

**ITEM 2**

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**Town of Kittery  
Planning Board Meeting  
October 13, 2022**

**ITEM 3 – 41 Route 236 – Preliminary Site Plan Review**

Action: Hold Public Hearing; continue, approve, or deny plan. Pursuant to 16.4 Land Use Regulations, 16.4.20 Special Exception Use Request, 16.5.32 Marijuana Business, and 16.7 Site Plan Review of the Town of Kittery Land Use and Development Code, owner LaPierre Properties, LLC and applicant Well Field 44, LLC with agent Attar Engineering, Inc. requests approval for a special exception use to construct a 1,034-sf Marijuana Business with appurtenant infrastructure and a wetland alteration of 1,367-sf, located on real property with the address of 41 Route 236, Tax Map 29, Lot 1, in the Commercial 2 (C-2) zoning district.

**PROJECT TRACKING**

REQ'D	ACTION	COMMENTS	STATUS
No	Sketch Plan	Accepted May 26, 2022	Accepted
YES	Site Visit	September 20, 2022 (No Quorum)	Held
YES	Additional Site Visit	October 5, 2022	Held
YES	Preliminary Plan Review Completeness/Acceptance	Aug 25, 2022	Accepted
YES	Public Hearing	October 13, 2022	Pending
YES	Preliminary Plan Approval	TBD	TBD
YES	Final Plan Review and Decision	TBD	TBD

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**Project Introduction**

41 Route 236 (“Project”) is situated in the Commercial-2 (C-2) and Residential-Suburban (R-S) zoning districts with the majority being in the C-2 zone. The 4.45-acre lot fronts Route 236 from the west and is abutted by vacant lots, single-family residential, and commercial uses. The natural characteristics in and around the site consist of wetlands and forested areas. The lot has significant wetlands (see Michael Cuomo’s letter to Brian Neilson, dated November 23, 2021), and a portion was filled to accommodate its current use as boat storage. The boat storage use received approval in 2009 from both the Town Code Enforcement Officer and Maine Department of Environmental Protection (“MDEP”). The MDEP approval was in the form of a ‘stormwater permit by rule’, as the applicant altered less than 4,300-sf of wetland and the Town approval was through the Business Use Change application process.

The submitted preliminary plan proposes to redevelop the current boat yard storage use to a Marijuana Business, specifically an adult use retail marijuana store. The proposed use is a special exception use, which

28 requires the Board to consider additional review criteria as found 16.7.10.D *Review Process and Submission*  
 29 *Requirements* and 16.2.12.F *Basis of decision*.

30 What has changed: The applicant is proposing to build a 1,034-sf retail store with now 13 on-site parking  
 31 spaces, including one ADA-compliant space. The additional parking proposed on the adjoining property to  
 32 the south has been dropped (pertinent material provided in the cover letter from Mike Sudak) because there  
 33 are no parking spaces to spare at that location. Instead, a travel way wraps around the proposed building,  
 34 providing full circulation with groups of four, or in one case five, parking spaces located on the east, west  
 35 and north sides of the structure. The number of parking spaces required is 6 (1 space per 175 feet of floor  
 36 space) so parking is over twice as much as is required.

37 A proposed stormwater detention pond lies immediately to the south of the proposed building. The existing  
 38 gravel driveway now used for access will be abandoned, the fill removed and the area restored to the  
 39 wetland’s original elevation and function. This new area of approximately 2,500 sf will be added to the  
 40 10,500 sf to the west that the applicant has proposed for restoration on earlier plans, for a total of about  
 41 13,000 sf of wetland restoration. A wetland restoration plan has been included in the submission. All access  
 42 will be via the new curb cut proposed. In order to provide the new access, approximately 1,367 (instead of  
 43 3,001-sf on the last plan) of wetlands are proposed to be altered (filled). The newest application also  
 44 includes a lighting/photometric plan.

45 Updates on traffic: The applicant has engaged a traffic engineer to look at summer traffic volumes (the  
 46 first traffic study was done in December and for a larger facility) to answer the Board’s questions about  
 47 right and/or left-turning lanes on Rt 236. The Traffic Impact Analysis is included in this packet. It appears  
 48 that trip generation and analysis for the retail store do not warrant right or left turning lanes. The  
 49 application includes the applicant’s engineer’s email to the traffic engineer which also states that he has  
 50 reached out to MaineDOT but hasn’t heard back as of that writing.

51 Updates on Wetland Filling: At the last Board meeting, the applicant was asked to provide a complete  
 52 history of the wetland filling that has occurred at the site. The previous owner has supplied that history  
 53 which is recounted in the cover letter to the Board. Pertinent documents are supplied in the application.

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§16.3 Definitions	
Term	Definition
<b>Wetland</b>	Areas that under normal circumstances have hydrophytic vegetation, hydric soils and wetland hydrology, as determined in the Corps of Engineers Wetlands Delineation Manual — Waterways Experiment Station Technical Report Y-87-1, January 1987" (1987 manual). This definition of wetland is based on the 1987 manual and is not subject to further revisions and/or amendments.
<b>Wetland Alteration</b>	Filling, dredging, removal of vegetation, muck or debris, draining or otherwise changing the hydrology; construction or repair of a structure. On a case-by-case basis and as determined by the Planning Board, the term "alteration" may exclude: A. An activity of installing a fence post or planting shrubs by hand; B. Alteration of an existing structure such as a bench or handrail; and C. The construction, repair or alteration of a structure with minimal impact such as a nesting box, pasture fence or staff gauge.

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57 What is not included:

- 58 • The wetland alteration application is not included in the submission although a restoration plan is.
- 59 • The photometric plan is difficult to read. There are what appears to be symbols for lighting on the
- 60 plan and the cutsheets for two types of lighting are included but it isn't clear exactly which lighting
- 61 models are being proposed, particularly in the case of the McGraw-Edison luminaires. Pole-
- 62 mounted? And if so, how high will the poles be? Since the site appears to be below the highway,
- 63 the pole height may be an important detail. The Grading and Utilities plan also shows lighting
- 64 locations.
- 65 • Building elevation drawings were not included in this submission. Has anything changed with the
- 66 building since the site design changed?
- 67 • No landscaping plan was submitted. Since a sign is proposed

68 The Board heard the application as a preliminary plan on July 14 and continued it, following acceptance of  
 69 the sketch site plan at the May 26, 2022 meeting. The preliminary plan process serves to give the Board a  
 70 deeper-dive into the details of the proposed development, informed by the additional materials such as  
 71 traffic impact analyses. Most decision-making occurs during this phase and the Board can give the applicant  
 72 direct guidance and feedback.

73 **Staff Review**

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74 *Plan Review Requirements:*

75 This preliminary plan submittal meets Preliminary Plan Review requirements (§16.7.10.C(4)), Land  
 76 Use Zone dimensional requirements (§16.4.20), parking requirements (§16.7.11.F), and the land-use  
 77 based marijuana business requirements (§16.5.32):

- 78 • Lot size exceeds the 20,000-sf required.
- 79 • Frontage meets the minimum requirement (150 ft).
- 80 • Setbacks are met for the C-2 zone (50 ft front, 30 feet side and rear).
- 81 • Parking meets the minimum on-site requirements (1 space per 175 sf gross floor area for retail),  
 82 providing 13 spaces (including 1 handicapped space) where approximately 6 are required (1034 sf  
 83 gross floor area / 175 = 5.9 spaces required). *ADDITIONAL PARKING ANALYSIS BELOW*
- 84 • The proposed building is set 100 feet back from the edge of the wetlands.
- 85 • Water and wastewater connections are shown.
- 86 • Stormwater infrastructure are shown on the plans but have yet to be reviewed by the Town's peer  
 87 review engineer.
- 88 • The proposed exterior wall of the building is greater than 1,000 feet from the daycare on Route  
 89 236.

90 *Traffic Analysis:*

91 The applicant has provided an updated traffic analysis from Sewall, a traffic engineering firm,  
 92 which reflects the proposed building's smaller size. Sewall shows that the trip generation of this  
 93 retail marijuana use, based on the building size, is even less than the first analysis showed when  
 94 the building was larger. **The analysis shows that the level of traffic does not warrant either a**  
 95 **right or a left turning lane based on MaineDOT warrant charts.** With the lessening of trip  
 96 numbers, Sewall is likely to contend that this project does not rise to the threshold  
 97 required for a traffic movement permit (TMP) from the Maine Department of Transportation

98 (MaineDOT). The applicant should be prepared to discuss the changes to the TIA based on Sewall's  
99 latest submission.

100 *Wetland Alteration:*

101 The existing site contains wetlands on nearly all sides of the current boat yard use, which is itself  
102 situated on wetland fill. The wetlands were delineated by Michael Cuomo, Maine Soil Scientist, on  
103 November 22, 2021. The applicant proposed impacts to the existing wetlands in order to construct  
104 a new driveway entrance from Route 236. This would impact 1,367 square feet of wetlands  
105 (reduced from 3,001 sf of impact). The applicant will be required to gain DEP approval and pay  
106 wetland impact fees to the Town and State, if approved.

107 As the previous plan indicated, the applicant also proposes to remove 10,500 square feet of previous  
108 fill on the western edge of the property. This is the area that was previously filled for the boat yard  
109 use. Staff believes this is a positive action that could have benefits to abutting properties. In  
110 addition, as previously stated, the applicant also proposes to remove the fill and restore the 2,500  
111 square foot area where the currently existing driveway exists.

