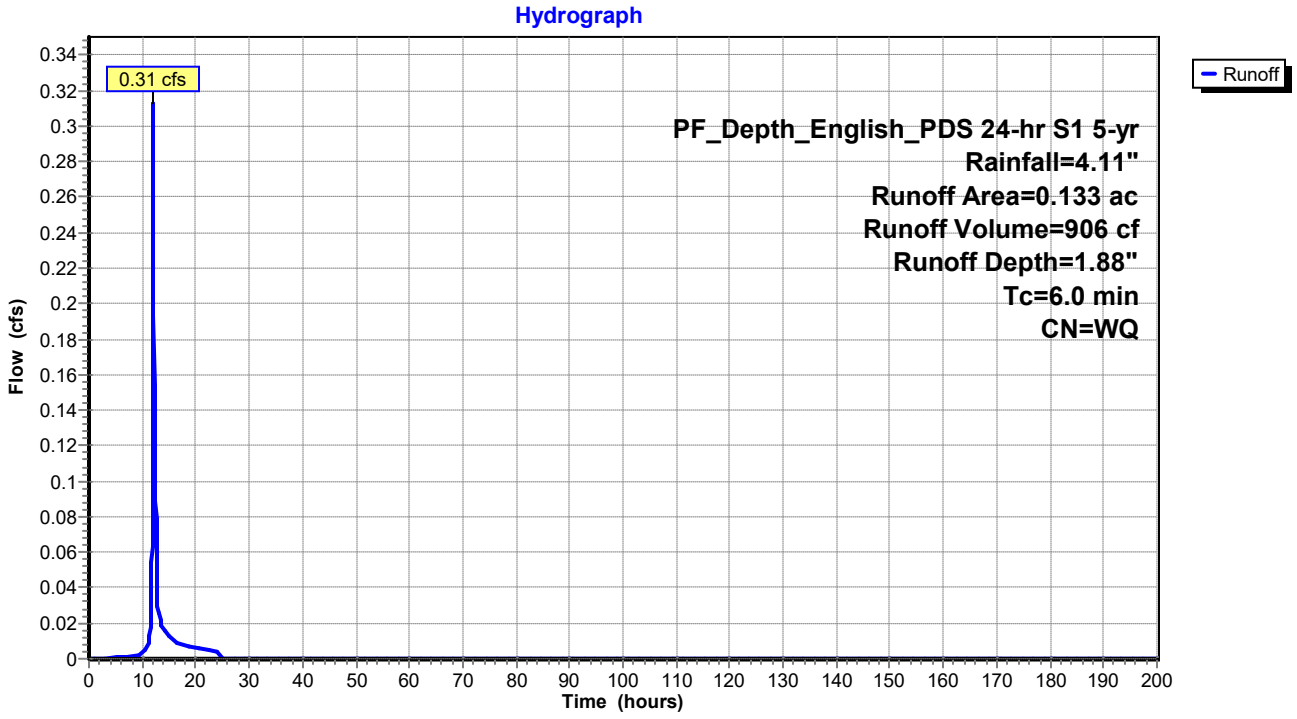
Runoff = 0.31 cfs @ 12.05 hrs, Volume= 906 cf, Depth= 1.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 5-yr Rainfall=4.11"

	Area (ac)	CN	Description
*	0.012	98	
*	0.121	74	
	0.133		Weighted Average
	0.121		90.98% Pervious Area
	0.012		9.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 5S: Post Development Bypass to POA 2



Summary for Subcatchment 5S: Post Development Bypass to POA 2

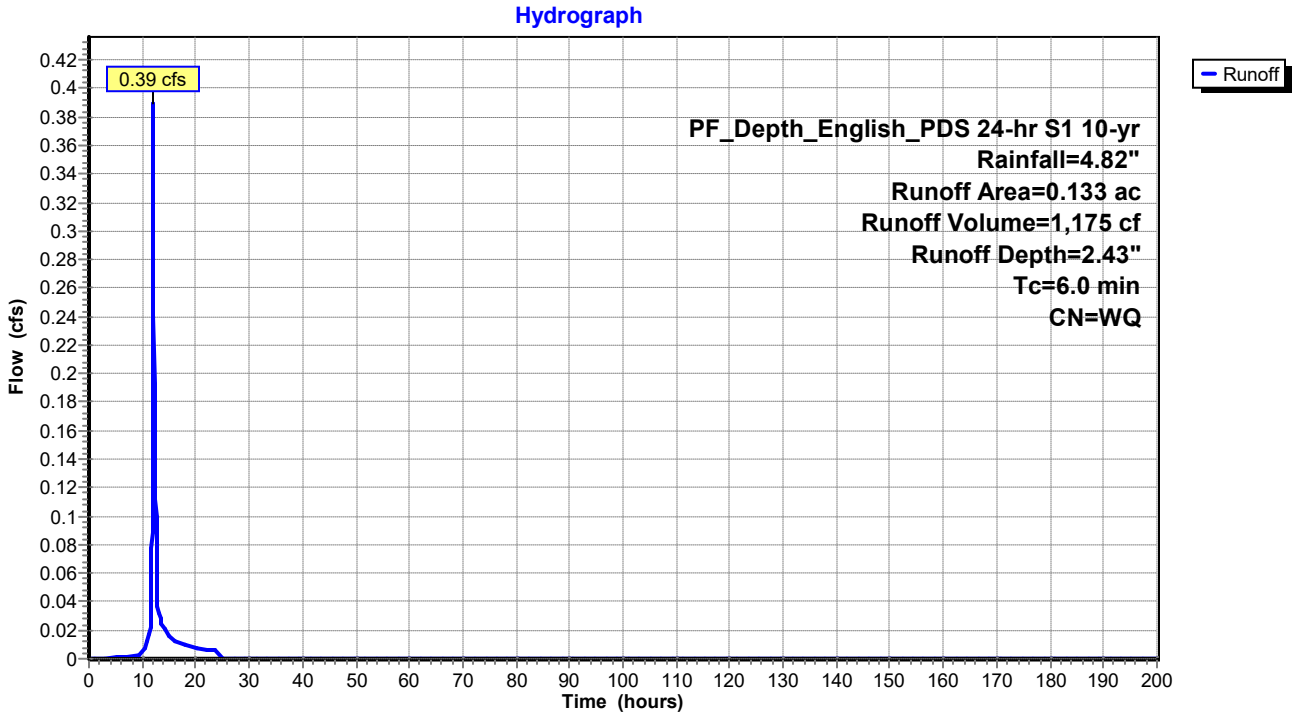
Runoff = 0.39 cfs @ 12.05 hrs, Volume= 1,175 cf, Depth= 2.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 10-yr Rainfall=4.82"

	Area (ac)	CN	Description
*	0.012	98	
*	0.121	74	
	0.133		Weighted Average
	0.121		90.98% Pervious Area
	0.012		9.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 5S: Post Development Bypass to POA 2



Summary for Subcatchment 5S: Post Development Bypass to POA 2

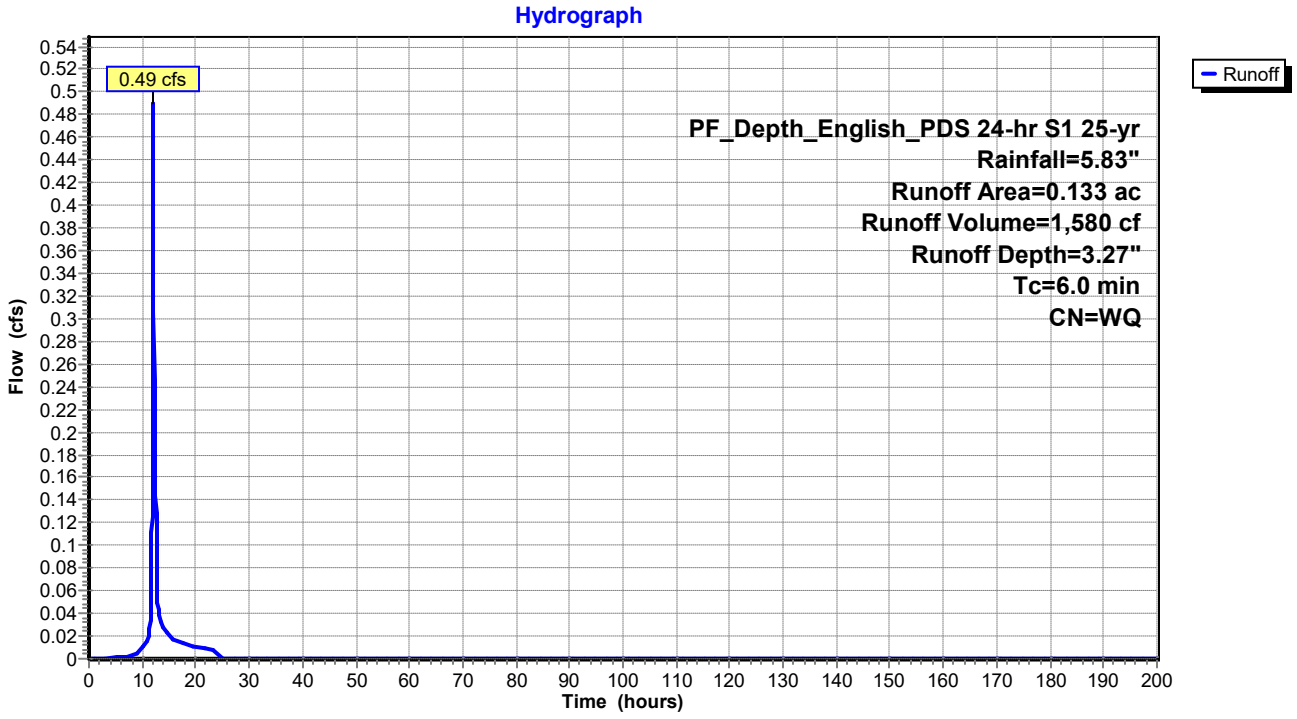
Runoff = 0.49 cfs @ 12.04 hrs, Volume= 1,580 cf, Depth= 3.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 25-yr Rainfall=5.83"

	Area (ac)	CN	Description
*	0.012	98	
*	0.121	74	
	0.133		Weighted Average
	0.121		90.98% Pervious Area
	0.012		9.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 5S: Post Development Bypass to POA 2



Summary for Subcatchment 5S: Post Development Bypass to POA 2

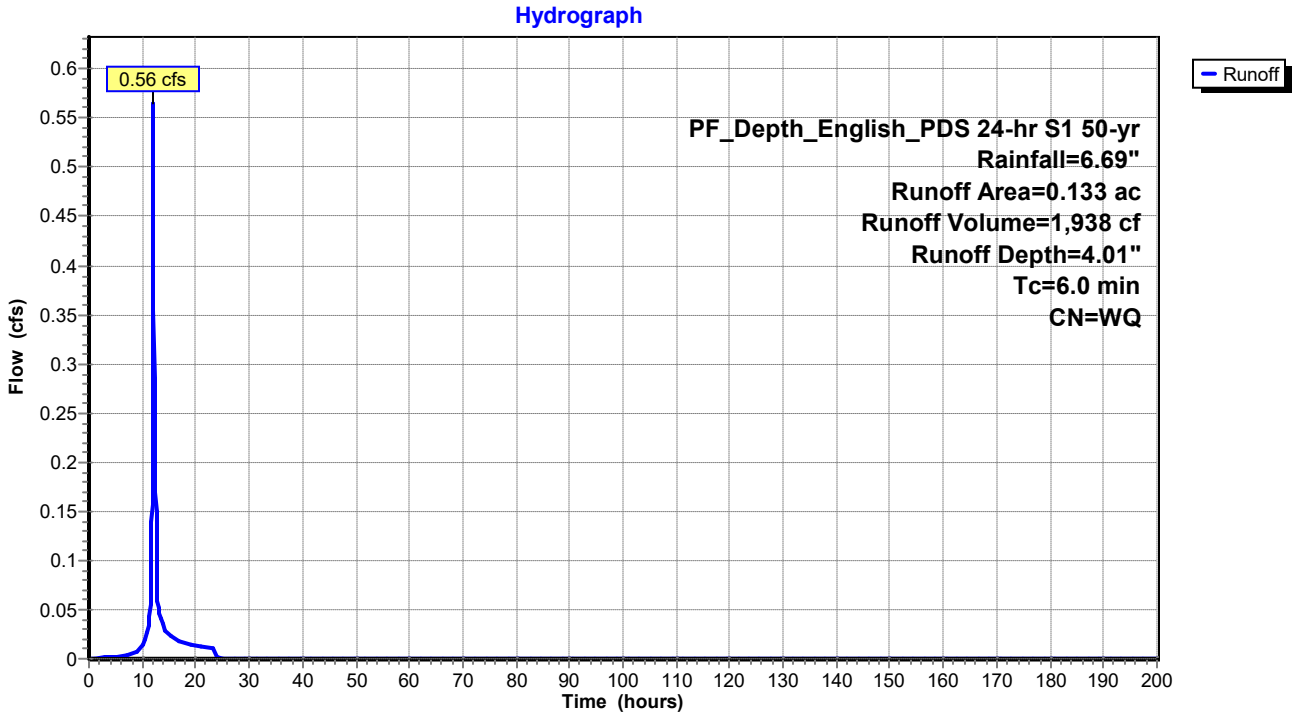
Runoff = 0.56 cfs @ 12.04 hrs, Volume= 1,938 cf, Depth= 4.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 50-yr Rainfall=6.69"

	Area (ac)	CN	Description
*	0.012	98	
*	0.121	74	
	0.133		Weighted Average
	0.121		90.98% Pervious Area
	0.012		9.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 5S: Post Development Bypass to POA 2



Summary for Subcatchment 5S: Post Development Bypass to POA 2

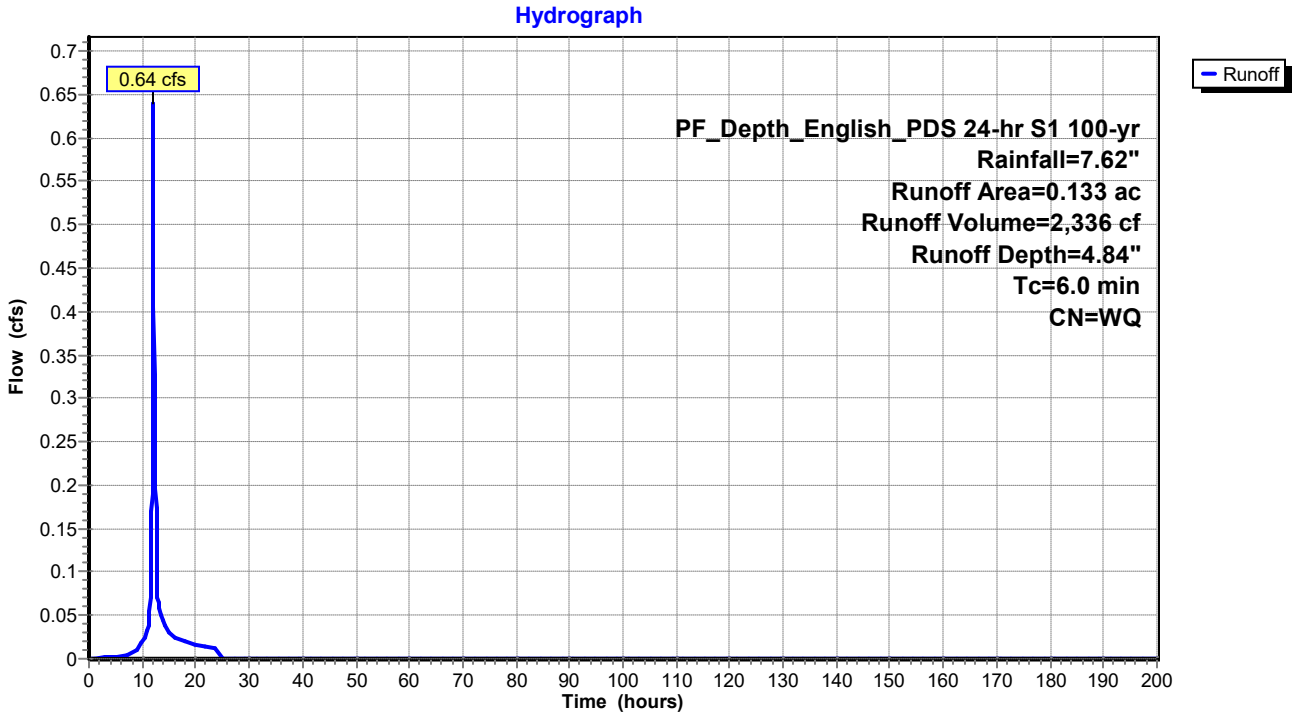
Runoff = 0.64 cfs @ 12.04 hrs, Volume= 2,336 cf, Depth= 4.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 100-yr Rainfall=7.62"

	Area (ac)	CN	Description
*	0.012	98	
*	0.121	74	
	0.133		Weighted Average
	0.121		90.98% Pervious Area
	0.012		9.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 5S: Post Development Bypass to POA 2



5.0 BASIN ROUTING ANALYSIS

Summary for Pond 6P: Basin 1

Inflow Area = 65,993 sf, 31.29% Impervious, Inflow Depth = 1.28" for 1-yr event
Inflow = 2.44 cfs @ 12.05 hrs, Volume= 7,064 cf
Outflow = 0.22 cfs @ 12.81 hrs, Volume= 5,864 cf, Atten= 91%, Lag= 46.1 min
Primary = 0.22 cfs @ 12.81 hrs, Volume= 5,864 cf

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Peak Elev= 200.41' @ 12.81 hrs Surf.Area= 5,964 sf Storage= 4,045 cf

Plug-Flow detention time= 891.8 min calculated for 5,862 cf (83% of inflow)
Center-of-Mass det. time= 814.9 min (1,621.7 - 806.7)

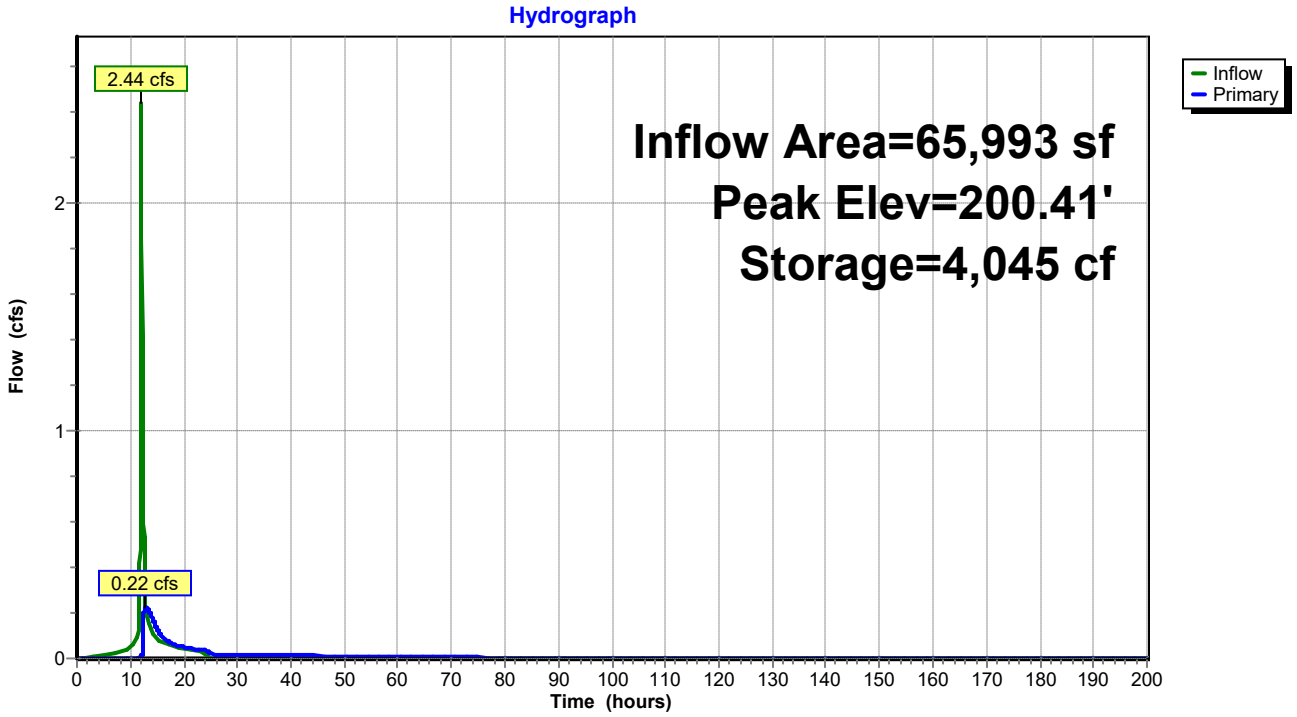
Volume	Invert	Avail.Storage	Storage Description
#1	197.75'	1,500 cf	**30.00'W x 100.00'L x 1.25'H Prismatoid** 3,750 cf Overall x 40.0% Voids
#2A	199.00'	4,089 cf	**30.00'W x 98.81'L x 5.50'H Field A** 16,303 cf Overall - 6,081 cf Embedded = 10,222 cf x 40.0% Voids
#3A	199.75'	6,081 cf	**Lane StormKeeper SK180** x 52 Inside #2 Effective Size= 70.5"W x 45.0"H => 15.97 sf x 7.11'L = 113.5 cf Overall Size= 78.0"W x 45.5"H x 7.39'L with 0.28' Overlap 52 Chambers in 4 Rows Cap Storage= +22.3 cf x 2 x 4 rows = 178.4 cf
		11,670 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	198.25'	**18.0" Round Culvert** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 198.25' / 197.85' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	200.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	203.50'	**2.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 1	198.75'	**0.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.22 cfs @ 12.81 hrs HW=200.41' (Free Discharge)
└**1=Culvert** (Passes 0.22 cfs of 7.98 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.21 cfs @ 2.39 fps)
  ├**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Orifice Controls 0.02 cfs @ 6.15 fps)

