

Erosion and Sediment Control Report

Pennsylvania Pipeline Project Beckersville Station Expansion Activities

March 2016

Revision #1 – 4.22.16

Revision #2 – 5.13.16

Revision #3 – 7.01.16

Revision #4 – 10.18.16

Prepared for:

Sunoco Pipeline, L.P.
525 Fritztown Road
Sinking Spring, PA 19608



Prepared by:

Tetra Tech, Inc.
661 Andersen Drive
Pittsburgh, PA 15220



TABLE OF CONTENTS

Section	Page
1.0 INTRODUCTION	1-1
1.1 PROJECT DESCRIPTION	1-1
1.2 APPROACH AND OVERVIEW	1-1
2.0 SITE DESCRIPTION	2-1
2.1 TOPOGRAPHY	2-1
2.2 GEOLOGY AND SOILS.....	2-1
2.3 SURFACE WATER HYDROLOGY	2-2
3.0 EROSION AND SEDIMENT CONTROL PRACTICES	3-1
3.1 CONSTRUCTION SEQUENCE	3-1
3.2 BEST MANAGEMENT PRACTICES.....	3-3
3.3 SEQUENCE OF BMP INSTALLATION.....	3-3
Vegetative Stabilization Controls	3-3
Structural Controls.....	3-3
3.4 PRIMARY CONSTRUCTION ACTIVITIES.....	3-6
Clearing and Grubbing	3-6
Grading and Topsoil Stockpiling	3-6
Vegetation	3-6
Permanent Seeding.....	3-7
Liming Rates	3-9
Fertilization Rates.....	3-9
Temporary Seeding.....	3-9
Mulching	3-10
Waste Considerations	3-11
Thermal Impacts.....	3-11
Riparian Forest Buffers	3-12
Stormwater Runoff Analysis.....	3-12
3.5 MAINTENANCE AND INSPECTION PROCEDURES	3-12
Compost Filter Socks	3-13
Rock Construction Entrances.....	3-13
Pumped Water Filter Bags	3-13
Vegetation	3-13
Mulch	3-13
Inspection and Maintenance	3-13
3.6 ANTIDEGRADATION	3-15
3.7 SITE RESTORATION.....	3-15
4.0 REFERENCES	4-1

LIST OF ATTACHMENTS

- A. SITE LOCATION MAPS
- B. SOILS LOCATION MAP AND DESCRIPTIONS
- C. PRE-DEVELOPED RUNOFF CALCULATIONS
- D. POST-DEVELOPED RUNOFF CALCULATIONS
- E. WORKSHEET 4 AND 5
- F. BASIN SPILLWAY BLOCKED CALCULATIONS
- G. INFILTRATION TESTING REPORT

LIST OF ACRONYMS

ACRONYM	MEANING
ABACT	Antidegradation Best Available Combination of Technologies
BMPs	Best management practices
CFS	Compost filter socks
E&S	Erosion and sediment
E&SCP	Erosion and sediment control plan
ESCGP-2	Erosion and Sediment Control General Permit 2
EV	Exceptional value
FEMA	Federal Emergency Management Agency
HQ	High quality
LOD	Limit of disturbance
PADEP	Pennsylvania Department of Environmental Protection
PCSM	Post-Construction Stormwater Management
PPP	Pennsylvania Pipeline Project
ROW	Right-of-way
Tt	Tetra Tech, Inc.
TSF	Trout Stocking Fishes
UNT	Unnamed tributary
USGS	United States Geological Survey

1.0 INTRODUCTION

Tetra Tech, Inc. (Tt) has prepared this Erosion & Sediment Control Plan (E&SCP) for the activities associated installation of the Sunoco Pipeline, L.P. (Sunoco) – Pennsylvania Pipeline Project (PPP) – Beckersville Pump Station Expansion Activities. The Project is located in Brecknock Township, Berks County, Pennsylvania (PA). A site location map is provided in Attachment 1. This E&SCP, if properly implemented, will provide for effective E&SCs throughout construction. Work will be performed within the limit(s) of disturbance (LOD) as depicted on the E&SCP drawing.

1.1 PROJECT DESCRIPTION

The project involves construction at the Beckersville Pump Station expansion, which will be connected to the PPP twenty-inch diameter transmission pipeline. Construction activities will involve installation of a rock construction entrance, expansion of the Beckersville pump station pad, and site restoration. Pump station expansion activities include the installation of a launcher, receiver, knock out tank, and pipe supports. The proposed expansion will be constructed within a LOD of approximately 5.985 acres in Berks County.

Past and present land use of the project area and surrounding area is mostly woodlands and some meadowland. Future land use will be a maintained gravel pad. Relevant topographic features including streams, streets, pipelines, structures, utility lines, fences, paving and other significant items along the pump station LOD are indicated on the plans, where applicable.

1.2 APPROACH AND OVERVIEW

This E&SCP was developed using Pennsylvania Department of Environmental Protection (PADEP) guidance documents and sound engineering judgment. When implemented properly, the E&SC practices identified herein will minimize uncontrolled surface water runoff from disturbed areas and minimize the migration of construction-generated sediment. The following general principals apply:

- Planning. Site topography, soil types, and potential effects of construction-related activities on E&S migration have been considered in developing this E&SCP. Areas of steep, erodible slopes and/or erodible soils, if encountered during construction activities, will not be disturbed without instituting proper engineering controls to minimize these concerns.
- Minimize Land Disturbance. To the extent possible and practical, disturbed areas and the duration of exposure to erosion elements will be minimized. Clearing of vegetation will be limited to only those areas of the site to be disturbed at a given time. Existing vegetation will be retained and protected to the extent possible.

Installation of E&SCs. E&SC best management practices (BMPs) will be constructed, stabilized, and functional before earth disturbance activities begin within the tributary areas of those BMPs.

- Maintenance of E&SCs. Until the site is stabilized, E&SCs will be properly maintained. Maintenance will entail inspections of E&SC features on a weekly basis and after runoff events. Preventative and corrective maintenance work, including clean out, repair, replacement, regrading, reseeding, and mulching will be performed as soon as practical. If E&SCs fail to perform as expected, replacements or modifications of those installed will be required.
- Stabilization of Disturbed Areas. If a cessation of earth disturbance activities lasts 4 days or longer, the site will be immediately seeded, mulched, or otherwise protected from accelerated E&S. BMPs will remain in place and be maintained until permanent stabilization is achieved. Disturbed areas will be stabilized as soon as is practical, including areas disturbed during the removal of BMPs. Temporary and permanent vegetation, mulch, gravel cover, repaving or a combination of these measures, will be employed immediately following the completion of backfilling and final grading activities.
- Floodplain. (See 25 PA Code §105.1) - A floodplain is the land adjoining a river or stream that has been or may be expected to be inundated by flood waters in a 100-year frequency flood. Unless otherwise specified, the boundary of the floodplain is as indicated on maps and flood insurance studies provided by Federal Emergency Management Agency (FEMA). In an area where no FEMA maps or studies have defined the boundary of the 100-year frequency floodplain, it is assumed absent evidence to the contrary, that the floodplain extends from (1) any perennial stream to 100 feet horizontally from the top of the bank, and (2) from any intermittent stream to 50 feet horizontally from the top of the bank of such intermittent stream.
- Floodway. The floodway is the channel of the watercourse and portions of the adjoining floodplains which are reasonably required to carry and discharge the 100-year frequency flood. Unless otherwise specified, the boundary of the floodway is as indicated on maps and flood insurance studies provided by FEMA. In an area where FEMA maps or studies have not been defined the boundary of the 100-year frequency floodway, it is assumed, absent evidence to the contrary, that the floodway extends from the stream to 50 feet from the top of the bank of the stream (See 25 PA Code § 105.1). The FEMA boundary is shown on the E&S drawings, when this information is available. When this information is not available, the floodway is shown as defined above for perennial and intermittent streams only.

2.0 SITE DESCRIPTION

SPLP is proposing to construct the Project in Brecknock Township, Berks County, PA. The Beckersville Pump Station expansion activities, which will be connected to the PPP twenty-inch diameter transmission pipeline, will be located on Allegheneyville Road, Mt. Brecknock Township, PA at latitude 40.21°, longitude -75.94°. The Project will include the construction of a rock construction entrance, expansion of the Beckersville pump station pad, pump station installation with pipes and pipe supports, and site restoration. The proposed Project will be constructed within an LOD of approximately 5.985 acres in Berks County.

Relevant topographic features including streams, streets, pipelines, structures, utility lines, fences, paving and other significant items along the gas line alignment are indicated on the construction plans, where applicable.

2.1 TOPOGRAPHY

The work zone is located on ground of varying elevations. Site elevations vary from approximately 620 feet (southeast portion of stream discharge) to 750 feet (north portion of pad area) above mean sea level based on the Pennsylvania Spatial Data Access. The construction plans show the topography of the site and the surrounding area.

2.2 GEOLOGY AND SOILS

The soils and geologic formations surrounding the site are shown on the figures provided in Attachment 4. Attachment 4 also provides the soil descriptions and properties of the soils found at the site. In general, the following actions will be taken to counteract soil limitations:

- E&S BMPs will be in place and functional prior to earth disturbance to counteract erodible soils.
- Prompt stabilization practices will be implemented.
- Cut slopes will be stabilized as soon as possible with seed and mulch or erosion control blanket to prevent sliding.
- If a high groundwater table is encountered, water will be drained away from disturbed areas to a well vegetated area or a placed compost filter sock (CFS) prior to being discharged off the site. Water encountered during construction activities will be pumped through a pumped water filter bag to a well vegetated upland area. Saturated soils will be dried prior to being used on-site.
- Soils will be evaluated throughout the construction process to determine whether additional measures will need to be taken to make the soil suitable for its intended use on-site.
- Soil amendments will be added to site soils to promote vegetative growth.

- A wetland delineation and stream investigation has been conducted to determine the presence and location of hydric soils. No streams or wetlands have been identified within the LOD. There are streams and wetlands located on the property. To prevent sediment from leaving the site, E&SCs will be in place and functional prior to earth disturbances, and stabilization practices will be implemented in disturbed areas as soon as practical. Geologic formations or soil conditions that may have the potential to cause pollution after earth disturbance were not observed during pre-design field activities.

The site consists of **Joanna (JpD, JnC)** loam 8 to 15, 8 to 25 percent slopes, and **Abbottstown (AbA)** silt loam 0 to 3 percent, which are described below.

JnC – Joanna loam, 8 to 15 percent slopes.

This moderately well-draining soil is located on concave and concave hills at elevations ranging from 200 to 1,000 feet above mean sea-level. It is formed from residuum weathered from conglomerate and/or residuum weathered from sandstone. The typical soil profile is: 0 to 8 inches: loam; 8 to 39 inches: clay loam; and 39 to 85 inches: sandy loam. The depth to water table is more than 80 inches. The restrictive feature, lithic bedrock, is encountered 72 to 100 inches below the surface. There is no frequency of flooding or ponding.

JpD– Joanna loam, 0 to 8 percent slopes.

This well-draining soil is located on shoulders of hillslopes at elevations ranging from 200 to 1,000 feet above mean sea-level. It is formed from residuum weathered from conglomerate and/or residuum weathered from sandstone. The typical soil profile is: 0 to 8 inches: loam; 8 to 39 inches: clay loam; and 39 to 85 inches: sandy loam. The depth to water table is more than 80 inches. The restrictive feature, lithic bedrock, is encountered 72 to 100 inches below the surface. There is no frequency of flooding or ponding.

AbA-Abbottstown silt loam, 0 to 3 percent slopes.

This somewhat poorly draining soil is located on footslope hillsslopes at elevations ranging from 300 to 1,000 feet above mean sea-level. It is formed from acid reddish brown residuum weathered from shale and siltstone. The typical soil profile is: 0 to 10 inches: silt loam; 10 to 20 inches: silt loam; 20 to 39: channery loam; 39 to 48 inches: channery silt loam; and 48 to 49 inches: bedrock. The depth to water table is 6 to 18 inches. The restrictive feature, fragipan, is encountered 15 to 30 inches below the surface. There is no frequency of flooding or ponding.

2.3 SURFACE WATER HYDROLOGY

The project area surface water runoff drains to the south to UNT to Muddy Creek, which is designated as High Quality-Trout Stock Fishes (HQ-TSF) under PA Code 25 Chapter 93.

This E&SCP contains BMPs to maintain the designated use of the receiving waters. The locations of the receiving waters relative to the project area can be seen on Attachment 1, USGS Project Location figure.

No streams and wetlands will be affected during construction.

3.0 EROSION AND SEDIMENT CONTROL PRACTICES

Two general types of E&SCs will be used on-site during construction: stabilization controls and structural controls. Stabilization controls are implemented as needed to preserve existing vegetation or disturbed areas. Structural controls are used to divert or convey runoff, prevent sediment migration, and reduce the erosive runoff forces. For the purposes of this plan, structural controls are mainly temporary; however, some of the controls may be permanent. The following sections describe the construction sequence and the E&SCs.

3.1 CONSTRUCTION SEQUENCE

Refer to the E&SCP drawings for the location of the proposed work and the associated BMPs. A generalized construction sequence is provided below. The construction sequence is intended to provide a general course of action in order to conform to the applicable regulatory agency requirements for temporary and permanent soil E&SCs. Necessary components for proper and complete execution of work pertaining to this plan, whether specifically mentioned or not, are to be performed by the contractor. It is not intended that the drawings and this report show detailed information on methods and materials. The contractor will comply with all requirements listed in this section, and will comply with the PA E&SC Manual. The contractor may be required to alter controls based on effectiveness of controls or differing conditions encountered in the field.

A preconstruction meeting is required prior to the start of any construction activity. The owner and/or operator will invite all contractors, the landowner, appropriate municipal officials; the E&SCP preparer, and a representative from the local PADEP or Conservation District to an on-site preconstruction meeting at least 7 days prior to construction commencement.

1. Locate staging areas and access points including construction entrances. Where needed, install appropriately sized CFS/silt fence in accordance with E&S details provided in Attachment 2 and within Attachment 3 of this E&SC Plan under Standard Construction Details. Use of composite filter sock is required within HQ or exceptional value (EV) designated watersheds.
2. Rock-construction entrances (Figure 3) are required when there is concern that sediment will be tracked off site by equipment travel or if there are nearby aquatic resources (e.g., road side ditches, wetlands, streams). Rock construction entrances with a wash rack will be required within HQ or EV watersheds (see the construction detail notes in regards to special sizes and requirements). Refer to the rock construction entrance detail in Attachment 3 of E&SC Plan for minimum required dimensions.
3. Install CFS/silt fence downslope of the topsoil and soil stockpiles.
4. Locate and stake out all special areas of concern or areas of avoidance (i.e., streams).

5. Install CFS along the perimeters of the site as shown on the construction drawings. Silt fence is not an alternate BMP in HQ/EV watersheds. Installation sizing and spacing will conform to the chart and details provided on the E&SC Detail Sheet.
6. Do not increase the total area of disturbance without prior approval.
7. Stockpile within the LOD in accordance with the details provided. Provide ABACT BMP controls around all topsoil stockpiles. Assure all stockpiles have appropriate CFS installed downslope.
8. Minimize total area of disturbance. Maintain temporary soil stockpiles within existing soil E&SCs. Should excavation enter streams/drainage-ways, follow specific details for these areas shown on the drawings and include the steps detailed in the specific sections below.
9. Grade surface to finished grade elevations as soon as practicable following completion of the pump station equipment installation. Immediately seed and mulch disturbed areas or gravel per the plan.
10. Maintain E&SC devices until site work is complete and a uniform 70-percent perennial vegetative cover is established.
11. Remove E&SC measures upon establishment of a uniform 70-percent vegetative cover over the disturbed area. Re-grade and revegetate areas disturbed during the removal of the soil E&SCs.

Underground Storage Pipe Installation

1. Structures such as inlet boxes, reinforced concrete boxes, etc. should be installed in accordance with the manufacturers' or design engineers guidance.
2. Structures may be set on a layer of clean, lightly compacted gravel (such as AASHTO #57).
3. The underground storage system should be underlain by a layer of permeable non-woven-geotextile.
4. Place underlying gravel/stone in minimum 6 inch lifts and lightly compact. Place pipes in gravel during placement.
5. Wrap and secure nonwoven geotextile to prevent gravel/stone from clogging with sediments.
6. Gravel should be free of fine sands, silts and clays within and above the underground storage system to the ground surface to allow infiltration into the pipes.

3.2 BEST MANAGEMENT PRACTICES

An effective method to minimize E&S migration is to promote and implement BMPs. BMPs are relatively simple, inexpensive, and cost-effective protocols to prevent E&S migration. The basic BMPs that are anticipated to be employed during the construction activities include:

- Minimizing disturbances to site areas, especially those currently covered with pavement or vegetation.
- Minimize the time that soil is exposed.
- Prevent the runoff from flowing across disturbed areas (divert the flow to vegetated areas).
- Stabilize disturbed soils as soon as possible.
- Slow down the runoff flowing across the site.
- Remove sediment from surface water runoff before it leaves the site.

3.3 SEQUENCE OF BMP INSTALLATION

General stabilization and structural controls will be used in E&SC practices to (1) divert stormwater flows away from exposed areas, (2) convey runoff, (3) prevent sediments from moving off-site, and (4) reduce the erosive forces of runoff waters. CFSs and other structural and non-structural controls that will be used during construction activities will include the following:

Vegetative Stabilization Controls

Grounds disturbed by any of the operations necessary to complete the work for this project are to be permanently seeded, or if specified, sodded, unless occupied by structures, gravel or paved. A temporary cessation of earth disturbance activities that lasts 4 days or longer requires temporary stabilization. Disturbed areas, which are at final grade, will be seeded and mulched immediately.

If seeding cannot be completed immediately after the area reaches final grade due to weather conditions, the disturbed area will be stabilized and mulched with straw at the rate of 3 tons per acre. This straw will be anchored using a method described under Mulching of this narrative.

Structural Controls

Temporary control facilities to be used during construction include the use of CFS and rock construction entrances. Other structural controls as described below may also be used as deemed necessary based on conditions encountered in the field. Installation guidelines and locations for the above devices are as

shown on the drawings and additional information can be found in the PA E&SC Manual. The temporary control measures that will be used on this Project include, but are not limited to:

- *Compost Filter Socks* - This temporary sedimentation control measure consists of wood or metal posts driven through a compost filled mesh tube. Filter socks will be located as needed on side-slope and down-slope boundaries of disturbed areas. Both ends of each CFS should be extended at least 8 feet upslope CFS will be sized using the PADEP Construction Detail provided in Attachment 3. CFSs will be used in drainage areas with siltation impaired waters.
- **Silt fence will not be used in drainage areas with HQ, EV, or Siltation impaired waters – (See Compost Filter Socks).**
- *Tarpaulin Covers* - Tarpaulin covers may be used, as necessary, to protect topsoil storage stockpiles from wind and precipitation erosion. Stockpile slopes will be 2:1 or less. A minimal amount of soil will be stockpiled so that the height of the stockpile is less than 35 feet.
- *Rock Construction Entrance* - Temporary access routes will be established to facilitate construction activities. The use of access routes will help confine truck and equipment traffic to specific corridors thus minimizing land disturbance and protecting vegetation. Site traffic during wet weather will be limited. No vehicles will be permitted in streams or rivers.
- *Wash Racks* - Wash racks may be used at rock construction entrances and will be designed to accommodate anticipated vehicular traffic in special protection watersheds. A water supply will be made available at wash racks to wash the wheels of vehicles exiting the site. Reasonable methods which are sanctioned by the PADEP as alternatives to installation of tire wash stations on public road access points for station projects in EV/HQ or siltation impaired watersheds include:
 - For paved surface public roads: use of a vacuum truck sweeper or sweeper with a catch bin attachment.
 - For dirt or gravel surface public roads: rigorous manual removal of mud/dirt from vehicle/equipment tires prior to exiting construction-site, supplemented by immediate recover, by manual or mechanical means, of soil which may become discharged onto public roadways, and dust control and/or compaction via rolling of the dirt public road surface will be implemented as needed.

A predicate for using the alternatives above is that the rock pad construction entrance will be extended to a minimum total length of 100 feet and will be constantly maintained including structure thickness to insure its effectiveness remains intact at all times.

Frequency of mechanical and/or manual controls will be dependent upon construction traffic intensity, weather, and soil moisture conditions. At a minimum for paved roads - any day in which construction traffic is exiting the rock construction entrance, the vacuum truck sweeper or sweeper with a catch bin attachment will clean the roadway at the end of the work day and prior to any forecasted rain event. The requirement is to not introduce sediment load from construction traffic onto public road surfaces and into road ditches which will flow into the special protection or siltation impaired water resources which are the subject of the increased protection measures.

Wash racks or alternative methods, as described above, must be used during construction because the site is located in a siltation impaired watershed. ABACT approved BMPs are to be used at all times for this site construction.

- *Pumped Water Filter Bag* - Pumped water filter bags may be used to filter water pumped from disturbed areas prior to discharging to surface waters. CFSs will be installed within 50 feet of any receiving surface water or where grassy area is not available. Filter bags will be installed according to the details shown in the PADEP Construction Detail provided in Attachment 3.
- *Erosion Control Blanket* - A manufactured erosion control blanket will be installed on all slopes 3:1 or steeper and within 50 feet of surface water or 100 feet of special protected water. The blanket will be biodegradable but capable of providing protection for 2 growing seasons. Straw or similar fiber material will be placed between two biodegradable nets. The top net will be heavyweight and UV stabilized; the bottom net will be a lightweight netting. Erosion control blankets will be anchored and stapled in place in accordance with the manufacturer's recommendations and the detail on the construction drawings. For slopes between 3:1 and 1:1, use erosion control blanket SC 150 as manufactured by North American Green or Owner approved equal material or equal method.
- *Public ROWs* - In an effort to reduce the tracking of sediment onto public ROWs, stabilized construction entrances of crushed stone located at points where traffic will be entering or leaving the site will be installed. Mud and soil accumulating on roadways, as a result of construction activities, will be removed with hand tools, such as shovels, and disposed of properly. The contractor will check the road a minimum of twice daily to verify cleanliness at road crossings and take necessary corrective action. Gravel will be used to limit dust and erodability.
- *Restoration* - All improved areas disturbed by construction will be restored.
- *Additional Requirements* - Any additional requirements to adequately control E&S pollution will be the responsibility of the contractor and will be considered incidental to construction activities.

3.4 PRIMARY CONSTRUCTION ACTIVITIES

Clearing and Grubbing

Brush, scrub growth, saplings and trees directed to be cut and removed will be completely removed from the site of the work, if encountered. The contractor will remove stumps and large roots and refill the depressions with suitable compacted earth fill where necessary to bring the grade back to its original elevation or final design grade. The contractor will protect exposed bare earth using mulch or other appropriate measures if clearing and grubbing operations are completed more than 4 days prior to pump station construction activities.

Grading and Topsoil Stockpiling

Before beginning excavation and/or filling work, the topsoil or gravel from all areas to be affected will be stripped and stockpiled in a separate stockpile from the other excavated soil material. After completion of the major construction work, the topsoil will then be replaced as the upper layer of backfill. In general, all topsoil stockpiles will be located within the LOD away from nearby streams and/or drainage ditches or watercourses. Temporary erosion protection devices such as CFS will be used to protect all stockpiled topsoil from being carried into nearby water courses by the action of any overland runoff water.

As topsoil stockpile(s) become(s) completely depleted, the disturbed area(s) will be graded and revegetated or finished with gravel. The CFS will be removed only after a uniform 70-percent perennial vegetative coverage has been established across the disturbed area.

Topsoil will not be placed when the subgrade is frozen or when it is excessively wet or dry, and will not be handled when in a frozen or muddy condition.

Vegetation

Grounds that are not gravely disturbed by any of the operations necessary to complete the work for this Project are to be permanently seeded, unless occupied by structures or paved. Any temporary cessation of earth disturbance activities, which lasts for 4 days or longer, requires temporary stabilization. Disturbed areas, which are at final grade, will be seeded and mulched immediately.

If seeding cannot be completed immediately after the area reaches final grade due to weather conditions, the disturbed area will be stabilized and mulched with straw at the rate of three tons per acre. This straw will be anchored using a method described under Mulching of this narrative.

Seeded areas will be inspected weekly and after each runoff event. Necessary repairs will be made by the end of the week.

Permanent Seeding

The site preparation and establishment of permanent cover will be conducted according to the following guidelines:

1. Install needed surface water control measures.
2. Hydroseed or follow Steps 3 through 6 below.
3. Perform all cultural operations at right angles to the slope.
4. Determine agricultural lime application rates by field pH testing. Perform testing at a rate of 1 test per acre (min.). In the absence of testing, apply at 6 tons per acre.
5. Apply dry 10-20-20 formulation of fertilizer at the rate of 678 lbs. per acre or at a rate determined by field testing.
6. Work in lime and fertilizer to a depth of 4 inches using suitable equipment.
7. Seed Mixture - The seed mixture will be:

TABLE 1: PENNDOT FORMULA W							
SCIENTIFIC NAME	COMMON NAME	REQUIRED VARIETIES	% BY WEIGHT	MINIMUM % PURITY	MINIMUM % GERMINATION	MAX % WEED	SEEDING RATE (LBS/1000 SF)
Festuca Arundinacea	Tall Fescue	Festuca arundinacea var. Kentucky 31	70	98	85	0.15	7.5
Lotus Corniculatus	Birdsfoot Trefoil Mixture	A combination of varieties (Viking, Empire, Norcen, Dawn, Leo, Bull, Maitland) with no one variety exceeding 50% of the total Trefoil component.	20	98	80 ⁽¹⁾	0.10	2.0
Agrostis Alba	Redtop	Agrostis alba	10	92	80	0.15	1.0

⁽¹⁾ Recommended 10% hardseed and 70% normal sprouts.

8. If not hydroseeding, apply mulch.

Notes:

1. Spread seeds where indicated and at the rates specified in Table 1, or as otherwise indicated.
2. Spread seeds within April 1 to June 15 or August 16 to September 15.
3. Extend seeding dates where project conditions warrant. Apply full treatment or apply only 50% of the permanent seeding and soil supplements and apply the remaining 50% within the next seeding dates, as directed in writing.
4. Use tillage and soil supplements before permanent seeding on topsoiled areas, where temporary seeding or mulching has been applied.
 - a. On topsoiled areas, 1:3 (3:1) and flatter, loosen the surface to a depth of at least 50 mm (2 inches) by disking, harrowing, or other acceptable methods until the tillage is satisfactory. On untilled areas, 1:3 (3:1) and flatter, till only as directed. Also, till or scarify areas if the surface is glazed or crusted.
 - b. Correct surface irregularities by filling depressions and leveling rough or uneven areas. Remove metal objects, stones larger than 50 mm (2 inches) in any dimension, and other debris or objects deemed detrimental to maintenance operations.
5. Inoculate leguminous seed, such as Crownvetch and Birdsfoot Trefoil, with proper cultures, according to the manufacturer's directions.
6. At the rates specified in Table 1, sow seeds uniformly on the prepared areas by the helicopter, hydraulic placement, broadcasting, drilling, or hand seeding methods. Inspect seeding equipment and adjust the equipment, if required, to ensure the specified application rates. Periodically perform a check on the rate and uniformity of application, as directed. Prior to seed application of each designated seed formula, thoroughly clean-out seed tank by rinsing with clean water to prevent contamination from one seed formula to the next. Repeat rinsing cycle until tank is clean. Collect all non-applied seed derived from each clean-out event and remove as waste from the project.
7. After seeding, roll topsoiled areas that are to be mowed. Use a roller with a mass (weight) not more than 100 kg/m (65 pounds per foot). If soil is wet or frozen, roll only when directed.
8. Apply herbicides as directed, to areas that are to be mowed and where weed growth is prominent. The Representative will designate existing plants or groups of plants to be saved within these areas before herbicide application. If directed, more than one application may be required to control undesirable growth. Apply material with application personnel certified by the Department of Agriculture and with equipment specified in Section 108.05(c).
9. Final acceptance of seeding and soil supplement materials and installation are subject to the results of official sampling and testing as specified before use and installation and the resultant establishment of the specified vegetation. Remove non-approved materials from the project.
 - a. Reseed rejected areas with additional applications of the specified seed and soil supplement materials. Redress soil surfaces when directed. Perform reapplication of seed and soil supplements within the next applicable seeding date if necessary or as directed. When directed, reseed areas damaged by herbicide applications and mowing operations. NOTE: Reseeded areas will also require the application of appropriate mulch as specified in Section 805.
 - b. Seeded areas may be rejected based on the lack of actual grass seedling establishment exhibited in the area for the specified seed formula.
 - i. Table 1 formula seeded areas that exhibit less than 70% surface area coverage with the specified germinated grass seedlings after 90 days of growth may be rejected upon visual inspection. The seed germination and growth period is determined from the date of the seeding operation for the area when these operations are performed within the specified seeding dates.
 - ii. Special seed formula planted areas (seed mixtures not indicated in Table 1) may be rejected based on the lack of the specified seed germination and growth of less than 11 seedlings/m²

- (9 seedlings/square yard) after 120 days of growth determined by visual inspection. The seed germination and growth period is determined from the date of the seeding operation of the area when these operations are performed within the specified seeding dates.
- iii. Seeded areas exhibiting soil surface erosion rills or gullies deeper than 250 mm (1-inch) may be rejected upon visual inspection. Redress and reseed designated eroded areas with specified materials and application rates as directed.
10. Maintain grass and legume ground cover areas, within the grading limits, until the entire project has been completed.
 - a. Control any noxious weed growth found within the right of way, by herbicide spraying and cutting. These plants are defined by the Pennsylvania Weed Control Act of 1982, P.L. 228, No. 74 and as amended by further legislation. Submit, for approval, a schedule of work and list of herbicide material to be used before starting this operation.
 - b. If a slope failure occurs on a slope previously completed, and requires further excavation and redressing to reestablish the slope, reapply the seeding and soil supplement work as specified for the original slope.
 11. Maintain turf grass areas within the grading limits, by mowing with approved equipment until the entire project has been completed.
 - a. Submit a proposed schedule of mowing operations that covers the length of the construction project for approval.

Liming Rates

Minimum 6 tons per acre at 100% effective neutralizing value (% ENV), unless the soil test determines that a lesser amount is needed. To determine the actual amount of regular lime to apply, divide the amount called for by the soil test by the % ENV for the product used. For example, if 6 tons per acre is needed and the env for the lime used is 88%, divide 6 by 0.88 resulting in 6.8 tons needing to be applied. For dolomitic lime, which has a significant amount of magnesium in it, divide the amount called for by the soil test by the % calcium carbonate equivalent (% CCE) listed for the product instead of the % ENV. The % CCE may be above 100% which accounts for the fact that magnesium has a greater effect per pound than the calcium in regular lime. Note: When a soil test requires more than 8,000 pounds of lime per acre, the lime must be mixed into the top 6 inches of soil.

Fertilization Rates

Prepare areas for seeding by uniformly applying supplements. Document bulk delivery. Blend the initial soil supplements into the soil at least 50 mm (2 inches), on topsoiled areas, by raking, disking, harrowing, or other acceptable methods. Blend the supplements into the soil during tillage operations. Apply slow-release nitrogen fertilizer to the surface of Formula W seeded areas before project completion. Apply soil supplements as shown in the following table, unless otherwise indicated:

Permanent Seeding Application Rate				
Soil Amendment	Per Acre	Per 1,000 sq. ft.	Per 1,000 sq. yds.	Notes
Agricultural Lime	3872 LBS.	89 LBS.	800 LBS.	or as per soil test; may not be required in agricultural fields
10-20-20 Fertilizer	678 LBS.	16 LBS.	140 LBS.	

38-0-0 Ureaform Fertilizer, OR	242 LBS.	6 LBS.	50 LBS.	
32-0-0 to 38-0-0 Sulfur Coated Urea Fertilizer, OR	286 LBS.	7 LBS.	59 LBS.	
31-0-0 IBDU Fertilizer	295 LBS.	7 LBS.	61 LBS.	

Temporary Seeding

Temporary grass cover will be established in the following areas:

- Where vegetative filters must be established below filter bags, a minimum distance of 10 feet will be seeded down slope of the trap outlet. Seed mixture for temporary cover will consist of 100-percent annual ryegrass. Seed will be applied at the rate of 40 lb. per acre or as recommended by a local recognized seed supplier and approved by the owner's representative. Prior to seeding, apply 1 ton of agricultural grade limestone per acre plus 10-10-10 fertilizer at the rate of 500 lb. per acre and work into soil.
- Where soil stockpiles are to be exposed for a period greater than four (4) days, the stockpile shall be seeded.

Temporary Seeding Application Rate				
Soil Amendment	Per Acre	Per 1,000 sq. ft.	Per 1,000 sq. yd.	Notes
Agricultural Lime	1 ton	40lb.	410 lb.	Typically not required for topsoil stockpiles
10-10-10 Fertilizer	500lb.	12.5 lb.	100lb.	Typically not required for topsoil stockpiles

Mulching

The purpose of mulch is to reduce runoff and erosion, prevent surface compaction or crusting, conserve moisture, aid in establishing plant cover, and control weeds. Mulch will be applied on any area subject to erosion, or which has unfavorable conditions for plant establishment and growth. The practice will be used alone or in conjunction with other structural and vegetative conservation practices, such as waterways, ponds, sedimentation traps or critical area planting. On sediment producing areas where the period of exposure is less than 2 months, mulch materials will be applied according to the following guidelines:

- Apply straw mulch at the rate of 3 tons per acre. Chemically treated or salted straw is not acceptable as mulch.
- Anchor straw mulch immediately after application by at least one of the following methods.

- A. "Crimp" straw mulch into the soil using tractor drawn equipment (straight bladed coulter or similar). This method is limited to slopes no steeper than 3:1. Operate machinery on the contour. Crimping of hay or straw by running it over with tracked machinery is not recommended.
- B. Uniformly apply asphalt, either emulsified or cut-back, containing no solvents or other diluting agents toxic to plant or animal life, at the rate of 31 gallons per 1,000 square feet.
- C. Use synthetic binders (chemical binders) as recommended by the manufacturer to anchor mulch provided sufficient documentation is provided to show that it is non-toxic to native plant and animal species.
- D. Staple lightweight plastic, fiber, or paper nets over the mulch according to the manufacturer's recommendations.

Mulched areas will be checked periodically and after each runoff event (e.g. rain, snowmelt, etc.) for damage until the desired purpose of the mulching is achieved. Damaged portions of the mulch or tie-down material will be repaired upon discovery.

Waste Considerations

The operator will remove from the site, recycle, or dispose of all building materials and wastes in accordance with PADEP's solid waste management regulations at 25 PA Code 260.1 et seq., 271.1 et seq., and 287.1 et seq. The contractor will not illegally bury, dump, or discharge building material or wastes at the site. Excess material brought into the site areas to facilitate construction access will be completely removed prior to rough grading and final surface stabilization. Expected construction wastes will consist of packaging material and sediment cleaned from BMPs. Packaging from the materials brought on-site will be disposed of by a licensed hauler. Sediment removed from BMPs will either be spread in a protected area to dry and then recycled as fill material or disposed of off-site. In cases where disposal is necessary, waste materials are to be disposed of at an approved PADEP waste disposal facility.

Thermal Impacts

Potential pollution to surface waters from thermal impacts will be minimized by limiting clearing and retaining existing vegetation where possible during construction. Following construction, permanent seeding will occur around the pad as soon as practicable to facilitate vegetative growth. All runoff will be stored to promote infiltration/evaporation before discharging. The surface runoff will be mostly shaded due to remaining wooded areas being undisturbed near the basin. The discharge point is to a highly shaded area on the Sunoco property.

Earth disturbance activities associated with the Project will be located within a HQ-TSF watershed. Accelerated E&S will be minimized to achieve zero net change in runoff between the pre and post-construction conditions. The extent of the disturbed area will be minimized, and the duration of disturbance

will be minimized by stabilizing disturbed areas as soon as practicable. Due to the size and location of the pad, it is not anticipated that adverse thermal impacts to surface waters will occur.

The receiving streams are classified as not attaining their existing water quality of a HQ-TSF. Reasons listed were impaired aquatic life due to urban runoff/storm sewers – siltation, water/flow variability, and other unknown causes. BMPs will be used onsite to protect and maintain their existing use.

ABACT BMPs will be used onsite to protect and maintain the existing water quality of receiving waters.

The following ABACT E&S BMPs will be used onsite:

- Wash racks or alternatives at rock construction entrances,
- CFS used in place of silt fence,
- Erosion control blanket on disturbed areas within 100 feet of a receiving surface waters, where applicable, and on slopes 3:1 or steeper.

Riparian Forest Buffers

Existing riparian forest buffers do not exist within the Project area.

Stormwater Runoff Analysis

The site's pre-development and post-development drainage characteristics were modeled in accordance with local and state requirements. The runoff analysis calculations were performed utilizing the U.S. Soil Conservation Service (SCS) TR-55 Urban Hydrology for Small Watersheds. The 1, 2, 5, 10, 25, 50 and 100-year storm events have been analyzed for pre- and post-developed conditions. The rainfall depths for each storm event are 2.67, 3.21, 4.03, 4.71, 5.70, 6.53 and 7.42 inches respectively, and follow the SCS 24-hour Type II rainfall distribution. Bentley PondPack V8i was used to perform the runoff analysis. The pre-development watershed features and runoff analysis is located in Appendix C. The post-development watershed features and runoff analysis is located in Appendix D.

A stormwater Best Management Practice (BMP) has been designed for the pump station to comply with the stormwater quality and quantity management requirements set forth in the Brecknock Township Stormwater Management Ordinance and the PA Stormwater BMP Manual. The BMP also has been designed to meet state stormwater quality and quantity management requirements. Calculation worksheets (Worksheet #4 and #5) from Chapter 8 of the Pennsylvania Stormwater Best Management Practices Manual were used to ensure compliance with state requirements.

3.5 MAINTENANCE AND INSPECTION PROCEDURES

Maintenance to the temporary E&SC structures will be performed by the contractor during the construction period. Maintenance for E&S devices will occur, at a minimum, as follows:

Compost Filter Socks

- Accumulated sediment will be removed as required, and in all cases where uniform accumulations are one-half the above ground height of the filter sock. Any accumulated earth behind the filter sock will be disposed of by the contractor in such a manner that the removed earth will not be excessively eroded and transported into a waterbody.
- The filter sock installation will be inspected weekly and after every runoff event. Loosened support stakes will be removed and new stakes driven. Filter socks will be maintained and repaired as per manufacturer specifications.
- Temporary E&SCs will be removed by the contractor only after a uniform 70-percent perennial vegetative coverage has been established across the disturbed area. Temporary E&SCs will be disposed of by the contractor at an approved PADEP disposal facility.

Rock Construction Entrances

- Rock construction entrance thickness will be constantly maintained to the specified dimensions by adding rock. A stockpile will be maintained on-site for this purpose.

Pumped Water Filter Bags

- Filter bags will be replaced when they become one-half full of sediment.
- Filter bags will be inspected daily. If any problem is detected, pumping will cease immediately and not resume until the problem is corrected.

Vegetation

- Seeded areas will be inspected weekly and after each runoff event. Necessary repairs will be made immediately.

Mulch

- Mulched areas will be checked periodically and after severe storms for damage until the desired purpose of the mulching is achieved. Damaged portions of the mulch or tie-down material will be repaired upon discovery.

Inspection and Maintenance

Until the site is stabilized, E&SC BMPs will be maintained properly. Preventative and corrective maintenance work, including clean-out, repair, replacement, regrading, reseeding, remulching, and renetting will be performed as soon as practical. If E&SC BMPs fail to perform as expected, replacement

BMPs, or modifications to those installed will be required. The following inspection and maintenance practices will be used to maintain E&SC on-site during activities.

- E&SC measures will be in-place and inspected at the end of the workday and after each runoff event. The contractor will immediately repair any deficiencies.
- Maintenance and inspection of sediment control facilities will conform to PADEP Chapter 102 and 105 rules and regulations.
- Sediment will be removed when it accumulates one-half the aboveground height of the CFS. All undercutting of erosion of the toe anchor will be repaired with compacted backfill material. Adhere to the manufacturer's recommendations for replacing filter socks due to weathering.
- Sediment removed from CFS and any other control devices will be mixed in with the other waste soil on the construction site and properly disposed of as discussed in Section 3.4.
- Sediment will be removed from the sediment removal facilities associated with wash racks as necessary. Sediment deposited on paved roadways will be removed and returned to the construction site daily, at a minimum.
- Re-vegetated areas will be inspected for bare spots, washouts, and healthy growth during the construction. Identified bare spots and washouts will be repaired as soon as practical.
- All soil stockpiles that are to remain more than 4 days will be seeded with temporary grass, as noted in the seeding specification on the construction drawings.
- The contractor will make certain that all runoff is directed to the sedimentation control devices.
- All sedimentation control measures will remain in place until the disturbed areas are stabilized and a uniform 70-percent perennial vegetative cover is established. Any area not achieving a 70-percent vegetative cover will be re-seeded and mulched.

If E&S BMPs are found to be inoperative or ineffective during an inspection, PADEP should be contacted within 24 hours, followed by the submission of a written noncompliance report to PADEP within 5 days of the initial contact.

Long-Term Maintenance

The owner will maintain the stormwater management facilities for this site. Maintenance of the stormwater management facilities includes, but is not limited to, the following:

1. The proposed stormwater detention system, private storm systems, and stormwater BMP's will be inspected and maintained by the property owner in accordance with the approved operation and maintenance program.
2. The stormwater BMP's are fixtures that can be altered or removed only after approval by the Municipality.
3. Annually inspect existing pipe inlets, channels, level spreaders and outfall protection areas to for erosion and sedimentation. Repair and clean stormwater structures as necessary.

4. Underground Storage Pipes:

The gravel surrounding underground pipes should be free of fine sands, silts and clays to provide proper storage and drainage.

- Catch Basins and Inlets should be inspected and cleaned at least two times per year and after runoff events.
- Remove trash and debris as necessary from collection inlets, pipes and from the surface above the storage area. Rake or vacuum fine materials as necessary from the gravel.
- Replace gravel if raking/vacuuming has reduced depth of gravel.

3.6 ANTIDegradation

Earth disturbance activities associated with the Beckersville Pump Station Expansion Activities will be located within HQ-TSF watershed. A combination of non-discharge alternatives and the use of BMPs on-site will protect and maintain the existing water quality of the receiving waters.

Non-discharge alternatives were evaluated to minimize accelerated E&S and achieve zero net charge in runoff between the pre and post-construction conditions. The extent of the disturbed area will be minimized, and the duration of disturbance will be minimized by stabilizing disturbed areas as soon as practicable. ABACT BMPs will be used onsite to protect and maintain the existing water quality of receiving waters.

The following ABACT BMPs will be used onsite when in HQ or EV areas:

- Wash racks located at rock construction entrances,
- CFS used in place of silt fence in HQ watersheds,
- Erosion control blanket on disturbed areas within 100 feet of a receiving surface waters, where applicable, and on slopes 3:1 or steeper.

3.7 SITE RESTORATION

Past and present land use of the project area and surrounding area is mostly woodlands and some meadowland. Future land use will be restored to a gravel pad and gravel rock construction entrance, and access road surrounded by meadowland in good condition. Primary receiving water outside the project area is UNT to Muddy Creek (HQ-TSF). Secondary waters include Muddy Creek (HQ-TSF). Location and types of soils are shown on the Soils Map and outlined in Section 2.3 of this narrative. In general, the following procedures will be implemented to counteract soil limitations:

- E&S BMPs will be in place and functional prior to earth disturbance to counteract erodible soils.
- Should a high water table be encountered during excavation procedures, the trench will be dewatered using a pumped water filter bag.

- Soils amendments will be added to soils that are found to be a poor source of topsoil.

Following completion of the Project, minor increases in stormwater runoff may occur. Ultimately, the site will be composed of restored areas and a gravel pad for the pump station. The restored areas will be vegetated to the equivalent of “meadow in good condition,” and the gravel pad will consist of mostly non-compacted yard gravel, which will promote infiltration and evaporation.

4.0 REFERENCES

Erosion and Sediment Pollution Control Program Manual, Commonwealth of Pennsylvania, Department of Environmental Protection, Office of Water Management, March 2012.

Stormwater Management for Construction Activities - Developing Pollution Prevention Plans and Best Management Practices, United States Environmental Protection Agency, Office of Water, 1993.

Morgantown Quadrangle, Pennsylvania - Berks County, Geological Survey, United States Department of Interior.

Web Soil Survey of Berks County, Pennsylvania, United States Department of Agriculture, Soil Conservation Service, November, 2015.

Pennsylvania Stormwater Best Management Practices Manual Draft, Pennsylvania Department of Environmental Protection, Bureau of Watershed Management, November, 2009.



VISUAL SITE INSPECTION REPORT

Note: It is a condition of National Pollutant Discharge Elimination System and Erosion and Sediment permits that a maintenance program be conducted to provide for the operation and maintenance of all BMPs to be inspected on a weekly basis and after each stormwater event. Please list in the space provided comments to note if repairs or replacement are needed or have been made for BMPs as a result of the inspection. Failure to conduct the required inspection may result in permit suspension or the imposition of civil penalties. If supplemental monitoring is required as part of a permit condition this form may be used to meet those monitoring requirements.

Project Site Name: _____ Date: _____ Inspection #: _____

Time: _____ Weather: _____

Permit #: _____ Photos Taken: Yes ☐ No ☐

Inspector/Title: _____

Municipality(s): _____

County(s): _____

Inspection Type (check one): Weekly ☐ Stormwater Event ☐

- | | Y | N |
|---|--------------------------|--------------------------|
| 1. Are the approved (Stamped) E & S plan and PCSM plan present on site? | ☐ | ☐ |
| 2. Are there activities occurring outside of the limits of disturbance shown on the plan drawings?
(If yes, notify conservation district and explain.) | ☐ | ☐ |

- | | | |
|---|--------------------------|--------------------------|
| 3. Is Construction Sequence being followed?
(If No, notify conservation district and explain.) | ☐ | ☐ |
|---|--------------------------|--------------------------|

4. E & S BMPs (List BMPs and note if installed and maintained as per the plan.)

	Y	N			
_____	☐	☐	_____	☐	☐
_____	☐	☐	_____	☐	☐
_____	☐	☐	_____	☐	☐
_____	☐	☐	_____	☐	☐
_____	☐	☐	_____	☐	☐
_____	☐	☐	_____	☐	☐
_____	☐	☐	_____	☐	☐
_____	☐	☐	_____	☐	☐
_____	☐	☐	_____	☐	☐

Were repairs/maintenance/replacement BMPs necessary (if so, describe): _____

5. **Site Conditions** **Y** **N**
- Sediment Discharge is occurring to waters or wetlands from earth disturbance activity? ☐ ☐
- Stabilization** of inactive disturbed areas, stockpiles, or at final grade? (exceeding 4 days inactive) ☐ ☐
- Are slopes 3:1 and greater stabilized with appropriate BMPs? ☐ ☐

6. **PCSM BMPs**
- Are areas intended for PCSM BMPs being protected from compaction? ☐ ☐
- PCSM BMPs (List BMPs and note if installed and maintained as per the plan.)**
- | | Y | N | | Y | N |
|-------|--------------------------|--------------------------|-------|--------------------------|--------------------------|
| _____ | ☐ | ☐ | _____ | ☐ | ☐ |
| _____ | ☐ | ☐ | _____ | ☐ | ☐ |
| _____ | ☐ | ☐ | _____ | ☐ | ☐ |
| _____ | ☐ | ☐ | _____ | ☐ | ☐ |
| _____ | ☐ | ☐ | _____ | ☐ | ☐ |
| _____ | ☐ | ☐ | _____ | ☐ | ☐ |
| _____ | ☐ | ☐ | _____ | ☐ | ☐ |
| _____ | ☐ | ☐ | _____ | ☐ | ☐ |
| _____ | ☐ | ☐ | _____ | ☐ | ☐ |

Were repairs/maintenance/replacement BMPs necessary (if so, describe): _____

7. **Department/Conservation District has been notified within 24 hours of non-compliance, including discharge to waters or wetlands?** ☐ ☐
8. **Identify all remedial measures that have been taken or will be taken on this site.**
- _____
- _____
- _____
- _____

Inspector's Signature: _____ Date: _____

Company Name: _____

Attach additional sheets for comments/repairs/remedial measures if necessary.

TETRA TECH

PROFESSIONAL ENGINEERS

CLIENT: SUNOCO

JOB NO.: _____

SHEET _____ OF _____

DESCRIPTION: Beddersville

CHK BY: _____

DATE: _____

● Anti-Sleep collars

$$y = 1.65$$

$$L_s = 1.65(2+4) \left[1 + \frac{0.064}{1+0.064} \right]$$

$$L_s = 9.9 [1.06015]$$

$$L_s = 10.495$$

$$L_f = 1.15(L_s) = 12.069$$

$$nV = \frac{1}{2} [L_f - L_s]$$

$$nV = \frac{1}{2} [12.069 - 10.495]$$

$$nV = \frac{1}{2} [1.574]$$

$$V = 0.787 [1 \text{ (all)}] \approx 1$$

$$\text{Min Spacing} = 5 \cdot 1 = 5$$

$$\text{Max Spacing} = 14 \cdot 1 = 14$$

* Use 1 collar 10 feet from Toe *

★ - REV 10-2016

TETRA TECH		PROFESSIONAL ENGINEERS	
CLIENT: <u>SUNOCO</u>	JOB NO.: _____	SHEET <u>6</u> OF _____	
DESCRIPTION: <u>BECKLEYVILLE</u>	CHK BY: <u>TC</u>	DATE: _____	
1. EXISTING FLOW TO STREAM ON SUNOCO PROPERTY			
		EXISTING CHANNEL Rough channel with grass $n = .03$ $s = 3\% \text{ min, } 9\% \text{ max}$	
DA TO STREAM AT INTERSECTION WITH SUNOCO PL.			
PRE-DEVELOPED			
DA = 4.8 AC		100' sheet flow - 12%	
WOODS, good cond.		550' shallow conc - 20%	
★ B-SOILS		200' o.c. - 9%	
$T_c = 14.5 \text{ min}$			
Q_{100} TO EXISTING STREAM = 15.18 cfs - PRE-DEV			
2. POST-DEV FLOW TO EXISTING STREAM - TOTAL from TWO BASINS PEAK OUTFLOW + REMAINDER OF UN-CHANGED AREA.			
BASIN #1 - $Q_{100} = 2.66 \text{ cfs}$			
BASIN #2 - $Q_{100} = .49 \text{ cfs}$			
POST-DEV REMAINDER - 3.26 AC			
★ - B-SOILS -		WOODS, good cond.	
		$T_c = 100' \text{ sheet} - 20\%$	
		$= 250' \text{ shall} - 20\%$	
		$= 200' \text{ o.c.} - 9\%$	
Q_{100} TO EXIST STREAM = 11.94 cfs		$T_c = 10.4 \text{ min}$	
POST-DEV			
TOTAL FLOW = $11.94 + 2.66 + .49 = 15.09$ ★			
$= 15.09 \text{ cfs} - \text{REDUCTION}$ ★			
"NO INCREASE IN FLOW TO EXIST CHANNEL"			

TETRA TECH

PROFESSIONAL ENGINEERS

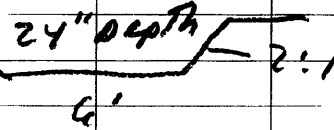
CLIENT: SUNOCO

JOB NO.: _____

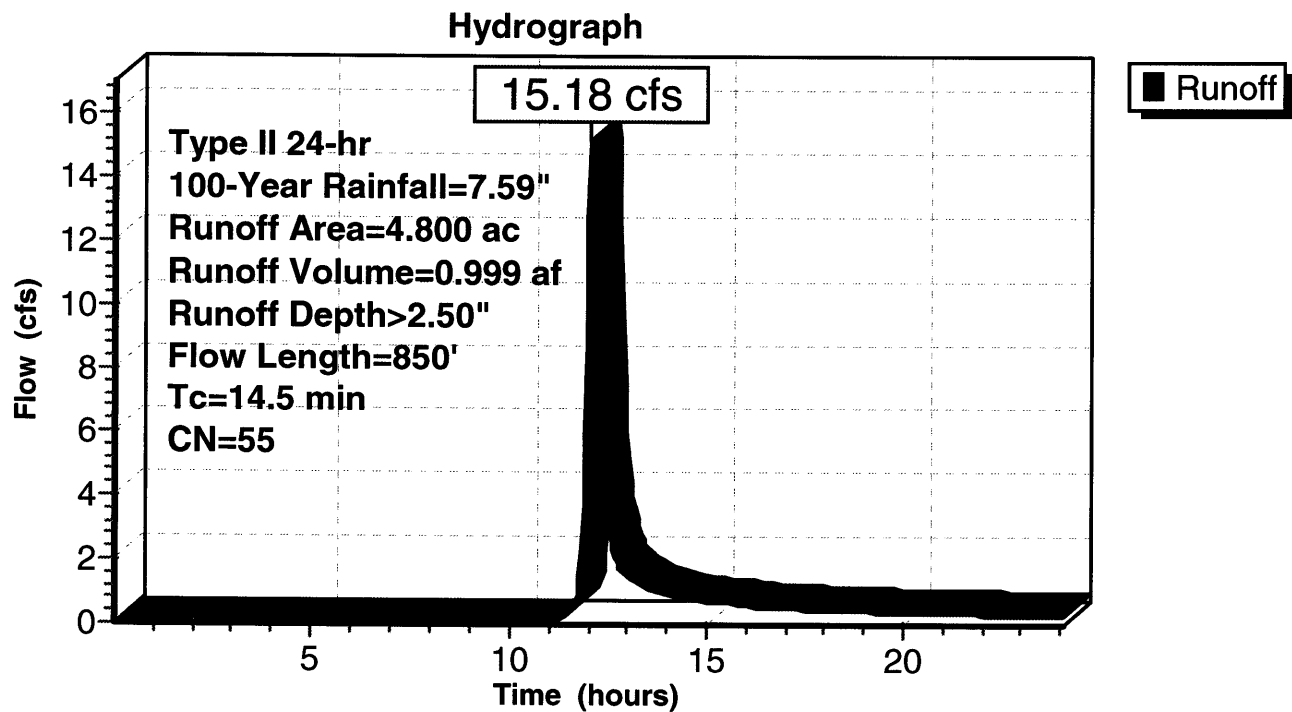
SHEET 7 OF _____DESCRIPTION: BELLEVILLECHK BY: TC

DATE: _____

3. EXISTING CHANNEL -

 $S = 3\% - 9\%$
 $Q = 29.53 \text{ cfs}$
 $n = .03$ FOR 3% SLOPE -
Depth = .69'
 $V = 5.82 \text{ fps}$
FOR 9% SLOPE
Depth = .50'
 $V = 8.41 \text{ fps}$

Subcatchment 1S: Pre Dev to Existing Stream



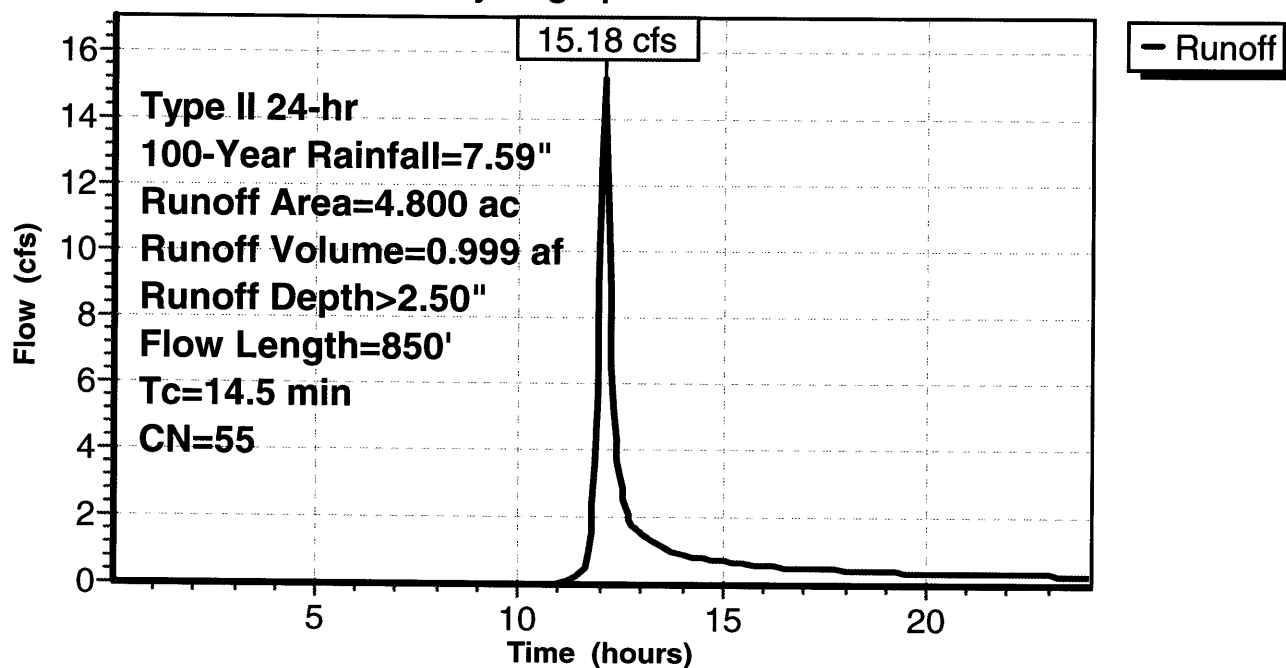
Summary for Subcatchment 1S: Pre Dev to Existing Stream

Runoff = 15.18 cfs @ 12.08 hrs, Volume= 0.999 af, Depth> 2.50"

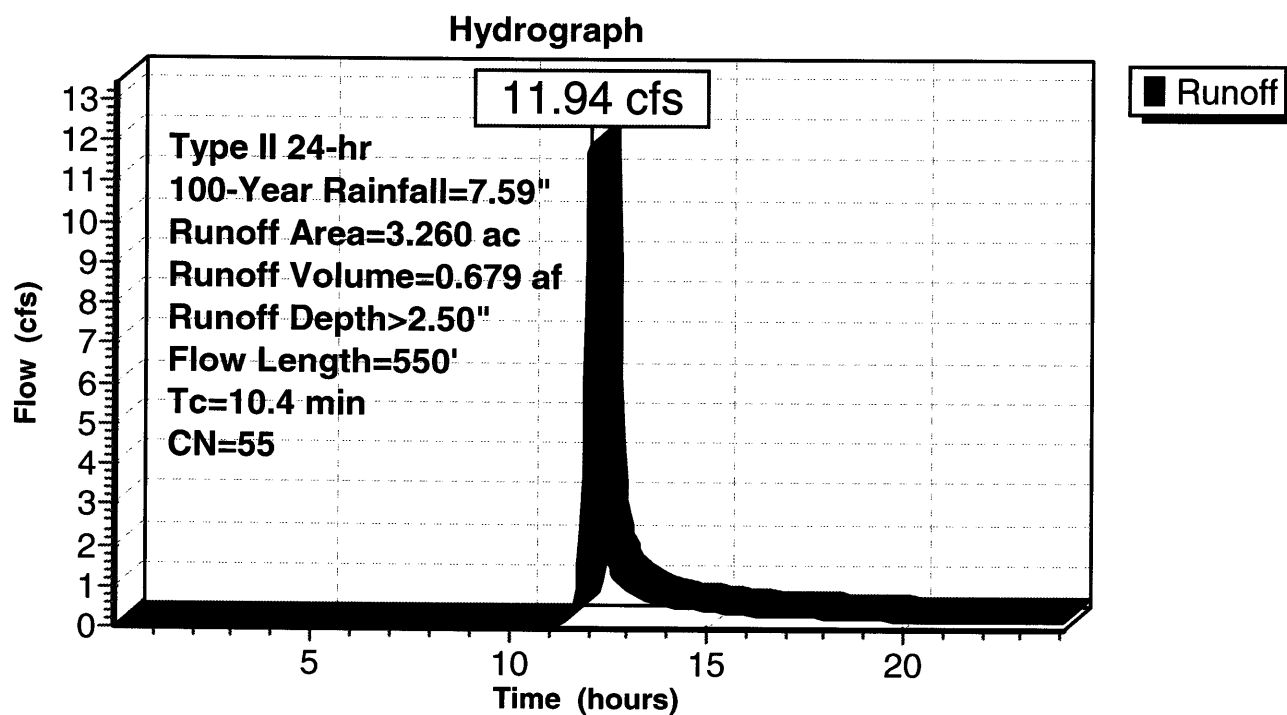
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.01-24.01 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=7.59"

Area (ac)	CN	Description
4.800	55	Woods, Good, HSG B
4.800		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.1200	0.16		Sheet Flow, A-B
					Woods: Light underbrush n= 0.400 P2= 3.40"
4.1	550	0.2000	2.24		Shallow Concentrated Flow, B-C
					Woodland Kv= 5.0 fps
0.2	200	0.0900	18.08	361.64	Channel Flow, C-D
					Area= 20.0 sf Perim= 14.9' r= 1.34' n= 0.030
14.5	850	Total			

Subcatchment 1S: Pre Dev to Existing Stream**Hydrograph**

Subcatchment 2S: Post Dev to Existing Stream



Beckersville Sunoco

Prepared by TETRA TECH, INC

HydroCAD® 10.00 s/n 07580 © 2013 HydroCAD Software Solutions LLC

Type II 24-hr 100-Year Rainfall=7.59"

Printed 10/14/2016

Page 1

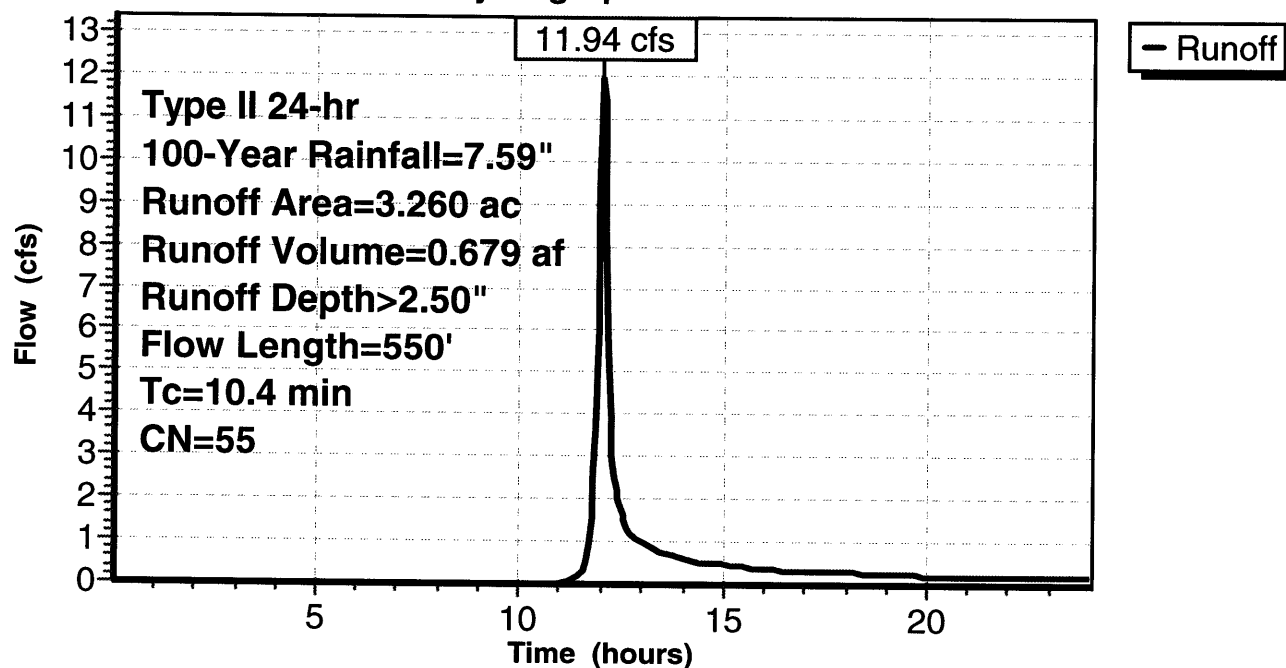
Summary for Subcatchment 2S: Post Dev to Existing Stream

Runoff = 11.94 cfs @ 12.03 hrs, Volume= 0.679 af, Depth> 2.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.01-24.01 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=7.59"

Area (ac)	CN	Description
3.260	55	Woods, Good, HSG B
3.260		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.2000	0.20		Sheet Flow, A-B Woods: Light underbrush n= 0.400 P2= 3.40"
1.9	250	0.2000	2.24		Shallow Concentrated Flow, B-C Woodland Kv= 5.0 fps
0.2	200	0.0900	18.08	361.64	Channel Flow, C-D Area= 20.0 sf Perim= 14.9' r= 1.34' n= 0.030
10.4	550	Total			

Subcatchment 2S: Post Dev to Existing Stream**Hydrograph**

INLET	TG	INV	PIPE	LENGTH	SIZE	SLOPE
INL. 1	731.50	726.00				
			P-1	65	15"	6.15%
INL. 2	731.50	722.00				
			P-2	49	15"	31.63%
MH. 1	712.00	706.50				
			-----	-----	-----	-----
HW 1	-----	711.00				
			P-3	22	15"	20.45%
MH. 1	712.00	706.50				
			P-4	78	15"	23.72%
MH. 2	702.00	688.00				
			P-5	125	15"	1.60%
RRA 1	-----	686.00				
			-----	-----	-----	-----
BASIN OUTLET	690.00	686.00				
			P-6	125	15"	6.40%
MH. 3	684.00	678.00				
			P-7	181	15"	13.37%
MH. 4	660.00	653.80				
			EX.	35	15"	22.29%
EX. ST. MH.	653.00	646.00				
			EX.	106	15"	29.25%
EX. ST. MH.	626.00	615.00				
			EX.	24	15"	3.75%
EX. RRA	-----	614.10				
			-----	-----	-----	-----
EX. INL.	729.00	725.00				
			EX. PIPE	52	15"	11.54%
EX. ST. MH.	723.00	719.00				
			P-8	52	15"	16.35%
INL. 3	715.00	710.50				
			P-9	22	15"	2.27%
RRA 2	-----	710.00				

WEIGHTED RUNOFF COEFFICIENT CALCULATOR

Design By: GZ Project: BECKERSVILLE PUMP STATION
 Checked. By: _____ Location: BRECKNOCK TOWNSHIP
 JOB NO. 212-IC-PB-00136

Runoff Coefficients: WOODED 0.20
 IMPERVIOUS 0.95
 GRASS 0.30

DRAINAGE AREA LABEL	WOODED AREA			IMPERVIOUS AREA			GRASS AREA			WEIGHTED COEFFICIENT CALCULATOR		
	A (Acres)	C	C.A.	A (Acres)	C	C.A.	A (Acres)	C	C.A.	TOTAL C * A	TOTAL AREA (AC)	WEIGHTED C
HW 1		0.20	0.00	0.19	0.95	0.18	0.335	0.30	0.10	0.28	0.52	0.53
INL 1		0.20	0.00	0.24	0.95	0.23	0.106	0.30	0.03	0.26	0.35	0.75
INL 2		0.20	0.00	0.28	0.95	0.27	0.080	0.30	0.02	0.29	0.36	0.81
Basin Outlet		0.20	0.00	0.18	0.95	0.17	1.903	0.30	0.57	0.74	2.08	0.36
Ex. Inl.		0.20	0.00		0.95	0.00	0.720	0.30	0.22	0.22	0.72	0.30
Channel #1		0.20	0.00	0.15	0.95	0.15	0.369	0.30	0.11	0.26	0.52	0.49
Channel #2		0.20	0.00	0.05	0.95	0.05	0.363	0.30	0.11	0.16	0.41	0.38

STORM SEWER DESIGN

Design By: GZ

Checked. By: TC

Design Storm: 100 YR

Project: BECKERSVILLE PUMP STATION

Location: BRECKNOCK TOWNSHIP

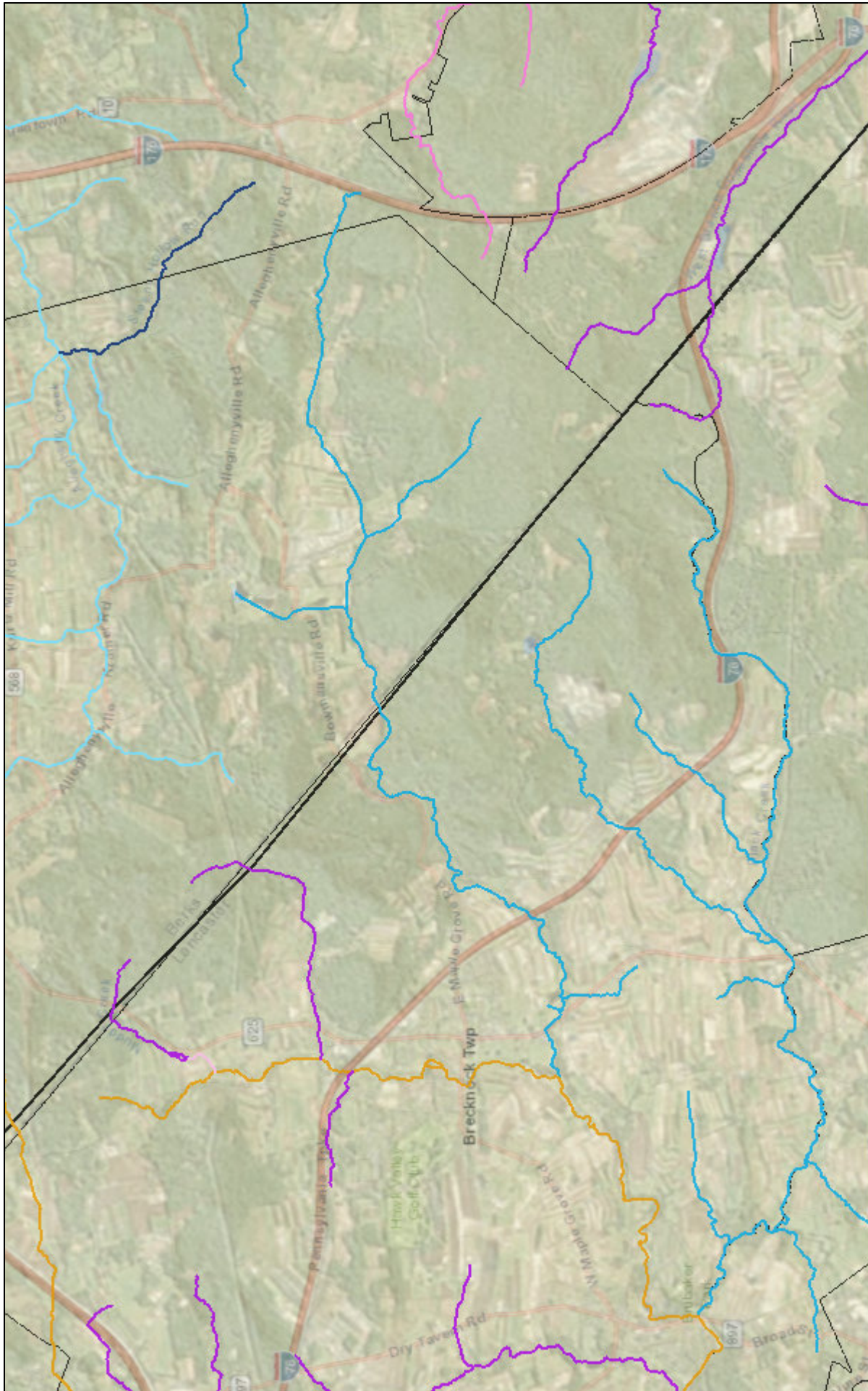
JOB NO. 212-IC-PB-00136

LOCATION	TO	INCREMENT AREA	SUM OF TIME TO INLET	RAINFALL INTENSITY	RUN OFF COEFFICIENT	C* A.	C.A.	SUMATION C.A.	DISCHARGE	LENGTH OF PIPE	SLOPE	ROUGHNESS COEFFICIENT	PIPE SIZE	JUST FULL CAPACITY	INVERT UPPER END	INVERT LOWER END	REMARKS
FROM	A	T	I	C	C* A.	C.A.	Q	L	S	N	In.	Q					
INL. 1	INL. 2	0.349	5.0	7.76	0.75	0.262	0.262	2.03	65	0.0615	15	17.36	726.00	722.00			
INL. 2	MH. 1	0.362	5.0	7.76	0.81	0.293	0.555	4.31	49	0.3163	15	39.36	722.00	706.50			
HW. 1	MH. 1	0.523	5.0	7.76	0.53	0.277	0.277	2.15	22	0.2045	15	31.65	711.00	706.50			
MH. 1	MH. 2	0.000	5.0	7.76	0.95	0.000	0.832	6.46	78	0.2372	15	34.08	706.50	688.00			
MH. 2	RRA 1	0.000	5.0	7.76	0.95	0.000	0.832	6.46	125	0.0160	15	8.85	688.00	686.00			
BASIN OUTLET	MH. 3	2.083	5.0	7.76	0.36	0.750	1.582	1.47	125	0.0640	15	17.70	686.00	678.00			BASIN DISCHARGE
MH. 3	MH. 4	0.000	5.0	7.76	0.95	0.000	1.582	1.47	181	0.1337	15	25.59	678.00	653.80			
MH. 4	EX. ST. MH	0.000	5.0	7.76	0.95	0.000	1.582	1.47	35	0.2229	15	33.04	653.80	646.00			
EX. ST. MH	EX. ST. MH	0.000	5.0	7.76	0.95	0.000	1.582	2.60	106	0.2925	15	37.85	646.00	615.00			ADD EX. BASIN FLOW
EX. ST. MH	EX. RRA	0.000	5.0	7.76	0.95	0.000	1.582	2.60	24	0.0417	15	14.28	615.00	614.00			(2.6 CFS)
EX. INL.	EX. ST. MH	0.720	5.0	7.76	0.30	0.216	0.216	1.68	52	0.1154	15	23.77	725.00	719.00			
EX. ST. MH	INL. 3	0.000	5.0	7.76	0.95	0.000	0.216	1.68	52	0.1635	15	28.29	719.00	710.50			
INL. 3	RRA 2	0.000	5.0	7.76	0.95	0.000	0.216	1.68	22	0.0227	15	10.55	710.50	710.00			
Channel #1		0.523	5.0	7.76	0.49	0.256	0.256	1.99									
Channel #2		0.413	5.0	7.76	0.38	0.157	0.157	1.22									

Drainage Area	Meadow Acres	CN	Woodland Acres	CN	Ex. Impervious Acres	CN	New Impervious Acres	CN	Grass Acres	CN	TOTAL ACREAGE	WEIGHTED CN
Pre-Development	2.827	58	0.408	55	0.336	85	0.000	98	0.000	61	3.571	60.198
Post-Development	0.000	58	0.408	55	0.000	85	0.706	98	2.203	61	3.317	68.137
Undetained DA #1	0.000	58	0.000	55	0.000	85	0.000	98	0.254	61	0.254	61.000

APPENDIX A

SITE LOCATION MAPS

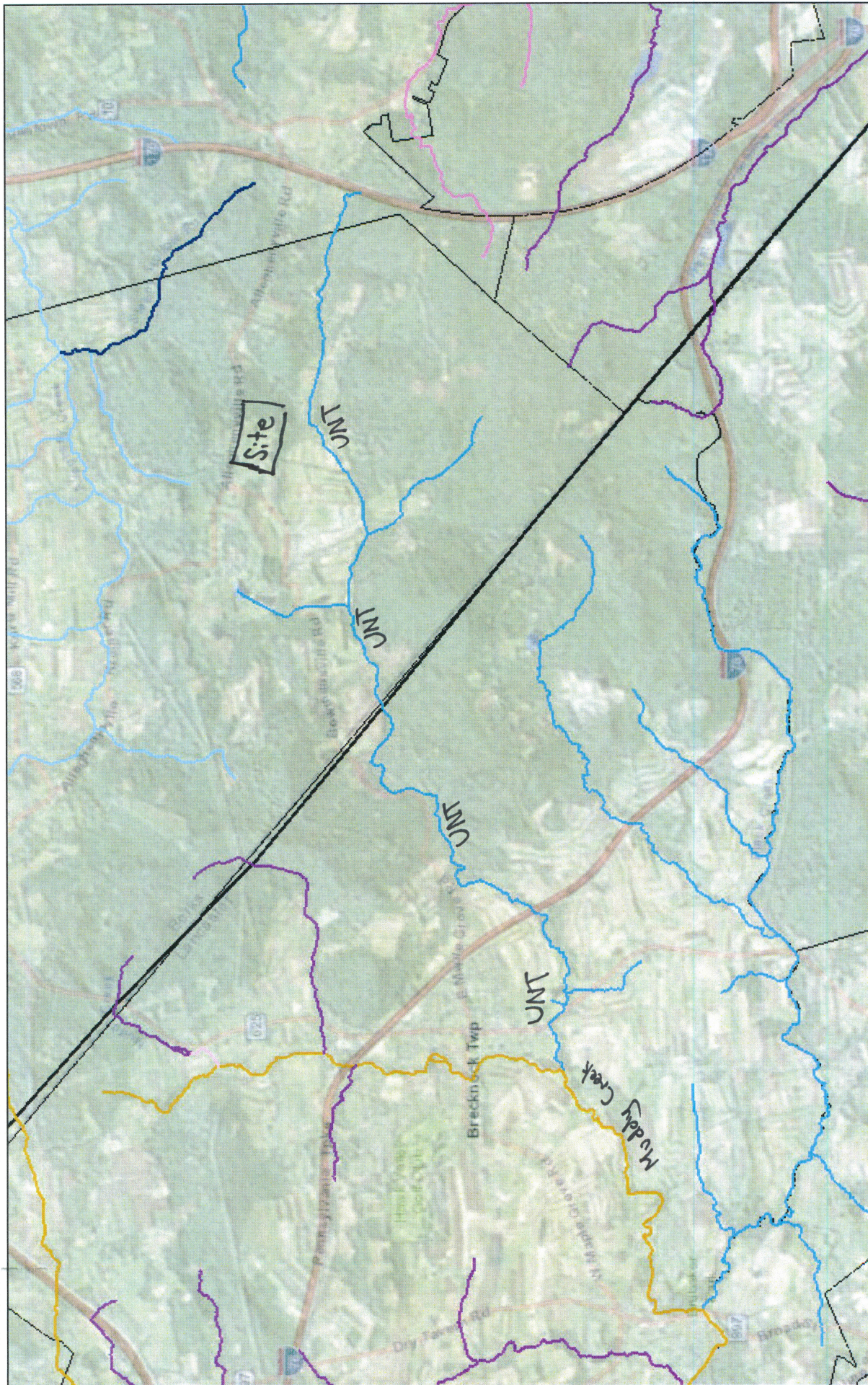


October 10, 2016

1:72,224

0 0.5 1 2 4
0 1 2 4
mi km

Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp.,
NPCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand),



October 10, 2016

1:72,224
0 0.5 1 2 4
0 1 2 4
km
mi

Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp.,
NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand),

1. PROJECT INFORMATION

Project Name: **Beckersville ME1 Pump Station**

Date of Review: **4/14/2016 02:15:00 PM**

Project Category: **Energy Storage, Production, and Transfer, Energy Transfer, Pipeline (e.g., gas, oil) -- NEW (construction of new line in a new location)**

Project Area: **7.47 acres**

County(s): **Berks**

Township/Municipality(s): **BRECKNOCK**

ZIP Code: **19540**

Quadrangle Name(s): **MORGANTOWN**

Watersheds HUC 8: **Lower Susquehanna; Schuylkill**

Watersheds HUC 12: **Green Hills Lake-Allegheny Creek; Muddy Creek**

Decimal Degrees: **40.216804, -75.940136**

Degrees Minutes Seconds: **40° 13' 0.4947" N, 75° 56' 24.4908" W**

2. SEARCH RESULTS

Agency	Results	Response
PA Game Commission	No Known Impact	No Further Review Required
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	Avoidance Measure	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.

Note that regardless of PNDI search results, projects requiring a Chapter 105 DEP individual permit or GP 5, 6, 7, 8, 9 or 11 in certain counties (Adams, Berks, Bucks, Carbon, Chester, Cumberland, Delaware, Lancaster, Lebanon, Lehigh, Monroe, Montgomery, Northampton, Schuylkill and York) must comply with the bog turtle habitat screening requirements of the PASPGP.

Beckersville ME1 Pump Station

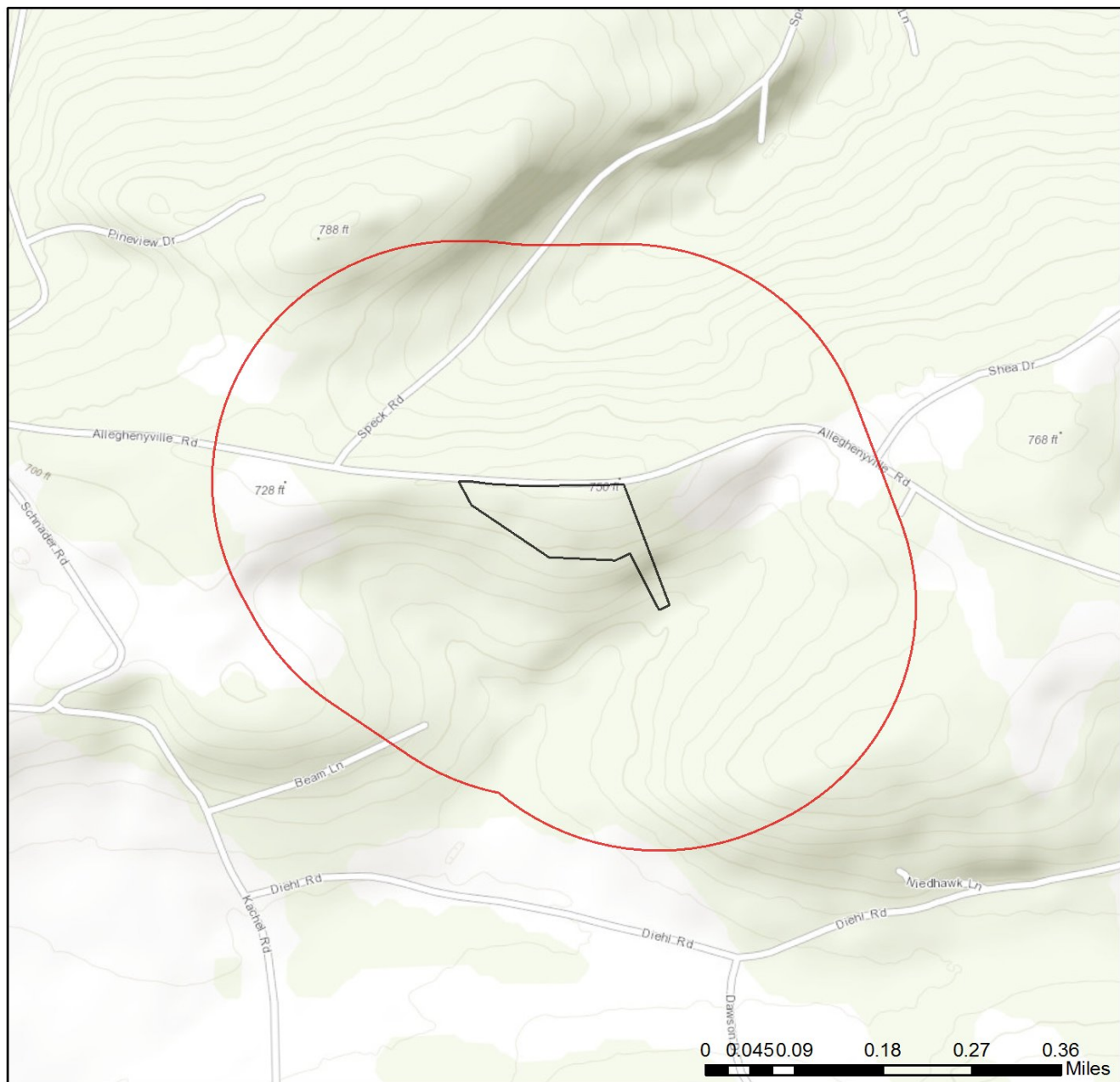


- ☐ Project Boundary
- ☐ Buffered Project Boundary

Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA,



Beckersville ME1 Pump Station



- ☐ Project Boundary
- ☐ Buffered Project Boundary

Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community



RESPONSE TO QUESTION(S) ASKED

Q1: Will this project or any project-related activities require any in-stream work, or a permanent or temporary crossing of a waterway (stream, river, creek, tributary)?

Your answer is: No

Q2: Accurately describe what is known about wetland presence in the project area or on the land parcel by selecting ONE of the following. "Project" includes all features of the project (including buildings, roads, utility lines, outfall and intake structures, wells, stormwater retention/detention basins, parking lots, driveways, lawns, etc.), as well as all associated impacts (e.g., temporary staging areas, work areas, temporary road crossings, areas subject to grading or clearing, etc.). Include all areas that will be permanently or temporarily affected -- either directly or indirectly -- by any type of disturbance (e.g., land clearing, grading, tree removal, flooding, etc.). Land parcel = the lot(s) on which some type of project(s) or activity(s) are proposed to occur.

Your answer is: Someone qualified to identify and delineate wetlands has investigated the site, and determined that NO wetlands are located in or within 300 feet of the project area. (A written report from the wetland specialist, and detailed project maps should document this.)

Q3: The proposed project is in the range of federally-listed bats. Describe how the project will affect bat habitat (forests, woodlots and trees) and indicate what measures will be taken in consideration of this.

Your answer is: The project will affect 1 to 39 acres of forests, woodlots and trees.

Q4: Is tree removal, tree cutting or forest clearing of 40 acres or more necessary to implement all aspects of this project?

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 jurisdictional agencies **strongly advise against** conducting surveys for the species listed on the receipt prior to consultation with the agencies.

PA Game Commission

RESPONSE:

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

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:

Avoidance Measure: Do not conduct this project/activity within 50 feet of any streams, rivers, creeks, or tributaries. This includes both perennial and intermittent waterways.

As the project proponent or applicant, I certify that I will implement the above Avoidance Measure:

 (Signature)

SPECIAL NOTE: If you agree to implement the above Avoidance Measure, no further coordination with this agency regarding threatened and endangered species and/or special concern species and resources is required. If you are not able to comply with the Avoidance Measures, you are required to coordinate with this agency - please send project information to this agency for review (see "What to Send" section).

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). 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. Alternatively, applicants may email or mail their project materials (see AGENCY CONTACT INFORMATION).

***Note:** U.S.Fish and Wildlife Service requires applicants to mail project materials to the USFWS PA field office (see AGENCY CONTACT INFORMATION). USFWS will not accept project materials submitted electronically (by upload or email).

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.

6. AGENCY CONTACT INFORMATION

PA Department of Conservation and Natural Resources

Bureau of Forestry, Ecological Services Section
400 Market Street, PO Box 8552
Harrisburg, PA 17105-8552
Email: RA-HeritageReview@pa.gov
Fax: (717) 772-0271

U.S. Fish and Wildlife Service

Pennsylvania Field Office
Endangered Species Section
110 Radnor Rd; Suite 101
State College, PA 16801
NO Faxes Please

PA Fish and Boat Commission

Division of Environmental Services
450 Robinson Lane, Bellefonte, PA 16823
Email: RA-FBPACENOTIFY@pa.gov

PA Game Commission

Bureau of Wildlife Habitat Management
Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue, Harrisburg, PA 17110-9797
Email: RA-PGC_PNDI@pa.gov
NO Faxes Please

7. PROJECT CONTACT INFORMATION

Name: Timothy J. Connolly Jr PE
Company/Business Name: TETRA Tech, LLC
Address: 1134 Twin Stacks Dr
City, State, Zip: DALLAS, PA 18612
Phone: (570) 674-8646 Fax: (570) 674-8651
Email: Tim.Connolly@TETRA Tech - LLC

8. CERTIFICATION

I certify that ALL of the project information contained in this receipt (including project location, project size/configuration, project type, answers to questions) is true, accurate and complete. In addition, if the project type, location, size or configuration changes, or if the answers to any questions that were asked during this online review change, I agree to re-do the online environmental review.