- 112 • A wetland restoration plan was submitted and contains information on fill removal, grading and  
113 replanting which the applicant proposes to insure the improved health of this wetland. Staff  
114 noted when discussing it with the applicant's engineer that a few more details may be needed  
115 (see *Additional Review Items* below).

116 In an earlier submission, the applicant included a letter from Maine DEP indicating no significant  
117 impacts to New England cottontail rabbits from this project. Staff provided the Beginning with  
118 Habitat map in that same packet for reference. In his letter also from an earlier submission, Mr.  
119 Cuomo – the soil scientist – suggested the applicant have the site investigated for vernal pools in  
120 the spring at two locations: one in the northern area of the lot and one along the southern boundary.  
121 Mr. Cuomo did return to investigate but not until June 7, 2022, which is outside the vernal pool  
122 evaluation season. The applicant has thus labeled these areas “potential vernal pools” on the plans.  
123 The applicant states that Maine DEP guidelines allow up to 25% disturbance within a 250-foot  
124 boundary of vernal pools of special significance and that the proposed project disturbs less than  
125 that threshold.

- 126 • Does the applicant contend there is no further need for Natural Resources Protection Act  
127 (NRPA) permitting?
- 128 • Staff would like information on how much disturbed area is within the 250-foot buffer of each  
129 “potential” vernal pool as a plan note, and should be prepared to discuss this with the Planning  
130 Board.

131 *Additional Review Items:*

132 Planning Department staff held a Technical Review Committee (TRC) meeting with Town  
133 department heads several weeks ago and discussed the issues raised with the applicant's engineer.  
134 The notable TRC comments were:

- 135 • The Fire Chief wants an additional hydrant located more proximate to the property as the nearest  
136 one is on the corner of Martin and Fernald Roads (Note #11 on Sheet 1). The applicant's  
137 engineer agreed and will place the hydrant in the next iteration of the plans.

- 138 • The RCP (reinforced concrete pipe) shown on Sheets 2 and 3, is the pipe that allows wetland  
139 flowage from west to east underneath Route 236. There was a concern that the pipe could be  
140 affected by the development. The TRC was looking at the earlier plans with the second driveway  
141 used for off-site parking access but staff remained concerned that the pipe could be affected by  
142 the cut and removal of fill in the effort to restore that area back to wetlands. The applicant's  
143 engineer agreed that more details would clarify but the pipe will remain viable (not left "high  
144 and dry" above the actual restored elevation).
- 145 • The Fire Chief and DPW were not satisfied with the location of the proposed entrance/exit  
146 (looking again at the earlier plans with the southern driveway being used to access additional  
147 parking) but no alternate location was proposed. The applicant's engineer and staff discussed  
148 this and agreed that the updated TIA and plans may provide some assurance about the curb cut  
149 location.

150 The TRC will review the revised plans – either this iteration, or if there are substantive changes  
151 after discussion at this August 25<sup>th</sup> Planning Board meeting, the next submission.

152 Similarly, Planning staff will send the plans for review by CMA, either this set or the next  
153 submission, whichever seems most suitable.

154 The Board voted to accept the sketch plan at the May 26, 2022 meeting. The applicant submitted  
155 plans for Preliminary Site Plan Review along with a Wetland Alteration Application for the July  
156 14<sup>th</sup> meeting which the Board continued.

157 **Update 10/13/22:**

158 There has been a letter submitted from the Kittery Conservation Commission, included in your  
159 packet.

160 Also in your packet, Attar Engineering has submitted a response to the site walk on September 20<sup>th</sup>  
161 regarding comments and a staff-proposed alternative exploration to shift the project away from the  
162 buffer area of trees on the northern side of the project site. (See page 3 of the report).

163 The letter also includes feedback from Randy Illian, Southern Regional Traffic Engineer at Maine  
164 DOT, who notes that the official speed limit on Route 236 is 45MPH and requests the study should  
165 be modified for a 45 MPH and adding the following to the plans:

- 166 1.) Proposed width of the driveway
- 167 2.) Appropriate guardrail end treatments on both sides of the driveway
- 3.) Vegetation maintenance (necessary to maintain/maximize sight distance)

168 The new plan shows a change from a two-way driving lane in the parking are to a one way, as well  
169 as angled parking to reduce the overall footprint of the parking area.

170 CMA, the Town's peer review engineer, has also submitted a review that is included in the packet.  
171 Staff concurs with CMA's lengthy list of plan deficiencies that must be remedied prior to  
172 subsequent reviews.

173 Staff has also provided comments from the Kittery Fire Chief, who recommends a fire hydrant be  
174 placed at the proposed entrance and that strong consideration be made to add a fire suppression  
175 sprinkler system to the building.

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177 **Next Steps**

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178 The Board will want to consider the following items:

- 179 • Whether the preliminary plan appears to be complete enough to accept, which consideration  
180 includes that the plan generally meets the Title 16 standards, and that questions have been answered  
181 or will be answered during subsequent reviews or meetings.
- 182 • (§16.7.10.C(3)a): Within 35 of days of a public hearing, the Planning Board must approve the plan,  
183 approve the plan with conditions, disapprove the plan, postpone action on the plan, or continue the  
184 review to another time/location. ~ any plan may be continued for a total period not to exceed 90  
185 calendar days

186 **Recommended Motions**

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187 Based on the review of the plan, staff recommends the following motion:

188 *Motion to continue the preliminary plan:*

189 Move to continue the preliminary plan application by owner LaPierre Properties, LLC and applicant  
190 Well Field 44, LLC, requesting approval for a special exception use to construct a 1,034-sf Marijuana  
191 Business with appurtenant infrastructure and a wetland alteration of 1,367-sf, located on real property with  
192 the address of 41 Route 236, Tax Map 29, Lot 1, in the Commercial 2 (C-2) zoning district.

MEMORANDUM

06 October 2022

From: Chief David O'Brien

Subj: 41 Route 236

The Fire Department has completed a review of the proposed mercantile facility to be constructed at 41 Route 236. We have met with the engineering firm for the project and have proposed a fire hydrant be positioned adjacent to the entrance from Route 236. They agreed with this request.

Although this building is not of sufficient size in both area and volume the Fire Department requests strong consideration be given to adding a full NFPA 13 fire suppression sprinkler system. This includes monitored alarm systems and a keyed entry KNOX box system.

*//s//*

D. W. O'Brien  
Fire Chief



# Town of Kittery, Maine

## *Conservation Commission*

200 Rogers Road, Kittery, Maine 03904

Date: September 28, 2022

To: Jordan Kelley, Town Planner  
Craig Alfis, Code Enforcement Officer  
Adam Causey, Director of Development  
Dutch Dunkelberger, Planning Board Chair  
Karen Kalmar, Planning Board Vice Chair

From: Earldean Wells, Chair

Re: Site Walk at 41 Rte. 236

During the September 20, 2022, site walk for the proposed development on the above-mentioned property, more in-depth information was presented which has led the Conservation Commission to have additional concerns to those mentioned in our letter of September 11, 2022:

- It is proposed to remove 10' to 20' of existing trees and shrubs along the northern edge of the proposed developed area. We feel strongly that native trees and shrubs will be needed to infill in this area along with a board fence to not only protect abutting properties from car headlights as well as to help absorb the water in this wetland area.
- An existing stand of phragmites (a very aggressive invasive plant) in this same area needs to be properly removed before any wetland restoration/creation project is begun on this property.
- A plan to offer a one-year guarantee of plant survival was mentioned for the restored/created wetland area, which is not acceptable. A legal contract between the applicant and the town of Kittery must be drawn up that discusses the maintenance schedule and needs necessary to the success of this restored/created wetland area. This contract will need to go with the land into perpetuity.
- A discussion needs to be had regarding the proposed wetland restoration/creation area and the use of the suggested seed mixture to be used in this wetland area. It is a large area and the existing stand of invasives Phragmites nearby suggests that seeds may not have the time needed to develop roots strong enough to compete with such an aggressive invasive species.
- Snow dump area is to be located in the westerly area of the proposed development. It was mentioned that snow could be pushed into the storm detention ponds in this area. Under Kittery Ordinance storm detention ponds must be inspected each spring and after heavy storm events by a Maine Specialist and a written report must be submitted to the town of Kittery. It is not advisable to dump snow into storm detention ponds as salt, sand and debris can hinder the ability of the detention pond to function properly and may shorten its life span. It was also mentioned that the snow plows would likely be adjusted so that the snow would be pushed off the side of the entrance and roadway throughout the developed area leading to snow melt running into the wetland without being filtered.
- The Conservation Commission understands that the existing gravel driveway will be removed along with the culvert under it along Route 236 and that the existing wetland fill will be removed and the area properly restored. A new entrance driveway is planned further to the north and it is proposed that there will be a new wetland fill area and 36" culvert. This is, in effect, just replacing an existing chock point along Route 236 with another chock point. The Conservation Commission feels strongly that due to the existing number of entrances, culverts, chock points and wetland fill already effecting the wetland along Route 236 causing the damage that neighboring property owners are already experiencing due to these wetland impacts, that a bridge across this wetland would be the best solution to gain access to this property. A bridge will reduce the number of impacts and allow the wetland to function naturally in this area. During a walk along Route 236 fronting this proposed parcel, it was observed that there is a





# Town of Kittery, Maine

## *Conservation Commission*

200 Rogers Road, Kittery, Maine 03904

huge amount of erosion from storm water sheeting off the road onto this property – it was also observed that the sheeting has eroded the soil to the point that several of the posts holding the guard rail are hanging in the air above the ground. It is proposed that the sheeting water off Route 236 into the wetland located on this property and the four abutting properties to the north is likely causing the flooding/ponding on the King property.