Pond 6P: Basin 1



Summary for Pond 6P: Basin 1

Inflow Area = 65,993 sf, 31.29% Impervious, Inflow Depth = 1.70" for 2-yr event
Inflow = 3.26 cfs @ 12.04 hrs, Volume= 9,322 cf
Outflow = 0.37 cfs @ 12.67 hrs, Volume= 8,121 cf, Atten= 89%, Lag= 37.7 min
Primary = 0.37 cfs @ 12.67 hrs, Volume= 8,121 cf

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Peak Elev= 200.86' @ 12.67 hrs Surf.Area= 5,964 sf Storage= 5,138 cf

Plug-Flow detention time= 686.9 min calculated for 8,119 cf (87% of inflow)
Center-of-Mass det. time= 624.9 min (1,428.3 - 803.4)

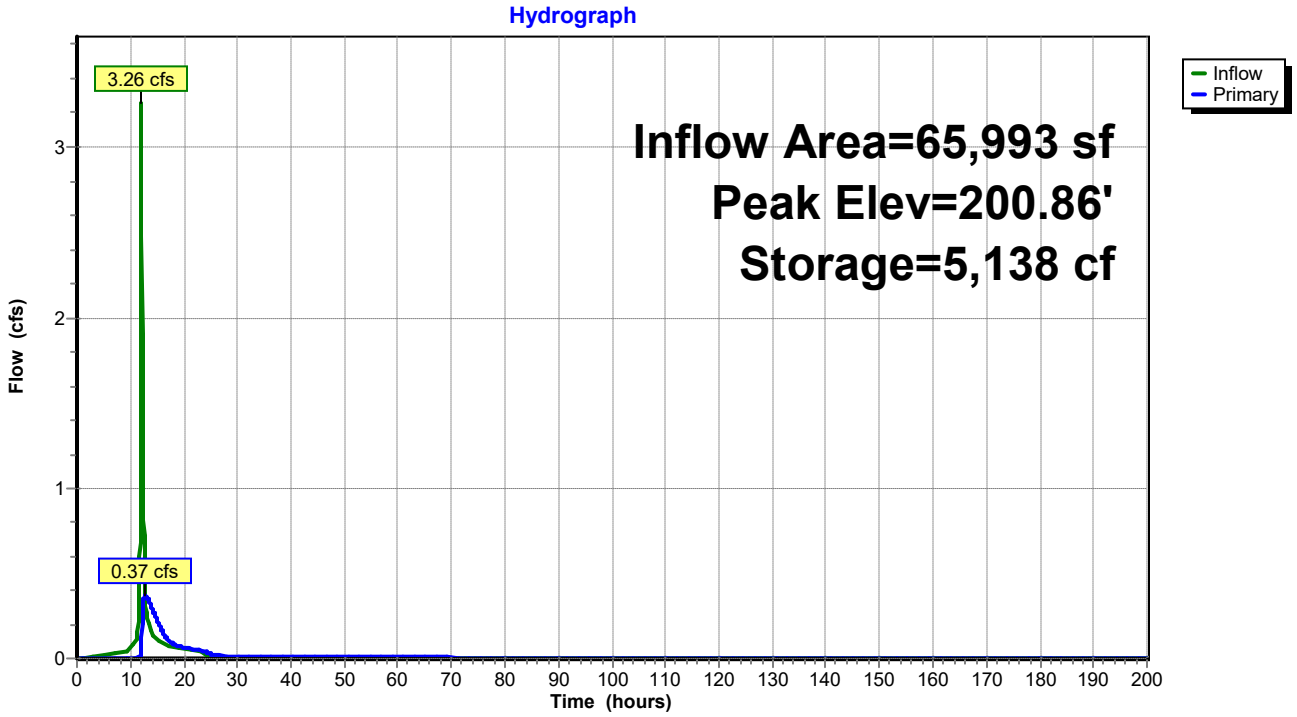
Volume	Invert	Avail.Storage	Storage Description
#1	197.75'	1,500 cf	**30.00'W x 100.00'L x 1.25'H Prismatoid** 3,750 cf Overall x 40.0% Voids
#2A	199.00'	4,089 cf	**30.00'W x 98.81'L x 5.50'H Field A** 16,303 cf Overall - 6,081 cf Embedded = 10,222 cf x 40.0% Voids
#3A	199.75'	6,081 cf	**Lane StormKeeper SK180** x 52 Inside #2 Effective Size= 70.5"W x 45.0"H => 15.97 sf x 7.11'L = 113.5 cf Overall Size= 78.0"W x 45.5"H x 7.39'L with 0.28' Overlap 52 Chambers in 4 Rows Cap Storage= +22.3 cf x 2 x 4 rows = 178.4 cf
		11,670 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	198.25'	**18.0" Round Culvert** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 198.25' / 197.85' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	200.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	203.50'	**2.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 1	198.75'	**0.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.37 cfs @ 12.67 hrs HW=200.86' (Free Discharge)
└**1=Culvert** (Passes 0.37 cfs of 9.16 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.35 cfs @ 4.01 fps)
  ├**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Orifice Controls 0.02 cfs @ 6.95 fps)

Pond 6P: Basin 1



Summary for Pond 6P: Basin 1

Inflow Area = 65,993 sf, 31.29% Impervious, Inflow Depth = 2.36" for 5-yr event
Inflow = 4.37 cfs @ 12.04 hrs, Volume= 13,006 cf
Outflow = 0.54 cfs @ 12.66 hrs, Volume= 11,806 cf, Atten= 88%, Lag= 37.0 min
Primary = 0.54 cfs @ 12.66 hrs, Volume= 11,806 cf

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Peak Elev= 201.67' @ 12.66 hrs Surf.Area= 5,964 sf Storage= 7,041 cf

Plug-Flow detention time= 526.6 min calculated for 11,803 cf (91% of inflow)
Center-of-Mass det. time= 479.2 min (1,279.6 - 800.4)

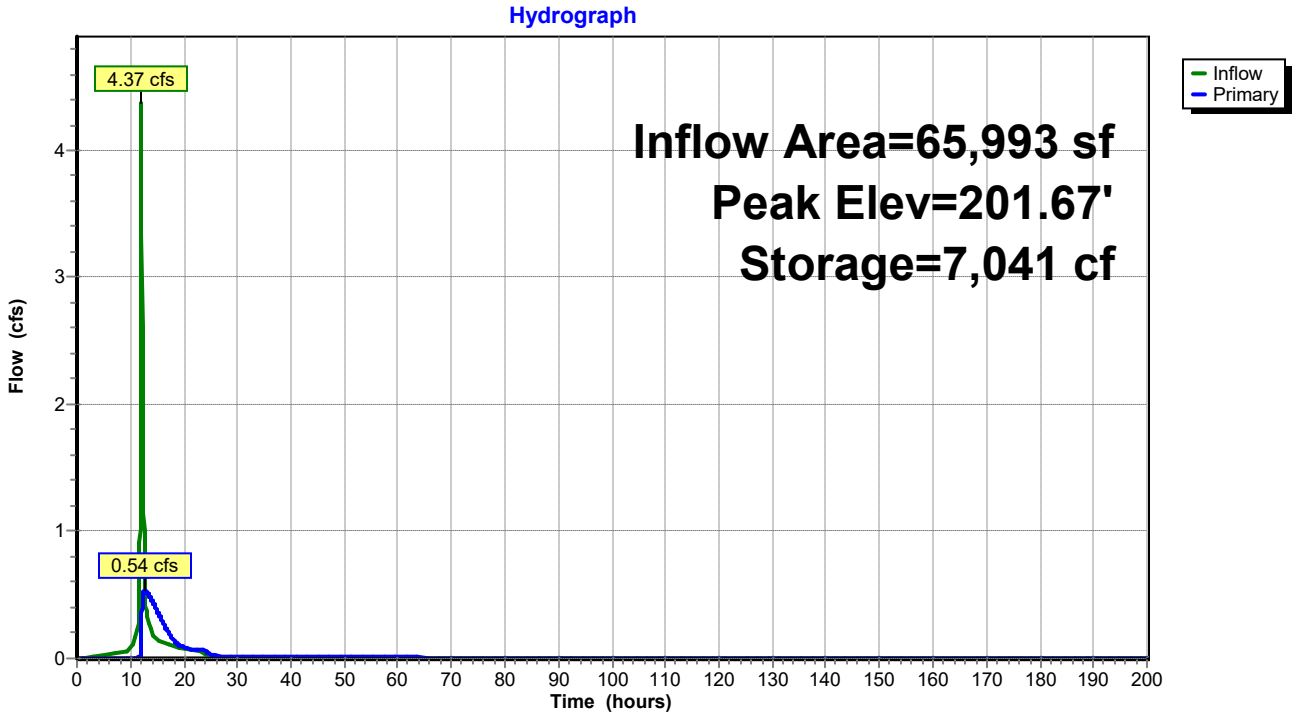
Volume	Invert	Avail.Storage	Storage Description
#1	197.75'	1,500 cf	**30.00'W x 100.00'L x 1.25'H Prismatoid** 3,750 cf Overall x 40.0% Voids
#2A	199.00'	4,089 cf	**30.00'W x 98.81'L x 5.50'H Field A** 16,303 cf Overall - 6,081 cf Embedded = 10,222 cf x 40.0% Voids
#3A	199.75'	6,081 cf	**Lane StormKeeper SK180** x 52 Inside #2 Effective Size= 70.5"W x 45.0"H => 15.97 sf x 7.11'L = 113.5 cf Overall Size= 78.0"W x 45.5"H x 7.39'L with 0.28' Overlap 52 Chambers in 4 Rows Cap Storage= +22.3 cf x 2 x 4 rows = 178.4 cf
		11,670 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	198.25'	**18.0" Round Culvert** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 198.25' / 197.85' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	200.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	203.50'	**2.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 1	198.75'	**0.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.54 cfs @ 12.66 hrs HW=201.67' (Free Discharge)
└─**1=Culvert** (Passes 0.54 cfs of 10.98 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.52 cfs @ 5.91 fps)
  ├─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └─**4=Orifice/Grate** (Orifice Controls 0.02 cfs @ 8.19 fps)

Pond 6P: Basin 1



Summary for Pond 6P: Basin 1

Inflow Area = 65,993 sf, 31.29% Impervious, Inflow Depth = 2.96" for 10-yr event
Inflow = 5.22 cfs @ 12.04 hrs, Volume= 16,281 cf
Outflow = 0.66 cfs @ 12.66 hrs, Volume= 15,081 cf, Atten= 87%, Lag= 37.2 min
Primary = 0.66 cfs @ 12.66 hrs, Volume= 15,081 cf

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Peak Elev= 202.43' @ 12.66 hrs Surf.Area= 5,964 sf Storage= 8,685 cf

Plug-Flow detention time= 456.0 min calculated for 15,081 cf (93% of inflow)
Center-of-Mass det. time= 414.8 min (1,213.8 - 799.0)

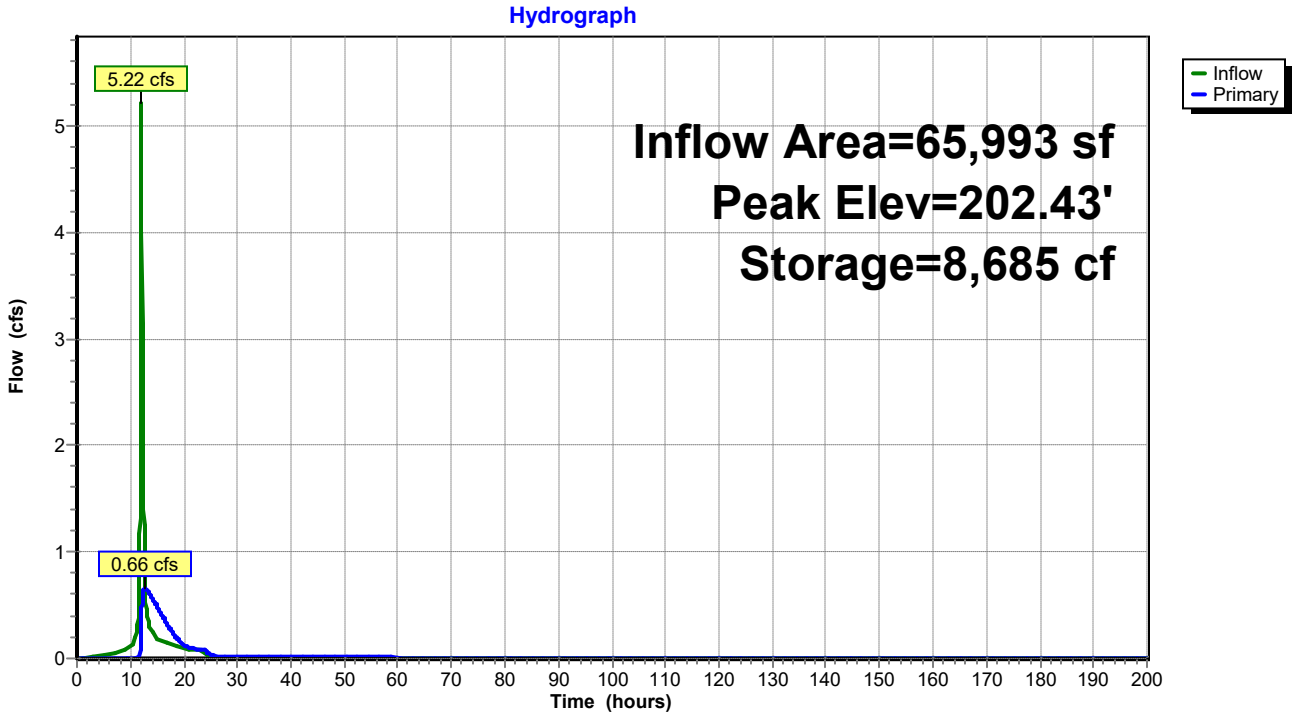
Volume	Invert	Avail.Storage	Storage Description
#1	197.75'	1,500 cf	**30.00'W x 100.00'L x 1.25'H Prismatoid** 3,750 cf Overall x 40.0% Voids
#2A	199.00'	4,089 cf	**30.00'W x 98.81'L x 5.50'H Field A** 16,303 cf Overall - 6,081 cf Embedded = 10,222 cf x 40.0% Voids
#3A	199.75'	6,081 cf	**Lane StormKeeper SK180** x 52 Inside #2 Effective Size= 70.5"W x 45.0"H => 15.97 sf x 7.11'L = 113.5 cf Overall Size= 78.0"W x 45.5"H x 7.39'L with 0.28' Overlap 52 Chambers in 4 Rows Cap Storage= +22.3 cf x 2 x 4 rows = 178.4 cf
		11,670 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	198.25'	**18.0" Round Culvert** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 198.25' / 197.85' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	200.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	203.50'	**2.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 1	198.75'	**0.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.66 cfs @ 12.66 hrs HW=202.43' (Free Discharge)
└**1=Culvert** (Passes 0.66 cfs of 12.45 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.63 cfs @ 7.25 fps)
  ├**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Orifice Controls 0.02 cfs @ 9.20 fps)

Pond 6P: Basin 1



Summary for Pond 6P: Basin 1

Inflow Area = 65,993 sf, 31.29% Impervious, Inflow Depth = 3.84" for 25-yr event
Inflow = 6.31 cfs @ 12.04 hrs, Volume= 21,119 cf
Outflow = 1.46 cfs @ 12.56 hrs, Volume= 19,918 cf, Atten= 77%, Lag= 31.3 min
Primary = 1.46 cfs @ 12.56 hrs, Volume= 19,918 cf

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Peak Elev= 203.71' @ 12.57 hrs Surf.Area= 5,964 sf Storage= 10,738 cf

Plug-Flow detention time= 388.3 min calculated for 19,913 cf (94% of inflow)
Center-of-Mass det. time= 357.2 min (1,154.3 - 797.1)

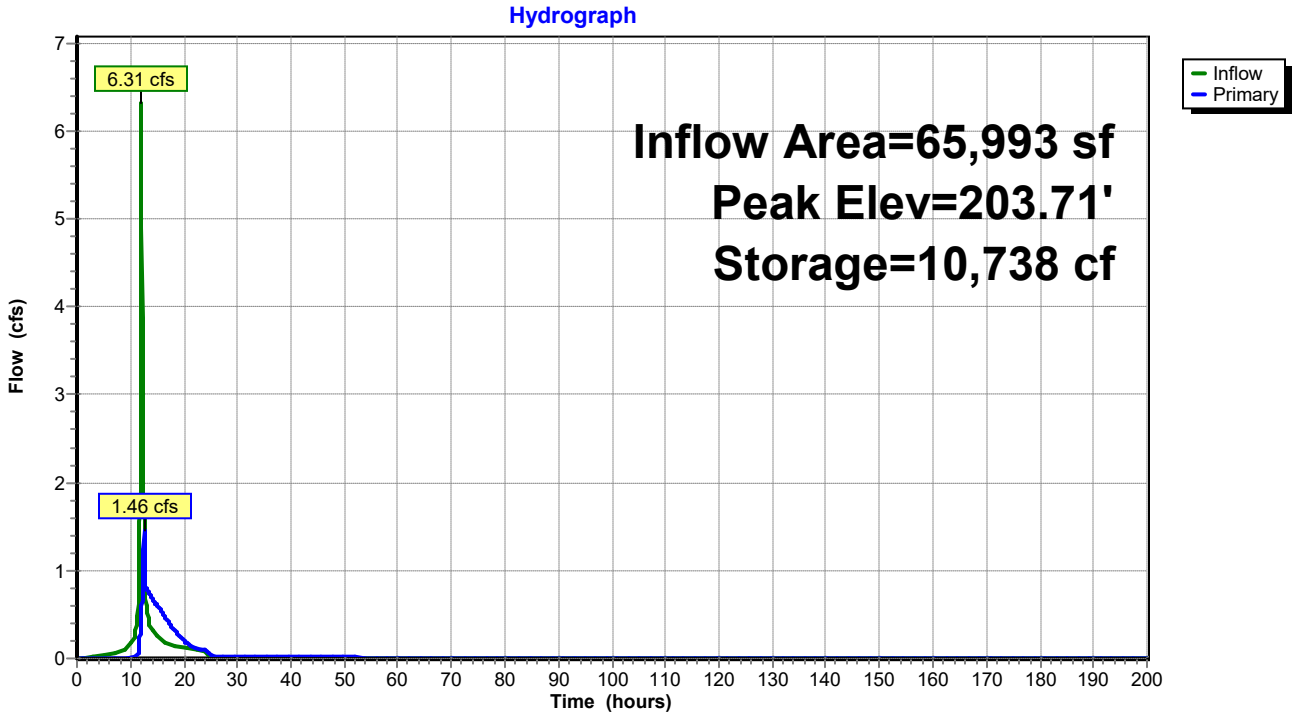
Volume	Invert	Avail.Storage	Storage Description
#1	197.75'	1,500 cf	**30.00'W x 100.00'L x 1.25'H Prismatoid** 3,750 cf Overall x 40.0% Voids
#2A	199.00'	4,089 cf	**30.00'W x 98.81'L x 5.50'H Field A** 16,303 cf Overall - 6,081 cf Embedded = 10,222 cf x 40.0% Voids
#3A	199.75'	6,081 cf	**Lane StormKeeper SK180** x 52 Inside #2 Effective Size= 70.5"W x 45.0"H => 15.97 sf x 7.11'L = 113.5 cf Overall Size= 78.0"W x 45.5"H x 7.39'L with 0.28' Overlap 52 Chambers in 4 Rows Cap Storage= +22.3 cf x 2 x 4 rows = 178.4 cf
		11,670 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	198.25'	**18.0" Round Culvert** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 198.25' / 197.85' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	200.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	203.50'	**2.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 1	198.75'	**0.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.43 cfs @ 12.56 hrs HW=203.71' (Free Discharge)
└**1=Culvert** (Passes 1.43 cfs of 14.58 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.79 cfs @ 9.06 fps)
  ├**3=Sharp-Crested Rectangular Weir** (Weir Controls 0.61 cfs @ 1.49 fps)
  └**4=Orifice/Grate** (Orifice Controls 0.03 cfs @ 10.69 fps)

Pond 6P: Basin 1



Summary for Pond 6P: Basin 1

Inflow Area = 65,993 sf, 31.29% Impervious, Inflow Depth = 4.61" for 50-yr event
Inflow = 7.12 cfs @ 12.04 hrs, Volume= 25,358 cf
Outflow = 2.66 cfs @ 12.32 hrs, Volume= 24,158 cf, Atten= 63%, Lag= 16.6 min
Primary = 2.66 cfs @ 12.32 hrs, Volume= 24,158 cf

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Peak Elev= 203.94' @ 12.32 hrs Surf.Area= 5,964 sf Storage= 11,005 cf