Tim J. Connolly
applicant/project proponent signature

4-14-2016
date

APPENDIX B

SOILS LOCATION MAP AND DESCRIPTIONS



United States
Department of
Agriculture



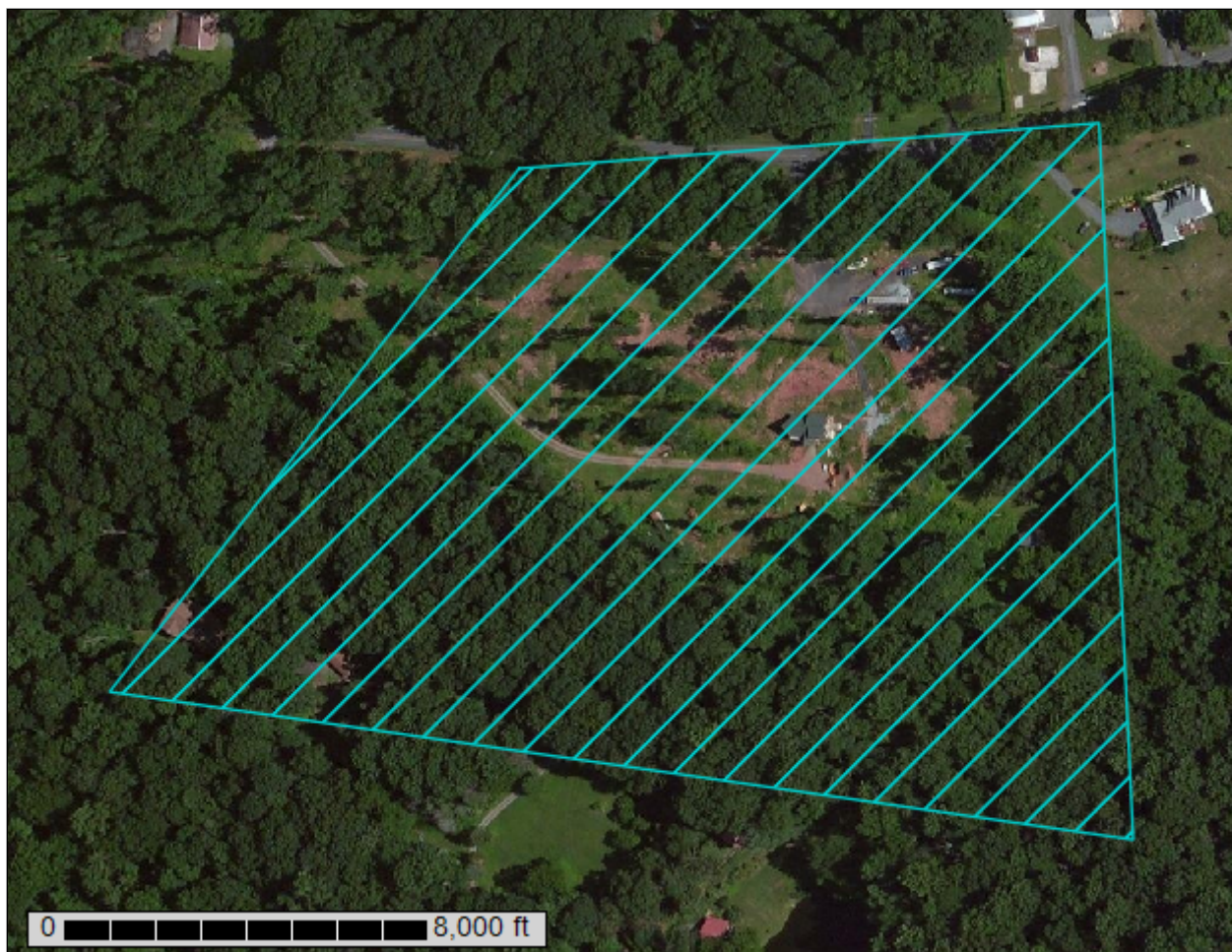
NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for **Berks County, Pennsylvania**

Beckersville Pump Station



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://soils.usda.gov/sqi/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<http://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means

for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

Preface	2
How Soil Surveys Are Made	5
Soil Map	7
Soil Map.....	8
Legend.....	9
Map Unit Legend.....	10
Map Unit Descriptions.....	10
Berks County, Pennsylvania.....	12
AbA—Abbottstown silt loam, 0 to 3 percent slopes.....	12
JnC—Joanna loam, 8 to 15 percent slopes.....	12
JpB—Joanna loam, 0 to 8 percent slopes, extremely stony.....	14
JpD—Joanna loam, 8 to 25 percent slopes, extremely stony.....	15
References	17

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

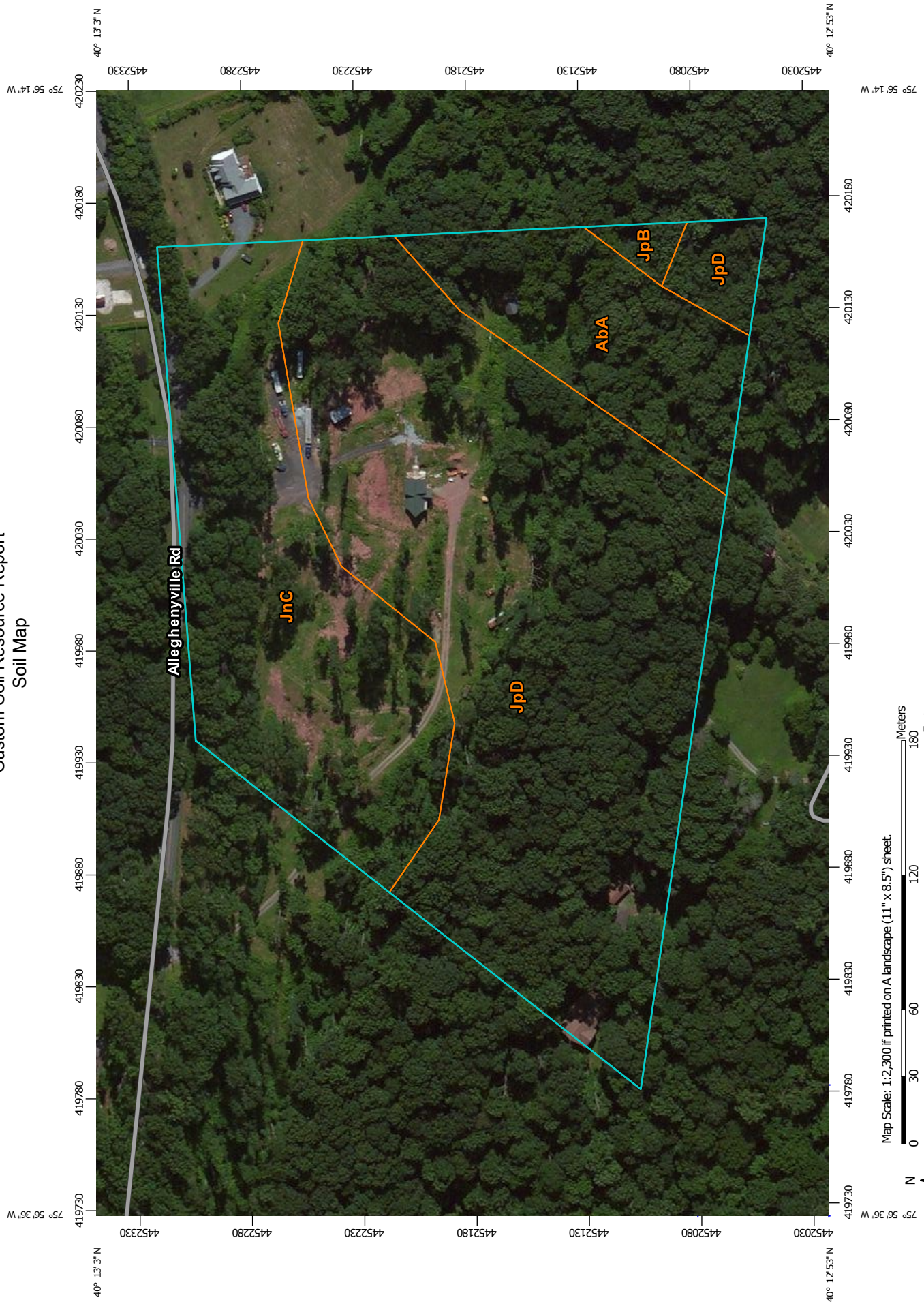
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



Map Unit Legend

Berks County, Pennsylvania (PA011)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AbA	Abbottstown silt loam, 0 to 3 percent slopes	2.2	11.9%
JnC	Joanna loam, 8 to 15 percent slopes	5.1	28.2%
JpB	Joanna loam, 0 to 8 percent slopes, extremely stony	0.2	0.9%
JpD	Joanna loam, 8 to 25 percent slopes, extremely stony	10.7	59.0%
Totals for Area of Interest		18.1	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic

classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Berks County, Pennsylvania

AbA—Abbottstown silt loam, 0 to 3 percent slopes

Map Unit Setting

Elevation: 300 to 1,000 feet

Mean annual precipitation: 40 to 44 inches

Mean annual air temperature: 52 to 55 degrees F

Frost-free period: 170 to 200 days

Map Unit Composition

Abbottstown and similar soils: 93 percent

Description of Abbottstown

Setting

Landform: Hillslopes

Landform position (two-dimensional): Footslope, toeslope

Landform position (three-dimensional): Base slope, head slope

Down-slope shape: Concave, linear

Across-slope shape: Linear, concave

Parent material: Acid reddish brown residuum weathered from shale and siltstone

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: 15 to 30 inches to fragipan; 40 to 60 inches to lithic bedrock

Drainage class: Somewhat poorly drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: About 6 to 18 inches

Frequency of flooding: None

Frequency of ponding: None

Available water capacity: Low (about 3.7 inches)

Interpretive groups

Farmland classification: Farmland of statewide importance

Land capability (nonirrigated): 3w

Hydrologic Soil Group: C

Typical profile

0 to 10 inches: Silt loam

10 to 20 inches: Silt loam

20 to 39 inches: Channery loam

39 to 48 inches: Channery silt loam

48 to 49 inches: Bedrock

JnC—Joanna loam, 8 to 15 percent slopes

Map Unit Setting

Elevation: 200 to 1,000 feet

Custom Soil Resource Report

Mean annual precipitation: 40 to 48 inches
Mean annual air temperature: 50 to 55 degrees F
Frost-free period: 150 to 190 days

Map Unit Composition

Joanna and similar soils: 90 percent
Minor components: 5 percent

Description of Joanna

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Side slope, nose slope
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Parent material: Residuum weathered from conglomerate and/or residuum weathered from sandstone

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 72 to 100 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 7.7 inches)

Interpretive groups

Farmland classification: Farmland of statewide importance
Land capability (nonirrigated): 3e
Hydrologic Soil Group: B

Typical profile

0 to 8 inches: Loam
8 to 39 inches: Clay loam
39 to 85 inches: Sandy loam

Minor Components

Croton

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, linear
Across-slope shape: Linear, concave

JpB—Joanna loam, 0 to 8 percent slopes, extremely stony

Map Unit Setting

Elevation: 200 to 1,000 feet

Mean annual precipitation: 40 to 48 inches

Mean annual air temperature: 50 to 55 degrees F

Frost-free period: 150 to 190 days

Map Unit Composition

Joanna, extremely stony, and similar soils: 90 percent

Minor components: 4 percent

Description of Joanna, Extremely Stony

Setting

Landform: Hillslopes

Landform position (two-dimensional): Shoulder, backslope

Landform position (three-dimensional): Nose slope, side slope

Down-slope shape: Convex, linear

Across-slope shape: Linear, convex

Parent material: Residuum weathered from conglomerate and/or residuum weathered from sandstone

Properties and qualities

Slope: 0 to 8 percent

Surface area covered with cobbles, stones or boulders: 9.0 percent

Depth to restrictive feature: 72 to 100 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.60 to 2.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water capacity: Moderate (about 7.7 inches)

Interpretive groups

Farmland classification: Not prime farmland

Land capability (nonirrigated): 7s

Hydrologic Soil Group: B

Typical profile

0 to 8 inches: Loam

8 to 39 inches: Clay loam

39 to 85 inches: Sandy loam

Minor Components

Croton

Percent of map unit: 4 percent

Landform: Depressions

Custom Soil Resource Report

Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave

JpD—Joanna loam, 8 to 25 percent slopes, extremely stony

Map Unit Setting

Elevation: 200 to 1,000 feet
Mean annual precipitation: 40 to 48 inches
Mean annual air temperature: 50 to 55 degrees F
Frost-free period: 150 to 190 days

Map Unit Composition

Joanna, extremely stony, and similar soils: 90 percent
Minor components: 2 percent

Description of Joanna, Extremely Stony

Setting

Landform: Hillslopes
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope, nose slope
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Parent material: Residuum weathered from sandstone and/or residuum weathered from conglomerate

Properties and qualities

Slope: 8 to 25 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 72 to 100 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 7.7 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 7s
Hydrologic Soil Group: B

Typical profile

0 to 8 inches: Loam
8 to 39 inches: Clay loam
39 to 85 inches: Sandy loam

Minor Components

Croton

Percent of map unit: 2 percent

Landform: Depressions

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave, linear

Across-slope shape: Linear, concave

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. <http://soils.usda.gov/>

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. <http://soils.usda.gov/>

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. <http://soils.usda.gov/>

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. <http://soils.usda.gov/>

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.glti.nrcs.usda.gov/>

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. <http://soils.usda.gov/>

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. <http://soils.usda.gov/>

Custom Soil Resource Report

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210.

APPENDIX C

PRE-DEVELOPED RUNOFF CALCULATIONS

Scenario: Pre-Development 100 year

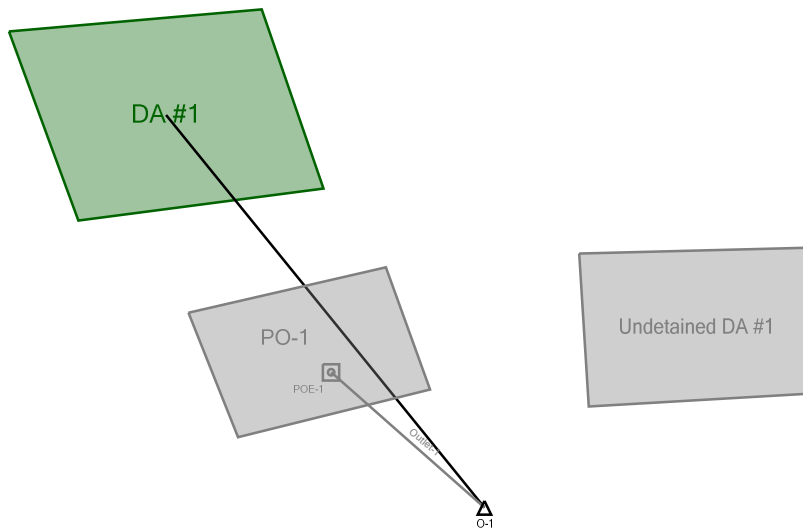


Table of Contents

	Master Network Summary	1
Time-Depth - 1	1 Year	
	Time-Depth Curve	2
	Time-Depth Curve	4
	Time-Depth Curve	6
	Time-Depth Curve	8
	Time-Depth Curve	10
	Time-Depth Curve	12
	Time-Depth Curve	14
DA #1	1 Year	
	Time of Concentration Calculations	16
	Time of Concentration Calculations	19
	Time of Concentration Calculations	22
	Time of Concentration Calculations	25
	Time of Concentration Calculations	28
	Time of Concentration Calculations	31
	Time of Concentration Calculations	34
	Unit Hydrograph Equations	37
DA #1	1 Year	
	Unit Hydrograph Summary	39
	Unit Hydrograph (Hydrograph Table)	41
	Unit Hydrograph Summary	43
	Unit Hydrograph (Hydrograph Table)	45
	Unit Hydrograph Summary	47
	Unit Hydrograph (Hydrograph Table)	49
	Unit Hydrograph Summary	51
	Unit Hydrograph (Hydrograph Table)	53
	Unit Hydrograph Summary	55
	Unit Hydrograph (Hydrograph Table)	57

Table of Contents

	Unit Hydrograph Summary	59
	Unit Hydrograph (Hydrograph Table)	61
	Unit Hydrograph Summary	63
	Unit Hydrograph (Hydrograph Table)	65
O-1	1 Year	
	Addition Summary	67
	Addition Summary	68
	Addition Summary	69
	Addition Summary	70
	Addition Summary	71
	Addition Summary	72
	Addition Summary	73

PRE-DEVELOPED CONDITIONS

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)
DA #1	Pre-Development 1 year	1	0.068	12.050	0.68
DA #1	Pre-Development 2 year	2	0.124	12.000	1.62
DA #1	Pre-Development 5 year	5	0.233	12.000	3.62
DA #1	Pre-Development 10 year	10	0.373	12.000	6.12
DA #1	Pre-Development 25 year	25	0.503	12.000	8.39
DA #1	Pre-Development 50 year	50	0.657	11.950	11.20
DA #1	Pre-Development 100 year	100	0.834	11.950	14.45

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)
O-1	Pre-Development 1 year	1	0.068	12.050	0.68
O-1	Pre-Development 2 year	2	0.124	12.000	1.62
O-1	Pre-Development 5 year	5	0.233	12.000	3.62
O-1	Pre-Development 10 year	10	0.373	12.000	6.12
O-1	Pre-Development 25 year	25	0.503	12.000	8.39
O-1	Pre-Development 50 year	50	0.657	11.950	11.20
O-1	Pre-Development 100 year	100	0.834	11.950	14.45

PRE-DEVELOPED CONDITIONS

Subsection: Time-Depth Curve

Label: Time-Depth - 1

Return Event: 1 years

Storm Event: 1 Year

Time-Depth Curve: 1 Year

Label	1 Year
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	1 years

CUMULATIVE RAINFALL (in)

Output Time Increment = 0.100 hours

Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.0
1.000	0.0	0.0	0.0	0.0	0.0
1.500	0.0	0.0	0.0	0.1	0.1
2.000	0.1	0.1	0.1	0.1	0.1
2.500	0.1	0.1	0.1	0.1	0.1
3.000	0.1	0.1	0.1	0.1	0.1
3.500	0.1	0.1	0.1	0.1	0.1
4.000	0.1	0.1	0.1	0.1	0.1
4.500	0.1	0.2	0.2	0.2	0.2
5.000	0.2	0.2	0.2	0.2	0.2
5.500	0.2	0.2	0.2	0.2	0.2
6.000	0.2	0.2	0.2	0.2	0.2
6.500	0.2	0.2	0.2	0.3	0.3
7.000	0.3	0.3	0.3	0.3	0.3
7.500	0.3	0.3	0.3	0.3	0.3
8.000	0.3	0.3	0.3	0.3	0.3
8.500	0.4	0.4	0.4	0.4	0.4
9.000	0.4	0.4	0.4	0.4	0.4
9.500	0.4	0.4	0.5	0.5	0.5
10.000	0.5	0.5	0.5	0.5	0.5
10.500	0.5	0.6	0.6	0.6	0.6
11.000	0.6	0.6	0.7	0.7	0.7
11.500	0.8	0.8	0.9	1.2	1.5
12.000	1.8	1.8	1.9	1.9	1.9
12.500	2.0	2.0	2.0	2.0	2.0
13.000	2.1	2.1	2.1	2.1	2.1
13.500	2.1	2.1	2.2	2.2	2.2
14.000	2.2	2.2	2.2	2.2	2.2
14.500	2.2	2.2	2.3	2.3	2.3
15.000	2.3	2.3	2.3	2.3	2.3
15.500	2.3	2.3	2.3	2.3	2.3
16.000	2.3	2.4	2.4	2.4	2.4
16.500	2.4	2.4	2.4	2.4	2.4

PRE-DEVELOPED CONDITIONS

Subsection: Time-Depth Curve

Label: Time-Depth - 1

Return Event: 1 years

Storm Event: 1 Year

CUMULATIVE RAINFALL (in)

Output Time Increment = 0.100 hours

Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.000	2.4	2.4	2.4	2.4	2.4
17.500	2.4	2.4	2.4	2.4	2.5
18.000	2.5	2.5	2.5	2.5	2.5
18.500	2.5	2.5	2.5	2.5	2.5
19.000	2.5	2.5	2.5	2.5	2.5
19.500	2.5	2.5	2.5	2.5	2.5
20.000	2.5	2.5	2.5	2.6	2.6
20.500	2.6	2.6	2.6	2.6	2.6
21.000	2.6	2.6	2.6	2.6	2.6
21.500	2.6	2.6	2.6	2.6	2.6
22.000	2.6	2.6	2.6	2.6	2.6
22.500	2.6	2.6	2.6	2.6	2.6
23.000	2.6	2.6	2.6	2.6	2.7
23.500	2.7	2.7	2.7	2.7	2.7
24.000	2.7	(N/A)	(N/A)	(N/A)	(N/A)

PRE-DEVELOPED CONDITIONS

Subsection: Time-Depth Curve

Label: Time-Depth - 1

Return Event: 10 years

Storm Event: 10 Year

Time-Depth Curve: 10 Year

Label	10 Year
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	10 years

CUMULATIVE RAINFALL (in)

Output Time Increment = 0.100 hours

Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.0
1.000	0.1	0.1	0.1	0.1	0.1
1.500	0.1	0.1	0.1	0.1	0.1
2.000	0.1	0.1	0.1	0.1	0.1
2.500	0.1	0.1	0.2	0.2	0.2
3.000	0.2	0.2	0.2	0.2	0.2
3.500	0.2	0.2	0.2	0.2	0.2
4.000	0.2	0.2	0.2	0.3	0.3
4.500	0.3	0.3	0.3	0.3	0.3
5.000	0.3	0.3	0.3	0.3	0.3
5.500	0.3	0.4	0.4	0.4	0.4
6.000	0.4	0.4	0.4	0.4	0.4
6.500	0.4	0.4	0.5	0.5	0.5
7.000	0.5	0.5	0.5	0.5	0.5
7.500	0.5	0.5	0.6	0.6	0.6
8.000	0.6	0.6	0.6	0.6	0.6
8.500	0.6	0.7	0.7	0.7	0.7
9.000	0.7	0.7	0.8	0.8	0.8
9.500	0.8	0.8	0.8	0.8	0.9
10.000	0.9	0.9	0.9	1.0	1.0
10.500	1.0	1.0	1.1	1.1	1.1
11.000	1.2	1.2	1.2	1.3	1.3
11.500	1.4	1.5	1.7	2.1	2.8
12.000	3.2	3.3	3.4	3.5	3.6
12.500	3.6	3.6	3.7	3.7	3.8
13.000	3.8	3.8	3.8	3.9	3.9
13.500	3.9	3.9	4.0	4.0	4.0
14.000	4.0	4.0	4.1	4.1	4.1
14.500	4.1	4.1	4.1	4.2	4.2
15.000	4.2	4.2	4.2	4.2	4.2
15.500	4.3	4.3	4.3	4.3	4.3
16.000	4.3	4.3	4.3	4.3	4.4
16.500	4.4	4.4	4.4	4.4	4.4

PRE-DEVELOPED CONDITIONS

Subsection: Time-Depth Curve

Label: Time-Depth - 1

Return Event: 10 years

Storm Event: 10 Year

CUMULATIVE RAINFALL (in)

Output Time Increment = 0.100 hours

Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.000	4.4	4.4	4.4	4.4	4.5
17.500	4.5	4.5	4.5	4.5	4.5
18.000	4.5	4.5	4.5	4.5	4.5
18.500	4.6	4.6	4.6	4.6	4.6
19.000	4.6	4.6	4.6	4.6	4.6
19.500	4.6	4.6	4.6	4.7	4.7
20.000	4.7	4.7	4.7	4.7	4.7
20.500	4.7	4.7	4.7	4.7	4.7
21.000	4.7	4.7	4.7	4.7	4.8
21.500	4.8	4.8	4.8	4.8	4.8
22.000	4.8	4.8	4.8	4.8	4.8
22.500	4.8	4.8	4.8	4.8	4.8
23.000	4.8	4.9	4.9	4.9	4.9
23.500	4.9	4.9	4.9	4.9	4.9
24.000	4.9	(N/A)	(N/A)	(N/A)	(N/A)

PRE-DEVELOPED CONDITIONS

Subsection: Time-Depth Curve

Label: Time-Depth - 1

Return Event: 100 years

Storm Event: 100 Year

Time-Depth Curve: 100 Year

Label	100 Year
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	100 years

CUMULATIVE RAINFALL (in)

Output Time Increment = 0.100 hours

Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.1	0.1	0.1
1.000	0.1	0.1	0.1	0.1	0.1
1.500	0.1	0.1	0.1	0.1	0.2
2.000	0.2	0.2	0.2	0.2	0.2
2.500	0.2	0.2	0.2	0.2	0.2
3.000	0.3	0.3	0.3	0.3	0.3
3.500	0.3	0.3	0.3	0.3	0.3
4.000	0.3	0.4	0.4	0.4	0.4
4.500	0.4	0.4	0.4	0.4	0.4
5.000	0.5	0.5	0.5	0.5	0.5
5.500	0.5	0.5	0.5	0.6	0.6
6.000	0.6	0.6	0.6	0.6	0.6
6.500	0.6	0.7	0.7	0.7	0.7
7.000	0.7	0.7	0.7	0.8	0.8
7.500	0.8	0.8	0.8	0.8	0.9
8.000	0.9	0.9	0.9	0.9	0.9
8.500	1.0	1.0	1.0	1.0	1.0
9.000	1.1	1.1	1.1	1.1	1.2
9.500	1.2	1.2	1.2	1.3	1.3
10.000	1.3	1.3	1.4	1.4	1.4
10.500	1.5	1.5	1.6	1.6	1.7
11.000	1.7	1.8	1.8	1.9	2.0
11.500	2.1	2.2	2.6	3.1	4.1
12.000	4.8	5.0	5.1	5.2	5.3
12.500	5.3	5.4	5.5	5.5	5.6
13.000	5.6	5.6	5.7	5.7	5.8
13.500	5.8	5.8	5.9	5.9	5.9
14.000	6.0	6.0	6.0	6.0	6.1
14.500	6.1	6.1	6.1	6.2	6.2
15.000	6.2	6.2	6.2	6.3	6.3
15.500	6.3	6.3	6.3	6.4	6.4
16.000	6.4	6.4	6.4	6.4	6.5
16.500	6.5	6.5	6.5	6.5	6.5

PRE-DEVELOPED CONDITIONS

Subsection: Time-Depth Curve

Label: Time-Depth - 1

Return Event: 100 years

Storm Event: 100 Year

CUMULATIVE RAINFALL (in)

Output Time Increment = 0.100 hours

Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.000	6.5	6.6	6.6	6.6	6.6
17.500	6.6	6.6	6.6	6.7	6.7
18.000	6.7	6.7	6.7	6.7	6.7
18.500	6.7	6.8	6.8	6.8	6.8
19.000	6.8	6.8	6.8	6.8	6.9
19.500	6.9	6.9	6.9	6.9	6.9
20.000	6.9	6.9	6.9	6.9	6.9
20.500	7.0	7.0	7.0	7.0	7.0
21.000	7.0	7.0	7.0	7.0	7.0
21.500	7.0	7.1	7.1	7.1	7.1
22.000	7.1	7.1	7.1	7.1	7.1
22.500	7.1	7.1	7.2	7.2	7.2
23.000	7.2	7.2	7.2	7.2	7.2
23.500	7.2	7.2	7.2	7.2	7.3
24.000	7.3	(N/A)	(N/A)	(N/A)	(N/A)

PRE-DEVELOPED CONDITIONS

Subsection: Time-Depth Curve

Label: Time-Depth - 1

Return Event: 2 years

Storm Event: 2 Year

Time-Depth Curve: 2 Year

Label	2 Year
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	2 years

CUMULATIVE RAINFALL (in)

Output Time Increment = 0.100 hours

Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.0
1.000	0.0	0.0	0.0	0.0	0.0
1.500	0.1	0.1	0.1	0.1	0.1
2.000	0.1	0.1	0.1	0.1	0.1
2.500	0.1	0.1	0.1	0.1	0.1
3.000	0.1	0.1	0.1	0.1	0.1
3.500	0.1	0.1	0.1	0.1	0.1
4.000	0.2	0.2	0.2	0.2	0.2
4.500	0.2	0.2	0.2	0.2	0.2
5.000	0.2	0.2	0.2	0.2	0.2
5.500	0.2	0.2	0.2	0.2	0.3
6.000	0.3	0.3	0.3	0.3	0.3
6.500	0.3	0.3	0.3	0.3	0.3
7.000	0.3	0.3	0.3	0.3	0.3
7.500	0.4	0.4	0.4	0.4	0.4
8.000	0.4	0.4	0.4	0.4	0.4
8.500	0.4	0.4	0.4	0.5	0.5
9.000	0.5	0.5	0.5	0.5	0.5
9.500	0.5	0.5	0.5	0.6	0.6
10.000	0.6	0.6	0.6	0.6	0.6
10.500	0.7	0.7	0.7	0.7	0.7
11.000	0.8	0.8	0.8	0.8	0.9
11.500	0.9	1.0	1.1	1.4	1.8
12.000	2.1	2.2	2.2	2.3	2.3
12.500	2.4	2.4	2.4	2.4	2.5
13.000	2.5	2.5	2.5	2.5	2.5
13.500	2.6	2.6	2.6	2.6	2.6
14.000	2.6	2.6	2.7	2.7	2.7
14.500	2.7	2.7	2.7	2.7	2.7
15.000	2.7	2.7	2.8	2.8	2.8
15.500	2.8	2.8	2.8	2.8	2.8
16.000	2.8	2.8	2.8	2.8	2.9
16.500	2.9	2.9	2.9	2.9	2.9

PRE-DEVELOPED CONDITIONS

Subsection: Time-Depth Curve

Label: Time-Depth - 1

Return Event: 2 years

Storm Event: 2 Year

CUMULATIVE RAINFALL (in)

Output Time Increment = 0.100 hours

Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.000	2.9	2.9	2.9	2.9	2.9
17.500	2.9	2.9	2.9	2.9	3.0
18.000	3.0	3.0	3.0	3.0	3.0
18.500	3.0	3.0	3.0	3.0	3.0
19.000	3.0	3.0	3.0	3.0	3.0
19.500	3.0	3.0	3.0	3.0	3.1
20.000	3.1	3.1	3.1	3.1	3.1
20.500	3.1	3.1	3.1	3.1	3.1
21.000	3.1	3.1	3.1	3.1	3.1
21.500	3.1	3.1	3.1	3.1	3.1
22.000	3.1	3.1	3.1	3.1	3.2
22.500	3.2	3.2	3.2	3.2	3.2
23.000	3.2	3.2	3.2	3.2	3.2
23.500	3.2	3.2	3.2	3.2	3.2
24.000	3.2	(N/A)	(N/A)	(N/A)	(N/A)

PRE-DEVELOPED CONDITIONS

Subsection: Time-Depth Curve

Label: Time-Depth - 1

Return Event: 25 years

Storm Event: 25 Year

Time-Depth Curve: 25 Year

Label	25 Year
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	25 years

CUMULATIVE RAINFALL (in)

Output Time Increment = 0.100 hours

Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.1
1.000	0.1	0.1	0.1	0.1	0.1
1.500	0.1	0.1	0.1	0.1	0.1
2.000	0.1	0.1	0.1	0.1	0.2
2.500	0.2	0.2	0.2	0.2	0.2
3.000	0.2	0.2	0.2	0.2	0.2
3.500	0.2	0.2	0.2	0.3	0.3
4.000	0.3	0.3	0.3	0.3	0.3
4.500	0.3	0.3	0.3	0.3	0.3
5.000	0.4	0.4	0.4	0.4	0.4
5.500	0.4	0.4	0.4	0.4	0.4
6.000	0.4	0.5	0.5	0.5	0.5
6.500	0.5	0.5	0.5	0.5	0.5
7.000	0.6	0.6	0.6	0.6	0.6
7.500	0.6	0.6	0.6	0.6	0.7
8.000	0.7	0.7	0.7	0.7	0.7
8.500	0.7	0.8	0.8	0.8	0.8
9.000	0.8	0.8	0.9	0.9	0.9
9.500	0.9	0.9	1.0	1.0	1.0
10.000	1.0	1.0	1.1	1.1	1.1
10.500	1.1	1.2	1.2	1.2	1.3
11.000	1.3	1.4	1.4	1.5	1.5
11.500	1.6	1.7	2.0	2.4	3.2
12.000	3.7	3.8	3.9	4.0	4.1
12.500	4.1	4.2	4.2	4.3	4.3
13.000	4.3	4.4	4.4	4.4	4.5
13.500	4.5	4.5	4.5	4.6	4.6
14.000	4.6	4.6	4.6	4.7	4.7
14.500	4.7	4.7	4.7	4.8	4.8
15.000	4.8	4.8	4.8	4.8	4.9
15.500	4.9	4.9	4.9	4.9	4.9
16.000	4.9	5.0	5.0	5.0	5.0
16.500	5.0	5.0	5.0	5.0	5.1

PRE-DEVELOPED CONDITIONS

Subsection: Time-Depth Curve

Label: Time-Depth - 1

Return Event: 25 years

Storm Event: 25 Year

CUMULATIVE RAINFALL (in)

Output Time Increment = 0.100 hours

Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.000	5.1	5.1	5.1	5.1	5.1
17.500	5.1	5.1	5.1	5.2	5.2
18.000	5.2	5.2	5.2	5.2	5.2
18.500	5.2	5.2	5.2	5.3	5.3
19.000	5.3	5.3	5.3	5.3	5.3
19.500	5.3	5.3	5.3	5.3	5.3
20.000	5.4	5.4	5.4	5.4	5.4
20.500	5.4	5.4	5.4	5.4	5.4
21.000	5.4	5.4	5.4	5.4	5.4
21.500	5.5	5.5	5.5	5.5	5.5
22.000	5.5	5.5	5.5	5.5	5.5
22.500	5.5	5.5	5.5	5.5	5.6
23.000	5.6	5.6	5.6	5.6	5.6
23.500	5.6	5.6	5.6	5.6	5.6
24.000	5.6	(N/A)	(N/A)	(N/A)	(N/A)

PRE-DEVELOPED CONDITIONS

Subsection: Time-Depth Curve

Label: Time-Depth - 1

Return Event: 5 years

Storm Event: 5 Year

Time-Depth Curve: 5 Year

Label	5 Year
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	5 years

CUMULATIVE RAINFALL (in)

Output Time Increment = 0.100 hours

Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.0
1.000	0.0	0.0	0.1	0.1	0.1
1.500	0.1	0.1	0.1	0.1	0.1
2.000	0.1	0.1	0.1	0.1	0.1
2.500	0.1	0.1	0.1	0.1	0.1
3.000	0.1	0.1	0.1	0.2	0.2
3.500	0.2	0.2	0.2	0.2	0.2
4.000	0.2	0.2	0.2	0.2	0.2
4.500	0.2	0.2	0.2	0.2	0.2
5.000	0.3	0.3	0.3	0.3	0.3
5.500	0.3	0.3	0.3	0.3	0.3
6.000	0.3	0.3	0.3	0.3	0.4
6.500	0.4	0.4	0.4	0.4	0.4
7.000	0.4	0.4	0.4	0.4	0.4
7.500	0.4	0.4	0.5	0.5	0.5
8.000	0.5	0.5	0.5	0.5	0.5
8.500	0.5	0.5	0.6	0.6	0.6
9.000	0.6	0.6	0.6	0.6	0.6
9.500	0.7	0.7	0.7	0.7	0.7
10.000	0.7	0.7	0.8	0.8	0.8
10.500	0.8	0.8	0.9	0.9	0.9
11.000	0.9	1.0	1.0	1.1	1.1
11.500	1.1	1.2	1.4	1.7	2.3
12.000	2.7	2.7	2.8	2.9	2.9
12.500	3.0	3.0	3.0	3.1	3.1
13.000	3.1	3.1	3.2	3.2	3.2
13.500	3.2	3.2	3.3	3.3	3.3
14.000	3.3	3.3	3.3	3.3	3.4
14.500	3.4	3.4	3.4	3.4	3.4
15.000	3.4	3.5	3.5	3.5	3.5
15.500	3.5	3.5	3.5	3.5	3.5
16.000	3.5	3.6	3.6	3.6	3.6
16.500	3.6	3.6	3.6	3.6	3.6

PRE-DEVELOPED CONDITIONS

Subsection: Time-Depth Curve

Label: Time-Depth - 1

Return Event: 5 years

Storm Event: 5 Year

CUMULATIVE RAINFALL (in)

Output Time Increment = 0.100 hours

Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.000	3.6	3.6	3.7	3.7	3.7
17.500	3.7	3.7	3.7	3.7	3.7
18.000	3.7	3.7	3.7	3.7	3.7
18.500	3.7	3.8	3.8	3.8	3.8
19.000	3.8	3.8	3.8	3.8	3.8
19.500	3.8	3.8	3.8	3.8	3.8
20.000	3.8	3.8	3.8	3.9	3.9
20.500	3.9	3.9	3.9	3.9	3.9
21.000	3.9	3.9	3.9	3.9	3.9
21.500	3.9	3.9	3.9	3.9	3.9
22.000	3.9	3.9	3.9	4.0	4.0
22.500	4.0	4.0	4.0	4.0	4.0
23.000	4.0	4.0	4.0	4.0	4.0
23.500	4.0	4.0	4.0	4.0	4.0
24.000	4.0	(N/A)	(N/A)	(N/A)	(N/A)

PRE-DEVELOPED CONDITIONS

Subsection: Time-Depth Curve

Label: Time-Depth - 1

Return Event: 50 years

Storm Event: 50 Year

Time-Depth Curve: 50 Year

Label	50 Year
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	50 years

CUMULATIVE RAINFALL (in)

Output Time Increment = 0.100 hours

Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.1	0.1
1.000	0.1	0.1	0.1	0.1	0.1
1.500	0.1	0.1	0.1	0.1	0.1
2.000	0.1	0.1	0.2	0.2	0.2
2.500	0.2	0.2	0.2	0.2	0.2
3.000	0.2	0.2	0.2	0.2	0.3
3.500	0.3	0.3	0.3	0.3	0.3
4.000	0.3	0.3	0.3	0.3	0.3
4.500	0.4	0.4	0.4	0.4	0.4
5.000	0.4	0.4	0.4	0.4	0.4
5.500	0.5	0.5	0.5	0.5	0.5
6.000	0.5	0.5	0.5	0.5	0.6
6.500	0.6	0.6	0.6	0.6	0.6
7.000	0.6	0.6	0.7	0.7	0.7
7.500	0.7	0.7	0.7	0.7	0.8
8.000	0.8	0.8	0.8	0.8	0.8
8.500	0.8	0.9	0.9	0.9	0.9
9.000	0.9	1.0	1.0	1.0	1.0
9.500	1.0	1.1	1.1	1.1	1.1
10.000	1.2	1.2	1.2	1.2	1.3
10.500	1.3	1.3	1.4	1.4	1.5
11.000	1.5	1.6	1.6	1.7	1.7
11.500	1.8	2.0	2.3	2.8	3.6
12.000	4.2	4.4	4.5	4.6	4.6
12.500	4.7	4.8	4.8	4.9	4.9
13.000	4.9	5.0	5.0	5.1	5.1
13.500	5.1	5.2	5.2	5.2	5.2
14.000	5.3	5.3	5.3	5.3	5.3
14.500	5.4	5.4	5.4	5.4	5.5
15.000	5.5	5.5	5.5	5.5	5.5
15.500	5.6	5.6	5.6	5.6	5.6
16.000	5.6	5.7	5.7	5.7	5.7
16.500	5.7	5.7	5.7	5.8	5.8

PRE-DEVELOPED CONDITIONS

Subsection: Time-Depth Curve

Label: Time-Depth - 1

Return Event: 50 years

Storm Event: 50 Year

CUMULATIVE RAINFALL (in)

Output Time Increment = 0.100 hours

Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.000	5.8	5.8	5.8	5.8	5.8
17.500	5.8	5.9	5.9	5.9	5.9
18.000	5.9	5.9	5.9	5.9	5.9
18.500	6.0	6.0	6.0	6.0	6.0
19.000	6.0	6.0	6.0	6.0	6.0
19.500	6.1	6.1	6.1	6.1	6.1
20.000	6.1	6.1	6.1	6.1	6.1
20.500	6.1	6.2	6.2	6.2	6.2
21.000	6.2	6.2	6.2	6.2	6.2
21.500	6.2	6.2	6.2	6.2	6.3
22.000	6.3	6.3	6.3	6.3	6.3
22.500	6.3	6.3	6.3	6.3	6.3
23.000	6.3	6.3	6.4	6.4	6.4
23.500	6.4	6.4	6.4	6.4	6.4
24.000	6.4	(N/A)	(N/A)	(N/A)	(N/A)

PRE-DEVELOPED CONDITIONS

Subsection: Time of Concentration Calculations
Label: DA #1

Return Event: 1 years
Storm Event: 1 Year

Time of Concentration Results

Segment #1: TR-55 Sheet Flow

Hydraulic Length	35.00 ft
Manning's n	0.400
Slope	0.114 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	0.13 ft/s
Segment Time of Concentration	0.077 hours

Segment #2: TR-55 Sheet Flow

Hydraulic Length	26.00 ft
Manning's n	0.130
Slope	0.330 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	0.45 ft/s
Segment Time of Concentration	0.016 hours

Segment #3: TR-55 Shallow Concentrated Flow

Hydraulic Length	105.00 ft
Is Paved?	True
Slope	0.028 ft/ft
Average Velocity	3.40 ft/s
Segment Time of Concentration	0.009 hours

Segment #4: TR-55 Shallow Concentrated Flow

Hydraulic Length	23.00 ft
Is Paved?	False
Slope	0.434 ft/ft
Average Velocity	10.63 ft/s
Segment Time of Concentration	0.001 hours

Segment #5: TR-55 Shallow Concentrated Flow

Hydraulic Length	77.00 ft
Is Paved?	False
Slope	0.129 ft/ft
Average Velocity	5.79 ft/s
Segment Time of Concentration	0.004 hours

PRE-DEVELOPED CONDITIONS

Subsection: Time of Concentration Calculations

Label: DA #1

Return Event: 1 years

Storm Event: 1 Year

Segment #6: TR-55 Shallow Concentrated Flow

Hydraulic Length	65.00 ft
Is Paved?	False
Slope	0.154 ft/ft
Average Velocity	6.33 ft/s
Segment Time of Concentration	0.003 hours

Segment #7: TR-55 Shallow Concentrated Flow

Hydraulic Length	205.00 ft
Is Paved?	False
Slope	0.097 ft/ft
Average Velocity	5.03 ft/s
Segment Time of Concentration	0.011 hours

Time of Concentration (Composite)

Time of Concentration (Composite)	0.120 hours
-----------------------------------	-------------

PRE-DEVELOPED CONDITIONS

Subsection: Time of Concentration Calculations
Label: DA #1

Return Event: 1 years
Storm Event: 1 Year

==== SCS Channel Flow

$T_c = \frac{R = Q_a / W_p}{V = (1.49 * (R^{2/3}) * (S_f^{-0.5})) / n}$
 $(L_f / V) / 3600$
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Where: Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Unpaved surface:
 $V = 16.1345 * (S_f^{0.5})$
Tc = Paved Surface:
 $V = 20.3282 * (S_f^{0.5})$
 $(L_f / V) / 3600$
V= Velocity, ft/sec
Where: Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

PRE-DEVELOPED CONDITIONS

Subsection: Time of Concentration Calculations
Label: DA #1

Return Event: 2 years
Storm Event: 1 Year

Time of Concentration Results

Segment #1: TR-55 Sheet Flow

Hydraulic Length	35.00 ft
Manning's n	0.400
Slope	0.114 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	0.13 ft/s
Segment Time of Concentration	0.077 hours

Segment #2: TR-55 Sheet Flow

Hydraulic Length	26.00 ft
Manning's n	0.130
Slope	0.330 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	0.45 ft/s
Segment Time of Concentration	0.016 hours

Segment #3: TR-55 Shallow Concentrated Flow

Hydraulic Length	105.00 ft
Is Paved?	True
Slope	0.028 ft/ft
Average Velocity	3.40 ft/s
Segment Time of Concentration	0.009 hours

Segment #4: TR-55 Shallow Concentrated Flow

Hydraulic Length	23.00 ft
Is Paved?	False
Slope	0.434 ft/ft
Average Velocity	10.63 ft/s
Segment Time of Concentration	0.001 hours

Segment #5: TR-55 Shallow Concentrated Flow

Hydraulic Length	77.00 ft
Is Paved?	False
Slope	0.129 ft/ft
Average Velocity	5.79 ft/s
Segment Time of Concentration	0.004 hours

PRE-DEVELOPED CONDITIONS

Subsection: Time of Concentration Calculations

Label: DA #1

Return Event: 2 years

Storm Event: 1 Year

Segment #6: TR-55 Shallow Concentrated Flow

Hydraulic Length	65.00 ft
Is Paved?	False
Slope	0.154 ft/ft
Average Velocity	6.33 ft/s
Segment Time of Concentration	0.003 hours

Segment #7: TR-55 Shallow Concentrated Flow

Hydraulic Length	205.00 ft
Is Paved?	False
Slope	0.097 ft/ft
Average Velocity	5.03 ft/s
Segment Time of Concentration	0.011 hours

Time of Concentration (Composite)

Time of Concentration (Composite)	0.120 hours
-----------------------------------	-------------

PRE-DEVELOPED CONDITIONS

Subsection: Time of Concentration Calculations
Label: DA #1

Return Event: 2 years
Storm Event: 1 Year

==== SCS Channel Flow

$T_c = \frac{R = Q_a / W_p}{V = (1.49 * (R^{2/3}) * (S_f^{-0.5})) / n}$
 $(L_f / V) / 3600$
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Where: Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Unpaved surface:
 $V = 16.1345 * (S_f^{0.5})$
Tc = Paved Surface:
 $V = 20.3282 * (S_f^{0.5})$
 $(L_f / V) / 3600$
V= Velocity, ft/sec
Where: Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

PRE-DEVELOPED CONDITIONS

Subsection: Time of Concentration Calculations
Label: DA #1

Return Event: 5 years
Storm Event: 1 Year

Time of Concentration Results

Segment #1: TR-55 Sheet Flow

Hydraulic Length	35.00 ft
Manning's n	0.400
Slope	0.114 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	0.13 ft/s
Segment Time of Concentration	0.077 hours

Segment #2: TR-55 Sheet Flow

Hydraulic Length	26.00 ft
Manning's n	0.130
Slope	0.330 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	0.45 ft/s
Segment Time of Concentration	0.016 hours

Segment #3: TR-55 Shallow Concentrated Flow

Hydraulic Length	105.00 ft
Is Paved?	True
Slope	0.028 ft/ft
Average Velocity	3.40 ft/s
Segment Time of Concentration	0.009 hours

Segment #4: TR-55 Shallow Concentrated Flow

Hydraulic Length	23.00 ft
Is Paved?	False
Slope	0.434 ft/ft
Average Velocity	10.63 ft/s
Segment Time of Concentration	0.001 hours

Segment #5: TR-55 Shallow Concentrated Flow

Hydraulic Length	77.00 ft
Is Paved?	False
Slope	0.129 ft/ft
Average Velocity	5.79 ft/s
Segment Time of Concentration	0.004 hours

PRE-DEVELOPED CONDITIONS

Subsection: Time of Concentration Calculations

Label: DA #1

Return Event: 5 years

Storm Event: 1 Year

Segment #6: TR-55 Shallow Concentrated Flow

Hydraulic Length	65.00 ft
Is Paved?	False
Slope	0.154 ft/ft
Average Velocity	6.33 ft/s
Segment Time of Concentration	0.003 hours

Segment #7: TR-55 Shallow Concentrated Flow

Hydraulic Length	205.00 ft
Is Paved?	False
Slope	0.097 ft/ft
Average Velocity	5.03 ft/s
Segment Time of Concentration	0.011 hours

Time of Concentration (Composite)

Time of Concentration (Composite)	0.120 hours
-----------------------------------	-------------

PRE-DEVELOPED CONDITIONS

Subsection: Time of Concentration Calculations
Label: DA #1

Return Event: 5 years
Storm Event: 1 Year

==== SCS Channel Flow

Tc = $R = Q_a / W_p$
 $V = (1.49 * (R^{2/3}) * (S_f^{-0.5})) / n$
 $(L_f / V) / 3600$
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Where: Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Unpaved surface:
V = $16.1345 * (S_f^{0.5})$
Tc = Paved Surface:
V = $20.3282 * (S_f^{0.5})$
 $(L_f / V) / 3600$
V= Velocity, ft/sec
Where: Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

PRE-DEVELOPED CONDITIONS

Subsection: Time of Concentration Calculations
Label: DA #1

Return Event: 10 years
Storm Event: 1 Year

Time of Concentration Results

Segment #1: TR-55 Sheet Flow

Hydraulic Length	35.00 ft
Manning's n	0.400
Slope	0.114 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	0.13 ft/s
Segment Time of Concentration	0.077 hours

Segment #2: TR-55 Sheet Flow

Hydraulic Length	26.00 ft
Manning's n	0.130
Slope	0.330 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	0.45 ft/s
Segment Time of Concentration	0.016 hours

Segment #3: TR-55 Shallow Concentrated Flow

Hydraulic Length	105.00 ft
Is Paved?	True
Slope	0.028 ft/ft
Average Velocity	3.40 ft/s
Segment Time of Concentration	0.009 hours

Segment #4: TR-55 Shallow Concentrated Flow

Hydraulic Length	23.00 ft
Is Paved?	False
Slope	0.434 ft/ft
Average Velocity	10.63 ft/s
Segment Time of Concentration	0.001 hours

Segment #5: TR-55 Shallow Concentrated Flow

Hydraulic Length	77.00 ft
Is Paved?	False
Slope	0.129 ft/ft
Average Velocity	5.79 ft/s
Segment Time of Concentration	0.004 hours

PRE-DEVELOPED CONDITIONS

Subsection: Time of Concentration Calculations

Label: DA #1

Return Event: 10 years

Storm Event: 1 Year

Segment #6: TR-55 Shallow Concentrated Flow

Hydraulic Length	65.00 ft
Is Paved?	False
Slope	0.154 ft/ft
Average Velocity	6.33 ft/s
Segment Time of Concentration	0.003 hours

Segment #7: TR-55 Shallow Concentrated Flow

Hydraulic Length	205.00 ft
Is Paved?	False
Slope	0.097 ft/ft
Average Velocity	5.03 ft/s
Segment Time of Concentration	0.011 hours

Time of Concentration (Composite)

Time of Concentration (Composite)	0.120 hours
-----------------------------------	-------------

PRE-DEVELOPED CONDITIONS

Subsection: Time of Concentration Calculations

Label: DA #1

Return Event: 10 years

Storm Event: 1 Year

==== SCS Channel Flow

$$T_c = \frac{R = Q_a / W_p}{V = (1.49 * (R^{2/3}) * (S_f^{-0.5})) / n}$$
$$\frac{(L_f / V) / 3600}{R = \text{Hydraulic radius}}$$

Where:

A_q= Flow area, square feet
W_p= Wetted perimeter, feet
V= Velocity, ft/sec
S_f= Slope, ft/ft
n= Manning's n
T_c= Time of concentration, hours
L_f= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Unpaved surface:

$$T_c = \frac{V = 16.1345 * (S_f^{0.5})}{V = 20.3282 * (S_f^{0.5})}$$

Paved Surface:

$$\frac{(L_f / V) / 3600}{V = \text{Velocity, ft/sec}}$$

Where:

S_f= Slope, ft/ft
T_c= Time of concentration, hours
L_f= Flow length, feet

PRE-DEVELOPED CONDITIONS

Subsection: Time of Concentration Calculations
Label: DA #1

Return Event: 25 years
Storm Event: 1 Year

Time of Concentration Results

Segment #1: TR-55 Sheet Flow

Hydraulic Length	35.00 ft
Manning's n	0.400
Slope	0.114 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	0.13 ft/s
Segment Time of Concentration	0.077 hours

Segment #2: TR-55 Sheet Flow

Hydraulic Length	26.00 ft
Manning's n	0.130
Slope	0.330 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	0.45 ft/s
Segment Time of Concentration	0.016 hours

Segment #3: TR-55 Shallow Concentrated Flow

Hydraulic Length	105.00 ft
Is Paved?	True
Slope	0.028 ft/ft
Average Velocity	3.40 ft/s
Segment Time of Concentration	0.009 hours

Segment #4: TR-55 Shallow Concentrated Flow

Hydraulic Length	23.00 ft
Is Paved?	False
Slope	0.434 ft/ft
Average Velocity	10.63 ft/s
Segment Time of Concentration	0.001 hours

Segment #5: TR-55 Shallow Concentrated Flow

Hydraulic Length	77.00 ft
Is Paved?	False
Slope	0.129 ft/ft
Average Velocity	5.79 ft/s
Segment Time of Concentration	0.004 hours

PRE-DEVELOPED CONDITIONS

Subsection: Time of Concentration Calculations

Label: DA #1

Return Event: 25 years

Storm Event: 1 Year

Segment #6: TR-55 Shallow Concentrated Flow

Hydraulic Length	65.00 ft
Is Paved?	False
Slope	0.154 ft/ft
Average Velocity	6.33 ft/s
Segment Time of Concentration	0.003 hours

Segment #7: TR-55 Shallow Concentrated Flow

Hydraulic Length	205.00 ft
Is Paved?	False
Slope	0.097 ft/ft
Average Velocity	5.03 ft/s
Segment Time of Concentration	0.011 hours

Time of Concentration (Composite)

Time of Concentration (Composite)	0.120 hours
-----------------------------------	-------------

PRE-DEVELOPED CONDITIONS

Subsection: Time of Concentration Calculations
Label: DA #1

Return Event: 25 years
Storm Event: 1 Year

==== SCS Channel Flow

$T_c = \frac{R = Q_a / W_p}{V = (1.49 * (R^{2/3}) * (S_f^{-0.5})) / n}$
 $(L_f / V) / 3600$
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Where: Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Unpaved surface:
 $V = 16.1345 * (S_f^{0.5})$
Tc = Paved Surface:
 $V = 20.3282 * (S_f^{0.5})$
 $(L_f / V) / 3600$
V= Velocity, ft/sec
Where: Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

PRE-DEVELOPED CONDITIONS

Subsection: Time of Concentration Calculations
Label: DA #1

Return Event: 50 years
Storm Event: 1 Year

Time of Concentration Results

Segment #1: TR-55 Sheet Flow

Hydraulic Length	35.00 ft
Manning's n	0.400
Slope	0.114 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	0.13 ft/s
Segment Time of Concentration	0.077 hours

Segment #2: TR-55 Sheet Flow

Hydraulic Length	26.00 ft
Manning's n	0.130
Slope	0.330 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	0.45 ft/s
Segment Time of Concentration	0.016 hours

Segment #3: TR-55 Shallow Concentrated Flow

Hydraulic Length	105.00 ft
Is Paved?	True
Slope	0.028 ft/ft
Average Velocity	3.40 ft/s
Segment Time of Concentration	0.009 hours

Segment #4: TR-55 Shallow Concentrated Flow

Hydraulic Length	23.00 ft
Is Paved?	False
Slope	0.434 ft/ft
Average Velocity	10.63 ft/s
Segment Time of Concentration	0.001 hours

Segment #5: TR-55 Shallow Concentrated Flow

Hydraulic Length	77.00 ft
Is Paved?	False
Slope	0.129 ft/ft
Average Velocity	5.79 ft/s
Segment Time of Concentration	0.004 hours

PRE-DEVELOPED CONDITIONS

Subsection: Time of Concentration Calculations

Label: DA #1

Return Event: 50 years

Storm Event: 1 Year

Segment #6: TR-55 Shallow Concentrated Flow

Hydraulic Length	65.00 ft
Is Paved?	False
Slope	0.154 ft/ft
Average Velocity	6.33 ft/s
Segment Time of Concentration	0.003 hours

Segment #7: TR-55 Shallow Concentrated Flow

Hydraulic Length	205.00 ft
Is Paved?	False
Slope	0.097 ft/ft
Average Velocity	5.03 ft/s
Segment Time of Concentration	0.011 hours

Time of Concentration (Composite)

Time of Concentration (Composite)	0.120 hours
-----------------------------------	-------------

PRE-DEVELOPED CONDITIONS

Subsection: Time of Concentration Calculations

Label: DA #1

Return Event: 50 years

Storm Event: 1 Year

==== SCS Channel Flow

$$T_c = \frac{R = Q_a / W_p}{V = (1.49 * (R^{2/3}) * (S_f^{-0.5})) / n}$$
$$\frac{(L_f / V) / 3600}{R = \text{Hydraulic radius}}$$

Where:

A_q= Flow area, square feet
W_p= Wetted perimeter, feet
V= Velocity, ft/sec
S_f= Slope, ft/ft
n= Manning's n
T_c= Time of concentration, hours
L_f= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Unpaved surface:

$$T_c = \frac{V = 16.1345 * (S_f^{0.5})}{V = 20.3282 * (S_f^{0.5})}$$

Paved Surface:

$$\frac{(L_f / V) / 3600}{V = \text{Velocity, ft/sec}}$$

Where:

S_f= Slope, ft/ft
T_c= Time of concentration, hours
L_f= Flow length, feet

PRE-DEVELOPED CONDITIONS

Subsection: Time of Concentration Calculations
Label: DA #1

Return Event: 100 years
Storm Event: 1 Year

Time of Concentration Results

Segment #1: TR-55 Sheet Flow

Hydraulic Length	35.00 ft
Manning's n	0.400
Slope	0.114 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	0.13 ft/s
Segment Time of Concentration	0.077 hours

Segment #2: TR-55 Sheet Flow

Hydraulic Length	26.00 ft
Manning's n	0.130
Slope	0.330 ft/ft
2 Year 24 Hour Depth	3.2 in
Average Velocity	0.45 ft/s
Segment Time of Concentration	0.016 hours

Segment #3: TR-55 Shallow Concentrated Flow

Hydraulic Length	105.00 ft
Is Paved?	True
Slope	0.028 ft/ft
Average Velocity	3.40 ft/s
Segment Time of Concentration	0.009 hours

Segment #4: TR-55 Shallow Concentrated Flow

Hydraulic Length	23.00 ft
Is Paved?	False
Slope	0.434 ft/ft
Average Velocity	10.63 ft/s
Segment Time of Concentration	0.001 hours

Segment #5: TR-55 Shallow Concentrated Flow

Hydraulic Length	77.00 ft
Is Paved?	False
Slope	0.129 ft/ft
Average Velocity	5.79 ft/s
Segment Time of Concentration	0.004 hours

PRE-DEVELOPED CONDITIONS

Subsection: Time of Concentration Calculations

Label: DA #1

Return Event: 100 years

Storm Event: 1 Year

Segment #6: TR-55 Shallow Concentrated Flow

Hydraulic Length	65.00 ft
Is Paved?	False
Slope	0.154 ft/ft
Average Velocity	6.33 ft/s
Segment Time of Concentration	0.003 hours

Segment #7: TR-55 Shallow Concentrated Flow

Hydraulic Length	205.00 ft
Is Paved?	False
Slope	0.097 ft/ft
Average Velocity	5.03 ft/s
Segment Time of Concentration	0.011 hours

Time of Concentration (Composite)

Time of Concentration (Composite)	0.120 hours
-----------------------------------	-------------

PRE-DEVELOPED CONDITIONS

Subsection: Time of Concentration Calculations
Label: DA #1

Return Event: 100 years
Storm Event: 1 Year

==== SCS Channel Flow

$T_c = \frac{R = Q_a / W_p}{V = (1.49 * (R^{2/3}) * (S_f^{-0.5})) / n}$
 $(L_f / V) / 3600$
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Where: Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Unpaved surface:
 $V = 16.1345 * (S_f^{0.5})$
Tc = Paved Surface:
 $V = 20.3282 * (S_f^{0.5})$
 $(L_f / V) / 3600$
V= Velocity, ft/sec
Where: Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

PRE-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Equations

Unit Hydrograph Method (Computational Notes)

Definition of Terms

At	Total area (acres): $A_t = A_i + A_p$
Ai	Impervious area (acres)
Ap	Pervious area (acres)
CNi	Runoff curve number for impervious area
CNp	Runoff curve number for pervious area
fLoss	f loss constant infiltration (depth/time)
gKs	Saturated Hydraulic Conductivity (depth/time)
Md	Volumetric Moisture Deficit
Psi	Capillary Suction (length)
hK	Horton Infiltration Decay Rate (time^{-1})
fo	Initial Infiltration Rate (depth/time)
fc	Ultimate(capacity)Infiltration Rate (depth/time)
Ia	Initial Abstraction (length)
dt	Computational increment (duration of unit excess rainfall) Default dt is smallest value of $0.1333T_c$, r_{tm} , and t_h (Smallest dt is then adjusted to match up with T_p)
UDdt	User specified override computational main time increment (only used if UDdt is $\Rightarrow .1333T_c$)
D(t)	Point on distribution curve (fraction of P) for time step t
K	$2 / (1 + (T_r/T_p))$: default $K = 0.75$: (for $T_r/T_p = 1.67$) Hydrograph shape factor = Unit Conversions * K : $= ((1\text{hr}/3600\text{sec}) * (1\text{ft}/12\text{in}) * ((5280\text{ft})^2/\text{sq.mi})) * K$ Default $K_s = 645.333 * 0.75 = 484$
Ks	
Lag	Lag time from center of excess runoff (dt) to T_p : $\text{Lag} = 0.6T_c$
P	Total precipitation depth, inches
Pa(t)	Accumulated rainfall at time step t
Pi(t)	Incremental rainfall at time step t
qp	Peak discharge (cfs) for 1in. runoff, for 1hr, for 1 sq.mi. $= (K_s * A * Q) / T_p$ (where $Q = 1\text{in. runoff}$, $A = \text{sq.mi.}$)
Qu(t)	Unit hydrograph ordinate (cfs) at time step t
Q(t)	Final hydrograph ordinate (cfs) at time step t
Rai(t)	Accumulated runoff (inches) at time step t for impervious area
Rap(t)	Accumulated runoff (inches) at time step t for pervious area
Rii(t)	Incremental runoff (inches) at time step t for impervious area
Rip(t)	Incremental runoff (inches) at time step t for pervious area
R(t)	Incremental weighted total runoff (inches)
Rtm	Time increment for rainfall table
Si	S for impervious area: $S_i = (1000/CN_i) - 10$
Sp	S for pervious area: $S_p = (1000/CN_p) - 10$
t	Time step (row) number
Tc	Time of concentration
Tb	Time (hrs) of entire unit hydrograph: $T_b = T_p + T_r$
Tp	Time (hrs) to peak of a unit hydrograph: $T_p = (dt/2) + \text{Lag}$
Tr	Time (hrs) of receding limb of unit hydrograph: $T_r = \text{ratio of } T_p$

PRE-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Equations

Unit Hydrograph Method

Computational Notes

Precipitation

Column (1)	Time for time step t
Column (2)	$D(t)$ = Point on distribution curve for time step t
Column (3)	$P_i(t) = P_a(t) - P_a(t-1)$: Col.(4) - Preceding Col.(4)
Column (4)	$P_a(t) = D(t) \times P$: Col.(2) $\times$ P

Pervious Area Runoff (using SCS Runoff CN Method)

	$Rap(t)$ = Accumulated pervious runoff for time step t
	If $(P_a(t))$ is $\leq 0.2Sp$ then use: $Rap(t) = 0.0$
Column (5)	If $(P_a(t))$ is $> 0.2Sp$ then use:
	$Rap(t) = (Col.(4) - 0.2Sp) \times 2 / (Col.(4) + 0.8Sp)$
	$Rip(t)$ = Incremental pervious runoff for time step t
Column (6)	$Rip(t) = Rap(t) - Rap(t-1)$
	$Rip(t) = Col.(5)$ for current row - Col.(5) for preceding row.

Impervious Area Runoff

Column (7 & 8)...	Did not specify to use impervious areas.
-------------------	--

Incremental Weighted Runoff

	$R(t) = (A_p/A_t) \times Rip(t) + (A_i/A_t) \times Rii(t)$
Column (9)	$R(t) = (A_p/A_t) \times Col.(6) + (A_i/A_t) \times Col.(8)$

SCS Unit Hydrograph Method

Column (10)	$Q(t)$ is computed with the SCS unit hydrograph method using $R(t)$ and $Qu(t)$.
-------------	---

PRE-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary
Label: DA #1

Return Event: 1 years
Storm Event: 1 Year

Storm Event	1 Year
Return Event	1 years
Duration	24.000 hours
Depth	2.7 in
Time of Concentration (Composite)	0.120 hours
Area (User Defined)	3.571 acres
Computational Time Increment	0.016 hours
Time to Peak (Computed)	12.041 hours
Flow (Peak, Computed)	0.69 ft ³ /s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.050 hours
Flow (Peak Interpolated Output)	0.68 ft ³ /s
Drainage Area	
SCS CN (Composite)	60.198
Area (User Defined)	3.571 acres
Maximum Retention (Pervious)	6.6 in
Maximum Retention (Pervious, 20 percent)	1.3 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.2 in
Runoff Volume (Pervious)	0.068 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.068 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.120 hours
Computational Time Increment	0.016 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

PRE-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary

Label: DA #1

Return Event: 1 years

Storm Event: 1 Year

SCS Unit Hydrograph Parameters

Unit peak, qp	33.69 ft ³ /s
Unit peak time, Tp	0.080 hours
Unit receding limb, Tr	0.320 hours
Total unit time, Tb	0.400 hours

PRE-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA #1

Return Event: 1 years
Storm Event: 1 Year

Storm Event	1 Year
Return Event	1 years
Duration	24.000 hours
Depth	2.7 in
Time of Concentration (Composite)	0.120 hours
Area (User Defined)	3.571 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
11.850	0.00	0.05	0.29	0.57	0.68
12.100	0.47	0.32	0.26	0.24	0.22
12.350	0.21	0.20	0.18	0.17	0.16
12.600	0.15	0.14	0.14	0.13	0.13
12.850	0.13	0.13	0.12	0.12	0.12
13.100	0.11	0.11	0.11	0.11	0.11
13.350	0.10	0.10	0.10	0.10	0.10
13.600	0.09	0.09	0.09	0.09	0.09
13.850	0.09	0.08	0.08	0.08	0.08
14.100	0.08	0.08	0.08	0.08	0.08
14.350	0.08	0.08	0.07	0.07	0.07
14.600	0.07	0.07	0.07	0.07	0.07
14.850	0.07	0.07	0.07	0.07	0.07
15.100	0.07	0.07	0.07	0.07	0.07
15.350	0.07	0.06	0.06	0.06	0.06
15.600	0.06	0.06	0.06	0.06	0.06
15.850	0.06	0.06	0.06	0.06	0.06
16.100	0.06	0.06	0.06	0.05	0.05
16.350	0.05	0.05	0.05	0.05	0.05
16.600	0.05	0.05	0.05	0.05	0.05
16.850	0.05	0.05	0.05	0.05	0.05
17.100	0.05	0.05	0.05	0.05	0.05
17.350	0.05	0.05	0.05	0.05	0.05
17.600	0.05	0.05	0.05	0.05	0.05
17.850	0.05	0.05	0.05	0.05	0.05
18.100	0.05	0.05	0.05	0.05	0.05
18.350	0.05	0.05	0.05	0.04	0.04
18.600	0.04	0.04	0.04	0.04	0.04
18.850	0.04	0.04	0.04	0.04	0.04
19.100	0.04	0.04	0.04	0.04	0.04
19.350	0.04	0.04	0.04	0.04	0.04
19.600	0.04	0.04	0.04	0.04	0.04
19.850	0.04	0.04	0.04	0.04	0.04

PRE-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA #1

Return Event: 1 years
Storm Event: 1 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
20.100	0.04	0.04	0.04	0.04	0.04
20.350	0.04	0.04	0.04	0.04	0.04
20.600	0.04	0.04	0.04	0.04	0.04
20.850	0.04	0.04	0.04	0.04	0.04
21.100	0.04	0.04	0.04	0.04	0.04
21.350	0.04	0.04	0.03	0.03	0.03
21.600	0.03	0.03	0.03	0.03	0.03
21.850	0.03	0.03	0.03	0.03	0.03
22.100	0.03	0.03	0.03	0.03	0.03
22.350	0.03	0.03	0.03	0.03	0.03
22.600	0.03	0.03	0.03	0.03	0.03
22.850	0.03	0.03	0.03	0.03	0.03
23.100	0.03	0.03	0.03	0.03	0.03
23.350	0.03	0.03	0.03	0.03	0.03
23.600	0.03	0.03	0.03	0.03	0.03
23.850	0.03	0.03	0.03	0.03	(N/A)

PRE-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary
Label: DA #1

Return Event: 2 years
Storm Event: 2 Year

Storm Event	2 Year
Return Event	2 years
Duration	24.000 hours
Depth	3.2 in
Time of Concentration (Composite)	0.120 hours
Area (User Defined)	3.571 acres
Computational Time Increment	0.016 hours
Time to Peak (Computed)	12.025 hours
Flow (Peak, Computed)	1.70 ft ³ /s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.000 hours
Flow (Peak Interpolated Output)	1.62 ft ³ /s
Drainage Area	
SCS CN (Composite)	60.198
Area (User Defined)	3.571 acres
Maximum Retention (Pervious)	6.6 in
Maximum Retention (Pervious, 20 percent)	1.3 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.4 in
Runoff Volume (Pervious)	0.125 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.124 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.120 hours
Computational Time Increment	0.016 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

PRE-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary

Label: DA #1

Return Event: 2 years

Storm Event: 2 Year

SCS Unit Hydrograph Parameters

Unit peak, qp	33.69 ft ³ /s
Unit peak time, Tp	0.080 hours
Unit receding limb, Tr	0.320 hours
Total unit time, Tb	0.400 hours

PRE-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA #1

Return Event: 2 years
Storm Event: 2 Year

Storm Event	2 Year
Return Event	2 years
Duration	24.000 hours
Depth	3.2 in
Time of Concentration (Composite)	0.120 hours
Area (User Defined)	3.571 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
11.750	0.00	0.00	0.13	0.64	1.26
12.000	1.62	1.59	1.03	0.66	0.52
12.250	0.46	0.42	0.39	0.36	0.34
12.500	0.31	0.29	0.27	0.25	0.24
12.750	0.24	0.23	0.23	0.22	0.21
13.000	0.21	0.20	0.20	0.19	0.19
13.250	0.18	0.18	0.18	0.17	0.17
13.500	0.17	0.16	0.16	0.16	0.15
13.750	0.15	0.15	0.14	0.14	0.14
14.000	0.14	0.13	0.13	0.13	0.13
14.250	0.13	0.13	0.13	0.12	0.12
14.500	0.12	0.12	0.12	0.12	0.12
14.750	0.12	0.12	0.12	0.12	0.11
15.000	0.11	0.11	0.11	0.11	0.11
15.250	0.11	0.11	0.11	0.11	0.10
15.500	0.10	0.10	0.10	0.10	0.10
15.750	0.10	0.10	0.10	0.09	0.09
16.000	0.09	0.09	0.09	0.09	0.09
16.250	0.09	0.09	0.09	0.09	0.09
16.500	0.09	0.09	0.09	0.09	0.09
16.750	0.08	0.08	0.08	0.08	0.08
17.000	0.08	0.08	0.08	0.08	0.08
17.250	0.08	0.08	0.08	0.08	0.08
17.500	0.08	0.08	0.08	0.08	0.08
17.750	0.08	0.08	0.08	0.08	0.08
18.000	0.08	0.07	0.07	0.07	0.07
18.250	0.07	0.07	0.07	0.07	0.07
18.500	0.07	0.07	0.07	0.07	0.07
18.750	0.07	0.07	0.07	0.07	0.07
19.000	0.07	0.07	0.07	0.07	0.06
19.250	0.06	0.06	0.06	0.06	0.06
19.500	0.06	0.06	0.06	0.06	0.06
19.750	0.06	0.06	0.06	0.06	0.06

PRE-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA #1

Return Event: 2 years
Storm Event: 2 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
20.000	0.06	0.06	0.06	0.06	0.06
20.250	0.06	0.06	0.06	0.06	0.06
20.500	0.06	0.06	0.06	0.06	0.06
20.750	0.06	0.06	0.05	0.05	0.05
21.000	0.05	0.05	0.05	0.05	0.05
21.250	0.05	0.05	0.05	0.05	0.05
21.500	0.05	0.05	0.05	0.05	0.05
21.750	0.05	0.05	0.05	0.05	0.05
22.000	0.05	0.05	0.05	0.05	0.05
22.250	0.05	0.05	0.05	0.05	0.05
22.500	0.05	0.05	0.05	0.05	0.05
22.750	0.05	0.05	0.05	0.05	0.05
23.000	0.05	0.05	0.05	0.05	0.05
23.250	0.05	0.05	0.05	0.05	0.05
23.500	0.05	0.05	0.05	0.05	0.05
23.750	0.05	0.05	0.05	0.05	0.05
24.000	0.05	(N/A)	(N/A)	(N/A)	(N/A)

PRE-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary
Label: DA #1

Return Event: 5 years
Storm Event: 5 Year

Storm Event	5 Year
Return Event	5 years
Duration	24.000 hours
Depth	4.0 in
Time of Concentration (Composite)	0.120 hours
Area (User Defined)	3.571 acres
Computational Time Increment	0.016 hours
Time to Peak (Computed)	12.009 hours
Flow (Peak, Computed)	3.65 ft ³ /s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.000 hours
Flow (Peak Interpolated Output)	3.62 ft ³ /s
Drainage Area	
SCS CN (Composite)	60.198
Area (User Defined)	3.571 acres
Maximum Retention (Pervious)	6.6 in
Maximum Retention (Pervious, 20 percent)	1.3 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.8 in
Runoff Volume (Pervious)	0.234 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.233 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.120 hours
Computational Time Increment	0.016 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

PRE-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary

Label: DA #1

Return Event: 5 years

Storm Event: 5 Year

SCS Unit Hydrograph Parameters

Unit peak, qp	33.69 ft ³ /s
Unit peak time, Tp	0.080 hours
Unit receding limb, Tr	0.320 hours
Total unit time, Tb	0.400 hours

PRE-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA #1

Return Event: 5 years
Storm Event: 5 Year

Storm Event	5 Year
Return Event	5 years
Duration	24.000 hours
Depth	4.0 in
Time of Concentration (Composite)	0.120 hours
Area (User Defined)	3.571 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
11.650	0.00	0.02	0.14	0.47	1.11
11.900	2.33	3.32	3.62	3.28	2.04
12.150	1.28	0.98	0.84	0.76	0.71
12.400	0.65	0.61	0.55	0.51	0.47
12.650	0.45	0.43	0.42	0.41	0.40
12.900	0.38	0.37	0.36	0.35	0.34
13.150	0.33	0.32	0.32	0.31	0.30
13.400	0.30	0.29	0.28	0.28	0.27
13.650	0.27	0.26	0.26	0.25	0.25
13.900	0.24	0.23	0.23	0.22	0.22
14.150	0.22	0.22	0.21	0.21	0.21
14.400	0.21	0.21	0.21	0.20	0.20
14.650	0.20	0.20	0.20	0.20	0.19
14.900	0.19	0.19	0.19	0.19	0.19
15.150	0.18	0.18	0.18	0.18	0.18
15.400	0.17	0.17	0.17	0.17	0.17
15.650	0.16	0.16	0.16	0.16	0.16
15.900	0.15	0.15	0.15	0.15	0.15
16.150	0.15	0.15	0.14	0.14	0.14
16.400	0.14	0.14	0.14	0.14	0.14
16.650	0.14	0.14	0.14	0.14	0.14
16.900	0.14	0.14	0.14	0.13	0.13
17.150	0.13	0.13	0.13	0.13	0.13
17.400	0.13	0.13	0.13	0.13	0.13
17.650	0.13	0.13	0.13	0.12	0.12
17.900	0.12	0.12	0.12	0.12	0.12
18.150	0.12	0.12	0.12	0.12	0.12
18.400	0.12	0.12	0.11	0.11	0.11
18.650	0.11	0.11	0.11	0.11	0.11
18.900	0.11	0.11	0.11	0.11	0.11
19.150	0.10	0.10	0.10	0.10	0.10
19.400	0.10	0.10	0.10	0.10	0.10
19.650	0.10	0.10	0.10	0.09	0.09

PRE-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA #1

Return Event: 5 years
Storm Event: 5 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
19.900	0.09	0.09	0.09	0.09	0.09
20.150	0.09	0.09	0.09	0.09	0.09
20.400	0.09	0.09	0.09	0.09	0.09
20.650	0.09	0.09	0.09	0.09	0.09
20.900	0.09	0.09	0.09	0.09	0.09
21.150	0.09	0.09	0.09	0.09	0.09
21.400	0.09	0.09	0.09	0.09	0.09
21.650	0.09	0.09	0.09	0.09	0.09
21.900	0.09	0.09	0.08	0.08	0.08
22.150	0.08	0.08	0.08	0.08	0.08
22.400	0.08	0.08	0.08	0.08	0.08
22.650	0.08	0.08	0.08	0.08	0.08
22.900	0.08	0.08	0.08	0.08	0.08
23.150	0.08	0.08	0.08	0.08	0.08
23.400	0.08	0.08	0.08	0.08	0.08
23.650	0.08	0.08	0.08	0.08	0.08
23.900	0.08	0.08	0.08	(N/A)	(N/A)

PRE-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary
Label: DA #1

Return Event: 10 years
Storm Event: 10 Year

Storm Event	10 Year
Return Event	10 years
Duration	24.000 hours
Depth	4.9 in
Time of Concentration (Composite)	0.120 hours
Area (User Defined)	3.571 acres
Computational Time Increment	0.016 hours
Time to Peak (Computed)	11.993 hours
Flow (Peak, Computed)	6.12 ft ³ /s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.000 hours
Flow (Peak Interpolated Output)	6.12 ft ³ /s
Drainage Area	
SCS CN (Composite)	60.198
Area (User Defined)	3.571 acres
Maximum Retention (Pervious)	6.6 in
Maximum Retention (Pervious, 20 percent)	1.3 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.3 in
Runoff Volume (Pervious)	0.374 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.373 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.120 hours
Computational Time Increment	0.016 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

PRE-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary

Label: DA #1

Return Event: 10 years

Storm Event: 10 Year

SCS Unit Hydrograph Parameters

Unit peak, qp	33.69 ft ³ /s
Unit peak time, Tp	0.080 hours
Unit receding limb, Tr	0.320 hours
Total unit time, Tb	0.400 hours

PRE-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA #1

Return Event: 10 years
Storm Event: 10 Year

Storm Event	10 Year
Return Event	10 years
Duration	24.000 hours
Depth	4.9 in
Time of Concentration (Composite)	0.120 hours
Area (User Defined)	3.571 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
11.400	0.00	0.00	0.01	0.04	0.09
11.650	0.21	0.46	0.85	1.51	2.61
11.900	4.58	5.93	6.12	5.35	3.28
12.150	2.03	1.53	1.31	1.18	1.09
12.400	1.00	0.93	0.84	0.78	0.72
12.650	0.68	0.65	0.64	0.62	0.60
12.900	0.58	0.56	0.54	0.52	0.51
13.150	0.50	0.48	0.47	0.46	0.45
13.400	0.44	0.43	0.42	0.41	0.40
13.650	0.39	0.39	0.38	0.37	0.36
13.900	0.35	0.35	0.34	0.33	0.33
14.150	0.32	0.32	0.32	0.31	0.31
14.400	0.31	0.31	0.30	0.30	0.30
14.650	0.30	0.29	0.29	0.29	0.28
14.900	0.28	0.28	0.28	0.27	0.27
15.150	0.27	0.27	0.26	0.26	0.26
15.400	0.25	0.25	0.25	0.25	0.24
15.650	0.24	0.24	0.23	0.23	0.23
15.900	0.23	0.22	0.22	0.22	0.21
16.150	0.21	0.21	0.21	0.21	0.21
16.400	0.21	0.21	0.21	0.20	0.20
16.650	0.20	0.20	0.20	0.20	0.20
16.900	0.20	0.20	0.20	0.19	0.19
17.150	0.19	0.19	0.19	0.19	0.19
17.400	0.19	0.19	0.19	0.18	0.18
17.650	0.18	0.18	0.18	0.18	0.18
17.900	0.18	0.18	0.18	0.17	0.17
18.150	0.17	0.17	0.17	0.17	0.17
18.400	0.17	0.17	0.16	0.16	0.16
18.650	0.16	0.16	0.16	0.16	0.16
18.900	0.16	0.15	0.15	0.15	0.15
19.150	0.15	0.15	0.15	0.15	0.15
19.400	0.14	0.14	0.14	0.14	0.14

PRE-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA #1

Return Event: 10 years
Storm Event: 10 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
19.650	0.14	0.14	0.14	0.13	0.13
19.900	0.13	0.13	0.13	0.13	0.13
20.150	0.13	0.13	0.13	0.13	0.13
20.400	0.13	0.13	0.13	0.13	0.13
20.650	0.13	0.13	0.13	0.13	0.13
20.900	0.13	0.13	0.12	0.12	0.12
21.150	0.12	0.12	0.12	0.12	0.12
21.400	0.12	0.12	0.12	0.12	0.12
21.650	0.12	0.12	0.12	0.12	0.12
21.900	0.12	0.12	0.12	0.12	0.12
22.150	0.12	0.12	0.12	0.12	0.12
22.400	0.12	0.12	0.12	0.12	0.12
22.650	0.12	0.12	0.12	0.12	0.12
22.900	0.12	0.12	0.12	0.12	0.12
23.150	0.12	0.12	0.12	0.12	0.12
23.400	0.12	0.11	0.11	0.11	0.11
23.650	0.11	0.11	0.11	0.11	0.11
23.900	0.11	0.11	0.11	(N/A)	(N/A)

PRE-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary
Label: DA #1

Return Event: 25 years
Storm Event: 25 Year

Storm Event	25 Year
Return Event	25 years
Duration	24.000 hours
Depth	5.6 in
Time of Concentration (Composite)	0.120 hours
Area (User Defined)	3.571 acres
Computational Time Increment	0.016 hours
Time to Peak (Computed)	11.977 hours
Flow (Peak, Computed)	8.46 ft ³ /s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.000 hours
Flow (Peak Interpolated Output)	8.39 ft ³ /s
Drainage Area	
SCS CN (Composite)	60.198
Area (User Defined)	3.571 acres
Maximum Retention (Pervious)	6.6 in
Maximum Retention (Pervious, 20 percent)	1.3 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.7 in
Runoff Volume (Pervious)	0.504 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.503 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.120 hours
Computational Time Increment	0.016 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

PRE-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary

Label: DA #1

Return Event: 25 years

Storm Event: 25 Year

SCS Unit Hydrograph Parameters

Unit peak, qp	33.69 ft ³ /s
Unit peak time, Tp	0.080 hours
Unit receding limb, Tr	0.320 hours
Total unit time, Tb	0.400 hours

PRE-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA #1

Return Event: 25 years
Storm Event: 25 Year

Storm Event	25 Year
Return Event	25 years
Duration	24.000 hours
Depth	5.6 in
Time of Concentration (Composite)	0.120 hours
Area (User Defined)	3.571 acres

HYDROGRAPH ORDINATES (ft³/s) Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
11.050	0.00	0.00	0.01	0.02	0.04
11.300	0.05	0.07	0.09	0.11	0.14
11.550	0.20	0.33	0.56	0.98	1.58
11.800	2.52	4.04	6.68	8.35	8.39
12.050	7.23	4.39	2.70	2.02	1.73
12.300	1.54	1.43	1.31	1.21	1.10
12.550	1.01	0.93	0.88	0.85	0.83
12.800	0.80	0.78	0.75	0.73	0.70
13.050	0.68	0.66	0.64	0.63	0.61
13.300	0.60	0.59	0.57	0.56	0.54
13.550	0.53	0.52	0.51	0.50	0.49
13.800	0.48	0.47	0.45	0.45	0.43
14.050	0.43	0.42	0.41	0.41	0.40
14.300	0.40	0.40	0.39	0.39	0.39
14.550	0.38	0.38	0.38	0.37	0.37
14.800	0.37	0.36	0.36	0.36	0.35
15.050	0.35	0.35	0.34	0.34	0.33
15.300	0.33	0.33	0.32	0.32	0.32
15.550	0.31	0.31	0.31	0.30	0.30
15.800	0.29	0.29	0.29	0.28	0.28
16.050	0.28	0.27	0.27	0.27	0.27
16.300	0.27	0.27	0.26	0.26	0.26
16.550	0.26	0.26	0.26	0.26	0.25
16.800	0.25	0.25	0.25	0.25	0.25
17.050	0.25	0.25	0.24	0.24	0.24
17.300	0.24	0.24	0.24	0.24	0.24
17.550	0.23	0.23	0.23	0.23	0.23
17.800	0.23	0.23	0.22	0.22	0.22
18.050	0.22	0.22	0.22	0.22	0.21
18.300	0.21	0.21	0.21	0.21	0.21
18.550	0.21	0.20	0.20	0.20	0.20
18.800	0.20	0.20	0.20	0.20	0.19
19.050	0.19	0.19	0.19	0.19	0.19

PRE-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA #1

Return Event: 25 years
Storm Event: 25 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
19.300	0.18	0.18	0.18	0.18	0.18
19.550	0.18	0.18	0.17	0.17	0.17
19.800	0.17	0.17	0.17	0.17	0.16
20.050	0.16	0.16	0.16	0.16	0.16
20.300	0.16	0.16	0.16	0.16	0.16
20.550	0.16	0.16	0.16	0.16	0.16
20.800	0.16	0.16	0.16	0.16	0.16
21.050	0.16	0.16	0.16	0.16	0.16
21.300	0.16	0.16	0.15	0.15	0.15
21.550	0.15	0.15	0.15	0.15	0.15
21.800	0.15	0.15	0.15	0.15	0.15
22.050	0.15	0.15	0.15	0.15	0.15
22.300	0.15	0.15	0.15	0.15	0.15
22.550	0.15	0.15	0.15	0.15	0.15
22.800	0.15	0.15	0.15	0.15	0.15
23.050	0.15	0.15	0.15	0.15	0.15
23.300	0.15	0.15	0.14	0.14	0.14
23.550	0.14	0.14	0.14	0.14	0.14
23.800	0.14	0.14	0.14	0.14	0.14

PRE-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary
Label: DA #1

Return Event: 50 years
Storm Event: 50 Year

Storm Event	50 Year
Return Event	50 years
Duration	24.000 hours
Depth	6.4 in
Time of Concentration (Composite)	0.120 hours
Area (User Defined)	3.571 acres
Computational Time Increment	0.016 hours
Time to Peak (Computed)	11.961 hours
Flow (Peak, Computed)	11.28 ft ³ /s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	11.950 hours
Flow (Peak Interpolated Output)	11.20 ft ³ /s
Drainage Area	
SCS CN (Composite)	60.198
Area (User Defined)	3.571 acres
Maximum Retention (Pervious)	6.6 in
Maximum Retention (Pervious, 20 percent)	1.3 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.2 in
Runoff Volume (Pervious)	0.658 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.657 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.120 hours
Computational Time Increment	0.016 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

PRE-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary

Label: DA #1

Return Event: 50 years

Storm Event: 50 Year

SCS Unit Hydrograph Parameters

Unit peak, qp	33.69 ft ³ /s
Unit peak time, Tp	0.080 hours
Unit receding limb, Tr	0.320 hours
Total unit time, Tb	0.400 hours

PRE-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA #1

Return Event: 50 years
Storm Event: 50 Year

Storm Event	50 Year
Return Event	50 years
Duration	24.000 hours
Depth	6.4 in
Time of Concentration (Composite)	0.120 hours
Area (User Defined)	3.571 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
10.600	0.00	0.00	0.01	0.02	0.03
10.850	0.03	0.04	0.05	0.07	0.08
11.100	0.09	0.11	0.13	0.15	0.18
11.350	0.20	0.23	0.26	0.30	0.40
11.600	0.63	0.99	1.63	2.48	3.77
11.850	5.76	9.19	11.20	11.05	9.40
12.100	5.68	3.47	2.59	2.20	1.97
12.350	1.82	1.66	1.54	1.39	1.28
12.600	1.18	1.12	1.07	1.04	1.01
12.850	0.98	0.94	0.92	0.88	0.85
13.100	0.83	0.81	0.79	0.77	0.75
13.350	0.73	0.72	0.70	0.68	0.67
13.600	0.65	0.63	0.62	0.61	0.59
13.850	0.58	0.57	0.56	0.54	0.53
14.100	0.52	0.52	0.51	0.51	0.50
14.350	0.50	0.49	0.49	0.48	0.48
14.600	0.47	0.47	0.47	0.46	0.46
14.850	0.45	0.45	0.44	0.44	0.44
15.100	0.43	0.43	0.42	0.42	0.41
15.350	0.41	0.40	0.40	0.39	0.39
15.600	0.38	0.38	0.37	0.37	0.36
15.850	0.36	0.36	0.35	0.35	0.34
16.100	0.34	0.34	0.33	0.33	0.33
16.350	0.33	0.33	0.33	0.32	0.32
16.600	0.32	0.32	0.32	0.32	0.31
16.850	0.31	0.31	0.31	0.31	0.31
17.100	0.30	0.30	0.30	0.30	0.30
17.350	0.30	0.29	0.29	0.29	0.29
17.600	0.29	0.29	0.28	0.28	0.28
17.850	0.28	0.28	0.28	0.27	0.27
18.100	0.27	0.27	0.27	0.27	0.26
18.350	0.26	0.26	0.26	0.26	0.25
18.600	0.25	0.25	0.25	0.25	0.25

PRE-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA #1

Return Event: 50 years
Storm Event: 50 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
18.850	0.24	0.24	0.24	0.24	0.24
19.100	0.24	0.23	0.23	0.23	0.23
19.350	0.23	0.22	0.22	0.22	0.22
19.600	0.22	0.22	0.21	0.21	0.21
19.850	0.21	0.21	0.20	0.20	0.20
20.100	0.20	0.20	0.20	0.20	0.20
20.350	0.20	0.20	0.20	0.20	0.20
20.600	0.20	0.20	0.20	0.20	0.19
20.850	0.19	0.19	0.19	0.19	0.19
21.100	0.19	0.19	0.19	0.19	0.19
21.350	0.19	0.19	0.19	0.19	0.19
21.600	0.19	0.19	0.19	0.19	0.19
21.850	0.19	0.19	0.19	0.19	0.19
22.100	0.19	0.19	0.19	0.19	0.18
22.350	0.18	0.18	0.18	0.18	0.18
22.600	0.18	0.18	0.18	0.18	0.18
22.850	0.18	0.18	0.18	0.18	0.18
23.100	0.18	0.18	0.18	0.18	0.18
23.350	0.18	0.18	0.18	0.18	0.18
23.600	0.18	0.18	0.18	0.18	0.17
23.850	0.17	0.17	0.17	0.17	(N/A)

PRE-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary
Label: DA #1

Return Event: 100 years
Storm Event: 100 Year

Storm Event	100 Year
Return Event	100 years
Duration	24.000 hours
Depth	7.3 in
Time of Concentration (Composite)	0.120 hours
Area (User Defined)	3.571 acres
Computational Time Increment	0.016 hours
Time to Peak (Computed)	11.961 hours
Flow (Peak, Computed)	14.50 ft ³ /s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	11.950 hours
Flow (Peak Interpolated Output)	14.45 ft ³ /s
Drainage Area	
SCS CN (Composite)	60.198
Area (User Defined)	3.571 acres
Maximum Retention (Pervious)	6.6 in
Maximum Retention (Pervious, 20 percent)	1.3 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.8 in
Runoff Volume (Pervious)	0.836 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.834 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.120 hours
Computational Time Increment	0.016 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

PRE-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary

Label: DA #1

Return Event: 100 years

Storm Event: 100 Year

SCS Unit Hydrograph Parameters

Unit peak, qp	33.69 ft ³ /s
Unit peak time, Tp	0.080 hours
Unit receding limb, Tr	0.320 hours
Total unit time, Tb	0.400 hours

PRE-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA #1

Return Event: 100 years
Storm Event: 100 Year

Storm Event	100 Year
Return Event	100 years
Duration	24.000 hours
Depth	7.3 in
Time of Concentration (Composite)	0.120 hours
Area (User Defined)	3.571 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
10.100	0.00	0.00	0.01	0.01	0.02
10.350	0.03	0.03	0.04	0.05	0.06
10.600	0.06	0.07	0.09	0.10	0.11
10.850	0.12	0.14	0.15	0.17	0.19
11.100	0.21	0.23	0.26	0.29	0.33
11.350	0.37	0.41	0.45	0.50	0.66
11.600	0.99	1.51	2.41	3.54	5.23
11.850	7.77	12.08	14.45	14.06	11.85
12.100	7.13	4.34	3.22	2.74	2.44
12.350	2.25	2.06	1.90	1.72	1.58
12.600	1.46	1.38	1.32	1.28	1.24
12.850	1.20	1.16	1.12	1.08	1.05
13.100	1.01	0.99	0.96	0.94	0.92
13.350	0.90	0.88	0.86	0.83	0.81
13.600	0.79	0.78	0.76	0.74	0.73
13.850	0.71	0.70	0.68	0.66	0.65
14.100	0.64	0.63	0.62	0.62	0.61
14.350	0.61	0.60	0.60	0.59	0.59
14.600	0.58	0.57	0.57	0.56	0.56
14.850	0.55	0.55	0.54	0.53	0.53
15.100	0.52	0.52	0.51	0.51	0.50
15.350	0.50	0.49	0.48	0.48	0.47
15.600	0.47	0.46	0.46	0.45	0.44
15.850	0.44	0.43	0.43	0.42	0.41
16.100	0.41	0.41	0.40	0.40	0.40
16.350	0.40	0.40	0.39	0.39	0.39
16.600	0.39	0.39	0.38	0.38	0.38
16.850	0.38	0.38	0.37	0.37	0.37
17.100	0.37	0.37	0.36	0.36	0.36
17.350	0.36	0.36	0.35	0.35	0.35
17.600	0.35	0.35	0.34	0.34	0.34
17.850	0.34	0.34	0.33	0.33	0.33
18.100	0.33	0.33	0.32	0.32	0.32

PRE-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA #1

Return Event: 100 years
Storm Event: 100 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
18.350	0.32	0.31	0.31	0.31	0.31
18.600	0.31	0.30	0.30	0.30	0.30
18.850	0.29	0.29	0.29	0.29	0.29
19.100	0.28	0.28	0.28	0.28	0.28
19.350	0.27	0.27	0.27	0.27	0.26
19.600	0.26	0.26	0.26	0.26	0.25
19.850	0.25	0.25	0.25	0.24	0.24
20.100	0.24	0.24	0.24	0.24	0.24
20.350	0.24	0.24	0.24	0.24	0.24
20.600	0.24	0.24	0.24	0.24	0.23
20.850	0.23	0.23	0.23	0.23	0.23
21.100	0.23	0.23	0.23	0.23	0.23
21.350	0.23	0.23	0.23	0.23	0.23
21.600	0.23	0.23	0.23	0.23	0.23
21.850	0.23	0.23	0.23	0.22	0.22
22.100	0.22	0.22	0.22	0.22	0.22
22.350	0.22	0.22	0.22	0.22	0.22
22.600	0.22	0.22	0.22	0.22	0.22
22.850	0.22	0.22	0.22	0.22	0.22
23.100	0.22	0.22	0.22	0.21	0.21
23.350	0.21	0.21	0.21	0.21	0.21
23.600	0.21	0.21	0.21	0.21	0.21
23.850	0.21	0.21	0.21	0.21	(N/A)

