



CITY OF WATERTOWN

Conservation Commission

Leo G. Martin, Chair
Maria P. Rose, Vice Chair
Charles C. Bering, Member
Jamie O'Connell, Member
Darya Mattes, Member
Rachel Danford, Member

The Conservation Commission of the City of Watertown will hold a public meeting on Wednesday, February 1, 2023 at 7:00 p.m. This meeting has only remote opportunities for participation with public access provided as follows:

CONSERVATION COMMISSION MEETING WEDNESDAY, FEBRUARY 1, 2023 AT 7:00 PM

AGENDA

ACCESS INFORMATION:

- A. The meeting will be televised through WCATV (Watertown Cable Access Television):
<http://vodwcatv.org/CablecastPublicSite/?channel=1>
- B. The Public may join the virtual meeting online: <https://watertown-ma.zoom.us/j/99597080710>
- C. Public may join the virtual meeting audio only by phone: (877) 853-5257 or (888) 475-4499 (Toll Free) and enter Webinar ID: 995-9708-0710
- D. Public may comment through email: sjenness@watertown-ma.gov

-
- 1. Public Hearing-
 - A. (Continuance was requested to February 1, 2023 meeting)- **Notice of Intent- O Arlington St. (Williams Pond Parcel)**- Mass DEP 321-0174- to construct a 2 story commercial building and parking lot on property known as the Williams Pond parcel: Max Hatziliades, Applicant/Owner, Mickey Marcus, Representative
 - 2. Public Hearing-
 - A. Continuance was requested to the March 1, 2023 meeting)- **Request for Determination of Applicability**- for the proposed parking lot improvements and utility upgrades located at **10-30 Manley Way, Watertown, Massachusetts**. PPF Industrial 20 Seylon, LLC, Owner, Christopher M. Lucas, Representative/Applicant
 - 3. Public Hearing-
 - A. **Lot located off 0 Arlington St- Notice of Intent** submitted for the construction of a 41,289

square feet (sf) of pervious parking area to grade and pave the north side of Sawins Pond, extending from the existing paved parking lot, located off 0 Arlington Street, between 71 Arlington Street and 15 Arlington Street taking place within the 100 foot Buffer Zone of Vegetated wetlands and Inland Bank and locally regulated 150 foot Buffer Zone. Polina Safran, Representative from SWCA, Max Hatziliades, Owner

4. Discussion
 - A. Letter from the Waltham Conservation Commission regarding the removal of the Watertown Dam
5. Acceptance of Minutes
 - A. Review and acceptance for minutes from the January 4, 2023 meeting.
6. Agent Report
 - A.
 1. CPC Update- Jamie O'Connell
 2. Climate and Energy Plan
 3. Whitney Hill Signage Update
 4. Ongoing Orders of Conditions
 5. Arsenal Park

The logo for SWCA is positioned vertically on the left side of the page. It consists of the letters 'S', 'W', 'C', and 'A' in a large, light blue, stylized font. The 'S' and 'W' are larger and more prominent, while the 'C' and 'A' are smaller and positioned to the right of the 'W'.

Notice of Intent Parking Lot Development Watertown, Massachusetts

DECEMBER 2023

PREPARED FOR
Maximos Hatziliades

PREPARED BY
SWCA Environmental Consultants

NOTICE OF INTENT PARKING LOT DEVELOPMENT

Prepared for

Maximos Hatziliades
71 Arlington Street
Watertown, Massachusetts 02472

Prepared by

SWCA Environmental Consultants
153 Cordaville Road, Suite 130
Southborough, MA 01772
(413) 256-0202
www.swca.com

SWCA Project No. 66582

December 2022

CONTENTS

1	Introduction.....	1
2	Site Description	1
2.1	Existing Conditions	2
2.2	Site History.....	2
2.3	Regulated Resource Areas	3
2.3.1	Inland Bank	3
2.3.2	Bordering Vegetated Wetland.....	3
2.3.3	Buffer Zone	3
2.3.4	Land Under Water	3
2.3.5	Riverfront Area.....	4
2.4	Other Environmental Constraints.....	2
3	Proposed Work.....	4
3.1	Project Description.....	4
3.2	Project Impacts.....	4
3.3	Mitigation Measures.....	5
3.4	Erosion and Sediment Control	5
4	Regulatory Compliance	5
4.1	Massachusetts Wetlands Protection Act	5
4.2	Watertown Bylaw Performance Standards	6
5	Conclusion	7
6	References Cited/Literature Cited	8

Appendices

Appendix A.	Watertown NOI Checklist, Watertown NOI Application for Permit, and Watertown Fee Calculation and Transmittal Form
Appendix B.	WPA form 3 and Copies of checks
Appendix C.	USGS Site Locus, FEMA Mapping, Design Plan
Appendix D.	Site Photographs
Appendix E.	Certified List of Abutters, Abutter Notification, Affidavit of Service
Appendix F.	Stormwater Checklist and Report

This page intentionally left blank.

1 INTRODUCTION

SWCA Environmental Consultants (SWCA) is filing a Notice of Intent (NOI) on behalf of Maximos Hatziliades (Applicant) for the development of a parking lot at 0 Arlington Street in Watertown, Massachusetts (the Project). This NOI is being submitted in accordance with the Massachusetts Wetlands Protection Act (M.G.L. c.131, §40) (WPA), its implementing regulations (310 CMR 10.00 et seq.), and the Watertown Wetlands Protection Ordinance and its implementing regulations. Completed Town of Watertown Application forms are included in Appendix A. A completed “WPA Form 3” is included in Appendix B.

The NOI proposes the construction of approximately 41,289 square feet (sf) of pervious parking area along the northern part of the parcel. Specifically, the Project proposes to grade and pave the north side of Sawins Pond extending from the existing paved parking lot, off Arlington Street, to Coolidge Avenue. In addition, the Project will include landscaping around the parking area and will enhance the Buffer Zone between the newly constructed parking area and the existing resource area with native plantings. Portions of the Project are proposed within the 100-foot Buffer Zone of Bordering Vegetated Wetlands (BVW) and Inland Bank, and locally regulated 150-foot Buffer Zone only. Please refer to Figure 1 in Appendix C depicting the Project area on an U.S. Geological Survey (USGS) topographic map along with site design plans.

In 2011, the applicant submitted a proposal for a similar project (DEP# 321-0145), for which the Watertown Conservation Commission issued an Order of Conditions on June 14, 2011. However, the Order of Conditions expired prior to commencement of the project. A Certificate of Compliance (Invalid Order) was issued by the Watertown Conservation Commission on July 20, 2021 for DEP# 321-0145. In 2019 SWCA prepared an Abbreviated Notice of Resource Area Delineation (ANRAD), DEP# 321-0168, which included the area in which the proposed site is located. An Order of Resource Area Delineation was issued on August 7, 2019. Amid the COVID-19 pandemic, Massachusetts issued an emergency order which suspended state permitting deadlines and extended validity of state permits. This allowed permits to be extended an additional 462 from their expiration date. Therefore, the ORAD is valid until November 12, 2023.

This project is being filed in accordance with 310 CMR 10.53(1). One original and six (6) hard copies of this NOI are being submitted to the Watertown Conservation Commission, one copy is sent to the Town Engineer, and a copy is being mailed to the Massachusetts Department of Environmental Protection (DEP) Northeast Regional Office. SWCA is notifying all abutters within 300 feet of the subject parcel. Certified list of abutters, a copy of the Abutters Notification Form, and Affidavit of Service is attached in Appendix E. Enclosed is a check of \$1,000 made out to the Town of Watertown for the local filing fee under Section III(G) in accordance with Watertown Wetland Ordinance Rules and Regulations and a check for \$262.50 for the local portion of the WPA filing fee for a Category 2b. project. The Commonwealth’s portion of \$237.50 will be sent to DEP. Copies of the checks can be found in Appendix B.

2 SITE DESCRIPTION

2.1 Existing Conditions

The Sawins Pond parcel is 4.97 acres and is located between Arlington Street and Coolidge Avenue. The parcel is located in a mixed industrial, commercial, and residential area of Watertown. On the western side of the parcel, a perennial stream, Williams Brook, flows under Arlington Street and daylight on the

western side of the parcel before flowing into Sawins Pond. A dam is located on the southern end of Sawins Pond near Coolidge Avenue, which impounds flow and creates Sawins Pond.

The northwestern side of the property, adjacent to Arlington Street, consists of an existing paved parking area. The area between the existing parking lot and Coolidge Avenue, is a previously disturbed site, consisting primarily of mugwort (*Artemisia vulgaris*), grass species, and a Staghorn sumac (*Rhus hirta*) saplings. A chain linked fence separated the property from Coolidge Avenue and the commercial property to the north. Saplings of Staghorn sumac are located predominantly along the fence line by Coolidge Avenue and the northern portion of the property. An access road, consisting of compact soil, spans between the existing paved parking area and gate along Coolidge Avenue. The northern portion of the property is relatively flat. A steep slope, vegetated with trees, separates the herbaceous northern side of the parcel from Sawins Pond. The Pond bank is located at the toe of the slope. Two BVWs are located on the southern bank of the pond and one BVW is located on the northern bank along a portion of Williams Brook, outside of the Project area. There are no wetlands located along the northern bank of the pond between the proposed Project area and the bank. Representative photographs of the Site are included in Appendix D.

According to the Federal Emergency Management Agency (FEMA) Floodplain Insurance Rate Maps (FIRMs) (Map Nos. 25017C0557E, dated June 4, 2010) (FEMA 2010), the Site is not within mapped FEMA floodplain. FEMA Floodplain Maps are included in Appendix C.

2.2 Site History

Sawins Pond was created in the late 1800's along with Williams Pond, which is no longer present. The ponds were developed by George W. Sawin as part of a resort for recreational purposes and can be seen in historical maps dating to at least 1889. When the resort went out of business in the early 1900's, the ponds were purchased by the Hood Rubber Company (Hood). The Hood Rubber Company property is described as being extensive and encompassing the Sawins and Williams Pond and extending west between Arsenal Street on the south and Dexter Street to the North (Vineyard 2008a). Hood became the largest manufacturer of rubber products in the world at one time and used the ponds as a source of cooling water for the plant and as a disposal location for their wastewater. The Hood Rubber Company was later acquired by B.F. Goodrich Corporation in 1929.

2.3 Regulated Resource Areas

Through the ANRAD process and with the issuance of the ORAD (DEP# 321-0168), jurisdictional resources areas at Sawins Pond were confirmed; including the northern and southern bank of Sawins Pond and the location Bordering Vegetated Wetlands (BVW) associated with Sawins Pond. Land Under Water is associated with the open water areas at this parcel. Both Bank and BVW have a 100-foot buffer zone under the Massachusetts Wetland Regulations and a 150-foot Buffer Zone pursuant to the Watertown Wetlands Ordinance. In addition, Watertown regulates the first 50-feet of any bank, wetland, pond as a 50-foot No Build Zone, in which no person shall build or enlarge any structures, parking lot or impervious surface.

As part of the ANRAD process and confirmation of jurisdictional resource areas at Sawins Pond, it was determined that the portion of open water from the culvert at Arlington Street and approximately 200-feet east is considered a perennial stream. This portion of the open water, therefore, has an associated Riverfront Area (RFA). The remaining open water is considered a pond and does not have an associated RFA. Sheet 1 of the Design Plan illustrates these resource areas and the limit of RFA. There is no work proposed within the RFA.

2.3.1 Inland Bank

Inland Bank is the resource area which confines waterways and water bodies (i.e., streams, ponds, and lakes). For streams, it extends from Mean Annual Low Water (MALW) to Mean Annual High Water (MAHW). As set forth in 310 CMR 10.54(2)(a-c), Inland Bank is defined as “the portion of the land surface which normally abuts and confines a water body. It occurs between a water body and a bordering vegetated wetland and adjacent floodplain, or, in the absence of these, it occurs between a water body and an upland.”

Bank, at the parcel, is associated with Sawins Pond. The Bank is located down gradient from the proposed project area. Vegetation in the form of mature trees and woody vines are located on the slope between the bank and the Project area. The Bank and the slope to the bank will not be altered during construction of the parking area.

2.3.2 Bordering Vegetated Wetland

As set forth in 310 CMR 10.55(2)(a-c), a BVW is defined as areas where the soils are saturated and/or inundated such that they support a predominance of wetland indicator plants and the BVW boundary is determined as “the line within which 50% or more of the vegetational community consists of wetland indicator plants and saturated or inundated conditions exist.”

In the approved ORAD (DEP#321-0168), there are two BVW’s located on the southern bank of Sawins Pond. The BVW’s consist primarily of silver maple (*Acer saccharinum*), common cattail (*Typha latifolia*), common rush (*Juncus effusus*), jewelweed (*Impatiens capensis*), Japanese knotweed (*Fallopia japonica*), and Asiatic bittersweet (*Celastrus orbiculatus*). No work is proposed within or near the BVW.

2.3.3 Buffer Zone

The WPA establishes a 100-foot Buffer Zone associated with Inland Bank and BVW. Watertown establishes a 150-foot Buffer Zone to resource areas. The 100-foot Buffer Zone and locally regulated 150-foot Buffer Zone begin at the bank with a steep upgradient slope vegetated with trees and woody vines before transitioning into a flat area dominated by herbaceous vegetation and saplings of staghorn sumac. An existing compact soil access road spans the buffer zone between the existing parking area off Arlington Street across the northern portion of the property to Coolidge Avenue. Both Buffer Zones extends beyond the parcel boundary where they consist of paved surfaces and commercial development.

City of Watertown also regulated the first 50-feet of any bank, wetland, pond as a 50-foot No Build Zone, in which no person shall build or enlarge any structures, parking lot or impervious surface. The first 50-feet of the Buffer Zone include a steep vegetated slope leading from the bank to a relatively level upland area that consists of patches of herbaceous vegetation, compacted soils, and saplings. A portion of the Project area, including mitigation plantings, is proposed within the 50-foot No Build Zone.

2.3.4 Land Under Water

As set forth in 310 CMR 10.56(2), Land Under Water (LUW) is defined as land beneath any creek, river, stream, pond or lake and is composed of organic muck or peat, fine sediments, rocks, or bedrock and with a boundary being the mean annual low water level. LUW does not have a buffer zone. The ORAD depicts LUW stretching along the either side of the banks of Sawins Pond between the culvert at Arlington Street to the dam at Coolidge Avenue. No work is proposed within LUW.

2.3.5 Riverfront Area

Williams Brook flows from the parcel located West of Arlington Street and into Sawins Pond. According to the ORDA (DEP#321-0168), the Brook ends at Flag LB-10 on the northern side of Sawins Pond and RB-7 on the southern side of Sawins Pond. The perineal brook has a 200-foot RFA that will extend from flag LB-10 and RB-7 west to Arlington Street. The proposed Project is not located within the 200-foot RFA.

2.4 Other Environmental Constraints

SWCA evaluated whether any additional resource areas were located within the project area, such as Riverfront Area, Areas of Critical Environmental Concern (ACECs) (MassGIS 2009), Outstanding Resource Waters (ORWs) (MassGIS 2010), Natural Heritage & Endangered Species Program (NHESP) designated Priority Habitat of Rare Species and Estimated Habitat of Rare Wildlife (MassGIS 2021a and 2021b), Certified Vernal Pools (MassGIS 2021c), Potential Vernal Pools (MassGIS 2021d), 100-year Federal Emergency Management Agency (FEMA) Floodplain (FEMA 2010), or Department of Fisheries & Wildlife Cold Water Fisheries Resource Areas. No other mapped sensitive resources were identified within the Assessment Area.

3 PROPOSED WORK

3.1 Project Description

The purpose of the proposed work is to develop additional parking area for the surrounding commercial buildings while keeping disturbance to a minimum. The proposed Project consists of converting approximately 41,289 sf of the north side of the parcel into a parking area. The proposed area will be graded and topped with porous asphalt. Approximately 8,788 sf of landscaping is proposed around the parking area, specifically as landscaping islands within the parking area and along the northern edge of property. The landscaped areas will consist of plantings and New England Conservation/Wildlife seed mix in the understory. The southern edge of the parking area will consist of approximately 3-foot wide strip of rock rip rap. Approximately 15,337 sf of the area between the rip rap and the edge of slope will be planted with native trees and shrubs and contain an understory of New England Conservation seed mix/Wildlife seed mix. The proposed mitigation plantings between the rip rap and the edge of slope will increase important wildlife habitat features by creating foraging, sheltering, and nesting opportunities where there previously few or none. Please refer to Sheet 4 of the Site Design Plan for planting list in Appendix C.

3.2 Project Impacts

No work is proposed within the jurisdictional wetlands or banks; however, portions of the 100-foot Buffer Zone to BVW and Inland Bank and locally regulated 150-foot Buffer Zone will be affected as a result of the work. In addition, Watertown regulates the first 50-feet of any bank, wetland, pond as a 50-foot No Build Zone, in which no person shall build or enlarge any structures, parking lot or impervious surface.

A small portion parking area will be located within the locally regulated 50-foot No Build Zone. However, the proposed parking area will consist of pervious material which will allow for water to recharge into the ground. The applicant is also proposing mitigation plantings, in the form of native trees, shrubs, and native herbaceous vegetation between the edge of slope and parking area, which presently

consists of mostly mugwort and compacted soil. The proposed plantings are discussed in Section 3.3 and are listed on Sheet 4 of the Site Design Plan in Appendix C. In addition, the proposed work provides an opportunity for the applicant to partially clean up the site by removing debris imbedded in the soil by the past parcel owners. The proposed work will also use best available measures, discussed in Section 3.4 to minimize adverse effects on nearby resource areas. The proposed work will result in a net ecological improvement over existing conditions and promotes the interests protected in the Watertown Wetland Ordinance.

3.3 Mitigation Measures

This parcel has been historically disturbed, specifically the area surrounding Sawins Pond. As part of the parking area construction, approximately 15,337 sf of native plantings are proposed within the 50-foot Buffer Zone in addition to the 8,788 sf landscape plantings proposed at the site. The plantings will be located between the riprap strip on the southern end of the parking area and the top of steep slope leading towards the northern bank of Sawins Pond. The proposed plantings will occur primarily within the 50-foot buffer zone to bank and will consist of a combination of trees and shrubs with a New England Conservation/ Wildlife Seed Mix in the understory. Please refer to Sheet 4 of the Design Plan in Appendix C for planting details. The proposed shrubs and trees will supplement the site's capacity to provide important wildlife habitat functions (i.e., shelter, forage, breeding areas, etc.) in addition to providing a vegetated buffer to help reduce stormwater flow and protect Sawins Pond.

3.4 Erosion and Sediment Control

To ensure no adverse impact will occur to the bank or LUW associated to Sawin's Pond, erosion and sediment controls will be placed between the proposed mitigation area and the slope leading down to the northern bank of Sawins Pond. The controls will be in the form of silt fence with staked hay bales in front of the silt fence. The installed controls will also act as a marker for limit of work. All erosion control barriers will be installed prior to any site work and shall remain in place until all surfaces are stable and any disturbed soils are sufficiently vegetated. On-site controls will be inspected daily, and any necessary maintenance will be promptly completed per the manufacturer's specifications and repaired as needed. Additional controls will be installed if site conditions warrant them as determined by the contractor. Exposed soils will not be left un-stabilized for more than 7 consecutive days without proper stabilization. The Design Plan depicts the location of the controls in Appendix C. Construction debris and sediment will be kept on-site and will not be permitted to migrate beyond the project boundaries. All temporary disturbed surfaces will be restored to preexisting conditions to the greatest extent possible.

4 REGULATORY COMPLIANCE

4.1 Massachusetts Wetlands Protection Act

The proposed activities are located within 100-foot Buffer Zone to Inland Bank and BVW only. The proposed work meets the requirements of General Provisions of work within the Buffer Zone of inland resource areas (310 CMR 10.53) the WPA.

4.2 Watertown Bylaws Performance Standards

The proposed activities are located within locally regulated 150-foot Buffer Zone to Inland Bank. Table 1 below lists the performance standards for the 150-foot Buffer Zone as set forth in the Watertown Wetlands Ordinance Rules and Regulations (Section IV(H)).

In addition, Watertown regulated the 50-foot No Build Zone as specified in Section IV A(9) of the Watertown Wetlands Ordinance Rules and Regulations. Though a small portion parking area will be located within the No Build Zone, the parking area will consist of pervious material, allowing for water to recharge into the ground. In addition, approximately 15,337 sf square feet of native vegetation is proposed to be installed. The proposed plantings will supplement the site's capacity to provide important wildlife habitat functions and enhance the Buffer Zone with diverse native vegetation. Also, the proposed work provides an opportunity for the applicant to partially clean up the site by removing debris imbedded in the soil by the past owners. During construction best available measures will be implemented to minimize adverse effects on nearby resource areas.

The Applicant requests approval to complete the proposed re-development work in the buffer zone and requests a waiver to the 50-foot No Build Zone as the proposed work will result in a net ecological improvement over existing site conditions and promotes the interests protected in the Watertown Wetland Ordinance.

Table 1. General Performance Standards for Buffer Zone (Section IV (H))

Citation	Regulation	Compliance
Section IV H(4)(a)	No work in a Buffer Zone should alter an adjacent Resource Area (including Intermittent Streams or Springs), or if an adjacent Resource Area is altered by work in the Buffer Zone, the alteration must comply with the applicable performance standards for the altered Resource Area and any other conditions the Commission may require to enforce those performance requirements.	Proposed work will include the installation of erosion and sediment controls, prior to the start of work. The controls will reduce the risk of sediment reaching the down gradient resource areas and will act as a limit of work.
Section IV H(4)(b)	The Commission may consider the extent of work, the proximity of the work to the Resource Area, the presence of steep slopes, the extent to which the Buffer Zone has already been developed, the extent of natural vegetation, and other factors that affect the potential impact of work in the Buffer Zone on Resource Areas. Where prior development of the Buffer Zone is extensive, the Commission may require measures such as the restoration of natural vegetation adjacent to the Resource Area to protect the interests of the Ordinance.	As part of the work, the buffer between the proposed pervious parking area and the resource area will be enhanced with native tree and shrub vegetation.
Section IV H(4)(c)	No above ground or underground storage tanks containing hazardous materials or gasoline, oil or other fuels may be placed within 100 feet of an adjacent protected Resource Area (including Intermittent Streams and Springs.)	Not applicable. No storage tanks are proposed.

Citation	Regulation	Compliance
Section IV H(4)(d)	The following activities will be prohibited within 25 feet of an adjacent Resource Area (including Intermittent Streams and Springs): ☐ Removal of trees or surface vegetation, except for selective pruning or thinning, removal of hazardous trees, replacement of non-native or invasive species with native plantings, or replacement of lawn or other significantly artificial landscape with indigenous groundcover, trees and/or shrubs. ☐ Use of fertilizers or pesticides. ☐ Dumping of grass clippings, brush, leaves, or other debris or trash. ☐ Storage of scrap metal, construction materials or equipment, or other materials. ☐ Piling of road salt, sand or snow. ☐ Vehicle parking.	No work is proposed within 25 feet of the resource area.
Section IV H(4)(e)	The Commission will not approve any alteration within 50 feet of a vernal pool, except under the provisions of Section I.D(2) or Section IV.A(9) of these Regulations. Such a waiver will at a minimum impose the same conditions and performance standards identified above for areas within 25 feet of protected Resource Areas.	Not applicable; there are no vernal pools in the area.
Section IV H(4)(f)	Properties not currently in compliance with the performance standards for Buffer Zones will not be permitted to increase their degree of non-conformance.	Not applicable.
Section IV H(4)(g)	The Commission may, at its sole discretion, require greater than the minimum setback distances specified above.	-
Section IV H(4)(h)	Erosion and sedimentation controls must be utilized for any construction within the Buffer Zone that will result in exposed soils. No silt or sediment may be allowed to enter a Resource Area during or subsequent to construction.	Erosion and sediment controls will be installed prior to commencement of work and will remain in place until all disturbed areas are stabilized. Erosion and sediment control locations are depicted on plans between the work area and the resource area.
Section IV H(4)(i)	Limited projects in the Buffer Zone....	Not applicable, this is not a limited project.

5 CONCLUSION

The work proposed in this NOI is designed to re-develop the site by expanding the existing parking area east towards Coolidge Avenue at 0 Arlington Street in Watertown. The proposed work includes the construction of a pervious parking area along the previously disturbed northern side of the parcel between the existing parking lot and Coolidge Avenue. The work will occur within the 100-foot Buffer Zone and locally regulated 150-foot Buffer Zone to Inland Bank of Sawins Pond only. Though a portion of the proposed parking area will be within the locally regulated 50-foot No Build Zone, the proposed work will result in a net ecological enhancement over existing site conditions and promotes the interests protected in the Watertown Wetland Ordinance. This work is filed under 310 CMR 10.53(1) and meets the provisions under that section of the WPA as well as the Watertown Wetlands Ordinance. Therefore, we respectfully request the Watertown Conservation Commission to issue an Order of Conditions in support of this Project.

6 REFERENCES

Federal Emergency Management Agency (FEMA). 2010. Flood Insurance Rate Map (FIRM), Middlesex County, Massachusetts, Map No. 25017C0557E.

Massachusetts Geographic Information System (MassGIS). 2009. Areas of Critical Environmental Concern. Available at <https://docs.digital.mass.gov/dataset/massgis-data-areas-critical-environmental-concern>. Accessed November 2022.

MassGIS. 2021a. NHESP Priority Habitats of Rare Wildlife. Available online at <https://docs.digital.mass.gov/dataset/massgis-data-nhesp-priority-habitats-rare-species>. Accessed November 2022.

MassGIS. 2021b. NHESP Estimated Habitats of Rare Wildlife. Available online at <https://docs.digital.mass.gov/dataset/massgis-data-nhesp-estimated-habitats-rare-wildlife>. Accessed November 2022.

MassGIS. 2021c. NHESP Certified Vernal Pools. Available online at <https://www.mass.gov/info-details/massgis-data-nhesp-certified-vernal-pools> . Accessed November 2022.

MassGIS 2021d. NHESP Potential Vernal Pools. Available online at <https://www.mass.gov/info-details/massgis-data-nhesp-potential-vernal-pools> . Accessed November 2022.

MassGIS. 2010. Outstanding Resource Waters. Available at: <https://www.mass.gov/info-details/massgis-data-outstanding-resource-waters>. Accessed November 2022.

This page intentionally left blank.

APPENDIX A

Watertown NOI Checklist

Watertown NOI Application for Permit

Watertown NOI Fee Calculation and Transmittal Form



Town of Watertown
Administration Building
149 Main Street
Watertown, Massachusetts 02472
Conservation Commission
Tel: (617) 972-6426 • Fax: (617) 972-6484

Laurel Schwab, Conservation Agent lschwab@watertown-ma.gov
Susan Jenness, Clerk sjenness@watertown-ma.gov

**CHECKLIST FOR FILING A NOTICE OF INTENT (NOI)
OR A REQUEST FOR DETERMINATION OF APPLICABILITY (RDA) OR OTHER
WETLANDS PERMIT**

Prior to submitting the NOI or Other Wetlands Permit:

- ☒ Let the Conservation Commission office know of your intention to file a NOI or RDA or Other Wetlands permit. You may contact us at (617)972-6426 or through e-mail Susan Jenness, Conservation Clerk, sjenness@watertown-ma.gov.
- ☒ Complete the NOI Form or Other Wetlands Forms including all supplemental information.
Note: A complete NOI or Other Wetland Permit includes Fee Transmittal Form, Filing Fee Calculation Worksheet, as well as all other relevant material.
- or
- ☐ Complete the RDA Form including relevant supporting data and plans
- ☒ Prepare plans showing proposed work, existing structures, proposed and existing grades, resources areas and buffer zones. The plans must be signed, stamped and dated.

Submittal Procedures:

DEP:

- ☒ Send the Commonwealth's fee by certified mail to:

Massachusetts DEP
P.O. Box 4062
Boston, MA 02111

- ☒ Digitally upload the complete package to the eDEP portal **OR** send a copy of the NOI or Other Wetlands Permit or RDA with all plans by certified mail to:

MassDEP Northeast Regional Office
205B Lowell St
Wilmington, MA 01887

TOWN ENGINEER:

- ☒ Send 1 copy of the NOI or Other Wetlands Permit or RDA with all plans and supplemental information by certified mail or hand deliver with receipt to:

Town Engineer
Dept. of Public Works
124 Orchard Street
Watertown, MA 02472

CONSERVATION COMMISSION:

- ☒ Submit the following by certified mail or hand deliver with receipt to:

Conservation Commission
Administration Building, 3RD floor
149 Main Street
Watertown, MA 02472

1. A brief project introduction and summary outlining project proposal
2. The **original and 6 copies** collated of *Application for Permit/Determination Watertown Wetlands Ordinance* form and NOI or RDA.
3. **6 complete sets of plans (signed, stamped and dated)**
4. The Town's share of application fee under the Wetlands Protection Act. (*Make check payable to the **Watertown Conservation Commission**.*)
5. The fee under the Watertown Wetlands Ordinance along with the completed *Fee Calculation and Transmittal Form*. (*Make check payable to **Town of Watertown**.*)
6. A copy of the check to the Commonwealth
***Note:** Submit the state share of the filing fee to the DEP as indicated on the Notice of Intent Fee Transmittal Form.*
7. Evidence of submittal to DEP and Town Engineer must be submitted to the Conservation Commission prior to the public hearing.

Upon filing on or before the "Filing Deadline," the applicant will be responsible for notifying the abutters and appropriate Town Departments. Our office can generate an abutters list for you. The Town will place the public notice, at your expense, in the *Watertown TAB & Press*. If you have any questions or need assistance, feel free to contact our office.



Town of Watertown
Administration Building
149 Main Street
Watertown, Massachusetts 02472
Conservation Commission
Tel: (617) 972-6426 • Fax: (617) 972-6484

WATERTOWN WETLANDS ORDINANCE Application for Permit/Determination

Application for:

- ☐ Request for Determination of Applicability ☒ Notice of Intent
☐ Other

Owner*		Applicant	
Name	Maximos Hatziliades	Name	Maximos Hatziliades
Street	5 Madison Street	Street	5 Madison Street
City	Belmont	City	Belmont
State	MA	State	MA
Zip	02478	Zip	02478
Phone	617-331-8209	Phone	617-331-8209
e-mail	maxhatz2@gmail.com	e-mail	maxhatz2@gmail.com

**Name(s) and address(s) under which title of property is recorded at Registry of Deeds.*

1. Location of site where work is proposed: _____
0 Arlington Street, Watertown- between 71 Arlington ST. and 15 Arlington ST.

Town of Watertown Assessor's Information:

Map: 1510 Lot: 1 Block: 0

2. Briefly describe the proposed work:

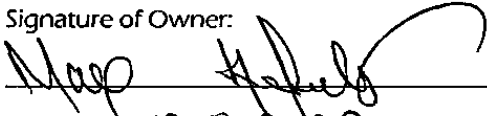
Construction of a pervious parking area along the northern portion of the
property, extending from the existing paved parking area off Arlington St
east towards Coolidge Ave.

3. Are there any impediments to accessing the site? ☒ No ☐ Yes

If yes, what are they (fence, dog, topography, etc.): Enter from Arlington Street, there is a fence from Coolidge Avenue side.

By signing this application the owner grants permission to the Conservation Commission for its members and designated representative to enter upon the premises of the site.

Signature of Owner:

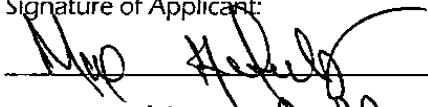


Date: 12.9.2022

Waiver

If the next regular meeting of the Conservation Commission is not within 21 days of submission of this filing, or if the agenda for the next regular meeting is full, I waive the 21 day requirement and agree to a later date for this Hearing no later than the next regular scheduled meeting or 30 days from the date of the filing a complete application (whichever is less).

Signature of Applicant:



Date: 12.9.2022



Town of Watertown
 Administration Building
 149 Main Street
 Watertown, Massachusetts 02472
Conservation Commission
 Tel: (617) 972-6426 • Fax: (617) 972-6484

WATERTOWN WETLANDS ORDINANCE Fee Calculation and Transmittal Form

Owner		Applicant	
Name	Maximos Hatziliades	Name	Maximos Hatziliades
Street	5 Madison Street	Street	5 Madison Street
City	Belmont	City	Belmont
State	MA	State	MA
Zip	02478	Zip	02478
Phone	617-331-8209	Phone	617-331-8209
e-mail	maxhatz2@gmail.com	e-mail	maxhatz2@gmail.com

Project Location:

0 Arlington Street, Watertown- between 71 Arlington ST. and 15 Arlington ST.

Any person filing an Application for Permit/RDA/NOI pursuant to the Ordinance shall, at the same time, pay a filing fee in accordance with the Filing Fee Schedule contained in the *Rules and Regulations for the Administration of the Watertown Wetlands Ordinance of 2008*. Municipal agencies are exempt from this requirement.

A. Fee Schedule:

Project Size	Fees
Less than 1,000 sq. ft	\$50.00
1,000 sq. ft. to less than 2,000 sq. ft.	\$100.00
2,000 sq. ft. to less than 3,000 sq. ft.	\$150.00
3,000 sq. ft. to less than 4,000 sq. ft.	\$200.00
4,000 sq. ft. to less than 5,000 sq. ft.	\$250.00
5,000 sq. ft. to less than 6,000 sq. ft.	\$300.00
6,000 sq. ft. to less than 10,000 sq. ft.	\$400.00
10,000 sq. ft. to less than 15,000 sq. ft.	\$500.00
15,000 sq. ft. to less than 20,000 sq. ft.	\$650.00
20,000 sq. ft. to less than 30,000 sq. ft.	\$750.00
30,000 sq. ft. to less than 50,000 sq. ft.	\$850.00
50,000 sq. ft. or greater	\$1000.00

Project Fee

\$1000.00

If yes, what arrangements have been or will be made to ensure that the Conservation Commission members and designated representatives have safe and easy access to the site?

6. Do you understand that notification of this application and the Public Hearing will be published in a newspaper of local circulation at your expense? Please check-off appropriate box: ☒ Yes ☐ No

7. How much is the filing fee, for this project, under the local ordinance? And under the Wetlands Protection Act?

\$ 1000.00

(See Fee Schedule). Make check payable to the Town of Watertown.

\$ 262.50

(See NOI Wetland Fee Transmittal Form wpaform3.doc) Make check payable to the Watertown Conservation Commission)

I hereby certify, under the pains and penalties of perjury, that the contents of this application are true and complete.

Signature of Applicant:



Date: 12-2022

Fee Exemption

The Commission may waive the filing fee for an Application or Request for Determination filed by a government agency, for an RDA filed by a person having no financial connection with the subject property, for any projects whose sole effect is to substantially enhance a Resource Area, or for other reasonable grounds as determined by the Commission at its discretion.

Grounds for Exemption (to be filled out by CC staff)

Signature of Owner or Applicant: _____

Date: _____

12.9.2022

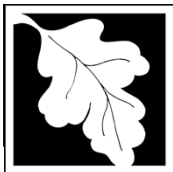
Enclose this form with a check or money order for the calculated amount payable to the Town of Watertown with the Application for Permit or Request for Determination of Applicability. These fees are non-refundable.

Please note this payment does not relieve the Applicant from the further fee requirements as stated in the Wetlands Protection Act Regulations MGL Chapter 44, Section 53G.

APPENDIX B

WPA Form 3

Copies of Checks



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Watertown

City/Town

Important:

When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Note:
Before completing this form consult your local Conservation Commission regarding any municipal bylaw or ordinance.

A. General Information

1. Project Location (**Note:** electronic filers will click on button to locate project site):

0 Arlington Street

a. Street Address

Watertown

b. City/Town

MA

c. Zip Code

Latitude and Longitude:

1510

f. Assessors Map/Plat Number

42.364755

d. Latitude

-71.152585

e. Longitude

1-0

g. Parcel /Lot Number

2. Applicant:

Maximos

a. First Name

Hatziliades

b. Last Name

c. Organization

5 Madison Street

d. Street Address

Belmont

e. City/Town

MA

f. State

02478

g. Zip Code

617-331-8209

h. Phone Number

i. Fax Number

maxhatz2@gmail.com

j. Email Address

3. Property owner (required if different from applicant): ☐ Check if more than one owner

a. First Name

b. Last Name

c. Organization

d. Street Address

e. City/Town

f. State

g. Zip Code

h. Phone Number

i. Fax Number

j. Email address

4. Representative (if any):

Polina

a. First Name

Safran

b. Last Name

SWCA Environmental Consultants

c. Company

153 Cordaville Road, Suite 130

d. Street Address

Southborough

e. City/Town

MA

f. State

01772

g. Zip Code

413-256-0202

h. Phone Number

i. Fax Number

polina.safran@swca.com

j. Email address

5. Total WPA Fee Paid (from NOI Wetland Fee Transmittal Form):

\$500

a. Total Fee Paid

\$237.50

b. State Fee Paid

\$262.50

c. City/Town Fee Paid



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Watertown

City/Town

A. General Information (continued)

6. General Project Description:

Construction of a pervious parking area along the northern portion of the property, extending from the existing paved parking area off Arlington St east towards Coolidge Ave.

7a. Project Type Checklist: (Limited Project Types see Section A. 7b.)

- | | |
|---|---|
| 1. ☐ Single Family Home | 2. ☐ Residential Subdivision |
| 3. ☒ Commercial/Industrial | 4. ☐ Dock/Pier |
| 5. ☐ Utilities | 6. ☐ Coastal engineering Structure |
| 7. ☐ Agriculture (e.g., cranberries, forestry) | 8. ☐ Transportation |
| 9. ☐ Other | |

7b. Is any portion of the proposed activity eligible to be treated as a limited project (including Ecological Restoration Limited Project) subject to 310 CMR 10.24 (coastal) or 310 CMR 10.53 (inland)?

1. ☐ Yes ☒ No If yes, describe which limited project applies to this project. (See 310 CMR 10.24 and 10.53 for a complete list and description of limited project types)

2. Limited Project Type

If the proposed activity is eligible to be treated as an Ecological Restoration Limited Project (310 CMR 10.24(8), 310 CMR 10.53(4)), complete and attach Appendix A: Ecological Restoration Limited Project Checklist and Signed Certification.