Plug-Flow detention time= 339.5 min calculated for 24,152 cf (95% of inflow)
Center-of-Mass det. time= 313.2 min (1,109.0 - 795.8)

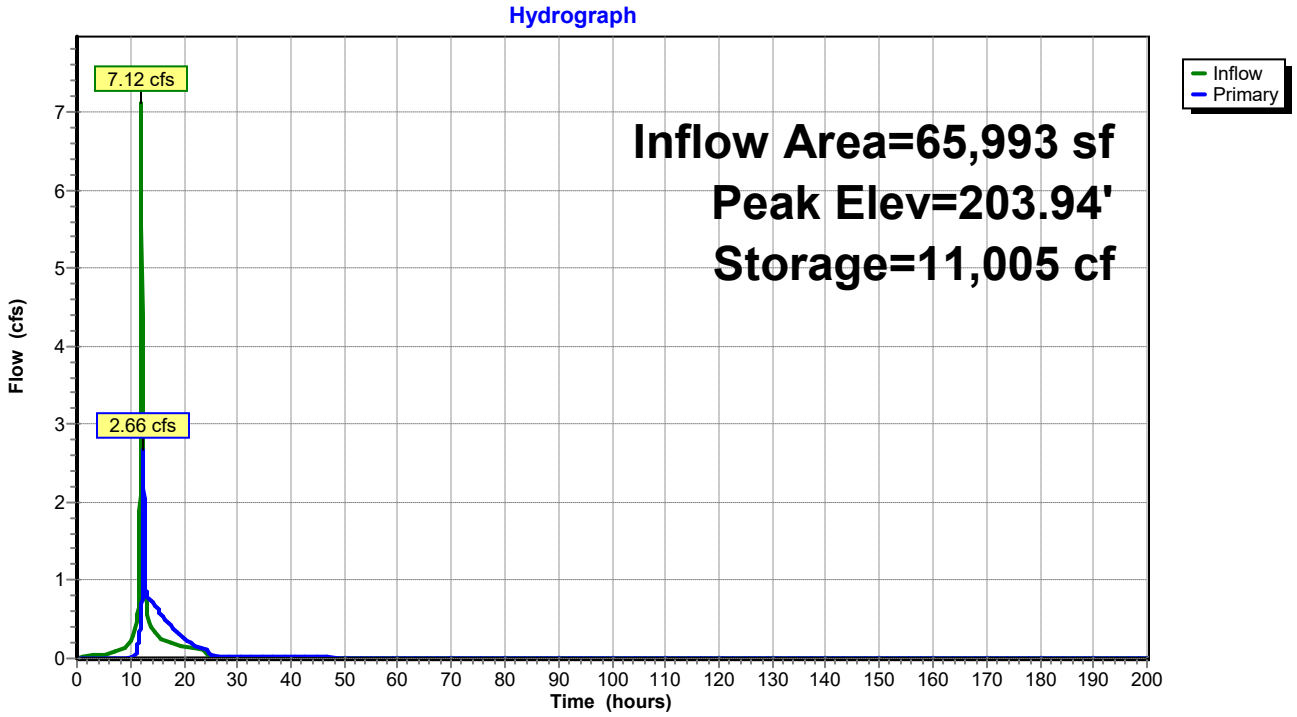
Volume	Invert	Avail.Storage	Storage Description
#1	197.75'	1,500 cf	**30.00'W x 100.00'L x 1.25'H Prismatoid** 3,750 cf Overall x 40.0% Voids
#2A	199.00'	4,089 cf	**30.00'W x 98.81'L x 5.50'H Field A** 16,303 cf Overall - 6,081 cf Embedded = 10,222 cf x 40.0% Voids
#3A	199.75'	6,081 cf	**Lane StormKeeper SK180** x 52 Inside #2 Effective Size= 70.5"W x 45.0"H => 15.97 sf x 7.11'L = 113.5 cf Overall Size= 78.0"W x 45.5"H x 7.39'L with 0.28' Overlap 52 Chambers in 4 Rows Cap Storage= +22.3 cf x 2 x 4 rows = 178.4 cf
		11,670 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	198.25'	**18.0" Round Culvert** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 198.25' / 197.85' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	200.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	203.50'	**2.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 1	198.75'	**0.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.61 cfs @ 12.32 hrs HW=203.93' (Free Discharge)
└**1=Culvert** (Passes 2.61 cfs of 14.92 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.82 cfs @ 9.34 fps)
  ├**3=Sharp-Crested Rectangular Weir** (Weir Controls 1.77 cfs @ 2.15 fps)
  └**4=Orifice/Grate** (Orifice Controls 0.03 cfs @ 10.93 fps)

Pond 6P: Basin 1



Summary for Pond 6P: Basin 1

Inflow Area = 65,993 sf, 31.29% Impervious, Inflow Depth = 5.46" for 100-yr event
Inflow = 7.92 cfs @ 12.04 hrs, Volume= 30,033 cf
Outflow = 4.29 cfs @ 12.20 hrs, Volume= 28,833 cf, Atten= 46%, Lag= 9.5 min
Primary = 4.29 cfs @ 12.20 hrs, Volume= 28,833 cf

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Peak Elev= 204.18' @ 12.20 hrs Surf.Area= 5,964 sf Storage= 11,291 cf

Plug-Flow detention time= 301.6 min calculated for 28,826 cf (96% of inflow)
Center-of-Mass det. time= 279.2 min (1,073.4 - 794.2)

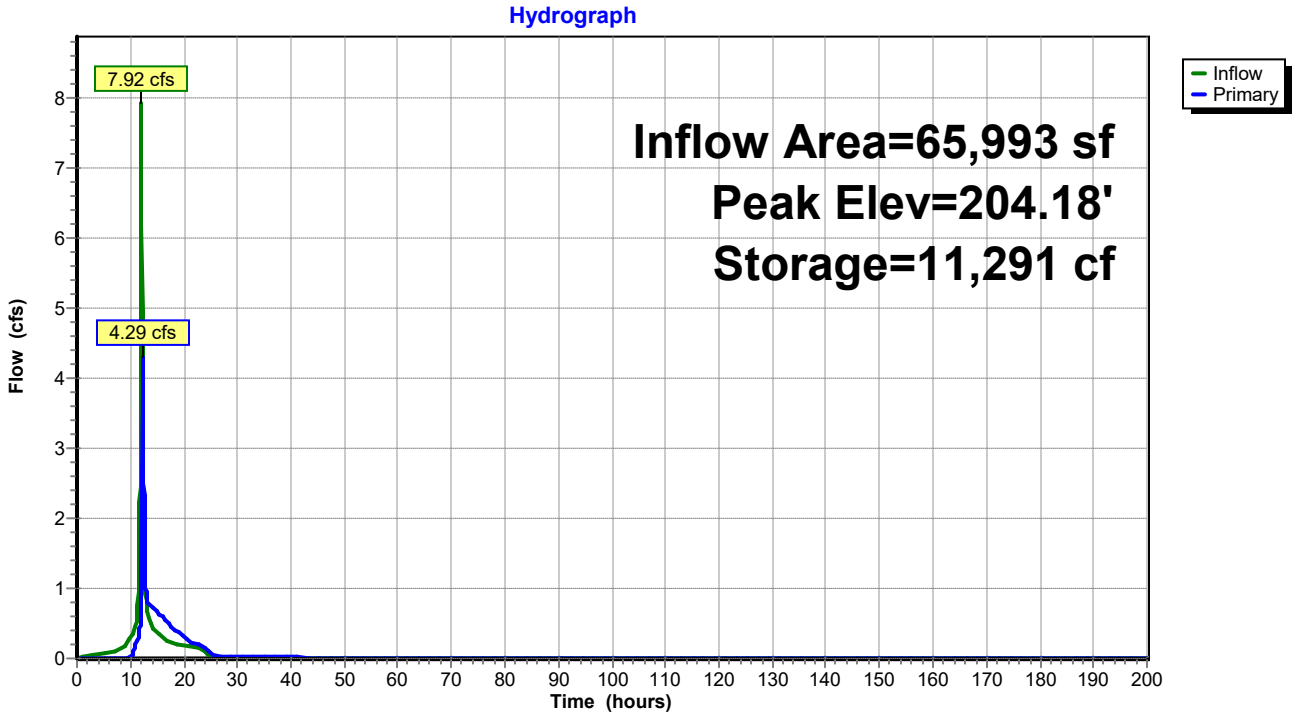
Volume	Invert	Avail.Storage	Storage Description
#1	197.75'	1,500 cf	**30.00'W x 100.00'L x 1.25'H Prismatoid** 3,750 cf Overall x 40.0% Voids
#2A	199.00'	4,089 cf	**30.00'W x 98.81'L x 5.50'H Field A** 16,303 cf Overall - 6,081 cf Embedded = 10,222 cf x 40.0% Voids
#3A	199.75'	6,081 cf	**Lane StormKeeper SK180** x 52 Inside #2 Effective Size= 70.5"W x 45.0"H => 15.97 sf x 7.11'L = 113.5 cf Overall Size= 78.0"W x 45.5"H x 7.39'L with 0.28' Overlap 52 Chambers in 4 Rows Cap Storage= +22.3 cf x 2 x 4 rows = 178.4 cf
		11,670 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	198.25'	**18.0" Round Culvert** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 198.25' / 197.85' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	200.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	203.50'	**2.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 1	198.75'	**0.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.29 cfs @ 12.20 hrs HW=204.18' (Free Discharge)
└**1=Culvert** (Passes 4.29 cfs of 15.29 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.84 cfs @ 9.65 fps)
  ├**3=Sharp-Crested Rectangular Weir** (Weir Controls 3.42 cfs @ 2.70 fps)
  └**4=Orifice/Grate** (Orifice Controls 0.03 cfs @ 11.19 fps)

Pond 6P: Basin 1



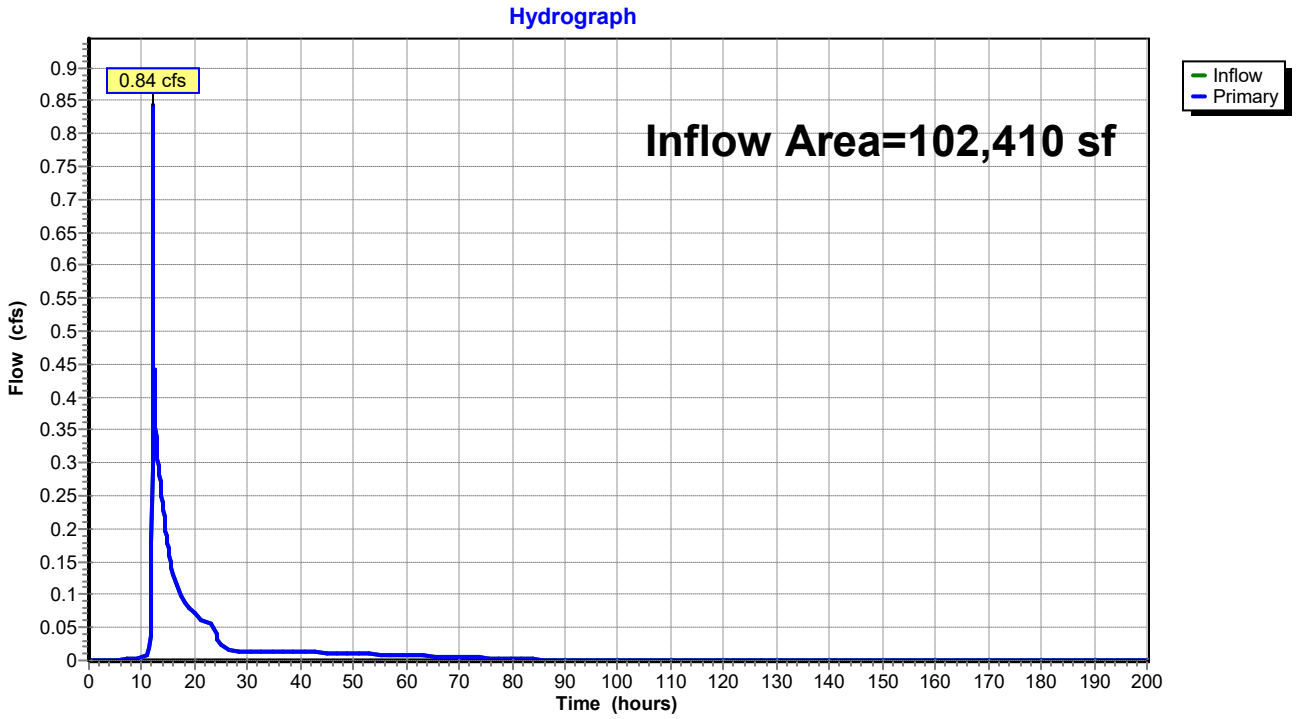
6.0 COMBINED HYDROGRAPHS

Summary for Link 7L: Post Development Total to POA 1

Inflow Area = 102,410 sf, 22.03% Impervious, Inflow Depth = 0.98" for 1-yr event
Inflow = 0.84 cfs @ 12.06 hrs, Volume= 8,359 cf
Primary = 0.84 cfs @ 12.06 hrs, Volume= 8,359 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs

Link 7L: Post Development Total to POA 1

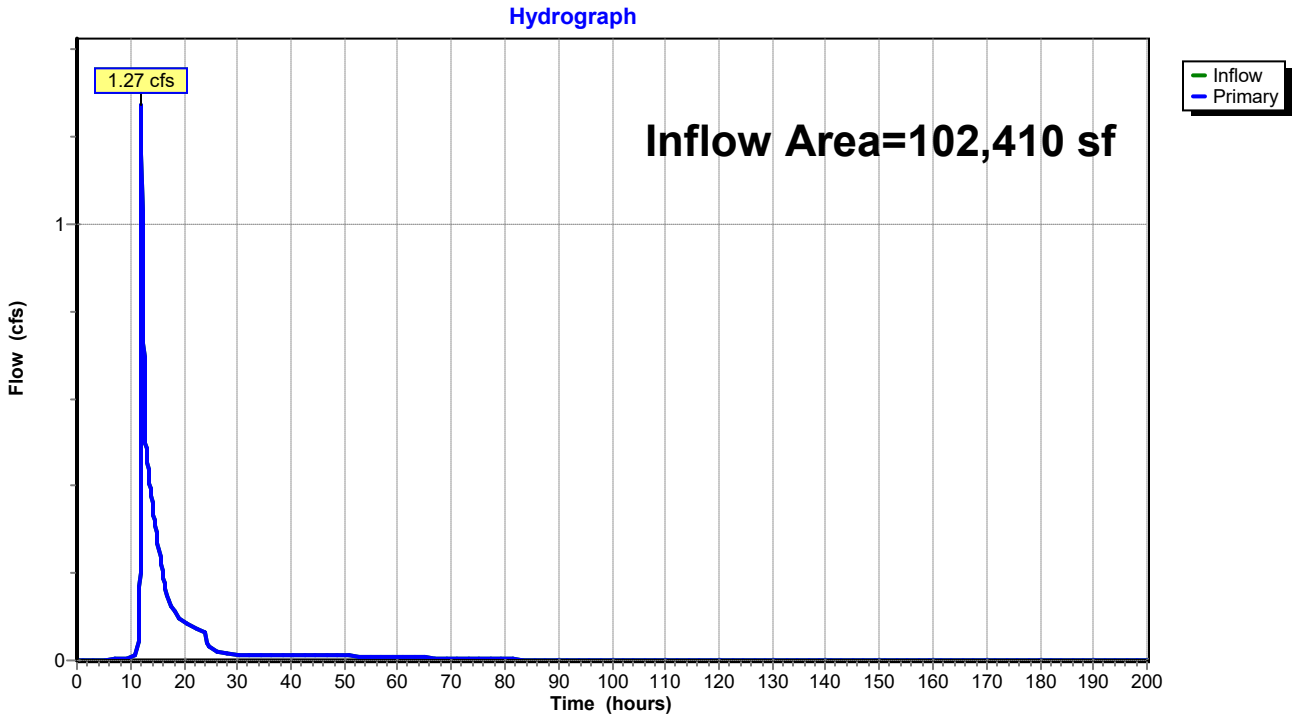


Summary for Link 7L: Post Development Total to POA 1

Inflow Area = 102,410 sf, 22.03% Impervious, Inflow Depth = 1.37" for 2-yr event
Inflow = 1.27 cfs @ 12.06 hrs, Volume= 11,701 cf
Primary = 1.27 cfs @ 12.06 hrs, Volume= 11,701 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs

Link 7L: Post Development Total to POA 1

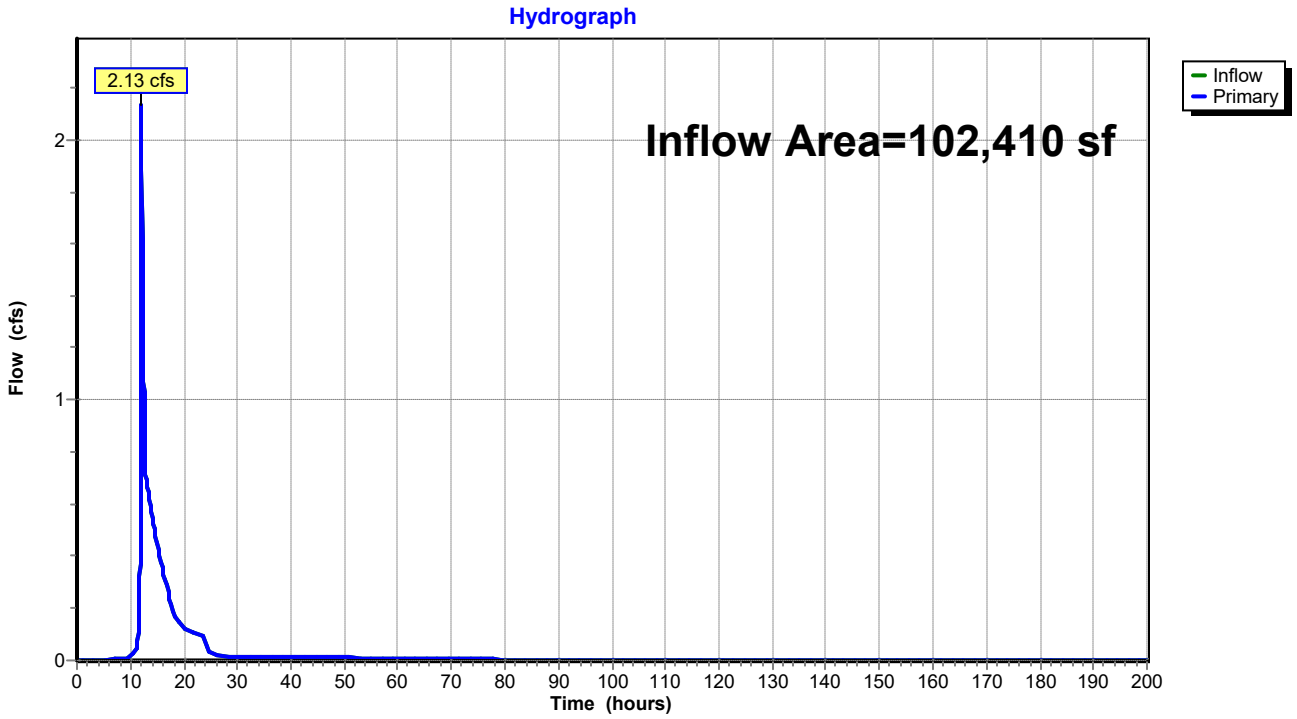


Summary for Link 7L: Post Development Total to POA 1

Inflow Area = 102,410 sf, 22.03% Impervious, Inflow Depth = 2.02" for 5-yr event
Inflow = 2.13 cfs @ 12.06 hrs, Volume= 17,220 cf
Primary = 2.13 cfs @ 12.06 hrs, Volume= 17,220 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs

Link 7L: Post Development Total to POA 1

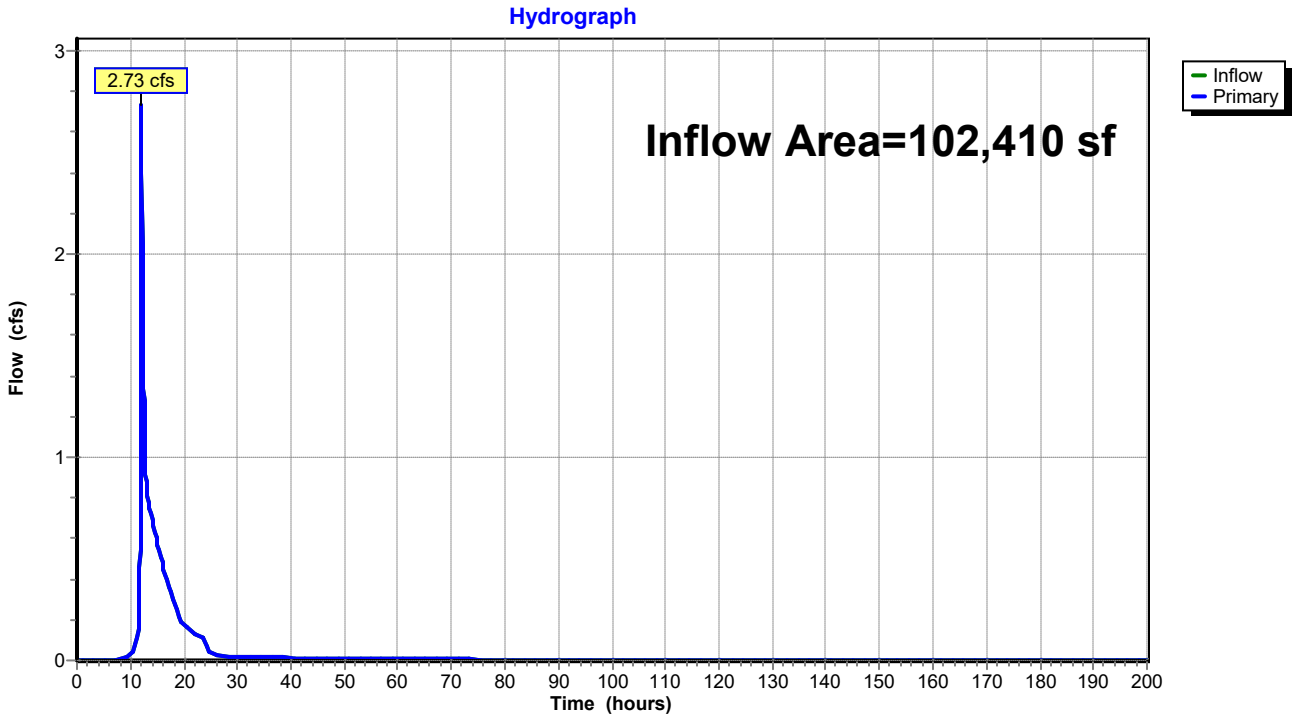


Summary for Link 7L: Post Development Total to POA 1

Inflow Area = 102,410 sf, 22.03% Impervious, Inflow Depth = 2.60" for 10-yr event
Inflow = 2.73 cfs @ 12.06 hrs, Volume= 22,167 cf
Primary = 2.73 cfs @ 12.06 hrs, Volume= 22,167 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs

Link 7L: Post Development Total to POA 1

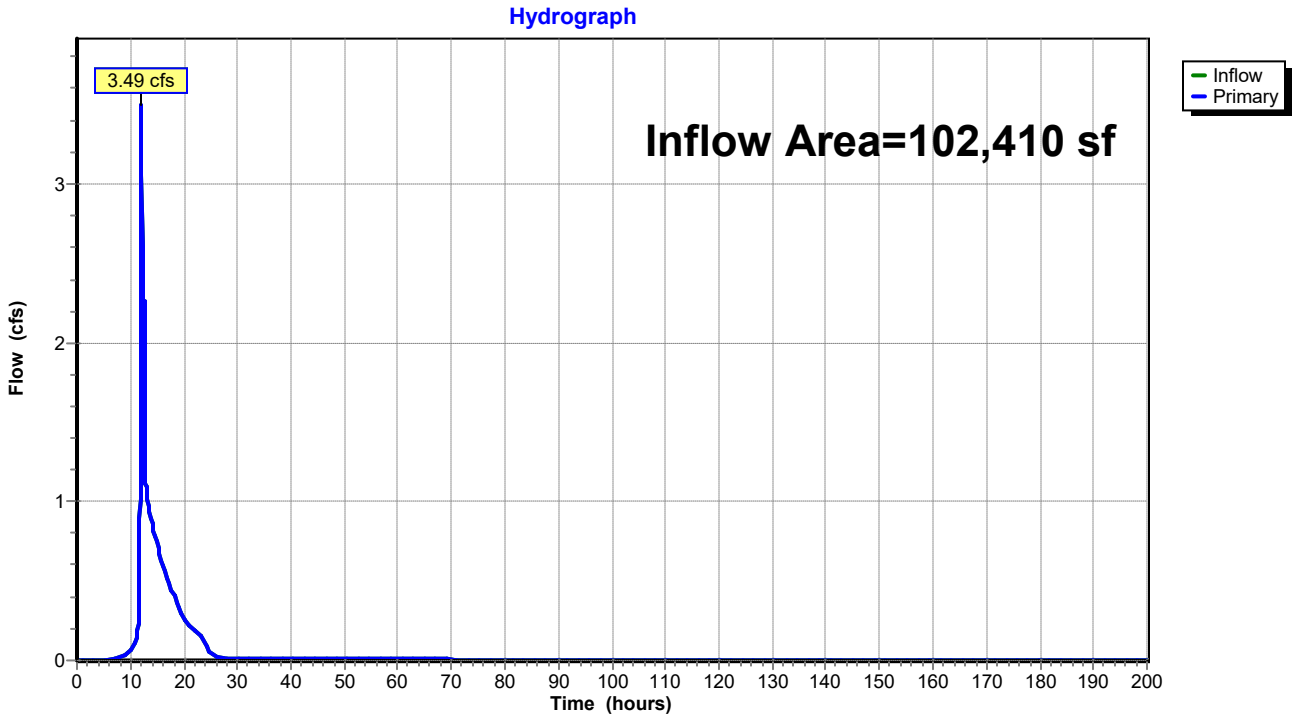


Summary for Link 7L: Post Development Total to POA 1

Inflow Area = 102,410 sf, 22.03% Impervious, Inflow Depth = 3.46" for 25-yr event
Inflow = 3.49 cfs @ 12.05 hrs, Volume= 29,521 cf
Primary = 3.49 cfs @ 12.05 hrs, Volume= 29,521 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs

Link 7L: Post Development Total to POA 1

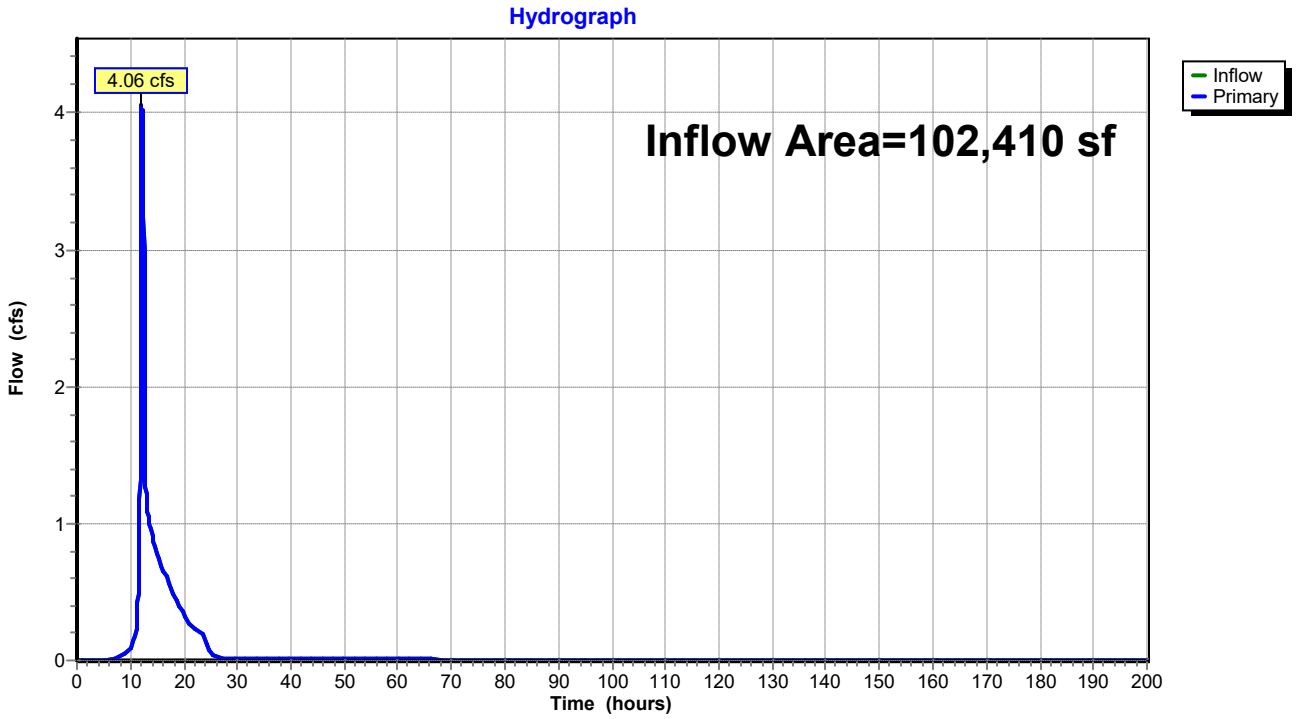


Summary for Link 7L: Post Development Total to POA 1

Inflow Area = 102,410 sf, 22.03% Impervious, Inflow Depth = 4.22" for 50-yr event
Inflow = 4.06 cfs @ 12.05 hrs, Volume= 35,994 cf
Primary = 4.06 cfs @ 12.05 hrs, Volume= 35,994 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs

Link 7L: Post Development Total to POA 1

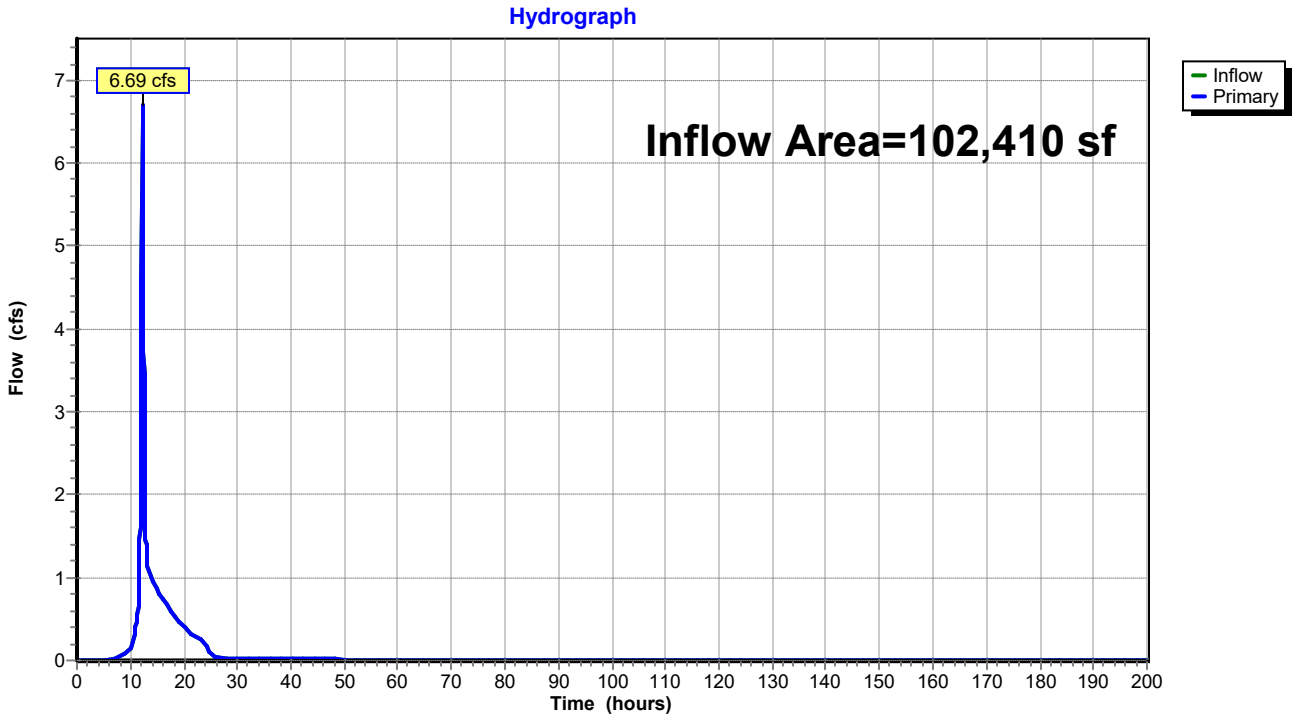


Summary for Link 7L: Post Development Total to POA 1

Inflow Area = 102,410 sf, 22.03% Impervious, Inflow Depth = 5.06" for 100-yr event
Inflow = 6.69 cfs @ 12.17 hrs, Volume= 43,155 cf
Primary = 6.69 cfs @ 12.17 hrs, Volume= 43,155 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs

Link 7L: Post Development Total to POA 1



7.0 MRC DESIGN

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Version 1.1, March 2025

Managed Release Concept (MRC) Spreadsheet

SCM ID: 1 Type: **MRC Storage Systems**

2-year/24-hour Precipitation Depth: **3.27** in Incremental SCM Drainage Area: **1.515** ac

Will flow from the drainage area be split into multiple MRC SCMs (cells) in parallel? ☐ Yes ☑ No

Is this SCM in series? ☐ Yes ☑ No

This SCM discharges: **Off-Site**

Will at least 10% of runoff from the 1.2-Inch/2-Hour Storm be managed using PCSM Objective A SCMs?

☑ Yes ☐ No ☐ There are no or insufficient natural stormwater features on the project site.

☑ *Drainage Area Characterization*

☐ ***Exempt from §§ 102.8(g)(2)(ii) & (iii)***

Pre-Construction Drainage Area Rows: **3** ☑ ***Calculate runoff automatically***

Pre-Construction Drainage Area Cover Type	Area (ac)	HSG	Runoff, 1.2-Inch (CF)	Runoff, 2-Year (CF)
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	0.145	N/A	519	1,599
Pervious as Meadow	1.333	C	159	4,454
Impervious as Meadow	0.036	C	4	120
		Totals (CF):	**682**	**6,173**

Post-Construction Drainage Area Rows: **2**

Post-Construction Drainage Area Cover Type	Area (ac)	HSG	Runoff, 1.2-Inch (CF)	Runoff, 2-Year (CF)
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	0.474	N/A	1,696	5,226
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	1.041	C	233	4,096
		Totals (CF):	**1,929**	**9,322**
		Total Volume Routed to SCM (CF):	**9,322**	
		Equivalent Impervious Area (ac):	**0.5**	

☑ *Design Standards*

MRC Storage Systems Variation: **Upstream MTD Pretreatment**

Parameter	Standard	Design Value
Bypass/Overflow Volume @ 1.2-Inch/2-Hour Storm	0	0
Maximum Storm Event Routed to MRC SCM		> 2-Year/24-Hour Storm
MRC SCM Drainage Area (Equivalent Impervious, maximum)	1.5	0.5
Storage Unit - Freeboard (inches) (maximum)	12	4

Storage Unit - Pre-Construction 1-Year/24-Hour Peak Rate (cfs)		1.07
Storage Unit - Post-Construction 2-Year/24-Hour Peak Rate (cfs) ***(see Note 1)***	1.07	0.37
Storage Unit - Controlled Release Rate for 1.2-Inch/2-Hour Storm (cfs) ***(see Note 2)***	0.02	
Storage Unit - Underdrain Outflow Rate for 1.2-Inch/2-Hour Storm (cfs).	≤ Controlled Release Rate	0.01
Storage Unit - Drawdown Time for Storm Event Routed to MRC SCM (hrs) (maximum)	168	106
Storage Unit - Separation Distance Between MRC SCM Bottom and SHWT (in)	12	> 12
Storage Unit - IWS Depth (ft) (minimum)	1	1.0
Storage Unit - IWS Area (SF)		3,000
Storage Unit - Void Space in IWS (%)		40%
Storage Unit - IWS Void Space Volume (CF) (minimum)	482	600
Storage Unit - A Synthetic Liner Will Be Installed		FALSE
Storage Unit - Diameter of Managed Release Orifice (in)		0.7
Storage Unit - Pretreatment for Additional Flows	TRUE OR N/A	N/A
Upstream MTD - TSS MOC at Design Flow (mg/L)	10	10
Upstream MTD - TP MOC at Design Flow (mg/L)	0.24	0.24
Upstream MTD - TN MOC at Design Flow (mg/L)	0.96	1
Upstream MTD - Flow Used to Determine MOCs (cfs)		0.4
Upstream MTD - Design Flow for Project (cfs)	0.4	0.34

Note 1: The standard is either 1) ≤ the pre-construction 1-Year/24-Hour Peak Rate OR 2) 0.15 cfs/acre, if the 1-Year/24-Hour Peak Rate is < 0.15 cf/acre.

Note 2: The standard is calculated based on the MRC release rate for the 1.2-Inch/2-Hour storm of 0.02 cfs/acre equivalent impervious x equivalent impervious in the drainage area (of each cell).

☑ ***Volume and Water Quality Management Credit***

Volume Management Credit (CF): **9,322**

CERTIFICATION

I certify under penalty of law and subject to the penalties of 18 Pa.C.S. § 4904 (relating to unsworn falsification to authorities) that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I further certify that the structure, function, and calculations contained in this spreadsheet have not been modified in comparison to the spreadsheet DEP has posted to its website.

PA-Licensed Professional Engineer Responsible for Design: **Anthony Brunkan**

Professional Engineer Company: **Cornerstone Consulting** License No.: **PE078665**

1-Year/24-Hour Pre-development Hydrographs

Summary for Subcatchment 8S: Pre-Development MRC DA 1 to Basin 1

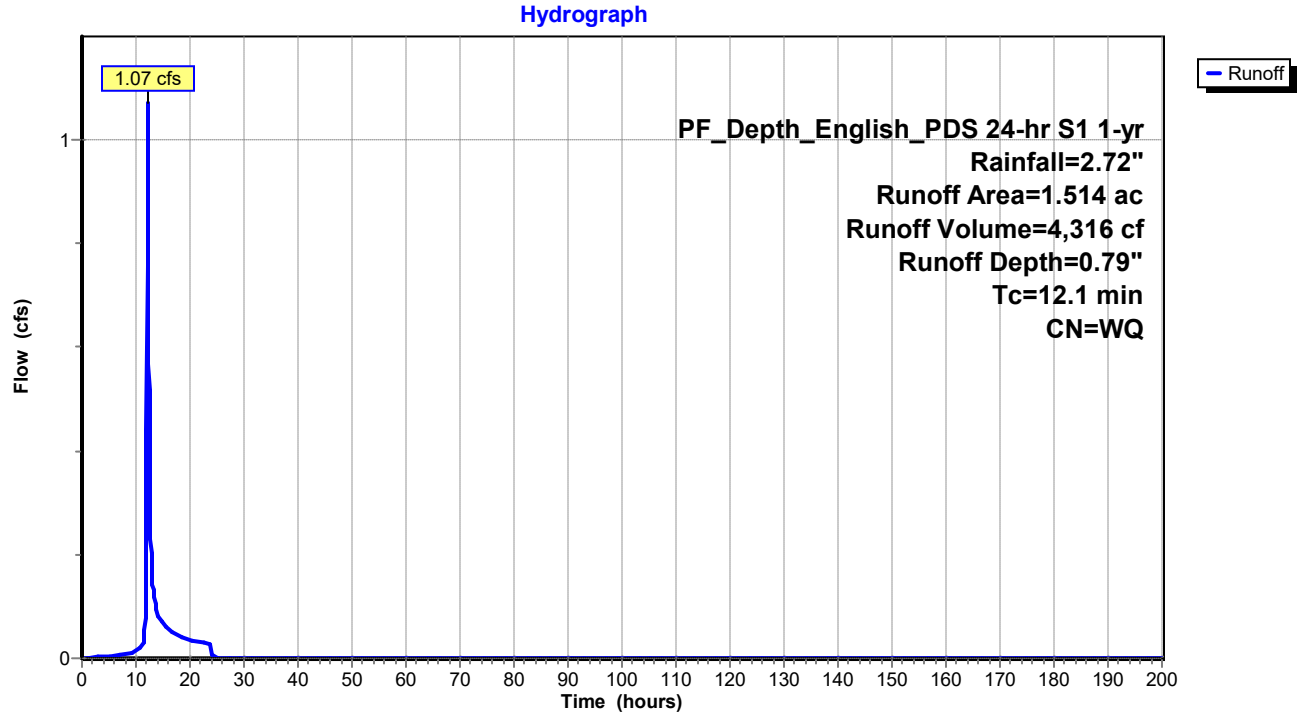
Runoff = 1.07 cfs @ 12.14 hrs, Volume= 4,316 cf, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 1-yr Rainfall=2.72"

	Area (ac)	CN	Description
*	0.145	98	
*	1.333	71	
*	0.036	71	Impervious as Meadow
	1.514		Weighted Average
	1.369		90.42% Pervious Area
	0.145		9.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1					**Direct Entry,**