PRE-DEVELOPED CONDITIONS

Subsection: Addition Summary

Label: O-1

Return Event: 1 years

Storm Event: 1 Year

Summary for Hydrograph Addition at 'O-1'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA #1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA #1	0.068	12.050	0.68
Flow (In)	O-1	0.068	12.050	0.68

PRE-DEVELOPED CONDITIONS

Subsection: Addition Summary

Label: O-1

Return Event: 2 years

Storm Event: 2 Year

Summary for Hydrograph Addition at 'O-1'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA #1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA #1	0.124	12.000	1.62
Flow (In)	O-1	0.124	12.000	1.62

PRE-DEVELOPED CONDITIONS

Subsection: Addition Summary

Label: O-1

Return Event: 5 years

Storm Event: 5 Year

Summary for Hydrograph Addition at 'O-1'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA #1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA #1	0.233	12.000	3.62
Flow (In)	O-1	0.233	12.000	3.62

PRE-DEVELOPED CONDITIONS

Subsection: Addition Summary

Label: O-1

Return Event: 10 years

Storm Event: 10 Year

Summary for Hydrograph Addition at 'O-1'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA #1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA #1	0.373	12.000	6.12
Flow (In)	O-1	0.373	12.000	6.12

PRE-DEVELOPED CONDITIONS

Subsection: Addition Summary

Label: O-1

Return Event: 25 years

Storm Event: 25 Year

Summary for Hydrograph Addition at 'O-1'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA #1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA #1	0.503	12.000	8.39
Flow (In)	O-1	0.503	12.000	8.39

PRE-DEVELOPED CONDITIONS

Subsection: Addition Summary

Label: O-1

Return Event: 50 years

Storm Event: 50 Year

Summary for Hydrograph Addition at 'O-1'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA #1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA #1	0.657	11.950	11.20
Flow (In)	O-1	0.657	11.950	11.20

PRE-DEVELOPED CONDITIONS

Subsection: Addition Summary

Label: O-1

Return Event: 100 years

Storm Event: 100 Year

Summary for Hydrograph Addition at 'O-1'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA #1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA #1	0.834	11.950	14.45
Flow (In)	O-1	0.834	11.950	14.45

PRE-DEVELOPED CONDITIONS

Index

D

DA #1 (Time of Concentration Calculations, 1 years)...16, 17, 18
DA #1 (Time of Concentration Calculations, 10 years)...25, 26, 27
DA #1 (Time of Concentration Calculations, 100 years)...34, 35, 36
DA #1 (Time of Concentration Calculations, 2 years)...19, 20, 21
DA #1 (Time of Concentration Calculations, 25 years)...28, 29, 30
DA #1 (Time of Concentration Calculations, 5 years)...22, 23, 24
DA #1 (Time of Concentration Calculations, 50 years)...31, 32, 33
DA #1 (Unit Hydrograph (Hydrograph Table), 1 years)...41, 42
DA #1 (Unit Hydrograph (Hydrograph Table), 10 years)...53, 54
DA #1 (Unit Hydrograph (Hydrograph Table), 100 years)...65, 66
DA #1 (Unit Hydrograph (Hydrograph Table), 2 years)...45, 46
DA #1 (Unit Hydrograph (Hydrograph Table), 25 years)...57, 58
DA #1 (Unit Hydrograph (Hydrograph Table), 5 years)...49, 50
DA #1 (Unit Hydrograph (Hydrograph Table), 50 years)...61, 62
DA #1 (Unit Hydrograph Summary, 1 years)...39, 40
DA #1 (Unit Hydrograph Summary, 10 years)...51, 52
DA #1 (Unit Hydrograph Summary, 100 years)...63, 64
DA #1 (Unit Hydrograph Summary, 2 years)...43, 44
DA #1 (Unit Hydrograph Summary, 25 years)...55, 56
DA #1 (Unit Hydrograph Summary, 5 years)...47, 48
DA #1 (Unit Hydrograph Summary, 50 years)...59, 60

M

Master Network Summary...1

O

O-1 (Addition Summary, 1 years)...67
O-1 (Addition Summary, 10 years)...70
O-1 (Addition Summary, 100 years)...73
O-1 (Addition Summary, 2 years)...68
O-1 (Addition Summary, 25 years)...71

PRE-DEVELOPED CONDITIONS

O-1 (Addition Summary, 5 years)...69

O-1 (Addition Summary, 50 years)...72

T

Time-Depth - 1 (Time-Depth Curve, 1 years)...2, 3

Time-Depth - 1 (Time-Depth Curve, 10 years)...4, 5

Time-Depth - 1 (Time-Depth Curve, 100 years)...6, 7

Time-Depth - 1 (Time-Depth Curve, 2 years)...8, 9

Time-Depth - 1 (Time-Depth Curve, 25 years)...10, 11

Time-Depth - 1 (Time-Depth Curve, 5 years)...12, 13

Time-Depth - 1 (Time-Depth Curve, 50 years)...14, 15

U

Unit Hydrograph Equations...37, 38

APPENDIX D

POST-DEVELOPED RUNOFF CALCULATIONS

Scenario: Post-Development 100 year

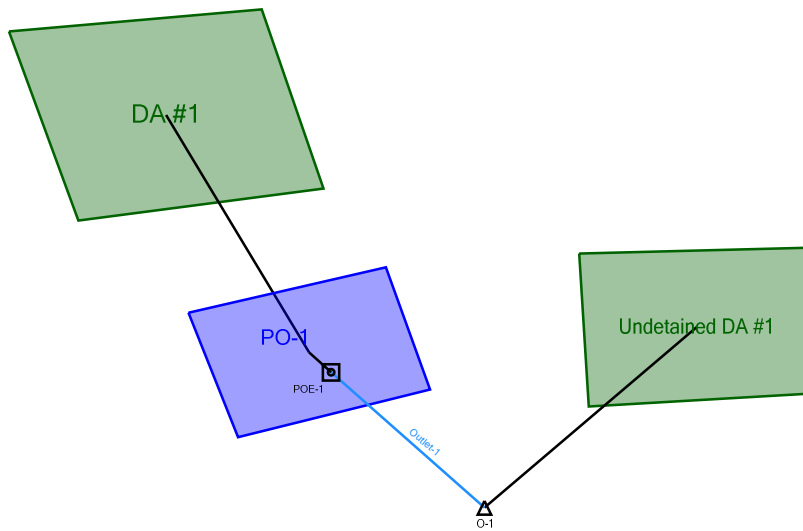


Table of Contents

	Master Network Summary	1
Time-Depth - 1	1 Year	
	Time-Depth Curve	4
	Time-Depth Curve	6
	Time-Depth Curve	8
	Time-Depth Curve	10
	Time-Depth Curve	12
	Time-Depth Curve	14
	Time-Depth Curve	16
	Unit Hydrograph Equations	18
DA #1	1 Year	
	Unit Hydrograph Summary	20
	Unit Hydrograph (Hydrograph Table)	22
	Unit Hydrograph Summary	24
	Unit Hydrograph (Hydrograph Table)	26
	Unit Hydrograph Summary	28
	Unit Hydrograph (Hydrograph Table)	30
	Unit Hydrograph Summary	32
	Unit Hydrograph (Hydrograph Table)	34
	Unit Hydrograph Summary	36
	Unit Hydrograph (Hydrograph Table)	38
	Unit Hydrograph Summary	40
	Unit Hydrograph (Hydrograph Table)	42
	Unit Hydrograph Summary	44
	Unit Hydrograph (Hydrograph Table)	46
Undetained DA #1	1 Year	
	Unit Hydrograph Summary	48
	Unit Hydrograph (Hydrograph Table)	50
	Unit Hydrograph Summary	52
	Unit Hydrograph (Hydrograph Table)	54

Table of Contents

	Unit Hydrograph Summary	56
	Unit Hydrograph (Hydrograph Table)	58
	Unit Hydrograph Summary	60
	Unit Hydrograph (Hydrograph Table)	62
	Unit Hydrograph Summary	64
	Unit Hydrograph (Hydrograph Table)	66
	Unit Hydrograph Summary	68
	Unit Hydrograph (Hydrograph Table)	70
	Unit Hydrograph Summary	72
	Unit Hydrograph (Hydrograph Table)	74
O-1	1 Year	
	Addition Summary	76
	Addition Summary	77
	Addition Summary	78
	Addition Summary	79
	Addition Summary	80
	Addition Summary	81
	Addition Summary	82
PO-1 (IN)	1 Year	
	Time vs. Elevation	83
	Time vs. Elevation	86
	Time vs. Elevation	89
	Time vs. Elevation	92
	Time vs. Elevation	95
	Time vs. Elevation	98
	Time vs. Elevation	101
PO-1	1 Year	
	Time vs. Volume	104
	Time vs. Volume	107
	Time vs. Volume	110
	Time vs. Volume	113
	Time vs. Volume	116

Table of Contents

	Time vs. Volume	119
	Time vs. Volume	122
PO-1	1 Year	
	Elevation-Area Volume Curve	125
	Volume Equations	126
	Elevation-Area Volume Curve	127
	Volume Equations	128
	Elevation-Area Volume Curve	129
	Volume Equations	130
	Elevation-Area Volume Curve	131
	Volume Equations	132
	Elevation-Area Volume Curve	133
	Volume Equations	134
	Elevation-Area Volume Curve	135
	Volume Equations	136
	Elevation-Area Volume Curve	137
	Volume Equations	138
Composite Outlet Structure - 1	1 Year	
	Outlet Input Data	139
	Individual Outlet Curves	141
	Composite Rating Curve	142
	Outlet Input Data	143
	Individual Outlet Curves	145
	Composite Rating Curve	146
	Outlet Input Data	147
	Individual Outlet Curves	149
	Composite Rating Curve	150
	Outlet Input Data	151
	Individual Outlet Curves	153
	Composite Rating Curve	154
	Outlet Input Data	155
	Individual Outlet Curves	157
	Composite Rating Curve	158

Table of Contents

	Outlet Input Data	159
	Individual Outlet Curves	161
	Composite Rating Curve	162
	Outlet Input Data	163
	Individual Outlet Curves	165
	Composite Rating Curve	166
Outlet-1	1 Year	
	Diverted Hydrograph	167
	Diverted Hydrograph	168
	Diverted Hydrograph	169
	Diverted Hydrograph	170
	Diverted Hydrograph	172
	Diverted Hydrograph	174
	Diverted Hydrograph	176
PO-1	1 Year	
	Elevation-Volume-Flow Table (Pond)	178
PO-1 (IN)	1 Year	
	Pond Infiltration Calculations	179
	Level Pool Pond Routing Summary	180
	Level Pool Pond Routing Summary	181
	Level Pool Pond Routing Summary	182
	Level Pool Pond Routing Summary	183
	Level Pool Pond Routing Summary	184
	Level Pool Pond Routing Summary	185
	Level Pool Pond Routing Summary	186
PO-1 (INF)	1 Year	
	Pond Infiltration Hydrograph	187
	Pond Infiltration Hydrograph	189
	Pond Infiltration Hydrograph	191
	Pond Infiltration Hydrograph	193
	Pond Infiltration Hydrograph	195

Table of Contents

	Pond Infiltration Hydrograph	197
	Pond Infiltration Hydrograph	199
PO-1 (OUT)	1 Year	
	Pond Routed Hydrograph (total out)	201
	Pond Routed Hydrograph (total out)	202
	Pond Routed Hydrograph (total out)	203
	Pond Routed Hydrograph (total out)	204
	Pond Routed Hydrograph (total out)	206
	Pond Routed Hydrograph (total out)	208
	Pond Routed Hydrograph (total out)	210
PO-1 (IN)	1 Year	
	Pond Inflow Summary	212
	Pond Inflow Summary	213
	Pond Inflow Summary	214
	Pond Inflow Summary	215
	Pond Inflow Summary	216
	Pond Inflow Summary	217
	Pond Inflow Summary	218

POST-DEVELOPED CONDITIONS

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)
DA #1	Post-Development 1 year	1	0.129	12.000	2.06
DA #1	Post-Development 2 year	2	0.205	11.950	3.45
DA #1	Post-Development 5 year	5	0.340	11.950	6.02
DA #1	Post-Development 10 year	10	0.502	11.950	9.04
DA #1	Post-Development 25 year	25	0.647	11.950	11.71
DA #1	Post-Development 50 year	50	0.815	11.950	14.75
DA #1	Post-Development 100 year	100	1.004	11.950	18.13
Undetained DA #1	Post-Development 1 year	1	0.005	12.000	0.06
Undetained DA #1	Post-Development 2 year	2	0.009	12.000	0.14
Undetained DA #1	Post-Development 5 year	5	0.017	12.000	0.29
Undetained DA #1	Post-Development 10 year	10	0.028	11.950	0.48
Undetained DA #1	Post-Development 25 year	25	0.037	11.950	0.66
Undetained DA #1	Post-Development 50 year	50	0.048	11.950	0.87
Undetained DA #1	Post-Development 100 year	100	0.061	11.950	1.10

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)
O-1	Post-Development 1 year	1	0.005	12.000	0.06
O-1	Post-Development 2 year	2	0.010	12.000	0.14
O-1	Post-Development 5 year	5	0.054	12.000	0.30
O-1	Post-Development 10 year	10	0.150	12.000	0.56
O-1	Post-Development 25 year	25	0.247	12.000	0.80
O-1	Post-Development 50 year	50	0.352	12.000	1.07

POST-DEVELOPED CONDITIONS

Subsection: Master Network Summary

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)
O-1	Post-Development 100 year	100	0.455	11.950	1.39

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
PO-1 (IN)	Post-Development 1 year	1	0.129	12.000	2.06	(N/A)	(N/A)
PO-1 (OUT)	Post-Development 1 year	1	0.000	0.000	0.00	686.15	0.047
PO-1 (IN)	Post-Development 2 year	2	0.205	11.950	3.45	(N/A)	(N/A)
PO-1 (OUT)	Post-Development 2 year	2	0.000	13.050	0.00	686.25	0.081
PO-1 (IN)	Post-Development 5 year	5	0.340	11.950	6.02	(N/A)	(N/A)
PO-1 (OUT)	Post-Development 5 year	5	0.037	13.350	0.09	686.48	0.155
PO-1 (IN)	Post-Development 10 year	10	0.502	11.950	9.04	(N/A)	(N/A)
PO-1 (OUT)	Post-Development 10 year	10	0.122	13.450	0.22	686.76	0.248
PO-1 (IN)	Post-Development 25 year	25	0.647	11.950	11.71	(N/A)	(N/A)
PO-1 (OUT)	Post-Development 25 year	25	0.210	13.450	0.32	687.01	0.335
PO-1 (IN)	Post-Development 50 year	50	0.815	11.950	14.75	(N/A)	(N/A)
PO-1 (OUT)	Post-Development 50 year	50	0.304	13.650	0.39	687.31	0.440

POST-DEVELOPED CONDITIONS

Subsection: Master Network Summary

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
PO-1 (IN)	Post-Development 100 year	100	1.004	11.950	18.13	(N/A)	(N/A)
PO-1 (OUT)	Post-Development 100 year	100	0.394	13.800	0.46	687.65	0.562

POST-DEVELOPED CONDITIONS

Subsection: Time-Depth Curve

Label: Time-Depth - 1

Return Event: 1 years

Storm Event: 1 Year

Time-Depth Curve: 1 Year

Label	1 Year
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	1 years

CUMULATIVE RAINFALL (in)

Output Time Increment = 0.100 hours

Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.0
1.000	0.0	0.0	0.0	0.0	0.0
1.500	0.0	0.0	0.0	0.1	0.1
2.000	0.1	0.1	0.1	0.1	0.1
2.500	0.1	0.1	0.1	0.1	0.1
3.000	0.1	0.1	0.1	0.1	0.1
3.500	0.1	0.1	0.1	0.1	0.1
4.000	0.1	0.1	0.1	0.1	0.1
4.500	0.1	0.2	0.2	0.2	0.2
5.000	0.2	0.2	0.2	0.2	0.2
5.500	0.2	0.2	0.2	0.2	0.2
6.000	0.2	0.2	0.2	0.2	0.2
6.500	0.2	0.2	0.2	0.3	0.3
7.000	0.3	0.3	0.3	0.3	0.3
7.500	0.3	0.3	0.3	0.3	0.3
8.000	0.3	0.3	0.3	0.3	0.3
8.500	0.4	0.4	0.4	0.4	0.4
9.000	0.4	0.4	0.4	0.4	0.4
9.500	0.4	0.4	0.5	0.5	0.5
10.000	0.5	0.5	0.5	0.5	0.5
10.500	0.5	0.6	0.6	0.6	0.6
11.000	0.6	0.6	0.7	0.7	0.7
11.500	0.8	0.8	0.9	1.2	1.5
12.000	1.8	1.8	1.9	1.9	1.9
12.500	2.0	2.0	2.0	2.0	2.0
13.000	2.1	2.1	2.1	2.1	2.1
13.500	2.1	2.1	2.2	2.2	2.2
14.000	2.2	2.2	2.2	2.2	2.2
14.500	2.2	2.2	2.3	2.3	2.3
15.000	2.3	2.3	2.3	2.3	2.3
15.500	2.3	2.3	2.3	2.3	2.3
16.000	2.3	2.4	2.4	2.4	2.4
16.500	2.4	2.4	2.4	2.4	2.4

POST-DEVELOPED CONDITIONS

Subsection: Time-Depth Curve

Label: Time-Depth - 1

Return Event: 1 years

Storm Event: 1 Year

CUMULATIVE RAINFALL (in)

Output Time Increment = 0.100 hours

Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.000	2.4	2.4	2.4	2.4	2.4
17.500	2.4	2.4	2.4	2.4	2.5
18.000	2.5	2.5	2.5	2.5	2.5
18.500	2.5	2.5	2.5	2.5	2.5
19.000	2.5	2.5	2.5	2.5	2.5
19.500	2.5	2.5	2.5	2.5	2.5
20.000	2.5	2.5	2.5	2.6	2.6
20.500	2.6	2.6	2.6	2.6	2.6
21.000	2.6	2.6	2.6	2.6	2.6
21.500	2.6	2.6	2.6	2.6	2.6
22.000	2.6	2.6	2.6	2.6	2.6
22.500	2.6	2.6	2.6	2.6	2.6
23.000	2.6	2.6	2.6	2.6	2.7
23.500	2.7	2.7	2.7	2.7	2.7
24.000	2.7	(N/A)	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Time-Depth Curve

Label: Time-Depth - 1

Return Event: 10 years

Storm Event: 10 Year

Time-Depth Curve: 10 Year

Label	10 Year
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	10 years

CUMULATIVE RAINFALL (in)

Output Time Increment = 0.100 hours

Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.0
1.000	0.1	0.1	0.1	0.1	0.1
1.500	0.1	0.1	0.1	0.1	0.1
2.000	0.1	0.1	0.1	0.1	0.1
2.500	0.1	0.1	0.2	0.2	0.2
3.000	0.2	0.2	0.2	0.2	0.2
3.500	0.2	0.2	0.2	0.2	0.2
4.000	0.2	0.2	0.2	0.3	0.3
4.500	0.3	0.3	0.3	0.3	0.3
5.000	0.3	0.3	0.3	0.3	0.3
5.500	0.3	0.4	0.4	0.4	0.4
6.000	0.4	0.4	0.4	0.4	0.4
6.500	0.4	0.4	0.5	0.5	0.5
7.000	0.5	0.5	0.5	0.5	0.5
7.500	0.5	0.5	0.6	0.6	0.6
8.000	0.6	0.6	0.6	0.6	0.6
8.500	0.6	0.7	0.7	0.7	0.7
9.000	0.7	0.7	0.8	0.8	0.8
9.500	0.8	0.8	0.8	0.8	0.9
10.000	0.9	0.9	0.9	1.0	1.0
10.500	1.0	1.0	1.1	1.1	1.1
11.000	1.2	1.2	1.2	1.3	1.3
11.500	1.4	1.5	1.7	2.1	2.8
12.000	3.2	3.3	3.4	3.5	3.6
12.500	3.6	3.6	3.7	3.7	3.8
13.000	3.8	3.8	3.8	3.9	3.9
13.500	3.9	3.9	4.0	4.0	4.0
14.000	4.0	4.0	4.1	4.1	4.1
14.500	4.1	4.1	4.1	4.2	4.2
15.000	4.2	4.2	4.2	4.2	4.2
15.500	4.3	4.3	4.3	4.3	4.3
16.000	4.3	4.3	4.3	4.3	4.4
16.500	4.4	4.4	4.4	4.4	4.4

POST-DEVELOPED CONDITIONS

Subsection: Time-Depth Curve

Label: Time-Depth - 1

Return Event: 10 years

Storm Event: 10 Year

CUMULATIVE RAINFALL (in)

Output Time Increment = 0.100 hours

Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.000	4.4	4.4	4.4	4.4	4.5
17.500	4.5	4.5	4.5	4.5	4.5
18.000	4.5	4.5	4.5	4.5	4.5
18.500	4.6	4.6	4.6	4.6	4.6
19.000	4.6	4.6	4.6	4.6	4.6
19.500	4.6	4.6	4.6	4.7	4.7
20.000	4.7	4.7	4.7	4.7	4.7
20.500	4.7	4.7	4.7	4.7	4.7
21.000	4.7	4.7	4.7	4.7	4.8
21.500	4.8	4.8	4.8	4.8	4.8
22.000	4.8	4.8	4.8	4.8	4.8
22.500	4.8	4.8	4.8	4.8	4.8
23.000	4.8	4.9	4.9	4.9	4.9
23.500	4.9	4.9	4.9	4.9	4.9
24.000	4.9	(N/A)	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Time-Depth Curve

Label: Time-Depth - 1

Return Event: 100 years

Storm Event: 100 Year

Time-Depth Curve: 100 Year

Label	100 Year
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	100 years

CUMULATIVE RAINFALL (in)

Output Time Increment = 0.100 hours

Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.1	0.1	0.1
1.000	0.1	0.1	0.1	0.1	0.1
1.500	0.1	0.1	0.1	0.1	0.2
2.000	0.2	0.2	0.2	0.2	0.2
2.500	0.2	0.2	0.2	0.2	0.2
3.000	0.3	0.3	0.3	0.3	0.3
3.500	0.3	0.3	0.3	0.3	0.3
4.000	0.3	0.4	0.4	0.4	0.4
4.500	0.4	0.4	0.4	0.4	0.4
5.000	0.5	0.5	0.5	0.5	0.5
5.500	0.5	0.5	0.5	0.6	0.6
6.000	0.6	0.6	0.6	0.6	0.6
6.500	0.6	0.7	0.7	0.7	0.7
7.000	0.7	0.7	0.7	0.8	0.8
7.500	0.8	0.8	0.8	0.8	0.9
8.000	0.9	0.9	0.9	0.9	0.9
8.500	1.0	1.0	1.0	1.0	1.0
9.000	1.1	1.1	1.1	1.1	1.2
9.500	1.2	1.2	1.2	1.3	1.3
10.000	1.3	1.3	1.4	1.4	1.4
10.500	1.5	1.5	1.6	1.6	1.7
11.000	1.7	1.8	1.8	1.9	2.0
11.500	2.1	2.2	2.6	3.1	4.1
12.000	4.8	5.0	5.1	5.2	5.3
12.500	5.3	5.4	5.5	5.5	5.6
13.000	5.6	5.6	5.7	5.7	5.8
13.500	5.8	5.8	5.9	5.9	5.9
14.000	6.0	6.0	6.0	6.0	6.1
14.500	6.1	6.1	6.1	6.2	6.2
15.000	6.2	6.2	6.2	6.3	6.3
15.500	6.3	6.3	6.3	6.4	6.4
16.000	6.4	6.4	6.4	6.4	6.5
16.500	6.5	6.5	6.5	6.5	6.5

POST-DEVELOPED CONDITIONS

Subsection: Time-Depth Curve

Label: Time-Depth - 1

Return Event: 100 years

Storm Event: 100 Year

CUMULATIVE RAINFALL (in)

Output Time Increment = 0.100 hours

Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.000	6.5	6.6	6.6	6.6	6.6
17.500	6.6	6.6	6.6	6.7	6.7
18.000	6.7	6.7	6.7	6.7	6.7
18.500	6.7	6.8	6.8	6.8	6.8
19.000	6.8	6.8	6.8	6.8	6.9
19.500	6.9	6.9	6.9	6.9	6.9
20.000	6.9	6.9	6.9	6.9	6.9
20.500	7.0	7.0	7.0	7.0	7.0
21.000	7.0	7.0	7.0	7.0	7.0
21.500	7.0	7.1	7.1	7.1	7.1
22.000	7.1	7.1	7.1	7.1	7.1
22.500	7.1	7.1	7.2	7.2	7.2
23.000	7.2	7.2	7.2	7.2	7.2
23.500	7.2	7.2	7.2	7.2	7.3
24.000	7.3	(N/A)	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Time-Depth Curve

Label: Time-Depth - 1

Return Event: 2 years

Storm Event: 2 Year

Time-Depth Curve: 2 Year

Label	2 Year
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	2 years

CUMULATIVE RAINFALL (in)

Output Time Increment = 0.100 hours

Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.0
1.000	0.0	0.0	0.0	0.0	0.0
1.500	0.1	0.1	0.1	0.1	0.1
2.000	0.1	0.1	0.1	0.1	0.1
2.500	0.1	0.1	0.1	0.1	0.1
3.000	0.1	0.1	0.1	0.1	0.1
3.500	0.1	0.1	0.1	0.1	0.1
4.000	0.2	0.2	0.2	0.2	0.2
4.500	0.2	0.2	0.2	0.2	0.2
5.000	0.2	0.2	0.2	0.2	0.2
5.500	0.2	0.2	0.2	0.2	0.3
6.000	0.3	0.3	0.3	0.3	0.3
6.500	0.3	0.3	0.3	0.3	0.3
7.000	0.3	0.3	0.3	0.3	0.3
7.500	0.4	0.4	0.4	0.4	0.4
8.000	0.4	0.4	0.4	0.4	0.4
8.500	0.4	0.4	0.4	0.5	0.5
9.000	0.5	0.5	0.5	0.5	0.5
9.500	0.5	0.5	0.5	0.6	0.6
10.000	0.6	0.6	0.6	0.6	0.6
10.500	0.7	0.7	0.7	0.7	0.7
11.000	0.8	0.8	0.8	0.8	0.9
11.500	0.9	1.0	1.1	1.4	1.8
12.000	2.1	2.2	2.2	2.3	2.3
12.500	2.4	2.4	2.4	2.4	2.5
13.000	2.5	2.5	2.5	2.5	2.5
13.500	2.6	2.6	2.6	2.6	2.6
14.000	2.6	2.6	2.7	2.7	2.7
14.500	2.7	2.7	2.7	2.7	2.7
15.000	2.7	2.7	2.8	2.8	2.8
15.500	2.8	2.8	2.8	2.8	2.8
16.000	2.8	2.8	2.8	2.8	2.9
16.500	2.9	2.9	2.9	2.9	2.9

POST-DEVELOPED CONDITIONS

Subsection: Time-Depth Curve

Label: Time-Depth - 1

Return Event: 2 years

Storm Event: 2 Year

CUMULATIVE RAINFALL (in)

Output Time Increment = 0.100 hours

Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.000	2.9	2.9	2.9	2.9	2.9
17.500	2.9	2.9	2.9	2.9	3.0
18.000	3.0	3.0	3.0	3.0	3.0
18.500	3.0	3.0	3.0	3.0	3.0
19.000	3.0	3.0	3.0	3.0	3.0
19.500	3.0	3.0	3.0	3.0	3.1
20.000	3.1	3.1	3.1	3.1	3.1
20.500	3.1	3.1	3.1	3.1	3.1
21.000	3.1	3.1	3.1	3.1	3.1
21.500	3.1	3.1	3.1	3.1	3.1
22.000	3.1	3.1	3.1	3.1	3.2
22.500	3.2	3.2	3.2	3.2	3.2
23.000	3.2	3.2	3.2	3.2	3.2
23.500	3.2	3.2	3.2	3.2	3.2
24.000	3.2	(N/A)	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Time-Depth Curve

Label: Time-Depth - 1

Return Event: 25 years

Storm Event: 25 Year

Time-Depth Curve: 25 Year

Label	25 Year
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	25 years

CUMULATIVE RAINFALL (in)

Output Time Increment = 0.100 hours

Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.1
1.000	0.1	0.1	0.1	0.1	0.1
1.500	0.1	0.1	0.1	0.1	0.1
2.000	0.1	0.1	0.1	0.1	0.2
2.500	0.2	0.2	0.2	0.2	0.2
3.000	0.2	0.2	0.2	0.2	0.2
3.500	0.2	0.2	0.2	0.3	0.3
4.000	0.3	0.3	0.3	0.3	0.3
4.500	0.3	0.3	0.3	0.3	0.3
5.000	0.4	0.4	0.4	0.4	0.4
5.500	0.4	0.4	0.4	0.4	0.4
6.000	0.4	0.5	0.5	0.5	0.5
6.500	0.5	0.5	0.5	0.5	0.5
7.000	0.6	0.6	0.6	0.6	0.6
7.500	0.6	0.6	0.6	0.6	0.7
8.000	0.7	0.7	0.7	0.7	0.7
8.500	0.7	0.8	0.8	0.8	0.8
9.000	0.8	0.8	0.9	0.9	0.9
9.500	0.9	0.9	1.0	1.0	1.0
10.000	1.0	1.0	1.1	1.1	1.1
10.500	1.1	1.2	1.2	1.2	1.3
11.000	1.3	1.4	1.4	1.5	1.5
11.500	1.6	1.7	2.0	2.4	3.2
12.000	3.7	3.8	3.9	4.0	4.1
12.500	4.1	4.2	4.2	4.3	4.3
13.000	4.3	4.4	4.4	4.4	4.5
13.500	4.5	4.5	4.5	4.6	4.6
14.000	4.6	4.6	4.6	4.7	4.7
14.500	4.7	4.7	4.7	4.8	4.8
15.000	4.8	4.8	4.8	4.8	4.9
15.500	4.9	4.9	4.9	4.9	4.9
16.000	4.9	5.0	5.0	5.0	5.0
16.500	5.0	5.0	5.0	5.0	5.1

POST-DEVELOPED CONDITIONS

Subsection: Time-Depth Curve

Label: Time-Depth - 1

Return Event: 25 years

Storm Event: 25 Year

CUMULATIVE RAINFALL (in)

Output Time Increment = 0.100 hours

Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.000	5.1	5.1	5.1	5.1	5.1
17.500	5.1	5.1	5.1	5.2	5.2
18.000	5.2	5.2	5.2	5.2	5.2
18.500	5.2	5.2	5.2	5.3	5.3
19.000	5.3	5.3	5.3	5.3	5.3
19.500	5.3	5.3	5.3	5.3	5.3
20.000	5.4	5.4	5.4	5.4	5.4
20.500	5.4	5.4	5.4	5.4	5.4
21.000	5.4	5.4	5.4	5.4	5.4
21.500	5.5	5.5	5.5	5.5	5.5
22.000	5.5	5.5	5.5	5.5	5.5
22.500	5.5	5.5	5.5	5.5	5.6
23.000	5.6	5.6	5.6	5.6	5.6
23.500	5.6	5.6	5.6	5.6	5.6
24.000	5.6	(N/A)	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Time-Depth Curve

Label: Time-Depth - 1

Return Event: 5 years

Storm Event: 5 Year

Time-Depth Curve: 5 Year

Label	5 Year
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	5 years

CUMULATIVE RAINFALL (in)

Output Time Increment = 0.100 hours

Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.0
1.000	0.0	0.0	0.1	0.1	0.1
1.500	0.1	0.1	0.1	0.1	0.1
2.000	0.1	0.1	0.1	0.1	0.1
2.500	0.1	0.1	0.1	0.1	0.1
3.000	0.1	0.1	0.1	0.2	0.2
3.500	0.2	0.2	0.2	0.2	0.2
4.000	0.2	0.2	0.2	0.2	0.2
4.500	0.2	0.2	0.2	0.2	0.2
5.000	0.3	0.3	0.3	0.3	0.3
5.500	0.3	0.3	0.3	0.3	0.3
6.000	0.3	0.3	0.3	0.3	0.4
6.500	0.4	0.4	0.4	0.4	0.4
7.000	0.4	0.4	0.4	0.4	0.4
7.500	0.4	0.4	0.5	0.5	0.5
8.000	0.5	0.5	0.5	0.5	0.5
8.500	0.5	0.5	0.6	0.6	0.6
9.000	0.6	0.6	0.6	0.6	0.6
9.500	0.7	0.7	0.7	0.7	0.7
10.000	0.7	0.7	0.8	0.8	0.8
10.500	0.8	0.8	0.9	0.9	0.9
11.000	0.9	1.0	1.0	1.1	1.1
11.500	1.1	1.2	1.4	1.7	2.3
12.000	2.7	2.7	2.8	2.9	2.9
12.500	3.0	3.0	3.0	3.1	3.1
13.000	3.1	3.1	3.2	3.2	3.2
13.500	3.2	3.2	3.3	3.3	3.3
14.000	3.3	3.3	3.3	3.3	3.4
14.500	3.4	3.4	3.4	3.4	3.4
15.000	3.4	3.5	3.5	3.5	3.5
15.500	3.5	3.5	3.5	3.5	3.5
16.000	3.5	3.6	3.6	3.6	3.6
16.500	3.6	3.6	3.6	3.6	3.6

POST-DEVELOPED CONDITIONS

Subsection: Time-Depth Curve

Label: Time-Depth - 1

Return Event: 5 years

Storm Event: 5 Year

CUMULATIVE RAINFALL (in)

Output Time Increment = 0.100 hours

Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.000	3.6	3.6	3.7	3.7	3.7
17.500	3.7	3.7	3.7	3.7	3.7
18.000	3.7	3.7	3.7	3.7	3.7
18.500	3.7	3.8	3.8	3.8	3.8
19.000	3.8	3.8	3.8	3.8	3.8
19.500	3.8	3.8	3.8	3.8	3.8
20.000	3.8	3.8	3.8	3.9	3.9
20.500	3.9	3.9	3.9	3.9	3.9
21.000	3.9	3.9	3.9	3.9	3.9
21.500	3.9	3.9	3.9	3.9	3.9
22.000	3.9	3.9	3.9	4.0	4.0
22.500	4.0	4.0	4.0	4.0	4.0
23.000	4.0	4.0	4.0	4.0	4.0
23.500	4.0	4.0	4.0	4.0	4.0
24.000	4.0	(N/A)	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Time-Depth Curve

Label: Time-Depth - 1

Return Event: 50 years

Storm Event: 50 Year

Time-Depth Curve: 50 Year

Label	50 Year
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	50 years

CUMULATIVE RAINFALL (in)

Output Time Increment = 0.100 hours

Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.1	0.1
1.000	0.1	0.1	0.1	0.1	0.1
1.500	0.1	0.1	0.1	0.1	0.1
2.000	0.1	0.1	0.2	0.2	0.2
2.500	0.2	0.2	0.2	0.2	0.2
3.000	0.2	0.2	0.2	0.2	0.3
3.500	0.3	0.3	0.3	0.3	0.3
4.000	0.3	0.3	0.3	0.3	0.3
4.500	0.4	0.4	0.4	0.4	0.4
5.000	0.4	0.4	0.4	0.4	0.4
5.500	0.5	0.5	0.5	0.5	0.5
6.000	0.5	0.5	0.5	0.5	0.6
6.500	0.6	0.6	0.6	0.6	0.6
7.000	0.6	0.6	0.7	0.7	0.7
7.500	0.7	0.7	0.7	0.7	0.8
8.000	0.8	0.8	0.8	0.8	0.8
8.500	0.8	0.9	0.9	0.9	0.9
9.000	0.9	1.0	1.0	1.0	1.0
9.500	1.0	1.1	1.1	1.1	1.1
10.000	1.2	1.2	1.2	1.2	1.3
10.500	1.3	1.3	1.4	1.4	1.5
11.000	1.5	1.6	1.6	1.7	1.7
11.500	1.8	2.0	2.3	2.8	3.6
12.000	4.2	4.4	4.5	4.6	4.6
12.500	4.7	4.8	4.8	4.9	4.9
13.000	4.9	5.0	5.0	5.1	5.1
13.500	5.1	5.2	5.2	5.2	5.2
14.000	5.3	5.3	5.3	5.3	5.3
14.500	5.4	5.4	5.4	5.4	5.5
15.000	5.5	5.5	5.5	5.5	5.5
15.500	5.6	5.6	5.6	5.6	5.6
16.000	5.6	5.7	5.7	5.7	5.7
16.500	5.7	5.7	5.7	5.8	5.8

POST-DEVELOPED CONDITIONS

Subsection: Time-Depth Curve

Label: Time-Depth - 1

Return Event: 50 years

Storm Event: 50 Year

CUMULATIVE RAINFALL (in)

Output Time Increment = 0.100 hours

Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.000	5.8	5.8	5.8	5.8	5.8
17.500	5.8	5.9	5.9	5.9	5.9
18.000	5.9	5.9	5.9	5.9	5.9
18.500	6.0	6.0	6.0	6.0	6.0
19.000	6.0	6.0	6.0	6.0	6.0
19.500	6.1	6.1	6.1	6.1	6.1
20.000	6.1	6.1	6.1	6.1	6.1
20.500	6.1	6.2	6.2	6.2	6.2
21.000	6.2	6.2	6.2	6.2	6.2
21.500	6.2	6.2	6.2	6.2	6.3
22.000	6.3	6.3	6.3	6.3	6.3
22.500	6.3	6.3	6.3	6.3	6.3
23.000	6.3	6.3	6.4	6.4	6.4
23.500	6.4	6.4	6.4	6.4	6.4
24.000	6.4	(N/A)	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Equations

Unit Hydrograph Method (Computational Notes)

Definition of Terms

At	Total area (acres): $A_t = A_i + A_p$
Ai	Impervious area (acres)
Ap	Pervious area (acres)
CNi	Runoff curve number for impervious area
CNp	Runoff curve number for pervious area
fLoss	f loss constant infiltration (depth/time)
gKs	Saturated Hydraulic Conductivity (depth/time)
Md	Volumetric Moisture Deficit
Psi	Capillary Suction (length)
hK	Horton Infiltration Decay Rate (time^{-1})
fo	Initial Infiltration Rate (depth/time)
fc	Ultimate(capacity)Infiltration Rate (depth/time)
Ia	Initial Abstraction (length)
dt	Computational increment (duration of unit excess rainfall) Default dt is smallest value of $0.1333T_c$, r_{tm} , and t_h (Smallest dt is then adjusted to match up with T_p)
UDdt	User specified override computational main time increment (only used if UDdt is $\Rightarrow .1333T_c$)
D(t)	Point on distribution curve (fraction of P) for time step t
K	$2 / (1 + (T_r/T_p))$: default $K = 0.75$: (for $T_r/T_p = 1.67$) Hydrograph shape factor = Unit Conversions * K : $= ((1\text{hr}/3600\text{sec}) * (1\text{ft}/12\text{in}) * ((5280\text{ft})^2/\text{sq.mi})) * K$ Default $K_s = 645.333 * 0.75 = 484$
Ks	
Lag	Lag time from center of excess runoff (dt) to T_p : $\text{Lag} = 0.6T_c$
P	Total precipitation depth, inches
Pa(t)	Accumulated rainfall at time step t
Pi(t)	Incremental rainfall at time step t
qp	Peak discharge (cfs) for 1in. runoff, for 1hr, for 1 sq.mi. $= (K_s * A * Q) / T_p$ (where $Q = 1\text{in. runoff}$, $A = \text{sq.mi.}$)
Qu(t)	Unit hydrograph ordinate (cfs) at time step t
Q(t)	Final hydrograph ordinate (cfs) at time step t
Rai(t)	Accumulated runoff (inches) at time step t for impervious area
Rap(t)	Accumulated runoff (inches) at time step t for pervious area
Rii(t)	Incremental runoff (inches) at time step t for impervious area
Rip(t)	Incremental runoff (inches) at time step t for pervious area
R(t)	Incremental weighted total runoff (inches)
Rtm	Time increment for rainfall table
Si	S for impervious area: $S_i = (1000/CN_i) - 10$
Sp	S for pervious area: $S_p = (1000/CN_p) - 10$
t	Time step (row) number
Tc	Time of concentration
Tb	Time (hrs) of entire unit hydrograph: $T_b = T_p + T_r$
Tp	Time (hrs) to peak of a unit hydrograph: $T_p = (dt/2) + \text{Lag}$
Tr	Time (hrs) of receding limb of unit hydrograph: $T_r = \text{ratio of } T_p$

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Equations

Unit Hydrograph Method

Computational Notes

Precipitation

Column (1)	Time for time step t
Column (2)	$D(t)$ = Point on distribution curve for time step t
Column (3)	$P_i(t) = P_a(t) - P_a(t-1)$: Col.(4) - Preceding Col.(4)
Column (4)	$P_a(t) = D(t) \times P$: Col.(2) $\times$ P

Pervious Area Runoff (using SCS Runoff CN Method)

	$Rap(t)$ = Accumulated pervious runoff for time step t
	If $(P_a(t))$ is $\leq 0.2Sp$ then use: $Rap(t) = 0.0$
Column (5)	If $(P_a(t))$ is $> 0.2Sp$ then use:
	$Rap(t) = (Col.(4) - 0.2Sp) \times 2 / (Col.(4) + 0.8Sp)$
	$Rip(t)$ = Incremental pervious runoff for time step t
Column (6)	$Rip(t) = Rap(t) - Rap(t-1)$
	$Rip(t) = Col.(5)$ for current row - Col.(5) for preceding row.

Impervious Area Runoff

Column (7 & 8)...	Did not specify to use impervious areas.
-------------------	--

Incremental Weighted Runoff

	$R(t) = (A_p/A_t) \times Rip(t) + (A_i/A_t) \times Rii(t)$
Column (9)	$R(t) = (A_p/A_t) \times Col.(6) + (A_i/A_t) \times Col.(8)$

SCS Unit Hydrograph Method

Column (10)	$Q(t)$ is computed with the SCS unit hydrograph method using $R(t)$ and $Qu(t)$.
-------------	---

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary
Label: DA #1

Return Event: 1 years
Storm Event: 1 Year

Storm Event	1 Year
Return Event	1 years
Duration	24.000 hours
Depth	2.7 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	3.317 acres
Computational Time Increment	0.011 hours
Time to Peak (Computed)	12.011 hours
Flow (Peak, Computed)	2.08 ft ³ /s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.000 hours
Flow (Peak Interpolated Output)	2.06 ft ³ /s
Drainage Area	
SCS CN (Composite)	68.137
Area (User Defined)	3.317 acres
Maximum Retention (Pervious)	4.7 in
Maximum Retention (Pervious, 20 percent)	0.9 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.5 in
Runoff Volume (Pervious)	0.130 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.129 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary

Label: DA #1

Return Event: 1 years

Storm Event: 1 Year

SCS Unit Hydrograph Parameters	
Unit peak, qp	45.10 ft ³ /s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA #1

Return Event: 1 years
Storm Event: 1 Year

Storm Event	1 Year
Return Event	1 years
Duration	24.000 hours
Depth	2.7 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	3.317 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
11.700	0.00	0.05	0.25	0.75	1.57
11.950	1.97	2.06	1.55	0.75	0.53
12.200	0.46	0.43	0.40	0.38	0.35
12.450	0.32	0.29	0.27	0.25	0.25
12.700	0.24	0.23	0.23	0.22	0.21
12.950	0.21	0.20	0.19	0.19	0.19
13.200	0.18	0.18	0.17	0.17	0.17
13.450	0.16	0.16	0.16	0.15	0.15
13.700	0.15	0.14	0.14	0.14	0.13
13.950	0.13	0.13	0.13	0.12	0.12
14.200	0.12	0.12	0.12	0.12	0.12
14.450	0.12	0.12	0.12	0.12	0.11
14.700	0.11	0.11	0.11	0.11	0.11
14.950	0.11	0.11	0.11	0.11	0.10
15.200	0.10	0.10	0.10	0.10	0.10
15.450	0.10	0.10	0.10	0.09	0.09
15.700	0.09	0.09	0.09	0.09	0.09
15.950	0.09	0.09	0.08	0.08	0.08
16.200	0.08	0.08	0.08	0.08	0.08
16.450	0.08	0.08	0.08	0.08	0.08
16.700	0.08	0.08	0.08	0.08	0.08
16.950	0.08	0.08	0.08	0.08	0.08
17.200	0.08	0.08	0.08	0.08	0.07
17.450	0.07	0.07	0.07	0.07	0.07
17.700	0.07	0.07	0.07	0.07	0.07
17.950	0.07	0.07	0.07	0.07	0.07
18.200	0.07	0.07	0.07	0.07	0.07
18.450	0.07	0.07	0.07	0.06	0.06
18.700	0.06	0.06	0.06	0.06	0.06
18.950	0.06	0.06	0.06	0.06	0.06
19.200	0.06	0.06	0.06	0.06	0.06
19.450	0.06	0.06	0.06	0.06	0.06
19.700	0.06	0.05	0.05	0.05	0.05

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA #1

Return Event: 1 years

Storm Event: 1 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
19.950	0.05	0.05	0.05	0.05	0.05
20.200	0.05	0.05	0.05	0.05	0.05
20.450	0.05	0.05	0.05	0.05	0.05
20.700	0.05	0.05	0.05	0.05	0.05
20.950	0.05	0.05	0.05	0.05	0.05
21.200	0.05	0.05	0.05	0.05	0.05
21.450	0.05	0.05	0.05	0.05	0.05
21.700	0.05	0.05	0.05	0.05	0.05
21.950	0.05	0.05	0.05	0.05	0.05
22.200	0.05	0.05	0.05	0.05	0.05
22.450	0.05	0.05	0.05	0.05	0.05
22.700	0.05	0.05	0.05	0.05	0.05
22.950	0.05	0.05	0.05	0.05	0.05
23.200	0.05	0.05	0.05	0.05	0.05
23.450	0.05	0.05	0.05	0.05	0.05
23.700	0.05	0.05	0.05	0.05	0.05
23.950	0.05	0.05	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary
Label: DA #1

Return Event: 2 years
Storm Event: 2 Year

Storm Event	2 Year
Return Event	2 years
Duration	24.000 hours
Depth	3.2 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	3.317 acres
Computational Time Increment	0.011 hours
Time to Peak (Computed)	11.933 hours
Flow (Peak, Computed)	3.47 ft ³ /s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	11.950 hours
Flow (Peak Interpolated Output)	3.45 ft ³ /s
Drainage Area	
SCS CN (Composite)	68.137
Area (User Defined)	3.317 acres
Maximum Retention (Pervious)	4.7 in
Maximum Retention (Pervious, 20 percent)	0.9 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.7 in
Runoff Volume (Pervious)	0.206 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.205 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary

Label: DA #1

Return Event: 2 years

Storm Event: 2 Year

SCS Unit Hydrograph Parameters

Unit peak, qp	45.10 ft ³ /s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA #1

Return Event: 2 years
Storm Event: 2 Year

Storm Event	2 Year
Return Event	2 years
Duration	24.000 hours
Depth	3.2 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	3.317 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
11.550	0.00	0.01	0.08	0.22	0.49
11.800	0.90	1.75	3.02	3.45	3.40
12.050	2.49	1.18	0.83	0.72	0.66
12.300	0.62	0.58	0.54	0.49	0.45
12.550	0.41	0.39	0.37	0.36	0.35
12.800	0.34	0.33	0.32	0.31	0.30
13.050	0.29	0.28	0.28	0.27	0.26
13.300	0.26	0.25	0.25	0.24	0.24
13.550	0.23	0.22	0.22	0.22	0.21
13.800	0.21	0.20	0.20	0.19	0.19
14.050	0.19	0.18	0.18	0.18	0.18
14.300	0.18	0.18	0.17	0.17	0.17
14.550	0.17	0.17	0.17	0.17	0.16
14.800	0.16	0.16	0.16	0.16	0.16
15.050	0.15	0.15	0.15	0.15	0.15
15.300	0.15	0.15	0.14	0.14	0.14
15.550	0.14	0.14	0.14	0.13	0.13
15.800	0.13	0.13	0.13	0.13	0.12
16.050	0.12	0.12	0.12	0.12	0.12
16.300	0.12	0.12	0.12	0.12	0.12
16.550	0.12	0.12	0.12	0.11	0.11
16.800	0.11	0.11	0.11	0.11	0.11
17.050	0.11	0.11	0.11	0.11	0.11
17.300	0.11	0.11	0.11	0.11	0.11
17.550	0.11	0.10	0.10	0.10	0.10
17.800	0.10	0.10	0.10	0.10	0.10
18.050	0.10	0.10	0.10	0.10	0.10
18.300	0.10	0.10	0.09	0.09	0.09
18.550	0.09	0.09	0.09	0.09	0.09
18.800	0.09	0.09	0.09	0.09	0.09
19.050	0.09	0.09	0.09	0.08	0.08
19.300	0.08	0.08	0.08	0.08	0.08
19.550	0.08	0.08	0.08	0.08	0.08

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA #1

Return Event: 2 years

Storm Event: 2 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
19.800	0.08	0.08	0.08	0.08	0.07
20.050	0.07	0.07	0.07	0.07	0.07
20.300	0.07	0.07	0.07	0.07	0.07
20.550	0.07	0.07	0.07	0.07	0.07
20.800	0.07	0.07	0.07	0.07	0.07
21.050	0.07	0.07	0.07	0.07	0.07
21.300	0.07	0.07	0.07	0.07	0.07
21.550	0.07	0.07	0.07	0.07	0.07
21.800	0.07	0.07	0.07	0.07	0.07
22.050	0.07	0.07	0.07	0.07	0.07
22.300	0.07	0.07	0.07	0.07	0.07
22.550	0.07	0.07	0.07	0.07	0.07
22.800	0.07	0.07	0.07	0.07	0.07
23.050	0.07	0.07	0.07	0.07	0.07
23.300	0.07	0.07	0.07	0.07	0.07
23.550	0.07	0.07	0.07	0.07	0.07
23.800	0.07	0.07	0.07	0.07	0.07

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary
Label: DA #1

Return Event: 5 years
Storm Event: 5 Year

Storm Event	5 Year
Return Event	5 years
Duration	24.000 hours
Depth	4.0 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	3.317 acres
Computational Time Increment	0.011 hours
Time to Peak (Computed)	11.933 hours
Flow (Peak, Computed)	6.15 ft ³ /s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	11.950 hours
Flow (Peak Interpolated Output)	6.02 ft ³ /s
Drainage Area	
SCS CN (Composite)	68.137
Area (User Defined)	3.317 acres
Maximum Retention (Pervious)	4.7 in
Maximum Retention (Pervious, 20 percent)	0.9 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.2 in
Runoff Volume (Pervious)	0.341 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.340 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary

Label: DA #1

Return Event: 5 years

Storm Event: 5 Year

SCS Unit Hydrograph Parameters

Unit peak, qp	45.10 ft ³ /s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA #1

Return Event: 5 years
Storm Event: 5 Year

Storm Event	5 Year
Return Event	5 years
Duration	24.000 hours
Depth	4.0 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	3.317 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
11.000	0.00	0.00	0.01	0.02	0.03
11.250	0.04	0.05	0.06	0.08	0.09
11.500	0.11	0.18	0.29	0.52	0.85
11.750	1.39	2.11	3.57	5.60	6.02
12.000	5.69	4.07	1.91	1.33	1.14
12.250	1.05	0.98	0.92	0.85	0.77
12.500	0.70	0.65	0.60	0.58	0.56
12.750	0.54	0.53	0.51	0.50	0.48
13.000	0.46	0.45	0.43	0.42	0.42
13.250	0.41	0.40	0.39	0.38	0.37
13.500	0.36	0.35	0.34	0.34	0.33
13.750	0.32	0.32	0.31	0.30	0.30
14.000	0.29	0.28	0.28	0.28	0.27
14.250	0.27	0.27	0.27	0.26	0.26
14.500	0.26	0.26	0.25	0.25	0.25
14.750	0.25	0.25	0.24	0.24	0.24
15.000	0.24	0.23	0.23	0.23	0.23
15.250	0.22	0.22	0.22	0.22	0.21
15.500	0.21	0.21	0.21	0.20	0.20
15.750	0.20	0.20	0.19	0.19	0.19
16.000	0.19	0.18	0.18	0.18	0.18
16.250	0.18	0.18	0.18	0.18	0.18
16.500	0.18	0.17	0.17	0.17	0.17
16.750	0.17	0.17	0.17	0.17	0.17
17.000	0.17	0.17	0.16	0.16	0.16
17.250	0.16	0.16	0.16	0.16	0.16
17.500	0.16	0.16	0.16	0.15	0.15
17.750	0.15	0.15	0.15	0.15	0.15
18.000	0.15	0.15	0.15	0.15	0.14
18.250	0.14	0.14	0.14	0.14	0.14
18.500	0.14	0.14	0.14	0.14	0.14
18.750	0.13	0.13	0.13	0.13	0.13
19.000	0.13	0.13	0.13	0.13	0.13

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA #1

Return Event: 5 years
Storm Event: 5 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
19.250	0.12	0.12	0.12	0.12	0.12
19.500	0.12	0.12	0.12	0.12	0.12
19.750	0.11	0.11	0.11	0.11	0.11
20.000	0.11	0.11	0.11	0.11	0.11
20.250	0.11	0.11	0.11	0.11	0.11
20.500	0.11	0.11	0.11	0.11	0.11
20.750	0.11	0.11	0.11	0.11	0.11
21.000	0.11	0.11	0.11	0.10	0.10
21.250	0.10	0.10	0.10	0.10	0.10
21.500	0.10	0.10	0.10	0.10	0.10
21.750	0.10	0.10	0.10	0.10	0.10
22.000	0.10	0.10	0.10	0.10	0.10
22.250	0.10	0.10	0.10	0.10	0.10
22.500	0.10	0.10	0.10	0.10	0.10
22.750	0.10	0.10	0.10	0.10	0.10
23.000	0.10	0.10	0.10	0.10	0.10
23.250	0.10	0.10	0.10	0.10	0.10
23.500	0.10	0.10	0.10	0.10	0.10
23.750	0.10	0.10	0.10	0.10	0.10
24.000	0.10	(N/A)	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary
Label: DA #1

Return Event: 10 years
Storm Event: 10 Year

Storm Event	10 Year
Return Event	10 years
Duration	24.000 hours
Depth	4.9 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	3.317 acres
Computational Time Increment	0.011 hours
Time to Peak (Computed)	11.933 hours
Flow (Peak, Computed)	9.32 ft ³ /s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	11.950 hours
Flow (Peak Interpolated Output)	9.04 ft ³ /s
Drainage Area	
SCS CN (Composite)	68.137
Area (User Defined)	3.317 acres
Maximum Retention (Pervious)	4.7 in
Maximum Retention (Pervious, 20 percent)	0.9 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.8 in
Runoff Volume (Pervious)	0.503 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.502 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary

Label: DA #1

Return Event: 10 years

Storm Event: 10 Year

SCS Unit Hydrograph Parameters

Unit peak, qp	45.10 ft ³ /s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA #1

Return Event: 10 years
Storm Event: 10 Year

Storm Event	10 Year
Return Event	10 years
Duration	24.000 hours
Depth	4.9 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	3.317 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
10.250	0.00	0.00	0.00	0.01	0.01
10.500	0.02	0.02	0.03	0.03	0.04
10.750	0.05	0.05	0.06	0.07	0.08
11.000	0.09	0.10	0.11	0.13	0.15
11.250	0.17	0.19	0.21	0.24	0.26
11.500	0.29	0.45	0.66	1.09	1.67
11.750	2.53	3.63	5.79	8.68	9.04
12.000	8.35	5.90	2.75	1.90	1.63
12.250	1.50	1.39	1.30	1.20	1.09
12.500	0.99	0.91	0.85	0.81	0.79
12.750	0.76	0.74	0.72	0.69	0.67
13.000	0.65	0.63	0.61	0.59	0.58
13.250	0.57	0.55	0.54	0.53	0.51
13.500	0.50	0.49	0.48	0.47	0.46
13.750	0.45	0.44	0.43	0.42	0.41
14.000	0.40	0.39	0.39	0.38	0.38
14.250	0.37	0.37	0.37	0.36	0.36
14.500	0.36	0.36	0.35	0.35	0.35
14.750	0.34	0.34	0.33	0.33	0.33
15.000	0.32	0.32	0.32	0.31	0.31
15.250	0.31	0.30	0.30	0.30	0.29
15.500	0.29	0.29	0.28	0.28	0.28
15.750	0.27	0.27	0.27	0.26	0.26
16.000	0.25	0.25	0.25	0.25	0.25
16.250	0.25	0.24	0.24	0.24	0.24
16.500	0.24	0.24	0.24	0.24	0.23
16.750	0.23	0.23	0.23	0.23	0.23
17.000	0.23	0.23	0.22	0.22	0.22
17.250	0.22	0.22	0.22	0.22	0.22
17.500	0.21	0.21	0.21	0.21	0.21
17.750	0.21	0.21	0.21	0.20	0.20
18.000	0.20	0.20	0.20	0.20	0.20
18.250	0.20	0.19	0.19	0.19	0.19

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA #1

Return Event: 10 years

Storm Event: 10 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
18.500	0.19	0.19	0.19	0.19	0.18
18.750	0.18	0.18	0.18	0.18	0.18
19.000	0.18	0.17	0.17	0.17	0.17
19.250	0.17	0.17	0.17	0.16	0.16
19.500	0.16	0.16	0.16	0.16	0.16
19.750	0.16	0.15	0.15	0.15	0.15
20.000	0.15	0.15	0.15	0.15	0.15
20.250	0.15	0.15	0.15	0.15	0.15
20.500	0.15	0.14	0.14	0.14	0.14
20.750	0.14	0.14	0.14	0.14	0.14
21.000	0.14	0.14	0.14	0.14	0.14
21.250	0.14	0.14	0.14	0.14	0.14
21.500	0.14	0.14	0.14	0.14	0.14
21.750	0.14	0.14	0.14	0.14	0.14
22.000	0.14	0.14	0.14	0.14	0.14
22.250	0.14	0.14	0.14	0.14	0.14
22.500	0.14	0.14	0.13	0.13	0.13
22.750	0.13	0.13	0.13	0.13	0.13
23.000	0.13	0.13	0.13	0.13	0.13
23.250	0.13	0.13	0.13	0.13	0.13
23.500	0.13	0.13	0.13	0.13	0.13
23.750	0.13	0.13	0.13	0.13	0.13
24.000	0.13	(N/A)	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary
Label: DA #1

Return Event: 25 years
Storm Event: 25 Year

Storm Event	25 Year
Return Event	25 years
Duration	24.000 hours
Depth	5.6 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	3.317 acres
Computational Time Increment	0.011 hours
Time to Peak (Computed)	11.922 hours
Flow (Peak, Computed)	12.15 ft ³ /s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	11.950 hours
Flow (Peak Interpolated Output)	11.71 ft ³ /s
Drainage Area	
SCS CN (Composite)	68.137
Area (User Defined)	3.317 acres
Maximum Retention (Pervious)	4.7 in
Maximum Retention (Pervious, 20 percent)	0.9 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.3 in
Runoff Volume (Pervious)	0.648 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.647 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary

Label: DA #1

Return Event: 25 years

Storm Event: 25 Year

SCS Unit Hydrograph Parameters

Unit peak, qp	45.10 ft ³ /s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA #1

Return Event: 25 years
Storm Event: 25 Year

Storm Event	25 Year
Return Event	25 years
Duration	24.000 hours
Depth	5.6 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	3.317 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
9.650	0.00	0.00	0.00	0.01	0.01
9.900	0.01	0.02	0.02	0.02	0.03
10.150	0.03	0.04	0.04	0.05	0.05
10.400	0.06	0.07	0.07	0.08	0.09
10.650	0.10	0.11	0.12	0.13	0.14
10.900	0.15	0.17	0.18	0.20	0.22
11.150	0.24	0.27	0.29	0.32	0.36
11.400	0.39	0.43	0.47	0.70	1.02
11.650	1.63	2.44	3.59	5.02	7.80
11.900	11.43	11.71	10.68	7.49	3.47
12.150	2.39	2.05	1.88	1.75	1.62
12.400	1.50	1.37	1.23	1.14	1.06
12.650	1.01	0.98	0.95	0.92	0.89
12.900	0.86	0.83	0.80	0.78	0.75
13.150	0.74	0.72	0.70	0.69	0.67
13.400	0.65	0.64	0.62	0.61	0.59
13.650	0.58	0.57	0.55	0.54	0.53
13.900	0.52	0.51	0.49	0.48	0.48
14.150	0.47	0.47	0.46	0.46	0.45
14.400	0.45	0.45	0.44	0.44	0.43
14.650	0.43	0.43	0.42	0.42	0.41
14.900	0.41	0.40	0.40	0.40	0.39
15.150	0.39	0.38	0.38	0.38	0.37
15.400	0.37	0.36	0.36	0.35	0.35
15.650	0.34	0.34	0.34	0.33	0.33
15.900	0.32	0.32	0.31	0.31	0.31
16.150	0.30	0.30	0.30	0.30	0.30
16.400	0.30	0.30	0.29	0.29	0.29
16.650	0.29	0.29	0.29	0.28	0.28
16.900	0.28	0.28	0.28	0.28	0.28
17.150	0.27	0.27	0.27	0.27	0.27
17.400	0.27	0.26	0.26	0.26	0.26
17.650	0.26	0.26	0.26	0.25	0.25

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA #1

Return Event: 25 years

Storm Event: 25 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
17.900	0.25	0.25	0.25	0.25	0.24
18.150	0.24	0.24	0.24	0.24	0.24
18.400	0.23	0.23	0.23	0.23	0.23
18.650	0.23	0.23	0.22	0.22	0.22
18.900	0.22	0.22	0.21	0.21	0.21
19.150	0.21	0.21	0.21	0.21	0.20
19.400	0.20	0.20	0.20	0.20	0.20
19.650	0.19	0.19	0.19	0.19	0.19
19.900	0.19	0.18	0.18	0.18	0.18
20.150	0.18	0.18	0.18	0.18	0.18
20.400	0.18	0.18	0.18	0.18	0.18
20.650	0.18	0.18	0.18	0.18	0.17
20.900	0.18	0.17	0.17	0.17	0.17
21.150	0.17	0.17	0.17	0.17	0.17
21.400	0.17	0.17	0.17	0.17	0.17
21.650	0.17	0.17	0.17	0.17	0.17
21.900	0.17	0.17	0.17	0.17	0.17
22.150	0.17	0.17	0.17	0.17	0.17
22.400	0.17	0.17	0.17	0.16	0.16
22.650	0.16	0.16	0.16	0.16	0.16
22.900	0.16	0.16	0.16	0.16	0.16
23.150	0.16	0.16	0.16	0.16	0.16
23.400	0.16	0.16	0.16	0.16	0.16
23.650	0.16	0.16	0.16	0.16	0.16
23.900	0.16	0.16	0.16	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary
Label: DA #1

Return Event: 50 years
Storm Event: 50 Year

Storm Event	50 Year
Return Event	50 years
Duration	24.000 hours
Depth	6.4 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	3.317 acres
Computational Time Increment	0.011 hours
Time to Peak (Computed)	11.922 hours
Flow (Peak, Computed)	15.41 ft ³ /s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	11.950 hours
Flow (Peak Interpolated Output)	14.75 ft ³ /s
Drainage Area	
SCS CN (Composite)	68.137
Area (User Defined)	3.317 acres
Maximum Retention (Pervious)	4.7 in
Maximum Retention (Pervious, 20 percent)	0.9 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.0 in
Runoff Volume (Pervious)	0.816 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.815 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary

Label: DA #1

Return Event: 50 years

Storm Event: 50 Year

SCS Unit Hydrograph Parameters

Unit peak, qp	45.10 ft ³ /s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA #1

Return Event: 50 years
Storm Event: 50 Year

Storm Event	50 Year
Return Event	50 years
Duration	24.000 hours
Depth	6.4 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	3.317 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
9.000	0.00	0.00	0.00	0.01	0.01
9.250	0.01	0.02	0.02	0.02	0.02
9.500	0.03	0.03	0.03	0.04	0.04
9.750	0.05	0.05	0.05	0.06	0.06
10.000	0.07	0.08	0.08	0.09	0.10
10.250	0.10	0.11	0.12	0.13	0.14
10.500	0.15	0.16	0.17	0.18	0.19
10.750	0.21	0.22	0.24	0.26	0.27
11.000	0.29	0.32	0.34	0.38	0.41
11.250	0.45	0.49	0.54	0.58	0.63
11.500	0.68	1.01	1.45	2.28	3.35
11.750	4.84	6.65	10.13	14.59	14.75
12.000	13.32	9.29	4.29	2.95	2.52
12.250	2.31	2.15	1.99	1.83	1.67
12.500	1.51	1.40	1.29	1.24	1.20
12.750	1.16	1.13	1.09	1.05	1.02
13.000	0.98	0.95	0.92	0.90	0.88
13.250	0.86	0.84	0.82	0.80	0.77
13.500	0.75	0.74	0.72	0.70	0.69
13.750	0.67	0.66	0.64	0.63	0.61
14.000	0.60	0.59	0.58	0.57	0.57
14.250	0.56	0.56	0.55	0.55	0.54
14.500	0.54	0.53	0.52	0.52	0.52
14.750	0.51	0.50	0.50	0.50	0.49
15.000	0.48	0.48	0.47	0.47	0.46
15.250	0.46	0.45	0.45	0.44	0.44
15.500	0.43	0.43	0.42	0.42	0.41
15.750	0.40	0.40	0.39	0.39	0.38
16.000	0.38	0.37	0.37	0.37	0.37
16.250	0.36	0.36	0.36	0.36	0.36
16.500	0.35	0.35	0.35	0.35	0.35
16.750	0.35	0.34	0.34	0.34	0.34
17.000	0.34	0.33	0.33	0.33	0.33

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA #1

Return Event: 50 years

Storm Event: 50 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
17.250	0.33	0.32	0.32	0.32	0.32
17.500	0.32	0.32	0.31	0.31	0.31
17.750	0.31	0.31	0.30	0.30	0.30
18.000	0.30	0.30	0.29	0.29	0.29
18.250	0.29	0.29	0.28	0.28	0.28
18.500	0.28	0.28	0.27	0.27	0.27
18.750	0.27	0.27	0.26	0.26	0.26
19.000	0.26	0.26	0.25	0.25	0.25
19.250	0.25	0.25	0.24	0.24	0.24
19.500	0.24	0.24	0.23	0.23	0.23
19.750	0.23	0.23	0.22	0.22	0.22
20.000	0.22	0.22	0.22	0.22	0.21
20.250	0.21	0.21	0.21	0.21	0.21
20.500	0.21	0.21	0.21	0.21	0.21
20.750	0.21	0.21	0.21	0.21	0.21
21.000	0.21	0.21	0.21	0.21	0.21
21.250	0.21	0.21	0.21	0.21	0.21
21.500	0.21	0.20	0.20	0.20	0.20
21.750	0.20	0.20	0.20	0.20	0.20
22.000	0.20	0.20	0.20	0.20	0.20
22.250	0.20	0.20	0.20	0.20	0.20
22.500	0.20	0.20	0.20	0.20	0.20
22.750	0.20	0.20	0.20	0.20	0.19
23.000	0.19	0.19	0.19	0.19	0.19
23.250	0.19	0.19	0.19	0.19	0.19
23.500	0.19	0.19	0.19	0.19	0.19
23.750	0.19	0.19	0.19	0.19	0.19
24.000	0.19	(N/A)	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary
Label: DA #1

Return Event: 100 years
Storm Event: 100 Year

Storm Event	100 Year
Return Event	100 years
Duration	24.000 hours
Depth	7.3 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	3.317 acres
Computational Time Increment	0.011 hours
Time to Peak (Computed)	11.922 hours
Flow (Peak, Computed)	19.03 ft ³ /s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	11.950 hours
Flow (Peak Interpolated Output)	18.13 ft ³ /s
Drainage Area	
SCS CN (Composite)	68.137
Area (User Defined)	3.317 acres
Maximum Retention (Pervious)	4.7 in
Maximum Retention (Pervious, 20 percent)	0.9 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.6 in
Runoff Volume (Pervious)	1.005 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	1.004 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary

Label: DA #1

Return Event: 100 years

Storm Event: 100 Year

SCS Unit Hydrograph Parameters

Unit peak, qp	45.10 ft ³ /s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA #1

Return Event: 100 years
Storm Event: 100 Year

Storm Event	100 Year
Return Event	100 years
Duration	24.000 hours
Depth	7.3 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	3.317 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
8.400	0.00	0.00	0.00	0.01	0.01
8.650	0.01	0.02	0.02	0.02	0.03
8.900	0.03	0.03	0.04	0.04	0.04
9.150	0.05	0.05	0.05	0.06	0.06
9.400	0.07	0.07	0.07	0.08	0.08
9.650	0.09	0.09	0.10	0.10	0.11
9.900	0.12	0.12	0.13	0.14	0.15
10.150	0.16	0.17	0.18	0.19	0.20
10.400	0.21	0.22	0.23	0.25	0.26
10.650	0.28	0.30	0.32	0.34	0.36
10.900	0.38	0.40	0.43	0.46	0.49
11.150	0.54	0.58	0.64	0.69	0.74
11.400	0.80	0.86	0.93	1.37	1.94
11.650	3.04	4.41	6.27	8.49	12.75
11.900	18.11	18.13	16.23	11.27	5.19
12.150	3.55	3.04	2.78	2.58	2.39
12.400	2.20	2.01	1.81	1.67	1.55
12.650	1.49	1.44	1.39	1.35	1.30
12.900	1.26	1.22	1.17	1.13	1.10
13.150	1.07	1.05	1.02	1.00	0.97
13.400	0.95	0.92	0.90	0.88	0.86
13.650	0.84	0.82	0.80	0.78	0.77
13.900	0.75	0.73	0.71	0.70	0.69
14.150	0.68	0.67	0.67	0.66	0.66
14.400	0.65	0.64	0.64	0.63	0.62
14.650	0.62	0.61	0.61	0.60	0.59
14.900	0.59	0.58	0.57	0.57	0.56
15.150	0.56	0.55	0.54	0.54	0.53
15.400	0.52	0.52	0.51	0.51	0.50
15.650	0.49	0.49	0.48	0.47	0.47
15.900	0.46	0.45	0.45	0.44	0.44
16.150	0.44	0.43	0.43	0.43	0.43
16.400	0.42	0.42	0.42	0.42	0.42

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA #1

Return Event: 100 years
Storm Event: 100 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
16.650	0.41	0.41	0.41	0.41	0.40
16.900	0.40	0.40	0.40	0.40	0.39
17.150	0.39	0.39	0.39	0.38	0.38
17.400	0.38	0.38	0.38	0.37	0.37
17.650	0.37	0.37	0.36	0.36	0.36
17.900	0.36	0.35	0.35	0.35	0.35
18.150	0.35	0.34	0.34	0.34	0.34
18.400	0.33	0.33	0.33	0.33	0.32
18.650	0.32	0.32	0.32	0.31	0.31
18.900	0.31	0.31	0.31	0.30	0.30
19.150	0.30	0.30	0.29	0.29	0.29
19.400	0.29	0.28	0.28	0.28	0.28
19.650	0.27	0.27	0.27	0.27	0.27
19.900	0.26	0.26	0.26	0.26	0.26
20.150	0.25	0.25	0.25	0.25	0.25
20.400	0.25	0.25	0.25	0.25	0.25
20.650	0.25	0.25	0.25	0.25	0.25
20.900	0.25	0.25	0.25	0.25	0.25
21.150	0.25	0.24	0.24	0.24	0.24
21.400	0.24	0.24	0.24	0.24	0.24
21.650	0.24	0.24	0.24	0.24	0.24
21.900	0.24	0.24	0.24	0.24	0.24
22.150	0.24	0.24	0.24	0.24	0.23
22.400	0.23	0.23	0.23	0.23	0.23
22.650	0.23	0.23	0.23	0.23	0.23
22.900	0.23	0.23	0.23	0.23	0.23
23.150	0.23	0.23	0.23	0.23	0.23
23.400	0.22	0.22	0.22	0.22	0.22
23.650	0.22	0.22	0.22	0.22	0.22
23.900	0.22	0.22	0.22	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary
Label: Undetained DA #1

Return Event: 1 years
Storm Event: 1 Year

Storm Event	1 Year
Return Event	1 years
Duration	24.000 hours
Depth	2.7 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.254 acres
Computational Time Increment	0.011 hours
Time to Peak (Computed)	12.022 hours
Flow (Peak, Computed)	0.07 ft ³ /s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.000 hours
Flow (Peak Interpolated Output)	0.06 ft ³ /s
Drainage Area	
SCS CN (Composite)	61.000
Area (User Defined)	0.254 acres
Maximum Retention (Pervious)	6.4 in
Maximum Retention (Pervious, 20 percent)	1.3 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.2 in
Runoff Volume (Pervious)	0.005 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.005 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary

Label: Undetained DA #1

Return Event: 1 years

Storm Event: 1 Year

SCS Unit Hydrograph Parameters

Unit peak, qp	3.45 ft ³ /s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)
Label: Undetained DA #1

Return Event: 1 years
Storm Event: 1 Year

Storm Event	1 Year
Return Event	1 years
Duration	24.000 hours
Depth	2.7 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.254 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
11.850	0.00	0.01	0.04	0.06	0.05
12.100	0.03	0.02	0.02	0.02	0.02
12.350	0.02	0.01	0.01	0.01	0.01
12.600	0.01	0.01	0.01	0.01	0.01
12.850	0.01	0.01	0.01	0.01	0.01
13.100	0.01	0.01	0.01	0.01	0.01
13.350	0.01	0.01	0.01	0.01	0.01
13.600	0.01	0.01	0.01	0.01	0.01
13.850	0.01	0.01	0.01	0.01	0.01
14.100	0.01	0.01	0.01	0.01	0.01
14.350	0.01	0.01	0.01	0.01	0.01
14.600	0.01	0.01	0.01	0.01	0.01
14.850	0.01	0.01	0.01	0.01	0.01
15.100	0.01	0.01	0.01	0.01	0.00
15.350	0.00	0.00	0.00	0.00	0.00
15.600	0.00	0.00	0.00	0.00	0.00
15.850	0.00	0.00	0.00	0.00	0.00
16.100	0.00	0.00	0.00	0.00	0.00
16.350	0.00	0.00	0.00	0.00	0.00
16.600	0.00	0.00	0.00	0.00	0.00
16.850	0.00	0.00	0.00	0.00	0.00
17.100	0.00	0.00	0.00	0.00	0.00
17.350	0.00	0.00	0.00	0.00	0.00
17.600	0.00	0.00	0.00	0.00	0.00
17.850	0.00	0.00	0.00	0.00	0.00
18.100	0.00	0.00	0.00	0.00	0.00
18.350	0.00	0.00	0.00	0.00	0.00
18.600	0.00	0.00	0.00	0.00	0.00
18.850	0.00	0.00	0.00	0.00	0.00
19.100	0.00	0.00	0.00	0.00	0.00
19.350	0.00	0.00	0.00	0.00	0.00
19.600	0.00	0.00	0.00	0.00	0.00
19.850	0.00	0.00	0.00	0.00	0.00

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)

Label: Undetained DA #1

Return Event: 1 years

Storm Event: 1 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
20.100	0.00	0.00	0.00	0.00	0.00
20.350	0.00	0.00	0.00	0.00	0.00
20.600	0.00	0.00	0.00	0.00	0.00
20.850	0.00	0.00	0.00	0.00	0.00
21.100	0.00	0.00	0.00	0.00	0.00
21.350	0.00	0.00	0.00	0.00	0.00
21.600	0.00	0.00	0.00	0.00	0.00
21.850	0.00	0.00	0.00	0.00	0.00
22.100	0.00	0.00	0.00	0.00	0.00
22.350	0.00	0.00	0.00	0.00	0.00
22.600	0.00	0.00	0.00	0.00	0.00
22.850	0.00	0.00	0.00	0.00	0.00
23.100	0.00	0.00	0.00	0.00	0.00
23.350	0.00	0.00	0.00	0.00	0.00
23.600	0.00	0.00	0.00	0.00	0.00
23.850	0.00	0.00	0.00	0.00	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary
Label: Undetained DA #1

Return Event: 2 years
Storm Event: 2 Year

Storm Event	2 Year
Return Event	2 years
Duration	24.000 hours
Depth	3.2 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.254 acres
Computational Time Increment	0.011 hours
Time to Peak (Computed)	12.011 hours
Flow (Peak, Computed)	0.14 ft ³ /s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.000 hours
Flow (Peak Interpolated Output)	0.14 ft ³ /s
Drainage Area	
SCS CN (Composite)	61.000
Area (User Defined)	0.254 acres
Maximum Retention (Pervious)	6.4 in
Maximum Retention (Pervious, 20 percent)	1.3 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.4 in
Runoff Volume (Pervious)	0.009 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.009 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary

Label: Undetained DA #1

Return Event: 2 years

Storm Event: 2 Year

SCS Unit Hydrograph Parameters

Unit peak, qp	3.45 ft ³ /s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)
Label: Undetained DA #1

Return Event: 2 years
Storm Event: 2 Year

Storm Event	2 Year
Return Event	2 years
Duration	24.000 hours
Depth	3.2 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.254 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
11.750	0.00	0.00	0.03	0.09	0.13
12.000	0.14	0.11	0.05	0.04	0.03
12.250	0.03	0.03	0.03	0.03	0.02
12.500	0.02	0.02	0.02	0.02	0.02
12.750	0.02	0.02	0.02	0.02	0.02
13.000	0.02	0.01	0.01	0.01	0.01
13.250	0.01	0.01	0.01	0.01	0.01
13.500	0.01	0.01	0.01	0.01	0.01
13.750	0.01	0.01	0.01	0.01	0.01
14.000	0.01	0.01	0.01	0.01	0.01
14.250	0.01	0.01	0.01	0.01	0.01
14.500	0.01	0.01	0.01	0.01	0.01
14.750	0.01	0.01	0.01	0.01	0.01
15.000	0.01	0.01	0.01	0.01	0.01
15.250	0.01	0.01	0.01	0.01	0.01
15.500	0.01	0.01	0.01	0.01	0.01
15.750	0.01	0.01	0.01	0.01	0.01
16.000	0.01	0.01	0.01	0.01	0.01
16.250	0.01	0.01	0.01	0.01	0.01
16.500	0.01	0.01	0.01	0.01	0.01
16.750	0.01	0.01	0.01	0.01	0.01
17.000	0.01	0.01	0.01	0.01	0.01
17.250	0.01	0.01	0.01	0.01	0.01
17.500	0.01	0.01	0.01	0.01	0.01
17.750	0.01	0.01	0.01	0.01	0.01
18.000	0.01	0.01	0.01	0.01	0.01
18.250	0.01	0.01	0.01	0.01	0.01
18.500	0.01	0.01	0.01	0.01	0.01
18.750	0.01	0.01	0.00	0.00	0.00
19.000	0.00	0.00	0.00	0.00	0.00
19.250	0.00	0.00	0.00	0.00	0.00
19.500	0.00	0.00	0.00	0.00	0.00
19.750	0.00	0.00	0.00	0.00	0.00

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)

Label: Undetained DA #1

Return Event: 2 years

Storm Event: 2 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
20.000	0.00	0.00	0.00	0.00	0.00
20.250	0.00	0.00	0.00	0.00	0.00
20.500	0.00	0.00	0.00	0.00	0.00
20.750	0.00	0.00	0.00	0.00	0.00
21.000	0.00	0.00	0.00	0.00	0.00
21.250	0.00	0.00	0.00	0.00	0.00
21.500	0.00	0.00	0.00	0.00	0.00
21.750	0.00	0.00	0.00	0.00	0.00
22.000	0.00	0.00	0.00	0.00	0.00
22.250	0.00	0.00	0.00	0.00	0.00
22.500	0.00	0.00	0.00	0.00	0.00
22.750	0.00	0.00	0.00	0.00	0.00
23.000	0.00	0.00	0.00	0.00	0.00
23.250	0.00	0.00	0.00	0.00	0.00
23.500	0.00	0.00	0.00	0.00	0.00
23.750	0.00	0.00	0.00	0.00	0.00
24.000	0.00	(N/A)	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary
Label: Undetained DA #1

Return Event: 5 years
Storm Event: 5 Year

Storm Event	5 Year
Return Event	5 years
Duration	24.000 hours
Depth	4.0 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.254 acres
Computational Time Increment	0.011 hours
Time to Peak (Computed)	12.011 hours
Flow (Peak, Computed)	0.29 ft ³ /s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.000 hours
Flow (Peak Interpolated Output)	0.29 ft ³ /s
Drainage Area	
SCS CN (Composite)	61.000
Area (User Defined)	0.254 acres
Maximum Retention (Pervious)	6.4 in
Maximum Retention (Pervious, 20 percent)	1.3 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.8 in
Runoff Volume (Pervious)	0.018 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.017 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary

Label: Undetained DA #1

Return Event: 5 years

Storm Event: 5 Year

SCS Unit Hydrograph Parameters

Unit peak, qp	3.45 ft ³ /s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)
Label: Undetained DA #1

Return Event: 5 years
Storm Event: 5 Year

Storm Event	5 Year
Return Event	5 years
Duration	24.000 hours
Depth	4.0 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.254 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
11.650	0.00	0.01	0.03	0.06	0.13
11.900	0.24	0.28	0.29	0.21	0.10
12.150	0.07	0.06	0.06	0.05	0.05
12.400	0.05	0.04	0.04	0.04	0.03
12.650	0.03	0.03	0.03	0.03	0.03
12.900	0.03	0.03	0.03	0.03	0.02
13.150	0.02	0.02	0.02	0.02	0.02
13.400	0.02	0.02	0.02	0.02	0.02
13.650	0.02	0.02	0.02	0.02	0.02
13.900	0.02	0.02	0.02	0.02	0.02
14.150	0.02	0.02	0.02	0.02	0.02
14.400	0.02	0.02	0.02	0.02	0.01
14.650	0.01	0.01	0.01	0.01	0.01
14.900	0.01	0.01	0.01	0.01	0.01
15.150	0.01	0.01	0.01	0.01	0.01
15.400	0.01	0.01	0.01	0.01	0.01
15.650	0.01	0.01	0.01	0.01	0.01
15.900	0.01	0.01	0.01	0.01	0.01
16.150	0.01	0.01	0.01	0.01	0.01
16.400	0.01	0.01	0.01	0.01	0.01
16.650	0.01	0.01	0.01	0.01	0.01
16.900	0.01	0.01	0.01	0.01	0.01
17.150	0.01	0.01	0.01	0.01	0.01
17.400	0.01	0.01	0.01	0.01	0.01
17.650	0.01	0.01	0.01	0.01	0.01
17.900	0.01	0.01	0.01	0.01	0.01
18.150	0.01	0.01	0.01	0.01	0.01
18.400	0.01	0.01	0.01	0.01	0.01
18.650	0.01	0.01	0.01	0.01	0.01
18.900	0.01	0.01	0.01	0.01	0.01
19.150	0.01	0.01	0.01	0.01	0.01
19.400	0.01	0.01	0.01	0.01	0.01
19.650	0.01	0.01	0.01	0.01	0.01

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)
 Label: Undetained DA #1

Return Event: 5 years
 Storm Event: 5 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
19.900	0.01	0.01	0.01	0.01	0.01
20.150	0.01	0.01	0.01	0.01	0.01
20.400	0.01	0.01	0.01	0.01	0.01
20.650	0.01	0.01	0.01	0.01	0.01
20.900	0.01	0.01	0.01	0.01	0.01
21.150	0.01	0.01	0.01	0.01	0.01
21.400	0.01	0.01	0.01	0.01	0.01
21.650	0.01	0.01	0.01	0.01	0.01
21.900	0.01	0.01	0.01	0.01	0.01
22.150	0.01	0.01	0.01	0.01	0.01
22.400	0.01	0.01	0.01	0.01	0.01
22.650	0.01	0.01	0.01	0.01	0.01
22.900	0.01	0.01	0.01	0.01	0.01
23.150	0.01	0.01	0.01	0.01	0.01
23.400	0.01	0.01	0.01	0.01	0.01
23.650	0.01	0.01	0.01	0.01	0.01
23.900	0.01	0.01	0.01	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary
Label: Undetained DA #1

Return Event: 10 years
Storm Event: 10 Year

Storm Event	10 Year
Return Event	10 years
Duration	24.000 hours
Depth	4.9 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.254 acres
Computational Time Increment	0.011 hours
Time to Peak (Computed)	11.933 hours
Flow (Peak, Computed)	0.49 ft ³ /s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	11.950 hours
Flow (Peak Interpolated Output)	0.48 ft ³ /s
Drainage Area	
SCS CN (Composite)	61.000
Area (User Defined)	0.254 acres
Maximum Retention (Pervious)	6.4 in
Maximum Retention (Pervious, 20 percent)	1.3 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.3 in
Runoff Volume (Pervious)	0.028 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.028 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary

Label: Undetained DA #1

Return Event: 10 years

Storm Event: 10 Year

SCS Unit Hydrograph Parameters

Unit peak, qp	3.45 ft ³ /s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)
Label: Undetained DA #1

Return Event: 10 years
Storm Event: 10 Year

Storm Event	10 Year
Return Event	10 years
Duration	24.000 hours
Depth	4.9 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.254 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
11.400	0.00	0.00	0.00	0.01	0.01
11.650	0.03	0.05	0.09	0.15	0.27
11.900	0.43	0.48	0.46	0.33	0.16
12.150	0.11	0.09	0.09	0.08	0.08
12.400	0.07	0.06	0.06	0.05	0.05
12.650	0.05	0.05	0.05	0.04	0.04
12.900	0.04	0.04	0.04	0.04	0.04
13.150	0.04	0.04	0.03	0.03	0.03
13.400	0.03	0.03	0.03	0.03	0.03
13.650	0.03	0.03	0.03	0.03	0.03
13.900	0.03	0.03	0.02	0.02	0.02
14.150	0.02	0.02	0.02	0.02	0.02
14.400	0.02	0.02	0.02	0.02	0.02
14.650	0.02	0.02	0.02	0.02	0.02
14.900	0.02	0.02	0.02	0.02	0.02
15.150	0.02	0.02	0.02	0.02	0.02
15.400	0.02	0.02	0.02	0.02	0.02
15.650	0.02	0.02	0.02	0.02	0.02
15.900	0.02	0.02	0.02	0.02	0.02
16.150	0.02	0.02	0.02	0.02	0.02
16.400	0.02	0.02	0.01	0.01	0.01
16.650	0.01	0.01	0.01	0.01	0.01
16.900	0.01	0.01	0.01	0.01	0.01
17.150	0.01	0.01	0.01	0.01	0.01
17.400	0.01	0.01	0.01	0.01	0.01
17.650	0.01	0.01	0.01	0.01	0.01
17.900	0.01	0.01	0.01	0.01	0.01
18.150	0.01	0.01	0.01	0.01	0.01
18.400	0.01	0.01	0.01	0.01	0.01
18.650	0.01	0.01	0.01	0.01	0.01
18.900	0.01	0.01	0.01	0.01	0.01
19.150	0.01	0.01	0.01	0.01	0.01
19.400	0.01	0.01	0.01	0.01	0.01

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)

Label: Undetained DA #1

Return Event: 10 years

Storm Event: 10 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
19.650	0.01	0.01	0.01	0.01	0.01
19.900	0.01	0.01	0.01	0.01	0.01
20.150	0.01	0.01	0.01	0.01	0.01
20.400	0.01	0.01	0.01	0.01	0.01
20.650	0.01	0.01	0.01	0.01	0.01
20.900	0.01	0.01	0.01	0.01	0.01
21.150	0.01	0.01	0.01	0.01	0.01
21.400	0.01	0.01	0.01	0.01	0.01
21.650	0.01	0.01	0.01	0.01	0.01
21.900	0.01	0.01	0.01	0.01	0.01
22.150	0.01	0.01	0.01	0.01	0.01
22.400	0.01	0.01	0.01	0.01	0.01
22.650	0.01	0.01	0.01	0.01	0.01
22.900	0.01	0.01	0.01	0.01	0.01
23.150	0.01	0.01	0.01	0.01	0.01
23.400	0.01	0.01	0.01	0.01	0.01
23.650	0.01	0.01	0.01	0.01	0.01
23.900	0.01	0.01	0.01	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary
Label: Undetained DA #1

Return Event: 25 years
Storm Event: 25 Year

Storm Event	25 Year
Return Event	25 years
Duration	24.000 hours
Depth	5.6 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.254 acres
Computational Time Increment	0.011 hours
Time to Peak (Computed)	11.933 hours
Flow (Peak, Computed)	0.67 ft ³ /s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	11.950 hours
Flow (Peak Interpolated Output)	0.66 ft ³ /s
Drainage Area	
SCS CN (Composite)	61.000
Area (User Defined)	0.254 acres
Maximum Retention (Pervious)	6.4 in
Maximum Retention (Pervious, 20 percent)	1.3 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.8 in
Runoff Volume (Pervious)	0.037 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.037 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary

Label: Undetained DA #1

Return Event: 25 years

Storm Event: 25 Year

SCS Unit Hydrograph Parameters	
Unit peak, qp	3.45 ft ³ /s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)
Label: Undetained DA #1

Return Event: 25 years
Storm Event: 25 Year

Storm Event	25 Year
Return Event	25 years
Duration	24.000 hours
Depth	5.6 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.254 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
11.000	0.00	0.00	0.00	0.00	0.00
11.250	0.00	0.01	0.01	0.01	0.01
11.500	0.01	0.02	0.03	0.06	0.10
11.750	0.16	0.24	0.39	0.61	0.66
12.000	0.62	0.44	0.21	0.14	0.12
12.250	0.11	0.11	0.10	0.09	0.08
12.500	0.08	0.07	0.07	0.06	0.06
12.750	0.06	0.06	0.06	0.05	0.05
13.000	0.05	0.05	0.05	0.05	0.05
13.250	0.04	0.04	0.04	0.04	0.04
13.500	0.04	0.04	0.04	0.04	0.04
13.750	0.03	0.03	0.03	0.03	0.03
14.000	0.03	0.03	0.03	0.03	0.03
14.250	0.03	0.03	0.03	0.03	0.03
14.500	0.03	0.03	0.03	0.03	0.03
14.750	0.03	0.03	0.03	0.03	0.03
15.000	0.03	0.03	0.03	0.02	0.02
15.250	0.02	0.02	0.02	0.02	0.02
15.500	0.02	0.02	0.02	0.02	0.02
15.750	0.02	0.02	0.02	0.02	0.02
16.000	0.02	0.02	0.02	0.02	0.02
16.250	0.02	0.02	0.02	0.02	0.02
16.500	0.02	0.02	0.02	0.02	0.02
16.750	0.02	0.02	0.02	0.02	0.02
17.000	0.02	0.02	0.02	0.02	0.02
17.250	0.02	0.02	0.02	0.02	0.02
17.500	0.02	0.02	0.02	0.02	0.02
17.750	0.02	0.02	0.02	0.02	0.02
18.000	0.02	0.02	0.02	0.02	0.02
18.250	0.02	0.02	0.02	0.02	0.02
18.500	0.02	0.01	0.01	0.01	0.01
18.750	0.01	0.01	0.01	0.01	0.01
19.000	0.01	0.01	0.01	0.01	0.01

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)
 Label: Undetained DA #1

Return Event: 25 years
 Storm Event: 25 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
19.250	0.01	0.01	0.01	0.01	0.01
19.500	0.01	0.01	0.01	0.01	0.01
19.750	0.01	0.01	0.01	0.01	0.01
20.000	0.01	0.01	0.01	0.01	0.01
20.250	0.01	0.01	0.01	0.01	0.01
20.500	0.01	0.01	0.01	0.01	0.01
20.750	0.01	0.01	0.01	0.01	0.01
21.000	0.01	0.01	0.01	0.01	0.01
21.250	0.01	0.01	0.01	0.01	0.01
21.500	0.01	0.01	0.01	0.01	0.01
21.750	0.01	0.01	0.01	0.01	0.01
22.000	0.01	0.01	0.01	0.01	0.01
22.250	0.01	0.01	0.01	0.01	0.01
22.500	0.01	0.01	0.01	0.01	0.01
22.750	0.01	0.01	0.01	0.01	0.01
23.000	0.01	0.01	0.01	0.01	0.01
23.250	0.01	0.01	0.01	0.01	0.01
23.500	0.01	0.01	0.01	0.01	0.01
23.750	0.01	0.01	0.01	0.01	0.01
24.000	0.01	(N/A)	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary
Label: Undetained DA #1