- The Conservation Commission wishes to respectfully point out that 16.5.9.G.1 of the Kittery Land Use and Development Code states: "In making the final determination as to whether a wetland application should be approved, the Planning Board will consider existing wetland destruction and the cumulative effect of reasonably anticipated future uses similar to the one proposed."

Thank you for your attention.



October 6, 2022

Jordan Kelley, Town Planner  
Town of Kittery  
200 Rogers Road  
Kittery, Maine 03904

**RE: Town of Kittery, Planning Board Services  
Preliminary Site Plan Review  
Well Field 44 Cannabis Dispensary, 41 Route 236, Tax Map 29, Lot 1  
CMA #591.150**

Dear Jordan:

CMA Engineers has received the following information for Assignment #150 for a site plan review for the proposed cannabis dispensary at 41 Route 236 in Kittery (Tax Map 29, Lot 1).

- 1) Plan set entitled: Well Field 44 Cannabis Dispensary, 41 Route 236, Kittery, ME 03904, prepared for Week Field 44, LLC, 8 Dexter Lane Unit 8, Kittery, Maine 03904, by Attar Engineering, Inc., 1284 State Road, Eliot, Maine 03903, dated June 30, 2022, and last revised September 29, 2022.
- 2) Preliminary Site Plan Review – Town Review Revisions 2, by Attar Engineering, Inc., dated September 29, 2022.
- 3) Preliminary Site Plan Review – Town Review Revisions by Attar Engineering, Inc., dated August 4, 2022.

The project is proposed as an adult use marijuana /cannabis dispensary/retail facility. The development is proposed on a lot that has previously been developed as a storage area for boats and other material. The existing lot is approximately 4.44 acres, located in both the C-2 and R-S zoning districts. All development is proposed in the C-2 portion (bordering Route 236). Connection to public water (KWD) and Town sewer facilities is proposed. The plan includes collection and treatment of stormwater/drainage from the new facilities through a closed system with discharge to the adjacent wetlands.

There are significant wetlands on the property. The development is proposed in a limited uplands portion. A new access is proposed to Route 236, with a proposed new wetlands impact of approximately 1,400 square feet. The developer proposes to restore existing wetlands that were filled on-site for a storage area and the existing access, for a total of 13,000 square feet of wetlands restoration.

We have reviewed the information submitted for conformance with the Kittery Land Use and Development Code (LUDC) and general engineering practices and offer the comments below that correspond directly to the Town's Ordinances with respect to the site plans for the facility itself at Map 29, Lot 1.

We have engaged Mark West, CWS, of West Environmental Inc. to review the wetlands restoration plan prepared by Michael Cuomo, Soil Scientist. Mark West completed a site visit and provided a list of comments and recommendations on the restoration plan, which are attached.

## **16.4 Zoning Regulations**

### *16.4.11. Residential-Suburban Zone (R-S)*

As noted above, a portion of the back of the site is located in the R-S Zone but no development is proposed in that portion.

### *16.4.20 Commercial 2, Route 236 Commercial Zone (C-2)*

16.4.20.C. The proposed use (marijuana business) is allowed as a special exception in the C-2 Zone.

16.4.20.D.(2)(b)&(e). It appears that the project conforms to most zoning standards, however the street frontage and building height are not shown on the plans.

16.4.20.D.(2)(d)\*\*. The rear yard setback is shown as 30' but because it abuts a residential zone should be 40'.

16.4.20.D.(2)(f)[1]. It appears that the maximum impervious surface coverage of 40% is met, but this should be shown to indicate performance with the ordinances.

16.4.20.D.(3)(b). The applicant should provide building elevations to show conformance with the ordinances.

16.4.20.D.(3)(c)[1]. The plans should include a landscape planter strip adjacent to the right-of-way in conformance with the ordinances.

## **16.5 General Development Requirements**

### *16.5.9. Conservation of wetlands including vernal pools*

The project proposes to impact approximately 1,367 square feet of wetland with the addition of the driveway and driveway culvert for access from Route 236. The plans identify two "potential" vernal pools on the property to the north and the south of the proposed building but also describe these vernal pools in Note 13 on Sheet 1 as "Significant Vernal Pool" and include the 250' critical terrestrial vernal setback lines on the plan. We note that the 250' critical terrestrial vernal setback lines overlap and cover all of the parcel leaving no buildable land. The term significant vernal pool, 250' setback and the accompanying critical terrestrial setback calculation included in Note 13 are all MDEP regulations. Is the applicant applying for permits through Maine

The applicant is proposing to restore two wetland areas, totaling approximately 13,000 square feet, which were previously filled. The details of the wetland restoration are being reviewed and comments are provided under separate cover.

16.5.9.F.&L. We note that the applicant has not submitted a wetlands alteration application.

16.5.9.I.(2)(b)&(c). There is no mitigation plan that delineates the undisturbed wetland buffer adjacent to the altered wetland and no discussion of a wetlands preservation fee.

16.5.30 Wetland setbacks for special situations

The parking areas and building meet setback requirements in Table 16.5.30.

16.5.32. Marijuana business

16.5.32.B.(2) The applicant should provide details of odor control using best management practices.

16.5.32.B.(7). The applicant should provide details of proposed fire suppression methods and fire alarms. These need to be approved by the Fire Chief.

16.5.32.B.(9). The applicant should provide details of proposed security measures in accordance with the Ordinances.

16.5.32.B.(11). Is the Planning Board requiring motion sensors for the lighting?

## **16.7 General Development Requirements**

### **16.7.11 Performance Standards and Approval Criteria**

#### *16.7.11.A. Water Supply*

16.7.11.A.(2) The applicant should provide written documentation of conformance and water supply adequacy from the Kittery Water District.

#### *16.7.11.B Sewage Disposal*

16.7.11.B.(1)(b) The applicant should provide written certification of capacity from the Superintendent of Sewer Services (SSS), and 16.7.11.B.(1)(d) The applicant should provide written approval of the construction drawings by the Town's SSS.

#### *16.7.11.C. Stormwater and Surface Drainage*

16.7.11.C. For drainage from the building and parking, the applicant is proposing to use closed piping that flows to a detention pond which discharges to an outfall with level spreader outside of the wetland. The proposed driveway requires a culvert crossing in the wetland along Route 236. All stormwater generated on site eventually discharges to the existing 36" CMP culvert crossing under Route 236.

We have the following comments on the updated Hydrocad model and the Operation and Maintenance Program (O&M):

The applicant has provided updated pre-and post-development stormwater calculations and plans for a larger downstream area. There are several stormwater summary tables and a rainfall event table. The report lacks a narrative discussion of pre- and post-development conditions, analyses methodology, source of the rainfall data (rainfall event totals appear to be incorrect), source of the soil types, effects of the wetlands restorations, conclusions, etc.

A cursory glance of the calculations shows that, in general, peak flows are reduced post development. We note that there is an increase in flow post development for the 25-year storm at the existing 36" culvert crossing Route 236 and the headwater elevation at the existing 36" culvert crossing of Route 236 is also increased for the 25-year storm event. There is no discussion to accompany this analysis.

There are issues and inconsistencies with the n-values used in the modeling. The incorrect n-value is used for the 15" CMP culvert at Martin Road. The pre- and post-development n-value used for the 36" culvert under Route 236 is different. Correcting the n-value difference will result in a larger increase in the 25-year storm mentioned above.

The drainage from Martin Road to the existing 36" culvert under Route 236 (that will flow through the proposed 36" driveway culvert) should be assessed to determine if it is a stream.

The applicant should submit a full drainage analysis, with a narrative, prepared by a licensed engineer. We will provide a detailed review of the stormwater upon receipt of a full drainage analysis.

The project requires MDEP approval under Chapter 500. Copies of MDEP correspondence should be included in the project record.

The applicant should review any Army Corp of Engineers requirements and the proposed project meets these requirements.

Due to the nature of the previous use of the site as a boat storage, an Environmental Site Assessment may be warranted to assess the presence of boat bottom paint.

16.7.11.C.(3) The proposed 36" driveway culvert is located outside of the right-of-way. Is a rectangular culvert with a natural bottom appropriate, as this drainage way serves a large upgradient area? Stream Smart design suggests embedding the culvert invert 12" but this has not been proposed. Embedding the invert would change the culvert hydraulics. Finally, an easement for culvert maintenance should be shown on the plan.

The O&M plan should contain information on rip rap maintenance, outlet structure maintenance, frequency of inspection, etc. Please add specifics to the maintenance log.

#### 16.7.11.E. Vehicular traffic

We have the following comments on the updated traffic reports.

- The application shall confirm there is adequate sight distance from the site driveway in both directions, using AASHTO's minimum requirements. Provide a sight distance easement if required to keep vegetation clear.
- Confirm auxiliary turn lanes are not warranted for the Saturday mid-day peak hour counts.
- How many registers/points of sale will the facility have? Using that information, are the estimated trip rates higher?

#### 16.7.11.F. Parking and loading

16.7.11.F.(4) All required dimensions from Table 2 summarized in Note 14 on Sheet 1 should be shown on the plan.

#### 16.7.11.H Exterior Lighting Requirements

16.7.11.H.(2)(a) The applicant should show the uniformity ratios of the access drive and parking lots on the lighting plan for conformance with the Ordinance.

