ATTACHMENT 5
(Environmental Assessment with Appendices)

ENVIRONMENTAL ASSESSMENT

SALEM NEW LONDON ROAD

BATTERY ENERGY STORAGE PROJECT

380 NEW LONDON ROAD

SALEM, CONNECTICUT

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1 Introduction

All-Points Technology Corporation, P.C. ("APT") prepared this Environmental Assessment ("EA") on behalf of Fairy Lake, LLC (the "Petitioner") for the proposed installation and utility interconnection of a battery energy storage facility (the "Project" or "Facility") located in the Town of Salem, Connecticut ("Town"). This EA has been completed to support the Petitioner's submission to the Connecticut Siting Council ("Council") of a petition for declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the construction, maintenance, and operation of the Facility.

The results of this assessment demonstrate that the proposed development will comply with the Connecticut Department of Energy and Environmental Protection's ("DEEP") air and water quality standards and will not have an adverse effect on the existing environment and ecology of the project site or the surrounding area.

2 Proposed Project

2.1 Project Setting

The Project will be located on the northeast side of New London Road (State Route 85) in Salem, Connecticut (the "Property"). The Property, which is utilized as a garden center, totals approximately 14.48 acres. A retail and greenhouse building is located in the center of the Property; additional greenhouses are at the rear of the building at the southeast portion of the Property. A paved parking lot extends across much of the front of the Property. The Property is privately owned and is zoned for business use (Special Business A).

Figure 1, *Location Map*, depicts the location of the Property and the immediate surrounding area.

Figure 1 - Location Map

Proposed Battery Storage Facility
CT Salem New London Rd
380 New London Road
Salem, Connecticut

The Project will be located within the northern portion of the Property, with the Site compound located in an area that is partially cleared and not in use for garden center operations. Access to the Facility will generally follow an existing dirt drive that extends from the paved parking lot to the rear of the Property; the Facility's interconnect line will extend from New London Road near the northwestern property boundary. The Project in its entirety will occupy approximately 2.2 acres of the Property ("Site").

The Property's existing topography generally slopes down from north to east, ranging from an average of approximately 395 feet above mean sea level ("AMSL") in the north to approximately 355 feet AMSL in the east.

Figure 2, *Existing Conditions*, depicts the Site and current conditions on the Property.

Connecticut State Route 85 abuts the Property to the west; a State road-side rest and picnic area is directly across from the northern portion of the Property. Land to the north, east and west beyond New London Road is wooded, with residential development beyond and within the wooded areas. Developed property used for garden center activities is to the south and southeast.

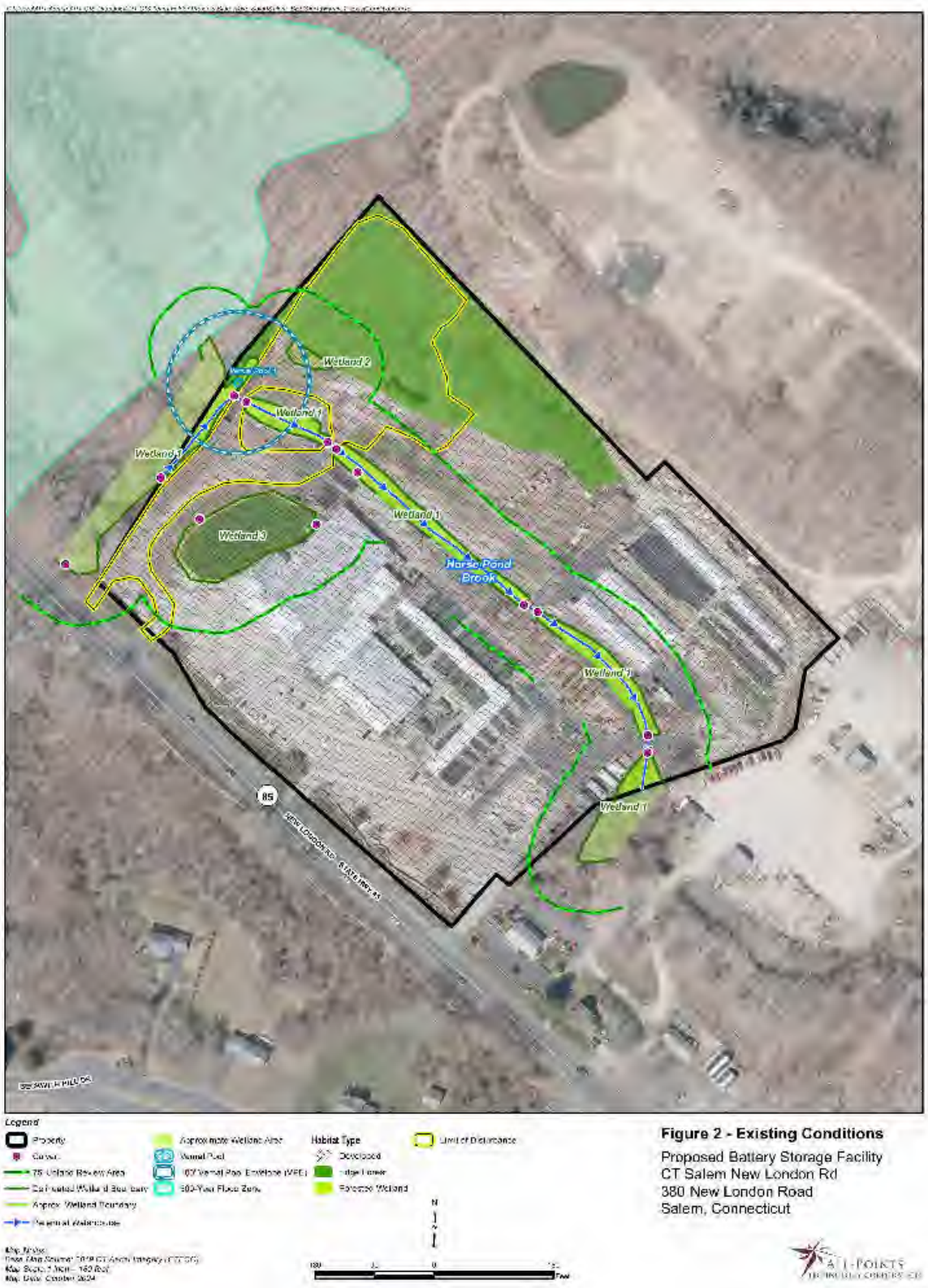


Figure 2 - Existing Conditions

Proposed Battery Storage Facility
CT Salem New London Rd
380 New London Road
Salem, Connecticut

2.2 Project Development and Operation

2.2.1 The Site

Upon its completion, the Facility will consist of seven (7) battery storage units, with five (5) inverters, two (2) transformers and two (2) recombiners on concrete pads. A 15-foot tall noise barrier will be installed on the northwestern side of the Facility. The Facility will be surrounded by an eight (8)-foot tall chain link fence.

Access to the Facility will extend from New London Road over the existing paved parking area to a gate, then follow an existing gravel drive over the northern/northwestern portion of the Property to the Facility compound. The access drive will be approximately 645 feet long and 15 feet wide; the gravel portion will be improved. During construction, a temporary bridge will be employed to provide heavy equipment access over Horse Pond Brook.

The Project will be serviced by one (1) electrical interconnection that will extend from New London Road along the northwestern Property boundary to one (1) overhead line requiring five (5) poles in the northwestern portion of the Property. The line will then extend underground to the Facility compound.

Once complete, the enclosed Facility will occupy approximately 0.38 acre of the Property with an additional ±1.82 acres of improvements, including the access drive and interconnect route, for a total Project Area of ±2.2 acres. Proposed development drawings are provided in Appendix A, *Project Plans*.

Construction activities associated with the Project will include the following:

- installing erosion and sedimentation control measures;
- grading associated with drainage and stormwater management;
- placement of a temporary bridge spanning Horse Pond Brook and associated wetlands;
- installing containers, inverters, transformers, and reclosers;
- installation of poles and trenching for electrical service for interconnection; and
- stabilizing the Project Area with vegetation.

Earthwork is required to allow the Project development to comply with the *General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities* ("General Permit").

The Facility is unstaffed; after construction is complete and the Facility is operable, traffic at the Site will be minimal. It is anticipated that the Facility will require preventative maintenance of the electrical equipment one (1) time per year. Annual maintenance will typically involve two (2) technicians for a day. Corrective maintenance will be performed on an as-needed basis.

2.2.2 Public Health and Safety

The Project will meet local, state, national and industry health and safety standards and requirements applicable to battery energy storage facilities' design, construction and operation. The Facility will not consume any raw materials, will not produce any by-products and will be unstaffed during normal operating conditions.

The Facility will be enclosed by an eight (8)-foot tall chain link fence. The entrance to the Facility will be gated, limiting access to authorized personnel only. All Town emergency response personnel will be provided access via a Knox padlock. The Facility will be remotely monitored and will have the ability to remotely de-energize in the case of an emergency. The Petitioner's Operations and Maintenance Plan and Emergency Response Plan will address access and emergency protocols, and the Petitioner will offer training to the Town's emergency responders.

3 Environmental Conditions

This section provides an overview of the current conditions at the Site and an evaluation of the Project's potential impacts on the environment. The results of this assessment demonstrate that the Project will comply with the DEEP air and water quality standards and will not have an undue adverse effect on the existing environment and ecology.

Please refer to Figure 3, *Proposed Conditions* for a depiction of the Project and its relationship with the resources discussed herein.

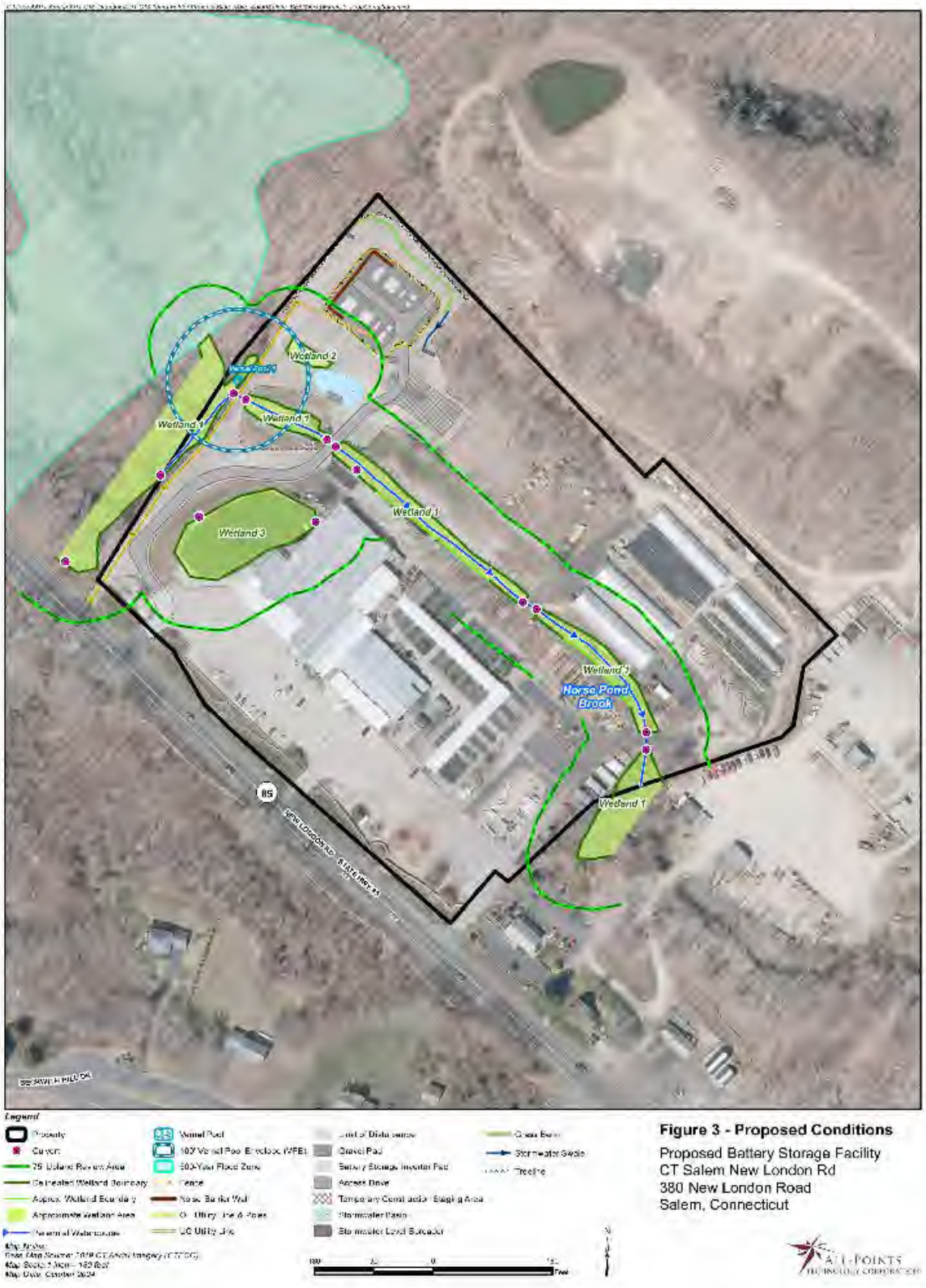


Figure 3 - Proposed Conditions

Proposed Battery Storage Facility
CT Salem New London Rd
380 New London Road
Salem, Connecticut

3.1 Air Quality

No air emissions are generated during operation of the battery energy storage facility. Therefore, the operation of the Facility will have no adverse effects on air quality and no permit is required.

Temporary, potential, construction-related mobile source emissions will include those associated with construction vehicles and equipment. Any potential air quality impacts related to construction activities can be considered de minimis. Such emissions will be mitigated using available measures, including limiting: idling times of equipment; proper maintenance of all vehicles and equipment; and watering/spraying to minimize dust and particulate releases. In addition, all equipment, including off-road equipment, used on the Property will meet the latest standards for diesel emissions, as prescribed by the United States Environmental Protection Agency.

3.2 Water Resources

3.2.1 Wetlands and Watercourses

APT Registered Soil Scientists identified a total of three (3) wetlands on the Property in proximity to the Project during a field inspection and wetland investigation completed on February 6, 2024. Subsequent inspections were completed on March 12 and April 17, 2024. The results of the wetland delineation are summarized below. The location of these resources is depicted on Figure 2, *Existing Conditions* and Figure 3, *Proposed Conditions*.

Wetland 1 is located along the western parcel boundary, draining north and then east across the Property interior. Flows are conveyed onto the Property through a roadside culvert located along New London Road. As the complex drains north, narrow bordering wetlands are present with evidence of recent flooding from storm events. Buttressed roots, drift lines and a build-up of debris were observed within the narrow bordering seasonally saturated areas. Historic disturbance has created bordering impoundments along the eastern boundary, confining the limits of the wetland complex. A 24-inch RCP culvert inlet near the western Property boundary conveys flows to Wetland 3, a large constructed open water pond utilized for irrigation and as an amenity to the garden center. An off-Property, unnamed intermittent watercourse converges with a perennial watercourse, identified as Horse Pond Brook, within the vicinity of the existing western crossing. Flows are then conveyed through two 24-inch RCP culverts as the watercourse spans east across the Property interior. Irrigation lines were observed embedded within Horse Pond

Brook where water is diverted to provide irrigation water to the plant nursery and garden center. Routine vegetative maintenance along buffer slopes and stone bank reinforcement has channelized and degraded portions of this riparian complex. Undisturbed portions of this wetland system are located primarily off-Property, and contain a dominant overstory of red maple, yellow birch and American elm. Areas of scrub-shrub vegetation were also noted, primarily consisting of speckled alder and juvenile black willow within central on-Property portions of the complex.

Wetland 2 is located within the northwestern portion of the Property. This complex was formed under anthropogenic conditions as a result of the historic and active property use that created an excavation that intercepts the seasonal high groundwater table. It consists of an isolated depressional feature located at the base of a hillslope and impoundments along the south, east and west boundaries from access roads and material stockpile areas that impede drainage of the trapped seasonal high groundwater discharge. Hillside seepage and runoff also contribute to the active hydrology with approximately 12- to 18-inches of inundation noted during the initial February 2024 inspection. Vegetation is limited primarily to emergent species soft rush, hard stem bulrush and purple loosestrife with multiflora rose and juvenile silky dogwood shrubs along the delineated boundary.

Wetland 3 consists of an irrigation pond constructed for the active plant nursery. Flows are conveyed from Wetland 1 into the feature, which consists of reinforced stone sidewalls with no bordering vegetation. An overflow structure is located in the northern portion of the complex to convey flows back into Horse Pond Brook. A sandy/cobble base was observed along the edges of the pond, with an interior of over 4 feet deep. At the time of investigations, work around the pond was observed, including movement of soil and rocks in and around the culvert inlet and western sidewalls. No fin fish species or other aquatic life were observed within the open water feature, although their complete absence was not verified. However, at the time the investigation was performed, many species are in their hibernation phase and would not be in and around the pond surface. Based on the connection to Horse Pond Brook, there is a likely potential this open water feature supports, at minimum, amphibian life.

3.2.2 Vernal Pool

The Department of the Army Regional General Permits for the State of Connecticut defines vernal pools as: depressional wetland basins that typically go dry in most years and may contain inlets

or outlets, typically of intermittent flow. Vernal pools range in both size and depth depending upon landscape position and parent material(s). Several species of amphibians depend on vernal pools for reproduction and development. These species are referred to as obligate, or indicator, vernal pool species and their presence in a wetland during the breeding season helps to identify that area as a vernal pool. In most years, vernal pools support one or more of the following obligate indicator species: wood frog, spotted salamander, blue-spotted salamander, marbled salamander, Jefferson's salamander and fairy shrimp. However, they should preclude sustainable populations of predatory fish.

Vernal pool physical characteristics can vary widely while still providing habitat for obligate species. "Classic" vernal pools are natural depressions in a wooded upland with no hydrologic connection to other wetland systems. Often, vernal pools are depressions or impoundments within larger wetland systems. These vernal pool habitats are commonly referred to as "cryptic" vernal pools. "Anthropogenic" vernal pools are intentionally or unintentionally man-made depressions that support successful breeding by obligate species.

A single flooded anthropogenic depression embedded within Wetland 1 was identified as potential vernal pool habitat during the initial Site investigation on February 6, 2024. Follow-up vernal pool surveys were conducted on March 12 and April 17, 2024 during the early spring breeding period and mid-spring hatch-out period. Evidence of spotted salamander (*Ambystoma maculatum*) breeding, a typical obligate vernal pool species, was observed within the vernal pool. The boundaries of the vernal pool were delineated and surveyed using field observations of the seasonally flooded extents. Survey methods included audial surveys to record chorusing wood frogs, visual surveys to search for adults, egg masses and larvae, and dip-netting within accessible areas to identify species within the water column and benthic material. Egg mass searches were conducted by slowly and methodically wading along the perimeter of accessible open water areas using polarized sunglasses for enhanced visual scanning under generally sunny skies. During the mid-March inspection, observations were limited to egg mass surveys, as tadpoles and larvae development were not yet present; three (3) spotted salamander egg masses were identified, two (2) of which were unfertilized masses as indicated by the opaque color of the individual eggs and lack of embryo development. It is possible that only one individual female spotted salamander laid the 3 egg masses. A dense algal bloom was present within the southern limits of the vernal pool.

A follow-up investigation was conducted on April 17, 2024 to confirm the vernal pool was sustaining the necessary hydrology to complete larval development and also to determine if any late breeding had occurred. The April investigation documented the vernal pool generally retained previously observed depths of inundation from the February and March inspections. A single spotted salamander egg mass, adult wood frog and multiple green frogs were identified. The dominance of green frogs and heavy eutrophication observed within this small depression serve as contributing factors for the limited breeding and suboptimal breeding habitat this resource supports. Heavy predation potential and poor water quality have limited the productivity of this depressional feature.

Vernal Pool Analysis

It is widely documented that vernal pool dependent amphibians are not solely reliant upon the actual vernal pool, which is limited to use for breeding and egg/larval development; they require surrounding upland forest habitat for most of their adult lives. Accepted studies recommend conservation within the vernal pool envelope ("VPE" - within 100 feet of the pool's edge) and the critical terrestrial habitat ("CTH" - 100-750 feet of the pool's edge) (Calhoun, Klemens, 2002; "BDP").[1] Intact forest represents the highest value, or optimal, habitat within both of these conservation zones to support breeding opportunities for the various obligate vernal pool indicator species that rely on forested habitat (e.g., wood frog and spotted salamander). In addition, the U.S. Army Corps of Engineers New England District's *Vernal Pool Best Management Practices* ("BMPs") establish the concept of "directional corridors" (referred to herein as "Migratory Corridors"). Identification of Migratory Corridors allows a project to evaluate potential impacts to optimal pool-breeding amphibian habitat with a focus on conserving the most essential habitats that link breeding pools, forested wetlands, and forested uplands. These interrelated habitats form essential Migratory Corridors at a landscape scale generally confined within the CTH. Migratory Corridors are identified through an evaluation of both wetland and terrestrial habitat structure qualities (e.g., vegetative cover types, width of vegetated buffer, soil surface moisture, thickness of duff layer, abundance of cover objects) that determine the locations of "Suitable Non-Breeding Habitat" and "Non-Habitat" in proximity to the vernal pool. Migratory Corridors occur in areas that link vernal pools and Suitable Non-Breeding Habitat (both forested wetland

[1] Calhoun, A.J.K. and M.W. Klemens. 2002. Best Development Practices (BDPs): Conserving Pool-Breeding Amphibians in Residential and Commercial Developments in the Northeastern United States. WCS/MCA Technical Paper No. 5.

and upland habitats). Non-habitat areas such as developed areas, maintained lawn, and agricultural fields do not support Migratory Corridors due to the lack of sufficient vegetative conditions that are often associated with higher levels of predation and human activity, which can result in direct mortality.

Based on observations of limited breeding of a single obligate species and surrounding development that includes routine disturbance of the VPE and CTH in the existing condition, the vernal pool represents a relatively low ecological value when compared to other vernal pool habitats located in this region. Routine disturbance within the 100-foot VPE to the north and east largely diminishes the quality of this resource. Despite the low ecological rating, the Project has been designed to avoid impacts to the VPE, with the exception of the installation of two (2) proposed utility poles required for the overhead electrical interconnection. These poles will be located within existing developed and degraded areas, and will have only a small footprint. Therefore, any impact to the nearby vernal pool is considered de minimis.

Additionally, impacts to Migratory Corridors and Suitable Non-Breeding habitat are largely avoided by the proposed Facility. The Facility will primarily be located within Edge Forest habitat, in proximity to Developed habitat areas. Based on field reconnaissance efforts and review of aerial photography, Suitable Non-Breeding Habitat exists to the north/northwest of the vernal pool where forested wetlands and uplands are present. In contrast, eastern/northeastern surrounding areas serve as non-habitat due to the general lack of vegetation, forest cover and routine disturbance associated with the garden center operation. Considering these facts and the separating distances that are provided between the Project limits and the vernal pool, no degradation would occur to the pool or obligate vernal pool species that utilize this pool. Limited traffic and human activity would be associated with long-term operation of the Facility, and existing limited amphibian productivity is expected to remain relatively unaltered and stable.

The potential does exist for short-term impact during construction of the Facility to herpetofauna associated with the vernal pool due to possible encounters with migrating and basking individuals that may intercept the proposed development footprint. Any such short-term impacts, to both obligate vernal pool species and herpetofauna that may be associated with the nearby wetland and riparian habitats, would be minimized by the proper installation and maintenance of erosion and sedimentation controls in accordance with *2024 Connecticut Guidelines for Soil Erosion and Sediment Control*. Best Management Practices are proposed during construction to

avoid/minimize the potential for short-term impact to herpetofauna. Nonetheless, the Petitioner proposes to implement a Resource Protection Plan[2] to mitigate any such short-term impacts. The Resource Protection Plan is intended to prevent incidental injury to any migrating vernal pool species by excluding them from entering the Project Area during construction with the use of silt fence barriers isolating the limits of construction activities.

3.2.3 Wetland Impacts

As previously discussed, Wetland 2 consists of an anthropogenic feature having formed as a result of historic property disturbance where hillside seepage converged with a depressional area bordered by artificial impoundments. These impoundments consist of a historic access road and debris pile to the west, compacted gravel surface to the south and additional fill piles to the east. Heavy equipment use associated with the garden center operations is on-going within proximity to the southern and eastern wetland boundary. This surrounding use and routine activity degrade the wetland complex and limit functions and values that would typically be supported by this type of wetland system. A proposed stormwater basin to provide proper treatment of runoff from the proposed Facility will be located to the immediate east of Wetland 2. Minimal grading and earth work are required to create the shallow basin, involving regrading adjacent to the wetland boundary. Erosion controls are proposed along the boundary of Wetland 2 to serve as an isolation barrier and ensure the resource is not impacted during construction activities. The shallow basin has been designed to retain six inches of water or less and draining within 48 to 72 hours in order to prevent the creation of a 'decoy pool' which could promote breeding of vernal pool species. Following completion of construction during which the basin would be used for temporary erosion control, the permanent stormwater basin will be planted with a native seed mix for detention basins (see Appendix A for seed specifications) which contains native wetland plant species such as New England aster, boneset, and spotted joe pye weed.

Access to the Project will be over existing gravel drives, which will be improved as necessary. During construction, to accommodate load requirements for the battery units and the crane required for installation, a 50-foot long temporary bridge will be utilized. This bridge will be placed over an existing culvert crossing of Horse Pond Brook. Use of the temporary bridge will distribute

[2] See Appendix A, *Project Plans,* Environmental Notes – Resource Protection Plan.

weight, prevent degradation to the existing twin 24-inch reinforced concrete pipes that convey flows from Horse Pond Brook, and limit impact to the perennial watercourse.

Lastly, overhead utilities are proposed along the western boundary within proximity to Wetland 1. This will require the installation of five (5) utility poles within an existing developed area consisting of a gravel surface routinely utilized by heavy machinery, vehicles and for material/debris storage associated with the garden center operation. Although within proximity to wetland resources, installation of the poles is considered a de minimis impact due to the limited nature and footprint of the utility poles, in comparison to underground interconnection which would result comparatively in a much large area of disturbance. Erosion controls will be placed around the pole locations to prevent material from entering the wetland throughout construction until areas are permanently stabilized.

Considering the developed nature of the Property in combination with the Project's stormwater design and implementation of the 2024 Connecticut Guidelines for Erosion and Sediment Control, the Project is not anticipated to result in a likely adverse impact to nearby wetland resources. Any potential secondary wetland impacts will be further mitigated through the implementation of a Resource Protection Plan that has been developed to protect the abutting wetland resources during construction of the Project.

3.2.4 Floodplain Areas

APT reviewed the United States Federal Emergency Management Agency ("FEMA") Flood Insurance Rate Map ("FIRM") for the Property. A FIRM is the official map of a community on which FEMA has delineated both the special hazard areas and risk premium zones applicable to the community. The area of the Property is mapped on FIRM PANEL #09011C 0328 G dated July 11, 2011. Based upon the reviewed FIRM Map, the Property and proposed Project Area are located in an area designated as Area of Minimal Flood Hazard – Zone X.

No special design considerations or precautions relative to flooding are required for the Facility. As no portion of the Facility is proposed to be located in or impact either 100- or 500-year flood zones, no impacts are anticipated to floodplain or downstream areas.

3.3 Water Quality

As discussed in this section, the Project will comply with DEEP's water quality standards. Once operative, the Facility will be unstaffed, and no potable water uses or sanitary discharges are planned. No liquid fuels are associated with the operation of the Facility. Stormwater generated by the proposed development will be properly handled and treated in accordance with the 2024 Connecticut Stormwater Quality Manual.

3.3.1 Groundwater

Groundwater underlying the Property is classified by DEEP as "GAA". This classification indicates groundwater within the area is presumed to be suitable for human consumption without treatment. Designated uses in GAA classified areas include existing or potential public supply of water suitable for drinking without treatment and baseflow for hydraulically-connected surface water bodies.

Based upon a review of available DEEP mapping, the Site is not located within a mapped (preliminary or final) DEEP Aquifer Protection Area.

The Project will have no adverse environmental effect on ground water quality.

3.3.2 Surface Water

The Project will have no adverse environmental effect on surface water quality. Based upon DEEP mapping, the Site is located in Major Drainage Basin 2 (Southeast Coastal Basin), Regional Drainage Basin 22 (Southeast Western Complex), Subregional Drainage Basin 2202 (Latimer Brook), and Local Drainage Basin 2202-03 (Unnamed Brook at Mouth above Latimer Brook). Based upon DEEP mapping, the nearest mapped waterbody is Horse Pond Brook, which flows southward through the Property. Horse Pond Brook is classified as a Class AA surface waterbody by the DEEP.[3] The Site will have no effect on this surface waterbody.

Based upon the reviewed DEEP mapping, the Site is located within the New London Department of Public Utilities Public Drinking Supply Watershed.

[3] Designated uses for AA classified waterbodies include existing or proposed drinking water supplies, habitat for fish and other aquatic life and wildlife, recreation, and water supply for industry and agriculture.

During construction, erosion and sediment ("E&S") controls will be installed and maintained in accordance with the 2024 Connecticut Guidelines for Soil Erosion and Sediment Control. Once operative, stormwater will be managed in accordance with the 2024 Connecticut Stormwater Quality Manual.

3.3.3 Stormwater Management

The project has been designed to meet the 2024 Connecticut Stormwater Quality Manual and 2024 Connecticut Guidelines for Soil Erosion and Sediment Control. Combined, these address three (3) main concerns: stormwater runoff peak attenuation, water quality volume treatment, and E&S control during construction. The Applicant will apply for a General Permit from DEEP. Technical details, mapping, and HydroCAD modeling results are provided in a Stormwater Management Report to be provided to DEEP and included as Appendix B. A summary of these results is provided below.

Stormwater Runoff Peak Attenuation

The potential for changes in runoff from the Site as a result of Project construction has been evaluated and addressed in compliance with the 2024 Connecticut Stormwater Quality Manual. The Project will require the installation of a gravel pad, several concrete pads within the gravel compound area, underground utilities and overhead interconnection, an access drive and multiple stormwater management features. The change in ground cover results in an increase in runoff.

To manage the increase in post-development runoff, gravel storage within the proposed gravel pad and one (1) grass-lined stormwater management basin with rip-rap lined overflow is proposed. Two proposed diversion channels/swales will divert upgradient runoff around the compound, which will discharge to energy dissipaters. Surface runoff from the proposed pad will be collected within the gravel of the pad and infiltrate into the soil sub-strata. Runoff greater than the available storage will overflow into the stormwater management basin thus managing the timing and release of flow from the Project Area.

The stormwater calculations for the Project predict that the post-development peak discharges to the waters of the State of Connecticut for the 2-, 25-, 50- and 100- year storm events are less than the pre-development peak discharges. Therefore, the Project is not anticipated to result in any adverse conditions to the surrounding areas and properties.

Water Quality Volume Treatment

The Project design also provides for adequate treatment of water quality volume associated with effective impervious cover, which includes the proposed gravel pad, battery storage units, and associated equipment. The proposed storage within the gravel pad and stormwater basin is designed to provide the requisite treatment volume associated with these features.

Erosion and Sediment Control During Construction

To safeguard water resources from potential impacts during construction, the Petitioner is committed to implementing protective measures in the form of a Stormwater Pollution Control Plan ("SWPCP"), to be finalized and submitted to the Council, subject to approval by DEEP Stormwater Management. The SWPCP will include monitoring of established E&S controls that are to be installed and maintained in accordance with the 2024 Connecticut Guidelines for Soil Erosion and Sediment Control and the General Permit.

To meet the requirement of the General Permit, one (1) temporary sediment basin will be installed prior to the start of Facility construction. Perimeter erosion controls (compost filter sock & silt fence) will be installed in downgradient locations of disturbed areas within the Project Area to capture sediment potentially mobilized during Site work. The basin will be cleaned of deposited sediment as needed during construction to maintain sufficient sediment storage capacity. Upon final Site stabilization, the temporary sediment basin will be converted to a permanent stormwater management basin by removing any accumulated sediments, removal of sediment baffles if applicable, and installation of permanent outlet control structures.

Open areas will be temporarily stabilized with quick growing annual seed during construction. The Project Area, excepting the access drive and stormwater basin, will subsequently be seeded with a permanent New England Conservation/Wildlife Seed Mix upon completion of construction. The permanent stormwater basin will be planted with a native seed mix for detention basins (see Appendix A for seed specifications). The phased erosion control plan and details are provided in Appendix A, *Project Plans*.

With the incorporation of these protective measures, stormwater runoff from Project development is not anticipated to result in an adverse impact to water quality associated with nearby surface water bodies.

Overall, the Project is anticipated to enhance the hydrological conditions of the Project Area while maintaining existing drainage watersheds to the extent practicable. Therefore, the Project is not anticipated to result in any adverse impacts to water resources in the surrounding area.

3.4 Habitat and Wildlife

Three (3) distinct habitat types (vegetative communities), separated by transitional ecotones, are located on the Property; two (2) are identified within the Project Area. These habitats were assessed using remote sensing and publicly available datasets and physically inspected during a February 6, 2024 field evaluation.

The habitats occupying the Site are as follows:

- Developed
- Edge Forest; and
- Wetland Forest

3.4.1 Habitat Types

Developed

The Developed habitat encompasses the majority of the Property. Developed habitat consists of paved parking areas along New London Road, and gravel and dirt access drives extending beyond and around an approximately 347,400 square foot commercial garden center building. A total of seven (7) out-buildings and numerous seasonal green houses are scattered throughout the Property, with four permanent greenhouses to the northeast. Maintained grass areas primarily located in the northwestern quadrant are utilized for material or equipment storage, debris stockpiling or access. These surfaces are routinely maintained, with areas of impervious surfaces and on-going disturbance.

Wetlands 2 and 3 are also included within Developed habitat areas. Due to the anthropogenic nature of Wetland 2 and the active stockpile of woody debris, the boundaries of this complex undergo routine disturbance that suppresses vegetation to primarily emergent species with juvenile shrubs. Wetland 3 includes a constructed irrigation pond utilized for garden center operations.

The Project will result in limited impacts to the Developed habitat, including improvements of an existing gravel road in order to gain access to the development area and installation of a stormwater detention basin. New gravel will be placed within the 15-foot access drive and a 50-foot long temporary bridge will be placed over an existing Horse Pond Brook culvert crossing during construction. Additionally, overhead utility lines, requiring pole installation, will occur within existing Developed areas. These activities are not anticipated to result in a significant negative impact due to the highly disturbed nature of this area and existing development.

Edge Forest

The Edge Forest habitat occupies north and northwestern portions of the Property. This habitat differs from the southern Forested Wetland habitat by occurring entirely within well-drained upland soils and consisting of a significantly different vegetative species composition. This Edge Forest habitat is characterized as a mixed hardwood forest dominated by red maple and red oak, with suppressed saplings of grey birch, beech, and hornbeam. Along transitional boundaries multiflora rose, winged euonymus, Asiatic bittersweet, poison ivy, Japanese knotweed and various goldenrod species were also observed. Debris piles, material stockpiles and dirt wood roads are also present within this habitat and along transitional boundaries bordering Developed areas.

The majority of the Project Area is within the Edge Forest habitat type. Impacts resulting from the Project are associated with grading and construction of the gravel compound, perimeter fencing, sound wall and stormwater management features to include a grass berm, stormwater swale and level spreader. Potential short-term impacts to this habitat during construction will be minimized through the proper stabilization of soils through strict adherence to the 2024 Connecticut Guidelines for Soil Erosion and Sediment Control. While the Project necessitates clearing for the battery and equipment compound, similar and higher quality interior forested habitat occurs in abundance to the northwest of the Project Area. As such, the Project is not anticipated to result in a significant impact to the existing Edge Forest habitat.

Wetland Forest

Forested Wetland habitat occurs along the western boundary and through central portions of the Property. This wetland habitat consists of a perennial watercourse with narrow bordering areas of seasonal saturation. Portions of this riparian corridor undergo routine vegetation maintenance and contain reinforced gravel banks directly abutting plant staging areas and temporary

greenhouses. Irrigation lines are also present within this complex for water withdrawal to seasonally support the plant nursery. The vernal pool previously discussed is within this habitat area, within a small hillside seep that converges with an intermittent watercourse and Horse Pond Brook along the western property boundary. A total of eight (8) 24-inch RCP culverts convey flows east through the center of the Property associated with a total of four (4) access roads spanning Horse Pond Brook.

Forested species within this complex consist of red maple, yellow birch, American elm, black willow, and swamp white oak, with areas of scrub-shrub vegetation dominated by silky dogwood, speckled alder, and black willow saplings. The Project will not result in any direct impacts to Forested Wetland areas. Robust erosion and sediment control measures are proposed as part of the Project along with implementation of a Resource Protection Plan to avoid potential secondary and short-term impacts to this habitat during construction.

The following table provides the total acreages of each habitat type located on the Property.

Table 1: Habitat Areas

Habitat Type	Total Area On-Property (+/- ac.)	Area Impacted by Project (+/- ac.)
Developed	11.8	1.04
Upland Forest	2.10	1.15
Forested Wetland	0.50	0.00

3.4.2 Wildlife

Development of the Project will occur within the Edge Forest and Developed habitat types. The roughly 11.80-acre Developed habitat provides limited value from a wildlife utilization standpoint as a result of routine management of these areas, lack of diverse vegetative communities and high level of human activity associated with the garden center operation. Project-related impacts within this habitat are limited and not anticipated to adversely affect wildlife. The remainder of the development will occur within Edge Forest. Although this habitat serves as a more viable location for resident (non-migratory) edge-tolerant species compared to Developed areas, the small habitat block size and on-going disturbance deter wildlife utilization. Additionally, similar and higher quality interior forested habitat exists immediately to the west and southeast.

Based on the surrounding land uses, the adjacent disturbed areas located in proximity to the Project Area are likely utilized by species that are more tolerant of human disturbance and habitat fragmentation. Generalist wildlife species common to the region, including several resident and migrant song birds and mammals such as raccoon, striped skunk, grey squirrel, Virginia opossum, white-tailed deer, and eastern chipmunk, could be expected to use this area. Due to the relatively small size of this habitat patch, and given the abundance of more suitable habitat west of the Property that supports habitat needs of these common species, the Project is not anticipated to result in a significant impact to wildlife and would not impact edge-intolerant species.

The Project Area will not encroach into wetland habitat areas. Noise and associated human activities during construction may result in limited, temporary disruption to wildlife using these wetland habitats; the current garden center operation already results in a relatively high level of human activity on the Property. Any possible wildlife displaced during construction would be expected to temporarily disperse deeper into the wetland habitat or nearby edge forest.

Post-construction, operation of the Project will not result in a likely adverse effect to wildlife using these habitats because it will be unoccupied and does not generate any significant traffic, or high level of human activity. Noise will be mitigated through the installation of a sound barrier along the north west side and northeast and northwest corners of the Project.

3.4.3 Core Forestland Habitat Determination

A contiguous interior forest block is present primarily to the west of the Property. APT evaluated the size and extent of this forest block using the DEEP's *Forestland Habitat Impact Mapping*[4], which identifies prime contiguous and connected core forestland blocks and is used as a screening tool to identify areas of potential forestland habitat impacts relative to renewable energy applications made to the Council. A portion of the Project Area is located within mapped forestland habitat along the western Property boundary. As the forest block has been perforated with roadways and residential development, the portion of forest being impacted by the proposed Project is classified as edge forest. The limited edge forest habitat within the Project Area is already perforated from historic disturbance and the existing garden center development. As a

[4] Source: http://ctdeep.maps.arcgis.com/apps/webappviewer/index.html?id=7b81844bab634281b544c20bf2d7bfb8

result, the Project will not have a material effect on either edge or core forest[5]. See Figure 4, *Existing Core Forest* and Figure 5, *Proposed Core Forest.*

[5] Core forest is defined in Connecticut General Statutes § 16a-3k.

Figure 4 - Existing Core Forest

Proposed Battery Storage Facility
CT Salem New London Rd
380 New London Road
Salem, Connecticut

Figure 5 - Proposed Core Forest

Proposed Battery Storage Facility
CT Salem New London Rd
380 New London Road
Salem, Connecticut

3.5 Rare Species

APT reviewed publicly available information to determine the potential presence of state/federally listed species and critical habitat on or proximate to the Site. A discussion is provided in the following sections.

3.5.1 USFWS Consultation

Consultation in accordance with Section 7 of the Endangered Species Act ("ESA") was completed through the U.S. Fish and Wildlife Service's ("USFWS") Information, Planning, and Conservation System ("IPaC"). Federally listed Endangered species northern long-eared bat ("NLEB"; *Myotis septentrionalis*) and Federally Proposed Endangered and State Endangered Species tricolored bat ("TCB"; *Perimyotis subflavus*) are known to occur in the vicinity of the Property. As a result of this preliminary finding, an evaluation to determine if the Project would result in a likely adverse effect to NLEB and TCB was performed as detailed below.

The Project would be located within an upland edge forest requiring tree clearing activities; trees potentially provide NLEB and TCB habitat. A review of the DEEP Wildlife Division Natural Diversity Data Base ("NDDB") NLEB habitat map and Connecticut NLEB Observations by Town map revealed that the proposed Facility is not within 150 feet of a known occupied NLEB maternity roost tree and is not within 0.25 mile of a known NLEB hibernaculum but summer occurrences of NLEB in the town of Salem have been documented. The nearest NLEB hibernaculum to the proposed Facility is located ±26.9 miles to the southwest in North Branford.

APT submitted the effects determination using the NLEB/TCB Determination Key ("DKey") within the IPaC system for this Facility and determined it "may affect, not likely to adversely affect" ("NLAA") NLEB and TCB. The NLAA determination is conditioned on a time of year restriction ("TOYR") for tree clearing, with tree clearing restricted to occur only during the inactive periods for NLEB and TCB, October 1 through April 14. The Petitioner has also proposed the installation of two multi-chamber nursery bat boxes within the northern portion of the Property. This conservation measure will provide bat habitat for roosting and pup rearing that could be used by either species. In addition, Petitioner will implement a Bat Protection Plan that will include contractor education on the protective and conservation measures. See Appendix A, Resource Protection Plan.

A full review of the Endangered Species Act Compliance Determination and USFWS's Response Letter are provided in Appendix C, *USFWS and NDDB Compliance Statement*.

3.5.2 Natural Diversity Data Base

The DEEP NDDB program performs hundreds of environmental reviews each year to determine the impact of proposed development projects on state-listed species and to help landowners conserve the state's biodiversity. In furtherance of this endeavor, the DEEP also developed maps to serve as a pre-screening tool to help determine if there is the potential for project-related impact to state-listed species.

The NDDB maps represent approximate locations of (i) endangered, threatened and special concern species and (ii) significant natural communities in Connecticut. The locations of species and natural communities depicted on the maps are based on data collected over the years by DEEP staff, scientists, conservation groups, and landowners. In some cases, an occurrence represents a location derived from literature, museum records and/or specimens. These data are compiled and maintained in the NDDB. The general locations of species and communities are symbolized as shaded (or cross-hatched) polygons on the maps. Exact locations have been masked to protect sensitive species from collection and disturbance and to protect landowners' rights whenever species occur on private property.

APT reviewed the most recent DEEP NDDB mapping (June 2024) and determined that the nearest known area of State-listed species is ±0.09-mile northwest of the Property. Since the proposed Site and Property are not located within an NDDB buffer area, consultation with DEEP is not required in accordance with their review policy.[6] However, the previously referenced required USFWS consultation necessitates consultation with DEEP NDDB. A request for final determination was submitted on September 28, 2024 which included a bat protection plan that contains protection measures during construction through a time of year restriction (TOYR) for tree clearing to occur only between October 1 through April 14, during the bats' inactive season, and two bat houses to be installed. NDDB issued a Determination letter on October 16, 2024 (No. 202409786) in which they indicated that they have records of NLEB and TCB near the Property

[6] DEEP Requests for NDDB State Listed Species Reviews. https://portal.ct.gov/DEEP/NDDB/Requests-for-NDDB-Environmental-Reviews

and concurred with bat protection and conservation measures, "which will minimize impacts to these species."

A full review is provided in Appendix C, *USFWS and NDDB Compliance Statement*.

3.6 Soils and Geology

The construction of the water quality basins and swale and grading within the Project Area will generate excess material. Topsoil will be segregated from underlying soil, stockpiled, and spread over disturbed areas being seeded. Excess material will be redistributed on the Property to the extent feasible; the remainder will be removed. See Appendix A*, Project Plans.*

All exposed soils resulting from construction activities will be properly and promptly treated in accordance with the 2024 Connecticut Guidelines for Soil Erosion and Sediment Control.

Surficial materials on the Property consist of thin deposits of glacial till. Bedrock beneath the property is identified as Potter Hill Granite Gneiss and Quartzite unit. Potter Hill Granite Gneiss is described as light-pink to gray, tan weathering, fine- to medium-grained, rarely porphyritic, well-foliated (not lineated) granitic gneiss, composed of microcline, quartz, oligoclase (or albite), biotite, and magnetite, minor muscovite, and local garnet. The Potter Hill Gneiss is mainly weathered, deeply stained, somewhat crumbly, and generally slabby. Quartzite unit is described as light-gray, glassy, generally thin bedded quartzite, also feldspathic and micaceous quartzite containing quartz-sillimanite nodules.[7]

The Petitioner does not anticipate encountering bedrock during Project development.

3.6.1 Prime Farmland Soils

In accordance with the Code of Federal Regulations, CFR Title 7, part 657, farmland soils include land that is defined as prime, unique, or farmlands of statewide or local importance based on soil type. They represent the most suitable land for producing food, feed, fiber, forage, and oilseed crops.

[7] Connecticut Natural Resources Atlas Series: Bedrock Geological map, cteco.uconn.edu/maps/state/Bedrock_Geologic_Map_of_Connecticut.pdf

According to the Connecticut Environmental Conditions Online Resource Guide[8], prime farmland soils are mapped throughout much of the southern portion of the Property, including the areas developed with the building and parking lot. A very small portion of the Project access within the paved parking lot (approximately 0.03 acre) crosses the mapped prime farmland soils. As that area is already paved, the Project results in no effect on prime farmland soils.

3.7 Historic and Archaeological Resources

The Petitioner requested comments on the proposed Project from the Connecticut State Historic Preservation Office ("SHPO"). SHPO confirmed that no properties listed on the National Register of Historic Places are located in the vicinity of the Project Area and 13 previously recorded archaeological sites have been reported within a mile of the proposed Project Area. However, due to the significant previous disturbances to the Property, SHPO determined that "no historic properties will be affected by the proposed BESS development."

The SHPO determination is contained in Appendix D, *SHPO Correspondence*.

3.8 Visibility

The Facility will be visible from portions of the Property and the immediately surrounding area. Year-round visibility will be primarily limited to the garden center, which includes the Property and the adjacent property to the southeast. Seasonal visibility, when the leaves are off the deciduous trees, will extend beyond the garden center properties across New London Road and northwest up to approximately 0.12 mile. One or more of the interconnection poles could be visible in areas extending along New London Road to the southeast and northwest.

See Appendix E, *Viewshed Maps and Photo-Simulations*.

[8] Connecticut Environmental Conditions Online (CTECO) Resource Guide, www.cteco.uconn.edu

3.9 Scenic and Recreational Areas

No state or local designated scenic roads or scenic areas are located near the Property and therefore none will be physically or visually impacted by development of the Project. The nearest scenic road is a portion of State Route 156-E, located approximately 5.0 miles west of the Project Area in East Haddam and Lyme, CT.

There are no Connecticut Blue Blaze Hiking Trails located proximate to the Site, and none will be affected. The nearest recreational resources are the State of Connecticut boat launch at Horse Pond, located at 295 New London Road, Salem and portions of the Nehantic State Forest, approximately 0.33-mile northwest of the Project. The Project is not expected to have a direct or indirect effect on these resources.

See Figure 6, *Surrounding Features Map,* for these and other resources located within one mile of the Project Area.

Figure 6 - Surrounding Features

Proposed Battery Storage Facility
CT Salem New London Rd
380 New London Road
Salem, Connecticut

3.10 Noise

Noise associated with the garden center operations is present for much of the year, and New London Road/Route 85 serves as a major north-south route between the New London area and central Connecticut.

Construction noise is exempted under State of Connecticut regulations for the control of noise, RCSA 22a-69-1.8(h).[9] During construction of the Facility, the temporary increase in noise would likely raise localized ambient sound levels immediately surrounding the Project Area. Standard types of construction equipment would be used for the Project. In general, the highest noise level from this type of equipment (e.g., backhoe, bulldozer, crane, trucks, etc.) is approximately 88 dBA at the source.

The Petitioner has completed a sound study to assess Project compliance with State Noise Regulations.[10] The Facility would be considered a Class C (Industrial) noise emitter. Nearby properties are residential and commercial receptors. Sound levels associated with the operation of the Facility at the northwest property line exceed the limits for residential receptors. Therefore, the study recommends installation of a sound barrier along the northwest side of the compound, continuing around the corners. The sound barrier has been incorporated in the Project design. As demonstrated in the sound study, with the recommended mitigation implemented, the Project will comply with applicable State noise standards. See Appendix F, *Sound Evaluation.*

3.11 Lighting

No exterior lighting is planned for the Project. There will be some small, non-intrusive lighting fixtures within the equipment to aid in maintenance.

3.12 FAA Determination

The Petitioner submitted relevant Project information to the Federal Aviation Administration ("FAA") for an aeronautical study to evaluate potential hazards to air navigation from temporary use of a crane during construction. The FAA provided a Determination of No Hazard to Air Navigation on December 2, 2024, with a condition that the crane (submitted at a maximum height

[9] The Town of Salem does not have a noise ordinance.
[10] RCSA 22a-69-3.5. Noise Zone Standards

of 185’ above ground level) be marked and lighted. See Appendix F, FAA Determination. The nearest airport is the Devils Hopyard Field – CT11 private airfield located in East Haddam, approximately 5.1 miles west of the Site.

4 Conclusion

As demonstrated in this Environmental Assessment, the Project will comply with the DEEP air and water quality standards. Further, it will not have an undue adverse effect on the existing environment and ecology; nor will it affect the scenic, historic and recreational resources in the vicinity of the Project.

Once operative, the Facility will be unstaffed and generate minimal traffic.

The Project is located at a garden center; much of the Property is developed with structures and/or in use for garden center operations. Horse Pond Brook and associated wetlands are centrally located on the Property. Development of the Project will have no significant impact on existing habitats and wildlife.

The Project will have no material effect on prime farmland soils or core forest.

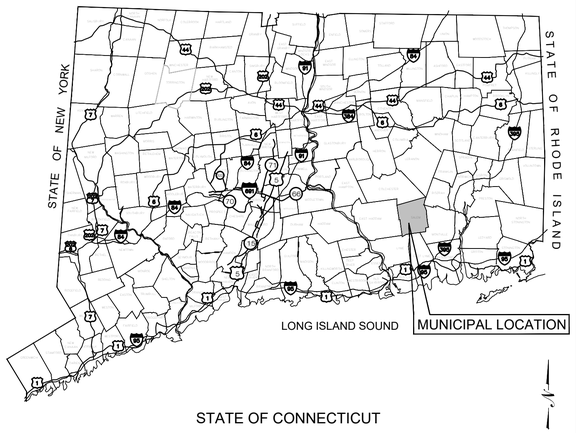
There is no adverse impact to wetlands or to the vernal pool on the Property. During construction, a temporary bridge will span the existing wetland crossing. E&S controls will be installed and maintained throughout construction in accordance with the Project's Resource Protection Program.