Return Event: 50 years
Storm Event: 50 Year

Storm Event	50 Year
Return Event	50 years
Duration	24.000 hours
Depth	6.4 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.254 acres
Computational Time Increment	0.011 hours
Time to Peak (Computed)	11.933 hours
Flow (Peak, Computed)	0.89 ft ³ /s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	11.950 hours
Flow (Peak Interpolated Output)	0.87 ft ³ /s
Drainage Area	
SCS CN (Composite)	61.000
Area (User Defined)	0.254 acres
Maximum Retention (Pervious)	6.4 in
Maximum Retention (Pervious, 20 percent)	1.3 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.3 in
Runoff Volume (Pervious)	0.048 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.048 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary

Label: Undetained DA #1

Return Event: 50 years

Storm Event: 50 Year

SCS Unit Hydrograph Parameters

Unit peak, qp	3.45 ft ³ /s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)
Label: Undetained DA #1

Return Event: 50 years
Storm Event: 50 Year

Storm Event	50 Year
Return Event	50 years
Duration	24.000 hours
Depth	6.4 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.254 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
10.550	0.00	0.00	0.00	0.00	0.00
10.800	0.00	0.00	0.01	0.01	0.01
11.050	0.01	0.01	0.01	0.01	0.01
11.300	0.02	0.02	0.02	0.02	0.03
11.550	0.04	0.06	0.10	0.15	0.23
11.800	0.34	0.55	0.83	0.87	0.80
12.050	0.57	0.27	0.18	0.16	0.15
12.300	0.14	0.13	0.12	0.11	0.10
12.550	0.09	0.08	0.08	0.08	0.07
12.800	0.07	0.07	0.07	0.07	0.06
13.050	0.06	0.06	0.06	0.06	0.06
13.300	0.05	0.05	0.05	0.05	0.05
13.550	0.05	0.05	0.05	0.04	0.04
13.800	0.04	0.04	0.04	0.04	0.04
14.050	0.04	0.04	0.04	0.04	0.04
14.300	0.04	0.04	0.04	0.04	0.03
14.550	0.03	0.03	0.03	0.03	0.03
14.800	0.03	0.03	0.03	0.03	0.03
15.050	0.03	0.03	0.03	0.03	0.03
15.300	0.03	0.03	0.03	0.03	0.03
15.550	0.03	0.03	0.03	0.03	0.03
15.800	0.03	0.03	0.03	0.03	0.02
16.050	0.02	0.02	0.02	0.02	0.02
16.300	0.02	0.02	0.02	0.02	0.02
16.550	0.02	0.02	0.02	0.02	0.02
16.800	0.02	0.02	0.02	0.02	0.02
17.050	0.02	0.02	0.02	0.02	0.02
17.300	0.02	0.02	0.02	0.02	0.02
17.550	0.02	0.02	0.02	0.02	0.02
17.800	0.02	0.02	0.02	0.02	0.02
18.050	0.02	0.02	0.02	0.02	0.02
18.300	0.02	0.02	0.02	0.02	0.02
18.550	0.02	0.02	0.02	0.02	0.02

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)
Label: Undetained DA #1

Return Event: 50 years
Storm Event: 50 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
18.800	0.02	0.02	0.02	0.02	0.02
19.050	0.02	0.02	0.02	0.02	0.02
19.300	0.02	0.02	0.02	0.02	0.02
19.550	0.02	0.02	0.02	0.02	0.02
19.800	0.02	0.01	0.01	0.01	0.01
20.050	0.01	0.01	0.01	0.01	0.01
20.300	0.01	0.01	0.01	0.01	0.01
20.550	0.01	0.01	0.01	0.01	0.01
20.800	0.01	0.01	0.01	0.01	0.01
21.050	0.01	0.01	0.01	0.01	0.01
21.300	0.01	0.01	0.01	0.01	0.01
21.550	0.01	0.01	0.01	0.01	0.01
21.800	0.01	0.01	0.01	0.01	0.01
22.050	0.01	0.01	0.01	0.01	0.01
22.300	0.01	0.01	0.01	0.01	0.01
22.550	0.01	0.01	0.01	0.01	0.01
22.800	0.01	0.01	0.01	0.01	0.01
23.050	0.01	0.01	0.01	0.01	0.01
23.300	0.01	0.01	0.01	0.01	0.01
23.550	0.01	0.01	0.01	0.01	0.01
23.800	0.01	0.01	0.01	0.01	0.01

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary
Label: Undetained DA #1

Return Event: 100 years
Storm Event: 100 Year

Storm Event	100 Year
Return Event	100 years
Duration	24.000 hours
Depth	7.3 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.254 acres
Computational Time Increment	0.011 hours
Time to Peak (Computed)	11.922 hours
Flow (Peak, Computed)	1.14 ft ³ /s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	11.950 hours
Flow (Peak Interpolated Output)	1.10 ft ³ /s
Drainage Area	
SCS CN (Composite)	61.000
Area (User Defined)	0.254 acres
Maximum Retention (Pervious)	6.4 in
Maximum Retention (Pervious, 20 percent)	1.3 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.9 in
Runoff Volume (Pervious)	0.061 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.061 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph Summary

Label: Undetained DA #1

Return Event: 100 years

Storm Event: 100 Year

SCS Unit Hydrograph Parameters

Unit peak, qp	3.45 ft ³ /s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)
Label: Undetained DA #1

Return Event: 100 years
Storm Event: 100 Year

Storm Event	100 Year
Return Event	100 years
Duration	24.000 hours
Depth	7.3 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.254 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
10.050	0.00	0.00	0.00	0.00	0.00
10.300	0.00	0.00	0.00	0.00	0.01
10.550	0.01	0.01	0.01	0.01	0.01
10.800	0.01	0.01	0.01	0.01	0.01
11.050	0.02	0.02	0.02	0.02	0.02
11.300	0.03	0.03	0.03	0.04	0.04
11.550	0.06	0.09	0.15	0.22	0.33
11.800	0.46	0.72	1.07	1.10	1.01
12.050	0.71	0.33	0.23	0.20	0.18
12.300	0.17	0.16	0.14	0.13	0.12
12.550	0.11	0.10	0.10	0.09	0.09
12.800	0.09	0.09	0.08	0.08	0.08
13.050	0.07	0.07	0.07	0.07	0.07
13.300	0.07	0.06	0.06	0.06	0.06
13.550	0.06	0.06	0.06	0.05	0.05
13.800	0.05	0.05	0.05	0.05	0.05
14.050	0.05	0.05	0.05	0.04	0.04
14.300	0.04	0.04	0.04	0.04	0.04
14.550	0.04	0.04	0.04	0.04	0.04
14.800	0.04	0.04	0.04	0.04	0.04
15.050	0.04	0.04	0.04	0.04	0.04
15.300	0.04	0.04	0.04	0.03	0.03
15.550	0.03	0.03	0.03	0.03	0.03
15.800	0.03	0.03	0.03	0.03	0.03
16.050	0.03	0.03	0.03	0.03	0.03
16.300	0.03	0.03	0.03	0.03	0.03
16.550	0.03	0.03	0.03	0.03	0.03
16.800	0.03	0.03	0.03	0.03	0.03
17.050	0.03	0.03	0.03	0.03	0.03
17.300	0.03	0.03	0.03	0.03	0.03
17.550	0.03	0.03	0.02	0.02	0.02
17.800	0.02	0.02	0.02	0.02	0.02
18.050	0.02	0.02	0.02	0.02	0.02

POST-DEVELOPED CONDITIONS

Subsection: Unit Hydrograph (Hydrograph Table)
Label: Undetained DA #1

Return Event: 100 years
Storm Event: 100 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
18.300	0.02	0.02	0.02	0.02	0.02
18.550	0.02	0.02	0.02	0.02	0.02
18.800	0.02	0.02	0.02	0.02	0.02
19.050	0.02	0.02	0.02	0.02	0.02
19.300	0.02	0.02	0.02	0.02	0.02
19.550	0.02	0.02	0.02	0.02	0.02
19.800	0.02	0.02	0.02	0.02	0.02
20.050	0.02	0.02	0.02	0.02	0.02
20.300	0.02	0.02	0.02	0.02	0.02
20.550	0.02	0.02	0.02	0.02	0.02
20.800	0.02	0.02	0.02	0.02	0.02
21.050	0.02	0.02	0.02	0.02	0.02
21.300	0.02	0.02	0.02	0.02	0.02
21.550	0.02	0.02	0.02	0.02	0.02
21.800	0.02	0.02	0.02	0.02	0.02
22.050	0.02	0.02	0.02	0.02	0.02
22.300	0.02	0.02	0.02	0.02	0.02
22.550	0.02	0.02	0.02	0.02	0.02
22.800	0.02	0.02	0.02	0.02	0.02
23.050	0.02	0.02	0.02	0.02	0.02
23.300	0.02	0.02	0.02	0.02	0.02
23.550	0.02	0.02	0.02	0.02	0.02
23.800	0.02	0.02	0.02	0.02	0.02

POST-DEVELOPED CONDITIONS

Subsection: Addition Summary

Label: O-1

Return Event: 1 years

Storm Event: 1 Year

Summary for Hydrograph Addition at 'O-1'

Upstream Link	Upstream Node
Outlet-1	PO-1
<Catchment to Outflow Node>	Undetained DA #1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	Outlet-1	0.000	0.000	0.00
Flow (From)	Undetained DA #1	0.005	12.000	0.06
Flow (In)	O-1	0.005	12.000	0.06

POST-DEVELOPED CONDITIONS

Subsection: Addition Summary

Label: O-1

Return Event: 2 years

Storm Event: 2 Year

Summary for Hydrograph Addition at 'O-1'

Upstream Link	Upstream Node
Outlet-1	PO-1
<Catchment to Outflow Node>	Undetained DA #1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	Outlet-1	0.000	13.050	0.00
Flow (From)	Undetained DA #1	0.009	12.000	0.14
Flow (In)	O-1	0.010	12.000	0.14

POST-DEVELOPED CONDITIONS

Subsection: Addition Summary

Label: O-1

Return Event: 5 years

Storm Event: 5 Year

Summary for Hydrograph Addition at 'O-1'

Upstream Link	Upstream Node
Outlet-1	PO-1
<Catchment to Outflow Node>	Undetained DA #1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	Outlet-1	0.037	13.350	0.09
Flow (From)	Undetained DA #1	0.017	12.000	0.29
Flow (In)	O-1	0.054	12.000	0.30

POST-DEVELOPED CONDITIONS

Subsection: Addition Summary

Label: O-1

Return Event: 10 years

Storm Event: 10 Year

Summary for Hydrograph Addition at 'O-1'

Upstream Link	Upstream Node
Outlet-1	PO-1
<Catchment to Outflow Node>	Undetained DA #1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	Outlet-1	0.122	13.450	0.22
Flow (From)	Undetained DA #1	0.028	11.950	0.48
Flow (In)	O-1	0.150	12.000	0.56

POST-DEVELOPED CONDITIONS

Subsection: Addition Summary

Label: O-1

Return Event: 25 years

Storm Event: 25 Year

Summary for Hydrograph Addition at 'O-1'

Upstream Link	Upstream Node
Outlet-1	PO-1
<Catchment to Outflow Node>	Undetained DA #1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	Outlet-1	0.210	13.450	0.32
Flow (From)	Undetained DA #1	0.037	11.950	0.66
Flow (In)	O-1	0.247	12.000	0.80

POST-DEVELOPED CONDITIONS

Subsection: Addition Summary

Label: O-1

Return Event: 50 years

Storm Event: 50 Year

Summary for Hydrograph Addition at 'O-1'

Upstream Link	Upstream Node
Outlet-1	PO-1
<Catchment to Outflow Node>	Undetained DA #1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	Outlet-1	0.304	13.650	0.39
Flow (From)	Undetained DA #1	0.048	11.950	0.87
Flow (In)	O-1	0.352	12.000	1.07

POST-DEVELOPED CONDITIONS

Subsection: Addition Summary

Label: O-1

Return Event: 100 years

Storm Event: 100 Year

Summary for Hydrograph Addition at 'O-1'

Upstream Link	Upstream Node
Outlet-1	PO-1
<Catchment to Outflow Node>	Undetained DA #1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	Outlet-1	0.394	13.800	0.46
Flow (From)	Undetained DA #1	0.061	11.950	1.10
Flow (In)	O-1	0.455	11.950	1.39

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Elevation
Label: PO-1 (IN)

Return Event: 1 years
Storm Event: 1 Year

Time vs. Elevation (ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
0.000	686.00	686.00	686.00	686.00	686.00
0.250	686.00	686.00	686.00	686.00	686.00
0.500	686.00	686.00	686.00	686.00	686.00
0.750	686.00	686.00	686.00	686.00	686.00
1.000	686.00	686.00	686.00	686.00	686.00
1.250	686.00	686.00	686.00	686.00	686.00
1.500	686.00	686.00	686.00	686.00	686.00
1.750	686.00	686.00	686.00	686.00	686.00
2.000	686.00	686.00	686.00	686.00	686.00
2.250	686.00	686.00	686.00	686.00	686.00
2.500	686.00	686.00	686.00	686.00	686.00
2.750	686.00	686.00	686.00	686.00	686.00
3.000	686.00	686.00	686.00	686.00	686.00
3.250	686.00	686.00	686.00	686.00	686.00
3.500	686.00	686.00	686.00	686.00	686.00
3.750	686.00	686.00	686.00	686.00	686.00
4.000	686.00	686.00	686.00	686.00	686.00
4.250	686.00	686.00	686.00	686.00	686.00
4.500	686.00	686.00	686.00	686.00	686.00
4.750	686.00	686.00	686.00	686.00	686.00
5.000	686.00	686.00	686.00	686.00	686.00
5.250	686.00	686.00	686.00	686.00	686.00
5.500	686.00	686.00	686.00	686.00	686.00
5.750	686.00	686.00	686.00	686.00	686.00
6.000	686.00	686.00	686.00	686.00	686.00
6.250	686.00	686.00	686.00	686.00	686.00
6.500	686.00	686.00	686.00	686.00	686.00
6.750	686.00	686.00	686.00	686.00	686.00
7.000	686.00	686.00	686.00	686.00	686.00
7.250	686.00	686.00	686.00	686.00	686.00
7.500	686.00	686.00	686.00	686.00	686.00
7.750	686.00	686.00	686.00	686.00	686.00
8.000	686.00	686.00	686.00	686.00	686.00
8.250	686.00	686.00	686.00	686.00	686.00
8.500	686.00	686.00	686.00	686.00	686.00
8.750	686.00	686.00	686.00	686.00	686.00
9.000	686.00	686.00	686.00	686.00	686.00
9.250	686.00	686.00	686.00	686.00	686.00
9.500	686.00	686.00	686.00	686.00	686.00
9.750	686.00	686.00	686.00	686.00	686.00
10.000	686.00	686.00	686.00	686.00	686.00

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Elevation

Label: PO-1 (IN)

Return Event: 1 years

Storm Event: 1 Year

Time vs. Elevation (ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
10.250	686.00	686.00	686.00	686.00	686.00
10.500	686.00	686.00	686.00	686.00	686.00
10.750	686.00	686.00	686.00	686.00	686.00
11.000	686.00	686.00	686.00	686.00	686.00
11.250	686.00	686.00	686.00	686.00	686.00
11.500	686.00	686.00	686.00	686.00	686.00
11.750	686.00	686.00	686.01	686.02	686.05
12.000	686.07	686.09	686.11	686.11	686.12
12.250	686.12	686.13	686.13	686.13	686.13
12.500	686.14	686.14	686.14	686.14	686.14
12.750	686.14	686.14	686.14	686.14	686.15
13.000	686.15	686.15	686.15	686.15	686.15
13.250	686.15	686.15	686.15	686.15	686.15
13.500	686.15	686.15	686.15	686.15	686.15
13.750	686.15	686.15	686.15	686.15	686.14
14.000	686.14	686.14	686.14	686.14	686.14
14.250	686.14	686.14	686.14	686.14	686.14
14.500	686.14	686.14	686.14	686.14	686.14
14.750	686.14	686.14	686.14	686.13	686.13
15.000	686.13	686.13	686.13	686.13	686.13
15.250	686.13	686.13	686.13	686.13	686.13
15.500	686.13	686.13	686.13	686.13	686.13
15.750	686.12	686.12	686.12	686.12	686.12
16.000	686.12	686.12	686.12	686.12	686.12
16.250	686.12	686.12	686.12	686.12	686.12
16.500	686.11	686.11	686.11	686.11	686.11
16.750	686.11	686.11	686.11	686.11	686.11
17.000	686.11	686.11	686.11	686.11	686.11
17.250	686.11	686.10	686.10	686.10	686.10
17.500	686.10	686.10	686.10	686.10	686.10
17.750	686.10	686.10	686.10	686.10	686.10
18.000	686.10	686.10	686.10	686.10	686.10
18.250	686.09	686.09	686.09	686.09	686.09
18.500	686.09	686.09	686.09	686.09	686.09
18.750	686.09	686.09	686.09	686.09	686.09
19.000	686.09	686.09	686.09	686.09	686.09
19.250	686.08	686.08	686.08	686.08	686.08
19.500	686.08	686.08	686.08	686.08	686.08
19.750	686.08	686.08	686.08	686.08	686.08
20.000	686.08	686.08	686.08	686.08	686.08
20.250	686.08	686.07	686.07	686.07	686.07

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Elevation

Label: PO-1 (IN)

Return Event: 1 years

Storm Event: 1 Year

Time vs. Elevation (ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
20.500	686.07	686.07	686.07	686.07	686.07
20.750	686.07	686.07	686.07	686.07	686.07
21.000	686.07	686.07	686.07	686.07	686.07
21.250	686.07	686.07	686.07	686.07	686.07
21.500	686.07	686.07	686.07	686.06	686.06
21.750	686.06	686.06	686.06	686.06	686.06
22.000	686.06	686.06	686.06	686.06	686.06
22.250	686.06	686.06	686.06	686.06	686.06
22.500	686.06	686.06	686.06	686.06	686.06
22.750	686.06	686.06	686.06	686.06	686.06
23.000	686.06	686.06	686.06	686.06	686.06
23.250	686.06	686.06	686.06	686.06	686.06
23.500	686.06	686.06	686.05	686.05	686.05
23.750	686.05	686.05	686.05	686.05	686.05
24.000	686.05	(N/A)	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Elevation

Label: PO-1 (IN)

Return Event: 2 years

Storm Event: 2 Year

Time vs. Elevation (ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
0.000	686.00	686.00	686.00	686.00	686.00
0.250	686.00	686.00	686.00	686.00	686.00
0.500	686.00	686.00	686.00	686.00	686.00
0.750	686.00	686.00	686.00	686.00	686.00
1.000	686.00	686.00	686.00	686.00	686.00
1.250	686.00	686.00	686.00	686.00	686.00
1.500	686.00	686.00	686.00	686.00	686.00
1.750	686.00	686.00	686.00	686.00	686.00
2.000	686.00	686.00	686.00	686.00	686.00
2.250	686.00	686.00	686.00	686.00	686.00
2.500	686.00	686.00	686.00	686.00	686.00
2.750	686.00	686.00	686.00	686.00	686.00
3.000	686.00	686.00	686.00	686.00	686.00
3.250	686.00	686.00	686.00	686.00	686.00
3.500	686.00	686.00	686.00	686.00	686.00
3.750	686.00	686.00	686.00	686.00	686.00
4.000	686.00	686.00	686.00	686.00	686.00
4.250	686.00	686.00	686.00	686.00	686.00
4.500	686.00	686.00	686.00	686.00	686.00
4.750	686.00	686.00	686.00	686.00	686.00
5.000	686.00	686.00	686.00	686.00	686.00
5.250	686.00	686.00	686.00	686.00	686.00
5.500	686.00	686.00	686.00	686.00	686.00
5.750	686.00	686.00	686.00	686.00	686.00
6.000	686.00	686.00	686.00	686.00	686.00
6.250	686.00	686.00	686.00	686.00	686.00
6.500	686.00	686.00	686.00	686.00	686.00
6.750	686.00	686.00	686.00	686.00	686.00
7.000	686.00	686.00	686.00	686.00	686.00
7.250	686.00	686.00	686.00	686.00	686.00
7.500	686.00	686.00	686.00	686.00	686.00
7.750	686.00	686.00	686.00	686.00	686.00
8.000	686.00	686.00	686.00	686.00	686.00
8.250	686.00	686.00	686.00	686.00	686.00
8.500	686.00	686.00	686.00	686.00	686.00
8.750	686.00	686.00	686.00	686.00	686.00
9.000	686.00	686.00	686.00	686.00	686.00
9.250	686.00	686.00	686.00	686.00	686.00
9.500	686.00	686.00	686.00	686.00	686.00
9.750	686.00	686.00	686.00	686.00	686.00
10.000	686.00	686.00	686.00	686.00	686.00

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Elevation
Label: PO-1 (IN)

Return Event: 2 years
Storm Event: 2 Year

Time vs. Elevation (ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
10.250	686.00	686.00	686.00	686.00	686.00
10.500	686.00	686.00	686.00	686.00	686.00
10.750	686.00	686.00	686.00	686.00	686.00
11.000	686.00	686.00	686.00	686.00	686.00
11.250	686.00	686.00	686.00	686.00	686.00
11.500	686.00	686.00	686.00	686.00	686.00
11.750	686.01	686.02	686.03	686.06	686.10
12.000	686.15	686.18	686.20	686.21	686.22
12.250	686.23	686.23	686.23	686.24	686.24
12.500	686.24	686.25	686.25	686.25	686.25
12.750	686.25	686.25	686.25	686.25	686.25
13.000	686.25	686.25	686.25	686.25	686.25
13.250	686.25	686.25	686.25	686.25	686.25
13.500	686.25	686.25	686.25	686.25	686.25
13.750	686.25	686.25	686.24	686.24	686.24
14.000	686.24	686.24	686.24	686.24	686.24
14.250	686.24	686.23	686.23	686.23	686.23
14.500	686.23	686.23	686.23	686.23	686.23
14.750	686.22	686.22	686.22	686.22	686.22
15.000	686.22	686.22	686.22	686.21	686.21
15.250	686.21	686.21	686.21	686.21	686.21
15.500	686.21	686.20	686.20	686.20	686.20
15.750	686.20	686.20	686.20	686.20	686.19
16.000	686.19	686.19	686.19	686.19	686.19
16.250	686.19	686.19	686.19	686.18	686.18
16.500	686.18	686.18	686.18	686.18	686.18
16.750	686.18	686.17	686.17	686.17	686.17
17.000	686.17	686.17	686.17	686.17	686.17
17.250	686.17	686.16	686.16	686.16	686.16
17.500	686.16	686.16	686.16	686.16	686.16
17.750	686.16	686.15	686.15	686.15	686.15
18.000	686.15	686.15	686.15	686.15	686.15
18.250	686.15	686.15	686.14	686.14	686.14
18.500	686.14	686.14	686.14	686.14	686.14
18.750	686.14	686.14	686.14	686.13	686.13
19.000	686.13	686.13	686.13	686.13	686.13
19.250	686.13	686.13	686.13	686.13	686.13
19.500	686.12	686.12	686.12	686.12	686.12
19.750	686.12	686.12	686.12	686.12	686.12
20.000	686.12	686.12	686.12	686.11	686.11
20.250	686.11	686.11	686.11	686.11	686.11

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Elevation

Label: PO-1 (IN)

Return Event: 2 years

Storm Event: 2 Year

Time vs. Elevation (ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
20.500	686.11	686.11	686.11	686.11	686.11
20.750	686.11	686.11	686.11	686.10	686.10
21.000	686.10	686.10	686.10	686.10	686.10
21.250	686.10	686.10	686.10	686.10	686.10
21.500	686.10	686.10	686.10	686.10	686.10
21.750	686.10	686.09	686.09	686.09	686.09
22.000	686.09	686.09	686.09	686.09	686.09
22.250	686.09	686.09	686.09	686.09	686.09
22.500	686.09	686.09	686.09	686.09	686.09
22.750	686.09	686.09	686.09	686.09	686.08
23.000	686.08	686.08	686.08	686.08	686.08
23.250	686.08	686.08	686.08	686.08	686.08
23.500	686.08	686.08	686.08	686.08	686.08
23.750	686.08	686.08	686.08	686.08	686.08
24.000	686.08	(N/A)	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Elevation
Label: PO-1 (IN)

Return Event: 5 years
Storm Event: 5 Year

Time vs. Elevation (ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
0.000	686.00	686.00	686.00	686.00	686.00
0.250	686.00	686.00	686.00	686.00	686.00
0.500	686.00	686.00	686.00	686.00	686.00
0.750	686.00	686.00	686.00	686.00	686.00
1.000	686.00	686.00	686.00	686.00	686.00
1.250	686.00	686.00	686.00	686.00	686.00
1.500	686.00	686.00	686.00	686.00	686.00
1.750	686.00	686.00	686.00	686.00	686.00
2.000	686.00	686.00	686.00	686.00	686.00
2.250	686.00	686.00	686.00	686.00	686.00
2.500	686.00	686.00	686.00	686.00	686.00
2.750	686.00	686.00	686.00	686.00	686.00
3.000	686.00	686.00	686.00	686.00	686.00
3.250	686.00	686.00	686.00	686.00	686.00
3.500	686.00	686.00	686.00	686.00	686.00
3.750	686.00	686.00	686.00	686.00	686.00
4.000	686.00	686.00	686.00	686.00	686.00
4.250	686.00	686.00	686.00	686.00	686.00
4.500	686.00	686.00	686.00	686.00	686.00
4.750	686.00	686.00	686.00	686.00	686.00
5.000	686.00	686.00	686.00	686.00	686.00
5.250	686.00	686.00	686.00	686.00	686.00
5.500	686.00	686.00	686.00	686.00	686.00
5.750	686.00	686.00	686.00	686.00	686.00
6.000	686.00	686.00	686.00	686.00	686.00
6.250	686.00	686.00	686.00	686.00	686.00
6.500	686.00	686.00	686.00	686.00	686.00
6.750	686.00	686.00	686.00	686.00	686.00
7.000	686.00	686.00	686.00	686.00	686.00
7.250	686.00	686.00	686.00	686.00	686.00
7.500	686.00	686.00	686.00	686.00	686.00
7.750	686.00	686.00	686.00	686.00	686.00
8.000	686.00	686.00	686.00	686.00	686.00
8.250	686.00	686.00	686.00	686.00	686.00
8.500	686.00	686.00	686.00	686.00	686.00
8.750	686.00	686.00	686.00	686.00	686.00
9.000	686.00	686.00	686.00	686.00	686.00
9.250	686.00	686.00	686.00	686.00	686.00
9.500	686.00	686.00	686.00	686.00	686.00
9.750	686.00	686.00	686.00	686.00	686.00
10.000	686.00	686.00	686.00	686.00	686.00

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Elevation
Label: PO-1 (IN)

Return Event: 5 years
Storm Event: 5 Year

Time vs. Elevation (ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
10.250	686.00	686.00	686.00	686.00	686.00
10.500	686.00	686.00	686.00	686.00	686.00
10.750	686.00	686.00	686.00	686.00	686.00
11.000	686.00	686.00	686.00	686.00	686.00
11.250	686.00	686.00	686.00	686.00	686.00
11.500	686.01	686.01	686.01	686.02	686.02
11.750	686.04	686.06	686.10	686.15	686.23
12.000	686.30	686.35	686.39	686.40	686.41
12.250	686.42	686.43	686.44	686.45	686.45
12.500	686.46	686.46	686.46	686.47	686.47
12.750	686.47	686.47	686.47	686.48	686.48
13.000	686.48	686.48	686.48	686.48	686.48
13.250	686.48	686.48	686.48	686.48	686.48
13.500	686.48	686.48	686.48	686.48	686.48
13.750	686.48	686.48	686.48	686.48	686.47
14.000	686.47	686.47	686.47	686.47	686.47
14.250	686.47	686.47	686.46	686.46	686.46
14.500	686.46	686.46	686.46	686.46	686.45
14.750	686.45	686.45	686.45	686.45	686.45
15.000	686.44	686.44	686.44	686.44	686.44
15.250	686.44	686.43	686.43	686.43	686.43
15.500	686.43	686.42	686.42	686.42	686.42
15.750	686.42	686.41	686.41	686.41	686.41
16.000	686.41	686.40	686.40	686.40	686.40
16.250	686.40	686.39	686.39	686.39	686.39
16.500	686.38	686.38	686.38	686.38	686.38
16.750	686.37	686.37	686.37	686.37	686.37
17.000	686.36	686.36	686.36	686.36	686.36
17.250	686.35	686.35	686.35	686.35	686.34
17.500	686.34	686.34	686.34	686.34	686.33
17.750	686.33	686.33	686.33	686.33	686.32
18.000	686.32	686.32	686.32	686.31	686.31
18.250	686.31	686.31	686.31	686.30	686.30
18.500	686.30	686.30	686.30	686.29	686.29
18.750	686.29	686.29	686.29	686.28	686.28
19.000	686.28	686.28	686.27	686.27	686.27
19.250	686.27	686.27	686.26	686.26	686.26
19.500	686.26	686.26	686.25	686.25	686.25
19.750	686.25	686.24	686.24	686.24	686.24
20.000	686.24	686.23	686.23	686.23	686.23
20.250	686.23	686.22	686.22	686.22	686.22

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Elevation

Label: PO-1 (IN)

Return Event: 5 years

Storm Event: 5 Year

Time vs. Elevation (ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
20.500	686.22	686.22	686.21	686.21	686.21
20.750	686.21	686.21	686.20	686.20	686.20
21.000	686.20	686.20	686.20	686.20	686.19
21.250	686.19	686.19	686.19	686.19	686.19
21.500	686.19	686.18	686.18	686.18	686.18
21.750	686.18	686.18	686.18	686.17	686.17
22.000	686.17	686.17	686.17	686.17	686.17
22.250	686.17	686.16	686.16	686.16	686.16
22.500	686.16	686.16	686.16	686.16	686.16
22.750	686.16	686.15	686.15	686.15	686.15
23.000	686.15	686.15	686.15	686.15	686.15
23.250	686.15	686.15	686.14	686.14	686.14
23.500	686.14	686.14	686.14	686.14	686.14
23.750	686.14	686.14	686.14	686.14	686.13
24.000	686.13	(N/A)	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Elevation

Label: PO-1 (IN)

Return Event: 10 years

Storm Event: 10 Year

Time vs. Elevation (ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
0.000	686.00	686.00	686.00	686.00	686.00
0.250	686.00	686.00	686.00	686.00	686.00
0.500	686.00	686.00	686.00	686.00	686.00
0.750	686.00	686.00	686.00	686.00	686.00
1.000	686.00	686.00	686.00	686.00	686.00
1.250	686.00	686.00	686.00	686.00	686.00
1.500	686.00	686.00	686.00	686.00	686.00
1.750	686.00	686.00	686.00	686.00	686.00
2.000	686.00	686.00	686.00	686.00	686.00
2.250	686.00	686.00	686.00	686.00	686.00
2.500	686.00	686.00	686.00	686.00	686.00
2.750	686.00	686.00	686.00	686.00	686.00
3.000	686.00	686.00	686.00	686.00	686.00
3.250	686.00	686.00	686.00	686.00	686.00
3.500	686.00	686.00	686.00	686.00	686.00
3.750	686.00	686.00	686.00	686.00	686.00
4.000	686.00	686.00	686.00	686.00	686.00
4.250	686.00	686.00	686.00	686.00	686.00
4.500	686.00	686.00	686.00	686.00	686.00
4.750	686.00	686.00	686.00	686.00	686.00
5.000	686.00	686.00	686.00	686.00	686.00
5.250	686.00	686.00	686.00	686.00	686.00
5.500	686.00	686.00	686.00	686.00	686.00
5.750	686.00	686.00	686.00	686.00	686.00
6.000	686.00	686.00	686.00	686.00	686.00
6.250	686.00	686.00	686.00	686.00	686.00
6.500	686.00	686.00	686.00	686.00	686.00
6.750	686.00	686.00	686.00	686.00	686.00
7.000	686.00	686.00	686.00	686.00	686.00
7.250	686.00	686.00	686.00	686.00	686.00
7.500	686.00	686.00	686.00	686.00	686.00
7.750	686.00	686.00	686.00	686.00	686.00
8.000	686.00	686.00	686.00	686.00	686.00
8.250	686.00	686.00	686.00	686.00	686.00
8.500	686.00	686.00	686.00	686.00	686.00
8.750	686.00	686.00	686.00	686.00	686.00
9.000	686.00	686.00	686.00	686.00	686.00
9.250	686.00	686.00	686.00	686.00	686.00
9.500	686.00	686.00	686.00	686.00	686.00
9.750	686.00	686.00	686.00	686.00	686.00
10.000	686.00	686.00	686.00	686.00	686.00

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Elevation
Label: PO-1 (IN)

Return Event: 10 years
Storm Event: 10 Year

Time vs. Elevation (ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
10.250	686.00	686.00	686.00	686.00	686.00
10.500	686.00	686.00	686.00	686.00	686.00
10.750	686.00	686.00	686.00	686.00	686.01
11.000	686.01	686.01	686.01	686.01	686.01
11.250	686.01	686.02	686.02	686.02	686.02
11.500	686.03	686.03	686.04	686.05	686.07
11.750	686.09	686.13	686.19	686.28	686.39
12.000	686.49	686.57	686.62	686.64	686.66
12.250	686.67	686.69	686.70	686.70	686.71
12.500	686.72	686.73	686.73	686.73	686.74
12.750	686.74	686.74	686.75	686.75	686.75
13.000	686.75	686.75	686.76	686.76	686.76
13.250	686.76	686.76	686.76	686.76	686.76
13.500	686.76	686.76	686.76	686.76	686.76
13.750	686.76	686.76	686.75	686.75	686.75
14.000	686.75	686.75	686.75	686.75	686.75
14.250	686.74	686.74	686.74	686.74	686.74
14.500	686.74	686.73	686.73	686.73	686.73
14.750	686.73	686.72	686.72	686.72	686.72
15.000	686.72	686.71	686.71	686.71	686.71
15.250	686.71	686.70	686.70	686.70	686.70
15.500	686.69	686.69	686.69	686.69	686.68
15.750	686.68	686.68	686.68	686.67	686.67
16.000	686.67	686.67	686.66	686.66	686.66
16.250	686.66	686.65	686.65	686.65	686.64
16.500	686.64	686.64	686.64	686.63	686.63
16.750	686.63	686.63	686.62	686.62	686.62
17.000	686.61	686.61	686.61	686.61	686.60
17.250	686.60	686.60	686.60	686.59	686.59
17.500	686.59	686.59	686.58	686.58	686.58
17.750	686.57	686.57	686.57	686.57	686.56
18.000	686.56	686.56	686.56	686.55	686.55
18.250	686.55	686.55	686.54	686.54	686.54
18.500	686.53	686.53	686.53	686.53	686.52
18.750	686.52	686.52	686.52	686.51	686.51
19.000	686.51	686.50	686.50	686.50	686.50
19.250	686.49	686.49	686.49	686.49	686.48
19.500	686.48	686.48	686.47	686.47	686.47
19.750	686.47	686.46	686.46	686.46	686.45
20.000	686.45	686.45	686.45	686.44	686.44
20.250	686.44	686.43	686.43	686.43	686.43

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Elevation

Return Event: 10 years

Label: PO-1 (IN)

Storm Event: 10 Year

Time vs. Elevation (ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
20.500	686.42	686.42	686.42	686.42	686.41
20.750	686.41	686.41	686.40	686.40	686.40
21.000	686.40	686.39	686.39	686.39	686.39
21.250	686.38	686.38	686.38	686.38	686.37
21.500	686.37	686.37	686.37	686.36	686.36
21.750	686.36	686.36	686.35	686.35	686.35
22.000	686.35	686.34	686.34	686.34	686.34
22.250	686.34	686.33	686.33	686.33	686.33
22.500	686.32	686.32	686.32	686.32	686.31
22.750	686.31	686.31	686.31	686.31	686.30
23.000	686.30	686.30	686.30	686.29	686.29
23.250	686.29	686.29	686.29	686.28	686.28
23.500	686.28	686.28	686.28	686.27	686.27
23.750	686.27	686.27	686.27	686.26	686.26
24.000	686.26	(N/A)	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Elevation

Label: PO-1 (IN)

Return Event: 25 years

Storm Event: 25 Year

Time vs. Elevation (ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
0.000	686.00	686.00	686.00	686.00	686.00
0.250	686.00	686.00	686.00	686.00	686.00
0.500	686.00	686.00	686.00	686.00	686.00
0.750	686.00	686.00	686.00	686.00	686.00
1.000	686.00	686.00	686.00	686.00	686.00
1.250	686.00	686.00	686.00	686.00	686.00
1.500	686.00	686.00	686.00	686.00	686.00
1.750	686.00	686.00	686.00	686.00	686.00
2.000	686.00	686.00	686.00	686.00	686.00
2.250	686.00	686.00	686.00	686.00	686.00
2.500	686.00	686.00	686.00	686.00	686.00
2.750	686.00	686.00	686.00	686.00	686.00
3.000	686.00	686.00	686.00	686.00	686.00
3.250	686.00	686.00	686.00	686.00	686.00
3.500	686.00	686.00	686.00	686.00	686.00
3.750	686.00	686.00	686.00	686.00	686.00
4.000	686.00	686.00	686.00	686.00	686.00
4.250	686.00	686.00	686.00	686.00	686.00
4.500	686.00	686.00	686.00	686.00	686.00
4.750	686.00	686.00	686.00	686.00	686.00
5.000	686.00	686.00	686.00	686.00	686.00
5.250	686.00	686.00	686.00	686.00	686.00
5.500	686.00	686.00	686.00	686.00	686.00
5.750	686.00	686.00	686.00	686.00	686.00
6.000	686.00	686.00	686.00	686.00	686.00
6.250	686.00	686.00	686.00	686.00	686.00
6.500	686.00	686.00	686.00	686.00	686.00
6.750	686.00	686.00	686.00	686.00	686.00
7.000	686.00	686.00	686.00	686.00	686.00
7.250	686.00	686.00	686.00	686.00	686.00
7.500	686.00	686.00	686.00	686.00	686.00
7.750	686.00	686.00	686.00	686.00	686.00
8.000	686.00	686.00	686.00	686.00	686.00
8.250	686.00	686.00	686.00	686.00	686.00
8.500	686.00	686.00	686.00	686.00	686.00
8.750	686.00	686.00	686.00	686.00	686.00
9.000	686.00	686.00	686.00	686.00	686.00
9.250	686.00	686.00	686.00	686.00	686.00
9.500	686.00	686.00	686.00	686.00	686.00
9.750	686.00	686.00	686.00	686.00	686.00
10.000	686.00	686.00	686.00	686.00	686.00

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Elevation

Label: PO-1 (IN)

Return Event: 25 years

Storm Event: 25 Year

Time vs. Elevation (ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
10.250	686.00	686.00	686.00	686.00	686.01
10.500	686.01	686.01	686.01	686.01	686.01
10.750	686.01	686.01	686.01	686.02	686.02
11.000	686.02	686.02	686.02	686.03	686.03
11.250	686.03	686.04	686.04	686.04	686.05
11.500	686.05	686.06	686.07	686.09	686.11
11.750	686.15	686.20	686.28	686.40	686.54
12.000	686.67	686.77	686.83	686.86	686.88
12.250	686.90	686.92	686.93	686.94	686.95
12.500	686.96	686.97	686.97	686.98	686.98
12.750	686.99	686.99	686.99	687.00	687.00
13.000	687.00	687.00	687.01	687.01	687.01
13.250	687.01	687.01	687.01	687.01	687.01
13.500	687.01	687.01	687.01	687.01	687.01
13.750	687.01	687.01	687.01	687.01	687.00
14.000	687.00	687.00	687.00	687.00	687.00
14.250	686.99	686.99	686.99	686.99	686.98
14.500	686.98	686.98	686.98	686.98	686.97
14.750	686.97	686.97	686.97	686.96	686.96
15.000	686.96	686.96	686.95	686.95	686.95
15.250	686.95	686.94	686.94	686.94	686.93
15.500	686.93	686.93	686.93	686.92	686.92
15.750	686.92	686.91	686.91	686.91	686.90
16.000	686.90	686.90	686.89	686.89	686.89
16.250	686.88	686.88	686.88	686.87	686.87
16.500	686.87	686.86	686.86	686.86	686.85
16.750	686.85	686.85	686.85	686.84	686.84
17.000	686.84	686.83	686.83	686.83	686.82
17.250	686.82	686.82	686.81	686.81	686.81
17.500	686.80	686.80	686.80	686.79	686.79
17.750	686.79	686.78	686.78	686.78	686.77
18.000	686.77	686.77	686.76	686.76	686.76
18.250	686.75	686.75	686.75	686.74	686.74
18.500	686.74	686.73	686.73	686.73	686.72
18.750	686.72	686.72	686.71	686.71	686.71
19.000	686.70	686.70	686.70	686.69	686.69
19.250	686.69	686.68	686.68	686.68	686.67
19.500	686.67	686.67	686.66	686.66	686.66
19.750	686.65	686.65	686.65	686.64	686.64
20.000	686.64	686.63	686.63	686.63	686.62
20.250	686.62	686.62	686.61	686.61	686.61

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Elevation

Label: PO-1 (IN)

Return Event: 25 years

Storm Event: 25 Year

Time vs. Elevation (ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
20.500	686.60	686.60	686.60	686.59	686.59
20.750	686.59	686.58	686.58	686.58	686.57
21.000	686.57	686.57	686.57	686.56	686.56
21.250	686.56	686.55	686.55	686.55	686.54
21.500	686.54	686.54	686.54	686.53	686.53
21.750	686.53	686.52	686.52	686.52	686.52
22.000	686.51	686.51	686.51	686.50	686.50
22.250	686.50	686.50	686.49	686.49	686.49
22.500	686.48	686.48	686.48	686.48	686.47
22.750	686.47	686.47	686.46	686.46	686.46
23.000	686.46	686.45	686.45	686.45	686.45
23.250	686.44	686.44	686.44	686.44	686.43
23.500	686.43	686.43	686.43	686.42	686.42
23.750	686.42	686.41	686.41	686.41	686.41
24.000	686.40	(N/A)	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Elevation

Label: PO-1 (IN)

Return Event: 50 years

Storm Event: 50 Year

Time vs. Elevation (ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
0.000	686.00	686.00	686.00	686.00	686.00
0.250	686.00	686.00	686.00	686.00	686.00
0.500	686.00	686.00	686.00	686.00	686.00
0.750	686.00	686.00	686.00	686.00	686.00
1.000	686.00	686.00	686.00	686.00	686.00
1.250	686.00	686.00	686.00	686.00	686.00
1.500	686.00	686.00	686.00	686.00	686.00
1.750	686.00	686.00	686.00	686.00	686.00
2.000	686.00	686.00	686.00	686.00	686.00
2.250	686.00	686.00	686.00	686.00	686.00
2.500	686.00	686.00	686.00	686.00	686.00
2.750	686.00	686.00	686.00	686.00	686.00
3.000	686.00	686.00	686.00	686.00	686.00
3.250	686.00	686.00	686.00	686.00	686.00
3.500	686.00	686.00	686.00	686.00	686.00
3.750	686.00	686.00	686.00	686.00	686.00
4.000	686.00	686.00	686.00	686.00	686.00
4.250	686.00	686.00	686.00	686.00	686.00
4.500	686.00	686.00	686.00	686.00	686.00
4.750	686.00	686.00	686.00	686.00	686.00
5.000	686.00	686.00	686.00	686.00	686.00
5.250	686.00	686.00	686.00	686.00	686.00
5.500	686.00	686.00	686.00	686.00	686.00
5.750	686.00	686.00	686.00	686.00	686.00
6.000	686.00	686.00	686.00	686.00	686.00
6.250	686.00	686.00	686.00	686.00	686.00
6.500	686.00	686.00	686.00	686.00	686.00
6.750	686.00	686.00	686.00	686.00	686.00
7.000	686.00	686.00	686.00	686.00	686.00
7.250	686.00	686.00	686.00	686.00	686.00
7.500	686.00	686.00	686.00	686.00	686.00
7.750	686.00	686.00	686.00	686.00	686.00
8.000	686.00	686.00	686.00	686.00	686.00
8.250	686.00	686.00	686.00	686.00	686.00
8.500	686.00	686.00	686.00	686.00	686.00
8.750	686.00	686.00	686.00	686.00	686.00
9.000	686.00	686.00	686.00	686.00	686.00
9.250	686.00	686.00	686.00	686.00	686.00
9.500	686.00	686.00	686.00	686.00	686.00
9.750	686.00	686.00	686.00	686.01	686.01
10.000	686.01	686.01	686.01	686.01	686.01

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Elevation

Label: PO-1 (IN)

Return Event: 50 years

Storm Event: 50 Year

Time vs. Elevation (ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
10.250	686.01	686.01	686.01	686.02	686.02
10.500	686.02	686.02	686.02	686.02	686.03
10.750	686.03	686.03	686.03	686.04	686.04
11.000	686.04	686.05	686.05	686.05	686.06
11.250	686.06	686.07	686.07	686.08	686.09
11.500	686.09	686.10	686.12	686.14	686.17
11.750	686.22	686.29	686.39	686.54	686.72
12.000	686.88	687.01	687.08	687.12	687.14
12.250	687.16	687.18	687.20	687.21	687.22
12.500	687.23	687.24	687.25	687.26	687.26
12.750	687.27	687.27	687.28	687.28	687.29
13.000	687.29	687.29	687.30	687.30	687.30
13.250	687.30	687.30	687.31	687.31	687.31
13.500	687.31	687.31	687.31	687.31	687.31
13.750	687.31	687.31	687.31	687.31	687.31
14.000	687.30	687.30	687.30	687.30	687.30
14.250	687.30	687.30	687.29	687.29	687.29
14.500	687.29	687.29	687.28	687.28	687.28
14.750	687.28	687.28	687.27	687.27	687.27
15.000	687.27	687.26	687.26	687.26	687.26
15.250	687.25	687.25	687.25	687.24	687.24
15.500	687.24	687.24	687.23	687.23	687.23
15.750	687.22	687.22	687.22	687.21	687.21
16.000	687.21	687.20	687.20	687.20	687.19
16.250	687.19	687.18	687.18	687.18	687.17
16.500	687.17	687.17	687.16	687.16	687.15
16.750	687.15	687.15	687.14	687.14	687.14
17.000	687.13	687.13	687.12	687.12	687.12
17.250	687.11	687.11	687.11	687.10	687.10
17.500	687.09	687.09	687.09	687.08	687.08
17.750	687.07	687.07	687.07	687.06	687.06
18.000	687.05	687.05	687.05	687.04	687.04
18.250	687.03	687.03	687.03	687.02	687.02
18.500	687.01	687.01	687.01	687.00	687.00
18.750	686.99	686.99	686.98	686.98	686.98
19.000	686.97	686.97	686.96	686.96	686.95
19.250	686.95	686.95	686.94	686.94	686.93
19.500	686.93	686.92	686.92	686.92	686.91
19.750	686.91	686.90	686.90	686.89	686.89
20.000	686.88	686.88	686.88	686.87	686.87
20.250	686.86	686.86	686.85	686.85	686.85

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Elevation

Return Event: 50 years

Label: PO-1 (IN)

Storm Event: 50 Year

Time vs. Elevation (ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
20.500	686.84	686.84	686.83	686.83	686.83
20.750	686.82	686.82	686.81	686.81	686.81
21.000	686.80	686.80	686.79	686.79	686.79
21.250	686.78	686.78	686.77	686.77	686.77
21.500	686.76	686.76	686.76	686.75	686.75
21.750	686.74	686.74	686.74	686.73	686.73
22.000	686.73	686.72	686.72	686.72	686.71
22.250	686.71	686.70	686.70	686.70	686.69
22.500	686.69	686.69	686.68	686.68	686.68
22.750	686.67	686.67	686.67	686.66	686.66
23.000	686.66	686.65	686.65	686.65	686.64
23.250	686.64	686.64	686.63	686.63	686.63
23.500	686.62	686.62	686.62	686.61	686.61
23.750	686.61	686.60	686.60	686.60	686.60
24.000	686.59	(N/A)	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Elevation

Label: PO-1 (IN)

Return Event: 100 years

Storm Event: 100 Year

Time vs. Elevation (ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
0.000	686.00	686.00	686.00	686.00	686.00
0.250	686.00	686.00	686.00	686.00	686.00
0.500	686.00	686.00	686.00	686.00	686.00
0.750	686.00	686.00	686.00	686.00	686.00
1.000	686.00	686.00	686.00	686.00	686.00
1.250	686.00	686.00	686.00	686.00	686.00
1.500	686.00	686.00	686.00	686.00	686.00
1.750	686.00	686.00	686.00	686.00	686.00
2.000	686.00	686.00	686.00	686.00	686.00
2.250	686.00	686.00	686.00	686.00	686.00
2.500	686.00	686.00	686.00	686.00	686.00
2.750	686.00	686.00	686.00	686.00	686.00
3.000	686.00	686.00	686.00	686.00	686.00
3.250	686.00	686.00	686.00	686.00	686.00
3.500	686.00	686.00	686.00	686.00	686.00
3.750	686.00	686.00	686.00	686.00	686.00
4.000	686.00	686.00	686.00	686.00	686.00
4.250	686.00	686.00	686.00	686.00	686.00
4.500	686.00	686.00	686.00	686.00	686.00
4.750	686.00	686.00	686.00	686.00	686.00
5.000	686.00	686.00	686.00	686.00	686.00
5.250	686.00	686.00	686.00	686.00	686.00
5.500	686.00	686.00	686.00	686.00	686.00
5.750	686.00	686.00	686.00	686.00	686.00
6.000	686.00	686.00	686.00	686.00	686.00
6.250	686.00	686.00	686.00	686.00	686.00
6.500	686.00	686.00	686.00	686.00	686.00
6.750	686.00	686.00	686.00	686.00	686.00
7.000	686.00	686.00	686.00	686.00	686.00
7.250	686.00	686.00	686.00	686.00	686.00
7.500	686.00	686.00	686.00	686.00	686.00
7.750	686.00	686.00	686.00	686.00	686.00
8.000	686.00	686.00	686.00	686.00	686.00
8.250	686.00	686.00	686.00	686.00	686.00
8.500	686.00	686.00	686.00	686.00	686.00
8.750	686.00	686.00	686.00	686.00	686.00
9.000	686.00	686.00	686.00	686.00	686.00
9.250	686.01	686.01	686.01	686.01	686.01
9.500	686.01	686.01	686.01	686.01	686.01
9.750	686.01	686.01	686.02	686.02	686.02
10.000	686.02	686.02	686.02	686.02	686.03

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Elevation
Label: PO-1 (IN)

Return Event: 100 years
Storm Event: 100 Year

Time vs. Elevation (ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
10.250	686.03	686.03	686.03	686.03	686.04
10.500	686.04	686.04	686.04	686.05	686.05
10.750	686.05	686.06	686.06	686.06	686.07
11.000	686.07	686.08	686.08	686.09	686.09
11.250	686.10	686.11	686.11	686.12	686.13
11.500	686.14	686.15	686.17	686.20	686.25
11.750	686.31	686.40	686.53	686.71	686.93
12.000	687.12	687.27	687.36	687.40	687.43
12.250	687.46	687.48	687.50	687.52	687.53
12.500	687.55	687.56	687.57	687.57	687.58
12.750	687.59	687.60	687.60	687.61	687.61
13.000	687.62	687.62	687.62	687.63	687.63
13.250	687.63	687.64	687.64	687.64	687.64
13.500	687.64	687.64	687.64	687.65	687.65
13.750	687.65	687.65	687.65	687.65	687.65
14.000	687.64	687.64	687.64	687.64	687.64
14.250	687.64	687.64	687.64	687.63	687.63
14.500	687.63	687.63	687.63	687.63	687.62
14.750	687.62	687.62	687.62	687.62	687.61
15.000	687.61	687.61	687.61	687.60	687.60
15.250	687.60	687.60	687.59	687.59	687.59
15.500	687.59	687.58	687.58	687.58	687.57
15.750	687.57	687.57	687.56	687.56	687.56
16.000	687.55	687.55	687.55	687.54	687.54
16.250	687.53	687.53	687.53	687.52	687.52
16.500	687.52	687.51	687.51	687.50	687.50
16.750	687.50	687.49	687.49	687.48	687.48
17.000	687.48	687.47	687.47	687.46	687.46
17.250	687.46	687.45	687.45	687.44	687.44
17.500	687.43	687.43	687.43	687.42	687.42
17.750	687.41	687.41	687.40	687.40	687.40
18.000	687.39	687.39	687.38	687.38	687.37
18.250	687.37	687.36	687.36	687.36	687.35
18.500	687.35	687.34	687.34	687.33	687.33
18.750	687.32	687.32	687.31	687.31	687.31
19.000	687.30	687.30	687.29	687.29	687.28
19.250	687.28	687.27	687.27	687.26	687.26
19.500	687.25	687.25	687.24	687.24	687.23
19.750	687.23	687.22	687.22	687.21	687.21
20.000	687.21	687.20	687.20	687.19	687.19
20.250	687.18	687.18	687.17	687.17	687.16

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Elevation

Label: PO-1 (IN)

Return Event: 100 years

Storm Event: 100 Year

Time vs. Elevation (ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
20.500	687.16	687.15	687.15	687.14	687.14
20.750	687.13	687.13	687.12	687.12	687.11
21.000	687.11	687.10	687.10	687.09	687.09
21.250	687.08	687.08	687.08	687.07	687.07
21.500	687.06	687.06	687.05	687.05	687.04
21.750	687.04	687.03	687.03	687.02	687.02
22.000	687.01	687.01	687.01	687.00	687.00
22.250	686.99	686.99	686.98	686.98	686.97
22.500	686.97	686.96	686.96	686.95	686.95
22.750	686.95	686.94	686.94	686.93	686.93
23.000	686.92	686.92	686.91	686.91	686.91
23.250	686.90	686.90	686.89	686.89	686.88
23.500	686.88	686.88	686.87	686.87	686.86
23.750	686.86	686.85	686.85	686.85	686.84
24.000	686.84	(N/A)	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Volume
Label: PO-1

Return Event: 1 years
Storm Event: 1 Year

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0.000	0.000	0.000	0.000	0.000	0.000
0.250	0.000	0.000	0.000	0.000	0.000
0.500	0.000	0.000	0.000	0.000	0.000
0.750	0.000	0.000	0.000	0.000	0.000
1.000	0.000	0.000	0.000	0.000	0.000
1.250	0.000	0.000	0.000	0.000	0.000
1.500	0.000	0.000	0.000	0.000	0.000
1.750	0.000	0.000	0.000	0.000	0.000
2.000	0.000	0.000	0.000	0.000	0.000
2.250	0.000	0.000	0.000	0.000	0.000
2.500	0.000	0.000	0.000	0.000	0.000
2.750	0.000	0.000	0.000	0.000	0.000
3.000	0.000	0.000	0.000	0.000	0.000
3.250	0.000	0.000	0.000	0.000	0.000
3.500	0.000	0.000	0.000	0.000	0.000
3.750	0.000	0.000	0.000	0.000	0.000
4.000	0.000	0.000	0.000	0.000	0.000
4.250	0.000	0.000	0.000	0.000	0.000
4.500	0.000	0.000	0.000	0.000	0.000
4.750	0.000	0.000	0.000	0.000	0.000
5.000	0.000	0.000	0.000	0.000	0.000
5.250	0.000	0.000	0.000	0.000	0.000
5.500	0.000	0.000	0.000	0.000	0.000
5.750	0.000	0.000	0.000	0.000	0.000
6.000	0.000	0.000	0.000	0.000	0.000
6.250	0.000	0.000	0.000	0.000	0.000
6.500	0.000	0.000	0.000	0.000	0.000
6.750	0.000	0.000	0.000	0.000	0.000
7.000	0.000	0.000	0.000	0.000	0.000
7.250	0.000	0.000	0.000	0.000	0.000
7.500	0.000	0.000	0.000	0.000	0.000
7.750	0.000	0.000	0.000	0.000	0.000
8.000	0.000	0.000	0.000	0.000	0.000
8.250	0.000	0.000	0.000	0.000	0.000
8.500	0.000	0.000	0.000	0.000	0.000
8.750	0.000	0.000	0.000	0.000	0.000
9.000	0.000	0.000	0.000	0.000	0.000
9.250	0.000	0.000	0.000	0.000	0.000
9.500	0.000	0.000	0.000	0.000	0.000
9.750	0.000	0.000	0.000	0.000	0.000
10.000	0.000	0.000	0.000	0.000	0.000

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Volume
Label: PO-1

Return Event: 1 years
Storm Event: 1 Year

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
10.250	0.000	0.000	0.000	0.000	0.000
10.500	0.000	0.000	0.000	0.000	0.000
10.750	0.000	0.000	0.000	0.000	0.000
11.000	0.000	0.000	0.000	0.000	0.000
11.250	0.000	0.000	0.000	0.000	0.000
11.500	0.000	0.000	0.000	0.000	0.000
11.750	0.000	0.001	0.003	0.007	0.014
12.000	0.022	0.030	0.034	0.036	0.037
12.250	0.039	0.040	0.041	0.042	0.043
12.500	0.043	0.044	0.044	0.045	0.045
12.750	0.045	0.045	0.046	0.046	0.046
13.000	0.046	0.046	0.046	0.047	0.047
13.250	0.047	0.047	0.047	0.047	0.047
13.500	0.047	0.047	0.047	0.047	0.046
13.750	0.046	0.046	0.046	0.046	0.046
14.000	0.046	0.046	0.045	0.045	0.045
14.250	0.045	0.045	0.045	0.044	0.044
14.500	0.044	0.044	0.044	0.044	0.043
14.750	0.043	0.043	0.043	0.043	0.043
15.000	0.042	0.042	0.042	0.042	0.042
15.250	0.041	0.041	0.041	0.041	0.041
15.500	0.040	0.040	0.040	0.040	0.040
15.750	0.039	0.039	0.039	0.039	0.039
16.000	0.038	0.038	0.038	0.038	0.037
16.250	0.037	0.037	0.037	0.037	0.036
16.500	0.036	0.036	0.036	0.036	0.035
16.750	0.035	0.035	0.035	0.035	0.034
17.000	0.034	0.034	0.034	0.034	0.034
17.250	0.033	0.033	0.033	0.033	0.033
17.500	0.032	0.032	0.032	0.032	0.032
17.750	0.032	0.031	0.031	0.031	0.031
18.000	0.031	0.031	0.030	0.030	0.030
18.250	0.030	0.030	0.030	0.029	0.029
18.500	0.029	0.029	0.029	0.029	0.028
18.750	0.028	0.028	0.028	0.028	0.028
19.000	0.028	0.027	0.027	0.027	0.027
19.250	0.027	0.027	0.026	0.026	0.026
19.500	0.026	0.026	0.026	0.026	0.025
19.750	0.025	0.025	0.025	0.025	0.025
20.000	0.024	0.024	0.024	0.024	0.024
20.250	0.024	0.024	0.023	0.023	0.023

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Volume
Label: PO-1

Return Event: 1 years
Storm Event: 1 Year

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
20.500	0.023	0.023	0.023	0.023	0.023
20.750	0.022	0.022	0.022	0.022	0.022
21.000	0.022	0.022	0.022	0.022	0.021
21.250	0.021	0.021	0.021	0.021	0.021
21.500	0.021	0.021	0.021	0.020	0.020
21.750	0.020	0.020	0.020	0.020	0.020
22.000	0.020	0.020	0.020	0.020	0.019
22.250	0.019	0.019	0.019	0.019	0.019
22.500	0.019	0.019	0.019	0.019	0.019
22.750	0.019	0.018	0.018	0.018	0.018
23.000	0.018	0.018	0.018	0.018	0.018
23.250	0.018	0.018	0.018	0.018	0.018
23.500	0.017	0.017	0.017	0.017	0.017
23.750	0.017	0.017	0.017	0.017	0.017
24.000	0.017	(N/A)	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Volume
Label: PO-1

Return Event: 2 years
Storm Event: 2 Year

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0.000	0.000	0.000	0.000	0.000	0.000
0.250	0.000	0.000	0.000	0.000	0.000
0.500	0.000	0.000	0.000	0.000	0.000
0.750	0.000	0.000	0.000	0.000	0.000
1.000	0.000	0.000	0.000	0.000	0.000
1.250	0.000	0.000	0.000	0.000	0.000
1.500	0.000	0.000	0.000	0.000	0.000
1.750	0.000	0.000	0.000	0.000	0.000
2.000	0.000	0.000	0.000	0.000	0.000
2.250	0.000	0.000	0.000	0.000	0.000
2.500	0.000	0.000	0.000	0.000	0.000
2.750	0.000	0.000	0.000	0.000	0.000
3.000	0.000	0.000	0.000	0.000	0.000
3.250	0.000	0.000	0.000	0.000	0.000
3.500	0.000	0.000	0.000	0.000	0.000
3.750	0.000	0.000	0.000	0.000	0.000
4.000	0.000	0.000	0.000	0.000	0.000
4.250	0.000	0.000	0.000	0.000	0.000
4.500	0.000	0.000	0.000	0.000	0.000
4.750	0.000	0.000	0.000	0.000	0.000
5.000	0.000	0.000	0.000	0.000	0.000
5.250	0.000	0.000	0.000	0.000	0.000
5.500	0.000	0.000	0.000	0.000	0.000
5.750	0.000	0.000	0.000	0.000	0.000
6.000	0.000	0.000	0.000	0.000	0.000
6.250	0.000	0.000	0.000	0.000	0.000
6.500	0.000	0.000	0.000	0.000	0.000
6.750	0.000	0.000	0.000	0.000	0.000
7.000	0.000	0.000	0.000	0.000	0.000
7.250	0.000	0.000	0.000	0.000	0.000
7.500	0.000	0.000	0.000	0.000	0.000
7.750	0.000	0.000	0.000	0.000	0.000
8.000	0.000	0.000	0.000	0.000	0.000
8.250	0.000	0.000	0.000	0.000	0.000
8.500	0.000	0.000	0.000	0.000	0.000
8.750	0.000	0.000	0.000	0.000	0.000
9.000	0.000	0.000	0.000	0.000	0.000
9.250	0.000	0.000	0.000	0.000	0.000
9.500	0.000	0.000	0.000	0.000	0.000
9.750	0.000	0.000	0.000	0.000	0.000
10.000	0.000	0.000	0.000	0.000	0.000

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Volume
Label: PO-1

Return Event: 2 years
Storm Event: 2 Year

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
10.250	0.000	0.000	0.000	0.000	0.000
10.500	0.000	0.000	0.000	0.000	0.000
10.750	0.000	0.000	0.000	0.000	0.000
11.000	0.000	0.000	0.000	0.000	0.000
11.250	0.000	0.000	0.000	0.000	0.000
11.500	0.000	0.000	0.000	0.000	0.001
11.750	0.002	0.005	0.010	0.020	0.033
12.000	0.046	0.058	0.064	0.068	0.070
12.250	0.072	0.073	0.075	0.076	0.077
12.500	0.078	0.078	0.079	0.079	0.080
12.750	0.080	0.080	0.080	0.081	0.081
13.000	0.081	0.081	0.081	0.081	0.081
13.250	0.081	0.080	0.080	0.080	0.080
13.500	0.080	0.080	0.079	0.079	0.079
13.750	0.079	0.078	0.078	0.078	0.077
14.000	0.077	0.077	0.076	0.076	0.075
14.250	0.075	0.075	0.074	0.074	0.074
14.500	0.073	0.073	0.072	0.072	0.072
14.750	0.071	0.071	0.071	0.070	0.070
15.000	0.069	0.069	0.069	0.068	0.068
15.250	0.067	0.067	0.067	0.066	0.066
15.500	0.066	0.065	0.065	0.064	0.064
15.750	0.064	0.063	0.063	0.062	0.062
16.000	0.062	0.061	0.061	0.060	0.060
16.250	0.060	0.059	0.059	0.058	0.058
16.500	0.058	0.057	0.057	0.057	0.056
16.750	0.056	0.055	0.055	0.055	0.054
17.000	0.054	0.054	0.053	0.053	0.053
17.250	0.052	0.052	0.052	0.051	0.051
17.500	0.051	0.050	0.050	0.050	0.050
17.750	0.049	0.049	0.049	0.048	0.048
18.000	0.048	0.047	0.047	0.047	0.047
18.250	0.046	0.046	0.046	0.045	0.045
18.500	0.045	0.045	0.044	0.044	0.044
18.750	0.043	0.043	0.043	0.043	0.042
19.000	0.042	0.042	0.042	0.041	0.041
19.250	0.041	0.041	0.040	0.040	0.040
19.500	0.040	0.039	0.039	0.039	0.039
19.750	0.038	0.038	0.038	0.038	0.037
20.000	0.037	0.037	0.037	0.036	0.036
20.250	0.036	0.036	0.035	0.035	0.035

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Volume
Label: PO-1

Return Event: 2 years
Storm Event: 2 Year

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
20.500	0.035	0.035	0.034	0.034	0.034
20.750	0.034	0.034	0.033	0.033	0.033
21.000	0.033	0.033	0.032	0.032	0.032
21.250	0.032	0.032	0.031	0.031	0.031
21.500	0.031	0.031	0.031	0.030	0.030
21.750	0.030	0.030	0.030	0.030	0.029
22.000	0.029	0.029	0.029	0.029	0.029
22.250	0.029	0.028	0.028	0.028	0.028
22.500	0.028	0.028	0.028	0.028	0.027
22.750	0.027	0.027	0.027	0.027	0.027
23.000	0.027	0.027	0.026	0.026	0.026
23.250	0.026	0.026	0.026	0.026	0.026
23.500	0.026	0.025	0.025	0.025	0.025
23.750	0.025	0.025	0.025	0.025	0.025
24.000	0.025	(N/A)	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Volume
Label: PO-1

Return Event: 5 years
Storm Event: 5 Year

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0.000	0.000	0.000	0.000	0.000	0.000
0.250	0.000	0.000	0.000	0.000	0.000
0.500	0.000	0.000	0.000	0.000	0.000
0.750	0.000	0.000	0.000	0.000	0.000
1.000	0.000	0.000	0.000	0.000	0.000
1.250	0.000	0.000	0.000	0.000	0.000
1.500	0.000	0.000	0.000	0.000	0.000
1.750	0.000	0.000	0.000	0.000	0.000
2.000	0.000	0.000	0.000	0.000	0.000
2.250	0.000	0.000	0.000	0.000	0.000
2.500	0.000	0.000	0.000	0.000	0.000
2.750	0.000	0.000	0.000	0.000	0.000
3.000	0.000	0.000	0.000	0.000	0.000
3.250	0.000	0.000	0.000	0.000	0.000
3.500	0.000	0.000	0.000	0.000	0.000
3.750	0.000	0.000	0.000	0.000	0.000
4.000	0.000	0.000	0.000	0.000	0.000
4.250	0.000	0.000	0.000	0.000	0.000
4.500	0.000	0.000	0.000	0.000	0.000
4.750	0.000	0.000	0.000	0.000	0.000
5.000	0.000	0.000	0.000	0.000	0.000
5.250	0.000	0.000	0.000	0.000	0.000
5.500	0.000	0.000	0.000	0.000	0.000
5.750	0.000	0.000	0.000	0.000	0.000
6.000	0.000	0.000	0.000	0.000	0.000
6.250	0.000	0.000	0.000	0.000	0.000
6.500	0.000	0.000	0.000	0.000	0.000
6.750	0.000	0.000	0.000	0.000	0.000
7.000	0.000	0.000	0.000	0.000	0.000
7.250	0.000	0.000	0.000	0.000	0.000
7.500	0.000	0.000	0.000	0.000	0.000
7.750	0.000	0.000	0.000	0.000	0.000
8.000	0.000	0.000	0.000	0.000	0.000
8.250	0.000	0.000	0.000	0.000	0.000
8.500	0.000	0.000	0.000	0.000	0.000
8.750	0.000	0.000	0.000	0.000	0.000
9.000	0.000	0.000	0.000	0.000	0.000
9.250	0.000	0.000	0.000	0.000	0.000
9.500	0.000	0.000	0.000	0.000	0.000
9.750	0.000	0.000	0.000	0.000	0.000
10.000	0.000	0.000	0.000	0.000	0.000

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Volume
Label: PO-1

Return Event: 5 years
Storm Event: 5 Year

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
10.250	0.000	0.000	0.000	0.000	0.000
10.500	0.000	0.000	0.000	0.000	0.000
10.750	0.000	0.000	0.000	0.000	0.000
11.000	0.000	0.000	0.000	0.000	0.000
11.250	0.000	0.000	0.001	0.001	0.001
11.500	0.002	0.002	0.003	0.005	0.007
11.750	0.012	0.019	0.030	0.049	0.072
12.000	0.095	0.113	0.124	0.130	0.133
12.250	0.136	0.139	0.142	0.144	0.146
12.500	0.147	0.148	0.149	0.150	0.151
12.750	0.152	0.152	0.153	0.153	0.154
13.000	0.154	0.155	0.155	0.155	0.155
13.250	0.155	0.155	0.155	0.155	0.155
13.500	0.155	0.155	0.155	0.155	0.154
13.750	0.154	0.154	0.154	0.153	0.153
14.000	0.153	0.152	0.152	0.151	0.151
14.250	0.150	0.150	0.150	0.149	0.149
14.500	0.148	0.148	0.147	0.147	0.146
14.750	0.146	0.145	0.145	0.144	0.143
15.000	0.143	0.142	0.142	0.141	0.141
15.250	0.140	0.139	0.139	0.138	0.138
15.500	0.137	0.136	0.136	0.135	0.134
15.750	0.134	0.133	0.133	0.132	0.131
16.000	0.130	0.130	0.129	0.128	0.128
16.250	0.127	0.126	0.126	0.125	0.124
16.500	0.123	0.123	0.122	0.121	0.121
16.750	0.120	0.119	0.119	0.118	0.117
17.000	0.117	0.116	0.115	0.114	0.114
17.250	0.113	0.112	0.112	0.111	0.110
17.500	0.110	0.109	0.108	0.108	0.107
17.750	0.106	0.105	0.105	0.104	0.103
18.000	0.103	0.102	0.101	0.101	0.100
18.250	0.099	0.099	0.098	0.097	0.097
18.500	0.096	0.095	0.094	0.094	0.093
18.750	0.092	0.092	0.091	0.090	0.090
19.000	0.089	0.088	0.088	0.087	0.086
19.250	0.086	0.085	0.084	0.083	0.083
19.500	0.082	0.081	0.081	0.080	0.079
19.750	0.079	0.078	0.077	0.077	0.076
20.000	0.075	0.075	0.074	0.073	0.073
20.250	0.072	0.071	0.071	0.070	0.070

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Volume
Label: PO-1

Return Event: 5 years
Storm Event: 5 Year

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
20.500	0.069	0.068	0.068	0.067	0.067
20.750	0.066	0.066	0.065	0.065	0.064
21.000	0.064	0.063	0.063	0.062	0.062
21.250	0.061	0.061	0.060	0.060	0.059
21.500	0.059	0.058	0.058	0.057	0.057
21.750	0.057	0.056	0.056	0.055	0.055
22.000	0.055	0.054	0.054	0.053	0.053
22.250	0.053	0.052	0.052	0.052	0.051
22.500	0.051	0.051	0.050	0.050	0.050
22.750	0.049	0.049	0.049	0.048	0.048
23.000	0.048	0.047	0.047	0.047	0.047
23.250	0.046	0.046	0.046	0.045	0.045
23.500	0.045	0.045	0.044	0.044	0.044
23.750	0.044	0.043	0.043	0.043	0.043
24.000	0.042	(N/A)	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Volume
Label: PO-1

Return Event: 10 years
Storm Event: 10 Year

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0.000	0.000	0.000	0.000	0.000	0.000
0.250	0.000	0.000	0.000	0.000	0.000
0.500	0.000	0.000	0.000	0.000	0.000
0.750	0.000	0.000	0.000	0.000	0.000
1.000	0.000	0.000	0.000	0.000	0.000
1.250	0.000	0.000	0.000	0.000	0.000
1.500	0.000	0.000	0.000	0.000	0.000
1.750	0.000	0.000	0.000	0.000	0.000
2.000	0.000	0.000	0.000	0.000	0.000
2.250	0.000	0.000	0.000	0.000	0.000
2.500	0.000	0.000	0.000	0.000	0.000
2.750	0.000	0.000	0.000	0.000	0.000
3.000	0.000	0.000	0.000	0.000	0.000
3.250	0.000	0.000	0.000	0.000	0.000
3.500	0.000	0.000	0.000	0.000	0.000
3.750	0.000	0.000	0.000	0.000	0.000
4.000	0.000	0.000	0.000	0.000	0.000
4.250	0.000	0.000	0.000	0.000	0.000
4.500	0.000	0.000	0.000	0.000	0.000
4.750	0.000	0.000	0.000	0.000	0.000
5.000	0.000	0.000	0.000	0.000	0.000
5.250	0.000	0.000	0.000	0.000	0.000
5.500	0.000	0.000	0.000	0.000	0.000
5.750	0.000	0.000	0.000	0.000	0.000
6.000	0.000	0.000	0.000	0.000	0.000
6.250	0.000	0.000	0.000	0.000	0.000
6.500	0.000	0.000	0.000	0.000	0.000
6.750	0.000	0.000	0.000	0.000	0.000
7.000	0.000	0.000	0.000	0.000	0.000
7.250	0.000	0.000	0.000	0.000	0.000
7.500	0.000	0.000	0.000	0.000	0.000
7.750	0.000	0.000	0.000	0.000	0.000
8.000	0.000	0.000	0.000	0.000	0.000
8.250	0.000	0.000	0.000	0.000	0.000
8.500	0.000	0.000	0.000	0.000	0.000
8.750	0.000	0.000	0.000	0.000	0.000
9.000	0.000	0.000	0.000	0.000	0.000
9.250	0.000	0.000	0.000	0.000	0.000
9.500	0.000	0.000	0.000	0.000	0.000
9.750	0.000	0.000	0.000	0.000	0.000
10.000	0.000	0.000	0.000	0.000	0.000

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Volume
Label: PO-1

Return Event: 10 years
Storm Event: 10 Year

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
10.250	0.000	0.000	0.000	0.000	0.000
10.500	0.000	0.000	0.000	0.000	0.001
10.750	0.001	0.001	0.001	0.001	0.002
11.000	0.002	0.002	0.003	0.003	0.004
11.250	0.004	0.005	0.006	0.006	0.007
11.500	0.008	0.010	0.012	0.015	0.021
11.750	0.029	0.041	0.060	0.089	0.124
12.000	0.159	0.186	0.202	0.209	0.215
12.250	0.219	0.223	0.227	0.230	0.233
12.500	0.235	0.237	0.238	0.240	0.241
12.750	0.242	0.243	0.244	0.245	0.245
13.000	0.246	0.246	0.247	0.247	0.248
13.250	0.248	0.248	0.248	0.248	0.248
13.500	0.248	0.248	0.248	0.248	0.248
13.750	0.247	0.247	0.247	0.246	0.246
14.000	0.246	0.245	0.245	0.244	0.243
14.250	0.243	0.242	0.242	0.241	0.241
14.500	0.240	0.239	0.239	0.238	0.238
14.750	0.237	0.236	0.236	0.235	0.234
15.000	0.234	0.233	0.232	0.231	0.231
15.250	0.230	0.229	0.228	0.228	0.227
15.500	0.226	0.225	0.224	0.224	0.223
15.750	0.222	0.221	0.220	0.219	0.219
16.000	0.218	0.217	0.216	0.215	0.214
16.250	0.213	0.212	0.211	0.210	0.210
16.500	0.209	0.208	0.207	0.206	0.205
16.750	0.204	0.203	0.202	0.201	0.201
17.000	0.200	0.199	0.198	0.197	0.196
17.250	0.195	0.194	0.193	0.192	0.192
17.500	0.191	0.190	0.189	0.188	0.187
17.750	0.186	0.185	0.184	0.184	0.183
18.000	0.182	0.181	0.180	0.179	0.178
18.250	0.177	0.176	0.175	0.175	0.174
18.500	0.173	0.172	0.171	0.170	0.169
18.750	0.168	0.167	0.167	0.166	0.165
19.000	0.164	0.163	0.162	0.161	0.160
19.250	0.159	0.158	0.157	0.157	0.156
19.500	0.155	0.154	0.153	0.152	0.151
19.750	0.150	0.149	0.148	0.147	0.146
20.000	0.145	0.144	0.144	0.143	0.142
20.250	0.141	0.140	0.139	0.138	0.137

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Volume
Label: PO-1

Return Event: 10 years
Storm Event: 10 Year

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
20.500	0.136	0.135	0.134	0.134	0.133
20.750	0.132	0.131	0.130	0.129	0.128
21.000	0.128	0.127	0.126	0.125	0.124
21.250	0.123	0.122	0.122	0.121	0.120
21.500	0.119	0.118	0.118	0.117	0.116
21.750	0.115	0.114	0.114	0.113	0.112
22.000	0.111	0.110	0.110	0.109	0.108
22.250	0.107	0.107	0.106	0.105	0.104
22.500	0.104	0.103	0.102	0.101	0.101
22.750	0.100	0.099	0.098	0.098	0.097
23.000	0.096	0.096	0.095	0.094	0.093
23.250	0.093	0.092	0.091	0.091	0.090
23.500	0.089	0.089	0.088	0.087	0.087
23.750	0.086	0.085	0.085	0.084	0.083
24.000	0.083	(N/A)	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Volume
Label: PO-1

Return Event: 25 years
Storm Event: 25 Year

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0.000	0.000	0.000	0.000	0.000	0.000
0.250	0.000	0.000	0.000	0.000	0.000
0.500	0.000	0.000	0.000	0.000	0.000
0.750	0.000	0.000	0.000	0.000	0.000
1.000	0.000	0.000	0.000	0.000	0.000
1.250	0.000	0.000	0.000	0.000	0.000
1.500	0.000	0.000	0.000	0.000	0.000
1.750	0.000	0.000	0.000	0.000	0.000
2.000	0.000	0.000	0.000	0.000	0.000
2.250	0.000	0.000	0.000	0.000	0.000
2.500	0.000	0.000	0.000	0.000	0.000
2.750	0.000	0.000	0.000	0.000	0.000
3.000	0.000	0.000	0.000	0.000	0.000
3.250	0.000	0.000	0.000	0.000	0.000
3.500	0.000	0.000	0.000	0.000	0.000
3.750	0.000	0.000	0.000	0.000	0.000
4.000	0.000	0.000	0.000	0.000	0.000
4.250	0.000	0.000	0.000	0.000	0.000
4.500	0.000	0.000	0.000	0.000	0.000
4.750	0.000	0.000	0.000	0.000	0.000
5.000	0.000	0.000	0.000	0.000	0.000
5.250	0.000	0.000	0.000	0.000	0.000
5.500	0.000	0.000	0.000	0.000	0.000
5.750	0.000	0.000	0.000	0.000	0.000
6.000	0.000	0.000	0.000	0.000	0.000
6.250	0.000	0.000	0.000	0.000	0.000
6.500	0.000	0.000	0.000	0.000	0.000
6.750	0.000	0.000	0.000	0.000	0.000
7.000	0.000	0.000	0.000	0.000	0.000
7.250	0.000	0.000	0.000	0.000	0.000
7.500	0.000	0.000	0.000	0.000	0.000
7.750	0.000	0.000	0.000	0.000	0.000
8.000	0.000	0.000	0.000	0.000	0.000
8.250	0.000	0.000	0.000	0.000	0.000
8.500	0.000	0.000	0.000	0.000	0.000
8.750	0.000	0.000	0.000	0.000	0.000
9.000	0.000	0.000	0.000	0.000	0.000
9.250	0.000	0.000	0.000	0.000	0.000
9.500	0.000	0.000	0.000	0.000	0.000
9.750	0.000	0.000	0.000	0.000	0.000
10.000	0.000	0.000	0.000	0.001	0.001

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Volume
Label: PO-1

Return Event: 25 years
Storm Event: 25 Year

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
10.250	0.001	0.001	0.001	0.001	0.002
10.500	0.002	0.002	0.003	0.003	0.003
10.750	0.004	0.004	0.005	0.005	0.006
11.000	0.006	0.007	0.008	0.009	0.009
11.250	0.010	0.012	0.013	0.014	0.016
11.500	0.017	0.019	0.022	0.028	0.035
11.750	0.047	0.064	0.090	0.128	0.174
12.000	0.218	0.253	0.274	0.284	0.291
12.250	0.297	0.302	0.306	0.310	0.314
12.500	0.317	0.319	0.321	0.323	0.325
12.750	0.326	0.328	0.329	0.330	0.331
13.000	0.331	0.332	0.333	0.333	0.334
13.250	0.334	0.334	0.334	0.335	0.335
13.500	0.335	0.335	0.334	0.334	0.334
13.750	0.334	0.333	0.333	0.333	0.332
14.000	0.332	0.331	0.330	0.330	0.329
14.250	0.328	0.328	0.327	0.326	0.326
14.500	0.325	0.324	0.323	0.323	0.322
14.750	0.321	0.320	0.319	0.318	0.318
15.000	0.317	0.316	0.315	0.314	0.313
15.250	0.312	0.311	0.310	0.309	0.308
15.500	0.307	0.306	0.305	0.304	0.303
15.750	0.302	0.301	0.300	0.299	0.298
16.000	0.297	0.296	0.294	0.293	0.292
16.250	0.291	0.290	0.289	0.288	0.287
16.500	0.285	0.284	0.283	0.282	0.281
16.750	0.280	0.279	0.277	0.276	0.275
17.000	0.274	0.273	0.272	0.271	0.270
17.250	0.268	0.267	0.266	0.265	0.264
17.500	0.263	0.262	0.260	0.259	0.258
17.750	0.257	0.256	0.255	0.254	0.253
18.000	0.251	0.250	0.249	0.248	0.247
18.250	0.246	0.245	0.244	0.242	0.241
18.500	0.240	0.239	0.238	0.237	0.236
18.750	0.235	0.234	0.232	0.231	0.230
19.000	0.229	0.228	0.227	0.226	0.225
19.250	0.223	0.222	0.221	0.220	0.219
19.500	0.218	0.217	0.216	0.214	0.213
19.750	0.212	0.211	0.210	0.209	0.208
20.000	0.207	0.205	0.204	0.203	0.202
20.250	0.201	0.200	0.199	0.198	0.197

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Volume
Label: PO-1

Return Event: 25 years
Storm Event: 25 Year

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
20.500	0.196	0.194	0.193	0.192	0.191
20.750	0.190	0.189	0.188	0.187	0.186
21.000	0.185	0.184	0.183	0.182	0.181
21.250	0.180	0.179	0.178	0.177	0.176
21.500	0.175	0.174	0.173	0.172	0.171
21.750	0.170	0.169	0.168	0.167	0.166
22.000	0.165	0.164	0.164	0.163	0.162
22.250	0.161	0.160	0.159	0.158	0.157
22.500	0.156	0.155	0.154	0.153	0.152
22.750	0.152	0.151	0.150	0.149	0.148
23.000	0.147	0.146	0.145	0.144	0.144
23.250	0.143	0.142	0.141	0.140	0.139
23.500	0.138	0.138	0.137	0.136	0.135
23.750	0.134	0.133	0.133	0.132	0.131
24.000	0.130	(N/A)	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Volume
Label: PO-1

Return Event: 50 years
Storm Event: 50 Year

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0.000	0.000	0.000	0.000	0.000	0.000
0.250	0.000	0.000	0.000	0.000	0.000
0.500	0.000	0.000	0.000	0.000	0.000
0.750	0.000	0.000	0.000	0.000	0.000
1.000	0.000	0.000	0.000	0.000	0.000
1.250	0.000	0.000	0.000	0.000	0.000
1.500	0.000	0.000	0.000	0.000	0.000
1.750	0.000	0.000	0.000	0.000	0.000
2.000	0.000	0.000	0.000	0.000	0.000
2.250	0.000	0.000	0.000	0.000	0.000
2.500	0.000	0.000	0.000	0.000	0.000
2.750	0.000	0.000	0.000	0.000	0.000
3.000	0.000	0.000	0.000	0.000	0.000
3.250	0.000	0.000	0.000	0.000	0.000
3.500	0.000	0.000	0.000	0.000	0.000
3.750	0.000	0.000	0.000	0.000	0.000
4.000	0.000	0.000	0.000	0.000	0.000
4.250	0.000	0.000	0.000	0.000	0.000
4.500	0.000	0.000	0.000	0.000	0.000
4.750	0.000	0.000	0.000	0.000	0.000
5.000	0.000	0.000	0.000	0.000	0.000
5.250	0.000	0.000	0.000	0.000	0.000
5.500	0.000	0.000	0.000	0.000	0.000
5.750	0.000	0.000	0.000	0.000	0.000
6.000	0.000	0.000	0.000	0.000	0.000
6.250	0.000	0.000	0.000	0.000	0.000
6.500	0.000	0.000	0.000	0.000	0.000
6.750	0.000	0.000	0.000	0.000	0.000
7.000	0.000	0.000	0.000	0.000	0.000
7.250	0.000	0.000	0.000	0.000	0.000
7.500	0.000	0.000	0.000	0.000	0.000
7.750	0.000	0.000	0.000	0.000	0.000
8.000	0.000	0.000	0.000	0.000	0.000
8.250	0.000	0.000	0.000	0.000	0.000
8.500	0.000	0.000	0.000	0.000	0.000
8.750	0.000	0.000	0.000	0.000	0.000
9.000	0.000	0.000	0.000	0.000	0.000
9.250	0.000	0.000	0.000	0.000	0.000
9.500	0.001	0.001	0.001	0.001	0.001
9.750	0.001	0.001	0.002	0.002	0.002
10.000	0.002	0.002	0.003	0.003	0.003

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Volume
Label: PO-1

Return Event: 50 years
Storm Event: 50 Year

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
10.250	0.004	0.004	0.005	0.005	0.005
10.500	0.006	0.006	0.007	0.008	0.008
10.750	0.009	0.010	0.011	0.011	0.012
11.000	0.013	0.014	0.015	0.017	0.018
11.250	0.020	0.021	0.023	0.025	0.027
11.500	0.029	0.032	0.037	0.044	0.055
11.750	0.071	0.094	0.127	0.176	0.234
12.000	0.290	0.335	0.360	0.372	0.381
12.250	0.388	0.394	0.400	0.405	0.409
12.500	0.413	0.416	0.419	0.421	0.423
12.750	0.425	0.427	0.429	0.431	0.432
13.000	0.433	0.434	0.435	0.436	0.437
13.250	0.437	0.438	0.438	0.439	0.439
13.500	0.439	0.440	0.440	0.440	0.440
13.750	0.440	0.439	0.439	0.439	0.438
14.000	0.438	0.438	0.437	0.437	0.436
14.250	0.435	0.435	0.434	0.433	0.433
14.500	0.432	0.431	0.431	0.430	0.429
14.750	0.428	0.428	0.427	0.426	0.425
15.000	0.424	0.423	0.422	0.422	0.421
15.250	0.420	0.419	0.418	0.417	0.416
15.500	0.415	0.413	0.412	0.411	0.410
15.750	0.409	0.408	0.407	0.405	0.404
16.000	0.403	0.402	0.400	0.399	0.398
16.250	0.397	0.395	0.394	0.393	0.391
16.500	0.390	0.389	0.388	0.386	0.385
16.750	0.384	0.382	0.381	0.380	0.378
17.000	0.377	0.376	0.374	0.373	0.372
17.250	0.370	0.369	0.368	0.366	0.365
17.500	0.364	0.362	0.361	0.359	0.358
17.750	0.357	0.355	0.354	0.353	0.351
18.000	0.350	0.348	0.347	0.346	0.344
18.250	0.343	0.341	0.340	0.339	0.337
18.500	0.336	0.334	0.333	0.331	0.330
18.750	0.328	0.327	0.325	0.324	0.322
19.000	0.321	0.319	0.318	0.316	0.315
19.250	0.313	0.312	0.310	0.309	0.307
19.500	0.306	0.304	0.303	0.301	0.300
19.750	0.299	0.297	0.296	0.294	0.293
20.000	0.291	0.290	0.288	0.287	0.285
20.250	0.284	0.282	0.281	0.279	0.278

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Volume
Label: PO-1

Return Event: 50 years
Storm Event: 50 Year

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
20.500	0.277	0.275	0.274	0.272	0.271
20.750	0.269	0.268	0.267	0.265	0.264
21.000	0.263	0.261	0.260	0.259	0.257
21.250	0.256	0.255	0.253	0.252	0.251
21.500	0.249	0.248	0.247	0.246	0.244
21.750	0.243	0.242	0.241	0.239	0.238
22.000	0.237	0.236	0.234	0.233	0.232
22.250	0.231	0.230	0.228	0.227	0.226
22.500	0.225	0.224	0.223	0.221	0.220
22.750	0.219	0.218	0.217	0.216	0.215
23.000	0.213	0.212	0.211	0.210	0.209
23.250	0.208	0.207	0.206	0.205	0.204
23.500	0.203	0.202	0.200	0.199	0.198
23.750	0.197	0.196	0.195	0.194	0.193
24.000	0.192	(N/A)	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Volume
Label: PO-1

Return Event: 100 years
Storm Event: 100 Year

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0.000	0.000	0.000	0.000	0.000	0.000
0.250	0.000	0.000	0.000	0.000	0.000
0.500	0.000	0.000	0.000	0.000	0.000
0.750	0.000	0.000	0.000	0.000	0.000
1.000	0.000	0.000	0.000	0.000	0.000
1.250	0.000	0.000	0.000	0.000	0.000
1.500	0.000	0.000	0.000	0.000	0.000
1.750	0.000	0.000	0.000	0.000	0.000
2.000	0.000	0.000	0.000	0.000	0.000
2.250	0.000	0.000	0.000	0.000	0.000
2.500	0.000	0.000	0.000	0.000	0.000
2.750	0.000	0.000	0.000	0.000	0.000
3.000	0.000	0.000	0.000	0.000	0.000
3.250	0.000	0.000	0.000	0.000	0.000
3.500	0.000	0.000	0.000	0.000	0.000
3.750	0.000	0.000	0.000	0.000	0.000
4.000	0.000	0.000	0.000	0.000	0.000
4.250	0.000	0.000	0.000	0.000	0.000
4.500	0.000	0.000	0.000	0.000	0.000
4.750	0.000	0.000	0.000	0.000	0.000
5.000	0.000	0.000	0.000	0.000	0.000
5.250	0.000	0.000	0.000	0.000	0.000
5.500	0.000	0.000	0.000	0.000	0.000
5.750	0.000	0.000	0.000	0.000	0.000
6.000	0.000	0.000	0.000	0.000	0.000
6.250	0.000	0.000	0.000	0.000	0.000
6.500	0.000	0.000	0.000	0.000	0.000
6.750	0.000	0.000	0.000	0.000	0.000
7.000	0.000	0.000	0.000	0.000	0.000
7.250	0.000	0.000	0.000	0.000	0.000
7.500	0.000	0.000	0.000	0.000	0.000
7.750	0.000	0.000	0.000	0.000	0.000
8.000	0.000	0.000	0.000	0.000	0.000
8.250	0.000	0.000	0.000	0.000	0.000
8.500	0.000	0.000	0.000	0.000	0.000
8.750	0.000	0.000	0.000	0.000	0.001
9.000	0.001	0.001	0.001	0.001	0.001
9.250	0.002	0.002	0.002	0.002	0.002
9.500	0.003	0.003	0.003	0.004	0.004
9.750	0.004	0.005	0.005	0.005	0.006
10.000	0.006	0.007	0.007	0.008	0.008