Subcatchment 8S: Pre-Development MRC DA 1 to Basin 1



2-Year/24-Hour Post-development Hydrographs

Summary for Subcatchment 3S: Post Development DA 1 to Basin 1

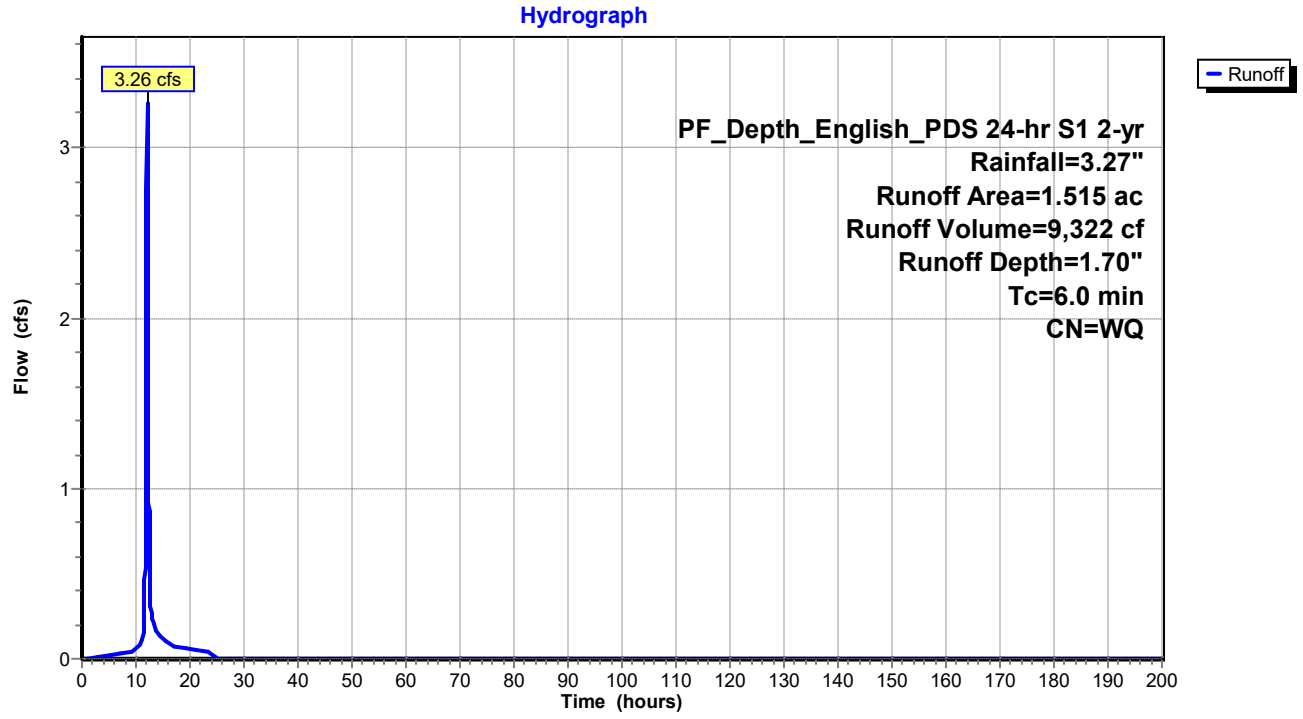
Runoff = 3.26 cfs @ 12.04 hrs, Volume= 9,322 cf, Depth= 1.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
PF_Depth_English_PDS 24-hr S1 2-yr Rainfall=3.27"

	Area (ac)	CN	Description
*	0.474	98	
*	1.041	74	
	1.515		Weighted Average
	1.041		68.71% Pervious Area
	0.474		31.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 3S: Post Development DA 1 to Basin 1



Summary for Pond 6P: Basin 1

Inflow Area = 65,993 sf, 31.29% Impervious, Inflow Depth = 1.70" for 2-yr event
Inflow = 3.26 cfs @ 12.04 hrs, Volume= 9,322 cf
Outflow = 0.37 cfs @ 12.67 hrs, Volume= 8,121 cf, Atten= 89%, Lag= 37.7 min
Primary = 0.37 cfs @ 12.67 hrs, Volume= 8,121 cf

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Peak Elev= 200.86' @ 12.67 hrs Surf.Area= 5,964 sf Storage= 5,138 cf

Plug-Flow detention time= 686.9 min calculated for 8,119 cf (87% of inflow)
Center-of-Mass det. time= 624.9 min (1,428.3 - 803.4)

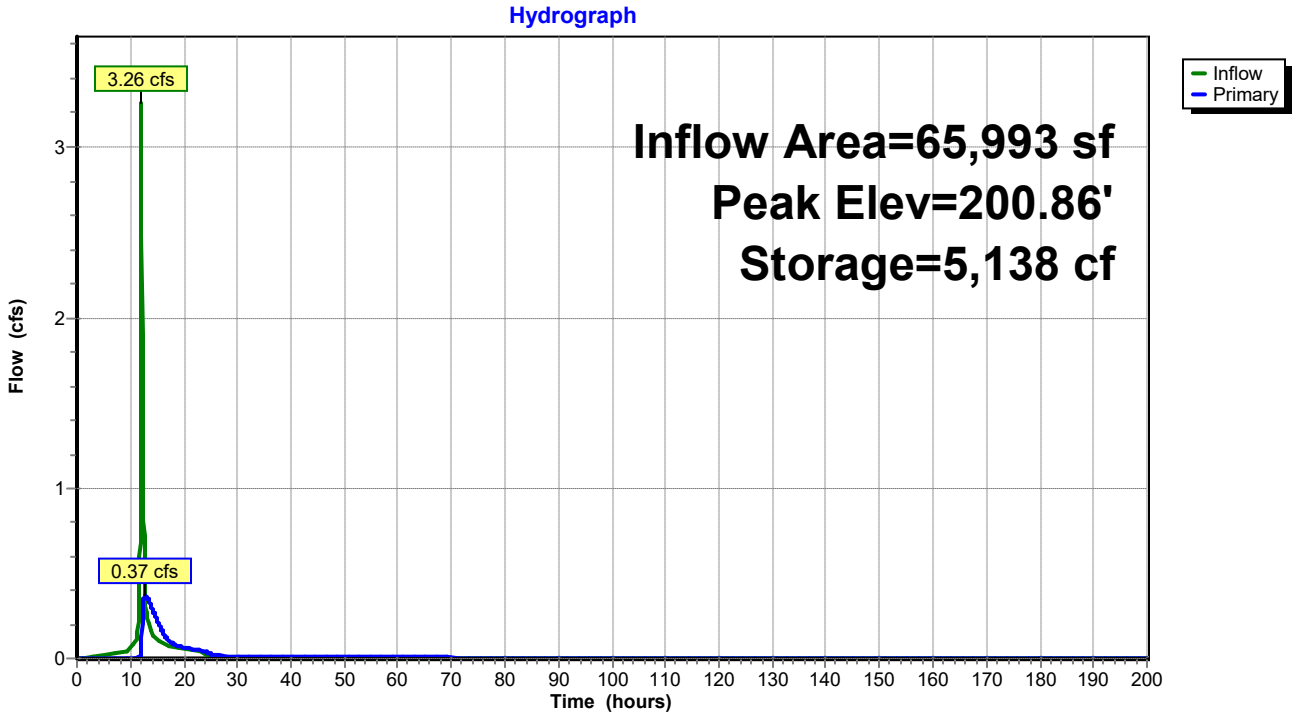
Volume	Invert	Avail.Storage	Storage Description
#1	197.75'	1,500 cf	**30.00'W x 100.00'L x 1.25'H Prismatoid** 3,750 cf Overall x 40.0% Voids
#2A	199.00'	4,089 cf	**30.00'W x 98.81'L x 5.50'H Field A** 16,303 cf Overall - 6,081 cf Embedded = 10,222 cf x 40.0% Voids
#3A	199.75'	6,081 cf	**Lane StormKeeper SK180** x 52 Inside #2 Effective Size= 70.5"W x 45.0"H => 15.97 sf x 7.11'L = 113.5 cf Overall Size= 78.0"W x 45.5"H x 7.39'L with 0.28' Overlap 52 Chambers in 4 Rows Cap Storage= +22.3 cf x 2 x 4 rows = 178.4 cf
		11,670 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	198.25'	**18.0" Round Culvert** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 198.25' / 197.85' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	200.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	203.50'	**2.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 1	198.75'	**0.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.37 cfs @ 12.67 hrs HW=200.86' (Free Discharge)
└**1=Culvert** (Passes 0.37 cfs of 9.16 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.35 cfs @ 4.01 fps)
  ├**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Orifice Controls 0.02 cfs @ 6.95 fps)

Pond 6P: Basin 1



100-Year/24-Hour Post-development Hydrographs

Summary for Pond 6P: Basin 1

Inflow Area = 65,993 sf, 31.29% Impervious, Inflow Depth = 5.46" for 100-yr event
Inflow = 7.92 cfs @ 12.04 hrs, Volume= 30,033 cf
Outflow = 4.29 cfs @ 12.20 hrs, Volume= 28,833 cf, Atten= 46%, Lag= 9.5 min
Primary = 4.29 cfs @ 12.20 hrs, Volume= 28,833 cf

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Peak Elev= 204.18' @ 12.20 hrs Surf.Area= 5,964 sf Storage= 11,291 cf

Plug-Flow detention time= 301.6 min calculated for 28,826 cf (96% of inflow)
Center-of-Mass det. time= 279.2 min (1,073.4 - 794.2)

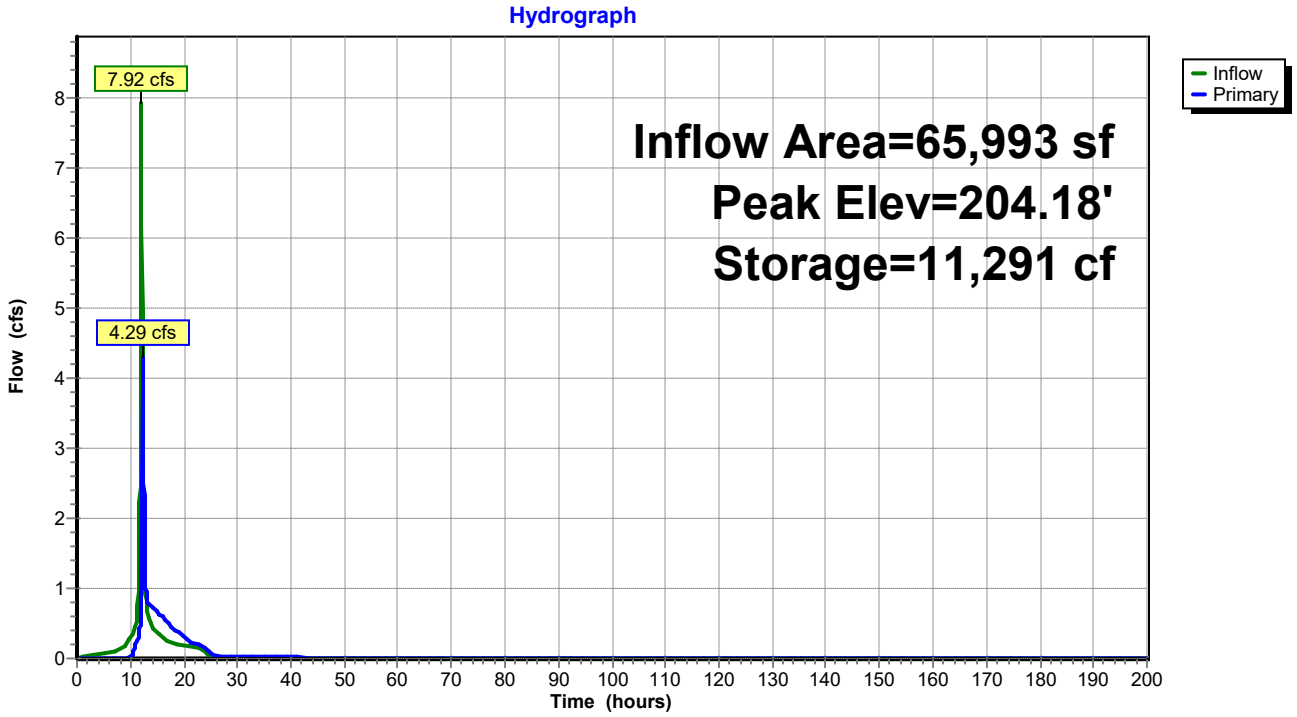
Volume	Invert	Avail.Storage	Storage Description
#1	197.75'	1,500 cf	**30.00'W x 100.00'L x 1.25'H Prismatoid** 3,750 cf Overall x 40.0% Voids
#2A	199.00'	4,089 cf	**30.00'W x 98.81'L x 5.50'H Field A** 16,303 cf Overall - 6,081 cf Embedded = 10,222 cf x 40.0% Voids
#3A	199.75'	6,081 cf	**Lane StormKeeper SK180** x 52 Inside #2 Effective Size= 70.5"W x 45.0"H => 15.97 sf x 7.11'L = 113.5 cf Overall Size= 78.0"W x 45.5"H x 7.39'L with 0.28' Overlap 52 Chambers in 4 Rows Cap Storage= +22.3 cf x 2 x 4 rows = 178.4 cf
		11,670 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	198.25'	**18.0" Round Culvert** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 198.25' / 197.85' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	200.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	203.50'	**2.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 1	198.75'	**0.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.29 cfs @ 12.20 hrs HW=204.18' (Free Discharge)
└**1=Culvert** (Passes 4.29 cfs of 15.29 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.84 cfs @ 9.65 fps)
  ├**3=Sharp-Crested Rectangular Weir** (Weir Controls 3.42 cfs @ 2.70 fps)
  └**4=Orifice/Grate** (Orifice Controls 0.03 cfs @ 11.19 fps)

Pond 6P: Basin 1



Hydrograph for Pond 6P: Basin 1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	197.75	0.00
5.00	0.06	656	198.30	0.00
10.00	**0.28**	**2,931**	**199.96**	**0.01**
15.00	**0.35**	**8,786**	**202.48**	**0.66**
20.00	0.18	4,604	200.64	0.31
25.00	0.00	3,384	200.15	0.06
30.00	0.00	2,963	199.98	0.01
35.00	0.00	2,715	199.88	0.01
40.00	0.00	2,478	199.78	0.01
45.00	0.00	2,253	199.64	0.01
50.00	0.00	2,050	199.46	0.01
55.00	0.00	1,870	199.31	0.01
60.00	0.00	1,712	199.18	0.01
65.00	0.00	1,577	199.06	0.01
70.00	0.00	1,465	198.97	0.01
75.00	0.00	1,375	198.90	0.00
80.00	0.00	1,308	198.84	0.00
85.00	0.00	1,264	198.80	0.00
90.00	0.00	1,239	198.78	0.00
95.00	0.00	1,226	198.77	0.00
100.00	0.00	1,219	198.77	0.00
105.00	0.00	1,215	198.76	0.00
110.00	0.00	1,212	198.76	0.00
115.00	0.00	1,210	198.76	0.00
120.00	0.00	1,208	198.76	0.00
125.00	0.00	1,207	198.76	0.00
130.00	0.00	1,206	198.75	0.00
135.00	0.00	1,205	198.75	0.00
140.00	0.00	1,204	198.75	0.00
145.00	0.00	1,203	198.75	0.00
150.00	0.00	1,203	198.75	0.00
155.00	0.00	1,202	198.75	0.00
160.00	0.00	1,202	198.75	0.00
165.00	0.00	1,201	198.75	0.00
170.00	0.00	1,201	198.75	0.00
175.00	0.00	1,201	198.75	0.00
180.00	0.00	1,201	198.75	0.00
185.00	0.00	1,201	198.75	0.00
190.00	0.00	1,201	198.75	0.00
195.00	0.00	1,200	198.75	0.00
200.00	0.00	1,200	198.75	0.00

drawdown time =
130-24 = 116 hrs.

8.0 PCSM SPREADSHEETS

General Information

Instructions | *General* | Volume | Rate | Quality

Project Name: **Sproul Road Subdivision**

Application Type: **PAG-02 NOI**

County: **Delaware**

Municipality: **Haverford Township**

Project Type: **Single-Family Housing**

(●) New Project ( ) Minor / Major Amendment

Area: **2.48** acres
(In Watershed)

Total Earth Disturbance: **1.96** acres
(In Watershed)

No. of Post-Construction Points of Analysis: **1**

at: **001**

Point of Analysis (POA) No.	Drainage Area (DA) (acres)	Earth Disturbance in DA (acres)	Existing Impervious in DA (acres)	Proposed Impervious in DA (acres)	Receiving Waters	Ch. 93 Class	Structural SCM(s)
001	1.52	1.40	0.21	0.47	Discharge to MS4	CWF, MF	Yes
Undetained Areas	0.97	0.54	0.00	0.06	Discharge to MS4	CWF, MF	
Totals:	**2.48**	**1.95**	**0.21**	**0.53**			

PROJECT SITE MEETS SMALL SITE EXCEPTION - RATE WORKSHEET NOT REQUIRED

Volume Management

Project: Sproul Road Subdivision

Instructions | General | *Volume* | Rate | Quality

2-Year / 24-Hour Storm Event (NOAA Atlas 14): **3.27** inches

Alternative 2-Year / 24-Hour Storm Event: inches

Alternative Source:

Pre-Construction Conditions: *No. Rows:* **4**

☐ *Exempt from Meadow in Good Condition* ☑ *Automatically Calculate CN, Ia, Runoff and Volume*

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	0.16	C	98	0.041	3.04	1,742
Forested (Good Condition)	0.06	C	70	0.857	0.87	192
Pervious as Meadow	1.70	C	71	0.817	0.92	5,674
Impervious as Meadow	0.04	N/A	78	0.564	1.32	192
TOTAL (ACRES):	**1.96**				**TOTAL (CF):**	**7,800**

Post-Construction Conditions: *No. Rows:* **2**

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	0.52	N/A	98	0.041	3.04	5,755
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	1.42	C	74	0.703	1.08	5,599
TOTAL (ACRES):	**1.95**				**TOTAL (CF):**	**11,354**

NET CHANGE IN VOLUME TO MANAGE (CF): **3,554**

Non-Structural SCM Volume Credits:

☐ Tree Planting Credit

☐ Other (attach calculations):

Description: **CREDIT (CF):**

Structural SCM Volume Credits: *No. Structural SCMs:* **1** *Start SCM Numbering at:* **1**

POA No.	SCM No.	SCM Name	MRC?	Discharge	Incremental SCM DA (acres)	Volume Routed to SCM (CF)	Infiltration / Vegetated Area (SF)	Infiltration Rate (in/hr)	Infiltration Period (hrs)	Vegeta-ted?	Media Depth (ft)	Storage Volume (CF)	Infiltration Credit (CF)	ET Credit (CF)
001	1	Dry Extended Detention Basin	Y	Off-Site	1.40	17,697				No	1.0	1,200		
												Totals:		

INFILTRATION & ET CREDITS (CF):	
MANAGED RELEASE CREDIT (CF):	**9,322**
NET CHANGE IN VOLUME TO MANAGE (CF):	**3,554**
TOTAL CREDITS (CF):	**9,322**

VOLUME REQUIREMENT SATISFIED

Water Quality

Project: Sproul Road Subdivision

PRINT

Instructions | General | Volume | Rate | *Quality*

Pre-Construction Pollutant Loads:

Land Cover (from Volume Worksheet)	Land Cover for Water Quality	Area (acres)	Soil Group	Runoff Volume (cf)	Pollutant Conc. (mg/L)			Pollutant Loads (lbs)		
					TSS	TP	TN	TSS	TP	TN
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	Residential	0.16	C	1,742	65.0	0.29	2.05	7.07	0.03	0.22
Forested (Good Condition)	Deciduous Forest/Evergreen Forest/Mixed Forest	0.06	C	192	45.0	0.13	1.05	0.54	0.00	0.01
Pervious as Meadow	Grassland/Herbaceous	1.70	C	5,674	48.8	0.22	2.30	17.29	0.08	0.81
Impervious as Meadow	Grassland/Herbaceous	0.04	N/A	192	48.8	0.22	2.30	0.59	0.00	0.03
	TOTAL (ACRES):	**1.96**					**TOTALS:**	**25.49**	**0.11**	**1.08**

Post-Construction Pollutant Loads (without BMPs):

Land Cover (from Volume Worksheet)	Land Cover for Water Quality	Area (acres)	Soil Group	Runoff Volume (cf)	Pollutant Conc. (mg/L)			Pollutant Loads (lbs)		
					TSS	TP	TN	TSS	TP	TN
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	Residential	0.52	N/A	5,755	65.0	0.29	2.05	23.36	0.10	0.74

Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	Open Space	1.42	C	5,599	78.0	0.25	1.25	27.27	0.09	0.44
	TOTAL (ACRES):	**1.95**					**TOTALS:**	**50.63**	**0.19**	**1.17**

POLLUTANT LOAD REDUCTION REQUIREMENTS (LBS):	**25.14**	**0.08**	**0.10**

☐ **Characterize Undetained Areas (for Untreated Stormwater)**

Non-Structural SCM Water Quality Credits:

☐ Pervious Undetained Area Credit

☐ Other (attach calculations)

	TSS	**TP**	**TN**
Description:			

Structural SCM Water Quality Credits:

☑ *Use default SCM Outflows and Median SCM Outflow Concentrations*

POA No.	**SCM No.**	**SCM Name**	**MRC?**	**SCM DA (acres)**	**Vol. Routed to SCM (CF)**	**Inf. & ET Credits (CF)**	**Capture & Buffer Credits (CF)**	**Outflow (CF)**	**Outflow Conc. (mg/L)**			**Pollutant Loads (lbs)**		
									TSS	**TP**	**TN**	**TSS**	**TP**	**TN**
001	1	Dry Extended Detention Basin	Y	1.40	17,697			17,697	-	-	-	-	-	-

	TSS	**TP**	**TN**
POLLUTANT LOADS FROM STRUCTURAL SCM (TREATED) OUTFLOWS (LBS):	**0.00**	**0.00**	**0.00**
POLLUTANT LOADS FROM UNTREATED STORMWATER (LBS):	**0.00**	**0.00**	**0.00**
NON-STRUCTURAL SCM WATER QUALITY CREDITS (LBS):			
NET POLLUTANT LOADS FROM SITE, POST-CONSTRUCTION (LBS):	**0.00**	**0.00**	**0.00**
POLLUTANT LOADS FROM SITE, PRE-CONSTRUCTION (LBS):	**25.49**	**0.11**	**1.08**

WATER QUALITY REQUIREMENT SATISFIED

CERTIFICATION

I certify under penalty of law and subject to the penalties of 18 Pa.C.S. § 4904 (relating to unsworn falsification to authorities) that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I further certify that the structure, function, and calculations contained in this spreadsheet have not been modified in comparison to the spreadsheet DEP has posted to its website or, if modifications were made, an explanation of the modifications made is attached to this spreadsheet.