Are any motion sensor lights proposed?

### Site Plan Comments

We have the following comments with respect to the site plans.

#### Sheet 1-Preliminary Site Plan:

- The dimensional requirements table should include the proposed dimensions in addition to the required dimensions.
- The impervious surface coverage should be shown as a percentage to indicate conformance with the ordinances.
- Does the proposed exterior stairwell provide handicapped access to the entrance at the rear of the building? If not, how is handicapped access provided?
- General Notes 6 and 7 may use incorrect wetland/soil certifications for the State of Maine.
- General Note 10 references municipal water but water service will be provided by Kittery Water District. In addition, the note references Kittery Sewer District but should say Kitter Sewer Services.
- Note 11 references a hydrant on Sheet 3 but none is shown.
- General Note 16 states that “specific planning (sic) locations shall be determined in a post-construction buffer survey”. The applicant should show the proposed locations and number of screening plants on the proposed landscaping plan and not determine this later.

#### Sheet 2-Existing Conditions Plan:

- The plan should label all existing utilities with size, type, and material. Existing manholes and inverts should be shown.
- There two “potential” vernal pools indicated on the plan. Has an assessment been completed to determine if these are classified as such?

#### Sheet 3-Grading and Utilities Plan:

- Change references from Kittery Sewer District to Kittery Sewer Services.
- There is a section of proposed sewer forcemain proposed. Have design details been provided to Kittery Sewer Services for review?
- The proposed sewer manhole inverts should be shown on the plan.
- Notes 1 and 3 mention multiple sewer mains and water services when one of each is proposed.
- Note 11 on Sheet 1 references a hydrant but none is shown.
- The proposed retaining wall should tie into proposed contours. Top and bottom of wall elevations or spot grades would be helpful.

Sheet 5-Site Details:

- Is there curbing located at the proposed entrance?
- Is a guardrail required along the proposed entrance?
- Detention Pond #1 shows the grate elevation of 42' at the top of the structure. The top of bank (elevation 43') is shown below the top of the structure (elevation 42').
- Is there a catch basin located on site?
- The Typical Sanitary manhole should include notes about compaction for gravel. The forcemain connection should be shown in the detail.
- Provide a trench patch detail for work in Route 236.
- The road cross section (wetland crossing at entrance) detail should include the 36" pipe.
- The Sewer Pipe Trench detail references "insulation as specified on plans and profiles". There are no profiles and no mention of insulation on the plans.
- The Kittery Water District should review water details.
- Kittery Sewer Services should review sewer details.
- The Retaining Wall Cross-Section has incorrect elevations and references a timber guardrail detail, but none is provided. It also is shown abutting a pond and the proposed sidewalk located on the back side of it is shown as gravel.

Sheet 7-Stormwater: Developed Conditions:

- The values in the Headwater Elevations: 25-Year Rainfall Event Table are from the previous drainage analysis from August 2, 2022 and should be updated.
- The inverts for the existing 36" culvert under Route 236 shown in the Enhanced Locus are different than those shown on Sheets 2, 3 and 6.

Sheet 8-Stormwater: Expanded Developed Conditions:

- The inverts, size, slope, and pipe material of the downstream culvert on Manson Road should be shown on the plan.

Sheet 9-Photometric Plan:

- Uniformity ratios for the driveway and parking should be shown on the plan.
- Are there any motion sensor lights proposed?
- Is 1.4 footcandles at the top section of the stairs sufficient illumination?

Sheet 10-Landscaping Plan:

- Provide planting details for the shrubs and trees.
- The plan should include notes on planting, plant maintenance, mulching, etc.
- The number of arborvitae and/or other screening plants should be specified on this plan and not determined per General Note 16 on Sheet 1 after construction.

Should you have any questions, please do not hesitate to call.

Very truly yours,  
CMA ENGINEERS, INC.



Jodie Bray Strickland, P.E.

Senior Project Engineer

Attachment

cc: Mike Sudak, EI, Attar Engineering

JBS:rol



# WEST ENVIRONMENTAL INC.



48 Stevens Hill Road, Nottingham, NH 03290  
603-734-4298 ♦ mark@westenv.net

Jodie Bray Strickland  
CMA Engineers, Inc.  
35 Bow Street  
Portsmouth, NH 03801

October 5, 2022

**RE: Well Field 44 LLC - 41 Route 236, Kittery, ME**  
**SUBJ: Review of Proposed Wetland Restoration**

Dear Jodie:

Per your request, West Environmental, Inc. (WEI) conducted a review of the purported Wetland Restoration including a site inspection with Jodie Bray Strickland, P.E. from your office on October 3, 2022. The following documents were reviewed:

1. Well Field 44 LLC Plan Set prepared by Attar Engineering Inc.
2. Wetland Restoration Sequence and Goals revised 9-19-22.
3. Aerial photos of the site dated 2005, 2008 and 2009.
4. Letter to Adam Causey from Attar Engineering August 4, 2022, with attachments.

## **Findings and Recommendations**

1. Significant Invasive Species Issues on the site threaten the success of any wetland restoration project.  
Invasive species observed in the adjacent wetland include:  
**Herbs** – Phragmites, purple loosestrife and crown vetch  
**Shrubs** – Multiflora rose, glossy buckthorn, barberry, and autumn olive.  
**Vines** – Bittersweet  
**Removal of these species PRIOR to the excavation work for the restoration is essential to the future success of the restored wetland. A detailed plan for this work is needed.**
2. Based on the aerial photos from 2005 to 2008 and the presence of trees in the wetlands adjacent the fill the impacted wetlands are forested and scrub-shrub systems and planting of trees and shrubs should be included to restore the wetland to its original condition.
3. The mapping of the restoration areas shows a 10-20 foot space between the wetland restoration area and the adjacent wetland. Both Wetland restoration areas need to merge with the existing adjacent wetland and should be recalculated. This also indicates the need for a grading plan for the restoration area.
4. Two test pits in the large wetland restoration area and one test pit in the driveway wetland restoration area should be dug to confirm that the original wetland topsoil layer is still intact and what the depth of fill that needs to be removed. It appears that 4 to 6 feet of fill has been placed in the wetlands sometime between 2008 and 2009. This may require that some of the fill from the site.
5. Has a hazardous waste assessment been performed on the site?

6. A Wetland Delineation Report should be prepared that includes the plant community information in the wetlands adjacent to the fill to determine the types of trees, shrubs and herbs that are native to the wetlands. This will be the basis of the proposed planting scheme.
7. The MEDEP been consulted regarding this wetland restoration as part of their approval for the proposed new driveway.

We have attached site plan comments and photo locations labeled on the plan.

This completes our report, and we hope that it meets your needs. Please call our office if you have any questions or require additional information.

Sincerely,  
West Environmental, Inc.



Mark C. West  
President  
NH Certified Wetland Scientist #10

Well Field 44 LLC Route 236 Kittery, ME      Photo Documentation      October 3, 2022



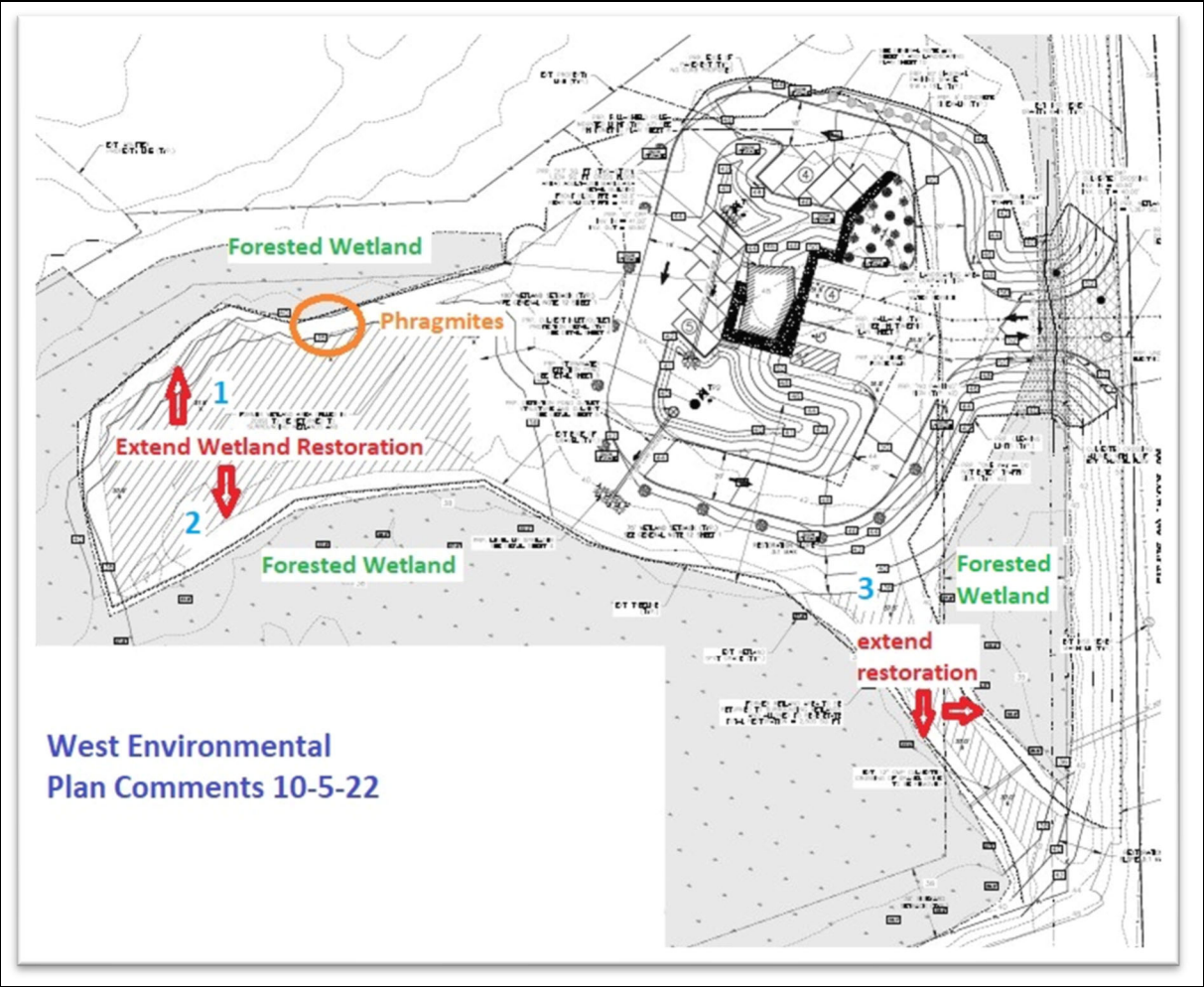
Photo 1: Looking east along the northern boundary of the proposed wetland restoration area. The phragmites stand is in the center background.