8. Property recorded at the Registry of Deeds for:

Middlesex County

a. County

1313

c. Book

b. Certificate # (if registered land)

36

d. Page Number

B. Buffer Zone & Resource Area Impacts (temporary & permanent)

- ☒ Buffer Zone Only – Check if the project is located only in the Buffer Zone of a Bordering Vegetated Wetland, Inland Bank, or Coastal Resource Area.
- ☒ Inland Resource Areas (see 310 CMR 10.54-10.58; if not applicable, go to Section B.3, Coastal Resource Areas).

Check all that apply below. Attach narrative and any supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Watertown

City/Town

B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)

For all projects affecting other Resource Areas, please attach a narrative explaining how the resource area was delineated.

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. ☐ Bank	1. linear feet	2. linear feet
b. ☐ Bordering Vegetated Wetland	1. square feet	2. square feet
c. ☐ Land Under Waterbodies and Waterways	1. square feet 3. cubic yards dredged	2. square feet

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
d. ☐ Bordering Land Subject to Flooding	1. square feet 3. cubic feet of flood storage lost	2. square feet 4. cubic feet replaced
e. ☐ Isolated Land Subject to Flooding	1. square feet 2. cubic feet of flood storage lost	3. cubic feet replaced
f. ☐ Riverfront Area	1. Name of Waterway (if available) - specify coastal or inland	

2. Width of Riverfront Area (check one):

- ☐ 25 ft. - Designated Densely Developed Areas only
- ☐ 100 ft. - New agricultural projects only
- ☐ 200 ft. - All other projects

3. Total area of Riverfront Area on the site of the proposed project: _____ square feet

4. Proposed alteration of the Riverfront Area:

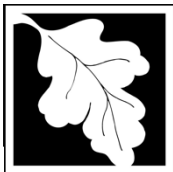
a. total square feet _____ b. square feet within 100 ft. _____ c. square feet between 100 ft. and 200 ft. _____

5. Has an alternatives analysis been done and is it attached to this NOI? ☐ Yes ☐ No

6. Was the lot where the activity is proposed created prior to August 1, 1996? ☐ Yes ☐ No

3. ☐ Coastal Resource Areas: (See 310 CMR 10.25-10.35)

Note: for coastal riverfront areas, please complete **Section B.2.f.** above.



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Watertown

City/Town

B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)

Check all that apply below. Attach narrative and supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.

Online Users:
Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

<u>Resource Area</u>	<u>Size of Proposed Alteration</u>	<u>Proposed Replacement (if any)</u>
a. ☐ Designated Port Areas	Indicate size under Land Under the Ocean, below	
b. ☐ Land Under the Ocean	1. square feet _____ 2. cubic yards dredged _____	
c. ☐ Barrier Beach	Indicate size under Coastal Beaches and/or Coastal Dunes below	
d. ☐ Coastal Beaches	1. square feet _____	2. cubic yards beach nourishment _____
e. ☐ Coastal Dunes	1. square feet _____	2. cubic yards dune nourishment _____
	<u>Size of Proposed Alteration</u>	<u>Proposed Replacement (if any)</u>
f. ☐ Coastal Banks	1. linear feet _____	
g. ☐ Rocky Intertidal Shores	1. square feet _____	
h. ☐ Salt Marshes	1. square feet _____	2. sq ft restoration, rehab., creation _____
i. ☐ Land Under Salt Ponds	1. square feet _____	
	2. cubic yards dredged _____	
j. ☐ Land Containing Shellfish	1. square feet _____	
k. ☐ Fish Runs	Indicate size under Coastal Banks, inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above	
	1. cubic yards dredged _____	
l. ☐ Land Subject to Coastal Storm Flowage	1. square feet _____	

4. ☐ Restoration/Enhancement

If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.2.b or B.3.h above, please enter the additional amount here.

a. square feet of BVW _____

b. square feet of Salt Marsh _____

5. ☐ Project Involves Stream Crossings

a. number of new stream crossings _____

b. number of replacement stream crossings _____



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Watertown

City/Town

C. Other Applicable Standards and Requirements

- ☐ This is a proposal for an Ecological Restoration Limited Project. Skip Section C and complete Appendix A: Ecological Restoration Limited Project Checklists – Required Actions (310 CMR 10.11).

Streamlined Massachusetts Endangered Species Act/Wetlands Protection Act Review

1. Is any portion of the proposed project located in **Estimated Habitat of Rare Wildlife** as indicated on the most recent Estimated Habitat Map of State-Listed Rare Wetland Wildlife published by the Natural Heritage and Endangered Species Program (NHESP)? To view habitat maps, see the *Massachusetts Natural Heritage Atlas* or go to http://maps.massgis.state.ma.us/PRI_EST_HAB/viewer.htm.

- a. ☐ Yes ☒ No **If yes, include proof of mailing or hand delivery of NOI to:**

Natural Heritage and Endangered Species Program
Division of Fisheries and Wildlife
1 Rabbit Hill Road
Westborough, MA 01581

2022

b. Date of map

If yes, the project is also subject to Massachusetts Endangered Species Act (MESA) review (321 CMR 10.18). To qualify for a streamlined, 30-day, MESA/Wetlands Protection Act review, please complete Section C.1.c, and include requested materials with this Notice of Intent (NOI); *OR* complete Section C.2.f, if applicable. *If MESA supplemental information is not included with the NOI, by completing Section 1 of this form, the NHESP will require a separate MESA filing which may take up to 90 days to review (unless noted exceptions in Section 2 apply, see below).*

- c. Submit Supplemental Information for Endangered Species Review*

1. ☐ Percentage/acreage of property to be altered:

(a) within wetland Resource Area

percentage/acreage

(b) outside Resource Area

percentage/acreage

2. ☐ Assessor's Map or right-of-way plan of site

2. ☐ Project plans for entire project site, including wetland resource areas and areas outside of wetlands jurisdiction, showing existing and proposed conditions, existing and proposed tree/vegetation clearing line, and clearly demarcated limits of work **

(a) ☐ Project description (including description of impacts outside of wetland resource area & buffer zone)

(b) ☐ Photographs representative of the site

* Some projects **not** in Estimated Habitat may be located in Priority Habitat, and require NHESP review (see <https://www.mass.gov/mas-endangered-species-act-mesa-regulatory-review>).

Priority Habitat includes habitat for state-listed plants and strictly upland species not protected by the Wetlands Protection Act.

** MESA projects may not be segmented (321 CMR 10.16). The applicant must disclose full development plans even if such plans are not required as part of the Notice of Intent process.



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Watertown

City/Town

C. Other Applicable Standards and Requirements (cont'd)

- (c) ☐ MESA filing fee (fee information available at <https://www.mass.gov/how-to/how-to-file-for-a-mesa-project-review>).

Make check payable to "Commonwealth of Massachusetts - NHESP" and **mail to NHESP** at above address

Projects altering 10 or more acres of land, also submit:

- (d) ☐ Vegetation cover type map of site
- (e) ☐ Project plans showing Priority & Estimated Habitat boundaries
- (f) OR Check One of the Following

1. ☐ Project is exempt from MESA review.
Attach applicant letter indicating which MESA exemption applies. (See 321 CMR 10.14, <https://www.mass.gov/service-details/exemptions-from-review-for-projectsactivities-in-priority-habitat>; the NOI must still be sent to NHESP if the project is within estimated habitat pursuant to 310 CMR 10.37 and 10.59.)

2. ☐ Separate MESA review ongoing. a. NHESP Tracking # _____ b. Date submitted to NHESP _____

3. ☐ Separate MESA review completed.
Include copy of NHESP "no Take" determination or valid Conservation & Management Permit with approved plan.

3. For coastal projects only, is any portion of the proposed project located below the mean high water line or in a fish run?

- a. ☒ Not applicable – project is in inland resource area only b. ☐ Yes ☐ No

If yes, include proof of mailing, hand delivery, or electronic delivery of NOI to either:

South Shore - Cohasset to Rhode Island border, and the Cape & Islands:

North Shore - Hull to New Hampshire border:

Division of Marine Fisheries -
Southeast Marine Fisheries Station
Attn: Environmental Reviewer
836 South Rodney French Blvd.
New Bedford, MA 02744
Email: dmf.envreview-south@mass.gov

Division of Marine Fisheries -
North Shore Office
Attn: Environmental Reviewer
30 Emerson Avenue
Gloucester, MA 01930
Email: dmf.envreview-north@mass.gov

Also if yes, the project may require a Chapter 91 license. For coastal towns in the Northeast Region, please contact MassDEP's Boston Office. For coastal towns in the Southeast Region, please contact MassDEP's Southeast Regional Office.

- c. ☐ Is this an aquaculture project? d. ☐ Yes ☐ No

If yes, include a copy of the Division of Marine Fisheries Certification Letter (M.G.L. c. 130, § 57).



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Watertown

City/Town

C. Other Applicable Standards and Requirements (cont'd)

Online Users:

Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

4. Is any portion of the proposed project within an Area of Critical Environmental Concern (ACEC)?
a. ☐ Yes ☐ No If yes, provide name of ACEC (see instructions to WPA Form 3 or MassDEP Website for ACEC locations). **Note:** electronic filers click on Website.
- b. ACEC
5. Is any portion of the proposed project within an area designated as an Outstanding Resource Water (ORW) as designated in the Massachusetts Surface Water Quality Standards, 314 CMR 4.00?
a. ☐ Yes ☒ No
6. Is any portion of the site subject to a Wetlands Restriction Order under the Inland Wetlands Restriction Act (M.G.L. c. 131, § 40A) or the Coastal Wetlands Restriction Act (M.G.L. c. 130, § 105)?
a. ☐ Yes ☒ No
7. Is this project subject to provisions of the MassDEP Stormwater Management Standards?
a. ☒ Yes. Attach a copy of the Stormwater Report as required by the Stormwater Management Standards per 310 CMR 10.05(6)(k)-(q) and check if:
1. ☐ Applying for Low Impact Development (LID) site design credits (as described in Stormwater Management Handbook Vol. 2, Chapter 3)
2. ☒ A portion of the site constitutes redevelopment
3. ☐ Proprietary BMPs are included in the Stormwater Management System.
b. ☐ No. Check why the project is exempt:
1. ☐ Single-family house
2. ☐ Emergency road repair
3. ☐ Small Residential Subdivision (less than or equal to 4 single-family houses or less than or equal to 4 units in multi-family housing project) with no discharge to Critical Areas.

D. Additional Information

- ☐ This is a proposal for an Ecological Restoration Limited Project. Skip Section D and complete Appendix A: Ecological Restoration Notice of Intent – Minimum Required Documents (310 CMR 10.12).

Applicants must include the following with this Notice of Intent (NOI). See instructions for details.

Online Users: Attach the document transaction number (provided on your receipt page) for any of the following information you submit to the Department.

1. ☐ USGS or other map of the area (along with a narrative description, if necessary) containing sufficient information for the Conservation Commission and the Department to locate the site. (Electronic filers may omit this item.)
2. ☐ Plans identifying the location of proposed activities (including activities proposed to serve as a Bordering Vegetated Wetland [BVW] replication area or other mitigating measure) relative to the boundaries of each affected resource area.



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Watertown

City/Town

D. Additional Information (cont'd)

3. ☐ Identify the method for BVW and other resource area boundary delineations (MassDEP BVW Field Data Form(s), Determination of Applicability, Order of Resource Area Delineation, etc.), and attach documentation of the methodology.

4. ☒ List the titles and dates for all plans and other materials submitted with this NOI.

Proposed Site Plan

a. Plan Title

Engineering Alliance, Inc.

Richard Salvo

b. Prepared By

c. Signed and Stamped by

August 5, 2022

as-needed

d. Final Revision Date

e. Scale

f. Additional Plan or Document Title

g. Date

5. ☐ If there is more than one property owner, please attach a list of these property owners not listed on this form.
6. ☐ Attach proof of mailing for Natural Heritage and Endangered Species Program, if needed.
7. ☐ Attach proof of mailing for Massachusetts Division of Marine Fisheries, if needed.
8. ☒ Attach NOI Wetland Fee Transmittal Form
9. ☐ Attach Stormwater Report, if needed.

E. Fees

1. ☐ Fee Exempt: No filing fee shall be assessed for projects of any city, town, county, or district of the Commonwealth, federally recognized Indian tribe housing authority, municipal housing authority, or the Massachusetts Bay Transportation Authority.

Applicants must submit the following information (in addition to pages 1 and 2 of the NOI Wetland Fee Transmittal Form) to confirm fee payment:

3935

2. Municipal Check Number

3934

4. State Check Number

Max

6. Payor name on check: First Name

December 9, 2022

3. Check date

December 9, 2022

5. Check date

Hatziliades

7. Payor name on check: Last Name



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File Number
Document Transmittal Number
Watertown
City/Town

F. Signatures and Submittal Requirements

I hereby certify under the penalties of perjury that the foregoing Notice of Intent and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I understand that the Conservation Commission will place notification of this Notice in a local newspaper at the expense of the applicant in accordance with the wetlands regulations, 310 CMR 10.05(5)(a).

I further certify under penalties of perjury that all abutters were notified of this application, pursuant to the requirements of M.G.L. c. 131, § 40. Notice must be made by Certificate of Mailing or in writing by hand delivery or certified mail (return receipt requested) to all abutters within 100 feet of the property line of the project location.

1. Signature of Applicant

[Handwritten Signature]

2. Date

12/9/2022

3. Signature of Property Owner (if different)

Polina Safran

4. Date

12/9/2022

5. Signature of Representative (if any)

6. Date

For Conservation Commission:

Two copies of the completed Notice of Intent (Form 3), including supporting plans and documents, two copies of the NOI Wetland Fee Transmittal Form, and the city/town fee payment, to the Conservation Commission by certified mail or hand delivery.

For MassDEP:

One copy of the completed Notice of Intent (Form 3), including supporting plans and documents, one copy of the NOI Wetland Fee Transmittal Form, and a **copy** of the state fee payment to the MassDEP Regional Office (see Instructions) by certified mail or hand delivery.

Other:

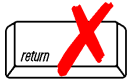
If the applicant has checked the "yes" box in any part of Section C, Item 3, above, refer to that section and the Instructions for additional submittal requirements.

The original and copies must be sent simultaneously. Failure by the applicant to send copies in a timely manner may result in dismissal of the Notice of Intent.



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
NOI Wetland Fee Transmittal Form
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A. Applicant Information

1. Location of Project:

0 Arlington Street

a. Street Address

3934

c. Check number

Watertown

b. City/Town

\$237.50

d. Fee amount

2. Applicant Mailing Address:

Maximos

a. First Name

Hatziiliades

b. Last Name

c. Organization

5 Madison Street

d. Mailing Address

Belmont

e. City/Town

MA

f. State

02478

g. Zip Code

617-331-8209

h. Phone Number

i. Fax Number

maxhatz2@gmail.com

j. Email Address

3. Property Owner (if different):

a. First Name

b. Last Name

c. Organization

d. Mailing Address

e. City/Town

f. State

g. Zip Code

h. Phone Number

i. Fax Number

j. Email Address

B. Fees

Fee should be calculated using the following process & worksheet. **Please see Instructions before filling out worksheet.**

Step 1/Type of Activity: Describe each type of activity that will occur in wetland resource area and buffer zone.

Step 2/Number of Activities: Identify the number of each type of activity.

Step 3/Individual Activity Fee: Identify each activity fee from the six project categories listed in the instructions.

Step 4/Subtotal Activity Fee: Multiply the number of activities (identified in Step 2) times the fee per category (identified in Step 3) to reach a subtotal fee amount. Note: If any of these activities are in a Riverfront Area in addition to another Resource Area or the Buffer Zone, the fee per activity should be multiplied by 1.5 and then added to the subtotal amount.

Step 5/Total Project Fee: Determine the total project fee by adding the subtotal amounts from Step 4.

Step 6/Fee Payments: To calculate the state share of the fee, divide the total fee in half and subtract \$12.50. To calculate the city/town share of the fee, divide the total fee in half and add \$12.50.

To calculate filing fees, refer to the category fee list and examples in the instructions for filling out WPA Form 3 (Notice of Intent).



Step 1/Type of Activity	Step 2/Number of Activities	Step 3/Individual Activity Fee	Step 4/Subtotal Activity Fee
Category 2b	1	\$500	\$500
Step 5/Total Project Fee:			\$500

Total Project Fee:	<u>\$500</u>
	a. Total Fee from Step 5
State share of filing Fee:	<u>\$237.50</u>
	b. 1/2 Total Fee less \$12.50
City/Town share of filling Fee:	<u>\$262.50</u>
	c. 1/2 Total Fee plus \$12.50

a.) Complete pages 1 and 2 and send with a check or money order for the state share of the fee, payable to the Commonwealth of Massachusetts.

b.) **To the Conservation Commission:** Send the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and the city/town fee payment.

Page 39 of 163

71 ARLINGTON STREET REALTY TRUST
5 MADISON STREET
BELMONT MA 02478

3934
53-7017-2113

Pay to the
Order of

CONNORWELLY OF MA
two hundred thirty seven ~~00~~

\$ 237 ~~50~~
Dollars
CHECK ARMOR
FRAUD PROTECTION
Photo
Safe
Deposit®
Details on back

Watertown
— Savings Bank —

For

[Signature]

⑆ 211370176⑆ 068 100467 4 3934

71 ARLINGTON STREET REALTY TRUST
5 MADISON STREET
BELMONT MA 02478

3935
53-7017-2113

Pay to the
Order of

Town of Watertown
two hundred sixty two ~~50~~

\$ 262 ~~50~~
Dollars
CHECK ARMOR
FRAUD PROTECTION
Photo
Safe
Deposit®
Details on back

Watertown
— Savings Bank —

For

[Signature]

⑆ 211370176⑆ 068 100467 4 3935

MAXIMOS HATZILIADIS
5 MADISON ST
BELMONT MA 02478

572
53-7017-2113

Pay to the
Order of

Town of Watertown
one thousand ~~xx~~

\$ 1,000 ~~xx~~
Dollars
CHECK ARMOR
FRAUD PROTECTION
Photo
Safe
Deposit®
Details on back

Watertown
— Savings Bank —

For Conservation No 1

[Signature]

⑆ 211370176⑆ 067 106370 7 0572

APPENDIX C

USGS Site Locus

FEMA Mapping

Site Design Plan

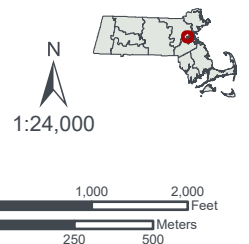


PARKING LOT NOI SAWINS POND
Figure 1. Site Locus
USGS
Topographic Map

- ▭ Subject Property
- USGS Quadrangle Boundary

Watertown
 Middlesex County, MA
 USGS 7.5' Quadrangle:
 Newton, MA, 42071-C2
 NAD 1983 StatePlane
 Massachusetts Mainland
 FIPS 2001
 71.1528°W 42.3643°N

Base Map: ESRI ArcGIS Online,
 accessed December 2022
 Updated: 12/1/2022
 Project No. 66582
 File: 01_SiteLocus



NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.7 North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Massachusetts State Plane, NAD 83, UTM zone 18Q. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRM for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov> or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, NIMS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at <http://www.ngs.noaa.gov>.

Base map information shown on this FIRM was provided in digital format by the Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Energy and Environmental Affairs. This information was derived from digital orthophotos produced at a scale of 1:5,000 from aerial photography dated April 2005.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels, community map repository addresses, and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at <http://msc.fema.gov>.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA-Map (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov>.

City of
Cambridge
250186



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equal or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently determined. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE AR99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE
The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachments so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS
ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot. Areas of 1% annual chance flood with average depths of 1 foot or greater are shown with a wavy line and areas protected by levees from 1% annual chance flood.

OTHER AREAS
Areas determined to be outside the 0.2% annual chance floodplain. Areas in which flood hazards are undetermined, but possible.

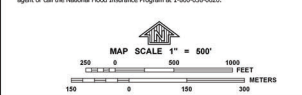
COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS
OTHERWISE PROTECTED AREAS (OPAs)
CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- Base Flood Elevation line and value; elevation in feet*
- Base Flood Elevation value uniform within zone; elevation in feet*

- * Referenced to the North American Vertical Datum of 1988
- Transact line
- 87°07'45", 32°22'30"
- 76°00'N
- 600000 FT
- DX5510
- M1.5
- River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index.
EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
June 4, 2010
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.
To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-338-6620.



NFIP PANEL 0557E

FIRM

FLOOD INSURANCE RATE MAP

MIDDLESEX COUNTY, MASSACHUSETTS (ALL JURISDICTIONS)

PANEL 557 OF 656
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	DATE	PANEL	SUFFIX
CAMBRIDGE CITY OF	2010	0557	E
WATERTOWN TOWN OF	2002	0557	E

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
25017C0557E

EFFECTIVE DATE
JUNE 4, 2010

Federal Emergency Management Agency

National Flood Hazard Layer FIRMMette



71°9'25"W 42°22'6"N



0 250 500 1,000 1,500 2,000 Feet 1:6,000 71°8'48"W 42°21'39"N
Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
		Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation 17.5
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
		Profile Baseline Hydrographic Feature
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

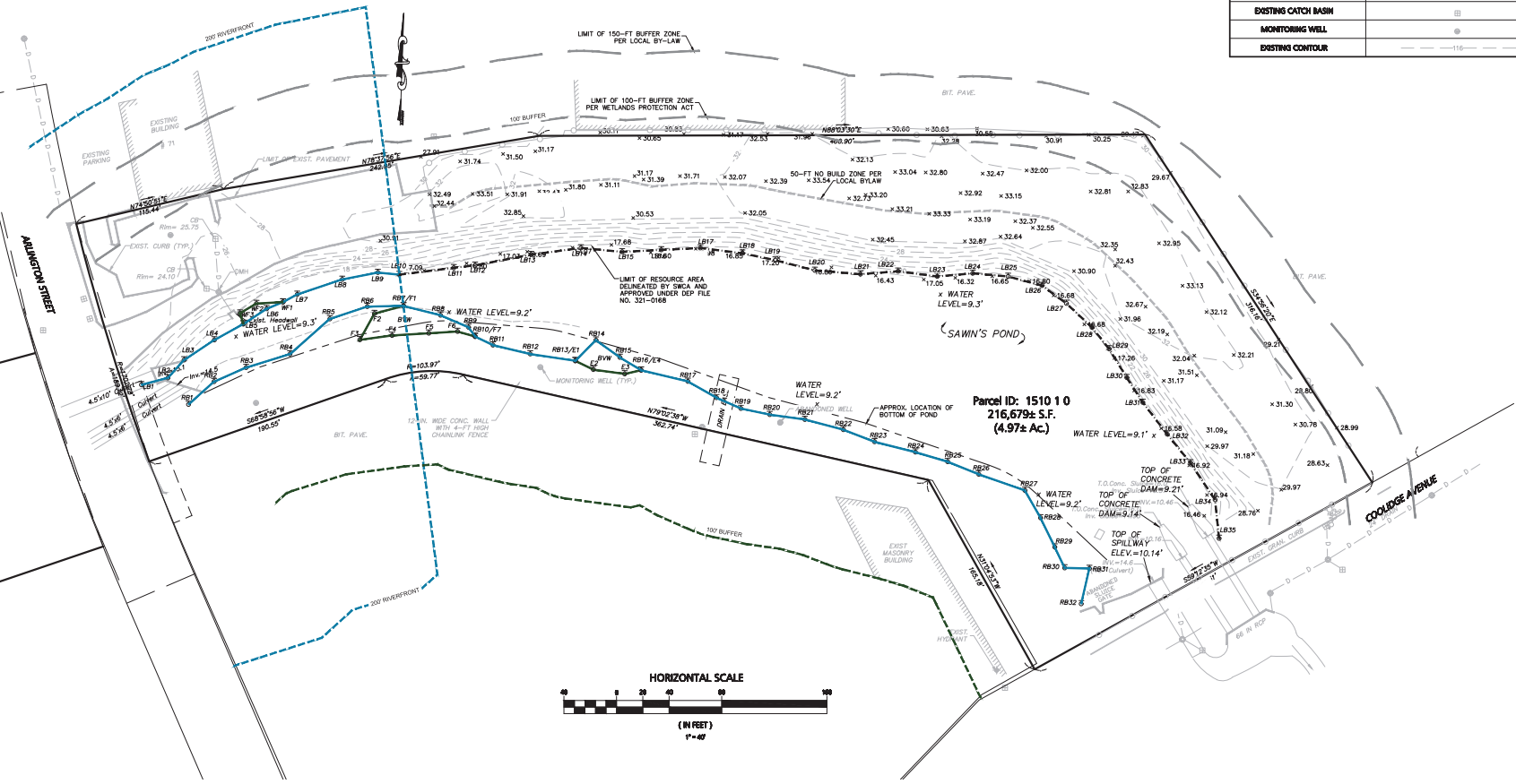
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/18/2022 at 5:05 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

- NOTES:
- EXISTING CONDITIONS INFORMATION OBTAINED FROM AN ACTUAL FIELD SURVEY PERFORMED BY OTTE & DWYER, INC. ON MARCH 11, 2009. PERIMETER OBTAINED FROM PLANS ENTITLED: "PLAN OF LAND ARLINGTON STREET AND COOLIDGE AVENUE, WATERTOWN, MA, BY LEBRON ASSOC. INC. DATED 8/21/87 AND "SITE PLAN OF LAND IN WATERTOWN, MA, MAXIMOS HATZILADES & SAVVAS KLADES BY VTP ASSOC. INC. DATED 4/10/86."
 - PLAN REFERENCES:
LAND COURT 71739 G
PLAN #313 - 1957, BK 8920 PG 290
PLAN #404 - 1943, BK 6708 PG 1
CLARENCE ST LAYOUT OF 2/15/1930
PLAN # 848 - 1973, BK 12475 PG 83
COOLIDGE AVE 1972 LAYOUT
ARLINGTON ST 1933 RELOCATION
 - DEED REFERENCE:
BK 10106 PG 271

LEGEND - EXISTING CONDITIONS PLAN	
EXISTING PROPERTY LINE	---
200-FT RIVERFRONT AREA	---
150-FT BUFFER (LOCAL BY-LAW)	---
105-FT BUFFER (MRA)	---
50-FT NO BUILD (LOCAL BY-LAW)	---
WETLAND	---
EXISTING CURB	---
BASEMENT	---
EXISTING FENCE	---
DRAINAGE CHANNEL	---
EXISTING BUILDING	---
EXISTING SEWER MANHOLE	---
EXISTING SEWER LINE	---
EXISTING DRAIN MANHOLE	---
EXISTING DRAIN LINE	---
EXISTING HYDRANT	---
EXISTING CATCH BASIN	---
MONITORING WELL	---
EXISTING CONTOUR	---





LEGEND - BANK CROSS SECTIONS

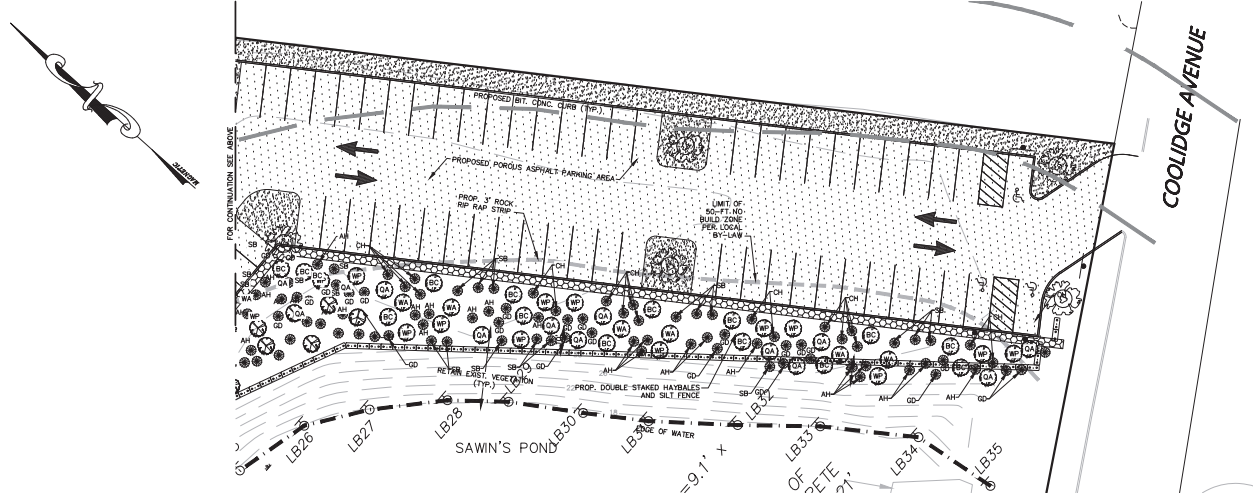
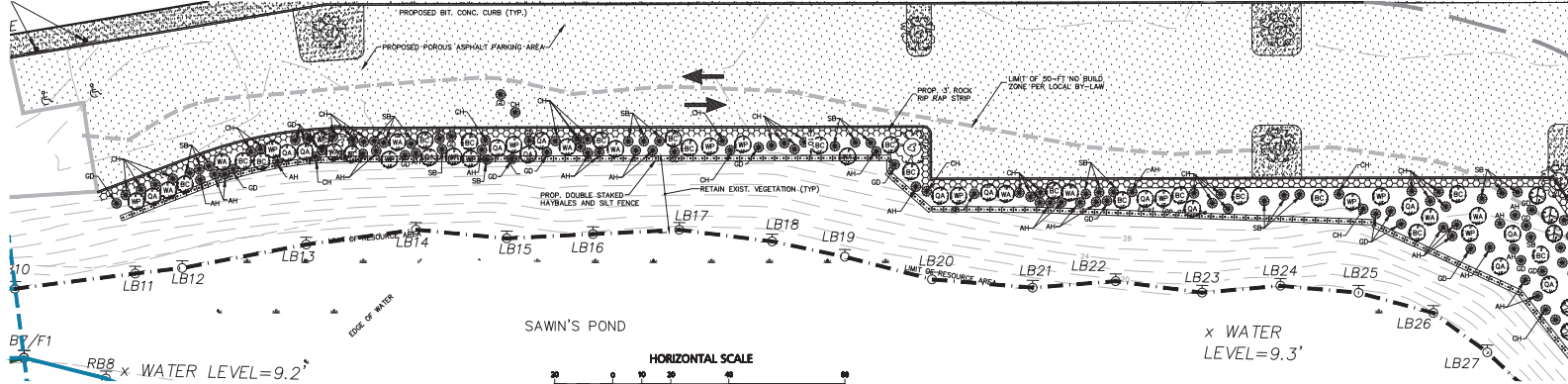
EXISTING GRADEAPPROX. LIMIT OF WETLAND

DESCRIPTION OF REVISION

PREPARED BY:

PROJECT:

APPLICANT:



PLANTING KEY

TREE:

WP= WHITE PINE / PINUS STROBUS

QA= QUINQUE LOBED / POPULUS TREMULA

BC= BLACK CHERRY / PRUNUS SEROTINA

WA= WHITE ASH / FRAXINUS AMERICANA

SHRUB

AH= AMERICAN HAZELNUT / CORYLUS AMERICANA

SB= SHADBLOW / AMELANCHIER CANADENSIS

CH= BLACK CHOKERBERRY / ARONIA MELANOCARPA

GD= GREY DOGWOOD / CORNUS RACEMOSA

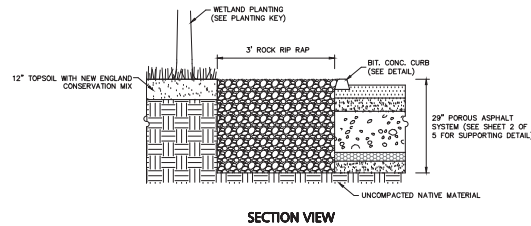
HERB

NE= NEW ENGLAND CONSERVATION / WILDLIFE SEED MIX

SUBSTITUTIONS MAY BE MADE BASED UPON NURSERY AVAILABILITY AND COST

NOTE:

BUFFERZONE ENHANCEMENT SECTION TO BE REPEATED THROUGHOUT ENTIRE BUFFERZONE ENHANCEMENT AREA.



BUFFERZONE ENHANCEMENT AREA

NOT TO SCALE

APPROVED BY: Maximos Hatzililades Professional Engineer Massachusetts, MA 02072	PROJECT: Proposed Site Plan Arlington Street & Coolidge Avenue Watertown, Massachusetts	PROJECT #: 08-27801 SCALE: A4 Model DESIGN BY: Cathy Beach	DATE: August 1, 2023 DWG FILE NAME: 08-27801.dwg CHECKED BY: Richard A. Sarno, P.E.	DATE: 8/25/21 DESCRIPTION OF REVISION:

APPENDIX D

Site Photographs



Photo #1: View western portion of the property adjacent to the existing paved parking area. The line of trees on the right is the edge of the slope down to Sawins Pond. The proposed work is located within the 100-foot Buffer Zone and locally regulated 150-foot Buffer Zone. *Facing east.*



Photo #2: View western section of the Project area. Proposed work will occur between the edge of the line of trees (right) and the northern property boundary, located just before the building on the left. Approximately, from the visible access road to the tree line is a portion of the 50-foot no build zone, in which mitigation plantings will be installed along with a small portion of the proposed parking area. *Facing east.*



Photo #3: View the proposed Project area. Proposed work area consists of primarily herbaceous vegetation. This area is located within the 100-foot Buffer Zone and locally regulated 150-foot Buffer Zone. Sawins Pond is located south (left) of the Project area. *Facing west.*



Photo #4: View of proposed Project area. Staghorn sumac is visibly growing along the northern fence line between the property and adjacent commercial property. Small piles of debris embedded in soil and overgrown with vegetation are located along the northern edge of the property. As part of the Project, these piles of debris will be removed off site. *Facing east.*



Photo #5: View the eastern end of the property, near Coolidge Avenue. Proposed work area consists of primarily herbaceous vegetation and a row of staghorn sumacs growing along the northern (right) fence line. The 50-foot no build zone is located to the left and consists primarily of herbaceous vegetation in this area. *Facing northwest.*



Photo #6: View of the eastern end of the Project area facing Coolidge Avenue. Staghorn sumac is visibly growing along the northern fence line between the property and adjacent commercial property and along the Coolidge Avenue fence line. *Facing northeast.*

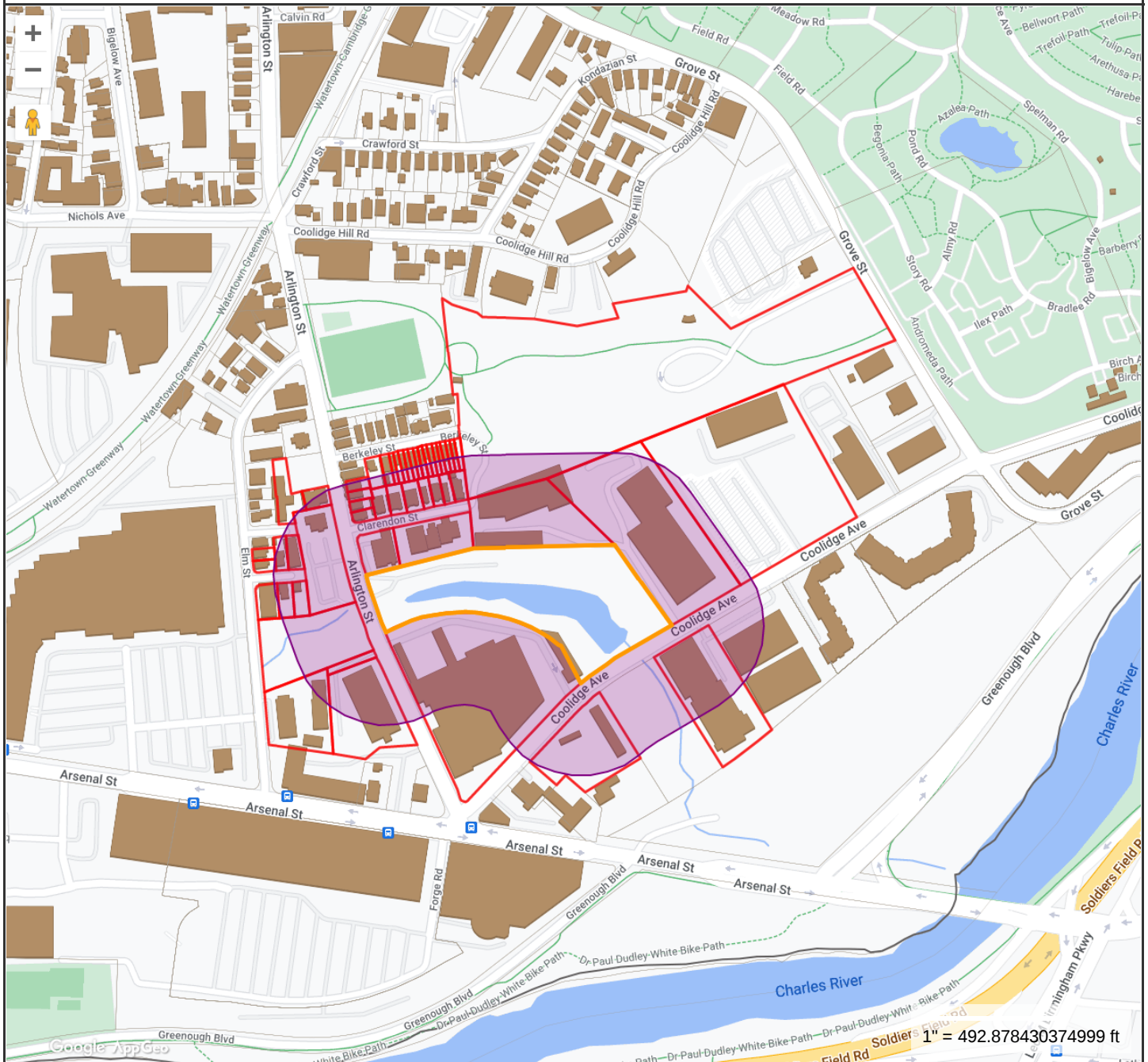
APPENDIX E

Certified List of Abutters

Abutter Notification Form

Affidavit of Service

300-foot Abutters to Sawins Pond Parcel



Property Information

Property ID 1510 1 0
Location ARLINGTON ST
Building Value 0
Land Value 362,500
Total Value 374,900



**MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT**

City of Watertown, MA makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated November 30, 2021
Data updated Daily

Print map scale is approximate.
Critical layout or measurement activities should not be done using this resource.