The Project has been designed to adequately handle water volume in accordance with the General Permit. The Petitioner will implement a SWPCP, in accordance with the 2024 Connecticut Stormwater Quality Manual and the 2024 Connecticut Guidelines for Soil Erosion and Sediment Control, that will include provisions for monitoring of development activities and the establishment of E&S controls to be installed and maintained throughout construction.

Visibility of the Project will be limited primarily to the garden center and associated Route 85/New London Road frontage.

APPENDIX A

PROJECT PLANS



"SALEM BESS"

FAIRY LAKE, LLC

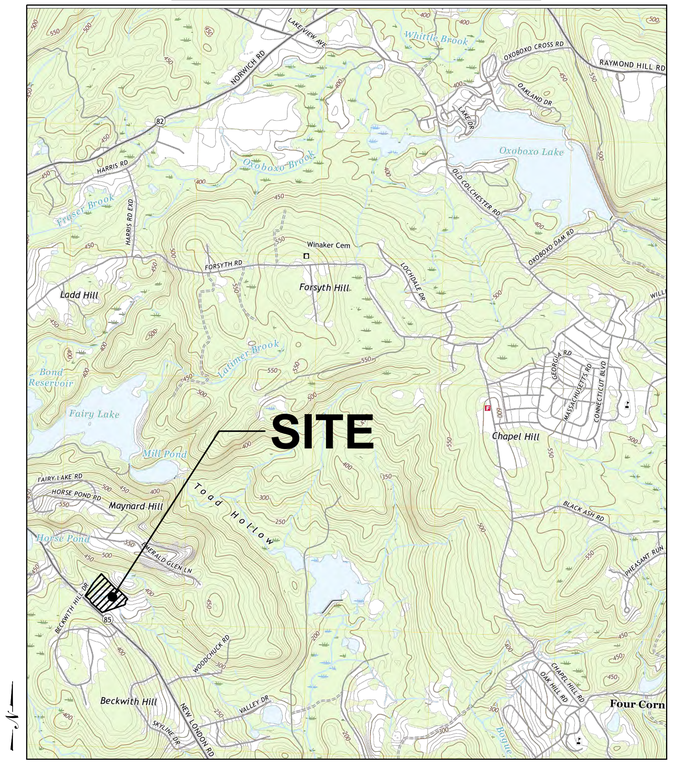
380 NEW LONDON ROAD
SALEM, CT 06420

LIST OF DRAWINGS

SITE INFORMATION

SITE NAME:	"SALEM BESS"
LOCATION:	380 NEW LONDON ROAD SALEM, CT 06420
SITE TYPE/DESCRIPTION:	ENERGY STORAGE SYSTEM 5 MW CONSISTING OF APPROX. 7 SOLBANK 3.0 BATTERIES, 5 EPC POWER CAB1000 INVERTERS, 2 TRANSFORMERS AND 2 DC RECOMBINERS
PROPERTY OWNER:	380 NEW LONDON ROAD HOLDINGS, LLC 380 NEW LONDON ROAD SALEM, CT 06420
PETITIONER:	FAIRY LAKE, LLC 116 HUNTINGTON AVENUE - SUITE 601 BOSTON, MA 02116
ENGINEER CONTACT:	THOMAS E. LITTLE, P.E. (860) 552-2046
LATITUDE:	N 41° 27' 29.80"
LONGITUDE:	W 72° 14' 30.23"
MBLU:	06/002/B00
ZONE:	SBA
LAND USE:	STORE/SHOP MDL-94
LAND CLASS CODE:	3220
TOTAL SITE ACREAGE:	14.48± AC.
TOTAL DISTURBED AREA:	2.2± AC.
APPROX. VOLUME OF CUT:	1,486± CY
APPROX. VOLUME OF FILL:	3,738± CY
APPROX. NET VOLUME:	2,252± CY OF FILL

USGS TOPOGRAPHIC MAP



SOURCE: USGS 7.5 QUADRANGLE MAP, PALMERTON, CT 2021

FAIRY LAKE, LLC

116 HUNTINGTON AVE
SUITE 601
BOSTON , MA 02116

ALL POINTS
TECHNOLOGY CORPORATION

567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PHONE: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

CSC SUBMISSION

NO	DATE	REVISION
1		
2		
3		
4		
5		
6		
7		

DESIGN PROFESSIONALS OF RECORD

PROF: THOMAS E. LITTLE, P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.
ADD: 567 VAUXHALL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385

OWNER: 380 NEW LONDON RD HOLDINGS LLC
ADDRESS: 380 NEW LONDON ROAD SALEM, CT 06420

SALEM BESS

SITE ADDRESS:
380 NEW LONDON ROAD
SALEM, CT 06420

APT FILING NUMBER: CT760100

DRAWN BY:UKA/ELZ
DATE: 11/06/24
CHECKED BY:TEL

SHEET TITLE:

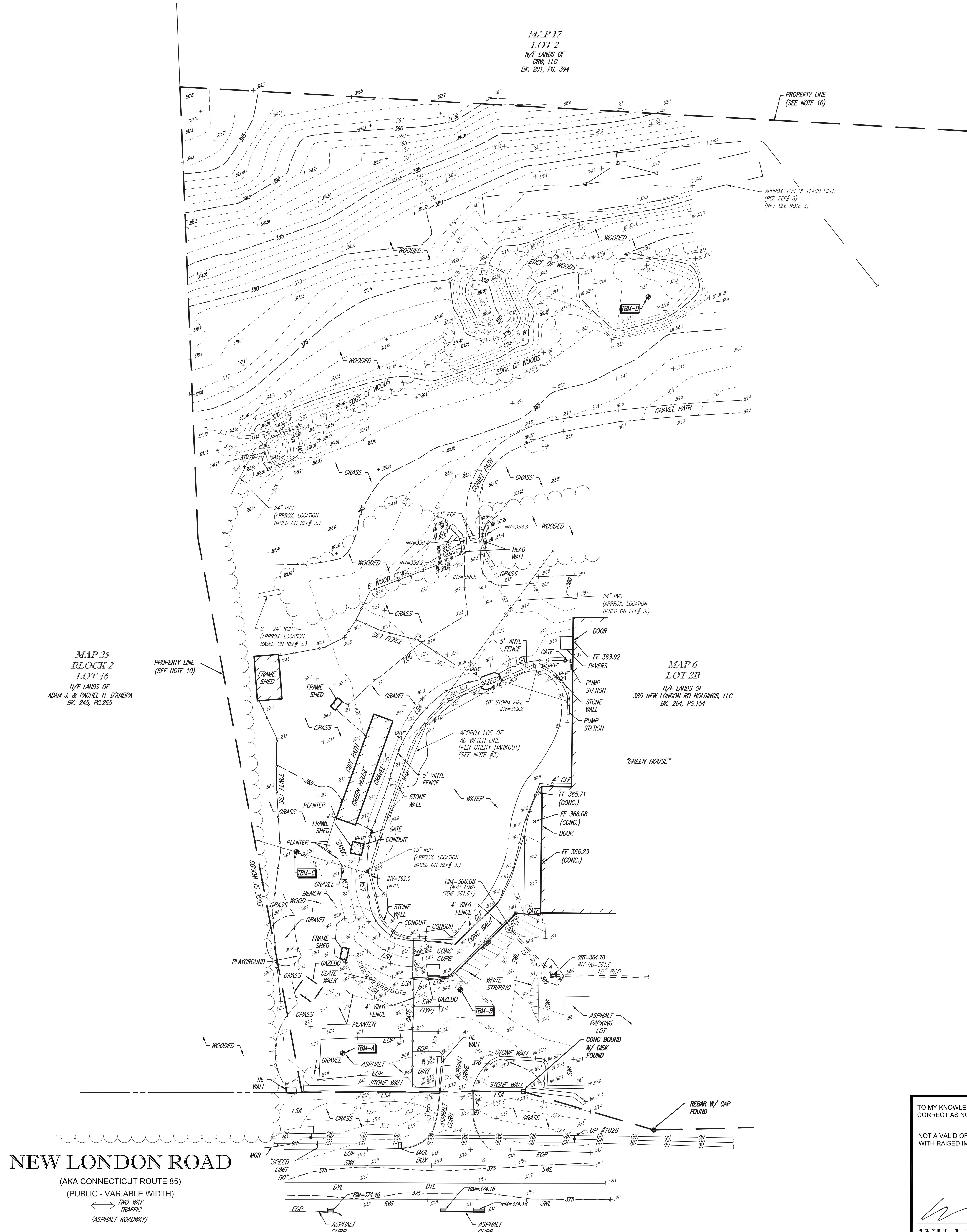
TITLE SHEET

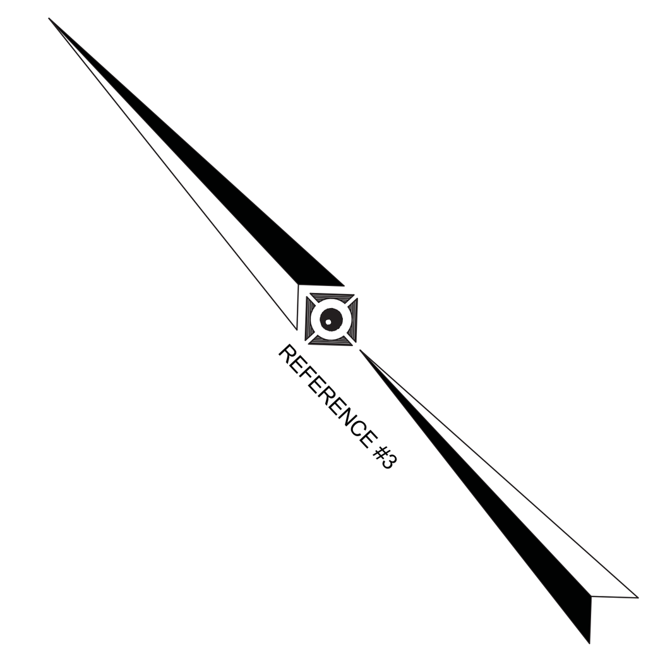
SHEET NUMBER:

T-1

LEGEND

- EXISTING CONTOUR
- EXISTING SPOT ELEVATION
- EXIST. TOP OF CURB ELEVATION
- EXIST. BOTTOM OF CURB ELEVATION
- EXIST. TOP OF WALL ELEVATION
- EXIST. BOTTOM OF WALL ELEVATION
- EXIST. FINISHED FLOOR ELEVATION
- OVERHEAD WIRES
- APPROX. LOC. UNDERGROUND DRAINAGE LINE
- APPROX. LOC. UNDERGROUND WATER LINE
- SUBSURFACE UTILITY QUALITY LEVEL C
- SUBSURFACE UTILITY QUALITY LEVEL D
- DRAINAGE/STORM MANHOLE
- METAL GUIDE RAIL
- APPROX. LOC. UNDERGROUND DRAINAGE LINE
- DEPRESSED CURB
- UNKNOWN VALVE
- UNKNOWN MANHOLE
- CATCH BASINS
- POST
- VENT & NUMBER OF VENTS
- MONITORING WELL
- UTILITY POLE
- DOUBLE SIGN
- SIGN
- MAIL BOX
- GATE POST
- LAMP
- AREA LIGHT
- DC DEPRESSED CURB
- DYL DOUBLE YELLOW LINE
- EOG EDGE OF GRAVEL
- EOP EDGE OF PAVEMENT
- LSA LANDSCAPED AREA
- SWL SOLID WHITE LINE
- UNKNOWN TERMINUS
- AG ABOVE GROUND
- TOW TOP OF WATER
- TYP TYPICAL
- NVP NO VISIBLE PIPE
- CLF CHAIN LINK FENCE
- EVIDENCE FOUND
- APPROX. LOC. PROPERTY LINE
- APPROX. LOC. EDGE OF WATER





LOCUS MAP
(NOT TO SCALE)

GRAPHIC SCALE

40' 0 20' 40' 80' 160'

(IN FEET)
1 inch = 40 ft.

NOTES:

1. THIS IS A TOPOGRAPHIC SURVEY PREPARED IN ACCORDANCE WITH THE STANDARDS OF A CLASS T-2 SURVEY AS DEFINED IN THE REGULATIONS OF CONNECTICUT STATE AGENCIES SECTION 20-300B, EFFECTIVE DATE JUNE 21, 1996, PARTIALLY AMENDED OCTOBER 26, 2018. THIS SURVEY IS ALSO PREPARED IN ACCORDANCE WITH THE MINIMUM STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT, ADOPTED ON AUGUST 29, 2019, BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS INC.

2. PROPERTY KNOWN AS LOT 2B AS SHOWN ON THE TOWN OF SALEM, NEW LONDON COUNTY, STATE OF CONNECTICUT , MAP NO. 6.

3. LOCATION OF UNDERGROUND UTILITIES ARE APPROXIMATE. LOCATIONS AND SIZES ARE BASED ON UTILITY MARK-OUTS, ABOVE GROUND STRUCTURES THAT WERE VISIBLE & ACCESSIBLE IN THE FIELD, AND THE MAPS AS LISTED IN THE REFERENCES AVAILABLE AT THE TIME OF THE SURVEY. AVAILABLE ASBUILT PLANS AND UTILITY MARKOUT DOES NOT ENSURE MAPPING OF ALL UNDERGROUND UTILITIES AND STRUCTURES. BEFORE ANY EXCAVATION IS TO BEGIN, ALL UNDERGROUND UTILITIES SHOULD BE VERIFIED AS TO THEIR LOCATION, SIZE AND TYPE BY THE PROPER UTILITY COMPANIES. CONTROL POINT ASSOCIATES, INC. DOES NOT GUARANTEE THE UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA EITHER IN SERVICE OR ABANDONED.

   THE SOURCE OF UNDERGROUND UTILITIES ARE SHOWN UTILIZING A QUALITY LEVEL SYSTEM:

   QUALITY LEVEL D - UTILITIES SHOWN BASED UPON REFERENCE MAPPING OR ORAL HISTORY. NOT FIELD VERIFIED.

   QUALITY LEVEL C - LOCATION OF UTILITY SURFACE FEATURES SUPPLEMENTS REFERENCE MAPPING. INCLUDES MARKOUT BY OTHERS.

   QUALITY LEVEL B - UTILITY LOCATION DATA IS COLLECTED THROUGH GEOPHYSICAL SENSING TECHNOLOGY TO SUPPLEMENT SURFACE FEATURES AND OR REFERENCE MAPPING. INCLUDES MARKOUT BY CONTROL POINT ASSOCIATES, INC.

   QUALITY LEVEL A - HORIZONTAL AND VERTICAL LOCATION OF UTILITIES ARE OBTAINED USING VACUUM EQUIPMENT EXCAVATION OR OTHER METHODS TO EXPOSE THE UTILITY. LOCATION SHOWN AT SINGLE POINT WHERE EXCAVATION OCCURRED UNLESS UTILITY WAS LOCATED PRIOR TO FILLING.

   ALL FOUR TYPES MAY NOT BE PRESENT ON THIS SURVEY.

4. THIS PLAN IS BASED ON INFORMATION PROVIDED BY THE CLIENT, A SURVEY PREPARED IN THE FIELD BY CONTROL POINT ASSOCIATES, INC., AND OTHER REFERENCE MATERIAL AS LISTED HEREON.

5. THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT AND IS SUBJECT TO THE RESTRICTIONS, COVENANTS AND/OR EASEMENTS THAT MAY BE CONTAINED THEREIN. IT IS STRONGLY RECOMMENDED THAT A COMPLETE TITLE SEARCH BE PROVIDED TO THE SURVEYOR FOR REVIEW PRIOR TO THE PLACEMENT OF OR ALTERATION TO IMPROVEMENTS ON THE PROPERTY.

6. BY GRAPHIC PLOTTING ONLY PROPERTY IS LOCATED IN FLOOD ZONE "X-UNSHADED", (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) PER REF. #2.

7. THE EXISTENCE OF UNDERGROUND STORAGE TANKS, IF ANY, WAS NOT KNOWN AT THE TIME OF THE FIELD SURVEY.

8. ELEVATIONS REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), BASED ON GPS OBSERVATIONS UTILIZING THE KEYSTONE VRS NETWORK (KEYNETGPS).
   TEMPORARY BENCH MARKS SET:

   TBM-A: MAG NAIL SET IN ASPHALT PAVEMENT, ELEVATION= 367.68'

   TBM-B: MAG NAIL SET IN ASPHALT PAVEMENT, ELEVATION= 367.18'

   TBM-C: PK NAIL FOUND, ELEVATION= 366.16'

   TBM-D: DOCK SPIKE SET, ELEVATION= 372.97'

   PRIOR TO CONSTRUCTION IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THAT THE BENCHMARKS ILLUSTRATED ON THIS SKETCH HAVE NOT BEEN DISTURBED AND THEIR ELEVATIONS HAVE BEEN CONFIRMED. ANY CONFLICTS MUST BE REPORTED PRIOR TO CONSTRUCTION.

9. PLANIMETRIC AND TOPOGRAPHIC FEATURES COMPILED BY CONTROL POINT ASSOCIATES, INC. UTILIZING PHOTOGRAMMETRIC METHODS FROM UAV PHOTOGRAPHY. UAV PHOTOGRAPHY PERFORMED BY CONTROL POINT ASSOCIATES, INC. ON MAY 17, 2023. THIS DATA SET WAS PRODUCED TO COMPLY WITH THE AMERICAN SOCIETY OF PHOTOGRAMMETRY AND REMOTE SENSING (ASPRS) CLASS 1 STANDARD FOR A HORIZONTAL MAPPING SCALE OF 1"=40'.

10. PROPERTY LINES ARE SHOWN FOR REFERENCE PURPOUSES ONLY BASED ON MAP REFERENCE #3 AND RECOVERED FIELD EVIDENCE AT THE TIME OF THE SURVEY.

11. THE FOLLOWING WERE THE RESPONSES FROM THE UTILITY COMPANIES:
   -CONNECTICUT WATER DOES NOT PROVIDE SERVICE IN SALEM.
   -ENBRIDGE'S ALGONQUIN GAS TRANSMISSION, LLC DOES NOT HAVE FACILITIES NEAR THE SITE
   -NO EVERSOURCE GAS FACULTIES IN THE REQUESTED AREA

REFERENCES:

1. THE TAX ASSESSOR'S MAP OF TOWN OF SALEM, NEW LONDON COUNTY, MAP 6.

2. MAP ENTITLED "NATIONAL FLOOD INSURANCE PROGRAM, FIRM, FLOOD INSURANCE RATE MAP, NEW LONDON COUNTY, CONNECTICUT, (ALL JURISDICTIONS), PANEL 328 OF 554", MAP NUMBER 09011C0328G , EFFECTIVE DATE: JULY 18, 2011.

3. MAP ENTITLED "BOUNDARY SURVEY PREPARED FOR DAVE BURNETT" PREPARED BY TOWNE ENGINEERS INC., DATED MAY 29, 2003, FILED WITH THE TOWN OF SALEM, CLERK'S OFFICE AS A MAP 343D.

No.	DESCRIPTION OF REVISION	FIELD CREW	DRAWN:	APPROVED:	DATE
1	REVISED PER CLIENT COMMENTS	-	R.J.K.	W.T.W.	9-18-2024

TO MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

NOT A VALID ORIGINAL DOCUMENT UNLESS EMBOSSED WITH RAISED IMPRESSION OR BLUE INK SEAL

STATE OF CONNECTICUT · WILLIAM THEODORE WHIMPLE · No. 70290 · LICENSED · LAND SURVEYOR

9-18-2024
DATE

WILLIAM T. WHIMPLE
CONNECTICUT PROFESSIONAL LAND SURVEYOR #70290

8-22-2024

TOPOGRAPHIC SURVEY
380 NEW LONDON ROAD

MAP 6, LOT 2B
TOWN OF SALEM, NEW LONDON COUNTY
STATE OF CONNECTICUT

FIELD BOOK NO. 24-06 CT
FIELD BOOK PG. 125
FIELD CREW D.G.
DRAWN: L.M.M.

CONTROL POINT ASSOCIATES, INC.
352 TURNPIKE ROAD
SOUTHBOROUGH, MA 01772
508.948.3000 - 508.948.3003 FAX
WWW.CPASURVEY.COM

WARREN, NJ 908.668.0099
CHALFONT, PA 215.712.9800
MT. LAUREL, NJ 609.857.2099
MANHATTAN, NY 646.780.0411
LONG ISLAND, NY 631.580.2645
ALBANY, NY 518.217.5010
ROCHESTER, NY 585.250.1764
GEORGETOWN, DE 302.295.1010
PHILADELPHIA, PA 215.712.9800
HUDSON VALLEY, NY 845.691.7339

REVIEWED:	APPROVED:	DATE	SCALE	FILE NO.	DWG. NO.
R.J.K.	W.T.W.	9-13-2024	1"=40'	03-230145-01	1 OF 1

THE STATE OF CONNECTICUT REQUIRES NOTIFICATION BY EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN THE STATE.

GENERAL NOTES

1. ALL CONSTRUCTION SHALL COMPLY WITH PROJECT DEVELOPER STANDARDS, TOWN OF SALEM STANDARDS, CONNECTICUT DEPARTMENT OF TRANSPORTATION STANDARDS AND SPECIFICATIONS IN THE ABOVE REFERENCED INCREASING HIERARCHY. IF SPECIFICATIONS ARE IN CONFLICT, THE MORE STRINGENT SPECIFICATION SHALL APPLY.

2. IF NO PROJECT CONSTRUCTION SPECIFICATION PACKAGE IS PROVIDED BY THE PROJECT DEVELOPER OR THEIR REPRESENTATIVE, THE CONTRACTOR SHALL COMPLY WITH THE MANUFACTURER, TOWN OF SALEM, OR CONNECTICUT DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, AND BE IN ACCORDANCE WITH ALL APPLICABLE OSHA, FEDERAL, STATE AND LOCAL REGULATIONS.

3. THE PROJECT DEVELOPER IS RESPONSIBLE FOR OBTAINING ALL NECESSARY ZONING AND STORMWATER PERMITS REQUIRED BY GOVERNMENT AGENCIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL OBTAIN ALL TOWN OF SALEM CONSTRUCTION PERMITS. THE CONTRACTOR SHALL POST ALL BONDS, PAY ALL FEES, PROVIDE PROOF OF INSURANCE AND PROVIDE TRAFFIC CONTROL NECESSARY FOR THIS WORK.

4. REFER TO PLANS, DETAILS AND REPORTS PREPARED BY ALL-POINTS TECHNOLOGY CORPORATION FOR ADDITIONAL INFORMATION. THE CONTRACTOR SHALL VERIFY ALL SITE CONDITIONS IN THE FIELD AND CONTACT THE PROJECT DEVELOPER IF THERE ARE ANY QUESTIONS OR CONFLICTS REGARDING THE CONSTRUCTION DOCUMENTS AND/OR FIELD CONDITIONS SO THAT APPROPRIATE REVISIONS CAN BE MADE PRIOR TO BIDDING/CONSTRUCTION. ANY CONFLICT BETWEEN THE DRAWINGS AND SPECIFICATIONS SHALL BE CONFIRMED WITH THE PROJECT DEVELOPERS CONSTRUCTION MANAGER PRIOR TO CONSTRUCTION.

5. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF ALL PRODUCTS, MATERIALS PER PLANS, AND SPECIFICATIONS TO THE PROJECT DEVELOPER FOR REVIEW AND APPROVAL PRIOR TO FABRICATION OR DELIVERY TO THE SITE. ALLOW A MINIMUM OF 14 WORKING DAYS FOR REVIEW.

6. SHOULD ANY UNKNOWN OR INCORRECTLY LOCATED EXISTING PIPING OR OTHER UTILITY BE UNCOVERED DURING EXCAVATION, CONSULT THE PROJECT DEVELOPER IMMEDIATELY FOR DIRECTIONS BEFORE PROCEEDING FURTHER WITH WORK IN THIS AREA.

7. DO NOT INTERRUPT EXISTING UTILITIES SERVICING FACILITIES OCCUPIED AND USED BY THE PROJECT DEVELOPER OR OTHERS DURING OCCUPIED HOURS, EXCEPT WHEN SUCH INTERRUPTIONS HAVE BEEN AUTHORIZED IN WRITING BY THE PROJECT DEVELOPER AND THE LOCAL MUNICIPALITY. INTERRUPTIONS SHALL ONLY OCCUR AFTER ACCEPTABLE TEMPORARY SERVICE HAS BEEN PROVIDED.

8. THE CONTRACT LIMIT IS THE PROPERTY LINE UNLESS OTHERWISE SPECIFIED OR SHOWN ON THE CONTRACT DRAWINGS.

9. THE CONTRACTOR SHALL ABIDE BY ALL OSHA, FEDERAL, STATE AND LOCAL REGULATIONS WHEN OPERATING CRANES, BOOMS, HOISTS, ETC. IN CLOSE PROXIMITY TO OVERHEAD ELECTRIC LINES. IF CONTRACTOR MUST OPERATE EQUIPMENT CLOSE TO ELECTRIC LINES, CONTACT POWER COMPANY TO MAKE ARRANGEMENTS FOR PROPER SAFEGUARDS. ANY UTILITY COMPANY FEES SHALL BE PAID FOR BY THE CONTRACTOR.

10. THE CONTRACTOR SHALL COMPLY WITH OSHA CFR 29 PART 1926 FOR EXCAVATION TRENCHING AND TRENCH PROTECTION REQUIREMENTS.

11. THE ENGINEER IS NOT RESPONSIBLE FOR SITE SAFETY MEASURES TO BE EMPLOYED DURING CONSTRUCTION. THE ENGINEER HAS NO CONTRACTUAL DUTY TO CONTROL THE SAFEST METHODS OR MEANS OF THE WORK, JOB SITE RESPONSIBILITIES, SUPERVISION OF PERSONNEL OR TO SUPERVISE SAFETY AND DO NOT VOLUNTARILY ASSUME ANY SUCH DUTY OR RESPONSIBILITY.

12. THE CONTRACTOR SHALL RESTORE ANY DRAINAGE STRUCTURE, PIPE, CONDUIT, PAVEMENT, CURBING, SIDEWALKS, LANDSCAPED AREAS OR SIGNAGE DISTURBED DURING CONSTRUCTION TO THEIR ORIGINAL CONDITION OR BETTER, AS APPROVED BY THE PROJECT DEVELOPER OR TOWN OF SALEM.

13. THE CONTRACTOR SHALL PROVIDE AS-BUILT RECORDS OF ALL CONSTRUCTION (INCLUDING UNDERGROUND UTILITIES) TO THE PROJECT DEVELOPER AT THE END OF CONSTRUCTION.

14. ALTERNATIVE METHODS AND PRODUCTS, OTHER THAN THOSE SPECIFIED, MAY BE USED IF REVIEWED AND APPROVED BY THE PROJECT DEVELOPER, ENGINEER, AND APPROPRIATE REGULATORY AGENCY PRIOR TO INSTALLATION DURING THE BIDDING/CONSTRUCTION PROCESS.

15. INFORMATION ON EXISTING UTILITIES AND STORM DRAINAGE SYSTEMS HAS BEEN COMPILED FROM AVAILABLE INFORMATION INCLUDING UTILITY PROVIDER AND MUNICIPAL RECORD MAPS AND/OR FIELD SURVEY AND IS NOT GUARANTEED CORRECT OR COMPLETE. UTILITIES AND STORM DRAINAGE SYSTEMS ARE SHOWN TO ALERT THE CONTRACTOR TO THEIR PRESENCE AND THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ACTUAL LOCATIONS AND ELEVATIONS OF ALL UTILITIES AND STORM DRAINAGE SYSTEMS INCLUDING SERVICES. PRIOR TO DEMOLITION OR CONSTRUCTION, THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" 72 HOURS BEFORE COMMENCEMENT OF WORK AT "811" AND VERIFY ALL UTILITY AND STORM DRAINAGE SYSTEM LOCATIONS.

16. NO CONSTRUCTION OR DEMOLITION SHALL BEGIN UNTIL APPROVAL OF THE FINAL PLANS AND PERMITS ARE GRANTED BY ALL GOVERNING AND REGULATORY AGENCIES.

SITE PLAN NOTES

1. THE SURVEY WAS PROVIDED BY CONTROL POINT ASSOCIATES, INC. DATED SEPTEMBER 18, 2024.

2. THE CONTRACTOR SHALL FOLLOW THE RECOMMENDED SEQUENCE OF CONSTRUCTION NOTES PROVIDED ON THE EROSION CONTROL PLAN OR SUBMIT AN ALTERNATE PLAN FOR APPROVAL BY THE ENGINEER AND/OR PERMITTING AGENCIES PRIOR TO THE START CONSTRUCTION. ALLOW A MINIMUM OF 14 WORKING DAYS FOR REVIEW.

3. PROPER CONSTRUCTION PROCEDURES SHALL BE FOLLOWED ON ALL IMPROVEMENTS WITHIN THIS PARCEL SO AS TO PREVENT THE SILTING OF ANY WATERCOURSE OR BVWS IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS. IN ADDITION, THE CONTRACTOR SHALL ADHERE TO THE "SEDIMENTATION EROSION CONTROL PLAN" CONTAINED HEREIN. THE CONTRACTOR SHALL BE RESPONSIBLE TO POST ALL BONDS AS REQUIRED BY GOVERNMENT AGENCIES WHICH WOULD GUARANTEE THE PROPER IMPLEMENTATION OF THE PLAN.

4. ALL SITE WORK, MATERIALS OF CONSTRUCTION, AND CONSTRUCTION METHODS FOR EARTHWORK AND STORM DRAINAGE WORK, SHALL CONFORM TO THE SPECIFICATIONS AND DETAILS AND APPLICABLE SECTIONS OF THE PROJECT SPECIFICATIONS MANUAL. OTHERWISE THIS WORK SHALL CONFORM TO THE STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION AND PROJECT GEOTECHNICAL REPORT IF THERE IS NO PROJECT SPECIFICATIONS MANUAL. ALL FILL MATERIAL UNDER STRUCTURES AND PAVED AREAS SHALL BE PER THE ABOVE STATED APPLICABLE SPECIFICATIONS, AND/OR PROJECT GEOTECHNICAL REPORT, AND SHALL BE PLACED IN ACCORDANCE WITH THE APPLICABLE SPECIFICATIONS UNDER THE SUPERVISION OF A QUALIFIED PROFESSIONAL ENGINEER. MATERIAL SHALL BE COMPACTED IN 8" LIFTS TO 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D 1557 AT 95% PERCENT OF OPTIMUM MOISTURE CONTENT.

5. ALL DISTURBANCE INCURRED TO PUBLIC, MUNICIPAL, COUNTY, STATE PROPERTY DUE TO CONSTRUCTION SHALL BE RESTORED TO ITS PREVIOUS CONDITION OR BETTER, TO THE SATISFACTION OF THE TOWN OF SALEM AND STATE OF CONNECTICUT.

6. IF IMPACTED OR CONTAMINATED SOIL IS ENCOUNTERED BY THE CONTRACTOR, THE CONTRACTOR SHALL SUSPEND EXCAVATION WORK OF IMPACTED SOIL AND NOTIFY THE PROJECT DEVELOPER AND/OR PROJECT DEVELOPER'S ENVIRONMENTAL CONSULTANT PRIOR TO PROCEEDING WITH FURTHER WORK IN THE IMPACTED SOIL LOCATION UNTIL FURTHER INSTRUCTED BY THE PROJECT DEVELOPER AND/OR PROJECT DEVELOPER'S ENVIRONMENTAL CONSULTANT.

CONSTRUCTION SEQUENCE NOTES

CONSTRUCTION ACTIVITIES ARE EXPECTED TO TAKE UP TO NINE MONTHS.

THE GENERAL CONSTRUCTION NOTES ARE AS FOLLOWS:

1. THE SITE CONTRACTOR SHALL BE FULLY RESPONSIBLE TO CONTROL CONSTRUCTION SUCH THAT SEDIMENTATION SHALL NOT AFFECT ROADS/HIGHWAYS AND THEIR DRAINAGE SYSTEM, NEIGHBORING PROPERTIES, WETLANDS AND REGULATORY PROTECTED AREAS, WHETHER SUCH SEDIMENTATION IS CAUSED BY WATER, WIND, OR DIRECT DEPOSIT. DESIGNATED ACCESS DRIVES MUST BE USED TO THE MAXIMUM EXTENTS POSSIBLE. IT IS REQUIRED THAT THE SITE CONTRACTOR PERFORM A DAILY INSPECTION OF ALL EROSION AND SEDIMENT CONTROL MEASURES EMPLOYED AT THE SITE.

2. A CTDEEP-APPROVED QUALIFIED INSPECTOR SHALL BE ASSIGNED TO BE RESPONSIBLE FOR PERFORMING INSPECTIONS AND PREPARING REPORTS IN ACCORDANCE WITH SECTION 5(B)(4)(B) OF THE CONSTRUCTION GENERAL PERMIT. THESE INSPECTIONS SHALL TAKE PLACE WEEKLY, AT A MINIMUM, AND SHALL BE REQUIRED WITHIN 24 HOURS OF A RAINFALL EVENT EXCEEDING 0.5 INCHES. THE ENGINEER OF RECORD SHALL BE REQUIRED TO REVIEW AND COUNTER-SIGN THE PREPARED WEEKLY REPORTS.

3. ENGINEER OF RECORD WILL PERFORM MONTHLY PLAN IMPLEMENTATION INSPECTIONS UNTIL EROSION CONTROLS ARE IN PLACE, OR THE FIRST THREE MONTHS (WHICHEVER IS GREATER) AND WILL PREPARE REPORTS OF THE FINDINGS.

4. THROUGHOUT THE COURSE OF THE CONSTRUCTION PROJECT, ADDITIONAL SEDIMENT AND EROSION CONTROL MEASURES MAY BE WARRANTED AT THE DISCRETION OF THE QUALIFIED INSPECTOR AND/OR DESIGN ENGINEER. THESE IMPROVEMENTS MUST BE IMPLEMENTED IN A TIMELY FASHION IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONSTRUCTION GENERAL PERMIT.

5. PRIOR TO CONSTRUCTION, THE APPLICANT SHALL PROVIDE THE TOWN OF GRANBY WITH THE NAME OF CONTACT AND 24-HOUR CONTACT INFORMATION.

6. CONTRACTOR SHALL ADHERE TO 2024 CONNECTICUT GUIDELINES FOR EROSION AND SEDIMENT CONTROL, AS AMENDED.

7. THE CONTRACTOR SHALL HOLD PRE-CONSTRUCTION MEETING(S). ATTENDEES SHALL INCLUDE, BUT NOT BE LIMITED TO, REPRESENTATIVES OF THE GENERAL CONTRACTOR, SITE CONTRACTOR, CTDEEP, TOWN OF GRANBY, ENGINEER OF RECORD, AND QUALIFIED SWPPP INSPECTOR.

8. THE CONTRACTOR SHALL CONTACT CALL-BEFORE-YOU-DIG (1-800-922-4455) PRIOR TO ENGAGING IN ANY EXCAVATION ACTIVITIES AT THE SITE.

9. THE CONTRACTOR SHALL NOTIFY THE TOWN OF GRANBY AGENT, ZONING ENFORCEMENT OFFICER, AND ENGINEERING DEPARTMENT, 48 HOURS PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION ACTIVITY.

10. NO CONSTRUCTION OF SITE IMPROVEMENTS MAY BEGIN UNTIL THE PROPER EROSION CONTROL MEASURES SERVING THE AREA TO BE DISTURBED ARE IN PLACE.

11. ANTICIPATED WORK HOURS WILL BE BETWEEN 7:00 AM AND 5:00 PM MONDAY THROUGH FRIDAY. IF ANY VARIATION FROM THIS SCHEDULE IS TEMPORARILY REQUIRED, THE PROJECT TEAM SHALL PROVIDE NOTICE TO CONNECTICUT SITING COUNCIL.

12. HIGH FLOTATION TIRE EQUIPMENT SHALL BE USED TO THE MAXIMUM EXTENTS PRACTICABLE IN LIEU OF TRACK CONSTRUCTION EQUIPMENT IN AN EFFORT TO AVOID COMPACTION OF THE NATIVE SOILS.

PRE-CONSTRUCTION SITE PROTECTION SEQUENCE

1. SURVEY AND MARK ALL WOODLAND CLEARING LIMITS.

2. EXISTING AND PROPOSED ACCESS ROADS SHALL BE DESIGNATED AS EARLY AS FEASIBLE AND USED PRIMARILY FOR CONSTRUCTION TRAFFIC.

3. FIELD SURVEY AND MARK BOUNDARY BETWEEN CLEARING LIMITS AND GRUBBING LIMITS.

4. INSTALL EROSION AND SEDIMENT CONTROLS FOLLOWING THE CT GUIDELINES AND MANUFACTURER'S DIRECTIONS. DURING CONSTRUCTION, THE CONTRACTOR SHALL INSTALL MEASURES AS REQUIRED BY THE ENGINEER OF RECORD OR QUALIFIED INSPECTOR, TO PREVENT SEDIMENT-LADEN RUNOFF FROM REACHING WETLANDS OR DISCHARGING OFFSITE.

5. INSTALL TEMPORARY BRIDGE PER MANUFACTURER RECOMMENDATIONS.

6. INSTALL STORMWATER BASIN AS EARLY AS FEASIBLE IN ACCORDANCE WITH THE APPROVED SITE-SPECIFIC SWPCP AND CT GUIDELINES. DISCHARGE AREAS BELOW OUTFALLS MUST BE INSPECTED TO CONFIRM FLOW WILL BE OVER STABLE GROUND AND SHEET FLOW IS ENCOURAGED. IF DISTURBED SOILS ARE PRESENT, THE ENGINEER OF RECORD TO PROVIDE CORRECT MEASURES TO ADDRESS CONDITION.

7. SEED AND PROTECT DISTURBED SOILS AROUND SEDIMENT TRAPS AND BASINS WITHIN 72 HOURS OF COMPLETION.

8. CLEAR AND GRUB VEGETATION PER SITE PLANS.

9. THE USE OF A TUB GRINDER IS RECOMMENDED FOR THE MULCHING OF FELLED TREES IF CHIPPED ON SITE. MULCH SHALL NOT BE CAST WIDESPREAD ACROSS SITE AS IT WILL INHIBIT VEGETATIVE GROWTH.

10. PERFORM EARTHWORK AND SHAPING ON THE SITE. TOPSOIL SHALL BE STRIPPED AND STOCKPILED FROM AREAS PROPOSED FOR REGRADING. EXCESS SOIL WHICH IS NOT REUSED IN PROPOSED SITE GRADING AS DEPICTED ON PLANS CAN BE HAULED OFF-SITE.

11. TOPSOIL SHALL BE REPLACED OVER REGRADED AREAS UPON COMPLETION OF MASS EARTHWORK ACTIVITIES AND AREAS WHICH WERE DISTURBED BY MASS EARTHWORK OPERATIONS SHALL BE RESEEDED WITHIN 72 HOURS OF COMPLETION.

12. THROUGHOUT CONSTRUCTION, THE CONTRACTOR SHALL ADDRESS ONGOING EROSION PROBLEMS USING TEMPORARY DIVERSIONS AND FILLING AND GRADING GULLIES.

CONSTRUCTION SEQUENCE

1. INSTALL STABILIZED GRAVEL ROADS.

2. INSTALL ELECTRICAL COMPONENTS AND INTERCONNECTION.

3. INSTALL SITE FENCING AND/OR SOUND WALL.

4. RESEED, REPAVE, AND/OR REPLANT ANY AREAS DISTURBED BY CONSTRUCTION.

5. AFTER SITE IS STABILIZED, AND AFTER INSPECTION BY DESIGN ENGINEER, OR OTHER OWNER'S REPRESENTATIVE, REMOVE TEMPORARY EROSION AND SEDIMENT CONTROLS. ENTIRE SITE SHALL BE CHECKED FOR AND CLEANED OF SEDIMENT AS NEEDED

UTILITY NOTES

1. CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE TOWN OF SALEM TO SECURE CONSTRUCTION PERMITS AND FOR PAYMENT OF FEES FOR STREET CUTS AND CONNECTIONS TO EXISTING UTILITIES.

2. REFER TO DRAWINGS BY PROJECT DEVELOPER FOR THE ONSITE ELECTRICAL DRAWINGS AND INTERCONNECTION TO EXISTING ELECTRICAL GRID. SITE CONTRACTOR SHALL SUPPLY AND INSTALL PIPE ADAPTERS AS NECESSARY AT BUILDING CONNECTION POINT OR AT EXISTING UTILITY OR PIPE CONNECTION POINT. THESE DETAILS ARE NOT INCLUDED IN THESE PLANS.

3. UTILITY LOCATIONS AND PENETRATIONS ARE SHOWN FOR THE CONTRACTOR'S INFORMATION AND SHALL BE VERIFIED WITH THE ELECTRICAL ENGINEER AND THE PROJECT DEVELOPER'S CONSTRUCTION MANAGER PRIOR TO THE START OF CONSTRUCTION.

4. THE CONTRACTOR SHALL VISIT THE SITE AND VERIFY THE ELEVATION AND LOCATION OF ALL UTILITIES BY VARIOUS MEANS PRIOR TO BEGINNING ANY EXCAVATION. TEST PITS SHALL BE DUG AT ALL LOCATIONS WHERE PROP. SANITARY SEWERS AND WHERE PROP. STORM PIPING WILL CROSS EXISTING UTILITIES, AND THE HORIZONTAL AND VERTICAL LOCATIONS OF THE UTILITIES SHALL BE DETERMINED. THE CONTRACTOR SHALL CONTACT THE PROJECT DEVELOPER IN THE EVENT OF ANY DISCOVERED OR UNFORESEEN CONFLICTS BETWEEN EXISTING AND PROPOSED SANITARY SEWERS, STORM PIPING AND UTILITIES SO THAT AN APPROPRIATE MODIFICATION MAY BE MADE.

5. UTILITY CONNECTION DESIGN AS REFLECTED ON THE PLAN MAY CHANGE SUBJECT TO UTILITY PROVIDER AND GOVERNING AUTHORITY STAFF REVIEW.

6. THE CONTRACTOR SHALL ENSURE THAT ALL UTILITY PROVIDERS AND GOVERNING AUTHORITY STANDARDS FOR MATERIALS AND CONSTRUCTION METHODS ARE MET. THE CONTRACTOR SHALL PERFORM PROPER COORDINATION WITH THE RESPECTIVE UTILITY PROVIDER.

7. THE CONTRACTOR SHALL ARRANGE FOR AND COORDINATE WITH THE RESPECTIVE UTILITY PROVIDERS FOR SERVICE INSTALLATIONS AND CONNECTIONS. THE CONTRACTOR SHALL COORDINATE WORK TO BE PERFORMED BY THE VARIOUS UTILITY PROVIDERS AND SHALL PAY ALL FEES FOR CONNECTIONS, DISCONNECTIONS, RELOCATIONS, INSPECTIONS, AND DEMOLITION UNLESS OTHERWISE STATED IN THE PROJECT SPECIFICATIONS MANUAL AND/OR GENERAL CONDITIONS OF THE CONTRACT.

8. ALL EXISTING PAVEMENT WHERE UTILITY PIPING IS TO BE INSTALLED SHALL BE SAW CUT. AFTER UTILITY INSTALLATION IS COMPLETED, THE CONTRACTOR SHALL INSTALL TEMPORARY AND/OR PERMANENT PAVEMENT REPAIR AS DETAILED ON THE DRAWINGS OR AS REQUIRED BY THE TOWN OF SALEM.

9. ALL PIPES SHALL BE LAID ON STRAIGHT ALIGNMENTS AND EVEN GRADES USING A PIPE LASER OR OTHER ACCURATE METHOD.

10. RELOCATION OF UTILITY PROVIDER FACILITIES, SUCH AS POLES, SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF THE UTILITY PROVIDER.

11. THE CONTRACTOR SHALL COMPACT PIPE BACKFILL IN 8" LIFTS ACCORDING TO THE PIPE BEDDING DETAILS. TRENCH BOTTOM SHALL BE STABLE IN HIGH GROUNDWATER AREAS. A PIPE FOUNDATION SHALL BE USED PER THE TRENCH DETAILS AND IN AREAS OF ROCK EXCAVATION.

12. CONTRACTOR TO PROVIDE STEEL SLEEVES AND ANNULAR SPACE SAND FILL FOR UTILITY PIPE AND CONDUIT CONNECTIONS UNDER FOOTINGS.

13. ALL UTILITY CONSTRUCTION IS SUBJECT TO INSPECTION FOR APPROVAL PRIOR TO BACKFILLING, IN ACCORDANCE WITH THE APPROPRIATE UTILITY PROVIDER REQUIREMENTS.

14. A ONE-FOOT MINIMUM VERTICAL CLEARANCE BETWEEN WATER, GAS, ELECTRICAL, AND TELEPHONE LINES AND STORM PIPING SHALL BE PROVIDED. A SIX-INCH MINIMUM CLEARANCE SHALL BE MAINTAINED BETWEEN STORM PIPING AND SANITARY SEWER. A 6-INCH TO 18-INCH VERTICAL CLEARANCE BETWEEN SANITARY SEWER PIPING AND STORM PIPING SHALL REQUIRE CONCRETE ENCASEMENT OF THE SANITARY PIPING.

15. THE CONTRACTOR SHALL RESTORE ANY UTILITY STRUCTURE, PIPE, CONDUIT, PAVEMENT, CURBING, SIDEWALKS, DRAINAGE STRUCTURE, SWALE OR LANDSCAPED AREAS DISTURBED DURING CONSTRUCTION, TO THEIR ORIGINAL CONDITION OR BETTER TO THE SATISFACTION OF THE PROJECT DEVELOPER AND TOWN OF SALEM.

16. INFORMATION ON EXISTING UTILITIES AND STORM DRAINAGE HAS BEEN COMPILED FROM AVAILABLE INFORMATION INCLUDING UTILITY PROVIDER AND MUNICIPAL RECORD MAPS AND/OR FIELD SURVEY, AND IS NOT GUARANTEED CORRECT OR COMPLETE. UTILITIES AND STORM DRAINAGE ARE SHOWN TO ALERT THE CONTRACTOR TO THEIR PRESENCE. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ACTUAL LOCATIONS AND ELEVATIONS OF ALL UTILITIES AND STORM DRAINAGE INCLUDING SERVICES. CONTACT "CALL BEFORE YOU DIG" AT 811 72 HOURS PRIOR TO CONSTRUCTION AND VERIFY ALL UNDERGROUND AND OVERHEAD UTILITY AND STORM DRAINAGE LOCATIONS. THE CONTRACTOR SHALL EMPLOY THE USE OF A UTILITY LOCATING COMPANY TO PROVIDE SUBSURFACE UTILITY ENGINEERING CONSISTING OF DESIGNATING UTILITIES AND STORM PIPING ON PRIVATE PROPERTY WITHIN THE CONTRACT LIMIT AND CONSISTING OF DESIGNATING AND LOCATING WHERE PROP. UTILITIES AND STORM PIPING CROSS EXISTING UTILITIES AND STORM PIPING WITHIN THE CONTRACT LIMITS.

17. THE CONTRACTOR SHALL ARRANGE AND COORDINATE WITH UTILITY PROVIDERS FOR WORK TO BE PERFORMED BY UTILITY PROVIDERS. THE CONTRACTOR SHALL PAY ALL UTILITY FEES UNLESS OTHERWISE STATED IN THE PROJECT SPECIFICATION MANUAL AND GENERAL CONDITIONS, AND REPAIR PAVEMENTS AS NECESSARY.

18. ELECTRIC DRAWINGS AND REQUIREMENTS ARE NOT INCLUDED AS PART OF THIS DRAWING SET AND SHOULD BE OBTAINED FROM THE PROJECT DEVELOPER.

19. ALTERNATIVE METHODS AND PRODUCTS OTHER THAN THOSE SPECIFIED MAY BE USED IF REVIEWED AND APPROVED BY THE PROJECT DEVELOPER, ENGINEER, AND APPROPRIATE REGULATORY AGENCIES PRIOR TO INSTALLATION.

20. THE CONTRACTOR SHALL MAINTAIN ALL FLOWS AND UTILITY CONNECTIONS TO EXISTING BUILDINGS WITHOUT INTERRUPTION UNLESS/UNTIL AUTHORIZED TO DISCONNECT BY THE PROJECT DEVELOPER, TOWN OF SALEM, UTILITY PROVIDERS AND GOVERNING AUTHORITIES.

ENVIRONMENTAL NOTES - RESOURCES PROTECTION MEASURES

BAT PROTECTION PROGRAM

THE PROPOSED FACILITY IS LOCATED WITHIN SENSITIVE HABITAT KNOWN TO BE USED BY NORTHERN LONG-EARED BAT ("NLEB"; MYOTIS SEPTENTRIONALIS), A FEDERALLY- AND STATE-LISTED ENDANGERED SPECIES, AND TRICOLORED BAT ("TCB"; PERIMYOTIS SUBFLAVUS), A FEDERALLY PROPOSED ENDANGERED AND STATE ENDANGERED SPECIES. IN ORDER TO PROTECT THESE BAT SPECIES AND PREVENT INCIDENTAL TAKE, PROTECTION AND CONSERVATION MEASURES ARE PROPOSED DURING CONSTRUCTION AND OPERATION OF THE FACILITY.
IT IS OF THE UTMOST IMPORTANCE THAT THE CONTRACTOR COMPLIES WITH THE REQUIREMENT FOR IMPLEMENTATION OF THESE PROTECTIVE MEASURES AND THE EDUCATION OF ITS EMPLOYEES AND SUBCONTRACTORS PERFORMING WORK ON THE PROJECT SITE.
ALL-POINTS TECHNOLOGY CORPORATION, P.C. ("APT") WILL SERVE AS THE ENVIRONMENTAL MONITOR FOR THIS PROJECT TO ENSURE THAT THESE PROTECTION AND CONSERVATION MEASURES ARE IMPLEMENTED PROPERLY. APT WILL PROVIDE AN EDUCATION SESSION FOR THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION ACTIVITIES ON THE POTENTIAL PRESENCE OF NLEB AND TCB. THE CONTRACTOR SHALL CONTACT DEAN GUSTAFSON, SENIOR BIOLOGIST AT APT, AT LEAST 5 BUSINESS DAYS PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITIES TO SCHEDULE A PRE-CONSTRUCTION MEETING. MR. GUSTAFSON CAN BE REACHED BY PHONE AT (860) 552-2033 OR VIA EMAIL AT DGUSTAFSON@ALLPOINTSTECH.COM.
THIS PROTECTION PROGRAM CONSISTS OF SEVERAL COMPONENTS: EDUCATION OF ALL CONTRACTORS AND SUB-CONTRACTORS PRIOR TO INITIATION OF WORK ON THE SITE; PROTECTIVE AND CONSERVATION MEASURES; PERIODIC INSPECTION OF THE CONSTRUCTION PROJECT; AND, REPORTING. DETAILS OF THE NLEB AND TCB PROTECTION MEASURES TO BE IMPLEMENTED IN ASSOCIATION WITH CONSTRUCTION AND OPERATION OF THE FACILITY ARE PROVIDED BELOW.