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Volume
Label: PO-1

Return Event: 100 years
Storm Event: 100 Year

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
10.250	0.009	0.009	0.010	0.011	0.011
10.500	0.012	0.013	0.014	0.015	0.016
10.750	0.017	0.018	0.019	0.020	0.021
11.000	0.023	0.024	0.026	0.028	0.029
11.250	0.032	0.034	0.036	0.039	0.042
11.500	0.045	0.049	0.055	0.064	0.079
11.750	0.100	0.129	0.171	0.232	0.305
12.000	0.373	0.427	0.458	0.474	0.484
12.250	0.493	0.502	0.509	0.515	0.521
12.500	0.525	0.529	0.533	0.536	0.538
12.750	0.541	0.543	0.546	0.548	0.549
13.000	0.551	0.553	0.554	0.555	0.556
13.250	0.557	0.558	0.559	0.560	0.560
13.500	0.561	0.561	0.562	0.562	0.562
13.750	0.562	0.562	0.562	0.562	0.562
14.000	0.562	0.561	0.561	0.560	0.560
14.250	0.559	0.559	0.558	0.558	0.557
14.500	0.557	0.556	0.555	0.555	0.554
14.750	0.553	0.553	0.552	0.551	0.550
15.000	0.549	0.549	0.548	0.547	0.546
15.250	0.545	0.544	0.543	0.542	0.541
15.500	0.540	0.539	0.538	0.536	0.535
15.750	0.534	0.533	0.532	0.530	0.529
16.000	0.528	0.527	0.525	0.524	0.523
16.250	0.521	0.520	0.519	0.517	0.516
16.500	0.514	0.513	0.512	0.510	0.509
16.750	0.507	0.506	0.504	0.503	0.501
17.000	0.500	0.498	0.497	0.495	0.494
17.250	0.492	0.491	0.489	0.488	0.486
17.500	0.485	0.483	0.482	0.480	0.479
17.750	0.477	0.475	0.474	0.472	0.471
18.000	0.469	0.468	0.466	0.464	0.463
18.250	0.461	0.460	0.458	0.456	0.455
18.500	0.453	0.452	0.450	0.448	0.447
18.750	0.445	0.443	0.442	0.440	0.438
19.000	0.437	0.435	0.433	0.432	0.430
19.250	0.428	0.427	0.425	0.423	0.422
19.500	0.420	0.418	0.417	0.415	0.413
19.750	0.411	0.410	0.408	0.406	0.404
20.000	0.403	0.401	0.399	0.397	0.396
20.250	0.394	0.392	0.391	0.389	0.387

POST-DEVELOPED CONDITIONS

Subsection: Time vs. Volume
Label: PO-1

Return Event: 100 years
Storm Event: 100 Year

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
20.500	0.385	0.384	0.382	0.380	0.379
20.750	0.377	0.375	0.374	0.372	0.370
21.000	0.369	0.367	0.365	0.364	0.362
21.250	0.360	0.359	0.357	0.355	0.354
21.500	0.352	0.350	0.349	0.347	0.346
21.750	0.344	0.342	0.341	0.339	0.338
22.000	0.336	0.334	0.333	0.331	0.330
22.250	0.328	0.326	0.325	0.323	0.322
22.500	0.320	0.318	0.317	0.315	0.314
22.750	0.312	0.310	0.309	0.307	0.306
23.000	0.304	0.303	0.301	0.300	0.298
23.250	0.297	0.295	0.294	0.292	0.291
23.500	0.289	0.288	0.287	0.285	0.284
23.750	0.282	0.281	0.279	0.278	0.277
24.000	0.275	(N/A)	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Elevation-Area Volume Curve

Return Event: 1 years

Label: PO-1

Storm Event: 1 Year

Elevation (ft)	Planimeter (ft ²)	Area (acres)	A1+A2+sqr (A1*A2) (acres)	Volume (ac-ft)	Volume (Total) (ac-ft)
686.00	0.0	0.315	0.000	0.000	0.000
688.00	0.0	0.381	1.042	0.695	0.695
690.00	0.0	0.452	1.248	0.832	1.527
692.00	0.0	0.529	1.470	0.980	2.507

POST-DEVELOPED CONDITIONS

Subsection: Volume Equations
Label: PO-1

Return Event: 1 years
Storm Event: 1 Year

Pond Volume Equations

*** Incremental volume computed by the Conic Method for Reservoir Volumes.**

$$\text{Volume} = (1/3) * (\text{EL2} - \text{EL1}) * (\text{Area1} + \text{Area2} + \text{sqr}(\text{Area1} * \text{Area2}))$$

where:	EL1, EL2	Lower and upper elevations of the increment
	Area1, Area2	Areas computed for EL1, EL2, respectively
	Volume	Incremental volume between EL1 and EL2

POST-DEVELOPED CONDITIONS

Subsection: Elevation-Area Volume Curve

Return Event: 2 years

Label: PO-1

Storm Event: 1 Year

Elevation (ft)	Planimeter (ft ²)	Area (acres)	A1+A2+sqr (A1*A2) (acres)	Volume (ac-ft)	Volume (Total) (ac-ft)
686.00	0.0	0.315	0.000	0.000	0.000
688.00	0.0	0.381	1.042	0.695	0.695
690.00	0.0	0.452	1.248	0.832	1.527
692.00	0.0	0.529	1.470	0.980	2.507

POST-DEVELOPED CONDITIONS

Subsection: Volume Equations
Label: PO-1

Return Event: 2 years
Storm Event: 1 Year

Pond Volume Equations

*** Incremental volume computed by the Conic Method for Reservoir Volumes.**

$$\text{Volume} = (1/3) * (\text{EL2} - \text{EL1}) * (\text{Area1} + \text{Area2} + \text{sqr}(\text{Area1} * \text{Area2}))$$

where:	EL1, EL2	Lower and upper elevations of the increment
	Area1, Area2	Areas computed for EL1, EL2, respectively
	Volume	Incremental volume between EL1 and EL2

POST-DEVELOPED CONDITIONS

Subsection: Elevation-Area Volume Curve

Return Event: 5 years

Label: PO-1

Storm Event: 1 Year

Elevation (ft)	Planimeter (ft ²)	Area (acres)	A1+A2+sqr (A1*A2) (acres)	Volume (ac-ft)	Volume (Total) (ac-ft)
686.00	0.0	0.315	0.000	0.000	0.000
688.00	0.0	0.381	1.042	0.695	0.695
690.00	0.0	0.452	1.248	0.832	1.527
692.00	0.0	0.529	1.470	0.980	2.507

POST-DEVELOPED CONDITIONS

Subsection: Volume Equations
Label: PO-1

Return Event: 5 years
Storm Event: 1 Year

Pond Volume Equations

*** Incremental volume computed by the Conic Method for Reservoir Volumes.**

$$\text{Volume} = (1/3) * (\text{EL2} - \text{EL1}) * (\text{Area1} + \text{Area2} + \text{sqr}(\text{Area1} * \text{Area2}))$$

where:	EL1, EL2	Lower and upper elevations of the increment
	Area1, Area2	Areas computed for EL1, EL2, respectively
	Volume	Incremental volume between EL1 and EL2

POST-DEVELOPED CONDITIONS

Subsection: Elevation-Area Volume Curve

Return Event: 10 years

Label: PO-1

Storm Event: 1 Year

Elevation (ft)	Planimeter (ft ²)	Area (acres)	A1+A2+sqr (A1*A2) (acres)	Volume (ac-ft)	Volume (Total) (ac-ft)
686.00	0.0	0.315	0.000	0.000	0.000
688.00	0.0	0.381	1.042	0.695	0.695
690.00	0.0	0.452	1.248	0.832	1.527
692.00	0.0	0.529	1.470	0.980	2.507

POST-DEVELOPED CONDITIONS

Subsection: Volume Equations
Label: PO-1

Return Event: 10 years
Storm Event: 1 Year

Pond Volume Equations

*** Incremental volume computed by the Conic Method for Reservoir Volumes.**

$$\text{Volume} = (1/3) * (\text{EL2} - \text{EL1}) * (\text{Area1} + \text{Area2} + \text{sqr}(\text{Area1} * \text{Area2}))$$

where:	EL1, EL2	Lower and upper elevations of the increment
	Area1, Area2	Areas computed for EL1, EL2, respectively
	Volume	Incremental volume between EL1 and EL2

POST-DEVELOPED CONDITIONS

Subsection: Elevation-Area Volume Curve

Return Event: 25 years

Label: PO-1

Storm Event: 1 Year

Elevation (ft)	Planimeter (ft ²)	Area (acres)	A1+A2+sqr (A1*A2) (acres)	Volume (ac-ft)	Volume (Total) (ac-ft)
686.00	0.0	0.315	0.000	0.000	0.000
688.00	0.0	0.381	1.042	0.695	0.695
690.00	0.0	0.452	1.248	0.832	1.527
692.00	0.0	0.529	1.470	0.980	2.507

POST-DEVELOPED CONDITIONS

Subsection: Volume Equations
Label: PO-1

Return Event: 25 years
Storm Event: 1 Year

Pond Volume Equations

*** Incremental volume computed by the Conic Method for Reservoir Volumes.**

$$\text{Volume} = (1/3) * (\text{EL2} - \text{EL1}) * (\text{Area1} + \text{Area2} + \text{sqr}(\text{Area1} * \text{Area2}))$$

where:	EL1, EL2	Lower and upper elevations of the increment
	Area1, Area2	Areas computed for EL1, EL2, respectively
	Volume	Incremental volume between EL1 and EL2

POST-DEVELOPED CONDITIONS

Subsection: Elevation-Area Volume Curve

Return Event: 50 years

Label: PO-1

Storm Event: 1 Year

Elevation (ft)	Planimeter (ft ²)	Area (acres)	A1+A2+sqr (A1*A2) (acres)	Volume (ac-ft)	Volume (Total) (ac-ft)
686.00	0.0	0.315	0.000	0.000	0.000
688.00	0.0	0.381	1.042	0.695	0.695
690.00	0.0	0.452	1.248	0.832	1.527
692.00	0.0	0.529	1.470	0.980	2.507

POST-DEVELOPED CONDITIONS

Subsection: Volume Equations
Label: PO-1

Return Event: 50 years
Storm Event: 1 Year

Pond Volume Equations

*** Incremental volume computed by the Conic Method for Reservoir Volumes.**

$$\text{Volume} = (1/3) * (\text{EL2} - \text{EL1}) * (\text{Area1} + \text{Area2} + \text{sqr}(\text{Area1} * \text{Area2}))$$

where:	EL1, EL2	Lower and upper elevations of the increment
	Area1, Area2	Areas computed for EL1, EL2, respectively
	Volume	Incremental volume between EL1 and EL2

POST-DEVELOPED CONDITIONS

Subsection: Elevation-Area Volume Curve

Return Event: 100 years

Label: PO-1

Storm Event: 1 Year

Elevation (ft)	Planimeter (ft ²)	Area (acres)	A1+A2+sqr (A1*A2) (acres)	Volume (ac-ft)	Volume (Total) (ac-ft)
686.00	0.0	0.315	0.000	0.000	0.000
688.00	0.0	0.381	1.042	0.695	0.695
690.00	0.0	0.452	1.248	0.832	1.527
692.00	0.0	0.529	1.470	0.980	2.507

POST-DEVELOPED CONDITIONS

Subsection: Volume Equations
Label: PO-1

Return Event: 100 years
Storm Event: 1 Year

Pond Volume Equations

*** Incremental volume computed by the Conic Method for Reservoir Volumes.**

$$\text{Volume} = (1/3) * (\text{EL2} - \text{EL1}) * (\text{Area1} + \text{Area2} + \text{sqr}(\text{Area1} * \text{Area2}))$$

where:	EL1, EL2	Lower and upper elevations of the increment
	Area1, Area2	Areas computed for EL1, EL2, respectively
	Volume	Incremental volume between EL1 and EL2

POST-DEVELOPED CONDITIONS

Subsection: Outlet Input Data

Label: Composite Outlet Structure - 1

Return Event: 1 years

Storm Event: 1 Year

Requested Pond Water Surface Elevations

Minimum (Headwater)	686.00 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	692.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular Tailwater Settings	Orifice - 1 Tailwater	Forward	TW	686.25 (N/A)	692.00 (N/A)

POST-DEVELOPED CONDITIONS

Subsection: Outlet Input Data

Label: Composite Outlet Structure - 1

Return Event: 1 years

Storm Event: 1 Year

Structure ID: Orifice - 1	
Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	686.25 ft
Orifice Diameter	4.0 in
Orifice Coefficient	0.600
Structure ID: TW	
Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall
Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft ³ /s
Flow Tolerance (Maximum)	10.000 ft ³ /s

POST-DEVELOPED CONDITIONS

Subsection: Individual Outlet Curves
 Label: Composite Outlet Structure - 1

Return Event: 1 years
 Storm Event: 1 Year

RATING TABLE FOR ONE OUTLET TYPE
 Structure ID = Orifice - 1 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
 Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft ³ /s)	Tailwater Elevation (ft)	Convergence Error (ft)
686.00	0.00	(N/A)	0.00
686.25	0.00	(N/A)	0.00
686.50	0.10	(N/A)	0.00
687.00	0.32	(N/A)	0.00
687.50	0.44	(N/A)	0.00
688.00	0.53	(N/A)	0.00
688.50	0.61	(N/A)	0.00
689.00	0.68	(N/A)	0.00
689.50	0.74	(N/A)	0.00
690.00	0.80	(N/A)	0.00
690.50	0.85	(N/A)	0.00
691.00	0.90	(N/A)	0.00
691.50	0.95	(N/A)	0.00
692.00	0.99	(N/A)	0.00

Computation Messages

HW & TW below invert
 Upstream HW & DNstream TW < Inv.El
 CRIT.DEPTH CONTROL Vh= .071ft
 Dcr= .178ft CRIT.DEPTH Hev= .00ft
 H =.58
 H =1.08
 H =1.58
 H =2.08
 H =2.58
 H =3.08
 H =3.58
 H =4.08
 H =4.58
 H =5.08
 H =5.58

POST-DEVELOPED CONDITIONS

Subsection: Composite Rating Curve
 Label: Composite Outlet Structure - 1

Return Event: 1 years
 Storm Event: 1 Year

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft ³ /s)	Tailwater Elevation (ft)	Convergence Error (ft)
686.00	0.00	(N/A)	0.00
686.25	0.00	(N/A)	0.00
686.50	0.10	(N/A)	0.00
687.00	0.32	(N/A)	0.00
687.50	0.44	(N/A)	0.00
688.00	0.53	(N/A)	0.00
688.50	0.61	(N/A)	0.00
689.00	0.68	(N/A)	0.00
689.50	0.74	(N/A)	0.00
690.00	0.80	(N/A)	0.00
690.50	0.85	(N/A)	0.00
691.00	0.90	(N/A)	0.00
691.50	0.95	(N/A)	0.00
692.00	0.99	(N/A)	0.00

Contributing Structures

None Contributing
 None Contributing
 Orifice - 1
 Orifice - 1
 Orifice - 1
 Orifice - 1
 Orifice - 1
 Orifice - 1
 Orifice - 1
 Orifice - 1
 Orifice - 1
 Orifice - 1
 Orifice - 1
 Orifice - 1

POST-DEVELOPED CONDITIONS

Subsection: Outlet Input Data

Label: Composite Outlet Structure - 1

Return Event: 2 years

Storm Event: 1 Year

Requested Pond Water Surface Elevations

Minimum (Headwater)	686.00 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	692.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular Tailwater Settings	Orifice - 1 Tailwater	Forward	TW	686.25 (N/A)	692.00 (N/A)

POST-DEVELOPED CONDITIONS

Subsection: Outlet Input Data

Label: Composite Outlet Structure - 1

Return Event: 2 years

Storm Event: 1 Year

Structure ID: Orifice - 1	
Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	686.25 ft
Orifice Diameter	4.0 in
Orifice Coefficient	0.600
Structure ID: TW	
Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall
Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft ³ /s
Flow Tolerance (Maximum)	10.000 ft ³ /s

POST-DEVELOPED CONDITIONS

Subsection: Individual Outlet Curves
 Label: Composite Outlet Structure - 1

Return Event: 2 years
 Storm Event: 1 Year

RATING TABLE FOR ONE OUTLET TYPE
 Structure ID = Orifice - 1 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
 Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft ³ /s)	Tailwater Elevation (ft)	Convergence Error (ft)
686.00	0.00	(N/A)	0.00
686.25	0.00	(N/A)	0.00
686.50	0.10	(N/A)	0.00
687.00	0.32	(N/A)	0.00
687.50	0.44	(N/A)	0.00
688.00	0.53	(N/A)	0.00
688.50	0.61	(N/A)	0.00
689.00	0.68	(N/A)	0.00
689.50	0.74	(N/A)	0.00
690.00	0.80	(N/A)	0.00
690.50	0.85	(N/A)	0.00
691.00	0.90	(N/A)	0.00
691.50	0.95	(N/A)	0.00
692.00	0.99	(N/A)	0.00

Computation Messages

HW & TW below invert
 Upstream HW & DNstream TW < Inv.El
 CRIT.DEPTH CONTROL Vh= .071ft
 Dcr= .178ft CRIT.DEPTH Hev= .00ft
 H =.58
 H =1.08
 H =1.58
 H =2.08
 H =2.58
 H =3.08
 H =3.58
 H =4.08
 H =4.58
 H =5.08
 H =5.58

POST-DEVELOPED CONDITIONS

Subsection: Composite Rating Curve
Label: Composite Outlet Structure - 1

Return Event: 2 years
Storm Event: 1 Year

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft ³ /s)	Tailwater Elevation (ft)	Convergence Error (ft)
686.00	0.00	(N/A)	0.00
686.25	0.00	(N/A)	0.00
686.50	0.10	(N/A)	0.00
687.00	0.32	(N/A)	0.00
687.50	0.44	(N/A)	0.00
688.00	0.53	(N/A)	0.00
688.50	0.61	(N/A)	0.00
689.00	0.68	(N/A)	0.00
689.50	0.74	(N/A)	0.00
690.00	0.80	(N/A)	0.00
690.50	0.85	(N/A)	0.00
691.00	0.90	(N/A)	0.00
691.50	0.95	(N/A)	0.00
692.00	0.99	(N/A)	0.00

Contributing Structures

None Contributing
None Contributing
Orifice - 1
Orifice - 1
Orifice - 1
Orifice - 1
Orifice - 1
Orifice - 1
Orifice - 1
Orifice - 1
Orifice - 1
Orifice - 1
Orifice - 1
Orifice - 1

POST-DEVELOPED CONDITIONS

Subsection: Outlet Input Data

Label: Composite Outlet Structure - 1

Return Event: 5 years

Storm Event: 1 Year

Requested Pond Water Surface Elevations

Minimum (Headwater)	686.00 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	692.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular Tailwater Settings	Orifice - 1 Tailwater	Forward	TW	686.25 (N/A)	692.00 (N/A)

POST-DEVELOPED CONDITIONS

Subsection: Outlet Input Data

Label: Composite Outlet Structure - 1

Return Event: 5 years

Storm Event: 1 Year

Structure ID: Orifice - 1	
Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	686.25 ft
Orifice Diameter	4.0 in
Orifice Coefficient	0.600
Structure ID: TW	
Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall
Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft ³ /s
Flow Tolerance (Maximum)	10.000 ft ³ /s

POST-DEVELOPED CONDITIONS

Subsection: Individual Outlet Curves
 Label: Composite Outlet Structure - 1

Return Event: 5 years
 Storm Event: 1 Year

RATING TABLE FOR ONE OUTLET TYPE
 Structure ID = Orifice - 1 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
 Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft ³ /s)	Tailwater Elevation (ft)	Convergence Error (ft)
686.00	0.00	(N/A)	0.00
686.25	0.00	(N/A)	0.00
686.50	0.10	(N/A)	0.00
687.00	0.32	(N/A)	0.00
687.50	0.44	(N/A)	0.00
688.00	0.53	(N/A)	0.00
688.50	0.61	(N/A)	0.00
689.00	0.68	(N/A)	0.00
689.50	0.74	(N/A)	0.00
690.00	0.80	(N/A)	0.00
690.50	0.85	(N/A)	0.00
691.00	0.90	(N/A)	0.00
691.50	0.95	(N/A)	0.00
692.00	0.99	(N/A)	0.00

Computation Messages

HW & TW below invert
 Upstream HW & DNstream TW < Inv.El
 CRIT.DEPTH CONTROL Vh= .071ft
 Dcr= .178ft CRIT.DEPTH Hev= .00ft
 H =.58
 H =1.08
 H =1.58
 H =2.08
 H =2.58
 H =3.08
 H =3.58
 H =4.08
 H =4.58
 H =5.08
 H =5.58

POST-DEVELOPED CONDITIONS

Subsection: Composite Rating Curve
 Label: Composite Outlet Structure - 1

Return Event: 5 years
 Storm Event: 1 Year

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft ³ /s)	Tailwater Elevation (ft)	Convergence Error (ft)
686.00	0.00	(N/A)	0.00
686.25	0.00	(N/A)	0.00
686.50	0.10	(N/A)	0.00
687.00	0.32	(N/A)	0.00
687.50	0.44	(N/A)	0.00
688.00	0.53	(N/A)	0.00
688.50	0.61	(N/A)	0.00
689.00	0.68	(N/A)	0.00
689.50	0.74	(N/A)	0.00
690.00	0.80	(N/A)	0.00
690.50	0.85	(N/A)	0.00
691.00	0.90	(N/A)	0.00
691.50	0.95	(N/A)	0.00
692.00	0.99	(N/A)	0.00

Contributing Structures

None Contributing
 None Contributing
 Orifice - 1
 Orifice - 1
 Orifice - 1
 Orifice - 1
 Orifice - 1
 Orifice - 1
 Orifice - 1
 Orifice - 1
 Orifice - 1
 Orifice - 1
 Orifice - 1
 Orifice - 1

POST-DEVELOPED CONDITIONS

Subsection: Outlet Input Data

Label: Composite Outlet Structure - 1

Return Event: 10 years

Storm Event: 1 Year

Requested Pond Water Surface Elevations

Minimum (Headwater)	686.00 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	692.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular Tailwater Settings	Orifice - 1 Tailwater	Forward	TW	686.25 (N/A)	692.00 (N/A)

POST-DEVELOPED CONDITIONS

Subsection: Outlet Input Data

Label: Composite Outlet Structure - 1

Return Event: 10 years

Storm Event: 1 Year

Structure ID: Orifice - 1	
Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	686.25 ft
Orifice Diameter	4.0 in
Orifice Coefficient	0.600
Structure ID: TW	
Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall
Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft ³ /s
Flow Tolerance (Maximum)	10.000 ft ³ /s

POST-DEVELOPED CONDITIONS

Subsection: Individual Outlet Curves
 Label: Composite Outlet Structure - 1

Return Event: 10 years
 Storm Event: 1 Year

RATING TABLE FOR ONE OUTLET TYPE
 Structure ID = Orifice - 1 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
 Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft ³ /s)	Tailwater Elevation (ft)	Convergence Error (ft)
686.00	0.00	(N/A)	0.00
686.25	0.00	(N/A)	0.00
686.50	0.10	(N/A)	0.00
687.00	0.32	(N/A)	0.00
687.50	0.44	(N/A)	0.00
688.00	0.53	(N/A)	0.00
688.50	0.61	(N/A)	0.00
689.00	0.68	(N/A)	0.00
689.50	0.74	(N/A)	0.00
690.00	0.80	(N/A)	0.00
690.50	0.85	(N/A)	0.00
691.00	0.90	(N/A)	0.00
691.50	0.95	(N/A)	0.00
692.00	0.99	(N/A)	0.00

Computation Messages

HW & TW below invert
 Upstream HW & DNstream TW < Inv.El
 CRIT.DEPTH CONTROL Vh= .071ft
 Dcr= .178ft CRIT.DEPTH Hev= .00ft
 H =.58
 H =1.08
 H =1.58
 H =2.08
 H =2.58
 H =3.08
 H =3.58
 H =4.08
 H =4.58
 H =5.08
 H =5.58

POST-DEVELOPED CONDITIONS

Subsection: Composite Rating Curve
Label: Composite Outlet Structure - 1

Return Event: 10 years
Storm Event: 1 Year

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft ³ /s)	Tailwater Elevation (ft)	Convergence Error (ft)
686.00	0.00	(N/A)	0.00
686.25	0.00	(N/A)	0.00
686.50	0.10	(N/A)	0.00
687.00	0.32	(N/A)	0.00
687.50	0.44	(N/A)	0.00
688.00	0.53	(N/A)	0.00
688.50	0.61	(N/A)	0.00
689.00	0.68	(N/A)	0.00
689.50	0.74	(N/A)	0.00
690.00	0.80	(N/A)	0.00
690.50	0.85	(N/A)	0.00
691.00	0.90	(N/A)	0.00
691.50	0.95	(N/A)	0.00
692.00	0.99	(N/A)	0.00

Contributing Structures

None Contributing
None Contributing
Orifice - 1
Orifice - 1
Orifice - 1
Orifice - 1
Orifice - 1
Orifice - 1
Orifice - 1
Orifice - 1
Orifice - 1
Orifice - 1
Orifice - 1
Orifice - 1

POST-DEVELOPED CONDITIONS

Subsection: Outlet Input Data

Label: Composite Outlet Structure - 1

Return Event: 25 years

Storm Event: 1 Year

Requested Pond Water Surface Elevations

Minimum (Headwater)	686.00 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	692.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular Tailwater Settings	Orifice - 1 Tailwater	Forward	TW	686.25 (N/A)	692.00 (N/A)

POST-DEVELOPED CONDITIONS

Subsection: Outlet Input Data

Label: Composite Outlet Structure - 1

Return Event: 25 years

Storm Event: 1 Year

Structure ID: Orifice - 1	
Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	686.25 ft
Orifice Diameter	4.0 in
Orifice Coefficient	0.600
Structure ID: TW	
Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall
Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft ³ /s
Flow Tolerance (Maximum)	10.000 ft ³ /s

POST-DEVELOPED CONDITIONS

Subsection: Individual Outlet Curves
 Label: Composite Outlet Structure - 1

Return Event: 25 years
 Storm Event: 1 Year

RATING TABLE FOR ONE OUTLET TYPE
 Structure ID = Orifice - 1 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
 Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft ³ /s)	Tailwater Elevation (ft)	Convergence Error (ft)
686.00	0.00	(N/A)	0.00
686.25	0.00	(N/A)	0.00
686.50	0.10	(N/A)	0.00
687.00	0.32	(N/A)	0.00
687.50	0.44	(N/A)	0.00
688.00	0.53	(N/A)	0.00
688.50	0.61	(N/A)	0.00
689.00	0.68	(N/A)	0.00
689.50	0.74	(N/A)	0.00
690.00	0.80	(N/A)	0.00
690.50	0.85	(N/A)	0.00
691.00	0.90	(N/A)	0.00
691.50	0.95	(N/A)	0.00
692.00	0.99	(N/A)	0.00

Computation Messages

HW & TW below invert
 Upstream HW & DNstream TW < Inv.El
 CRIT.DEPTH CONTROL Vh= .071ft
 Dcr= .178ft CRIT.DEPTH Hev= .00ft
 H =.58
 H =1.08
 H =1.58
 H =2.08
 H =2.58
 H =3.08
 H =3.58
 H =4.08
 H =4.58
 H =5.08
 H =5.58

POST-DEVELOPED CONDITIONS

Subsection: Composite Rating Curve
 Label: Composite Outlet Structure - 1

Return Event: 25 years
 Storm Event: 1 Year

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft ³ /s)	Tailwater Elevation (ft)	Convergence Error (ft)
686.00	0.00	(N/A)	0.00
686.25	0.00	(N/A)	0.00
686.50	0.10	(N/A)	0.00
687.00	0.32	(N/A)	0.00
687.50	0.44	(N/A)	0.00
688.00	0.53	(N/A)	0.00
688.50	0.61	(N/A)	0.00
689.00	0.68	(N/A)	0.00
689.50	0.74	(N/A)	0.00
690.00	0.80	(N/A)	0.00
690.50	0.85	(N/A)	0.00
691.00	0.90	(N/A)	0.00
691.50	0.95	(N/A)	0.00
692.00	0.99	(N/A)	0.00

Contributing Structures

None Contributing
 None Contributing
 Orifice - 1
 Orifice - 1
 Orifice - 1
 Orifice - 1
 Orifice - 1
 Orifice - 1
 Orifice - 1
 Orifice - 1
 Orifice - 1
 Orifice - 1
 Orifice - 1
 Orifice - 1

POST-DEVELOPED CONDITIONS

Subsection: Outlet Input Data

Label: Composite Outlet Structure - 1

Return Event: 50 years

Storm Event: 1 Year

Requested Pond Water Surface Elevations

Minimum (Headwater)	686.00 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	692.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular Tailwater Settings	Orifice - 1 Tailwater	Forward	TW	686.25 (N/A)	692.00 (N/A)

POST-DEVELOPED CONDITIONS

Subsection: Outlet Input Data

Label: Composite Outlet Structure - 1

Return Event: 50 years

Storm Event: 1 Year

Structure ID: Orifice - 1	
Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	686.25 ft
Orifice Diameter	4.0 in
Orifice Coefficient	0.600
Structure ID: TW	
Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall
Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft ³ /s
Flow Tolerance (Maximum)	10.000 ft ³ /s

POST-DEVELOPED CONDITIONS

Subsection: Individual Outlet Curves
Label: Composite Outlet Structure - 1

Return Event: 50 years
Storm Event: 1 Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice - 1 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft ³ /s)	Tailwater Elevation (ft)	Convergence Error (ft)
686.00	0.00	(N/A)	0.00
686.25	0.00	(N/A)	0.00
686.50	0.10	(N/A)	0.00
687.00	0.32	(N/A)	0.00
687.50	0.44	(N/A)	0.00
688.00	0.53	(N/A)	0.00
688.50	0.61	(N/A)	0.00
689.00	0.68	(N/A)	0.00
689.50	0.74	(N/A)	0.00
690.00	0.80	(N/A)	0.00
690.50	0.85	(N/A)	0.00
691.00	0.90	(N/A)	0.00
691.50	0.95	(N/A)	0.00
692.00	0.99	(N/A)	0.00

Computation Messages

HW & TW below invert
Upstream HW & DNstream TW < Inv.El
CRIT.DEPTH CONTROL Vh= .071ft
Dcr= .178ft CRIT.DEPTH Hev= .00ft
H =.58
H =1.08
H =1.58
H =2.08
H =2.58
H =3.08
H =3.58
H =4.08
H =4.58
H =5.08
H =5.58

POST-DEVELOPED CONDITIONS

Subsection: Composite Rating Curve
Label: Composite Outlet Structure - 1

Return Event: 50 years
Storm Event: 1 Year

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft ³ /s)	Tailwater Elevation (ft)	Convergence Error (ft)
686.00	0.00	(N/A)	0.00
686.25	0.00	(N/A)	0.00
686.50	0.10	(N/A)	0.00
687.00	0.32	(N/A)	0.00
687.50	0.44	(N/A)	0.00
688.00	0.53	(N/A)	0.00
688.50	0.61	(N/A)	0.00
689.00	0.68	(N/A)	0.00
689.50	0.74	(N/A)	0.00
690.00	0.80	(N/A)	0.00
690.50	0.85	(N/A)	0.00
691.00	0.90	(N/A)	0.00
691.50	0.95	(N/A)	0.00
692.00	0.99	(N/A)	0.00

Contributing Structures

None Contributing
None Contributing
Orifice - 1
Orifice - 1
Orifice - 1
Orifice - 1
Orifice - 1
Orifice - 1
Orifice - 1
Orifice - 1
Orifice - 1
Orifice - 1
Orifice - 1
Orifice - 1

POST-DEVELOPED CONDITIONS

Subsection: Outlet Input Data

Label: Composite Outlet Structure - 1

Return Event: 100 years

Storm Event: 1 Year

Requested Pond Water Surface Elevations

Minimum (Headwater)	686.00 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	692.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular Tailwater Settings	Orifice - 1 Tailwater	Forward	TW	686.25 (N/A)	692.00 (N/A)

POST-DEVELOPED CONDITIONS

Subsection: Outlet Input Data

Label: Composite Outlet Structure - 1

Return Event: 100 years

Storm Event: 1 Year

Structure ID: Orifice - 1	
Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	686.25 ft
Orifice Diameter	4.0 in
Orifice Coefficient	0.600
Structure ID: TW	
Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall
Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft ³ /s
Flow Tolerance (Maximum)	10.000 ft ³ /s

POST-DEVELOPED CONDITIONS

Subsection: Individual Outlet Curves
Label: Composite Outlet Structure - 1

Return Event: 100 years
Storm Event: 1 Year

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice - 1 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft ³ /s)	Tailwater Elevation (ft)	Convergence Error (ft)
686.00	0.00	(N/A)	0.00
686.25	0.00	(N/A)	0.00
686.50	0.10	(N/A)	0.00
687.00	0.32	(N/A)	0.00
687.50	0.44	(N/A)	0.00
688.00	0.53	(N/A)	0.00
688.50	0.61	(N/A)	0.00
689.00	0.68	(N/A)	0.00
689.50	0.74	(N/A)	0.00
690.00	0.80	(N/A)	0.00
690.50	0.85	(N/A)	0.00
691.00	0.90	(N/A)	0.00
691.50	0.95	(N/A)	0.00
692.00	0.99	(N/A)	0.00

Computation Messages

HW & TW below invert
Upstream HW & DNstream TW < Inv.El
CRIT.DEPTH CONTROL Vh= .071ft
Dcr= .178ft CRIT.DEPTH Hev= .00ft
H =.58
H =1.08
H =1.58
H =2.08
H =2.58
H =3.08
H =3.58
H =4.08
H =4.58
H =5.08
H =5.58

POST-DEVELOPED CONDITIONS

Subsection: Composite Rating Curve
 Label: Composite Outlet Structure - 1

Return Event: 100 years
 Storm Event: 1 Year

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft ³ /s)	Tailwater Elevation (ft)	Convergence Error (ft)
686.00	0.00	(N/A)	0.00
686.25	0.00	(N/A)	0.00
686.50	0.10	(N/A)	0.00
687.00	0.32	(N/A)	0.00
687.50	0.44	(N/A)	0.00
688.00	0.53	(N/A)	0.00
688.50	0.61	(N/A)	0.00
689.00	0.68	(N/A)	0.00
689.50	0.74	(N/A)	0.00
690.00	0.80	(N/A)	0.00
690.50	0.85	(N/A)	0.00
691.00	0.90	(N/A)	0.00
691.50	0.95	(N/A)	0.00
692.00	0.99	(N/A)	0.00

Contributing Structures

None Contributing
 None Contributing
 Orifice - 1
 Orifice - 1
 Orifice - 1
 Orifice - 1
 Orifice - 1
 Orifice - 1
 Orifice - 1
 Orifice - 1
 Orifice - 1
 Orifice - 1
 Orifice - 1
 Orifice - 1

POST-DEVELOPED CONDITIONS

Subsection: Diverted Hydrograph

Label: Outlet-1

Return Event: 1 years

Storm Event: 1 Year

Peak Discharge	0.00 ft ³ /s
Time to Peak	8.000 hours
Hydrograph Volume	0.000 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.000	0.00	0.00	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Diverted Hydrograph

Label: Outlet-1

Return Event: 2 years

Storm Event: 2 Year

Peak Discharge	0.00 ft ³ /s
Time to Peak	13.050 hours
Hydrograph Volume	0.000 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
12.900	0.00	0.00	0.00	0.00	0.00
13.150	0.00	0.00	0.00	0.00	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Diverted Hydrograph
Label: Outlet-1

Return Event: 5 years
Storm Event: 5 Year

Peak Discharge	0.09 ft ³ /s
Time to Peak	13.350 hours
Hydrograph Volume	0.037 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
11.950	0.00	0.02	0.04	0.06	0.06
12.200	0.07	0.07	0.07	0.08	0.08
12.450	0.08	0.08	0.09	0.09	0.09
12.700	0.09	0.09	0.09	0.09	0.09
12.950	0.09	0.09	0.09	0.09	0.09
13.200	0.09	0.09	0.09	0.09	0.09
13.450	0.09	0.09	0.09	0.09	0.09
13.700	0.09	0.09	0.09	0.09	0.09
13.950	0.09	0.09	0.09	0.09	0.09
14.200	0.09	0.09	0.09	0.09	0.09
14.450	0.09	0.09	0.08	0.08	0.08
14.700	0.08	0.08	0.08	0.08	0.08
14.950	0.08	0.08	0.08	0.08	0.08
15.200	0.08	0.08	0.07	0.07	0.07
15.450	0.07	0.07	0.07	0.07	0.07
15.700	0.07	0.07	0.07	0.07	0.07
15.950	0.06	0.06	0.06	0.06	0.06
16.200	0.06	0.06	0.06	0.06	0.06
16.450	0.06	0.05	0.05	0.05	0.05
16.700	0.05	0.05	0.05	0.05	0.05
16.950	0.05	0.05	0.05	0.04	0.04
17.200	0.04	0.04	0.04	0.04	0.04
17.450	0.04	0.04	0.04	0.04	0.04
17.700	0.03	0.03	0.03	0.03	0.03
17.950	0.03	0.03	0.03	0.03	0.03
18.200	0.03	0.02	0.02	0.02	0.02
18.450	0.02	0.02	0.02	0.02	0.02
18.700	0.02	0.02	0.02	0.01	0.01
18.950	0.01	0.01	0.01	0.01	0.01
19.200	0.01	0.01	0.01	0.01	0.00
19.450	0.00	0.00	0.00	0.00	0.00

POST-DEVELOPED CONDITIONS

Subsection: Diverted Hydrograph
Label: Outlet-1

Return Event: 10 years
Storm Event: 10 Year

Peak Discharge	0.22 ft ³ /s
Time to Peak	13.450 hours
Hydrograph Volume	0.122 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
11.850	0.00	0.01	0.06	0.10	0.13
12.100	0.16	0.16	0.17	0.18	0.18
12.350	0.19	0.19	0.20	0.20	0.20
12.600	0.20	0.20	0.21	0.21	0.21
12.850	0.21	0.21	0.21	0.21	0.21
13.100	0.21	0.21	0.21	0.21	0.22
13.350	0.22	0.22	0.22	0.22	0.22
13.600	0.22	0.21	0.21	0.21	0.21
13.850	0.21	0.21	0.21	0.21	0.21
14.100	0.21	0.21	0.21	0.21	0.21
14.350	0.21	0.21	0.21	0.20	0.20
14.600	0.20	0.20	0.20	0.20	0.20
14.850	0.20	0.20	0.20	0.20	0.20
15.100	0.19	0.19	0.19	0.19	0.19
15.350	0.19	0.19	0.19	0.19	0.19
15.600	0.18	0.18	0.18	0.18	0.18
15.850	0.18	0.18	0.18	0.18	0.17
16.100	0.17	0.17	0.17	0.17	0.17
16.350	0.17	0.17	0.17	0.16	0.16
16.600	0.16	0.16	0.16	0.16	0.16
16.850	0.16	0.15	0.15	0.15	0.15
17.100	0.15	0.15	0.15	0.15	0.15
17.350	0.14	0.14	0.14	0.14	0.14
17.600	0.14	0.14	0.14	0.13	0.13
17.850	0.13	0.13	0.13	0.13	0.13
18.100	0.13	0.13	0.12	0.12	0.12
18.350	0.12	0.12	0.12	0.12	0.12
18.600	0.11	0.11	0.11	0.11	0.11
18.850	0.11	0.11	0.11	0.11	0.10
19.100	0.10	0.10	0.10	0.10	0.10
19.350	0.10	0.10	0.09	0.09	0.09
19.600	0.09	0.09	0.09	0.09	0.09
19.850	0.09	0.08	0.08	0.08	0.08
20.100	0.08	0.08	0.08	0.08	0.08
20.350	0.07	0.07	0.07	0.07	0.07
20.600	0.07	0.07	0.07	0.07	0.06
20.850	0.06	0.06	0.06	0.06	0.06

POST-DEVELOPED CONDITIONS

Subsection: Diverted Hydrograph
Label: Outlet-1

Return Event: 10 years
Storm Event: 10 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
21.100	0.06	0.06	0.06	0.05	0.05
21.350	0.05	0.05	0.05	0.05	0.05
21.600	0.05	0.05	0.05	0.04	0.04
21.850	0.04	0.04	0.04	0.04	0.04
22.100	0.04	0.04	0.04	0.03	0.03
22.350	0.03	0.03	0.03	0.03	0.03
22.600	0.03	0.03	0.03	0.03	0.02
22.850	0.02	0.02	0.02	0.02	0.02
23.100	0.02	0.02	0.02	0.02	0.02
23.350	0.01	0.01	0.01	0.01	0.01
23.600	0.01	0.01	0.01	0.01	0.01
23.850	0.01	0.01	0.00	0.00	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Diverted Hydrograph
Label: Outlet-1

Return Event: 25 years
Storm Event: 25 Year

Peak Discharge	0.32 ft ³ /s
Time to Peak	13.450 hours
Hydrograph Volume	0.210 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
11.800	0.00	0.01	0.06	0.12	0.18
12.050	0.22	0.25	0.26	0.27	0.28
12.300	0.28	0.29	0.29	0.30	0.30
12.550	0.31	0.31	0.31	0.31	0.31
12.800	0.32	0.32	0.32	0.32	0.32
13.050	0.32	0.32	0.32	0.32	0.32
13.300	0.32	0.32	0.32	0.32	0.32
13.550	0.32	0.32	0.32	0.32	0.32
13.800	0.32	0.32	0.32	0.32	0.32
14.050	0.32	0.32	0.32	0.32	0.32
14.300	0.32	0.32	0.32	0.31	0.31
14.550	0.31	0.31	0.31	0.31	0.31
14.800	0.31	0.31	0.31	0.30	0.30
15.050	0.30	0.30	0.30	0.30	0.30
15.300	0.30	0.29	0.29	0.29	0.29
15.550	0.29	0.29	0.29	0.29	0.28
15.800	0.28	0.28	0.28	0.28	0.28
16.050	0.28	0.27	0.27	0.27	0.27
16.300	0.27	0.27	0.27	0.26	0.26
16.550	0.26	0.26	0.26	0.26	0.26
16.800	0.25	0.25	0.25	0.25	0.25
17.050	0.25	0.25	0.24	0.24	0.24
17.300	0.24	0.24	0.24	0.24	0.23
17.550	0.23	0.23	0.23	0.23	0.23
17.800	0.23	0.22	0.22	0.22	0.22
18.050	0.22	0.22	0.22	0.21	0.21
18.300	0.21	0.21	0.21	0.21	0.21
18.550	0.20	0.20	0.20	0.20	0.20
18.800	0.20	0.19	0.19	0.19	0.19
19.050	0.19	0.19	0.19	0.18	0.18
19.300	0.18	0.18	0.18	0.18	0.18
19.550	0.17	0.17	0.17	0.17	0.17
19.800	0.17	0.17	0.16	0.16	0.16
20.050	0.16	0.16	0.16	0.16	0.15
20.300	0.15	0.15	0.15	0.15	0.15
20.550	0.15	0.14	0.14	0.14	0.14
20.800	0.14	0.14	0.14	0.13	0.13

POST-DEVELOPED CONDITIONS

Subsection: Diverted Hydrograph
Label: Outlet-1

Return Event: 25 years
Storm Event: 25 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
21.050	0.13	0.13	0.13	0.13	0.13
21.300	0.12	0.12	0.12	0.12	0.12
21.550	0.12	0.12	0.12	0.11	0.11
21.800	0.11	0.11	0.11	0.11	0.11
22.050	0.11	0.10	0.10	0.10	0.10
22.300	0.10	0.10	0.10	0.10	0.10
22.550	0.09	0.09	0.09	0.09	0.09
22.800	0.09	0.09	0.09	0.09	0.08
23.050	0.08	0.08	0.08	0.08	0.08
23.300	0.08	0.08	0.08	0.07	0.07
23.550	0.07	0.07	0.07	0.07	0.07
23.800	0.07	0.07	0.07	0.06	0.06

POST-DEVELOPED CONDITIONS

Subsection: Diverted Hydrograph
Label: Outlet-1

Return Event: 50 years
Storm Event: 50 Year

Peak Discharge	0.39 ft ³ /s
Time to Peak	13.650 hours
Hydrograph Volume	0.304 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
11.750	0.00	0.02	0.06	0.12	0.20
12.000	0.27	0.32	0.34	0.35	0.35
12.250	0.36	0.36	0.37	0.37	0.37
12.500	0.38	0.38	0.38	0.38	0.38
12.750	0.38	0.38	0.39	0.39	0.39
13.000	0.39	0.39	0.39	0.39	0.39
13.250	0.39	0.39	0.39	0.39	0.39
13.500	0.39	0.39	0.39	0.39	0.39
13.750	0.39	0.39	0.39	0.39	0.39
14.000	0.39	0.39	0.39	0.39	0.39
14.250	0.39	0.39	0.39	0.39	0.39
14.500	0.39	0.39	0.39	0.39	0.39
14.750	0.39	0.38	0.38	0.38	0.38
15.000	0.38	0.38	0.38	0.38	0.38
15.250	0.38	0.38	0.38	0.38	0.38
15.500	0.38	0.38	0.37	0.37	0.37
15.750	0.37	0.37	0.37	0.37	0.37
16.000	0.37	0.37	0.37	0.37	0.37
16.250	0.36	0.36	0.36	0.36	0.36
16.500	0.36	0.36	0.36	0.36	0.36
16.750	0.36	0.36	0.35	0.35	0.35
17.000	0.35	0.35	0.35	0.35	0.35
17.250	0.35	0.35	0.35	0.34	0.34
17.500	0.34	0.34	0.34	0.34	0.34
17.750	0.34	0.34	0.34	0.34	0.33
18.000	0.33	0.33	0.33	0.33	0.33
18.250	0.33	0.33	0.33	0.33	0.33
18.500	0.32	0.32	0.32	0.32	0.32
18.750	0.32	0.32	0.31	0.31	0.31
19.000	0.31	0.31	0.30	0.30	0.30
19.250	0.30	0.30	0.30	0.29	0.29
19.500	0.29	0.29	0.29	0.28	0.28
19.750	0.28	0.28	0.28	0.27	0.27
20.000	0.27	0.27	0.27	0.26	0.26
20.250	0.26	0.26	0.26	0.26	0.25
20.500	0.25	0.25	0.25	0.25	0.24
20.750	0.24	0.24	0.24	0.24	0.24

POST-DEVELOPED CONDITIONS

Subsection: Diverted Hydrograph
Label: Outlet-1

Return Event: 50 years
Storm Event: 50 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
21.000	0.23	0.23	0.23	0.23	0.23
21.250	0.23	0.22	0.22	0.22	0.22
21.500	0.22	0.22	0.21	0.21	0.21
21.750	0.21	0.21	0.21	0.20	0.20
22.000	0.20	0.20	0.20	0.20	0.19
22.250	0.19	0.19	0.19	0.19	0.19
22.500	0.19	0.18	0.18	0.18	0.18
22.750	0.18	0.18	0.17	0.17	0.17
23.000	0.17	0.17	0.17	0.17	0.16
23.250	0.16	0.16	0.16	0.16	0.16
23.500	0.16	0.15	0.15	0.15	0.15
23.750	0.15	0.15	0.15	0.15	0.14
24.000	0.14	(N/A)	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Diverted Hydrograph
Label: Outlet-1

Return Event: 100 years
Storm Event: 100 Year

Peak Discharge	0.46 ft ³ /s
Time to Peak	13.800 hours
Hydrograph Volume	0.394 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
11.700	0.00	0.02	0.06	0.11	0.19
11.950	0.29	0.35	0.38	0.40	0.41
12.200	0.42	0.43	0.43	0.44	0.44
12.450	0.44	0.45	0.45	0.45	0.45
12.700	0.45	0.45	0.45	0.46	0.46
12.950	0.46	0.46	0.46	0.46	0.46
13.200	0.46	0.46	0.46	0.46	0.46
13.450	0.46	0.46	0.46	0.46	0.46
13.700	0.46	0.46	0.46	0.46	0.46
13.950	0.46	0.46	0.46	0.46	0.46
14.200	0.46	0.46	0.46	0.46	0.46
14.450	0.46	0.46	0.46	0.46	0.46
14.700	0.46	0.46	0.46	0.46	0.46
14.950	0.46	0.46	0.46	0.46	0.46
15.200	0.46	0.46	0.45	0.45	0.45
15.450	0.45	0.45	0.45	0.45	0.45
15.700	0.45	0.45	0.45	0.45	0.45
15.950	0.45	0.45	0.45	0.45	0.44
16.200	0.44	0.44	0.44	0.44	0.44
16.450	0.44	0.44	0.44	0.44	0.44
16.700	0.44	0.44	0.44	0.43	0.43
16.950	0.43	0.43	0.43	0.43	0.43
17.200	0.43	0.43	0.43	0.42	0.42
17.450	0.42	0.42	0.42	0.42	0.42
17.700	0.42	0.42	0.42	0.41	0.41
17.950	0.41	0.41	0.41	0.41	0.41
18.200	0.41	0.41	0.41	0.40	0.40
18.450	0.40	0.40	0.40	0.40	0.40
18.700	0.40	0.40	0.40	0.39	0.39
18.950	0.39	0.39	0.39	0.39	0.39
19.200	0.39	0.39	0.38	0.38	0.38
19.450	0.38	0.38	0.38	0.38	0.38
19.700	0.38	0.37	0.37	0.37	0.37
19.950	0.37	0.37	0.37	0.37	0.37
20.200	0.36	0.36	0.36	0.36	0.36
20.450	0.36	0.36	0.36	0.35	0.35
20.700	0.35	0.35	0.35	0.35	0.35

POST-DEVELOPED CONDITIONS

Subsection: Diverted Hydrograph
Label: Outlet-1

Return Event: 100 years
Storm Event: 100 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
20.950	0.35	0.35	0.34	0.34	0.34
21.200	0.34	0.34	0.34	0.34	0.34
21.450	0.34	0.34	0.33	0.33	0.33
21.700	0.33	0.33	0.33	0.33	0.33
21.950	0.33	0.32	0.32	0.32	0.32
22.200	0.32	0.32	0.32	0.31	0.31
22.450	0.31	0.31	0.30	0.30	0.30
22.700	0.30	0.30	0.30	0.29	0.29
22.950	0.29	0.29	0.29	0.28	0.28
23.200	0.28	0.28	0.28	0.27	0.27
23.450	0.27	0.27	0.27	0.26	0.26
23.700	0.26	0.26	0.26	0.26	0.25
23.950	0.25	0.25	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Elevation-Volume-Flow Table (Pond)
Label: PO-1

Return Event: 1 years
Storm Event: 1 Year

Infiltration	
Infiltration Method (Computed)	Average Infiltration Rate
Infiltration Rate (Average)	0.8750 in/h
Initial Conditions	
Elevation (Water Surface, Initial)	686.00 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft ³ /s
Flow (Initial Infiltration)	0.00 ft ³ /s
Flow (Initial, Total)	0.00 ft ³ /s
Time Increment	0.050 hours

Elevation (ft)	Outflow (ft ³ /s)	Storage (ac-ft)	Area (acres)	Infiltration (ft ³ /s)	Flow (Total) (ft ³ /s)	2S/t + O (ft ³ /s)
686.00	0.00	0.000	0.315	0.00	0.00	0.00
686.25	0.00	0.080	0.323	0.28	0.28	38.85
686.50	0.10	0.161	0.331	0.29	0.39	78.50
687.00	0.32	0.331	0.347	0.31	0.63	160.75
687.50	0.44	0.509	0.364	0.32	0.76	246.90
688.00	0.53	0.695	0.381	0.34	0.86	337.12
688.50	0.61	0.890	0.398	0.35	0.96	431.50
689.00	0.68	1.093	0.416	0.37	1.04	530.08
689.50	0.74	1.305	0.434	0.38	1.12	632.96
690.00	0.80	1.527	0.452	0.40	1.19	740.24
690.50	0.85	1.758	0.471	0.42	1.26	851.98
691.00	0.90	1.998	0.490	0.43	1.33	968.26
691.50	0.95	2.247	0.509	0.45	1.40	1,089.16
692.00	0.99	2.507	0.529	0.47	1.46	1,214.77

POST-DEVELOPED CONDITIONS

Subsection: Pond Infiltration Calculations

Label: PO-1 (IN)

Return Event: 1 years

Storm Event: 1 Year

Average Infiltration Rating Table

Elevation (Water Surface) (ft)	Area (Total) (ft ²)	Flow (Infiltration) (ft ³ /s)
686.00	13,712.7	0.00
686.25	14,058.1	0.28
686.50	14,407.8	0.29
687.00	15,120.2	0.31
687.50	15,849.7	0.32
688.00	16,596.4	0.34
688.50	17,347.0	0.35
689.00	18,114.3	0.37
689.50	18,898.2	0.38
690.00	19,698.7	0.40
690.50	20,506.8	0.42
691.00	21,331.1	0.43
691.50	22,171.6	0.45
692.00	23,028.4	0.47

POST-DEVELOPED CONDITIONS

Subsection: Level Pool Pond Routing Summary
Label: PO-1 (IN)

Return Event: 1 years
Storm Event: 1 Year

Infiltration			
Infiltration Method (Computed)		Average Infiltration Rate	
Infiltration Rate (Average)		0.8750 in/h	
Initial Conditions			
Elevation (Water Surface, Initial)		686.00 ft	
Volume (Initial)		0.000 ac-ft	
Flow (Initial Outlet)		0.00 ft³/s	
Flow (Initial Infiltration)		0.00 ft³/s	
Flow (Initial, Total)		0.00 ft³/s	
Time Increment		0.050 hours	
Inflow/Outflow Hydrograph Summary			
Flow (Peak In)		2.06 ft³/s	Time to Peak (Flow, In)
Infiltration (Peak)		0.17 ft³/s	Time to Peak (Infiltration)
Flow (Peak Outlet)		0.00 ft³/s	Time to Peak (Flow, Outlet)
Elevation (Water Surface, Peak)		686.15 ft	
Volume (Peak)		0.047 ac-ft	
Mass Balance (ac-ft)			
Volume (Initial)		0.000 ac-ft	
Volume (Total Inflow)		0.129 ac-ft	
Volume (Total Infiltration)		0.113 ac-ft	
Volume (Total Outlet Outflow)		0.000 ac-ft	
Volume (Retained)		0.017 ac-ft	
Volume (Unrouted)		0.000 ac-ft	
Error (Mass Balance)		0.1 %	

POST-DEVELOPED CONDITIONS

Subsection: Level Pool Pond Routing Summary
Label: PO-1 (IN)

Return Event: 2 years
Storm Event: 2 Year

Infiltration			
Infiltration Method (Computed)	Average Infiltration Rate		
Infiltration Rate (Average)	0.8750 in/h		
Initial Conditions			
Elevation (Water Surface, Initial)	686.00 ft		
Volume (Initial)	0.000 ac-ft		
Flow (Initial Outlet)	0.00 ft³/s		
Flow (Initial Infiltration)	0.00 ft³/s		
Flow (Initial, Total)	0.00 ft³/s		
Time Increment	0.050 hours		
Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	3.45 ft³/s	Time to Peak (Flow, In)	11.950 hours
Infiltration (Peak)	0.28 ft³/s	Time to Peak (Infiltration)	13.050 hours
Flow (Peak Outlet)	0.00 ft³/s	Time to Peak (Flow, Outlet)	13.050 hours
Peak Conditions			
Elevation (Water Surface, Peak)	686.25 ft		
Volume (Peak)	0.081 ac-ft		
Mass Balance (ac-ft)			
Volume (Initial)	0.000 ac-ft		
Volume (Total Inflow)	0.205 ac-ft		
Volume (Total Infiltration)	0.181 ac-ft		
Volume (Total Outlet Outflow)	0.000 ac-ft		
Volume (Retained)	0.024 ac-ft		
Volume (Unrouted)	0.000 ac-ft		
Error (Mass Balance)	0.1 %		

POST-DEVELOPED CONDITIONS

Subsection: Level Pool Pond Routing Summary
Label: PO-1 (IN)

Return Event: 5 years
Storm Event: 5 Year

Infiltration			
Infiltration Method (Computed)		Average Infiltration Rate	
Infiltration Rate (Average)		0.8750 in/h	
Initial Conditions			
Elevation (Water Surface, Initial)		686.00 ft	
Volume (Initial)		0.000 ac-ft	
Flow (Initial Outlet)		0.00 ft³/s	
Flow (Initial Infiltration)		0.00 ft³/s	
Flow (Initial, Total)		0.00 ft³/s	
Time Increment		0.050 hours	
Inflow/Outflow Hydrograph Summary			
Flow (Peak In)		6.02 ft³/s	Time to Peak (Flow, In)
Infiltration (Peak)		0.29 ft³/s	Time to Peak (Infiltration)
Flow (Peak Outlet)		0.09 ft³/s	Time to Peak (Flow, Outlet)
			11.950 hours
			13.350 hours
			13.350 hours
Peak Conditions			
Elevation (Water Surface, Peak)		686.48 ft	
Volume (Peak)		0.155 ac-ft	
Mass Balance (ac-ft)			
Volume (Initial)		0.000 ac-ft	
Volume (Total Inflow)		0.340 ac-ft	
Volume (Total Infiltration)		0.261 ac-ft	
Volume (Total Outlet Outflow)		0.037 ac-ft	
Volume (Retained)		0.042 ac-ft	
Volume (Unrouted)		0.000 ac-ft	
Error (Mass Balance)		0.1 %	

POST-DEVELOPED CONDITIONS

Subsection: Level Pool Pond Routing Summary
Label: PO-1 (IN)

Return Event: 10 years
Storm Event: 10 Year

Infiltration			
Infiltration Method (Computed)		Average Infiltration Rate	
Infiltration Rate (Average)		0.8750 in/h	
Initial Conditions			
Elevation (Water Surface, Initial)		686.00 ft	
Volume (Initial)		0.000 ac-ft	
Flow (Initial Outlet)		0.00 ft³/s	
Flow (Initial Infiltration)		0.00 ft³/s	
Flow (Initial, Total)		0.00 ft³/s	
Time Increment		0.050 hours	
Inflow/Outflow Hydrograph Summary			
Flow (Peak In)		9.04 ft³/s	Time to Peak (Flow, In)
Infiltration (Peak)		0.30 ft³/s	Time to Peak (Infiltration)
Flow (Peak Outlet)		0.22 ft³/s	Time to Peak (Flow, Outlet)
			11.950 hours
			13.450 hours
			13.450 hours
Peak Conditions			
Elevation (Water Surface, Peak)		686.76 ft	
Volume (Peak)		0.248 ac-ft	
Mass Balance (ac-ft)			
Volume (Initial)		0.000 ac-ft	
Volume (Total Inflow)		0.502 ac-ft	
Volume (Total Infiltration)		0.299 ac-ft	
Volume (Total Outlet Outflow)		0.122 ac-ft	
Volume (Retained)		0.081 ac-ft	
Volume (Unrouted)		0.000 ac-ft	
Error (Mass Balance)		0.0 %	

POST-DEVELOPED CONDITIONS

Subsection: Level Pool Pond Routing Summary
Label: PO-1 (IN)

Return Event: 25 years
Storm Event: 25 Year

Infiltration			
Infiltration Method (Computed)		Average Infiltration Rate	
Infiltration Rate (Average)		0.8750 in/h	
Initial Conditions			
Elevation (Water Surface, Initial)		686.00 ft	
Volume (Initial)		0.000 ac-ft	
Flow (Initial Outlet)		0.00 ft³/s	
Flow (Initial Infiltration)		0.00 ft³/s	
Flow (Initial, Total)		0.00 ft³/s	
Time Increment		0.050 hours	
Inflow/Outflow Hydrograph Summary			
Flow (Peak In)		11.71 ft³/s	Time to Peak (Flow, In)
Infiltration (Peak)		0.31 ft³/s	Time to Peak (Infiltration)
Flow (Peak Outlet)		0.32 ft³/s	Time to Peak (Flow, Outlet)
Elevation (Water Surface, Peak)		687.01 ft	
Volume (Peak)		0.335 ac-ft	
Mass Balance (ac-ft)			
Volume (Initial)		0.000 ac-ft	
Volume (Total Inflow)		0.647 ac-ft	
Volume (Total Infiltration)		0.308 ac-ft	
Volume (Total Outlet Outflow)		0.210 ac-ft	
Volume (Retained)		0.129 ac-ft	
Volume (Unrouted)		-0.001 ac-ft	
Error (Mass Balance)		0.1 %	

POST-DEVELOPED CONDITIONS

Subsection: Level Pool Pond Routing Summary
Label: PO-1 (IN)

Return Event: 50 years
Storm Event: 50 Year

Infiltration			
Infiltration Method (Computed)	Average Infiltration Rate		
Infiltration Rate (Average)	0.8750 in/h		
Initial Conditions			
Elevation (Water Surface, Initial)	686.00 ft		
Volume (Initial)	0.000 ac-ft		
Flow (Initial Outlet)	0.00 ft³/s		
Flow (Initial Infiltration)	0.00 ft³/s		
Flow (Initial, Total)	0.00 ft³/s		
Time Increment	0.050 hours		
Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	14.75 ft³/s	Time to Peak (Flow, In)	11.950 hours
Infiltration (Peak)	0.32 ft³/s	Time to Peak (Infiltration)	13.650 hours
Flow (Peak Outlet)	0.39 ft³/s	Time to Peak (Flow, Outlet)	13.650 hours
Elevation (Water Surface, Peak)	687.31 ft		
Volume (Peak)	0.440 ac-ft		
Mass Balance (ac-ft)			
Volume (Initial)	0.000 ac-ft		
Volume (Total Inflow)	0.815 ac-ft		
Volume (Total Infiltration)	0.320 ac-ft		
Volume (Total Outlet Outflow)	0.304 ac-ft		
Volume (Retained)	0.190 ac-ft		
Volume (Unrouted)	-0.001 ac-ft		
Error (Mass Balance)	0.1 %		

POST-DEVELOPED CONDITIONS

Subsection: Level Pool Pond Routing Summary
Label: PO-1 (IN)

Return Event: 100 years
Storm Event: 100 Year

Infiltration			
Infiltration Method (Computed)		Average Infiltration Rate	
Infiltration Rate (Average)		0.8750 in/h	
Initial Conditions			
Elevation (Water Surface, Initial)		686.00 ft	
Volume (Initial)		0.000 ac-ft	
Flow (Initial Outlet)		0.00 ft³/s	
Flow (Initial Infiltration)		0.00 ft³/s	
Flow (Initial, Total)		0.00 ft³/s	
Time Increment		0.050 hours	
Inflow/Outflow Hydrograph Summary			
Flow (Peak In)		18.13 ft³/s	Time to Peak (Flow, In)
Infiltration (Peak)		0.33 ft³/s	Time to Peak (Infiltration)
Flow (Peak Outlet)		0.46 ft³/s	Time to Peak (Flow, Outlet)
Elevation (Water Surface, Peak)		687.65 ft	
Volume (Peak)		0.562 ac-ft	
Mass Balance (ac-ft)			
Volume (Initial)		0.000 ac-ft	
Volume (Total Inflow)		1.004 ac-ft	
Volume (Total Infiltration)		0.335 ac-ft	
Volume (Total Outlet Outflow)		0.394 ac-ft	
Volume (Retained)		0.273 ac-ft	
Volume (Unrouted)		-0.002 ac-ft	
Error (Mass Balance)		0.2 %	

POST-DEVELOPED CONDITIONS

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 1 years
Storm Event: 1 Year

Peak Discharge	0.17 ft ³ /s
Time to Peak	13.400 hours
Hydrograph Volume	0.112 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
11.750	0.00	0.00	0.01	0.03	0.05
12.000	0.08	0.11	0.12	0.13	0.13
12.250	0.14	0.14	0.15	0.15	0.15
12.500	0.16	0.16	0.16	0.16	0.16
12.750	0.16	0.16	0.16	0.16	0.17
13.000	0.17	0.17	0.17	0.17	0.17
13.250	0.17	0.17	0.17	0.17	0.17
13.500	0.17	0.17	0.17	0.17	0.17
13.750	0.17	0.17	0.17	0.17	0.16
14.000	0.16	0.16	0.16	0.16	0.16
14.250	0.16	0.16	0.16	0.16	0.16
14.500	0.16	0.16	0.16	0.16	0.16
14.750	0.16	0.15	0.15	0.15	0.15
15.000	0.15	0.15	0.15	0.15	0.15
15.250	0.15	0.15	0.15	0.15	0.15
15.500	0.15	0.14	0.14	0.14	0.14
15.750	0.14	0.14	0.14	0.14	0.14
16.000	0.14	0.14	0.14	0.14	0.13
16.250	0.13	0.13	0.13	0.13	0.13
16.500	0.13	0.13	0.13	0.13	0.13
16.750	0.13	0.13	0.13	0.12	0.12
17.000	0.12	0.12	0.12	0.12	0.12
17.250	0.12	0.12	0.12	0.12	0.12
17.500	0.12	0.12	0.12	0.11	0.11
17.750	0.11	0.11	0.11	0.11	0.11
18.000	0.11	0.11	0.11	0.11	0.11
18.250	0.11	0.11	0.11	0.11	0.11
18.500	0.10	0.10	0.10	0.10	0.10
18.750	0.10	0.10	0.10	0.10	0.10
19.000	0.10	0.10	0.10	0.10	0.10
19.250	0.10	0.10	0.10	0.09	0.09
19.500	0.09	0.09	0.09	0.09	0.09
19.750	0.09	0.09	0.09	0.09	0.09
20.000	0.09	0.09	0.09	0.09	0.09
20.250	0.09	0.09	0.08	0.08	0.08
20.500	0.08	0.08	0.08	0.08	0.08
20.750	0.08	0.08	0.08	0.08	0.08

POST-DEVELOPED CONDITIONS

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 1 years
Storm Event: 1 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
21.000	0.08	0.08	0.08	0.08	0.08
21.250	0.08	0.08	0.08	0.08	0.08
21.500	0.07	0.07	0.07	0.07	0.07
21.750	0.07	0.07	0.07	0.07	0.07
22.000	0.07	0.07	0.07	0.07	0.07
22.250	0.07	0.07	0.07	0.07	0.07
22.500	0.07	0.07	0.07	0.07	0.07
22.750	0.07	0.07	0.07	0.07	0.07
23.000	0.07	0.07	0.06	0.06	0.06
23.250	0.06	0.06	0.06	0.06	0.06
23.500	0.06	0.06	0.06	0.06	0.06
23.750	0.06	0.06	0.06	0.06	0.06
24.000	0.06	(N/A)	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 2 years
Storm Event: 2 Year

Peak Discharge	0.28 ft ³ /s
Time to Peak	13.050 hours
Hydrograph Volume	0.181 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
11.650	0.00	0.00	0.01	0.02	0.04
11.900	0.07	0.12	0.17	0.21	0.23
12.150	0.24	0.25	0.26	0.26	0.27
12.400	0.27	0.27	0.28	0.28	0.28
12.650	0.28	0.28	0.28	0.28	0.28
12.900	0.28	0.28	0.28	0.28	0.28
13.150	0.28	0.28	0.28	0.28	0.28
13.400	0.28	0.28	0.28	0.28	0.28
13.650	0.28	0.28	0.28	0.28	0.28
13.900	0.28	0.28	0.28	0.27	0.27
14.150	0.27	0.27	0.27	0.27	0.27
14.400	0.26	0.26	0.26	0.26	0.26
14.650	0.26	0.26	0.26	0.25	0.25
14.900	0.25	0.25	0.25	0.25	0.25
15.150	0.24	0.24	0.24	0.24	0.24
15.400	0.24	0.24	0.23	0.23	0.23
15.650	0.23	0.23	0.23	0.23	0.22
15.900	0.22	0.22	0.22	0.22	0.22
16.150	0.22	0.21	0.21	0.21	0.21
16.400	0.21	0.21	0.21	0.21	0.20
16.650	0.20	0.20	0.20	0.20	0.20
16.900	0.20	0.20	0.19	0.19	0.19
17.150	0.19	0.19	0.19	0.19	0.19
17.400	0.18	0.18	0.18	0.18	0.18
17.650	0.18	0.18	0.18	0.18	0.17
17.900	0.17	0.17	0.17	0.17	0.17
18.150	0.17	0.17	0.17	0.17	0.16
18.400	0.16	0.16	0.16	0.16	0.16
18.650	0.16	0.16	0.16	0.16	0.15
18.900	0.15	0.15	0.15	0.15	0.15
19.150	0.15	0.15	0.15	0.15	0.14
19.400	0.14	0.14	0.14	0.14	0.14
19.650	0.14	0.14	0.14	0.14	0.14
19.900	0.14	0.13	0.13	0.13	0.13
20.150	0.13	0.13	0.13	0.13	0.13
20.400	0.13	0.13	0.13	0.12	0.12
20.650	0.12	0.12	0.12	0.12	0.12

POST-DEVELOPED CONDITIONS

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 2 years
Storm Event: 2 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
20.900	0.12	0.12	0.12	0.12	0.12
21.150	0.12	0.12	0.11	0.11	0.11
21.400	0.11	0.11	0.11	0.11	0.11
21.650	0.11	0.11	0.11	0.11	0.11
21.900	0.11	0.11	0.11	0.11	0.10
22.150	0.10	0.10	0.10	0.10	0.10
22.400	0.10	0.10	0.10	0.10	0.10
22.650	0.10	0.10	0.10	0.10	0.10
22.900	0.10	0.10	0.10	0.10	0.10
23.150	0.09	0.09	0.09	0.09	0.09
23.400	0.09	0.09	0.09	0.09	0.09
23.650	0.09	0.09	0.09	0.09	0.09
23.900	0.09	0.09	0.09	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 5 years
Storm Event: 5 Year

Peak Discharge	0.29 ft ³ /s
Time to Peak	13.350 hours
Hydrograph Volume	0.261 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
11.200	0.00	0.00	0.00	0.00	0.00
11.450	0.00	0.01	0.01	0.01	0.02
11.700	0.03	0.04	0.07	0.11	0.17
11.950	0.26	0.29	0.29	0.29	0.29
12.200	0.29	0.29	0.29	0.29	0.29
12.450	0.29	0.29	0.29	0.29	0.29
12.700	0.29	0.29	0.29	0.29	0.29
12.950	0.29	0.29	0.29	0.29	0.29
13.200	0.29	0.29	0.29	0.29	0.29
13.450	0.29	0.29	0.29	0.29	0.29
13.700	0.29	0.29	0.29	0.29	0.29
13.950	0.29	0.29	0.29	0.29	0.29
14.200	0.29	0.29	0.29	0.29	0.29
14.450	0.29	0.29	0.29	0.29	0.29
14.700	0.29	0.29	0.29	0.29	0.29
14.950	0.29	0.29	0.29	0.29	0.29
15.200	0.29	0.29	0.29	0.29	0.29
15.450	0.29	0.29	0.29	0.29	0.29
15.700	0.29	0.29	0.29	0.29	0.29
15.950	0.29	0.29	0.29	0.29	0.29
16.200	0.29	0.29	0.29	0.29	0.29
16.450	0.29	0.29	0.29	0.29	0.29
16.700	0.29	0.29	0.29	0.29	0.29
16.950	0.29	0.29	0.29	0.29	0.29
17.200	0.29	0.29	0.29	0.29	0.29
17.450	0.29	0.29	0.29	0.29	0.29
17.700	0.29	0.29	0.29	0.29	0.29
17.950	0.29	0.29	0.29	0.29	0.29
18.200	0.29	0.29	0.29	0.29	0.29
18.450	0.29	0.29	0.29	0.29	0.29
18.700	0.29	0.29	0.29	0.29	0.29
18.950	0.29	0.29	0.29	0.29	0.29
19.200	0.29	0.29	0.29	0.29	0.29
19.450	0.29	0.28	0.28	0.28	0.28
19.700	0.28	0.28	0.28	0.28	0.27
19.950	0.27	0.27	0.27	0.26	0.26
20.200	0.26	0.26	0.26	0.25	0.25

POST-DEVELOPED CONDITIONS

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 5 years
Storm Event: 5 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
20.450	0.25	0.25	0.24	0.24	0.24
20.700	0.24	0.24	0.24	0.23	0.23
20.950	0.23	0.23	0.23	0.22	0.22
21.200	0.22	0.22	0.22	0.22	0.21
21.450	0.21	0.21	0.21	0.21	0.21
21.700	0.20	0.20	0.20	0.20	0.20
21.950	0.20	0.20	0.19	0.19	0.19
22.200	0.19	0.19	0.19	0.19	0.19
22.450	0.18	0.18	0.18	0.18	0.18
22.700	0.18	0.18	0.18	0.17	0.17
22.950	0.17	0.17	0.17	0.17	0.17
23.200	0.17	0.17	0.17	0.16	0.16
23.450	0.16	0.16	0.16	0.16	0.16
23.700	0.16	0.16	0.16	0.15	0.15
23.950	0.15	0.15	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 10 years
Storm Event: 10 Year

Peak Discharge	0.30 ft ³ /s
Time to Peak	13.450 hours
Hydrograph Volume	0.297 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
10.550	0.00	0.00	0.00	0.00	0.00
10.800	0.00	0.00	0.01	0.01	0.01
11.050	0.01	0.01	0.01	0.01	0.02
11.300	0.02	0.02	0.02	0.03	0.03
11.550	0.04	0.04	0.06	0.07	0.10
11.800	0.15	0.21	0.29	0.29	0.29
12.050	0.29	0.30	0.30	0.30	0.30
12.300	0.30	0.30	0.30	0.30	0.30
12.550	0.30	0.30	0.30	0.30	0.30
12.800	0.30	0.30	0.30	0.30	0.30
13.050	0.30	0.30	0.30	0.30	0.30
13.300	0.30	0.30	0.30	0.30	0.30
13.550	0.30	0.30	0.30	0.30	0.30
13.800	0.30	0.30	0.30	0.30	0.30
14.050	0.30	0.30	0.30	0.30	0.30
14.300	0.30	0.30	0.30	0.30	0.30
14.550	0.30	0.30	0.30	0.30	0.30
14.800	0.30	0.30	0.30	0.30	0.30
15.050	0.30	0.30	0.30	0.30	0.30
15.300	0.30	0.30	0.30	0.30	0.30
15.550	0.30	0.30	0.30	0.30	0.30
15.800	0.30	0.30	0.30	0.30	0.30
16.050	0.30	0.30	0.30	0.30	0.30
16.300	0.30	0.30	0.30	0.30	0.30
16.550	0.30	0.30	0.30	0.30	0.30
16.800	0.30	0.30	0.30	0.30	0.30
17.050	0.30	0.29	0.29	0.29	0.29
17.300	0.29	0.29	0.29	0.29	0.29
17.550	0.29	0.29	0.29	0.29	0.29
17.800	0.29	0.29	0.29	0.29	0.29
18.050	0.29	0.29	0.29	0.29	0.29
18.300	0.29	0.29	0.29	0.29	0.29
18.550	0.29	0.29	0.29	0.29	0.29
18.800	0.29	0.29	0.29	0.29	0.29
19.050	0.29	0.29	0.29	0.29	0.29
19.300	0.29	0.29	0.29	0.29	0.29
19.550	0.29	0.29	0.29	0.29	0.29

POST-DEVELOPED CONDITIONS

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 10 years
Storm Event: 10 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
19.800	0.29	0.29	0.29	0.29	0.29
20.050	0.29	0.29	0.29	0.29	0.29
20.300	0.29	0.29	0.29	0.29	0.29
20.550	0.29	0.29	0.29	0.29	0.29
20.800	0.29	0.29	0.29	0.29	0.29
21.050	0.29	0.29	0.29	0.29	0.29
21.300	0.29	0.29	0.29	0.29	0.29
21.550	0.29	0.29	0.29	0.29	0.29
21.800	0.29	0.29	0.29	0.29	0.29
22.050	0.29	0.29	0.29	0.29	0.29
22.300	0.29	0.29	0.29	0.29	0.29
22.550	0.29	0.29	0.29	0.29	0.29
22.800	0.29	0.29	0.29	0.29	0.29
23.050	0.29	0.29	0.29	0.29	0.29
23.300	0.29	0.29	0.29	0.29	0.29
23.550	0.29	0.29	0.29	0.29	0.29
23.800	0.29	0.29	0.29	0.29	0.28

POST-DEVELOPED CONDITIONS

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 25 years
Storm Event: 25 Year

Peak Discharge	0.31 ft ³ /s
Time to Peak	13.450 hours
Hydrograph Volume	0.306 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
10.000	0.00	0.00	0.00	0.00	0.00
10.250	0.00	0.00	0.00	0.01	0.01
10.500	0.01	0.01	0.01	0.01	0.01
10.750	0.01	0.01	0.02	0.02	0.02
11.000	0.02	0.03	0.03	0.03	0.03
11.250	0.04	0.04	0.05	0.05	0.06
11.500	0.06	0.07	0.08	0.10	0.13
11.750	0.17	0.23	0.29	0.29	0.29
12.000	0.30	0.30	0.30	0.30	0.30
12.250	0.30	0.30	0.30	0.30	0.30
12.500	0.31	0.31	0.31	0.31	0.31
12.750	0.31	0.31	0.31	0.31	0.31
13.000	0.31	0.31	0.31	0.31	0.31
13.250	0.31	0.31	0.31	0.31	0.31
13.500	0.31	0.31	0.31	0.31	0.31
13.750	0.31	0.31	0.31	0.31	0.31
14.000	0.31	0.31	0.31	0.31	0.31
14.250	0.31	0.31	0.31	0.31	0.31
14.500	0.31	0.31	0.31	0.31	0.31
14.750	0.31	0.31	0.31	0.31	0.31
15.000	0.31	0.31	0.30	0.30	0.30
15.250	0.30	0.30	0.30	0.30	0.30
15.500	0.30	0.30	0.30	0.30	0.30
15.750	0.30	0.30	0.30	0.30	0.30
16.000	0.30	0.30	0.30	0.30	0.30
16.250	0.30	0.30	0.30	0.30	0.30
16.500	0.30	0.30	0.30	0.30	0.30
16.750	0.30	0.30	0.30	0.30	0.30
17.000	0.30	0.30	0.30	0.30	0.30
17.250	0.30	0.30	0.30	0.30	0.30
17.500	0.30	0.30	0.30	0.30	0.30
17.750	0.30	0.30	0.30	0.30	0.30
18.000	0.30	0.30	0.30	0.30	0.30
18.250	0.30	0.30	0.30	0.30	0.30
18.500	0.30	0.30	0.30	0.30	0.30
18.750	0.30	0.30	0.30	0.30	0.30
19.000	0.30	0.30	0.30	0.30	0.30

POST-DEVELOPED CONDITIONS

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 25 years
Storm Event: 25 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
19.250	0.30	0.30	0.30	0.30	0.30
19.500	0.30	0.30	0.30	0.30	0.30
19.750	0.30	0.30	0.30	0.30	0.30
20.000	0.30	0.30	0.30	0.30	0.30
20.250	0.30	0.30	0.30	0.29	0.29
20.500	0.29	0.29	0.29	0.29	0.29
20.750	0.29	0.29	0.29	0.29	0.29
21.000	0.29	0.29	0.29	0.29	0.29
21.250	0.29	0.29	0.29	0.29	0.29
21.500	0.29	0.29	0.29	0.29	0.29
21.750	0.29	0.29	0.29	0.29	0.29
22.000	0.29	0.29	0.29	0.29	0.29
22.250	0.29	0.29	0.29	0.29	0.29
22.500	0.29	0.29	0.29	0.29	0.29
22.750	0.29	0.29	0.29	0.29	0.29
23.000	0.29	0.29	0.29	0.29	0.29
23.250	0.29	0.29	0.29	0.29	0.29
23.500	0.29	0.29	0.29	0.29	0.29
23.750	0.29	0.29	0.29	0.29	0.29
24.000	0.29	(N/A)	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 50 years
Storm Event: 50 Year

Peak Discharge	0.32 ft ³ /s
Time to Peak	13.650 hours
Hydrograph Volume	0.319 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
9.350	0.00	0.00	0.00	0.00	0.00
9.600	0.00	0.00	0.00	0.00	0.00
9.850	0.01	0.01	0.01	0.01	0.01
10.100	0.01	0.01	0.01	0.01	0.01
10.350	0.02	0.02	0.02	0.02	0.02
10.600	0.03	0.03	0.03	0.03	0.04
10.850	0.04	0.04	0.04	0.05	0.05
11.100	0.06	0.06	0.07	0.07	0.08
11.350	0.08	0.09	0.10	0.11	0.12
11.600	0.13	0.16	0.20	0.25	0.29
11.850	0.29	0.29	0.30	0.30	0.31
12.100	0.31	0.31	0.31	0.31	0.31
12.350	0.31	0.31	0.31	0.31	0.31
12.600	0.31	0.31	0.31	0.31	0.31
12.850	0.31	0.31	0.31	0.31	0.31
13.100	0.32	0.32	0.32	0.32	0.32
13.350	0.32	0.32	0.32	0.32	0.32
13.600	0.32	0.32	0.32	0.32	0.32
13.850	0.32	0.32	0.32	0.32	0.32
14.100	0.32	0.32	0.32	0.32	0.31
14.350	0.31	0.31	0.31	0.31	0.31
14.600	0.31	0.31	0.31	0.31	0.31
14.850	0.31	0.31	0.31	0.31	0.31
15.100	0.31	0.31	0.31	0.31	0.31
15.350	0.31	0.31	0.31	0.31	0.31
15.600	0.31	0.31	0.31	0.31	0.31
15.850	0.31	0.31	0.31	0.31	0.31
16.100	0.31	0.31	0.31	0.31	0.31
16.350	0.31	0.31	0.31	0.31	0.31
16.600	0.31	0.31	0.31	0.31	0.31
16.850	0.31	0.31	0.31	0.31	0.31
17.100	0.31	0.31	0.31	0.31	0.31
17.350	0.31	0.31	0.31	0.31	0.31
17.600	0.31	0.31	0.31	0.31	0.31
17.850	0.31	0.31	0.31	0.31	0.31
18.100	0.31	0.31	0.31	0.31	0.31
18.350	0.31	0.31	0.31	0.31	0.31

POST-DEVELOPED CONDITIONS

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 50 years
Storm Event: 50 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
18.600	0.31	0.31	0.31	0.31	0.31
18.850	0.31	0.31	0.31	0.31	0.31
19.100	0.31	0.31	0.30	0.30	0.30
19.350	0.30	0.30	0.30	0.30	0.30
19.600	0.30	0.30	0.30	0.30	0.30
19.850	0.30	0.30	0.30	0.30	0.30
20.100	0.30	0.30	0.30	0.30	0.30
20.350	0.30	0.30	0.30	0.30	0.30
20.600	0.30	0.30	0.30	0.30	0.30
20.850	0.30	0.30	0.30	0.30	0.30
21.100	0.30	0.30	0.30	0.30	0.30
21.350	0.30	0.30	0.30	0.30	0.30
21.600	0.30	0.30	0.30	0.30	0.30
21.850	0.30	0.30	0.30	0.30	0.30
22.100	0.30	0.30	0.30	0.30	0.30
22.350	0.30	0.30	0.30	0.30	0.30
22.600	0.30	0.30	0.30	0.30	0.30
22.850	0.30	0.30	0.30	0.30	0.30
23.100	0.30	0.30	0.30	0.30	0.30
23.350	0.30	0.30	0.30	0.30	0.30
23.600	0.30	0.30	0.30	0.29	0.29
23.850	0.29	0.29	0.29	0.29	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 100 years
Storm Event: 100 Year

Peak Discharge	0.33 ft ³ /s
Time to Peak	13.800 hours
Hydrograph Volume	0.334 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
8.750	0.00	0.00	0.00	0.00	0.00
9.000	0.00	0.00	0.00	0.00	0.01
9.250	0.01	0.01	0.01	0.01	0.01
9.500	0.01	0.01	0.01	0.01	0.01
9.750	0.02	0.02	0.02	0.02	0.02
10.000	0.02	0.02	0.03	0.03	0.03
10.250	0.03	0.03	0.04	0.04	0.04
10.500	0.04	0.05	0.05	0.05	0.06
10.750	0.06	0.06	0.07	0.07	0.08
11.000	0.08	0.09	0.09	0.10	0.11
11.250	0.11	0.12	0.13	0.14	0.15
11.500	0.16	0.18	0.20	0.23	0.28
11.750	0.29	0.29	0.29	0.30	0.30
12.000	0.31	0.31	0.32	0.32	0.32
12.250	0.32	0.32	0.32	0.32	0.32
12.500	0.32	0.32	0.32	0.32	0.32
12.750	0.32	0.32	0.32	0.32	0.32
13.000	0.32	0.32	0.32	0.32	0.32
13.250	0.33	0.33	0.33	0.33	0.33
13.500	0.33	0.33	0.33	0.33	0.33
13.750	0.33	0.33	0.33	0.33	0.33
14.000	0.33	0.33	0.33	0.33	0.33
14.250	0.33	0.33	0.33	0.33	0.33
14.500	0.33	0.32	0.32	0.32	0.32
14.750	0.32	0.32	0.32	0.32	0.32
15.000	0.32	0.32	0.32	0.32	0.32
15.250	0.32	0.32	0.32	0.32	0.32
15.500	0.32	0.32	0.32	0.32	0.32
15.750	0.32	0.32	0.32	0.32	0.32
16.000	0.32	0.32	0.32	0.32	0.32
16.250	0.32	0.32	0.32	0.32	0.32
16.500	0.32	0.32	0.32	0.32	0.32
16.750	0.32	0.32	0.32	0.32	0.32
17.000	0.32	0.32	0.32	0.32	0.32
17.250	0.32	0.32	0.32	0.32	0.32
17.500	0.32	0.32	0.32	0.32	0.32
17.750	0.32	0.32	0.32	0.32	0.32

POST-DEVELOPED CONDITIONS

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 100 years
Storm Event: 100 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
18.000	0.32	0.32	0.32	0.32	0.32
18.250	0.32	0.32	0.32	0.32	0.32
18.500	0.32	0.32	0.32	0.32	0.32
18.750	0.32	0.32	0.32	0.32	0.32
19.000	0.32	0.32	0.31	0.31	0.31
19.250	0.31	0.31	0.31	0.31	0.31
19.500	0.31	0.31	0.31	0.31	0.31
19.750	0.31	0.31	0.31	0.31	0.31
20.000	0.31	0.31	0.31	0.31	0.31
20.250	0.31	0.31	0.31	0.31	0.31
20.500	0.31	0.31	0.31	0.31	0.31
20.750	0.31	0.31	0.31	0.31	0.31
21.000	0.31	0.31	0.31	0.31	0.31
21.250	0.31	0.31	0.31	0.31	0.31
21.500	0.31	0.31	0.31	0.31	0.31
21.750	0.31	0.31	0.31	0.31	0.31
22.000	0.31	0.31	0.31	0.31	0.31
22.250	0.31	0.31	0.31	0.31	0.31
22.500	0.31	0.31	0.31	0.30	0.30
22.750	0.30	0.30	0.30	0.30	0.30
23.000	0.30	0.30	0.30	0.30	0.30
23.250	0.30	0.30	0.30	0.30	0.30
23.500	0.30	0.30	0.30	0.30	0.30
23.750	0.30	0.30	0.30	0.30	0.30
24.000	0.30	(N/A)	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Pond Routed Hydrograph (total out)

Label: PO-1 (OUT)

Return Event: 1 years

Storm Event: 1 Year

Peak Discharge	0.00 ft ³ /s
Time to Peak	8.000 hours
Hydrograph Volume	0.000 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.000	0.00	0.00	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Pond Routed Hydrograph (total out)

Label: PO-1 (OUT)

Return Event: 2 years

Storm Event: 2 Year

Peak Discharge	0.00 ft ³ /s
Time to Peak	13.050 hours
Hydrograph Volume	0.000 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
12.900	0.00	0.00	0.00	0.00	0.00
13.150	0.00	0.00	0.00	0.00	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Pond Routed Hydrograph (total out)
Label: PO-1 (OUT)

Return Event: 5 years
Storm Event: 5 Year

Peak Discharge	0.09 ft ³ /s
Time to Peak	13.350 hours
Hydrograph Volume	0.037 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
11.950	0.00	0.02	0.04	0.06	0.06
12.200	0.07	0.07	0.07	0.08	0.08
12.450	0.08	0.08	0.09	0.09	0.09
12.700	0.09	0.09	0.09	0.09	0.09
12.950	0.09	0.09	0.09	0.09	0.09
13.200	0.09	0.09	0.09	0.09	0.09
13.450	0.09	0.09	0.09	0.09	0.09
13.700	0.09	0.09	0.09	0.09	0.09
13.950	0.09	0.09	0.09	0.09	0.09
14.200	0.09	0.09	0.09	0.09	0.09
14.450	0.09	0.09	0.08	0.08	0.08
14.700	0.08	0.08	0.08	0.08	0.08
14.950	0.08	0.08	0.08	0.08	0.08
15.200	0.08	0.08	0.07	0.07	0.07
15.450	0.07	0.07	0.07	0.07	0.07
15.700	0.07	0.07	0.07	0.07	0.07
15.950	0.06	0.06	0.06	0.06	0.06
16.200	0.06	0.06	0.06	0.06	0.06
16.450	0.06	0.05	0.05	0.05	0.05
16.700	0.05	0.05	0.05	0.05	0.05
16.950	0.05	0.05	0.05	0.04	0.04
17.200	0.04	0.04	0.04	0.04	0.04
17.450	0.04	0.04	0.04	0.04	0.04
17.700	0.03	0.03	0.03	0.03	0.03
17.950	0.03	0.03	0.03	0.03	0.03
18.200	0.03	0.02	0.02	0.02	0.02
18.450	0.02	0.02	0.02	0.02	0.02
18.700	0.02	0.02	0.02	0.01	0.01
18.950	0.01	0.01	0.01	0.01	0.01
19.200	0.01	0.01	0.01	0.01	0.00
19.450	0.00	0.00	0.00	0.00	0.00

POST-DEVELOPED CONDITIONS

Subsection: Pond Routed Hydrograph (total out)
Label: PO-1 (OUT)

Return Event: 10 years
Storm Event: 10 Year

Peak Discharge	0.22 ft ³ /s
Time to Peak	13.450 hours
Hydrograph Volume	0.122 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
11.850	0.00	0.01	0.06	0.10	0.13
12.100	0.16	0.16	0.17	0.18	0.18
12.350	0.19	0.19	0.20	0.20	0.20
12.600	0.20	0.20	0.21	0.21	0.21
12.850	0.21	0.21	0.21	0.21	0.21
13.100	0.21	0.21	0.21	0.21	0.22
13.350	0.22	0.22	0.22	0.22	0.22
13.600	0.22	0.21	0.21	0.21	0.21
13.850	0.21	0.21	0.21	0.21	0.21
14.100	0.21	0.21	0.21	0.21	0.21
14.350	0.21	0.21	0.21	0.20	0.20
14.600	0.20	0.20	0.20	0.20	0.20
14.850	0.20	0.20	0.20	0.20	0.20
15.100	0.19	0.19	0.19	0.19	0.19
15.350	0.19	0.19	0.19	0.19	0.19
15.600	0.18	0.18	0.18	0.18	0.18
15.850	0.18	0.18	0.18	0.18	0.17
16.100	0.17	0.17	0.17	0.17	0.17
16.350	0.17	0.17	0.17	0.16	0.16
16.600	0.16	0.16	0.16	0.16	0.16
16.850	0.16	0.15	0.15	0.15	0.15
17.100	0.15	0.15	0.15	0.15	0.15
17.350	0.14	0.14	0.14	0.14	0.14
17.600	0.14	0.14	0.14	0.13	0.13
17.850	0.13	0.13	0.13	0.13	0.13
18.100	0.13	0.13	0.12	0.12	0.12
18.350	0.12	0.12	0.12	0.12	0.12
18.600	0.11	0.11	0.11	0.11	0.11
18.850	0.11	0.11	0.11	0.11	0.10
19.100	0.10	0.10	0.10	0.10	0.10
19.350	0.10	0.10	0.09	0.09	0.09
19.600	0.09	0.09	0.09	0.09	0.09
19.850	0.09	0.08	0.08	0.08	0.08
20.100	0.08	0.08	0.08	0.08	0.08
20.350	0.07	0.07	0.07	0.07	0.07
20.600	0.07	0.07	0.07	0.07	0.06
20.850	0.06	0.06	0.06	0.06	0.06