SURREY ROAD LLC
1236 1K 0
41 SEYON STREET
WALTHAM, MA 02453

HATZIILIADES MAXIMOS
1236 2 0
5 MADISON ST
BELMONT, MA 02178

SURREY ROAD LLC
1236 3F 0
41 SEYON ST, STE 200
WALTHAM, MA 02453

ELM STREET PROPERTY OWNER, LLC
1236 4 G
930 COMMONWEALTH AVE SOUTH
BOSTON, MA 02215

HANLON, JR MICHAEL F.
1237 11 0
7 YUKON AVE
WATERTOWN, MA 02472

FORD GEORGE
1237 12C 0
42 VINELAND STREET
BRIGHTON, MA 02135

WOLF STEVEN T, TRUSTEE
1237 13A 0
C/O STEVEN WOLF
WAYLAND, MA 01778

BUSTEED HARRY
1237 14 0
8 YUKON AV
WATERTOWN, MA 02472

KALAKIDIS SOTIRIA
1237 15 5
57 ELM ST
WATERTOWN, MA 02472

NERPOUNI KATHLEEN
1237 16 4
59 ELM STREET
WATERTOWN, MA 02472

BUSA ROBERT E.
1237 2A 65
30 MALLARD WAY
WALTHAM, MA 02154

MASREAL CO INC
1237 2B C
55 GLENLAKE PKWY NE
ATLANTA, GA 30328

10 MUNROE LLC
1237 32F 0
10 MUNROE AVENUE
WATERTOWN, MA 02472

DERMENJIAN CHARLES
1237 9 6
374 LAKE STREET
BELMONT, MA 02478

AGGREGATE INDUSTRIES -
1401 1E 0
6211 ANN ARBOR ROAD
DUNDEE, MI 48131

ARE-MA REGION NO. 77, LLC
1401 3B A
PO BOX 847
CARLSBAD, CA 92018

WATERTOWN, TOWN OF FILIPPELLO PARK
1507 1B 0
149 MAIN ST
WATERTOWN, MA 02472

MASREAL COMPANY INC
1507 2 0
55 GLENLAKE PARKWAY NE
ATLANTA, GA 30328

URELL ALAN R
1507 3 0
86 COOLIDGE AVE
WATERTOWN, MA 02472

BARCLAY WATER TREATMENT CO.INC
1507 5 1
55 CHAPEL ST
NEWTON, MA 02458

MASREAL COMPANY INC
1509 1 0
55 GLENLAKE PKWY NE
ATLANTA, GA 30328

HATZIILIADES MAXIMOS TRUSTEE
1510 3 0
5 MADISON ST
BELMONT, MA 02478

RED COAT REALTY LLC
1510 5A 0
P O BOX 540045
WALTHAM, MA 02454-0045

TANCREDO SILVIO
1511 15 48
44 CLARENDON ST
WATERTOWN, MA 02472

PIRZADA VAZEER
1511 17 46
5 KONDAZIAN ST
WATERTOWN, MA 02472

PIRZADA VAZEER
1511 18 45
5 KONDAZIAN ST
WATERTOWN, MA 02472

LIANG JOE
1511 19 43
10 ADAMSON ST
ALLSTON, MA 02134

CHEN CHEN
1511 21 42
126 BUTTRICK LANE
CARLISLE, MA 01741

DILIBERTO JOE P.
1511 23 40
25 EVERGREEN AVENUE
WELLESLEY, MA 02482

YE WEI
1511 25 37
228 WASHINGTON ST
WESTWOOD, MA 02090

BOYD, GALE M AND ERIC C. TRUSTEES
1511 27 36
81 ARLINGTON ST
WATERTOWN, MA 02472

BEDROSIAN GREGORY TRUSTEE ET
1511 28 35
83 ARLINGTON ST UNIT 2
WATERTOWN, MA 02472

NIU XIANG
1511 29 34
20 REEVES RD
BEDFORD, MA 01730

MAGUIRE ISABELLA TRUSTEE
1511 31 33
87 ARLINGTON ST
WATERTOWN, MA 02472

REYNOLDS JR CHARLES
1511 34 28
9 BERKELEY ST
WATERTOWN, MA 02472

BLANCHARD DOUG
1511 36A 0
11 BERKELEY ST
WATERTOWN, MA 02472

PARIURY JACKIE M.
1511 36B 0
13 BERKELEY STREET
WATERTOWN, MA 02472

SURRETTE, RICHARD F
1511 36C 0
15 BERKELEY ST
WATERTOWN, MA 02472

BRODSKY ARCHIE
1511 36D 0
17 BERKELEY STREET
WATERTOWN, MA 02472

BLANCHETTE HEATHER
1511 36E 0
19 BERKELEY ST
WATERTOWN, MA 02472

CASSIDY CHRISTINE
1511 36F 0
21 BERKELEY ST
WATERTOWN, MA 02472

TORCHIO RALPH F
1511 36G 0
23 BERKELEY ST
WATERTOWN, MA 02472

BRACCINI JANICE E
1511 36H 0
25 BERKELEY ST - U1
WATERTOWN, MA 02472

TANNER ALYSSA
1511 36H 0B
25 BERKELEY ST - U2
WATERTOWN, MA 02472

SPEROS ANNA L/E
1511 36I 0
27 BERKELEY ST
WATERTOWN, MA 02472

ROSATI FLORA
1511 36J 0
29 BERKELEY ST
WATERTOWN, MA 02472

STENIS SYLVIE L/E
1511 36K 0
31 BERKELEY ST
WATERTOWN, MA 02472

KNOLL JACOB R
1511 36L 0
33 BERKELEY ST
WATERTOWN, MA 02472

STEINER LILY
1511 36M 0
35 BERKELEY ST
WATERTOWN, MA 02472

37 BERKELEY ST LLC
1511 36N 0
38 SCHOOL ST
ARLINGTON, MA 02476

SPEROS ANNA L/E
1511 36O 0
27 BERKELEY ST
WATERTOWN, MA 02472

PIPPOS SPIROS
1511 36P 0
41 BERKELEY ST
WATERTOWN, MA 02472

NOTIFICATION TO ABUTTERS

WATERTOWN WETLANDS ORDINANCE MASSACHUSETTS WETLANDS PROTECTION ACT M.G.L. C. 131.§40

An Application for Permit and a Notice of Intent has been filed with the Watertown Conservation Commission seeking permission to remove, fill, dredge or alter an area subject to protection under G.L. Ch. 131.§40 and/or the Watertown Wetlands Ordinance.

The name of the Applicant is Maximos Hatziliades.

The address of the land where the activity is proposed is 0 Arlington Street- Sawins Pond Parcel (42.364755, -71.152585).

The work proposed is the construction of a parking area north of Sawins Pond between the existing paved parking area off Arlington Street and Coolidge Avenue.

Copies of the Application for Permit and Notice of Intent and accompanying plans may be examined at the office of the Watertown Conservation Commission, Town Hall (3rd floor), 149 Main Street, Watertown MA during regular business hours.

For more information, call 413-256-0202 or email: polina.safran@swca.com

Check one: This is the Applicant [☐], Applicant's representative [X ☒], or other [specify].

Copies of the Application for Permit and Notice of Intent may be obtained from either (check one) the Applicant [☐] or the Applicant's representative [X ☒], by calling 413-256-0202 between 9 am – 5pm on Monday through Friday or email at polina.safran@swca.com.

Notice of the public hearing to be held on January 4 at 7pm at Watertown City Hall, 149 Main Street in Watertown and will be published in the *Watertown Tab* and will be posted outside the Town Clerk's office on the first floor of the Watertown Town Hall, at least five business days in advance of the hearing.

Contact the Watertown Conservation Commission of the MA Department of Environmental Protection (DEP) Northeast Region Office for information about this Application or the Wetlands Protection Act, and the Commission regarding the Watertown Wetlands Ordinance.

Watertown Conservation Commission
(617) 972-6426
<http://www.watertown-ma.gov/index.aspx?nid=103>

MassDEP Northeast Region Office
(978) 694-3200
<http://www.mass.gov/depl/>



ENVIRONMENTAL CONSULTANTS

Sound Science. Creative Solutions.®

Amherst Office
15 Research Drive
Amherst, Massachusetts 01002
Tel 413.256.0202 Fax 413.256.1092

AFFIDAVIT OF SERVICE

Under the Massachusetts Wetlands Protection Act

I, _____, hereby certify under the pains and penalties of perjury that on _____, I gave notification to abutters in compliance with the Massachusetts Wetlands Protection Act and the Watertown Wetlands Ordinance in connection with the following matter:

A Notice of Intent filed under the Massachusetts Wetlands Protection Act and the Watertown Wetlands Protection By-law by Maximos Hatziliades with the Watertown Conservation Commission on December 14, 2022. The form of notification, and a list of the abutters to whom it was given and their addresses, are attached to the Affidavit of Service.

Name _____

Date _____

APPENDIX F

Stormwater Checklist

DRAINAGE CALCULATIONS

for the

PROPOSED PARKING LOT IMPROVEMENTS

located at

**Arlington Street & Coolidge Avenue
(Parcel ID: 1510 1 0)
Watertown, Massachusetts**

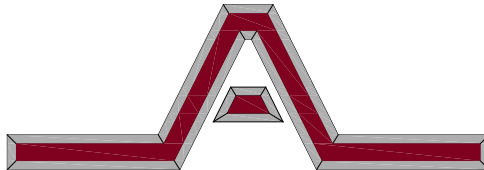
Submitted to:

**Town of Watertown
149 Main Street
Watertown, Massachusetts 02472**

Prepared for:

**Maximos Hatziliades
71 Arlington Street
Watertown, Massachusetts 02472**

Prepared by



Engineering Alliance, Inc.

Civil Engineering & Land Planning Consultants
194 Central Street
Saugus, MA 01906
Tel: (781) 231-1349
Fax: (781) 417-0020

1950 Lafayette Road
Portsmouth, NH 03801
Tel: (603) 610-7100
Fax: (603) 610-7101

December 12, 2022

Table of Contents

	Page
1. NARRATIVE	
▪ Project Description	1
▪ Site Description	1
▪ Low Impact Considerations	1
▪ Pre-Development Condition	1-2
▪ Post-Development Condition	2
▪ Porous Asphalt	3
▪ Tree Box Filters	3
▪ Erosion and Siltation Control	3
▪ Figure 1 USGS Locus Map	4
▪ Figure 2 FEMA Flood Map	5
▪ Figure 3 Ortho Photo	6
▪ Figure 4 Natural Heritage Map	7
▪ Figure 5 Soils Map	8
▪ Soils Descriptions	9
2. APPENDICES	
▪ APPENDIX A	Existing Conditions Drainage Calculations Existing Watershed Plan
▪ APPENDIX B	Proposed Conditions Drainage Calculations Proposed Watershed Plan
▪ APPENDIX C	Best Management Practice Maintenance Plan
▪ APPENDIX D	Stormwater Checklist & Miscellaneous Drainage Calculations

**Proposed Commercial Re-development
Arlington Street and Coolidge Avenue
Watertown, MA 02472**

Project Description

The project consists of the re-development of a parcel of land located at Arlington Street and Coolidge Avenue (Parcel ID: 150 1 0) in Watertown, Massachusetts. The proposed work includes the installation of a 41,289 s.f. parking lot which will be constructed with porous asphalt pavement, parking lot signage and striping, landscaped areas, buffer zone enhancement area, and incidental site work. The parking lot will be accessed through existing curb cuts located on Arlington Street and Coolidge Avenue. All of the work will occur within the 150-ft (Watertown Local By-Law) buffer zone associated with Sawin's Pond.

Site Description

The site is located in the Industrial-2 (I-2) zoning district and is comprised of 4.97± acres. The subject property is bordered by Arlington Street to the west, commercial and industrial uses to the north, east, and south, and Coolidge Avenue to the southeast. Sawin's Pond covers approximately half of the southern portion of the parcel. The remainder of the site is primarily wooded with the exception of a 1,580± s.f. paved parking area in the northwest corner. Sawin's Pond receives drainage from Williams Pond and municipal drainage from Arlington Street through concrete culverts located in the eastern and western portion of the subject property. In addition, the existing parking area and the adjacent property to the south discharge storm water into the pond. The water level of Sawin's Pond is controlled by a dam that directs flow through culverts beneath Coolidge Avenue. The banks of Sawin's Pond contain debris such as rubber, tarps, and building materials. The site was reportedly approved in 1966 by the Town of Watertown and state officials as a dump/landfill owned and operated by B.F. Goodrich at the time.

The existing parking area is graded in such a way so as to direct storm water into the two existing catch basins which discharge into Sawin's Pond via an existing headwall. The remainder of the upland slopes range from 2-4%, while the banks of Sawin's Pond have slopes up to 50%. Although the majority of the site is lightly wooded, the majority of the vegetation is non-native. Photos pre-1970 seem to indicate that the entire site had been clear cut while the dump/landfill operations were on-going.

Soils information was obtained from the USDA Natural Resources Conservation Service (NRCS) Maps and available data for Middlesex County. The onsite soils are classified as Urban Land and Udorthents, sandy. Refer to Figure 5 – Soils Map for a delineation of the boundaries of the soil with respect to the subject parcel and the attached NRCS soil description information. The Flood Insurance Rate Map for the Town of Watertown (Community Panel 25017C0557E, June 4, 2010) describes the project site as Zone X. Zone X is classified as an area of minimal flooding. Refer to Figure 2 – FEMA Flood Map for a delineation of the flooding zones in relation to the subject parcel. All lot lines, topography, utilities, and other existing site information was compiled from a field survey performed by Otte & Dwyer Land Surveyors, Inc. and record plans.

Low Impact Development Considerations

In accordance with the Massachusetts Department of Environmental Protection (DEP) Stormwater Management Standards multiple options were considered when designing the proposed parking area. The Stormwater Management Standards require a project proponent to analyze various alternatives to the proposed design in an effort to minimize disturbances to the resource areas.

The preferred option (the proposal) provides a significant amount of storm water treatment through the use of porous asphalt (the DEP recognizes an 80% TSS removal rate for this BMP), and reduces the risk of additional point source discharges and scouring along the banks of the pond. It also ensures that the peak flow entering Sawin's Pond in the post-development condition will not exceed the pre-development condition. All proposed encroachments within fifty (50) feet of the resource area have been reduced to the greatest extent possible.

Pre-Development Condition

Technical Release 20 (TR-20) Program for Project Formulation Hydrology developed by the Soil Conservation Service (SCS) was employed to develop pre- and post-development peak flows. Drainage calculations were performed for the pre-development condition for the 2, 10, 25, and 100-year type III 24-

hour storm events. Rainfall intensities were obtained from the NOAA Atlas 14. Refer to Section III for computer results, soil characteristics, cover descriptions and times of concentrations calculations.

In the pre-development storm water analysis, a watershed area totaling 65,414 s.f. was analyzed. This area is limited to the on-site area that is proposed to be developed and off-site tributary areas. Existing Watershed #1 (EWS-1) encompasses 37,006 s.f. and is the area that directs flows offsite (Design Point #1). Existing Watershed #2 (EWS-2) totals 28,408 s.f. and is the area that is tributary to Sawin's Pond (Design Point #2). Refer to the Existing Watershed Plan (EWP) in Section III for a delineation of the watershed areas as well as the location of the design point.

A summary of the peak rates of runoff during the Pre-Development Condition is as follows:

Pre-Development Condition Peak Discharge Summary:

	2-Year Storm (3.26 IN)	10-Year Storm (5.15 IN)	25-Year Storm (6.32 IN)	100-Year Storm (8.14 IN)
Design Point #1 (Offsite)	0.89 CFS	2.02 CFS	2.76 CFS	3.95 CFS
Design Point #2 (Sawin's Pond)	0.73 CFS	1.65 CFS	2.25 CFS	3.22 CFS

Post-Development Condition

The proposed development consists of the construction of a 41,289 s.f. porous asphalt parking area with bituminous concrete curb that will connect to the existing 15,815 s.f. bituminous concrete parking area. Tree box filters have also been provided to further increase groundwater recharge. All of the work will occur on land that had been previously disturbed and/or developed. The porous asphalt will provide storm water treatment and promote ground water recharge. Overflow from storm events greater than the 100-year storm will enter the tree box filters. Buffer zone enhancement in the form of a rock rip rap strip and native plantings will be provided between the edge of the proposed parking area and the top of the Sawin's Pond bank for stabilization and to help dissipate flows into the pond.

The porous asphalt has been designed to infiltrate all storm water for storm events up to and including the 100-year storm and to prevent surface runoff from directly entering Sawin's Pond or the abutting properties and streets. In the unlikely event (storm in excess of the 100-year storm) that the porous asphalt should overtop, the parking area has been graded to direct storm water flows into tree box filters.

The drainage calculations were performed for the post-development condition for the 2, 10, 25, and 100-year type III 24-hour storm events. The same area (65,414 s.f.) and two design points used in the pre-development model were analyzed for the post-development condition. The area that directs flow offsite (DP-1) is Proposed Watershed #1 (PWS-1) and consists of 8,788 s.f. Proposed Watershed #2 (PWS-2) consists of 15,337 s.f. and directs flows to Sawin's Pond (DP-2). Proposed Watershed #3 includes 41,298 s.f. of proposed porous asphalt. Refer to Section III for computer results, soil characteristics, cover descriptions, times of concentrations calculations, and the Proposed Watershed Plan (PWP).

A summary of the peak rates of runoff during the post-development condition is as follows:

Post-Development Condition Peak Discharge Summary:

	2-Year Storm (3.26 IN)	10-Year Storm (5.15 IN)	25-Year Storm (6.32 IN)	100-Year Storm (8.14 IN)
Design Point #1 (Offsite)	0.24 CFS	0.59 CFS	0.82 CFS	1.19 CFS
Design Point #2 (Sawin's Pond)	0.34 CFS	0.83 CFS	1.16 CFS	1.68 CFS
% Reduction (DP-1)	-73%	-71%	-71%	-70%
% Reduction (DP-2)	-53%	-50%	-48%	-48%

As indicated by the table above, the peak rate of runoff has been mitigated for all storms up to and including the 100-year storm event for both design points. Peak flows have been reduced by between 48% and 73%.

Porous Asphalt

The porous asphalt is proposed to act as the onsite best management practice that provides the Massachusetts DEP required recharge volume, the required water quality treatment volume, and the required TSS removal. The porous asphalt system consists of a six (6) inch layer of porous asphalt over a “choker course” consisting of four (4) inches of 3/4” crushed stone. A “filter course” of twelve (12) inches of bank run gravel is beneath the “choker course.” Below the “filter course” is a “filter blanket” of three (3) inches of 3/8” pea gravel and a “reservoir course” consisting of four (4) inches of 3/4” crushed stone. These layers are in accordance with the detail provided by the University of New Hampshire and shown in Volume 2 Chapter 2 of the Stormwater Management Standards. The required recharge volume and water quality treatment volume was calculated using the formulas provided in Standard 3 and Standard 4 of the Stormwater Management Standards. This volume is recharged through the gravel base provided beneath the porous asphalt. Sizing of this gravel base was accomplished by using the HydroCad 9.0. The infiltration rate was assumed to be 0.17 inches/hour based on Table 2.3.3 1982 Rawls Rates found in the Stormwater Management Standards. The “filter course” has the capacity to hold stormwater for storm events up to and including the 100-year storm event. Only the “filter course” was considered as storage for the hydraulic calculations.

Porous asphalt also provides stormwater treatment by allowing flows to pass through the void space in the asphalt mix. The asphalt is mixed with a low content of fine sand so there is 10%-25% void space. Porous asphalt can infiltrate as much as 70%-80% of annual rainfall and, coupled with regular sweeping, will provide the DEP minimum required TSS of 80%.

Tree Box Filters

Although the porous asphalt is expected to fully capture and infiltrate all stormwater for storm events up to and including the 100-year storm, tree box filters have been provided for additional stormwater treatment and recharge. A bituminous curb has been provided to direct flows into these tree boxes in the event of a storm event in excess of the largest design storm. Each tree box filter consists of a tree in an open bottom concrete barrel with an underdrain in crushed gravel, surrounded by a porous soil media. Stormwater captured in the filter percolates into the underlying soil. Flows in excess of the capacity of the filter are directed through the underdrain.

Erosion and Siltation Control

Rows of hay bales and siltation fence will be placed at the limit of work prior to the commencement of any construction activity. The integrity of the hay bales and silt fence will be maintained by periodic inspection and replaced as necessary. The hay bales and silt fence will remain in place until the first course of pavement has been placed and vegetation has been established.



PREPARED BY:



Engineering Alliance, Inc.
 Civil Engineering & Land Planning Consultants
 194 Central Street
 Saugus, MA 01906
 Tel: (781) 231-1349
 Fax: (781) 417-0020

1950 Lafayette Road
 Portsmouth, NH 03801
 Tel: (603) 610-7100
 Fax: (603) 610-7101

PROJECT:

Notice of Intent

Arlington Street & Coolidge Street
 Watertown, MA 02472

PROJECT: 09-27801

SCALE: 1:25,000

DESIGNED BY: Calvin Reach

DATE: August 5, 2022

DWG FILE NAME: Figures.dwg

CHECKED BY: Richard A. Salvo, P.E.

DRAWING TITLE:

FIGURE 1 - USGS LOCUS MAP

Page #:

1 of 5



PREPARED BY:



Engineering Alliance, Inc.
 Civil Engineering & Land Planning Consultants
 194 Central Street
 Saugus, MA 01906
 Tel: (781) 231-1349
 Fax: (781) 417-0020

1950 Lafayette Road
 Portsmouth, NH 03801
 Tel: (603) 610-7100
 Fax: (603) 610-7101

PROJECT:

Notice of Intent

Arlington Street & Coolidge Street
 Watertown, MA 02472

PROJECT: 09-27801

SCALE: 1"=200'

DESIGNED BY: Calvin Reach

DATE: August 5, 2022

DWG FILE NAME: Figures.dwg

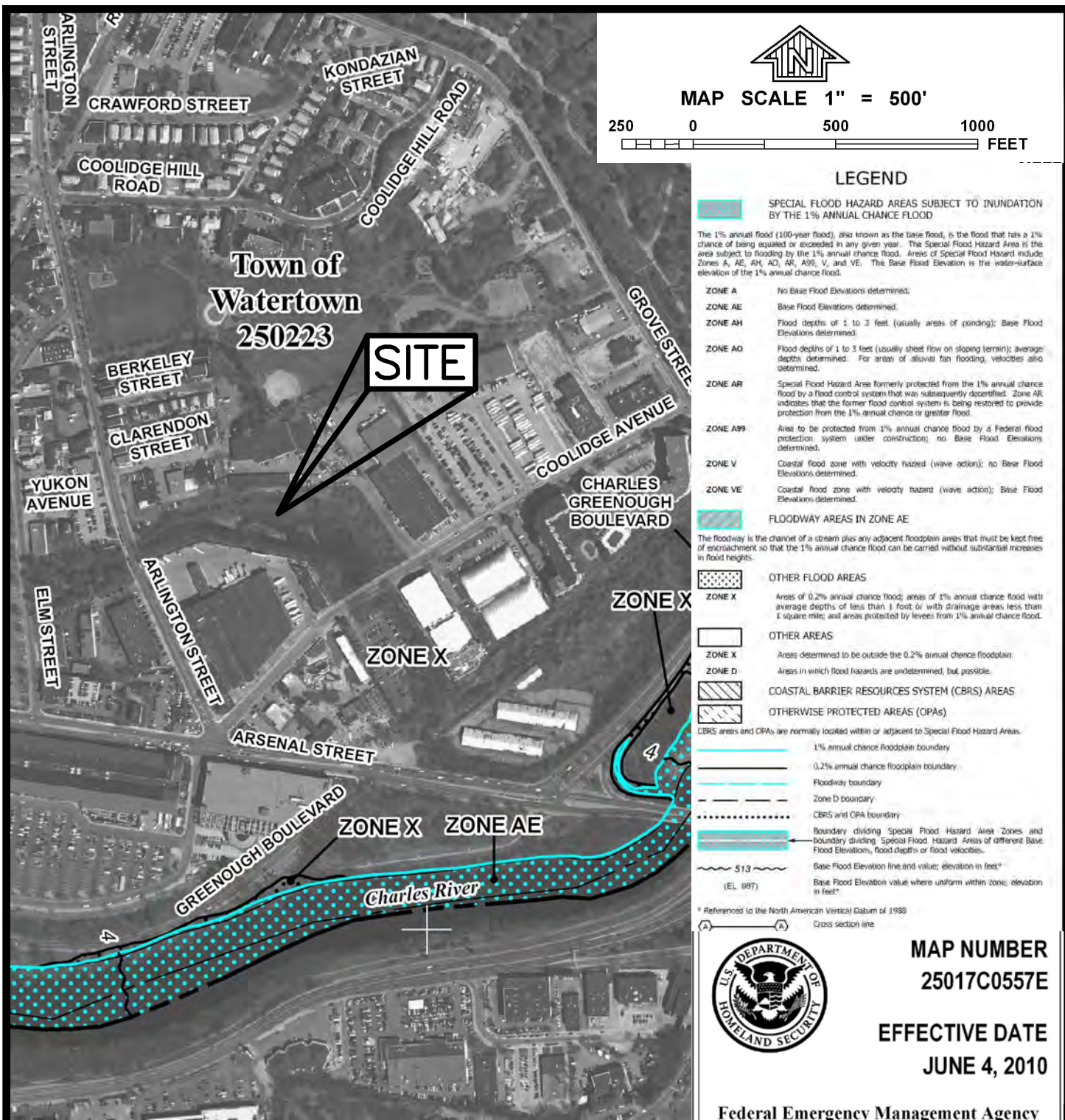
CHECKED BY: Richard A. Salvo, P.E.

DRAWING TITLE:

FIGURE 2 - ORTHO PHOTO

Page #:

2 of 5



PREPARED BY:



Engineering Alliance, Inc.
Civil Engineering & Land Planning Consultants
194 Central Street
Saugus, MA 01906
Tel: (781) 231-1349
Fax: (781) 417-0020

1950 Lafayette Road
Portsmouth, NH 03801
Tel: (603) 610-7100
Fax: (603) 610-7101

PROJECT:

Notice of Intent

Arlington Street & Coolidge Street
Watertown, MA 02472

PROJECT: 09-27801

SCALE: 1"=500'

DESIGNED BY: Calvin Reach

DATE: August 5, 2022

DWG FILE NAME: Figures.dwg

CHECKED BY: Richard A. Salvo, P.E.

DRAWING TITLE:

FIGURE 3 - FEMA FLOOD MAP

Page #:

3 of 5



LEGEND:

-  - NHESP ESTIMATED HABITATS OF RARE SPECIES
-  - NHESP PRIORITY HABITATS OF RARE SPECIES
-  - NHESP CERTIFIED VERNAL POOLS

PREPARED BY:



Engineering Alliance, Inc.
 Civil Engineering & Land Planning Consultants
 194 Central Street
 Saugus, MA 01906
 Tel: (781) 231-1349
 Fax: (781) 417-0020

1950 Lafayette Road
 Portsmouth, NH 03801
 Tel: (603) 610-7100
 Fax: (603) 610-7101

PROJECT:

Notice of Intent
 Arlington Street & Cooldige Street
 Watertown, MA 02472

PROJECT: 09-27801

SCALE: 1:25,000

DESIGNED BY: Calvin Reach

DATE: August 5, 2022

DWG FILE NAME: Figures.dwg

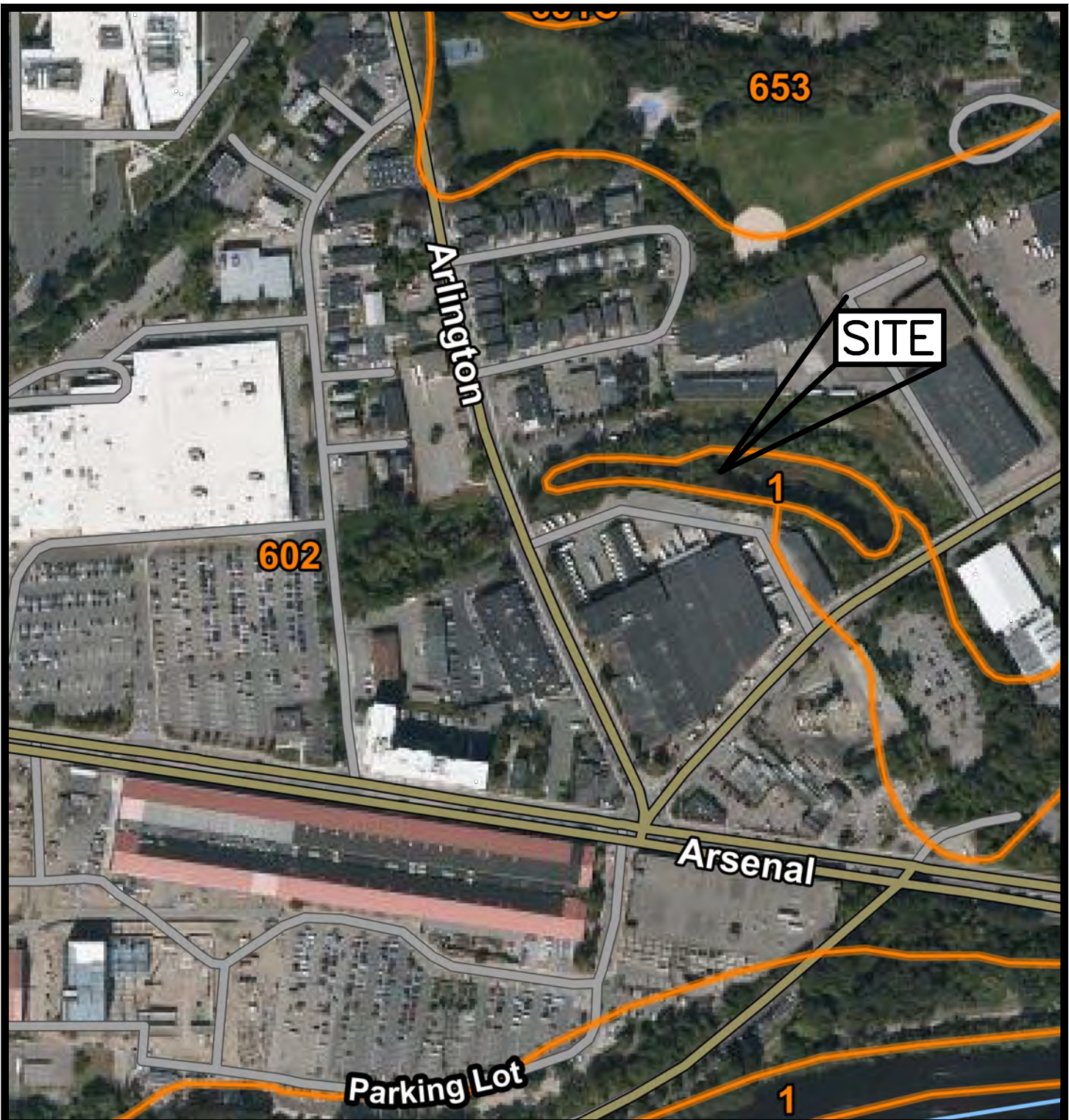
CHECKED BY: Richard A. Salvo, P.E.

DRAWING TITLE:

FIGURE 4 - NATURAL HERITAGE MAP

Page #:

4 of 5



PREPARED BY:



Engineering Alliance, Inc.
 Civil Engineering & Land Planning Consultants
 194 Central Street
 Saugus, MA 01906
 Tel: (781) 231-1349
 Fax: (781) 417-0020
 1950 Lafayette Road
 Portsmouth, NH 03801
 Tel: (603) 610-7100
 Fax: (603) 610-7101

PROJECT:

Notice of Intent
 Arlington Street & Coolidge Street
 Watertown, MA 02472

PROJECT: 09-27801

DATE: August 5, 2022

SCALE: 1"=300'

DWG FILE NAME: Figures.dwg

DESIGNED BY: Calvin Reach

CHECKED BY: Richard A. Salvo, P.E.

DRAWING TITLE:

FIGURE 5 - SOILS MAP

Page #:

5 of 5

Middlesex County, Massachusetts

1—Water

Map Unit Setting

National map unit symbol: 996p

Frost-free period: 110 to 200 days

Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Setting

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Dip

Down-slope shape: Linear

Across-slope shape: Linear

Data Source Information

Soil Survey Area: Middlesex County, Massachusetts

Survey Area Data: Version 22, Sep 9, 2022

Middlesex County, Massachusetts

602—Urban land

Map Unit Setting

National map unit symbol: 9950

Elevation: 0 to 3,000 feet

Mean annual precipitation: 32 to 50 inches

Mean annual air temperature: 45 to 50 degrees F

Frost-free period: 110 to 200 days

Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Excavated and filled land

Minor Components

Udorthents, loamy

Percent of map unit: 5 percent

Hydric soil rating: No

Rock outcrop

Percent of map unit: 5 percent

Landform: Ledges

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Head slope

Down-slope shape: Concave

Across-slope shape: Concave

Udorthents, wet substratum

Percent of map unit: 5 percent

Hydric soil rating: No

Data Source Information

Soil Survey Area: Middlesex County, Massachusetts

Survey Area Data: Version 22, Sep 9, 2022

Middlesex County, Massachusetts

653—Udorthents, sandy

Map Unit Setting

National map unit symbol: vr1k

Elevation: 0 to 3,000 feet

Mean annual precipitation: 32 to 50 inches

Mean annual air temperature: 45 to 50 degrees F

Frost-free period: 110 to 200 days

Farmland classification: Not prime farmland

Map Unit Composition

Udorthents, sandy, and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents, Sandy

Setting

Parent material: Loamy alluvium and/or sandy glaciofluvial deposits and/or loamy glaciolacustrine deposits and/or loamy marine deposits and/or loamy basal till and/or loamy lodgment till

Properties and qualities

Slope: 0 to 25 percent

Depth to restrictive feature: More than 80 inches

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Minor Components

Udorthents, loamy

Percent of map unit: 5 percent

Hydric soil rating: No

Unnamed

Percent of map unit: 5 percent

Urban land

Percent of map unit: 5 percent

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Linear

Across-slope shape: Linear

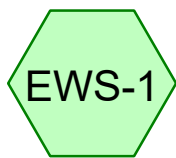
Data Source Information

Soil Survey Area: Middlesex County, Massachusetts

Survey Area Data: Version 22, Sep 9, 2022

APPENDIX A

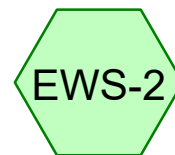
**Existing Conditions Drainage Calculations
Existing Watershed Plan**



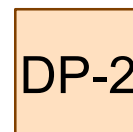
Existing Waterhsed 1



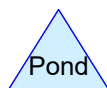
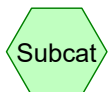
DP-1-Flow Offsite



Existing Watershed 2



DP-2-Sawin's Pond



Routing Diagram for Existing conditions

Prepared by Engineering Alliance, Inc., Printed 12/13/2022
HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Existing conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Printed 12/13/2022

Page 2

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year Storm	Type III 24-hr		Default	24.00	1	3.26	2
2	10-Year Storm	Type III 24-hr		Default	24.00	1	5.15	2
3	25-Year Storm	Type III 24-hr		Default	24.00	1	6.32	2
4	100-Year Storm	Type III 24-hr		Default	24.00	1	8.14	2

Existing conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Printed 12/13/2022

Page 3

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.502	77	Woods, Poor, HSG C (EWS-1, EWS-2)
1.502	77	TOTAL AREA

Existing conditions

Prepared by Engineering Alliance, Inc.

Printed 12/13/2022

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Page 4

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
1.502	HSG C	EWS-1, EWS-2
0.000	HSG D	
0.000	Other	
1.502		TOTAL AREA

Existing conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Printed 12/13/2022

Page 5

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	1.502	0.000	0.000	1.502	Woods, Poor	EWS-1, EWS-2
0.000	0.000	1.502	0.000	0.000	1.502	TOTAL AREA	

Existing conditions*Type III 24-hr 2-Year Storm Rainfall=3.26"*

Prepared by Engineering Alliance, Inc.