1. CONTRACTOR EDUCATION
   - 1.a. PRIOR TO WORK ON SITE, THE CONTRACTOR SHALL ATTEND AN EDUCATIONAL SESSION AT THE PRE-CONSTRUCTION MEETING WITH APT. THIS ORIENTATION AND EDUCATIONAL SESSION WILL CONSIST OF AN INTRODUCTORY MEETING WITH APT TO EMPHASIZE THE ENVIRONMENTALLY SENSITIVE NATURE OF THE PROJECT, THE RARE SPECIES RESOURCES, AND THE REQUIREMENT TO DILIGENTLY FOLLOW THE PROTECTIVE AND CONSERVATION MEASURES AS DESCRIBED IN SECTIONS BELOW.
   - 1.b. THE CONTRACTOR WILL BE PROVIDED WITH CELL PHONE AND EMAIL CONTACTS FOR APT PERSONNEL TO IMMEDIATELY REPORT ANY ENCOUNTERS WITH ANY RARE SPECIES. EDUCATIONAL POSTER MATERIALS WILL BE PROVIDED BY APT AND DISPLAYED ON THE JOB SITE TO MAINTAIN WORKER AWARENESS AS THE PROJECT PROGRESSES.
   - 1.c. IF ANY RARE SPECIES ARE ENCOUNTERED, THE CONTRACTOR SHALL IMMEDIATELY CEASE ALL WORK, AVOID ANY DISTURBANCE TO THE SPECIES, AND CONTACT APT.
2. BAT TREE CLEARING RESTRICTION
   - 2.a. A TIME OF YEAR RESTRICTION ("TOYR") FOR TREE CLEARING RESTRICTS TREE REMOVAL TO OCCUR ONLY BETWEEN NOVEMBER 1ST/ THROUGH APRIL 14TH/, DURING THE BAT'S INACTIVE SEASON, WHEN NLEB AND TCB WOULD LIKELY BE IN HIBERNACULA AND NOT PRESENT IN FORESTED HABITAT ON THE SUBJECT PROPERTY. DO NOT REMOVE TREES BETWEEN APRIL 15TH/ THROUGH OCTOBER 31ST/.
3. NLEB AND TCB CONSERVATION
   - 3.a. TWO (2) MULTI-CHAMBER NURSERY BAT HOUSES WILL BE INSTALLED IN THE NORTHERN PORTION OF THE SUBJECT PROPERTY LOCATED IN AN EXISTING CLEARED AREA PROXIMATE TO A POND AND HORSE POUND BROOK. BAT HOUSE BOXES WILL BE INSTALLED ON EITHER SIDE OF A SINGLE PRESSURE TREATED 20-FOOT LONG 4-INCH BY 6-INCH POST EMBEDDED 4-FEET INTO THE GROUND. BAT HOUSE BOXES WILL BE PAINTED BLACK OR A DARK SHADE OF PAINT AND INSTALLED FACING SOUTHEAST TO CAPTURE MORNING SUN AND ATTAIN SUN EXPOSURE FOR A MINIMUM OF 6-8 HOURS/DAY, IDEAL CONDITIONS FOR REARING YOUNG BAT PUPS.
4. REPORTING
   - 4.a. A COMPLIANCE MONITORING REPORT (BRIEF NARRATIVE AND APPLICABLE PHOTOS) DOCUMENTING APT INSPECTION VERIFYING TOYR FOR TREE REMOVAL WAS ADHERED TO AND INSTALLATION OF THE BAT HOUSES WILL BE SUBMITTED BY APT TO THE PERMITTEE FOR COMPLIANCE VERIFICATION. ANY OBSERVATIONS OF BATS WILL BE INCLUDED IN THE REPORTS.
   - 4.b. FOLLOWING COMPLETION OF THE CONSTRUCTION PROJECT, APT WILL PROVIDE A FINAL COMPLIANCE MONITORING REPORT TO THE PERMITTEE DOCUMENTING IMPLEMENTATION OF THIS NLEB AND TCB PROTECTION AND CONSERVATION PROGRAM AND ANY SPECIES OBSERVATIONS. THE PERMITTEE SHALL PROVIDE A COPY OF THE FINAL COMPLIANCE MONITORING REPORT TO THE CONNECTICUT SITING COUNCIL FOR COMPLIANCE VERIFICATION.
   - 4.c. ANY OBSERVATIONS OF RARE SPECIES WILL BE REPORTED TO DEEP BY APT ON THE APPROPRIATE SPECIAL ANIMAL REPORTING FORM, WITH PHOTO-DOCUMENTATION (IF POSSIBLE) AND SPECIFIC INFORMATION ON THE LOCATION AND DISPOSITION OF THE ANIMAL.

GENERAL LEGEND

	EXISTING	PROPOSED
PROPERTY LINE		
BUILDING SETBACK		
EASEMENT		
TREE LINE		
WETLAND	V V V	
WETLAND NOISE BARIER		
WETLAND BUFFER		
VERNAL POOL		
VERNAL POOL BUFFER		
WATERCOURSE		
WATERCOURSE BUFFER		
MAJOR CONTOUR		
MINOR CONTOUR		
UNDERGROUND ELECTRIC		E E
OVERHEAD ELECTRIC		OH OH
BASIN		
SWALE		
FENCE		X X X
LIMIT OF DISTURBANCE	I	L L
FILTER SOCK		FS FS
SILT FENCE		SF SF

FAIRY LAKE, LLC

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CSC SUBMISSION

NO	DATE	REVISION
1		
2		
3		
4		
5		
6		
7		

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NO	DATE	REVISION
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DESIGN PROFESSIONALS OF RECORD

PROF: THOMAS E. LITTLE, P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.
ADD: 567 VAUXHALL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385

OWNER: 380 NEW LONDON RD HOLDINGS LLC
ADDRESS: 380 NEW LONDON ROAD SALEM, CT 06420

SALEM BESS

SITE ADDRESS:
380 NEW LONDON ROAD
SALEM, CT 06420

APT FILING NUMBER: CT760100

DRAWN BY:UKA/ELZ
DATE: 11/06/24
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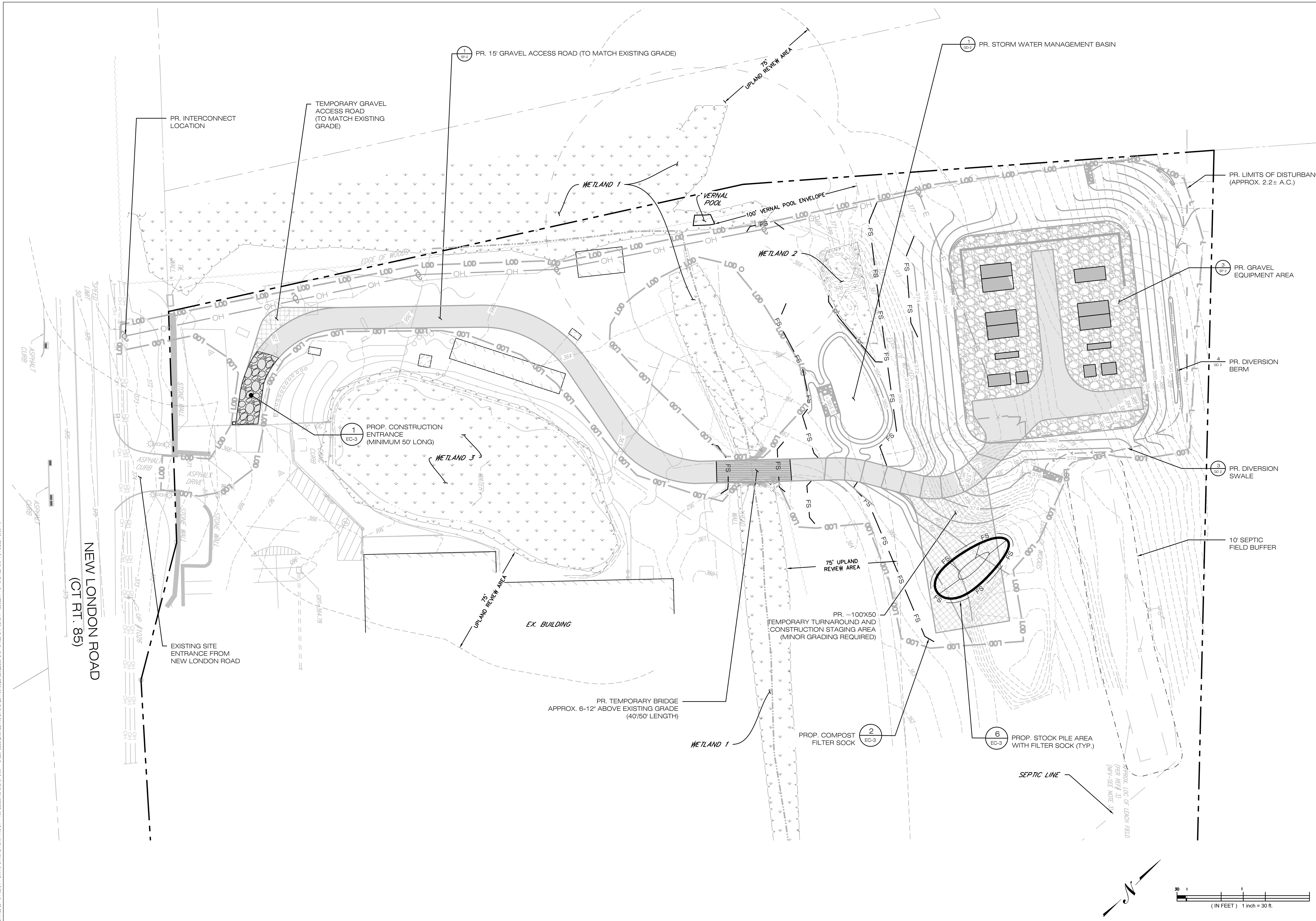
SHEET TITLE:

OVERALL LOCUS PLAN

SHEET NUMBER:

OP-1



PR. 15' GRAVEL ACCESS ROAD (TO MATCH EXISTING GRADE)
75' UPLAND REVIEW AREA
PR. STORM WATER MANAGEMENT BASIN
TEMPORARY GRAVEL ACCESS ROAD (TO MATCH EXISTING GRADE)
PR. INTERCONNECT LOCATION
WETLAND 1
VERNAL POOL
100' VERNAL POOL ENVELOPE
EDGE OF WOODS
WETLAND 2
PR. LIMITS OF DISTURBANCE (APPROX. 2.2± A.C.)
PR. GRAVEL EQUIPMENT AREA
PR. DIVERSION BERM
PR. DIVERSION SWALE
10' SEPTIC FIELD BUFFER
PROP. CONSTRUCTION ENTRANCE (MINIMUM 50' LONG)
WETLAND 3
STONE WALL
ASPHALT CURB
ASPHALT DRIVE
CONC. CURB
NEW LONDON ROAD (CT RT. 85)
EXISTING SITE ENTRANCE FROM NEW LONDON ROAD
EX. BUILDING
75' UPLAND REVIEW AREA
PR. ~100'X50 TEMPORARY TURNAROUND AND CONSTRUCTION STAGING AREA (MINOR GRADING REQUIRED)
PR. TEMPORARY BRIDGE APPROX. 6-12" ABOVE EXISTING GRADE (40'/50' LENGTH)
WETLAND 1
PROP. COMPOST FILTER SOCK
PROP. STOCK PILE AREA WITH FILTER SOCK (TYP.)
SEPTIC LINE
APPROX. LOC OF LEACH FIELD (PER REF # 3) (NFI-SEE NOTE X)
(IN FEET) 1 inch = 30 ft.

FAIRY LAKE, LLC

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CSC SUBMISSION

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APT FILING NUMBER: CT760100

DRAWN BY: UKA/ELZ

DATE: 11/06/24

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SHEET TITLE:

EROSION & SEDIMENT CONTROL PLAN

SHEET NUMBER:

EC-1

EROSION CONTROL NOTES

EROSION AND SEDIMENT CONTROL PLAN NOTES

1. THE CONTRACTOR SHALL CONSTRUCT ALL SEDIMENT AND EROSION CONTROLS IN ACCORDANCE WITH THE 2024 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL, LATEST EDITION, IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, AND AS DIRECTED BY THE TOWN OF SALEM, PERMITTEE, AND/OR SWPCP MONITOR. ALL PERIMETER SEDIMENTATION AND EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE START OF CLEARING AND GRUBBING AND DEMOLITION OPERATIONS.

2. THESE DRAWINGS ARE ONLY INTENDED TO DESCRIBE THE SEDIMENT AND EROSION CONTROL MEASURES FOR THIS SITE. SEE CONSTRUCTION SEQUENCE FOR ADDITIONAL INFORMATION. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHOWN ON THE EROSION & SEDIMENT CONTROL PLAN ARE SHOWN AS REQUIRED BY THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT ALL EROSION CONTROL MEASURES ARE CONFIGURED AND CONSTRUCTED IN A MANNER THAT WILL MINIMIZE EROSION OF SOILS AND PREVENT THE TRANSPORT OF SEDIMENTS AND OTHER POLLUTANTS TO STORM DRAINAGE SYSTEMS AND/OR WATERCOURSES. ACTUAL SITE CONDITIONS OR SEASONAL AND CLIMATIC CONDITIONS MAY WARRANT ADDITIONAL CONTROLS OR CONFIGURATIONS, AS REQUIRED, AND AS DIRECTED BY THE PERMITTEE AND/OR SWPCP MONITOR. REFER TO SITE PLAN FOR GENERAL INFORMATION AND OTHER CONTRACT PLANS FOR APPROPRIATE INFORMATION.

3. A BOND OR LETTER OF CREDIT MAY BE REQUIRED TO BE POSTED WITH THE GOVERNING AUTHORITY FOR THE EROSION CONTROL INSTALLATION AND MAINTENANCE.

4. THE CONTRACTOR SHALL APPLY THE MINIMUM EROSION & SEDIMENT CONTROL MEASURES SHOWN ON THE PLAN IN CONJUNCTION WITH CONSTRUCTION SEQUENCING, SUCH THAT ALL ACTIVE WORK ZONES ARE PROTECTED. ADDITIONAL AND/OR ALTERNATIVE SEDIMENT AND EROSION CONTROL MEASURES MAY BE INSTALLED DURING THE CONSTRUCTION PERIOD IF FOUND NECESSARY BY THE CONTRACTOR, OWNER, SITE ENGINEER, MUNICIPAL OFFICIALS, OR ANY GOVERNING AGENCY. THE CONTRACTOR SHALL CONTACT THE OWNER AND APPROPRIATE GOVERNING AGENCIES FOR APPROVAL IF ALTERNATIVE CONTROLS OTHER THAN THOSE SHOWN ON THE PLANS ARE PROPOSED BY THE CONTRACTOR.

5. THE CONTRACTOR SHALL TAKE EXTREME CARE DURING CONSTRUCTION SO AS NOT TO DISTURB UNPROTECTED WETLAND AREAS OR INSTALLED SEDIMENTATION AND EROSION CONTROL MEASURES. THE CONTRACTOR SHALL INSPECT ALL SEDIMENT AND EROSION CONTROLS WEEKLY AND WITHIN 24 HOURS OF A STORM WITH A RAINFALL AMOUNT OF 0.25 INCHES OR GREATER TO VERIFY THAT THE CONTROLS ARE OPERATING PROPERLY AND MAKE REPAIRS AS NECESSARY IN A TIMELY MANOR.

6. THE CONTRACTOR SHALL KEEP A SUPPLY OF EROSION CONTROL MATERIAL (SILT FENCE, COMPOST FILTER SOCK, EROSION CONTROL BLANKET, ETC.) ON-SITE FOR PERIODIC MAINTENANCE AND EMERGENCY REPAIRS.

7. ALL FILL MATERIAL PLACED ADJACENT TO ANY WETLAND AREA SHALL BE GOOD QUALITY, WITH LESS THAN 5% FINES PASSING THROUGH A #200 SIEVE (BANK RUN), SHALL BE PLACED IN MAXIMUM ONE FOOT LIFTS, AND SHALL BE COMPACTED TO 95% MAX. DRY DENSITY MODIFIED PROCTOR OR AS SPECIFIED IN THE CONTRACT SPECIFICATIONS.

8. PROTECT EXISTING TREES THAT ARE TO BE SAVED BY FENCING, ORANGE SAFETY FENCE, CONSTRUCTION TAPE, OR EQUIVALENT FENCING/TAPE. ANY LIMB TRIMMING SHOULD BE DONE AFTER CONSULTATION WITH AN ARBORIST AND BEFORE CONSTRUCTION BEGINS IN THAT AREA; FENCING SHALL BE MAINTAINED AND REPAIRED DURING CONSTRUCTION.

9. CONSTRUCTION ENTRANCES (ANTI-TRACKING PADS) SHALL BE INSTALLED PRIOR TO ANY SITE EXCAVATION OR CONSTRUCTION ACTIVITY AND SHALL BE MAINTAINED THROUGHOUT THE DURATION OF ALL CONSTRUCTION IF REQUIRED. THE LOCATION OF THE TRACKING PADS MAY CHANGE AS VARIOUS PHASES OF CONSTRUCTION ARE COMPLETED. CONTRACTOR SHALL ENSURE THAT ALL VEHICLES EXITING THE SITE ARE PASSING OVER THE ANTI-TRACKING PADS PRIOR TO EXITING.

10. ALL CONSTRUCTION SHALL BE CONTAINED WITHIN THE LIMIT OF DISTURBANCE, WHICH SHALL BE MARKED WITH SILT FENCE, SAFETY FENCE, HAY BALES, RIBBONS, OR OTHER MEANS PRIOR TO CLEARING. CONSTRUCTION ACTIVITY SHALL REMAIN ON THE UPHILL SIDE OF THE SEDIMENT BARRIER UNLESS WORK IS SPECIFICALLY CALLED FOR ON THE DOWNHILL SIDE OF THE BARRIER.

11. NO CUT OR FILL SLOPES SHALL EXCEED 2:1 EXCEPT WHERE STABILIZED BY ROCK FACED EMBANKMENTS OR EROSION CONTROL BLANKETS. ALL SLOPES SHALL BE SEEDED AND BANKS WILL BE STABILIZED IMMEDIATELY UPON COMPLETION OF FINAL GRADING UNTIL TURF IS ESTABLISHED.

12. DIRECT ALL DEWATERING PUMP DISCHARGE TO A SEDIMENT CONTROL DEVICE CONFORMING TO THE GUIDELINES WITHIN THE APPROVED LIMIT OF DISTURBANCE IF REQUIRED. DISCHARGE TO STORM DRAINS OR SURFACE WATERS FROM SEDIMENT CONTROLS SHALL BE CLEAR AND APPROVED BY THE PERMITTEE OR MUNICIPALITY.

13. THE CONTRACTOR SHALL MAINTAIN A CLEAN CONSTRUCTION SITE AND SHALL NOT ALLOW THE ACCUMULATION OF RUBBISH OR CONSTRUCTION DEBRIS ON THE SITE. PROPER SANITARY DEVICES SHALL BE MAINTAINED ON-SITE AT ALL TIMES AND SECURED APPROPRIATELY. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID THE SPILLAGE OF FUEL OR OTHER POLLUTANTS ON THE CONSTRUCTION SITE AND SHALL ADHERE TO ALL APPLICABLE POLICIES AND REGULATIONS RELATED TO SPILL PREVENTION AND RESPONSE/CONTAINMENT.

14. MINIMIZE LAND DISTURBANCES. SEED AND MULCH DISTURBED AREAS WITH TEMPORARY MIX AS SOON AS PRACTICABLE (2 WEEK MAXIMUM UNSTABILIZED PERIOD) USING PERENNIAL RYEGRASS AT 40 LBS PER ACRE. MULCH ALL CUT AND FILL SLOPES AND SWALES WITH LOOSE HAY AT A RATE OF 2 TONS PER ACRE. IF NECESSARY, REPLACE LOOSE HAY ON SLOPES WITH EROSION CONTROL BLANKETS OR JUTE CLOTH. MODERATELY GRADED AREAS, ISLANDS, AND TEMPORARY CONSTRUCTION STAGING AREAS MAY BE HYDROSEEDED WITH TACKIFIER.

15. SWEEP AFFECTED PORTIONS OF OFF SITE ROADS ONE OR MORE TIMES A DAY (OR LESS FREQUENTLY IF TRACKING IS NOT A PROBLEM) DURING CONSTRUCTION. FOR DUST CONTROL, PERIODICALLY MOISTEN EXPOSED SOIL SURFACES WITH WATER ON UNPAVED TRAVELWAYS TO KEEP THE TRAVELWAYS DAMP. CALCIUM CHLORIDE MAY ALSO BE APPLIED TO ACCESS ROADS. DUMP TRUCK LOADS EXITING THE SITE SHALL BE COVERED.

16. VEGETATIVE ESTABLISHMENT SHALL OCCUR ON ALL DISTURBED SOIL, UNLESS THE AREA IS UNDER ACTIVE CONSTRUCTION, IT IS COVERED IN STONE OR SCHEDULED FOR PAVING WITHIN 30 DAYS. TEMPORARY SEEDING OR NON-LIVING SOIL PROTECTION OF ALL EXPOSED SOILS AND SLOPES SHALL BE INITIATED WITHIN THE FIRST 7 DAYS OF SUSPENDING WORK IN AREAS TO BE LEFT LONGER THAN 30 DAYS.

17. MAINTAIN ALL PERMANENT AND TEMPORARY SEDIMENT CONTROL DEVICES IN EFFECTIVE CONDITION THROUGHOUT THE CONSTRUCTION PERIOD. UPON COMPLETION OF WORK SWEEP CONCRETE PADS, CLEAN THE STORMWATER MANAGEMENT SYSTEMS AND REMOVE ALL TEMPORARY SEDIMENT CONTROLS ONCE THE SITE IS FULLY STABILIZED AND APPROVAL HAS BEEN RECEIVED FROM PERMITTEE OR THE MUNICIPALITY.

18. THE SITE WAS DESIGNED TO COMPLY WITH FEDERAL, STATE, AND, IF APPLICABLE, LOCAL STANDARDS, PLUS CURRENT ACCEPTED PRACTICES FOR THE INDUSTRY. ADDITIONAL CONTROLS AND ACTIVITIES MAY BE DEEMED NECESSARY BY THE SWPCP MONITOR DURING CONSTRUCTION AS A RESULT OF UNFORESEEN CONDITIONS AND/OR MEANS AND METHODS. SUCH ITEMS MAY INCLUDE, BUT ARE NOT LIMITED TO: ADDITIONAL FOREBAYS, BASINS, OR UPSTREAM STRUCTURAL CONTROLS, THE USE OF FLOCCULANTS OF FLOCK LOGS TO DECREASE SEDIMENT, DISCHARGE MANAGEMENT SUCH AS ADDITIONAL ARMORING AND FILTERING MEASURES (I.E. STRAW BALES, WATTLES, ETC.), AND HYDROSEEDING WITH RAPIDLY GERMINATING SEED.

CONSTRUCTION OPERATION AND MAINTENANCE PLAN - BY CONTRACTOR

E&S MEASURE	INSPECTION SCHEDULE	MAINTENANCE REQUIRED
CONSTRUCTION ENTRANCE	DAILY	PLACE ADDITIONAL STONE, EXTEND THE LENGTH OR REMOVE AND REPLACE THE STONE. CLEAN PAVED SURFACES OF TRACKED SEDIMENT.
COMPOST FILTER SOCK	WEEKLY & WITHIN 24 HOURS OF RAINFALL > 0.25"	REPAIR/REPLACE WHEN FAILURE OR DETERIORATION IS OBSERVED.
SILT FENCE	WEEKLY & WITHIN 24 HOURS OF RAINFALL > 0.25"	REPAIR/REPLACE WHEN FAILURE OR DETERIORATION IS OBSERVED. REMOVE SILT WHEN IT REACHES 1/2 THE HEIGHT OF THE FENCE.
TOPSOIL/BORROW STOCKPILES	DAILY	REPAIR/REPLACE SEDIMENT BARRIERS AS NECESSARY.
TEMPORARY SOIL PROTECTION	WEEKLY & WITHIN 24 HOURS OF RAINFALL > 0.25"	REPAIR ERODED OR BARE AREAS IMMEDIATELY. RESEED AND MULCH.

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DRAWN BY:UKA/ELZ

DATE: 11/06/24

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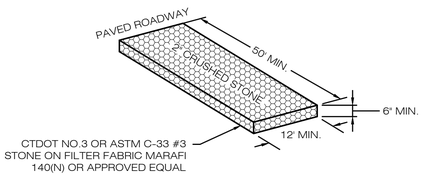
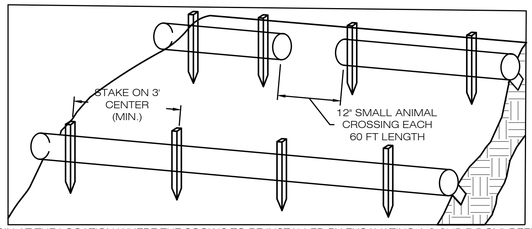
SHEET TITLE:
EROSION & SEDIMENT CONTROL NOTES

SHEET NUMBER:
EC-2



CONSTRUCTION ENTRANCE DETAIL

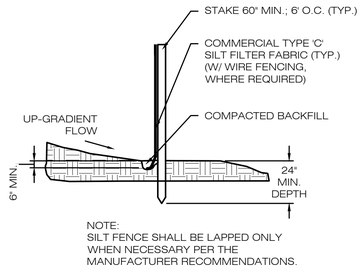
1 EC-3 **SCALE : N.T.S.**



1. BEGIN AT THE LOCATION WHERE THE SOCK IS TO BE INSTALLED BY EXCAVATING A 2-3" (5-7.5 CM) DEEP X 9" (22.9 CM) WIDE TRENCH ALONG THE CONTOUR OF THE SLOPE. EXCAVATED SOIL SHOULD BE PLACED UP SLOPE FROM THE ANCHOR TRENCH.
2. PLACE THE SOCK IN THE TRENCH SO THAT IT CONTOURS TO THE SOIL SURFACE. COMPACT SOIL FROM THE EXCAVATED TRENCH AGAINST THE SOCK ON THE UPHILL SIDE. SOCKS SHALL BE INSTALLED IN 60 FT CONTINUOUS LENGTHS WITH ADJACENT SOCKS TIGHTLY ABUT. EVERY 60 FT THE SOCK ROW SHALL BE SPACED 12 INCHES CLEAR, END TO END, FOR AMPHIBIAN AND REPTILE TRAVEL. THE OPEN SPACES SHALL BE STAGGERED MID LENGTH OF THE NEXT DOWN GRADIENT SOCK.
3. SECURE THE SOCK WITH 18-24" (45.7-61 CM) STAKES EVERY 3' (0.9 -1.2 M) AND WITH A STAKE ON EACH END. STAKES SHOULD BE DRIVEN THROUGH THE MIDDLE OF THE SOCK LEAVING AT LEAST 2-3" (5-7.5 CM) OF STAKE EXTENDING ABOVE THE SOCK. STAKES SHOULD BE DRIVEN PERPENDICULAR TO THE SLOPE FACE.
4. CONTRACTOR TO FOLLOW MANUFACTURE'S SPECIFICATIONS AND INSTALL DIRECTIONS IF DIRECTED THAN WHAT IS PROVIDED ABOVE.

COMPOST FILTER SOCK SEDIMENTATION CONTROL BARRIER

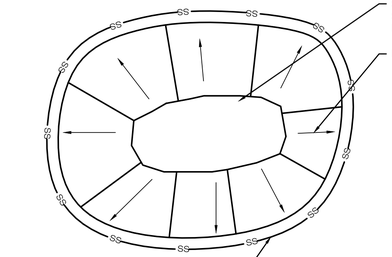
2 EC-3 **SCALE : N.T.S.**



NOTE:
SILT FENCE SHALL BE LAPPED ONLY WHEN NECESSARY PER THE MANUFACTURER RECOMMENDATIONS.

SILT FENCE DETAIL

3 EC-3 **SCALE : N.T.S.**



NOTES:
1. ALL EXISTING EXCAVATED MATERIAL THAT IS NOT TO BE REUSED IN THE WORK IS TO BE IMMEDIATELY REMOVED FROM THE SITE AND PROPERLY DISPOSED OF.

2. SOIL/AGGREGATE STOCKPILE SITES TO BE WHERE SHOWN ON THE DRAWINGS.

3. RESTORE STOCKPILE SITES TO PRE-EXISTING PROJECT CONDITION AND RESEED AS REQUIRED.

4. STOCKPILE HEIGHTS MUST NOT EXCEED 35'. STOCKPILE SLOPES MUST BE 2:1 OR FLATTER.

MATERIALS STOCKPILE DETAIL

4 EC-3 **SCALE : N.T.S.**

Ernst Conservation Seeds
8884 Mercer Pike
Meadville, PA 16335
(800) 873-3321 Fax (814) 336-5191
www.ernstseed.com

Date: July 12, 2022

Quick Erosion Control Cover Mix - ERNMX-104

	Botanical Name	Common Name
50.00 %	*Lolium multiflorum*	Annual Ryegrass
50.00 %	*Lolium perenne, 'Blackstone'*	Perennial Ryegrass, 'Blackstone'

100.00 %

Seeding Rate: 50 lb per acre

Erosion Control & Revegetation

Designed to achieve that quick, green color and fast erosion control with strong, fibrous roots. Mix formulations are subject to change without notice depending on the availability of existing and new products. While the formula may change, the guiding philosophy and function of the mix will not.

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Meadville, PA 16335
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www.ernstseed.com

Date: July 17, 2022

Rain Garden Mix - ERNMX-180

	Botanical Name	Common Name
34.50 %	*Schizachyrium scoparium, Fort Indiantown Gap-PA Ecotype*	Little Bluestem, Fort Indiantown Gap-PA Ecotype
20.00 %	*Elymus virginicus, Madison-NY Ecotype*	Virginia Wildrye, Madison-NY Ecotype
7.50 %	*Echinacea purpurea*	Purple Coneflower
5.60 %	*Chasmanthium latifolium, WV Ecotype*	River Oats, WV Ecotype
5.00 %	*Carex vulpinoidea, PA Ecotype*	Fox Sedge, PA Ecotype
3.00 %	*Chamaecrista fasciculata, PA Ecotype*	Partridge Pea, PA Ecotype
3.00 %	*Coreopsis lanceolata*	Lanceleaf Coreopsis
3.00 %	*Panicum rigidulum, PA Ecotype*	Redtop Panicgrass, PA Ecotype
3.00 %	*Rudbeckia hirta*	Blackeyed Susan
2.00 %	*Heliopsis helianthoides, PA Ecotype*	Oxeye Sunflower, PA Ecotype
2.00 %	*Panicum clandestinum, Tioga*	Deertongue, Tioga
2.00 %	*Verbena hastata, PA Ecotype*	Blue Vervain, PA Ecotype
1.70 %	*Asclepias incarnata, PA Ecotype*	Swamp Milkweed, PA Ecotype
1.00 %	*Carex scoparia, PA Ecotype*	Blunt Broom Sedge, PA Ecotype
1.00 %	*Senna hebecarpa, VA & WV Ecotype*	Wild Senna, VA & WV Ecotype
0.90 %	*Penstemon digitalis, PA Ecotype*	Tall White Beardtongue, PA Ecotype
0.80 %	*Zizia aurea, PA Ecotype*	Golden Alexanders, PA Ecotype
0.70 %	*Pycnanthemum tenuifolium*	Narrowleaf Mountainmint
0.50 %	*Baptisia australis, Southern WV Ecotype*	Blue False Indigo, Southern WV Ecotype
0.40 %	*Aster lateriflorus*	Calico Aster
0.40 %	*Monarda fistulosa, Fort Indiantown Gap-PA Ecotype*	Wild Bergamot, Fort Indiantown Gap-PA Ecotype
0.30 %	*Aster novae-angliae, PA Ecotype*	New England Aster, PA Ecotype
0.30 %	*Aster prenanthoides, PA Ecotype*	Zigzag Aster, PA Ecotype
0.30 %	*Juncus tenuis, PA Ecotype*	Path Rush, PA Ecotype
0.20 %	*Eupatorium perfoliatum, PA Ecotype*	Boneset, PA Ecotype
0.20 %	*Helenium autumnale, Northern VA Ecotype*	Common Sneezeweed, Northern VA Ecotype
0.20 %	*Juncus effusus*	Soft Rush
0.20 %	*Oenothera fruticosa var. fruticosa*	Sundrops
0.20 %	*Solidago nemoralis, PA Ecotype*	Gray Goldenrod, PA Ecotype
0.10 %	*Solidago rugosa, PA Ecotype*	Wrinkleleaf Goldenrod, PA Ecotype

100.00 %

Seeding Rate: 20 lb per acre with a cover crop. For sites that drain within 24 hours of a rain event use one of the following cover crops:Oats (1 Jan to 31 Jul; 30 lbs/acre), Japanese Millet (1 May to 31 Aug; 10 lbs/acre), or grain rye (1 Aug to 31 Dec; 30 lbs/acre).

Stormwater Management; Uplands & Meadows

The native perennial forbs and grasses provide food and cover for rain garden biodiversity. Mix formulations are subject to change without notice depending on the availability of existing and new products. While the formula may change, the guiding philosophy and function of the mix will not.

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Meadville, PA 16335
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Date: October 24, 2024

Native Steep Slope Mix w/Annual Ryegrass - ERNMX-181

	Botanical Name	Common Name
29.00 %	*Andropogon gerardii, 'Prairie View'-IN Ecotype*	Big Bluestem, 'Prairie View'-IN Ecotype
20.60 %	*Elymus virginicus, Madison-NY Ecotype*	Virginia Wildrye, Madison-NY Ecotype
20.00 %	*Lolium multiflorum*	Annual Ryegrass
15.00 %	*Sorghastrum nutans, NY4 Ecotype*	Indiangrass, NY4 Ecotype
4.80 %	*Panicum virgatum, 'Shawnee'*	Switchgrass, 'Shawnee'
4.00 %	*Agrostis perennans, Albany Pine Bush-NY Ecotype*	Autumn Bentgrass, Albany Pine Bush-NY Ecotype
2.80 %	*Panicum clandestinum, Tioga*	Deertongue, Tioga
1.00 %	*Rudbeckia hirta*	Blackeyed Susan
0.70 %	*Coreopsis lanceolata*	Lanceleaf Coreopsis
0.70 %	*Echinacea purpurea*	Purple Coneflower
0.70 %	*Heliopsis helianthoides, PA Ecotype*	Oxeye Sunflower, PA Ecotype
0.20 %	*Aster pilosus, PA Ecotype*	Heath Aster, PA Ecotype
0.20 %	*Monarda fistulosa*	Wild Bergamot
0.10 %	*Apocynum cannabinum, PA Ecotype*	Indianhemp, PA Ecotype
0.10 %	*Asclepias syriaca*	Common Milkweed
0.10 %	*Solidago rugosa, PA Ecotype*	Wrinkleleaf Goldenrod, PA Ecotype

100.00 %

Seeding Rate: 60 lb per acre, or 1.5 lb per 1,000 sq ft

Erosion Control & Revegetation; Grasses & Grass-like Species - Herbaceous Perennial; Herbaceous Flowering Species - Herbaceous Perennial

The native grass and forb species tolerate poor soils typically found on steep slopes in the eastern United States. Mix formulations are subject to change without notice depending on the availability of existing and new products. While the formula may change, the guiding philosophy and function of the mix will not.

SEED MIXES

5 EC-3 **SCALE : N.T.S.**

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SALEM BESS

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SALEM, CT 06420

APT FILING NUMBER: CT760100

DRAWN BY:JKA/ELZ

DATE: 11/06/24 CHECKED BY: TEL

SHEET TITLE:
EROSION & SEDIMENT CONTROL DETAILS

SHEET NUMBER:
EC-3

PR. INTERCONNECT LOCATION

TEMPORARY GRAVEL ACCESS ROAD (TO MATCH EXISTING GRADE)

1 SP-2 PR. 15' GRAVEL ACCESS ROAD (TO MATCH EXISTING GRADE)

PR. OVERHEAD ELECTRIC W/ PR. UTILITY POLES (6 TYP.)

75' UPLAND REVIEW AREA

1 GD-2 PR. STORM WATER MANAGEMENT BASIN

PR. UNDERGROUND ELECTRIC (TYP.)

5 SP-2 PR. CHAINLINK FENCE

4 SP-2 PR. 15' NOISE BARRIER

PR. BAT BOX MOUNTED ON 20' LONG 4"X6" PRESSURE TREATED POST INSTALLED 4' DEEP INTO THE GROUND (SEE NOTES ON GN-1)

WETLAND 1

VERNAL POOL

100' VERNAL POOL ENVELOPE

WETLAND 2

PR. LIMITS OF DISTURBANCE (APPROX. 2.2± A.C.)

2 SP-2 PR. BESS UNITS ON CONC. PADS

3 SP-2 PR. GRAVEL EQUIPMENT AREA

2 SP-2 PR. INVERTERS & TRANSFORMERS ON CONC. PADS

4 GD-2 PR. DIVERSION BERM

5 SP-2 PR. 20' GATE

3 GD-2 PR. DIVERSION SWALE

10' SEPTIC FIELD BUFFER

PROPOSED KNOX BOX FOR USE BY LOCAL FIRE DEPT.

UTILIZE EXISTING GRAVEL ACCESS

WETLAND 3

EX. BUILDING

75' UPLAND REVIEW AREA

75' UPLAND REVIEW AREA

PR. ~100'X50' TEMPORARY TURNAROUND AND CONSTRUCTION STAGING AREA (MINOR GRADING REQUIRED)

PR. TEMPORARY BRIDGE APPROX. 6-12" ABOVE EXISTING GRADE (40'/50' LENGTH)

WETLAND 1

SEPTIC LINE

EXISTING SITE ENTRANCE FROM NEW LONDON ROAD

NEW LONDON ROAD (CT RT. 85)

(IN FEET) 1 inch = 30 ft.

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SALEM BESS

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DATE: 11/06/24

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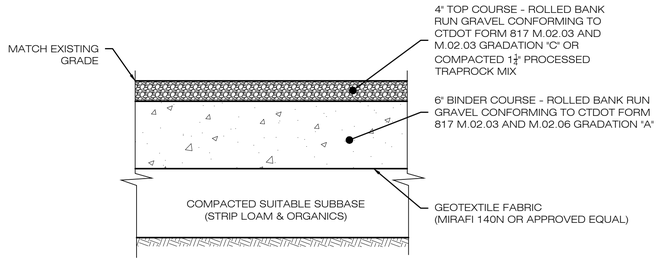
SITE PLAN

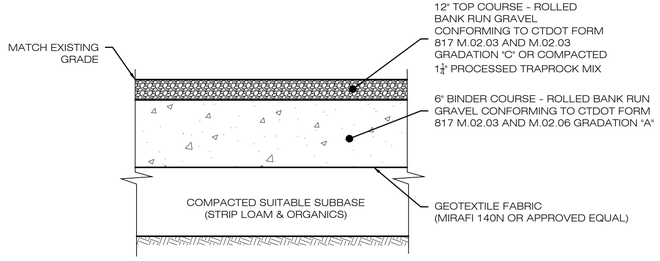
SHEET NUMBER:

SP-1



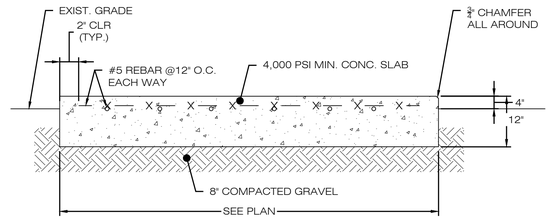
NOTES:
1. SUBBASE MAY CONSIST OF NATIVE MATERIALS IF FOUND ACCEPTABLE BY THE ENGINEER. SUBBASE TO BE COMPACTED TO 95% MAX DRY DENSITY.
2. SUBBASE IS TO BE FREE FROM DEBRIS AND UNSUITABLE MATERIALS.

1 SP-2 GRAVEL ACCESS DRIVE SECTION
SCALE : N.T.S.



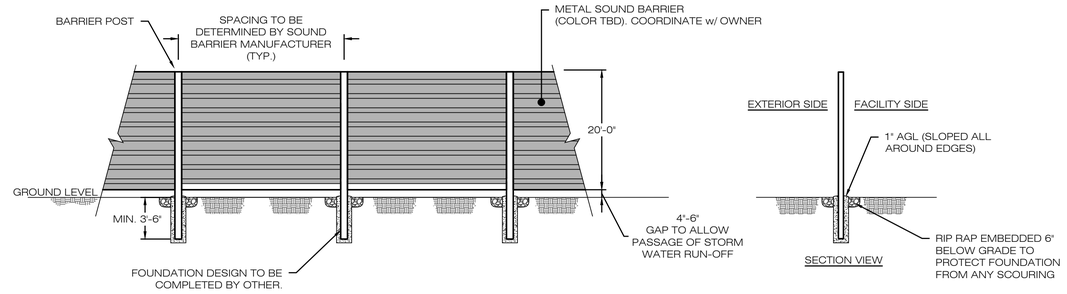
NOTES:
1. SUBBASE MAY CONSIST OF NATIVE MATERIALS IF FOUND ACCEPTABLE BY THE ENGINEER. SUBBASE TO BE COMPACTED TO 95% MAX DRY DENSITY.
2. SUBBASE IS TO BE FREE FROM DEBRIS AND UNSUITABLE MATERIALS.

3 SP-2 GRAVEL PAD
SCALE : N.T.S.



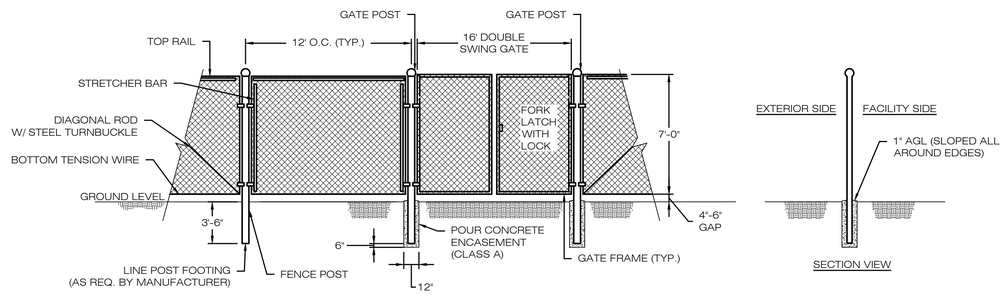
NOTE:
SEE ELECTRICAL DRAWINGS FOR ADDITIONAL CONCRETE PAD DESIGN DETAILS

2 SP-2 CONCRETE EQUIPMENT PAD
SCALE : N.T.S.



NOTES:
1. SOUND BARRIER PRODUCT & SPECIFICATIONS TO BE DETERMINED BY OWNER.
2. BARRIER POST FOUNDATION TO BE DESIGNED BY OTHERS.

4 SP-2 GENERIC SOUND BARRIER DETAIL
SCALE : N.T.S.



5 SP-2 CHAIN-LINK FENCE & GATE DETAIL
SCALE : N.T.S.

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SALEM BESS

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SALEM, CT 06420

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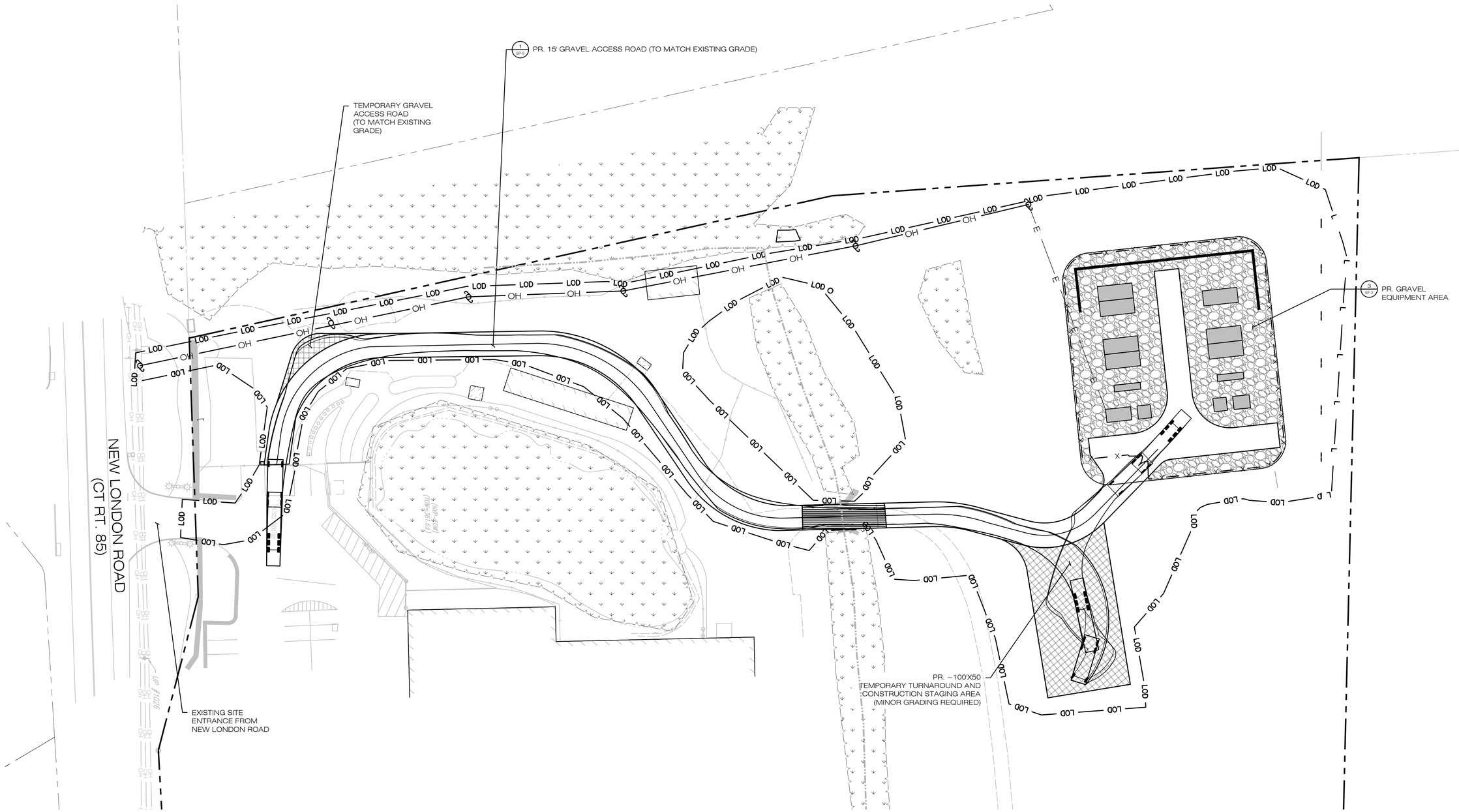
SHEET TITLE:
SITE PLAN DETAILS

SHEET NUMBER:
SP-2



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DRAWN BY:IJKA/ELZ
DATE: 11/06/24
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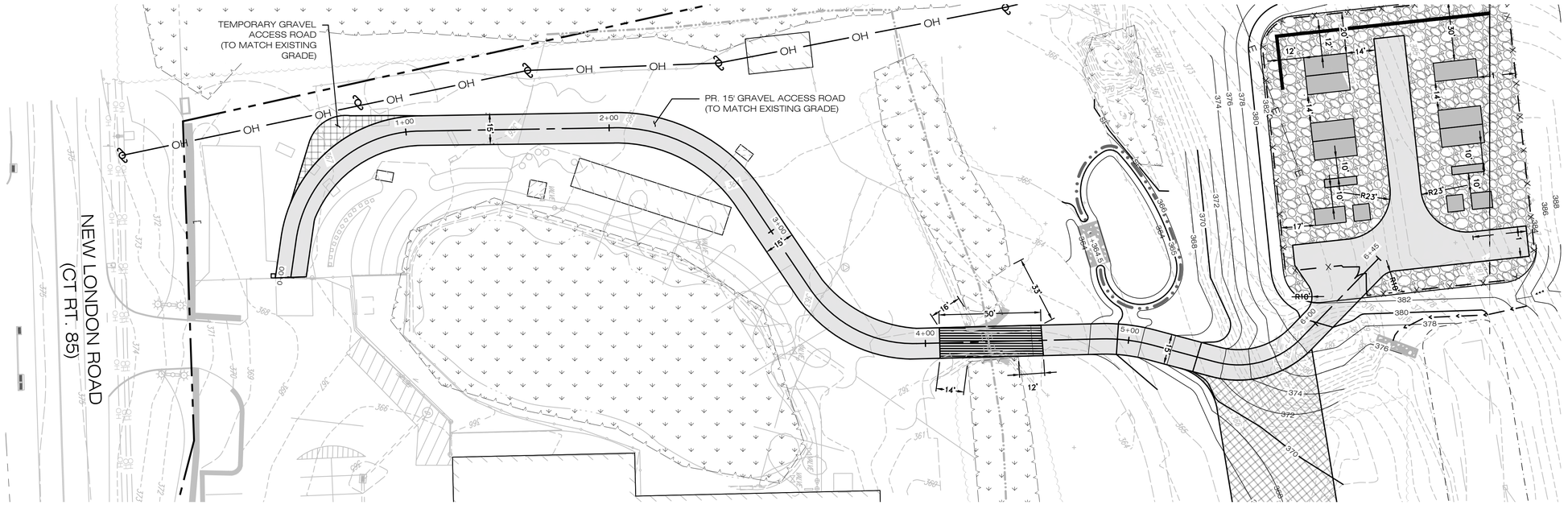
SHEET TITLE:

VEHICLE TURNING ANALYSIS

SHEET NUMBER:

TA-1

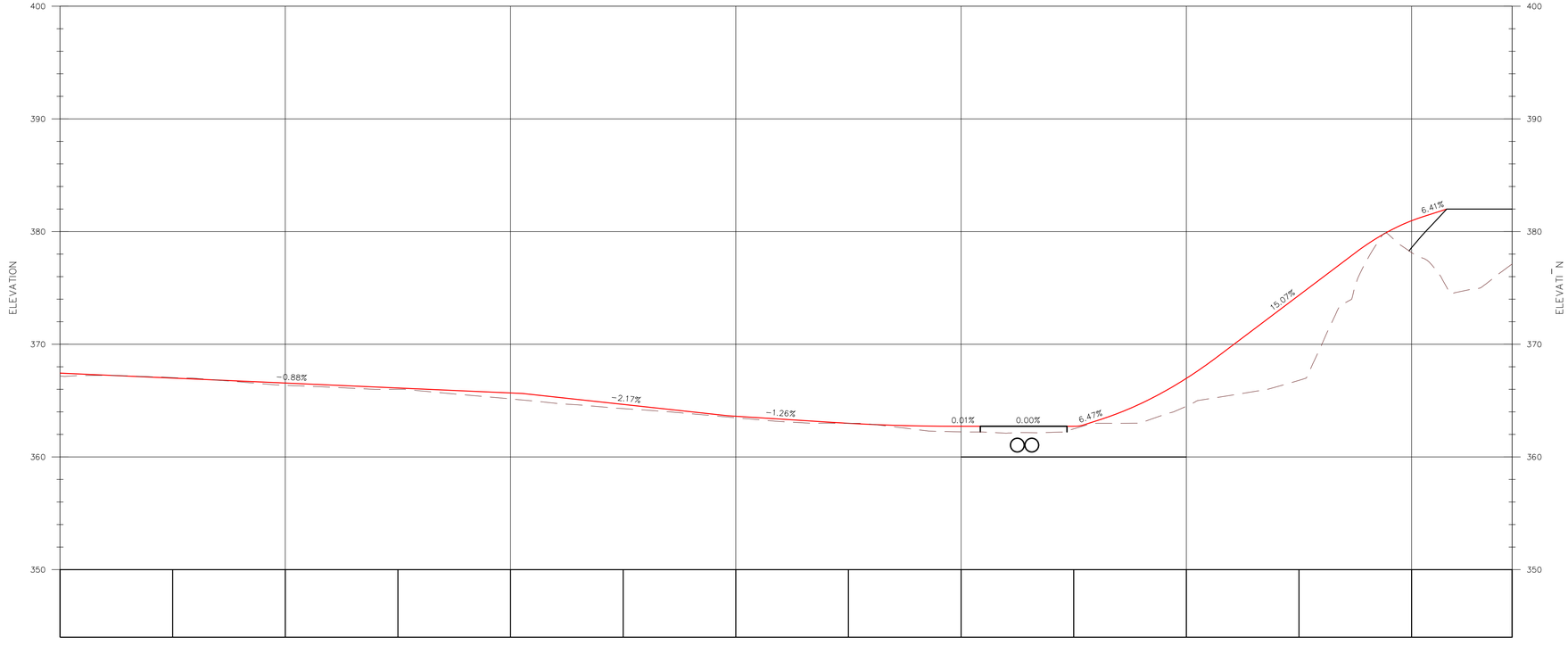


1 SP-1

ACCESS ROAD PLAN

SCALE : 1" = 30'

(IN FEET) 1 inch = 30 ft.