Photo 2: Looking southwest at the forested wetland at the western end of the fill area. Glossy buckthorn dominates the shrub layer.



Photo 3: Looking south at the driveway that is proposed to be removed. The wetland restoration area is bordered by forested wetlands on both sides.



West Environmental  
Plan Comments 10-5-22



# ATTAR

ENGINEERING, INC

CIVIL STRUCTURAL MARINE

Mr. Jordan Kelley, Town Planner  
Town of Kittery, Maine  
200 Rogers Road  
Kittery, Maine 03904

September 29<sup>th</sup>, 2022  
Project No. C277-22

**RE: Preliminary Site Plan Review – Town Review Revisions 2  
Well Field 44 Cannabis Dispensary (Tax Map 29, Lot 1)  
41 Route 236, Kittery, Maine**

Dear Mr. Kelley:

On behalf of Well Field 44, LLC., I have enclosed for your review and consideration a revised Plan Set and associated attachments for the above-referenced project. Revisions have been made to address comments presented at the August 25<sup>th</sup> Planning Board meeting, during the September 20<sup>th</sup> Site Walk, and from various correspondence with Town staff.

- Prior to the August 25<sup>th</sup> Planning Board meeting, the Traffic Impact Analysis (TIA) was updated for the proposed development to reflect the currently-proposed size of the facility and the expected trips generated. During the August 25<sup>th</sup> meeting the Planning Board recommended additional updates and research, which includes:
  - Despite this section of Route 236 being within an Urban Compact Zone and therefore outside the jurisdiction of the MDOT for Traffic Movement Permits (TMPs), the opinion of the MDOT was still obtained for the proposed development. Comments from Mr. Randy Illian, P.E. and Southern Region Traffic Engineer of MDOT are attached. General Note #17 on Sheet 1 addresses Mr. Illian's request for proper guardrail end treatments on either side of the proposed entrance.
  - The other comments from Mr. Illian are addressed in a further update of the project TIA, prepared on September 7<sup>th</sup> by Diane Morabito, P.E. and Vice President of Traffic Engineering at Sewall. Updates include the assessment of the Route 236 corridor as a 45mph zone (despite being signed as a 40mph zone) and whether or not the proposed development would meet MDOT warrant charts and require an auxiliary turn lane in either direction.
  - An additional statement from Diane Morabito is attached, which provides her comment on whether or not LUC 882 (Marijuana Dispensaries) reflects current developments and uses in the State of Maine.
- A consistent talking point through the approvals process for this proposed development has been vehicular safety and adequate parking, and specific mention has been made several times to the East Coast Cannabis business on the Route 236 corridor in Eliot. The applicant met with Mr. Jeff Brubaker, Eliot Town Planner on September 15<sup>th</sup> to discuss the proposed development and to see if there were any "lessons learned" from the ECC business that could be reflected onto this application. Mr. Brubaker offered the following comments:
  - LUC 882 is standard code when determining trip rate generation for a proposed development for this type of use. A TIA prepared by Greenman-Pedersen, Inc.

for the Green Truck Marijuana Dispensary on Arc Road in Eliot provided additional depth in their Traffic Volumes analysis by referencing a study presented by the ITE Northeastern District at their annual meeting in May of 2021. This study indicated that trip generation based on the number of registers (or points of sale) within a facility provided more consistent trip rates between sites across the Commonwealth of Massachusetts, since the square footage of dispensaries can vary widely between sites depending on the allocated space for display of products, waiting areas, etc.. An excerpted portion of this Arc Road TIA is attached.

- In response to the influx of Adult-Use Marijuana Retail Store uses being approved and constructed in Eliot, the Town sought to update their Code of Ordinances to have future applications of the same use be put to more reasonable scrutiny. Such updates included:
  - Revised performance standards in §33-190(10) “Performance standards for marijuana establishments and medical marijuana establishments” to make mandatory the inclusion of a traffic impact assessment.
  - Revised parking requirements in §45-495(7) “Schedule of minimum required offstreet parking spaces”, which was revised with Supplement 22 (08/30/2022) to require marijuana retail stores to provide “1 parking space for each 100 square feet of retail floor area (minimum 10 spaces)” as opposed to the normal 1 space for each 150 square feet of retail floor area for all other wholesale or retail uses.
- Lastly, Mr. Brubaker recommended that “No Parking” signage be placed at the throat of the proposed entrance, noting that a portion of the parking concerns at the ECC site were due to customers parking on either side of the entrance and interfering with the site lines of vehicles queueing to leave the facility. Such signs have been added to Sheets 1 & 3 of the Plan Set.
- As requested during the August 25<sup>th</sup> Planning Board meeting and discussed at the September 20<sup>th</sup> Site Walk, the proposed development has had its internal travelway and parking lot redesigned to incorporate one-way circulation and 60° diagonal spaces for the majority of the provided parking. This change allows aisle widths to be slightly thinner, reducing impervious footprint, and will reduce on-site traffic congestion with customers attempting to circulate the building and park from both directions. All associated signage and directional painted arrows have been added and revised within the Plan Set.
- A further update to the project Wetland Restoration Sequence, prepared on September 19<sup>th</sup> by Michael Cuomo, project wetland and soil scientist, is attached. Updates include:
  - Minimum noticing period of the contractor to the wetland scientist
  - What powers the wetland scientist has if the restoration is not completed properly or left incomplete
  - Recipients of the reports and documentation of the restoration effort, both during and post-construction
  - Excavation processes at the start of restoration, and if there are procedural differences in the restoration sequence if/when hydric soils are encountered
- Additional survey work was performed on-site in early- and mid-September to provide more detail to the wetland restoration and stormwater analysis of the proposed development. Existing elevation shots were taken in the wetland complex around the perimeter of both proposed restoration areas, and spot grades have been added to Sheet 3 of the Plan Set. Proposed grading in wetland restoration areas has been updated to reflect these spot grades. Additionally, shots were taken of the centerline of stormwater flow in the thin ribbon of wetland where the proposed entrance is located, and the proposed 36” culverted crossing was realigned to match this centerline.

- An updated HydroCAD model is attached which expands the analysis area to include the large wetland complex east of Route 236 that receives the runoff from this development and all of the abutting properties south of Martin Road. The new analysis point is the 48" RCP beneath Dana Avenue that receives the easterly wetland complex and directs stormwater flow towards Interstate-95.
- Additional callouts have been added to Sheet 3 of the Plan Set to confirm that no curbing is proposed for this development. The proposed travelway is superelevated to pitch all impervious runoff to the on-site detention pond and stormwater management appurtenances. Snow storage locations have also been added to Sheet 3 as requested.
- A Landscaping Plan has been added as Sheet 10 to the Plan Set, which depicts plantings within the landscaping bed to be located near the entrance, as well as shade trees abutting the circulating travelway around the building. The Landscaping Plan also references General Note #16 on Sheet 1, which provides language for post-construction vegetative screening and specifies deer-resistant arborvitae plantings.
- A request was made by abutting property owners for the Applicant to provide a statement on what the property may have been like prior to its development into the Boat Storage Yard. After further consideration, the Applicant feels that the record which was provided with the August 4<sup>th</sup> submission to the Town of Kittery is the most comprehensive record that can reasonably be obtained, as it includes the original wetland impact permitting and Town approvals for the Boat Yard use.
- Test pit locations have been added to Sheets 1 & 3 of the Plan Set in areas on either side of the rear (westerly) parking aisle – the culverted crossing and stormwater detention pond for on-site drainage. Test pits are being dug in the field on September 29<sup>th</sup> by the project soil scientist and shall be forwarded to the Town upon receipt.
- During and after the September 20<sup>th</sup> Site Walk, Town Planner Mr. Jordan Kelley requested an alternatives exploration of the site configuration to determine if any appurtenances of the development could be located elsewhere on-site and eliminate the need for the depicted clearing into the vegetated buffer along the north side of the project site. The applicant offers the following conclusions after exploration:
  - Depicted wetland setbacks in previous iterations of the Plan Set were shown at 75' (for larger parking aisles) and 100' (for structures). Spreading the parking aisles around the site has allowed for all aisles to fall into the 1-5 stall range, which reduces the wetland setback requirement from 75' to 50' as outlined in §16.5.30 (and depicted in General Note #12 on Sheet 1). Wetland setback linework on the updated Plan Set has removed the 75' callout and replaced it with a 50' callout to support these parking changes. As shown on the updated Plan Set, the most limiting factor in the reconfiguration of the travelways within the development would be access to parking. All parking spaces have been located to allow customers to access the building directly without needing to walk across the circulating travelway.
  - All parking spaces, adjacent travelway aisles, and roadway widths have been designed to the minimum allowable values as per the dimensional standards outlined in §16.7.11.F.(4) (and depicted in General Note #14 on Sheet 1). One additional comment for consideration would be the parking calculation in General Note #5 on Sheet 1. The proposed development currently allocates more than double the minimum required number of parking spaces (13 proposed, 6 required). In response to Mr. Kelley's request, removal of the northernmost aisle of 4 parking spaces would push the adjacent travelway significantly further south and likely remove any necessary clearing of the northern vegetated buffer. This would be a decision for the Planning Board to weigh, as adequate parking has been the driving topic of conversation through the approvals process thus far.