POST-DEVELOPED CONDITIONS

Subsection: Pond Routed Hydrograph (total out)

Label: PO-1 (OUT)

Return Event: 10 years

Storm Event: 10 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
21.100	0.06	0.06	0.06	0.05	0.05
21.350	0.05	0.05	0.05	0.05	0.05
21.600	0.05	0.05	0.05	0.04	0.04
21.850	0.04	0.04	0.04	0.04	0.04
22.100	0.04	0.04	0.04	0.03	0.03
22.350	0.03	0.03	0.03	0.03	0.03
22.600	0.03	0.03	0.03	0.03	0.02
22.850	0.02	0.02	0.02	0.02	0.02
23.100	0.02	0.02	0.02	0.02	0.02
23.350	0.01	0.01	0.01	0.01	0.01
23.600	0.01	0.01	0.01	0.01	0.01
23.850	0.01	0.01	0.00	0.00	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Pond Routed Hydrograph (total out)
Label: PO-1 (OUT)

Return Event: 25 years
Storm Event: 25 Year

Peak Discharge	0.32 ft ³ /s
Time to Peak	13.450 hours
Hydrograph Volume	0.210 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
11.800	0.00	0.01	0.06	0.12	0.18
12.050	0.22	0.25	0.26	0.27	0.28
12.300	0.28	0.29	0.29	0.30	0.30
12.550	0.31	0.31	0.31	0.31	0.31
12.800	0.32	0.32	0.32	0.32	0.32
13.050	0.32	0.32	0.32	0.32	0.32
13.300	0.32	0.32	0.32	0.32	0.32
13.550	0.32	0.32	0.32	0.32	0.32
13.800	0.32	0.32	0.32	0.32	0.32
14.050	0.32	0.32	0.32	0.32	0.32
14.300	0.32	0.32	0.32	0.31	0.31
14.550	0.31	0.31	0.31	0.31	0.31
14.800	0.31	0.31	0.31	0.30	0.30
15.050	0.30	0.30	0.30	0.30	0.30
15.300	0.30	0.29	0.29	0.29	0.29
15.550	0.29	0.29	0.29	0.29	0.28
15.800	0.28	0.28	0.28	0.28	0.28
16.050	0.28	0.27	0.27	0.27	0.27
16.300	0.27	0.27	0.27	0.26	0.26
16.550	0.26	0.26	0.26	0.26	0.26
16.800	0.25	0.25	0.25	0.25	0.25
17.050	0.25	0.25	0.24	0.24	0.24
17.300	0.24	0.24	0.24	0.24	0.23
17.550	0.23	0.23	0.23	0.23	0.23
17.800	0.23	0.22	0.22	0.22	0.22
18.050	0.22	0.22	0.22	0.21	0.21
18.300	0.21	0.21	0.21	0.21	0.21
18.550	0.20	0.20	0.20	0.20	0.20
18.800	0.20	0.19	0.19	0.19	0.19
19.050	0.19	0.19	0.19	0.18	0.18
19.300	0.18	0.18	0.18	0.18	0.18
19.550	0.17	0.17	0.17	0.17	0.17
19.800	0.17	0.17	0.16	0.16	0.16
20.050	0.16	0.16	0.16	0.16	0.15
20.300	0.15	0.15	0.15	0.15	0.15
20.550	0.15	0.14	0.14	0.14	0.14
20.800	0.14	0.14	0.14	0.13	0.13

POST-DEVELOPED CONDITIONS

Subsection: Pond Routed Hydrograph (total out)

Label: PO-1 (OUT)

Return Event: 25 years

Storm Event: 25 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
21.050	0.13	0.13	0.13	0.13	0.13
21.300	0.12	0.12	0.12	0.12	0.12
21.550	0.12	0.12	0.12	0.11	0.11
21.800	0.11	0.11	0.11	0.11	0.11
22.050	0.11	0.10	0.10	0.10	0.10
22.300	0.10	0.10	0.10	0.10	0.10
22.550	0.09	0.09	0.09	0.09	0.09
22.800	0.09	0.09	0.09	0.09	0.08
23.050	0.08	0.08	0.08	0.08	0.08
23.300	0.08	0.08	0.08	0.07	0.07
23.550	0.07	0.07	0.07	0.07	0.07
23.800	0.07	0.07	0.07	0.06	0.06

POST-DEVELOPED CONDITIONS

Subsection: Pond Routed Hydrograph (total out)
Label: PO-1 (OUT)

Return Event: 50 years
Storm Event: 50 Year

Peak Discharge	0.39 ft ³ /s
Time to Peak	13.650 hours
Hydrograph Volume	0.304 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
11.750	0.00	0.02	0.06	0.12	0.20
12.000	0.27	0.32	0.34	0.35	0.35
12.250	0.36	0.36	0.37	0.37	0.37
12.500	0.38	0.38	0.38	0.38	0.38
12.750	0.38	0.38	0.39	0.39	0.39
13.000	0.39	0.39	0.39	0.39	0.39
13.250	0.39	0.39	0.39	0.39	0.39
13.500	0.39	0.39	0.39	0.39	0.39
13.750	0.39	0.39	0.39	0.39	0.39
14.000	0.39	0.39	0.39	0.39	0.39
14.250	0.39	0.39	0.39	0.39	0.39
14.500	0.39	0.39	0.39	0.39	0.39
14.750	0.39	0.38	0.38	0.38	0.38
15.000	0.38	0.38	0.38	0.38	0.38
15.250	0.38	0.38	0.38	0.38	0.38
15.500	0.38	0.38	0.37	0.37	0.37
15.750	0.37	0.37	0.37	0.37	0.37
16.000	0.37	0.37	0.37	0.37	0.37
16.250	0.36	0.36	0.36	0.36	0.36
16.500	0.36	0.36	0.36	0.36	0.36
16.750	0.36	0.36	0.35	0.35	0.35
17.000	0.35	0.35	0.35	0.35	0.35
17.250	0.35	0.35	0.35	0.34	0.34
17.500	0.34	0.34	0.34	0.34	0.34
17.750	0.34	0.34	0.34	0.34	0.33
18.000	0.33	0.33	0.33	0.33	0.33
18.250	0.33	0.33	0.33	0.33	0.33
18.500	0.32	0.32	0.32	0.32	0.32
18.750	0.32	0.32	0.31	0.31	0.31
19.000	0.31	0.31	0.30	0.30	0.30
19.250	0.30	0.30	0.30	0.29	0.29
19.500	0.29	0.29	0.29	0.28	0.28
19.750	0.28	0.28	0.28	0.27	0.27
20.000	0.27	0.27	0.27	0.26	0.26
20.250	0.26	0.26	0.26	0.26	0.25
20.500	0.25	0.25	0.25	0.25	0.24
20.750	0.24	0.24	0.24	0.24	0.24

POST-DEVELOPED CONDITIONS

Subsection: Pond Routed Hydrograph (total out)

Label: PO-1 (OUT)

Return Event: 50 years

Storm Event: 50 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
21.000	0.23	0.23	0.23	0.23	0.23
21.250	0.23	0.22	0.22	0.22	0.22
21.500	0.22	0.22	0.21	0.21	0.21
21.750	0.21	0.21	0.21	0.20	0.20
22.000	0.20	0.20	0.20	0.20	0.19
22.250	0.19	0.19	0.19	0.19	0.19
22.500	0.19	0.18	0.18	0.18	0.18
22.750	0.18	0.18	0.17	0.17	0.17
23.000	0.17	0.17	0.17	0.17	0.16
23.250	0.16	0.16	0.16	0.16	0.16
23.500	0.16	0.15	0.15	0.15	0.15
23.750	0.15	0.15	0.15	0.15	0.14
24.000	0.14	(N/A)	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Pond Routed Hydrograph (total out)
Label: PO-1 (OUT)

Return Event: 100 years
Storm Event: 100 Year

Peak Discharge	0.46 ft ³ /s
Time to Peak	13.800 hours
Hydrograph Volume	0.394 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
11.700	0.00	0.02	0.06	0.11	0.19
11.950	0.29	0.35	0.38	0.40	0.41
12.200	0.42	0.43	0.43	0.44	0.44
12.450	0.44	0.45	0.45	0.45	0.45
12.700	0.45	0.45	0.45	0.46	0.46
12.950	0.46	0.46	0.46	0.46	0.46
13.200	0.46	0.46	0.46	0.46	0.46
13.450	0.46	0.46	0.46	0.46	0.46
13.700	0.46	0.46	0.46	0.46	0.46
13.950	0.46	0.46	0.46	0.46	0.46
14.200	0.46	0.46	0.46	0.46	0.46
14.450	0.46	0.46	0.46	0.46	0.46
14.700	0.46	0.46	0.46	0.46	0.46
14.950	0.46	0.46	0.46	0.46	0.46
15.200	0.46	0.46	0.45	0.45	0.45
15.450	0.45	0.45	0.45	0.45	0.45
15.700	0.45	0.45	0.45	0.45	0.45
15.950	0.45	0.45	0.45	0.45	0.44
16.200	0.44	0.44	0.44	0.44	0.44
16.450	0.44	0.44	0.44	0.44	0.44
16.700	0.44	0.44	0.44	0.43	0.43
16.950	0.43	0.43	0.43	0.43	0.43
17.200	0.43	0.43	0.43	0.42	0.42
17.450	0.42	0.42	0.42	0.42	0.42
17.700	0.42	0.42	0.42	0.41	0.41
17.950	0.41	0.41	0.41	0.41	0.41
18.200	0.41	0.41	0.41	0.40	0.40
18.450	0.40	0.40	0.40	0.40	0.40
18.700	0.40	0.40	0.40	0.39	0.39
18.950	0.39	0.39	0.39	0.39	0.39
19.200	0.39	0.39	0.38	0.38	0.38
19.450	0.38	0.38	0.38	0.38	0.38
19.700	0.38	0.37	0.37	0.37	0.37
19.950	0.37	0.37	0.37	0.37	0.37
20.200	0.36	0.36	0.36	0.36	0.36
20.450	0.36	0.36	0.36	0.35	0.35
20.700	0.35	0.35	0.35	0.35	0.35

POST-DEVELOPED CONDITIONS

Subsection: Pond Routed Hydrograph (total out)

Label: PO-1 (OUT)

Return Event: 100 years

Storm Event: 100 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
20.950	0.35	0.35	0.34	0.34	0.34
21.200	0.34	0.34	0.34	0.34	0.34
21.450	0.34	0.34	0.33	0.33	0.33
21.700	0.33	0.33	0.33	0.33	0.33
21.950	0.33	0.32	0.32	0.32	0.32
22.200	0.32	0.32	0.32	0.31	0.31
22.450	0.31	0.31	0.30	0.30	0.30
22.700	0.30	0.30	0.30	0.29	0.29
22.950	0.29	0.29	0.29	0.28	0.28
23.200	0.28	0.28	0.28	0.27	0.27
23.450	0.27	0.27	0.27	0.26	0.26
23.700	0.26	0.26	0.26	0.26	0.25
23.950	0.25	0.25	(N/A)	(N/A)	(N/A)

POST-DEVELOPED CONDITIONS

Subsection: Pond Inflow Summary

Label: PO-1 (IN)

Return Event: 1 years

Storm Event: 1 Year

Summary for Hydrograph Addition at 'PO-1'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA #1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA #1	0.129	12.000	2.06
Flow (In)	PO-1	0.129	12.000	2.06

POST-DEVELOPED CONDITIONS

Subsection: Pond Inflow Summary

Label: PO-1 (IN)

Return Event: 2 years

Storm Event: 2 Year

Summary for Hydrograph Addition at 'PO-1'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA #1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA #1	0.205	11.950	3.45
Flow (In)	PO-1	0.205	11.950	3.45

POST-DEVELOPED CONDITIONS

Subsection: Pond Inflow Summary

Label: PO-1 (IN)

Return Event: 5 years

Storm Event: 5 Year

Summary for Hydrograph Addition at 'PO-1'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA #1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA #1	0.340	11.950	6.02
Flow (In)	PO-1	0.340	11.950	6.02

POST-DEVELOPED CONDITIONS

Subsection: Pond Inflow Summary

Label: PO-1 (IN)

Return Event: 10 years

Storm Event: 10 Year

Summary for Hydrograph Addition at 'PO-1'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA #1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA #1	0.502	11.950	9.04
Flow (In)	PO-1	0.502	11.950	9.04

POST-DEVELOPED CONDITIONS

Subsection: Pond Inflow Summary

Label: PO-1 (IN)

Return Event: 25 years

Storm Event: 25 Year

Summary for Hydrograph Addition at 'PO-1'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA #1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA #1	0.647	11.950	11.71
Flow (In)	PO-1	0.647	11.950	11.71

POST-DEVELOPED CONDITIONS

Subsection: Pond Inflow Summary

Label: PO-1 (IN)

Return Event: 50 years

Storm Event: 50 Year

Summary for Hydrograph Addition at 'PO-1'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA #1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA #1	0.815	11.950	14.75
Flow (In)	PO-1	0.815	11.950	14.75

POST-DEVELOPED CONDITIONS

Subsection: Pond Inflow Summary

Label: PO-1 (IN)

Return Event: 100 years

Storm Event: 100 Year

Summary for Hydrograph Addition at 'PO-1'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA #1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA #1	1.004	11.950	18.13
Flow (In)	PO-1	1.004	11.950	18.13

POST-DEVELOPED CONDITIONS

Index

C

Composite Outlet Structure - 1 (Composite Rating Curve, 1 years)...142
Composite Outlet Structure - 1 (Composite Rating Curve, 10 years)...154
Composite Outlet Structure - 1 (Composite Rating Curve, 100 years)...166
Composite Outlet Structure - 1 (Composite Rating Curve, 2 years)...146
Composite Outlet Structure - 1 (Composite Rating Curve, 25 years)...158
Composite Outlet Structure - 1 (Composite Rating Curve, 5 years)...150
Composite Outlet Structure - 1 (Composite Rating Curve, 50 years)...162
Composite Outlet Structure - 1 (Individual Outlet Curves, 1 years)...141
Composite Outlet Structure - 1 (Individual Outlet Curves, 10 years)...153
Composite Outlet Structure - 1 (Individual Outlet Curves, 100 years)...165
Composite Outlet Structure - 1 (Individual Outlet Curves, 2 years)...145
Composite Outlet Structure - 1 (Individual Outlet Curves, 25 years)...157
Composite Outlet Structure - 1 (Individual Outlet Curves, 5 years)...149
Composite Outlet Structure - 1 (Individual Outlet Curves, 50 years)...161
Composite Outlet Structure - 1 (Outlet Input Data, 1 years)...139, 140
Composite Outlet Structure - 1 (Outlet Input Data, 10 years)...151, 152
Composite Outlet Structure - 1 (Outlet Input Data, 100 years)...163, 164
Composite Outlet Structure - 1 (Outlet Input Data, 2 years)...143, 144
Composite Outlet Structure - 1 (Outlet Input Data, 25 years)...155, 156
Composite Outlet Structure - 1 (Outlet Input Data, 5 years)...147, 148
Composite Outlet Structure - 1 (Outlet Input Data, 50 years)...159, 160

D

DA #1 (Unit Hydrograph (Hydrograph Table), 1 years)...22, 23
DA #1 (Unit Hydrograph (Hydrograph Table), 10 years)...34, 35
DA #1 (Unit Hydrograph (Hydrograph Table), 100 years)...46, 47
DA #1 (Unit Hydrograph (Hydrograph Table), 2 years)...26, 27
DA #1 (Unit Hydrograph (Hydrograph Table), 25 years)...38, 39
DA #1 (Unit Hydrograph (Hydrograph Table), 5 years)...30, 31
DA #1 (Unit Hydrograph (Hydrograph Table), 50 years)...42, 43
DA #1 (Unit Hydrograph Summary, 1 years)...20, 21

POST-DEVELOPED CONDITIONS

DA #1 (Unit Hydrograph Summary, 10 years)...32, 33
DA #1 (Unit Hydrograph Summary, 100 years)...44, 45
DA #1 (Unit Hydrograph Summary, 2 years)...24, 25
DA #1 (Unit Hydrograph Summary, 25 years)...36, 37
DA #1 (Unit Hydrograph Summary, 5 years)...28, 29
DA #1 (Unit Hydrograph Summary, 50 years)...40, 41

M

Master Network Summary...1, 2, 3

O

O-1 (Addition Summary, 1 years)...76
O-1 (Addition Summary, 10 years)...79
O-1 (Addition Summary, 100 years)...82
O-1 (Addition Summary, 2 years)...77
O-1 (Addition Summary, 25 years)...80
O-1 (Addition Summary, 5 years)...78
O-1 (Addition Summary, 50 years)...81
Outlet-1 (Diverted Hydrograph, 1 years)...167
Outlet-1 (Diverted Hydrograph, 10 years)...170, 171
Outlet-1 (Diverted Hydrograph, 100 years)...176, 177
Outlet-1 (Diverted Hydrograph, 2 years)...168
Outlet-1 (Diverted Hydrograph, 25 years)...172, 173
Outlet-1 (Diverted Hydrograph, 5 years)...169
Outlet-1 (Diverted Hydrograph, 50 years)...174, 175

P

PO-1 (Elevation-Area Volume Curve, 1 years)...125
PO-1 (Elevation-Area Volume Curve, 10 years)...131
PO-1 (Elevation-Area Volume Curve, 100 years)...137
PO-1 (Elevation-Area Volume Curve, 2 years)...127
PO-1 (Elevation-Area Volume Curve, 25 years)...133
PO-1 (Elevation-Area Volume Curve, 5 years)...129
PO-1 (Elevation-Area Volume Curve, 50 years)...135
PO-1 (Elevation-Volume-Flow Table (Pond), 1 years)...178

POST-DEVELOPED CONDITIONS

PO-1 (IN) (Level Pool Pond Routing Summary, 1 years)...	180
PO-1 (IN) (Level Pool Pond Routing Summary, 10 years)...	183
PO-1 (IN) (Level Pool Pond Routing Summary, 100 years)...	186
PO-1 (IN) (Level Pool Pond Routing Summary, 2 years)...	181
PO-1 (IN) (Level Pool Pond Routing Summary, 25 years)...	184
PO-1 (IN) (Level Pool Pond Routing Summary, 5 years)...	182
PO-1 (IN) (Level Pool Pond Routing Summary, 50 years)...	185
PO-1 (IN) (Pond Infiltration Calculations, 1 years)...	179
PO-1 (IN) (Pond Inflow Summary, 1 years)...	212
PO-1 (IN) (Pond Inflow Summary, 10 years)...	215
PO-1 (IN) (Pond Inflow Summary, 100 years)...	218
PO-1 (IN) (Pond Inflow Summary, 2 years)...	213
PO-1 (IN) (Pond Inflow Summary, 25 years)...	216
PO-1 (IN) (Pond Inflow Summary, 5 years)...	214
PO-1 (IN) (Pond Inflow Summary, 50 years)...	217
PO-1 (IN) (Time vs. Elevation, 1 years)...	83, 84, 85
PO-1 (IN) (Time vs. Elevation, 10 years)...	92, 93, 94
PO-1 (IN) (Time vs. Elevation, 100 years)...	101, 102, 103
PO-1 (IN) (Time vs. Elevation, 2 years)...	86, 87, 88
PO-1 (IN) (Time vs. Elevation, 25 years)...	95, 96, 97
PO-1 (IN) (Time vs. Elevation, 5 years)...	89, 90, 91
PO-1 (IN) (Time vs. Elevation, 50 years)...	98, 99, 100
PO-1 (INF) (Pond Infiltration Hydrograph, 1 years)...	187, 188
PO-1 (INF) (Pond Infiltration Hydrograph, 10 years)...	193, 194
PO-1 (INF) (Pond Infiltration Hydrograph, 100 years)...	199, 200
PO-1 (INF) (Pond Infiltration Hydrograph, 2 years)...	189, 190
PO-1 (INF) (Pond Infiltration Hydrograph, 25 years)...	195, 196
PO-1 (INF) (Pond Infiltration Hydrograph, 5 years)...	191, 192
PO-1 (INF) (Pond Infiltration Hydrograph, 50 years)...	197, 198
PO-1 (OUT) (Pond Routed Hydrograph (total out), 1 years)...	201
PO-1 (OUT) (Pond Routed Hydrograph (total out), 10 years)...	204, 205
PO-1 (OUT) (Pond Routed Hydrograph (total out), 100 years)...	210, 211

POST-DEVELOPED CONDITIONS

PO-1 (OUT) (Pond Routed Hydrograph (total out), 2 years)...202
PO-1 (OUT) (Pond Routed Hydrograph (total out), 25 years)...206, 207
PO-1 (OUT) (Pond Routed Hydrograph (total out), 5 years)...203
PO-1 (OUT) (Pond Routed Hydrograph (total out), 50 years)...208, 209
PO-1 (Time vs. Volume, 1 years)...104, 105, 106
PO-1 (Time vs. Volume, 10 years)...113, 114, 115
PO-1 (Time vs. Volume, 100 years)...122, 123, 124
PO-1 (Time vs. Volume, 2 years)...107, 108, 109
PO-1 (Time vs. Volume, 25 years)...116, 117, 118
PO-1 (Time vs. Volume, 5 years)...110, 111, 112
PO-1 (Time vs. Volume, 50 years)...119, 120, 121
PO-1 (Volume Equations, 1 years)...126
PO-1 (Volume Equations, 10 years)...132
PO-1 (Volume Equations, 100 years)...138
PO-1 (Volume Equations, 2 years)...128
PO-1 (Volume Equations, 25 years)...134
PO-1 (Volume Equations, 5 years)...130
PO-1 (Volume Equations, 50 years)...136

T

Time-Depth - 1 (Time-Depth Curve, 1 years)...4, 5
Time-Depth - 1 (Time-Depth Curve, 10 years)...6, 7
Time-Depth - 1 (Time-Depth Curve, 100 years)...8, 9
Time-Depth - 1 (Time-Depth Curve, 2 years)...10, 11
Time-Depth - 1 (Time-Depth Curve, 25 years)...12, 13
Time-Depth - 1 (Time-Depth Curve, 5 years)...14, 15
Time-Depth - 1 (Time-Depth Curve, 50 years)...16, 17

U

Undetained DA #1 (Unit Hydrograph (Hydrograph Table), 1 years)...50, 51
Undetained DA #1 (Unit Hydrograph (Hydrograph Table), 10 years)...62, 63
Undetained DA #1 (Unit Hydrograph (Hydrograph Table), 100 years)...74, 75
Undetained DA #1 (Unit Hydrograph (Hydrograph Table), 2 years)...54, 55
Undetained DA #1 (Unit Hydrograph (Hydrograph Table), 25 years)...66, 67

POST-DEVELOPED CONDITIONS

Undetained DA #1 (Unit Hydrograph (Hydrograph Table), 5 years)...58, 59

Undetained DA #1 (Unit Hydrograph (Hydrograph Table), 50 years)...70, 71

Undetained DA #1 (Unit Hydrograph Summary, 1 years)...48, 49

Undetained DA #1 (Unit Hydrograph Summary, 10 years)...60, 61

Undetained DA #1 (Unit Hydrograph Summary, 100 years)...72, 73

Undetained DA #1 (Unit Hydrograph Summary, 2 years)...52, 53

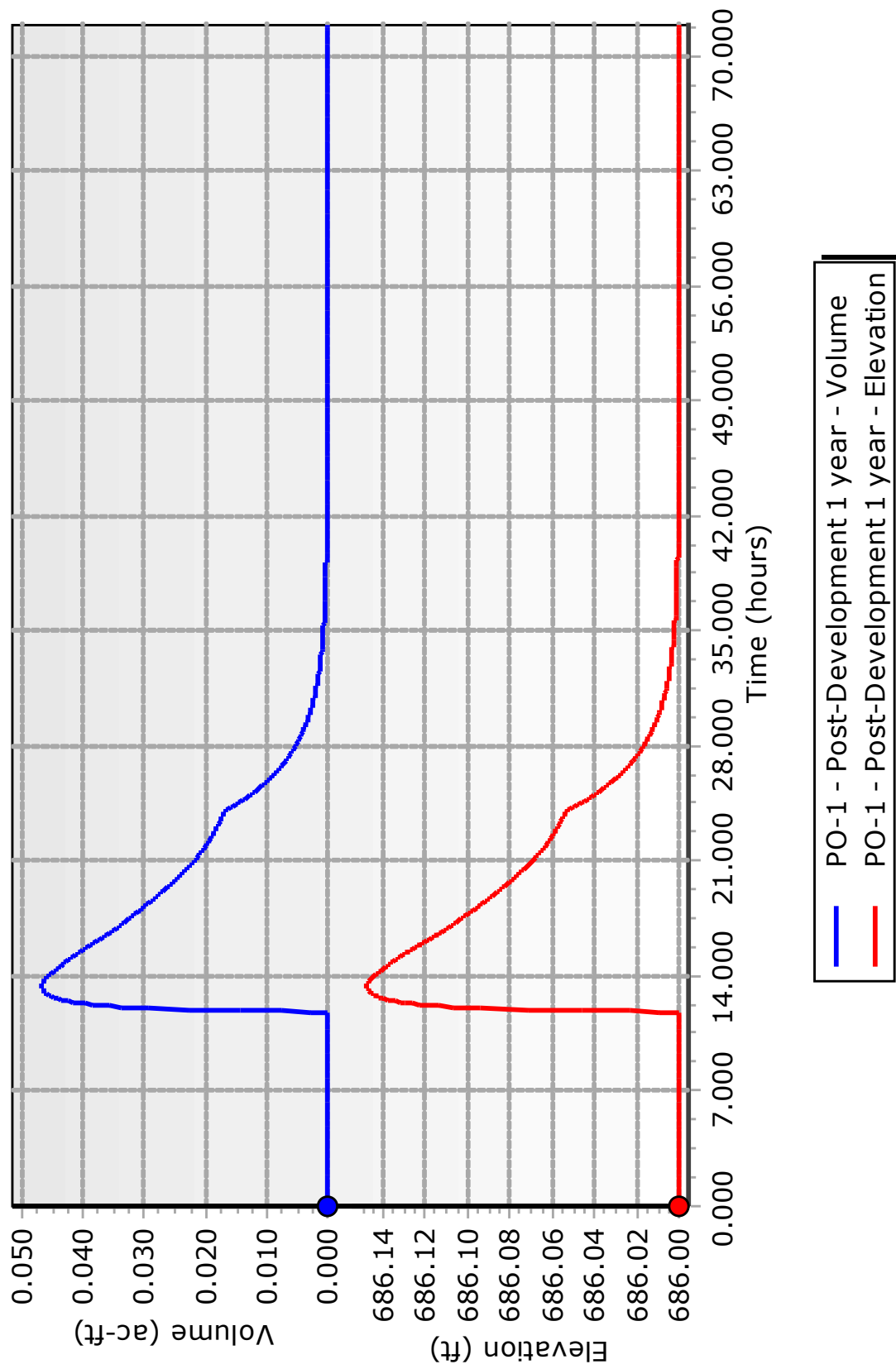
Undetained DA #1 (Unit Hydrograph Summary, 25 years)...64, 65

Undetained DA #1 (Unit Hydrograph Summary, 5 years)...56, 57

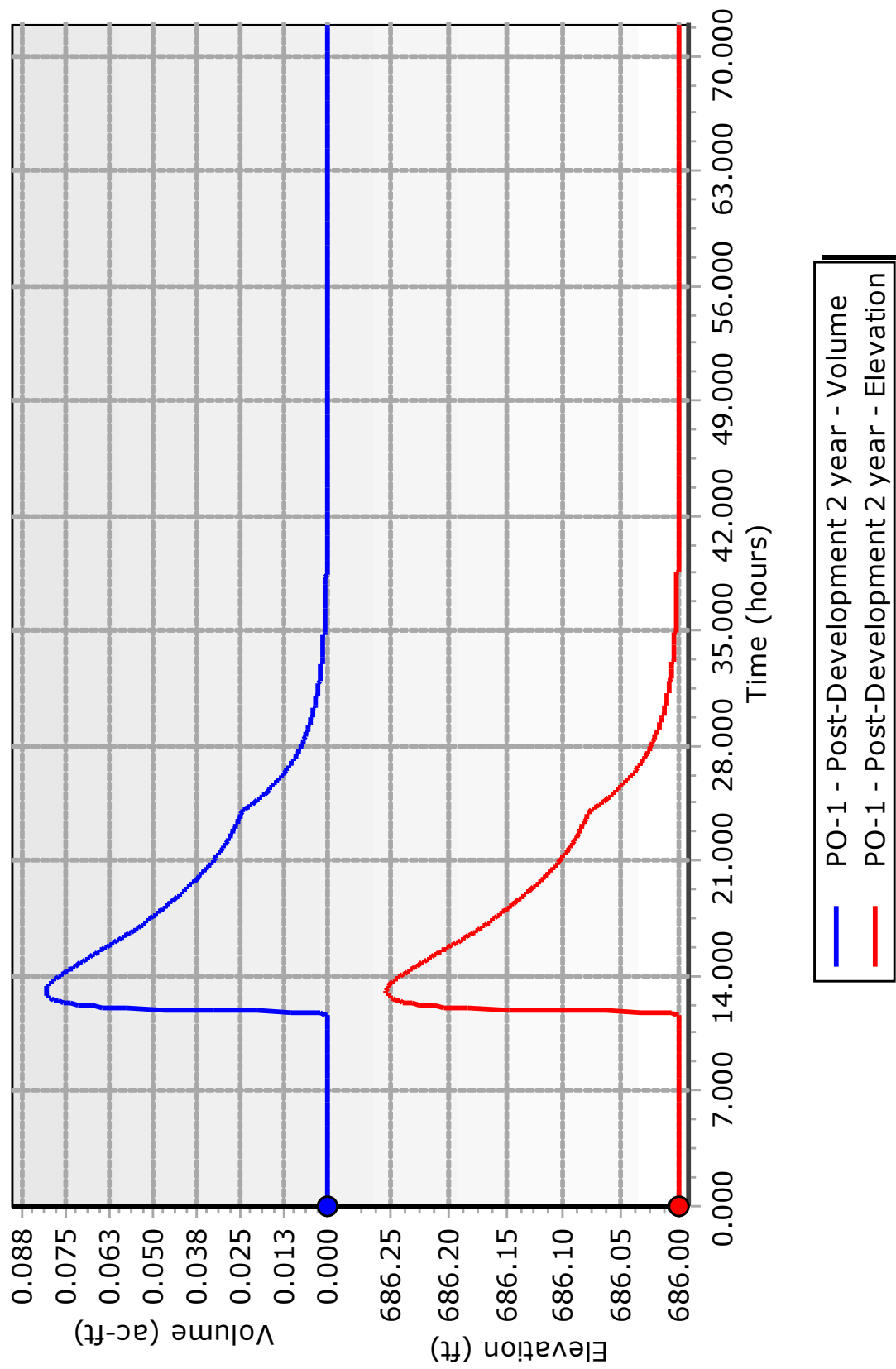
Undetained DA #1 (Unit Hydrograph Summary, 50 years)...68, 69

Unit Hydrograph Equations...18, 19

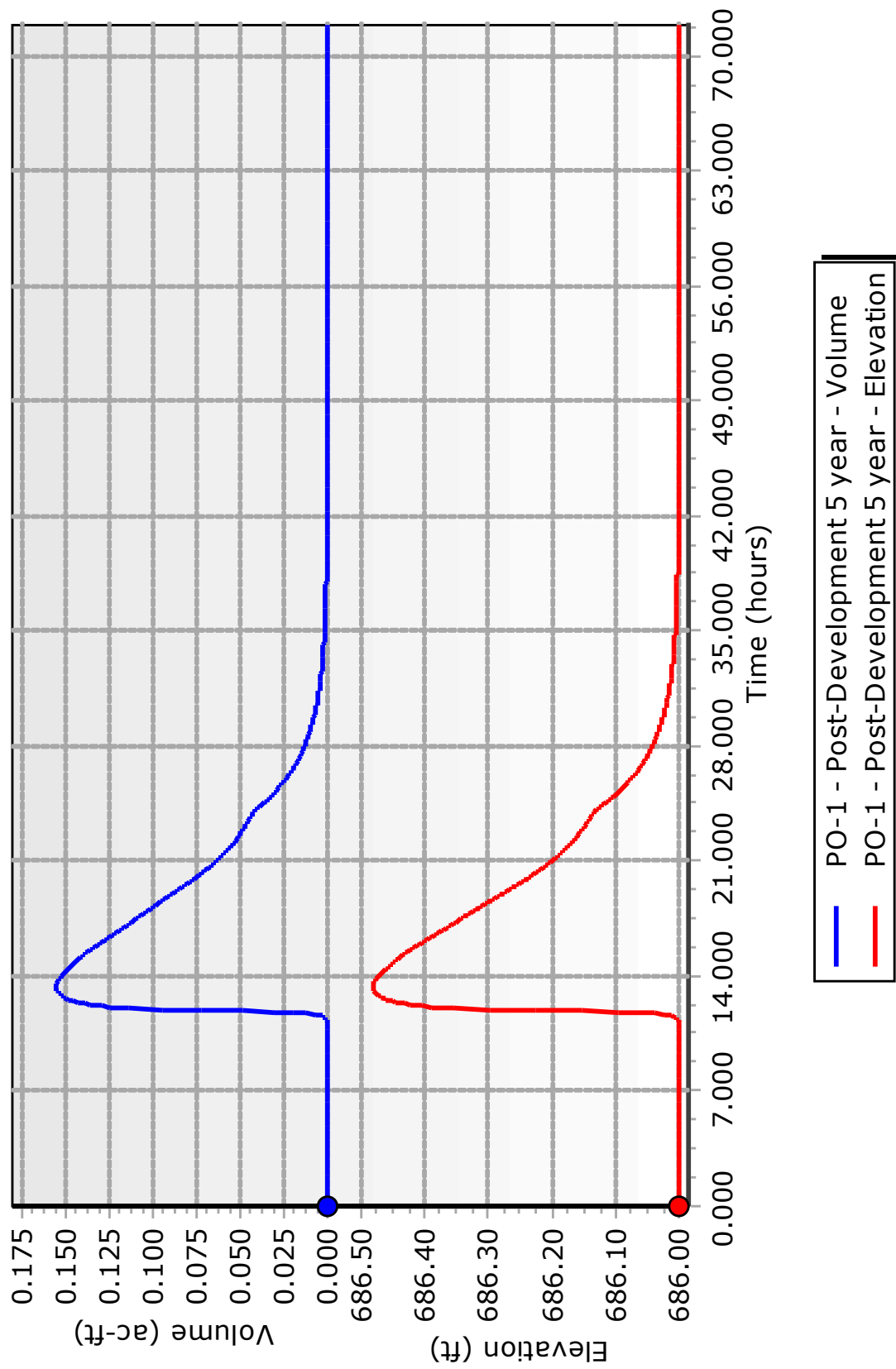
New Graph



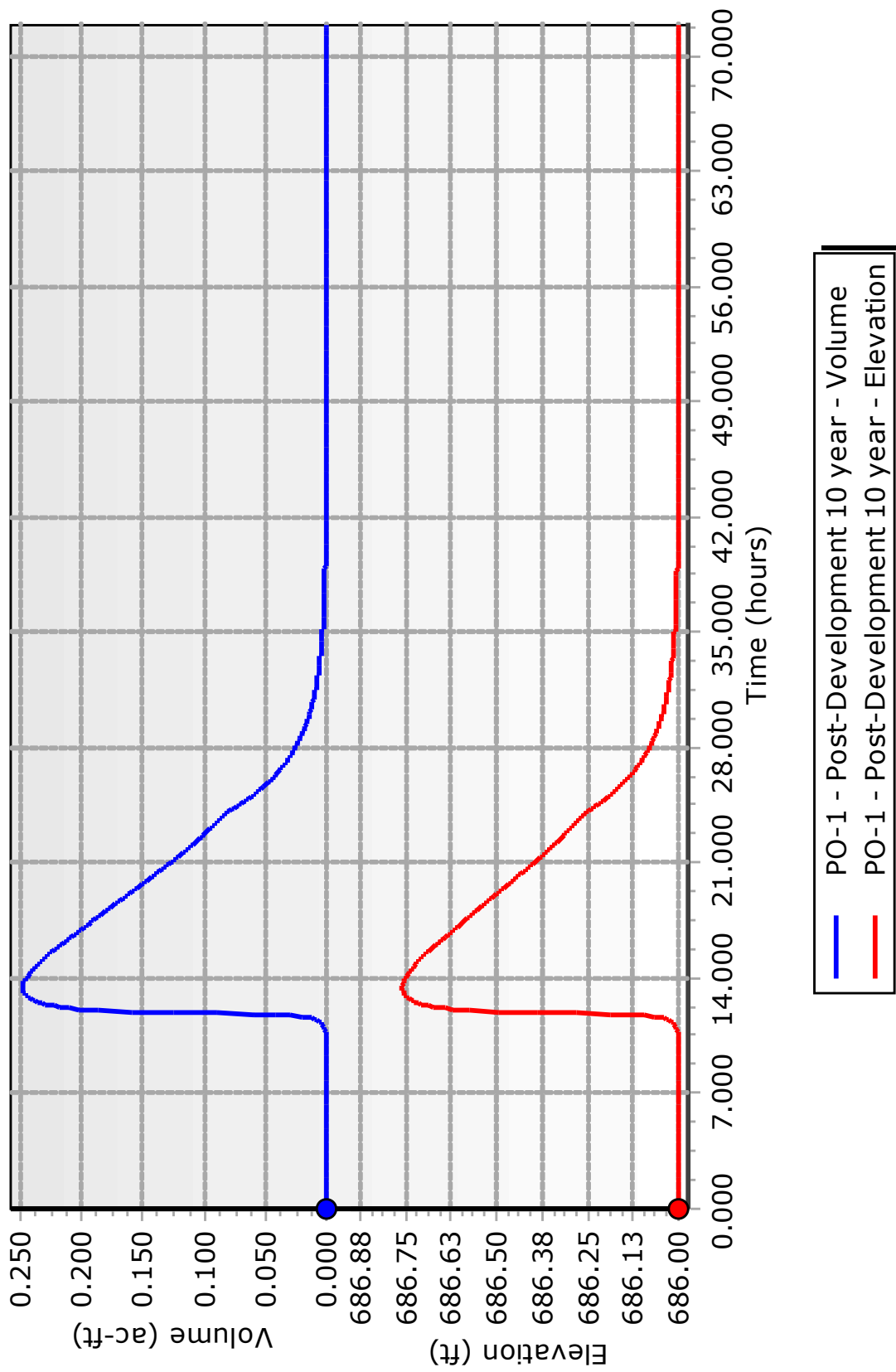
New Graph



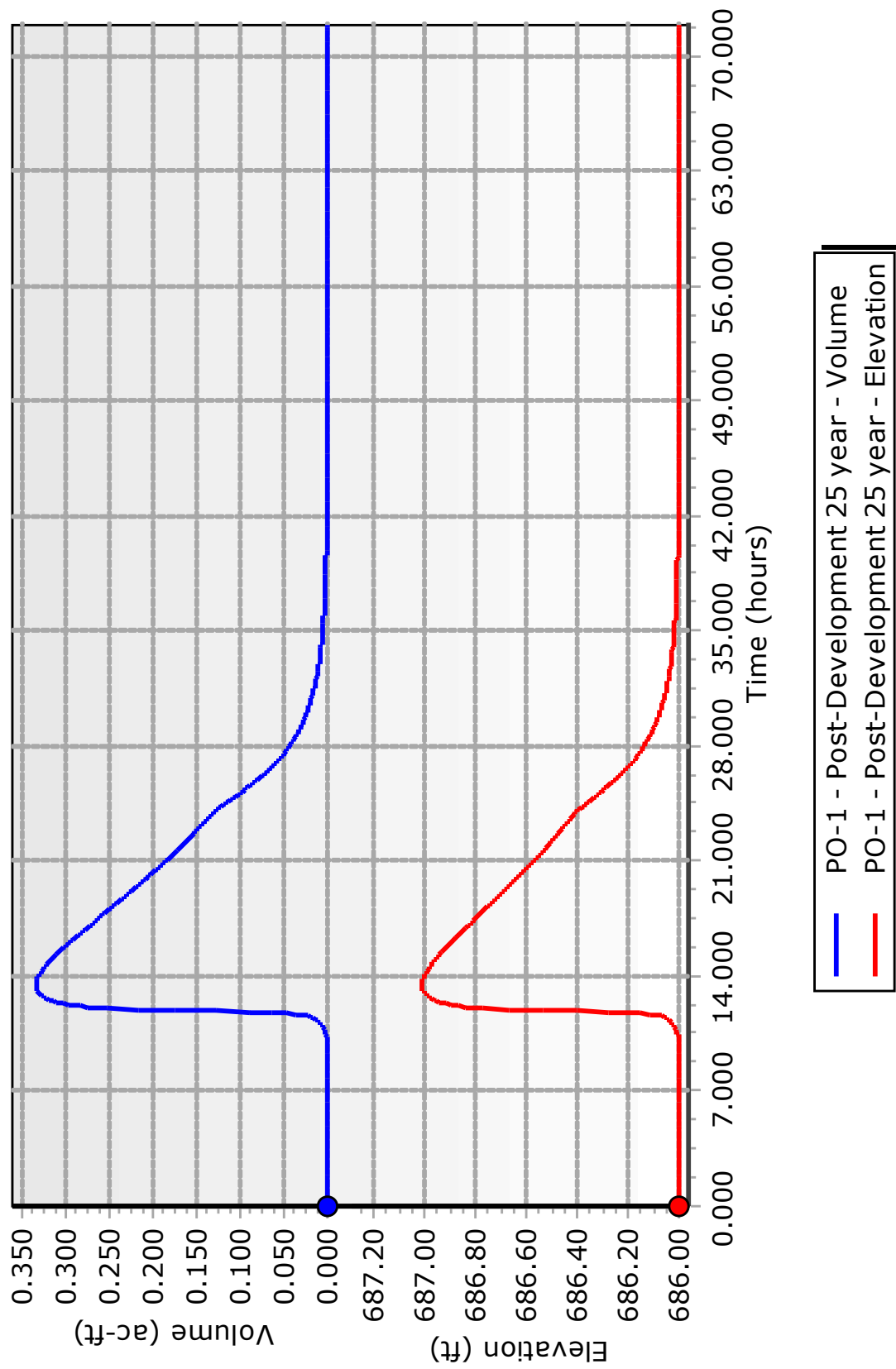
New Graph



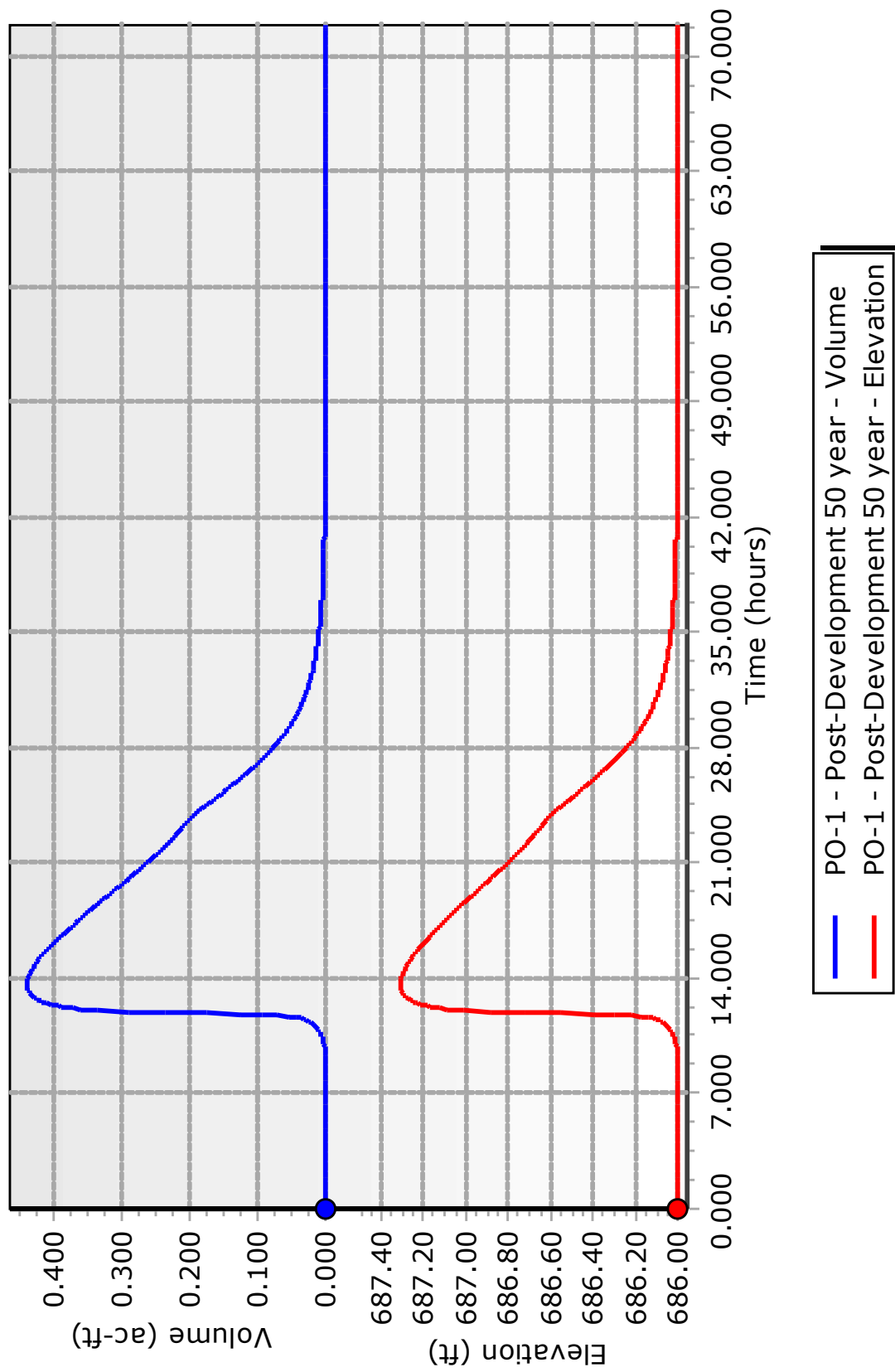
New Graph



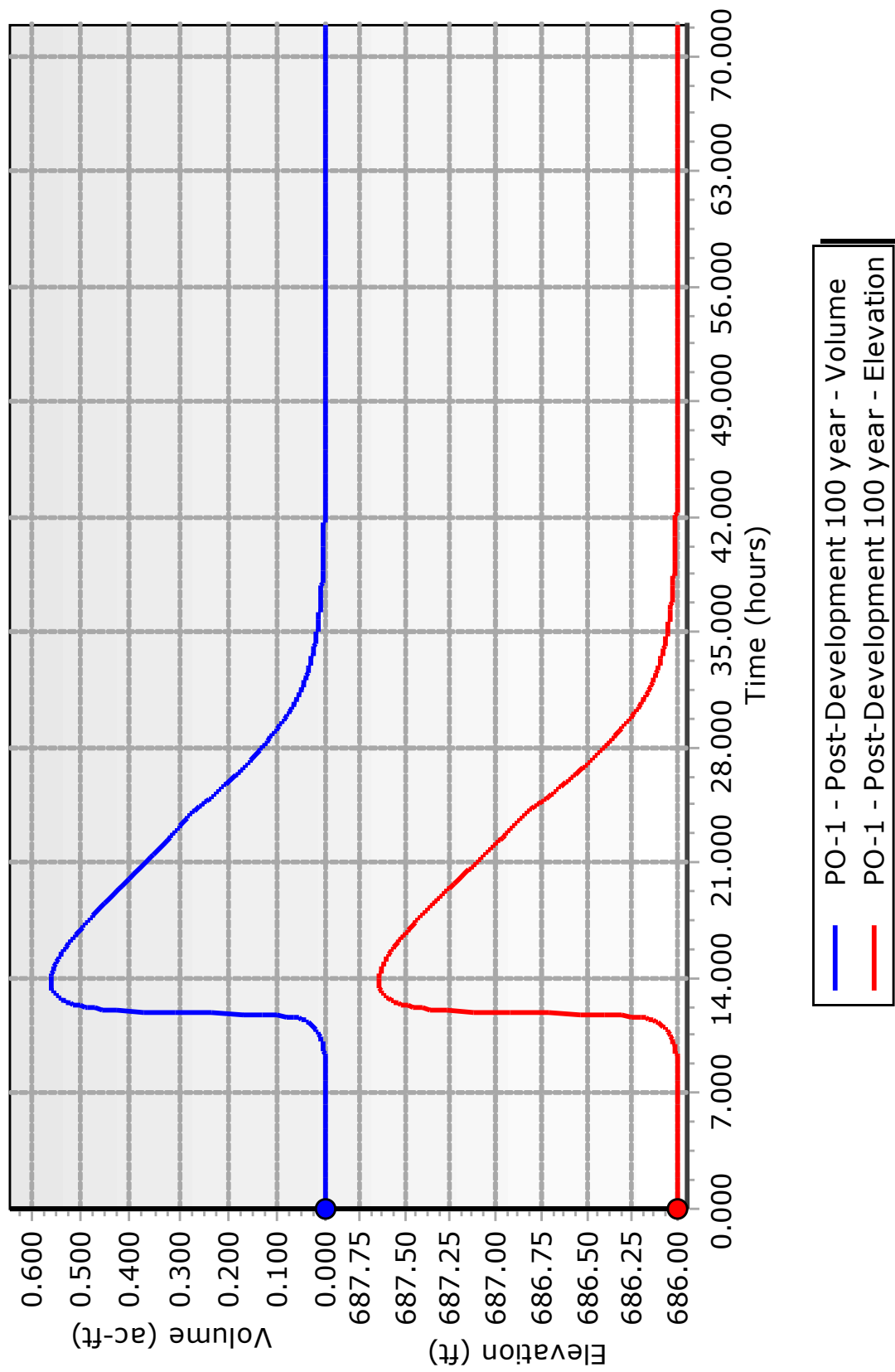
New Graph



New Graph



New Graph



APPENDIX E

WORKSHEETS #4 AND #5

Appendix D. Worksheets

Worksheet 1. General Site Information

INSTRUCTIONS: Fill out Worksheet 1 for each watershed

Date: 10/10/2016

Project Name: SUNOCO LOGISTICS - BECKERSVILLE STATION

Municipality: BRECKNOCK TOWNSHIP

County: BERKS COUNTY

Total Area (acres): 5.985

Major River Basin: CONESTOGA RIVER

Watershed: MUDDY CREEK

Sub-Basin: UNT MUDDY CREEK

Nearest Surface Water(s) to Receive Runoff: UNT MUDDY CREEK

Chapter 93 – Designated Water Use/Existing Water Use: HQ-TSF

Impaired according to Category 4 or 5 of the Integrated Water Quality Monitoring and Assessment Report? Yes ☒ No ☐

List Causes of Impairment: URBAN RUNOFF/STORM SEWERS

Is there an established TMDL that applies: Yes ☐ No ☒

Total Maximum Daily Loads (TMDLS)

Is project subject to, or part of:

Municipal Separate Storm Sewer System (MS4) Requirements? Yes ☐ No ☒

Existing or planned drinking water supply? Yes ☐ No ☒

If yes, distance from proposed discharge (miles):

Approved Act 167 Plan? Yes ☒ No ☐

Existing River Conservation Plan? Yes ☒ No ☐

Worksheet 2. Sensitive Natural Resources from PA Stormwater Best Management Practices Chapter 5

INSTRUCTIONS

1. Provide Sensitive Resources Map according to non-structural BMP 5.4.1 in Chapter 5. This map should identify wetlands, woodlands, natural drainage ways, steep slopes, and other sensitive natural areas.

2. Summarize the existing extent of each sensitive resource in the Existing Sensitive Resources Table (below, using Acres). If none present, insert 0.

3. Summarize Total Protected Area as defined under BMPs in Chapter 5.

4. Do not count any area twice. For example, an area that is both a floodplain and a wetland may only be considered once.

EXISTING NATURAL SENSITIVE RESOURCE	MAPPED? Yes/no/n/a	TOTAL AREA (Ac.)	PROTECTED AREA (Ac.)
Waterbodies			
Floodplains			
Riparian Areas			
Wetlands			
Woodlands			
Natural Drainage Ways			
Steep Slopes, 15% - 25%			
Steep Slopes, over 25%			
Other:			
Other:			
TOTAL EXISTING:			

Worksheet 3. Nonstructural BMP Credits from PA Stormwater Best Management Practices Manual (SW BMP Manual)

PROTECTED AREA

1.1 Area of Protected Sensitive/Special Value Features (see WS 2) 0.000 Ac.

1.2 Area of Riparian Forest Buffer Protection (see WS 2) 0.000 Ac.

3.1 Area of Minimum Disturbance/Reduced Grading (See Chapter 8, page 21 – SW BMP Manual) 0.000 Ac

TOTAL 0.000 Ac

Site Area	Minus	Protected Area	=	Stormwater Management Area
<u>5.985</u>	-	<u>0.000</u>	=	<u>5.985</u>
This is the area that requires stormwater management 				

VOLUME CREDITS

3.1 Minimum Soil Compaction (See Chapter 8, page 22 – SW BMP Manual)

Lawn ft² x 1/4" x 1/12 = ft³

Meadow ft² x 1/3" x 1/12 = ft³

3.3 Protect Existing Trees (See Chapter 8, page 23 – SW BMP Manual)

For Trees within 100 feet of impervious area:

Tree Canopy ft² x 1/2" x 1/12 = ft³

5.1 Disconnect Roof Leaders to Vegetated Areas (See Chapter 8 page 25 – SW BMP Manual)

For runoff directed to areas protected under 5.8.1 and 5.8.2

Roof Area ft² x 1/3" x 1/12 = ft³

For all other disconnected roof areas

Roof Area ft² x 1/4" x 1/12 = ft³

5.2 Disconnect Non-Roof impervious to Vegetated Areas (See Chapter 8, page 26 – SW BMP Manual)

For Runoff directed to areas protected under 5.8.1 and 5.8.2

Impervious Area ft² x 1/3" x 1/12 = ft³

For all other disconnected roof areas

Impervious Area ft² x 1/4" x 1/12 = ft³

TOTAL NON-STRUCTURAL VOLUME CREDIT* ft

**For use on Worksheet 5*

Worksheet 4. Change in Runoff Volume for 2-YR Storm Event

PROJECT: SUNOCO LOGISTICS - BECKERSVILLE STATION
Drainage Area: MUDDY CREEK
2-Year Rainfall: 3.21 in

Total Site Area: 5.985 acres
Protected Site Area: 0.000 acres
Managed Area: 5.985 acres

Existing Conditions:

Cover Type/Condition	Soil Type	Area (sf)	Area (ac)	CN	S	la (0.2*S)	Q Runoff ¹ (in)	Runoff Volume ² (ft ³)
Woodland	B	0	0	70	4.286	0.8571	0	0
Meadow	B	239,626	5.501	58	7.241	1.4483	0.3447	6,884
Impervious	B	21,099	0.484	98	0.2041	0.0408	2.977	5,235
TOTAL:		260,725	5.985					12,119

Developed Conditions

Cover Type/Condition	Soil Type	Area (sf)	Area (ac)	CN	S	la (0.2*S)	Q Runoff ¹ (in)	Runoff Volume ² (ft ³)
NEW IMPERVIOUS	B	18,045	0.414	98	0.2041	0.0408	2.977	6,544
GRASS	B	216,306	4.966	61	6.3934	1.2787	0.448	8,076
EX. IMPERVIOUS	B	26,374	0.605	98	0.2041	0.0408	2.977	6,544
TOTAL:		260,725	5.985					19,098

2-Year Volume Increase (ft³): 6,979

2-Year Volume Increase = Developed Conditions Runoff Volume – Existing Conditions Runoff Volume

- Runoff (in) = $Q = (P - 0.2S)^2 / (P + 0.8S)$ where
 P = 2-Year Rainfall (in)
 $S = (1000 / CN) - 10$
- Runoff Volume (CF) = $Q \times \text{Area} \times 1/12$
 Q = Runoff (in)
 Area = Land use area (sq. ft)

**Note: Runoff Volume must be calculated for EACH land use type/condition and HSGI.
The use of a weighted CN value for volume calculations is not acceptable.**

Worksheet 5. Structural BMP Volume Credits

PROJECT: SUNOCO LOGISTICS - BECKERSVILLE STATION
SUB-BASIN: MUDDY CREEK

Required Control Volume (ft³) – from Worksheet 4: 6,979
Non-structural Volume Credit (ft³) – from Worksheet 3: - 0
(maximum is 25% of required volume)
Structural Volume Reqmt (ft³) 6,979
(Required Control Volume minus Non-structural Credit)

Proposed BMPs from PA Stormwater Best Management Practices Manual Chapter 6		Area (ft ²)	Volume Reduction Permanently Removed (ft ³)
6.4.1	Porous Pavement		
6.4.2	Infiltration Basin	13,718	8,930
6.4.3	Infiltration Bed		
6.4.4	Infiltration Trench		
6.4.5	Rain Garden/Bioretenention		
6.4.6	Dry Well / Seepage Pit		
6.4.7	Constructed Filter		
6.4.8	Vegetated Swale		
6.4.9	Vegetated Filter Strip		
6.4.10	Berm		
6.5.1	Vegetated Roof		
6.5.2	Capture and Re-use		
6.6.1	Constructed Wetlands		
6.6.2	Wet Pond / Retention Basin		
6.7.1	Riparian Buffer/Riparian Forest Buffer Restoration		
6.7.2	Landscape Restoration / Reforestation		
6.7.3	Soil Amendment		
6.8.1	Level Spreader		
6.8.2	Special Storage Areas		
Other			

Total Structural Volume (ft³): 8,930
Structural Volume Requirement (ft³): 6,979
DIFFERENCE <1,951>

Worksheet 10 – Water Quality Compliance for Nitrate

Does the site design incorporate the following BMPs to address nitrate pollution? A summary “yes” rating is achieved if at least 2 Primary BMPs for nitrate are provided across the site or 4 secondary BMPs for nitrate are provided across the site (or the equivalent) “provided across the site” is taken to mean the specifications for that BMP set forward in Sections 5 and 6 are satisfied.

Proposed BMPs from PA Stormwater Best Management Practices Manual Chapter 5 & 6

	Yes	No
Primary BMPs for Nitrate:	☐	☐
NS BMP 5.4.2 – Protect/Conserve/Enhance Riparian Buffers	☐	☐
NS BMP 5.5.4 – Cluster Uses at Each Site	☐	☐
NS BMP 5.6.1 – Minimize Total Disturbed Area	☒	☐
NS BMP 5.6.3 – Re-Vegetate/Re-Forest Disturbed Areas (Native Species)	☐	☐
NS BMP 5.9.1 – Street Sweeping/Vacuuming	☐	☐
Structural BMP 6.7.1 – Riparian Buffer Restoration	☐	☐
Structural BMP 6.7.2 – Landscape Restoration	☐	☐
	☐	☐
Secondary BMPs for Nitrate:	☐	☐
NS BMP 5.4.1 – Protect Sensitive/Special Value Features	☐	☐
NS BMP 5.4.3 – Protect/Utilize Natural Drainage Features	☒	☐
NS BMP 5.6.2 – Minimize Soil Compaction	☐	☐
Structural BMP 6.4.5 – Rain Garden/Bioretenion	☐	☐
Structural BMP 6.4.8 – Vegetated Swale	☒	☐
Structural BMP 6.4.9 – Vegetated Filter Strip	☐	☐
Structural BMP 6.6.1 – Constructed Wetland	☐	☐
Structural BMP 6.7.1 – Riparian Buffer Restoration	☐	☐
Structural BMP 6.7.2 – Landscape Restoration	☐	☐
Structural BMP 6.7.3 – Soils Amendment/Restoration	☐	☐

Project:

10/10/2016

Beckersville Pump Station - Total Disturbed Area

EXISTING CONDITIONS

2-year Rainfall 3.21

Cover Type	Soil Type	Area (sf)	Area (ac)	CN	S	la (0.2*S)	0.8*S	Q Runoff (in)	Runoff Volume (cf)
20% IMPERVIOUS	B	5275	0.121	58	7.241	1.4483	5.793	0.3447	152
MEADOW	B	234351	5.380	58	7.241	1.4483	5.793	0.3447	6732
80% IMPERVIOUS	B	21099	0.484	98	0.2041	0.0408	0.163	2.977	5235
Total		260725	5.985	61.24					12119
									0.278

PROPOSED CONDITIONS

2-year Rainfall 3.21

Cover Type	Soil Type	Area (sf)	Area (ac)	CN	S	la (0.2*S)	0.8*S	Q Runoff (in)	Runoff Volume (cf)
EX. IMPERVIOUS	B	26374	0.605	98	0.2041	0.0408	0.163	2.977	6544
IMPERVIOUS	B	18045	0.414	98	0.2041	0.0408	0.163	2.977	4477
GRASS	B	216306	4.966	61	6.3934	1.2787	5.115	0.448	8076
WOODLANDS	B	0	0.000	65	5.385	1.0769	4.308	0.6052	0
Total		260725	5.985	67.30					19098
									0.438

2yr Volume Increase (cf/ac)

6979

0.160208893

Project:

10/10/2016

Beckersville Pump Station - Infiltration Basin

PROPOSED CONDITIONS

2-year Rainfall

3.26

Cover Type	Soil Type	Area (sf)	Area (ac)	CN	S	la (0.2*S)	0.8*S	Q Runoff (in)	Runoff Volume (cf)
STONE SURFACE	B	0	0.000	85	1.7647	0.3529	1.412	1.809	0
IMPERVIOUS	B	30753	0.706	98	0.2041	0.041	0.163	3.027	7758
GRASS	B	95971	2.203	61	6.3934	1.279	5.115	0.469	3749
WOODLANDS	B	17793	0.408	65	5.385	1.0769	4.308	0.630	934
Total		144517	3.318	69.37					12441
									0.286

PROJECT: Sunoco - Beckersville Station
SUB-BASIN: Muddy Run

Required Control Volume (ft3) - from Worksheet 4: 6,979

Non-structural Volume Credit (ft3) - from Worksheet 3: N/A

Structural Volume Reqmt (ft3) 6,979
(Required Control Volume minus Non-structural Credit)

Proposed BMP	Area (ft2)	Storage Volume (ft3)
6.4.1 Porous Pavement		
6.4.2 Infiltration Basin	13,718	8,930
6.4.3 Infiltration Bed		
6.4.4 Infiltration Trench		
6.4.5 Rain Garden/Bioretenction		
6.4.6 Dry Well/Seepage Pit		
6.4.7 Constructed Filter		
6.4.8 Vegetated Swale		
6.4.9 Vegetated Filter Strip		
6.4.10 Berm		
6.5.1 Vegetated Roof		
6.5.2 Capture and Re-Use		
6.6.1 Constructed Wetlands		
6.6.2 Wet Pond/Retention Basin		
6.6.3 Dry Extended Detention Basin		
6.6.4 Water Quality Filters		
6.7.1 Riparian Buffer Restoration		
6.7.2 Landscape Restoration/Reforestation		
6.7.3 Soil Amendment		
6.8.1 Level Spreader		
6.8.2 Special Storage Areas		
Other:		
Total Structural Volume Provided (ft3):		8,930
Structural Volume Requirement (ft3):		6,979
DIFFERENCE:		-1,951

TETRA TECH

PROFESSIONAL ENGINEERS

CLIENT: SUNOCO

JOB NO.: _____

SHEET _____ OF _____

DESCRIPTION: Beddersville

CHK BY: _____

DATE: _____

Volume CalculationsBMP Manual Guidance:

$$\text{Volume} = \text{Depth} \cdot \text{Area} = 0.25 \cdot \left[\frac{13,718 + 14,059}{2} \right] = 3,472 \text{ cf}$$

$$\begin{aligned} \text{Infiltration Volume} &= \text{Area} \cdot \text{Infiltration Rate}^1 \cdot \text{Infiltration Period}^2 \cdot \left(\frac{1}{2} \right) \\ &= 13,718 \cdot 0.875 \cdot 38.5 \cdot \left(\frac{1}{2} \right) \\ &= 38,510 \text{ cf} \end{aligned}$$

$$* \text{ Total Volume} = 38,510 + 3,472 = \underline{41,982 \text{ cf}}$$

Stormwater Program Guidance: [Pond Pack]

According to stormwater analysis, only 8,973 cf reach basin in 2-year storm. Of this volume all is stored and infiltrated in 38.5 hours. This shows zero runoff leaves basin in the 2-year storm. Thusly, 8,930 cf is the volume reduction.

* Of the two methods the more restrictive volume was used. *

8,930 cf Removal

Notes:

1 - Infiltration rate is average of Tests "C" & "D". A factor of safety of 2 was used.

2 - According to Pond Pack Calculations all water leaves basin in 38.5 hours. This is the time of concentration.

POST-DEVELOPED CONDITIONS

Subsection: Master Network Summary

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)
O-1	Post-Development 100 year	100	0.455	11.950	1.39

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
PO-1 (IN)	Post-Development 1 year	1	0.129	12.000	2.06	(N/A)	(N/A)
PO-1 (OUT)	Post-Development 1 year	1	0.000	0.000	0.00	686.15	0.047
PO-1 (IN)	Post-Development 2 year	2	0.205	11.950	3.45	(N/A)	(N/A)
PO-1 (OUT)	Post-Development 2 year	2	0.000	13.050	0.00	686.25	0.081
PO-1 (IN)	Post-Development 5 year	5	0.340	11.950	6.02	(N/A)	(N/A)
PO-1 (OUT)	Post-Development 5 year	5	0.037	13.350	0.09	686.48	0.155
PO-1 (IN)	Post-Development 10 year	10	0.502	11.950	9.04	(N/A)	(N/A)
PO-1 (OUT)	Post-Development 10 year	10	0.122	13.450	0.22	686.76	0.248
PO-1 (IN)	Post-Development 25 year	25	0.647	11.950	11.71	(N/A)	(N/A)
PO-1 (OUT)	Post-Development 25 year	25	0.210	13.450	0.32	687.01	0.335
PO-1 (IN)	Post-Development 50 year	50	0.815	11.950	14.75	(N/A)	(N/A)
PO-1 (OUT)	Post-Development 50 year	50	0.304	13.650	0.39	687.31	0.440

Difference
in vs out
is volume
Removed:
8,930

Stormwater BMP Information Chart 5.B revised March 15, 2016

All information to be based on the 2-year/24-hour storm

Provide page numbers from the stormwater narrative identifying the location of the above information.

- ¹ Can include active infiltration time - dewatering time should not exceed 72 hours after the 2-year/24-hour storm
- ² Depth to limiting zone is recommended to be at least 2 ft below infiltration testing elevation/proposed infiltration elevation.
- ³ A maximum of 2 feet of Hydraulic head is recommended.
- ⁴ Provide supporting field notes/documentation from soil evaluation.
- ⁵ This value should be greater than or equal to the Volume to be Infiltrated or Managed by the BMP.
- ⁶ A maximum of 8:1 is recommended.
- ⁷ A maximum of 5:1 is recommended; however, in carbonate geology areas, a maximum of 3:1 is recommended.
- ⁸ Calculated runoff volume that is managed in ways other than infiltration to address 25 PA Code Ch 102.8(g)(2)
- ⁹ The infiltration testing information should be located on the plan view of the PCSM Plan and should include infiltration test elevation and rate.

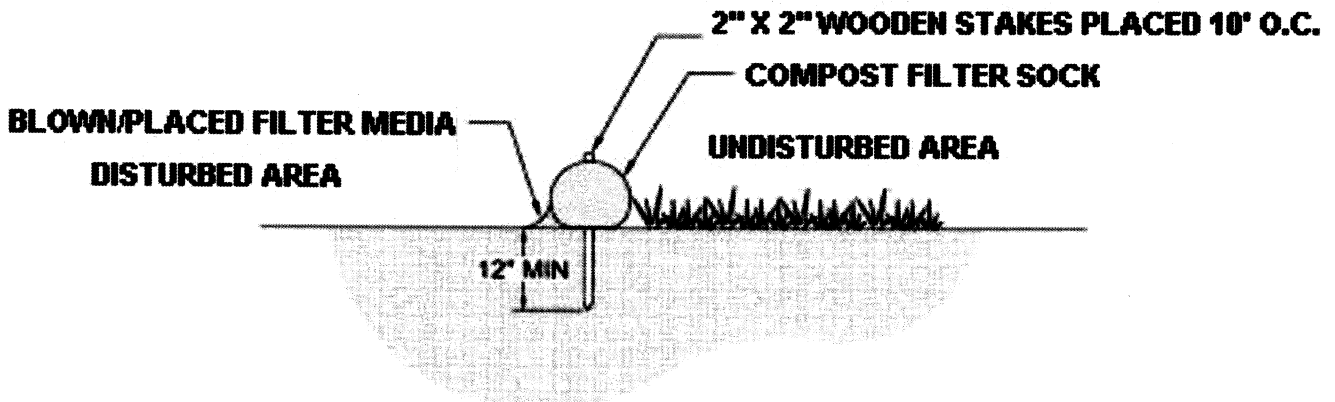
Any deviations from the recommendations above should be adequately justified by a qualified professional and included with the application.

NOTE: This chart is for summary purposes only and should be consistent with all design calculations and worksheets.

STANDARD E&S WORKSHEET #1

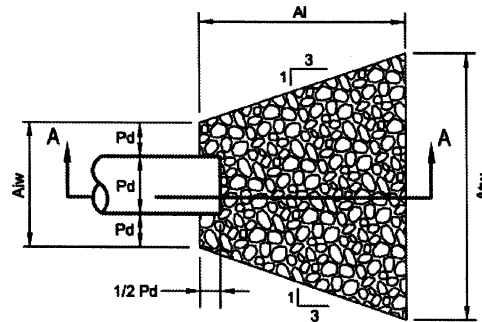
Compost Filter Socks

PROJECT NAME: Beddersville Pump Station
LOCATION: Beddersville Township, Berks County
PREPARED BY: GZ DATE: 10/17/16
CHECKED BY: _____ DATE: _____

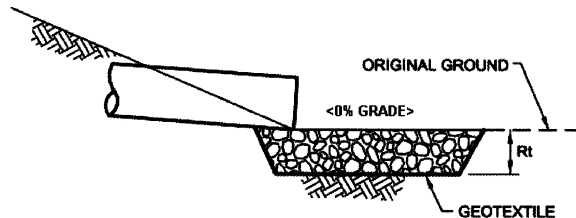
[illegible]

STANDARD E&S WORKSHEET # 20 **Riprap Apron Outlet Protection**

PROJECT NAME: Beckersville Pump Station
 LOCATION: Brecknock Township, Berks County
 PREPARED BY: GZ DATE: 10/10/16
 CHECKED BY: _____ DATE: _____



PLAN VIEW



SECTION A - A

NO.	PIPE DIA. Do (in.)	TAIL WATER COND. (Max or Min)	MAN. "n" FOR PIPE	PIPE SLOPE (FT/FT)	Q (CFS)	V* (FPS)	RIPRAP SIZE	Rt (in)	Al (ft)	Aiw (ft)	Atw (ft)
1	15	Min	0.012	0.016	8.85	7.21	R-4	18	11	4	15
2	15	Min	0.012	0.0227	10.54	8.59	R-4	18	11	4	15
Ex. RPA	15	Min	0.012	0.0375	3.15	9.00	R-4	18	8	4	12

*:The anticipated velocity (V) should not exceed the maximum permissible shown in Table 6.6 for the proposed riprap protection. Adjust for less than full pipe flow. Use Manning's equation to calculate velocity for pipe slopes ≥ 0.05 ft/ft.

RRA 2

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data

Roughness Coefficient	0.012	
Channel Slope	0.02270	ft/ft
Normal Depth	1.25	ft
Diameter	1.25	ft
Discharge	10.54	ft ³ /s

Results

Discharge	10.54	ft ³ /s
Normal Depth	1.25	ft
Flow Area	1.23	ft ²
Wetted Perimeter	3.93	ft
Hydraulic Radius	0.31	ft
Top Width	0.00	ft
Critical Depth	1.20	ft
Percent Full	100.0	%
Critical Slope	0.01972	ft/ft
Velocity	8.59	ft/s
Velocity Head	1.15	ft
Specific Energy	2.40	ft
Froude Number	0.00	
Maximum Discharge	11.34	ft ³ /s
Discharge Full	10.54	ft ³ /s
Slope Full	0.02270	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%

RRA 2

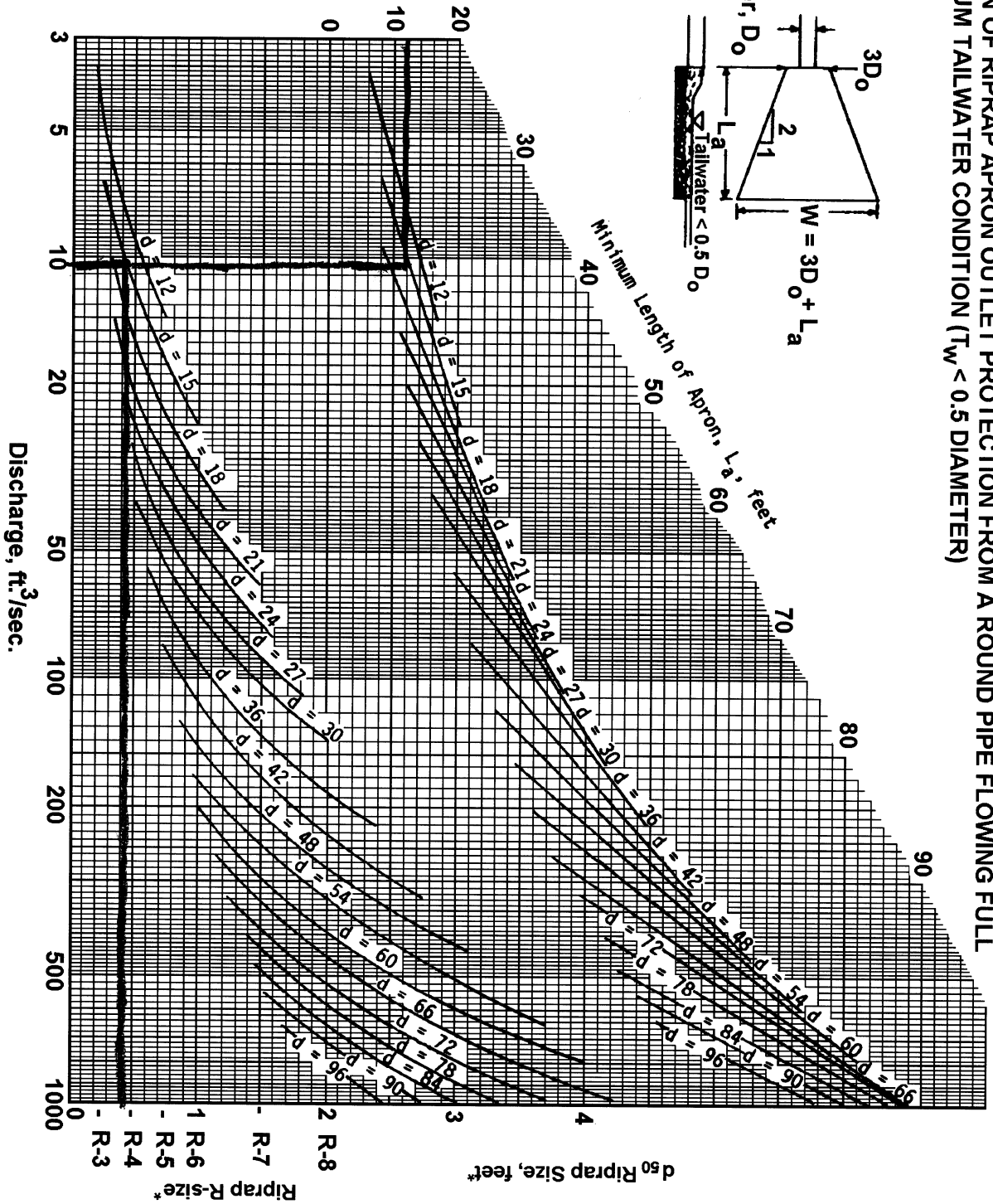
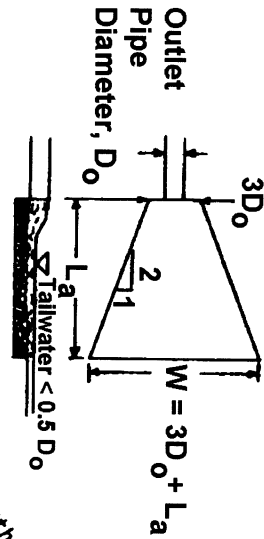
GVF Output Data

Normal Depth Over Rise	100.00	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.25	ft
Critical Depth	1.20	ft
Channel Slope	0.02270	ft/ft
Critical Slope	0.01972	ft/ft

RPA 2

DESIGN OF RIPRAP APRON OUTLET PROTECTION FROM A ROUND PIPE FLOWING FULL MINIMUM TAILWATER CONDITION ($T_w < 0.5$ DIAMETER)

Adapted from USDA - NRCS



Not to be used for Box Culverts

* For discharge velocities exceeding Maximum Allowable for Riprap indicated, increase d_{50} stone size and/or provide velocity reduction device.

Full Capacity Discharge = 10,541 ft^3/s
Full Capacity Velocity = 8.59 ft/s

RRA 1

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data

Roughness Coefficient	0.012	
Channel Slope	0.01600	ft/ft
Normal Depth	1.25	ft
Diameter	1.25	ft
Discharge	8.85	ft ³ /s

Results

Discharge	8.85	ft ³ /s
Normal Depth	1.25	ft
Flow Area	1.23	ft ²
Wetted Perimeter	3.93	ft
Hydraulic Radius	0.31	ft
Top Width	0.00	ft
Critical Depth	1.15	ft
Percent Full	100.0	%
Critical Slope	0.01389	ft/ft
Velocity	7.21	ft/s
Velocity Head	0.81	ft
Specific Energy	2.06	ft
Froude Number	0.00	
Maximum Discharge	9.52	ft ³ /s
Discharge Full	8.85	ft ³ /s
Slope Full	0.01600	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%

RRA 1

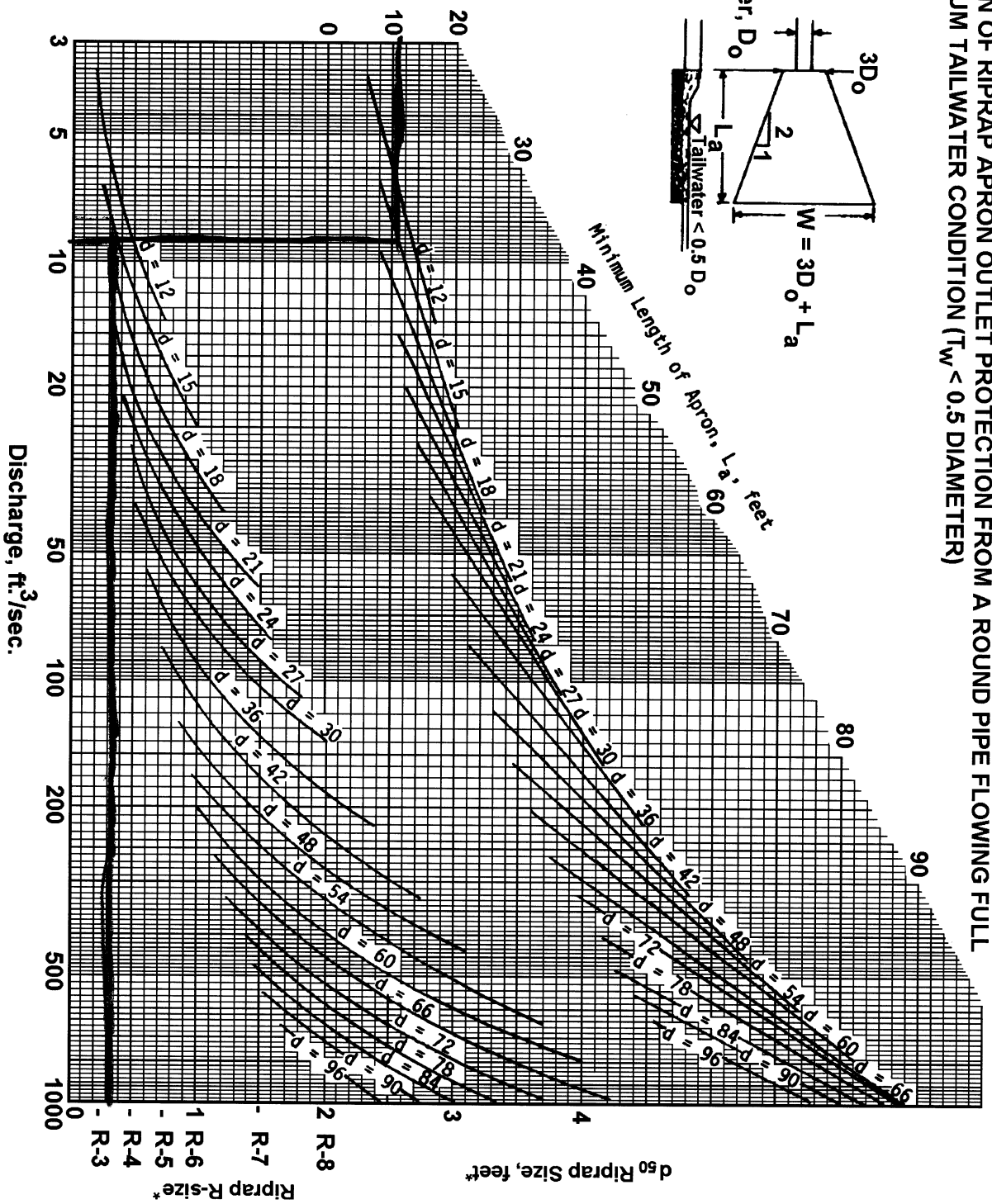
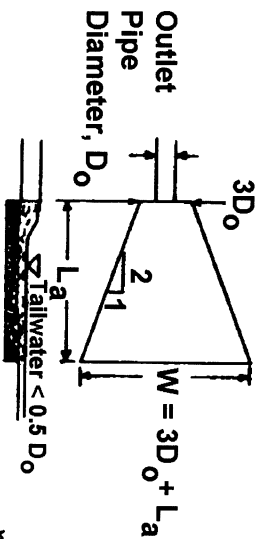
GVF Output Data

Normal Depth Over Rise	100.00	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.25	ft
Critical Depth	1.15	ft
Channel Slope	0.01600	ft/ft
Critical Slope	0.01389	ft/ft

RRA #1

DESIGN OF RIPRAP APRON OUTLET PROTECTION FROM A ROUND PIPE FLOWING FULL MINIMUM TAILWATER CONDITION ($T_w < 0.5$ DIAMETER)

Adapted from USDA - NRCS



NOTE: Do not extrapolate

Not to be used for Box Culverts

FIGURE 9.3
Riprap Apron Design, Minimum Tailwater Condition

* For discharge velocities exceeding Maximum Allowable for Riprap indicated, increase d_{50} stone size and/or provide velocity reduction device.

Full Capacity Discharge = 8.85 ft³/s
Full Capacity Velocity = 7.21 ft/s

Ex. RRA 1

Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Roughness Coefficient	0.012	
Channel Slope	0.03750	ft/ft
Diameter	1.25	ft
Discharge	3.15	ft ³ /s

Results

Normal Depth	0.41	ft
Flow Area	0.35	ft ²
Wetted Perimeter	1.52	ft
Hydraulic Radius	0.23	ft
Top Width	1.17	ft
Critical Depth	0.71	ft
Percent Full	32.8	%
Critical Slope	0.00521	ft/ft
Velocity	9.00	ft/s
Velocity Head	1.26	ft
Specific Energy	1.67	ft
Froude Number	2.90	
Maximum Discharge	14.58	ft ³ /s
Discharge Full	13.55	ft ³ /s
Slope Full	0.00203	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

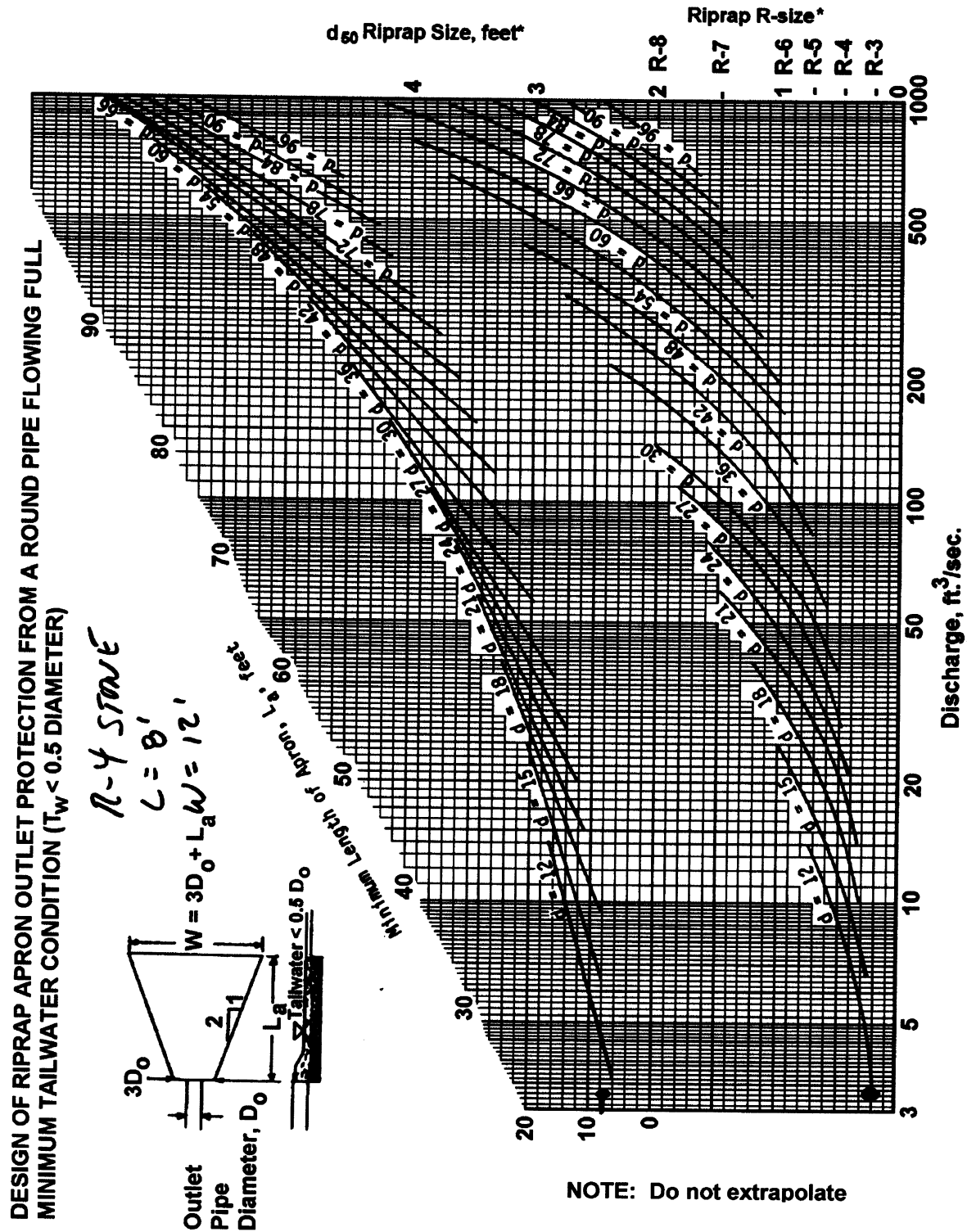
Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	32.79	%
Downstream Velocity	Infinity	ft/s

Ex. RRA 1

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.41	ft
Critical Depth	0.71	ft
Channel Slope	0.03750	ft/ft
Critical Slope	0.00521	ft/ft

FIGURE 9.3
Riprap Apron Design, Minimum Tailwater Condition



* For discharge velocities exceeding Maximum Allowable for Riprap indicated, increase d_{50} stone size and/or provide velocity reduction device.

Adapted from USDA - NRCS

Not to be used for Box Culverts

Emergency Spillway

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.061	
Channel Slope	0.08000	ft/ft
Left Side Slope	2.00	ft/ft (H:V)
Right Side Slope	2.00	ft/ft (H:V)
Bottom Width	6.00	ft
Discharge	18.13	ft ³ /s

Results

Normal Depth	0.59	ft
Flow Area	4.23	ft ²
Wetted Perimeter	8.64	ft
Hydraulic Radius	0.49	ft
Top Width	8.36	ft
Critical Depth	0.61	ft
Critical Slope	0.07038	ft/ft
Velocity	4.28	ft/s
Velocity Head	0.28	ft
Specific Energy	0.87	ft
Froude Number	1.06	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.59	ft
Critical Depth	0.61	ft
Channel Slope	0.08000	ft/ft

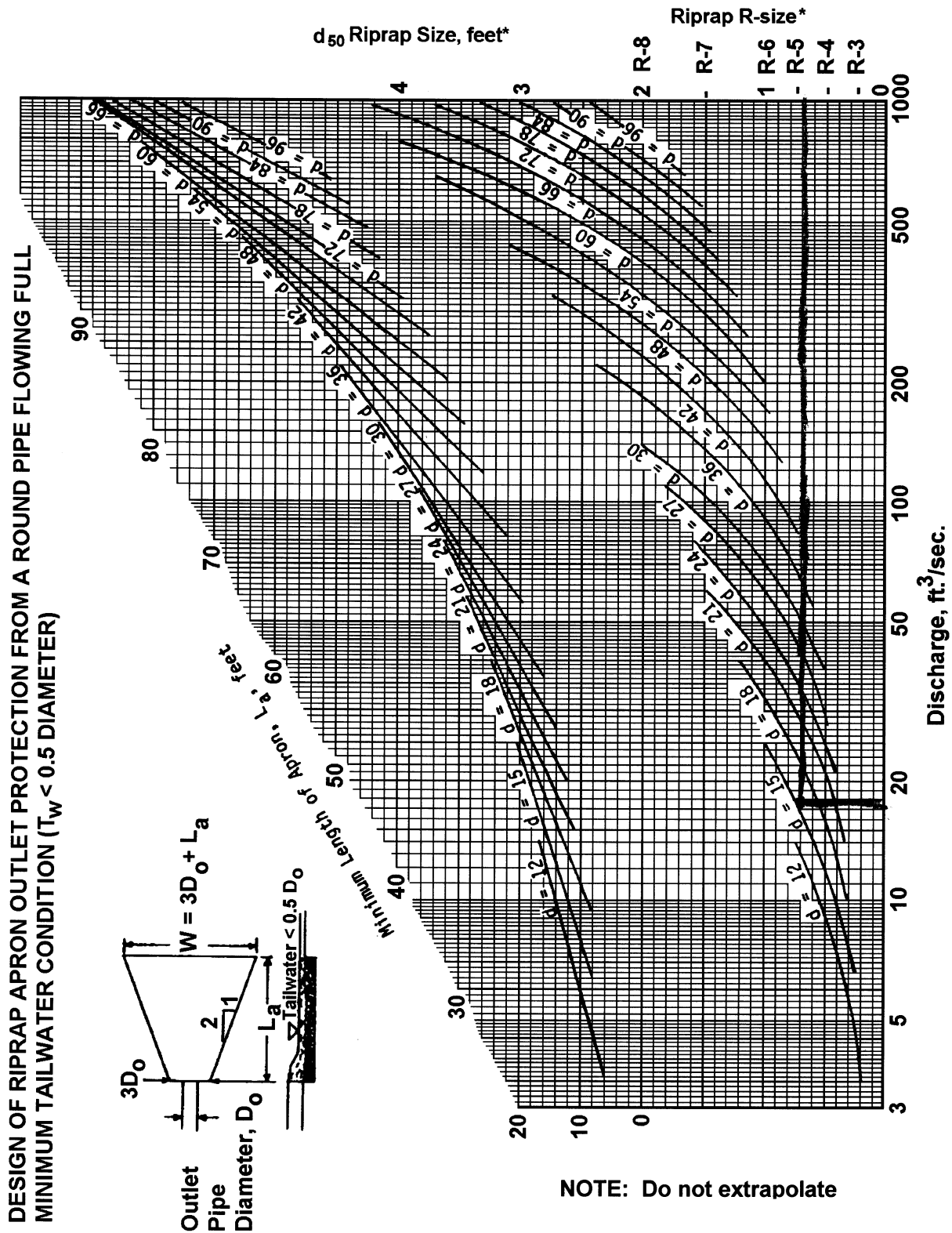
Emergency Spillway

GVF Output Data

Critical Slope

0.07038 ft/ft

FIGURE 9.3
Riprap Apron Design, Minimum Tailwater Condition



Adapted from USDA - NRCS

Not to be used for Box Culverts

* For discharge velocities exceeding Maximum Allowable for Riprap indicated, increase d_{50} stone size and/or provide velocity reduction device.