Printed 12/13/2022

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Page 6

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EWS-1: Existing Watershed 1 Runoff Area=37,006 sf 0.00% Impervious Runoff Depth>1.25"
Flow Length=207' Tc=16.0 min CN=77 Runoff=0.89 cfs 0.088 af

Subcatchment EWS-2: Existing Watershed 2 Runoff Area=28,408 sf 0.00% Impervious Runoff Depth>1.25"
Flow Length=76' Slope=0.0370 '/' Tc=13.7 min CN=77 Runoff=0.73 cfs 0.068 af

Reach DP-1: DP-1-Flow OffsiteInflow=0.89 cfs 0.088 af
Outflow=0.89 cfs 0.088 af**Reach DP-2: DP-2-Sawin's Pond**Inflow=0.73 cfs 0.068 af
Outflow=0.73 cfs 0.068 af

Total Runoff Area = 1.502 ac Runoff Volume = 0.156 af Average Runoff Depth = 1.25"
100.00% Pervious = 1.502 ac 0.00% Impervious = 0.000 ac

Existing conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 2-Year Storm Rainfall=3.26"

Printed 12/13/2022

Page 7

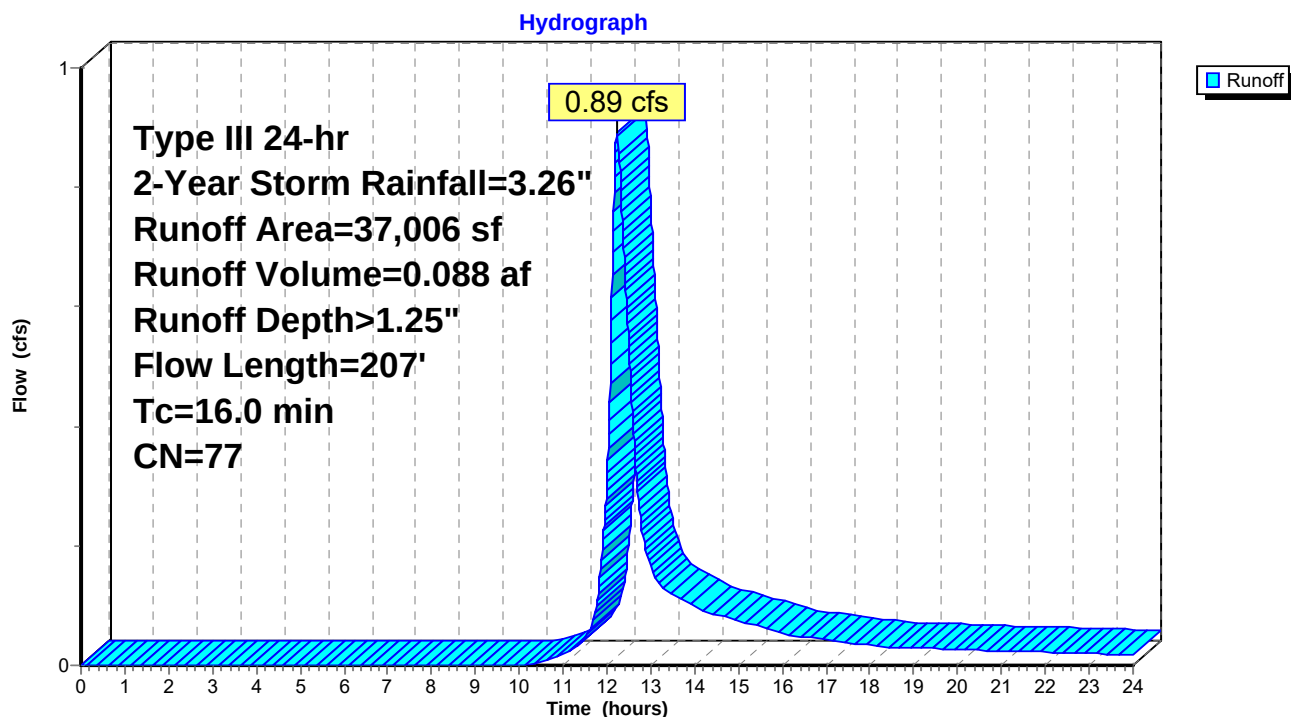
Summary for Subcatchment EWS-1: Existing Waterhsed 1

Runoff = 0.89 cfs @ 12.23 hrs, Volume= 0.088 af, Depth> 1.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Storm Rainfall=3.26"

Area (sf)	CN	Description
37,006	77	Woods, Poor, HSG C
37,006		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	50	0.0186	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
3.1	157	0.0287	0.85		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
16.0	207	Total			

Subcatchment EWS-1: Existing Waterhsed 1

Existing conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 2-Year Storm Rainfall=3.26"

Printed 12/13/2022

Page 8

Summary for Subcatchment EWS-2: Existing Watershed 2

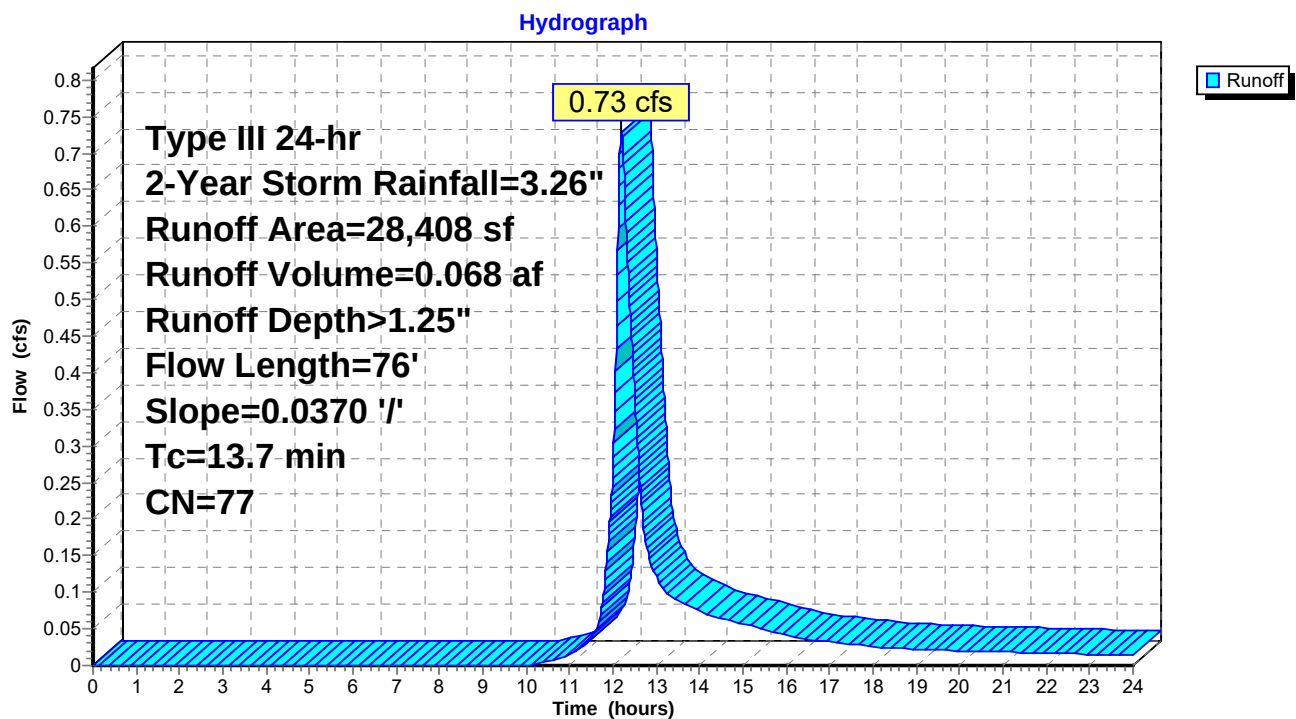
Runoff = 0.73 cfs @ 12.20 hrs, Volume= 0.068 af, Depth> 1.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Storm Rainfall=3.26"

Area (sf)	CN	Description
28,408	77	Woods, Poor, HSG C
28,408		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	76	0.0370	0.09		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"

Subcatchment EWS-2: Existing Watershed 2



Existing conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 2-Year Storm Rainfall=3.26"

Printed 12/13/2022

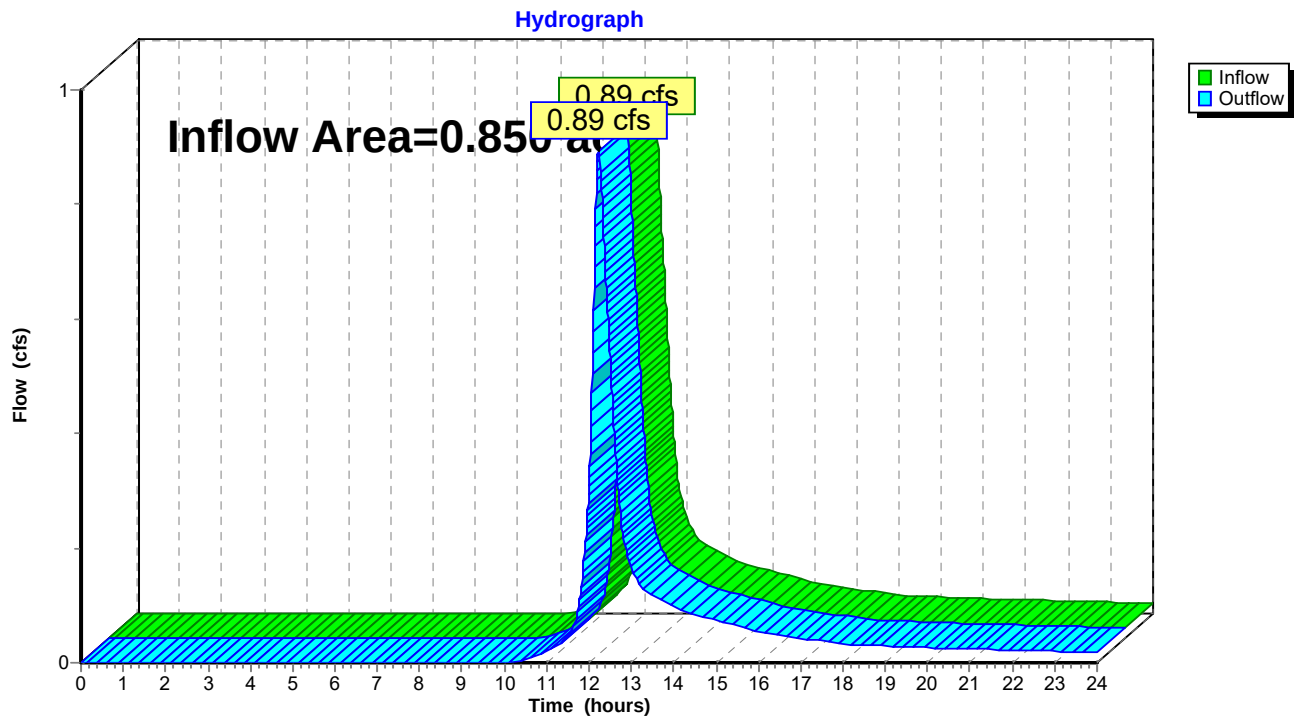
Page 9

Summary for Reach DP-1: DP-1-Flow Offsite

Inflow Area = 0.850 ac, 0.00% Impervious, Inflow Depth > 1.25" for 2-Year Storm event
Inflow = 0.89 cfs @ 12.23 hrs, Volume= 0.088 af
Outflow = 0.89 cfs @ 12.23 hrs, Volume= 0.088 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Reach DP-1: DP-1-Flow Offsite



Existing conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 2-Year Storm Rainfall=3.26"

Printed 12/13/2022

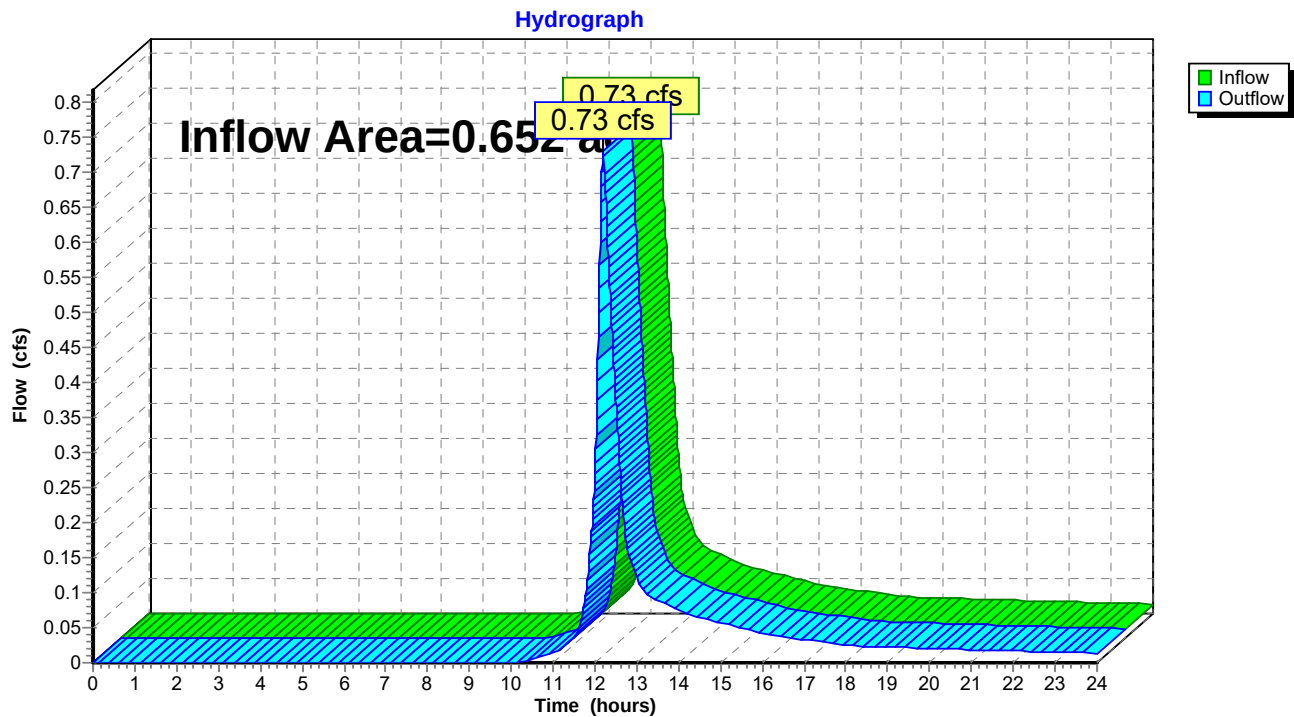
Page 10

Summary for Reach DP-2: DP-2-Sawin's Pond

Inflow Area = 0.652 ac, 0.00% Impervious, Inflow Depth > 1.25" for 2-Year Storm event
Inflow = 0.73 cfs @ 12.20 hrs, Volume= 0.068 af
Outflow = 0.73 cfs @ 12.20 hrs, Volume= 0.068 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Reach DP-2: DP-2-Sawin's Pond



Existing conditions*Type III 24-hr 10-Year Storm Rainfall=5.15"*

Prepared by Engineering Alliance, Inc.

Printed 12/13/2022

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Page 11

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EWS-1: Existing Watershed 1 Runoff Area=37,006 sf 0.00% Impervious Runoff Depth>2.74"
Flow Length=207' Tc=16.0 min CN=77 Runoff=2.02 cfs 0.194 af

Subcatchment EWS-2: Existing Watershed 2 Runoff Area=28,408 sf 0.00% Impervious Runoff Depth>2.74"
Flow Length=76' Slope=0.0370 '/' Tc=13.7 min CN=77 Runoff=1.65 cfs 0.149 af

Reach DP-1: DP-1-Flow Offsite

Inflow=2.02 cfs 0.194 af

Outflow=2.02 cfs 0.194 af

Reach DP-2: DP-2-Sawin's Pond

Inflow=1.65 cfs 0.149 af

Outflow=1.65 cfs 0.149 af

Total Runoff Area = 1.502 ac Runoff Volume = 0.343 af Average Runoff Depth = 2.74"
100.00% Pervious = 1.502 ac 0.00% Impervious = 0.000 ac

Existing conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Storm Rainfall=5.15"

Printed 12/13/2022

Page 12

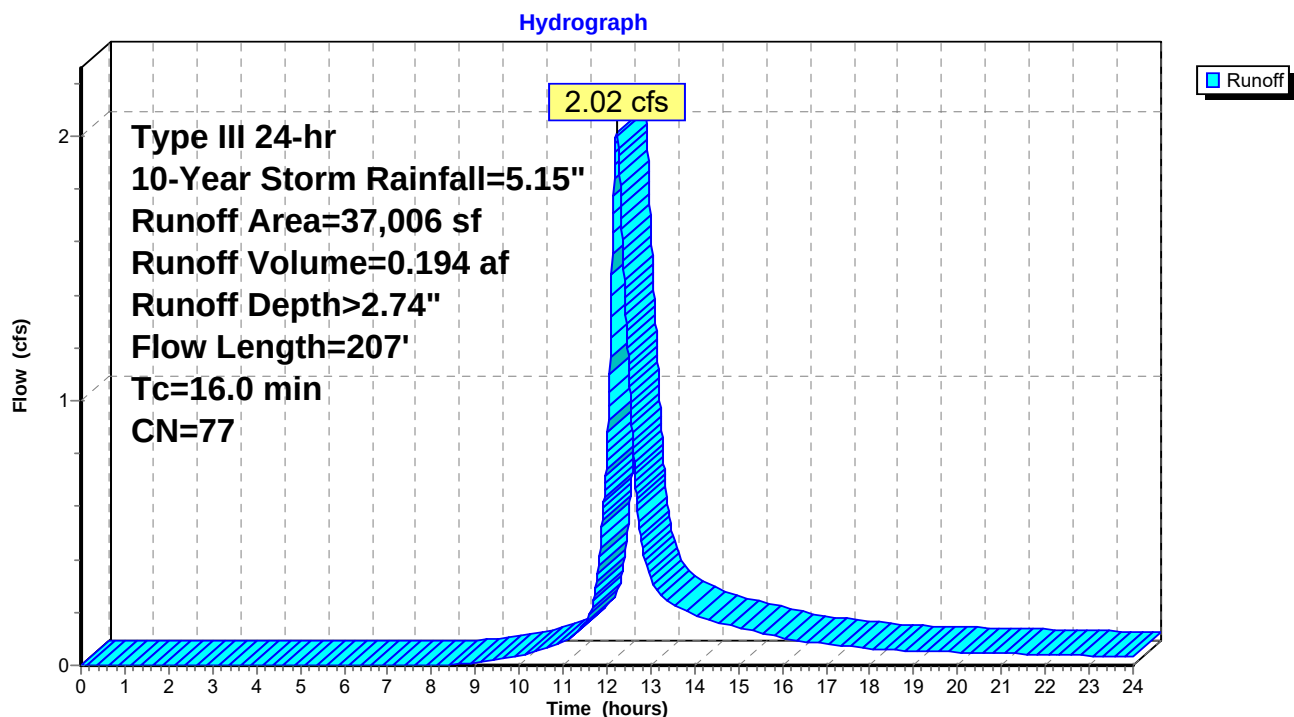
Summary for Subcatchment EWS-1: Existing Waterhsed 1

Runoff = 2.02 cfs @ 12.22 hrs, Volume= 0.194 af, Depth> 2.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Storm Rainfall=5.15"

Area (sf)	CN	Description
37,006	77	Woods, Poor, HSG C
37,006		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	50	0.0186	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
3.1	157	0.0287	0.85		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
16.0	207	Total			

Subcatchment EWS-1: Existing Waterhsed 1

Existing conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Storm Rainfall=5.15"

Printed 12/13/2022

Page 13

Summary for Subcatchment EWS-2: Existing Watershed 2

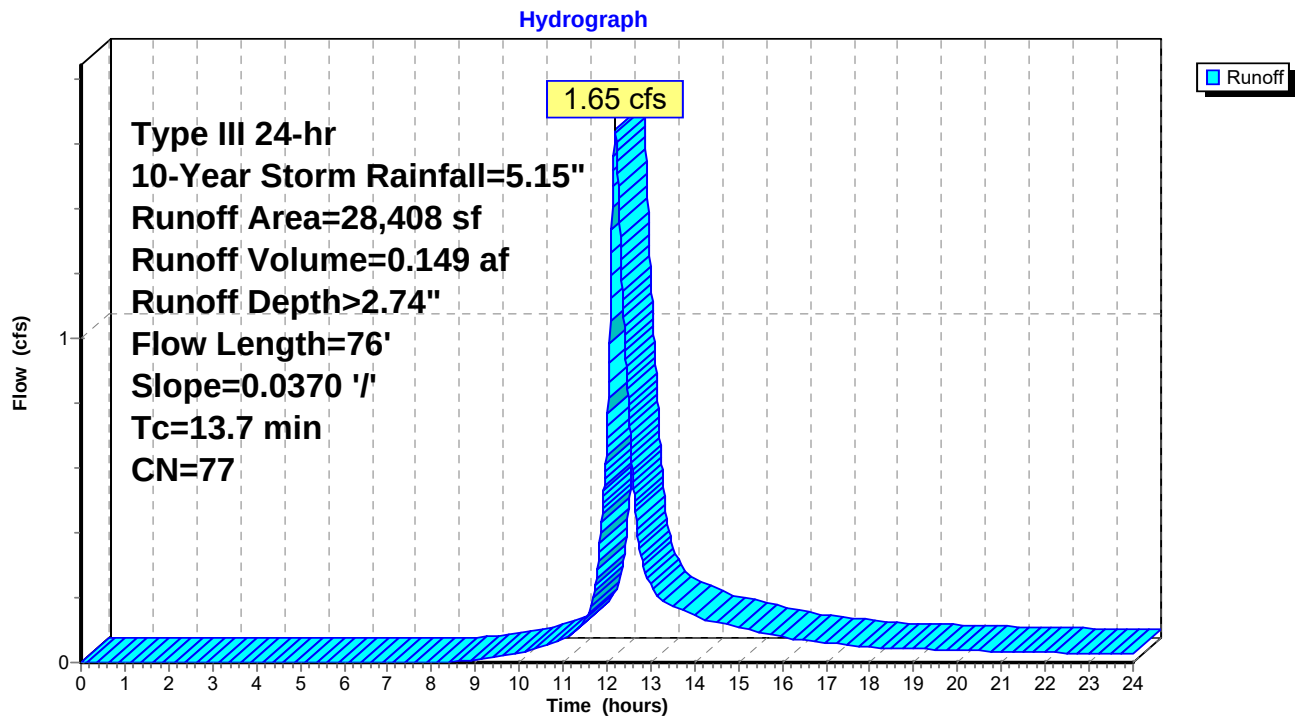
Runoff = 1.65 cfs @ 12.19 hrs, Volume= 0.149 af, Depth> 2.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Storm Rainfall=5.15"

Area (sf)	CN	Description
28,408	77	Woods, Poor, HSG C
28,408		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	76	0.0370	0.09		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"

Subcatchment EWS-2: Existing Watershed 2



Existing conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Storm Rainfall=5.15"

Printed 12/13/2022

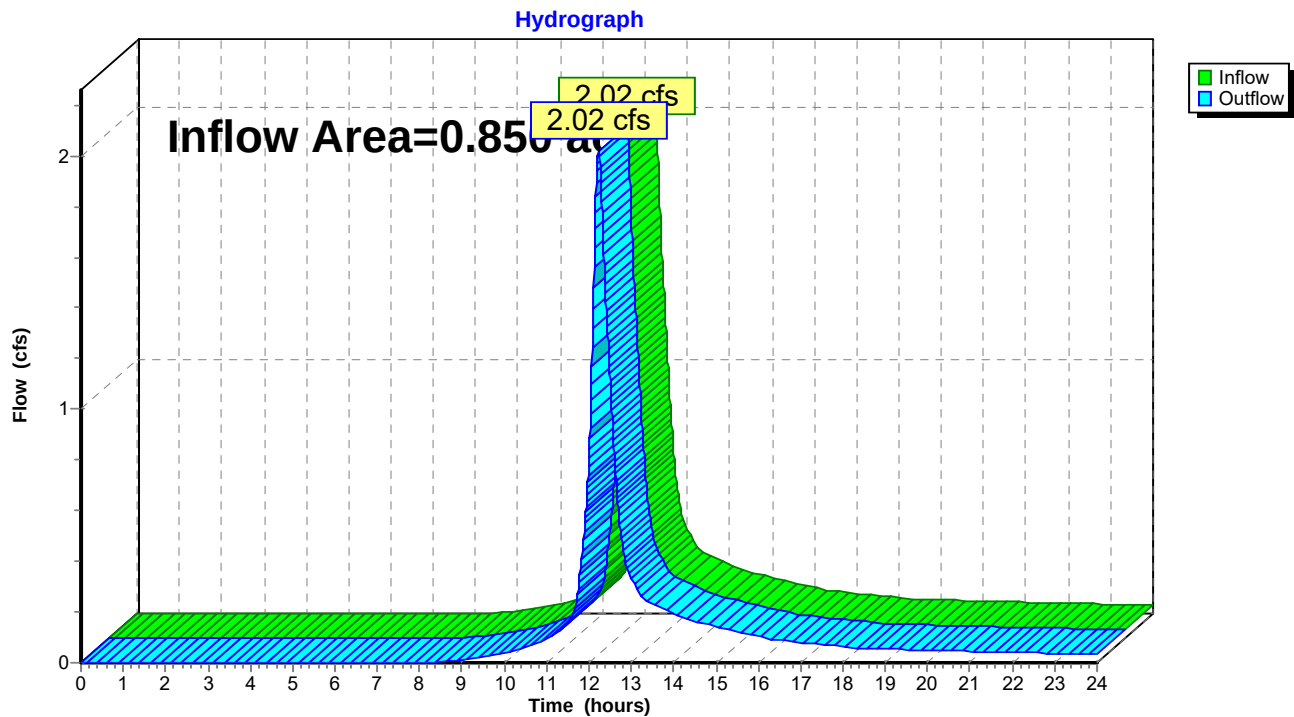
Page 14

Summary for Reach DP-1: DP-1-Flow Offsite

Inflow Area = 0.850 ac, 0.00% Impervious, Inflow Depth > 2.74" for 10-Year Storm event
Inflow = 2.02 cfs @ 12.22 hrs, Volume= 0.194 af
Outflow = 2.02 cfs @ 12.22 hrs, Volume= 0.194 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Reach DP-1: DP-1-Flow Offsite



Existing conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Storm Rainfall=5.15"

Printed 12/13/2022

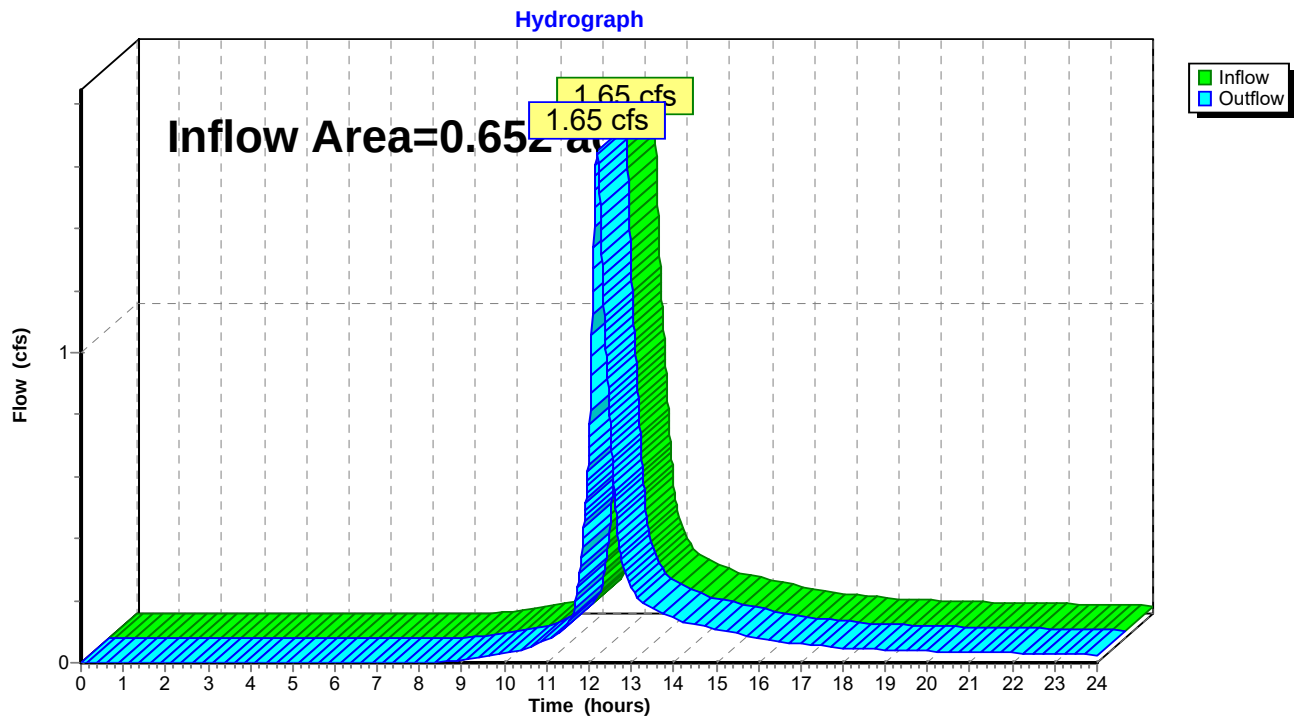
Page 15

Summary for Reach DP-2: DP-2-Sawin's Pond

Inflow Area = 0.652 ac, 0.00% Impervious, Inflow Depth > 2.74" for 10-Year Storm event
Inflow = 1.65 cfs @ 12.19 hrs, Volume= 0.149 af
Outflow = 1.65 cfs @ 12.19 hrs, Volume= 0.149 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Reach DP-2: DP-2-Sawin's Pond



Existing conditions*Type III 24-hr 25-Year Storm Rainfall=6.32"*

Prepared by Engineering Alliance, Inc.

Printed 12/13/2022

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Page 16

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EWS-1: Existing Watershed 1 Runoff Area=37,006 sf 0.00% Impervious Runoff Depth>3.75"
Flow Length=207' Tc=16.0 min CN=77 Runoff=2.76 cfs 0.265 af

Subcatchment EWS-2: Existing Watershed 2 Runoff Area=28,408 sf 0.00% Impervious Runoff Depth>3.75"
Flow Length=76' Slope=0.0370 '/' Tc=13.7 min CN=77 Runoff=2.25 cfs 0.204 af

Reach DP-1: DP-1-Flow Offsite

Inflow=2.76 cfs 0.265 af
Outflow=2.76 cfs 0.265 af

Reach DP-2: DP-2-Sawin's Pond

Inflow=2.25 cfs 0.204 af
Outflow=2.25 cfs 0.204 af

Total Runoff Area = 1.502 ac Runoff Volume = 0.469 af Average Runoff Depth = 3.75"
100.00% Pervious = 1.502 ac 0.00% Impervious = 0.000 ac

Existing conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Storm Rainfall=6.32"

Printed 12/13/2022

Page 17

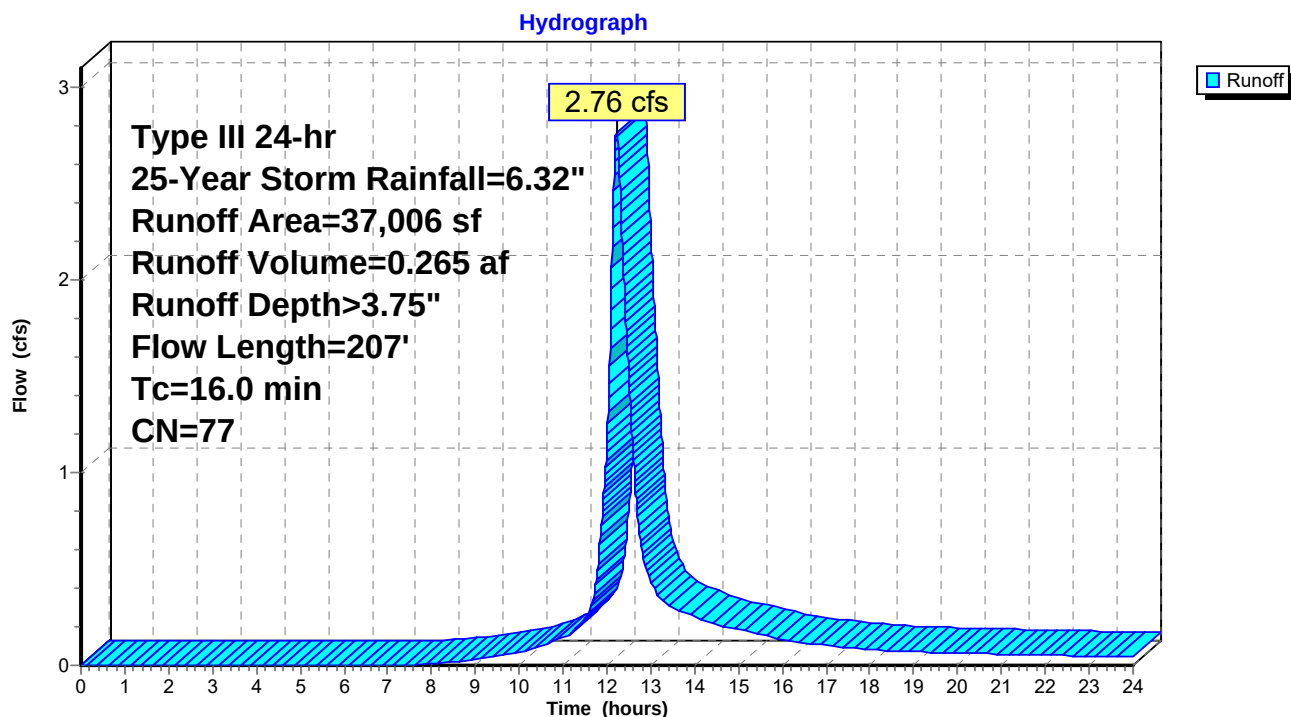
Summary for Subcatchment EWS-1: Existing Watershed 1

Runoff = 2.76 cfs @ 12.22 hrs, Volume= 0.265 af, Depth> 3.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Storm Rainfall=6.32"

Area (sf)	CN	Description
37,006	77	Woods, Poor, HSG C
37,006		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	50	0.0186	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
3.1	157	0.0287	0.85		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
16.0	207	Total			

Subcatchment EWS-1: Existing Watershed 1

Existing conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Storm Rainfall=6.32"

Printed 12/13/2022

Page 18

Summary for Subcatchment EWS-2: Existing Watershed 2

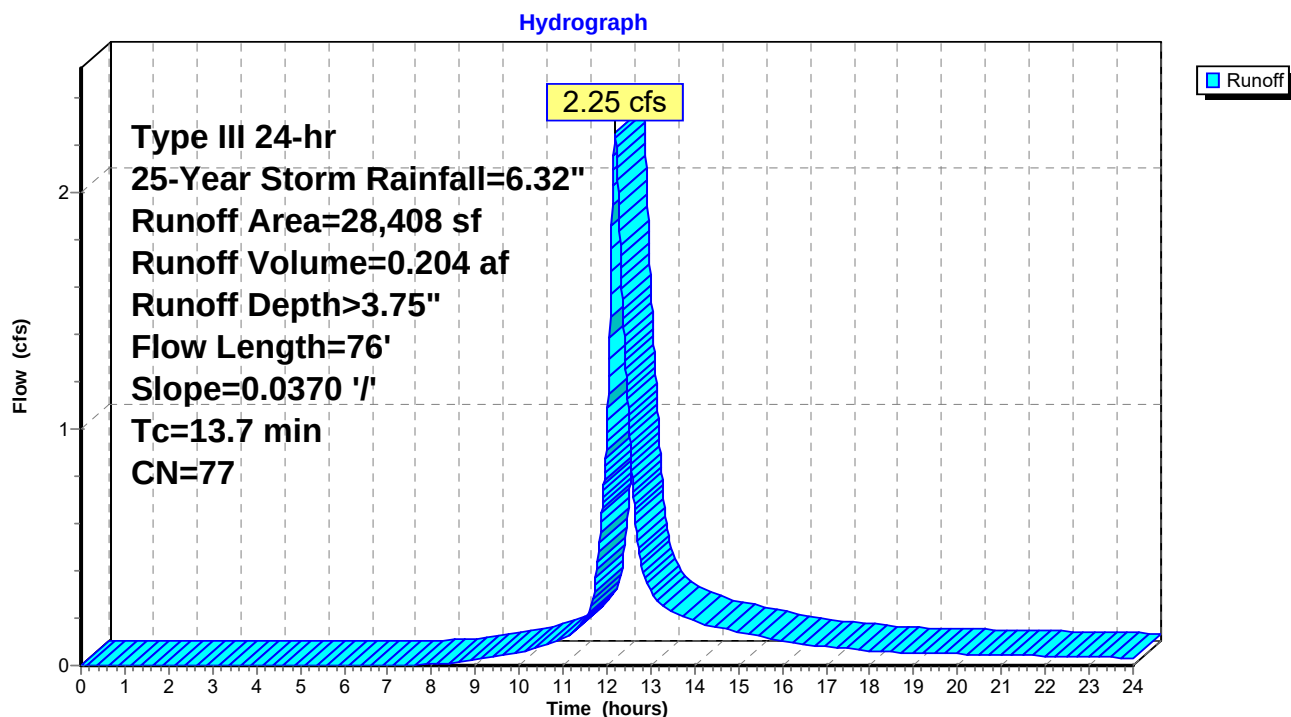
Runoff = 2.25 cfs @ 12.19 hrs, Volume= 0.204 af, Depth> 3.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Storm Rainfall=6.32"

Area (sf)	CN	Description
28,408	77	Woods, Poor, HSG C
28,408		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	76	0.0370	0.09		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"

Subcatchment EWS-2: Existing Watershed 2



Existing conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Storm Rainfall=6.32"

Printed 12/13/2022

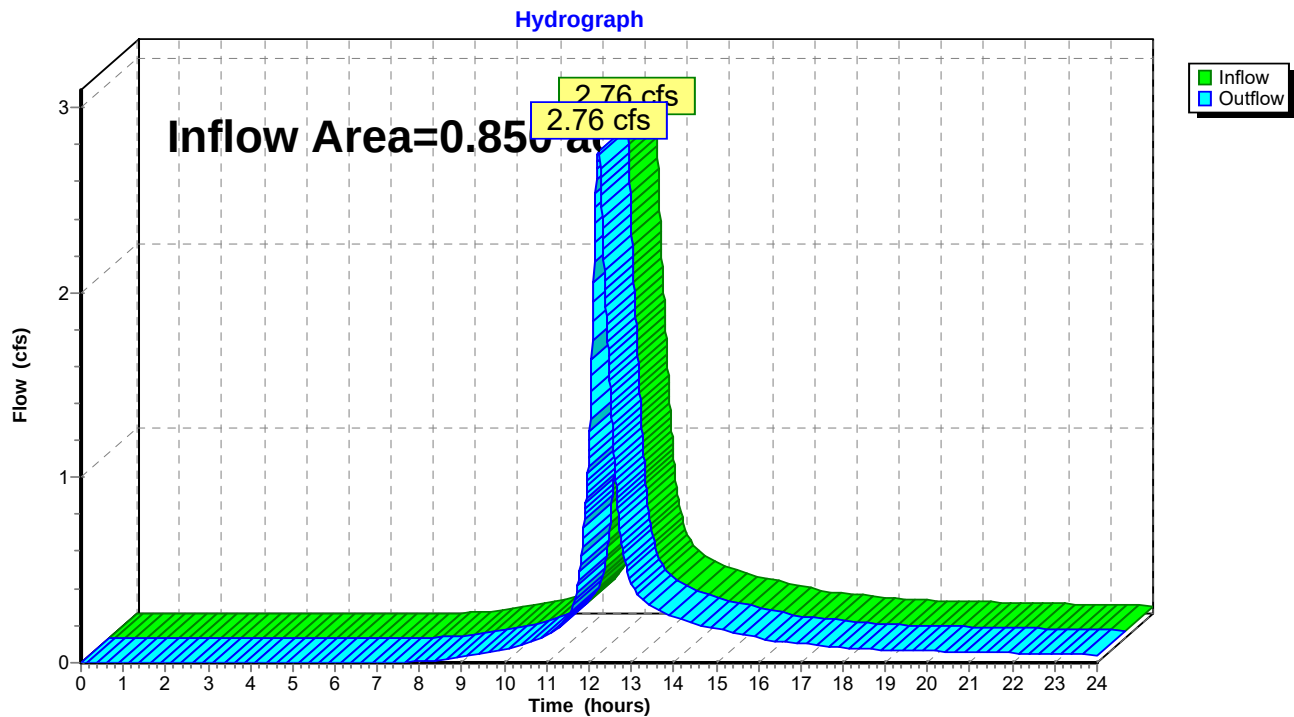
Page 19

Summary for Reach DP-1: DP-1-Flow Offsite

Inflow Area = 0.850 ac, 0.00% Impervious, Inflow Depth > 3.75" for 25-Year Storm event
Inflow = 2.76 cfs @ 12.22 hrs, Volume= 0.265 af
Outflow = 2.76 cfs @ 12.22 hrs, Volume= 0.265 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Reach DP-1: DP-1-Flow Offsite



Existing conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Storm Rainfall=6.32"

Printed 12/13/2022

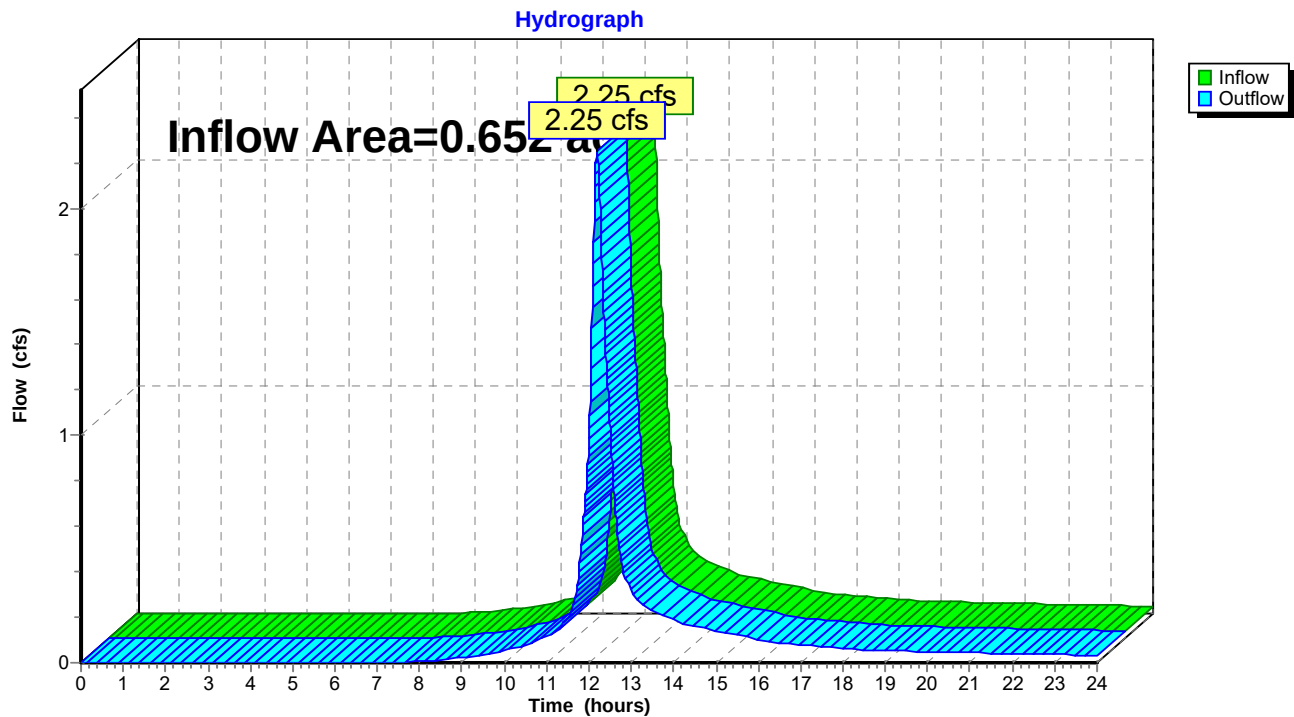
Page 20

Summary for Reach DP-2: DP-2-Sawin's Pond

Inflow Area = 0.652 ac, 0.00% Impervious, Inflow Depth > 3.75" for 25-Year Storm event
Inflow = 2.25 cfs @ 12.19 hrs, Volume= 0.204 af
Outflow = 2.25 cfs @ 12.19 hrs, Volume= 0.204 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Reach DP-2: DP-2-Sawin's Pond



Existing conditions*Type III 24-hr 100-Year Storm Rainfall=8.14"*

Prepared by Engineering Alliance, Inc.