- An updated Stormwater Operation and Maintenance Program is attached, which addresses comments raised during the September 20<sup>th</sup> Site Walk on the continued flow and function of the thin ribbon of wetlands along the eastern edge of the property and the 36" RCP culverted crossing of Route 236 that receives stormwater flow from the site. Erosion and sedimentation controls shall be established upstream of these areas and construction sequencing shall ensure that the function of both of these areas is uninterrupted during the construction process.

Thank you for your review and consideration – we look forward to discussing this project at upcoming Planning Board meetings. Please contact me for any additional information or clarifications required.

Sincerely;

A handwritten signature in black ink, reading "Michael J. Sudak". The signature is written in a cursive style with a large, stylized initial "M".

Michael J. Sudak, E.I.  
Staff Engineer

cc: Well Field 44, LLC.  
C277-22 Cover Rev 29Sep2022.doc



**From:** [Illian, Randy](#)  
**To:** [Mike Sudak](#)  
**Cc:** [Ken Wood](#); [Wyatt](#); [Adam Causey](#); [David Rich](#)  
**Subject:** RE: 41 Route 236 - Cannabis Dispensary - Traffic Impact Analysis  
**Date:** Wednesday, August 31, 2022 8:04:52 AM

---

Mike,

Based upon Diane's submittals, I agree that this, 1000 SF Cannabis Dispensary does not require a TMP. Additionally, the modifications to the driveway are within the Kittery Urban Compact and are the authority of the Town of Kittery.

Please note that the official Speed Limit in this area is 45 MPH.

I would like to request the study be modified for the 45 MPH Speed Limit and the following added to the plans:

1. Proposed width of the driveway
2. Appropriate guardrail end treatments on both sides of the driveway
3. Vegetation maintenance (necessary to maintain/maximize sight distance)

Thank you,

**Randy Illian, P.E.**  
**Southern Region Traffic Engineer**  
**Maine Department of Transportation**  
Scarborough, ME  
tel: (207)885-7000  
fax: (207)883-3806  
he / him

---

**From:** Mike Sudak <mike@attarengineering.com>  
**Sent:** Tuesday, August 30, 2022 11:52 AM  
**To:** Illian, Randy <Randy.Illian@maine.gov>  
**Cc:** Ken Wood <Ken@attarengineering.com>; Wyatt <wyatt@attarengineering.com>  
**Subject:** 41 Route 236 - Cannabis Dispensary - Traffic Impact Analysis

**EXTERNAL: This email originated from outside of the State of Maine Mail System. Do not click links or open attachments unless you recognize the sender and know the content is safe.**

Randy,

Thank you for calling me back earlier this morning. As requested I've attached the most current Plan Set and Traffic Impact Analysis for the project that we discussed in Kittery on the Route 236 corridor. My original outreach to Van Terrell (and then to you) was to make good on the Town's request for the MDOT to weigh in on the TIA that has been prepared by Sewall for the new entrance and business that is being proposed. I know this is in the Urban Compact Zone and therefore your agency has no jurisdiction on permitting, but I wanted to see if you agree with the assertions made

within the TIA.

Please let me know if you have any questions/concerns.

Thanks and take care.

-Mike

---

Michael J. Sudak, E.I.  
Civil Engineer  
Attar Engineering, Inc.  
1284 State Road  
Eliot, Maine 03903  
Ph: (207) 439-6023  
Fax: (207) 439-2128  
Cell: (978) 317-3398

September 7, 2022

Mr. Mike Michael J. Sudak, E.I.  
 Attar Engineering, Inc.  
 1284 State Road  
 Eliot, Maine 03903

**RE: PROPOSED MARIJUANA SALES SHOP – 41 ROUTE 236**

As requested, this memorandum is written to document revised trip generation and updated traffic analysis for a proposed marijuana sales shop at 41 Route 236 in Kittery, Maine. The site location is shown in Figure 1. Sewall performed a full traffic impact analysis study for the originally proposed 3,150 square foot (S.F.) building, dated 12/29/2021. That analysis was based upon winter counts, which were factored to peak summer conditions. This updated analysis is based upon summer 2022 traffic counts. Additionally, the proposed building has been reduced in size from 3,150 S.F. to 1,034 S.F. The revised trip generation analysis is as follows:

**TRIP GENERATION**

The number of trips to be generated by the smaller marijuana sales shop was estimated utilizing the latest Institute of Transportation Engineers (ITE) “Trip Generation, 11<sup>th</sup> edition”, which is the same approach used for the original traffic impact study. Land use code (LUC) 882 – Marijuana Dispensary was utilized on the basis of 1,034 gross S.F. The results are summarized below:

<u>Time Period</u>	<u>ITE TRIP GENERATION</u> <u>One-Way Trip-Ends</u>
Weekday	218
AM Peak Hour – Adjacent Street	11
Entering	6
Exiting	5
AM Peak Hour – Generator	17
Entering	9
Exiting	8

<u>Time Period</u>	<u>One-Way Trip-Ends</u>
PM Peak Hour – Adjacent Street	19
Entering	9
Exiting	10
PM Peak Hour – Generator	25
Entering	12
Exiting	13
Saturday Peak Hour - Generator	30
Entering	15
Exiting	15

As seen above, the smaller shop is expected to generate from 11 to 30 one-way trips in peak hours and 218 one-way (109 round-trips) daily based upon the ITE data. This is a significant reduction from the previously proposed facility, which would have generated from 33 to 91 trips in peak hours and 666 trips on a daily basis.

## TRAFFIC VOLUMES

Based upon the previous traffic counts, the highest peak hour period for Route 236 is the weekday PM peak hour, typical of most Maine locations. An updated turning movement count was conducted on August 9, 2022 under peak summer conditions at the intersection of Route 236 and the Pine Brook Business Suites. The previous counts were conducted in December of 2021 and given time of year, required significant factoring to obtain projected summer volumes. It is important to note that the actual summer 2022 counts were 15 % lower than the factored 2021 traffic volumes, which is a significant difference, showing that the volumes utilized in the original Traffic Impact Study were inflated. The updated 2022 traffic counts are summarized in Figure 2.

The new marijuana sales trips were assigned to Route 236 based upon the traffic patterns recorded during the counts, which are also consistent with the previous trip assignment patterns used in the original study. These trip assignments, for the PM peak hour analysis period, are shown in Figure 3. As in the original study, the 2022 volumes were projected to 2023 No Build conditions using a ½ % annual traffic growth rate. The projected 2023 No Build volumes are shown in Figure 4. Lastly, the projected Build volumes are shown in Figure 5.

## AUXILIARY TURN LANE WARRANTS

It is understood that the Town of Kittery has requested right and left turn lanes on Route 236 to serve the proposed marijuana sales facility. Route 236 is a state facility. MaineDOT utilizes the warrant charts in NCHRP 457 to determine if auxiliary turn lanes are warranted. Sewall performed left and right turn lane analysis, for the projected Build 2023 volumes, utilizing average Route 236 volumes (as opposed to 30<sup>th</sup> highest hour summer volumes). The warrant charts, for the 45-mph speed limit requested by MaineDOT (versus the 40-mph posted speed limit) are included in the appendix. The results show that neither a right turn lane or a left turn lane are warranted on Route 236 to serve traffic entering the site. Since these turn lanes are unwarranted it is unlikely that MaineDOT would allow them to be built within their right-of-way, especially given potential wetland impacts.

## CAPACITY ANALYSIS

Traffic operations are evaluated in terms of level of service (LOS). Level of service is a qualitative measure that describes operations by letter designation. The levels range from A - very little delay to F - extreme delays. Level of service "D" is generally considered acceptable in urban locations while LOS "E" is generally considered the capacity of a facility and the minimum tolerable level. The level of service for unsignalized intersections is based upon average control delay per vehicle for each minor, opposed movement. These criteria are defined in the following table excerpted from the 2010 "Highway Capacity Manual":

### **Unsignalized Intersection Level of Service**

<u>LOS</u>	<u>Delay Range</u>
A	<= 10.0 seconds
B	> 10.0 and <= 15.0
C	> 15.0 and <= 25.0
D	> 25.0 and <= 35.0
E	> 35.0 and <= 50.0
F	> 50.0

## UNSIGNALIZED INTERSECTION ANALYSIS

The level of service (LOS) was calculated for the unsignalized site drive intersection for projected 2023 Build conditions using Synchro 11/SimTraffic to assure acceptable levels of service. The results, averaging five (5) runs, are summarized below:

<u>Approach</u>	<b>Route 236 &amp; Site Drive</b>
	<b>PM Peak Hour Level of Service</b>
Eastbound Site Drive	<u>2023 Build</u> C (15.2)
Northbound Route 236	A (1.0)
Southbound Route 236	A (2.2)
Overall Intersection	A (1.5)

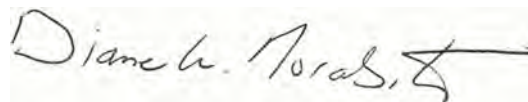
As seen above, the proposed site drive is expected to function at good level of service “C” during the PM peak hour, demonstrating no capacity concerns for the projected volumes.