STANDARD E&S WORKSHEET #11

Channel Design Data

PROJECT NAME: Beckersville PPP Pump Station

LOCATION: Brecknock Township, Berks County

PREPARED BY:

DATE:

CHECKED BY:

DATE:

CHANNEL OR CHANNEL SECTION	#1 (MAX)	#1 (MIN)	#1 (MAX)	#1 (MIN)	Spillway
TEMPORARY OR PERMANENT? (T OR P)	P	P	P	P	P
DESIGN STORM (2, 5, OR 10 YR)	100	100	100	100	100
ACRES (AC)	0.52	0.52	0.52	0.52	3.317
MULTIPLIER (1.6, 2.25, OR 2.75) ¹	---	---	---	---	NA
Q _r (REQUIRED CAPACITY) (CFS)	1.99	1.99	1.99	1.99	18.13
Q (CALCULATED AT FLOW DEPTH d) (CFS)	1.99	1.99	1.99	1.99	18.13
PROTECTIVE LINING ²	C125	C125	Unlined	Unlined	SC250
n (MANNING'S COEFFICIENT) ²	0.022	0.022	0.109	0.142	0.061
V _a (ALLOWABLE VELOCITY) (FPS)	---	---	---	---	---
V (CALCULATED AT FLOW DEPTH d) (FPS)	6.49	2.56	2.21	0.68	4.28
τ _a (MAX ALLOWABLE SHEAR STRESS) (LB/FT ²)	2.25	2.25	4.20	4.20	8.00
τ _d (CALC'D SHEAR STRESS AT FLOW DEPTH d) (LB/FT ²)	1.35	0.19	3.36	0.51	2.95
CHANNEL BOTTOM WIDTH (FT)	2	2	2	2	6
CHANNEL SIDE SLOPES (H:1)	2	2	2	2	2
D (TOTAL DEPTH) (FT)	2	2	2	2	2
CHANNEL TOP WIDTH @ D (FT)	10	10	10	10	14
d (CALCULATED FLOW DEPTH) (FT)	0.14	0.3	0.34	0.81	0.59
CHANNEL TOP WIDTH @ FLOW DEPTH d (FT)	2.56	3.20	3.36	5.24	8.36
BOTTOM WIDTH: FLOW DEPTH RATIO (12:1 MAX)	14.3	6.7	5.9	2.5	10.2
d ₅₀ STONE SIZE (IN)	---	---	---	---	---
A (CROSS-SECTIONAL AREA) (SQ. FT.)	0.32	0.78	0.91	2.93	4.24
R (HYDRAULIC RADIUS)	0.12	0.23	0.26	0.52	0.49
S (BED SLOPE) ³ (FT/FT)	0.16	0.01	0.10	0.01	0.08
S _c (CRITICAL SLOPE) (FT/FT)	0.0037381	0.003827	0.095618	0.205191	0.042417
.7S _c (FT/FT)	0.0026167	0.002679	0.066932	0.143633	0.029692
1.3S _c (FT/FT)	0.0048595	0.004975	0.124303	0.266748	0.055142
STABLE FLOW? (Y/N)	Y	Y	Y	Y	Y
FREEBOARD BASED ON UNSTABLE FLOW (FT)	---	---	---	---	---
FREEBOARD BASED ON STABLE FLOW (FT)	1.86	1.7	1.66	1.19	1.41
MINIMUM REQUIRED FREEBOARD ⁴ (FT)	0.5	0.5	0.5	0.5	0.5
DESIGN METHOD FOR PROTECTIVE LINING ⁵	S	S	S	S	S
PERMISSIBLE VELOCITY (V) OR SHEAR STRESS (S)	S	S	S	S	S

1. Use 1.6 for Temporary Channels; 2.25 for Temporary Channels in Special Protection (HQ or EV) Watersheds; 2.75 for Permanent Channels. For Rational Method, enter "N/A" and attach E&S Worksheets 9 and 10. For TR-55 enter "N/A" and attach appropriate Worksheets.
2. Adjust "n" value for changes in channel liner and flow depth. For vegetated channels, provide data for manufactured linings without vegetation in separate columns.
3. Slopes may not be averaged.
4. Minimum Freeboard is 0.5 ft. or 1/4 Total Channel Depth, whichever is greater
5. Permissible velocity lining design method is not acceptable for channels with a bed slope of 10% or greater. Shear stress lining design method is required for channels with a bed slope of 10% or greater. Shear stress lining design method may be used for any channel bed slope.

STANDARD E&S WORKSHEET #11

Channel Design Data

PROJECT NAME: Beckersville PPP Pump Station

LOCATION: Brecknock Township, Berks County

PREPARED BY:

DATE:

CHECKED BY:

DATE:

CHANNEL OR CHANNEL SECTION	#2 (MAX)	#2 (MIN)	#2 (MAX)	#2 (MIN)	
TEMPORARY OR PERMANENT? (T OR P)	P	P	P	P	
DESIGN STORM (2, 5, OR 10 YR)	100	100	100	100	
ACRES (AC)	0.41	0.41	0.41	0.41	
MULTIPLIER (1.6, 2.25, OR 2.75) ¹	---	---	---	---	
Q _r (REQUIRED CAPACITY) (CFS)	1.22	1.22	1.22	1.22	
Q (CALCULATED AT FLOW DEPTH d) (CFS)	1.22	1.22	1.22	1.22	
PROTECTIVE LINING ²	C125	C125	Unlined	Unlined	
n (MANNING'S COEFFICIENT) ²	0.022	0.022	0.14	0.177	
V _a (ALLOWABLE VELOCITY) (FPS)	---	---	---	---	
V (CALCULATED AT FLOW DEPTH d) (FPS)	4.70	2.19	1.36	0.51	
τ _a (MAX ALLOWABLE SHEAR STRESS) (LB/FT ²)	2.25	2.25	4.20	4.20	
τ _d (CALC'D SHEAR STRESS AT FLOW DEPTH d) (LB/FT ²)	0.73	0.14	2.10	0.44	
CHANNEL BOTTOM WIDTH (FT)	2	2	2	2	
CHANNEL SIDE SLOPES (H:1)	2	2	2	2	
D (TOTAL DEPTH) (FT)	2	2	2	2	
CHANNEL TOP WIDTH @ D (FT)	10	10	10	10	
d (CALCULATED FLOW DEPTH) (FT)	0.12	0.23	0.34	0.71	
CHANNEL TOP WIDTH @ FLOW DEPTH d (FT)	2.48	2.92	3.36	4.84	
BOTTOM WIDTH: FLOW DEPTH RATIO (12:1 MAX)	16.7	8.7	5.9	2.8	
d ₅₀ STONE SIZE (IN)	---	---	---	---	
A (CROSS-SECTIONAL AREA) (SQ. FT.)	0.27	0.57	0.91	2.43	
R (HYDRAULIC RADIUS)	0.11	0.19	0.26	0.47	
S (BED SLOPE) ³ (FT/FT)	0.16	0.01	0.10	0.01	
S _c (CRITICAL SLOPE) (FT/FT)	0.0037798	0.003736	0.15774	0.303974	
.7S _c (FT/FT)	0.0026458	0.002615	0.110418	0.212782	
1.3S _c (FT/FT)	0.0049137	0.004856	0.205062	0.395166	
STABLE FLOW? (Y/N)	Y	Y	Y	Y	
FREEBOARD BASED ON UNSTABLE FLOW (FT)	---	---	---	---	
FREEBOARD BASED ON STABLE FLOW (FT)	1.88	1.77	1.66	1.29	
MINIMUM REQUIRED FREEBOARD ⁴ (FT)	0.5	0.5	0.5	0.5	
DESIGN METHOD FOR PROTECTIVE LINING ⁵	S	S	S	S	
PERMISSIBLE VELOCITY (V) OR SHEAR STRESS (S)	S	S	S	S	

1. Use 1.6 for Temporary Channels; 2.25 for Temporary Channels in Special Protection (HQ or EV) Watersheds; 2.75 for Permanent Channels. For Rational Method, enter "N/A" and attach E&S Worksheets 9 and 10. For TR-55 enter "N/A" and attach appropriate Worksheets.
2. Adjust "n" value for changes in channel liner and flow depth. For vegetated channels, provide data for manufactured linings without vegetation in separate columns.
3. Slopes may not be averaged.
4. Minimum Freeboard is 0.5 ft. or 1/4 Total Channel Depth, whichever is greater
5. Permissible velocity lining design method is not acceptable for channels with a bed slope of 10% or greater. Shear stress lining design method is required for channels with a bed slope of 10% or greater. Shear stress lining design method may be used for any channel bed slope.

**Erosion Control Materials Design Software
Version 5.0**

**Project Name: Beckersville ME2
Project Number: 76244
Channel Name: Channel #1 Max**

Discharge	1.99
Peak Flow Period	24
Channel Slope	0.16
Channel Bottom Width	2
Left Side Slope	2
Right Side Slope	2
Low Flow Liner	
Retardance Class	C
Vegetation Type	Mix (Sod & Bunch)
Vegetation Density	Good 75-95%
Soil Type	Loam

C125

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
C125 Unvegetated	Straight	1.99 cfs	6.49 ft/s	0.14 ft	0.022	2.25 lbs/ft ²	1.35 lbs/ft ²	1.67	STABLE	D

Unreinforced Vegetation - Class C - Mix (Sod & Bunch) - Good 75-95%

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
Unreinforced Vegetation	Straight	1.99 cfs	2.21 ft/s	0.34 ft	0.109	4.2 lbs/ft ²	3.36 lbs/ft ²	1.25	STABLE	--
Underlying Substrate	Straight	1.99 cfs	2.21 ft/s	0.34 ft	--	0.04 lbs/ft ²	0.017 lbs/ft ²	2.02	STABLE	--

Erosion Control Materials Design Software Version 5.0

Channel Computations

Project Parameters	
Specify Manning's n:	0.11
Discharge:	1.99
Peak Flow Period:	24
Channel Slope:	0.16
Bottom Width:	2
Left Side Slope:	2
Right Side Slope:	2
Existing Channel Bend:	0
Bend Coefficient (Kb):	1.00
Retardance Class (A - E):	C
Vegetation Type:	Mix (Sod & Bunch)
Vegetation Density:	Good 75-95%
Soil Type:	Loam
Channel Lining Options	
Protection Type	Permanent

Material Type	
Matting Type	C125
Manning's N value for selected Product	0.02
Cross-Sectional Area (A)	
$A = AL + AB + AR =$	0.31
$AL = (1/2) * \text{Depth}^2 * ZL =$	0.02
$AB = \text{Bottom Width} * \text{Depth} =$	0.27
$AR = (1/2) * \text{Depth}^2 * ZR =$	0.02
Wetted Perimeter (P)	
$P = PL + PB + PR =$	2.6
$PL = \text{Depth} * (ZL^2 + 1)^{0.5} =$	0.3
$PB = \text{Channel Bottom Width} =$	2
$PR = \text{Depth} * (ZR^2 + 1)^{0.5} =$	0.3
Hydraulic Radius (R)	
$R = A / P =$	0.12
Flow (Q)	
$Q = 1.486 / n * A * R^{2/3} * S^{1/2} =$	1.99
Velocity (V)	
$V = Q / A =$	6.49
Channel Shear Stress (Te)	
$Td = 62.4 * \text{Depth} * \text{Slope} =$	1.35
Channel Safety Factor = (Tp / Td)	1.67
Effective Stress on Blanket(Tdb)	
$Te = Td * (1 - CF) * (ns/n)^2 =$	0
CF =	0
ns =	0

Soil Safety Factor	
Allowable Soil Shear (Ta) =	0
Soil Safety Factor = Ta / Te =	0
Conclusion: Stability of Mat	STABLE

Material Type	
Matting Type	Unreinforced Vegetation
Manning's N value for selected Product	0.11
Cross-Sectional Area (A)	
A = AL + AB + AR =	0.9
AL = (1/2) * Depth ² * ZL =	0.11
AB = Bottom Width * Depth =	0.67
AR = (1/2) * Depth ² * ZR =	0.11
Wetted Perimeter (P)	
P = PL + PB + PR =	3.51
PL = Depth * (ZL ² + 1)0.5 =	0.75
PB = Channel Bottom Width =	2
PR = Depth * (ZR ² + 1)0.5 =	0.75
Hydraulic Radius (R)	
R = A / P =	0.26
Flow (Q)	
Q = 1.486 / n * A * R ^{2/3} * S ^{1/2} =	1.99
Velocity (V)	
V = Q / A =	2.21
Channel Shear Stress (Te)	
Td = 62.4 * Depth * Slope =	3.36
Channel Safety Factor = (Tp / Td)	1.25
Effective Stress on Blanket(Tdb)	
Te = Td * (1-CF) * (ns/n) ² =	0.02
CF =	0.75
ns =	0.02
Soil Safety Factor	
Allowable Soil Shear (Ta) =	0.04
Soil Safety Factor = Ta / Te =	2.02
Conclusion: Stability of Mat	STABLE
Conclusion: Stability of Underlying soil	

Side Slope Liner Results

**Erosion Control Materials Design Software
Version 5.0**

Project Name: Beckersville ME2
Project Number: 76244
Channel Name: Channel #1 Min

Discharge	1.99
Peak Flow Period	24
Channel Slope	0.01
Channel Bottom Width	2
Left Side Slope	2
Right Side Slope	2
Low Flow Liner	
Retardance Class	C
Vegetation Type	Mix (Sod & Bunch)
Vegetation Density	Good 75-95%
Soil Type	Loam

C125

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
C125 Unvegetated	Straight	1.99 cfs	2.56 ft/s	0.3 ft	0.022	2.25 lbs/ft ²	0.19 lbs/ft ²	12.04	STABLE	D

Unreinforced Vegetation - Class C - Mix (Sod & Bunch) - Good 75-95%

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
Unreinforced Vegetation	Straight	1.99 cfs	0.68 ft/s	0.81 ft	0.142	4.2 lbs/ft ²	0.51 lbs/ft ²	8.31	STABLE	--
Underlying Substrate	Straight	1.99 cfs	0.68 ft/s	0.81 ft	--	0.04 lbs/ft ²	0.002 lbs/ft ²	22.92	STABLE	--

Erosion Control Materials Design Software Version 5.0

Channel Computations

Project Parameters	
Specify Manning's n:	0.14
Discharge:	1.99
Peak Flow Period:	24
Channel Slope:	0.01
Bottom Width:	2
Left Side Slope:	2
Right Side Slope:	2
Existing Channel Bend:	0
Bend Coefficient (Kb):	1.00
Retardance Class (A - E):	C
Vegetation Type:	Mix (Sod & Bunch)
Vegetation Density:	Good 75-95%
Soil Type:	Loam
Channel Lining Options	
Protection Type	Permanent

Material Type	
Matting Type	C125
Manning's N value for selected Product	0.02
Cross-Sectional Area (A)	
$A = AL + AB + AR =$	0.78
$AL = (1/2) * \text{Depth}^2 * ZL =$	0.09
$AB = \text{Bottom Width} * \text{Depth} =$	0.6
$AR = (1/2) * \text{Depth}^2 * ZR =$	0.09
Wetted Perimeter (P)	
$P = PL + PB + PR =$	3.34
$PL = \text{Depth} * (ZL^2 + 1)^{0.5} =$	0.67
$PB = \text{Channel Bottom Width} =$	2
$PR = \text{Depth} * (ZR^2 + 1)^{0.5} =$	0.67
Hydraulic Radius (R)	
$R = A / P =$	0.23
Flow (Q)	
$Q = 1.486 / n * A * R^{2/3} * S^{1/2} =$	1.99
Velocity (V)	
$V = Q / A =$	2.56
Channel Shear Stress (Te)	
$Td = 62.4 * \text{Depth} * \text{Slope} =$	0.19
Channel Safety Factor = (Tp / Td)	12.04
Effective Stress on Blanket(Tdb)	
$Te = Td * (1 - CF) * (ns/n)^2 =$	0
CF =	0
ns =	0

Soil Safety Factor	
Allowable Soil Shear (Ta) =	0
Soil Safety Factor = Ta / Te =	0
Conclusion: Stability of Mat	STABLE

Material Type	
Matting Type	Unreinforced Vegetation
Manning's N value for selected Product	0.14
Cross-Sectional Area (A)	
A = AL + AB + AR =	2.93
AL = (1/2) * Depth ² * ZL =	0.66
AB = Bottom Width * Depth =	1.62
AR = (1/2) * Depth ² * ZR =	0.66
Wetted Perimeter (P)	
P = PL + PB + PR =	5.62
PL = Depth * (ZL ² + 1) ^{0.5} =	1.81
PB = Channel Bottom Width =	2
PR = Depth * (ZR ² + 1) ^{0.5} =	1.81
Hydraulic Radius (R)	
R = A / P =	0.52
Flow (Q)	
Q = 1.486 / n * A * R ^{2/3} * S ^{1/2} =	1.99
Velocity (V)	
V = Q / A =	0.68
Channel Shear Stress (Te)	
Td = 62.4 * Depth * Slope =	0.51
Channel Safety Factor = (Tp / Td)	8.31
Effective Stress on Blanket(Tdb)	
Te = Td * (1-CF) * (ns/n) ² =	0
CF =	0.75
ns =	0.02
Soil Safety Factor	
Allowable Soil Shear (Ta) =	0.04
Soil Safety Factor = Ta / Te =	22.92
Conclusion: Stability of Mat	STABLE
Conclusion: Stability of Underlying soil	

Side Slope Liner Results

**Erosion Control Materials Design Software
Version 5.0**

**Project Name: Beckersville ME2
Project Number: 76244
Channel Name: Channel #2 Max**

Discharge	1.22
Peak Flow Period	24
Channel Slope	0.1
Channel Bottom Width	2
Left Side Slope	2
Right Side Slope	2
Low Flow Liner	
Retardance Class	C
Vegetation Type	Mix (Sod & Bunch)
Vegetation Density	Good 75-95%
Soil Type	Loam

C125

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
C125 Unvegetated	Straight	1.22 cfs	4.7 ft/s	0.12 ft	0.022	2.25 lbs/ft ²	0.73 lbs/ft ²	3.1	STABLE	D

Unreinforced Vegetation - Class C - Mix (Sod & Bunch) - Good 75-95%

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
Unreinforced Vegetation	Straight	1.22 cfs	1.36 ft/s	0.34 ft	0.14	4.2 lbs/ft ²	2.1 lbs/ft ²	2	STABLE	--
Underlying Substrate	Straight	1.22 cfs	1.36 ft/s	0.34 ft	--	0.04 lbs/ft ²	0.007 lbs/ft ²	5.36	STABLE	--

Erosion Control Materials Design Software Version 5.0

Channel Computations

Project Parameters	
Specify Manning's n:	0.14
Discharge:	1.22
Peak Flow Period:	24
Channel Slope:	0.1
Bottom Width:	2
Left Side Slope:	2
Right Side Slope:	2
Existing Channel Bend:	0
Bend Coefficient (Kb):	1.00
Retardance Class (A - E):	C
Vegetation Type:	Mix (Sod & Bunch)
Vegetation Density:	Good 75-95%
Soil Type:	Loam
Channel Lining Options	
Protection Type	Permanent

Material Type	
Matting Type	C125
Manning's N value for selected Product	0.02
Cross-Sectional Area (A)	
$A = AL + AB + AR =$	0.26
$AL = (1/2) * Depth^2 * ZL =$	0.01
$AB = Bottom Width * Depth =$	0.23
$AR = (1/2) * Depth^2 * ZR =$	0.01
Wetted Perimeter (P)	
$P = PL + PB + PR =$	2.52
$PL = Depth * (ZL^2 + 1)^{0.5} =$	0.26
$PB = Channel Bottom Width =$	2
$PR = Depth * (ZR^2 + 1)^{0.5} =$	0.26
Hydraulic Radius (R)	
$R = A / P =$	0.1
Flow (Q)	
$Q = 1.486 / n * A * R^{2/3} * S^{1/2} =$	1.22
Velocity (V)	
$V = Q / A =$	4.7
Channel Shear Stress (Te)	
$Td = 62.4 * Depth * Slope =$	0.73
Channel Safety Factor = (Tp / Td)	3.1
Effective Stress on Blanket(Tdb)	
$Te = Td * (1 - CF) * (ns/n)^2 =$	0
CF =	0
ns =	0

Soil Safety Factor	
Allowable Soil Shear (Ta) =	0
Soil Safety Factor = Ta / Te =	0
Conclusion: Stability of Mat	STABLE

Material Type	
Matting Type	Unreinforced Vegetation
Manning's N value for selected Product	0.14
Cross-Sectional Area (A)	
A = AL + AB + AR =	0.9
AL = (1/2) * Depth ² * ZL =	0.11
AB = Bottom Width * Depth =	0.67
AR = (1/2) * Depth ² * ZR =	0.11
Wetted Perimeter (P)	
P = PL + PB + PR =	3.51
PL = Depth * (ZL ² + 1)0.5 =	0.75
PB = Channel Bottom Width =	2
PR = Depth * (ZR ² + 1)0.5 =	0.75
Hydraulic Radius (R)	
R = A / P =	0.26
Flow (Q)	
Q = 1.486 / n * A * R ^{2/3} * S ^{1/2} =	1.22
Velocity (V)	
V = Q / A =	1.36
Channel Shear Stress (Te)	
Td = 62.4 * Depth * Slope =	2.1
Channel Safety Factor = (Tp / Td)	2
Effective Stress on Blanket(Tdb)	
Te = Td * (1-CF) * (ns/n) ² =	0.01
CF =	0.75
ns =	0.02
Soil Safety Factor	
Allowable Soil Shear (Ta) =	0.04
Soil Safety Factor = Ta / Te =	5.36
Conclusion: Stability of Mat	STABLE
Conclusion: Stability of Underlying soil	

Side Slope Liner Results

**Erosion Control Materials Design Software
Version 5.0**

**Project Name: Beckersville ME2
Project Number: 76244
Channel Name: Channel #2 Min**

Discharge	1.22
Peak Flow Period	24
Channel Slope	0.01
Channel Bottom Width	2
Left Side Slope	2
Right Side Slope	2
Low Flow Liner	
Retardance Class	C
Vegetation Type	Mix (Sod & Bunch)
Vegetation Density	Good 75-95%
Soil Type	Loam

C125

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
C125 Unvegetated	Straight	1.22 cfs	2.19 ft/s	0.23 ft	0.022	2.25 lbs/ft ²	0.14 lbs/ft ²	15.88	STABLE	D

Unreinforced Vegetation - Class C - Mix (Sod & Bunch) - Good 75-95%

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
Unreinforced Vegetation	Straight	1.22 cfs	0.51 ft/s	0.71 ft	0.177	4.2 lbs/ft ²	0.44 lbs/ft ²	9.53	STABLE	--
Underlying Substrate	Straight	1.22 cfs	0.51 ft/s	0.71 ft	--	0.04 lbs/ft ²	0.001 lbs/ft ²	40.78	STABLE	--

Erosion Control Materials Design Software Version 5.0

Channel Computations

Project Parameters	
Specify Manning's n:	0.18
Discharge:	1.22
Peak Flow Period:	24
Channel Slope:	0.01
Bottom Width:	2
Left Side Slope:	2
Right Side Slope:	2
Existing Channel Bend:	0
Bend Coefficient (Kb):	1.00
Retardance Class (A - E):	C
Vegetation Type:	Mix (Sod & Bunch)
Vegetation Density:	Good 75-95%
Soil Type:	Loam
Channel Lining Options	
Protection Type	Permanent

Material Type	
Matting Type	C125
Manning's N value for selected Product	0.02
Cross-Sectional Area (A)	
$A = AL + AB + AR =$	0.56
$AL = (1/2) * Depth^2 * ZL =$	0.05
$AB = Bottom Width * Depth =$	0.45
$AR = (1/2) * Depth^2 * ZR =$	0.05
Wetted Perimeter (P)	
$P = PL + PB + PR =$	3.02
$PL = Depth * (ZL^2 + 1)^{0.5} =$	0.51
$PB = Channel Bottom Width =$	2
$PR = Depth * (ZR^2 + 1)^{0.5} =$	0.51
Hydraulic Radius (R)	
$R = A / P =$	0.18
Flow (Q)	
$Q = 1.486 / n * A * R^{2/3} * S^{1/2} =$	1.22
Velocity (V)	
$V = Q / A =$	2.19
Channel Shear Stress (Te)	
$Td = 62.4 * Depth * Slope =$	0.14
Channel Safety Factor = (Tp / Td)	15.88
Effective Stress on Blanket(Tdb)	
$Te = Td * (1 - CF) * (ns/n)^2 =$	0
CF =	0
ns =	0

Soil Safety Factor	
Allowable Soil Shear (Ta) =	0
Soil Safety Factor = Ta / Te =	0
Conclusion: Stability of Mat	STABLE

Material Type	
Matting Type	Unreinforced Vegetation
Manning's N value for selected Product	0.18
Cross-Sectional Area (A)	
A = AL + AB + AR =	2.41
AL = (1/2) * Depth ² * ZL =	0.5
AB = Bottom Width * Depth =	1.41
AR = (1/2) * Depth ² * ZR =	0.5
Wetted Perimeter (P)	
P = PL + PB + PR =	5.16
PL = Depth * (ZL ² + 1) ^{0.5} =	1.58
PB = Channel Bottom Width =	2
PR = Depth * (ZR ² + 1) ^{0.5} =	1.58
Hydraulic Radius (R)	
R = A / P =	0.47
Flow (Q)	
Q = 1.486 / n * A * R ^{2/3} * S ^{1/2} =	1.22
Velocity (V)	
V = Q / A =	0.51
Channel Shear Stress (Te)	
Td = 62.4 * Depth * Slope =	0.44
Channel Safety Factor = (Tp / Td)	9.53
Effective Stress on Blanket(Tdb)	
Te = Td * (1-CF) * (ns/n) ² =	0
CF =	0.75
ns =	0.02
Soil Safety Factor	
Allowable Soil Shear (Ta) =	0.04
Soil Safety Factor = Ta / Te =	40.78
Conclusion: Stability of Mat	STABLE
Conclusion: Stability of Underlying soil	

Side Slope Liner Results

**Erosion Control Materials Design Software
Version 5.0**

**Project Name: Beckersville ME2
Project Number: 76244
Channel Name: Emergency Spillway**

Discharge	18.13
Peak Flow Period	24
Channel Slope	0.08
Channel Bottom Width	6
Left Side Slope	2
Right Side Slope	2
Low Flow Liner	
Retardance Class	C
Vegetation Type	Mix (Sod & Bunch)
Vegetation Density	Good 75-95%
Soil Type	Loam

SC250 - Class C - Mix (Sod & Bunch) - Good 75-95%

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
SC250 Unvegetated	Straight	18.13 cfs	5.67 ft/s	0.46 ft	0.04	2.5 lbs/ft ²	2.31 lbs/ft ²	1.08	STABLE	E
SC250 Reinforced Vegetation	Straight	18.13 cfs	4.28 ft/s	0.59 ft	0.061	8 lbs/ft ²	2.95 lbs/ft ²	2.72	STABLE	E
Underlying Substrate	Straight	18.13 cfs	4.28 ft/s	0.59 ft	--	0.8 lbs/ft ²	0.289 lbs/ft ²	2.77	STABLE	--

**Erosion Control Materials Design Software
Version 5.0**

Channel Computations

Project Parameters	
Specify Manning's n:	0.06
Discharge:	18.13
Peak Flow Period:	24
Channel Slope:	0.08
Bottom Width:	6
Left Side Slope:	2
Right Side Slope:	2
Existing Channel Bend:	0
Bend Coefficient (Kb):	1.00
Retardance Class (A - E):	C
Vegetation Type:	Mix (Sod & Bunch)
Vegetation Density:	Good 75-95%
Soil Type:	Loam
Channel Lining Options	
Protection Type	Permanent

Material Type	
Matting Type	SC250
Manning's N value for selected Product	0.04
Cross-Sectional Area (A)	
$A = AL + AB + AR =$	3.2
$AL = (1/2) * Depth^2 * ZL =$	0.21
$AB = Bottom Width * Depth =$	2.77
$AR = (1/2) * Depth^2 * ZR =$	0.21
Wetted Perimeter (P)	
$P = PL + PB + PR =$	8.07
$PL = Depth * (ZL^2 + 1)^{0.5} =$	1.03
$PB = Channel Bottom Width =$	6
$PR = Depth * (ZR^2 + 1)^{0.5} =$	1.03
Hydraulic Radius (R)	
$R = A / P =$	0.4
Flow (Q)	
$Q = 1.486 / n * A * R^{2/3} * S^{1/2} =$	18.13
Velocity (V)	
$V = Q / A =$	5.67
Channel Shear Stress (Te)	
$Td = 62.4 * Depth * Slope =$	2.31
Channel Safety Factor = (Tp / Td)	1.08
Effective Stress on Blanket(Tdb)	
$Te = Td * (1 - CF) * (ns/n)^2 =$	2.31
CF =	0
ns =	0.04

Soil Safety Factor	
Allowable Soil Shear (Ta) =	0
Soil Safety Factor = Ta / Te =	0
Conclusion: Stability of Mat	STABLE
Conclusion: Stability of Underlying soil	STABLE

Material Type	
Matting Type	SC250
Manning's N value for selected Product	0.06
Cross-Sectional Area (A)	
A = AL + AB + AR =	4.24
AL = (1/2) * Depth ² * ZL =	0.35
AB = Bottom Width * Depth =	3.54
AR = (1/2) * Depth ² * ZR =	0.35
Wetted Perimeter (P)	
P = PL + PB + PR =	8.64
PL = Depth * (ZL ² + 1)0.5 =	1.32
PB = Channel Bottom Width =	6
PR = Depth * (ZR ² + 1)0.5 =	1.32
Hydraulic Radius (R)	
R = A / P =	0.49
Flow (Q)	
Q = 1.486 / n * A * R ^{2/3} * S ^{1/2} =	18.14
Velocity (V)	
V = Q / A =	4.28
Channel Shear Stress (Te)	
Td = 62.4 * Depth * Slope =	2.95
Channel Safety Factor = (Tp / Td)	2.72
Effective Stress on Blanket(Tdb)	
Te = Td * (1-CF) * (ns/n) ² =	0.29
CF =	0.75
ns =	0.04
Soil Safety Factor	
Allowable Soil Shear (Ta) =	0.8
Soil Safety Factor = Ta / Te =	2.77
Conclusion: Stability of Mat	STABLE
Conclusion: Stability of Underlying soil	STABLE

Side Slope Liner Results

APPENDIX F

BASIN SPILLWAY BLOCKED CALCULATIONS

Table of Contents

	Master Network Summary	1
O-1	1 Year	
	Addition Summary	4
	Addition Summary	5
	Addition Summary	6
	Addition Summary	7
	Addition Summary	8
	Addition Summary	9
	Addition Summary	10
Outlet-1	1 Year	
	Diverted Hydrograph	11
	Diverted Hydrograph	12
	Diverted Hydrograph	13
	Diverted Hydrograph	14
	Diverted Hydrograph	15
	Diverted Hydrograph	16
	Diverted Hydrograph	17
PO-1	1 Year	
	Elevation-Volume-Flow Table (Pond)	18
PO-1 (IN)	1 Year	
	Pond Infiltration Calculations	19
	Level Pool Pond Routing Summary	20
	Level Pool Pond Routing Summary	21
	Level Pool Pond Routing Summary	22
	Level Pool Pond Routing Summary	23
	Level Pool Pond Routing Summary	24
	Level Pool Pond Routing Summary	25
	Level Pool Pond Routing Summary	26
PO-1 (INF)	1 Year	
	Pond Infiltration Hydrograph	27
	Pond Infiltration Hydrograph	31

Table of Contents

	Pond Infiltration Hydrograph	36
	Pond Infiltration Hydrograph	41
	Pond Infiltration Hydrograph	47
	Pond Infiltration Hydrograph	53
	Pond Infiltration Hydrograph	60
PO-1 (OUT)	1 Year	
	Pond Routed Hydrograph (total out)	67
	Pond Routed Hydrograph (total out)	68
	Pond Routed Hydrograph (total out)	69
	Pond Routed Hydrograph (total out)	70
	Pond Routed Hydrograph (total out)	71
	Pond Routed Hydrograph (total out)	72
	Pond Routed Hydrograph (total out)	73

SPILLWAY BLOCKED

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)
DA #1	Post-Development 1 year	1	0.130	12.000	2.06
DA #1	Post-Development 2 year	2	0.206	11.950	3.45
DA #1	Post-Development 5 year	5	0.341	11.950	6.02
DA #1	Post-Development 10 year	10	0.503	11.950	9.04
DA #1	Post-Development 25 year	25	0.648	11.950	11.71
DA #1	Post-Development 50 year	50	0.816	11.950	14.75
DA #1	Post-Development 100 year	100	1.005	11.950	18.13
Undetained DA #1	Post-Development 1 year	1	0.005	12.000	0.06
Undetained DA #1	Post-Development 2 year	2	0.009	12.000	0.14
Undetained DA #1	Post-Development 5 year	5	0.018	12.000	0.29
Undetained DA #1	Post-Development 10 year	10	0.028	11.950	0.48
Undetained DA #1	Post-Development 25 year	25	0.037	11.950	0.66
Undetained DA #1	Post-Development 50 year	50	0.048	11.950	0.87
Undetained DA #1	Post-Development 100 year	100	0.061	11.950	1.10

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)
O-1	Post-Development 1 year	1	0.005	12.000	0.06
O-1	Post-Development 2 year	2	0.009	12.000	0.14
O-1	Post-Development 5 year	5	0.018	12.000	0.29
O-1	Post-Development 10 year	10	0.028	11.950	0.48
O-1	Post-Development 25 year	25	0.037	11.950	0.66
O-1	Post-Development 50 year	50	0.048	11.950	0.87

SPILLWAY BLOCKED

Subsection: Master Network Summary

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)
O-1	Post-Development 100 year	100	0.061	11.950	1.10

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
PO-1 (IN)	Post-Development 1 year	1	0.130	12.000	2.06	(N/A)	(N/A)
PO-1 (OUT)	Post-Development 1 year	1	0.000	0.000	0.00	686.18	0.057
PO-1 (IN)	Post-Development 2 year	2	0.206	11.950	3.45	(N/A)	(N/A)
PO-1 (OUT)	Post-Development 2 year	2	0.000	0.000	0.00	686.30	0.096
PO-1 (IN)	Post-Development 5 year	5	0.341	11.950	6.02	(N/A)	(N/A)
PO-1 (OUT)	Post-Development 5 year	5	0.000	0.000	0.00	686.53	0.170
PO-1 (IN)	Post-Development 10 year	10	0.503	11.950	9.04	(N/A)	(N/A)
PO-1 (OUT)	Post-Development 10 year	10	0.000	0.000	0.00	686.87	0.287
PO-1 (IN)	Post-Development 25 year	25	0.648	11.950	11.71	(N/A)	(N/A)
PO-1 (OUT)	Post-Development 25 year	25	0.000	0.000	0.00	687.20	0.400
PO-1 (IN)	Post-Development 50 year	50	0.816	11.950	14.75	(N/A)	(N/A)
PO-1 (OUT)	Post-Development 50 year	50	0.000	0.000	0.00	687.58	0.537

SPILLWAY BLOCKED

Subsection: Master Network Summary

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
PO-1 (IN)	Post-Development 100 year	100	1.005	11.950	18.13	(N/A)	(N/A)
PO-1 (OUT)	Post-Development 100 year	100	0.000	0.000	0.00	688.00	0.696

SPILLWAY BLOCKED

Subsection: Addition Summary

Label: O-1

Return Event: 1 years

Storm Event: 1 Year

Summary for Hydrograph Addition at 'O-1'

Upstream Link	Upstream Node
Outlet-1	PO-1
<Catchment to Outflow Node>	Undetained DA #1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	Outlet-1	0.000	0.000	0.00
Flow (From)	Undetained DA #1	0.005	12.000	0.06
Flow (In)	O-1	0.005	12.000	0.06

SPILLWAY BLOCKED

Subsection: Addition Summary

Label: O-1

Return Event: 2 years

Storm Event: 2 Year

Summary for Hydrograph Addition at 'O-1'

Upstream Link	Upstream Node
Outlet-1	PO-1
<Catchment to Outflow Node>	Undetained DA #1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	Outlet-1	0.000	0.000	0.00
Flow (From)	Undetained DA #1	0.009	12.000	0.14
Flow (In)	O-1	0.009	12.000	0.14

SPILLWAY BLOCKED

Subsection: Addition Summary

Label: O-1

Return Event: 5 years

Storm Event: 5 Year

Summary for Hydrograph Addition at 'O-1'

Upstream Link	Upstream Node
Outlet-1	PO-1
<Catchment to Outflow Node>	Undetained DA #1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	Outlet-1	0.000	0.000	0.00
Flow (From)	Undetained DA #1	0.018	12.000	0.29
Flow (In)	O-1	0.018	12.000	0.29

SPILLWAY BLOCKED

Subsection: Addition Summary

Label: O-1

Return Event: 10 years

Storm Event: 10 Year

Summary for Hydrograph Addition at 'O-1'

Upstream Link	Upstream Node
Outlet-1	PO-1
<Catchment to Outflow Node>	Undetained DA #1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	Outlet-1	0.000	0.000	0.00
Flow (From)	Undetained DA #1	0.028	11.950	0.48
Flow (In)	O-1	0.028	11.950	0.48

SPILLWAY BLOCKED

Subsection: Addition Summary

Label: O-1

Return Event: 25 years

Storm Event: 25 Year

Summary for Hydrograph Addition at 'O-1'

Upstream Link	Upstream Node
Outlet-1	PO-1
<Catchment to Outflow Node>	Undetained DA #1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	Outlet-1	0.000	0.000	0.00
Flow (From)	Undetained DA #1	0.037	11.950	0.66
Flow (In)	O-1	0.037	11.950	0.66

SPILLWAY BLOCKED

Subsection: Addition Summary

Label: O-1

Return Event: 50 years

Storm Event: 50 Year

Summary for Hydrograph Addition at 'O-1'

Upstream Link	Upstream Node
Outlet-1	PO-1
<Catchment to Outflow Node>	Undetained DA #1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	Outlet-1	0.000	0.000	0.00
Flow (From)	Undetained DA #1	0.048	11.950	0.87
Flow (In)	O-1	0.048	11.950	0.87

SPILLWAY BLOCKED

Subsection: Addition Summary

Label: O-1

Return Event: 100 years

Storm Event: 100 Year

Summary for Hydrograph Addition at 'O-1'

Upstream Link	Upstream Node
Outlet-1	PO-1
<Catchment to Outflow Node>	Undetained DA #1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	Outlet-1	0.000	0.000	0.00
Flow (From)	Undetained DA #1	0.061	11.950	1.10
Flow (In)	O-1	0.061	11.950	1.10

SPILLWAY BLOCKED

Subsection: Diverted Hydrograph
Label: Outlet-1

Return Event: 1 years
Storm Event: 1 Year

Peak Discharge	0.00 ft ³ /s
Time to Peak	24.000 hours
Hydrograph Volume	0.000 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.000	0.00	0.00	(N/A)	(N/A)	(N/A)

SPILLWAY BLOCKED

Subsection: Diverted Hydrograph
Label: Outlet-1

Return Event: 2 years
Storm Event: 2 Year

Peak Discharge	0.00 ft ³ /s
Time to Peak	24.000 hours
Hydrograph Volume	0.000 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.000	0.00	0.00	(N/A)	(N/A)	(N/A)

SPILLWAY BLOCKED

Subsection: Diverted Hydrograph
Label: Outlet-1

Return Event: 5 years
Storm Event: 5 Year

Peak Discharge	0.00 ft ³ /s
Time to Peak	24.000 hours
Hydrograph Volume	0.000 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.000	0.00	0.00	(N/A)	(N/A)	(N/A)

SPILLWAY BLOCKED

Subsection: Diverted Hydrograph
Label: Outlet-1

Return Event: 10 years
Storm Event: 10 Year

Peak Discharge	0.00 ft ³ /s
Time to Peak	24.000 hours
Hydrograph Volume	0.000 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.000	0.00	0.00	(N/A)	(N/A)	(N/A)

SPILLWAY BLOCKED

Subsection: Diverted Hydrograph
Label: Outlet-1

Return Event: 25 years
Storm Event: 25 Year

Peak Discharge	0.00 ft ³ /s
Time to Peak	24.000 hours
Hydrograph Volume	0.000 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.000	0.00	0.00	(N/A)	(N/A)	(N/A)

SPILLWAY BLOCKED

Subsection: Diverted Hydrograph
Label: Outlet-1

Return Event: 50 years
Storm Event: 50 Year

Peak Discharge	0.00 ft ³ /s
Time to Peak	24.000 hours
Hydrograph Volume	0.000 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.000	0.00	0.00	(N/A)	(N/A)	(N/A)

SPILLWAY BLOCKED

Subsection: Diverted Hydrograph
Label: Outlet-1

Return Event: 100 years
Storm Event: 100 Year

Peak Discharge	0.00 ft ³ /s
Time to Peak	24.000 hours
Hydrograph Volume	0.000 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.000	0.00	0.00	(N/A)	(N/A)	(N/A)

SPILLWAY BLOCKED

Subsection: Elevation-Volume-Flow Table (Pond)
Label: PO-1

Return Event: 1 years
Storm Event: 1 Year

Infiltration	
Infiltration Method (Computed)	Average Infiltration Rate
Infiltration Rate (Average)	0.8750 in/h
Initial Conditions	
Elevation (Water Surface, Initial)	686.00 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft ³ /s
Flow (Initial Infiltration)	0.00 ft ³ /s
Flow (Initial, Total)	0.00 ft ³ /s
Time Increment	0.050 hours

Elevation (ft)	Outflow (ft ³ /s)	Storage (ac-ft)	Area (acres)	Infiltration (ft ³ /s)	Flow (Total) (ft ³ /s)	2S/t + O (ft ³ /s)
686.00	0.00	0.000	0.315	0.00	0.00	0.00
686.50	0.00	0.161	0.331	0.29	0.29	78.40
687.00	0.00	0.331	0.347	0.31	0.31	160.43
687.50	0.00	0.509	0.364	0.32	0.32	246.46
688.00	0.00	0.695	0.381	0.34	0.34	336.59
688.50	0.00	0.890	0.398	0.35	0.35	430.89
689.00	0.00	1.093	0.416	0.37	0.37	529.40
689.50	0.00	1.305	0.434	0.38	0.38	632.22
690.00	0.00	1.527	0.452	0.40	0.40	739.44
690.50	6.36	1.758	0.471	0.42	6.78	857.50
691.00	18.00	1.998	0.490	0.43	18.43	985.36
691.50	33.07	2.247	0.509	0.45	33.52	1,121.28
692.00	50.91	2.507	0.529	0.47	51.38	1,264.69

SPILLWAY BLOCKED

Subsection: Pond Infiltration Calculations

Label: PO-1 (IN)

Return Event: 1 years

Storm Event: 1 Year

Average Infiltration Rating Table

Elevation (Water Surface) (ft)	Area (Total) (ft ²)	Flow (Infiltration) (ft ³ /s)
686.00	13,712.7	0.00
686.50	14,407.8	0.29
687.00	15,120.2	0.31
687.50	15,849.7	0.32
688.00	16,596.4	0.34
688.50	17,347.0	0.35
689.00	18,114.3	0.37
689.50	18,898.2	0.38
690.00	19,698.7	0.40
690.50	20,506.8	0.42
691.00	21,331.1	0.43
691.50	22,171.6	0.45
692.00	23,028.4	0.47

SPILLWAY BLOCKED

Subsection: Level Pool Pond Routing Summary
Label: PO-1 (IN)

Return Event: 1 years
Storm Event: 1 Year

Infiltration			
Infiltration Method (Computed)		Average Infiltration Rate	
Infiltration Rate (Average)		0.8750 in/h	
Initial Conditions			
Elevation (Water Surface, Initial)		686.00 ft	
Volume (Initial)		0.000 ac-ft	
Flow (Initial Outlet)		0.00 ft³/s	
Flow (Initial Infiltration)		0.00 ft³/s	
Flow (Initial, Total)		0.00 ft³/s	
Time Increment		0.050 hours	
Inflow/Outflow Hydrograph Summary			
Flow (Peak In)		2.06 ft³/s	Time to Peak (Flow, In)
Infiltration (Peak)		0.11 ft³/s	Time to Peak (Infiltration)
Flow (Peak Outlet)		0.00 ft³/s	Time to Peak (Flow, Outlet)
			12.000 hours
			15.100 hours
			0.000 hours
Peak Conditions			
Elevation (Water Surface, Peak)		686.18 ft	
Volume (Peak)		0.057 ac-ft	
Mass Balance (ac-ft)			
Volume (Initial)		0.000 ac-ft	
Volume (Total Inflow)		0.130 ac-ft	
Volume (Total Infiltration)		0.130 ac-ft	
Volume (Total Outlet Outflow)		0.000 ac-ft	
Volume (Retained)		0.000 ac-ft	
Volume (Unrouted)		0.000 ac-ft	
Error (Mass Balance)		0.0 %	

SPILLWAY BLOCKED

Subsection: Level Pool Pond Routing Summary
Label: PO-1 (IN)

Return Event: 2 years
Storm Event: 2 Year

Infiltration			
Infiltration Method (Computed)		Average Infiltration Rate	
Infiltration Rate (Average)		0.8750 in/h	
Initial Conditions			
Elevation (Water Surface, Initial)		686.00 ft	
Volume (Initial)		0.000 ac-ft	
Flow (Initial Outlet)		0.00 ft³/s	
Flow (Initial Infiltration)		0.00 ft³/s	
Flow (Initial, Total)		0.00 ft³/s	
Time Increment		0.050 hours	
Inflow/Outflow Hydrograph Summary			
Flow (Peak In)		3.45 ft³/s	Time to Peak (Flow, In)
Infiltration (Peak)		0.18 ft³/s	Time to Peak (Infiltration)
Flow (Peak Outlet)		0.00 ft³/s	Time to Peak (Flow, Outlet)
Elevation (Water Surface, Peak)		686.30 ft	
Volume (Peak)		0.096 ac-ft	
Mass Balance (ac-ft)			
Volume (Initial)		0.000 ac-ft	
Volume (Total Inflow)		0.206 ac-ft	
Volume (Total Infiltration)		0.206 ac-ft	
Volume (Total Outlet Outflow)		0.000 ac-ft	
Volume (Retained)		0.000 ac-ft	
Volume (Unrouted)		0.000 ac-ft	
Error (Mass Balance)		0.0 %	

SPILLWAY BLOCKED

Subsection: Level Pool Pond Routing Summary
Label: PO-1 (IN)

Return Event: 5 years
Storm Event: 5 Year

Infiltration			
Infiltration Method (Computed)	Average Infiltration Rate		
Infiltration Rate (Average)	0.8750 in/h		
Initial Conditions			
Elevation (Water Surface, Initial)	686.00 ft		
Volume (Initial)	0.000 ac-ft		
Flow (Initial Outlet)	0.00 ft³/s		
Flow (Initial Infiltration)	0.00 ft³/s		
Flow (Initial, Total)	0.00 ft³/s		
Time Increment	0.050 hours		
Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	6.02 ft³/s	Time to Peak (Flow, In)	11.950 hours
Infiltration (Peak)	0.29 ft³/s	Time to Peak (Infiltration)	13.950 hours
Flow (Peak Outlet)	0.00 ft³/s	Time to Peak (Flow, Outlet)	0.000 hours
Elevation (Water Surface, Peak)	686.53 ft		
Volume (Peak)	0.170 ac-ft		
Mass Balance (ac-ft)			
Volume (Initial)	0.000 ac-ft		
Volume (Total Inflow)	0.341 ac-ft		
Volume (Total Infiltration)	0.341 ac-ft		
Volume (Total Outlet Outflow)	0.000 ac-ft		
Volume (Retained)	0.000 ac-ft		
Volume (Unrouted)	0.000 ac-ft		
Error (Mass Balance)	0.0 %		

SPILLWAY BLOCKED

Subsection: Level Pool Pond Routing Summary
Label: PO-1 (IN)

Return Event: 10 years
Storm Event: 10 Year

Infiltration			
Infiltration Method (Computed)		Average Infiltration Rate	
Infiltration Rate (Average)		0.8750 in/h	
Initial Conditions			
Elevation (Water Surface, Initial)		686.00 ft	
Volume (Initial)		0.000 ac-ft	
Flow (Initial Outlet)		0.00 ft³/s	
Flow (Initial Infiltration)		0.00 ft³/s	
Flow (Initial, Total)		0.00 ft³/s	
Time Increment		0.050 hours	
Inflow/Outflow Hydrograph Summary			
Flow (Peak In)		9.04 ft³/s	Time to Peak (Flow, In)
Infiltration (Peak)		0.30 ft³/s	Time to Peak (Infiltration)
Flow (Peak Outlet)		0.00 ft³/s	Time to Peak (Flow, Outlet)
			11.950 hours
			15.350 hours
			0.000 hours
Peak Conditions			
Elevation (Water Surface, Peak)		686.87 ft	
Volume (Peak)		0.287 ac-ft	
Mass Balance (ac-ft)			
Volume (Initial)		0.000 ac-ft	
Volume (Total Inflow)		0.503 ac-ft	
Volume (Total Infiltration)		0.503 ac-ft	
Volume (Total Outlet Outflow)		0.000 ac-ft	
Volume (Retained)		0.000 ac-ft	
Volume (Unrouted)		0.000 ac-ft	
Error (Mass Balance)		0.0 %	

SPILLWAY BLOCKED

Subsection: Level Pool Pond Routing Summary
Label: PO-1 (IN)

Return Event: 25 years
Storm Event: 25 Year

Infiltration			
Infiltration Method (Computed)		Average Infiltration Rate	
Infiltration Rate (Average)		0.8750 in/h	
Initial Conditions			
Elevation (Water Surface, Initial)		686.00 ft	
Volume (Initial)		0.000 ac-ft	
Flow (Initial Outlet)		0.00 ft³/s	
Flow (Initial Infiltration)		0.00 ft³/s	
Flow (Initial, Total)		0.00 ft³/s	
Time Increment		0.050 hours	
Inflow/Outflow Hydrograph Summary			
Flow (Peak In)		11.71 ft³/s	Time to Peak (Flow, In)
Infiltration (Peak)		0.31 ft³/s	Time to Peak (Infiltration)
Flow (Peak Outlet)		0.00 ft³/s	Time to Peak (Flow, Outlet)
			11.950 hours
			16.000 hours
			0.000 hours
Elevation (Water Surface, Peak)			
		687.20 ft	
Volume (Peak)		0.400 ac-ft	
Mass Balance (ac-ft)			
Volume (Initial)		0.000 ac-ft	
Volume (Total Inflow)		0.648 ac-ft	
Volume (Total Infiltration)		0.648 ac-ft	
Volume (Total Outlet Outflow)		0.000 ac-ft	
Volume (Retained)		0.000 ac-ft	
Volume (Unrouted)		0.000 ac-ft	
Error (Mass Balance)		0.0 %	

SPILLWAY BLOCKED

Subsection: Level Pool Pond Routing Summary
Label: PO-1 (IN)

Return Event: 50 years
Storm Event: 50 Year

Infiltration			
Infiltration Method (Computed)		Average Infiltration Rate	
Infiltration Rate (Average)		0.8750 in/h	
Initial Conditions			
Elevation (Water Surface, Initial)		686.00 ft	
Volume (Initial)		0.000 ac-ft	
Flow (Initial Outlet)		0.00 ft³/s	
Flow (Initial Infiltration)		0.00 ft³/s	
Flow (Initial, Total)		0.00 ft³/s	
Time Increment		0.050 hours	
Inflow/Outflow Hydrograph Summary			
Flow (Peak In)		14.75 ft³/s	Time to Peak (Flow, In)
Infiltration (Peak)		0.32 ft³/s	Time to Peak (Infiltration)
Flow (Peak Outlet)		0.00 ft³/s	Time to Peak (Flow, Outlet)
Elevation (Water Surface, Peak)		687.58 ft	
Volume (Peak)		0.537 ac-ft	
Mass Balance (ac-ft)			
Volume (Initial)		0.000 ac-ft	
Volume (Total Inflow)		0.816 ac-ft	
Volume (Total Infiltration)		0.815 ac-ft	
Volume (Total Outlet Outflow)		0.000 ac-ft	
Volume (Retained)		0.001 ac-ft	
Volume (Unrouted)		0.000 ac-ft	
Error (Mass Balance)		0.0 %	

SPILLWAY BLOCKED

Subsection: Level Pool Pond Routing Summary
Label: PO-1 (IN)

Return Event: 100 years
Storm Event: 100 Year

Infiltration			
Infiltration Method (Computed)		Average Infiltration Rate	
Infiltration Rate (Average)		0.8750 in/h	
Initial Conditions			
Elevation (Water Surface, Initial)		686.00 ft	
Volume (Initial)		0.000 ac-ft	
Flow (Initial Outlet)		0.00 ft³/s	
Flow (Initial Infiltration)		0.00 ft³/s	
Flow (Initial, Total)		0.00 ft³/s	
Time Increment		0.050 hours	
Inflow/Outflow Hydrograph Summary			
Flow (Peak In)		18.13 ft³/s	Time to Peak (Flow, In)
Infiltration (Peak)		0.34 ft³/s	Time to Peak (Infiltration)
Flow (Peak Outlet)		0.00 ft³/s	Time to Peak (Flow, Outlet)
Elevation (Water Surface, Peak)		688.00 ft	
Volume (Peak)		0.696 ac-ft	
Mass Balance (ac-ft)			
Volume (Initial)		0.000 ac-ft	
Volume (Total Inflow)		1.005 ac-ft	
Volume (Total Infiltration)		1.003 ac-ft	
Volume (Total Outlet Outflow)		0.000 ac-ft	
Volume (Retained)		0.002 ac-ft	
Volume (Unrouted)		0.000 ac-ft	
Error (Mass Balance)		0.0 %	

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 1 years
Storm Event: 1 Year

Peak Discharge	0.11 ft ³ /s
Time to Peak	15.100 hours
Hydrograph Volume	0.129 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
11.750	0.00	0.00	0.00	0.01	0.03
12.000	0.04	0.05	0.06	0.07	0.07
12.250	0.07	0.08	0.08	0.08	0.08
12.500	0.08	0.09	0.09	0.09	0.09
12.750	0.09	0.09	0.09	0.09	0.09
13.000	0.09	0.10	0.10	0.10	0.10
13.250	0.10	0.10	0.10	0.10	0.10
13.500	0.10	0.10	0.10	0.10	0.10
13.750	0.10	0.10	0.10	0.10	0.10
14.000	0.10	0.10	0.10	0.10	0.10
14.250	0.10	0.10	0.10	0.10	0.10
14.500	0.11	0.11	0.11	0.11	0.11
14.750	0.11	0.11	0.11	0.11	0.11
15.000	0.11	0.11	0.11	0.11	0.11
15.250	0.11	0.11	0.11	0.11	0.11
15.500	0.11	0.11	0.11	0.11	0.11
15.750	0.10	0.10	0.10	0.10	0.10
16.000	0.10	0.10	0.10	0.10	0.10
16.250	0.10	0.10	0.10	0.10	0.10
16.500	0.10	0.10	0.10	0.10	0.10
16.750	0.10	0.10	0.10	0.10	0.10
17.000	0.10	0.10	0.10	0.10	0.10
17.250	0.10	0.10	0.10	0.10	0.10
17.500	0.10	0.10	0.10	0.10	0.10
17.750	0.10	0.10	0.10	0.10	0.10
18.000	0.10	0.10	0.10	0.10	0.10
18.250	0.10	0.10	0.10	0.10	0.10
18.500	0.10	0.09	0.09	0.09	0.09
18.750	0.09	0.09	0.09	0.09	0.09
19.000	0.09	0.09	0.09	0.09	0.09
19.250	0.09	0.09	0.09	0.09	0.09
19.500	0.09	0.09	0.09	0.09	0.09
19.750	0.09	0.09	0.09	0.09	0.09
20.000	0.09	0.09	0.09	0.09	0.09
20.250	0.09	0.09	0.09	0.09	0.09
20.500	0.09	0.09	0.08	0.08	0.08
20.750	0.08	0.08	0.08	0.08	0.08

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 1 years
Storm Event: 1 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
21.000	0.08	0.08	0.08	0.08	0.08
21.250	0.08	0.08	0.08	0.08	0.08
21.500	0.08	0.08	0.08	0.08	0.08
21.750	0.08	0.08	0.08	0.08	0.08
22.000	0.08	0.08	0.08	0.08	0.08
22.250	0.08	0.08	0.08	0.08	0.08
22.500	0.08	0.08	0.08	0.08	0.08
22.750	0.08	0.07	0.07	0.07	0.07
23.000	0.07	0.07	0.07	0.07	0.07
23.250	0.07	0.07	0.07	0.07	0.07
23.500	0.07	0.07	0.07	0.07	0.07
23.750	0.07	0.07	0.07	0.07	0.07
24.000	0.07	0.07	0.07	0.07	0.07
24.250	0.07	0.07	0.07	0.07	0.07
24.500	0.07	0.07	0.06	0.06	0.06
24.750	0.06	0.06	0.06	0.06	0.06
25.000	0.06	0.06	0.06	0.06	0.06
25.250	0.06	0.06	0.06	0.06	0.06
25.500	0.06	0.06	0.06	0.06	0.05
25.750	0.05	0.05	0.05	0.05	0.05
26.000	0.05	0.05	0.05	0.05	0.05
26.250	0.05	0.05	0.05	0.05	0.05
26.500	0.05	0.05	0.05	0.05	0.05
26.750	0.05	0.05	0.05	0.05	0.05
27.000	0.05	0.04	0.04	0.04	0.04
27.250	0.04	0.04	0.04	0.04	0.04
27.500	0.04	0.04	0.04	0.04	0.04
27.750	0.04	0.04	0.04	0.04	0.04
28.000	0.04	0.04	0.04	0.04	0.04
28.250	0.04	0.04	0.04	0.04	0.04
28.500	0.04	0.04	0.04	0.04	0.04
28.750	0.03	0.03	0.03	0.03	0.03
29.000	0.03	0.03	0.03	0.03	0.03
29.250	0.03	0.03	0.03	0.03	0.03
29.500	0.03	0.03	0.03	0.03	0.03
29.750	0.03	0.03	0.03	0.03	0.03
30.000	0.03	0.03	0.03	0.03	0.03
30.250	0.03	0.03	0.03	0.03	0.03
30.500	0.03	0.03	0.03	0.03	0.03
30.750	0.03	0.03	0.03	0.03	0.03
31.000	0.02	0.02	0.02	0.02	0.02
31.250	0.02	0.02	0.02	0.02	0.02

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 1 years
Storm Event: 1 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
31.500	0.02	0.02	0.02	0.02	0.02
31.750	0.02	0.02	0.02	0.02	0.02
32.000	0.02	0.02	0.02	0.02	0.02
32.250	0.02	0.02	0.02	0.02	0.02
32.500	0.02	0.02	0.02	0.02	0.02
32.750	0.02	0.02	0.02	0.02	0.02
33.000	0.02	0.02	0.02	0.02	0.02
33.250	0.02	0.02	0.02	0.02	0.02
33.500	0.02	0.02	0.02	0.02	0.02
33.750	0.02	0.02	0.02	0.02	0.02
34.000	0.02	0.02	0.02	0.02	0.02
34.250	0.02	0.02	0.02	0.01	0.01
34.500	0.01	0.01	0.01	0.01	0.01
34.750	0.01	0.01	0.01	0.01	0.01
35.000	0.01	0.01	0.01	0.01	0.01
35.250	0.01	0.01	0.01	0.01	0.01
35.500	0.01	0.01	0.01	0.01	0.01
35.750	0.01	0.01	0.01	0.01	0.01
36.000	0.01	0.01	0.01	0.01	0.01
36.250	0.01	0.01	0.01	0.01	0.01
36.500	0.01	0.01	0.01	0.01	0.01
36.750	0.01	0.01	0.01	0.01	0.01
37.000	0.01	0.01	0.01	0.01	0.01
37.250	0.01	0.01	0.01	0.01	0.01
37.500	0.01	0.01	0.01	0.01	0.01
37.750	0.01	0.01	0.01	0.01	0.01
38.000	0.01	0.01	0.01	0.01	0.01
38.250	0.01	0.01	0.01	0.01	0.01
38.500	0.01	0.01	0.01	0.01	0.01
38.750	0.01	0.01	0.01	0.01	0.01
39.000	0.01	0.01	0.01	0.01	0.01
39.250	0.01	0.01	0.01	0.01	0.01
39.500	0.01	0.01	0.01	0.01	0.01
39.750	0.01	0.01	0.01	0.01	0.01
40.000	0.01	0.01	0.01	0.01	0.01
40.250	0.01	0.01	0.01	0.01	0.01
40.500	0.01	0.01	0.01	0.01	0.01
40.750	0.01	0.01	0.01	0.01	0.01
41.000	0.01	0.01	0.01	0.01	0.01
41.250	0.01	0.01	0.01	0.01	0.01
41.500	0.01	0.01	0.01	0.01	0.01
41.750	0.00	0.00	0.00	0.00	0.00

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 1 years
Storm Event: 1 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
42.000	0.00	0.00	0.00	0.00	0.00
42.250	0.00	0.00	0.00	0.00	0.00
42.500	0.00	0.00	0.00	0.00	0.00
42.750	0.00	0.00	0.00	0.00	0.00
43.000	0.00	0.00	0.00	0.00	0.00
43.250	0.00	0.00	0.00	0.00	0.00
43.500	0.00	0.00	0.00	0.00	0.00
43.750	0.00	0.00	0.00	0.00	0.00
44.000	0.00	0.00	0.00	0.00	0.00
44.250	0.00	0.00	0.00	0.00	0.00
44.500	0.00	0.00	0.00	0.00	0.00
44.750	0.00	0.00	0.00	0.00	0.00
45.000	0.00	0.00	0.00	0.00	0.00
45.250	0.00	0.00	0.00	0.00	0.00
45.500	0.00	0.00	0.00	0.00	0.00
45.750	0.00	0.00	0.00	0.00	0.00
46.000	0.00	0.00	0.00	0.00	0.00
46.250	0.00	0.00	0.00	0.00	0.00
46.500	0.00	0.00	0.00	0.00	0.00
46.750	0.00	0.00	0.00	0.00	0.00
47.000	0.00	0.00	0.00	0.00	0.00
47.250	0.00	0.00	0.00	0.00	0.00
47.500	0.00	0.00	0.00	0.00	0.00
47.750	0.00	0.00	0.00	0.00	0.00
48.000	0.00	0.00	0.00	0.00	0.00
48.250	0.00	0.00	0.00	0.00	0.00
48.500	0.00	0.00	0.00	0.00	0.00
48.750	0.00	0.00	0.00	0.00	0.00
49.000	0.00	0.00	0.00	0.00	0.00
49.250	0.00	0.00	0.00	0.00	0.00
49.500	0.00	0.00	0.00	0.00	0.00
49.750	0.00	0.00	0.00	0.00	0.00
50.000	0.00	0.00	0.00	0.00	0.00
50.250	0.00	0.00	0.00	0.00	0.00
50.500	0.00	0.00	0.00	0.00	0.00
50.750	0.00	0.00	0.00	0.00	0.00
51.000	0.00	0.00	0.00	0.00	0.00
51.250	0.00	0.00	0.00	0.00	0.00
51.500	0.00	0.00	0.00	0.00	0.00
51.750	0.00	0.00	0.00	0.00	0.00
52.000	0.00	0.00	0.00	0.00	0.00

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 2 years
Storm Event: 2 Year

Peak Discharge	0.18 ft ³ /s
Time to Peak	14.350 hours
Hydrograph Volume	0.205 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
11.650	0.00	0.00	0.00	0.01	0.02
11.900	0.04	0.06	0.09	0.11	0.12
12.150	0.13	0.13	0.14	0.14	0.14
12.400	0.15	0.15	0.15	0.15	0.15
12.650	0.16	0.16	0.16	0.16	0.16
12.900	0.16	0.16	0.17	0.17	0.17
13.150	0.17	0.17	0.17	0.17	0.17
13.400	0.17	0.17	0.17	0.17	0.17
13.650	0.17	0.17	0.17	0.17	0.17
13.900	0.17	0.18	0.18	0.18	0.18
14.150	0.18	0.18	0.18	0.18	0.18
14.400	0.18	0.18	0.18	0.18	0.18
14.650	0.18	0.18	0.18	0.18	0.18
14.900	0.17	0.17	0.17	0.17	0.17
15.150	0.17	0.17	0.17	0.17	0.17
15.400	0.17	0.17	0.17	0.17	0.17
15.650	0.17	0.17	0.17	0.17	0.17
15.900	0.17	0.17	0.17	0.17	0.17
16.150	0.17	0.17	0.17	0.17	0.17
16.400	0.17	0.17	0.17	0.17	0.17
16.650	0.17	0.16	0.16	0.16	0.16
16.900	0.16	0.16	0.16	0.16	0.16
17.150	0.16	0.16	0.16	0.16	0.16
17.400	0.16	0.16	0.16	0.16	0.16
17.650	0.16	0.16	0.16	0.16	0.16
17.900	0.16	0.16	0.15	0.15	0.15
18.150	0.15	0.15	0.15	0.15	0.15
18.400	0.15	0.15	0.15	0.15	0.15
18.650	0.15	0.15	0.15	0.15	0.15
18.900	0.15	0.15	0.15	0.15	0.15
19.150	0.14	0.14	0.14	0.14	0.14
19.400	0.14	0.14	0.14	0.14	0.14
19.650	0.14	0.14	0.14	0.14	0.14
19.900	0.14	0.14	0.14	0.14	0.14
20.150	0.14	0.14	0.13	0.13	0.13
20.400	0.13	0.13	0.13	0.13	0.13
20.650	0.13	0.13	0.13	0.13	0.13

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 2 years
Storm Event: 2 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
20.900	0.13	0.13	0.13	0.13	0.13
21.150	0.13	0.13	0.13	0.13	0.13
21.400	0.12	0.12	0.12	0.12	0.12
21.650	0.12	0.12	0.12	0.12	0.12
21.900	0.12	0.12	0.12	0.12	0.12
22.150	0.12	0.12	0.12	0.12	0.12
22.400	0.12	0.12	0.12	0.12	0.12
22.650	0.12	0.11	0.11	0.11	0.11
22.900	0.11	0.11	0.11	0.11	0.11
23.150	0.11	0.11	0.11	0.11	0.11
23.400	0.11	0.11	0.11	0.11	0.11
23.650	0.11	0.11	0.11	0.11	0.11
23.900	0.11	0.11	0.11	0.11	0.11
24.150	0.10	0.10	0.10	0.10	0.10
24.400	0.10	0.10	0.10	0.10	0.10
24.650	0.10	0.10	0.10	0.09	0.09
24.900	0.09	0.09	0.09	0.09	0.09
25.150	0.09	0.09	0.09	0.09	0.09
25.400	0.09	0.09	0.09	0.08	0.08
25.650	0.08	0.08	0.08	0.08	0.08
25.900	0.08	0.08	0.08	0.08	0.08
26.150	0.08	0.08	0.08	0.08	0.08
26.400	0.07	0.07	0.07	0.07	0.07
26.650	0.07	0.07	0.07	0.07	0.07
26.900	0.07	0.07	0.07	0.07	0.07
27.150	0.07	0.07	0.07	0.07	0.06
27.400	0.06	0.06	0.06	0.06	0.06
27.650	0.06	0.06	0.06	0.06	0.06
27.900	0.06	0.06	0.06	0.06	0.06
28.150	0.06	0.06	0.06	0.06	0.06
28.400	0.06	0.06	0.05	0.05	0.05
28.650	0.05	0.05	0.05	0.05	0.05
28.900	0.05	0.05	0.05	0.05	0.05
29.150	0.05	0.05	0.05	0.05	0.05
29.400	0.05	0.05	0.05	0.05	0.05
29.650	0.05	0.05	0.05	0.04	0.04
29.900	0.04	0.04	0.04	0.04	0.04
30.150	0.04	0.04	0.04	0.04	0.04
30.400	0.04	0.04	0.04	0.04	0.04
30.650	0.04	0.04	0.04	0.04	0.04
30.900	0.04	0.04	0.04	0.04	0.04
31.150	0.04	0.04	0.04	0.04	0.04

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 2 years
Storm Event: 2 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
31.400	0.04	0.04	0.03	0.03	0.03
31.650	0.03	0.03	0.03	0.03	0.03
31.900	0.03	0.03	0.03	0.03	0.03
32.150	0.03	0.03	0.03	0.03	0.03
32.400	0.03	0.03	0.03	0.03	0.03
32.650	0.03	0.03	0.03	0.03	0.03
32.900	0.03	0.03	0.03	0.03	0.03
33.150	0.03	0.03	0.03	0.03	0.03
33.400	0.03	0.03	0.03	0.03	0.03
33.650	0.03	0.03	0.02	0.02	0.02
33.900	0.02	0.02	0.02	0.02	0.02
34.150	0.02	0.02	0.02	0.02	0.02
34.400	0.02	0.02	0.02	0.02	0.02
34.650	0.02	0.02	0.02	0.02	0.02
34.900	0.02	0.02	0.02	0.02	0.02
35.150	0.02	0.02	0.02	0.02	0.02
35.400	0.02	0.02	0.02	0.02	0.02
35.650	0.02	0.02	0.02	0.02	0.02
35.900	0.02	0.02	0.02	0.02	0.02
36.150	0.02	0.02	0.02	0.02	0.02
36.400	0.02	0.02	0.02	0.02	0.02
36.650	0.02	0.02	0.02	0.02	0.02
36.900	0.02	0.02	0.02	0.02	0.02
37.150	0.01	0.01	0.01	0.01	0.01
37.400	0.01	0.01	0.01	0.01	0.01
37.650	0.01	0.01	0.01	0.01	0.01
37.900	0.01	0.01	0.01	0.01	0.01
38.150	0.01	0.01	0.01	0.01	0.01
38.400	0.01	0.01	0.01	0.01	0.01
38.650	0.01	0.01	0.01	0.01	0.01
38.900	0.01	0.01	0.01	0.01	0.01
39.150	0.01	0.01	0.01	0.01	0.01
39.400	0.01	0.01	0.01	0.01	0.01
39.650	0.01	0.01	0.01	0.01	0.01
39.900	0.01	0.01	0.01	0.01	0.01
40.150	0.01	0.01	0.01	0.01	0.01
40.400	0.01	0.01	0.01	0.01	0.01
40.650	0.01	0.01	0.01	0.01	0.01
40.900	0.01	0.01	0.01	0.01	0.01
41.150	0.01	0.01	0.01	0.01	0.01
41.400	0.01	0.01	0.01	0.01	0.01
41.650	0.01	0.01	0.01	0.01	0.01

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 2 years
Storm Event: 2 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
41.900	0.01	0.01	0.01	0.01	0.01
42.150	0.01	0.01	0.01	0.01	0.01
42.400	0.01	0.01	0.01	0.01	0.01
42.650	0.01	0.01	0.01	0.01	0.01
42.900	0.01	0.01	0.01	0.01	0.01
43.150	0.01	0.01	0.01	0.01	0.01
43.400	0.01	0.01	0.01	0.01	0.01
43.650	0.01	0.01	0.01	0.01	0.01
43.900	0.01	0.01	0.01	0.01	0.01
44.150	0.01	0.01	0.01	0.01	0.01
44.400	0.01	0.01	0.01	0.00	0.00
44.650	0.00	0.00	0.00	0.00	0.00
44.900	0.00	0.00	0.00	0.00	0.00
45.150	0.00	0.00	0.00	0.00	0.00
45.400	0.00	0.00	0.00	0.00	0.00
45.650	0.00	0.00	0.00	0.00	0.00
45.900	0.00	0.00	0.00	0.00	0.00
46.150	0.00	0.00	0.00	0.00	0.00
46.400	0.00	0.00	0.00	0.00	0.00
46.650	0.00	0.00	0.00	0.00	0.00
46.900	0.00	0.00	0.00	0.00	0.00
47.150	0.00	0.00	0.00	0.00	0.00
47.400	0.00	0.00	0.00	0.00	0.00
47.650	0.00	0.00	0.00	0.00	0.00
47.900	0.00	0.00	0.00	0.00	0.00
48.150	0.00	0.00	0.00	0.00	0.00
48.400	0.00	0.00	0.00	0.00	0.00
48.650	0.00	0.00	0.00	0.00	0.00
48.900	0.00	0.00	0.00	0.00	0.00
49.150	0.00	0.00	0.00	0.00	0.00
49.400	0.00	0.00	0.00	0.00	0.00
49.650	0.00	0.00	0.00	0.00	0.00
49.900	0.00	0.00	0.00	0.00	0.00
50.150	0.00	0.00	0.00	0.00	0.00
50.400	0.00	0.00	0.00	0.00	0.00
50.650	0.00	0.00	0.00	0.00	0.00
50.900	0.00	0.00	0.00	0.00	0.00
51.150	0.00	0.00	0.00	0.00	0.00
51.400	0.00	0.00	0.00	0.00	0.00
51.650	0.00	0.00	0.00	0.00	0.00
51.900	0.00	0.00	0.00	0.00	0.00
52.150	0.00	0.00	0.00	0.00	0.00

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 2 years
Storm Event: 2 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
52.400	0.00	0.00	0.00	0.00	0.00
52.650	0.00	0.00	0.00	0.00	0.00
52.900	0.00	0.00	0.00	0.00	0.00
53.150	0.00	0.00	0.00	0.00	0.00
53.400	0.00	0.00	0.00	0.00	0.00
53.650	0.00	0.00	0.00	0.00	0.00
53.900	0.00	0.00	0.00	0.00	0.00
54.150	0.00	0.00	0.00	0.00	0.00
54.400	0.00	0.00	0.00	0.00	0.00
54.650	0.00	0.00	0.00	0.00	0.00
54.900	0.00	0.00	(N/A)	(N/A)	(N/A)

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 5 years
Storm Event: 5 Year

Peak Discharge	0.29 ft ³ /s
Time to Peak	13.950 hours
Hydrograph Volume	0.340 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
11.300	0.00	0.00	0.00	0.00	0.00
11.550	0.00	0.01	0.01	0.01	0.02
11.800	0.03	0.06	0.09	0.13	0.17
12.050	0.21	0.23	0.24	0.25	0.25
12.300	0.26	0.27	0.27	0.27	0.28
12.550	0.28	0.28	0.29	0.29	0.29
12.800	0.29	0.29	0.29	0.29	0.29
13.050	0.29	0.29	0.29	0.29	0.29
13.300	0.29	0.29	0.29	0.29	0.29
13.550	0.29	0.29	0.29	0.29	0.29
13.800	0.29	0.29	0.29	0.29	0.29
14.050	0.29	0.29	0.29	0.29	0.29
14.300	0.29	0.29	0.29	0.29	0.29
14.550	0.29	0.29	0.29	0.29	0.29
14.800	0.29	0.29	0.29	0.29	0.29
15.050	0.29	0.29	0.29	0.29	0.29
15.300	0.29	0.29	0.29	0.29	0.29
15.550	0.29	0.29	0.29	0.29	0.29
15.800	0.29	0.29	0.29	0.29	0.29
16.050	0.29	0.29	0.29	0.29	0.29
16.300	0.29	0.29	0.28	0.28	0.28
16.550	0.28	0.28	0.28	0.28	0.28
16.800	0.28	0.28	0.28	0.28	0.27
17.050	0.27	0.27	0.27	0.27	0.27
17.300	0.27	0.27	0.27	0.27	0.27
17.550	0.27	0.27	0.26	0.26	0.26
17.800	0.26	0.26	0.26	0.26	0.26
18.050	0.26	0.26	0.26	0.26	0.25
18.300	0.25	0.25	0.25	0.25	0.25
18.550	0.25	0.25	0.25	0.25	0.25
18.800	0.25	0.24	0.24	0.24	0.24
19.050	0.24	0.24	0.24	0.24	0.24
19.300	0.24	0.24	0.24	0.23	0.23
19.550	0.23	0.23	0.23	0.23	0.23
19.800	0.23	0.23	0.23	0.23	0.22
20.050	0.22	0.22	0.22	0.22	0.22
20.300	0.22	0.22	0.22	0.22	0.22

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 5 years
Storm Event: 5 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
20.550	0.22	0.21	0.21	0.21	0.21
20.800	0.21	0.21	0.21	0.21	0.21
21.050	0.21	0.21	0.21	0.21	0.20
21.300	0.20	0.20	0.20	0.20	0.20
21.550	0.20	0.20	0.20	0.20	0.20
21.800	0.20	0.20	0.20	0.19	0.19
22.050	0.19	0.19	0.19	0.19	0.19
22.300	0.19	0.19	0.19	0.19	0.19
22.550	0.19	0.19	0.19	0.18	0.18
22.800	0.18	0.18	0.18	0.18	0.18
23.050	0.18	0.18	0.18	0.18	0.18
23.300	0.18	0.18	0.18	0.18	0.17
23.550	0.17	0.17	0.17	0.17	0.17
23.800	0.17	0.17	0.17	0.17	0.17
24.050	0.17	0.17	0.17	0.17	0.16
24.300	0.16	0.16	0.16	0.16	0.16
24.550	0.16	0.16	0.15	0.15	0.15
24.800	0.15	0.15	0.15	0.15	0.15
25.050	0.15	0.14	0.14	0.14	0.14
25.300	0.14	0.14	0.14	0.14	0.14
25.550	0.14	0.13	0.13	0.13	0.13
25.800	0.13	0.13	0.13	0.13	0.13
26.050	0.13	0.12	0.12	0.12	0.12
26.300	0.12	0.12	0.12	0.12	0.12
26.550	0.12	0.12	0.11	0.11	0.11
26.800	0.11	0.11	0.11	0.11	0.11
27.050	0.11	0.11	0.11	0.11	0.10
27.300	0.10	0.10	0.10	0.10	0.10
27.550	0.10	0.10	0.10	0.10	0.10
27.800	0.10	0.10	0.10	0.09	0.09
28.050	0.09	0.09	0.09	0.09	0.09
28.300	0.09	0.09	0.09	0.09	0.09
28.550	0.09	0.09	0.08	0.08	0.08
28.800	0.08	0.08	0.08	0.08	0.08
29.050	0.08	0.08	0.08	0.08	0.08
29.300	0.08	0.08	0.08	0.08	0.07
29.550	0.07	0.07	0.07	0.07	0.07
29.800	0.07	0.07	0.07	0.07	0.07
30.050	0.07	0.07	0.07	0.07	0.07
30.300	0.07	0.07	0.07	0.06	0.06
30.550	0.06	0.06	0.06	0.06	0.06
30.800	0.06	0.06	0.06	0.06	0.06

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 5 years
Storm Event: 5 Year

HYDROGRAPH ORDINATES (ft³/s) Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
31.050	0.06	0.06	0.06	0.06	0.06
31.300	0.06	0.06	0.06	0.06	0.06
31.550	0.06	0.05	0.05	0.05	0.05
31.800	0.05	0.05	0.05	0.05	0.05
32.050	0.05	0.05	0.05	0.05	0.05
32.300	0.05	0.05	0.05	0.05	0.05
32.550	0.05	0.05	0.05	0.05	0.05
32.800	0.05	0.05	0.05	0.04	0.04
33.050	0.04	0.04	0.04	0.04	0.04
33.300	0.04	0.04	0.04	0.04	0.04
33.550	0.04	0.04	0.04	0.04	0.04
33.800	0.04	0.04	0.04	0.04	0.04
34.050	0.04	0.04	0.04	0.04	0.04
34.300	0.04	0.04	0.04	0.04	0.04
34.550	0.04	0.03	0.03	0.03	0.03
34.800	0.03	0.03	0.03	0.03	0.03
35.050	0.03	0.03	0.03	0.03	0.03
35.300	0.03	0.03	0.03	0.03	0.03
35.550	0.03	0.03	0.03	0.03	0.03
35.800	0.03	0.03	0.03	0.03	0.03
36.050	0.03	0.03	0.03	0.03	0.03
36.300	0.03	0.03	0.03	0.03	0.03
36.550	0.03	0.03	0.03	0.03	0.03
36.800	0.03	0.02	0.02	0.02	0.02
37.050	0.02	0.02	0.02	0.02	0.02
37.300	0.02	0.02	0.02	0.02	0.02
37.550	0.02	0.02	0.02	0.02	0.02
37.800	0.02	0.02	0.02	0.02	0.02
38.050	0.02	0.02	0.02	0.02	0.02
38.300	0.02	0.02	0.02	0.02	0.02
38.550	0.02	0.02	0.02	0.02	0.02
38.800	0.02	0.02	0.02	0.02	0.02
39.050	0.02	0.02	0.02	0.02	0.02
39.300	0.02	0.02	0.02	0.02	0.02
39.550	0.02	0.02	0.02	0.02	0.02
39.800	0.02	0.02	0.02	0.02	0.02
40.050	0.02	0.02	0.02	0.02	0.02
40.300	0.01	0.01	0.01	0.01	0.01
40.550	0.01	0.01	0.01	0.01	0.01
40.800	0.01	0.01	0.01	0.01	0.01
41.050	0.01	0.01	0.01	0.01	0.01
41.300	0.01	0.01	0.01	0.01	0.01

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 5 years
Storm Event: 5 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
41.550	0.01	0.01	0.01	0.01	0.01
41.800	0.01	0.01	0.01	0.01	0.01
42.050	0.01	0.01	0.01	0.01	0.01
42.300	0.01	0.01	0.01	0.01	0.01
42.550	0.01	0.01	0.01	0.01	0.01
42.800	0.01	0.01	0.01	0.01	0.01
43.050	0.01	0.01	0.01	0.01	0.01
43.300	0.01	0.01	0.01	0.01	0.01
43.550	0.01	0.01	0.01	0.01	0.01
43.800	0.01	0.01	0.01	0.01	0.01
44.050	0.01	0.01	0.01	0.01	0.01
44.300	0.01	0.01	0.01	0.01	0.01
44.550	0.01	0.01	0.01	0.01	0.01
44.800	0.01	0.01	0.01	0.01	0.01
45.050	0.01	0.01	0.01	0.01	0.01
45.300	0.01	0.01	0.01	0.01	0.01
45.550	0.01	0.01	0.01	0.01	0.01
45.800	0.01	0.01	0.01	0.01	0.01
46.050	0.01	0.01	0.01	0.01	0.01
46.300	0.01	0.01	0.01	0.01	0.01
46.550	0.01	0.01	0.01	0.01	0.01
46.800	0.01	0.01	0.01	0.01	0.01
47.050	0.01	0.01	0.01	0.01	0.01
47.300	0.01	0.01	0.01	0.01	0.01
47.550	0.01	0.01	0.00	0.00	0.00
47.800	0.00	0.00	0.00	0.00	0.00
48.050	0.00	0.00	0.00	0.00	0.00
48.300	0.00	0.00	0.00	0.00	0.00
48.550	0.00	0.00	0.00	0.00	0.00
48.800	0.00	0.00	0.00	0.00	0.00
49.050	0.00	0.00	0.00	0.00	0.00
49.300	0.00	0.00	0.00	0.00	0.00
49.550	0.00	0.00	0.00	0.00	0.00
49.800	0.00	0.00	0.00	0.00	0.00
50.050	0.00	0.00	0.00	0.00	0.00
50.300	0.00	0.00	0.00	0.00	0.00
50.550	0.00	0.00	0.00	0.00	0.00
50.800	0.00	0.00	0.00	0.00	0.00
51.050	0.00	0.00	0.00	0.00	0.00
51.300	0.00	0.00	0.00	0.00	0.00
51.550	0.00	0.00	0.00	0.00	0.00
51.800	0.00	0.00	0.00	0.00	0.00

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 5 years
Storm Event: 5 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
52.050	0.00	0.00	0.00	0.00	0.00
52.300	0.00	0.00	0.00	0.00	0.00
52.550	0.00	0.00	0.00	0.00	0.00
52.800	0.00	0.00	0.00	0.00	0.00
53.050	0.00	0.00	0.00	0.00	0.00
53.300	0.00	0.00	0.00	0.00	0.00
53.550	0.00	0.00	0.00	0.00	0.00
53.800	0.00	0.00	0.00	0.00	0.00
54.050	0.00	0.00	0.00	0.00	0.00
54.300	0.00	0.00	0.00	0.00	0.00
54.550	0.00	0.00	0.00	0.00	0.00
54.800	0.00	0.00	0.00	0.00	0.00
55.050	0.00	0.00	0.00	0.00	0.00
55.300	0.00	0.00	0.00	0.00	0.00
55.550	0.00	0.00	0.00	0.00	0.00
55.800	0.00	0.00	0.00	0.00	0.00
56.050	0.00	0.00	0.00	0.00	0.00
56.300	0.00	0.00	0.00	0.00	0.00
56.550	0.00	0.00	0.00	0.00	0.00
56.800	0.00	0.00	0.00	0.00	0.00
57.050	0.00	0.00	0.00	0.00	0.00
57.300	0.00	0.00	0.00	0.00	0.00
57.550	0.00	0.00	0.00	0.00	0.00
57.800	0.00	0.00	0.00	0.00	0.00
58.050	0.00	(N/A)	(N/A)	(N/A)	(N/A)

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 10 years
Storm Event: 10 Year

Peak Discharge	0.30 ft ³ /s
Time to Peak	15.350 hours
Hydrograph Volume	0.502 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
10.650	0.00	0.00	0.00	0.00	0.00
10.900	0.00	0.00	0.00	0.00	0.01
11.150	0.01	0.01	0.01	0.01	0.01
11.400	0.01	0.01	0.02	0.02	0.02
11.650	0.03	0.04	0.05	0.08	0.11
11.900	0.16	0.23	0.29	0.29	0.30
12.150	0.30	0.30	0.30	0.30	0.30
12.400	0.30	0.30	0.30	0.30	0.30
12.650	0.30	0.30	0.30	0.30	0.30
12.900	0.30	0.30	0.30	0.30	0.30
13.150	0.30	0.30	0.30	0.30	0.30
13.400	0.30	0.30	0.30	0.30	0.30
13.650	0.30	0.30	0.30	0.30	0.30
13.900	0.30	0.30	0.30	0.30	0.30
14.150	0.30	0.30	0.30	0.30	0.30
14.400	0.30	0.30	0.30	0.30	0.30
14.650	0.30	0.30	0.30	0.30	0.30
14.900	0.30	0.30	0.30	0.30	0.30
15.150	0.30	0.30	0.30	0.30	0.30
15.400	0.30	0.30	0.30	0.30	0.30
15.650	0.30	0.30	0.30	0.30	0.30
15.900	0.30	0.30	0.30	0.30	0.30
16.150	0.30	0.30	0.30	0.30	0.30
16.400	0.30	0.30	0.30	0.30	0.30
16.650	0.30	0.30	0.30	0.30	0.30
16.900	0.30	0.30	0.30	0.30	0.30
17.150	0.30	0.30	0.30	0.30	0.30
17.400	0.30	0.30	0.30	0.30	0.30
17.650	0.30	0.30	0.30	0.30	0.30
17.900	0.30	0.30	0.30	0.30	0.30
18.150	0.30	0.30	0.30	0.30	0.30
18.400	0.30	0.30	0.30	0.30	0.30
18.650	0.30	0.30	0.30	0.30	0.30
18.900	0.30	0.30	0.30	0.30	0.30
19.150	0.30	0.30	0.30	0.30	0.30
19.400	0.30	0.30	0.30	0.30	0.30
19.650	0.30	0.30	0.30	0.30	0.30

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 10 years
Storm Event: 10 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
19.900	0.30	0.30	0.30	0.30	0.30
20.150	0.30	0.30	0.30	0.30	0.30
20.400	0.30	0.30	0.30	0.30	0.30
20.650	0.30	0.30	0.30	0.30	0.30
20.900	0.30	0.30	0.30	0.30	0.30
21.150	0.30	0.30	0.30	0.30	0.30
21.400	0.30	0.30	0.30	0.30	0.30
21.650	0.30	0.30	0.30	0.30	0.30
21.900	0.30	0.30	0.30	0.30	0.30
22.150	0.30	0.30	0.30	0.30	0.30
22.400	0.30	0.30	0.30	0.30	0.30
22.650	0.30	0.30	0.30	0.30	0.30
22.900	0.30	0.30	0.30	0.30	0.30
23.150	0.30	0.30	0.30	0.30	0.30
23.400	0.30	0.30	0.30	0.30	0.30
23.650	0.30	0.30	0.30	0.30	0.30
23.900	0.30	0.30	0.30	0.30	0.29
24.150	0.29	0.29	0.29	0.29	0.29
24.400	0.29	0.29	0.29	0.29	0.29
24.650	0.29	0.29	0.29	0.29	0.29
24.900	0.29	0.29	0.29	0.29	0.29
25.150	0.29	0.29	0.29	0.29	0.29
25.400	0.29	0.29	0.29	0.29	0.29
25.650	0.29	0.29	0.29	0.28	0.28
25.900	0.28	0.28	0.28	0.27	0.27
26.150	0.27	0.27	0.27	0.26	0.26
26.400	0.26	0.26	0.26	0.25	0.25
26.650	0.25	0.25	0.25	0.25	0.24
26.900	0.24	0.24	0.24	0.24	0.23
27.150	0.23	0.23	0.23	0.23	0.23
27.400	0.22	0.22	0.22	0.22	0.22
27.650	0.22	0.21	0.21	0.21	0.21
27.900	0.21	0.21	0.21	0.20	0.20
28.150	0.20	0.20	0.20	0.20	0.19
28.400	0.19	0.19	0.19	0.19	0.19
28.650	0.19	0.18	0.18	0.18	0.18
28.900	0.18	0.18	0.18	0.18	0.17
29.150	0.17	0.17	0.17	0.17	0.17
29.400	0.17	0.17	0.16	0.16	0.16
29.650	0.16	0.16	0.16	0.16	0.16
29.900	0.15	0.15	0.15	0.15	0.15
30.150	0.15	0.15	0.15	0.15	0.14

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 10 years
Storm Event: 10 Year