Printed 12/13/2022

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Page 21

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EWS-1: Existing Watershed 1 Runoff Area=37,006 sf 0.00% Impervious Runoff Depth>5.39"
Flow Length=207' Tc=16.0 min CN=77 Runoff=3.95 cfs 0.381 af

Subcatchment EWS-2: Existing Watershed 2 Runoff Area=28,408 sf 0.00% Impervious Runoff Depth>5.39"
Flow Length=76' Slope=0.0370 '/' Tc=13.7 min CN=77 Runoff=3.22 cfs 0.293 af

Reach DP-1: DP-1-Flow Offsite

Inflow=3.95 cfs 0.381 af

Outflow=3.95 cfs 0.381 af

Reach DP-2: DP-2-Sawin's Pond

Inflow=3.22 cfs 0.293 af

Outflow=3.22 cfs 0.293 af

Total Runoff Area = 1.502 ac Runoff Volume = 0.674 af Average Runoff Depth = 5.39"
100.00% Pervious = 1.502 ac 0.00% Impervious = 0.000 ac

Existing conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 100-Year Storm Rainfall=8.14"

Printed 12/13/2022

Page 22

Summary for Subcatchment EWS-1: Existing Waterhsed 1

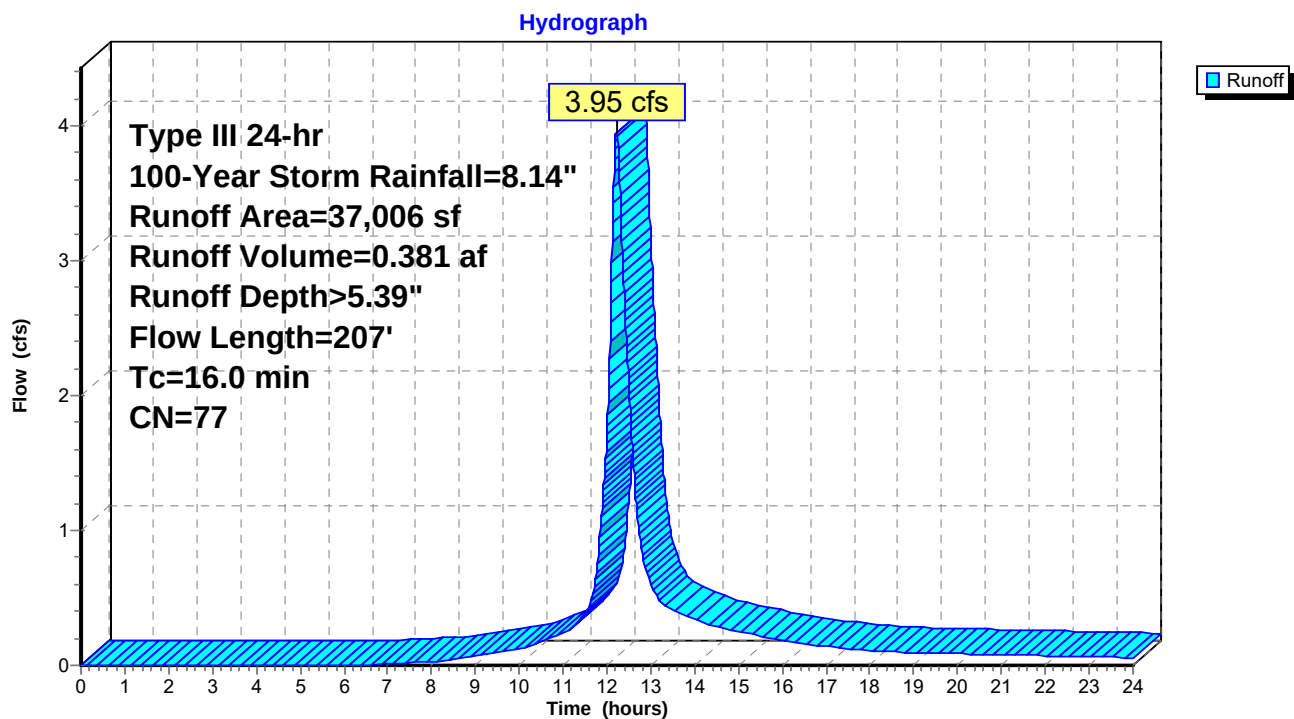
Runoff = 3.95 cfs @ 12.21 hrs, Volume= 0.381 af, Depth> 5.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Storm Rainfall=8.14"

Area (sf)	CN	Description
37,006	77	Woods, Poor, HSG C
37,006		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	50	0.0186	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
3.1	157	0.0287	0.85		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
16.0	207	Total			

Subcatchment EWS-1: Existing Waterhsed 1



Existing conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 100-Year Storm Rainfall=8.14"

Printed 12/13/2022

Page 23

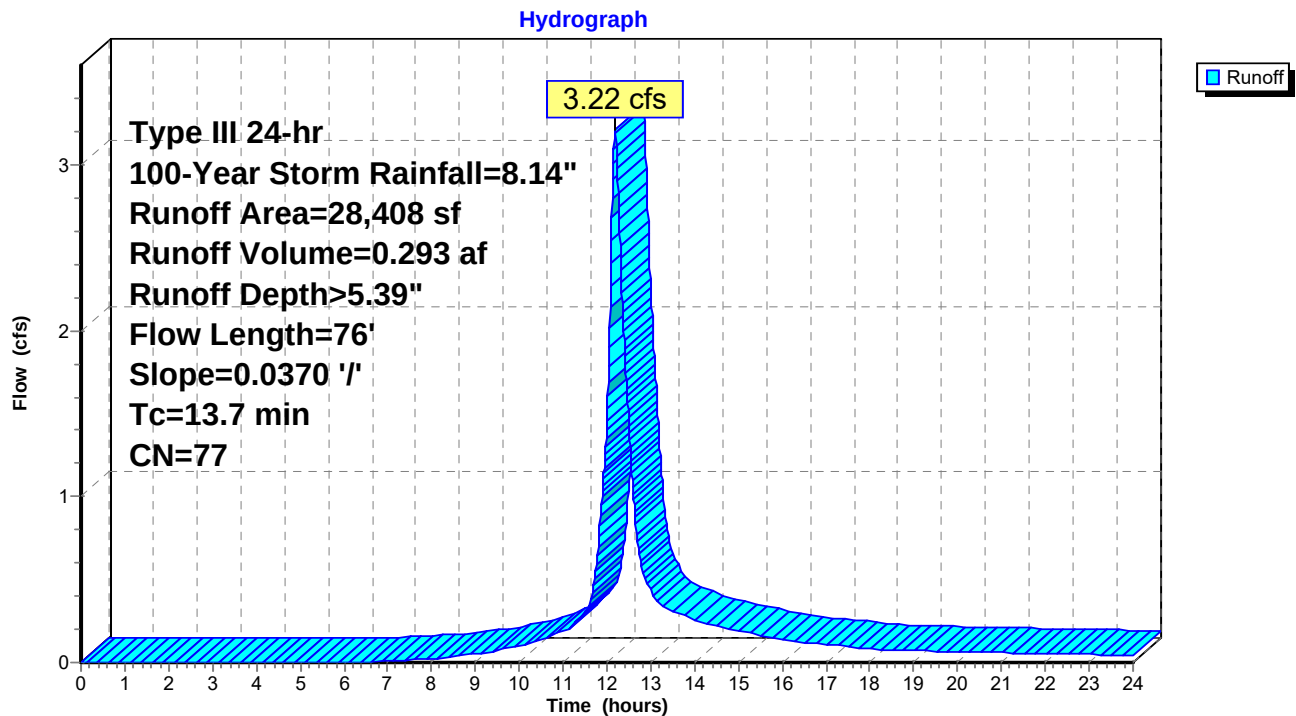
Summary for Subcatchment EWS-2: Existing Watershed 2

Runoff = 3.22 cfs @ 12.19 hrs, Volume= 0.293 af, Depth> 5.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Storm Rainfall=8.14"

Area (sf)	CN	Description
28,408	77	Woods, Poor, HSG C
28,408		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	76	0.0370	0.09		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"

Subcatchment EWS-2: Existing Watershed 2

Existing conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 100-Year Storm Rainfall=8.14"

Printed 12/13/2022

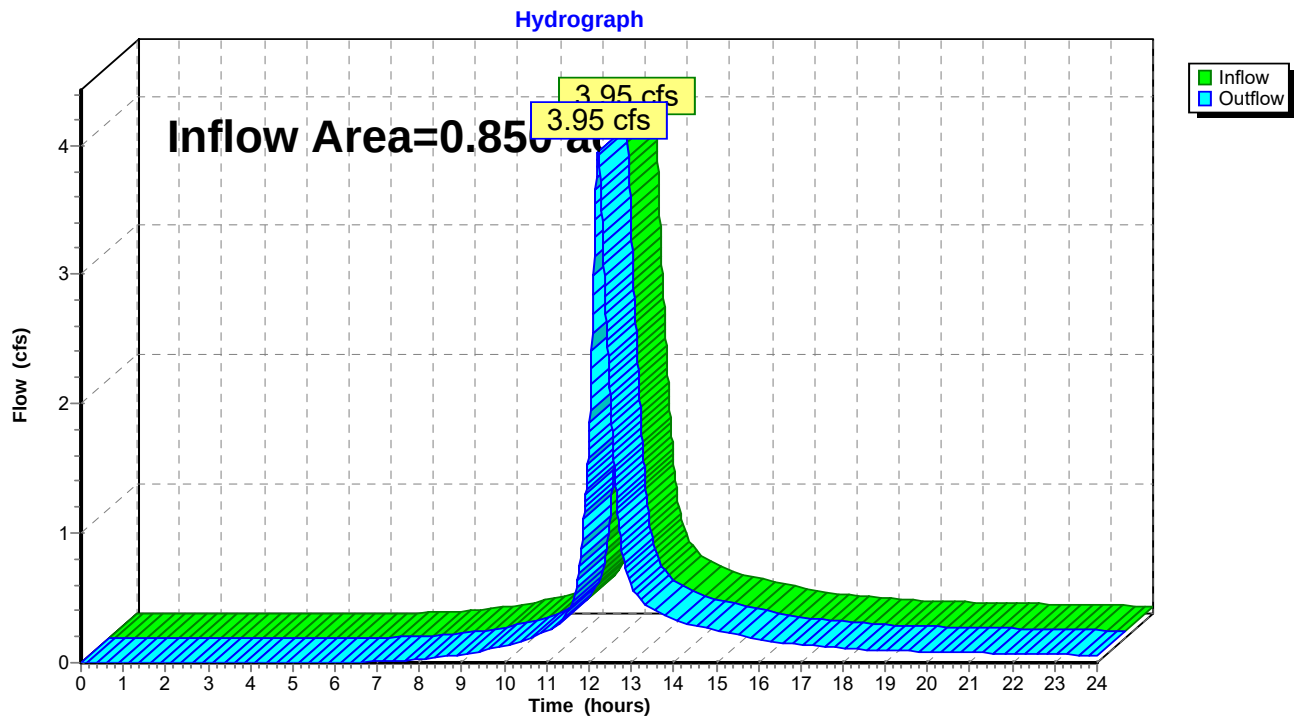
Page 24

Summary for Reach DP-1: DP-1-Flow Offsite

Inflow Area = 0.850 ac, 0.00% Impervious, Inflow Depth > 5.39" for 100-Year Storm event
Inflow = 3.95 cfs @ 12.21 hrs, Volume= 0.381 af
Outflow = 3.95 cfs @ 12.21 hrs, Volume= 0.381 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Reach DP-1: DP-1-Flow Offsite



Existing conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 100-Year Storm Rainfall=8.14"

Printed 12/13/2022

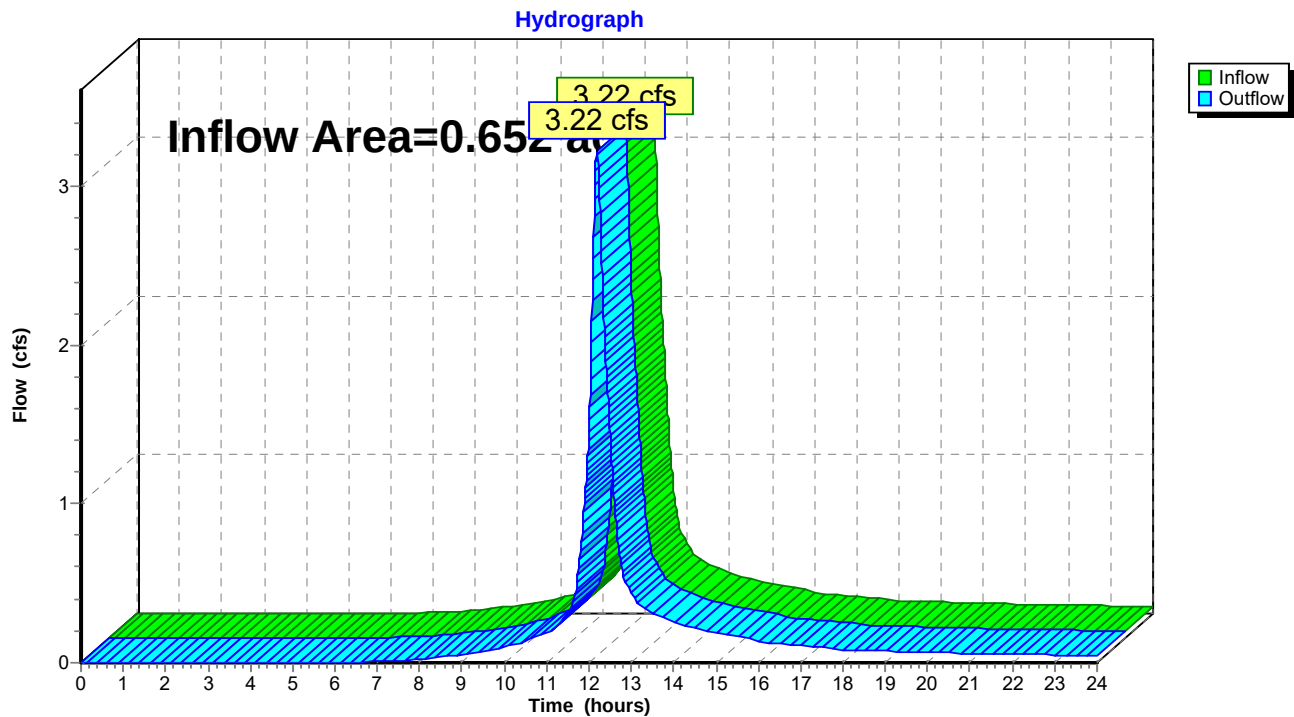
Page 25

Summary for Reach DP-2: DP-2-Sawin's Pond

Inflow Area = 0.652 ac, 0.00% Impervious, Inflow Depth > 5.39" for 100-Year Storm event
Inflow = 3.22 cfs @ 12.19 hrs, Volume= 0.293 af
Outflow = 3.22 cfs @ 12.19 hrs, Volume= 0.293 af, Atten= 0%, Lag= 0.0 min

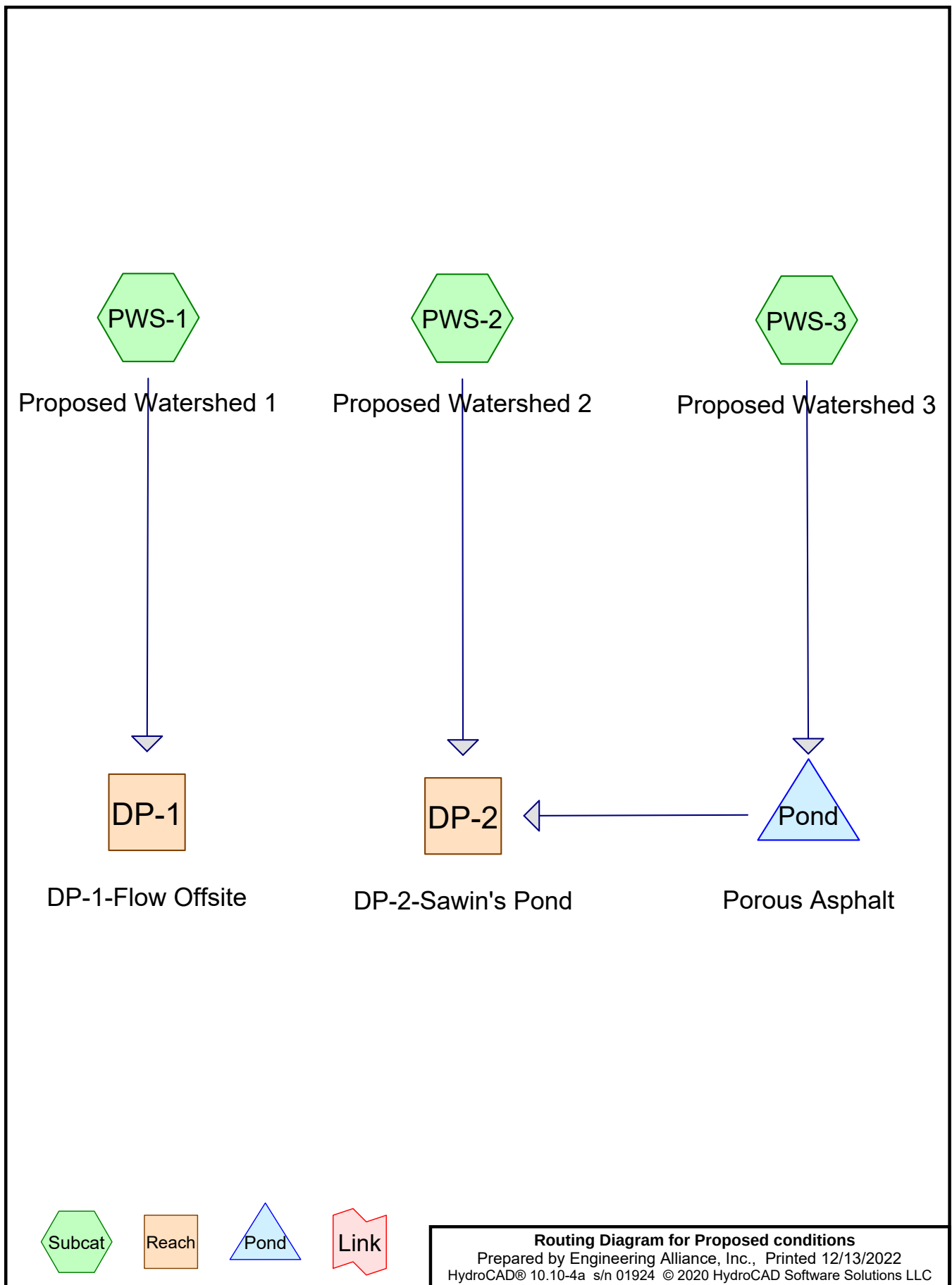
Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Reach DP-2: DP-2-Sawin's Pond



APPENDIX B

**Proposed Conditions Drainage Calculations
Proposed Watershed Plan**



Proposed conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Printed 12/13/2022

Page 2

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year Storm	Type III 24-hr		Default	24.00	1	3.26	2
2	10-Year Storm	Type III 24-hr		Default	24.00	1	5.15	2
3	25-Year Storm	Type III 24-hr		Default	24.00	1	6.32	2
4	100-Year Storm	Type III 24-hr		Default	24.00	1	8.14	2

Proposed conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Printed 12/13/2022

Page 3

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.554	74	>75% Grass cover, Good, HSG C (PWS-1, PWS-2)
0.948	98	Porous Asphalt (PWS-3)
1.502	89	TOTAL AREA

Proposed conditions

Prepared by Engineering Alliance, Inc.

Printed 12/13/2022

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Page 4

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.554	HSG C	PWS-1, PWS-2
0.000	HSG D	
0.948	Other	PWS-3
1.502		TOTAL AREA

Proposed conditions

Prepared by Engineering Alliance, Inc.

Printed 12/13/2022

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Page 5

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.554	0.000	0.000	0.554	>75% Grass cover, Good	PWS-1, PWS-2
0.000	0.000	0.000	0.000	0.948	0.948	Porous Asphalt	PWS-3
0.000	0.000	0.554	0.000	0.948	1.502	TOTAL AREA	

Proposed conditions*Type III 24-hr 2-Year Storm Rainfall=3.26"*

Prepared by Engineering Alliance, Inc.

Printed 12/13/2022

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Page 6

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PWS-1: Proposed Watershed 1 Runoff Area=8,788 sf 0.00% Impervious Runoff Depth>1.08"
Tc=6.0 min CN=74 Runoff=0.24 cfs 0.018 af

Subcatchment PWS-2: Proposed Watershed Runoff Area=15,337 sf 0.00% Impervious Runoff Depth>1.07"
Flow Length=68' Tc=12.5 min CN=74 Runoff=0.34 cfs 0.032 af

Subcatchment PWS-3: Proposed Runoff Area=41,289 sf 100.00% Impervious Runoff Depth>3.02"
Tc=6.0 min CN=98 Runoff=3.00 cfs 0.239 af

Reach DP-1: DP-1-Flow Offsite Inflow=0.24 cfs 0.018 af
Outflow=0.24 cfs 0.018 af

Reach DP-2: DP-2-Sawin's Pond Inflow=0.34 cfs 0.032 af
Outflow=0.34 cfs 0.032 af

Pond Pond: Porous Asphalt Peak Elev=31.28' Storage=4,673 cf Inflow=3.00 cfs 0.239 af
Discarded=0.16 cfs 0.217 af Primary=0.00 cfs 0.000 af Outflow=0.16 cfs 0.217 af

Total Runoff Area = 1.502 ac Runoff Volume = 0.289 af Average Runoff Depth = 2.31"
36.88% Pervious = 0.554 ac 63.12% Impervious = 0.948 ac

Proposed conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 2-Year Storm Rainfall=3.26"

Printed 12/13/2022

Page 7

Summary for Subcatchment PWS-1: Proposed Watershed 1

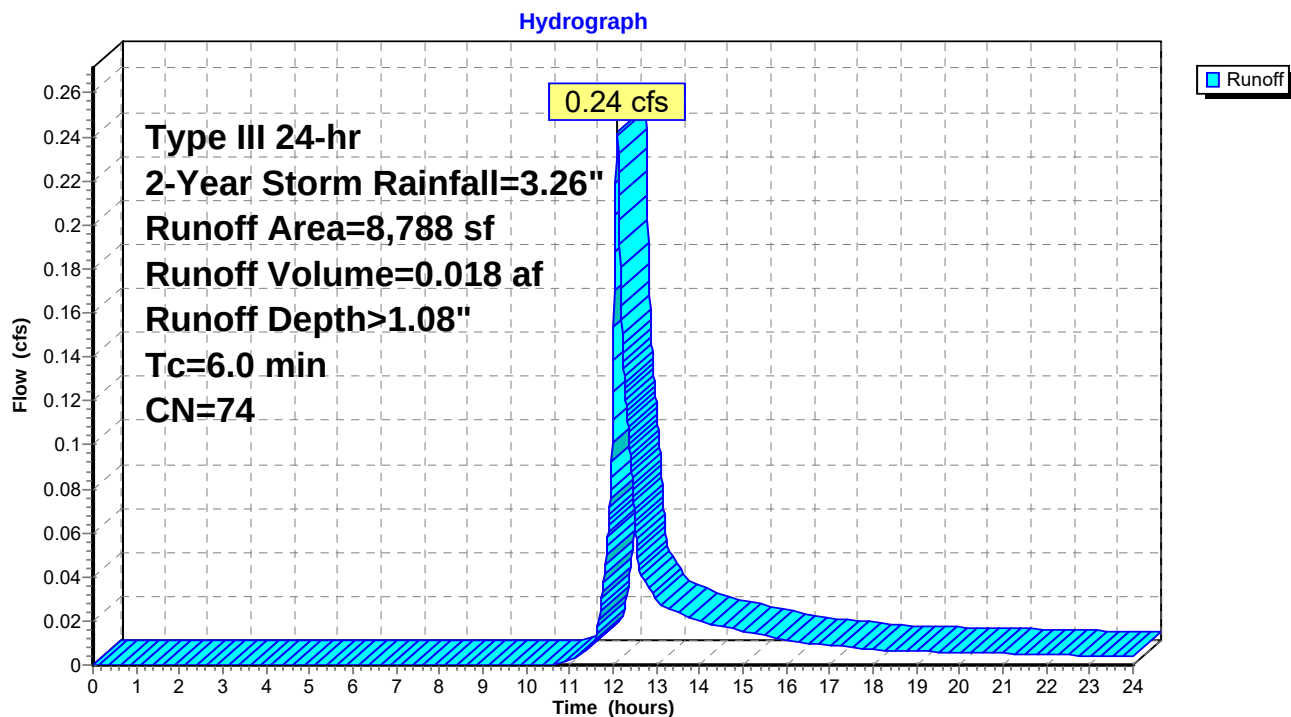
Runoff = 0.24 cfs @ 12.10 hrs, Volume= 0.018 af, Depth> 1.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Storm Rainfall=3.26"

Area (sf)	CN	Description
8,788	74	>75% Grass cover, Good, HSG C
8,788		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum Allowable Tc

Subcatchment PWS-1: Proposed Watershed 1



Proposed conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 2-Year Storm Rainfall=3.26"

Printed 12/13/2022

Page 8

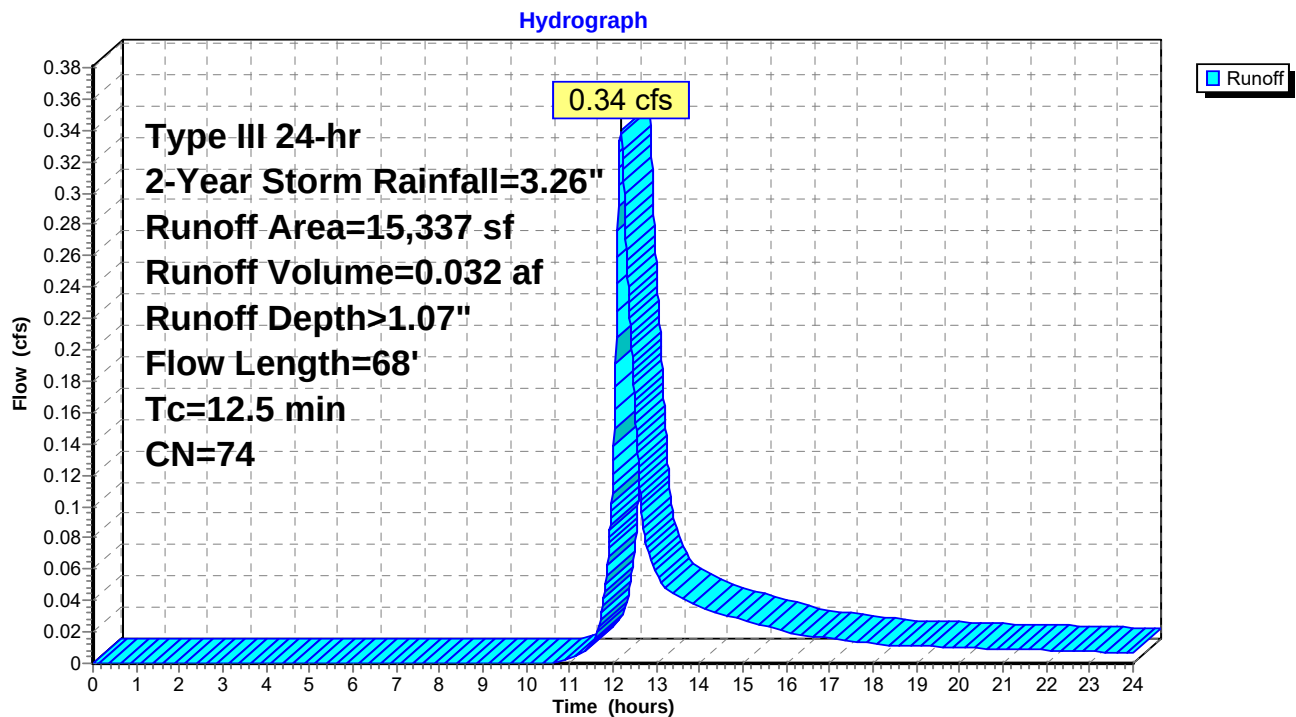
Summary for Subcatchment PWS-2: Proposed Watershed 2

Runoff = 0.34 cfs @ 12.18 hrs, Volume= 0.032 af, Depth> 1.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Storm Rainfall=3.26"

Area (sf)	CN	Description
15,337	74	>75% Grass cover, Good, HSG C
15,337		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	28	0.0140	0.08		Sheet Flow, Grass: Dense n= 0.240 P2= 3.20"
6.6	40	0.0600	0.10		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
12.5	68	Total			

Subcatchment PWS-2: Proposed Watershed 2

Proposed conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 2-Year Storm Rainfall=3.26"

Printed 12/13/2022

Page 9

Summary for Subcatchment PWS-3: Proposed Watershed 3

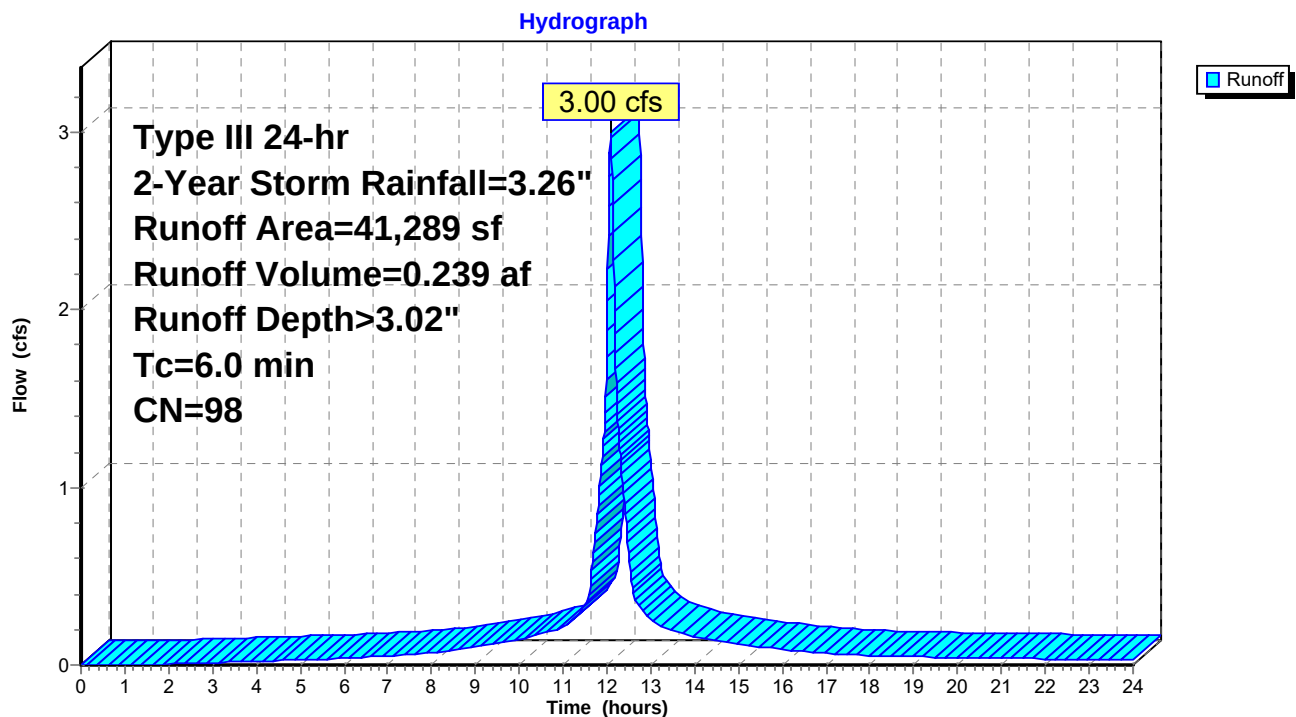
Runoff = 3.00 cfs @ 12.08 hrs, Volume= 0.239 af, Depth> 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Storm Rainfall=3.26"

	Area (sf)	CN	Description
*	41,289	98	Porous Asphalt
	41,289		100.00% Impervious Area

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

Subcatchment PWS-3: Proposed Watershed 3



Proposed conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 2-Year Storm Rainfall=3.26"

Printed 12/13/2022

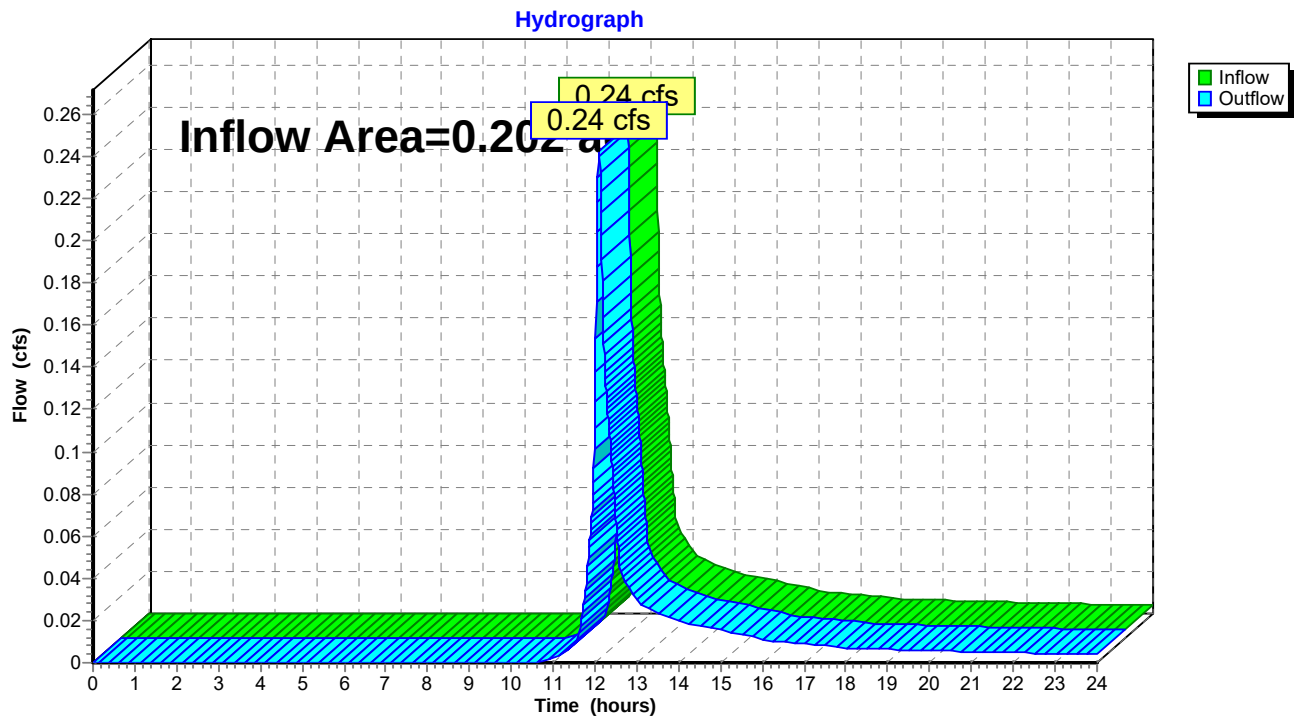
Page 10

Summary for Reach DP-1: DP-1-Flow Offsite

Inflow Area = 0.202 ac, 0.00% Impervious, Inflow Depth > 1.08" for 2-Year Storm event
Inflow = 0.24 cfs @ 12.10 hrs, Volume= 0.018 af
Outflow = 0.24 cfs @ 12.10 hrs, Volume= 0.018 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Reach DP-1: DP-1-Flow Offsite



Proposed conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 2-Year Storm Rainfall=3.26"

Printed 12/13/2022

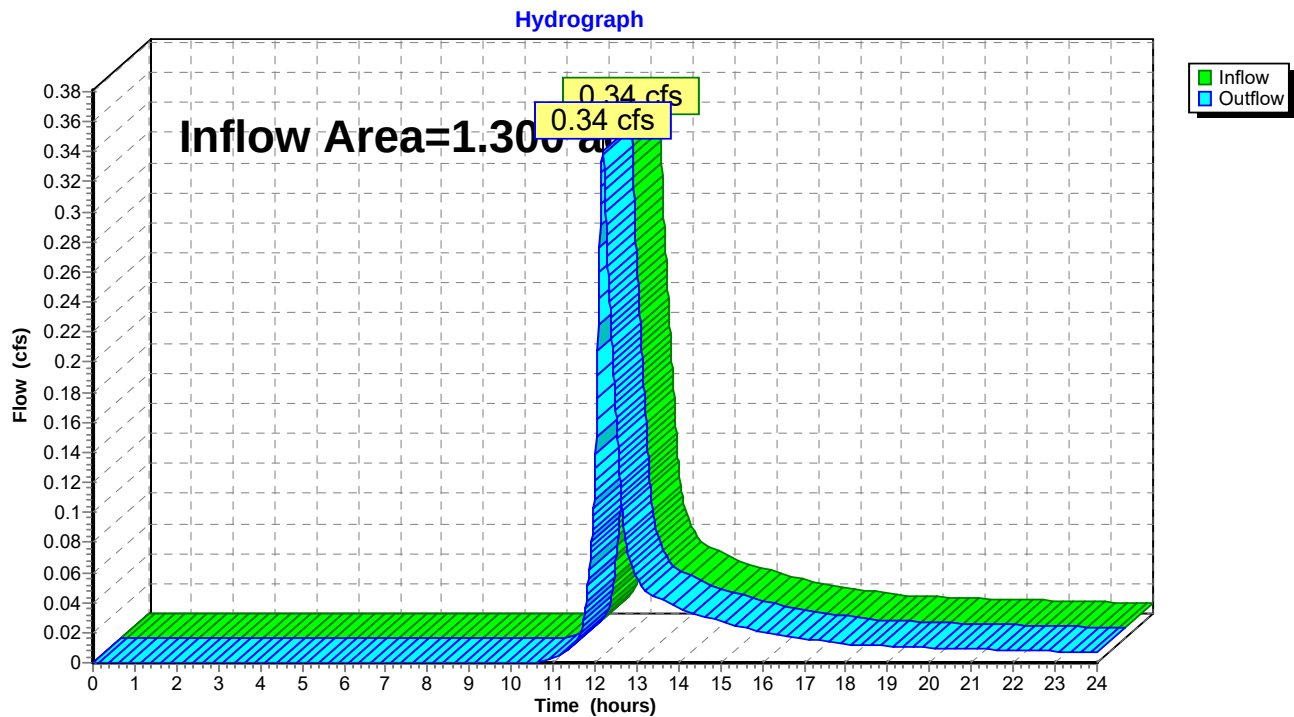
Page 11

Summary for Reach DP-2: DP-2-Sawin's Pond

Inflow Area = 1.300 ac, 72.92% Impervious, Inflow Depth > 0.29" for 2-Year Storm event
Inflow = 0.34 cfs @ 12.18 hrs, Volume= 0.032 af
Outflow = 0.34 cfs @ 12.18 hrs, Volume= 0.032 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Reach DP-2: DP-2-Sawin's Pond



Proposed conditions

Type III 24-hr 2-Year Storm Rainfall=3.26"

Prepared by Engineering Alliance, Inc.