1 SP-1

ACCESS ROAD PROFILE

HORIZ. SCALE : 1" = 30'
VERT. SCALE : 1" = 10'

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SHEET TITLE:

ACCESS ROAD PLAN & PROFILE

SHEET NUMBER:

SP-2

PR. 15' GRAVEL ACCESS ROAD (TO MATCH EXISTING GRADE)

PR. STORM WATER MANAGEMENT BASIN
MANAGEMENT BASIN
BOTTOM OF BASIN:
364.0'
SPILLWAY: 364.5'
TOP OF BASIN: 365.0'

PR. ENERGY DISSIPATOR

PR. INTERCONNECT LOCATION

TEMPORARY GRAVEL ACCESS ROAD (TO MATCH EXISTING GRADE)

75' UPLAND REVIEW AREA

PR. BAT BOX MOUNTED ON 20' LONG 4"X6" PRESSURE TREATED POST INSTALLED 4' DEEP INTO THE GROUND (SEE NOTES ON GN-1)

WETLAND 1

VERNAL POOL

WETLAND 2

PR. LIMITS OF DISTURBANCE (APPROX. 2.2± A.C.)

PR. GRAVEL PAD EQUIPMENT AREA ELEV. 382' TO 384'

PR. DIVERSION BERM

PR. TREE CLEARING LIMITS

PR. DIVERSION SWALE

PR. ENERGY DISSIPATOR

10' SEPTIC FIELD BUFFER

NEW LONDON ROAD (CT RT. 85)

WETLAND 3

EX. STOCKPILE

EX. BUILDING

75' UPLAND REVIEW AREA

EXISTING SITE ENTRANCE FROM NEW LONDON ROAD

PR. TEMPORARY BRIDGE
APPROX. 6-12" ABOVE EXISTING GRADE
(40'/50' LENGTH)

PR. ~100'X50'
TEMPORARY TURNAROUND AND CONSTRUCTION STAGING AREA
(MINOR GRADING REQUIRED)

WETLAND 1

SEPTIC LINE

N

30 0 30
(IN FEET) 1 inch = 30 ft.

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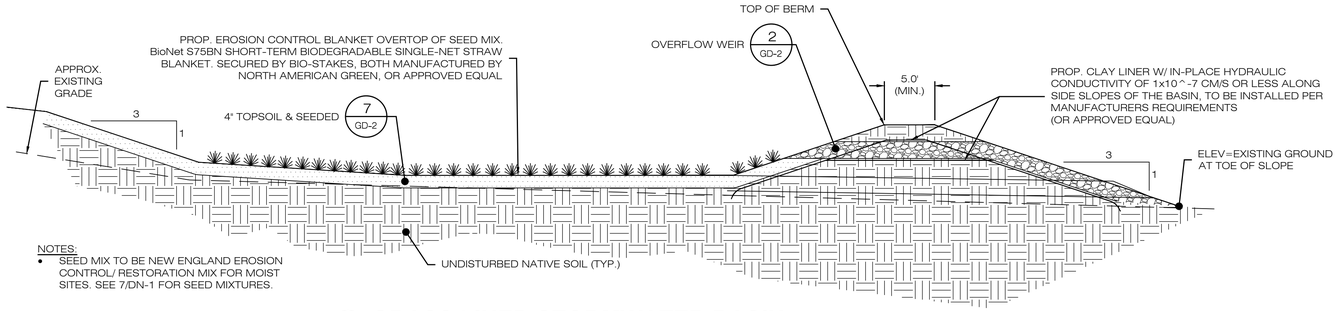
SHEET TITLE:

GRADING & DRAINAGE PLAN

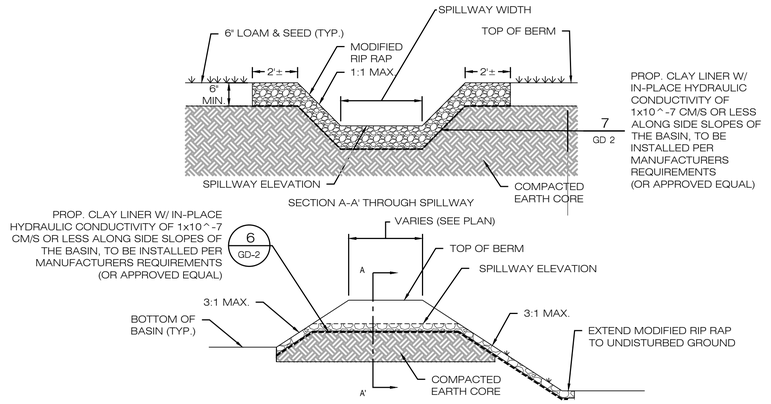
SHEET NUMBER:

GD-1

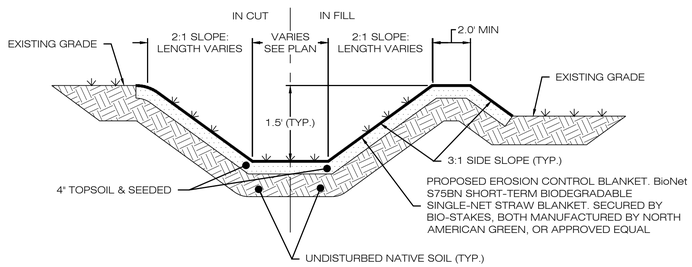


NOTES:
- SEED MIX TO BE NEW ENGLAND EROSION CONTROL/ RESTORATION MIX FOR MOIST SITES. SEE 7/DN-1 FOR SEED MIXTURES.

1 GD-2 GRASS LINED STORMWATER BASIN
SCALE : N.T.S.

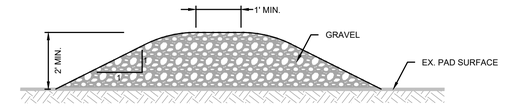


2 GD-2 OVERFLOW WEIR DETAIL
SCALE : N.T.S.



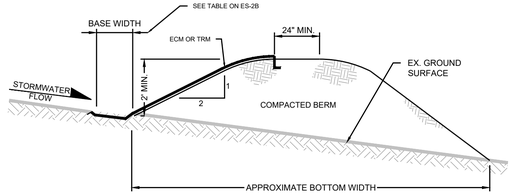
NOTES:
1. SEED MIX TO BE NEW ENGLAND EROSION CONTROL/ RESTORATION MIX FOR MOIST SITES ON THE BOTTOM OF THE BASIN AND NEW ENGLAND EROSION/RESTORATION MIX FOR DRY SITES ON THE SIDE SLOPES.
2. IF DEPTH VARIES FROM 2.0', SEE PLAN CALLOUTS.

3 GD-2 GRASS LINED SWALE
SCALE : N.T.S.



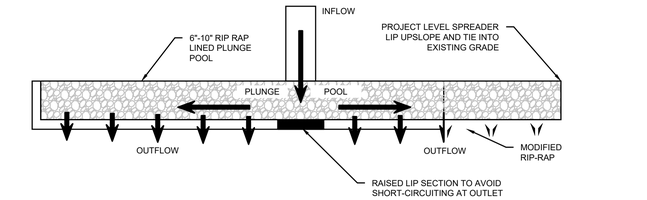
NOTES:
1. BERM WILL BE CONSTRUCTED OF 2A GRAVEL.
2. BERM WILL BECOME A 4" HIGH SAFTEY BUMP IN AREAS WHERE TRAFFIC MAY ENTER/EXIT.

TOP OF SLOPE BERM DETAIL
N.T.S.

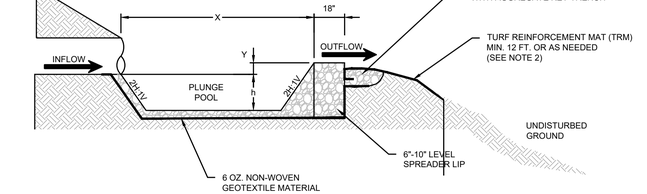


NOTES:
1. DIVERSION BERM WILL BE CONSTRUCTED OF COMPACTED SOIL AND STABILIZED WITH EROSION CONTROL MATTING OR TURF REINFORCEMENT MATTING.
2. A MINIMUM OF 4" OF TOPSOIL SHALL BE PLACED ON TOP OF COMPACTED GROUND.

4 GD-2 DIVERSION BERM DETAIL
SCALE : N.T.S.



PLAN VIEW



PROFILE VIEW

NOTES:
1. UNDERLYING SOILS TO REMAIN UNDISTURBED, COMPACTED AND PROTECTED FROM HEAVY EQUIPMENT TO PRESERVE INFILTRATION CAPACITY.
2. LEVEL SPREADER TO BE INSTALLED COMPLETELY LEVEL ALONG THE EXISTING CONTOUR WITH A SMOOTH TRANSITION BETWEEN THE LEVEL SPREADER AND THE EXISTING GRADE. THE IDEAL ELEVATION OF THE LEVEL SPREADER LIP IS 3 INCHES ABOVE THE EXISTING GRADE.
3. THE MINIMUM WIDTH OF 12' OF TURF REINFORCEMENT MAT (TRM) IS TO BE INSTALLED IMMEDIATELY DOWNSLOPE OF THE LEVEL SPREADER LIP. CONTRACTOR TO INSTALL ADDITIONAL TRM AS NECESSARY BASED ON EXISTING SITE CONDITIONS TO ADEQUATELY STABILIZE THE DOWNSLOPE AREA.

ENERGY DISSIPATOR - PERMANENT LEVEL SPREADER
5 GD-2 **SCALE : N.T.S.**

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GRADING & DRAINAGE DETAILS

SHEET NUMBER:
GD-2

APPENDIX B

STORMWATER MANAGEMENT
REPORT SUMMARY

STORMWATER MANAGEMENT REPORT

PROPOSED

SALEM BESS

BATTERY ENERGY STORAGE PROJECT

380 NEW LONDON ROAD
SALEM, CONNECTICUT
NEW LONDON COUNTY

Prepared for:

Fairy Lake, LLC
116 Huntington Avenue, Suite 601
Boston, MA 02116

Prepared by:

All-Points Technology Corporation, P.C.
567 Vauxhall Street Extension, Suite 311
Waterford, CT 06385

November 2024

Table of Contents

Tables

Appendices

Introduction

At the request of Fairy Lake, LLC, All-Points Technology Corporation, P.C. ("APT") has completed a hydrological analysis to assess potential stormwater effects from a proposed 5.0 MW battery energy storage facility herein referred to as Salem BESS (the “Project”) in Salem Connecticut located at 380 New London Road, in Salem, Connecticut (the "Site").

The purpose of this report is to provide an analysis of the potential stormwater drainage impacts associated with the Project, as well as a description of the design to mitigate such potential stormwater drainage impacts. The design is intended to be in full compliance with the State’s CT Stormwater Quality Manual dated September 30, 2023 while taking prevailing site conditions and practical factors into account.

Existing Site Conditions

The Site is a privately-owned irregular shaped parcel located at 380 New London Road, Salem, Connecticut, that consists of approximately 14.48 acres of land. The property is owned by the 380 New London Rd Holdings LLC, and consists of greenhouse buildings in the center and southeast portions of the site, a paved parking lot extending across the front of the site, wooded areas in the north east, an existing brook extending across the center of the site and open space throughout. The property’s current primary use is a garden center. The terrain has slopes with the highest elevations in the northern corner of the project area (~El. 395'), decreasing in elevation and generally sloping to the east and south (~El. 355’).

Developed Site Conditions

The Project will be constructed in the northwest side of the property. Access to the Project will be provided via one improvement and extension of an existing gravel drive that comes off the site’s existing parking lot. The Project includes the installation of seven (7) battery storage units, with two (2) inverters, two (2) transformers and two (2) recombiners on concrete pads. A 15-foot tall noise barrier will be installed on the northwestern side of the Facility. The Facility will be surrounded by an eight (8)-foot tall chain link fence. The project will be serviced by one (1) electrical interconnect that will extend overhead from New London Road to five (5) poles before extending underground to the proposed facility. The area within the Project’s limits of disturbance is existing open-space as well as wooded areas in the northern corner that will require clearing and grubbing.

The proposed facility will be installed on a gravel pad that will be graded into existing slopes. Areas of clearing and grubbing and any existing ground cover that is disturbed during construction will be reseeded with a native steep slope mix with annual ryegrass (ERNMX-181, or approved equivalent).

Stormwater Management

Analysis Methodology

The hydrologic analysis was performed using the HydroCAD stormwater modeling system computer program developed by HydroCAD Software Solutions, LLC.

Hydrographs for each watershed were developed using the SCS Synthetic Unit Hydrograph Method with a Type III rainfall distribution. Hydrographs were developed for the NOAA Atlas 14, Volume 10, Version 3 Precipitation 2-, 25-, 50-, and 100-year storm event with rainfall depths of 3.44, 6.20, 7.00, and 7.84 inches respectively.

The existing and proposed drainage areas used in the calculations are illustrated on the Existing and Proposed Drainage Area Plans (EDA-1 & PDA-1). These maps and the corresponding HydroCAD output are attached.

Existing Drainage Patterns

The proposed Project area drains generally from the north to the west. The area that drains to the west, Analysis Point One ("AP-1"), drains via surface runoff to an existing brook, Horse Pond Brook. Peak discharges have been computed at the analysis points for the 2-, 25-, 50-, and 100-year storm events as shown in Table 1.

Soils within the proposed project area as identified by the United States Department of Agriculture (USDA) Natural Resources Conservation Service consist of:

Map Unit	*Description*	*Slopes (%)*	*HSG*
52C	Sutton Fine Sandy Loam	2 to 15	B/D
62C	Canton and Charlton fine sandy loams	8 to 15	B
3	Ridgebury, Leicester, and Whitman soils	0 to 8	D

Specific details for each soil Map Unit Symbol are provided in Appendix B.

Soil types with a dual rated hydrologic soil group (i.e. B/D) were modeled in their undrained condition. Time of concentration, roughness coefficients and land use areas were based on existing ground cover, as assessed by site visits and review of aerial photography. Curve Numbers and Time of Concentration values for the existing conditions scenario are summarized on Sheet EDA-1. The existing peak discharge rate at the Analysis Point are presented in Table 1.

Table 1

Analysis Point	**Pre-developed Peak Storm Runoff (Q), cubic feet per second (cfs)**			
	2-year	**25-year**	**50-year**	**100-year**
AP-1	1.00	3.91	4.89	5.95

Proposed Drainage Patterns

The Project will result in 2.2± acres of disturbance for the installation of the proposed battery energy storage facility, including the necessary utilities and access road. Overall, hydrologically, through the transition from wooded and open spaced lawn to primarily open-spaced lawn, the post-developed condition is designed to mimic or improve the pre-developed condition.

To manage the increase in post-development runoff due to the change in cover type associated with converting woods to open-space lawn, one (1) grass-lined stormwater management basin is proposed; located west of the proposed facility. The available storage within the proposed gravel pad will provide the necessary water quality treatment volume for the additional impervious area. See calculations attached

Since the proposed development mimics or improves the existing conditions, the post-development condition was modeled using the same Analysis Points. Peak discharges have been evaluated at AP-1 for the 2-year, 25-year, 50-year, and 100-year storm events.

Table 2

Analysis Point	**Post-developed Peak Storm Runoff (Q), cubic feet per second (cfs)**			
	2-year	**25-year**	**50-year**	**100-year**
AP-1	0.94	3.03	3.70	5.43

The reductions in runoff achieved by the post-development discharges in comparison with the pre-development discharges are tabulated in Table 3.

Table 3

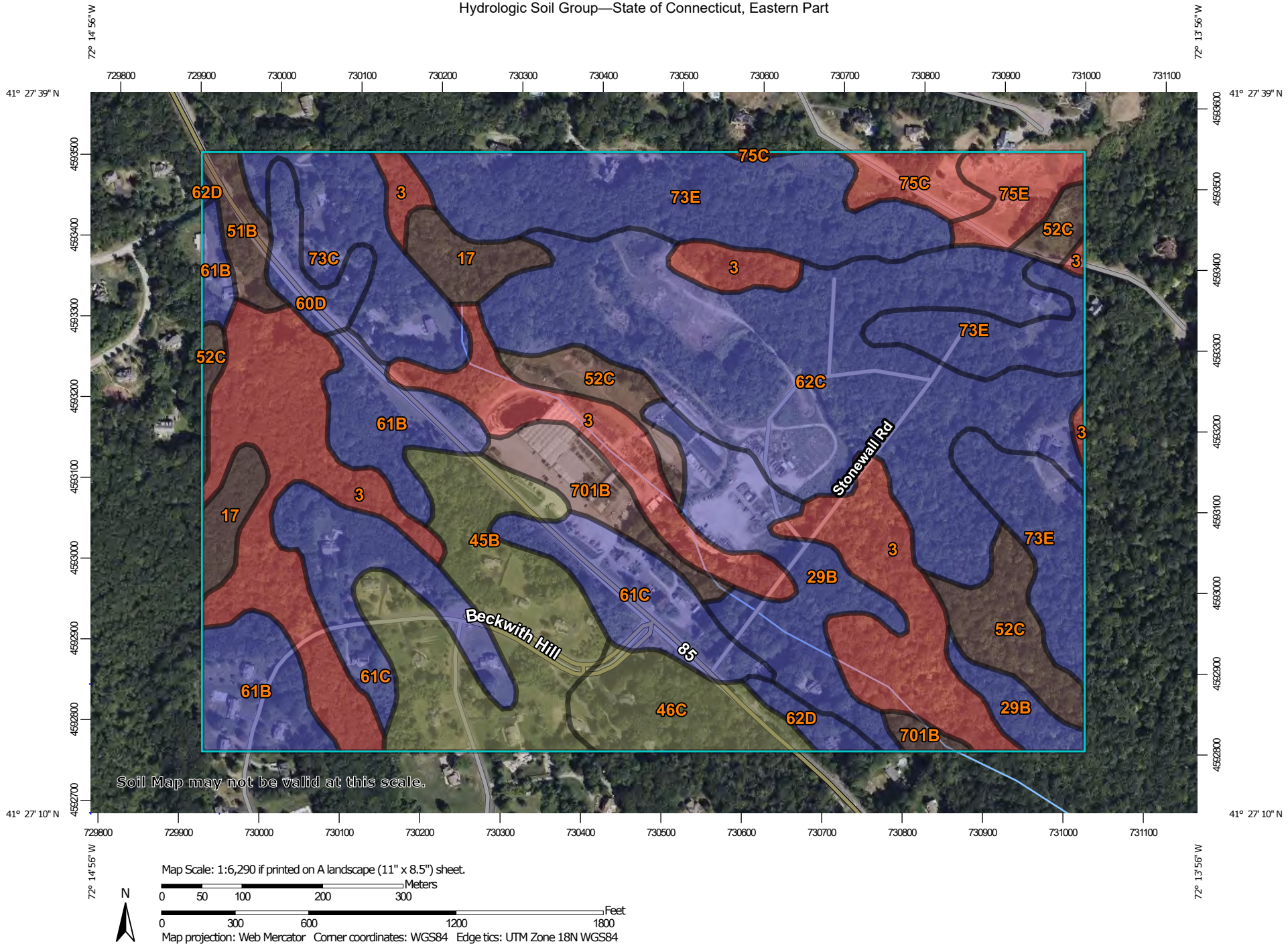
Analysis Point	**Pre vs. Post Peak Storm Runoff (Q) Percent Reduction**			
	2-year	**25-year**	**50-year**	**100-year**
AP-1	6.0%	22.5%	24.3%	8.7%

Conclusion

The stormwater management for the proposed site has been designed such that the post-development peak discharges to the waters of the State of Connecticut for the 2-, 25-, 50-, and 100- year storm events are less than the pre-development peak discharges. As a result, the proposed battery energy storage facility is not anticipated to result in adverse conditions to the surrounding areas and properties.

APPENDIX A: NRCS SOIL SURVEY

Hydrologic Soil Group—State of Connecticut, Eastern Part



MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Connecticut, Eastern Part
Survey Area Data: Version 2, Aug 30, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 14, 2022—Oct 6, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
3	Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony	D	34.6	17.1%
17	Timakwa and Natchaug soils, 0 to 2 percent slopes	B/D	4.9	2.4%
29B	Agawam fine sandy loam, 3 to 8 percent slopes	B	12.7	6.3%
45B	Woodbridge fine sandy loam, 3 to 8 percent slopes	C/D	16.8	8.3%
46C	Woodbridge fine sandy loam, 8 to 15 percent slopes, very stony	C/D	6.7	3.3%
51B	Sutton fine sandy loam, 0 to 8 percent slopes, very stony	B/D	2.4	1.2%
52C	Sutton fine sandy loam, 2 to 15 percent slopes, extremely stony	B/D	9.6	4.8%
60D	Canton and Charlton soils, 15 to 25 percent slopes	B	3.1	1.5%
61B	Canton and Charlton fine sandy loams, 0 to 8 percent slopes, very stony	B	12.0	5.9%
61C	Canton and Charlton fine sandy loams, 8 to 15 percent slopes, very stony	B	14.6	7.2%
62C	Canton and Charlton fine sandy loams, 3 to 15 percent slopes, extremely stony	B	37.3	18.4%
62D	Canton and Charlton fine sandy loams, 15 to 35 percent slopes, extremely stony	B	1.5	0.7%
73C	Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky	B	8.0	4.0%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
73E	Charlton-Chatfield complex, 15 to 45 percent slopes, very rocky	B	27.1	13.4%
75C	Hollis-Chatfield-Rock outcrop complex, 3 to 15 percent slopes	D	2.8	1.4%
75E	Hollis-Chatfield-Rock outcrop complex, 15 to 45 percent slopes	D	3.3	1.6%
701B	Ninigret fine sandy loam, 3 to 8 percent slopes	B/D	4.9	2.4%
Totals for Area of Interest			**202.3**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

APPENDIX B: EXISTING DRAINAGE AREA MAP (EDA-1) & HYDROLOGIC COMPUTATION (HYDROCAD)

EXISTING DRAINAGE AREAS

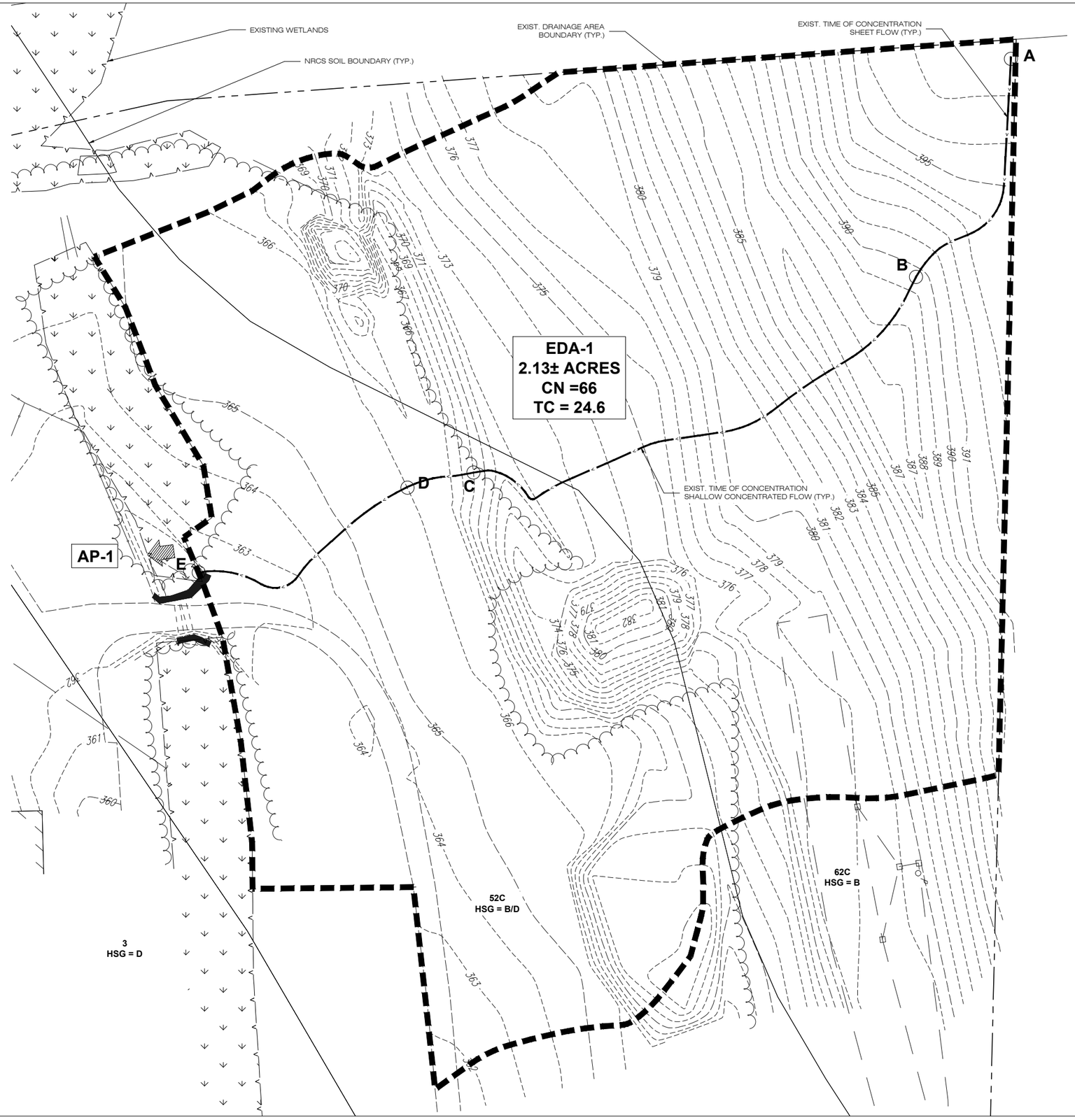
	TOTAL AREA (ACRES)	COMPOSITE CN	TC (MINS.)
EDA-1	2.13	66	24.6

EXISTING CONDITION PEAK FLOWS

ANALYSIS POINT	2-YEAR (CFS)	25-YEAR (CFS)	50-YEAR (CFS)	100-YEAR (CFS)
AP-1	1.00	3.91	4.89	5.95

TIME OF CONCENTRATION

SEGMENT	TYPE	TIME (MINS.)
A-B	SHEET	21.3
B-C	SHEET	2.0
C-D	SHALLOW	0.2
D-E	SHALLOW	1.1



1 EDA-1 **EXISTING DRAINAGE AREA MAP**
SCALE : 1" = 20'-0"

20 0 10 20 40
(IN FEET) 1 inch = 20 ft.

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CONSTRUCTION DOCUMENTS

NO	DATE	REVISION
1		
2		
3		
4		
5		
6		
7		

DESIGN PROFESSIONALS OF RECORD

PROF: THOMAS E. LITTLE, P.E.
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SALEM BESS

SITE ADDRESS:
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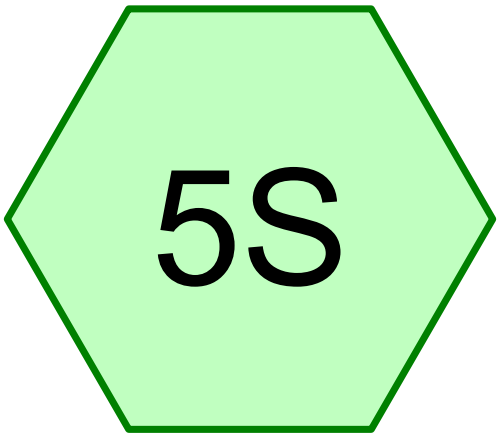
SALEM, CT 06420

APT FILING NUMBER: CT760100

DRAWN BY: UKA
DATE: 11/08/24 CHECKED BY: TEL

SHEET TITLE:
EXISTING DRAINAGE AREA MAP

SHEET NUMBER:
EDA-1



EX-DRAINAGE AREA

Subcat Reach Pond Link

Routing Diagram for CT760100_Salem - Basin_2024.10.24
Prepared by All-Points Tech Corp, PC, Printed 11/8/2024

Summary for Subcatchment 5S: EX-DRAINAGE AREA

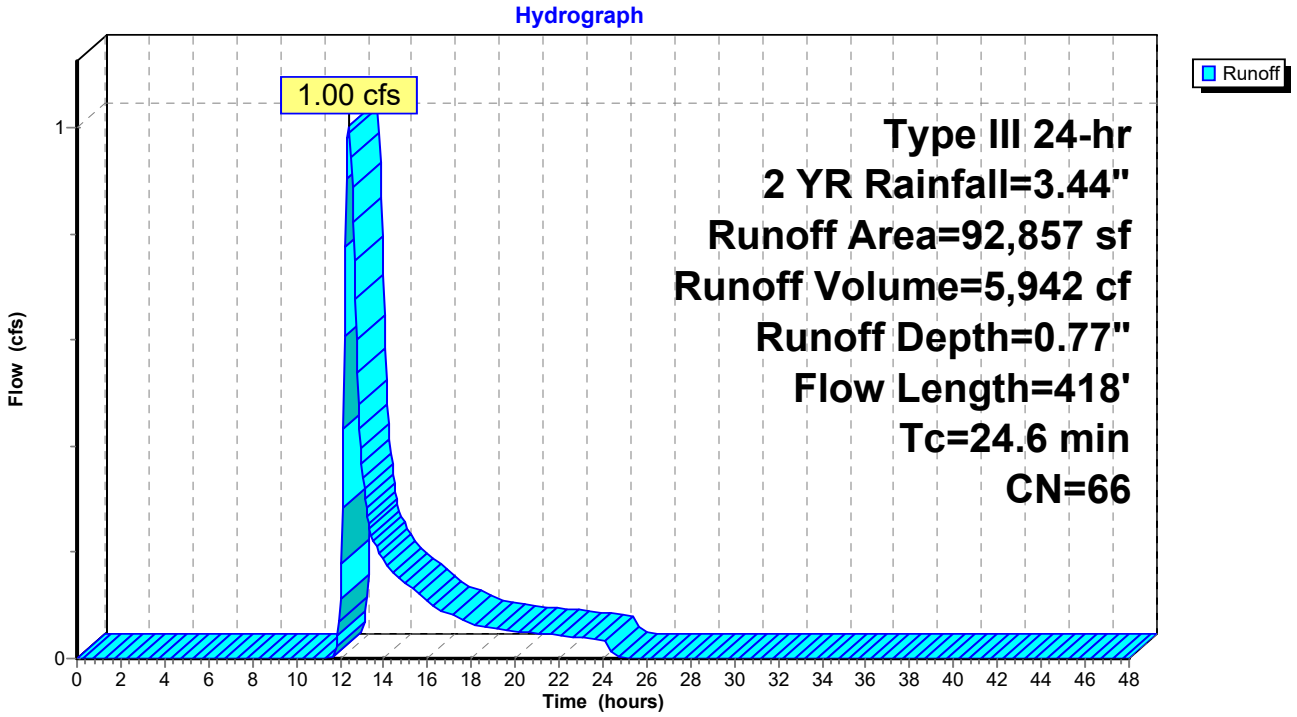
Runoff = 1.00 cfs @ 12.41 hrs, Volume= 5,942 cf, Depth= 0.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.44"

	Area (sf)	CN	Description
	5,450	77	Woods, Good, HSG D
	30,393	80	Pasture/grassland/range, Good, HSG D
	49,423	55	Woods, Good, HSG B
	5,670	61	Pasture/grassland/range, Good, HSG B
*	1,921	98	Gravel surface, HSG B
	92,857	66	Weighted Average
	90,936		97.93% Pervious Area
	1,921		2.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.3	99	0.0829	0.08		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.12"
2.0	199	0.1085	1.65		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
0.2	26	0.0769	1.94		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
1.1	94	0.0426	1.44		**Shallow Concentrated Flow, E-F** Short Grass Pasture Kv= 7.0 fps
24.6	418	Total			

Subcatchment 5S: EX-DRAINAGE AREA



Summary for Subcatchment 5S: EX-DRAINAGE AREA

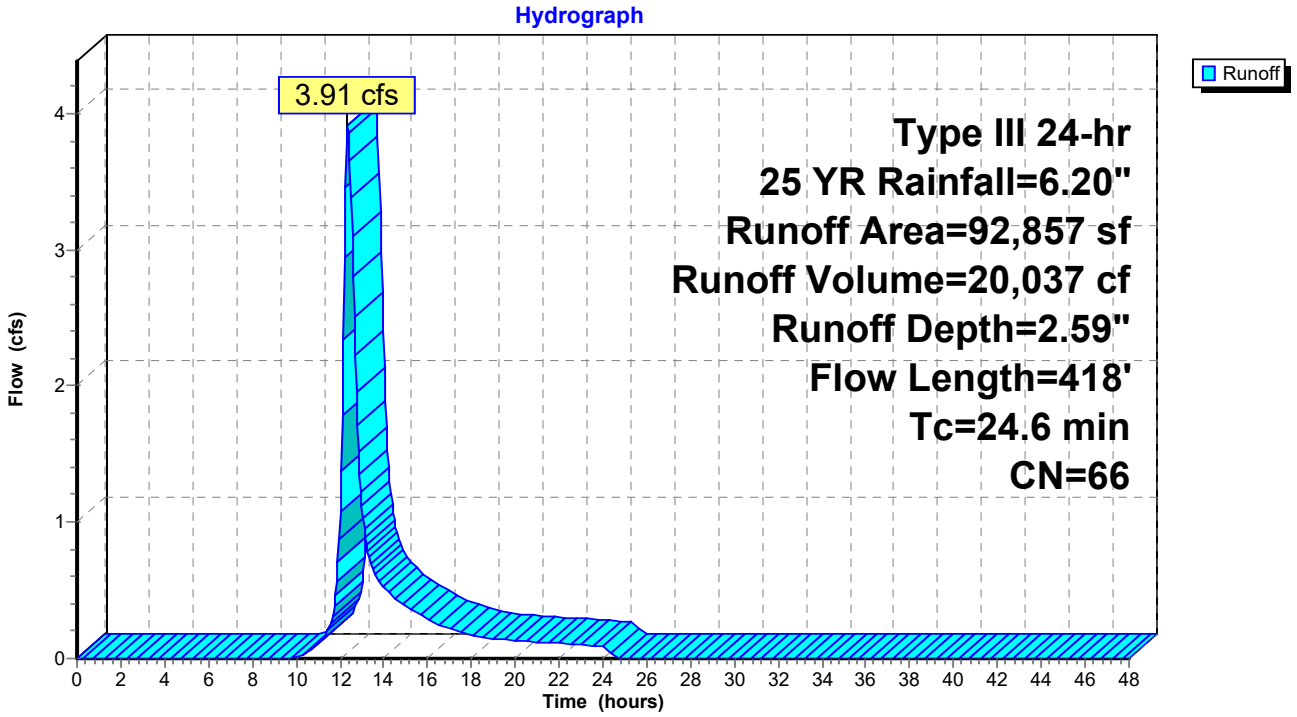
Runoff = 3.91 cfs @ 12.36 hrs, Volume= 20,037 cf, Depth= 2.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.20"

	Area (sf)	CN	Description
	5,450	77	Woods, Good, HSG D
	30,393	80	Pasture/grassland/range, Good, HSG D
	49,423	55	Woods, Good, HSG B
	5,670	61	Pasture/grassland/range, Good, HSG B
*	1,921	98	Gravel surface, HSG B
	92,857	66	Weighted Average
	90,936		97.93% Pervious Area
	1,921		2.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.3	99	0.0829	0.08		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.12"
2.0	199	0.1085	1.65		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
0.2	26	0.0769	1.94		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
1.1	94	0.0426	1.44		**Shallow Concentrated Flow, E-F** Short Grass Pasture Kv= 7.0 fps
24.6	418	Total			

Subcatchment 5S: EX-DRAINAGE AREA



Summary for Subcatchment 5S: EX-DRAINAGE AREA

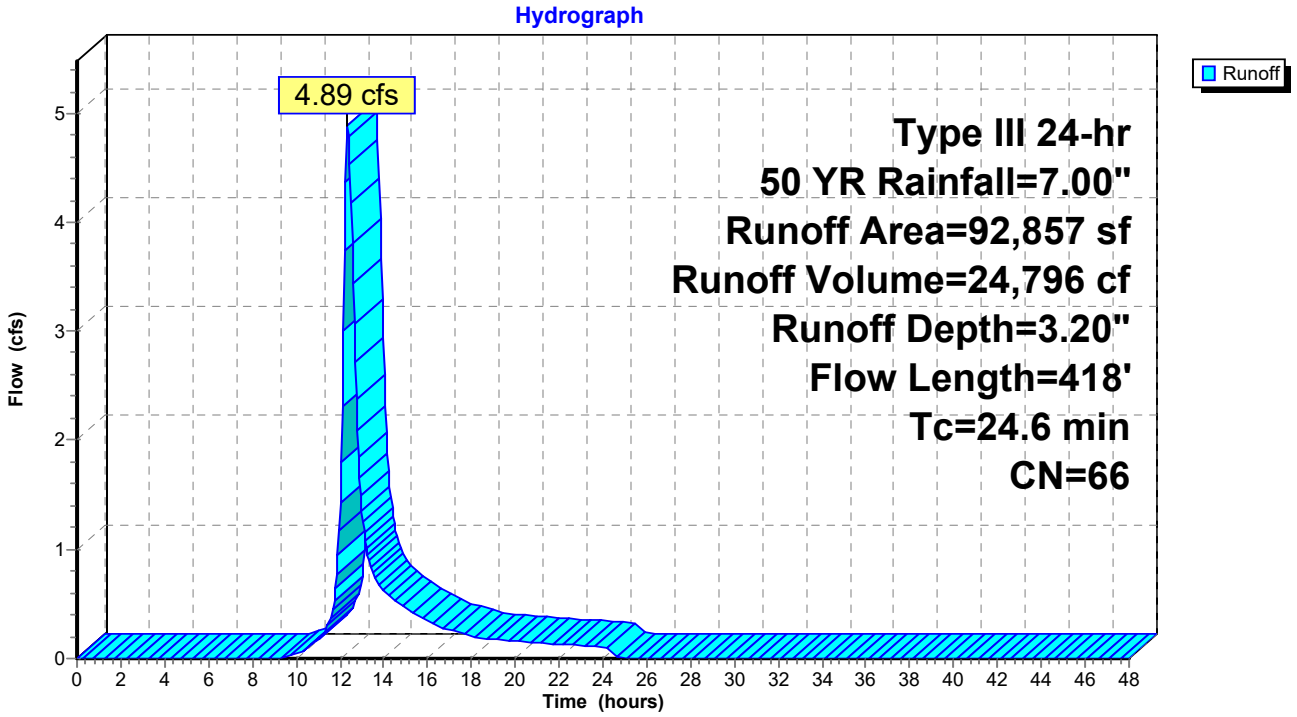
Runoff = 4.89 cfs @ 12.35 hrs, Volume= 24,796 cf, Depth= 3.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 YR Rainfall=7.00"

	Area (sf)	CN	Description
	5,450	77	Woods, Good, HSG D
	30,393	80	Pasture/grassland/range, Good, HSG D
	49,423	55	Woods, Good, HSG B
	5,670	61	Pasture/grassland/range, Good, HSG B
*	1,921	98	Gravel surface, HSG B
	92,857	66	Weighted Average
	90,936		97.93% Pervious Area
	1,921		2.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.3	99	0.0829	0.08		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.12"
2.0	199	0.1085	1.65		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
0.2	26	0.0769	1.94		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
1.1	94	0.0426	1.44		**Shallow Concentrated Flow, E-F** Short Grass Pasture Kv= 7.0 fps
24.6	418	Total			

Subcatchment 5S: EX-DRAINAGE AREA



Summary for Subcatchment 5S: EX-DRAINAGE AREA

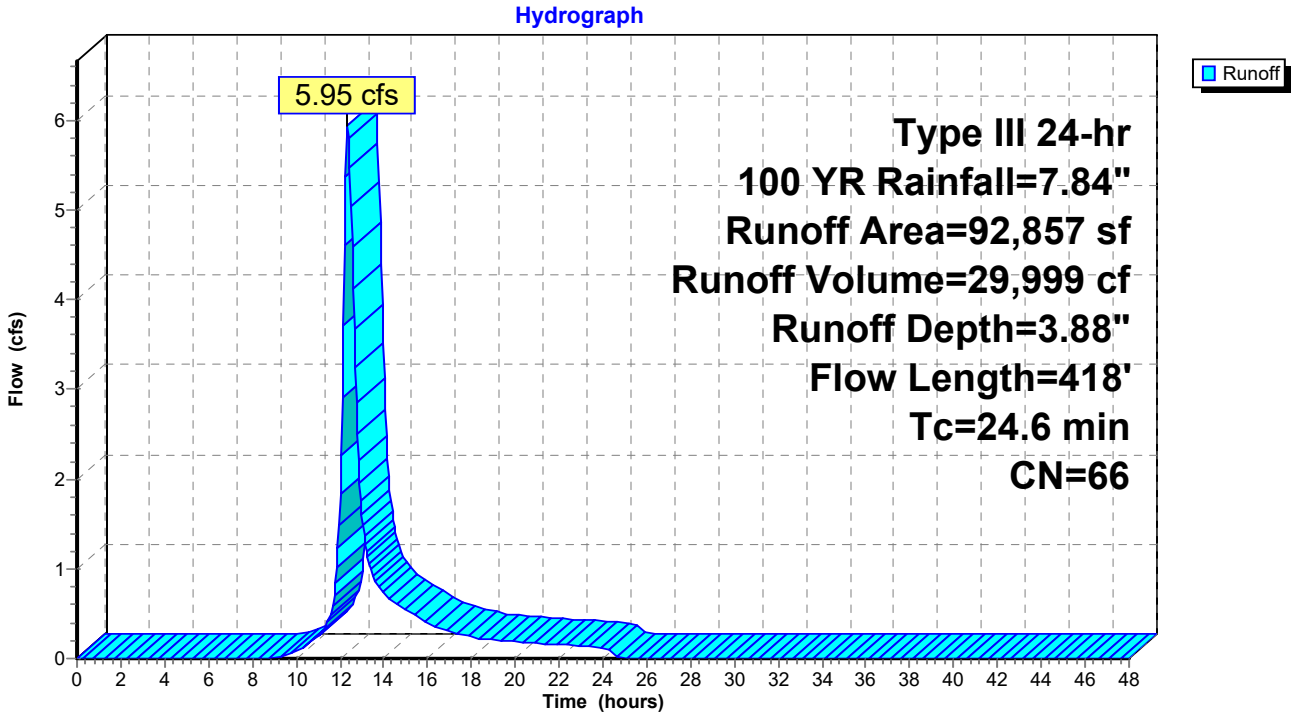
Runoff = 5.95 cfs @ 12.35 hrs, Volume= 29,999 cf, Depth= 3.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.84"

	Area (sf)	CN	Description
	5,450	77	Woods, Good, HSG D
	30,393	80	Pasture/grassland/range, Good, HSG D
	49,423	55	Woods, Good, HSG B
	5,670	61	Pasture/grassland/range, Good, HSG B
*	1,921	98	Gravel surface, HSG B
	92,857	66	Weighted Average
	90,936		97.93% Pervious Area
	1,921		2.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.3	99	0.0829	0.08		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.12"
2.0	199	0.1085	1.65		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
0.2	26	0.0769	1.94		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
1.1	94	0.0426	1.44		**Shallow Concentrated Flow, E-F** Short Grass Pasture Kv= 7.0 fps
24.6	418	Total			

Subcatchment 5S: EX-DRAINAGE AREA



APPENDIX C: PROPOSED DRAINAGE AREA MAP (PDA-1) & HYDROLOGIC COMPUTATION (HYDROCAD)

PROPOSED DRAINAGE AREAS

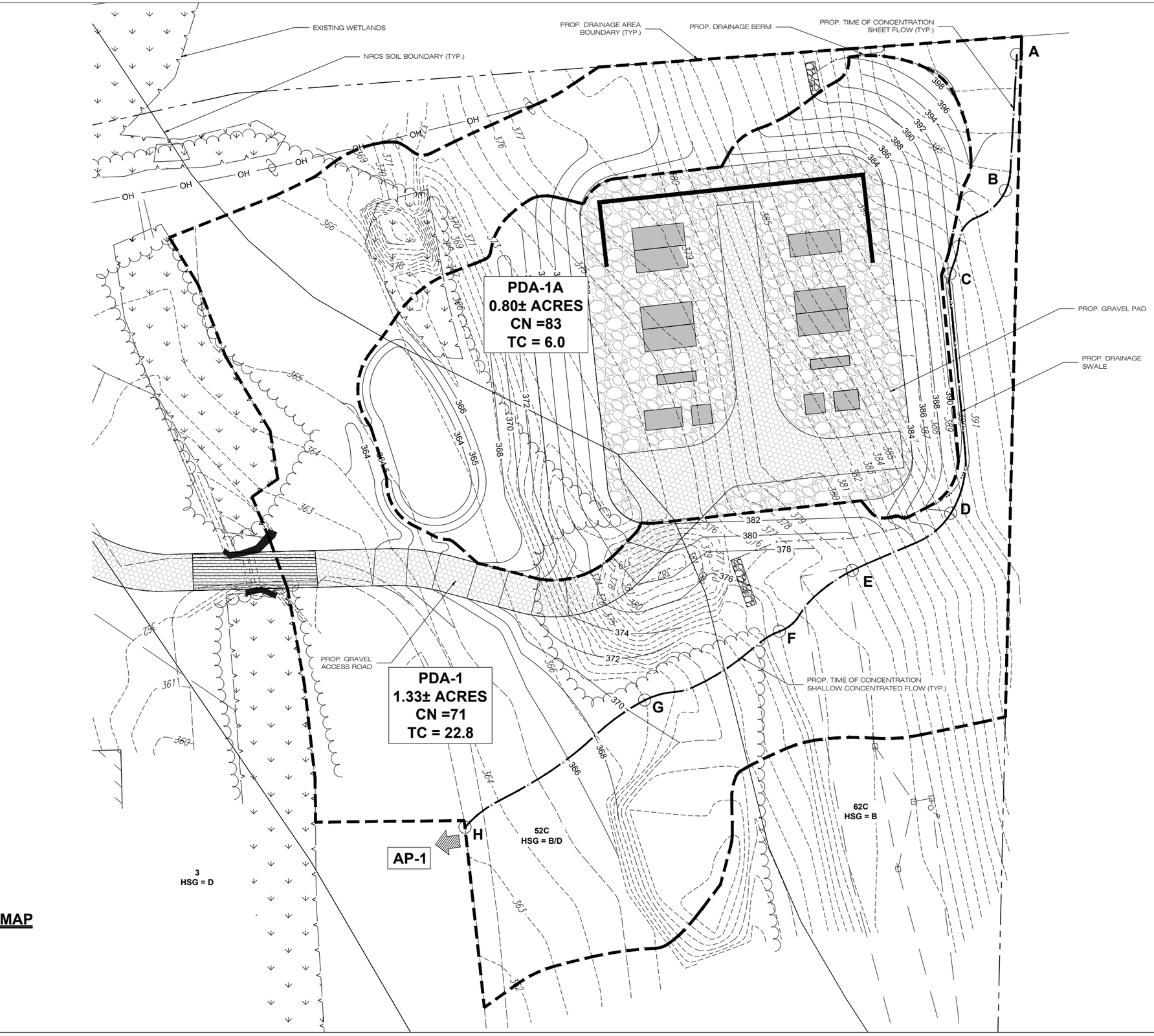
	TOTAL AREA (ACRES)	COMPOSITE CN	TC (MINS.)
PDA-1	1.33	71	22.8
PDA-1A	0.80	83	6.0

PROPOSED CONDITION PEAK FLOWS

ANALYSIS POINT	2-YEAR (CFS)	25-YEAR (CFS)	50-YEAR (CFS)	100-YEAR (CFS)
AP-1	0.94	3.03	3.70	5.43

TIME OF CONCENTRATION

SEGMENT	TYPE	TIME (MINS.)
A-B	SHEET	15.4
B-C	SHEET	3.8
C-D	SHALLOW	1.6
D-E	SHALLOW	0.3
E-F	SHALLOW	0.3
F-G	SHALLOW	0.4
G-H	SHALLOW	1.0



1 PDA-1 **PROPOSED DRAINAGE AREA MAP**
SCALE : 1" = 20'-0"

20 0 10 20 40
(IN FEET) 1 inch = 20 ft.