Anthony Brunkan	7/28/2025
Spreadsheet User Name	Date

9.0 APPENDICES

APPENDIX A

NOAA Atlas 14, Volume 2, Version 3
Location name: Bryn Mawr, Pennsylvania, USA*
Latitude: 39.9972°, Longitude: -75.3574°
Elevation: 223 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.349** (0.321-0.380)	**0.415** (0.382-0.452)	**0.487** (0.447-0.530)	**0.537** (0.492-0.585)	**0.597** (0.544-0.649)	**0.638** (0.578-0.694)	**0.678** (0.611-0.739)	**0.712** (0.638-0.779)	**0.752** (0.667-0.826)	**0.781** (0.688-0.863)
10-min	**0.557** (0.513-0.607)	**0.664** (0.611-0.723)	**0.780** (0.715-0.848)	**0.859** (0.787-0.935)	**0.952** (0.867-1.04)	**1.02** (0.920-1.11)	**1.08** (0.971-1.18)	**1.13** (1.01-1.24)	**1.19** (1.06-1.31)	**1.23** (1.08-1.36)
15-min	**0.696** (0.641-0.758)	**0.835** (0.768-0.909)	**0.987** (0.905-1.07)	**1.09** (0.995-1.18)	**1.21** (1.10-1.31)	**1.29** (1.16-1.40)	**1.36** (1.23-1.48)	**1.42** (1.28-1.56)	**1.50** (1.33-1.64)	**1.54** (1.36-1.71)
30-min	**0.954** (0.879-1.04)	**1.15** (1.06-1.26)	**1.40** (1.28-1.52)	**1.57** (1.44-1.71)	**1.79** (1.63-1.94)	**1.94** (1.75-2.11)	**2.08** (1.88-2.27)	**2.22** (1.99-2.43)	**2.38** (2.12-2.62)	**2.50** (2.20-2.76)
60-min	**1.19** (1.10-1.30)	**1.45** (1.33-1.58)	**1.80** (1.65-1.95)	**2.05** (1.88-2.23)	**2.38** (2.17-2.59)	**2.62** (2.38-2.86)	**2.87** (2.59-3.13)	**3.11** (2.79-3.40)	**3.42** (3.03-3.76)	**3.65** (3.22-4.03)
2-hr	**1.43** (1.30-1.56)	**1.73** (1.59-1.90)	**2.16** (1.97-2.37)	**2.49** (2.26-2.72)	**2.92** (2.64-3.19)	**3.26** (2.92-3.56)	**3.59** (3.21-3.94)	**3.93** (3.48-4.31)	**4.38** (3.84-4.83)	**4.73** (4.10-5.24)
3-hr	**1.56** (1.43-1.71)	**1.89** (1.73-2.07)	**2.36** (2.16-2.59)	**2.72** (2.48-2.98)	**3.21** (2.90-3.51)	**3.59** (3.22-3.93)	**3.98** (3.55-4.36)	**4.37** (3.86-4.80)	**4.89** (4.26-5.40)	**5.30** (4.57-5.87)
6-hr	**1.94** (1.78-2.13)	**2.34** (2.15-2.58)	**2.92** (2.66-3.21)	**3.38** (3.08-3.71)	**4.03** (3.64-4.42)	**4.56** (4.08-5.00)	**5.11** (4.53-5.61)	**5.69** (4.98-6.25)	**6.49** (5.59-7.19)	**7.15** (6.06-7.94)
12-hr	**2.36** (2.16-2.61)	**2.85** (2.60-3.15)	**3.57** (3.25-3.94)	**4.17** (3.78-4.60)	**5.04** (4.52-5.54)	**5.77** (5.13-6.35)	**6.56** (5.76-7.24)	**7.42** (6.42-8.21)	**8.67** (7.34-9.63)	**9.71** (8.07-10.8)
24-hr	**2.72** (2.50-2.96)	**3.27** (3.01-3.57)	**4.11** (3.78-4.49)	**4.82** (4.41-5.25)	**5.83** (5.31-6.34)	**6.69** (6.06-7.27)	**7.62** (6.86-8.26)	**8.62** (7.71-9.34)	**10.1** (8.92-10.9)	**11.3** (9.91-12.2)
2-day	**3.13** (2.87-3.42)	**3.78** (3.47-4.13)	**4.76** (4.36-5.19)	**5.56** (5.08-6.06)	**6.70** (6.10-7.29)	**7.64** (6.93-8.31)	**8.65** (7.80-9.41)	**9.73** (8.72-10.6)	**11.3** (10.0-12.3)	**12.6** (11.1-13.6)
3-day	**3.30** (3.03-3.61)	**3.98** (3.66-4.35)	**5.00** (4.58-5.46)	**5.83** (5.33-6.35)	**7.00** (6.38-7.63)	**7.98** (7.25-8.68)	**9.02** (8.15-9.81)	**10.1** (9.10-11.0)	**11.7** (10.4-12.8)	**13.0** (11.5-14.2)
4-day	**3.47** (3.19-3.80)	**4.18** (3.85-4.57)	**5.24** (4.81-5.72)	**6.09** (5.59-6.65)	**7.31** (6.68-7.96)	**8.32** (7.57-9.06)	**9.40** (8.50-10.2)	**10.5** (9.48-11.5)	**12.2** (10.8-13.3)	**13.5** (11.9-14.7)
7-day	**4.05** (3.75-4.40)	**4.85** (4.50-5.28)	**6.01** (5.56-6.54)	**6.96** (6.43-7.56)	**8.32** (7.65-9.03)	**9.45** (8.64-10.2)	**10.6** (9.68-11.5)	**11.9** (10.8-12.9)	**13.7** (12.3-14.9)	**15.2** (13.5-16.5)
10-day	**4.60** (4.28-4.96)	**5.50** (5.12-5.93)	**6.71** (6.24-7.24)	**7.69** (7.13-8.29)	**9.05** (8.36-9.75)	**10.2** (9.35-10.9)	**11.3** (10.4-12.2)	**12.5** (11.4-13.5)	**14.2** (12.8-15.3)	**15.5** (14.0-16.8)
20-day	**6.22** (5.83-6.64)	**7.38** (6.92-7.88)	**8.81** (8.26-9.41)	**9.93** (9.30-10.6)	**11.5** (10.7-12.2)	**12.6** (11.8-13.5)	**13.9** (12.9-14.8)	**15.1** (13.9-16.1)	**16.7** (15.4-17.9)	**18.0** (16.4-19.2)
30-day	**7.74** (7.32-8.19)	**9.12** (8.62-9.66)	**10.7** (10.1-11.3)	**11.8** (11.2-12.5)	**13.4** (12.6-14.2)	**14.6** (13.7-15.4)	**15.8** (14.8-16.7)	**16.9** (15.8-17.9)	**18.4** (17.1-19.5)	**19.5** (18.1-20.7)
45-day	**9.84** (9.33-10.4)	**11.6** (11.0-12.2)	**13.3** (12.6-14.0)	**14.6** (13.8-15.4)	**16.3** (15.4-17.2)	**17.5** (16.6-18.5)	**18.7** (17.6-19.7)	**19.8** (18.6-20.9)	**21.2** (19.9-22.4)	**22.2** (20.8-23.4)
60-day	**11.8** (11.2-12.4)	**13.8** (13.1-14.5)	**15.8** (15.0-16.6)	**17.2** (16.4-18.1)	**19.0** (18.1-20.0)	**20.4** (19.3-21.4)	**21.6** (20.5-22.7)	**22.8** (21.5-24.0)	**24.2** (22.8-25.5)	**25.2** (23.7-26.5)

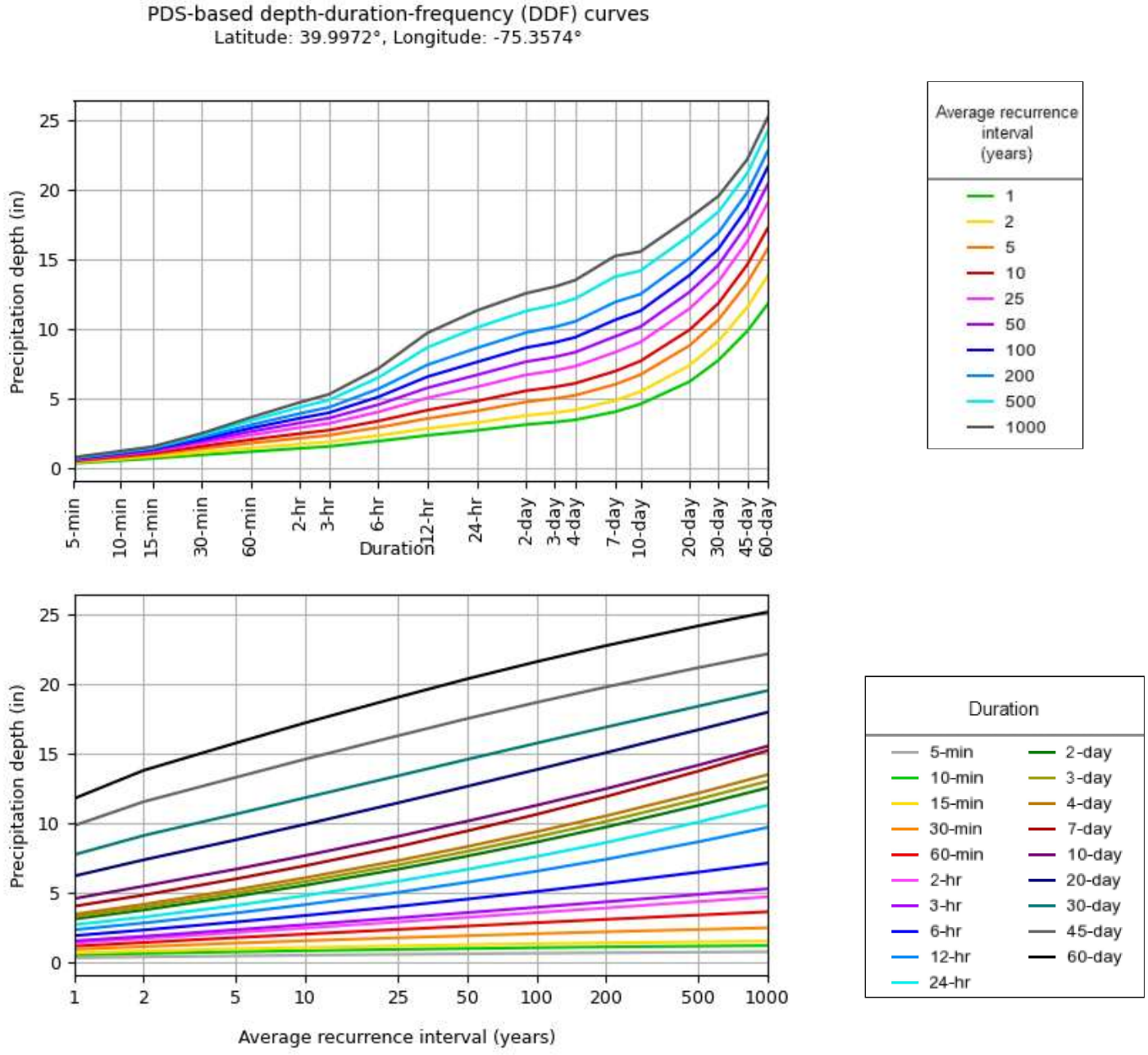
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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PF graphical



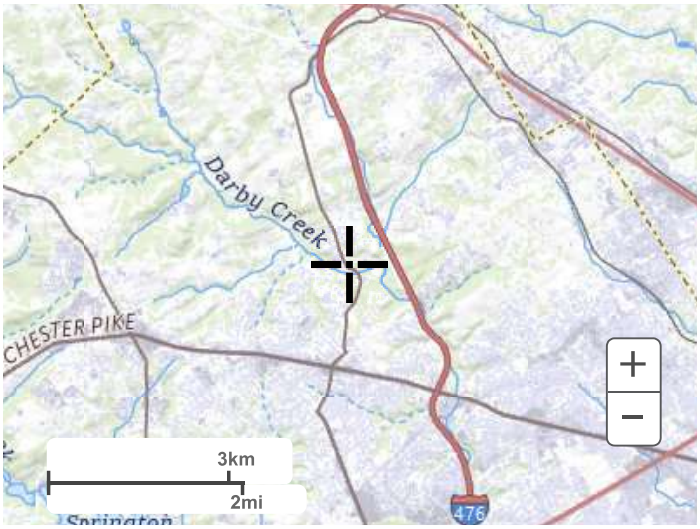
NOAA Atlas 14, Volume 2, Version 3

Created (GMT): Wed Jul 30 14:02:13 2025

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Maps & aerials

Small scale terrain



Large scale terrain



Large scale map



Large scale aerial



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

APPENDIX B

EARTH ENGINEERING INCORPORATED
Geotechnical Engineers & Geologists

January 20, 2025
EEI Project No: 37968.00

Paul Bloomfield
Sproul Development Properties, LLC
884 Briarwood Road
Newtown Square, PA 19073

Re: Infiltration Investigation
1039 Sproul Rd.
Haverford Township
Bryn Mawr, Pennsylvania

Dear Mr. Bloomfield:

Earth Engineering Incorporated (EEI) has prepared this letter to present the results of the stormwater infiltration investigation performed at the above-referenced site. The data was collected from a proposed stormwater management (SWM) area.

The scope of work for this project included the excavation of test pits to evaluate the subsurface conditions for any limiting zones, Double-Ring Infiltrometer (DRI) testing, and the preparation of this letter. This investigation was conducted in general accordance with EEI Proposal Number BB-23093, dated December 6, 2024.

SITE DESCRIPTION AND EXISTING FEATURES

The subject site is located at 1039 Sproul Rd in Haverford Township, Delaware County Pennsylvania. The subject site is bound by private residences south, east and north and by Garrett Drive to the west. The development area consists of an existing stormwater basin and includes grass, mature trees and shrubs.

The topography across the site slopes gradually from northeast to southwest. EEI has estimated that the maximum relief across the study area is approximately twenty-two (22) feet. Based on the plans provided to EEI the relief in the investigated area ranges from 229.5 feet to 208 feet.

FIELD INVESTIGATION

Infiltration Test Pits

Ten (10) test pits, TP-1 to TP-10, were excavated by a representative of HC site Construction Inc., on January 3 and January 7, 2025, utilizing a Hitachi 350 LC trackhoe. As per the instructions of the civil engineer to depths of up to 7.5 feet below existing grade with target depths of infiltration testing of 4.0 feet to 5.0 feet below existing grades. As previously noted, existing surface elevations of the investigated area were on plans provided to EEI.

The locations of the test pits are depicted on the *Testing Location Plan*, EEI Drawing No. 37968.00-A-101, which is enclosed for reference.

The exposed soil profiles were examined to obtain limiting zone information such as the groundwater table, soil mottling, very dense weathered rock or other restrictive features. A limiting zone is defined as a horizon or condition of the soil or underlying strata which includes:

- A seasonal high water table, whether perched or regional, determined by direct observation of the water table or soil mottling;
- Rock with open joints, fractures or solution channels, masses of loose rock fragments including gravel, with insufficient fine soil to fill the voids between the fragments;
- Rock formation, other stratum, or soil condition which is so slowly permeable that it effectively limits the downward passage of effluent. This includes soils horizons with measured infiltration rates of 0.10 in per hour or less.

Test Pit Logs, which are enclosed for reference, provide additional detail regarding the soil strata and other pertinent information to aid in the design of the SWM facilities.

Double Ring Infiltration Testing

Two (2) infiltration tests were completed at each test pit location for a total of twenty (20) DRI tests. The infiltration tests are denoted in this report with a "DR" followed by the number of the test pit and the letter of the infiltration test. For example, the two DRI tests conducted at TP-1 are designated as DR-1A and DR-1B. The infiltration test depths were provided to EEI by the client. Infiltration testing was completed at depths of 4.0 feet to 6.0 feet below existing grades.

The DRI testing apparatus has two concentric rings that are 4 inches and 8 inches and 6 inches and 12 inches in diameter. Procedures used for the infiltration testing were in accordance with the *2006 Pennsylvania Stormwater Best Management Practices Manual, Appendix C (PA BMP Manual)*. At the time of the testing, the ambient temperature ranged from approximately 50°F to 67°F. No measurable amount of precipitation was received during or within the 24 hours prior to the infiltration testing.

SUBSURFACE CONDITIONS

Geology

According to the Commonwealth of Pennsylvania, Topographic and Geologic Survey, Atlas of Preliminary Geologic Quadrangle Maps of Pennsylvania, 1966, Revised 1978, Lansdowne Quadrangle, the investigated site is underlain by the Lower Paleozoic Period Wissahickon Formation (Geologic Symbol: Xw). Plate 2, included in the Appendix, shows the location of the site on a geologic map of the area.

As noted in the Commonwealth of Pennsylvania, Topographic and Geologic Survey, Engineering Characteristics of The Rocks of Pennsylvania, Fourth (4th) Series, Revised 1982, the metamorphic Wissahickon Formation (Xw) is typically composed of a mica-schist. This rock is characterized by its distinct foliation which is caused by the preferential orientation of muscovite, feldspar and quartz. The foliation within this formation is typically well developed, fissile to thin. This rock type is moderately resistant to weathering and the overlying soil mantle is typically thin. In comparison to other rock types, the ease of excavation ranges from easy in completely weathered rock to difficult in slightly to fresh weathered rock. Groundwater springs and quartz boulders are common occurrences within this formation.

Based upon the materials observed during the field investigation, the residual soil conditions at the site appeared typical of the weathering of the schist of the Wissahickon Formation.

Soils

Per the Natural Resources and Conservation Service (NRCS) online *Web Soil Survey*, Glenleg channery loam (GjB) soils were mapped within the testing area. In general, the soil types found on site were consistent with Glenleg channery loam (GjB) soils mapped. A "Soil Map" is enclosed for reference.

Specific information regarding the soil morphological features including the abundance, size and, contrast of redox features (mottling), if encountered, as well as other information pertinent to the design of stormwater management facilities is provided on the enclosed *Test Pit Logs*.

Based upon visual classification of the soils, three (3) naturally occurring soil strata were encountered beneath surficial topsoil at the test pit locations. The naturally occurring soil strata are indicative of Wissahickon Schist. A generalized description of these strata are provided below.

Stratum I – Residual

Stratum I is described as residual and is visually described as tan orange-brown silty lean clay with trace to some roots to orange brown silty sand with trace fine gravel. Stratum I was encountered beneath the surficial topsoil at all test pit locations and extended to depths of up to 7.0 feet below existing surface elevations The Stratum I soils were encountered in a moist to wet state at the time of the field investigation.

Stratum II – Decomposed Schist

Stratum II is described as decomposed schist and is visually described as tan-brown faintly saprolitic silty sand to pale yellow and tan brown micaceous sandy gravel and cobbles. Stratum II was encountered underlaying Stratum I at all test pit locations and extended to depths of up to 7.5 feet below existing surface elevations. The Stratum II soils were encountered in a moist state at the time of the field investigation.

Stratum III – Weathered Schist

Stratum III is described as Weathered Schist and is visually described as tan-brown, brown, micaceous saprolitic sandy gravel with abundant gravel and cobbles. Stratum II was encountered underlaying Stratum II at test pit locations TP-2, TP-3 and TP-6 to TP-10 and extended to depths of up to 7.0 feet below existing surface elevations. The Stratum III soils were encountered in a dry to moist state at the time of the field investigation.

Bedrock

An intact, weathered, bedrock surface was encountered at test pit TP-9 at 6.8 feet beneath existing surface elevations within areas explored during this investigation. Bedrock is defined herein as bucket refusal within residual materials where the excavating equipment encounters the moderately weathered to fresh bedrock surface.

Groundwater

Groundwater measurements were taken upon completion of excavation and up to approximately 6.0 hours after excavation of the test pits. Seepage and groundwater were not encountered at the test pit depths explored. It should be noted that groundwater observations were made at the time of the subsurface investigation and that groundwater table elevation may fluctuate with daily, seasonal, and climatic variations.

DATA SUMMARY

Table I summarizes the type and depth of limiting zones encountered within the test pits conducted. Additional detail regarding the soils and limiting zones is provided on the enclosed Test Pit Logs. Elevations were based on *Grading Plan* by Cornerstone Consulting Engineers. All depths were measured from existing grade at the time of the investigation.