Printed 12/13/2022

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Page 12

Summary for Pond Pond: Porous Asphalt

Inflow Area = 0.948 ac, 100.00% Impervious, Inflow Depth > 3.02" for 2-Year Storm event
 Inflow = 3.00 cfs @ 12.08 hrs, Volume= 0.239 af
 Outflow = 0.16 cfs @ 10.63 hrs, Volume= 0.217 af, Atten= 95%, Lag= 0.0 min
 Discarded = 0.16 cfs @ 10.63 hrs, Volume= 0.217 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 31.28' @ 13.95 hrs Surf.Area= 41,289 sf Storage= 4,673 cf

Plug-Flow detention time= 236.6 min calculated for 0.216 af (91% of inflow)
 Center-of-Mass det. time= 189.7 min (945.1 - 755.5)

Volume	Invert	Avail.Storage	Storage Description
#1	31.00'	16,516 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 41,289 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.00	41,289	0	0
32.00	41,289	41,289	41,289

Device	Routing	Invert	Outlet Devices
#1	Discarded	31.00'	0.170 in/hr Exfiltration over Horizontal area
#2	Primary	32.00'	775.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.16 cfs @ 10.63 hrs HW=31.01' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.16 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=31.00' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Proposed conditions

Prepared by Engineering Alliance, Inc.

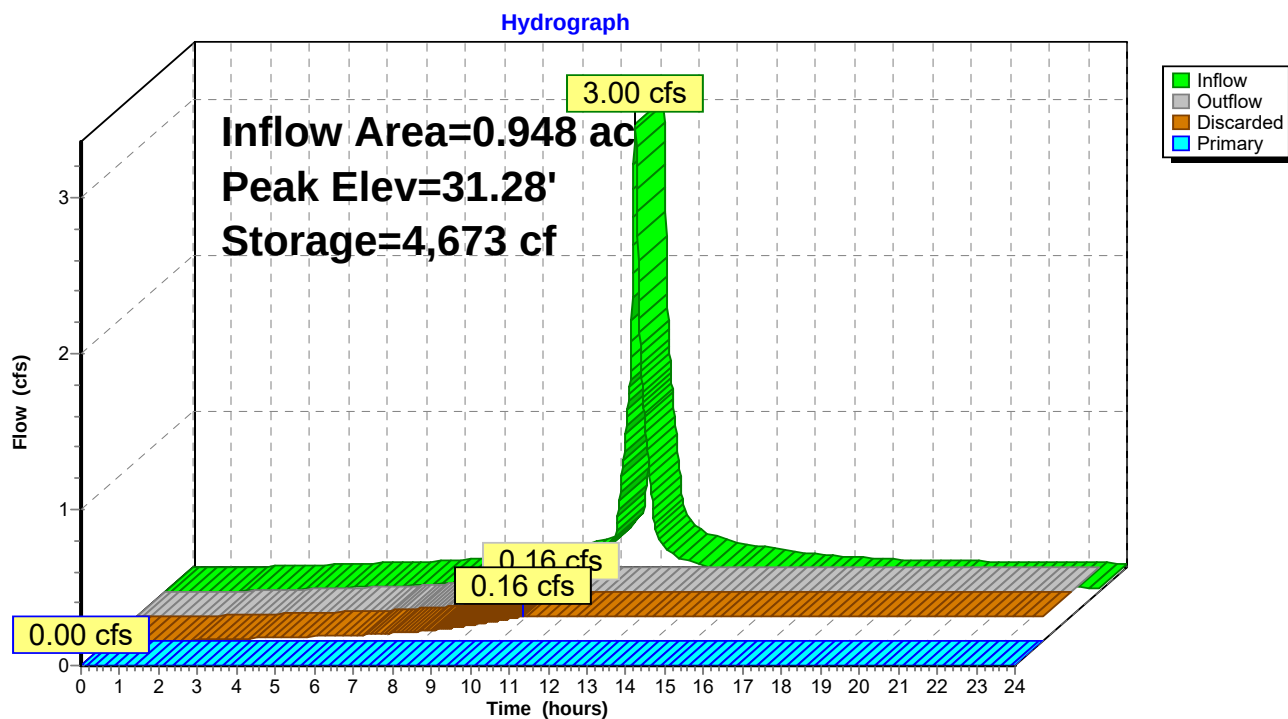
HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 2-Year Storm Rainfall=3.26"

Printed 12/13/2022

Page 13

Pond Pond: Porous Asphalt



Proposed conditions*Type III 24-hr 10-Year Storm Rainfall=5.15"*

Prepared by Engineering Alliance, Inc.

Printed 12/13/2022

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Page 14

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PWS-1: Proposed Watershed 1 Runoff Area=8,788 sf 0.00% Impervious Runoff Depth>2.48"
Tc=6.0 min CN=74 Runoff=0.59 cfs 0.042 af

Subcatchment PWS-2: Proposed Watershed Runoff Area=15,337 sf 0.00% Impervious Runoff Depth>2.48"
Flow Length=68' Tc=12.5 min CN=74 Runoff=0.83 cfs 0.073 af

Subcatchment PWS-3: Proposed Runoff Area=41,289 sf 100.00% Impervious Runoff Depth>4.91"
Tc=6.0 min CN=98 Runoff=4.78 cfs 0.388 af

Reach DP-1: DP-1-Flow Offsite Inflow=0.59 cfs 0.042 af
Outflow=0.59 cfs 0.042 af

Reach DP-2: DP-2-Sawin's Pond Inflow=0.83 cfs 0.073 af
Outflow=0.83 cfs 0.073 af

Pond Pond: Porous Asphalt Peak Elev=31.55' Storage=9,097 cf Inflow=4.78 cfs 0.388 af
Discarded=0.16 cfs 0.240 af Primary=0.00 cfs 0.000 af Outflow=0.16 cfs 0.240 af

Total Runoff Area = 1.502 ac Runoff Volume = 0.502 af Average Runoff Depth = 4.01"
36.88% Pervious = 0.554 ac 63.12% Impervious = 0.948 ac

Proposed conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Storm Rainfall=5.15"

Printed 12/13/2022

Page 15

Summary for Subcatchment PWS-1: Proposed Watershed 1

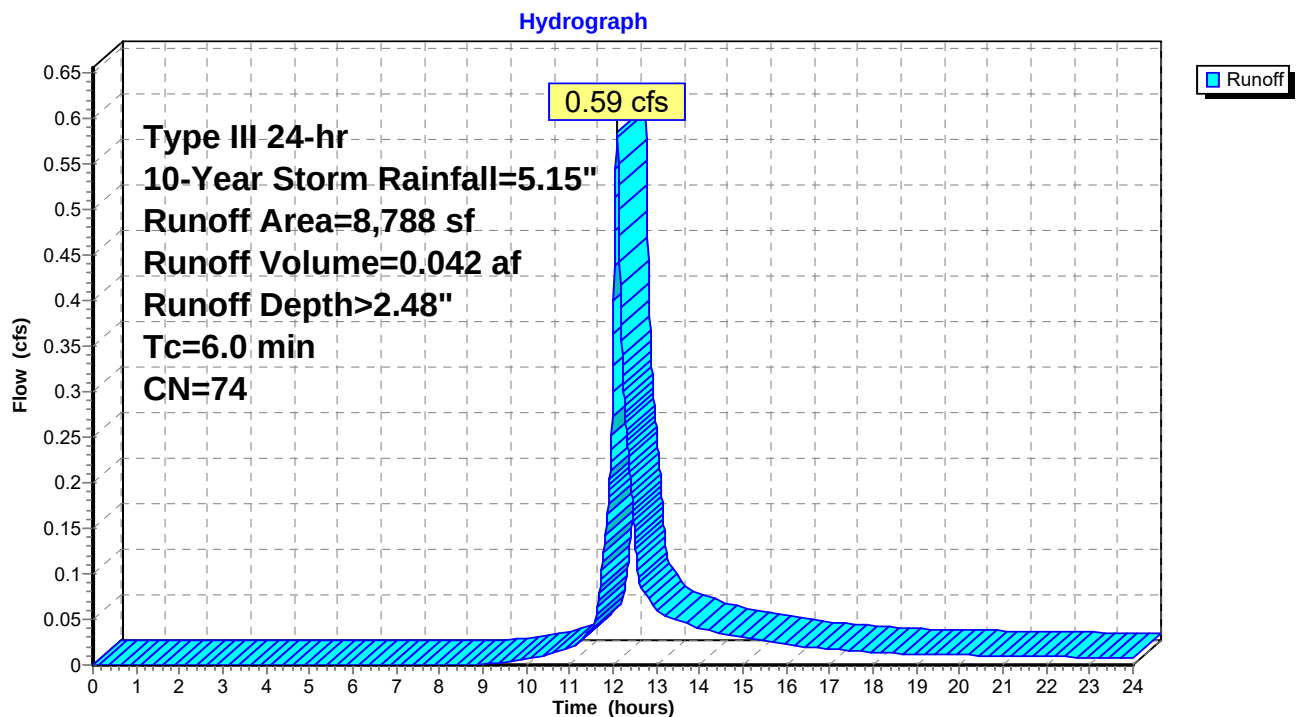
Runoff = 0.59 cfs @ 12.09 hrs, Volume= 0.042 af, Depth> 2.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Storm Rainfall=5.15"

Area (sf)	CN	Description
8,788	74	>75% Grass cover, Good, HSG C
8,788		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum Allowable Tc

Subcatchment PWS-1: Proposed Watershed 1



Proposed conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Storm Rainfall=5.15"

Printed 12/13/2022

Page 16

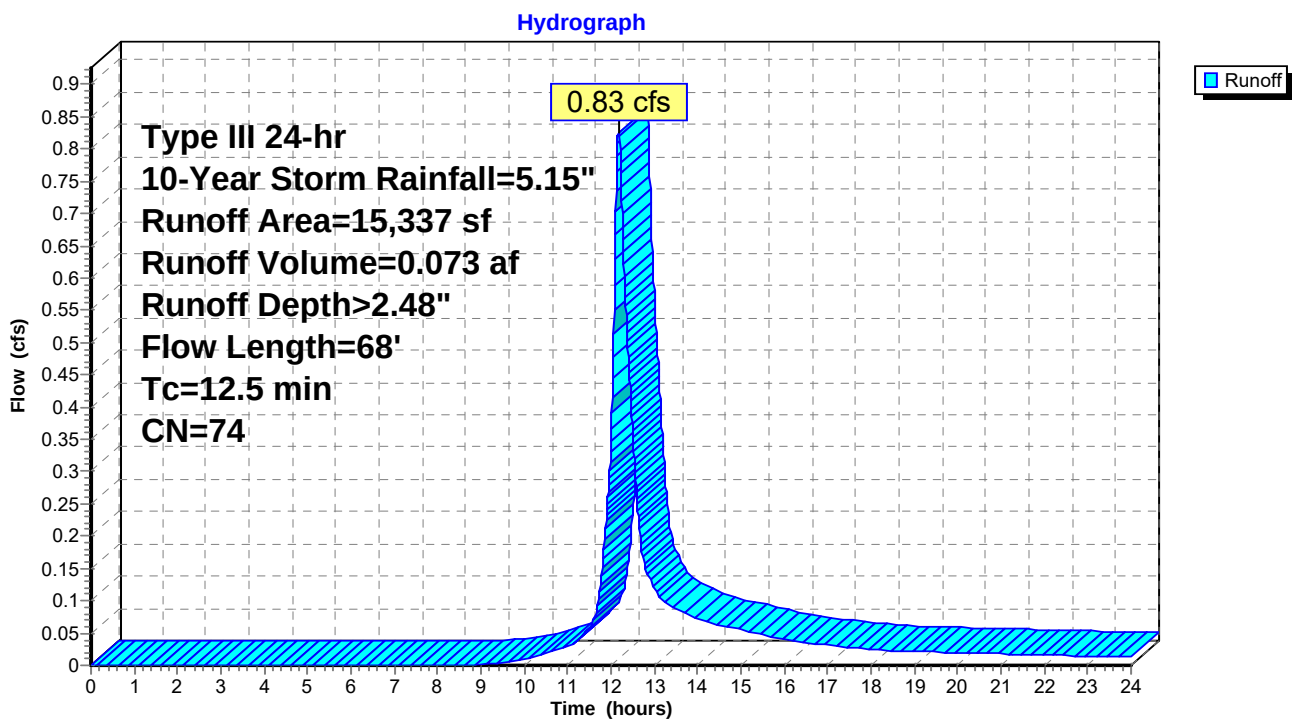
Summary for Subcatchment PWS-2: Proposed Watershed 2

Runoff = 0.83 cfs @ 12.18 hrs, Volume= 0.073 af, Depth> 2.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Storm Rainfall=5.15"

Area (sf)	CN	Description
15,337	74	>75% Grass cover, Good, HSG C
15,337		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	28	0.0140	0.08		Sheet Flow, Grass: Dense n= 0.240 P2= 3.20"
6.6	40	0.0600	0.10		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
12.5	68	Total			

Subcatchment PWS-2: Proposed Watershed 2

Proposed conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Storm Rainfall=5.15"

Printed 12/13/2022

Page 17

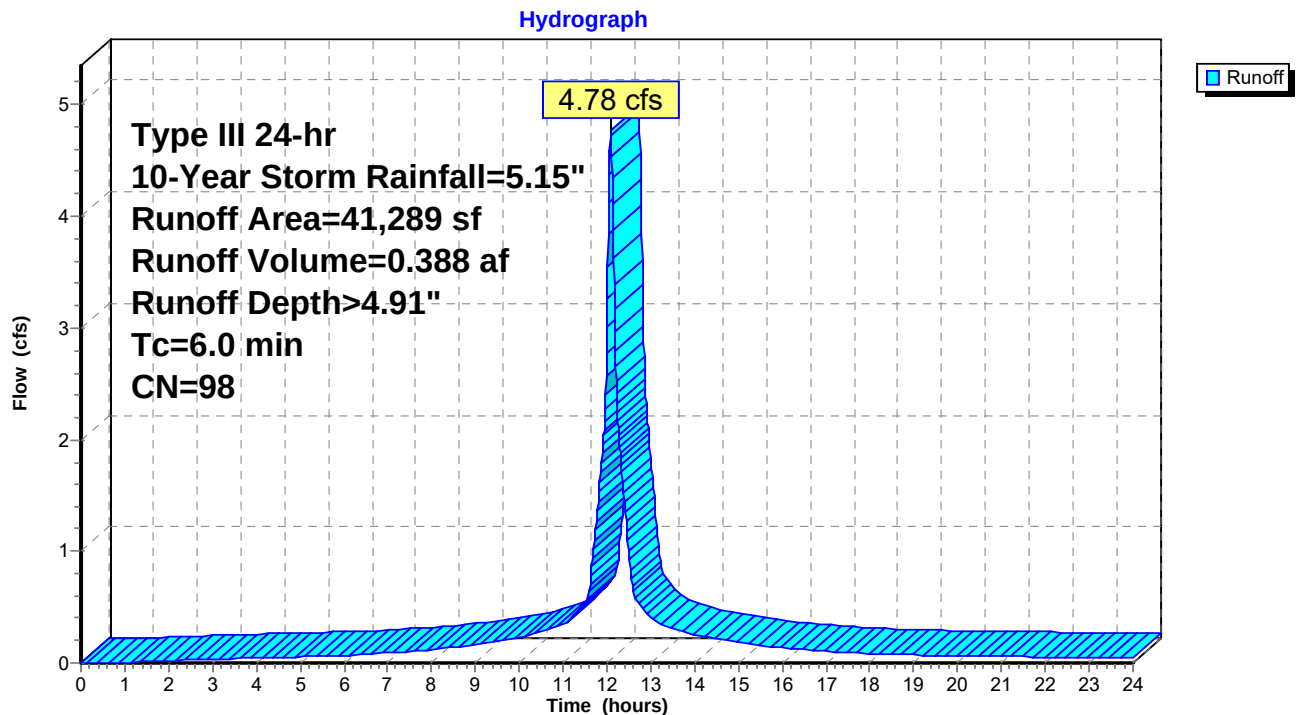
Summary for Subcatchment PWS-3: Proposed Watershed 3

Runoff = 4.78 cfs @ 12.08 hrs, Volume= 0.388 af, Depth> 4.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Storm Rainfall=5.15"

	Area (sf)	CN	Description
*	41,289	98	Porous Asphalt
	41,289		100.00% Impervious Area

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

Subcatchment PWS-3: Proposed Watershed 3

Proposed conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Storm Rainfall=5.15"

Printed 12/13/2022

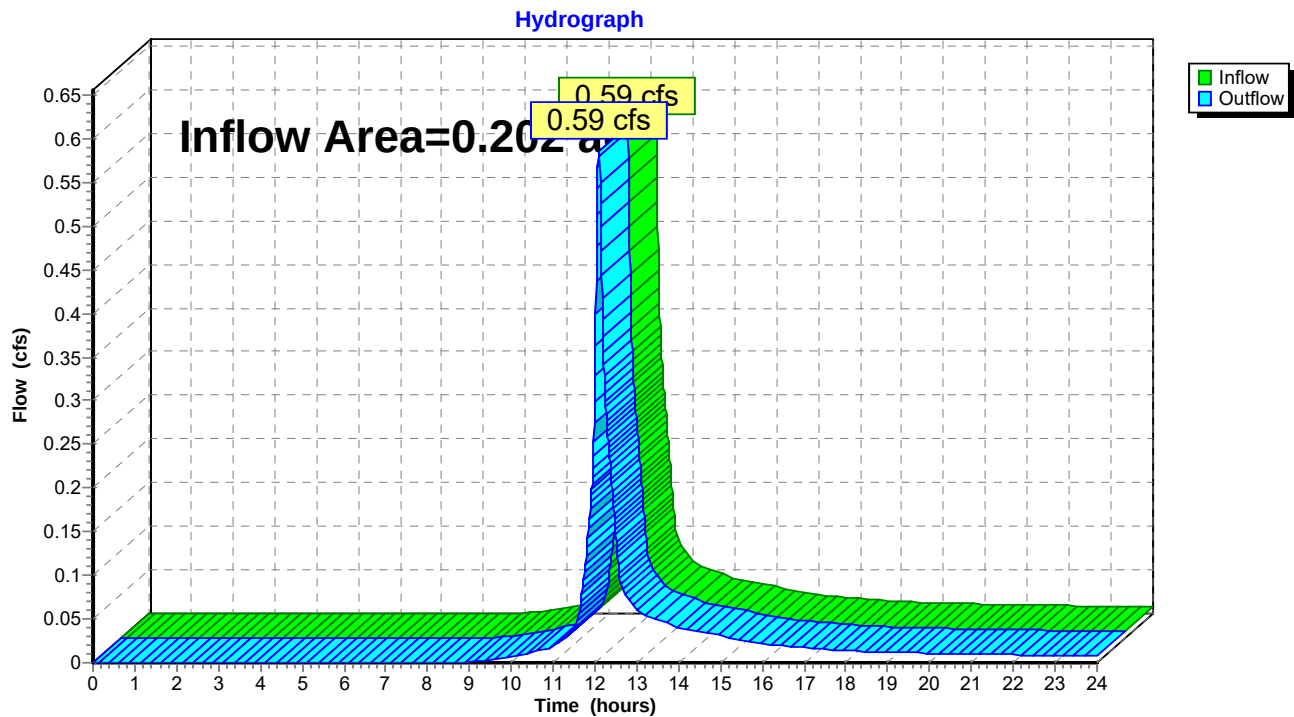
Page 18

Summary for Reach DP-1: DP-1-Flow Offsite

Inflow Area = 0.202 ac, 0.00% Impervious, Inflow Depth > 2.48" for 10-Year Storm event
Inflow = 0.59 cfs @ 12.09 hrs, Volume= 0.042 af
Outflow = 0.59 cfs @ 12.09 hrs, Volume= 0.042 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Reach DP-1: DP-1-Flow Offsite



Proposed conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 10-Year Storm Rainfall=5.15"

Printed 12/13/2022

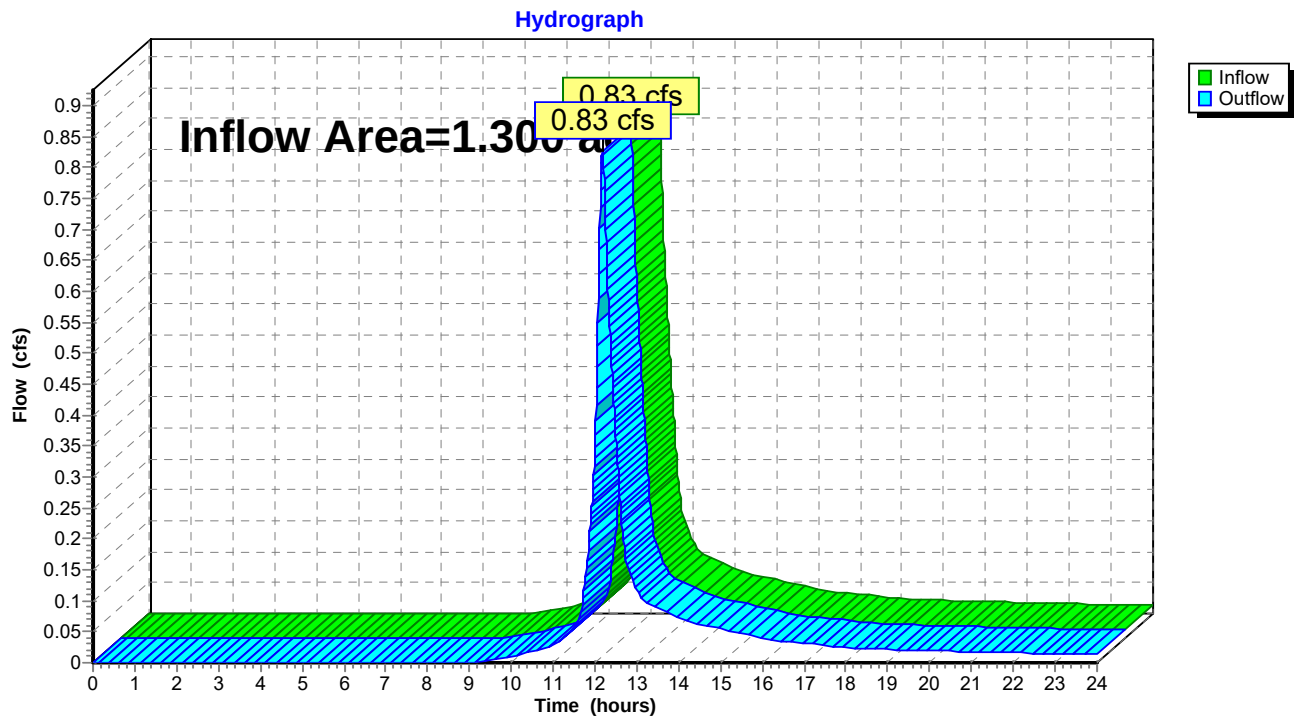
Page 19

Summary for Reach DP-2: DP-2-Sawin's Pond

Inflow Area = 1.300 ac, 72.92% Impervious, Inflow Depth > 0.67" for 10-Year Storm event
Inflow = 0.83 cfs @ 12.18 hrs, Volume= 0.073 af
Outflow = 0.83 cfs @ 12.18 hrs, Volume= 0.073 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Reach DP-2: DP-2-Sawin's Pond



Proposed conditions

Type III 24-hr 10-Year Storm Rainfall=5.15"

Prepared by Engineering Alliance, Inc.

Printed 12/13/2022

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Page 20

Summary for Pond Pond: Porous Asphalt

Inflow Area = 0.948 ac, 100.00% Impervious, Inflow Depth > 4.91" for 10-Year Storm event
 Inflow = 4.78 cfs @ 12.08 hrs, Volume= 0.388 af
 Outflow = 0.16 cfs @ 9.15 hrs, Volume= 0.240 af, Atten= 97%, Lag= 0.0 min
 Discarded = 0.16 cfs @ 9.15 hrs, Volume= 0.240 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 31.55' @ 15.48 hrs Surf.Area= 41,289 sf Storage= 9,097 cf

Plug-Flow detention time= 253.5 min calculated for 0.240 af (62% of inflow)
 Center-of-Mass det. time= 146.3 min (893.3 - 747.0)

Volume	Invert	Avail.Storage	Storage Description
#1	31.00'	16,516 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 41,289 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.00	41,289	0	0
32.00	41,289	41,289	41,289

Device	Routing	Invert	Outlet Devices
#1	Discarded	31.00'	0.170 in/hr Exfiltration over Horizontal area
#2	Primary	32.00'	775.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.16 cfs @ 9.15 hrs HW=31.01' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.16 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=31.00' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Proposed conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

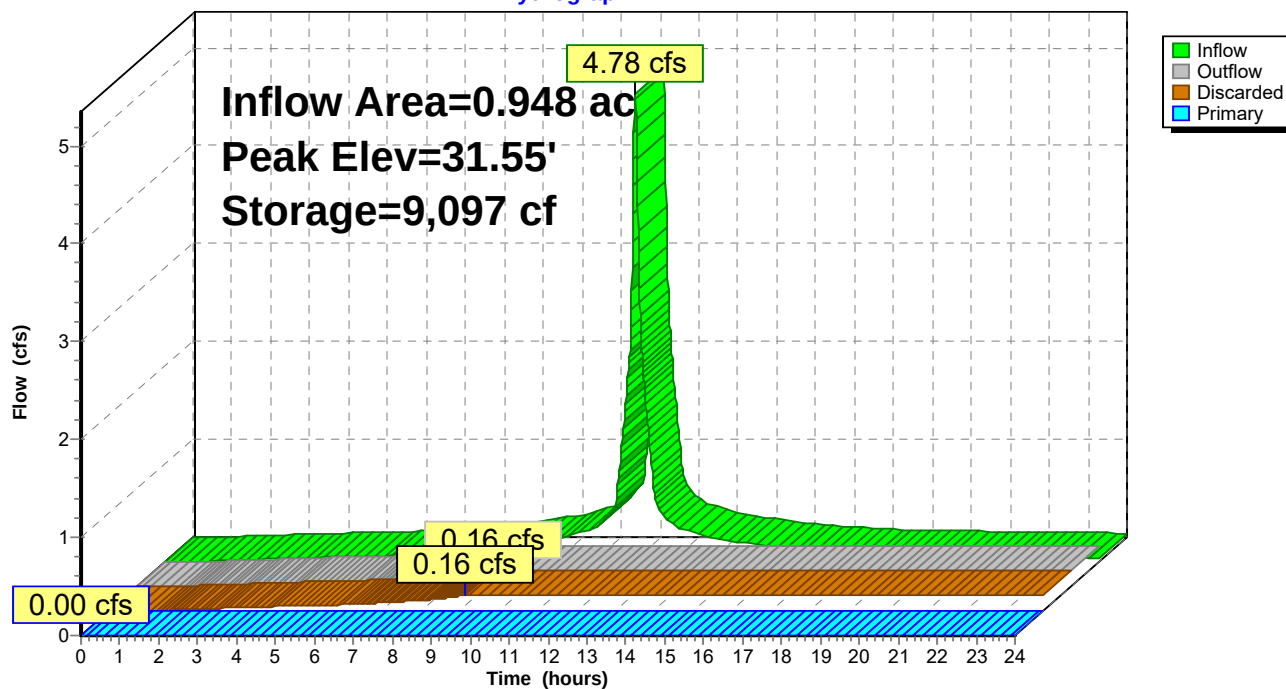
Type III 24-hr 10-Year Storm Rainfall=5.15"

Printed 12/13/2022

Page 21

Pond Pond: Porous Asphalt

Hydrograph



Proposed conditions*Type III 24-hr 25-Year Storm Rainfall=6.32"*

Prepared by Engineering Alliance, Inc.