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CONSTRUCTION DOCUMENTS

NO	DATE	REVISION
1		
2		
3		
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7		

DESIGN PROFESSIONALS OF RECORD

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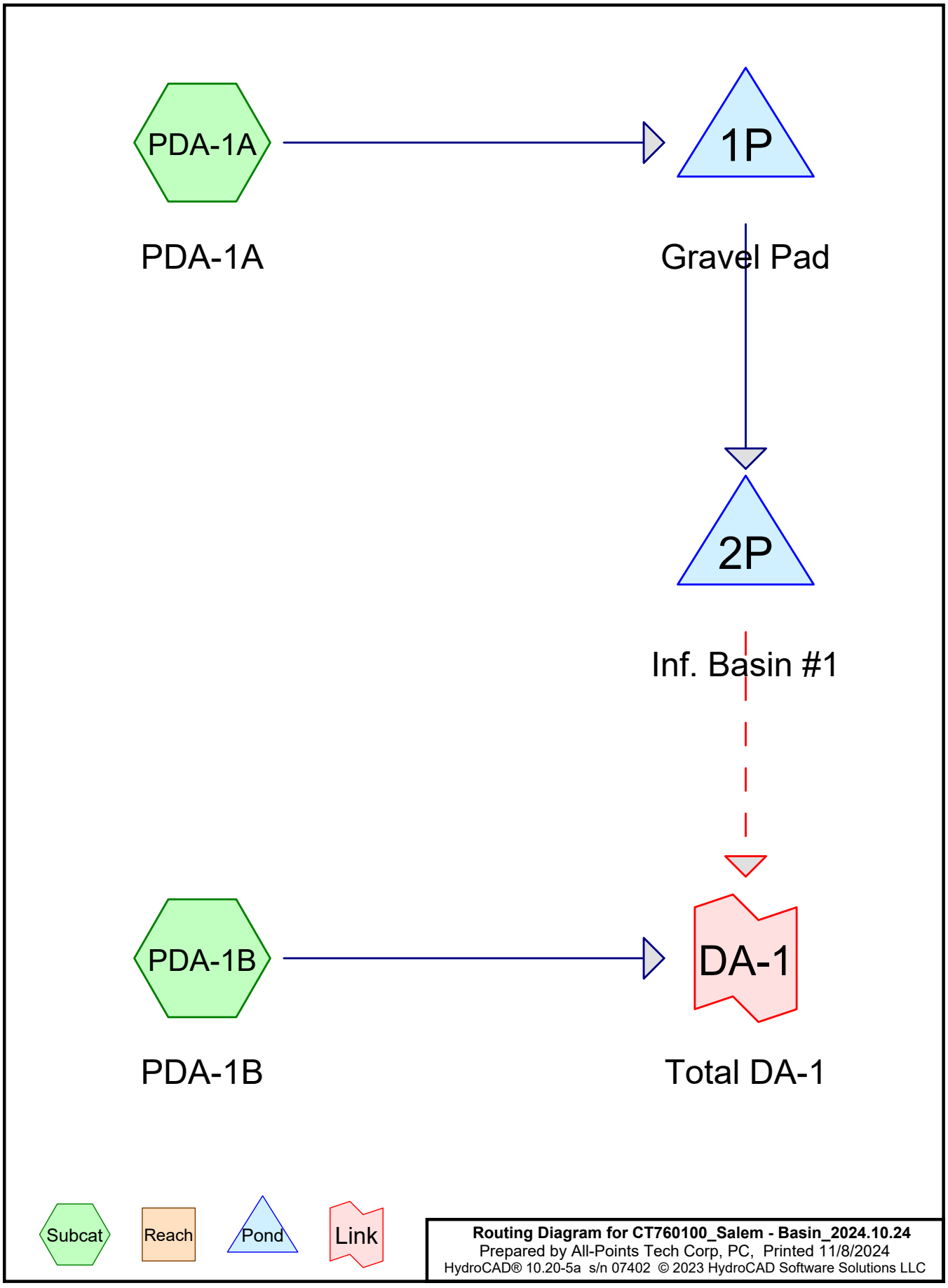
APT FILING NUMBER: CT760100

DRAWN BY: UKA
DATE: 11/08/24
CHECKED BY: TEL

SHEET TITLE:
PROPOSED DRAINAGE AREA MAP

SHEET NUMBER:
PDA-1



Routing Diagram for CT760100_Salem - Basin_2024.10.24
Prepared by All-Points Tech Corp, PC, Printed 11/8/2024

Summary for Subcatchment PDA-1A: PDA-1A

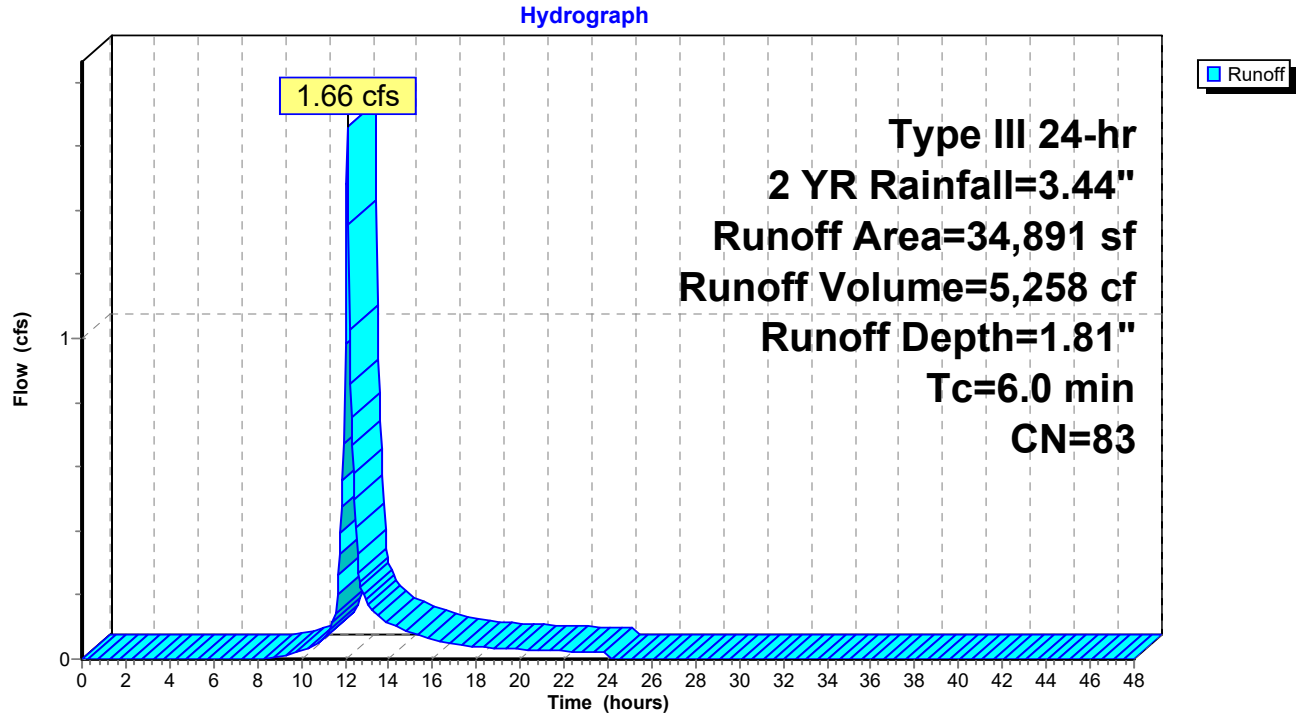
Runoff = 1.66 cfs @ 12.09 hrs, Volume= 5,258 cf, Depth= 1.81"
Routed to Pond 1P : Gravel Pad

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.44"

	Area (sf)	CN	Description
*	17,380	98	Proposed Pad
	6,534	80	Pasture/grassland/range, Good, HSG D
	10,498	61	Pasture/grassland/range, Good, HSG B
	479	55	Woods, Good, HSG B
	34,891	83	Weighted Average
	17,511		50.19% Pervious Area
	17,380		49.81% Impervious Area

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

Subcatchment PDA-1A: PDA-1A



Summary for Subcatchment PDA-1B: PDA-1B

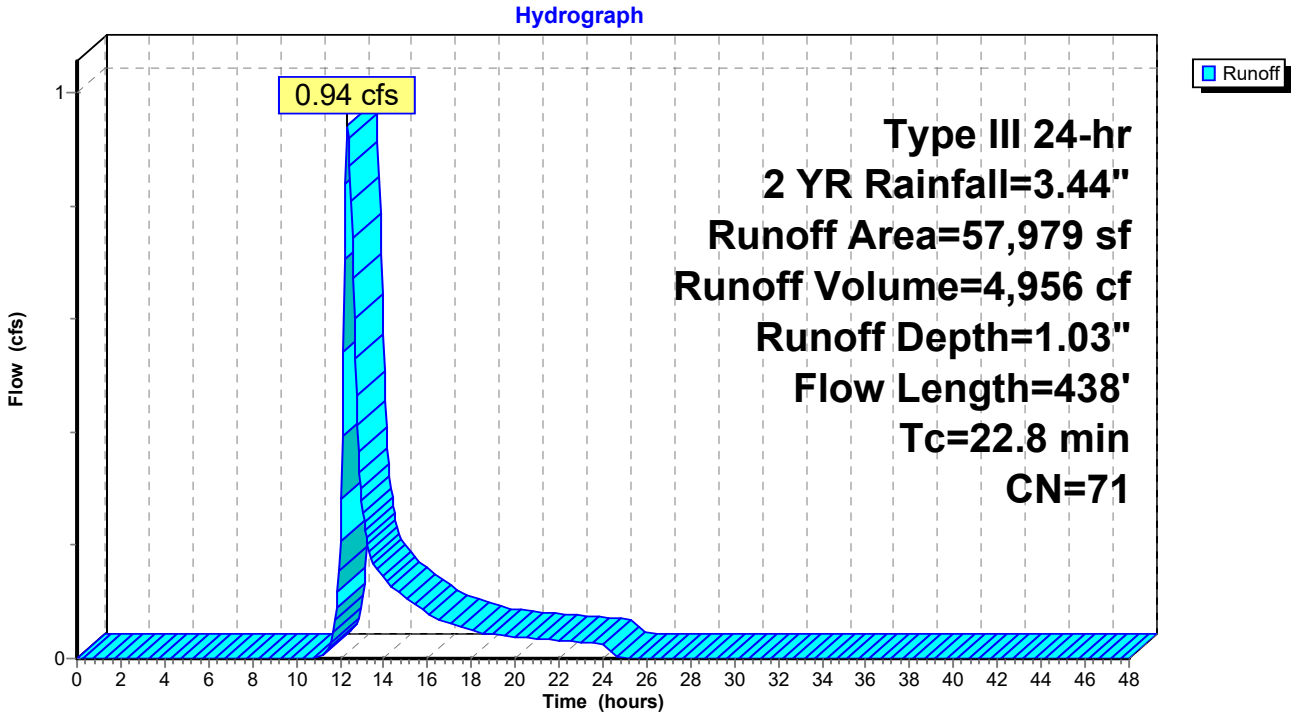
Runoff = 0.94 cfs @ 12.35 hrs, Volume= 4,956 cf, Depth= 1.03"
Routed to Link DA-1 : Total DA-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.44"

	Area (sf)	CN	Description
	9,932	55	Woods, Good, HSG B
	17,119	61	Pasture/grassland/range, Good, HSG B
*	1,612	98	Gravel surface, HSG B
	26,702	80	Pasture/grassland/range, Good, HSG D
*	2,614	98	Proposed Gravel Road
	57,979	71	Weighted Average
	53,753		92.71% Pervious Area
	4,226		7.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	56	0.0591	0.06		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.12"
3.8	43	0.1023	0.19		**Sheet Flow, B-C** Grass: Dense n= 0.240 P2= 3.12"
1.6	99	0.0212	1.02		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
0.3	47	0.1915	3.06		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
0.3	39	0.0769	1.94		**Shallow Concentrated Flow, E-F** Short Grass Pasture Kv= 7.0 fps
0.4	63	0.1429	2.65		**Shallow Concentrated Flow, F-G** Short Grass Pasture Kv= 7.0 fps
1.0	91	0.0440	1.47		**Shallow Concentrated Flow, G-H** Short Grass Pasture Kv= 7.0 fps
22.8	438	Total			

Subcatchment PDA-1B: PDA-1B



Summary for Pond 1P: Gravel Pad

Inflow Area = 34,891 sf, 49.81% Impervious, Inflow Depth = 1.81" for 2 YR event
Inflow = 1.66 cfs @ 12.09 hrs, Volume= 5,258 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 2P : Inf. Basin #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 381.51' @ 24.40 hrs Surf.Area= 17,380 sf Storage= 5,258 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	380.75'	8,690 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 21,725 cf Overall x 40.0% Voids

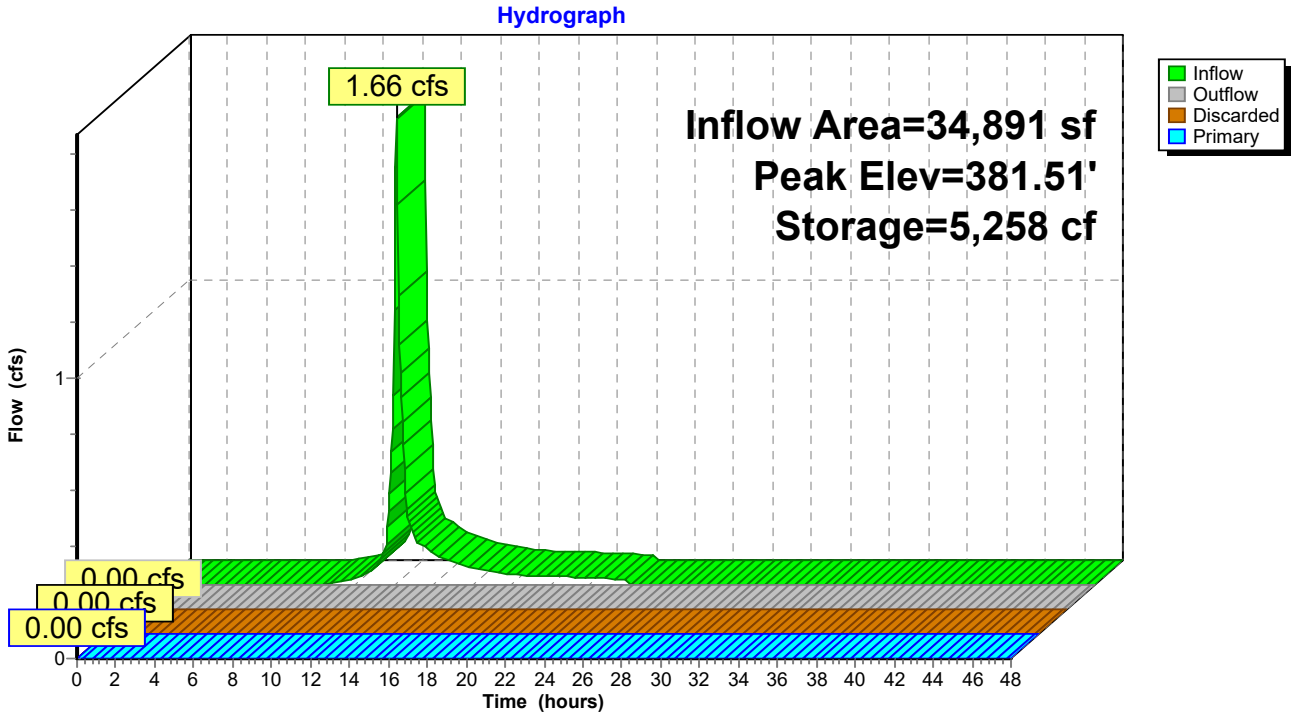
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
380.75	17,380	0	0
382.00	17,380	21,725	21,725

Device	Routing	Invert	Outlet Devices
#1	Primary	381.95'	**109.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	381.00'	**0.120 in/hr Exfiltration over Surface area above 381.00'** Conductivity to Groundwater Elevation = 370.00' Excluded Surface area = 17,380 sf

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=380.75' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=380.75' TW=364.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Gravel Pad



Summary for Pond 2P: Inf. Basin #1

Inflow Area = 34,891 sf, 49.81% Impervious, Inflow Depth = 0.00" for 2 YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link DA-1 : Total DA-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 364.00' @ 0.00 hrs Surf.Area= 1,688 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	364.00'	4,548 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

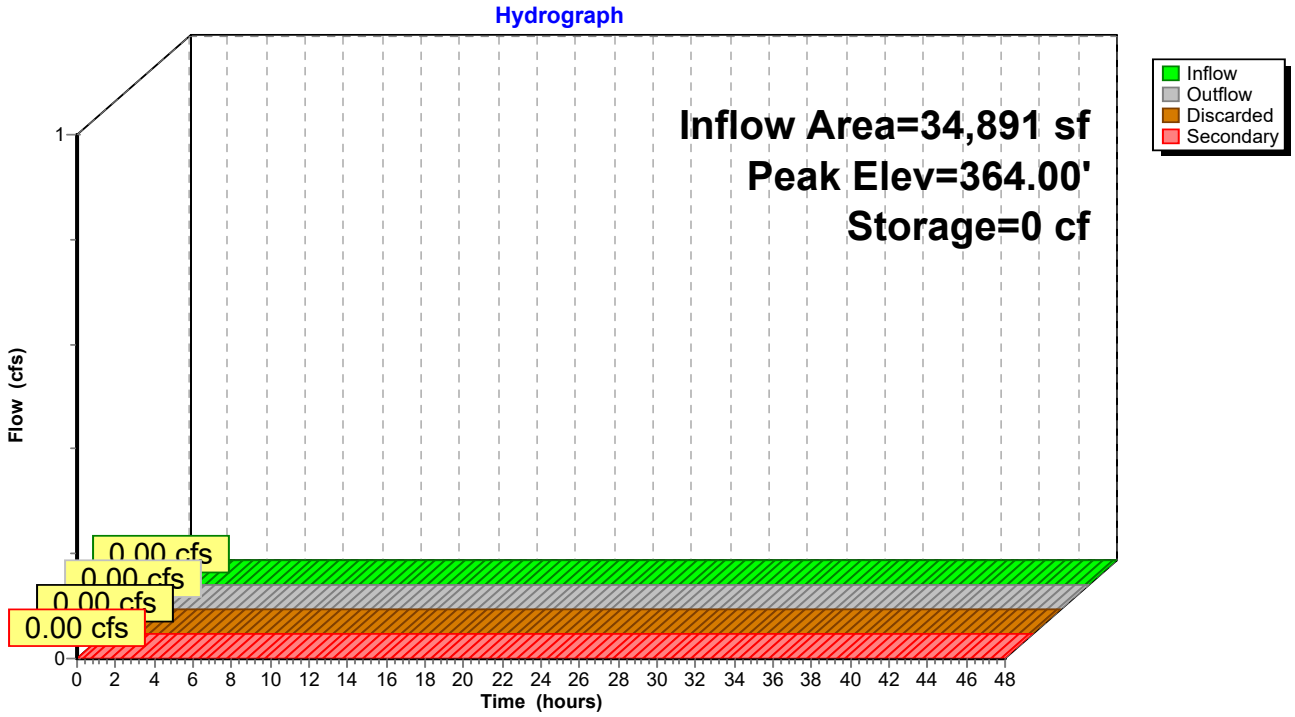
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
364.00	1,688	173.0	0	0	1,688
365.00	2,277	192.0	1,975	1,975	2,269
366.00	2,880	210.4	2,573	4,548	2,892

Device	Routing	Invert	Outlet Devices
#1	Secondary	364.50'	**20.0' long x 7.0' breadth Emergency Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#2	Discarded	364.00'	**0.120 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 350.00'

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=364.00' (Free Discharge)
↑**2=Exfiltration** (Passes 0.00 cfs of 0.00 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=364.00' TW=0.00' (Dynamic Tailwater)
↑**1=Emergency Spillway** (Controls 0.00 cfs)

Pond 2P: Inf. Basin #1

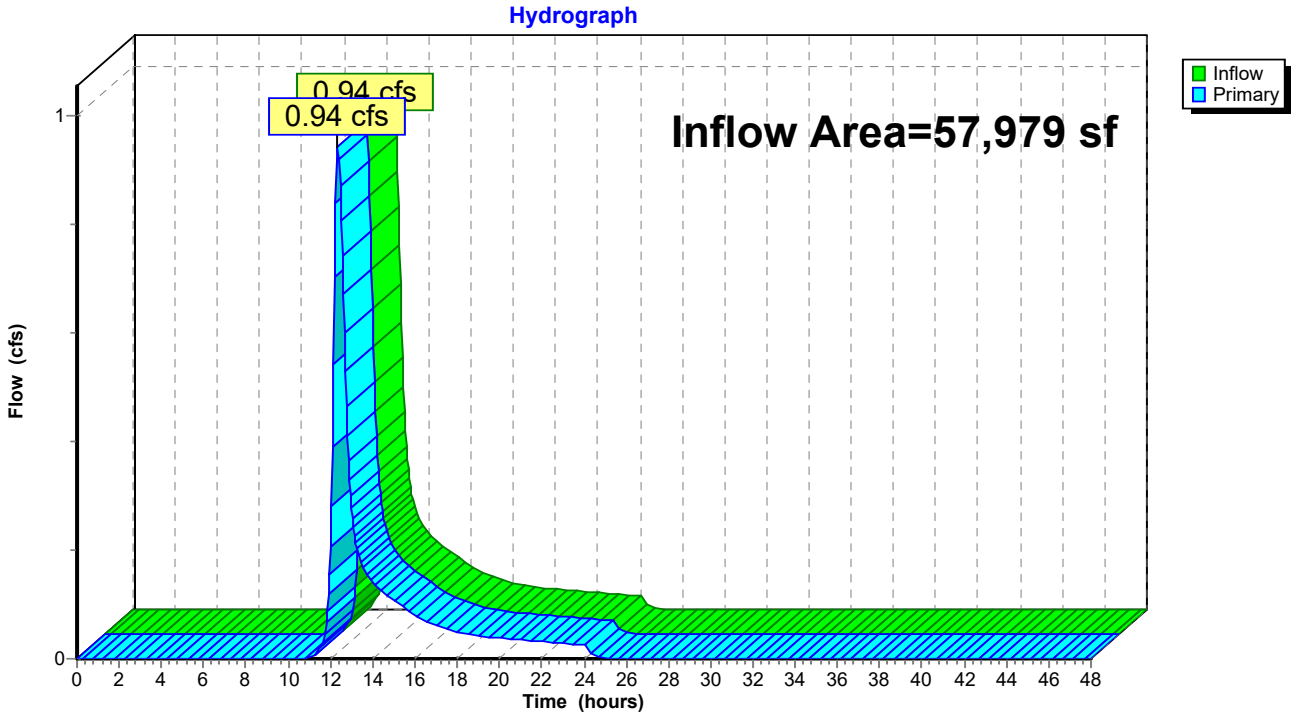


Summary for Link DA-1: Total DA-1

Inflow Area = 57,979 sf, 7.29% Impervious, Inflow Depth = 1.03" for 2 YR event
Inflow = 0.94 cfs @ 12.35 hrs, Volume= 4,956 cf
Primary = 0.94 cfs @ 12.35 hrs, Volume= 4,956 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link DA-1: Total DA-1



Summary for Subcatchment PDA-1A: PDA-1A

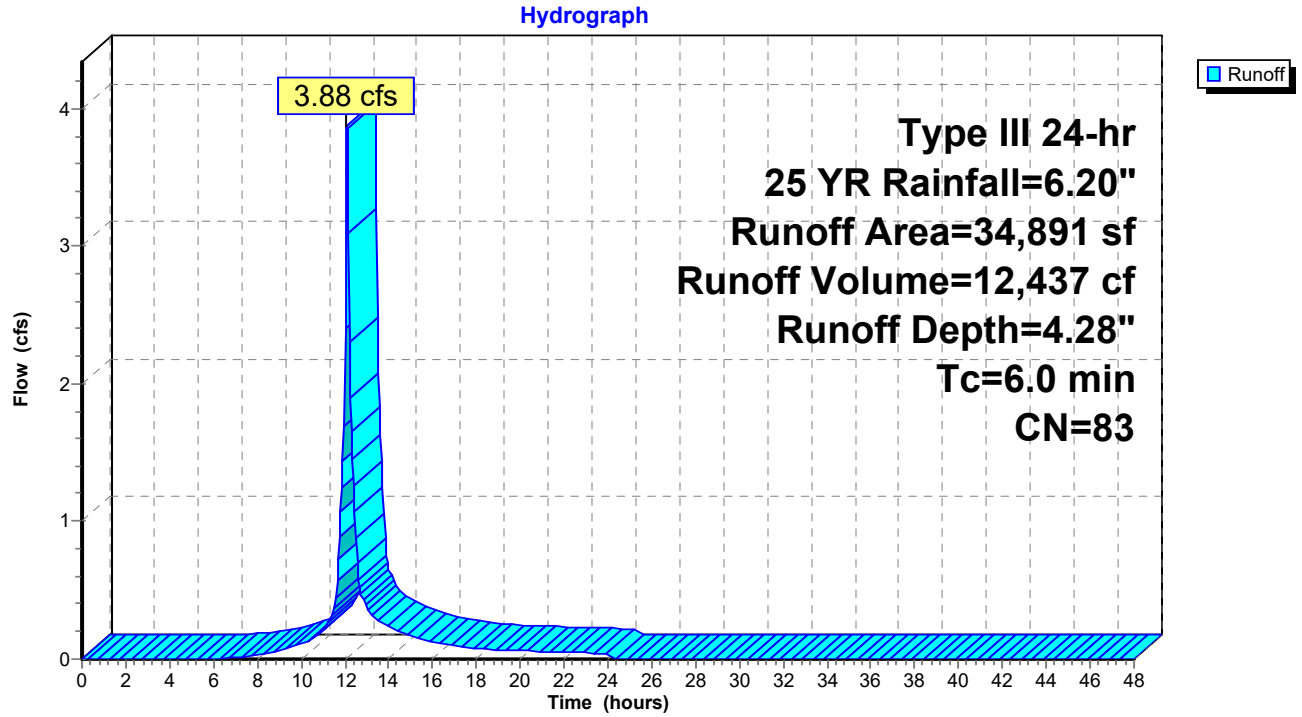
Runoff = 3.88 cfs @ 12.09 hrs, Volume= 12,437 cf, Depth= 4.28"
Routed to Pond 1P : Gravel Pad

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.20"

	Area (sf)	CN	Description
*	17,380	98	Proposed Pad
	6,534	80	Pasture/grassland/range, Good, HSG D
	10,498	61	Pasture/grassland/range, Good, HSG B
	479	55	Woods, Good, HSG B
	34,891	83	Weighted Average
	17,511		50.19% Pervious Area
	17,380		49.81% Impervious Area

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

Subcatchment PDA-1A: PDA-1A



Summary for Subcatchment PDA-1B: PDA-1B

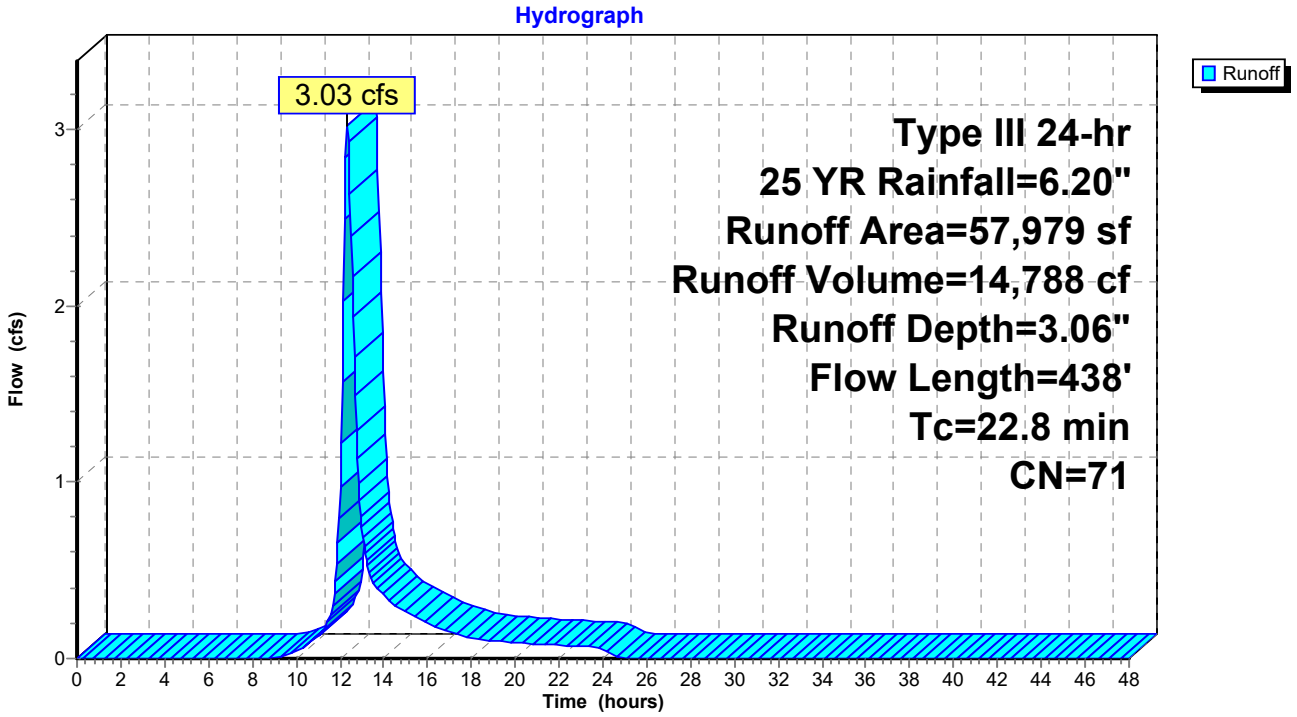
Runoff = 3.03 cfs @ 12.32 hrs, Volume= 14,788 cf, Depth= 3.06"
Routed to Link DA-1 : Total DA-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.20"

	Area (sf)	CN	Description
	9,932	55	Woods, Good, HSG B
	17,119	61	Pasture/grassland/range, Good, HSG B
*	1,612	98	Gravel surface, HSG B
	26,702	80	Pasture/grassland/range, Good, HSG D
*	2,614	98	Proposed Gravel Road
	57,979	71	Weighted Average
	53,753		92.71% Pervious Area
	4,226		7.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	56	0.0591	0.06		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.12"
3.8	43	0.1023	0.19		**Sheet Flow, B-C** Grass: Dense n= 0.240 P2= 3.12"
1.6	99	0.0212	1.02		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
0.3	47	0.1915	3.06		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
0.3	39	0.0769	1.94		**Shallow Concentrated Flow, E-F** Short Grass Pasture Kv= 7.0 fps
0.4	63	0.1429	2.65		**Shallow Concentrated Flow, F-G** Short Grass Pasture Kv= 7.0 fps
1.0	91	0.0440	1.47		**Shallow Concentrated Flow, G-H** Short Grass Pasture Kv= 7.0 fps
22.8	438	Total			

Subcatchment PDA-1B: PDA-1B



Summary for Pond 1P: Gravel Pad

Inflow Area = 34,891 sf, 49.81% Impervious, Inflow Depth = 4.28" for 25 YR event
Inflow = 3.88 cfs @ 12.09 hrs, Volume= 12,437 cf
Outflow = 0.30 cfs @ 13.34 hrs, Volume= 4,094 cf, Atten= 92%, Lag= 75.2 min
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 0.30 cfs @ 13.34 hrs, Volume= 4,094 cf
Routed to Pond 2P : Inf. Basin #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 381.96' @ 13.34 hrs Surf.Area= 17,380 sf Storage= 8,418 cf

Plug-Flow detention time= 334.5 min calculated for 4,090 cf (33% of inflow)
Center-of-Mass det. time= 203.4 min (1,008.4 - 805.0)

Volume	Invert	Avail.Storage	Storage Description
#1	380.75'	8,690 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 21,725 cf Overall x 40.0% Voids

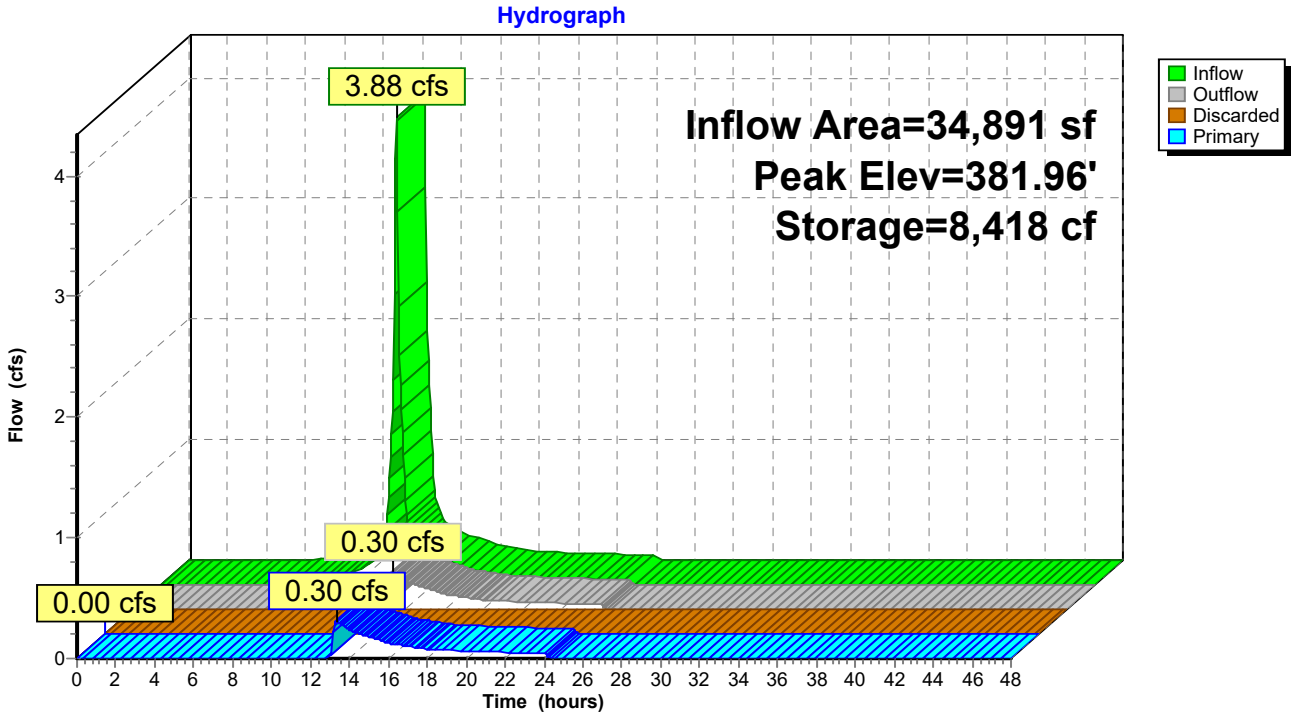
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
380.75	17,380	0	0
382.00	17,380	21,725	21,725

Device	Routing	Invert	Outlet Devices
#1	Primary	381.95'	**109.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	381.00'	**0.120 in/hr Exfiltration over Surface area above 381.00'** Conductivity to Groundwater Elevation = 370.00' Excluded Surface area = 17,380 sf

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=380.75' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.30 cfs @ 13.34 hrs HW=381.96' TW=364.10' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 0.30 cfs @ 0.25 fps)

Pond 1P: Gravel Pad



Summary for Pond 2P: Inf. Basin #1

Inflow Area = 34,891 sf, 49.81% Impervious, Inflow Depth = 1.41" for 25 YR event
Inflow = 0.30 cfs @ 13.34 hrs, Volume= 4,094 cf
Outflow = 0.21 cfs @ 14.37 hrs, Volume= 3,634 cf, Atten= 30%, Lag= 61.7 min
Discarded = 0.01 cfs @ 14.37 hrs, Volume= 690 cf
Secondary = 0.21 cfs @ 14.37 hrs, Volume= 2,944 cf
Routed to Link DA-1 : Total DA-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 364.53' @ 14.37 hrs Surf.Area= 1,987 sf Storage= 966 cf

Plug-Flow detention time= 242.0 min calculated for 3,630 cf (89% of inflow)
Center-of-Mass det. time= 197.9 min (1,206.3 - 1,008.4)

Volume	Invert	Avail.Storage	Storage Description
#1	364.00'	4,548 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

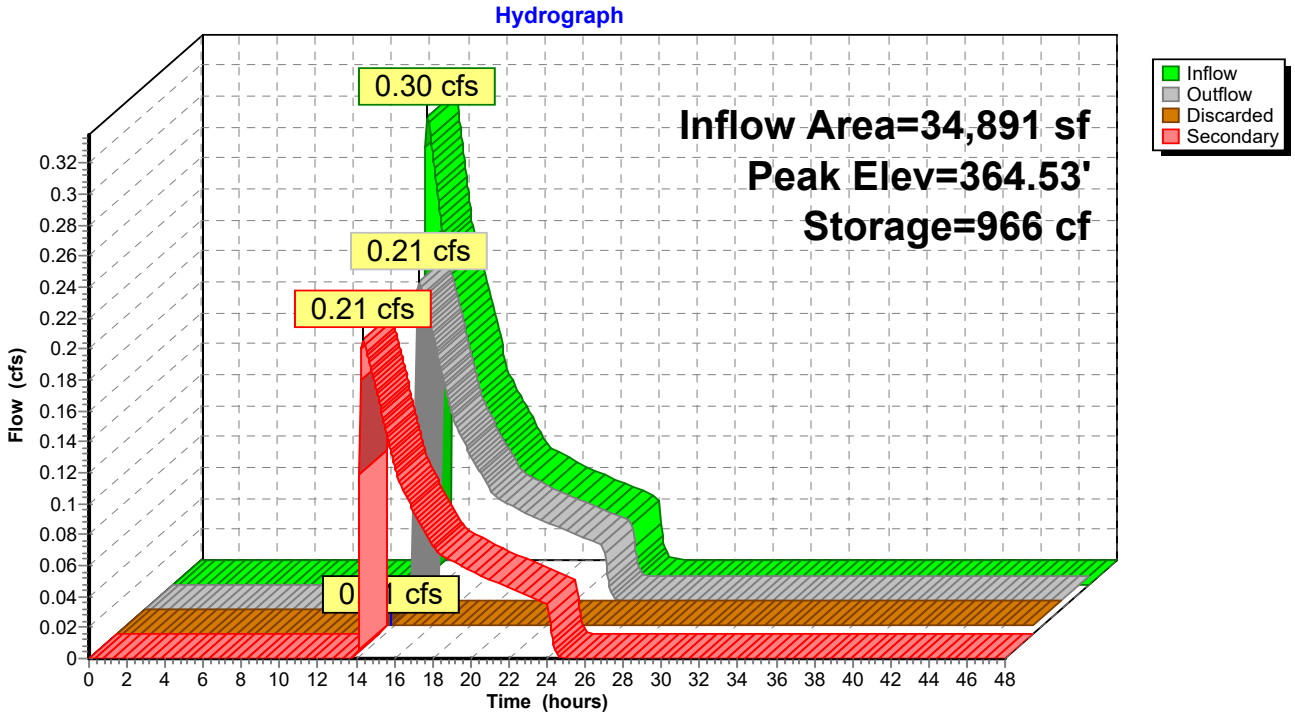
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
364.00	1,688	173.0	0	0	1,688
365.00	2,277	192.0	1,975	1,975	2,269
366.00	2,880	210.4	2,573	4,548	2,892

Device	Routing	Invert	Outlet Devices
#1	Secondary	364.50'	**20.0' long x 7.0' breadth Emergency Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#2	Discarded	364.00'	**0.120 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 350.00'

Discarded OutFlow Max=0.01 cfs @ 14.37 hrs HW=364.53' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.01 cfs)

Secondary OutFlow Max=0.21 cfs @ 14.37 hrs HW=364.53' TW=0.00' (Dynamic Tailwater)
↑—**1=Emergency Spillway** (Weir Controls 0.21 cfs @ 0.39 fps)

Pond 2P: Inf. Basin #1

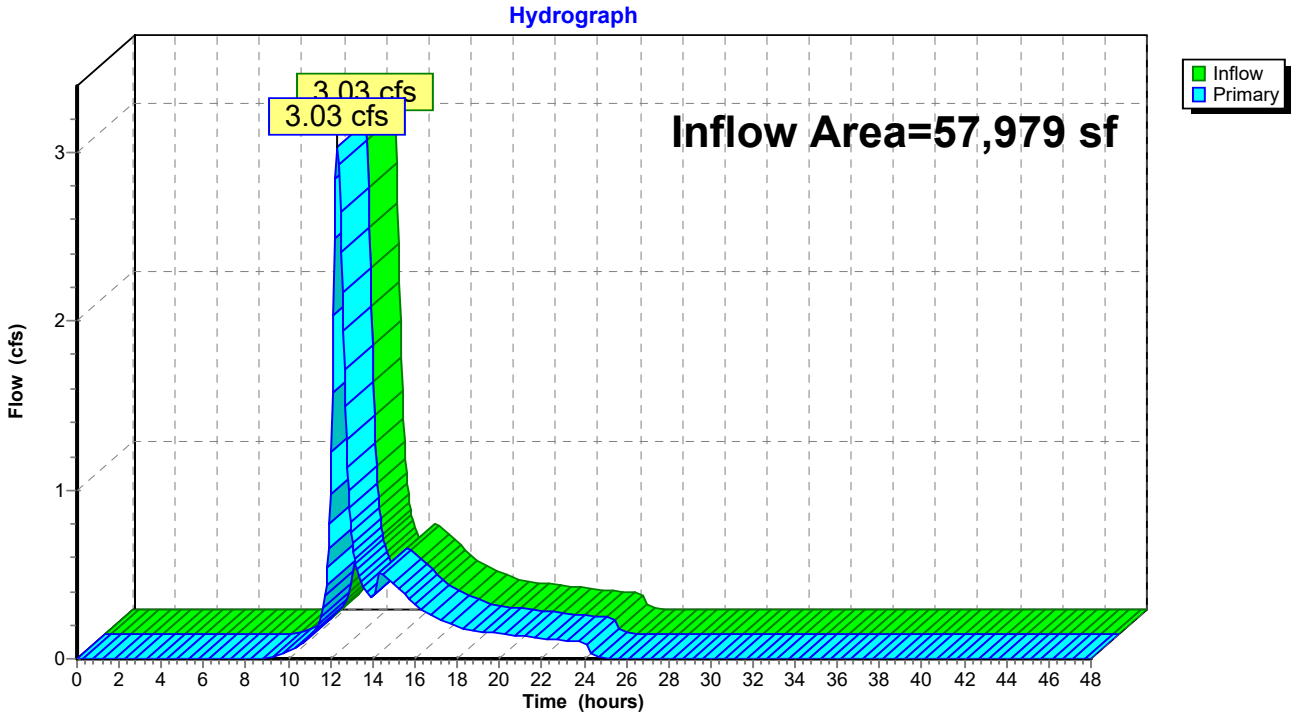


Summary for Link DA-1: Total DA-1

Inflow Area = 57,979 sf, 7.29% Impervious, Inflow Depth = 3.67" for 25 YR event
Inflow = 3.03 cfs @ 12.32 hrs, Volume= 17,732 cf
Primary = 3.03 cfs @ 12.32 hrs, Volume= 17,732 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link DA-1: Total DA-1



Summary for Subcatchment PDA-1A: PDA-1A

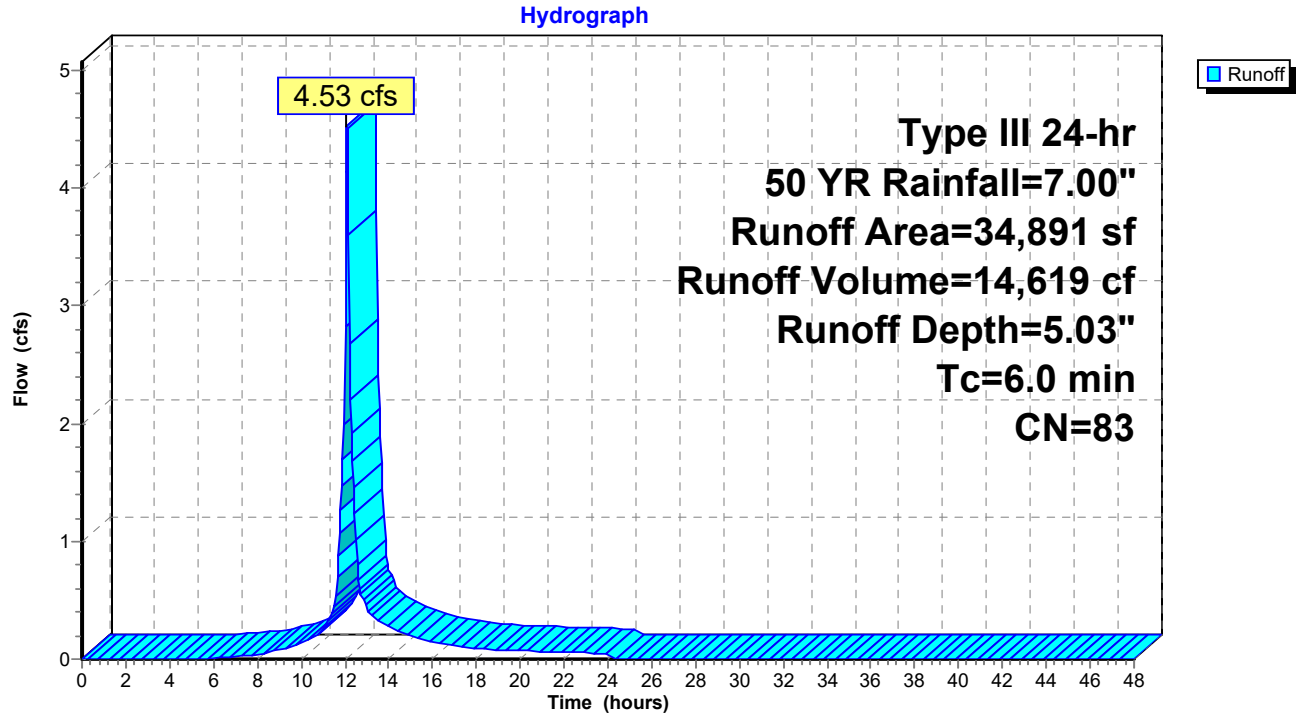
Runoff = 4.53 cfs @ 12.09 hrs, Volume= 14,619 cf, Depth= 5.03"
Routed to Pond 1P : Gravel Pad

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 YR Rainfall=7.00"

	Area (sf)	CN	Description
*	17,380	98	Proposed Pad
	6,534	80	Pasture/grassland/range, Good, HSG D
	10,498	61	Pasture/grassland/range, Good, HSG B
	479	55	Woods, Good, HSG B
	34,891	83	Weighted Average
	17,511		50.19% Pervious Area
	17,380		49.81% Impervious Area

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

Subcatchment PDA-1A: PDA-1A



Summary for Subcatchment PDA-1B: PDA-1B

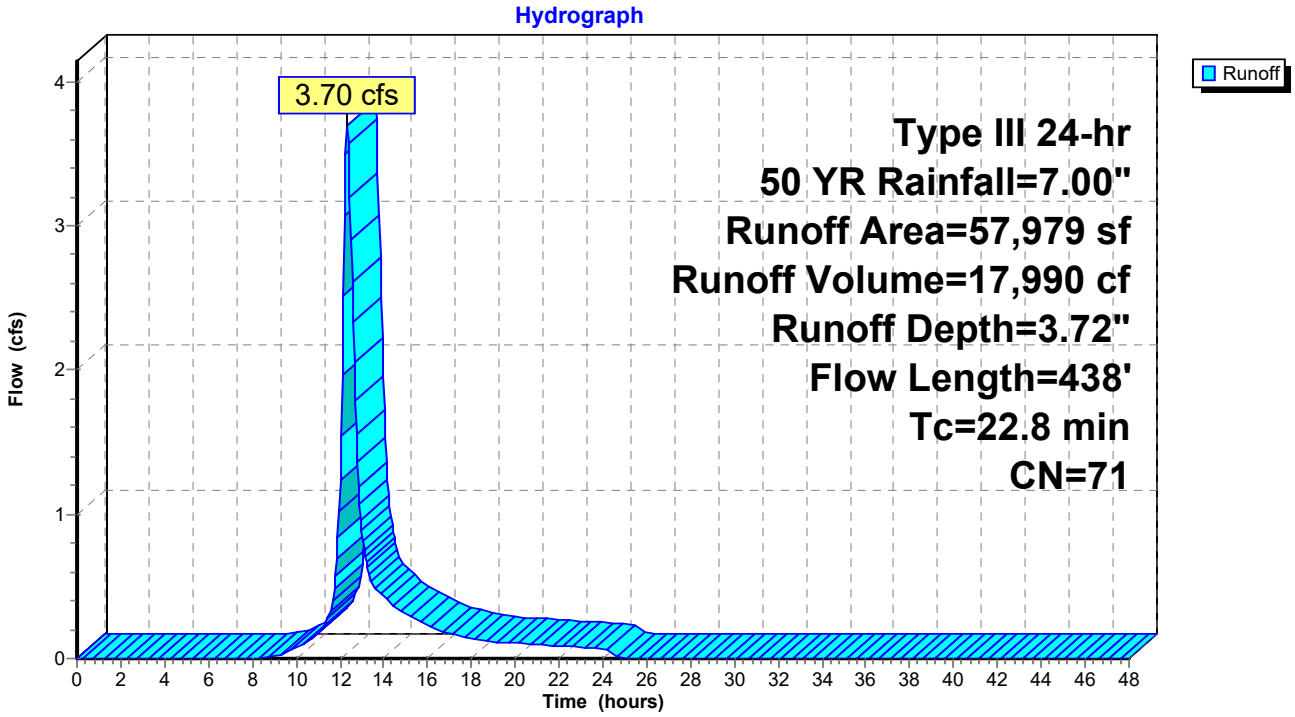
Runoff = 3.70 cfs @ 12.32 hrs, Volume= 17,990 cf, Depth= 3.72"
Routed to Link DA-1 : Total DA-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 YR Rainfall=7.00"

	Area (sf)	CN	Description
	9,932	55	Woods, Good, HSG B
	17,119	61	Pasture/grassland/range, Good, HSG B
*	1,612	98	Gravel surface, HSG B
	26,702	80	Pasture/grassland/range, Good, HSG D
*	2,614	98	Proposed Gravel Road
	57,979	71	Weighted Average
	53,753		92.71% Pervious Area
	4,226		7.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	56	0.0591	0.06		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.12"
3.8	43	0.1023	0.19		**Sheet Flow, B-C** Grass: Dense n= 0.240 P2= 3.12"
1.6	99	0.0212	1.02		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
0.3	47	0.1915	3.06		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
0.3	39	0.0769	1.94		**Shallow Concentrated Flow, E-F** Short Grass Pasture Kv= 7.0 fps
0.4	63	0.1429	2.65		**Shallow Concentrated Flow, F-G** Short Grass Pasture Kv= 7.0 fps
1.0	91	0.0440	1.47		**Shallow Concentrated Flow, G-H** Short Grass Pasture Kv= 7.0 fps
22.8	438	Total			

Subcatchment PDA-1B: PDA-1B



Summary for Pond 1P: Gravel Pad

Inflow Area = 34,891 sf, 49.81% Impervious, Inflow Depth = 5.03" for 50 YR event
Inflow = 4.53 cfs @ 12.09 hrs, Volume= 14,619 cf
Outflow = 1.07 cfs @ 12.52 hrs, Volume= 6,276 cf, Atten= 76%, Lag= 25.5 min
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 1.07 cfs @ 12.52 hrs, Volume= 6,276 cf
Routed to Pond 2P : Inf. Basin #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 381.98' @ 12.52 hrs Surf.Area= 17,380 sf Storage= 8,519 cf

Plug-Flow detention time= 265.4 min calculated for 6,270 cf (43% of inflow)
Center-of-Mass det. time= 146.2 min (946.6 - 800.4)

Volume	Invert	Avail.Storage	Storage Description
#1	380.75'	8,690 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 21,725 cf Overall x 40.0% Voids