TABLE I – COMPARISON OF INFILTRATION DEPTHS AND LIMITING ZONES

Test Pit Number	[1.] Ground Surface Elevation (ft)	Limiting Zone Condition	[2.] Limiting Zone Depth (ft.)	Limiting Zone Elevation (ft.)	[2.] Infiltration Test Depth (ft)
TP-1	213.0	None Encountered	NA	NA	4.5
TP-2	229.8	Weathered Rock	4.0 to 7.0	225.8 to 222.8	2.0
TP-3	227.5	None Encountered	1.0 to 4.0	226.6.5 to 223.5	4.0
TP-4	208.8	None Encountered	NA	NA	4.6
TP-5	228.5	None Encountered	NA	NA	4.0
TP-6	226.0	None Encountered	1.5 to 3.0	224.5 to 223.0	4.0
TP-7	213.9	None Encountered	NA	NA	4.0
TP-8	229.5	Weathered Rock	5.0 to 7.25	224.5 to 222.25	3.75
TP-9	227.5	None Encountered	0.4 to 2.0	227.1 to 225.5	2
Tp-9	227.5	Weathered Rock	4.5 to 6.8	223.0 to 220.7	2
TP-9	227.5	Bedrock	6.8	220.7	2
TP-10	218.5	Weathered Rock	6.0’ to 7.0’	212.5’ to 211.5	4.0

[1.] Ground surface elevations were based on plans provided to EEI.
[2.] Depth measured from existing ground surface at the time of investigation.

Table II provides a summary of the infiltration rates measured during the investigation. The measured infiltration rates that are reported in *Table II* do not include the factor of safety required to determine the design rate.

TABLE II - INFILTRATION RATES AT TEST LOCATIONS

Infiltration Test Number	Ground Surface Elevation (ft)	[1.] Infiltration Test Depth *(ft)*	Infiltration Test Elevation (ft)	Test Interval *(min)*	Final Drop in Water Level *(in)*	Infiltration Rate *(in/hr)*
DR-1A	213.0	4.5	208.5	30	0.1	0.2
DR-1B	213.0	4.5	208.5	30	0.1	0.2
DR-2A	229.8	2.0	227.8	30	0.35	0.7
DR-2B	229.8	2.0	227.8	30	0.4	0.8
DR-3A	227.5	4.0	223.5	30	1.25	2.5
DR-3B	227.5	4.0	223.5	30	1.25	2.5
DR-4A	208.8	4.6	204.2	30	0.0	0.0
DR-4B	208.8	4.6	204.2	30	0.0	0.0
DR-5A	228.5	5.0	223.5	30	0.9	1.8
DR-5B	228.5	5.0	223.5	30	1.0	2
DR-6A	226.0	4.0	222.0	30	1.75	3.5
DR-6B	226.0	4.0	222.0	30	0.75	1.5
DR-7A	213.9	4.0	209.9	30	0.1	0.2
DR-7B	213.9	4.0	209.9	30	0.1	0.2
DR-8A	229.5	3.75	225.75	30	1.8	3.6
DR-8B	229.5	3.75	225.75	30	1.2	2.4
DR-9A	227.5	2.5	225.0	30	2.0	4.0
DR-9B	227.5	2.5	225.0	30	2.0	4.0
DR-10A	218.5	4.0	214.5	30	1.6	3.2
DR-10B	218.5	4.0	214.5	30	1.5	3.0

[1.] Depth measured from existing ground surface at the time of investigation.

CONCLUSIONS

As indicated in *Table I*, the measured infiltration rates observed at a depths of 3.75 feet to 5.0 feet below existing grade at test pit locations TP-1 to TP-10 were recorded to range from 0.0 inches per hour to 4.0 inches per hour. The PA BMP Manual recommends that the measured infiltration rates for soils being considered for stormwater infiltration range from 0.10 inches per hour to 10.0 inches per hour.

The infiltration rates provided above are raw field measured values and do not include a safety factor for design purposes. The determination of the appropriate design value for the stormwater management system including application of the appropriate factors of safety is the responsibility of the project civil engineer. According to the PA BMP Manual, a minimum factor of safety of 2.0 is recommended for most cases.

LIMITATIONS

The information contained in this letter is based upon the subsurface data collected and on details stated in this letter. Should conditions arise which differ from those specifically stated herein, our office should be notified immediately so that our conclusions can be reviewed and revised, if necessary.

The scope of work for this project was limited to providing infiltration test results for the proposed stormwater infiltration facilities, as discussed herein. This report offers no facts or opinions related to potential impacts resulting from infiltrating stormwater at this location on structures and surrounding areas. No conclusions or recommendations related to geotechnical conditions at the site are discussed or inferred herein. It is emphasized that this stormwater infiltration investigation was conducted for the proposed development at 1039 Sproul Rd. in Haverford Township, Delaware County, Pennsylvania. Earth Engineering Incorporated does not assume any responsibility in using this report for drainage system consideration or designs other than at the specific site addressed.

We trust this is the information you require. If you have any questions regarding the information contained herein, please call.

Sincerely,
EARTH ENGINEERING INCORPORATED



Jim DeVita
Soil Scientist

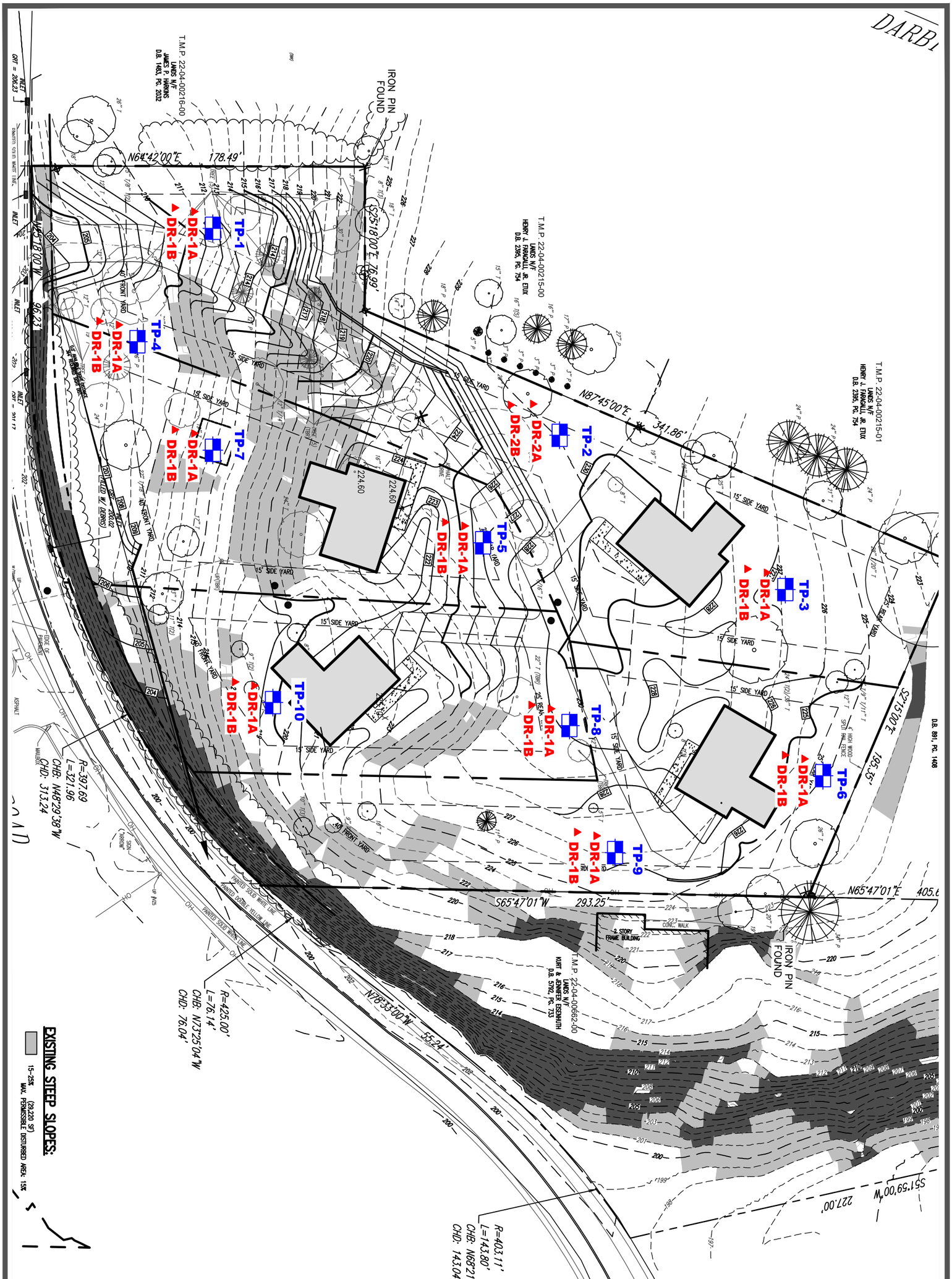




Timothy B. Carlin, P.E.
Assistant Director – Geotechnical Investigations

Attachments:

Testing Location Plan
Infiltration Test Results
Test Pit Logs



TESTING LOCATION PLAN

FOR

CHRISTY REC CENTER

HAVERFORD TOWNSHIP DELAWARE COUNTY PENNSYLVANIA

KEY:

TEST PIT LOCATION

DRI TESTING LOCATION

Scale:	Date:	Drawn By:	Checked By:
NTS	1-8-2024	JAD	
Drawing Number:		Approved By:	
37968.00-A-101			

BASE PLAN PROVIDED BY:
CORNERSTONE
CONSULTING ENGINEERS

EARTH ENGINEERING INCORPORATED
Geotechnical Engineers & Geologists
115 W. Germantown Pike
East Norriton, PA 19401
(610)277-0880
FAX (610)277-0878
www.earthengineering.com

Double Ring Infiltrometer Test Results

Location	Surface Elevation (ft.)	*Infiltration Depth (ft.)	Drop in Water within Inner Ring during Presoak Period (in.)		Drop in Water within Inner Ring at Time (in.)								**Infiltration Rate Inches/Hour
			30 min.	30 min.	30 min	30 min	30 min	30 min	min	min	min	min	
DR-3A	227.5	4.0	1.5	1.5	1.5	1.5	1.5	1.25					2.5
DR-3B	227.5	4.0	1.50	1.50	1.50	1.25	1.25	1.25					2.5
DR-6A	226.0	4.0	2.5	1.75	1.75	1.75	1,75	1.75					3.5
DR-6B	226.0	4.0	1.0	0.75	0.75	0.75	0.75	0.75					1.50

* Infiltration depths were measured from existing site grades at the time of the investigation.

Test Hole Number	Surface Elevation (ft.)	*Infiltration Depth (ft.)	Drop in Water within Inner Ring during Presoak Period (in.)		Drop in Water within Inner Ring at Time (in.)								**Infiltration Rate Inches/Hour
			30 min.	30 min.	30 min	30 min	30 min	30 min	30 min	30 min	30 min	30 min	

**Measured infiltration rates do not include a factor of safety for the design infiltration rate.

Indicates the final reading that was used to determine the infiltration rate at the corresponding location.

EARTH ENGINEERING INCORPORATED
Geotechnical Engineers & Geologists

115 West Germantown Pike East Norriton, PA 19401
PHONE 610-277-0880 FAX 610-277-0878

INFILTRATION TESTING LOG

Project Name: 1039 Sproul Rd.
Project Number: 37968.00
Date of Testing: 1/3/2025
EEI Representative: J. Kufta
Drawn/ Compiled by: J. Kufta
Date Compiled: 1/3/2025

Double Ring Infiltrometer Test Results

Location	Surface Elevation (ft.)	*Infiltration Depth (ft.)	Drop in Water within Inner Ring during Presoak Period (in.)		Drop in Water within Inner Ring at Time (in.)								**Infiltration Rate Inches/Hour
			30 min.	30 min.	30 min	30 min	30 min	30 min	min	min	min	min	
DR-2A	229.8	2.0	0.50	0.50	0.50	0.35	0.35	0.35					0.7
DR-2B	229.8	2.0	0.80	0.70	0.70	0.40	0.40	0.40					0.8
DR-5A	228.5	5.0	2.0	1.00	0.90	0.90	0.90	0.90					1.8
DR-5B	228.5	5.0	2.5	1.20	1.10	1.10	1.00	1.00					2.0

* Infiltration depths were measured from existing site grades at the time of the investigation.

Test Hole Number	Surface Elevation (ft.)	*Infiltration Depth (ft.)	Drop in Water within Inner Ring during Presoak Period (in.)		Drop in Water within Inner Ring at Time (in.)								**Infiltration Rate Inches/Hour
			30 min.	30 min.	30 min	30 min	30 min	30 min	30 min	30 min	30 min	30 min	
DR-9A	227.5	2.5	2.00	2.00	2.00	2.00	2.00	2.00					4.0
DR-9B	227.5	2.5	2.00	2.00	2.00	2.00	2.00	2.00					4.0
DR-8A	229.5	3.75	3.00	2.00	1.80	1.80	1.80	1.80					3.6
DR-8B	229.5	3.75	2.10	1.50	1.30	1.30	1.20	1.20					2.4

**Measured infiltration rates do not include a factor of safety for the design infiltration rate.

Indicates the final reading that was used to determine the infiltration rate at the corresponding location.

EARTH ENGINEERING INCORPORATED
Geotechnical Engineers & Geologists

115 West Germantown Pike East Norriton, PA 19401
PHONE 610-277-0880 FAX 610-277-0878

INFILTRATION TESTING LOG

Project Name: 1039 Sproul Rd.
Project Number: 37968.00
Date of Testing: 1/3/2025
EEI Representative: J. DeVita
Drawn/ Compiled by: J. DeVita
Date Compiled: 1/3/2025

Double Ring Infiltrometer Test Results

Location	Surface Elevation (ft.)	*Infiltration Depth (ft.)	Drop in Water within Inner Ring during Presoak Period (in.)		Drop in Water within Inner Ring at Time (in.)								**Infiltration Rate Inches/Hour
			30 min.	30 min.	30 min	30 min	30 min	30 min	min	min	min	min	
DR-10A	218.5	4.0	2.0	2.0	1.7	1.7	1.6	1.6					3.2
DR-10B	218.5	4.0	2.5	2.1	1.6	1.5	1.5	1.5					3.0
DR-7A	213.9	4.0	0.8	0.4	0.2	0.1	0.1	0.1					0.2
DR-7B	213.9	4.0	0.4	0.2	0.1	0.1	0.1	0.1					0.2

* Infiltration depths were measured from existing site grades at the time of the investigation.

Test Hole Number	Surface Elevation (ft.)	*Infiltration Depth (ft.)	Drop in Water within Inner Ring during Presoak Period (in.)		Drop in Water within Inner Ring at Time (in.)								**Infiltration Rate Inches/Hour
			30 min.	30 min.	30 min	30 min	30 min	30 min	30 min	30 min	30 min	30 min	
DR-4A	208.8	4.6	0.5	0.2	0.1	0.1	0.1	0.0					0.0
DR-4B	208.8	4.6	0.5	0.1	0.1	0.1	0.1	0.0					0.0
DR-1A	213.0	4.5	0.5	0.1	0.1	0.1	0.1	0.1					0.2
DR-1B	213.0	4.5	0.3	0.1	0.1	0.1	0.1	0.1					0.2

**Measured infiltration rates do not include a factor of safety for the design infiltration rate.

Indicates the final reading that was used to determine the infiltration rate at the corresponding location.

EARTH ENGINEERING INCORPORATED
Geotechnical Engineers & Geologists

115 West Germantown Pike East Norriton, PA 19401
PHONE 610-277-0880 FAX 610-277-0878

INFILTRATION TESTING LOG

Project Name: 1039 Sproul Rd.
Project Number: 37968.00
Date of Testing: 1/7/2025
EEI Representative: J. DeVita
Drawn/ Compiled by: J. DeVita
Date Compiled: 1/8/2025

EARTH ENGINEERING INCORPORATED
Geotechnical Engineers & Geologists

TEST PIT LOG

PIT NO. **TP-1**
SHEET **1** OF **1**
DATE: START **1/7/25**
END **1/7/25**
SURFACE ELEV. (FT) **213.0**

PROJECT NAME **1039 Sproul Rd.**
PROJECT LOCATION **Haverford Township, Delaware County, PA**
PROJECT NUMBER **37968.00**
INSPECTOR NAME **J. DeVita**
EQUIPMENT USED **Hitachi 350 LC**
EXCAVATING COMPANY **Darwin/HC Site Construction Inc.**
WATER: DEPTH: **dry** TIME: **0.25 hrs.**
WATER: DEPTH: _____ TIME: _____

DEPTH (FT)	USCS	H_2O CONTENT **	GRAPHIC LOG	DESCRIPTION (DEPTH / ELEVATION)	REMARKS
0.0	oh	m		Topsoil (9")	Easy excavating 0.0' to 7.0'
0.8				0.8 / 212.3	
	cl	m		Silty Lean Clay; trace to some roots; tan orange-brown (Residual)	DRI seated at 4.5'
7.0				7.0 / 206.0	
	sm	m		Silty Sand; trace to some gravel and quartz, mica, saprolitic; tan-brown (Decomposed Schist)	Moderate excavating 7.0' to 7.5'
7.5				7.5 / 205.5	End of test pit at 7.5' Limiting zones: None encountered

** D = DRY, M = MOIST, W = WET

EARTH ENGINEERING INCORPORATED
Geotechnical Engineers & Geologists

TEST PIT LOG

PIT NO. **TP-10**
SHEET **1** OF **1**
DATE: START **1/7/34**
END **1/7/25**
SURFACE ELEV. (FT) **218.5**

PROJECT NAME **1039 Sproul Rd.**
PROJECT LOCATION **Haverford Township, Delaware County, PA**
PROJECT NUMBER **37968.00**
INSPECTOR NAME **J. DeVita**
EQUIPMENT USED **Hitachi 350 LC**
EXCAVATING COMPANY **Darwin/HC Site Construction Inc.**
WATER: DEPTH: **dry** TIME: **0.25 hrs.**
WATER: DEPTH: _____ TIME: _____

DEPTH (FT)	USCS	H_2O CONTENT **	GRAPHIC LOG	DESCRIPTION (DEPTH / ELEVATION)	REMARKS
0.0	oh	m		Topsoil (9")	Easy excavating 0.0' to 4.9'
0.8				0.8 / 217.8	
	sm	m		Silty Sand; trace fine gravel; tan-brown (Residual)	DRI seated at 4.0'
4.9				4.9 / 213.6	
	sm	m		Silty Sand; mica, some gravel and cobbles; tan-brown (Decomposed Schist)	Moderate excavating 4.9' to 6.0'
6.0				6.0 / 212.5	
	gm	m		Sandy Gravel; mica, saprolitic, abundant gravel and cobbles; tan-brown, brown (Weathered Schist)	Moderate to difficult excavating 6.0' to 7.0'
7.0				7.0 / 211.5	End of test pit at 7.0' Limiting zones: Weathered rock 6.0' to 7.0'

** D = DRY, M = MOIST, W = WET

EARTH ENGINEERING INCORPORATED
Geotechnical Engineers & Geologists

TEST PIT LOG

PIT NO. **TP-2**
SHEET **1** OF **1**
DATE: START **1/3/25**
END **1/3/25**
SURFACE ELEV. (FT) **229.8**

PROJECT NAME **1039 Sproul Rd.**
PROJECT LOCATION **Haverford Township, Delaware County, PA**
PROJECT NUMBER **37968.00**
INSPECTOR NAME **J. DeVita**
EQUIPMENT USED **Hitachi 350 LC**
EXCAVATING COMPANY **Darwin/HC Site Construction Inc.**
WATER: DEPTH: **dry** TIME: **6.0 hrs.**
WATER: DEPTH: _____ TIME: _____

DEPTH (FT)	USCS	H_2O CONTENT **	GRAPHIC LOG	DESCRIPTION (DEPTH / ELEVATION)	REMARKS
0.0	oh	m		Topsoil (6")	Easy excavating 0.0' to 2.0'
0.5				0.5 / 229.3	
	sm	m		Silty Sand; trace fine gravel; orange-brown (Residual)	
2.0				2.0 / 227.8	
	sm	m		Sandy Gravel; some gravel, mica; pale yellow, pale tan-brown (Decomposed Schist)	Moderate excavating 2.0' to 4.0' DRI rings seated at 2.0'
4.0				4.0 / 225.8	
	gm	m		Sandy Gravel; abundant gravel, saprolitic, mica; white, black, pale yellow (Weathered Schist)	Difficult excavating 4.0' to 7.0'
7.0				7.0 / 222.8	
					End of test pit at 7.0' Limiting zones: Weathered rock 4.0' to 7.0'

** D = DRY, M = MOIST, W = WET

EARTH ENGINEERING INCORPORATED
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TEST PIT LOG

PIT NO. **TP-3**
SHEET **1** OF **1**
DATE: START **1/3/25**
END **1/3/25**
SURFACE ELEV. (FT) **227.5**

PROJECT NAME **1039 Sproul Rd.**
PROJECT LOCATION **Haverford Township, Delaware County, PA**
PROJECT NUMBER **37968.00**
INSPECTOR NAME **J. Kufta**
EQUIPMENT USED **Hitachi 350 LC**
EXCAVATING COMPANY **Darwin/HC Site Construction Inc.**
WATER: DEPTH: **dry** TIME: **0.25 hrs.**
WATER: DEPTH: **dry** TIME: **6.5 hrs.**