Printed 12/13/2022

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Page 22

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PWS-1: Proposed Watershed 1 Runoff Area=8,788 sf 0.00% Impervious Runoff Depth>3.45"
Tc=6.0 min CN=74 Runoff=0.82 cfs 0.058 af

Subcatchment PWS-2: Proposed Watershed Runoff Area=15,337 sf 0.00% Impervious Runoff Depth>3.45"
Flow Length=68' Tc=12.5 min CN=74 Runoff=1.16 cfs 0.101 af

Subcatchment PWS-3: Proposed Runoff Area=41,289 sf 100.00% Impervious Runoff Depth>6.08"
Tc=6.0 min CN=98 Runoff=5.87 cfs 0.480 af

Reach DP-1: DP-1-Flow Offsite Inflow=0.82 cfs 0.058 af
Outflow=0.82 cfs 0.058 af

Reach DP-2: DP-2-Sawin's Pond Inflow=1.16 cfs 0.101 af
Outflow=1.16 cfs 0.101 af

Pond Pond: Porous Asphalt Peak Elev=31.73' Storage=12,133 cf Inflow=5.87 cfs 0.480 af
Discarded=0.16 cfs 0.251 af Primary=0.00 cfs 0.000 af Outflow=0.16 cfs 0.251 af

Total Runoff Area = 1.502 ac Runoff Volume = 0.639 af Average Runoff Depth = 5.11"
36.88% Pervious = 0.554 ac 63.12% Impervious = 0.948 ac

Proposed conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Storm Rainfall=6.32"

Printed 12/13/2022

Page 23

Summary for Subcatchment PWS-1: Proposed Watershed 1

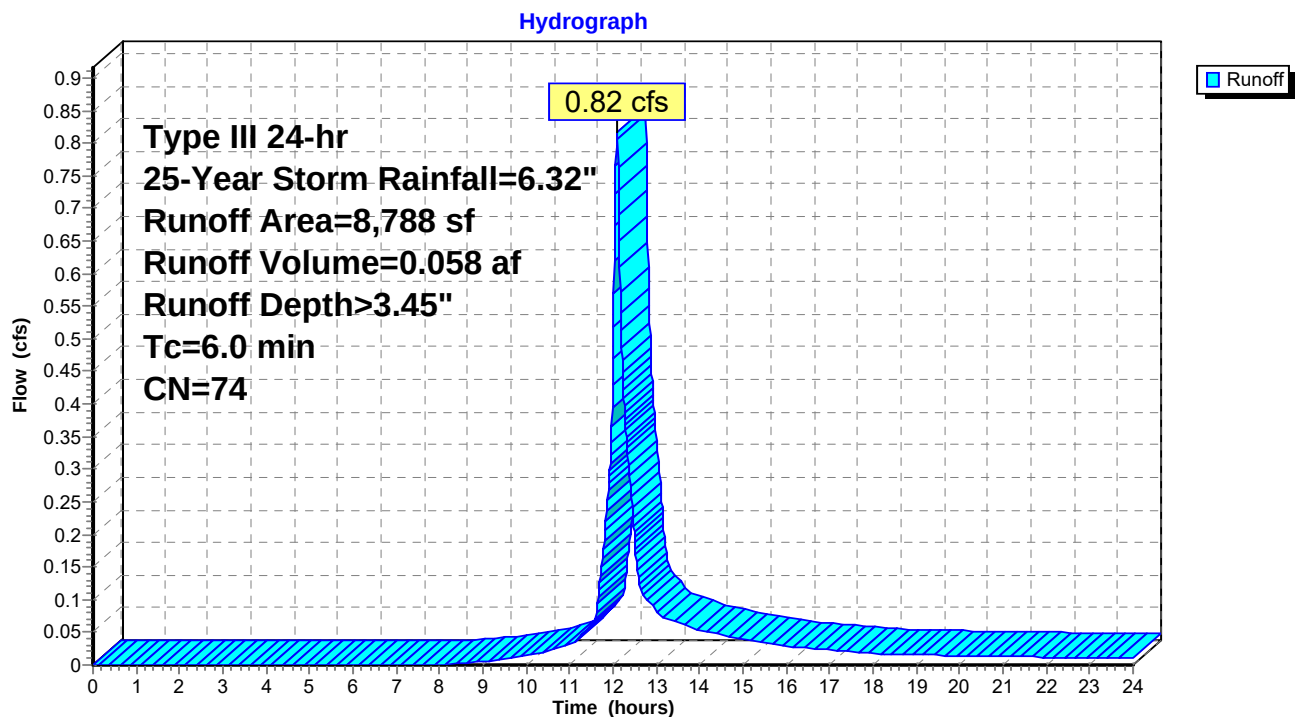
Runoff = 0.82 cfs @ 12.09 hrs, Volume= 0.058 af, Depth> 3.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Storm Rainfall=6.32"

Area (sf)	CN	Description
8,788	74	>75% Grass cover, Good, HSG C
8,788		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum Allowable Tc

Subcatchment PWS-1: Proposed Watershed 1



Proposed conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Storm Rainfall=6.32"

Printed 12/13/2022

Page 24

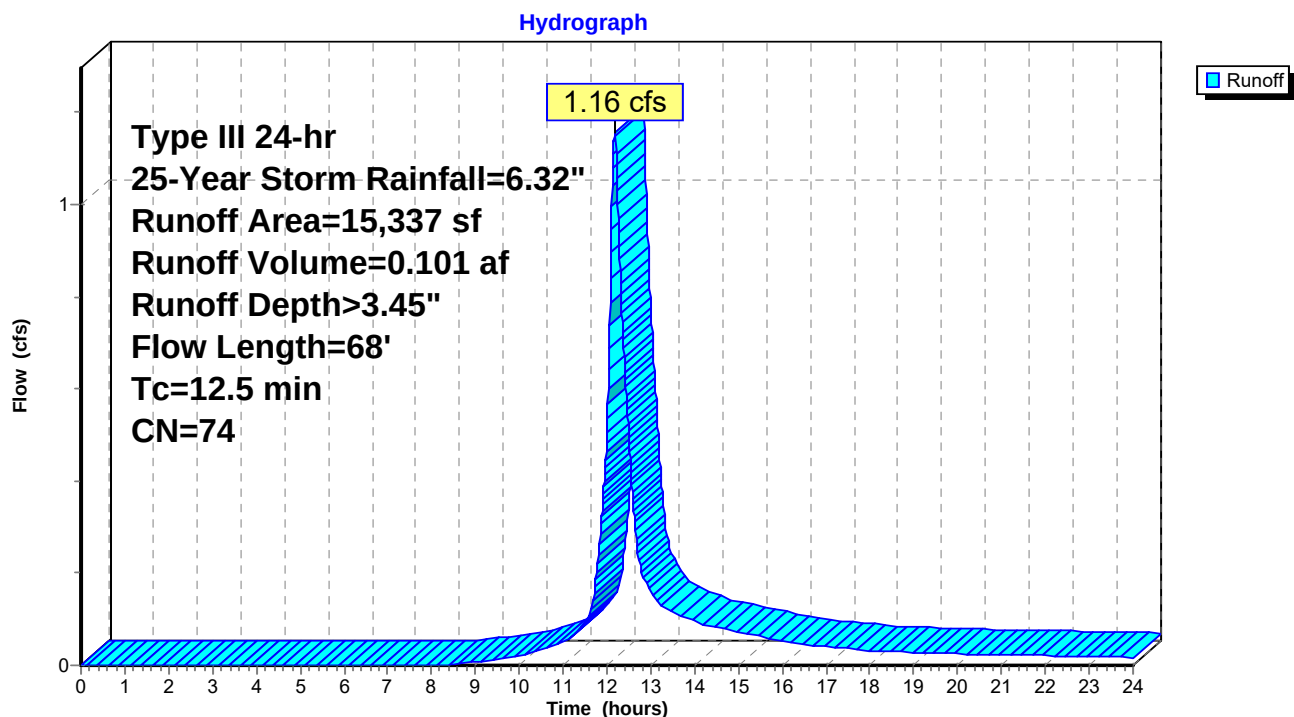
Summary for Subcatchment PWS-2: Proposed Watershed 2

Runoff = 1.16 cfs @ 12.18 hrs, Volume= 0.101 af, Depth> 3.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Storm Rainfall=6.32"

Area (sf)	CN	Description
15,337	74	>75% Grass cover, Good, HSG C
15,337		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	28	0.0140	0.08		Sheet Flow, Grass: Dense n= 0.240 P2= 3.20"
6.6	40	0.0600	0.10		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
12.5	68	Total			

Subcatchment PWS-2: Proposed Watershed 2

Proposed conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Storm Rainfall=6.32"

Printed 12/13/2022

Page 25

Summary for Subcatchment PWS-3: Proposed Watershed 3

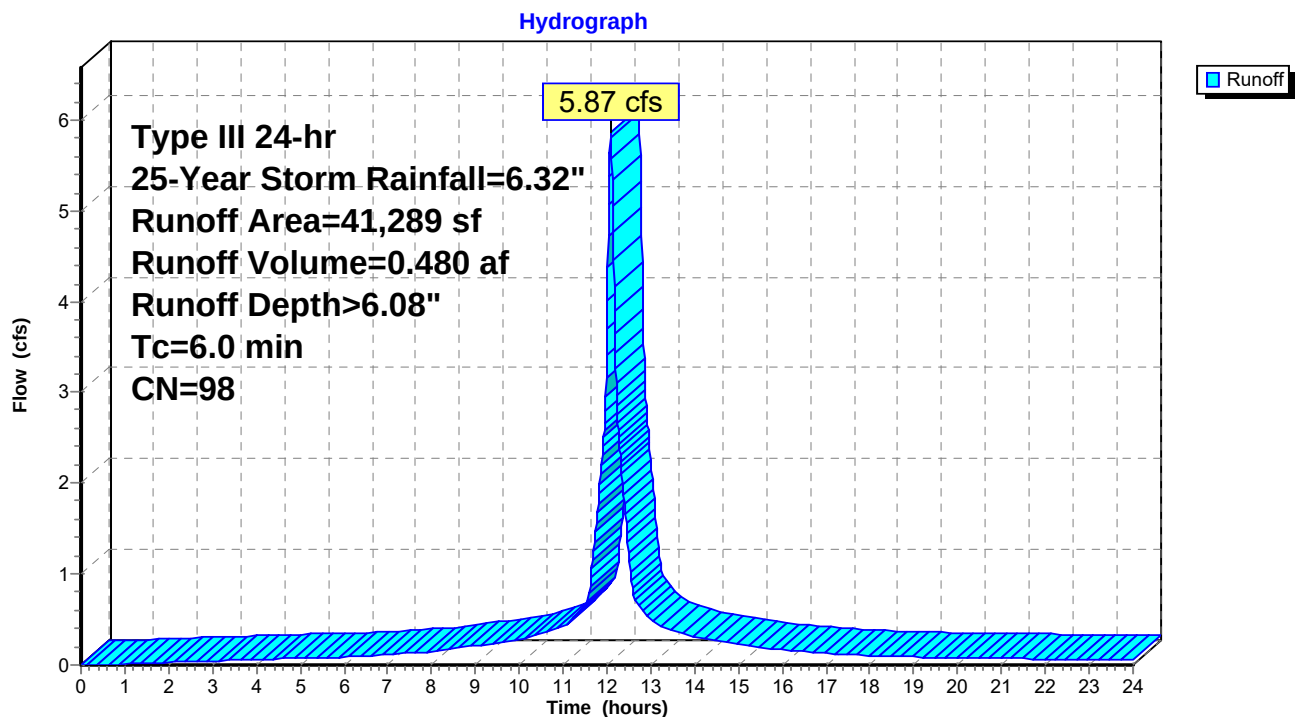
Runoff = 5.87 cfs @ 12.08 hrs, Volume= 0.480 af, Depth> 6.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Storm Rainfall=6.32"

	Area (sf)	CN	Description
*	41,289	98	Porous Asphalt
	41,289		100.00% Impervious Area

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

Subcatchment PWS-3: Proposed Watershed 3



Proposed conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Storm Rainfall=6.32"

Printed 12/13/2022

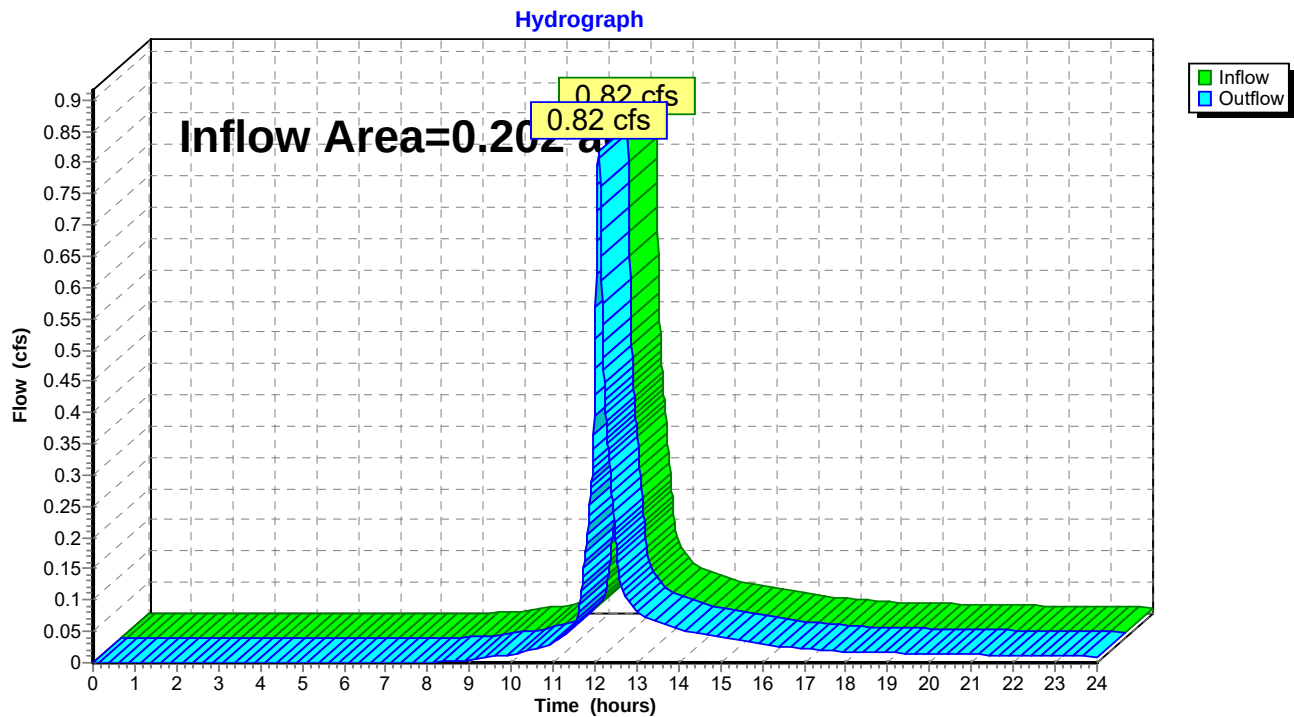
Page 26

Summary for Reach DP-1: DP-1-Flow Offsite

Inflow Area = 0.202 ac, 0.00% Impervious, Inflow Depth > 3.45" for 25-Year Storm event
Inflow = 0.82 cfs @ 12.09 hrs, Volume= 0.058 af
Outflow = 0.82 cfs @ 12.09 hrs, Volume= 0.058 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Reach DP-1: DP-1-Flow Offsite



Proposed conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Storm Rainfall=6.32"

Printed 12/13/2022

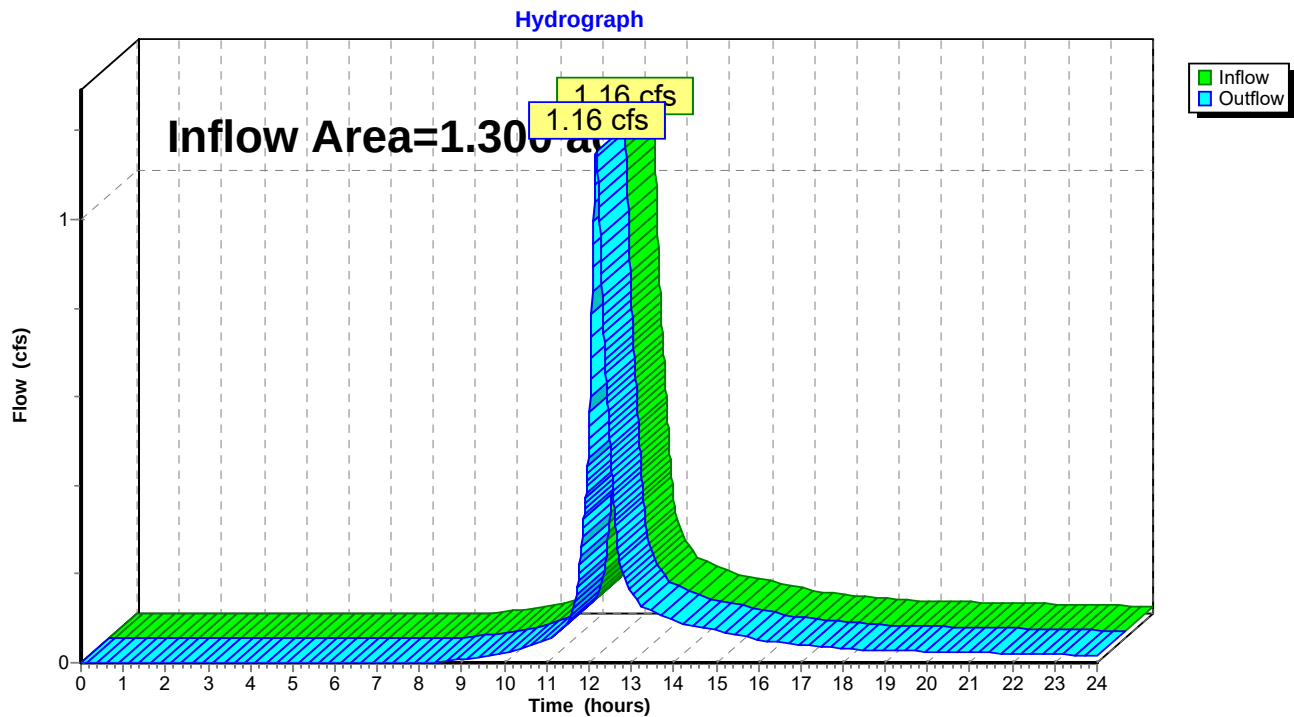
Page 27

Summary for Reach DP-2: DP-2-Sawin's Pond

Inflow Area = 1.300 ac, 72.92% Impervious, Inflow Depth > 0.93" for 25-Year Storm event
Inflow = 1.16 cfs @ 12.18 hrs, Volume= 0.101 af
Outflow = 1.16 cfs @ 12.18 hrs, Volume= 0.101 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Reach DP-2: DP-2-Sawin's Pond



Proposed conditions

Type III 24-hr 25-Year Storm Rainfall=6.32"

Prepared by Engineering Alliance, Inc.

Printed 12/13/2022

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Page 28

Summary for Pond Pond: Porous Asphalt

Inflow Area = 0.948 ac, 100.00% Impervious, Inflow Depth > 6.08" for 25-Year Storm event
 Inflow = 5.87 cfs @ 12.08 hrs, Volume= 0.480 af
 Outflow = 0.16 cfs @ 8.55 hrs, Volume= 0.251 af, Atten= 97%, Lag= 0.0 min
 Discarded = 0.16 cfs @ 8.55 hrs, Volume= 0.251 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 31.73' @ 16.01 hrs Surf.Area= 41,289 sf Storage= 12,133 cf

Plug-Flow detention time= 251.4 min calculated for 0.251 af (52% of inflow)
 Center-of-Mass det. time= 125.4 min (869.2 - 743.8)

Volume	Invert	Avail.Storage	Storage Description
#1	31.00'	16,516 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 41,289 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.00	41,289	0	0
32.00	41,289	41,289	41,289

Device	Routing	Invert	Outlet Devices
#1	Discarded	31.00'	0.170 in/hr Exfiltration over Horizontal area
#2	Primary	32.00'	775.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.16 cfs @ 8.55 hrs HW=31.01' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.16 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=31.00' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Proposed conditions

Prepared by Engineering Alliance, Inc.

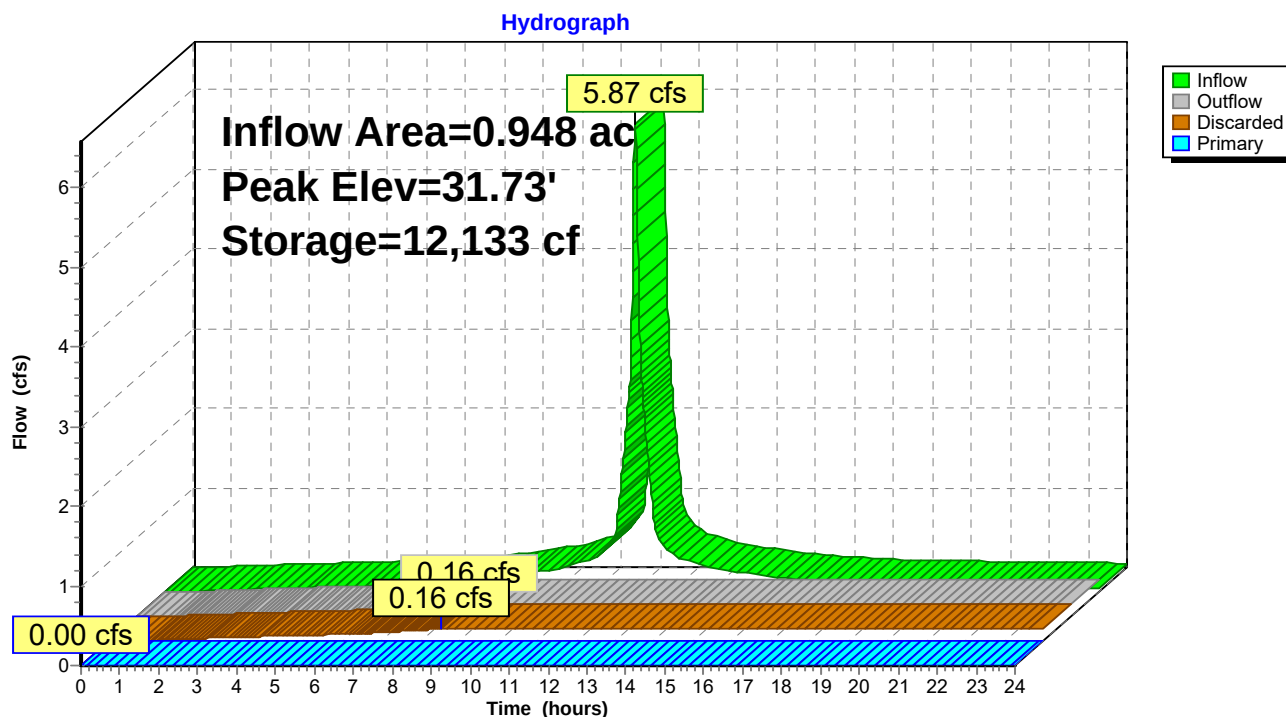
HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Storm Rainfall=6.32"

Printed 12/13/2022

Page 29

Pond Pond: Porous Asphalt



Proposed conditions*Type III 24-hr 100-Year Storm Rainfall=8.14"*

Prepared by Engineering Alliance, Inc.

Printed 12/13/2022

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Page 30

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PWS-1: Proposed Watershed 1 Runoff Area=8,788 sf 0.00% Impervious Runoff Depth>5.05"
Tc=6.0 min CN=74 Runoff=1.19 cfs 0.085 af

Subcatchment PWS-2: Proposed Watershed Runoff Area=15,337 sf 0.00% Impervious Runoff Depth>5.04"
Flow Length=68' Tc=12.5 min CN=74 Runoff=1.68 cfs 0.148 af

Subcatchment PWS-3: Proposed Runoff Area=41,289 sf 100.00% Impervious Runoff Depth>7.89"
Tc=6.0 min CN=98 Runoff=7.58 cfs 0.624 af

Reach DP-1: DP-1-Flow Offsite Inflow=1.19 cfs 0.085 af
Outflow=1.19 cfs 0.085 af

Reach DP-2: DP-2-Sawin's Pond Inflow=1.68 cfs 0.152 af
Outflow=1.68 cfs 0.152 af

Pond Pond: Porous Asphalt Peak Elev=32.00' Storage=16,516 cf Inflow=7.58 cfs 0.624 af
Discarded=0.16 cfs 0.266 af Primary=0.09 cfs 0.004 af Outflow=0.26 cfs 0.270 af

Total Runoff Area = 1.502 ac Runoff Volume = 0.856 af Average Runoff Depth = 6.84"
36.88% Pervious = 0.554 ac 63.12% Impervious = 0.948 ac

Proposed conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 100-Year Storm Rainfall=8.14"

Printed 12/13/2022

Page 31

Summary for Subcatchment PWS-1: Proposed Watershed 1

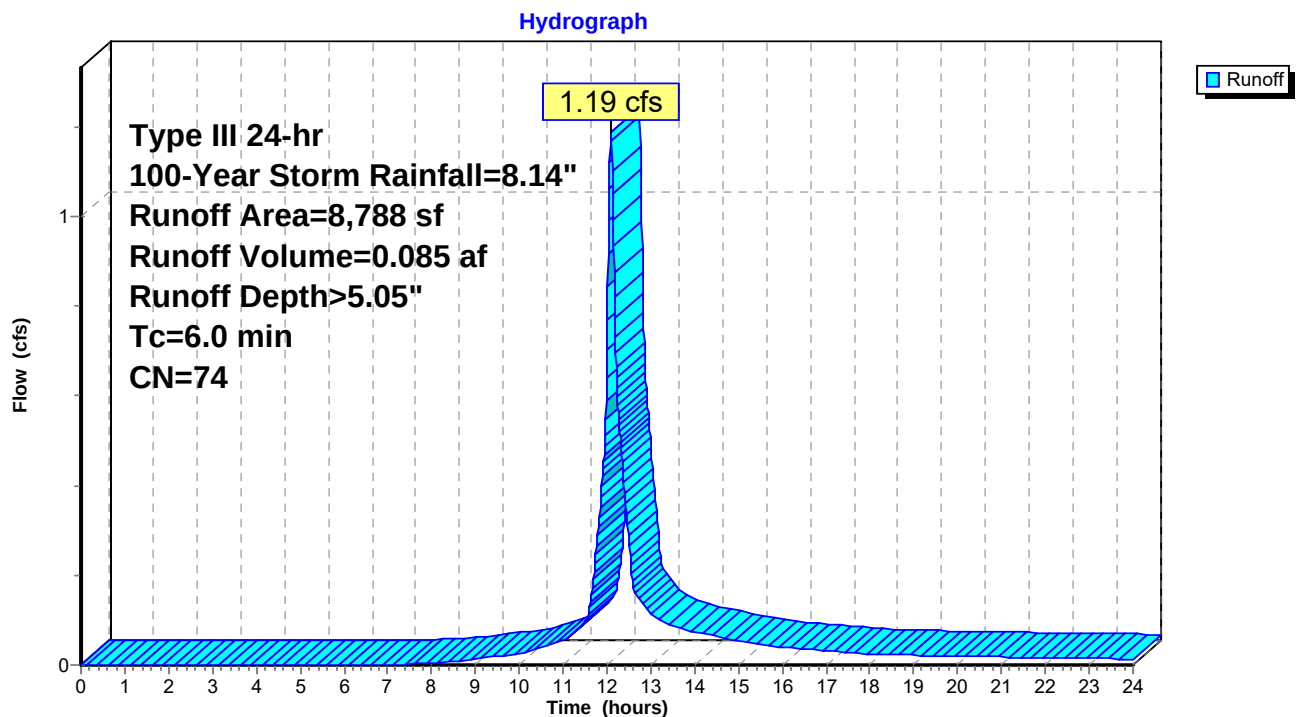
Runoff = 1.19 cfs @ 12.09 hrs, Volume= 0.085 af, Depth> 5.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Storm Rainfall=8.14"

Area (sf)	CN	Description
8,788	74	>75% Grass cover, Good, HSG C
8,788		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum Allowable Tc

Subcatchment PWS-1: Proposed Watershed 1



Proposed conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 100-Year Storm Rainfall=8.14"

Printed 12/13/2022

Page 32

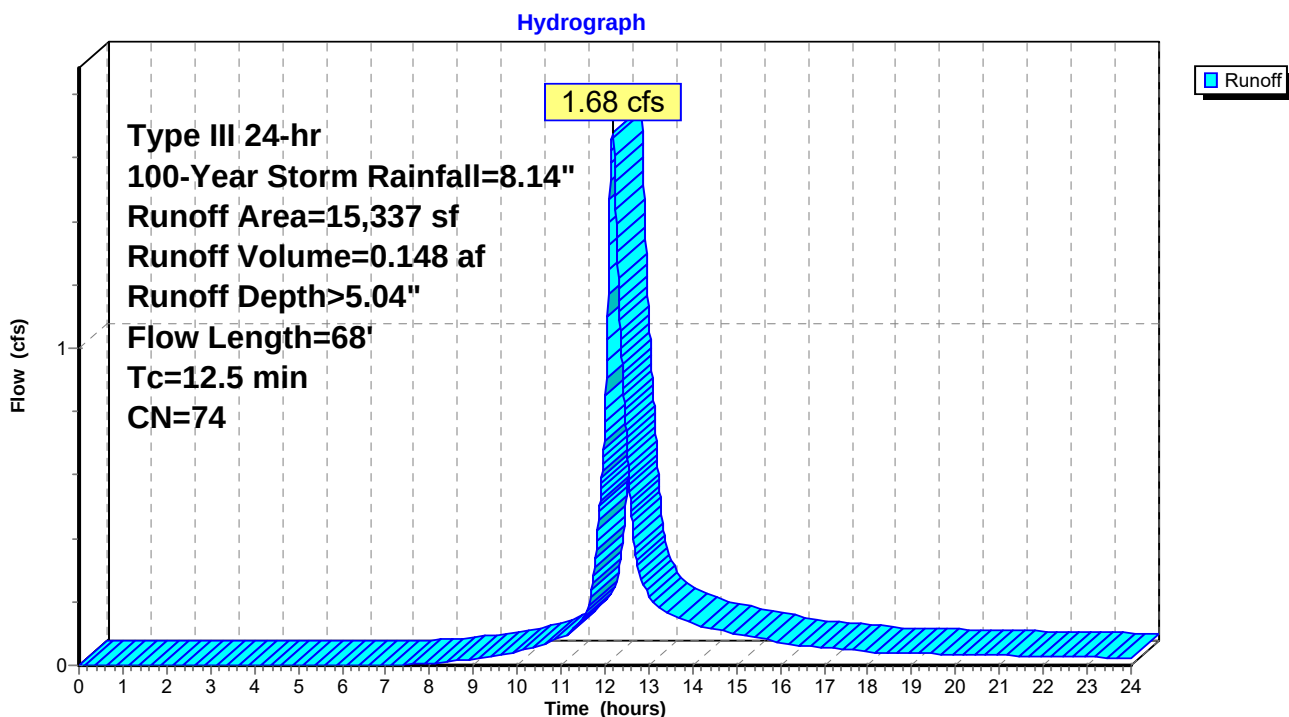
Summary for Subcatchment PWS-2: Proposed Watershed 2

Runoff = 1.68 cfs @ 12.17 hrs, Volume= 0.148 af, Depth> 5.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Storm Rainfall=8.14"

Area (sf)	CN	Description
15,337	74	>75% Grass cover, Good, HSG C
15,337		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	28	0.0140	0.08		Sheet Flow, Grass: Dense n= 0.240 P2= 3.20"
6.6	40	0.0600	0.10		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
12.5	68	Total			

Subcatchment PWS-2: Proposed Watershed 2

Proposed conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 100-Year Storm Rainfall=8.14"

Printed 12/13/2022

Page 33

Summary for Subcatchment PWS-3: Proposed Watershed 3

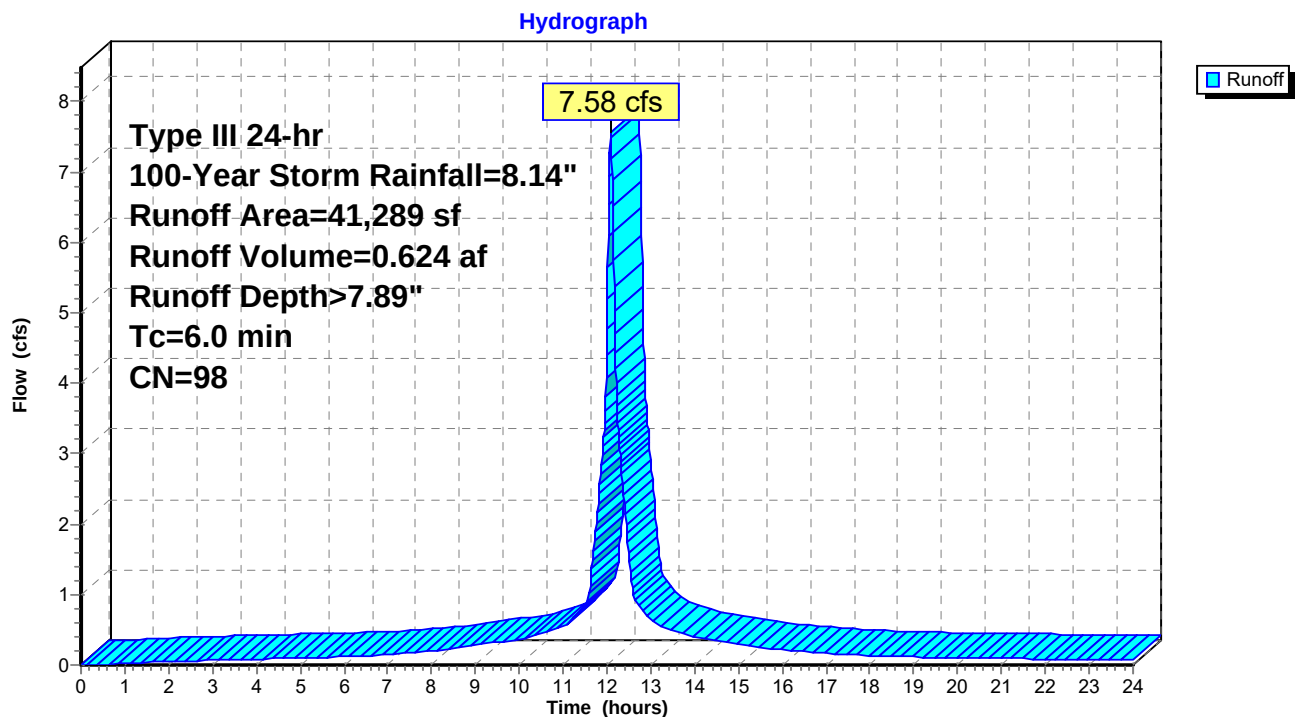
Runoff = 7.58 cfs @ 12.08 hrs, Volume= 0.624 af, Depth> 7.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Storm Rainfall=8.14"

	Area (sf)	CN	Description
*	41,289	98	Porous Asphalt
	41,289		100.00% Impervious Area

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

Subcatchment PWS-3: Proposed Watershed 3



Proposed conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 100-Year Storm Rainfall=8.14"

Printed 12/13/2022

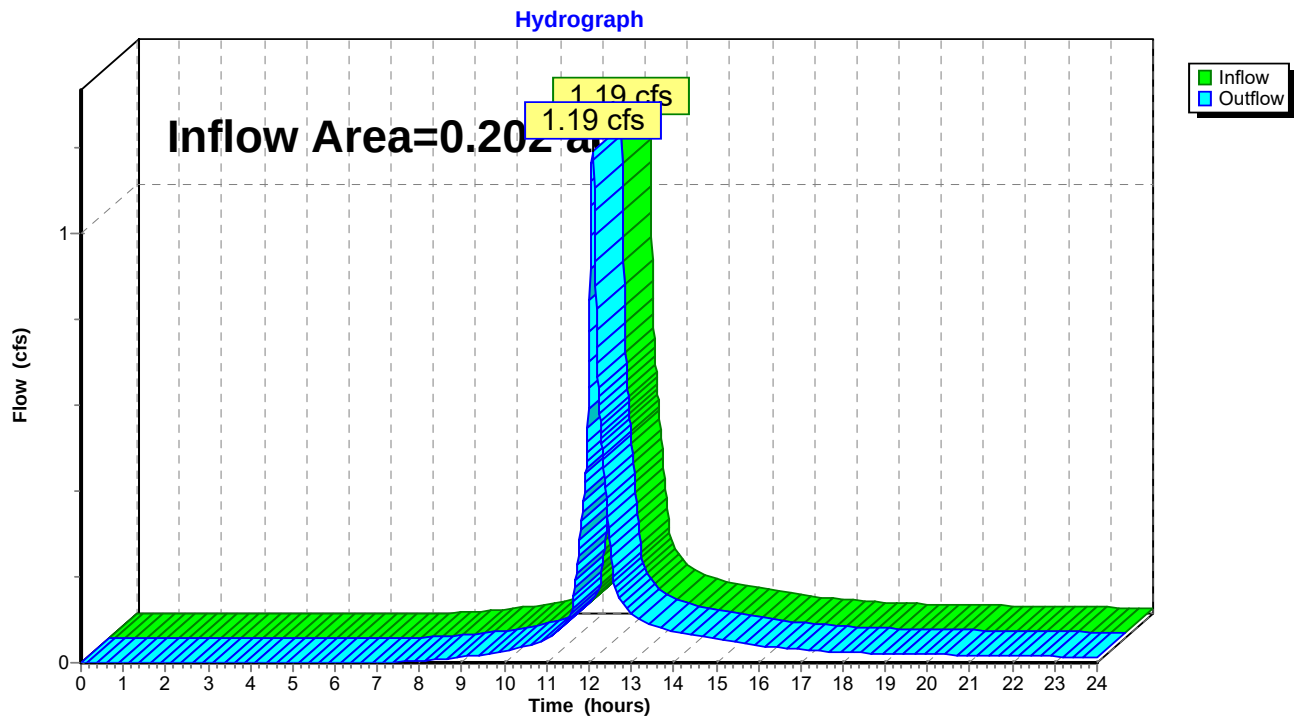
Page 34

Summary for Reach DP-1: DP-1-Flow Offsite

Inflow Area = 0.202 ac, 0.00% Impervious, Inflow Depth > 5.05" for 100-Year Storm event
Inflow = 1.19 cfs @ 12.09 hrs, Volume= 0.085 af
Outflow = 1.19 cfs @ 12.09 hrs, Volume= 0.085 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Reach DP-1: DP-1-Flow Offsite



Proposed conditions

Prepared by Engineering Alliance, Inc.

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 100-Year Storm Rainfall=8.14"

Printed 12/13/2022

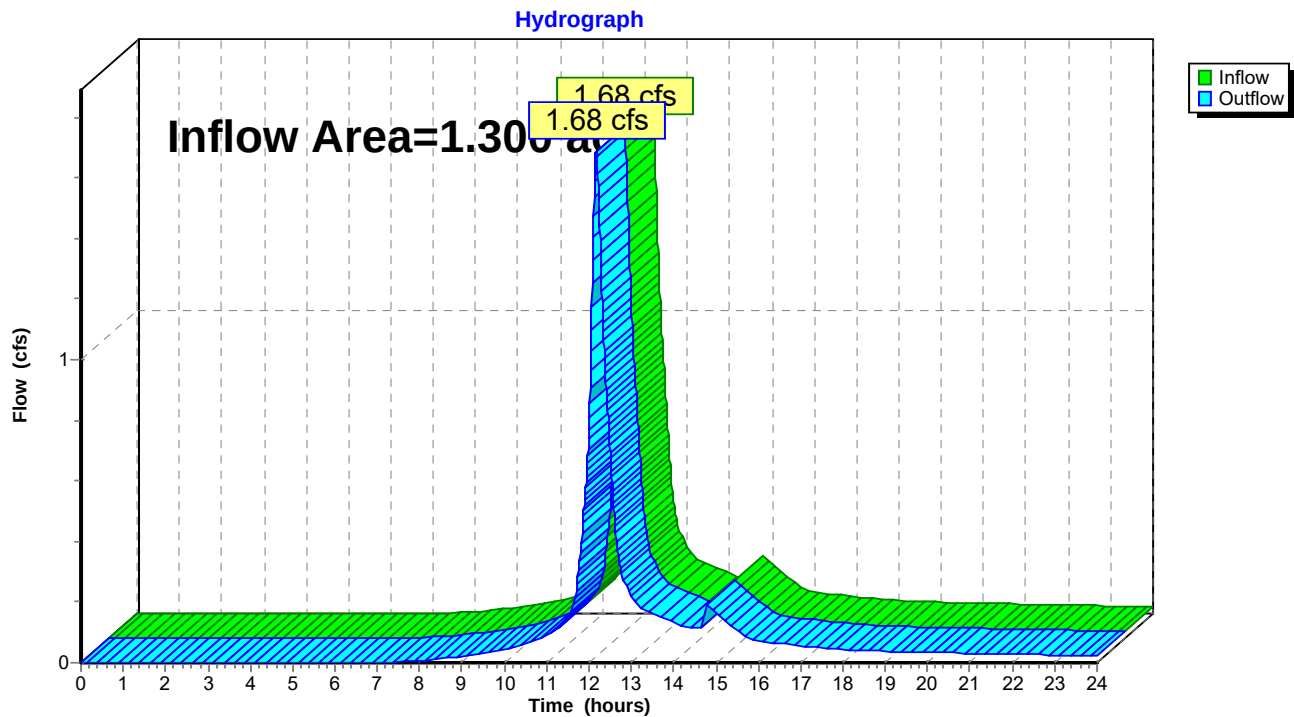
Page 35

Summary for Reach DP-2: DP-2-Sawin's Pond

Inflow Area = 1.300 ac, 72.92% Impervious, Inflow Depth > 1.40" for 100-Year Storm event
Inflow = 1.68 cfs @ 12.17 hrs, Volume= 0.152 af
Outflow = 1.68 cfs @ 12.17 hrs, Volume= 0.152 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Reach DP-2: DP-2-Sawin's Pond



Proposed conditions

Type III 24-hr 100-Year Storm Rainfall=8.14"

Prepared by Engineering Alliance, Inc.

Printed 12/13/2022

HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

Page 36

Summary for Pond Pond: Porous Asphalt

Inflow Area = 0.948 ac, 100.00% Impervious, Inflow Depth > 7.89" for 100-Year Storm event
 Inflow = 7.58 cfs @ 12.08 hrs, Volume= 0.624 af
 Outflow = 0.26 cfs @ 14.69 hrs, Volume= 0.270 af, Atten= 97%, Lag= 156.4 min
 Discarded = 0.16 cfs @ 7.57 hrs, Volume= 0.266 af
 Primary = 0.09 cfs @ 14.69 hrs, Volume= 0.004 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 32.00' @ 14.69 hrs Surf.Area= 41,289 sf Storage= 16,516 cf

Plug-Flow detention time= 250.6 min calculated for 0.270 af (43% of inflow)
 Center-of-Mass det. time= 99.1 min (839.5 - 740.5)

Volume	Invert	Avail.Storage	Storage Description
#1	31.00'	16,516 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 41,289 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.00	41,289	0	0
32.00	41,289	41,289	41,289

Device	Routing	Invert	Outlet Devices
#1	Discarded	31.00'	0.170 in/hr Exfiltration over Horizontal area
#2	Primary	32.00'	775.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.16 cfs @ 7.57 hrs HW=31.01' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.16 cfs)

Primary OutFlow Max=0.02 cfs @ 14.69 hrs HW=32.00' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** (Weir Controls 0.02 cfs @ 0.05 fps)

Proposed conditions

Prepared by Engineering Alliance, Inc.