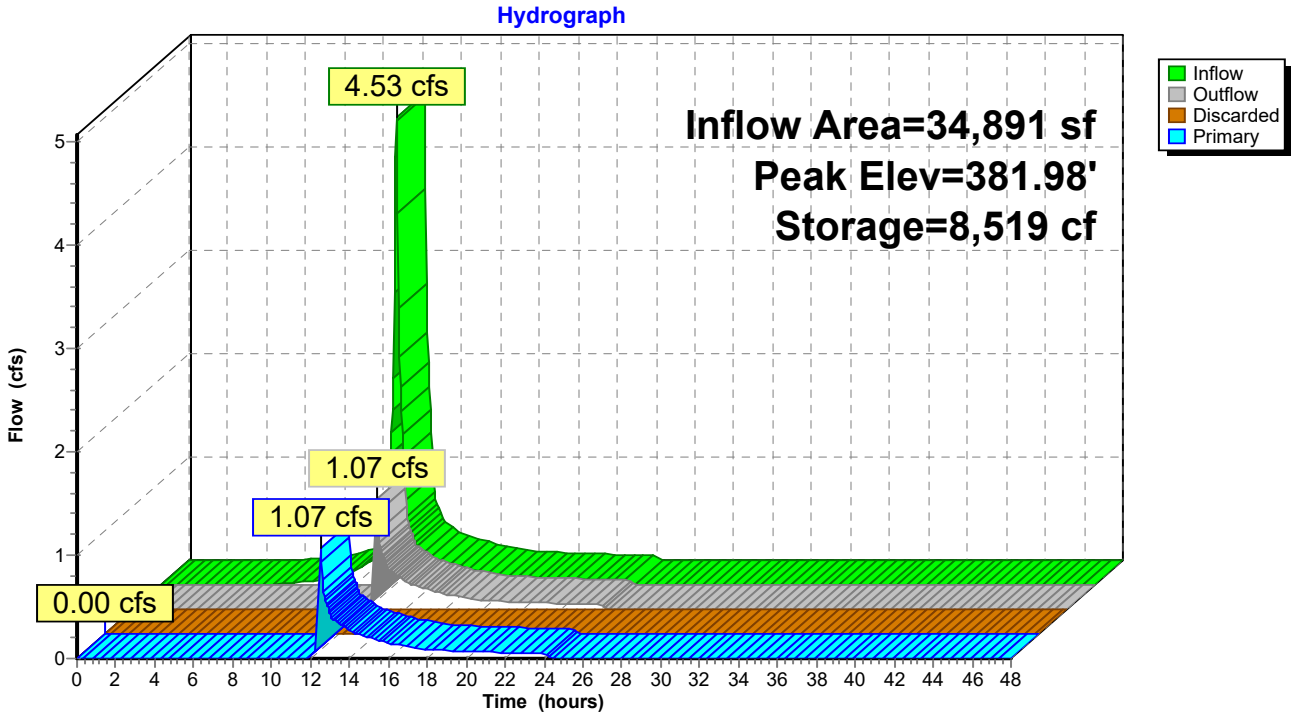
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
380.75	17,380	0	0
382.00	17,380	21,725	21,725

Device	Routing	Invert	Outlet Devices
#1	Primary	381.95'	**109.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	381.00'	**0.120 in/hr Exfiltration over Surface area above 381.00'** Conductivity to Groundwater Elevation = 370.00' Excluded Surface area = 17,380 sf

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=380.75' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=1.01 cfs @ 12.52 hrs HW=381.97' TW=364.14' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 1.01 cfs @ 0.38 fps)

Pond 1P: Gravel Pad



Summary for Pond 2P: Inf. Basin #1

Inflow Area = 34,891 sf, 49.81% Impervious, Inflow Depth = 2.16" for 50 YR event
Inflow = 1.07 cfs @ 12.52 hrs, Volume= 6,276 cf
Outflow = 0.49 cfs @ 12.92 hrs, Volume= 5,816 cf, Atten= 55%, Lag= 24.4 min
Discarded = 0.01 cfs @ 12.92 hrs, Volume= 706 cf
Secondary = 0.48 cfs @ 12.92 hrs, Volume= 5,110 cf
Routed to Link DA-1 : Total DA-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 364.55' @ 12.92 hrs Surf.Area= 1,999 sf Storage= 1,006 cf

Plug-Flow detention time= 164.0 min calculated for 5,816 cf (93% of inflow)
Center-of-Mass det. time= 129.9 min (1,076.5 - 946.6)

Volume	Invert	Avail.Storage	Storage Description
#1	364.00'	4,548 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

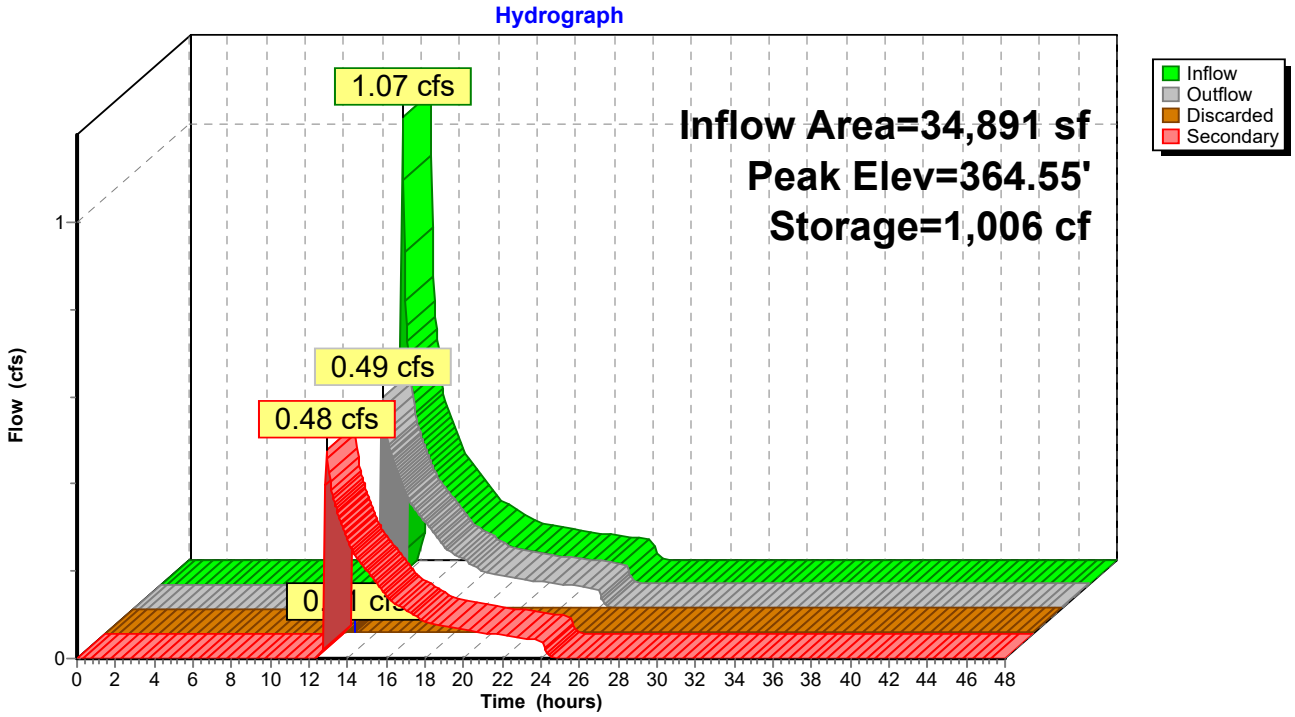
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
364.00	1,688	173.0	0	0	1,688
365.00	2,277	192.0	1,975	1,975	2,269
366.00	2,880	210.4	2,573	4,548	2,892

Device	Routing	Invert	Outlet Devices
#1	Secondary	364.50'	**20.0' long x 7.0' breadth Emergency Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#2	Discarded	364.00'	**0.120 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 350.00'

Discarded OutFlow Max=0.01 cfs @ 12.92 hrs HW=364.55' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.01 cfs)

Secondary OutFlow Max=0.47 cfs @ 12.92 hrs HW=364.55' TW=0.00' (Dynamic Tailwater)
↑—**1=Emergency Spillway** (Weir Controls 0.47 cfs @ 0.51 fps)

Pond 2P: Inf. Basin #1

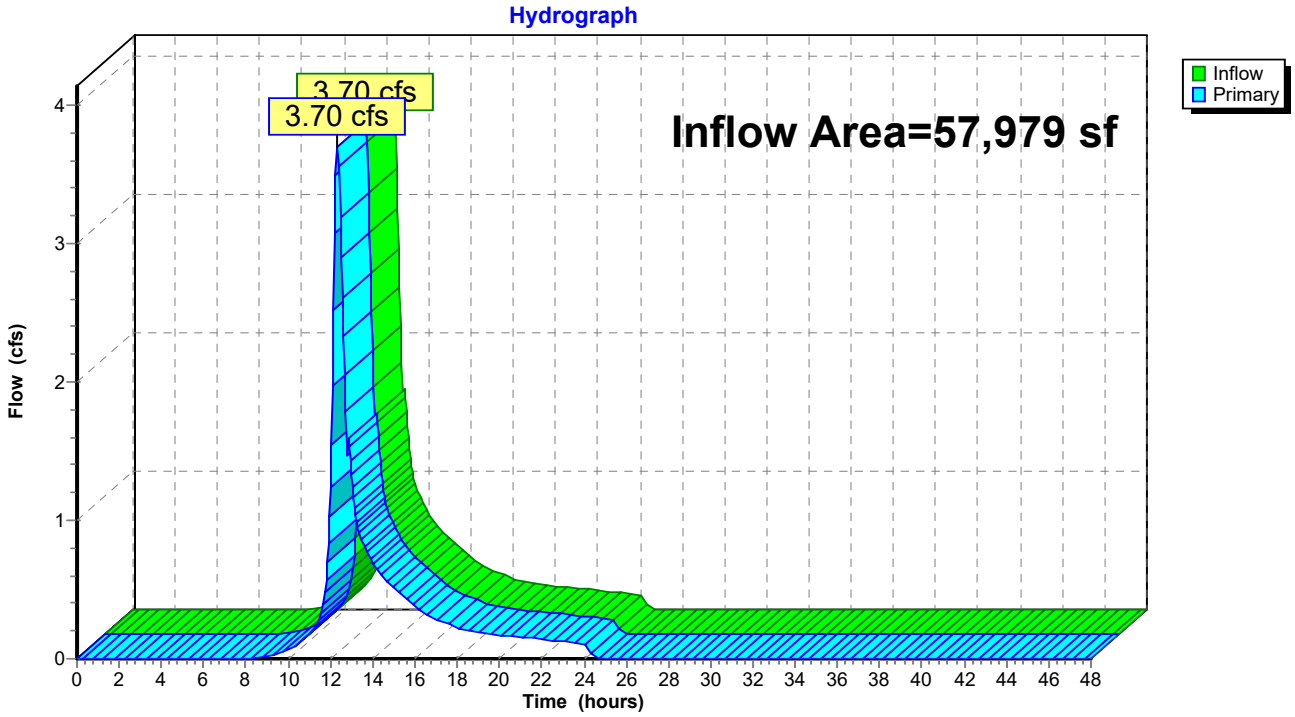


Summary for Link DA-1: Total DA-1

Inflow Area = 57,979 sf, 7.29% Impervious, Inflow Depth = 4.78" for 50 YR event
Inflow = 3.70 cfs @ 12.32 hrs, Volume= 23,100 cf
Primary = 3.70 cfs @ 12.32 hrs, Volume= 23,100 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link DA-1: Total DA-1



Summary for Subcatchment PDA-1A: PDA-1A

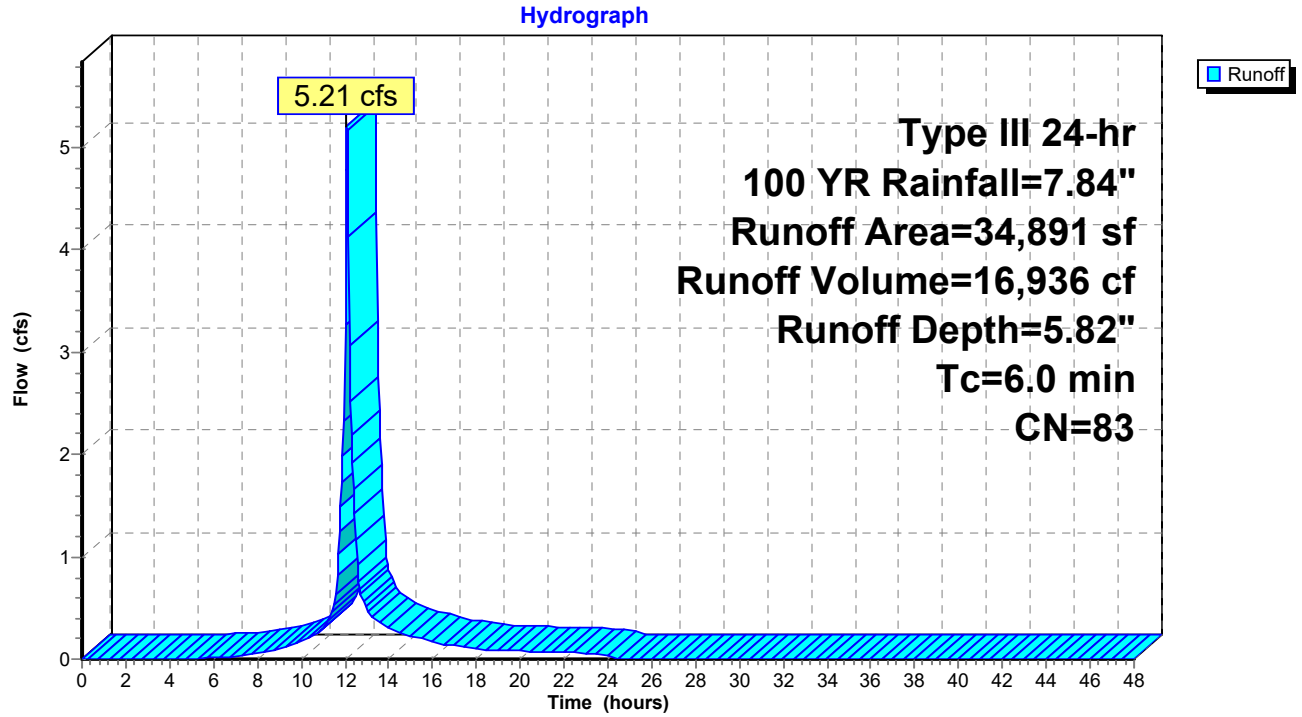
Runoff = 5.21 cfs @ 12.09 hrs, Volume= 16,936 cf, Depth= 5.82"
Routed to Pond 1P : Gravel Pad

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.84"

	Area (sf)	CN	Description
*	17,380	98	Proposed Pad
	6,534	80	Pasture/grassland/range, Good, HSG D
	10,498	61	Pasture/grassland/range, Good, HSG B
	479	55	Woods, Good, HSG B
	34,891	83	Weighted Average
	17,511		50.19% Pervious Area
	17,380		49.81% Impervious Area

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

Subcatchment PDA-1A: PDA-1A



Summary for Subcatchment PDA-1B: PDA-1B

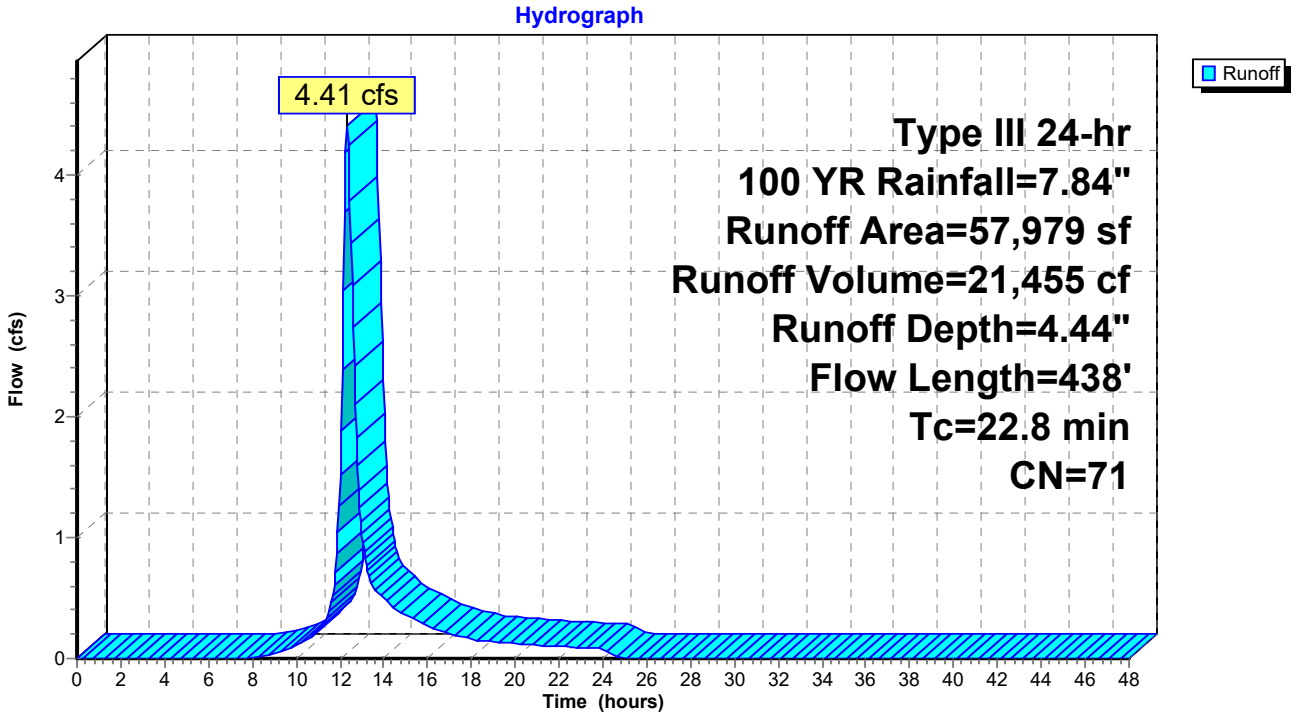
Runoff = 4.41 cfs @ 12.32 hrs, Volume= 21,455 cf, Depth= 4.44"
Routed to Link DA-1 : Total DA-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.84"

	Area (sf)	CN	Description
	9,932	55	Woods, Good, HSG B
	17,119	61	Pasture/grassland/range, Good, HSG B
*	1,612	98	Gravel surface, HSG B
	26,702	80	Pasture/grassland/range, Good, HSG D
*	2,614	98	Proposed Gravel Road
	57,979	71	Weighted Average
	53,753		92.71% Pervious Area
	4,226		7.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	56	0.0591	0.06		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.12"
3.8	43	0.1023	0.19		**Sheet Flow, B-C** Grass: Dense n= 0.240 P2= 3.12"
1.6	99	0.0212	1.02		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
0.3	47	0.1915	3.06		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
0.3	39	0.0769	1.94		**Shallow Concentrated Flow, E-F** Short Grass Pasture Kv= 7.0 fps
0.4	63	0.1429	2.65		**Shallow Concentrated Flow, F-G** Short Grass Pasture Kv= 7.0 fps
1.0	91	0.0440	1.47		**Shallow Concentrated Flow, G-H** Short Grass Pasture Kv= 7.0 fps
22.8	438	Total			

Subcatchment PDA-1B: PDA-1B



Summary for Pond 1P: Gravel Pad

Inflow Area = 34,891 sf, 49.81% Impervious, Inflow Depth = 5.82" for 100 YR event
Inflow = 5.21 cfs @ 12.09 hrs, Volume= 16,936 cf
Outflow = 2.40 cfs @ 12.32 hrs, Volume= 8,594 cf, Atten= 54%, Lag= 13.6 min
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 2.40 cfs @ 12.32 hrs, Volume= 8,594 cf
Routed to Pond 2P : Inf. Basin #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 381.99' @ 12.32 hrs Surf.Area= 17,380 sf Storage= 8,645 cf

Plug-Flow detention time= 226.0 min calculated for 8,585 cf (51% of inflow)
Center-of-Mass det. time= 114.6 min (910.9 - 796.3)

Volume	Invert	Avail.Storage	Storage Description
#1	380.75'	8,690 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 21,725 cf Overall x 40.0% Voids

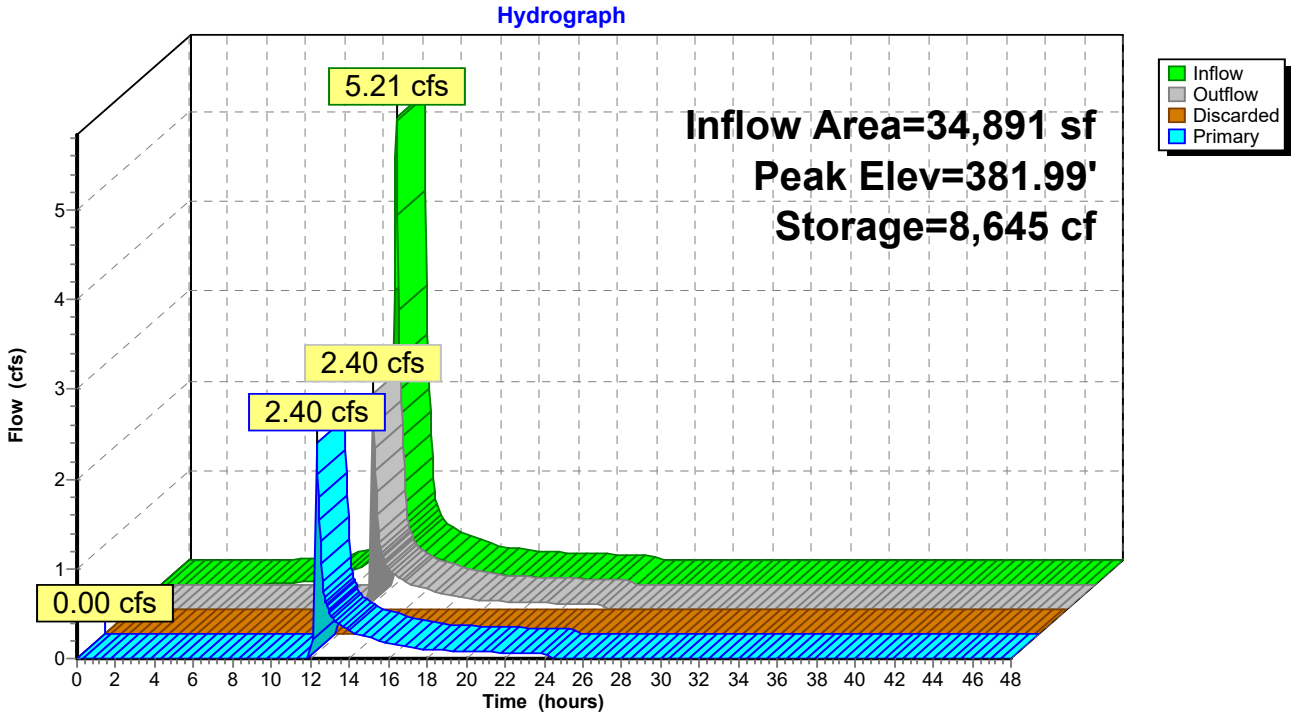
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
380.75	17,380	0	0
382.00	17,380	21,725	21,725

Device	Routing	Invert	Outlet Devices
#1	Primary	381.95'	**109.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	381.00'	**0.120 in/hr Exfiltration over Surface area above 381.00'** Conductivity to Groundwater Elevation = 370.00' Excluded Surface area = 17,380 sf

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=380.75' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=2.23 cfs @ 12.32 hrs HW=381.99' TW=364.29' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 2.23 cfs @ 0.50 fps)

Pond 1P: Gravel Pad



Summary for Pond 2P: Inf. Basin #1

Inflow Area = 34,891 sf, 49.81% Impervious, Inflow Depth = 2.96" for 100 YR event
Inflow = 2.40 cfs @ 12.32 hrs, Volume= 8,594 cf
Outflow = 1.68 cfs @ 12.46 hrs, Volume= 8,133 cf, Atten= 30%, Lag= 8.8 min
Discarded = 0.01 cfs @ 12.46 hrs, Volume= 711 cf
Secondary = 1.68 cfs @ 12.46 hrs, Volume= 7,422 cf
Routed to Link DA-1 : Total DA-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 364.61' @ 12.46 hrs Surf.Area= 2,035 sf Storage= 1,129 cf

Plug-Flow detention time= 120.4 min calculated for 8,133 cf (95% of inflow)
Center-of-Mass det. time= 93.5 min (1,004.5 - 910.9)

Volume	Invert	Avail.Storage	Storage Description
#1	364.00'	4,548 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

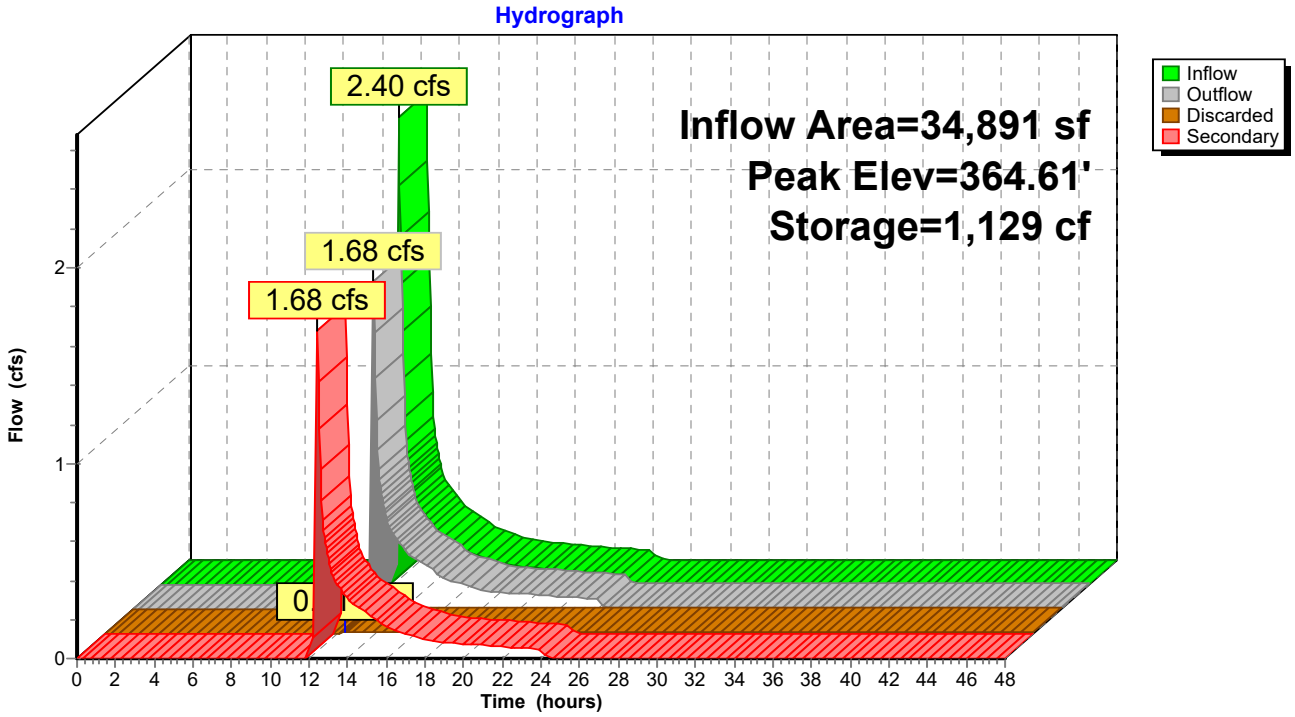
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
364.00	1,688	173.0	0	0	1,688
365.00	2,277	192.0	1,975	1,975	2,269
366.00	2,880	210.4	2,573	4,548	2,892

Device	Routing	Invert	Outlet Devices
#1	Secondary	364.50'	**20.0' long x 7.0' breadth Emergency Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#2	Discarded	364.00'	**0.120 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 350.00'

Discarded OutFlow Max=0.01 cfs @ 12.46 hrs HW=364.60' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.01 cfs)

Secondary OutFlow Max=1.58 cfs @ 12.46 hrs HW=364.60' TW=0.00' (Dynamic Tailwater)
↑—**1=Emergency Spillway** (Weir Controls 1.58 cfs @ 0.77 fps)

Pond 2P: Inf. Basin #1

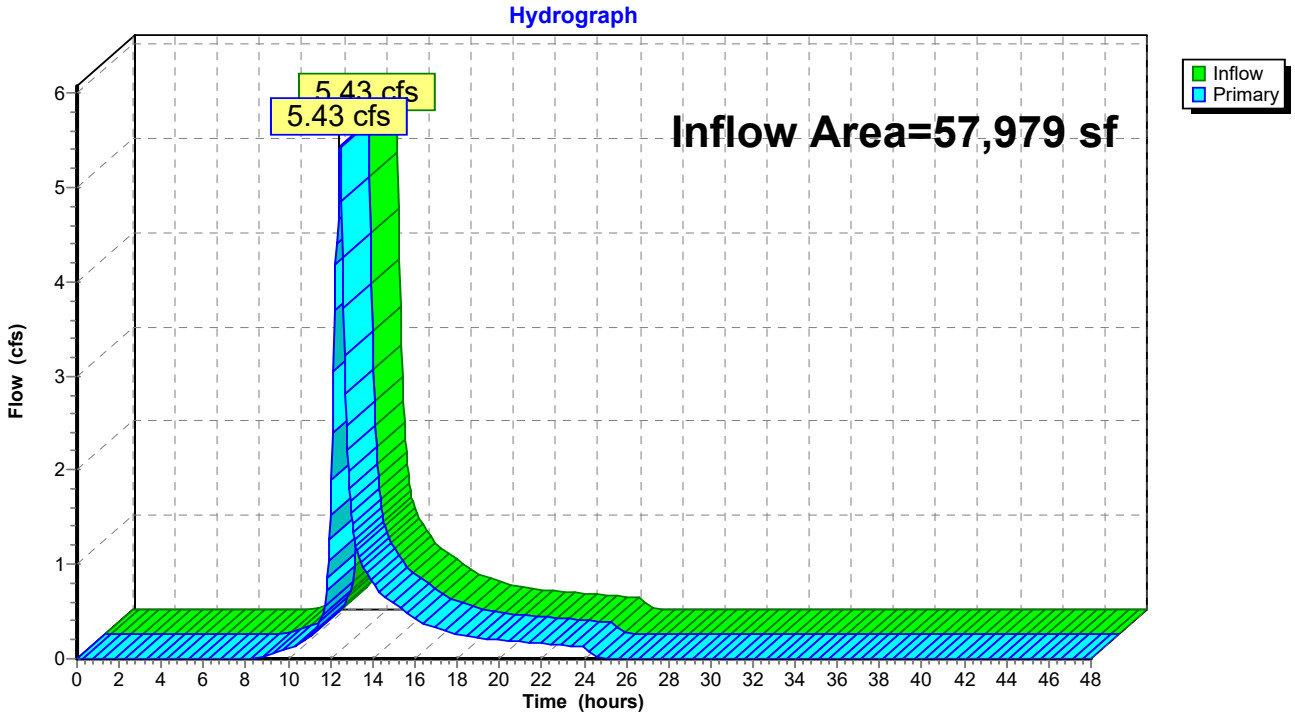


Summary for Link DA-1: Total DA-1

Inflow Area = 57,979 sf, 7.29% Impervious, Inflow Depth = 5.98" for 100 YR event
Inflow = 5.43 cfs @ 12.45 hrs, Volume= 28,877 cf
Primary = 5.43 cfs @ 12.45 hrs, Volume= 28,877 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link DA-1: Total DA-1



APPENDIX D: NOAA ATLAS 14 PRECIPITATION FREQUENCY TABLE

NOAA Atlas 14, Volume 10, Version 3
Location name: Salem, Connecticut, USA*
Latitude: 41.4556°, Longitude: -72.241°
Elevation: 372 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.338** (0.262-0.424)	**0.405** (0.313-0.509)	**0.514** (0.397-0.648)	**0.605** (0.464-0.766)	**0.730** (0.543-0.960)	**0.824** (0.602-1.10)	**0.923** (0.655-1.28)	**1.04** (0.696-1.46)	**1.20** (0.775-1.73)	**1.33** (0.841-1.96)
10-min	**0.478** (0.371-0.601)	**0.573** (0.444-0.721)	**0.728** (0.562-0.918)	**0.857** (0.658-1.09)	**1.03** (0.770-1.36)	**1.17** (0.851-1.56)	**1.31** (0.928-1.81)	**1.47** (0.986-2.06)	**1.70** (1.10-2.45)	**1.88** (1.19-2.77)
15-min	**0.563** (0.436-0.707)	**0.674** (0.522-0.848)	**0.856** (0.661-1.08)	**1.01** (0.774-1.28)	**1.22** (0.906-1.60)	**1.37** (1.00-1.84)	**1.54** (1.09-2.13)	**1.72** (1.16-2.42)	**1.99** (1.29-2.89)	**2.22** (1.40-3.26)
30-min	**0.785** (0.609-0.986)	**0.941** (0.729-1.18)	**1.20** (0.923-1.51)	**1.41** (1.08-1.78)	**1.70** (1.26-2.23)	**1.92** (1.40-2.56)	**2.15** (1.52-2.97)	**2.40** (1.62-3.38)	**2.78** (1.80-4.02)	**3.08** (1.95-4.54)
60-min	**1.01** (0.781-1.27)	**1.21** (0.935-1.52)	**1.54** (1.18-1.94)	**1.80** (1.39-2.29)	**2.18** (1.62-2.86)	**2.46** (1.79-3.29)	**2.75** (1.95-3.81)	**3.08** (2.07-4.34)	**3.56** (2.31-5.16)	**3.95** (2.50-5.82)
2-hr	**1.32** (1.03-1.65)	**1.58** (1.23-1.97)	**2.00** (1.56-2.51)	**2.35** (1.82-2.96)	**2.83** (2.12-3.70)	**3.19** (2.35-4.25)	**3.57** (2.56-4.92)	**4.02** (2.71-5.60)	**4.67** (3.04-6.70)	**5.22** (3.31-7.61)
3-hr	**1.54** (1.21-1.91)	**1.84** (1.44-2.28)	**2.32** (1.81-2.89)	**2.72** (2.11-3.41)	**3.28** (2.47-4.26)	**3.69** (2.72-4.89)	**4.13** (2.97-5.66)	**4.64** (3.15-6.44)	**5.41** (3.53-7.72)	**6.06** (3.86-8.79)
6-hr	**1.96** (1.55-2.42)	**2.34** (1.85-2.89)	**2.95** (2.32-3.65)	**3.45** (2.70-4.30)	**4.15** (3.15-5.36)	**4.67** (3.47-6.15)	**5.22** (3.78-7.11)	**5.88** (4.00-8.08)	**6.85** (4.48-9.68)	**7.67** (4.90-11.0)
12-hr	**2.44** (1.95-3.00)	**2.91** (2.31-3.57)	**3.67** (2.91-4.51)	**4.30** (3.39-5.31)	**5.16** (3.94-6.62)	**5.81** (4.34-7.58)	**6.50** (4.72-8.76)	**7.30** (4.99-9.94)	**8.48** (5.58-11.9)	**9.48** (6.08-13.5)
24-hr	**2.87** (2.31-3.50)	**3.44** (2.76-4.19)	**4.37** (3.49-5.34)	**5.14** (4.08-6.31)	**6.20** (4.77-7.90)	**7.00** (5.27-9.07)	**7.84** (5.74-10.5)	**8.84** (6.07-11.9)	**10.3** (6.80-14.3)	**11.6** (7.44-16.3)
2-day	**3.22** (2.60-3.89)	**3.90** (3.15-4.72)	**5.01** (4.04-6.08)	**5.93** (4.75-7.23)	**7.20** (5.58-9.12)	**8.14** (6.19-10.5)	**9.16** (6.77-12.2)	**10.4** (7.17-13.9)	**12.3** (8.12-16.9)	**13.9** (8.96-19.3)
3-day	**3.49** (2.84-4.20)	**4.23** (3.43-5.10)	**5.44** (4.40-6.57)	**6.44** (5.18-7.81)	**7.82** (6.08-9.86)	**8.84** (6.74-11.3)	**9.94** (7.38-13.2)	**11.3** (7.81-15.0)	**13.3** (8.85-18.2)	**15.1** (9.78-20.9)
4-day	**3.74** (3.06-4.50)	**4.52** (3.69-5.44)	**5.80** (4.70-6.98)	**6.85** (5.53-8.29)	**8.30** (6.48-10.4)	**9.38** (7.17-12.0)	**10.5** (7.84-14.0)	**12.0** (8.29-15.9)	**14.1** (9.38-19.2)	**16.0** (10.4-22.0)
7-day	**4.47** (3.67-5.33)	**5.32** (4.36-6.36)	**6.72** (5.49-8.05)	**7.88** (6.40-9.48)	**9.48** (7.44-11.8)	**10.7** (8.19-13.5)	**11.9** (8.90-15.6)	**13.5** (9.38-17.7)	**15.8** (10.5-21.3)	**17.7** (11.5-24.3)
10-day	**5.18** (4.27-6.16)	**6.08** (5.01-7.24)	**7.55** (6.19-9.01)	**8.77** (7.15-10.5)	**10.4** (8.22-12.9)	**11.7** (9.00-14.7)	**13.0** (9.71-16.9)	**14.6** (10.2-19.1)	**16.9** (11.3-22.7)	**18.8** (12.3-25.7)
20-day	**7.38** (6.13-8.72)	**8.34** (6.92-9.86)	**9.91** (8.20-11.7)	**11.2** (9.22-13.3)	**13.0** (10.3-15.9)	**14.4** (11.1-17.8)	**15.8** (11.7-20.1)	**17.3** (12.2-22.4)	**19.4** (13.0-25.7)	**21.0** (13.8-28.4)
30-day	**9.22** (7.70-10.8)	**10.2** (8.52-12.0)	**11.8** (9.85-14.0)	**13.2** (10.9-15.6)	**15.1** (12.0-18.3)	**16.5** (12.8-20.3)	**17.9** (13.3-22.5)	**19.4** (13.7-24.9)	**21.2** (14.4-28.0)	**22.6** (14.8-30.4)
45-day	**11.5** (9.65-13.5)	**12.5** (10.5-14.7)	**14.3** (11.9-16.7)	**15.7** (13.0-18.5)	**17.6** (14.0-21.2)	**19.2** (14.8-23.3)	**20.6** (15.3-25.6)	**22.0** (15.6-28.1)	**23.6** (16.0-31.0)	**24.8** (16.3-33.0)
60-day	**13.4** (11.3-15.6)	**14.5** (12.2-16.9)	**16.3** (13.6-19.1)	**17.7** (14.8-20.9)	**19.8** (15.8-23.7)	**21.4** (16.6-25.9)	**22.9** (17.0-28.2)	**24.2** (17.2-30.9)	**25.8** (17.5-33.6)	**26.7** (17.6-35.5)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

APPENDIX E: Water Quality Volume Calculations

WATER QUALITY VOLUME CALCULATIONS
FOR
SALEM BESS
380 NEW LONDON ROAD, SALEM, CT

$$WQV = \frac{(P)(R)(A)}{12}$$

where:

WQV = water quality volume (cubic feet)
P = 1.3 inches (90th percentile rainfall event)
R = volumetric runoff coefficient = 0.05+0.009(I)
I = post- development impervious area (percent) after application of non-structural LID site planning and design strategies and before application of structural stormwater BMPs
A = post-development total drainage area of site or design point (square feet)

$V=WQV+((P)(A_b)/12)$

V=required basin storage volume (ac-ft)
WQV=Water Quality Volume (ac-ft)
P= design water quality precipitation (in)
A_b=basin surface area (ac)

	Area (ac)	Pervious (ac)	Imperv. (ac)	I	R	WQV (ac-ft)	P (in)	A_b (ac)	V (ac-ft)	Total V Req. (cf)	V Provided (cf)	
PDA-1A	0.801	-	0.399	49.81%	0.50	0.04	1.3	0.3989899	0.09	3,766.38	8,342.00	Gravel Stor

1.3 INCHES IS NEW P, PER 2024 STORMWATER MANUAL

Overall Total V Required = 3,766.38 cf
Overall Total V Provided = 8,342.00 cf

WQv 1,883.54 Cubic feet

APPENDIX F: Subsurface Investigation Results

DOWN TO EARTH CONSULTING, LLC
GEOTECHNICAL AND ENVIRONMENTAL ENGINEERING

PRELIMINARY GEOTECHNICAL ENGINEERING REPORT
PROPOSED BATTERY STORAGE SYSTEM
380 NEW LONDON ROAD
SALEM, CONNECTICUT

Prepared for:

All-Points Technology Corporation, P.C.
567 Vauxhaul Street Extension – Suite 311
Waterford, Connecticut 06385

Prepared by:

Down To Earth Consulting, LLC
27 Siemon Company Drive #363W
Watertown, Connecticut 06795

File No. 0032-082.00
November 2024

DOWN TO EARTH CONSULTING, LLC
GEOTECHNICAL AND ENVIRONMENTAL ENGINEERING

November 1, 2024
File No. 0032-082.00

Mr. Thomas E. Little, P.E.
All-Points Technology Corporation
567 Vauxhaul Street Extension – Suite 311
Waterford, Connecticut 06385

Via email: TLittle@allpointstech.com

Re: Geotechnical Engineering Report
Proposed Battery Storage System
380 New London Road, Salem, Connecticut

Down To Earth Consulting, LLC (DTE) is pleased to submit this geotechnical engineering report for the proposed battery storage system on New London Road in Salem, Connecticut (Site) for All-Points Technology Corporation (Client). Our services were completed in general accordance with our current Master Services Agreement. We appreciate this opportunity to work with you and look forward to our continued involvement. Please call if you have any questions.

Sincerely,

Down To Earth Consulting, LLC

Raymond P. Janeiro, P.E.
Principal

TABLE OF CONTENTS

APPENDICES

1.0 INTRODUCTION

Down To Earth Consulting, LLC, completed a subsurface exploration program and geotechnical engineering evaluation for the proposed battery storage system at the referenced Site. Our geotechnical engineering services included: reviewing provided project drawings, completing borings, characterizing subsurface conditions within the proposed development limits, performing geotechnical engineering analyses, and providing geotechnical design and construction recommendations for the project. Refer to Figure 1 and 2 (in Appendix 1) for an area plan and site plan, respectively.

Our services were performed in accordance with our August 23, 2023, proposal, which was based in part on the provided drawing (*Test Locations - Concept Plan, Salem BESS, 380 New London Road, Salem, CT,* prepared by the Client).

Our recommendations are based on allowable stress design methods and the 2022 Connecticut State Building Code which references the 2021 International Building Code.

2.0 BACKGROUND

The Site is generally bordered by New London Road and Burnett's Garden Center to the south, and undeveloped land to the north. Horse Pond Brook is also located just south of the proposed BESS development, such that a vehicular bridge will be required to access the proposed development (which will be designed by others). Based on topographic information provided by the Client, Site grades generally slope from about El. 398 at the northern limits of the Site down to about El. 363 at the southern Site limits near the existing brook and proposed bridge.

We understand the project will generally consist of constructing an approximate 115- by 130-foot fenced compound with an associated access driveway for the proposed battery storage units. We assume that proposed battery storage systems, conversion system, and ancillary equipment will be founded on concrete slabs within the compound. Proposed finished grade elevations were not provided to DTE at the time of this writing, but it is anticipated that limited cuts (on the order of 2 to 4 feet) will be required for the project. Refer to the Site and Boring Location Plan (Figure 2) for additional proposed development details.

3.0 SUBSURFACE DATA

3.1 GENERAL SITE GEOLOGY

Published surficial and bedrock geological map data (*1:24,000 scale, Surficial Geology of the Montville Quadrangle, Connecticut, Richard Goldsmith, 1962 and 1:125,000 scale, Bedrock Geological Map of Connecticut, John Rodgers, 1985*) was reviewed. The Site surficial material is mapped as a variable mixture of gravel, sand, silt, and clay intermixed with cobbles and boulders (Glacial Till). The underlying bedrock is classified as light-pink to gray, fine- to medium-grained schist and gneiss (Plainfield Formation).

3.2 EXPLORATIONS

We observed and logged four test borings (B-1 through B-4) drilled by our subcontractor SITE, LLC on October 7, 2024. Exploration locations are depicted on Figure 2 (Appendix 1) and the logs are included in Appendix 2. Exploration locations were located in the field by taping/pacing from existing site features and should be considered approximate.

The borings were drilled to explore the soil, bedrock, and groundwater conditions in the Site area. Hollow stem auger drilling methods were used to advance the borings to depths ranging from approximately 6 to 17 feet below existing grades. Each boring was terminated upon encountering drilling refusal on inferred bedrock.

Representative soil samples were obtained from the borings for soil classification by split barrel sampling procedures in general accordance with ASTM D-1586. The split-spoon sampling procedure utilizes a standard 2-inch O.D. split-barrel sampler that is driven into the bottom of the boring with a 140-pound hammer falling a distance of 30 inches. The number of blows required to advance the sampler the middle 12-inches of a normal 24-inch penetration is recorded as the Standard Penetration Resistance Value (N). The blows (i.e., “N-Value”) are indicated on the boring logs at their depth of occurrence and provide an indication of the relative consistency of the material.

Groundwater levels were measured using a weighted tape in open exploration holes during drilling.

3.3 INFILTRATION TESTING

We performed a falling head permeability test (B-2/I-2) to estimate the vertical hydraulic conductivity of encountered Site soils. The tests were performed in 4-inch diameter casing at a depth of about 1.4 feet below existing grade. The test location is depicted on Figure 2 and the field logs are included in Appendix 3. Measured permeability values averaged about 0.8 inches per hour. The infiltration testing results are included in Appendix 3.

4.0 SUBSURFACE CONDITIONS

4.1 SUBSURFACE PROFILE

The generalized subsurface profile in the Site area, as inferred from the subsurface exploration data, is summarized as follows:

BESS Compound (Boring B-1)

- Subsoil: Loose, brown, sandy SILT, containing trace amounts of roots (ML)
  – about 3 feet thick (to about El. 372); over

- Weathered Bedrock: Very dense, white/brown, silty GRAVEL with sand (GM)
  – about 7 feet thick (to about El. 365); over

- Inferred Bedrock: Auger refusal was encountered at about 9.7 feet below grade on inferred bedrock.

Stormwater Basin (Boring B-2)

- Fill: Medium dense, brown, gravelly SAND with silt
  – about 2 feet thick (to about El. 363); over

- Sand & Gravel: Dense to very dense, brown, well-graded SAND with gravel (SW)
  – about 4 feet thick (to about El. 359); over
- Inferred Bedrock: Auger refusal was encountered at about 6.3 feet below grade on inferred bedrock.

Temporary Vehicular Bridge (B-3 and B-4)

- Fill: Loose to medium dense, dark brown, gravelly SAND with silt, containing trace amounts of foreign debris (e.g., wood fragments)
  – about 2 to 5 feet thick (to about El. 361 to 358); over

- Alluvium (B-4): Loose, gray, silty SAND, containing trace amounts of organics
  – about 2 feet thick (to about El. 356); over

- Sand & Gravel: Medium dense to dense, brown, well-graded SAND with gravel (SW)
  – about 8 to 12 feet thick (to about El. 346 to 350); over

- Weathered Bedrock (B-4): Very dense, white/gray, decomposed SCHIST fragments
  – about 2 feet thick (to about El. 348); over

- Inferred Bedrock: Auger refusal was encountered at about 13.3 to 16.8 feet below grade on inferred bedrock.

Visual classifications of soil samples and conditions encountered at each exploration location can be found in the provided exploration logs, included as Appendix 2.

4.2 GROUNDWATER

Groundwater levels were measured in the explorations at the times and under the conditions stated on the logs. Groundwater was encountered at about 3 feet below grade, except for Boring B-1 where groundwater was not encountered within the boring. Groundwater levels measured in the explorations may not have had sufficient time to stabilize and should be considered approximate.

Groundwater levels will vary depending on factors such as temperature, season, precipitation, construction activity, and other conditions, which may be different from those at the time of these measurements. Therefore, groundwater levels during construction or at other times in the life of the structures may be higher or lower than the levels indicated on the boring logs. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

5.0 GEOTECHNICAL DESIGN RECOMMENDATIONS

5.1 EQUIPMENT SLABS-ON-GRADE

We recommend supporting the proposed battery storage system equipment on a structural slab that is adequately designed to accommodate the proposed loading conditions. The slab should bear on natural Sand & Gravel or on CGF over these materials. The slabs-on-grade should be constructed with a perimeter frost wall unless seasonal movement of the equipment pads is acceptable.

We recommend a maximum net allowable bearing pressure of 3 kips per square foot (ksf) for slab design. Frost walls should be embedded a minimum of 42 inches below final grades for frost protection. Alternatively, dense insulation boards could be used under lightly loaded slabs-on-grade to reduce frost penetration. We recommend an ultimate coefficient of sliding friction of 0.45 (except if insulation boards are used to minimize frost penetration). A factor of safety of at least 1.5 should be applied to calculated sliding resistance.

We recommend placing the concrete slabs over a minimum twelve-inch-thick base course layer of compacted Crushed Stone placed over the surface of the natural Sand & Gravel or CGF over these materials. When CGF is used beneath the slab, we recommend that it be placed one foot beyond the edge of the slab and at a one horizontal to one vertical slope away and downward from the bottom outside edge of the slab.

The design subgrade modulus for the recommended subgrade and base course is 250 pounds per cubic inch.

5.2 SEISMIC DESIGN

Based on the standard penetration test results, location of the groundwater table, visual soil classification, and design peak ground acceleration at this locale, the site soils are not susceptible to liquefaction.

We recommend using the following design parameters as defined by the Building Code and, where applicable, the 2021 International Building Code (IBC):

- Site Class: C (Section 1613.5 of the IBC)
- MCE spectral response accelerations: S_s = 0.205g and S_1 = 0.055g (Building Code Appendix P)

6.0 GEOTECHNICAL CONSTRUCTION RECOMMENDATIONS

Geotechnical construction considerations include: removal of unsuitable bearing materials below proposed structures; possible bedrock removal; slab subgrade preparation; fill material placement and compaction; reuse of excavated materials; and temporary groundwater control.

6.1 REMOVAL OF BURIED STRUCTURES AND UTILITIES

All existing substructures and utilities (if applicable) within the proposed Site area must be removed in their entirety prior to construction of new slabs. Disturbed materials must be removed down to the level of firm, natural soil and the resulting excavations must be backfilled with CGF to achieve required subgrades. Backfill materials placed in the building area should be placed in accordance with Section 7.0.

6.2 SUBGRADE PREPARATION

Excavation to subgrade elevations for slab construction should be performed using a smooth-edged bucket to minimize possible disturbance to the subgrade. Soil subgrades should be proof-compacted prior to CGF or concrete placement under the observation of a qualified Geotechnical Engineer with at least four (4) passes of a smooth-drum vibratory roller (minimum 8,000 pounds, minimum centrifugal force of 12,500 pounds) or, where approved by the Geotechnical Engineer, a vibratory plate compactor with a minimum of 2,500 pounds of centrifugal force. Any soft or loose zones identified during proof-rolling should be excavated and replaced with CGF, as necessary, and as recommended the Geotechnical Engineer.

If bedrock is encountered within the depth of proposed foundation subgrades, the foundation excavation should be cut relatively level and no steeper than 18H:1V. A minimum 12-inch-thick lift of additional CGF should be placed over the bedrock subgrade to provide a smooth transition between soil and bedrock subgrades.

Final excavations should not be made until the areas are ready for CGF placement. The base of footing and slab excavations should be free of water, frost, ice, organic material, and loose soils prior to placing CGF and concrete.

6.3 BEDROCK REMOVAL

Shallow bedrock may be encountered at isolated locations within slab subgrade areas. We anticipate that isolated bedrock removal can be accomplished with the use of large excavators and hydraulic splitters/air rams. We do not anticipate that blasting will be required as means of isolated bedrock removal but will need confirmation once proposed slab elevations have been established.

6.4 SLOPES

Permanent slopes may be needed adjacent to the proposed BESS development. We recommend slopes be constructed no steeper than 3 Horizontal to 1 Vertical (3H:1V). Permanent slope surfaces should be vegetated and protected with erosion mats until the vegetation is established. Grading should be designed to reduce the likelihood of water ponding near the proposed structures.