DEPTH (FT)	USCS	H_2O CONTENT **	GRAPHIC LOG	DESCRIPTION (DEPTH / ELEVATION)	REMARKS
0.0	oh	m		Topsoil (6”)	Easy excavating 0.0' to 2.0'
0.5				0.5 / 227.0	
	ml/sm	m		Silty Fine Sand; trace gravel; orange-brown, tan (Residual)	
2.0				2.0 / 225.5	
	sm	m		Micaceous Silty Sand; trace gravel, mottled; orange-brown, brown, tan, gray (Decomposed Schist)	Easy to moderate excavating 2.0' to 4.0'
4.0				4.0 / 223.5	
	sm/gm	m		Micaceous Silty Sand; trace to some gravel and cobbles, saprolitic; orange-brown, tan, gray (Weathered Schist)	Moderate to difficult excavating 4.0' to 7.0' DRI seated at 4.0' per civil direction
7.0				7.0 / 220.5	
					End of test pit at 7.0' Limiting zones: None encountered

** D = DRY, M = MOIST, W = WET

EARTH ENGINEERING INCORPORATED
Geotechnical Engineers & Geologists

TEST PIT LOG

PIT NO. **TP-4**
SHEET **1** OF **1**
DATE: START **1/7/25**
END **1/7/25**
SURFACE ELEV. (FT) **208.8**

PROJECT NAME **1039 Sproul Rd.**
PROJECT LOCATION **Haverford Township, Delaware County, PA**
PROJECT NUMBER **37968.00**
INSPECTOR NAME **J. DeVita**
EQUIPMENT USED **Hitachi 350 LC**
EXCAVATING COMPANY **Darwin/HC Site Construction Inc.**
WATER: DEPTH: **dry** TIME: **0.25 hrs.**
WATER: DEPTH: _____ TIME: _____

DEPTH (FT)	USCS	H_2O CONTENT **	GRAPHIC LOG	DESCRIPTION (DEPTH / ELEVATION)	REMARKS
0.0	oh	m		Topsoil (6")	Easy excavating 0.0' to 6.5'
0.5				0.5 / 208.3	
	cl	m		Silty Lean Clay; trace to some roots; tan orange-brown (Residual)	DRI seated at 4.6'
6.5				6.5 / 202.3	
	sm	m		Silty Sand; trace to some gravel, mica, saprolitic; tan-brown (Decomposed Schist)	Moderate excavating 6.5' to 7.0'
7.0				7.0 / 201.8	End of test pit at 7.0' Limiting zones: None encountered

** D = DRY, M = MOIST, W = WET

EARTH ENGINEERING INCORPORATED
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TEST PIT LOG

PIT NO. **TP-5**
SHEET **1** OF **1**
DATE: START **1/3/25**
END **1/3/25**
SURFACE ELEV. (FT) **228.5**

PROJECT NAME **1039 Sproul Rd.**
PROJECT LOCATION **Haverford Township, Delaware County, PA**
PROJECT NUMBER **37968.00**
INSPECTOR NAME **J. DeVita**
EQUIPMENT USED **Hitachi 350 LC**
EXCAVATING COMPANY **Darwin/HC Site Construction Inc.**
WATER: DEPTH: **dry** TIME: **6.0 hrs.**
WATER: DEPTH: _____ TIME: _____

DEPTH (FT)	USCS	H_2O CONTENT **	GRAPHIC LOG	DESCRIPTION (DEPTH / ELEVATION)	REMARKS
0.0	oh	m		Topsoil (9")	Easy excavating 0.0' to 1.75'
0.8				0.8 / 227.8	
	sm	m		Silty Sand; mica; orange-brown (Residual)	
1.8				1.8 / 226.8	
	sm	m		Silty Sand; mica, some gravel; tan-brown, black, white (Decomposed Schist)	Moderate excavating 1.75' to 7.5' DRI seated at 4.0'
7.5				7.5 / 221.0	End of test pit at 7.5' Limiting zones: None encountered

** D = DRY, M = MOIST, W = WET

EARTH ENGINEERING INCORPORATED
Geotechnical Engineers & Geologists

TEST PIT LOG

PIT NO. **TP-6**
SHEET **1** OF **1**
DATE: START **1/3/25**
END **1/3/25**
SURFACE ELEV. (FT) **226.0**

PROJECT NAME **1039 Sproul Rd.**
PROJECT LOCATION **Haverford Township, Delaware County, PA**
PROJECT NUMBER **37968.00**
INSPECTOR NAME **J. Kufta**
EQUIPMENT USED **Hitachi 350 LC**
EXCAVATING COMPANY **Darwin/HC Site Construction Inc.**
WATER: DEPTH: **dry** TIME: **0.25 hrs.**
WATER: DEPTH: **dry** TIME: **6.5 hrs.**

DEPTH (FT)	USCS	H_2O CONTENT **	GRAPHIC LOG	DESCRIPTION (DEPTH / ELEVATION)	REMARKS
0.0	oh	m		Topsoil (6")	Easy excavating 0.0' to 1.5'
0.5				0.5 / 225.5	
	ml/sm	m		Silty Fine Sand; trace gravel; orange-brown, brown, tan-gray (Residual)	
1.5				1.5 / 224.5	
	sm	m		Micaceous Silty Sand; trace gravel, mottled; orange-brown, brown, tan, gray (Decomposed Schist)	Easy to moderate excavating 1.5' to 3.0'
3.0				3.0 / 223.0	
	sm/gm	m		Micaceous Silty Sand; trace to some gravel and cobbles, saprolitic; tan, brown (Weathered Schist)	Moderate to difficult excavating 3.0' to 7.0' DRI seated at 4.0'
7.0				7.0 / 219.0	
					End of test pit at 7.0' Limiting zones: None encountered

** D = DRY, M = MOIST, W = WET

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TEST PIT LOG

PIT NO. **TP-7**
SHEET **1** OF **1**
DATE: START **1/7/25**
END **1/7/25**
SURFACE ELEV. (FT) **213.9**

PROJECT NAME **1039 Sproul Rd.**
PROJECT LOCATION **Haverford Township, Delaware County, PA**
PROJECT NUMBER **37968.00**
INSPECTOR NAME **J. DeVita**
EQUIPMENT USED **Hitachi 350 LC**
EXCAVATING COMPANY **Darwin/HC Site Construction Inc.**
WATER: DEPTH: **dry** TIME: **0.25 hrs.**
WATER: DEPTH: _____ TIME: _____

DEPTH (FT)	USCS	H_2O CONTENT **	GRAPHIC LOG	DESCRIPTION (DEPTH / ELEVATION)	REMARKS
0.0	oh	m		Topsoil (9")	Easy excavating 0.0' to 5.0'
0.8				0.8 / 213.2	
	cl	m		Silty Lean Clay; trace to some roots; tan orange-brown (Residual)	DRI seated at 4.0'
5.0				5.0 / 208.9	
	sm	m		Silty Sand; trace to some gravel, mica, saprolitic; tan-brown (Decomposed Schist)	Moderate excavating 5.0' to 7.0'
7.0				7.0 / 206.9	End of test pit at 7.0' Limiting zones: None encountered

** D = DRY, M = MOIST, W = WET

EARTH ENGINEERING INCORPORATED
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TEST PIT LOG

PIT NO. **TP-8**
SHEET **1** OF **1**
DATE: START **1/3/25**
END **1/3/25**
SURFACE ELEV. (FT) **229.5**

PROJECT NAME **1039 Sproul Rd.**
PROJECT LOCATION **Haverford Township, Delaware County, PA**
PROJECT NUMBER **37968.00**
INSPECTOR NAME **J. DeVita**
EQUIPMENT USED **Hitachi 350 LC**
EXCAVATING COMPANY **Darwin/HC Site Construction Inc.**
WATER: DEPTH: **dry** TIME: **5.0 hrs.**
WATER: DEPTH: _____ TIME: _____

DEPTH (FT)	USCS	H_2O CONTENT **	GRAPHIC LOG	DESCRIPTION (DEPTH / ELEVATION)	REMARKS
0.0	oh	m		Topsoil (6")	Easy excavating 0.0' to 1.3'
0.5				0.5 / 229.0	
	sm	m		Silty Sand; trace fine gravel; orange-brown (Residual)	
1.3				1.3 / 228.2	Moderate excavating 1.3' to 5.0'
	sm	m		Silty Sand; mica, some gravel; [ale yellow, black, white (Decomposed Schist)	DRI seated at 3.75'
5.0				5.0 / 224.5	
	sm	m		Silty Sand; mica, saprolitic, abundant gravel; pale yellow, black, white (Weathered Schist)	Difficult excavating 5.0' to 7.25'
7.3				7.3 / 222.3	End of test pit at 7.25' Limiting zone: Weathered rock 5.0' to 7.25'

** D = DRY, M = MOIST, W = WET

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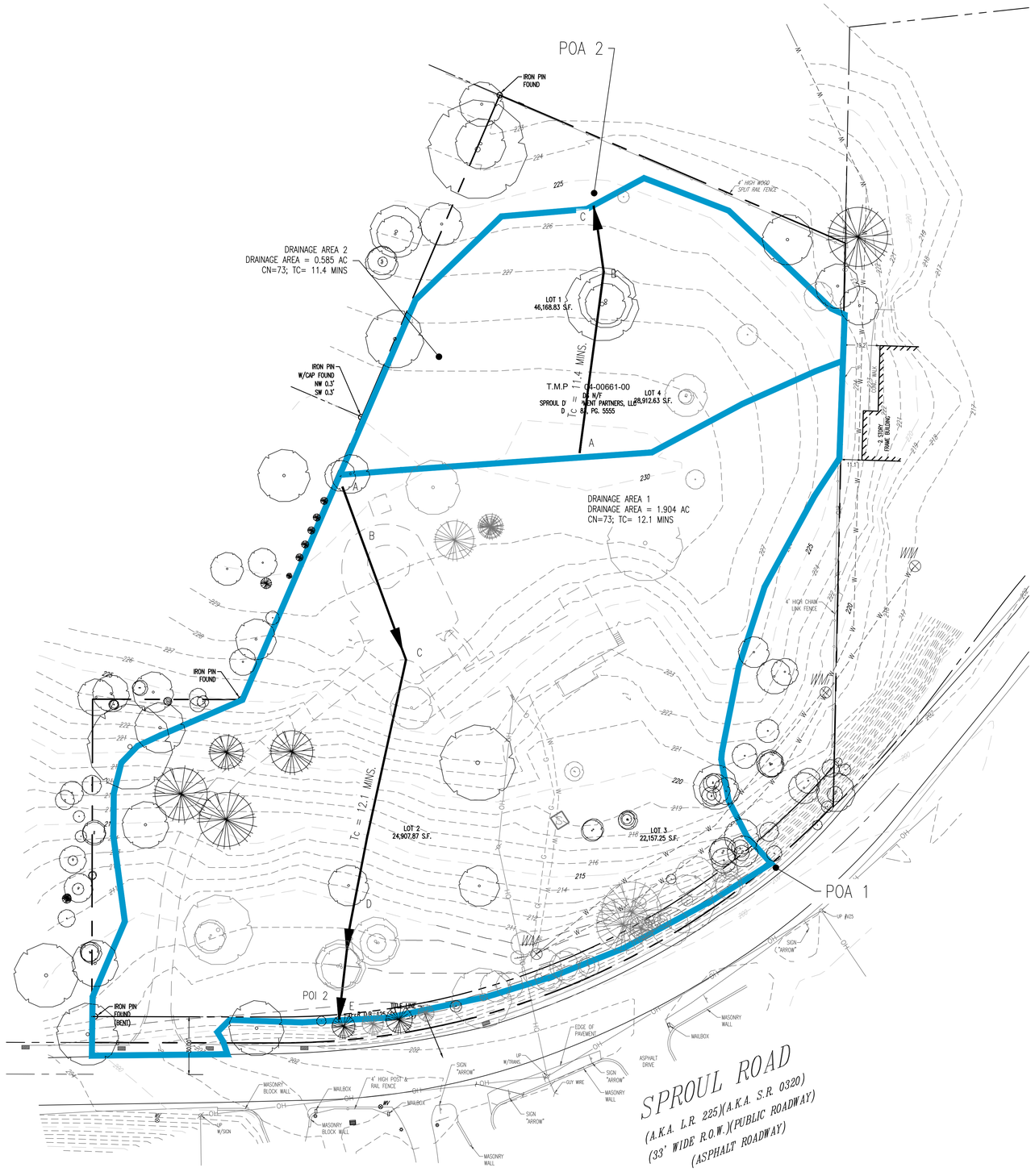
TEST PIT LOG

PIT NO. **TP-9**
SHEET **1** OF **1**
DATE: START **1/3/25**
END **1/3/25**
SURFACE ELEV. (FT) **227.5**

PROJECT NAME **1039 Sproul Rd.**
PROJECT LOCATION **Haverford Township, Delaware County, PA**
PROJECT NUMBER **37968.00**
INSPECTOR NAME **J. Kufta**
EQUIPMENT USED **Hitachi 350 LC**
EXCAVATING COMPANY **Darwin/HC Site Construction Inc.**
WATER: DEPTH: **dry** TIME: **0.25 hrs.**
WATER: DEPTH: **dry** TIME: **5.5 hrs.**

DEPTH (FT)	USCS	H_2O CONTENT **	GRAPHIC LOG	DESCRIPTION (DEPTH / ELEVATION)	REMARKS
0.0	oh	m/w		Topsoil (5")	Easy to moderate excavating 0.0' to 2.0'
0.4				0.4 / 227.1	
	ml/sm	m		Micaceous Silty Sand; trace gravel; mottled; orange-brown, brown, tan gray (Residual)	
2.0				2.0 / 225.5	
	sm	m		Micaceous Silty Sand; trace to some gravel, trace cobbles, saprolitic; brown, gray (Decomposed Schist)	Moderate excavating 2.0' to 4.5' DRI set at 2.5' due to very dense restrictive weathered rock
4.5				4.5 / 223.0	
	sm/gm	m		Micaceous Silty Sand; some gravel, trace to some cobbles, tan brown (Weathered Schist)	Moderate to difficult excavating 4.5' to 6.8'
6.8				6.8 / 220.7	
					Bucket refusal and end of test pit at 6.8' Limiting zones: Weathered rock 4.5' to 6.8' Bedrock at 6.8'

** D = DRY, M = MOIST, W = WET



GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

CLIENT DATA

Cornerstone
Consulting Engineers & Design Services, Inc.
213 West Main Street, Lansdale, PA 19446
Phone: 215-362-2600 Fax: 215-362-8400
WWW.CORNERSTONENET.COM
Philadelphia Region 215-362-2600
Lehigh Valley Region 610-820-8200
Pocono Region 570-839-1770

REVISIONS

NO	BY	DESCRIPTION	DATE
1	EMR	REVISED EXISTING CONDITIONS PLAN	11/6/2025
2	EMR	REVISED PER PC COMMENTS	5/1/2025
3	EMR	REVISED PER ZONING HEARING BOARD	7/31/2025

PENNSYLVANIA
ONE CALL SYSTEM, INC.
925 Irwin Run Road
West Mifflin, Pennsylvania
15122 - 1078

811

BEFORE YOU DIG ANYWHERE IN PENNSYLVANIA CALL 1-800-242-1776

J.B. ANDERSON
PROFESSIONAL ENGINEER
COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA LICENSE No. PE 055536
MARYLAND LICENSE No. 28513
NEW JERSEY LICENSE No. 24GE04520400
VIRGINIA LICENSE No. 0402 045725
FLORIDA LICENSE No. 75184
NEW YORK LICENSE No. 093667-1

PROJECT LOCATION

PRELIM/ FINAL RESIDENTIAL SUBDIVISION PLAN

1039 SPROUL ROAD
TOWNSHIP OF HAVERFORD
DELAWARE COUNTY
PENNSYLVANIA

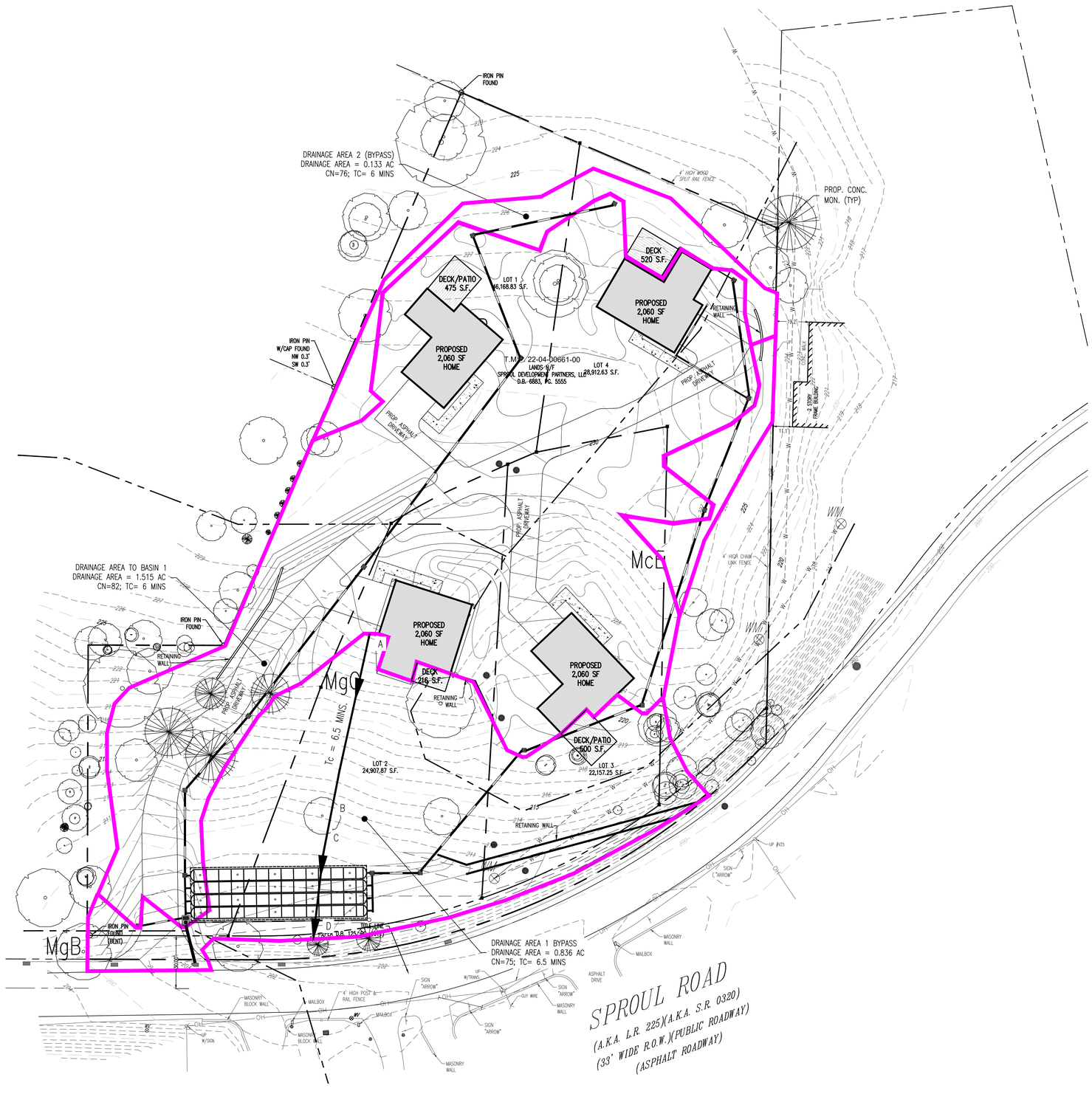
TITLE

PRE-DEVELOPMENT DRAINAGE AREA PLAN

PROJ. #	23-0220	DATE	1-2-2025
CAD ID.	23-0220	DRN BY	SCC
SCALE	AS NOTED	CHK BY	JBA

SHEET 1 OF 2

REVISION 3



GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

CLIENT DATA

Cornerstone
Consulting Engineers & Design Services, Inc.
213 West Main Street, Lansdale, PA 19446
Phone: 215-362-2600 Fax: 215-362-8400
WWW.CORNERSTONENET.COM
Philadelphia Region 215-362-2600
Lehigh Valley Region 610-820-8200
Pocono Region 570-839-1770

REVISIONS

NO.	BY	DESCRIPTION	DATE
1	DMR	REVISED EXISTING CONDITIONS PLAN	11/6/2025
2	DMR	REVISED PER PC COMMENTS	5/1/2025
3	DMR	REVISED PER ZONING HEARING BOARD	7/31/2025

PENNSYLVANIA ONE CALL SYSTEM, INC.
925 Irwin Run Road
West Mifflin, Pennsylvania
15122 - 1078

811

BEFORE YOU DIG ANYWHERE IN PENNSYLVANIA! CALL 1-800-242-1776

J.B. ANDERSON
PROFESSIONAL ENGINEER
DELAWARE LICENSE No: PE 15458
PENNSYLVANIA LICENSE No: PE 055536
MARYLAND LICENSE No: 28313
NEW JERSEY LICENSE No: 24GE04520400
VIRGINIA LICENSE No: 0402 045725
FLORIDA LICENSE No: 75144
NEW YORK LICENSE No: 093667-1

PROJECT LOCATION

PRELIM/ FINAL RESIDENTIAL SUBDIVISION PLAN

1039 SPROUL ROAD
TOWNSHIP OF HAVERFORD
DELAWARE COUNTY
PENNSYLVANIA

TITLE

POST-DEVELOPMENT DRAINAGE AREA PLAN

PROJ. #	23-0220	DATE	1-2-2025
CAD ID.	23-0220	DRN BY	SCC
SCALE	AS NOTED	CHK BY	JBA

SHEET 2 OF 2

REVISION 3