To summarize, the reduced size facility is expected to generate from 11 to 30 one-way trips in peak hours, which would not be expected to have a significant impact on off-site traffic operations. Updated peak summer traffic counts were obtained for the traffic analysis, which did not identify any capacity constraints. Additionally, neither a right-turn nor a left-turn lane are warranted on Route 236 to store traffic entering the proposed marijuana sales facility.

As always, please do not hesitate to contact Sewall if you or the Town of Kittery have any questions or require any additional information or analysis regarding our findings.



Sincerely,



Diane W. Morabito, P.E. PTOE  
Vice President Traffic Engineering



**Figure 1**

**Site Location Map**

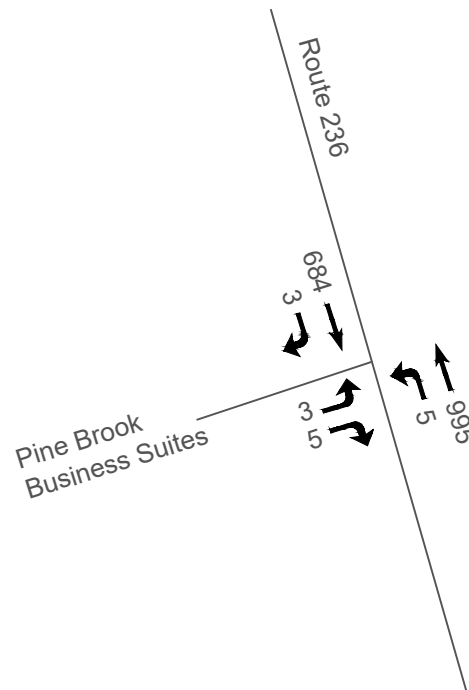
**41 Route 236 Marijuana Sales**

**Kittery, Maine**





PM Peak Hour: 2:30-3:30



**Figure 2**

**2022 Existing PM Peak Hour Volumes**  
**41 Route 236 Marijuana Sales**  
**Kittery, Maine**



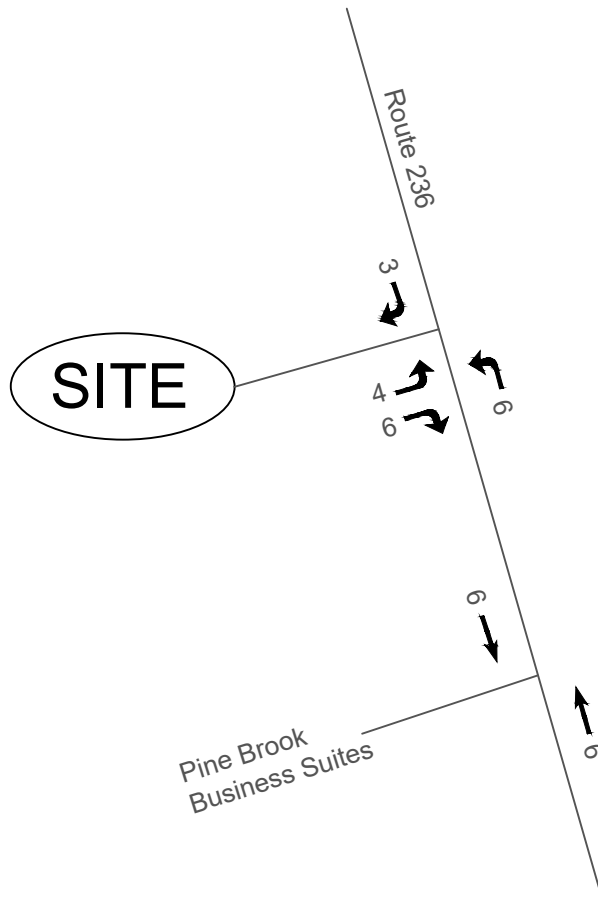




19 Primary Trips

9 In

10 Out



Signalized Intersection



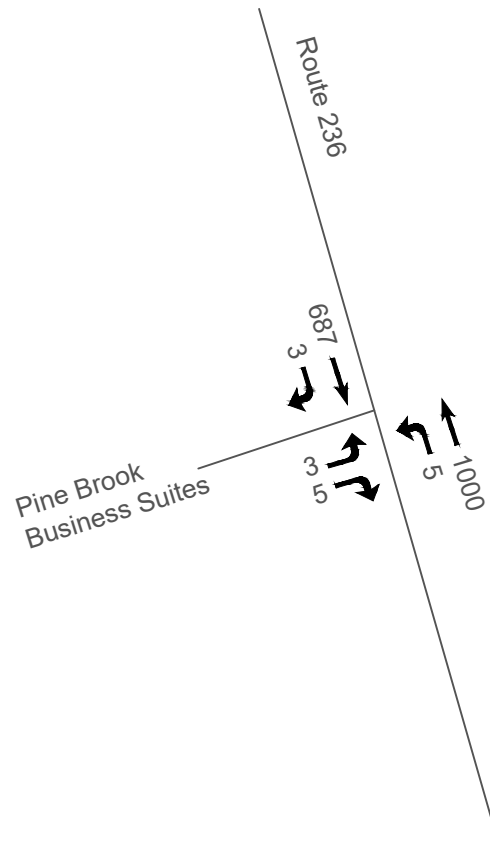
Figure 3

PM Peak Hour Trip Assignments

41 Route 236 Marijuana Sales

Kittery, Maine

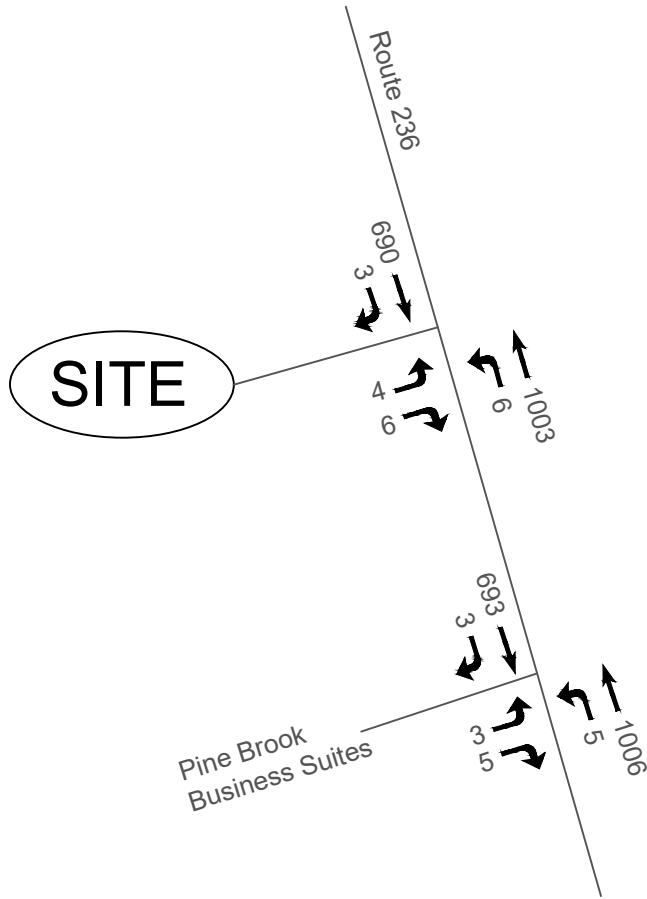




**Figure 4**

**2023 No Build PM Peak Hour Volumes  
41 Route 236 Marijuana Sales  
Kittery, Maine**





**Figure 5**

**2023 Build PM Peak Hour Volumes**

**41 Route 236 Marijuana Sales**

**Kittery, Maine**



**Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.**

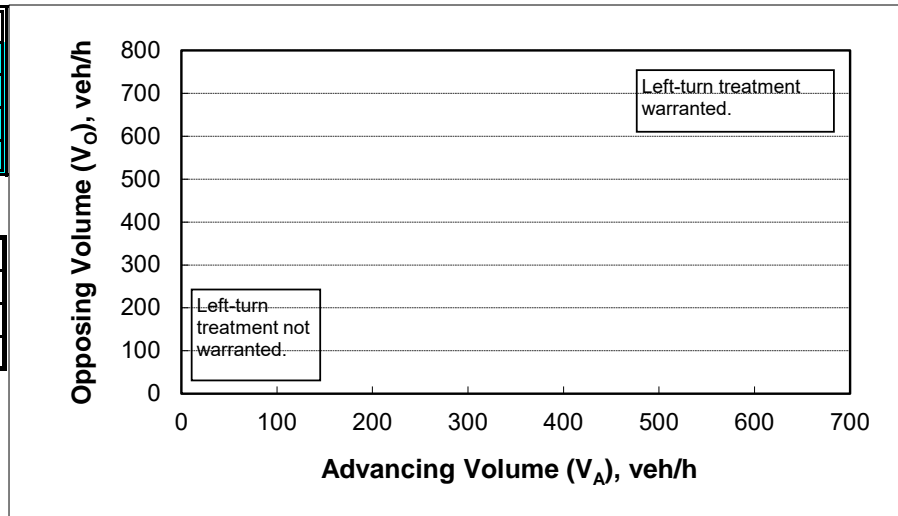
**2-lane roadway (English)**

**INPUT**

Variable	Value
85 <sup>th</sup> percentile speed, mph:	45
Percent of left-turns in advancing volume ( $V_A$ ), %:	1%
Advancing volume ( $V_A$ ), veh/h:	879
Opposing volume ( $V_O$ ), veh/h:	604