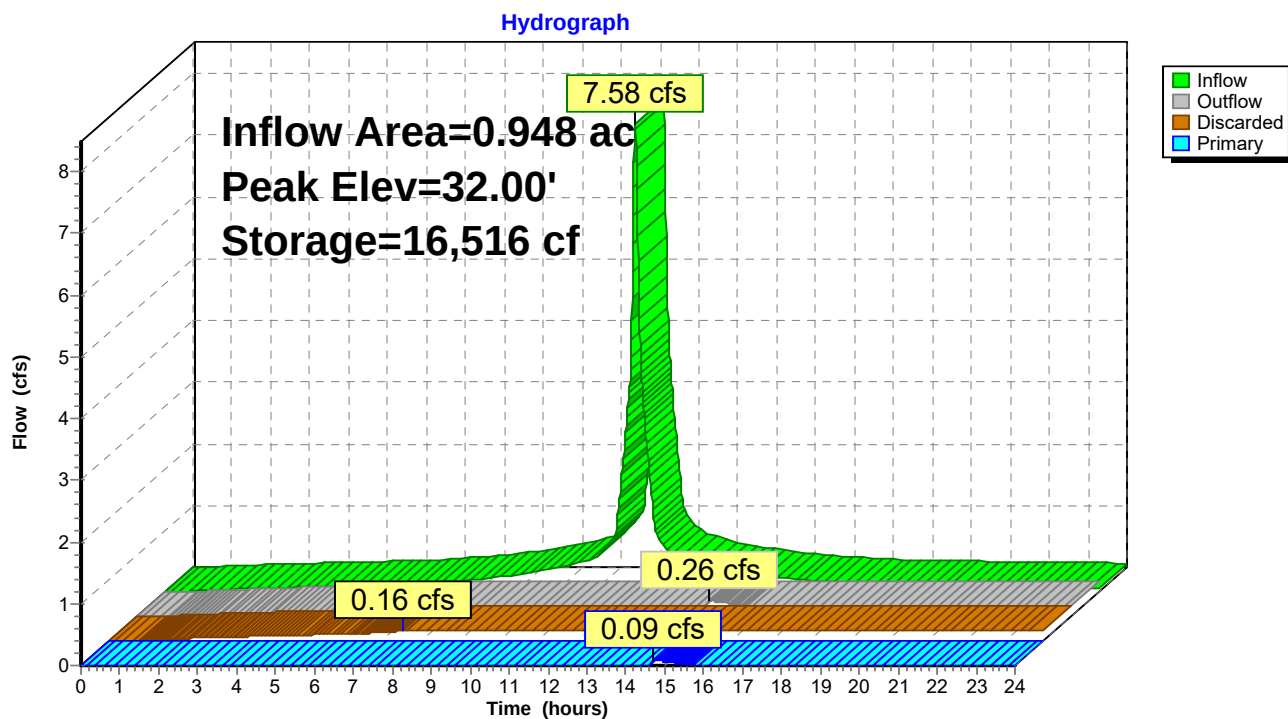
HydroCAD® 10.10-4a s/n 01924 © 2020 HydroCAD Software Solutions LLC

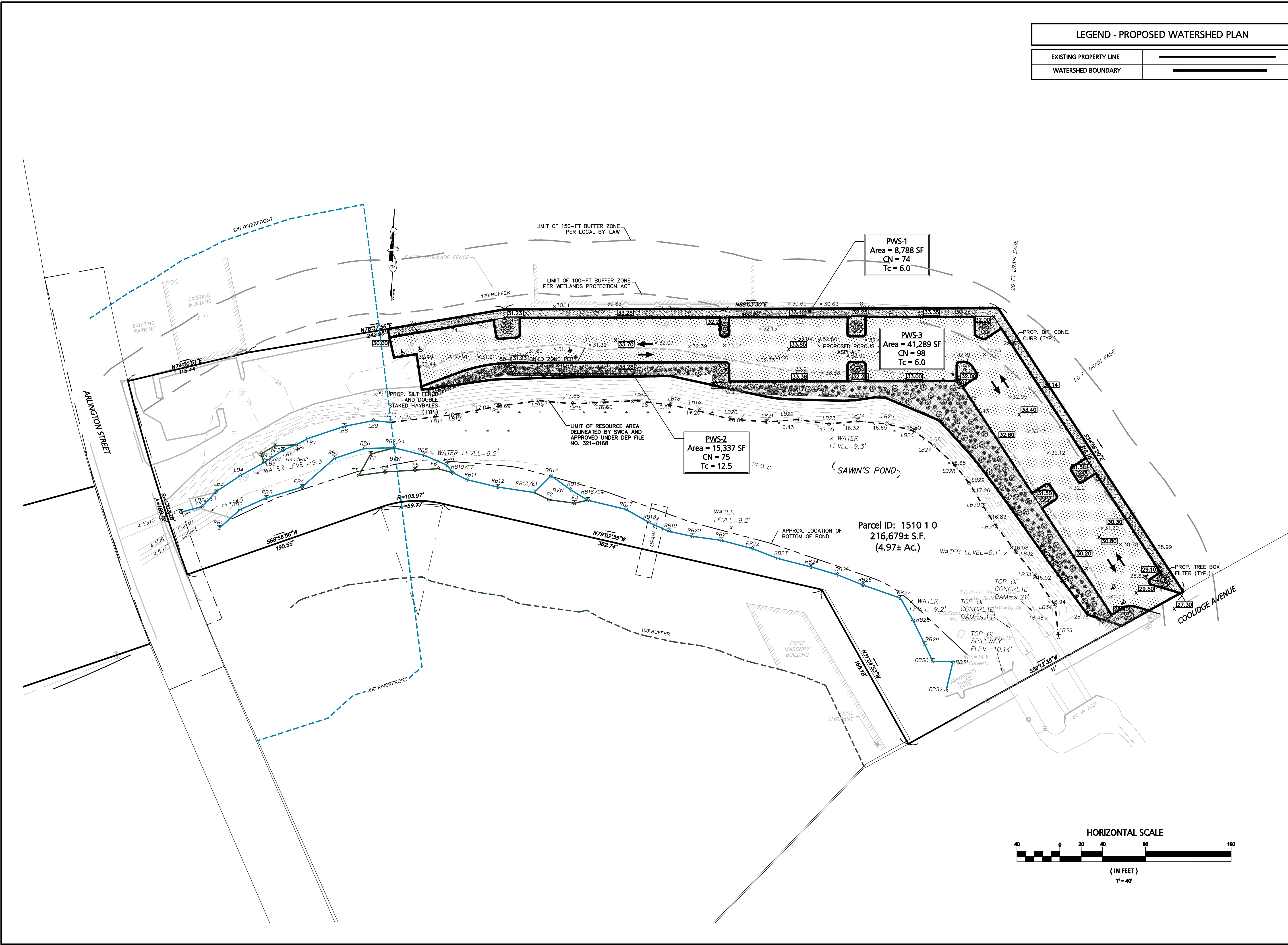
Type III 24-hr 100-Year Storm Rainfall=8.14"

Printed 12/13/2022

Page 37

Pond Pond: Porous Asphalt





APPLICANT:		PROJECT:		PREPARED BY:	
Maximos Hatziliades 71 Arlington Street Watertown, MA 02472		Proposed Site Plan Arlington Street & Coolidge Avenue Watertown, Massachusetts		Engineering Alliance, Inc. Civil Engineering & Land Planning Consultants 194 Central Street Saugus, MA 01906 Tel: (781) 231-1349 Fax: (781) 417-0020	
DWG. NO.	DRAWING TITLE:	PROJECT #	DATE:	DATE	DESCRIPTION OF REVISION
PWP	Proposed Watershed Plan	09-27801	August 5, 2022		
		SCALE: As Noted	DWG FILE NAME: 08-27801_Consnap.dwg		
		DESIGN BY: Calvin Reach	CHECKED BY: Richard A. Salvo, P.E.		

BEST MANAGEMENT PRACTICES OPERATION AND MAINTENANCE PLAN

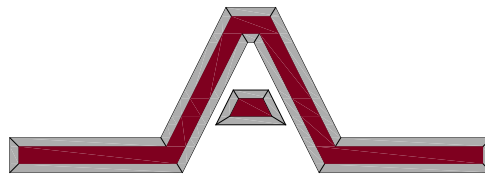
**For The
Proposed Parking Improvements**

**Located at
Arlington Street & Coolidge Avenue
Watertown, Massachusetts**

***Submitted to:*
City of Watertown
Planning Board
149 Main Street
Watertown, Massachusetts 02472**

***Prepared for:*
Maximos Hatziliades
71 Arlington Street
Watertown, MA 02472**

Prepared by



Engineering Alliance, Inc.

Civil Engineering & Land Planning Consultants	
194 Central Street	1950 Lafayette Road
Saugus, MA 01906	Portsmouth, NH 03801
Tel: (781) 231-1349	Tel: (603) 610-7100
Fax: (781) 417-0020	Fax: (603) 610-7101

December 12, 2022

BEST MANAGEMENT PRACTICES OPERATION AND MAINTENANCE PLAN

The purpose of this Best Management Practices Operation and Maintenance plan is to provide guidance for mandatory maintenance procedures of site preparation and pre and post construction activities for the project located at Arlington Street & Coolidge Avenue in Watertown, Massachusetts.

The Best Management Practices Operation and Maintenance Plan is summarized below and will be incorporated into the construction documents for this project. This plan is broken into two major sections. The first section is construction-related erosion and sedimentation controls. The second section is devoted to a post-development operation and maintenance plan.

Basic Information

Owner/Maintenance Responsibilities:

Maximos Hatziliades
71 Arlington Street
Watertown, MA 02472

Inspector:

Maximos Hatziliades
71 Arlington Street
Watertown, MA 02472

In the event that the property ownership changes, this Operation and Maintenance Plan shall continue to run with the land and apply to any successors or assigns. Upon the conveyance of land, the City of Watertown shall be notified in writing indicating the new ownership's contact information within 48 hours of the conveyance.

Prior to the conveyance of the property, an educational meeting shall be held between the current owner, the new owner and the parties responsible for the maintenance of the stormwater management facility. The purpose of the meeting will be to educate the new owner on the maintenance responsibilities for the stormwater management facility including, but not limited to:

- Description of system components
- Required maintenance of each component
- Frequency of maintenance of each component

This document shall be updated to indicate the time and date of the meeting as well as the contact information for the new property owner.

Time and Date of Educational Meeting: _____

New Owner Information

Acknowledgement of Storm Water Management Maintenance Responsibilities:

Owner Signature

Date

Acknowledgement of Storm Water Management Maintenance Responsibilities:

Management Company Representative Signature

Date

Maintenance Budget

A compounding annual budget of **\$1,500 per year** shall be set aside to maintain and/or replace the stormwater management system. This budget shall cover the cost of:

- Parking Lot Sweeping
- Replacement of Porous Asphalt and Tree Box Filter Stone Bed

Section 1 - Construction Activities & Erosion Controls

1. Contact the Watertown Conservation Commission at least three (3) days prior to start of construction.
2. The contractor shall only disturb the minimum area necessary in order to limit the impact on the surrounding area including the bordering vegetated wetlands and abutting residential developments.
3. A stabilized construction entrance shall be installed at the project site entrances. Vehicle wash down shall occur on the gravel surface that is adjacent to or part of the stabilized construction entrance.
 - a. Stabilized construction entrance will be installed from the existing pavement on site to minimize sediment track-out.
 - b. Entrance should be maintained in a condition that will prevent tracking or flowing of sediment off the project site. May require periodic topdressing with additional stone.
 - c. Entrance and sediment disposal area shall be inspected weekly and after heavy rains or heavy use.
 - d. Mud and sediment tracked or washed onto public road shall be immediately removed.
 - e. Once mud and soil particles clog the voids in the gravel and the effectiveness of the gravel pad is no longer satisfactory, the pad must be topdressed with new stone. Replacement of the entire pad may be necessary when the pad becomes completely clogged.
 - f. Pad shall be reshaped as needed for drainage and runoff control.
 - g. Broken road pavement as a result of construction activities on roadways immediately adjacent to the Project Site shall be repaired immediately.
4. Install haybales and silt fence around the proposed work zone to prevent sediment from leaving the subject property. Haybales and silt fence are to be inspected on a weekly basis. Any damaged or compromised erosion control measures are to be replaced immediately.
5. Proper erosion and sediment control must be employed around all material stockpile areas. Regular provisions for dust control must be used, via a water truck or other acceptable method. Erosion and sediment controls around material stockpile areas are to be inspected on a weekly basis. Any damaged or compromised erosion control measures are to be replaced immediately.
6. Waste material is to be stored in a dumpster on site and covered at all times. Waste material dumpster is to be maintained to ensure no overtopping or leaks will occur.
7. Construction materials are to be stored onsite and covered at all times.
8. If necessary, dewatering shall include all necessary control, management, and disposal of groundwater on a 24-hour basis as appropriate during construction. Dewatering shall include the lowering of the groundwater table to relieve any hydrostatic head that could cause a decrease in the stability of the excavated subgrade. It shall also include the intercepting seepage which could otherwise emerge from the slope or sides of excavations which could cause a decrease in the stability of the excavated subgrade of the slopes or sides of the excavations.

Dewatering shall be performed during construction to temporarily protect against the following.

1. The loss of any material beneath the excavated subgrade or from the slopes or sides of the excavations or the movement of any fine particle materials from the soil.
2. Any increased vertical or lateral loads on the excavation support systems.
3. Any disturbance, rupture, instability, build, or heaving of the bottom of the excavated subgrade during excavation and trenching, placement of foundation or bedding materials, construction of slabs, footings, pipes, conduits, underdrains, and any other structures, and backfilling operations.

The dewatering systems and equipment shall be removed from the site when no longer required.

9. Slopes exceeding 3(H):1(V) shall be stabilized with temporary seeding. All slopes are to be checked periodically to see that vegetation is in good condition. Any damage from erosion or animal burrowing should be repaired immediately to prevent further damage. Areas requiring revegetation should be repaired immediately. Slopes should be limed and fertilized as necessary to keep vegetation healthy. Control undesirable vegetation such as weeds and woody growth to avoid bank stability problems in the future.
10. The entire project area shall be swept upon completion of construction and prior to removal of the erosion control devices.
11. All disturbed areas of the worksite must be stabilized during the winter months (October 15th – April 15th) by placement of approximately six (6) inches of hay mulch or straw.
12. Refueling of machinery is to occur offsite whenever possible. Any necessary onsite refueling shall occur within the designated refueling area.

Construction Sequencing

1. Install erosion control measures per plan.
2. Clear and grub only where necessary.
3. Fine grade site.
4. Install site curbing.
5. Install porous asphalt.
6. Install signing and striping.
7. Install landscaping and tree box filters.
8. Remove erosion control devices.

Spill Prevention and Response

Prevention:

The following are the material management practices that will be used to reduce the risk of spills or other accidental exposure of materials and substances to stormwater runoff:

1. An effort will be made to store only the amount of material required to do the job.
2. All materials stored onsite will be stored in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure.
3. Products will be kept in their original containers with the original manufacturer's label.
4. Substances will not be mixed with one another unless recommended by the manufacturer.
5. Whenever possible, all of a product will be used up before disposing of the container.
6. Manufacturer's recommendations for proper use and disposal will be followed.
7. The site superintendent will inspect daily to ensure proper use and disposal of materials onsite.
8. Products will be kept in the original containers unless they are not re-sealable.
9. Original labels and material safety data will be retained; they contain important product information.
10. If surplus product must be disposed of, manufacturers or local and State recommended methods for proper disposal will be followed.
11. Petroleum Products – All onsite vehicles will be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers that are clearly labeled. Any asphalt substances used onsite will be applied according to the manufacturer's recommendations.
12. Paints – All containers will be tightly sealed and stored when not required for use. Excess paint will not be discharged to the storm sewer system but will be properly disposed of according to the manufacturer's instructions or State and local regulations.
13. Fertilizers – Fertilizers used will be applied only in the minimum amounts recommended by the manufacturer. Once applied, fertilizer will be worked into the soil to limit exposure to stormwater. Storage will be in a covered shed. The contents of any partially used bags of fertilizer will be transferred to a sealable plastic bin to avoid spills.
14. Concrete Trucks - Concrete Trucks will not be allowed to wash out or discharge surplus concrete or drum wash water on the site.

In addition to the good housekeeping and material management practices discussed in the previous sections of this plan, the following practices will be followed for spill prevention and clean-up:

1. Manufacturers' recommended methods for spill cleanup will be clearly posted and site personnel will be made aware of the procedures and the location of the information and cleanup supplies.
2. Materials and equipment necessary for spill cleanup will be kept in the material storage area onsite. Equipment and materials will include but not be limited to brooms, dustpans, mops, rags, gloves, goggles, kitty litter, sand, sawdust, and plastic and metal trash containers specifically for this purpose.
3. All spills will be cleaned up immediately upon discovery.
4. The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
5. Spills of toxic or hazardous substances will be reported to the appropriate State or local government agency, regardless of the size.
6. The spill prevention plan will be adjusted to include measure to prevent this type of spill from reoccurring and how to clean up the spill if there should be another. A description of the spill, what caused it, and the cleanup measure will also be included.
7. The Site Superintendent responsible for the day-to-day site operation will be the spill prevention and cleanup coordinator.

Fueling and Maintenance of Equipment or Vehicles

General:

Vehicle and equipment fueling procedures are designed to prevent fuel spills and leaks in order to minimize the discharge of such pollutants into storm drains and waterways.

Implementation:

Offsite fueling stations should be used as much as possible. • When fueling offsite is not practicable, a designated fueling area away from drainage ways must be used. • Locate designated fueling areas a minimum of 50 feet away from concentrated flows of stormwater, drainage ways, and inlets. • An impermeable surface should be used at the designated fueling area. • Containment should be built around the designated fueling areas to prevent the release of spills, as well as runoff and runon. • Absorbent spill cleanup materials should be available at all designated fueling areas. If absorbent materials are used on spills, the material is to be removed immediately and disposed of properly. • Fueling nozzles should be equipped with an automatic shutoff to control drips. • Topping off of fuel tanks should be discouraged. • A sign is to be installed adjacent to each fueling facility to inform equipment operators of the designated fueling location. • For larger equipment, such as cranes and excavators that are not able to travel to a designated fueling area, mobile fueling may be necessary. Absorbent spill cleanup materials and spill kits should be available on all fueling trucks. Drip pans or absorbent pads should be used in mobile fueling operations. • The contractor shall train his/her employees and subcontractors in proper fueling and cleanup procedures. These procedures must be documented.

Inspection/Maintenance:

The contractor should inspect vehicles and equipment for leaks each day they are used. Leaks are to be repaired immediately or the piece of equipment should be removed from the project site. • Designated fueling areas should be inspected for leaks and spills each day they are used. Any leaks or spills are to be cleaned up immediately. • Any leaks or spills discharged through a drainage system will require the preparation of an Incidence of Non-Compliance. • Update the SWPPP anytime a designated fueling location has been removed, relocated, added, modified, or required maintenance.

Washing of Equipment and Vehicles

Wash water from vehicle and equipment cleaning is not to be discharged from construction sites because the rinse water may contain contaminants such as sediment, petroleum/lubricant residues, soaps, or solvents that could enter storm drain systems or receiving waters.

Equipment/vehicle cleaning should be conducted offsite. All vehicles that regularly enter and leave the construction site must be cleaned offsite.

For equipment that must be cleaned on site, the cleaning operations must be fully contained and disposed of offsite. The vehicle wash area must be properly identified by sign and located away from storm drain inlets, drainage facilities, and watercourses. It must be paved with concrete or asphalt and have a berm to contain runoff and prevent run-on. It must be equipped with a sump for the collection and disposal of wash water.

Section 2 – Post Development Operation & Maintenance

1. Porous Asphalt – Porous asphalt areas should be maintained periodically to maintain infiltration. Care should be taken to keep sediment off the pavement during and after construction. Monthly (12 times per year) cleaning by a vacuum-type street cleaner should be performed when the pavement is dry. Vacuum settings should be adjusted to prevent the uptake of aggregate in the pavement openings and joints. It is important to keep the drainage voids and joints filled with aggregate. Replenishment can be done, if needed, at the time of cleaning. Acceptable types of vacuum sweepers include the Elgin Whirlwind and the Allianz Model 650 or approved equal.

If the pavement surface has become significantly clogged such that routine vacuum sweeping does not restore permeability, then a more intensive level of treatment may be required. The porous pavement areas shall be washed with clean, low pressure water, followed by immediate vacuuming. Combinations of washing and vacuuming techniques have proved effective in cleaning both organic clogging as well as sandy clogging. Research has found that a “power head cone nozzle” that “concentrated the water in a narrowly rotating cone” worked best. (Note: if the pressure of the washing nozzle is too great, contaminants may be driven further into the porous surface.) Maintenance crews are encouraged to determine the most effective strategy of cleaning their porous installations. Winter maintenance for a porous parking lot may be necessary, but is usually less intensive than that required for a standard asphalt lot. By its very nature, a porous pavement system with subsurface aggregate bed has superior snow melting characteristics than does standard pavement. Therefore, ice and light snow accumulation are generally not as problematic. However, snow will accumulate during heavier storms. Abrasives such as sand or cinders should not be applied on or adjacent to the porous pavement. Snow plowing is necessary for significant snow accumulation, but should be done carefully. Standard road salt is acceptable for use as a deicer on porous pavement, although a non-toxic, organic deicer, applied either as a blended, magnesium chloride-based liquid product or as pretreated rock salt, is recommended. Acceptable liquid deicers include Magic-O, Ice B’ Gone, Ice Ban, and Geomelt, or approved equal. Magic Salt or approved equal is an example of an acceptable pretreated salt product. Other acceptable deicer alternatives to standard sodium chloride include calcium chloride, magnesium chloride, potassium chloride, urea, and calcium magnesium acetate. Follow supplier recommendations when applying deicers to pavement.

Repairs shall be made with porous asphalt mix. If an area greater than 50 SF is in need of repair, approval of patch type must be sought from either the engineer or owner. Under no circumstance is the pavement surface to ever be seal coated. Any required repair of drainage structures should be done promptly to ensure continued proper functioning of the system.

2. Street Sweeping - Paved areas shall be swept by street sweepers periodically during dry weather to remove excess sediments, reducing the amount of sediments that the drainage system will have to remove from the runoff. **At a minimum all paved areas must be swept on a monthly average, with sweeping scheduled primarily in the spring and fall.**
3. Snow removal and storage - Plowed snow shall be placed in the pervious area located within and surrounding the parking area where it can slowly infiltrate. Sediments shall be removed from this area every spring. When the amount of snow exceeds the capacity of the snow storage areas, it shall be removed from the site and disposed of properly immediately after each storm at the owner’s expense.
4. Pesticides, Herbicides, and Fertilizers - Pesticides and herbicides shall not be used within the limits of the 100-foot buffer zone to any wetland resource areas as defined under 310 CMR 10.00. In addition, fertilizers that are used within this zone should be restricted to the use of organic fertilizers only.
5. Maintenance Responsibilities - All post construction maintenance activities should be documented and kept on file and made available to the Conservation Commission or Planning Board upon request. All post construction maintenance activities shall survive the conditions of approval and shall run with the title of the property.

All structural BMP’s as identified on the site plans will be owned and maintained by the owner of the property.

Arlington Street and Coolidge Avenue

Watertown, MA
BMP Maintenance Log

BMP STRUCTURE	INSPECTOR (NAME)	WORK PERFORMED	DATE PERFORMED	COMMENTS
Porous Asphalt				
Tree Box Filter				
Other				
Additional Comments:				

APPENDIX D

**Stormwater Checklist & Miscellaneous
Drainage Calculations**



Checklist for Stormwater Report

A. Introduction

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the [Massachusetts Stormwater Handbook](#). The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.¹ This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8²
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

¹ The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

² For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.



Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

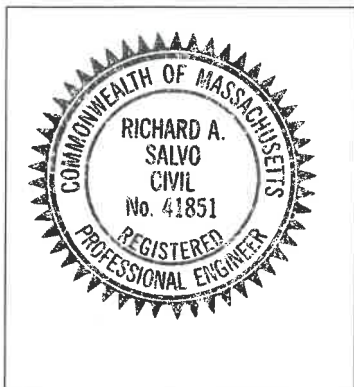
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature



RSR 12.12.2022
Signature and Date

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

- ☐ New development
- ☒ Redevelopment
- ☐ Mix of New Development and Redevelopment



Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- ☒ No disturbance to any Wetland Resource Areas
- ☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- ☐ Reduced Impervious Area (Redevelopment Only)
- ☐ Minimizing disturbance to existing trees and shrubs
- ☐ LID Site Design Credit Requested:
 - ☐ Credit 1
 - ☐ Credit 2
 - ☐ Credit 3
- ☐ Use of "country drainage" versus curb and gutter conveyance and pipe
- ☐ Bioretention Cells (includes Rain Gardens)
- ☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- ☒ Treebox Filter
- ☐ Water Quality Swale
- ☐ Grass Channel
- ☐ Green Roof
- ☒ Other (describe): Porous Asphalt

Standard 1: No New Untreated Discharges

- ☒ No new untreated discharges
- ☐ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- ☐ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.



Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

- ☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.
- ☒ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.
- ☒ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

- ☒ Soil Analysis provided.
- ☒ Required Recharge Volume calculation provided.
- ☐ Required Recharge volume reduced through use of the LID site Design Credits.
- ☒ Sizing the infiltration, BMPs is based on the following method: Check the method used.
 - ☒ Static
 - ☐ Simple Dynamic
 - ☐ Dynamic Field¹
- ☐ Runoff from all impervious areas at the site discharging to the infiltration BMP.
- ☒ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.
- ☒ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.
- ☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:
 - ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
 - ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
 - ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
 - ☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.
- ☒ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.
- ☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

¹ 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.



Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

- ☐ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.
- ☐ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
 - Provisions for storing materials and waste products inside or under cover;
 - Vehicle washing controls;
 - Requirements for routine inspections and maintenance of stormwater BMPs;
 - Spill prevention and response plans;
 - Provisions for maintenance of lawns, gardens, and other landscaped areas;
 - Requirements for storage and use of fertilizers, herbicides, and pesticides;
 - Pet waste management provisions;
 - Provisions for operation and management of septic systems;
 - Provisions for solid waste management;
 - Snow disposal and plowing plans relative to Wetland Resource Areas;
 - Winter Road Salt and/or Sand Use and Storage restrictions;
 - Street sweeping schedules;
 - Provisions for prevention of illicit discharges to the stormwater management system;
 - Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
 - Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
 - List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.
- ☒ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.
 - ☐ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:
 - ☐ is within the Zone II or Interim Wellhead Protection Area
 - ☐ is near or to other critical areas
 - ☐ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
 - ☐ involves runoff from land uses with higher potential pollutant loads.
 - ☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.
 - ☒ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.



Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

- ☒ The BMP is sized (and calculations provided) based on:
 - ☒ The ½" or 1" Water Quality Volume or
 - ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.
- ☐ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.
- ☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

- ☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.
- ☐ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted **prior to** the discharge of stormwater to the post-construction stormwater BMPs.
- ☒ The NPDES Multi-Sector General Permit does **not** cover the land use.
- ☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.
- ☐ All exposure has been eliminated.
- ☐ All exposure has **not** been eliminated and all BMPs selected are on MassDEP LUHPPL list.
- ☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

- ☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.
- ☐ Critical areas and BMPs are identified in the Stormwater Report.



Checklist for Stormwater Report

Checklist (continued)

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

- ☒ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:
 - ☐ Limited Project
 - ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
 - ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
 - ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
 - ☐ Bike Path and/or Foot Path
- ☒ Redevelopment Project
- ☐ Redevelopment portion of mix of new and redevelopment.
- ☐ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.
- ☐ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
 - Construction Period Operation and Maintenance Plan;
 - Names of Persons or Entity Responsible for Plan Compliance;
 - Construction Period Pollution Prevention Measures;
 - Erosion and Sedimentation Control Plan Drawings;
 - Detail drawings and specifications for erosion control BMPs, including sizing calculations;
 - Vegetation Planning;
 - Site Development Plan;
 - Construction Sequencing Plan;
 - Sequencing of Erosion and Sedimentation Controls;
 - Operation and Maintenance of Erosion and Sedimentation Controls;
 - Inspection Schedule;
 - Maintenance Schedule;
 - Inspection and Maintenance Log Form.
- ☒ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.



Checklist for Stormwater Report

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

- ☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has **not** been included in the Stormwater Report but will be submitted **before** land disturbance begins.
- ☐ The project is **not** covered by a NPDES Construction General Permit.
- ☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.
- ☒ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

- ☒ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:
 - ☒ Name of the stormwater management system owners;
 - ☒ Party responsible for operation and maintenance;
 - ☒ Schedule for implementation of routine and non-routine maintenance tasks;
 - ☒ Plan showing the location of all stormwater BMPs maintenance access areas;
 - ☐ Description and delineation of public safety features;
 - ☒ Estimated operation and maintenance budget; and
 - ☒ Operation and Maintenance Log Form.
- ☐ The responsible party is **not** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:
 - ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
 - ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

- ☒ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;
- ☒ An Illicit Discharge Compliance Statement is attached;
- ☐ NO Illicit Discharge Compliance Statement is attached but will be submitted **prior to** the discharge of any stormwater to post-construction BMPs.



Engineering Alliance, Inc.
 Civil Engineering & Land Planning Consultants
 194 Central Street 1950 Lafayette Road
 Saugus, MA 01906 Portsmouth, NH 03801
 Tel: (781) 231-1349 Tel: (603) 610-7100
 Fax: (781) 417-0020 Fax: (603) 610-7101

TSS Removal Calculations

Name:	Proposed Commercial Re-development	Proj. No.:	09-27801
	Watertown, MA	Date:	2/15/2011
Client:	Maximos Hatziliades	Computed by:	ABS
County:	Middlesex	Checked by:	RAS

A	B	C	D	E
BMP	TSS Removal Rate	Starting TSS Load*	Amount Removed (BxC)	Remaining Load (C-D)
Street Sweeping	5	1.00	0.05	0.95
Porous Asphalt	80	0.95	0.76	0.19
Total TSS Removal=			81%	

Notes:
 *Starting TSS Load for first BMP= 1.00. TSS load for subsequent BMP's is equal to the Remaining Load (E) from the previous BMP.

Project: Proposed Commercial Re-development
Client: Maximos Hatziliades
Project Number: 09-27801

Prepared By: ABS
Checked By: RAS
Date: 12/12/22



STANDARD 3: REQUIRED RECHARGE VOLUME

$$R_v = F \times \text{impervious area}$$

R_v = Required Recharge Volume

F = Target Depth associated with each Hydrologic Soil Group

Impervious Area = pavement and rooftop on site

Impervious Area: 41,289 sf = 0.95 acres

Hydrologic Group	Volume to Recharge
A	0.60
B	0.35
C	0.25
D	0.10

$$R_v = 0.95 \times 0.25 \times \frac{1 \text{ ft}}{12 \text{ in.}} \times \frac{43,560 \text{ sf}}{1 \text{ ac.}} = 860 \text{ CF}$$

Capture Area Adjustment

Total Impervious Area:	41,289 sf
Pervious Pavement Area:	41,289 sf
Ratio (Total Imp. Area/Imp. Area to Recharge):	1.00
Adjusted Min. Required Recharge Volume ($R_v \times \text{Ratio}$):	860 CF

NOTES:

1. See attached HydroCad models for the volume recharged by the porous asphalt. Only the volume provided by the filter course (bank run gravel) is considered storage. **16,516 CF > 860 CF**

DRAWDOWN WITHIN 72 HOURS

$$\text{Time}_{\text{drawdown}} = \frac{\text{Recharge Volume}}{K(\text{Bottom Area})(n)}$$

K = Saturated Hydraulic Conductivity
 n = porosity

Porous Asphalt

$$\text{Time}_{\text{drawdown}} = \frac{16,516}{(0.17 \text{ in/hr})(1/12 \text{ ft/in})(41289 \text{ sf})} = 28.2 < 72 \text{ HRS}$$

NOTES:

1. K value is for sandy clay loam as shown in Table 2.3.3, entitled "1982 Rawls Rates," in the MADEP Stormwater Management Standards.

Project: Proposed Commercial Re-development
Client: Maximos Hatziliades
Project Number: 09-27801

Prepared By: ABS
Checked By: RAS
Date: 12/12/22



STANDARD 4: WATER QUALITY

WATER QUALITY TREATMENT VOLUME

$$V_{WQ} = (D_{WQ} \text{ in.} / 12 \text{ inches/foot}) \times (A_{IMP} \times 43,560 \text{ square feet/acre})$$

V_{WQ} = Required Water Quality Volume (in cubic feet)
 D_{WQ} = Water Quality Depth
 A_{IMP} = Impervious Area (in acres)

$$V_{WQ} = (0.5 \text{ in.} / 12 \text{ inches/foot}) \times (0.95 \times 43,560 \text{ square feet/acre}) = \boxed{1,924 \text{ CF}}$$

Stormwater BMP	Volume
Porous Asphalt	16,516
Total	16,516

NOTES:

- Storage volumes for the stormwater BMP obtained from the hydrologic models used for Standard 3.

CONCLUSION:

- The storage volume provided by the proposed BMP is greater then the required water quality treatment volume.

ILLICIT DISCHARGE COMPLIANCE STATEMENT

In accordance with the Wetland Regulations found in 310 CMR 10.05(6) and the *Massachusetts Stormwater Handbook* published by the Massachusetts Department of Environmental Protection, the stormwater management system for the proposed project located at 87 Arlington Street and Coolidge Avenue in Watertown, Massachusetts shall accept no illicit discharges. Illicit discharges are defined as discharges not entirely comprised of stormwater and include, but are not limited to, wastewater discharges and discharges of stormwater contaminated by contact with process wastes, raw materials, toxic pollutants, hazardous substances, oil, or grease.

Engineering Alliance, Inc. has performed an investigation of the existing site conditions and did not find any illicit discharges. Prior to construction, additional investigations will take place to identify and remove any and all illicit discharges currently onsite. These actions include, without limitation, visual screening, dye or smoke testing, and the removal of any sources of illicit discharges to the stormwater management system.

Should any illicit discharges enter the stormwater management system after construction has been completed, immediate steps to remove the discharges and their source shall be taken to return the system to its proper working state.



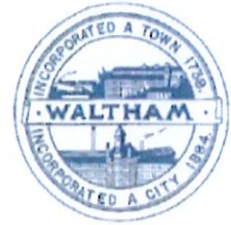
Richard A. Salvo, P.E.
for Engineering Alliance, Inc.

12/12/22

Date

Waltham Conservation Commission

119 School Street
Waltham, Massachusetts 02451
(781) 314-3845
conservation@city.waltham.ma.us



December 20, 2022

Beth Card, Secretary
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Doug Rice, Commissioner
Department of Conservation and Recreation
251 Causeway Street, 9th floor
Boston, MA 02114

Dear Secretary Card and Commissioner Rice,

We, the members of the Waltham Conservation Commission, submit this letter to express our support for the removal of the Watertown Dam. The Charles River is extremely important to the residents of Waltham, who appreciate it for its beauty, ecological functions, historical significance, and recreational opportunities. The Waltham Conservation Commission encourages the removal of the Watertown Dam and subsequent restoration of the river to more natural conditions.

Although the project is not in the regulatory jurisdictional area of the Waltham Conservation Commission, we are interested in and support the project because the Watertown Dam impedes the natural, historic migration of diadromous fish upstream to Waltham. Removing the dam would improve ecosystems in Waltham by providing a timely influx of fish, a critical food source that supports the springtime reproduction of bald eagles, ospreys, river otters, black-crowned night herons, and other species have been documented in Waltham.

We were impressed by the detail of the feasibility study conducted in 2021. Based on the findings of this study, we feel the removal of the dam will be beneficial for the following reasons:

- Currently, the dam blocks passage of migratory fish including Alewife, Blueback Herring, Rainbow Smelt, and Shad. Removing the dam will allow these fish to reach locations further upstream, increasing access to spawning habitat and food sources.
- Removal of the dam would increase resiliency to flood events caused by climate change. According to the report, flooding downstream of the dam would remain unchanged, while floodplain elevation upstream could be lowered by as much as six feet.

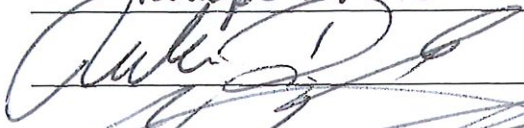
- Currently, the impounded area directly upstream of the dam measures higher temperatures and lower total dissolved oxygen. These conditions are detrimental to most fish species. Removal of the dam would allow water to flow more freely, producing colder, more oxygenated conditions that are better for fish and amphibians.
- Immediately upstream of the removed dam, the lowered water surface would initially create more exposed banks. These exposed banks will then be vegetated, increasing the size and diversity of the riparian buffer.

Across Massachusetts, and indeed the country, unnecessary dams are being successfully removed and rivers restored. We urge you to add the Watertown Dam to this list.

Respectfully,



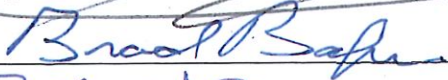
Philip Moser, Chair



William Doyle, Vice Chair



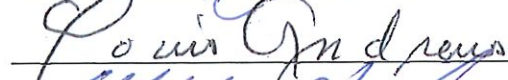
Gerard Dufromont, Secretary



Brad Baker



Mike Donovan



Louis Andrews



Alexander Sbordone

cc:

Massachusetts Fish & Game Commissioner Ron Amidon
 Division of Marine Fisheries Commissioner Daniel McKiernan
 City of Watertown Council
 City of Watertown Conservation Commission
 CRWA Executive Director Emily Norton