6.5 TEMPORARY EXCAVATIONS

The site soils are classified as OSHA Class “C” soil and can be cut at a maximum one vertical to one and a half horizontal (1V:1.5H) slope up to a maximum excavation depth of 20 feet. These maximum slope and excavation depths assume no surcharge load (i.e., stockpiles, construction equipment, etc.) at the top of the excavations or groundwater seepage.

If excavations cannot be sloped in accordance with OSHA requirements, a temporary excavation support system will be required. The system should be chosen and installed by the contactor and designed by a Professional Engineer registered in the State of Connecticut.

6.6 TEMPORARY GROUNDWATER CONTROL

Based on information obtained from the subsurface exploration program, the proposed slabs-on-grade will be constructed above the groundwater table. Stormwater runoff should not be permitted to accumulate on/within exposed subgrades and the runoff should be directed away from the exposed subgrade areas.

7.0 MATERIALS RECOMMENDATIONS

7.1 ON-SITE MATERIALS

Based on our visual soil classifications, existing Site soils may satisfy the requirements for CGF. Excavated soils could also be re-used as Common Fill during Site development. If during construction excavated materials are planned for reuse, gradation analyses and Modified Proctor Test (ASTM D-1577, Method C) should be performed on representative soil samples and the results submitted to the Geotechnical Engineer for review and approval.

7.2 COMPACTED GRANULAR FILL

Compacted Granular Fill (CGF) for use as structural fill shall consist of inorganic soil free of clay, loam, ice and snow, tree stumps, roots, and other organic matter; graded within the following limits:

Sieve Size	Percent finer by weight
3-inches	100%
1/2-inch	50 - 85
No. 4	40 - 75
No. 50	8 - 28
No. 200	0 – 12

7.3 CRUSHED STONE

Crushed Stone for use below slabs shall consist of sound, tough, durable, rock that is graded within the following:

Sieve Size	Percent finer by weight
5/8-inches	100%
1/2-inch	85 - 100
3/8 inch	15 - 45
No. 4	0 - 15
No. 8	0 - 5

7.4 COMMON FILL

Common Fill may be used for general site grading, and other areas as appropriate, or as directed by the Geotechnical Engineer or his/her representative. The material should not be used beneath sensitive structures. Common Fill should conform to the following gradation requirements:

Sieve Size	Percent finer by weight
6-inches	100%
No. 200	0 - 25

7.5 MATERIAL COMPACTION

CGF should be placed in loose lifts not exceeding 8 inches in depth and compacted to at least 95 percent of its maximum dry density (and within 2% of optimum moisture content) as determined by ASTM D1557, Method C (Modified Proctor).

Common Fill should also be placed in loose lifts not exceeding 8 inches in depth, and compacted to at least 92 percent of its maximum dry density.

Crushed Stone is considered to be “self-compacting” and would negate the need to run laboratory proctor testing and have field density testing of in-place lifts. The crushed stone should be plate compacted to “chink up” the working surface in lifts. We recommend placing Crushed Stone in maximum 12-inch lifts and compacting the lifts with a minimum of four passes with a vibratory plate compactor weighing a minimum of 1,000 pounds and with a minimum centrifugal force of 10,000 pounds.

7.6 GEOTEXTILE FABRIC

Geotextile fabric used as a separation fabric for crushed stone and soil material should meet the following criteria:

Property	Criteria	Test Method
Grab Strength	min. 120lbs	ASTM D4632
Static (CBR) Puncture	min. 310lbs	ASTM D6241
Trapezoid Tear	min. 50lbs	ASTM D4533
Apparent Opening Size	No. 70 (max.) U.S. Sieve Size	ASTM D4751

Fabric should be needle-punched non-woven material. Seams should be overlapped a minimum of six inches. During stone placement, the stone drop height should not exceed three feet and equipment traffic should be kept off the fabric until at least 6 to 12 inches of material is placed.

8.0 REVIEW OF FINAL DESIGN, PLANS, AND SPECIFICATIONS

When project plans are finalized, and specifications are available, they should be provided to DTE for review of conformance with our geotechnical recommendations. If any changes are made to the proposed battery storage system development or elevations, the recommendations provided in this report will need to be verified by DTE for applicability.

9.0 CONSTRUCTION QUALITY CONTROL

We further recommend that DTE be retained during earthwork construction to observe excavation to slab subgrade, subgrade preparation, and fill placement and compaction in accordance with Building Code requirements. The geotechnical engineer in the field should observe the work for compliance with the recommendations in this report, identify changes in subsurface conditions from those observed in the explorations should they become apparent, and assist in the development of design changes should subsurface conditions differ from those anticipated prior to the start of construction.

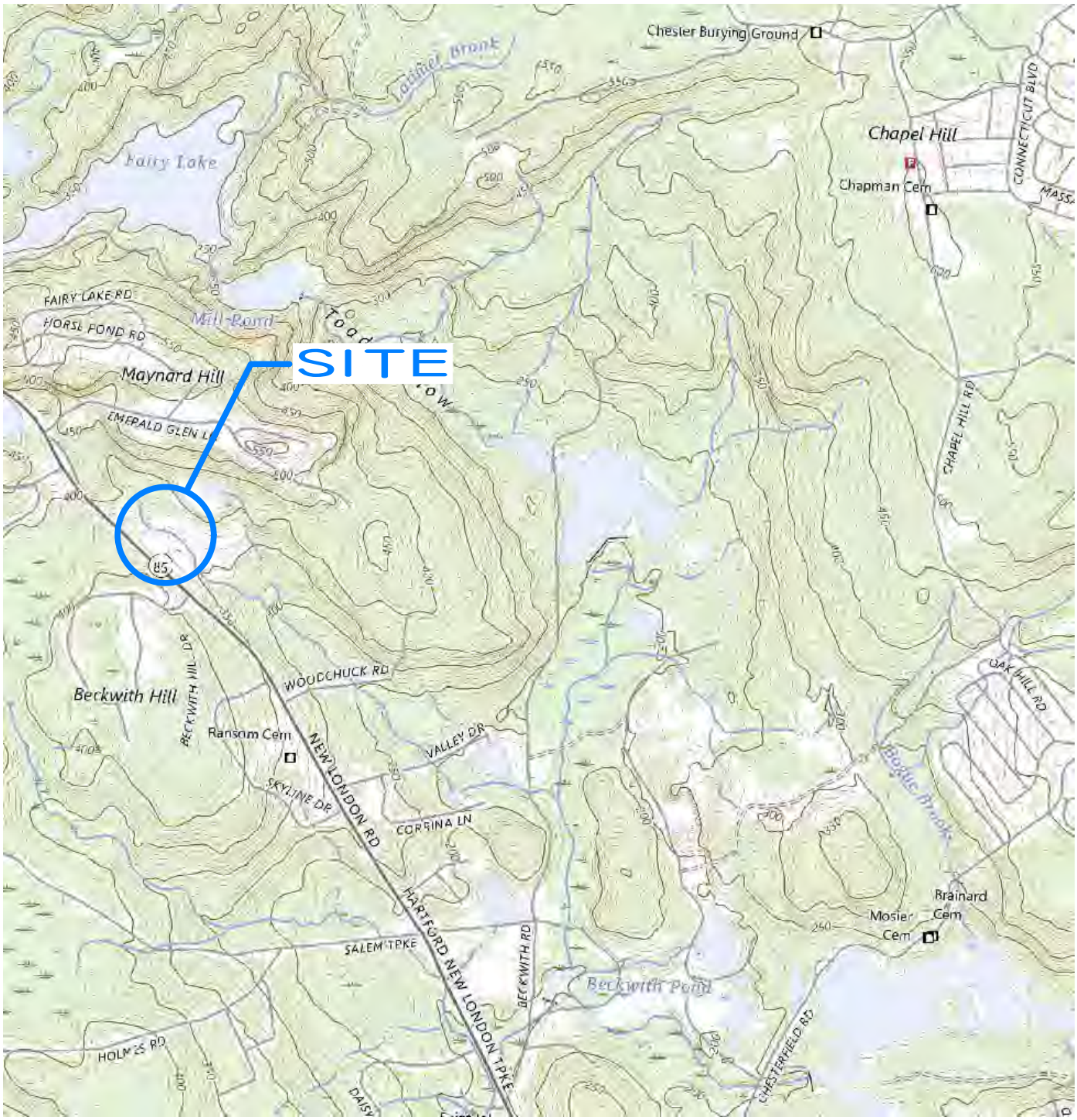
10.0 CLOSURE

We trust the information presented herein is sufficient for your use to progress design of the proposed battery storage system development. We have enjoyed working with you on this project and look forward to our continued involvement. Please do not hesitate to call us if you have any questions.

This report is subject to the limitations included in Appendix 5.

APPENDIX 1 -

FIGURES



DOWN TO EARTH CONSULTING, LLC

27 SIEMON COMPANY DRIVE – SUITE 363W
WATERTOWN, CONNECTICUT 06795

QUADRANGLE LOCATION

AREA PLAN
PROPOSED BESS DEVELOPMENT
380 NEW LONDON ROAD
SALEM, CONNECTICUT

REFERENCE:
USGS TOPOGRAPHIC QUADRANGLE: PALMERTOWN, CT

SCALE 1"= 2,000'

2,000' 1,000' 0 2,000'

PROJECT NO.	0032–082.00
DATE:	10/23/24
FIGURE NO.	1

DRAWN BY: BV

REVIEWED BY: RPJ

LEGEND

B-1 ⊕ TEST BORING NO. AND LOCATION

B-1

B-2/I-2

B-4

B-3

TBM-D

NOTES:

1) BASE MAP DEVELOPED FROM AN ELECTRONIC FILE PREPARED BY ALL-POINTS TECHNOLOGY CORPORATION, P.C., ENTITLED 'CONCEPT PLAN', SHEET NUMBER: CP-1, DATED JULY 22, 2024. ORIGINAL SCALE 1:30.
2) BORINGS WERE COMPLETED BY SITE, LLC AND OBSERVED BY DOWN TO EARTH CONSULTING, LLC.
3) THE LOCATIONS OF THE EXPLORATIONS WERE DETERMINED BY TAPING AND VISUAL ESTIMATES FROM EXISTING SITE FEATURES. THESE LOCATIONS SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.

DESIGNED BY OTHERS						
DRAWN BY BV						
CHECKED BY RPJ						
APPROVED BY RPJ	NO.	DATE	REVISIONS	DRWN.	CHKD	APPVD

SCALE 1" = 40'

40 20 0 40

DOWN TO EARTH CONSULTING LLC
27 SIEMON COMPANY DRIVE #363W
WATERTOWN, CONNECTICUT 06795

PROJECT
PROPOSED BESS DEVELOPMENT
380 NEW LONDON ROAD
SALEM, CONNECTICUT

DWG. TITLE.
SITE AND EXPLORATION LOCATION PLAN

FILE NO. 0032-082.00
SCALE AS NOTED
DATE 10/23/24
FIGURE NO. 2

APPENDIX 2 -

TEST BORING LOGS

DOWN TO EARTH CONSULTING, LLC
GEOTECHNICAL AND ENVIRONMENTAL ENGINEERING

PROJECT
PROPOSED BESS DEVELOPMENT
380 NEW LONDON ROAD
SALEM, CONNECTICUT

BORING NO. B-1
SHEET 1 of 1
FILE NO. 0032-082.00
CHKD. BY RPJ

Boring Co.	SITE, LLC	Boring Location	See Boring Location Plan		
Driller	John DeAngelis	Ground Surface El.	375'+/-	Datum	Not Available
Logged By	Mateusz Fekieta	Date Start	10/7/2024	Date End	10/7/2024

Hammer Type:	Automatic Hammer
Sampler Size:	1-3/8" I.D. Split Spoon
Type Drill Rig:	Track Mounted CME 55 LCX
Drilling Method:	2.25-inch I.D. Hollow-Stem Augers

Groundwater Readings (from ground surface)				
Date	Time	Depth (ft)	Elev.	Stabilization Time
10/7/24	-	-	-	Not Encountered

DEPTH	Casing Blows (ft)	SAMPLE INFORMATION Type & No.	REC/PEN (inches)	DEPTH (feet)	BLOWS PER 6 INCHES	Core Time (min./ft)	SAMPLE DESCRIPTION	STRATA
1		S-1	12/24	0 to 2	2-4-5-4		Loose, brown, fine to coarse SAND, some Silt, trace fine Gravel, trace (-) Roots	6"+/- Topsoil
2								SUBSOIL
3		S-2	18/24	2 to 4	3-4-9-22		Medium dense, light brown, fine SAND and SILT, trace fine Gravel, with decomposed rock fragments at sample tip	
4								
5								
6		S-3	4/8	5 to 5.7	48-50/2"		Very dense, white/brown, fine to coarse GRAVEL and fine to coarse SAND, little Silt	
7								WEATHERED ROCK
8								
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11							END OF EXPLORATION AT 9.7 FEET BELOW GROUND SURFACE	
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SPT N-Values	SPT N-Values	Proportions	SYMBOL KEY	
0 to 4 - Very Loose	0 to 2 - Very Soft	Trace = 0 to 10%	1. S denotes split-barrel sampler.	7. WH denotes weight of hammer
5 to 10 - Loose	3 to 4 - Soft	Little = 10 to 20%	2. ST denotes 3-inch O.D. undisturbed sample.	8. WR denotes weight of rods
11 to 30 - Medium Dense	5 to 8 - Medium Stiff	Some = 20 to 35%	3. UO denotes 3-inch Osterberg undisturbed sample.	9. PP denotes Pocket Penetrometer.
31 to 50 - Dense	9 to 15 - Stiff	And = 35 to 50%	4. PEN denotes penetration length of sampler.	10. FVST denotes field vane shear test.
Over 50 - Very Dense	16 to 30 - Very Stiff		5. REC denotes recovered length of sample.	11. RQD denotes Rock Quality Designation.
	Over 30 - Hard		6. SPT denotes Standard Penetration Test.	12. C denotes core run number.

FIELD NOTES: 1) Stratification lines represent approximate boundaries between soil types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations may occur due to other factors.
3) Cobbles and/or boulders were inferred based on observed auger chatter from about 4 to 9.7 feet below grade.
4) Auger refusal encountered at about 9.7 feet below grade on inferred bedrock.

DOWN TO EARTH CONSULTING, LLC
GEOTECHNICAL AND ENVIRONMENTAL ENGINEERING

PROJECT
PROPOSED BESS DEVELOPMENT
380 NEW LONDON ROAD
SALEM, CONNECTICUT

BORING NO. B-2
SHEET 1 of 1
FILE NO. 0032-082.00
CHKD. BY RPJ

Boring Co.	Site, LLC	Boring Location	See Boring Location Plan		
Driller	John DeAngelis	Ground Surface El.	365'+/-	Datum	Not Available
Logged By	Mateusz Fekieta	Date Start	10/7/2024	Date End	10/7/2024

Hammer Type:	Automatic Hammer
Sampler Size:	1-3/8" I.D. Split Spoon
Type Drill Rig:	Track Mounted CME 55 LCX
Drilling Method:	2.25-inch I.D. Hollow-Stem Augers

Groundwater Readings (from ground surface)

Date	Time	Depth (ft)	Elev.	Stabilization Time
10/7/24	-	3	362'+/-	Wet Sample
10/7/24	-	3.5	361.5'+/-	End of Drilling

DEPTH	Casing Blows (ft)	SAMPLE INFORMATION Type & No.	REC/PEN (inches)	DEPTH (feet)	BLOWS PER 6 INCHES	Core Time (min./ft)	SAMPLE DESCRIPTION	STRATA
1		S-1	16/24	0 to 2	6-10-16-31		Medium dense, brown, fine to coarse SAND, some fine to coarse Gravel, little Silt	4"+/- Topsoil
2								FILL
3		S-2	20/24	2 to 4	49-32-14-15		Dense, brown, fine to coarse GRAVEL and fine to coarse SAND, trace Silt	
4								SAND & GRAVEL
5								
6		S-3	14/15	5 to 6.3	29-44-50/3"		Very dense, brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt	
7							END OF EXPLORATION AT 6.3 FEET BELOW GROUND SURFACE	
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SPT N-Values	SPT N-Values	Proportions	SYMBOL KEY	
0 to 4 - Very Loose	0 to 2 - Very Soft	Trace = 0 to 10%	1. S denotes split-barrel sampler.	7. WH denotes weight of hammer
5 to 10 - Loose	3 to 4 - Soft	Little = 10 to 20%	2. ST denotes 3-inch O.D. undisturbed sample.	8. WR denotes weight of rods
11 to 30 - Medium Dense	5 to 8 - Medium Stiff	Some = 20 to 35%	3. UO denotes 3-inch Osterberg undisturbed sample.	9. PP denotes Pocket Penetrometer.
31 to 50 - Dense	9 to 15 - Stiff	And = 35 to 50%	4. PEN denotes penetration length of sampler.	10. FVST denotes field vane shear test.
Over 50 - Very Dense	16 to 30 - Very Stiff		5. REC denotes recovered length of sample.	11. RQD denotes Rock Quality Designation.
	Over 30 - Hard		6. SPT denotes Standard Penetration Test.	12. C denotes core run number.

FIELD NOTES: 1) Stratification lines represent approximate boundaries between soil types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations may occur due to other factors.
3) Sampler refusal encountered at about 6.3 feet below grade on inferred bedrock or possible boulder.

DOWN TO EARTH CONSULTING, LLC
GEOTECHNICAL AND ENVIRONMENTAL ENGINEERING

PROJECT
PROPOSED BESS DEVELOPMENT
380 NEW LONDON ROAD
SALEM, CONNECTICUT

BORING NO. B-3
SHEET 1 of 1
FILE NO. 0032-082.00
CHKD. BY RPJ

Boring Co.	Site, LLC	Boring Location	See Boring Location Plan		
Driller	John DeAngelis	Ground Surface El.	363'+/-	Datum	Not Available
Logged By	Mateusz Fekieta	Date Start	10/7/2024	Date End	10/7/2024

Hammer Type:	Automatic Hammer
Sampler Size:	1-3/8" I.D. Split Spoon
Type Drill Rig:	Track Mounted CME 55 LCX
Drilling Method:	2.25-inch I.D. Hollow-Stem Augers

Groundwater Readings (from ground surface)

Date	Time	Depth (ft)	Elev.	Stabilization Time
10/7/24	-	2	361'+/-	Wet Sample
10/7/24	-	3	360'+/-	End of Drilling

DEPTH	Casing Blows (ft)	Type & No.	REC/PEN (inches)	DEPTH (feet)	BLOWS PER 6 INCHES	Core Time (min./ft)	SAMPLE DESCRIPTION	STRATA
1		S-1	20/24	0 to 2	2-3-6-9		Loose, brown, fine to coarse SAND, some fine to coarse Gravel, trace Silt	6"+/- Topsoil FILL
2								
3		S-2	14/24	2 to 4	9-9-14-12		Medium dense, brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt	SAND & GRAVEL
4								
5								
6		S-3	18/24	5 to 7	14-20-20-18		Dense, orange-brown, fine to coarse GRAVEL and fine to coarse SAND, little Silt	
7								
8		S-4	20/24	7 to 9	14-26-20-23		Dense, brown, fine to coarse SAND, some fine to coarse Gravel, little Silt	
9								
10								
11		S-5	8/12	10 to 11	26-65/6"		Very dense, brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt	
12								
13								
14							END OF EXPLORATION AT 13.3 FEET BELOW GROUND SURFACE	
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SPT N-Values	SPT N-Values	Proportions	SYMBOL KEY	
0 to 4 - Very Loose	0 to 2 - Very Soft	Trace = 0 to 10%	1. S denotes split-barrel sampler.	7. WH denotes weight of hammer
5 to 10 - Loose	3 to 4 - Soft	Little = 10 to 20%	2. ST denotes 3-inch O.D. undisturbed sample.	8. WR denotes weight of rods
11 to 30 - Medium Dense	5 to 8 - Medium Stiff	Some = 20 to 35%	3. UO denotes 3-inch Osterberg undisturbed sample.	9. PP denotes Pocket Penetrometer.
31 to 50 - Dense	9 to 15 - Stiff	And = 35 to 50%	4. PEN denotes penetration length of sampler.	10. FVST denotes field vane shear test.
Over 50 - Very Dense	16 to 30 - Very Stiff		5. REC denotes recovered length of sample.	11. RQD denotes Rock Quality Designation.
	Over 30 - Hard		6. SPT denotes Standard Penetration Test.	12. C denotes core run number.

FIELD NOTES: 1) Stratification lines represent approximate boundaries between soil types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations may occur due to other factors.
3) Auger refusal encountered at about 13.3 feet below grade on inferred bedrock or possible boulder.

DOWN TO EARTH CONSULTING, LLC
GEOTECHNICAL AND ENVIRONMENTAL ENGINEERING

PROJECT			
PROPOSED BESS DEVELOPMENT	BORING NO.	B-4	
380 NEW LONDON ROAD	SHEET	1 of 1	
SALEM, CONNECTICUT	FILE NO.	0032-082.00	
	CHKD. BY	RPJ	

Boring Co.	Site, LLC	Boring Location	See Boring Location Plan		
Driller	John DeAngelis	Ground Surface El.	363'+/-	Datum	Not Available
Logged By	Mateusz Fekieta	Date Start	10/7/2024	Date End	10/7/2024

Hammer Type:	Automatic Hammer
Sampler Size:	1-3/8" I.D. Split Spoon
Type Drill Rig:	Track Mounted CME 55 LCX
Drilling Method:	2.25-inch I.D. Hollow-Stem Augers

Groundwater Readings (from ground surface)				
Date	Time	Depth (ft)	Elev.	Stabilization Time
10/7/24	-	3	360'+/-	Wet Sample
10/7/24	-	3	360'+/-	End of Drilling

DEPTH	Casing Blows (ft)	SAMPLE INFORMATION Type & No.	REC/PEN (inches)	DEPTH (feet)	BLOWS PER 6 INCHES	Core Time (min./ft)	SAMPLE DESCRIPTION	STRATA
1		S-1	14/24	0 to 2	2-15-15-11		Medium dense, gray-brown, fine to coarse SAND, some fine to coarse Gravel, little Silt	4"+/- Topsoil
2								
3		S-2	20/24	2 to 4	7-5-5-7		Loose, black, fine to coarse SAND and SILT, little fine to coarse Gravel, trace decomposed Wood fragments	FILL
4								
5								
6		S-3	20/24	5 to 7	4-4-5-7		Loose, gray, fine to coarse SAND and SILT, little fine Gravel, trace Organics, slight organic odor	ALLUVIUM
7								
8		S-4	8/24	7 to 9	6-6-6-11		Medium dense, brown, fine to coarse SAND, some fine Gravel, little Silt	SAND & GRAVEL
9								
10								
11		S-5	12/24	10 to 12	48-16-11-8		Medium dense, brown, fine to coarse SAND and fine to coarse GRAVEL, trace Silt	
12								
13								
14								
15								
16		S-6	12/12	15 to 16	42-52/6"		Very dense, gray/white, decomposed SCHIST fragments	WEATHERED ROCK
17								
18							END OF EXPLORATION AT 16.8 FEET BELOW GROUND SURFACE	
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SPT N-Values	SPT N-Values	Proportions	SYMBOL KEY	
0 to 4 - Very Loose	0 to 2 - Very Soft	Trace = 0 to 10%	1. S denotes split-barrel sampler.	7. WH denotes weight of hammer
5 to 10 - Loose	3 to 4 - Soft	Little = 10 to 20%	2. ST denotes 3-inch O.D. undisturbed sample.	8. WR denotes weight of rods
11 to 30 - Medium Dense	5 to 8 - Medium Stiff	Some = 20 to 35%	3. UO denotes 3-inch Osterberg undisturbed sample.	9. PP denotes Pocket Penetrometer.
31 to 50 - Dense	9 to 15 - Stiff	And = 35 to 50%	4. PEN denotes penetration length of sampler.	10. FVST denotes field vane shear test.
Over 50 - Very Dense	16 to 30 - Very Stiff		5. REC denotes recovered length of sample.	11. RQD denotes Rock Quality Designation.
	Over 30 - Hard		6. SPT denotes Standard Penetration Test.	12. C denotes core run number.

FIELD NOTES: 1) Stratification lines represent approximate boundaries between soil types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations may occur due to other factors.
3) Auger refusal encountered at about 16.8 feet below grade on inferred bedrock.

APPENDIX 3 -

INFILTRATION TESTING RESULTS

DOWN TO EARTH CONSULTING, LLC
GEOTECHNICAL AND ENVIRONMENTAL ENGINEERING

Test Boring Falling Head Test
Proposed BESS Development
380 New London Road
Salem, CT
File No. 0032-082.00

Test Location: I-2
Test Type: Falling Head
Date: 10/7/2024

Driller: John DeAngelis
Engineer: M. Fekieta
Weather: Sunny, 60s

Ground surface El.: 365.5+/- (ft.)
Top of Casing El.: 367.1+/- (ft.)
Bottom of Casing El.: 364.1+/- (ft.)

Total Casing Length: 3 (ft.)

Inside Casing Diameter: 4 (in.)

Hydraulic Conductivity (Kv) = π [D {Ln (h1/h2) }] / 11 (t2-t1)

Elapsed Time (min.)	t2 - t1 (min.)	DTW (in.)	h1 (in.)	h2 (in.)	ln(h1/h2)	Kv (in/min)	Kv (cm/sec)	Kv (in/hr)
1.0	1.0	0.1	36.0	35.9	0.0035	4.0E-03	1.7E-04	2.4E-01
2	1.0	0.5	35.9	35.5	0.0105	1.2E-02	5.1E-04	7.2E-01
3	1.0	1.0	35.5	35.0	0.0142	1.6E-02	6.9E-04	9.7E-01
5	2.0	1.8	35.0	34.3	0.0217	1.2E-02	5.2E-04	7.4E-01
7.5	2.5	2.6	34.3	33.4	0.0259	1.2E-02	5.0E-04	7.1E-01
10	2.5	3.4	33.4	32.6	0.0227	1.0E-02	4.4E-04	6.2E-01
15	5.0	5.0	32.6	31.0	0.0511	1.2E-02	4.9E-04	7.0E-01
20	5.0	6.8	31.0	29.3	0.0581	1.3E-02	5.6E-04	8.0E-01
25	5.0	8.3	29.3	27.8	0.0526	1.2E-02	5.1E-04	7.2E-01
30	5.0	9.8	27.8	26.3	0.0556	1.3E-02	5.4E-04	7.6E-01
40	10.0	12.4	26.3	23.6	0.1054	1.2E-02	5.1E-04	7.2E-01
60	20.0	17.0	23.6	19.0	0.2179	1.2E-02	5.3E-04	7.5E-01
80	20.0	21.0	19.0	15.0	0.2364	1.4E-02	5.7E-04	8.1E-01
90	10.0	22.8	15.0	13.3	0.1241	1.4E-02	6.0E-04	8.5E-01
100	10.0	24.4	13.3	11.6	0.1308	1.5E-02	6.3E-04	9.0E-01
120	20.0	27.0	11.6	9.0	0.2559	1.5E-02	6.2E-04	8.8E-01

APPENDIX 4 -

LABORATORY TESTING RESULTS

Thielsch
DIVISION OF THE RISE GROUP

195 Frances Avenue
Cranston RI, 02910
Phone: (401)-467-6454
Fax: (401)-467-2398
cts.thielsch.com
Let's Build a Solid Foundation

Client Information:	
Down to Earth Consulting LLC	
Naugatuck, CT	
Project Manager:	Ray Janeiro
Assigned By:	Ray Janeiro
Collected By:	DTE

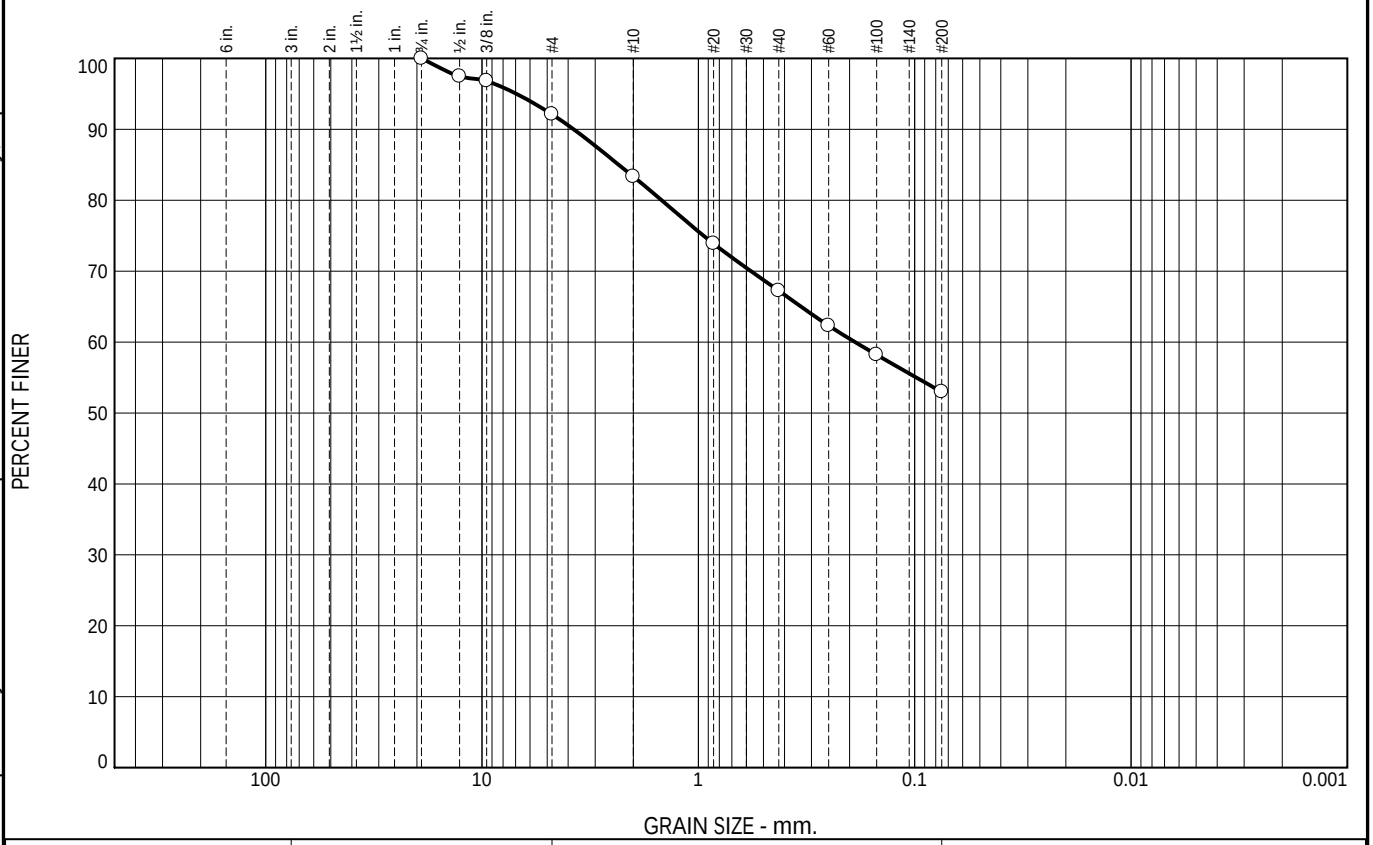
Project Information:	
Proposed BESS Development	
Woodbury, CT	
Project Number:	0032-082.00
Summary Page:	1 of 1
Report Date:	11.01.24

LABORATORY TESTING DATA SHEET, Report No.: 7424-K-234

Boring No.	Sample ID	Depth (ft)	Laboratory No.	Identification Tests									Proctor / CBR / Permeability Tests								Laboratory Log and Soil Description
				As Rcvd Moisture Content %	LL %	PL %	OD LL	Gravel %	Sand %	Fines %	Org. %	pH	g_d MAX (pcf) W_{opt} (%)	g_d MAX (pcf) W_{opt} (%) (Corr.)	Dry unit wt. (pcf)	Test Moisture Content %	Target Test Setup as % of Proctor	CBR @ 0.1"	CBR @ 0.2"	Permeability cm/sec	
				D2216	D4318			D6913			D2974	D4792	D1557								
B-1	Grab	1-3	24-S-4327	7.4				7.9	39.1	53.0											Light Brown sandy silt
B-1	S-3	5-5.7	24-S-4328					52.4	35.3	12.3											Light Brown silty gravel with sand

Date Received: **10.28.24** Reviewed By: Date Reviewed: **11.01.24**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	7.9	8.8	16.1	14.2	53.0	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100.0		
1/2"	97.5		
3/8"	96.8		
#4	92.1		
#10	83.3		
#20	73.9		
#40	67.2		
#60	62.3		
#100	58.2		
#200	53.0		

* (no specification provided)

Soil Description

Light Brown sandy silt

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 3.7674 D_{85}= 2.3339 D_{60}= 0.1884
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= ML AASHTO= A-4(0)

Remarks

Sample visually classified as non-plastic. Sample could not be rolled to 1/4".

Source of Sample: Borings Depth: 1-3'
Sample Number: **B-1 /** Grab

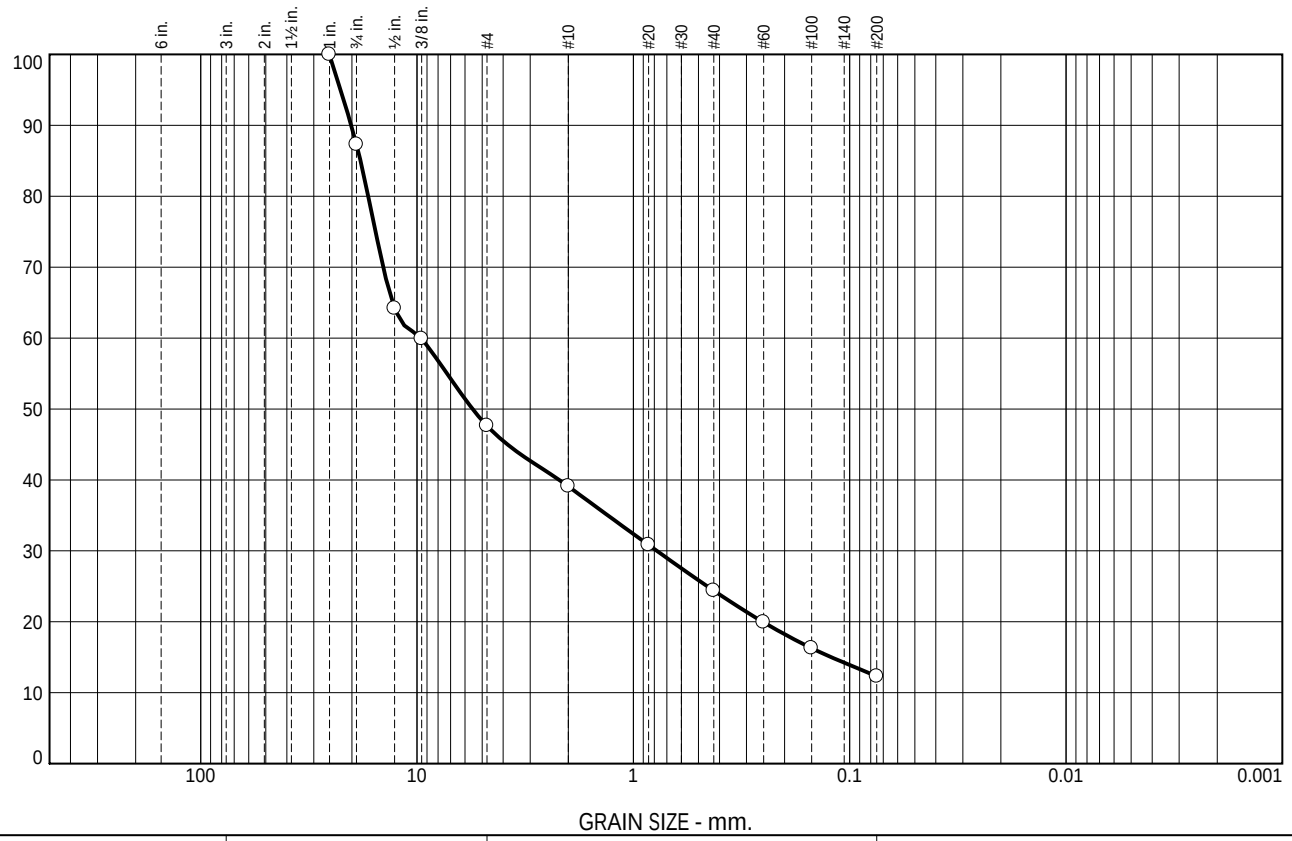
Date: 10.30.24

Thielsch Engineering Inc.
Cranston, RI

Client: Down to Earth Consulting, LLC
Project: Proposed BESS Development
Woodbury, CT
Project No: 0032-082.00 Fig. 24-S-4327

Tested By: AB/MCS/SBR Checked By: Rebecca Roth

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	12.7	39.7	8.5	14.7	12.1	12.3	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1"	100.0		
3/4"	87.3		
1/2"	64.2		
3/8"	59.9		
#4	47.6		
#10	39.1		
#20	30.8		
#40	24.4		
#60	19.9		
#100	16.3		
#200	12.3		

* (no specification provided)

Soil Description

Light Brown silty gravel with sand

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 20.1454 D_{85}= 18.2532 D_{60}= 9.5889
D_{50}= 5.5358 D_{30}= 0.7789 D_{15}= 0.1216
D_{10}= C_u= C_c=

Classification

USCS= GM AASHTO= A-1-a

Remarks

Source of Sample: Borings Depth: 5-5.7'
Sample Number: **B-1 /** S-3

Date: 10.30.24

Thielsch Engineering Inc.

Cranston, RI

Client: Down to Earth Consulting, LLC
Project: Proposed BESS Development
Woodbury, CT
Project No: 0032-082.00 Fig. 24-S-4328

Tested By: AB/MCS/SBR Checked By: Rebecca Roth

APPENDIX 5 -

LIMITATIONS

LIMITATIONS

Explorations

1. The analyses and recommendations submitted in this report are based in part upon the data obtained from subsurface explorations by Down To Earth Consulting, LLC (DTE) and others. The nature and extent of variations between these explorations may not become evident until construction. If variations then appear evident, it will be necessary to reevaluate the recommendations of this report.

2. The generalized soil profile described in the text is intended to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized and have been developed by interpretations of widely spaced explorations and samples; actual soil transitions are probably more erratic. For specific information, refer to the boring logs.

3. Water level readings have been made in the drill holes at times and under conditions stated on the boring logs. These data have been reviewed and interpretations have been made in the text of this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, tidal, temperature, and other factors occurring since the time measurements were made.

Review

4. In the event that any changes in the nature, design or location of the proposed BESS development are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing by DTE. It is recommended that this firm be provided the opportunity for a general review of final design and specifications in order that earthwork and foundation recommendations may be properly interpreted and implemented in the design and specifications.

Construction

5. It is recommended that this firm be retained to provide soil engineering services during construction of the earthworks and foundation phases of the work. This is to observe compliance with the design concepts, specifications, and recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated prior to start of construction.

Use of Report

6. This report has been prepared for the exclusive use of All-Points Technology Corporation for specific application to the project noted in this geotechnical report in accordance with generally accepted soil and foundation engineering practices. No other warranty, express or implied, is made.

7. This soil and foundation engineering report has been prepared for this project by DTE. This report is for design purposes only and is not sufficient to prepare an accurate bid. Contractors wishing a copy of the report may secure it with the understanding that its scope is limited to design considerations only.

8. This report may contain comparative cost estimates for the purpose of evaluating alternative foundation schemes. These estimates may also involve approximate quantity evaluations. It should be noted that quantity estimates may not be accurate enough for construction bids. Since DTE has no control over labor and materials cost and design, the estimates of construction costs have been made on the basis of experience. DTE does not guarantee the accuracy of cost estimates as compared to contractor's bids for construction costs.

APPENDIX C

USFWS AND NDDB

COMPLIANCE MEMO

USFWS & NDDB COMPLIANCE

November 7, 2024

BlueWave Project Development, LLC
116 Huntington Ave., Suite 601
Boston, MA 02116

Re: 380 New London Road, Salem, Connecticut
APT Job No: CT760100

On behalf of BlueWave Project Development, LLC ("BlueWave"), All-Points Technology Corporation, P.C. ("APT") performed an evaluation with respect to possible Federally- and State-listed, Threatened, Endangered or Special Concern species in order to determine if the proposed Battery Energy Storage ("BESS") facility ("Facility" or "Project") located at 380 New London Road, Salem, Connecticut ("Subject Property") would result in a potential adverse effect to listed species.

USFWS

The federal consultation was completed in accordance with Section 7 of the Endangered Species Act through the U.S. Fish and Wildlife Service's ("USFWS") Information, Planning, and Conservation System ("IPaC"). Based on the results of the IPaC review, two Federally listed[1] Endangered species documented as northern long-eared bat ("NLEB"; *Myotis septentrionalis*) and tricolored bat ("TCB"; *Perimyotis subflavus*) are known to occur in the vicinity of the Property. Please refer to the enclosed official species list.[2] As a result of this finding, APT performed an evaluation to determine if the proposed Facility would result in a likely adverse effect to NLEB and TCB.

Northern Long-eared Bat and Tricolored Bat

The proposed Facility is located within an upland edge forest adjacent to the garden center that occupies the majority of the Property. Development of the Facility will require tree clearing and trimming removing ±1.15 acres of edge forest; trees potentially provide NLEB and TCB habitat. A review of the Connecticut Department of Energy & Environmental Protection ("CTDEEP") Wildlife Division Natural Diversity Data Base ("NDDB") NLEB habitat map[3] and Connecticut NLEB Observations by Town map[4] revealed that the proposed Facility is not within 0.25 mile of a known NLEB hibernaculum (TCB may also use NLEB hibernaculum) but summer occurrences of NLEB and TCB in the town of Salem have been documented. The nearest NLEB hibernaculum to the proposed Facility is located ±26.9 miles southwest in North Branford.

[1] Listing under the federal Endangered Species Act

[2] Tricolored Bat (TCB; *Perimyotis subflavus*), although currently a Proposed Endangered species, still requires evaluation of possible impacts by the proposed action. A combined NLEB and TCB Determination Key was made available through the IPaC system on October 29, 2024.
Monarch butterfly (*Danaus plexippus*), a Candidate species, is also listed for the Property. Candidate species have no current protections under the ESA and there is no requirement to consider project impacts.

[3] *Northern long-eared bat areas of concern in Connecticut to assist with Federal Endangered Species Act Compliance* map. March 6, 2019.

[4] *Connecticut Northern Long-eared bat Observations by Town* map. July 24, 2023.

APT submitted the effects determination using the NLEB/TCB Determination Key ("DKey") within the IPaC system for this Facility and determined it "may affect, not likely to adversely affect" ("NLAA") NLEB and TCB. The NLAA determination is conditioned on a time of year restriction ("TOYR") for tree clearing resulting in tree clearing restricted to occur only during the inactive periods for NLEB and TCB, October 1 – April 14; please refer to the enclosed USFWS November 7, 2024 letter for NLEB and TCB generated by the NLEB/TCB DKey.

NDDB

APT reviewed the most recent DEEP NDDB mapping (June 2024) and determined that the nearest known area of State-listed species is ±0.09-mile northwest of the Property; please see attached NDDB Map. Since the proposed Site and Property are not located within an NDDB buffer area, consultation with DEEP is not required in accordance with their review policy.[5] However, the previously referenced USFWS compliance review necessitated consultation with DEEP NDDB due to the occurrence of the two bat species which are also State-listed species. A request for final determination was submitted on September 28, 2024 which included a bat protection plan that contains protection measures during construction through a time of year restriction ("TOYR") for tree clearing to occur only during the bat's inactive season (between October 1st through April 14th) which is consistent with the USFWS NLAA determination and installation of two bat houses. NDDB issued a Determination letter on October 16, 2024 (No. 202409786; please see attached) in which they indicated that they have records of NLEB and TCB nearby the proposed Property and concurred with bat protection and conservation measures, "which will minimize impacts to these species."

Therefore, the proposed Facility with the noted TOYR and conservation measures is not anticipated to adversely impact any Federal or State Threatened, Endangered or species of Special Concern.

Sincerely,
All-Points Technology Corporation, P.C.

Dean Gustafson
Senior Biologist

Enclosures

[5] DEEP Requests for NDDB State Listed Species Reviews. https://portal.ct.gov/DEEP/NDDB/Requests-for-NDDB-Environmental-Reviews

USFWS Consultation

- Species List
- NLEB/TCB Determination Key Letter

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To: 09/20/2024 20:24:57 UTC
Project Code: 2024-0050976
Project Name: BlueWave Storage Origination LLC: Salem BESS

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

Updated 4/12/2023 - Please review this letter each time you request an Official Species List, we will continue to update it with additional information and links to websites may change.

About Official Species Lists

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Federal and non-Federal project proponents have responsibilities under the Act to consider effects on listed species.

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested by returning to an existing project's page in IPaC.

Endangered Species Act Project Review

Please visit the "**New England Field Office Endangered Species Project Review and Consultation**" website for step-by-step instructions on how to consider effects on listed

species and prepare and submit a project review package if necessary:

https://www.fws.gov/office/new-england-ecological-services/endangered-species-project-review

NOTE Please do not use the **Consultation Package Builder** tool in IPaC except in specific situations following coordination with our office. Please follow the project review guidance on our website instead and reference your **Project Code** in all correspondence.

Northern Long-eared Bat - (**Updated 4/12/2023**) The Service published a final rule to reclassify the northern long-eared bat (NLEB) as endangered on November 30, 2022. The final rule went into effect on March 31, 2023. You may utilize the **Northern Long-eared Bat Rangewide Determination Key** available in IPaC. More information about this Determination Key and the Interim Consultation Framework are available on the northern long-eared bat species page:

https://www.fws.gov/species/northern-long-eared-bat-myotis-septentrionalis

For projects that previously utilized the 4(d) Determination Key, the change in the species' status may trigger the need to re-initiate consultation for any actions that are not completed and for which the Federal action agency retains discretion once the new listing determination becomes effective. If your project was not completed by March 31, 2023, and may result in incidental take of NLEB, please reach out to our office at newengland@fws.gov to see if reinitiation is necessary.

Additional Info About Section 7 of the Act
Under section 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to determine whether projects may affect threatened and endangered species and/or designated critical habitat. If a Federal agency, or its non-Federal representative, determines that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Federal agency also may need to consider proposed species and proposed critical habitat in the consultation. 50 CFR 402.14(c)(1) specifies the information required for consultation under the Act regardless of the format of the evaluation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/service/section-7-consultations

In addition to consultation requirements under Section 7(a)(2) of the ESA, please note that under sections 7(a)(1) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species. Please contact NEFO if you would like more information.

Candidate species that appear on the enclosed species list have no current protections under the ESA. The species' occurrence on an official species list does not convey a requirement to

consider impacts to this species as you would a proposed, threatened, or endangered species. The ESA does not provide for interagency consultations on candidate species under section 7, however, the Service recommends that all project proponents incorporate measures into projects to benefit candidate species and their habitats wherever possible.

Migratory Birds

In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see:

https://www.fws.gov/program/migratory-bird-permit

https://www.fws.gov/library/collections/bald-and-golden-eagle-management

Please feel free to contact us at **newengland@fws.gov** with your **Project Code** in the subject line if you need more information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat.

Attachment(s): Official Species List

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

PROJECT SUMMARY

Project Code: 2024-0050976
Project Name: BlueWave Storage Origination LLC: Salem BESS
Project Type: Power Gen - Other
Project Description: BlueWave Storage Origination, LLC intends to lease a portion of a +/- 14.48-acre property in support of a panned +/- 5.0 MW AC Battery Energy Storage ("BESS") facility located at 380 New London Road, Salem, Connecticut.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@41.45720335,-72.24145446141432,14z

Counties: New London County, Connecticut

ENDANGERED SPECIES ACT SPECIES

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Endangered
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To: 11/07/2024 16:41:22 UTC
Project code: 2024-0050976
Project Name: BlueWave Storage Origination LLC: Salem BESS

Federal Nexus: no
Federal Action Agency (if applicable):

Subject: Technical assistance for 'BlueWave Storage Origination LLC: Salem BESS'

Dear Deborah Gustafson:

This letter records your determination using the Information for Planning and Consultation (IPaC) system provided to the U.S. Fish and Wildlife Service (Service) on November 07, 2024, for 'BlueWave Storage Origination LLC: Salem BESS' (here forward, Project). This project has been assigned Project Code 2024-0050976 and all future correspondence should clearly reference this number. **Please carefully review this letter. Your Endangered Species Act (Act) requirements may not bbe complete.**

Ensuring Accurate Determinations When Using IPaC

The Service developed the IPaC system and associated species' determination keys in accordance with the Endangered Species Act of 1973 (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and based on a standing analysis. All information submitted by the Project proponent into IPaC must accurately represent the full scope and details of the Project.

Failure to accurately represent or implement the Project as detailed in IPaC or the Northern Long-eared Bat and Tricolored Bat Range-wide Determination Key (Dkey), invalidates this letter. ***Answers to certain questions in the DKey commit the project proponent to implementation of conservation measures that must be followed for the ESA determination to remain valid. Note that conservation measures for northern long-eared bat and tricolored bat may differ. If both bat species are present in the action area and the key suggests more conservative measures for one of the species for your project, the Project may need to apply the most conservative measures in order to avoid adverse effects. If unsure which conservation measures should be applied, please contact the appropriate Ecological Services Field Office***

Determination for the Northern Long-Eared Bat and Tricolored Bat

Based upon your IPaC submission and a standing analysis completed by the Service, your project has reached the following effect determination(s):

Species	Listing Status	Determination
Northern Long-eared Bat (*Myotis septentrionalis*)	Endangered	NLAA
Tricolored Bat (*Perimyotis subflavus*)	Proposed Endangered	NLAA

Federal agencies must consult with U.S. Fish and Wildlife Service under section 7(a)(2) of the Endangered Species Act (ESA) when an action *may affect* a listed species. Tricolored bat is proposed for listing as endangered under the ESA, but not yet listed. For actions that may affect a proposed species, agencies cannot consult, but they can *confer* under the authority of section 7(a)(4) of the ESA. Such conferences can follow the procedures for a consultation and be adopted as such if and when the proposed species is listed. Should the tricolored bat be listed, agencies must review projects that are not yet complete, or projects with ongoing effects within the tricolored bat range that previously received a NE or NLAA determination from the key to confirm that the determination is still accurate.

Other Species and Critical Habitat that May be Present in the Action Area

The IPaC-assisted determination key for the northern long-eared bat and tricolored bat does not apply to the following ESA-protected species and/or critical habitat that also may occur in your Action area:

- Monarch Butterfly *Danaus plexippus* Candidate

You may coordinate with our Office to determine whether the Action may cause prohibited take of the animal species and/or critical habitat listed above. Note that if a new species is listed that may be affected by the identified action before it is complete, additional review is recommended to ensure compliance with the Endangered Species Act.

Next Steps

Coordination with the Service is complete. This letter serves as technical assistance. All conservation measures should be implemented as proposed. Thank you for considering federally listed species during your project planning.

If no changes occur with the Project or there are no updates on listed species, no further consultation/coordination for this project is required for the northern long-eared bat. However, the Service recommends that project proponents re-evaluate the Project in IPaC if: 1) the scope, timing, duration, or location of the Project changes (includes any project changes or amendments); 2) new information reveals the Project may impact (positively or negatively) federally listed species or designated critical habitat; or 3) a new species is listed, or critical habitat designated. If any of the above conditions occurs, additional coordination with the Service should take place before project implements any changes which are final or commits additional resources.