HYDROGRAPH ORDINATES (ft³/s) Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
30.400	0.14	0.14	0.14	0.14	0.14
30.650	0.14	0.14	0.14	0.13	0.13
30.900	0.13	0.13	0.13	0.13	0.13
31.150	0.13	0.13	0.13	0.13	0.12
31.400	0.12	0.12	0.12	0.12	0.12
31.650	0.12	0.12	0.12	0.12	0.12
31.900	0.11	0.11	0.11	0.11	0.11
32.150	0.11	0.11	0.11	0.11	0.11
32.400	0.11	0.11	0.10	0.10	0.10
32.650	0.10	0.10	0.10	0.10	0.10
32.900	0.10	0.10	0.10	0.10	0.10
33.150	0.09	0.09	0.09	0.09	0.09
33.400	0.09	0.09	0.09	0.09	0.09
33.650	0.09	0.09	0.09	0.09	0.09
33.900	0.08	0.08	0.08	0.08	0.08
34.150	0.08	0.08	0.08	0.08	0.08
34.400	0.08	0.08	0.08	0.08	0.08
34.650	0.08	0.08	0.07	0.07	0.07
34.900	0.07	0.07	0.07	0.07	0.07
35.150	0.07	0.07	0.07	0.07	0.07
35.400	0.07	0.07	0.07	0.07	0.07
35.650	0.07	0.06	0.06	0.06	0.06
35.900	0.06	0.06	0.06	0.06	0.06
36.150	0.06	0.06	0.06	0.06	0.06
36.400	0.06	0.06	0.06	0.06	0.06
36.650	0.06	0.06	0.06	0.06	0.05
36.900	0.05	0.05	0.05	0.05	0.05
37.150	0.05	0.05	0.05	0.05	0.05
37.400	0.05	0.05	0.05	0.05	0.05
37.650	0.05	0.05	0.05	0.05	0.05
37.900	0.05	0.05	0.05	0.05	0.05
38.150	0.04	0.04	0.04	0.04	0.04
38.400	0.04	0.04	0.04	0.04	0.04
38.650	0.04	0.04	0.04	0.04	0.04
38.900	0.04	0.04	0.04	0.04	0.04
39.150	0.04	0.04	0.04	0.04	0.04
39.400	0.04	0.04	0.04	0.04	0.04
39.650	0.04	0.04	0.04	0.04	0.03
39.900	0.03	0.03	0.03	0.03	0.03
40.150	0.03	0.03	0.03	0.03	0.03
40.400	0.03	0.03	0.03	0.03	0.03
40.650	0.03	0.03	0.03	0.03	0.03

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 10 years
Storm Event: 10 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
40.900	0.03	0.03	0.03	0.03	0.03
41.150	0.03	0.03	0.03	0.03	0.03
41.400	0.03	0.03	0.03	0.03	0.03
41.650	0.03	0.03	0.03	0.03	0.03
41.900	0.03	0.03	0.03	0.03	0.02
42.150	0.02	0.02	0.02	0.02	0.02
42.400	0.02	0.02	0.02	0.02	0.02
42.650	0.02	0.02	0.02	0.02	0.02
42.900	0.02	0.02	0.02	0.02	0.02
43.150	0.02	0.02	0.02	0.02	0.02
43.400	0.02	0.02	0.02	0.02	0.02
43.650	0.02	0.02	0.02	0.02	0.02
43.900	0.02	0.02	0.02	0.02	0.02
44.150	0.02	0.02	0.02	0.02	0.02
44.400	0.02	0.02	0.02	0.02	0.02
44.650	0.02	0.02	0.02	0.02	0.02
44.900	0.02	0.02	0.02	0.02	0.02
45.150	0.02	0.02	0.02	0.02	0.02
45.400	0.02	0.02	0.01	0.01	0.01
45.650	0.01	0.01	0.01	0.01	0.01
45.900	0.01	0.01	0.01	0.01	0.01
46.150	0.01	0.01	0.01	0.01	0.01
46.400	0.01	0.01	0.01	0.01	0.01
46.650	0.01	0.01	0.01	0.01	0.01
46.900	0.01	0.01	0.01	0.01	0.01
47.150	0.01	0.01	0.01	0.01	0.01
47.400	0.01	0.01	0.01	0.01	0.01
47.650	0.01	0.01	0.01	0.01	0.01
47.900	0.01	0.01	0.01	0.01	0.01
48.150	0.01	0.01	0.01	0.01	0.01
48.400	0.01	0.01	0.01	0.01	0.01
48.650	0.01	0.01	0.01	0.01	0.01
48.900	0.01	0.01	0.01	0.01	0.01
49.150	0.01	0.01	0.01	0.01	0.01
49.400	0.01	0.01	0.01	0.01	0.01
49.650	0.01	0.01	0.01	0.01	0.01
49.900	0.01	0.01	0.01	0.01	0.01
50.150	0.01	0.01	0.01	0.01	0.01
50.400	0.01	0.01	0.01	0.01	0.01
50.650	0.01	0.01	0.01	0.01	0.01
50.900	0.01	0.01	0.01	0.01	0.01
51.150	0.01	0.01	0.01	0.01	0.01

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 10 years
Storm Event: 10 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
51.400	0.01	0.01	0.01	0.01	0.01
51.650	0.01	0.01	0.01	0.01	0.01
51.900	0.01	0.01	0.01	0.01	0.01
52.150	0.01	0.01	0.01	0.01	0.01
52.400	0.01	0.01	0.01	0.01	0.01
52.650	0.01	0.01	0.01	0.01	0.00
52.900	0.00	0.00	0.00	0.00	0.00
53.150	0.00	0.00	0.00	0.00	0.00
53.400	0.00	0.00	0.00	0.00	0.00
53.650	0.00	0.00	0.00	0.00	0.00
53.900	0.00	0.00	0.00	0.00	0.00
54.150	0.00	0.00	0.00	0.00	0.00
54.400	0.00	0.00	0.00	0.00	0.00
54.650	0.00	0.00	0.00	0.00	0.00
54.900	0.00	0.00	0.00	0.00	0.00
55.150	0.00	0.00	0.00	0.00	0.00
55.400	0.00	0.00	0.00	0.00	0.00
55.650	0.00	0.00	0.00	0.00	0.00
55.900	0.00	0.00	0.00	0.00	0.00
56.150	0.00	0.00	0.00	0.00	0.00
56.400	0.00	0.00	0.00	0.00	0.00
56.650	0.00	0.00	0.00	0.00	0.00
56.900	0.00	0.00	0.00	0.00	0.00
57.150	0.00	0.00	0.00	0.00	0.00
57.400	0.00	0.00	0.00	0.00	0.00
57.650	0.00	0.00	0.00	0.00	0.00
57.900	0.00	0.00	0.00	0.00	0.00
58.150	0.00	0.00	0.00	0.00	0.00
58.400	0.00	0.00	0.00	0.00	0.00
58.650	0.00	0.00	0.00	0.00	0.00
58.900	0.00	0.00	0.00	0.00	0.00
59.150	0.00	0.00	0.00	0.00	0.00
59.400	0.00	0.00	0.00	0.00	0.00
59.650	0.00	0.00	0.00	0.00	0.00
59.900	0.00	0.00	0.00	0.00	0.00
60.150	0.00	0.00	0.00	0.00	0.00
60.400	0.00	0.00	0.00	0.00	0.00
60.650	0.00	0.00	0.00	0.00	0.00
60.900	0.00	0.00	0.00	0.00	0.00
61.150	0.00	0.00	0.00	0.00	0.00
61.400	0.00	0.00	0.00	0.00	0.00
61.650	0.00	0.00	0.00	0.00	0.00

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 10 years
Storm Event: 10 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
61.900	0.00	0.00	0.00	0.00	0.00
62.150	0.00	0.00	0.00	0.00	0.00
62.400	0.00	0.00	0.00	0.00	0.00
62.650	0.00	0.00	0.00	0.00	0.00
62.900	0.00	0.00	0.00	0.00	0.00
63.150	0.00	0.00	0.00	0.00	(N/A)

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 25 years
Storm Event: 25 Year

Peak Discharge	0.31 ft ³ /s
Time to Peak	16.000 hours
Hydrograph Volume	0.647 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
10.100	0.00	0.00	0.00	0.00	0.00
10.350	0.00	0.00	0.00	0.00	0.00
10.600	0.00	0.01	0.01	0.01	0.01
10.850	0.01	0.01	0.01	0.01	0.01
11.100	0.01	0.02	0.02	0.02	0.02
11.350	0.02	0.03	0.03	0.03	0.04
11.600	0.04	0.05	0.07	0.09	0.12
11.850	0.17	0.24	0.29	0.30	0.30
12.100	0.30	0.30	0.30	0.30	0.30
12.350	0.31	0.31	0.31	0.31	0.31
12.600	0.31	0.31	0.31	0.31	0.31
12.850	0.31	0.31	0.31	0.31	0.31
13.100	0.31	0.31	0.31	0.31	0.31
13.350	0.31	0.31	0.31	0.31	0.31
13.600	0.31	0.31	0.31	0.31	0.31
13.850	0.31	0.31	0.31	0.31	0.31
14.100	0.31	0.31	0.31	0.31	0.31
14.350	0.31	0.31	0.31	0.31	0.31
14.600	0.31	0.31	0.31	0.31	0.31
14.850	0.31	0.31	0.31	0.31	0.31
15.100	0.31	0.31	0.31	0.31	0.31
15.350	0.31	0.31	0.31	0.31	0.31
15.600	0.31	0.31	0.31	0.31	0.31
15.850	0.31	0.31	0.31	0.31	0.31
16.100	0.31	0.31	0.31	0.31	0.31
16.350	0.31	0.31	0.31	0.31	0.31
16.600	0.31	0.31	0.31	0.31	0.31
16.850	0.31	0.31	0.31	0.31	0.31
17.100	0.31	0.31	0.31	0.31	0.31
17.350	0.31	0.31	0.31	0.31	0.31
17.600	0.31	0.31	0.31	0.31	0.31
17.850	0.31	0.31	0.31	0.31	0.31
18.100	0.31	0.31	0.31	0.31	0.31
18.350	0.31	0.31	0.31	0.31	0.31
18.600	0.31	0.31	0.31	0.31	0.31
18.850	0.31	0.31	0.31	0.31	0.31
19.100	0.31	0.31	0.31	0.31	0.31

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 25 years
Storm Event: 25 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
19.350	0.31	0.31	0.31	0.31	0.31
19.600	0.31	0.31	0.31	0.31	0.31
19.850	0.31	0.31	0.31	0.31	0.31
20.100	0.31	0.31	0.31	0.31	0.31
20.350	0.31	0.31	0.31	0.31	0.31
20.600	0.31	0.31	0.31	0.31	0.31
20.850	0.31	0.31	0.31	0.31	0.31
21.100	0.31	0.31	0.31	0.31	0.31
21.350	0.31	0.31	0.31	0.31	0.31
21.600	0.31	0.31	0.31	0.31	0.31
21.850	0.31	0.31	0.31	0.31	0.31
22.100	0.31	0.31	0.31	0.31	0.31
22.350	0.31	0.31	0.31	0.31	0.31
22.600	0.31	0.31	0.31	0.31	0.31
22.850	0.31	0.31	0.31	0.31	0.31
23.100	0.31	0.31	0.31	0.31	0.31
23.350	0.31	0.31	0.31	0.31	0.31
23.600	0.31	0.31	0.31	0.31	0.31
23.850	0.31	0.31	0.31	0.31	0.31
24.100	0.31	0.31	0.31	0.31	0.31
24.350	0.31	0.31	0.31	0.31	0.31
24.600	0.31	0.31	0.31	0.30	0.30
24.850	0.30	0.30	0.30	0.30	0.30
25.100	0.30	0.30	0.30	0.30	0.30
25.350	0.30	0.30	0.30	0.30	0.30
25.600	0.30	0.30	0.30	0.30	0.30
25.850	0.30	0.30	0.30	0.30	0.30
26.100	0.30	0.30	0.30	0.30	0.30
26.350	0.30	0.30	0.30	0.30	0.30
26.600	0.30	0.30	0.30	0.30	0.30
26.850	0.30	0.30	0.30	0.30	0.30
27.100	0.30	0.30	0.30	0.30	0.30
27.350	0.30	0.30	0.30	0.30	0.30
27.600	0.30	0.30	0.30	0.30	0.30
27.850	0.30	0.30	0.30	0.30	0.30
28.100	0.30	0.30	0.30	0.30	0.30
28.350	0.30	0.30	0.30	0.30	0.30
28.600	0.30	0.30	0.30	0.30	0.30
28.850	0.30	0.30	0.30	0.30	0.30
29.100	0.30	0.30	0.30	0.30	0.30
29.350	0.30	0.30	0.29	0.29	0.29
29.600	0.29	0.29	0.29	0.29	0.29

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 25 years
Storm Event: 25 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
29.850	0.29	0.29	0.29	0.29	0.29
30.100	0.29	0.29	0.29	0.29	0.29
30.350	0.29	0.29	0.29	0.29	0.29
30.600	0.29	0.29	0.29	0.29	0.29
30.850	0.29	0.29	0.29	0.29	0.29
31.100	0.29	0.28	0.28	0.28	0.28
31.350	0.28	0.27	0.27	0.27	0.27
31.600	0.27	0.26	0.26	0.26	0.26
31.850	0.26	0.25	0.25	0.25	0.25
32.100	0.25	0.25	0.24	0.24	0.24
32.350	0.24	0.24	0.23	0.23	0.23
32.600	0.23	0.23	0.23	0.22	0.22
32.850	0.22	0.22	0.22	0.22	0.21
33.100	0.21	0.21	0.21	0.21	0.21
33.350	0.20	0.20	0.20	0.20	0.20
33.600	0.20	0.20	0.19	0.19	0.19
33.850	0.19	0.19	0.19	0.19	0.18
34.100	0.18	0.18	0.18	0.18	0.18
34.350	0.18	0.18	0.17	0.17	0.17
34.600	0.17	0.17	0.17	0.17	0.17
34.850	0.16	0.16	0.16	0.16	0.16
35.100	0.16	0.16	0.16	0.15	0.15
35.350	0.15	0.15	0.15	0.15	0.15
35.600	0.15	0.15	0.14	0.14	0.14
35.850	0.14	0.14	0.14	0.14	0.14
36.100	0.14	0.13	0.13	0.13	0.13
36.350	0.13	0.13	0.13	0.13	0.13
36.600	0.13	0.13	0.12	0.12	0.12
36.850	0.12	0.12	0.12	0.12	0.12
37.100	0.12	0.12	0.12	0.11	0.11
37.350	0.11	0.11	0.11	0.11	0.11
37.600	0.11	0.11	0.11	0.11	0.11
37.850	0.10	0.10	0.10	0.10	0.10
38.100	0.10	0.10	0.10	0.10	0.10
38.350	0.10	0.10	0.10	0.09	0.09
38.600	0.09	0.09	0.09	0.09	0.09
38.850	0.09	0.09	0.09	0.09	0.09
39.100	0.09	0.09	0.09	0.08	0.08
39.350	0.08	0.08	0.08	0.08	0.08
39.600	0.08	0.08	0.08	0.08	0.08
39.850	0.08	0.08	0.08	0.08	0.08
40.100	0.07	0.07	0.07	0.07	0.07

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 25 years
Storm Event: 25 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
40.350	0.07	0.07	0.07	0.07	0.07
40.600	0.07	0.07	0.07	0.07	0.07
40.850	0.07	0.07	0.07	0.07	0.06
41.100	0.06	0.06	0.06	0.06	0.06
41.350	0.06	0.06	0.06	0.06	0.06
41.600	0.06	0.06	0.06	0.06	0.06
41.850	0.06	0.06	0.06	0.06	0.06
42.100	0.06	0.06	0.05	0.05	0.05
42.350	0.05	0.05	0.05	0.05	0.05
42.600	0.05	0.05	0.05	0.05	0.05
42.850	0.05	0.05	0.05	0.05	0.05
43.100	0.05	0.05	0.05	0.05	0.05
43.350	0.05	0.05	0.05	0.04	0.04
43.600	0.04	0.04	0.04	0.04	0.04
43.850	0.04	0.04	0.04	0.04	0.04
44.100	0.04	0.04	0.04	0.04	0.04
44.350	0.04	0.04	0.04	0.04	0.04
44.600	0.04	0.04	0.04	0.04	0.04
44.850	0.04	0.04	0.04	0.04	0.04
45.100	0.04	0.04	0.03	0.03	0.03
45.350	0.03	0.03	0.03	0.03	0.03
45.600	0.03	0.03	0.03	0.03	0.03
45.850	0.03	0.03	0.03	0.03	0.03
46.100	0.03	0.03	0.03	0.03	0.03
46.350	0.03	0.03	0.03	0.03	0.03
46.600	0.03	0.03	0.03	0.03	0.03
46.850	0.03	0.03	0.03	0.03	0.03
47.100	0.03	0.03	0.03	0.03	0.03
47.350	0.03	0.03	0.02	0.02	0.02
47.600	0.02	0.02	0.02	0.02	0.02
47.850	0.02	0.02	0.02	0.02	0.02
48.100	0.02	0.02	0.02	0.02	0.02
48.350	0.02	0.02	0.02	0.02	0.02
48.600	0.02	0.02	0.02	0.02	0.02
48.850	0.02	0.02	0.02	0.02	0.02
49.100	0.02	0.02	0.02	0.02	0.02
49.350	0.02	0.02	0.02	0.02	0.02
49.600	0.02	0.02	0.02	0.02	0.02
49.850	0.02	0.02	0.02	0.02	0.02
50.100	0.02	0.02	0.02	0.02	0.02
50.350	0.02	0.02	0.02	0.02	0.02
50.600	0.02	0.02	0.02	0.02	0.02

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 25 years
Storm Event: 25 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
50.850	0.01	0.01	0.01	0.01	0.01
51.100	0.01	0.01	0.01	0.01	0.01
51.350	0.01	0.01	0.01	0.01	0.01
51.600	0.01	0.01	0.01	0.01	0.01
51.850	0.01	0.01	0.01	0.01	0.01
52.100	0.01	0.01	0.01	0.01	0.01
52.350	0.01	0.01	0.01	0.01	0.01
52.600	0.01	0.01	0.01	0.01	0.01
52.850	0.01	0.01	0.01	0.01	0.01
53.100	0.01	0.01	0.01	0.01	0.01
53.350	0.01	0.01	0.01	0.01	0.01
53.600	0.01	0.01	0.01	0.01	0.01
53.850	0.01	0.01	0.01	0.01	0.01
54.100	0.01	0.01	0.01	0.01	0.01
54.350	0.01	0.01	0.01	0.01	0.01
54.600	0.01	0.01	0.01	0.01	0.01
54.850	0.01	0.01	0.01	0.01	0.01
55.100	0.01	0.01	0.01	0.01	0.01
55.350	0.01	0.01	0.01	0.01	0.01
55.600	0.01	0.01	0.01	0.01	0.01
55.850	0.01	0.01	0.01	0.01	0.01
56.100	0.01	0.01	0.01	0.01	0.01
56.350	0.01	0.01	0.01	0.01	0.01
56.600	0.01	0.01	0.01	0.01	0.01
56.850	0.01	0.01	0.01	0.01	0.01
57.100	0.01	0.01	0.01	0.01	0.01
57.350	0.01	0.01	0.01	0.01	0.01
57.600	0.01	0.01	0.01	0.01	0.01
57.850	0.01	0.01	0.01	0.01	0.01
58.100	0.01	0.01	0.00	0.00	0.00
58.350	0.00	0.00	0.00	0.00	0.00
58.600	0.00	0.00	0.00	0.00	0.00
58.850	0.00	0.00	0.00	0.00	0.00
59.100	0.00	0.00	0.00	0.00	0.00
59.350	0.00	0.00	0.00	0.00	0.00
59.600	0.00	0.00	0.00	0.00	0.00
59.850	0.00	0.00	0.00	0.00	0.00
60.100	0.00	0.00	0.00	0.00	0.00
60.350	0.00	0.00	0.00	0.00	0.00
60.600	0.00	0.00	0.00	0.00	0.00
60.850	0.00	0.00	0.00	0.00	0.00
61.100	0.00	0.00	0.00	0.00	0.00

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 25 years
Storm Event: 25 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
61.350	0.00	0.00	0.00	0.00	0.00
61.600	0.00	0.00	0.00	0.00	0.00
61.850	0.00	0.00	0.00	0.00	0.00
62.100	0.00	0.00	0.00	0.00	0.00
62.350	0.00	0.00	0.00	0.00	0.00
62.600	0.00	0.00	0.00	0.00	0.00
62.850	0.00	0.00	0.00	0.00	0.00
63.100	0.00	0.00	0.00	0.00	0.00
63.350	0.00	0.00	0.00	0.00	0.00
63.600	0.00	0.00	0.00	0.00	0.00
63.850	0.00	0.00	0.00	0.00	0.00
64.100	0.00	0.00	0.00	0.00	0.00
64.350	0.00	0.00	0.00	0.00	0.00
64.600	0.00	0.00	0.00	0.00	0.00
64.850	0.00	0.00	0.00	0.00	0.00
65.100	0.00	0.00	0.00	0.00	0.00
65.350	0.00	0.00	0.00	0.00	0.00
65.600	0.00	0.00	0.00	0.00	0.00
65.850	0.00	0.00	0.00	0.00	0.00
66.100	0.00	0.00	0.00	0.00	0.00
66.350	0.00	0.00	0.00	0.00	0.00
66.600	0.00	0.00	0.00	0.00	0.00
66.850	0.00	0.00	0.00	0.00	0.00
67.100	0.00	0.00	0.00	0.00	0.00
67.350	0.00	0.00	0.00	0.00	0.00
67.600	0.00	0.00	0.00	0.00	0.00
67.850	0.00	0.00	0.00	0.00	0.00
68.100	0.00	0.00	0.00	0.00	0.00
68.350	0.00	0.00	0.00	0.00	0.00
68.600	0.00	0.00	(N/A)	(N/A)	(N/A)

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 50 years
Storm Event: 50 Year

Peak Discharge	0.32 ft ³ /s
Time to Peak	17.350 hours
Hydrograph Volume	0.815 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
9.500	0.00	0.00	0.00	0.00	0.00
9.750	0.00	0.00	0.00	0.00	0.00
10.000	0.00	0.00	0.01	0.01	0.01
10.250	0.01	0.01	0.01	0.01	0.01
10.500	0.01	0.01	0.01	0.01	0.02
10.750	0.02	0.02	0.02	0.02	0.02
11.000	0.03	0.03	0.03	0.03	0.04
11.250	0.04	0.04	0.05	0.05	0.05
11.500	0.06	0.06	0.07	0.09	0.11
11.750	0.14	0.18	0.24	0.29	0.30
12.000	0.30	0.31	0.31	0.31	0.31
12.250	0.31	0.31	0.31	0.31	0.31
12.500	0.31	0.32	0.32	0.32	0.32
12.750	0.32	0.32	0.32	0.32	0.32
13.000	0.32	0.32	0.32	0.32	0.32
13.250	0.32	0.32	0.32	0.32	0.32
13.500	0.32	0.32	0.32	0.32	0.32
13.750	0.32	0.32	0.32	0.32	0.32
14.000	0.32	0.32	0.32	0.32	0.32
14.250	0.32	0.32	0.32	0.32	0.32
14.500	0.32	0.32	0.32	0.32	0.32
14.750	0.32	0.32	0.32	0.32	0.32
15.000	0.32	0.32	0.32	0.32	0.32
15.250	0.32	0.32	0.32	0.32	0.32
15.500	0.32	0.32	0.32	0.32	0.32
15.750	0.32	0.32	0.32	0.32	0.32
16.000	0.32	0.32	0.32	0.32	0.32
16.250	0.32	0.32	0.32	0.32	0.32
16.500	0.32	0.32	0.32	0.32	0.32
16.750	0.32	0.32	0.32	0.32	0.32
17.000	0.32	0.32	0.32	0.32	0.32
17.250	0.32	0.32	0.32	0.32	0.32
17.500	0.32	0.32	0.32	0.32	0.32
17.750	0.32	0.32	0.32	0.32	0.32
18.000	0.32	0.32	0.32	0.32	0.32
18.250	0.32	0.32	0.32	0.32	0.32
18.500	0.32	0.32	0.32	0.32	0.32

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 50 years
Storm Event: 50 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
18.750	0.32	0.32	0.32	0.32	0.32
19.000	0.32	0.32	0.32	0.32	0.32
19.250	0.32	0.32	0.32	0.32	0.32
19.500	0.32	0.32	0.32	0.32	0.32
19.750	0.32	0.32	0.32	0.32	0.32
20.000	0.32	0.32	0.32	0.32	0.32
20.250	0.32	0.32	0.32	0.32	0.32
20.500	0.32	0.32	0.32	0.32	0.32
20.750	0.32	0.32	0.32	0.32	0.32
21.000	0.32	0.32	0.32	0.32	0.32
21.250	0.32	0.32	0.32	0.32	0.32
21.500	0.32	0.32	0.32	0.32	0.32
21.750	0.32	0.32	0.32	0.32	0.32
22.000	0.32	0.32	0.32	0.32	0.32
22.250	0.32	0.32	0.32	0.32	0.32
22.500	0.32	0.32	0.32	0.32	0.32
22.750	0.32	0.32	0.32	0.32	0.32
23.000	0.32	0.32	0.32	0.32	0.32
23.250	0.32	0.32	0.32	0.32	0.32
23.500	0.32	0.32	0.32	0.32	0.32
23.750	0.32	0.32	0.32	0.32	0.32
24.000	0.32	0.32	0.32	0.32	0.32
24.250	0.32	0.32	0.32	0.32	0.32
24.500	0.32	0.32	0.32	0.32	0.32
24.750	0.32	0.32	0.32	0.32	0.32
25.000	0.32	0.32	0.32	0.32	0.32
25.250	0.32	0.32	0.32	0.32	0.32
25.500	0.32	0.32	0.32	0.32	0.32
25.750	0.32	0.32	0.32	0.32	0.32
26.000	0.31	0.31	0.31	0.31	0.31
26.250	0.31	0.31	0.31	0.31	0.31
26.500	0.31	0.31	0.31	0.31	0.31
26.750	0.31	0.31	0.31	0.31	0.31
27.000	0.31	0.31	0.31	0.31	0.31
27.250	0.31	0.31	0.31	0.31	0.31
27.500	0.31	0.31	0.31	0.31	0.31
27.750	0.31	0.31	0.31	0.31	0.31
28.000	0.31	0.31	0.31	0.31	0.31
28.250	0.31	0.31	0.31	0.31	0.31
28.500	0.31	0.31	0.31	0.31	0.31
28.750	0.31	0.31	0.31	0.31	0.31
29.000	0.31	0.31	0.31	0.31	0.31

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 50 years
Storm Event: 50 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
29.250	0.31	0.31	0.31	0.31	0.31
29.500	0.31	0.31	0.31	0.31	0.31
29.750	0.31	0.31	0.31	0.31	0.31
30.000	0.31	0.31	0.31	0.31	0.31
30.250	0.31	0.31	0.31	0.31	0.31
30.500	0.31	0.31	0.31	0.31	0.30
30.750	0.30	0.30	0.30	0.30	0.30
31.000	0.30	0.30	0.30	0.30	0.30
31.250	0.30	0.30	0.30	0.30	0.30
31.500	0.30	0.30	0.30	0.30	0.30
31.750	0.30	0.30	0.30	0.30	0.30
32.000	0.30	0.30	0.30	0.30	0.30
32.250	0.30	0.30	0.30	0.30	0.30
32.500	0.30	0.30	0.30	0.30	0.30
32.750	0.30	0.30	0.30	0.30	0.30
33.000	0.30	0.30	0.30	0.30	0.30
33.250	0.30	0.30	0.30	0.30	0.30
33.500	0.30	0.30	0.30	0.30	0.30
33.750	0.30	0.30	0.30	0.30	0.30
34.000	0.30	0.30	0.30	0.30	0.30
34.250	0.30	0.30	0.30	0.30	0.30
34.500	0.30	0.30	0.30	0.30	0.30
34.750	0.30	0.30	0.30	0.30	0.30
35.000	0.30	0.30	0.30	0.30	0.30
35.250	0.30	0.30	0.30	0.29	0.29
35.500	0.29	0.29	0.29	0.29	0.29
35.750	0.29	0.29	0.29	0.29	0.29
36.000	0.29	0.29	0.29	0.29	0.29
36.250	0.29	0.29	0.29	0.29	0.29
36.500	0.29	0.29	0.29	0.29	0.29
36.750	0.29	0.29	0.29	0.29	0.29
37.000	0.29	0.29	0.28	0.28	0.28
37.250	0.28	0.28	0.27	0.27	0.27
37.500	0.27	0.27	0.26	0.26	0.26
37.750	0.26	0.26	0.25	0.25	0.25
38.000	0.25	0.25	0.25	0.24	0.24
38.250	0.24	0.24	0.24	0.23	0.23
38.500	0.23	0.23	0.23	0.23	0.22
38.750	0.22	0.22	0.22	0.22	0.22
39.000	0.21	0.21	0.21	0.21	0.21
39.250	0.21	0.20	0.20	0.20	0.20
39.500	0.20	0.20	0.20	0.19	0.19

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 50 years
Storm Event: 50 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
39.750	0.19	0.19	0.19	0.19	0.19
40.000	0.18	0.18	0.18	0.18	0.18
40.250	0.18	0.18	0.18	0.17	0.17
40.500	0.17	0.17	0.17	0.17	0.17
40.750	0.16	0.16	0.16	0.16	0.16
41.000	0.16	0.16	0.16	0.16	0.15
41.250	0.15	0.15	0.15	0.15	0.15
41.500	0.15	0.15	0.15	0.14	0.14
41.750	0.14	0.14	0.14	0.14	0.14
42.000	0.14	0.14	0.13	0.13	0.13
42.250	0.13	0.13	0.13	0.13	0.13
42.500	0.13	0.13	0.13	0.12	0.12
42.750	0.12	0.12	0.12	0.12	0.12
43.000	0.12	0.12	0.12	0.12	0.11
43.250	0.11	0.11	0.11	0.11	0.11
43.500	0.11	0.11	0.11	0.11	0.11
43.750	0.11	0.10	0.10	0.10	0.10
44.000	0.10	0.10	0.10	0.10	0.10
44.250	0.10	0.10	0.10	0.10	0.09
44.500	0.09	0.09	0.09	0.09	0.09
44.750	0.09	0.09	0.09	0.09	0.09
45.000	0.09	0.09	0.09	0.09	0.08
45.250	0.08	0.08	0.08	0.08	0.08
45.500	0.08	0.08	0.08	0.08	0.08
45.750	0.08	0.08	0.08	0.08	0.08
46.000	0.08	0.07	0.07	0.07	0.07
46.250	0.07	0.07	0.07	0.07	0.07
46.500	0.07	0.07	0.07	0.07	0.07
46.750	0.07	0.07	0.07	0.07	0.07
47.000	0.06	0.06	0.06	0.06	0.06
47.250	0.06	0.06	0.06	0.06	0.06
47.500	0.06	0.06	0.06	0.06	0.06
47.750	0.06	0.06	0.06	0.06	0.06
48.000	0.06	0.06	0.05	0.05	0.05
48.250	0.05	0.05	0.05	0.05	0.05
48.500	0.05	0.05	0.05	0.05	0.05
48.750	0.05	0.05	0.05	0.05	0.05
49.000	0.05	0.05	0.05	0.05	0.05
49.250	0.05	0.05	0.05	0.05	0.04
49.500	0.04	0.04	0.04	0.04	0.04
49.750	0.04	0.04	0.04	0.04	0.04
50.000	0.04	0.04	0.04	0.04	0.04

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 50 years
Storm Event: 50 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
50.250	0.04	0.04	0.04	0.04	0.04
50.500	0.04	0.04	0.04	0.04	0.04
50.750	0.04	0.04	0.04	0.04	0.04
51.000	0.04	0.04	0.04	0.03	0.03
51.250	0.03	0.03	0.03	0.03	0.03
51.500	0.03	0.03	0.03	0.03	0.03
51.750	0.03	0.03	0.03	0.03	0.03
52.000	0.03	0.03	0.03	0.03	0.03
52.250	0.03	0.03	0.03	0.03	0.03
52.500	0.03	0.03	0.03	0.03	0.03
52.750	0.03	0.03	0.03	0.03	0.03
53.000	0.03	0.03	0.03	0.03	0.03
53.250	0.03	0.03	0.03	0.02	0.02
53.500	0.02	0.02	0.02	0.02	0.02
53.750	0.02	0.02	0.02	0.02	0.02
54.000	0.02	0.02	0.02	0.02	0.02
54.250	0.02	0.02	0.02	0.02	0.02
54.500	0.02	0.02	0.02	0.02	0.02
54.750	0.02	0.02	0.02	0.02	0.02
55.000	0.02	0.02	0.02	0.02	0.02
55.250	0.02	0.02	0.02	0.02	0.02
55.500	0.02	0.02	0.02	0.02	0.02
55.750	0.02	0.02	0.02	0.02	0.02
56.000	0.02	0.02	0.02	0.02	0.02
56.250	0.02	0.02	0.02	0.02	0.02
56.500	0.02	0.02	0.02	0.02	0.02
56.750	0.02	0.01	0.01	0.01	0.01
57.000	0.01	0.01	0.01	0.01	0.01
57.250	0.01	0.01	0.01	0.01	0.01
57.500	0.01	0.01	0.01	0.01	0.01
57.750	0.01	0.01	0.01	0.01	0.01
58.000	0.01	0.01	0.01	0.01	0.01
58.250	0.01	0.01	0.01	0.01	0.01
58.500	0.01	0.01	0.01	0.01	0.01
58.750	0.01	0.01	0.01	0.01	0.01
59.000	0.01	0.01	0.01	0.01	0.01
59.250	0.01	0.01	0.01	0.01	0.01
59.500	0.01	0.01	0.01	0.01	0.01
59.750	0.01	0.01	0.01	0.01	0.01
60.000	0.01	0.01	0.01	0.01	0.01
60.250	0.01	0.01	0.01	0.01	0.01
60.500	0.01	0.01	0.01	0.01	0.01

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 50 years
Storm Event: 50 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
60.750	0.01	0.01	0.01	0.01	0.01
61.000	0.01	0.01	0.01	0.01	0.01
61.250	0.01	0.01	0.01	0.01	0.01
61.500	0.01	0.01	0.01	0.01	0.01
61.750	0.01	0.01	0.01	0.01	0.01
62.000	0.01	0.01	0.01	0.01	0.01
62.250	0.01	0.01	0.01	0.01	0.01
62.500	0.01	0.01	0.01	0.01	0.01
62.750	0.01	0.01	0.01	0.01	0.01
63.000	0.01	0.01	0.01	0.01	0.01
63.250	0.01	0.01	0.01	0.01	0.01
63.500	0.01	0.01	0.01	0.01	0.01
63.750	0.01	0.01	0.01	0.01	0.01
64.000	0.01	0.01	0.01	0.00	0.00
64.250	0.00	0.00	0.00	0.00	0.00
64.500	0.00	0.00	0.00	0.00	0.00
64.750	0.00	0.00	0.00	0.00	0.00
65.000	0.00	0.00	0.00	0.00	0.00
65.250	0.00	0.00	0.00	0.00	0.00
65.500	0.00	0.00	0.00	0.00	0.00
65.750	0.00	0.00	0.00	0.00	0.00
66.000	0.00	0.00	0.00	0.00	0.00
66.250	0.00	0.00	0.00	0.00	0.00
66.500	0.00	0.00	0.00	0.00	0.00
66.750	0.00	0.00	0.00	0.00	0.00
67.000	0.00	0.00	0.00	0.00	0.00
67.250	0.00	0.00	0.00	0.00	0.00
67.500	0.00	0.00	0.00	0.00	0.00
67.750	0.00	0.00	0.00	0.00	0.00
68.000	0.00	0.00	0.00	0.00	0.00
68.250	0.00	0.00	0.00	0.00	0.00
68.500	0.00	0.00	0.00	0.00	0.00
68.750	0.00	0.00	0.00	0.00	0.00
69.000	0.00	0.00	0.00	0.00	0.00
69.250	0.00	0.00	0.00	0.00	0.00
69.500	0.00	0.00	0.00	0.00	0.00
69.750	0.00	0.00	0.00	0.00	0.00
70.000	0.00	0.00	0.00	0.00	0.00
70.250	0.00	0.00	0.00	0.00	0.00
70.500	0.00	0.00	0.00	0.00	0.00
70.750	0.00	0.00	0.00	0.00	0.00
71.000	0.00	0.00	0.00	0.00	0.00

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 50 years
Storm Event: 50 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
71.250	0.00	0.00	0.00	0.00	0.00
71.500	0.00	0.00	0.00	0.00	0.00
71.750	0.00	0.00	0.00	0.00	0.00
72.000	0.00	(N/A)	(N/A)	(N/A)	(N/A)

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 100 years
Storm Event: 100 Year

Peak Discharge	0.34 ft ³ /s
Time to Peak	18.350 hours
Hydrograph Volume	1.003 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
8.900	0.00	0.00	0.00	0.00	0.00
9.150	0.00	0.00	0.00	0.00	0.00
9.400	0.00	0.00	0.01	0.01	0.01
9.650	0.01	0.01	0.01	0.01	0.01
9.900	0.01	0.01	0.01	0.01	0.01
10.150	0.01	0.02	0.02	0.02	0.02
10.400	0.02	0.02	0.02	0.03	0.03
10.650	0.03	0.03	0.03	0.04	0.04
10.900	0.04	0.04	0.05	0.05	0.05
11.150	0.06	0.06	0.06	0.07	0.07
11.400	0.08	0.08	0.09	0.10	0.11
11.650	0.13	0.15	0.19	0.25	0.29
11.900	0.30	0.30	0.31	0.32	0.32
12.150	0.32	0.32	0.32	0.32	0.32
12.400	0.32	0.32	0.32	0.33	0.33
12.650	0.33	0.33	0.33	0.33	0.33
12.900	0.33	0.33	0.33	0.33	0.33
13.150	0.33	0.33	0.33	0.33	0.33
13.400	0.33	0.33	0.33	0.33	0.33
13.650	0.33	0.33	0.33	0.33	0.33
13.900	0.33	0.33	0.33	0.33	0.33
14.150	0.33	0.33	0.33	0.33	0.33
14.400	0.33	0.33	0.33	0.33	0.33
14.650	0.33	0.33	0.33	0.33	0.33
14.900	0.33	0.33	0.33	0.33	0.33
15.150	0.33	0.33	0.33	0.33	0.33
15.400	0.33	0.33	0.33	0.34	0.34
15.650	0.34	0.34	0.34	0.34	0.34
15.900	0.34	0.34	0.34	0.34	0.34
16.150	0.34	0.34	0.34	0.34	0.34
16.400	0.34	0.34	0.34	0.34	0.34
16.650	0.34	0.34	0.34	0.34	0.34
16.900	0.34	0.34	0.34	0.34	0.34
17.150	0.34	0.34	0.34	0.34	0.34
17.400	0.34	0.34	0.34	0.34	0.34
17.650	0.34	0.34	0.34	0.34	0.34
17.900	0.34	0.34	0.34	0.34	0.34

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 100 years
Storm Event: 100 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
18.150	0.34	0.34	0.34	0.34	0.34
18.400	0.34	0.34	0.34	0.34	0.34
18.650	0.34	0.34	0.34	0.34	0.34
18.900	0.34	0.34	0.34	0.34	0.34
19.150	0.34	0.34	0.34	0.34	0.34
19.400	0.34	0.34	0.34	0.34	0.34
19.650	0.34	0.34	0.34	0.34	0.34
19.900	0.34	0.34	0.34	0.34	0.34
20.150	0.34	0.34	0.34	0.34	0.34
20.400	0.34	0.34	0.34	0.34	0.34
20.650	0.34	0.34	0.34	0.34	0.34
20.900	0.34	0.34	0.34	0.34	0.34
21.150	0.34	0.34	0.34	0.34	0.34
21.400	0.34	0.34	0.33	0.33	0.33
21.650	0.33	0.33	0.33	0.33	0.33
21.900	0.33	0.33	0.33	0.33	0.33
22.150	0.33	0.33	0.33	0.33	0.33
22.400	0.33	0.33	0.33	0.33	0.33
22.650	0.33	0.33	0.33	0.33	0.33
22.900	0.33	0.33	0.33	0.33	0.33
23.150	0.33	0.33	0.33	0.33	0.33
23.400	0.33	0.33	0.33	0.33	0.33
23.650	0.33	0.33	0.33	0.33	0.33
23.900	0.33	0.33	0.33	0.33	0.33
24.150	0.33	0.33	0.33	0.33	0.33
24.400	0.33	0.33	0.33	0.33	0.33
24.650	0.33	0.33	0.33	0.33	0.33
24.900	0.33	0.33	0.33	0.33	0.33
25.150	0.33	0.33	0.33	0.33	0.33
25.400	0.33	0.33	0.33	0.33	0.33
25.650	0.33	0.33	0.33	0.33	0.33
25.900	0.33	0.33	0.33	0.33	0.33
26.150	0.33	0.33	0.33	0.33	0.33
26.400	0.33	0.33	0.33	0.33	0.33
26.650	0.33	0.33	0.33	0.33	0.33
26.900	0.33	0.33	0.33	0.33	0.33
27.150	0.33	0.33	0.33	0.33	0.33
27.400	0.33	0.33	0.33	0.33	0.33
27.650	0.33	0.33	0.33	0.32	0.32
27.900	0.32	0.32	0.32	0.32	0.32
28.150	0.32	0.32	0.32	0.32	0.32
28.400	0.32	0.32	0.32	0.32	0.32

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 100 years
Storm Event: 100 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
28.650	0.32	0.32	0.32	0.32	0.32
28.900	0.32	0.32	0.32	0.32	0.32
29.150	0.32	0.32	0.32	0.32	0.32
29.400	0.32	0.32	0.32	0.32	0.32
29.650	0.32	0.32	0.32	0.32	0.32
29.900	0.32	0.32	0.32	0.32	0.32
30.150	0.32	0.32	0.32	0.32	0.32
30.400	0.32	0.32	0.32	0.32	0.32
30.650	0.32	0.32	0.32	0.32	0.32
30.900	0.32	0.32	0.32	0.32	0.32
31.150	0.32	0.32	0.32	0.32	0.32
31.400	0.32	0.32	0.32	0.32	0.32
31.650	0.32	0.32	0.32	0.32	0.32
31.900	0.32	0.32	0.32	0.32	0.32
32.150	0.32	0.32	0.32	0.32	0.32
32.400	0.31	0.31	0.31	0.31	0.31
32.650	0.31	0.31	0.31	0.31	0.31
32.900	0.31	0.31	0.31	0.31	0.31
33.150	0.31	0.31	0.31	0.31	0.31
33.400	0.31	0.31	0.31	0.31	0.31
33.650	0.31	0.31	0.31	0.31	0.31
33.900	0.31	0.31	0.31	0.31	0.31
34.150	0.31	0.31	0.31	0.31	0.31
34.400	0.31	0.31	0.31	0.31	0.31
34.650	0.31	0.31	0.31	0.31	0.31
34.900	0.31	0.31	0.31	0.31	0.31
35.150	0.31	0.31	0.31	0.31	0.31
35.400	0.31	0.31	0.31	0.31	0.31
35.650	0.31	0.31	0.31	0.31	0.31
35.900	0.31	0.31	0.31	0.31	0.31
36.150	0.31	0.31	0.31	0.31	0.31
36.400	0.31	0.31	0.31	0.31	0.31
36.650	0.31	0.31	0.31	0.31	0.31
36.900	0.31	0.31	0.31	0.31	0.30
37.150	0.30	0.30	0.30	0.30	0.30
37.400	0.30	0.30	0.30	0.30	0.30
37.650	0.30	0.30	0.30	0.30	0.30
37.900	0.30	0.30	0.30	0.30	0.30
38.150	0.30	0.30	0.30	0.30	0.30
38.400	0.30	0.30	0.30	0.30	0.30
38.650	0.30	0.30	0.30	0.30	0.30
38.900	0.30	0.30	0.30	0.30	0.30

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 100 years
Storm Event: 100 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
39.150	0.30	0.30	0.30	0.30	0.30
39.400	0.30	0.30	0.30	0.30	0.30
39.650	0.30	0.30	0.30	0.30	0.30
39.900	0.30	0.30	0.30	0.30	0.30
40.150	0.30	0.30	0.30	0.30	0.30
40.400	0.30	0.30	0.30	0.30	0.30
40.650	0.30	0.30	0.30	0.30	0.30
40.900	0.30	0.30	0.30	0.30	0.30
41.150	0.30	0.30	0.30	0.30	0.30
41.400	0.30	0.30	0.30	0.30	0.30
41.650	0.30	0.30	0.30	0.29	0.29
41.900	0.29	0.29	0.29	0.29	0.29
42.150	0.29	0.29	0.29	0.29	0.29
42.400	0.29	0.29	0.29	0.29	0.29
42.650	0.29	0.29	0.29	0.29	0.29
42.900	0.29	0.29	0.29	0.29	0.29
43.150	0.29	0.29	0.29	0.29	0.29
43.400	0.29	0.29	0.28	0.28	0.28
43.650	0.28	0.28	0.27	0.27	0.27
43.900	0.27	0.27	0.26	0.26	0.26
44.150	0.26	0.26	0.25	0.25	0.25
44.400	0.25	0.25	0.25	0.24	0.24
44.650	0.24	0.24	0.24	0.23	0.23
44.900	0.23	0.23	0.23	0.23	0.22
45.150	0.22	0.22	0.22	0.22	0.22
45.400	0.21	0.21	0.21	0.21	0.21
45.650	0.21	0.20	0.20	0.20	0.20
45.900	0.20	0.20	0.20	0.19	0.19
46.150	0.19	0.19	0.19	0.19	0.19
46.400	0.18	0.18	0.18	0.18	0.18
46.650	0.18	0.18	0.18	0.17	0.17
46.900	0.17	0.17	0.17	0.17	0.17
47.150	0.16	0.16	0.16	0.16	0.16
47.400	0.16	0.16	0.16	0.16	0.15
47.650	0.15	0.15	0.15	0.15	0.15
47.900	0.15	0.15	0.15	0.14	0.14
48.150	0.14	0.14	0.14	0.14	0.14
48.400	0.14	0.14	0.13	0.13	0.13
48.650	0.13	0.13	0.13	0.13	0.13
48.900	0.13	0.13	0.13	0.12	0.12
49.150	0.12	0.12	0.12	0.12	0.12
49.400	0.12	0.12	0.12	0.12	0.11

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 100 years
Storm Event: 100 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
49.650	0.11	0.11	0.11	0.11	0.11
49.900	0.11	0.11	0.11	0.11	0.11
50.150	0.11	0.10	0.10	0.10	0.10
50.400	0.10	0.10	0.10	0.10	0.10
50.650	0.10	0.10	0.10	0.10	0.09
50.900	0.09	0.09	0.09	0.09	0.09
51.150	0.09	0.09	0.09	0.09	0.09
51.400	0.09	0.09	0.09	0.09	0.08
51.650	0.08	0.08	0.08	0.08	0.08
51.900	0.08	0.08	0.08	0.08	0.08
52.150	0.08	0.08	0.08	0.08	0.08
52.400	0.08	0.07	0.07	0.07	0.07
52.650	0.07	0.07	0.07	0.07	0.07
52.900	0.07	0.07	0.07	0.07	0.07
53.150	0.07	0.07	0.07	0.07	0.07
53.400	0.06	0.06	0.06	0.06	0.06
53.650	0.06	0.06	0.06	0.06	0.06
53.900	0.06	0.06	0.06	0.06	0.06
54.150	0.06	0.06	0.06	0.06	0.06
54.400	0.06	0.06	0.05	0.05	0.05
54.650	0.05	0.05	0.05	0.05	0.05
54.900	0.05	0.05	0.05	0.05	0.05
55.150	0.05	0.05	0.05	0.05	0.05
55.400	0.05	0.05	0.05	0.05	0.05
55.650	0.05	0.05	0.05	0.05	0.04
55.900	0.04	0.04	0.04	0.04	0.04
56.150	0.04	0.04	0.04	0.04	0.04
56.400	0.04	0.04	0.04	0.04	0.04
56.650	0.04	0.04	0.04	0.04	0.04
56.900	0.04	0.04	0.04	0.04	0.04
57.150	0.04	0.04	0.04	0.04	0.04
57.400	0.04	0.04	0.04	0.03	0.03
57.650	0.03	0.03	0.03	0.03	0.03
57.900	0.03	0.03	0.03	0.03	0.03
58.150	0.03	0.03	0.03	0.03	0.03
58.400	0.03	0.03	0.03	0.03	0.03
58.650	0.03	0.03	0.03	0.03	0.03
58.900	0.03	0.03	0.03	0.03	0.03
59.150	0.03	0.03	0.03	0.03	0.03
59.400	0.03	0.03	0.03	0.03	0.03
59.650	0.03	0.03	0.03	0.02	0.02
59.900	0.02	0.02	0.02	0.02	0.02

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 100 years
Storm Event: 100 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
60.150	0.02	0.02	0.02	0.02	0.02
60.400	0.02	0.02	0.02	0.02	0.02
60.650	0.02	0.02	0.02	0.02	0.02
60.900	0.02	0.02	0.02	0.02	0.02
61.150	0.02	0.02	0.02	0.02	0.02
61.400	0.02	0.02	0.02	0.02	0.02
61.650	0.02	0.02	0.02	0.02	0.02
61.900	0.02	0.02	0.02	0.02	0.02
62.150	0.02	0.02	0.02	0.02	0.02
62.400	0.02	0.02	0.02	0.02	0.02
62.650	0.02	0.02	0.02	0.02	0.02
62.900	0.02	0.02	0.02	0.02	0.02
63.150	0.02	0.01	0.01	0.01	0.01
63.400	0.01	0.01	0.01	0.01	0.01
63.650	0.01	0.01	0.01	0.01	0.01
63.900	0.01	0.01	0.01	0.01	0.01
64.150	0.01	0.01	0.01	0.01	0.01
64.400	0.01	0.01	0.01	0.01	0.01
64.650	0.01	0.01	0.01	0.01	0.01
64.900	0.01	0.01	0.01	0.01	0.01
65.150	0.01	0.01	0.01	0.01	0.01
65.400	0.01	0.01	0.01	0.01	0.01
65.650	0.01	0.01	0.01	0.01	0.01
65.900	0.01	0.01	0.01	0.01	0.01
66.150	0.01	0.01	0.01	0.01	0.01
66.400	0.01	0.01	0.01	0.01	0.01
66.650	0.01	0.01	0.01	0.01	0.01
66.900	0.01	0.01	0.01	0.01	0.01
67.150	0.01	0.01	0.01	0.01	0.01
67.400	0.01	0.01	0.01	0.01	0.01
67.650	0.01	0.01	0.01	0.01	0.01
67.900	0.01	0.01	0.01	0.01	0.01
68.150	0.01	0.01	0.01	0.01	0.01
68.400	0.01	0.01	0.01	0.01	0.01
68.650	0.01	0.01	0.01	0.01	0.01
68.900	0.01	0.01	0.01	0.01	0.01
69.150	0.01	0.01	0.01	0.01	0.01
69.400	0.01	0.01	0.01	0.01	0.01
69.650	0.01	0.01	0.01	0.01	0.01
69.900	0.01	0.01	0.01	0.01	0.01
70.150	0.01	0.01	0.01	0.01	0.01
70.400	0.01	0.01	0.01	0.00	0.00

SPILLWAY BLOCKED

Subsection: Pond Infiltration Hydrograph
Label: PO-1 (INF)

Return Event: 100 years
Storm Event: 100 Year

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
70.650	0.00	0.00	0.00	0.00	0.00
70.900	0.00	0.00	0.00	0.00	0.00
71.150	0.00	0.00	0.00	0.00	0.00
71.400	0.00	0.00	0.00	0.00	0.00
71.650	0.00	0.00	0.00	0.00	0.00
71.900	0.00	0.00	0.00	(N/A)	(N/A)

SPILLWAY BLOCKED

Subsection: Pond Routed Hydrograph (total out)

Label: PO-1 (OUT)

Return Event: 1 years

Storm Event: 1 Year

Peak Discharge	0.00 ft ³ /s
Time to Peak	24.000 hours
Hydrograph Volume	0.000 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.000	0.00	0.00	(N/A)	(N/A)	(N/A)

SPILLWAY BLOCKED

Subsection: Pond Routed Hydrograph (total out)

Label: PO-1 (OUT)

Return Event: 2 years

Storm Event: 2 Year

Peak Discharge	0.00 ft ³ /s
Time to Peak	24.000 hours
Hydrograph Volume	0.000 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.000	0.00	0.00	(N/A)	(N/A)	(N/A)

SPILLWAY BLOCKED

Subsection: Pond Routed Hydrograph (total out)

Label: PO-1 (OUT)

Return Event: 5 years

Storm Event: 5 Year

Peak Discharge	0.00 ft ³ /s
Time to Peak	24.000 hours
Hydrograph Volume	0.000 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.000	0.00	0.00	(N/A)	(N/A)	(N/A)

SPILLWAY BLOCKED

Subsection: Pond Routed Hydrograph (total out)

Label: PO-1 (OUT)

Return Event: 10 years

Storm Event: 10 Year

Peak Discharge	0.00 ft ³ /s
Time to Peak	24.000 hours
Hydrograph Volume	0.000 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.000	0.00	0.00	(N/A)	(N/A)	(N/A)

SPILLWAY BLOCKED

Subsection: Pond Routed Hydrograph (total out)

Label: PO-1 (OUT)

Return Event: 25 years

Storm Event: 25 Year

Peak Discharge	0.00 ft ³ /s
Time to Peak	24.000 hours
Hydrograph Volume	0.000 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.000	0.00	0.00	(N/A)	(N/A)	(N/A)

SPILLWAY BLOCKED

Subsection: Pond Routed Hydrograph (total out)

Label: PO-1 (OUT)

Return Event: 50 years

Storm Event: 50 Year

Peak Discharge	0.00 ft ³ /s
Time to Peak	24.000 hours
Hydrograph Volume	0.000 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.000	0.00	0.00	(N/A)	(N/A)	(N/A)

SPILLWAY BLOCKED

Subsection: Pond Routed Hydrograph (total out)

Label: PO-1 (OUT)

Return Event: 100 years

Storm Event: 100 Year

Peak Discharge	0.00 ft ³ /s
Time to Peak	24.000 hours
Hydrograph Volume	0.000 ac-ft

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.050 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.000	0.00	0.00	(N/A)	(N/A)	(N/A)

SPILLWAY BLOCKED

Index

M

Master Network Summary...1, 2, 3

O

O-1 (Addition Summary, 1 years)...4

O-1 (Addition Summary, 10 years)...7

O-1 (Addition Summary, 100 years)...10

O-1 (Addition Summary, 2 years)...5

O-1 (Addition Summary, 25 years)...8

O-1 (Addition Summary, 5 years)...6

O-1 (Addition Summary, 50 years)...9

Outlet-1 (Diverted Hydrograph, 1 years)...11

Outlet-1 (Diverted Hydrograph, 10 years)...14

Outlet-1 (Diverted Hydrograph, 100 years)...17

Outlet-1 (Diverted Hydrograph, 2 years)...12

Outlet-1 (Diverted Hydrograph, 25 years)...15

Outlet-1 (Diverted Hydrograph, 5 years)...13

Outlet-1 (Diverted Hydrograph, 50 years)...16

P

PO-1 (Elevation-Volume-Flow Table (Pond), 1 years)...18

PO-1 (IN) (Level Pool Pond Routing Summary, 1 years)...20

PO-1 (IN) (Level Pool Pond Routing Summary, 10 years)...23

PO-1 (IN) (Level Pool Pond Routing Summary, 100 years)...26

PO-1 (IN) (Level Pool Pond Routing Summary, 2 years)...21

PO-1 (IN) (Level Pool Pond Routing Summary, 25 years)...24

PO-1 (IN) (Level Pool Pond Routing Summary, 5 years)...22

PO-1 (IN) (Level Pool Pond Routing Summary, 50 years)...25

PO-1 (IN) (Pond Infiltration Calculations, 1 years)...19

PO-1 (INF) (Pond Infiltration Hydrograph, 1 years)...27, 28, 29, 30

PO-1 (INF) (Pond Infiltration Hydrograph, 10 years)...41, 42, 43, 44, 45, 46

PO-1 (INF) (Pond Infiltration Hydrograph, 100 years)...60, 61, 62, 63, 64, 65, 66

SPILLWAY BLOCKED

PO-1 (INF) (Pond Infiltration Hydrograph, 2 years)...31, 32, 33, 34, 35
PO-1 (INF) (Pond Infiltration Hydrograph, 25 years)...47, 48, 49, 50, 51, 52
PO-1 (INF) (Pond Infiltration Hydrograph, 5 years)...36, 37, 38, 39, 40
PO-1 (INF) (Pond Infiltration Hydrograph, 50 years)...53, 54, 55, 56, 57, 58, 59
PO-1 (OUT) (Pond Routed Hydrograph (total out), 1 years)...67
PO-1 (OUT) (Pond Routed Hydrograph (total out), 10 years)...70
PO-1 (OUT) (Pond Routed Hydrograph (total out), 100 years)...73
PO-1 (OUT) (Pond Routed Hydrograph (total out), 2 years)...68
PO-1 (OUT) (Pond Routed Hydrograph (total out), 25 years)...71
PO-1 (OUT) (Pond Routed Hydrograph (total out), 5 years)...69
PO-1 (OUT) (Pond Routed Hydrograph (total out), 50 years)...72

APPENDIX G

INFILTRATION TESTING REPORT

TETRA TECH		PROFESSIONAL ENGINEERS	
CLIENT: <u>SUNOCO</u>	JOB NO.: _____		SHEET <u>1</u> OF <u>1</u>
DESCRIPTION: <u>BECKERSVILLE</u>	CHK BY: _____	DATE: <u>10/17/14</u>	
1. SOILS TESTING - 2015 - TB #1 - TB #2 TB1 - SURF - 711.0 TB#2 SURF - 712.0 TEST - 708.0 TEST - 704.0 .14 in/hr .08 in/hr			
2. 2014 TESTS -			
TB #	SURFACE	TEST ELEV	PIT BOTTOM i
A	726.0	722.5	720.5 1.88 in/hr
B	725.0	722.0	720.0 0.0
C	691.0	687.5	685.5 .12
D	689.0	686.0	684.0 3.38
BASIN #2 - BOTTOM ELEV = 684.0			

TRIP REPORT

Date: October 28, 2015

To: Megan Carson

From: Tim Evans, PG

Subject: Summary of Soil Infiltration Tests
Beckersville Station
Sunoco PPP
Brecknock Township, Berks County, Pennsylvania

This trip report provides results of soil infiltration tests that were completed as part of the Pennsylvania Pipeline Project (PPP) for Sunoco Pipeline, LP, in Brecknock Township, Berks County, Pennsylvania.

1.0 PURPOSE

This report presents the field data and results of single-ring soil infiltration tests conducted to support the design of stormwater management systems at several locations in Brecknock Township, Berks County, Pennsylvania. One shallow test (IT-1) and one deep tests (IT-2) were performed at the property. Test locations are listed by coordinates (latitude and longitude) in Table 1 and shown on the attached figures.

2.0 FIELD ACTIVITIES

The infiltration tests were conducted by Shannon Hill of Tetra Tech, Inc., on October 19, 2015. The test locations were positioned in the field using a handheld, WAAS-enabled GPS unit. Table 1 provides the coordinates of the test locations. TP-1 was located in an open area on a slope, and TP-2 was located in a wooded area also on a slope. Both TP-1 and TP-2 were located north of Piro Lane, a gravel road running south from Alleghenyville Road. Photographs of testing locations are attached to this report.

The infiltration tests were performed in accordance with the procedure specified in the 2006 Pennsylvania Stormwater Best Management Practices (BMP) Manual. Single-ring tests were performed at this site. The single-ring test locations were prepared with the assistance of a hollow-stem auger (HSA) rig. The single-ring infiltrometers used for testing consisted of a 6-inch diameter PVC casing. After augering to the desired depth, the PVC casing was driven approximately 2 inches. Loose soil that fell into the casing during installation was removed, if possible, and approximately 2 inches of sand was placed at the bottom of the casing to avoid wash out during the infiltration testing. Bentonite was used to seal the annulus space between outside of the ring and the soil boring and was hydrated for 30 minutes prior to beginning the presoak. Infiltration test depths are provided on Table 1.

Test locations were pre-soaked for 1 hour. The tests were then conducted with measurements at 30-minute intervals, based on the observed water level drops during the pre-soak period. Pre-soak and test information was recorded on infiltration test sheets; copies of the test sheets are attached to this report.

During the testing, the weather was sunny and warm, approximately 60 degrees Fahrenheit, and no precipitation was observed during the tests.

In addition, split-spoon samples were collected continuously at the testing locations in separate borings from the infiltration test borings, to characterize the soil, determine the depth to bedrock, if encountered, and inspect for evidence of the seasonal high water table. The borings for lithology and water table determination were identified with the corresponding infiltration test name. The split-spoon sampling was completed to two feet below the target infiltration test depth or refusal, whichever was encountered first.

Descriptions of the soil were recorded on field logs, which were based on the form example in the BMP manual. Copies of the field soil logs are attached to this report.

3.0 RESULTS

3.1 SOILS DESCRIPTION

Soils encountered consisted of 4 inches of a dark brown topsoil/surface soil layer, underlain primarily by silty soils with some to little clay and very little sand and gravel. Thin grass roots were encountered in the topsoil/surface soils with few roots being observed in the underlying soil horizons. Table 1 summarizes the depths of the infiltration tests (split spoon sampling completed approximately 2 feet deeper than infiltration test depths).

The soils were noted to be dry to moist during the split-spoon sampling activities. No mottling of soils or groundwater was observed at either location.

According to United States Department of Agriculture Natural Resources Conservation Service Web Soil Survey¹ data, the soil types for the test locations are mapped as follows:

- TP-1 and TP-2 – Joanna loam (JnC soil symbol) with 8 to 15 percent slopes

3.2 INFILTRATION TEST RESULTS

Table 1 summarizes the infiltration rates (inches per hour) calculated from the test data. Infiltration rates presented in Table 1 were calculated from the average water level drop of the last four readings measured in the inner ring.

¹ <http://websoilsurvey.nrcs.usda.gov/>. Accessed October 21, 2015.

Both tests exhibited a slow rate of infiltration, requiring a 30-minute test cycle.

Table 1
Summary of Infiltration Test Results
Beckersville Station
Breaknock Township, Berks County, PA
Sunoco PPP

Test Location (TP-)	Location Data		Test Depth (inches)	Infiltration Test Result (inches/hour)
	LATITUDE	LONGITUDE		
TP-1	40.2166348	-75.9407743	36	0.18
TP-2	40.2165658	-75.9403544	120	0.06

Figure 1

Infiltration Test Locations
Beckersville Station
Berks County, PA

Legend

 Infiltration Test Location



Google earth

© 2015 Google

ATTACHMENTS

SOIL LOGS

PROJECT NAME: Sunoco Bensenville
PROJECT NUMBER: 112TC07771
DRILLING COMPANY: Terra Testing
DRILLING RIG: HSA

BORING NO.: TP-1 Beckersville
DATE: 10/14/15
GEOLOGIST: S. Hill
DRILLER: M. Deanda

[illegible]

* When rock coring, enter rock brokenness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated response read.

Remarks: Infiltration test location
Set 3' bars

Drilling Area
Background (ppm):

Converted to Well: Yes No ☒ Well I.D. #:



Tetra Tech

BORING LOGPage 1 of 1PROJECT NAME: Sunoco - BeckersvilleBORING No.: TP-2 - Beckersville

PROJECT NUMBER: _____

DATE: 10/19/15DRILLING COMPANY: Tetra TechGEOLOGIST: S.H.I.DRILLING RIG: HSADRILLER: M. Depudis

Sample No. Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION			U S C S	Remarks	PID/FID Reading (ppm)			
				Soil Density/ Consistency or Rock Hardness	Color	Material Classification			Sample	Sampler BZ	Borehole**	Driller BZ**
0		4/5	2/2	Med stiff	Red Bm	Top soil / orange clayey SILT	ML/CL	moist				
2		6/10				Same w/ some fine clayey silt	SP ML/CL	Solid coloring				
4		5/6	1.8/2			clayey SILT	ML/CL					
6		9/10						mica flats				
8		6/7	1.3/2			Trace gravel						
10		7/10										
12		15/22	2/2	stiff hard	Bm red	CLAY w/ Trace gravel & silt SILT w/ clay	CL ML/CL	Moist / slightly wetter than (1st water table just penetrated)				
14		17/17	2/2		Bm							
16		13/15	2/2					micaceous / solid coloring				
18		17/22										
20		19/20										
22		24/25				SILT w/ little clayey silt						
24												
26												
28												
30												
32												
34												
36												
38												
40												
42												
44												
46												
48												
50												
52												
54												
56												
58												
60												
62												
64												
66												
68												
70												
72												
74												
76												
78												
80												
82												
84												
86												
88												
90												
92												
94												
96												
98												
100												

* When rock coring, enter rock brokenness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated response read.

Remarks: Infiltration test location

Drilling Area

Background (ppm): Converted to Well: YesNo X

Well I.D. #: _____

INFILTRATION TEST DATA SHEETS



Tetra Tech, Inc.

INFILTRATION TEST DATA SHEET CASED HOLE INFILTRATION TEST

PROJECT NAME: Sunoco
PROJECT NUMBER: 1121607771
PERSONNEL: S. Hill

TEST AREA ID: TP-1
DATE: 10/19/15

CASING INSIDE

DIAMETER: 6"

BOREHOLE

DIAMETER: 8"

TESTING DEPTH: 3'

Location Coordinates or Description:

(located on slope on open area)

Distance from the top of casing to bottom of the hole: 5' (2' stick up)

TIME	ELAPSED TIME SINCE START OF TEST (minutes)	WATER LEVEL READING (inches)	WATER LEVEL DROP (inches)	VOLUME OF WATER ADDED AT EACH CYCLE, INNER RING (liters)	REMARKS
		<u>BTOC</u>			

PRESOAK DATA

<u>1610</u>	<u>0</u>	<u>3.05'</u>	<u>-----</u>	<u>12L</u>	
<u>1640</u>	<u>30</u>	<u>3.0</u>	<u>0.05</u>	<u>—</u>	
<u>1710</u>	<u>60</u>	<u>3.0</u>	<u>0</u>	<u>—</u>	

TEST DATA

<u>1710</u>	<u>0</u>	<u>3.0</u>	<u>-----</u>	<u>—</u>	
<u>1740</u>	<u>30</u>	<u>3.01</u>	<u>0.01</u>	<u>—</u>	
<u>1810</u>	<u>60</u>	<u>3.01</u>	<u>0.0</u>	<u>—</u>	
<u>1840</u>	<u>90</u>	<u>3.03</u>	<u>0.02</u>	<u>—</u>	
<u>1910</u>	<u>120</u>	<u>3.03</u>	<u>0.0</u>	<u>—</u>	<u>End of test</u>



Tetra Tech, Inc.

INFILTRATION TEST DATA SHEET CASED HOLE INFILTRATION TEST

PROJECT NAME: <u>SUNOCO</u>		TEST AREA ID: <u>TP. 2 Beckersville</u>			
PROJECT NUMBER: <u>112100771</u>		DATE: <u>10/9/15</u>			
PERSONNEL: <u>SHW</u>					
CASING INSIDE DIAMETER: <u>6"</u> BOREHOLE DIAMETER: <u>8"</u> TESTING DEPTH: <u>10'</u>		Location Coordinates or Description: <u>on slope in wooded area</u> <u>same coordinates as proposed</u>			
Distance from the top of casing to bottom of the hole: <u>10'</u>					
TIME	ELAPSED TIME SINCE START OF TEST (minutes)	WATER LEVEL READING (inches)	WATER LEVEL DROP (inches)	VOLUME OF WATER ADDED AT EACH CYCLE, INNER RING (liters)	REMARKS
PRESOAK DATA					
1530	0	8.0'	-----	—	
1600	30	8.0'	0	—	
1630	60	8.0'	0	—	
TEST DATA					
1630	0	8.0	-----	—	
1700	30	8.0	0.0	—	
1730	60	8.0	0.0	—	
1800	90	8.01	0.01	—	
1830	120	8.01	0.0	—	End of test

PHOTOGRAPHS

SITE PHOTOGRAPHIC LOG



Date: 10/19/15	View: East	Photographer: S. Hill
--------------------------	----------------------	---------------------------------

TP-1 Infiltration Test.



Date: 10/19/15	View: West	Photographer: S. Hill
--------------------------	----------------------	---------------------------------

TP-2 Infiltration Test.

TRIP REPORT

Date: June 13, 2016

To: Tim Connelly, P.E.

From: Jim Coffman

Subject: Summary of Soil infiltration Testing
Beckersville Pump Station Project
Sunoco Logistics Partners, L.P.
Berks County, Brecknock Township, PA

This trip report provides results of a soil infiltration test that was completed at the Beckersville Pump Station operated by Sunoco Logistics Partners, L.P. in Berks County, Brecknock Township, Pennsylvania.

1.0 PURPOSE

This report presents the field data and results of four double-ring soil infiltration tests and four exploration (lithology) test pits conducted to support stormwater management system design at the abovementioned pump station. The infiltration test locations, named Locations A through D, are listed with field coordinates (latitude and longitude) in Table 1 and shown on the attached figure.

2.0 FIELD ACTIVITIES

The infiltration tests were conducted by Jim Coffman of Tetra Tech, Inc., on May 26, 2016. The test locations were positioned in the field with the assistance of Tim Connolly of Tetra Tech using ground coordinates entered into a handheld, WAAS- enabled GPS unit. An autolevel was used to determine ground elevations at the test locations. Separate exploration test pits for logging lithology were conducted to 5 to 5½ feet depth next to the pits used for infiltration testing. Locations A, C, and D were located on slight to moderately sloped land surface in grassy and wooded area, and location B was located on a moderately to steeply sloped grassy area. Photographs of work locations are attached at the end of this report.

The infiltration tests were performed in accordance with the procedure specified in the 2006 Pennsylvania Stormwater Best Management Practices (BMP) Manual. The test locations were prepared with the assistance of a trackhoe, with care taken to minimize disturbance of the soil surface to be tested.

A double-ring infiltrometer was used for testing and consisted of 10-inch and 6-inch diameter sections of steel casing. After digging to the target depth, the test surface was leveled, and any loose soil or fallen vegetation was removed. The rings were driven approximately 2 to 4 inches

into the soil (6- to 8-inch water columns). The infiltration test depths ranged from 36 to 42 inches below ground surface.

The test locations were pre-soaked for 1 hour. The tests were then conducted with measurements at 30-minute intervals, based on the observed water level during the pre-soak periods. Pre-soak and test information was recorded on dedicated infiltration test sheets; copies of the test sheets are attached to this report.

During the testing, ambient temperature was in the low to upper 80 degrees Fahrenheit, and no precipitation was observed in the area at the time of testing and no significant rainfall had occurred in the area 24 hours prior to the testing according to local weather reports.

Exploration test pits were excavated next to the test locations to characterize the soil, determine the depth to bedrock (if encountered), and inspect for evidence of high water table. The test pits were machine-excavated to at least 2 feet below the infiltration test depths. Descriptions of the soil were recorded by the Tetra Tech geologist on field logs, which were based on the form example in the BMP manual. Copies of the field logs are attached to this report.

3.0 RESULTS

3.1 SOILS DESCRIPTION

The observed soils at Location A generally consisted of reddish-brown to brownish-red, moist loam; at Locations B through D, a similar loam was observed to 2 to 4 feet and underlain by clay loam. Little to some sub-angular red sandstone conglomerate fragments containing rounded milky quartz-rich gravel sized inclusions were observed throughout the soils. The soils appeared generally solid in color pattern (no mottling observed) within the depths of the exploration and test pits. No standing water or water table, or bedrock, were observed in any of the exploration pits. Small roots (tree and grass) were present in the pits.

According to United States Department of Agriculture Natural Resources Conservation Service Web Soil Survey¹ data, the locations map within the Joanna loam groups (JnC and JpD soil symbols) with loam, clay loam and silty loam soil described in typical profile. The JpD group (encompassing Locations B through D) is described as occurring on steeper slope and being stonier (containing more stone fragments) than the JnC soil group (encompassing Location A).

¹ <http://websoilsurvey.nrcs.usda.gov/>. Accessed May 25, 2016.

3.2 INFILTRATION TEST RESULTS

Table 1 provided below summarizes the infiltration rate (inches per hour) from the test data. The western locations (A and D) exhibited higher infiltration rates than eastern locations. No infiltration (zero infiltration) was observed at Location B, which may have been located on disturbed ground above a constructed settling basin. Based on the presoaks, the tests required a 30-minute test cycle.

Table 1
Summary of Infiltration Test Result and Work Locations
Beckersville Pump Station Project
Berks County, Brecknock Township, PA
Sunoco Logistics Partners, L.P.

Location #	Location Data ¹		Test Depth (inches)	Infiltration Test Result (inches/hour)
	LATITUDE_WGS_84	LONGITUDE_WGS_84		
A	40°13'01.0" N	75°56'26.2" W	42	1.88
B	40°13'00.5" N	75°56'20.5" W	36	0
C	40°12'58.2" N	75°56'22.2" W	36	0.12
D	40°12'58.2" N	75°56'25.7" W	36	3.38

Note

¹ Field coordinates

ATTACHMENTS

SITE FIGURE

SOIL LOGS



TETRA TECH

Soil Log

Tested By: J. C. Hoffman Project: Beekersville Road Sta Project No.: 1121065370
Test Pit: A Date: 5/26/16 Elevation: Track hoe
Geology: soil Soil Type: loam Land Use: and scraped around pump station Weather: Sunny 80s

Additional Comments

Tim Connolly directed location

Horizon	Upper Boundary	Lower Boundary	Soil Textural Class	Type, Size, Coarse Fragments, etc.	Soil Color	Color Patterns	Pores, Roots, Rock Structure	Depth to Bedrock	Depth to Water	Comments
<u>B</u>	<u>0"</u>	<u>66"</u>	<u>loam</u>	<u>subangular to fine grained sandstone conglomerate w/ rounded quartz gravel (in thin)</u>	<u>reddish brown to brownish grey with variation</u>	<u>mostly solidly</u>	<u>few roots (small tree)</u>	<u>—</u>	<u>—</u>	<u>moist</u>

Horizon:	USDA Definition	Soil Textural Class	Boundary	Notes:
O	Organic debris	Use ternary diagram from	Use depth and classification	
A	Dark colored, mixed mineral organic matter	US Department of Agriculture Soil Conservation Service	Classification as Follows: Abrupt	
B	Maximum accumulation of silicate clay minerals		Clear	
C	Weathered parent material		Gradual	
R	Layer of consolidated rock beneath the soil		Diffuse	

Table based on: Sample soil log located on page 12 of the Pennsylvania Stormwater Best Management Practices Manual
USDA Definitions located from: http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/edu/7cid=nrcs142p2_054308

Tested By: J. C. Goffman Date: 5/26/16 Project: Beckersville Pump Sta Project No.: 1121C05376
 Test Pit: B Soil Type: Clay loam Elevation: frack hole Equipment Used: frack hole
 Geology: Soil Land Use: undisrupted pump Sta Weather: Sunny 80s

Additional Comments: In Connolly ditch location

Horizon	Upper Boundary	Lower Boundary	Soil Textural Class	Type, Size, Coarse Fragments, etc.	Soil Color	Color Patterns	Pores, Root Structure	Depth to Bedrock	Depth to Water	Comments
B	0	24"	loam	sub-angular frag red sands to brown concrete w/ rounded quartz (mining)	Reddish Brown	Solid	few roots (small tree)	—	—	moist
B	24"	60"	clay loam	—	Brownish Red	"	"	—	—	—

Horizon:	USDA Definition	Soil Textural Class	Boundary	Notes:
O	Organic debris	Use ternary diagram from	Use depth and classification	
A	Dark colored, mixed mineral organic matter	US Department of Agriculture Soil Conservation Service	Classification as Follows: Abrupt	
B	Maximum accumulation of silicate clay minerals		Clear	
C	Weathered parent material		Gradual	
R	Layer of consolidated rock beneath the soil		Diffuse	

Tested By: J. Coffman
 Test Pit: C
 Geology: Soil

Date: 5/26/10
 Soil Type: clay loam

Project: Beckersville Pump Sta Project No.: 112105370
 Elevation: Trackhoe
 Land Use: undeveloped/woods Equipment Used: Trackhoe
 Weather: Sunny 80s (upper)

Additional Comments

Horizon	Upper Boundary	Lower Boundary	Soil Textural Class	Type, Size, Coarse Fragments, etc.	Soil Color	Color Patterns	Pores, Roots, Rock Structure	Depth to Bedrock	Depth to Water	Comments
B	0"	24"	loam	Sub-angular to sub-spherical fragments, some w/ conchoidal fracture	Reddish brown	Solid	few roots (small)	—	—	moist
B	24"	60"	clay loam	rounded quartz grains (milky)	u	u	u	—	—	↓

Horizon:	USDA Definition	Soil Textural Class	Boundary	Notes:
O	Organic debris	Use ternary diagram from US Department of Agriculture Soil Conservation Service	Use depth and classification	
A	Dark colored, mixed mineral organic matter		Classification as Follows: Abrupt	
B	Maximum accumulation of silicate clay minerals		Clear	
C	Weathered parent material		Gradual	
R	Layer of consolidated rock beneath the soil		Diffuse	



TETRA TECH

Soil Log

Tested By: J. Coffman Date: 5/26/16 Project: Beckersville Pump Sta Project No.: 1121C05370
Test Pit: D Soil Type: loam Elevation: frackhee Equipment Used: frackhee
Geology: soil Land Use: undeveloped/wooded Weather: Upper 80s

Additional Comments

Horizon	Upper Boundary	Lower Boundary	Soil Textural Class	Type, Size, Coarse Fragments, etc.	Soil Color	Color Patterns	Pores, Roots, Rock Structure	Depth to Bedrock	Depth to Water	Comments
B	0"	48"	loam	sub angular frag rock sandstone w/ congl. fragments rounded quartz gravel (m. lky)	reddish brown	solid	many roots	—	—	moist
B	48"	60"	clay loam	sub angular (see above)	brownish red	"	no roots	—	—	

Horizon:	USDA Definition	Soil Textural Class	Boundary	Notes:
O	Organic debris	Use ternary diagram from	Use depth and classification	
A	Dark colored, mixed mineral organic matter	US Department of Agriculture Soil Conservation Service	Classification as Follows: Abrupt	
B	Maximum accumulation of silicate clay minerals		Clear	
C	Weathered parent material		Gradual	
R	Layer of consolidated rock beneath the soil		Diffuse	

Table based on: Sample soil log located on page 12 of the Pennsylvania Stormwater Best Management Practices Manual
USDA Definitions located from: http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/edu/7cid=nrcs142p2_054308

INFILTRATION TEST DATA SHEETS



INFILTRATION TEST DATA SHEET

Tetra Tech, Inc.

PROJECT NAME: Beckersville Pump St TEST AREA ID: A
PROJECT NUMBER: 1121003378 PERSONNEL: J. Coffman

TEST METHOD: Double Ring Infiltrometer Percolation
Single Ring Infiltrometer

INNER RING INSIDE DIAMETER/HEIGHT: 6"
OUTER RING INSIDE DIAMETER/HEIGHT: 10"

Location Coordinates or Description:

Waypt 52 40°13'01.0"/
75°56'26.2"
slight slope (at bottom of steep slope to road)

PERCOLATION HOLE DIAMETER: 7" (If performing an open hole perc test) photo: 2,3

DATE(s): 5/26/16

Distance from the bottom of the inner ring/hole to measuring point (minimum water column of 6-8 inches): 7"

MEASURING POINT: Ring Rim Indicator Mark

DEPTH OF TEST: 3.5ft

TIME	ELAPSED TIME SINCE START OF TEST (minutes)	WATER LEVEL DROP, INNER RING OR PERCOLATION HOLE (inches)	VOLUME OF WATER ADDED AT EACH CYCLE, INNER RING (liters)	REMARKS
PRESOAK DATA				
0925	0	-----	9.9	start of presoak
0955	30	0 15/16	1.6	volume of inner + outer for presoak only
1025	60	0 15/16	1.5	
TEST DATA				
1025	0	-----	-----	Volume - Inner Ring Only
1055	30	0 15/16	0.5	
1125	60	0 14/16	0.5	
1155	90	0 14/16	0.5	
1225	120	0 15/16	---	end of test



INFILTRATION TEST DATA SHEET

Tetra Tech, Inc.

PROJECT NAME: Beckersville Pump Sta. TEST AREA ID: B
PROJECT NUMBER: 112105370 PERSONNEL: J. Coffman

TEST METHOD: Double Ring Infiltrometer Percolation
Single Ring Infiltrometer

INNER RING INSIDE DIAMETER/HEIGHT: 6"
OUTER RING INSIDE DIAMETER/HEIGHT: 10"

PERCOLATION HOLE DIAMETER: — (If performing an open hole perc test)

DATE(s): 5/25/16

Distance from the bottom of the inner ring/hole to measuring point (minimum water column of 6-8 inches): 6"

Location Coordinates or Description:

Waypoint 53/40013' 00.5"
75° 56' 20.5"

30° slope, newly planted grass area
down slope 20' from Sta. fence
photo: 1, 4, 5

MEASURING POINT: Ring Rim Indicator Mark

DEPTH OF TEST: 3.0 ft

TIME	ELAPSED TIME SINCE START OF TEST (minutes)	WATER LEVEL DROP, INNER RING OR PERCOLATION HOLE (inches)	VOLUME OF WATER ADDED AT EACH CYCLE, INNER RING (liters)	REMARKS
------	--	--	---	---------

PRESOAK DATA

1020	0	-----	9.9	start of presoak
1050	30	see remarks →		fixed lateral leak - outer ring + possibly inner
1120	60	0	0	

TEST DATA

1120	0	-----	—	start of test
1150	30	0	0	
1220	60	0	0	
1250	90	0	0	
1320	120	0	—	end of test



INFILTRATION TEST DATA SHEET

Tetra Tech, Inc.

PROJECT NAME: <u>Beckersville Pump Sta</u>		TEST AREA ID: <u>C</u>		
PROJECT NUMBER: <u>112105370</u>		PERSONNEL: <u>J. Coffman</u>		
TEST METHOD: <u>Double Ring Infiltrometer</u> Percolation Single Ring Infiltrometer		Location Coordinates or Description: <u>Waypt 57 40° 12' 58.2</u> <u>55 75° 56' 22.2</u> <u>Photo, 6/7</u>		
INNER RING INSIDE DIAMETER/HEIGHT: <u>6"</u> OUTER RING INSIDE DIAMETER/HEIGHT: <u>10"</u>				
PERCOLATION HOLE DIAMETER: <u>—</u> (If performing an open hole perc test)				
DATE(s): <u>5/26/16</u>				
Distance from the bottom of the inner ring/hole to measuring point (minimum water column of 6-8 inches): <u>8"</u>				
MEASURING POINT: <u>(Ring Rim)</u> Indicator Mark		DEPTH OF TEST: <u>3 ft</u>		
TIME	ELAPSED TIME SINCE START OF TEST (minutes)	WATER LEVEL DROP, INNER RING OR PERCOLATION HOLE (inches)	VOLUME OF WATER ADDED AT EACH CYCLE, INNER RING (liters)	REMARKS
PRESOAK DATA				
<u>1220</u>	<u>0</u>	<u>-----</u>	<u>9.9 - both rings</u>	<u>start of presoak</u>
<u>1250</u>	<u>30</u>	<u>0 1/16</u>	<u>0.05</u>	
<u>1320</u>	<u>60</u>	<u>0 1/16</u>	<u>0.05</u>	
TEST DATA				
<u>1320</u>	<u>0</u>	<u>-----</u>	<u>—</u>	<u>start of test</u>
<u>1350</u>	<u>30</u>	<u>0 1/16</u>	<u>0.05</u>	
<u>1420</u>	<u>60</u>	<u>0 1/16</u>	<u>0.05</u>	
<u>1450</u>	<u>90</u>	<u>0 1/16</u>	<u>0.05</u>	
<u>1520</u>	<u>120</u>			



INFILTRATION TEST DATA SHEET

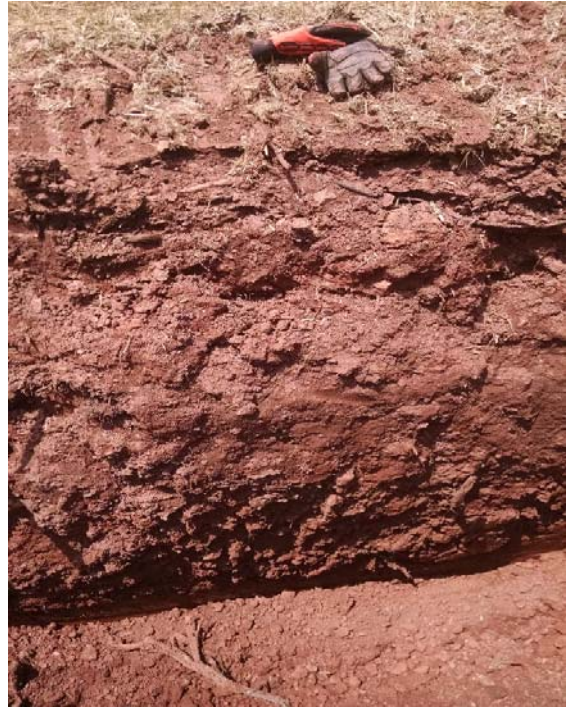
Tetra Tech, Inc.

PROJECT NAME: <u>Beckersville Camp Sta</u>		TEST AREA ID: <u>D</u>		
PROJECT NUMBER: _____		PERSONNEL: <u>J. Cottman</u>		
TEST METHOD: <u>Double Ring Infiltrometer</u> ☒ Percolation Single Ring Infiltrometer ☐		Location Coordinates or Description: <u>40°12'58.2" / 75°56'25.7"</u> <u>Slight slope, wooded area</u> <u>photos</u>		
INNER RING INSIDE DIAMETER/HEIGHT: <u>6"</u> OUTER RING INSIDE DIAMETER/HEIGHT: <u>10"</u>				
PERCOLATION HOLE DIAMETER: _____ (If performing an open hole perc test)				
DATE(s): <u>5/26/16</u>				
Distance from the bottom of the inner ring/hole to measuring point (minimum water column of 6-8 inches): <u>8"</u>				
MEASURING POINT: <u>Ring Rim</u> ☒ Indicator Mark ☐		DEPTH OF TEST: <u>3 ft</u>		
TIME	ELAPSED TIME SINCE START OF TEST (minutes)	WATER LEVEL DROP, INNER RING OR PERCOLATION HOLE (inches)	VOLUME OF WATER ADDED AT EACH CYCLE, INNER RING (liters)	REMARKS
PRESOAK DATA				
<u>13:45</u>	<u>0</u>	<u>-----</u>	<u>9.9</u>	<u>both rings pre scale start</u>
<u>14:15</u>	<u>30</u>	<u>1 1/4 / 16</u>	<u>1.2</u>	
<u>14:45</u>	<u>60</u>	<u>1 8 / 16</u>	<u>0.9</u>	
TEST DATA				
<u>14:45</u>	<u>0</u>	<u>-----</u>	<u>---</u>	<u>start of test</u>
<u>15:15</u>	<u>30</u>	<u>1 7 / 16</u>	<u>0.9</u>	
<u>15:45</u>	<u>60</u>	<u>1 9 / 16</u>	<u>1.1</u>	
<u>16:15</u>	<u>90</u>	<u>1" / 16</u>	<u>1.3</u>	
<u>16:45</u>	<u>120</u>	<u>1" / 16</u>	<u>---</u>	<u>end of test</u>

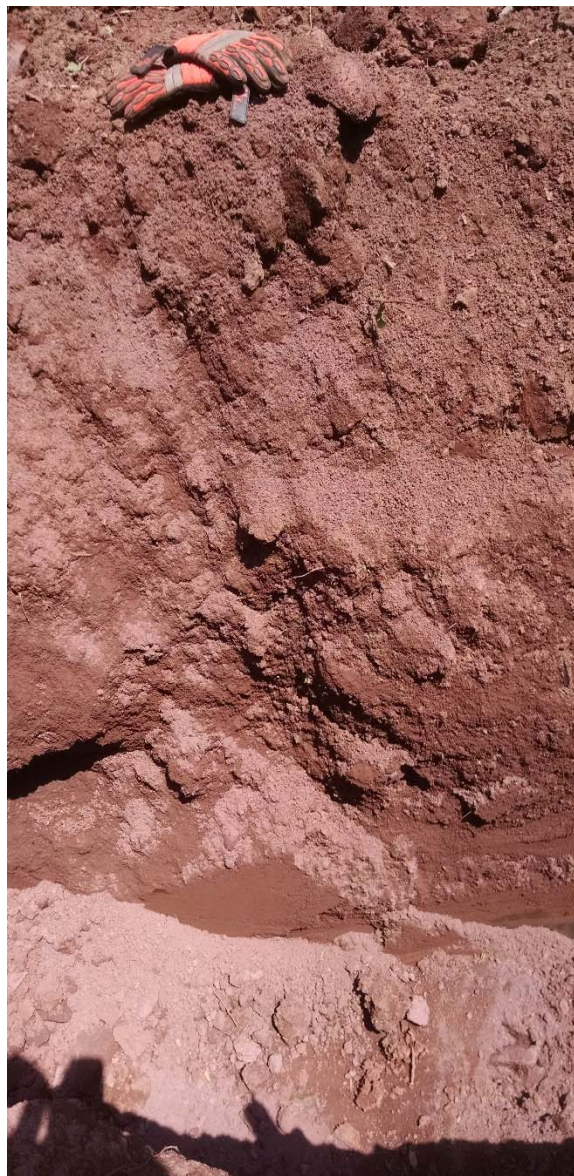
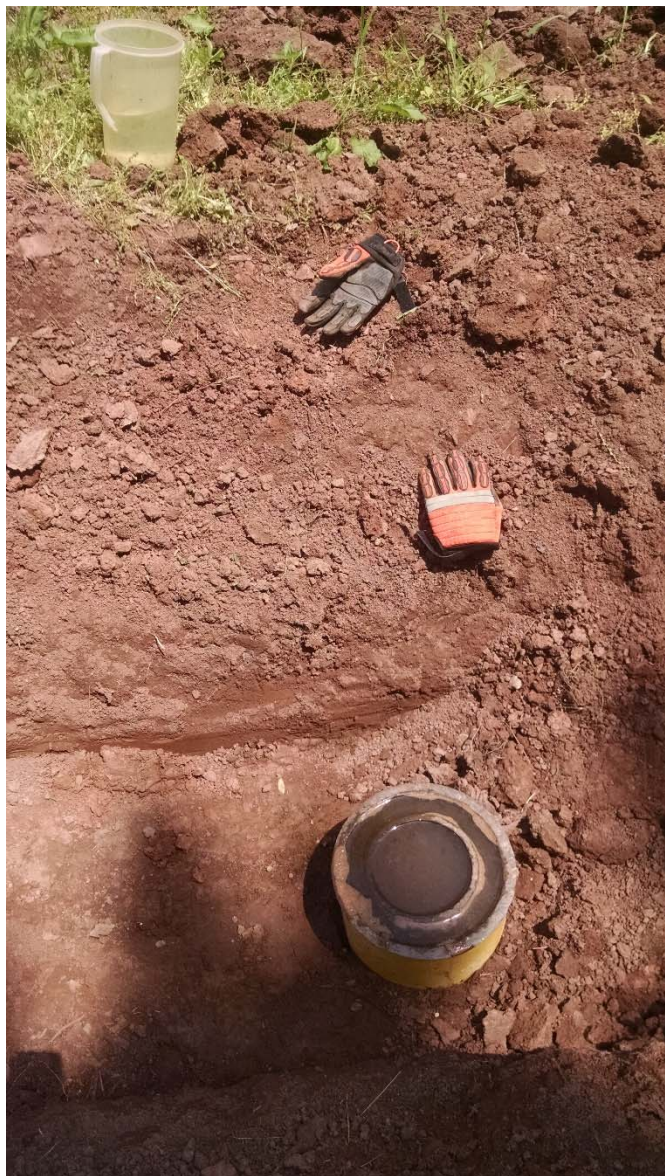
PHOTOGRAPHS



Location A test and exploration pits



Location B test and exploration test pits (top), sandstone conglomerate (bottom)



Location C test and exploration test pits