If you have any questions regarding this letter or need further assistance, please contact the New England Ecological Services Field Office and reference Project Code 2024-0050976 associated with this Project.

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

BlueWave Storage Origination LLC: Salem BESS

2. Description

The following description was provided for the project 'BlueWave Storage Origination LLC: Salem BESS':

> BlueWave Storage Origination, LLC intends to lease a portion of a +/- 14.48-acre property in support of a panned +/- 5.0 MW AC Battery Energy Storage ("BESS") facility located at 380 New London Road, Salem, Connecticut.

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@41.45720335,-72.24145446141432,14z

DETERMINATION KEY RESULT

Based on the answers provided, the proposed Action is consistent with a determination of “may affect, but not likely to adversely affect” for a least one species covered by this determination key.

QUALIFICATION INTERVIEW

1. Does the proposed project include, or is it reasonably certain to cause, intentional take of listed bats or any other listed species?

   Note: Intentional take is defined as take that is the intended result of a project. Intentional take could refer to research, direct species management, surveys, and/or studies that include intentional handling/encountering, harassment, collection, or capturing of any individual of a federally listed threatened, endangered or proposed species?

   No

2. Is the action area wholly within Zone 2 of the year-round active area for northern long-eared bat and/or tricolored bat?

   Automatically answered
   No

3. Does the action area intersect Zone 1 of the year-round active area for northern long-eared bat and/or tricolored bat?

   Automatically answered
   No

4. Does any component of the action involve leasing, construction or operation of wind turbines? Answer 'yes' if the activities considered are conducted with the intention of gathering survey information to inform the leasing, construction, or operation of wind turbines.

   Note: For federal actions, answer ‘yes’ if the construction or operation of wind power facilities is either (1) part of the federal action or (2) would not occur but for a federal agency action (federal permit, funding, etc.).

   No

5. Is the proposed action authorized, permitted, licensed, funded, or being carried out by a Federal agency in whole or in part?

   No

6. [Semantic] Is the action area located within 0.5 miles of a known bat hibernaculum?

   Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

   Automatically answered
   No

7. Does the action area contain any winter roosts or caves (or associated sinkholes, fissures, or other karst features), mines, rocky outcroppings, or tunnels that could provide habitat for hibernating bats?

   No

8. Does the action area contain (1) talus or (2) anthropogenic or naturally formed rock shelters or crevices in rocky outcrops, rock faces or cliffs?

   No

9. Will the action cause effects to a bridge?

   Note: Covered bridges should be considered as bridges in this question.

   No

10. Will the action result in effects to a culvert or tunnel at any time of year?

    No

11. Are trees present within 1000 feet of the action area?

    Note: If there are trees within the action area that are of a sufficient size to be potential roosts for bats answer "Yes". If unsure, additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    Yes

12. Does the action include the intentional exclusion of bats from a building or structure?

    Note: Exclusion is conducted to deny bats' entry or reentry into a building. To be effective and to avoid harming bats, it should be done according to established standards. If your action includes bat exclusion and you are unsure whether northern long-eared bats or tricolored bats are present, answer "Yes." Answer "No" if there are no signs of bat use in the building/structure. If unsure, contact your local Ecological Services Field Office to help assess whether northern long-eared bats or tricolored bats may be present. Contact a Nuisance Wildlife Control Operator (NWCO) for help in how to exclude bats from a structure safely without causing harm to the bats (to find a NWCO certified in bat standards, search the Internet using the search term "National Wildlife Control Operators Association bats"). Also see the White-Nose Syndrome Response Team's guide for bat control in structures.

    No

13. Does the action involve removal, modification, or maintenance of a human-made structure (barn, house, or other building) **known or suspected to contain roosting bats?**

    No

14. Will the action cause construction of one or more new roads open to the public?

    For federal actions, answer ‘yes’ when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.).

    No

15. Will the action include or cause any construction or other activity that is reasonably certain to increase average daily traffic permanently or temporarily on one or more existing roads?

    Note: For federal actions, answer ‘yes’ when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.). .

    No

16. Will the action include or cause any construction or other activity that is reasonably certain to increase the number of travel lanes on an existing thoroughfare?

    For federal actions, answer ‘yes’ when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.).

    No

17. Will the proposed Action involve the creation of a new water-borne contaminant source (e.g., leachate pond, pits containing chemicals that are not NSF/ANSI 60 compliant)?

    Note: For information regarding NSF/ANSI 60 please visit https://www.nsf.org/knowledge-library/nsf-ansi-standard-60-drinking-water-treatment-chemicals-health-effects

    No

18. Will the proposed action involve the creation of a new point source discharge from a facility other than a water treatment plant or storm water system?

    No

19. Will the action include drilling or blasting?

    No

20. Will the action involve military training (e.g., smoke operations, obscurant operations, exploding munitions, artillery fire, range use, helicopter or fixed wing aircraft use)?

    No

21. Will the proposed action involve the use of herbicides or other pesticides other than herbicides (e.g., fungicides, insecticides, or rodenticides)?

    No

22. Will the action include or cause activities that are reasonably certain to cause chronic or intense nighttime noise (above current levels of ambient noise in the area) in suitable summer habitat for the northern long-eared bat or tricolored bat during the active season?

    Chronic noise is noise that is continuous or occurs repeatedly again and again for a long time. Sources of chronic or intense noise that could cause adverse effects to bats may include, but are not limited to: road traffic; trains; aircraft; industrial activities; gas compressor stations; loud music; crowds; oil and gas extraction; construction; and mining.

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    No

23. Does the action include, or is it reasonably certain to cause, the use of permanent or temporary artificial lighting within 1000 feet of suitable northern long-eared bat or tricolored bat roosting habitat?

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    No

24. Will the action include tree cutting or other means of knocking down or bringing down trees, tree topping, or tree trimming?

    Yes

25. Will the proposed action occur exclusively in an already established and currently maintained utility right-of-way?

    No

26. Does the action include emergency cutting or trimming of hazard trees in order to remove an imminent threat to human safety or property? See hazard tree note at the bottom of the key for text that will be added to response letters

    Note: A "hazard tree" is a tree that is an immediate threat to lives, public health and safety, or improved property.

    No

27. Does the project intersect with the 0- 9.9% forest density category?

    Automatically answered
    No

28. Does the project intersect with the 10.0- 19.9% forest density category map?

    Automatically answered
    No

29. Does the project intersect with the 20.0- 29.9% forest density category map?

    Automatically answered
    No

30. Does the project intersect with the 30.0- 100% forest density category map?

    Automatically answered
    Yes

31. Will the action cause trees to be cut, knocked down, or otherwise brought down across an area greater than 100 acres in total extent?

    No

32. Will the proposed action result in the use of prescribed fire?

    Note: If the prescribed fire action includes other activities than application of fire (e.g., tree cutting, fire line preparation) please consider impacts from those activities within the previous representative questions in the key. This set of questions only considers impacts from flame and smoke.

    No

33. Does the action area intersect the northern long-eared bat species list area?

    Automatically answered
    Yes

34. [Semantic] Is the action area located within 0.25 miles of a culvert that is known to be occupied by northern long-eared or tricolored bats?

    Automatically answered
    No

35. [Semantic] Is the action area located within 150 feet of a documented northern long-eared bat roost site?

    Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

    Automatically answered
    No

36. Is suitable summer habitat for the northern long-eared bat present within 1000 feet of project activities?
    If unsure, answer "Yes."

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    Yes

37. Are any of the trees proposed for cutting or other means of knocking down, bringing down, topping, or trimming suitable for northern long-eared bat roosting (i.e., live trees and/or snags ≥3 inches dbh that have exfoliating bark, cracks, crevices, and/or cavities)?

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    Yes

38. Will any tree cutting/trimming or other knocking or bringing down of trees occur during the **Summer Occupancy season** for northern long-eared bats in the action area?

    Note: Bat activity periods for your state can be found in Appendix L of the Service's Range-wide Indiana Bat and Northern long-eared Bat Survey Guidelines.

    No

39. Does the action area intersect the tricolored bat species list area?

    Automatically answered
    Yes

40. [Semantic] Is the action area located within 0.25 miles of a culvert that is known to be occupied by northern long-eared or tricolored bats?

    Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

    Automatically answered
    No

41. Is suitable summer habitat for the tricolored bat present within 1000 feet of project activities?
    (If unsure, answer ""Yes."")

    Note: If there are trees within the action area that may provide potential roosts for tricolored bats (e.g., clusters of leaves in live and dead deciduous trees, Spanish moss (Tillandsia usneoides), clusters of dead pine needles of large live pines) answer ""Yes."" For a complete definition of suitable summer habitat for the tricolored bat, please see Appendix A in the Service's Range-wide Indiana Bat and Northern long-eared Bat Survey Guidelines.

    Yes

42. Do any of the trees proposed for cutting or other means of knocking down, bringing down, topping, or trimming provide potential roosts for tricolored bats (e.g., clusters of leaves in live and dead deciduous trees, Spanish moss (*Tillandsia usneoides*), clusters of dead pine needles of large live pine trees)?

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    Yes

43. Will any tree cutting/trimming or other knocking or bringing down of trees be conducted during the Pup Season for tricolored bat?

    Note: Bat activity periods for your state can be found in Appendix L of the Service's Range-wide Indiana Bat and Northern long-eared Bat Survey Guidelines.

    No

44. Do you have any documents that you want to include with this submission?

    No

PROJECT QUESTIONNAIRE

Enter the extent of the action area (in acres) from which trees will be removed - round up to the nearest tenth of an acre. For this question, include the entire area where tree removal will take place, even if some live or dead trees will be left standing.

1.2

NDDB Consultation

- NDDB Map
- NDDB Determination Letter

C:\Users\mkope\APT GIS Dropbox\APT GIS Team Folder\Projects\Blue Wave Solar\Salem_BESS\mxd\NDDB Attachment B.mxd

Legend

- Site
- Approximate Parcel Boundary
- Access Drive
- Fence
- Sound Wall
- Overhead Electrical Utilities
- Underground Electrical Utilities
- BESS Unit
- Gravel Area
- Temporary Bridge
- Stormwater Basin
- Limit of Disturbance
- Natural Diversity Database (updated June 2024)

NDDB Map

Proposed Battery Storage Facility
CT Salem New London Rd F
380 New London Road
Salem, Connecticut

N

250 125 0 250 Feet

Map Notes:
Base Map Source: 2023 Aerial Photograph (CTECO)
Map Scale: 1 inch = 250 feet
Map Date: September 2024

ALL-POINTS TECHNOLOGY CORPORATION

Connecticut
Department of Energy &
Environmental Protection

portal.ct.gov/DEEP

10/16/2024

Dean Gustafson
BlueWave
116 Huntington Ave
Boston, MA 02116
dgustafson@allpointstech.com

Subject: Salem BESS
Filing #: 118495
NDDB - New Determination Number: 202409786

Expiration Date: 10/16/2026

Location Description: 380 New London Rd, Salem, CT

I have reviewed Natural Diversity Data Base (NDDB) maps and files regarding this project. According to our records, there are State-listed species (RCSA Sec. 26-306) documented nearby the proposed project area.

- **Northern long-eared bat (*Myotis septentrionalis*)- State, Federally Endangered**
- **Tri-colored bat (*Perimyotis sublflavus*)- State Endangered, Federally Petitioned Endangered**

Northern long-eared bat (*Myotis septentrionalis*)- State, Federally Endangered

The Northern long-eared bat is one of the species most impacted by White Nose Syndrome. Populations in Connecticut have declined by over 90%, and it has been Federally listed as Endangered. During the summer northern long-eared bats roost singly or in maternal colonies underneath bark, in cavities or in crevices of both live trees and snags (dead trees). Males and non-reproductive females may also roost in cooler places, like caves and mines. Northern long-eared bats seem to be flexible in selecting roosts, choosing roost trees based on suitability to retain bark or provide cavities or crevices. This bat has also been found rarely roosting in structures, like barns and sheds. Northern long-eared bats spend winter hibernating in caves and mines, called hibernacula.

Tri-colored bat (*Perimyotis sublflavus*)- State Endangered, Federally Petitioned Endangered

Populations of Tri-colored bats have declined over 90% as a result of White Nose Syndrome. This bat is associated with forested edges and open forested landscapes with water features. Maternity colonies will form in tree cavities of mature trees, they will occasionally roost on man-made structures. They are among the most sensitive bats to cold temperatures and in winter they hibernate in caves and abandoned mines where temperatures and humidity levels are stable.

- I concur with your Bat Protection Plan (attached), which will minimize impacts to these species.

Your submission information indicates that your project requires a state permit, license, registration, or

authorization, or utilizes state funding or involves state agency action. This NDDB - New determination may be utilized to fulfill the Endangered and Threatened Species requirements for state-issued permit applications, licenses, registration submissions, and authorizations.

Please be aware of the following limitations and conditions:

Natural Diversity Database information includes all information regarding listed species available to us at the time of the request. This information is a compilation of data collected over the years by the Department of Energy and Environmental Protection's Natural History Survey and cooperating units of DEEP, land owners, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as enhance existing data. Such new information is incorporated into the Database and accessed through the ezFile portal as it becomes available. New information may result in additional review, and new or modified restrictions or conditions may be necessary to remain in compliance with certain state permits.

- During your work listed species may be encountered on site. A report must be submitted by the observer to the Natural Diversity Database promptly and additional review and restrictions or conditions may be necessary to remain in compliance with certain state permits. Please fill out the appropriate survey form and follow the instructions for submittal.
- Your project involves the state permit application process or other state involvement, including state funding or state agency actions; please note that consultations with your permit analyst or the agency may result in additional requirements. In this situation, additional evaluation of the proposal by the DEEP Wildlife Division may be necessary and additional information, including but not limited to species-specific site surveys, may be required. Any additional review may result in specific restrictions or conditions relating to listed species that may be found at or in the vicinity of the site.
- If your project involves preparing an Environmental Impact Assessment, this NDDB consultation and determination should not be substituted for biological field surveys assessing on-site habitat and species presence.
- The NDDB - New determination for the Salem BESS as described in the submitted information and summarized at the end of this document is valid until 10/16/2026. This determination applies only to the project as described in the submission and summarized at the end of this letter. Please re-submit an updated Request for Review if the project's scope of work and/or timeframe changes, including if work has not begun by 10/16/2026.

If you have further questions, please contact me at the following:

Shannon Kearney
CT DEEP Bureau of Natural Resources
Wildlife Division
Natural Diversity Database
79 Elm Street
Hartford, CT 06106-5127
(860) 424-3170
Shannon.Kearney@ct.gov

Please reference the Determination Number 202409786 when you e-mail or write. Thank you for consulting the Natural Diversity Data Base.

Shannon Kearney
Wildlife Division- Natural Diversity Data Base
79 Elm Street

Hartford, CT 06106-5127
(860) 424-3170
Shannon.Kearney@ct.gov

Application Details:

Project involves federal funds or federal permit:	No
Project involves state funds, state agency action, or relates to CEPA request:	No
Project requires state permit, license, registration, or authorization:	Yes
DEEP enforcement action related to project:	
Project Type:	Energy and Utility Production Facilities and Distribution Infrastructure
Project Sub-type:	New facility construction
Project Name:	Salem BESS
Project Description:	

ENVIRONMENTAL NOTES - RESOURCES PROTECTION MEASURES

BAT PROTECTION PROGRAM

The proposed facility is located within sensitive habitat known to be used by northern long-eared bat ("NLEB"; Myotis septentrionalis), a Federally- and State-listed Endangered Species, and tricolored bat ("TCB"; Perimyotis subflavus), a Federally Proposed Endangered and State Endangered Species. In order to protect these bat species and prevent incidental take, protection and conservation measures are proposed during construction and operation of the facility.

It is of the utmost importance that the Contractor complies with the requirement for implementation of these protective measures and the education of its employees and subcontractors performing work on the project site.

All-Points Technology Corporation, P.C. ("APT") will serve as the Environmental Monitor for this project to ensure that these protection and conservation measures are implemented properly. APT will provide an education session for the Contractor prior to the start of construction activities on the potential presence of NLEB and TCB. The Contractor shall contact Dean Gustafson, Senior Biologist at APT, at least 5 business days prior to the start of any construction activities to schedule a pre-construction meeting. Mr. Gustafson can be reached by phone at (860) 552-2033 or via email at dgustafson@allpointstech.com.

This protection program consists of several components: education of all contractors and sub-contractors prior to initiation of work on the site; protective and conservation measures; periodic inspection of the construction project; and, reporting. Details of the NLEB and TCB protection measures to be implemented in association with construction and operation of the facility are provided below.

1. **Contractor Education**

    a. Prior to work on site, the Contractor shall attend an educational session at the pre-construction meeting with APT. This orientation and educational session will consist of an introductory meeting with APT to emphasize the environmentally sensitive nature of the project, the rare species resources, and the requirement to diligently follow the Protective and Conservation Measures as described in sections below.

    b. The Contractor will be provided with cell phone and email contacts for APT personnel to immediately report any encounters with any rare species. Educational poster materials will be provided by APT and displayed on the job site to maintain worker awareness as the project progresses.

    c. If any rare species are encountered, the Contractor shall immediately cease all work, avoid any disturbance to the species, and contact APT.

2. **Bat Habitat - Tree Clearing Restriction**

    a. A time of year restriction ("TOYR") for tree clearing restricts tree removal to occur only between October 1st through April 14th, during the bat's inactive season, when NLEB and TCB would likely be in hibernacula and not present in forested habitat on the subject property. Do not remove trees between April 15th through September 30th.

3. NLEB and TCB Conservation

b. Two (2) multi-chamber nursery bat houses will be installed in the northern portion of the subject property located in an existing cleared area proximate to a pond and Horse Pound Brook. Bat house boxes will be installed on either side of a single pressure treated 20-foot long 4-inch by 6-inch post embedded 4 feet into the ground. Bat house boxes will be painted black or a dark shade of paint and installed facing southeast to capture morning sun and attain sun exposure for a minimum of 6-8 hours/day, ideal conditions for rearing young bat pups.

4. Reporting

a. A Compliance Monitoring Report (brief narrative and applicable photos) documenting APT inspection verifying TOYR for tree removal was adhered to and installation of the bat houses will be submitted by APT to the permittee for compliance verification. Any observations of bats will be included in the reports.

b. Following completion of the construction project, APT will provide a Final Compliance Monitoring Report to the permittee documenting implementation of this NLEB and TCB protection and conservation program and any species observations. The permittee shall provide a copy of the Final Compliance Monitoring Report to the Connecticut Siting Council for compliance verification.

c. Any observations of rare species will be reported to DEEP by APT on the appropriate special animal reporting form, with photo-documentation (if possible) and specific information on the location and disposition of the animal.

APPENDIX D

SHPO CORRESPONDENCE

June 6, 2023

Mr. Raju Vasamsetti
Weston & Sampson Engineers, Inc.
712 Brook Street, Suite 103
Rocky Hill, CT 06067
(sent via email only to vasamsettir@wseinc.com)

Subject: Proposed Battery Energy Storage System
380 New London Road
Salem, Connecticut

Dear Mr. Vasamsetti:

The State Historic Preservation Office (SHPO) has reviewed the referenced project in response to your request for our comments regarding potential effects to historic properties. SHPO understands that the proposed project consists of the construction of a battery energy storage system (BESS) with associated site improvements. The project parcel measures approximately 14.48 acres in area. The project will require a Stormwater Discharge permit issued by the Connecticut Department of Energy and Environmental Protection through the authority of the Environmental Protection Agency as well as approval from the Connecticut Siting Council. As a result, it is subject to review by this office pursuant to Section 106 of the National Historic Preservation Act and the Connecticut Environmental Policy Act.

There are no properties listed on the National Register of Historic Places located in the vicinity of the project area. A total of 13 previously recorded archaeological sites have been reported within a mile of the proposed project area. However, readily available historic imagery suggests that much of the proposed project area has undergone significant previous disturbances. Therefore, it is unlikely that intact archaeological deposits will be impacted by the proposed activities. Based on the information submitted to this office, it is the opinion of SHP that no historic properties will be affected by the proposed BESS development.

SHPO appreciates the opportunity to comment upon this project. Do not hesitate to contact Cory Atkinson, Staff Archaeologist and Environmental Reviewer, for additional information at (860) 500-2458 or cory.atkinson@ct.gov.

Sincerely,

Jonathan Kinney

Jonathan Kinney
State Historic Preservation Officer

APPENDIX E

VIEWSHED MAPS AND PHOTO-SIMULATIONS

ALL-POINTS
TECHNOLOGY CORPORATION

PHOTOGRAPHIC DOCUMENTATION & SIMULATIONS

SALEM BESS
380 NEW LONDON ROAD
SALEM, CT

PREPARED FOR:

BLUEWAVE

PREPARED BY:
All-Points Technology Corporation, P.C.
567 Vauxhall Street Extension – Suite 311
Waterford, CT 06320

PHOTO LOG

Legend

- Site
- Approximate Parcel Boundary
- Photographic Location
- Access Drive
- Fence
- Sound Wall
- Overhead Electrical Utilities
- Underground Electrical Utilities
- BESS Unit
- Gravel Area
- Temporary Bridge
- Stormwater Basin
- Limit of Disturbance

N W E S

200 100 0 200 Feet

ALL-POINTS TECHNOLOGY CORPORATION

BLUEWAVE

EXISTING

PHOTOGRAPHED ON 7/25/2024

PHOTO	LOCATION	ORIENTATION
1	**NEW LONDON ROAD**	**NORTHEAST**

PROPOSED

PHOTO	LOCATION	ORIENTATION
1	**NEW LONDON ROAD**	**NORTHEAST**

EXISTING

PHOTOGRAPHED ON 7/25/2024

PHOTO	LOCATION	ORIENTATION
2	**NEW LONDON ROAD**	**NORTH**

ALL-POINTS TECHNOLOGY CORPORATION

BLUEWAVE

PROPOSED

PHOTO	LOCATION	ORIENTATION
2	**NEW LONDON ROAD**	**NORTH**

EXISTING

PHOTOGRAPHED ON 7/25/2024

PHOTO	LOCATION	ORIENTATION
3	**NEW LONDON ROAD**	**NORTH**

ALL-POINTS TECHNOLOGY CORPORATION BLUEWAVE

PROPOSED

PHOTO	LOCATION	ORIENTATION
3	**NEW LONDON ROAD**	**NORTH**

EXISTING

AERIAL PHOTOGRAPH
SOURCE: NEARMAP 2024

PROPOSED

AERIAL PHOTOGRAPH
SOURCE: NEARMAP 2024

ALL-POINTS TECHNOLOGY CORPORATION

BLUEWAVE

AERIAL PHOTOGRAPH
SOURCE: NEARMAP 2024

PROPOSED

AERIAL PHOTOGRAPH
SOURCE: NEARMAP 2024

ALL-POINTS TECHNOLOGY CORPORATION
BLUEWAVE

APPENDIX F

SOUND EVALUATION

August 28, 2024

Ms. Lily Blain
BlueWave Energy
116 Huntington Avenue, Suite 601
Boston, MA 02116

SUBJECT: BESS Facility Environmental Sound Evaluation
New London Road, Salem, CT

Dear Ms. Blain,

Cavanaugh Tocci Associates has evaluated the environmental sound impact associated with the proposed Battery Energy Storage System (BESS) at 380 New London Road in Salem, Connecticut. The objectives of this evaluation were:

- To define acoustic design goals based on applicable noise regulations,
- To estimate and evaluate the acoustic impact of the proposed project in the surrounding community.

Results of the evaluation are summarized herein. Appendix A of this report is a glossary of relevant acoustic terminology.

Environmental Noise Regulations

To the best of our knowledge, only state noise regulations apply to sound produced by the proposed project. A brief summary of these regulations follows:

State of Connecticut Noise Regulation

The State of Connecticut Noise Regulation (Section 22a-69-1 to 7.4) defines limits for environmental sound produced by this project. The sound level limits are based on both emitter and receptor land use classifications, and are listed below in Table 1:

TABLE 1
Connecticut Regulations for the Control of Noise Sound Level Limits (dBA)

	Receptor Class			
Emitter Class	**C**	**B**	**A/Day**	**A/Night**
C	70	66	61	51
B	62	62	55	45
A	62	55	55	45

Definitions

In the above table, day is defined as the time interval 7:00 a.m. to 10:00 p.m. Night is defined as the time interval 10:00 p.m. to 7:00 a.m. Noise Zone Classifications are based on the actual land use (not zoning). Where multiple land uses exist on the same property, the least restrictive limits apply.

A Class A noise zone is land generally designated for residential use or areas where serenity and tranquility are essential to the intended use.

A Class B noise zone includes land uses generally of a commercial nature.

A Class C noise zone includes uses generally of an industrial nature, including utilities.

Exceptions and Other Limit Provisions

Section 22a-69-3.3 Prominent Discrete Tones

To offset the undesirable nature of tonal sound in the environment, the regulation penalizes sources of prominent, audible discrete tones. If a facility produces such sounds, the applicable limits in Table 1 are reduced by 5 dBA. In its definitions (Section 22a-69-1.2), the regulation defines a method for identifying prominent discrete tones based on measuring one-third octave band sound levels.

Town of Salem, CT

The Town of Salem, CT Code of Ordinances does not include any regulation regarding sound.

Facility Acoustic Requirements

Our interpretation of the above referenced regulations follows:

- The property of the proposed Project is within a Special Business A zone. The Project would be considered a utility facility, and therefore subject to Class C emitter requirements.
- The nearest residences to the west and north of the facility, and across New London Road to the southeast, are within an RuA rural zone; residential use indicates a receiver classification of A. The facility will produce sound during daytime and nighttime hours, therefore the more stringent nighttime limit of 51 dBA applies.
- Abutting properties to the northeast and southeast are commercial use; therefore a 66 dBA limit applies at these property boundaries during daytime and nighttime hours.

Facility Sound Analysis

Facility-related sound impacts that are associated with equipment at the proposed BESS facility have been calculated using CadnaA environmental sound modeling software (Version 2024 MR1 DataKustic GmbH). The CadnaA sound modeling software uses algorithms and procedures described in International Standard ISO 9613-2:1996 “Acoustics- Attenuation of sound during propagation outdoors –

Part 2: General method of calculation". This standard and its associated methodology are the most universally accepted approach for environmental sound modeling of industrial and transit sound sources. The methodology described in this standard provides estimates of A-weighted sound levels for meteorological conditions that are favorable for the propagation of sound (downwind with a wind speed of 1-5 meters/sec). This methodology is also valid for sound propagation under well-developed moderate ground-based temperature profile inversions, which commonly occur on clear calm nights.

Our analysis considers that the BESS installation will be comprised of Seven eSolar SolBank BESS modules and two EPC Power CAB100 power conditioning system (PCS) units and associated transformers. Sound emission data used in the acoustic model for this system has been provided by the respective manufacturers.

Figure 1 presents the results of the acoustic modeling for proposed BESS facility. Table 2 below provides a summary of our estimates of facility A-weighted sound levels at relevant property boundaries and residences. The results indicate an exceedance of the overall sound level limit at the northwest property boundary, as well as a pure tone condition, which lowers the overall limit by 5 dBA. Noise controls will be required for compliance at this location.

TABLE 2
Estimate of Facility Sound Levels at Property Boundaries (dBA)

Receptor	Description	Facility Sound	Produces Tone	Limit
PL-R-NW	Residential property line, northwest	***56***	Yes	51 → 46 [1]
PL-R-SW	Residential property line, southwest	38	No	51
PL-C-NE	Commercial property line, northeast	56	No	66
PL-C-SE	Commercial property line, southeast	36	No	66
R-NW	Residence northwest	41	No	51
R-W	Residence west	41	No	51

[1] Reduction of 5 dB due to tone condition indicated.

Noise Control

Figure 2 shows a sound barrier design for achieving compliance with the State of Connecticut Noise Regulation. Modeling results are presented in Figure 3, and a summary of results are shown below in Table 3.

TABLE 3
Estimate of Facility Sound Levels at Modeled Receptors (dBA)
With Recommended Noise Control

Receptor	Description	Facility Sound	Produces Tone	Limit
PL-R-NW	Residential property line, northwest	49	No	51
PL-R-SW	Residential property line, southwest	38	No	51
PL-C-NE	Commercial property line, northeast	56	No	66
PL-C-SE	Commercial property line, southeast	36	No	66
R-NW	Residence northwest	40	No	51
R-W	Residence west	38	No	51

Conclusion

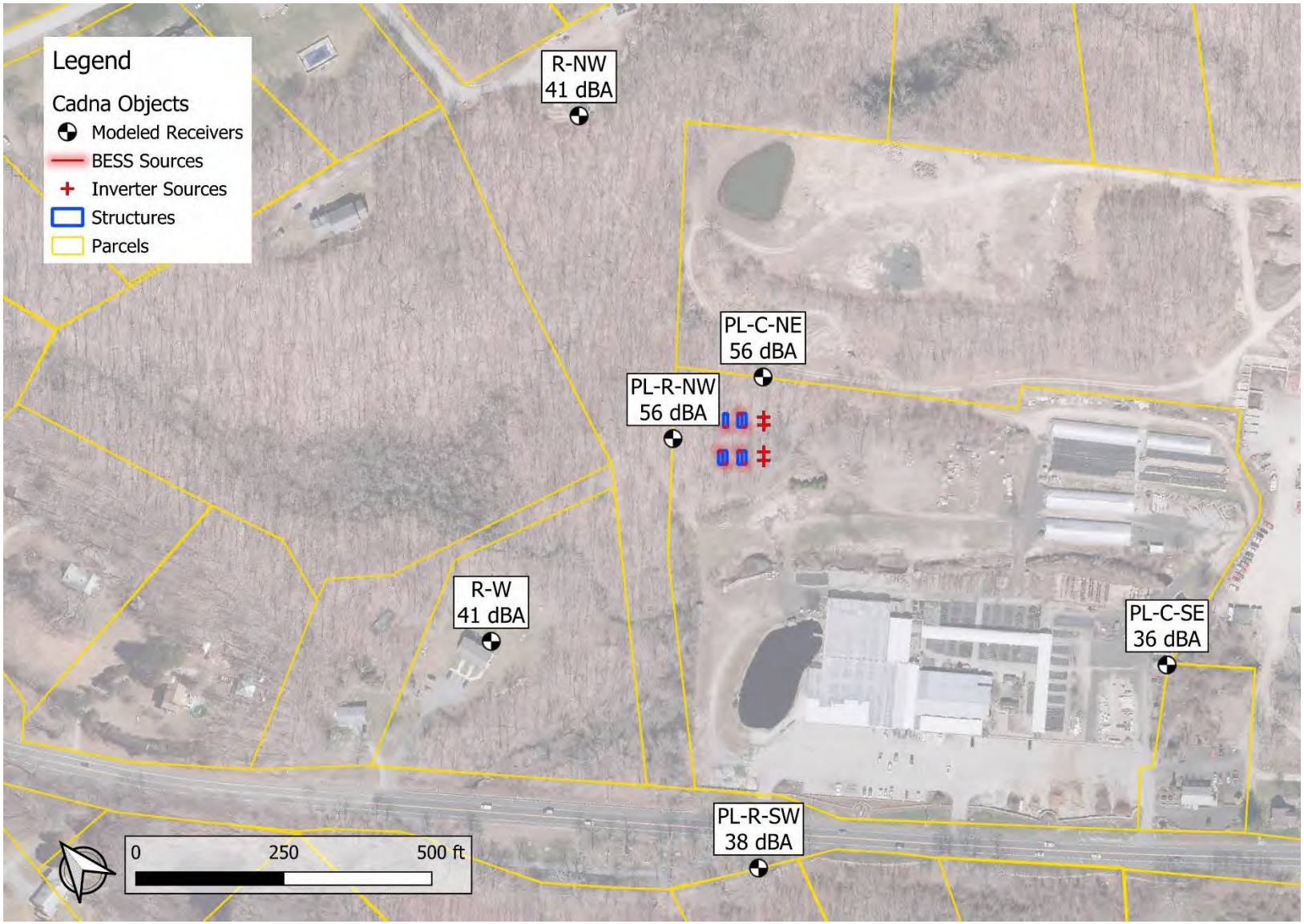
Based on our review of the data presented in Table 3, it is our professional opinion that, with implementation of the recommended barrier design, the proposed BESS project at 380 New London Road in Salem, Connecticut will comply with the most stringent requirements of the state noise regulations.

Sincerely,

CAVANAUGH TOCCI

Bradley M. Dunkin, *Associate Principal Consultant*
24043/BlueWave BESS Salem CT Sound Evaluation.docx

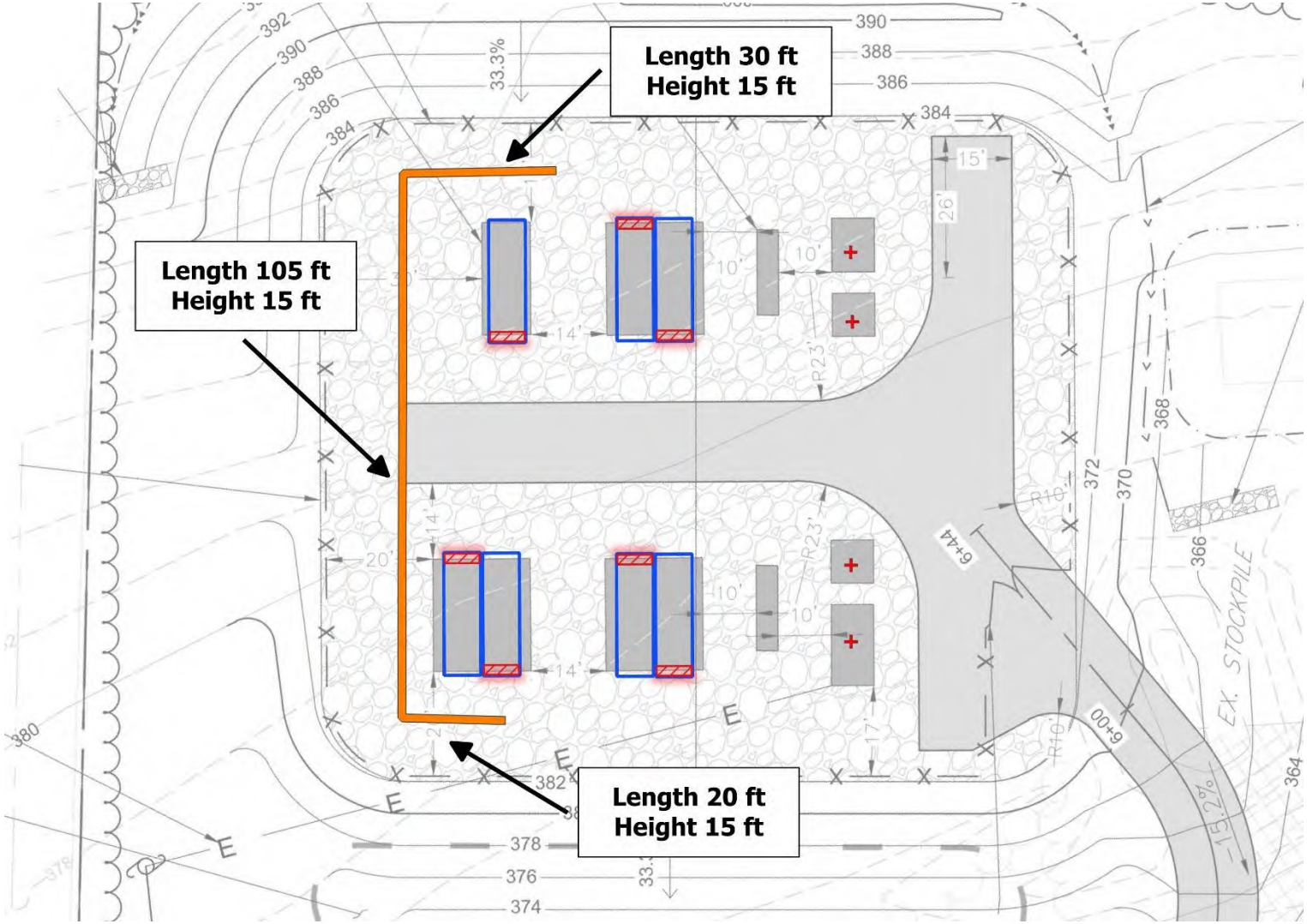
FIGURES



Sound Modeling Results

Figure 1

CAVANAUGHTOCCI



Sound Barrier Design

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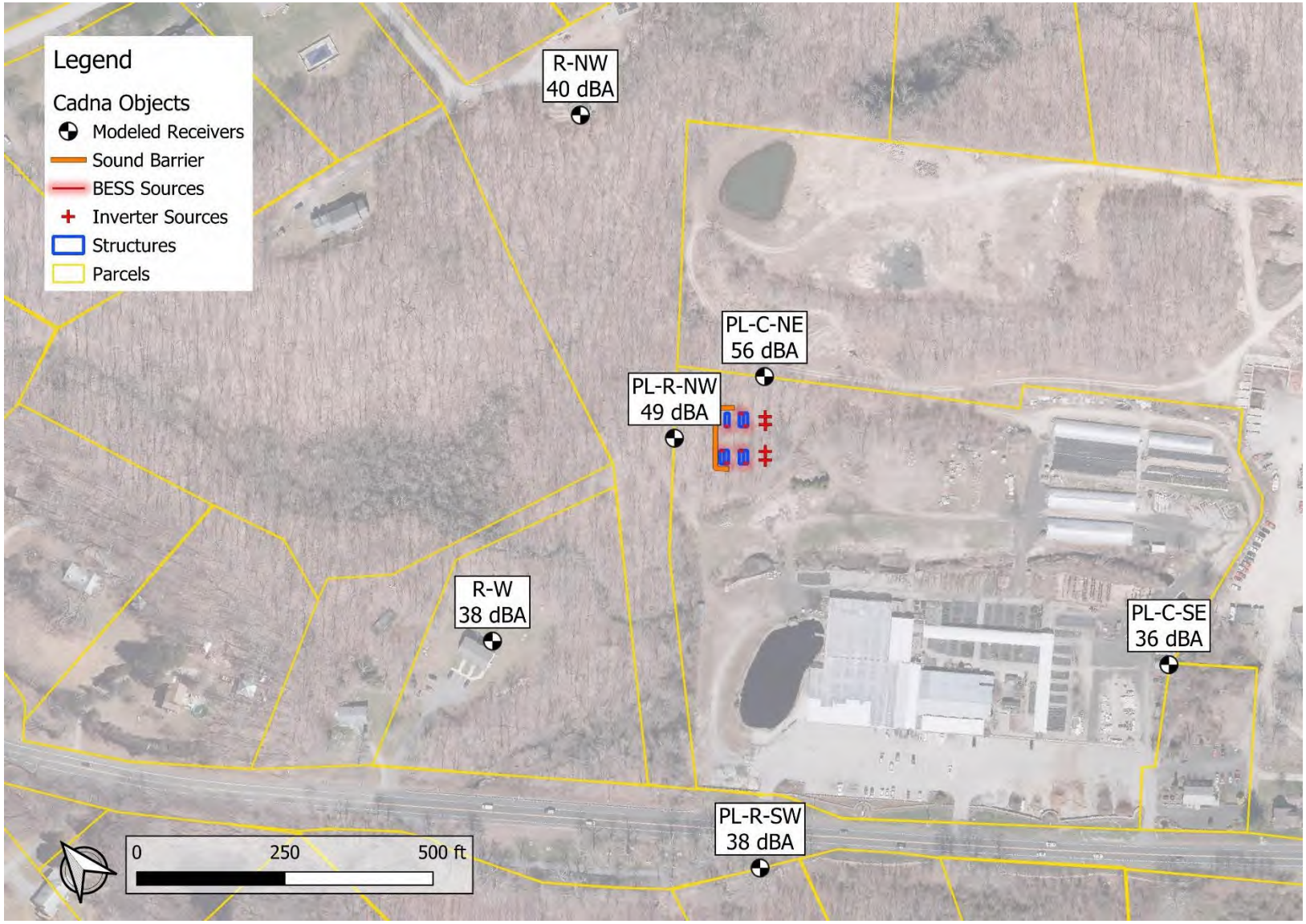

Sound Modeling Results - With Sound Barrier

Figure 1

CAVANAUGHTOCCI

Appendix A

Sound Measurement Terminology

SOUND MEASUREMENT TERMINOLOGY

In order to quantify the amplitude, frequency, and temporal characteristics of sound, various acoustical descriptors are used. The following is an introduction to acoustic terminology that is used in this report.

Sound Level

Sound levels are typically quantified using a logarithmic decibel (dB) scale. The use of a logarithmic scale helps to compress the wide range of human sensitivity to sound amplitude into a scale that ranges from approximately 0 to 180 dB. Note however, that the use of the logarithmic scale prevents simple arithmetic operations when combining the cumulative impact of sources. For example, two sources of equal sound level operated simultaneously results in a combined sound level that is only 3 dB higher than if only one source was operated alone. An important feature of the human perception of continuous sound is that an increase or decrease in sound pressure level by 3 dB or less is barely perceptible, and an increase or decrease by 10 dB is perceived as a doubling or halving of noise level.

A-weighting

Generally, the sensitivity of human hearing is restricted to the frequency range of 20 Hz to 20,000 Hz. However, the human ear is most sensitive to sound in the 500 Hz to 5,000 Hz frequency range. Above and below this range, the ear becomes progressively less sensitive. To account for this feature of human hearing, sound level meters incorporate filtering of acoustic signals that corresponds to the varying sensitivity of the human ear to sound at different frequencies. This filtering is called A-weighting. Sound level measurements that are obtained using this filtering are referred to as A-weighted sound levels and are signified by the identifier, dBA. A-weighted sound levels are widely used for evaluating human exposure to environmental sounds. To help place A-weighted sound levels in perspective, Figure A-1 contains a scale showing typical sound levels for common interior and environmental sound sources.

Spectral Characteristics – Octave and 1/3 Octave Band Sound Levels

To characterize a sound, it is often necessary to evaluate the frequency distribution of the sound energy. As mentioned before, the frequencies of most interest where human exposure is concerned range between 20 Hz and 20,000 Hz. This frequency range is commonly divided into octave bands, where an octave band is a range of frequencies. Each octave band is referred to by its center frequency and has a bandwidth of one octave (a doubling of frequency). To cover the full range of human hearing, it is necessary to measure sound in 10 separate octave bands. Typically, the lowest frequency band measured has a center frequency of 31.5 Hz. The next frequency band has a center frequency of 63 Hz. This geometric series continues to the highest frequency band that has a center frequency of 16,000 Hz. A set of octave band sound levels to describe a particular sound is called an octave band spectrum. Covering the full range of

hearing, an octave band spectrum would have 10 values, one for each band. Under certain circumstances, more frequency resolution in acoustical data is needed to identify the presence of tonal sounds. A 1/3 octave band spectrum uses filters that divide each octave band into 3 separate frequency bands. Note that octave band and 1/3 octave band sound levels are not usually A-weighted, with their units being dB.

Environmental Noise Descriptors

Sound levels in the environment are continuously fluctuating and it is difficult to quantify these time-varying levels with single number descriptors. Statistical approaches, which use *percentile sound levels* and *equivalent sound levels*, are often used to quantify the temporal characteristics of environmental sound.

Percentile sound levels (L_n) are the A-weighted sound levels that are exceeded for specific percentages of time within a noise measurement interval. For example if a measurement interval is one hour long, the 50th percentile sound level (L_{50}) is the A-weighted sound level that is exceeded for 30 minutes of that interval.

- L_{90} is the sound level in dBA exceeded 90 percent of the time during the measurement period. The 90th percentile sound level represents the nominally lowest level reached during the monitoring interval and is typically influenced by sound of relatively low level, but nearly constant duration, such as distant traffic or continuously operating industrial equipment. The L_{90} is often used in standards to quantify the existing background or residual sound level.

- L_{50} is the median sound level: the sound level in dBA exceeded 50 percent of the time during the measurement period.

- L_{10} is the sound level exceeded only 10 percent of the time. It is close to the maximum level observed during the measurement period. The L_{10} is sometimes called the intrusive sound level because it is caused by occasional louder noises like those from passing motor vehicles or aircraft.

By using percentile sound levels, it is possible to characterize the sound environment in terms of the steady-state background sound (L_{90}) and occasional transient sound (L_{10}).

The equivalent sound level (L_{eq}) is the energy average of the A weighted sound level for the measurement interval. Sounds of low level and long duration, as well as sounds of high level and short duration influence this sound level descriptor.

Noise levels at night generally produce greater annoyance than do the same levels which occur during the day. It is generally agreed that a given level of environmental noise during the day would appear to be 10 dBA louder at night – at least in terms of potential for causing community concern. The day night average sound level (Ldn) is a 24 hour average A-weighted

sound level where a 10 dB "penalty" is applied to sound occurring between the hours of 10:00 p.m. and 7:00 a.m. The 10 dB penalty accounts for the heightened sensitivity of a community to noise occurring at night.

When a steady continuous sound is measured, the L_{10}, L_{50}, L_{90} and L_{eq} are all equal. For a constant sound level, such as from a power plant operating continuously for a 24-hour period, the L_{dn} is approximately 6 dBA higher than the directly measured sound level.

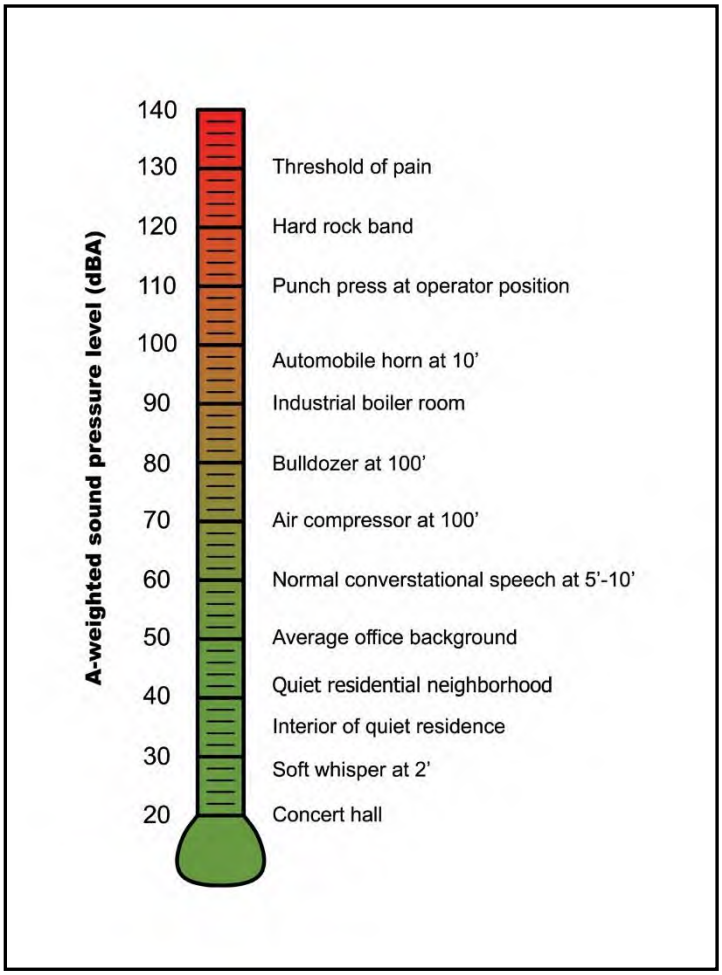

Figure A-1
Typical Sound Levels for Common Interior and Environmental Sources

APPENDIX G

FEDERAL AVIATION
ADMINISTRATION DETERMINATION

Mail Processing Center
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
2024-ANE-3806-OE

Issued Date: 12/02/2024

Ryan Fujimoto
All-Points Technology Corporation, P.C.
567 Vauxhall Street Extension
Suite 311
Waterford, CT 06385

****DETERMINATION OF NO HAZARD TO AIR NAVIGATION FOR TEMPORARY STRUCTURE****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Mobile Crane Terex RT100
Location:	Salem, CT
Latitude:	41-27-29.10N NAD 83
Longitude:	72-14-29.80W
Heights:	380 feet site elevation (SE)
	185 feet above ground level (AGL)
	565 feet above mean sea level (AMSL)

This aeronautical study revealed that the temporary structure does not exceed obstruction standards and would not be a hazard to air navigation provided the condition(s), if any, in this letter is (are) met:

SEE ATTACHMENT FOR ADDITIONAL CONDITION(S) OR INFORMATION

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights and frequencies or use of greater power, except those frequencies specified in the Colo Void Clause Coalition; Antenna System Co-Location; Voluntary Best Practices, will void this determination. Any future construction or alteration, including increase to heights, power or the addition of other transmitters, requires separate notice to the FAA. This determination includes all previously filed frequencies and power for this structure.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of a structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination did not include an evaluation of the permanent structure associated with the use of this temporary structure. If the permanent structure will exceed Title 14 of the Code of Federal Regulations, part 77.9, a separate aeronautical study and FAA determination is required.

This determination concerns the effect of this temporary structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

A copy of this determination will be forwarded to the Federal Aviation Administration Flight Procedures Office if the structure is subject to the issuance of a Notice To Air Missions (NOTAM).

If we can be of further assistance, please contact Victoria Rosenthal-Williams, at (404) 305-6071, or Victoria.M-CTR.Rosenthal-Wil@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2024-ANE-3806-OE.

Signature Control No: 635301476-640579745 (TMP)
Julie A. Morgan
Manager, Obstruction Evaluation Group

Additional Condition(s) or Information for ASN 2024-ANE-3806-OE

Proposal: To construct and/or operate a(n) Mobile Crane to a height of 185 feet above ground level, 565 feet above mean sea level.

Location: The structure will be located 9.69 nautical miles east of 42B Airport reference point.

Case Description for ASN 2024-ANE-3806-OE

Installation of 5.0 MW BESS at 380 New London Road, Salem, CT. BESS Cabinets are less than ten feet tall, Notice Criterial Tool gave result of not exceeding Notice Criteria.

Part 77 Obstruction Standard(s) Exceeded and Aeronautical Impacts, if any:

Aeronautical study revealed that the temporary structure will not exceed any Part 77 obstruction standard. Aeronautical study confirmed that the temporary structure will have no effect on any existing or proposed arrival, departure or en route instrument/visual flight rules (IFR/VFR) operations or procedures. Additionally, aeronautical study confirmed that the temporary structure will have no physical or electromagnetic effect on the operation of air navigation and communications facilities and will not impact any airspace and routes used by the military. Based on this aeronautical study, the FAA finds that the temporary structure will have no adverse effect on air navigation and will not impact any aeronautical operations or procedures.

Based on this aeronautical study, the structure would not constitute a substantial adverse effect on aeronautical operations or procedures because it will be temporary. The temporary structure would not be considered a hazard to air navigation provided all of the conditions specified in this determination are strictly met.

As a condition to this Determination, the structure is to be marked/lighted in accordance with FAA Advisory circular 70/7460-1 M Change 1, Obstruction Marking and Lighting, flags/red lights-Chapters 3(Marked),4,5(Red),14(Temporary),&15.

Any failure or malfunction that lasts more than thirty (30) minutes and affects a top light or flashing obstruction light, regardless of its position, should be reported immediately to (877) 487-6867 so a Notice to Air Missions (NOTAM) can be issued. As soon as the normal operation is restored, notify the same number.

This determination expires on 06/02/2026 unless extended, revised, or terminated by the issuing office.

It is required that FAA Form 7460-2, Notice of Actual Construction or Alteration, be e-filed within 5 days after the temporary structure is dismantled.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

Sectional Map for ASN 2024-ANE-3806-OE