**OUTPUT**

Variable	Value
Limiting advancing volume ( $V_A$ ), veh/h:	1083
<b>Guidance for determining the need for a major-road left-turn bay:</b>	
<b>Left-turn treatment NOT warranted.</b>	



**CALIBRATION CONSTANTS**

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

**Build PM Peak Hour - Average Route 236 Volumes - Left-turn Lane Not Warranted**

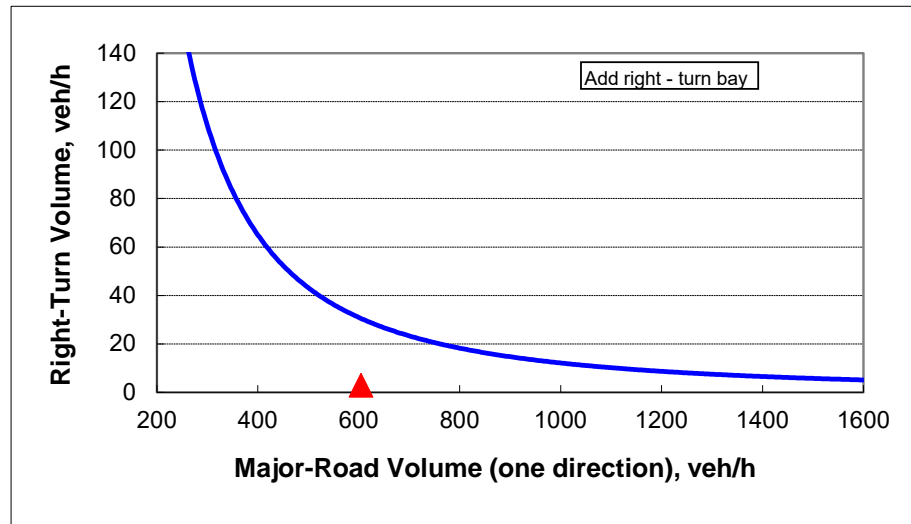
**Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.**

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	45
Major-road volume (one direction), veh/h:	604
Right-turn volume, veh/h:	3

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	31
<b>Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:</b>	
<b>Do NOT add right-turn bay.</b>	



Build PM Volumes - Average Route 236 Volumes - Right-turn Lane Not Warranted

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	-1:-10	-1:-10	-1:-10	-1:-10	-1:-10	-1:-10
End Time	12:00	12:00	12:00	12:00	12:00	12:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	1842	1920	1885	1832	1837	1863
Vehs Exited	1851	1903	1886	1827	1844	1862
Starting Vehs	38	28	47	37	35	35
Ending Vehs	29	45	46	42	28	38
Travel Distance (mi)	912	942	931	901	910	919
Travel Time (hr)	32.8	35.8	33.2	31.8	32.8	33.3
Total Delay (hr)	9.0	11.0	8.9	8.2	9.1	9.2
Total Stops	588	726	587	573	590	612
Fuel Used (gal)	29.8	31.4	30.0	29.3	29.8	30.1

Interval #0 Information Seeding

Start Time	-1:-10
End Time	-1:00
Total Time (min)	10
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Record

Start Time	-1:00
End Time	12:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	5	Avg
Vehs Entered	1842	1920	1885	1832	1837	1863
Vehs Exited	1851	1903	1886	1827	1844	1862
Starting Vehs	38	28	47	37	35	35
Ending Vehs	29	45	46	42	28	38
Travel Distance (mi)	912	942	931	901	910	919
Travel Time (hr)	32.8	35.8	33.2	31.8	32.8	33.3
Total Delay (hr)	9.0	11.0	8.9	8.2	9.1	9.2
Total Stops	588	726	587	573	590	612
Fuel Used (gal)	29.8	31.4	30.0	29.3	29.8	30.1

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**3: Route 236 & Martin Road/Stevenson Road Performance by approach**

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Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	1.7	2.1	0.1	0.8	0.5
Total Del/Veh (s)	27.2	28.4	14.0	7.8	12.6

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**6: Route 236 & Site Drive Performance by approach**

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Approach	EB	NB	SB	All
Denied Del/Veh (s)	0.1	1.0	0.0	0.6
Total Del/Veh (s)	15.2	1.0	2.2	1.5

---

**Total Network Performance**

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Denied Del/Veh (s)	1.0
Total Del/Veh (s)	16.5

**Intersection: 3: Route 236 & Martin Road/Stevenson Road**

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	LT	R	L	TR	L	TR
Maximum Queue (ft)	62	42	114	74	139	466	88	245
Average Queue (ft)	21	11	36	32	18	192	36	80
95th Queue (ft)	54	35	84	68	74	374	74	183
Link Distance (ft)	642		972			879		1226
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)		50		50	175		200	
Storage Blk Time (%)	4	0	9	6		8		1
Queuing Penalty (veh)	1	0	4	3		1		0

**Intersection: 6: Route 236 & Site Drive**

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	34	56
Average Queue (ft)	9	3
95th Queue (ft)	31	27
Link Distance (ft)	232	456
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

**Network Summary**

Network wide Queuing Penalty: 9
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Intersection: 3: Route 236 & Martin Road/Stevenson Road

Phase	1	2	4	5	6	8
Movement(s) Served	SBL	NBT	EBTL	NBL	SBT	WBTL
Maximum Green (s)	10.0	45.0	20.0	5.0	50.0	20.0
Minimum Green (s)	5.0	5.0	5.0	5.0	5.0	5.0
Recall	None	C-Max	None	None	C-Max	None
Avg. Green (s)	7.5	71.1	8.9	6.3	82.2	8.9
g/C Ratio	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Cycles Skipped (%)	33	5	15	71	11	15
Cycles @ Minimum (%)	0	0	3	0	0	3
Cycles Maxed Out (%)	0	95	0	0	89	0
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA  
Number of Complete Cycles : 0

**From:** [Diane Morabito](#)  
**To:** [Mike Sudak](#)  
**Subject:** RE: 41 Route 236, Kittery - Well Field 44 Cannabis Dispensary  
**Date:** Wednesday, September 14, 2022 2:56:51 PM  
**Attachments:** [image001.png](#)  
[image003.png](#)

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Hi Mike,

LUC 882 is from the newest ITE report, published in 2021. Data for LUC 882 is based upon studies done in CA, OR, MA and CO. There is no cited Maine data in the report but one would expect the results to be similar to Colorado or Massachusetts and certainly to the ITE average of the four states with similar legal sales. I am not aware of any specific trip generation studies or counts that have been done here in Maine to verify the applicability.

Diane

**Diane W. Morabito, PE, PTOE**

*Vice President Traffic Engineering*

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14 York Street | Portland, Maine 04101 | [www.sewall.com](http://www.sewall.com)

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**From:** Mike Sudak <mike@attarengineering.com>  
**Sent:** Wednesday, September 14, 2022 2:27 PM  
**To:** Diane Morabito <mordi@sewall.com>  
**Cc:** Ken Wood <Ken@attarengineering.com>  
**Subject:** 41 Route 236, Kittery - Well Field 44 Cannabis Dispensary

Good Afternoon Diane,

Thanks again for your continued work on this project and for the TIA update to reflect a 45mph corridor.

I'm going through my notes from the last Planning Board meeting, and the one (hopefully final) transportation-related comment I wrote down was concerning LUC 882 for Marijuana Dispensaries. The question revolved around whether or not this LUC has been updated recently to reflect the burgeoning nature of these types of developments in the state, and/or if the LUC is currently believed to be an accurate representation of this use in Maine.

Please let me know if you have any questions/concerns.

Thanks and take care.

-Mike

-----  
Michael J. Sudak, E.I.

## TECHNICAL MEMORANDUM

**REF:** NEX-2200051.00

**DATE:** February 7, 2022

**TO:** Mr. Josh Seymour  
JD Investments LLC  
19 Buffum Road, Unit 6  
North Berwick, ME 03906

**FROM:** Ms. Rebecca L. Brown, P.E., Senior Project Manager

**RE:** Traffic Impact Assessment  
Green Truck Marijuana Dispensary  
16 Arc Road – Eliot, Maine

---

## INTRODUCTION

Greenman-Pedersen, Inc. (GPI) has prepared this *Traffic Impact Assessment (TIA)* for a proposed medical and adult recreational marijuana dispensary to be located at 16 Arc Road in Eliot, Maine. The site currently contains a ±3,800 square foot (SF) warehouse building with access/egress provided via a gravel driveway on Arc Road. The Project consists of constructing an additional 6,000 SF building on-site to consist of a co-located medical and adult recreational marijuana dispensary and redeveloping the existing warehouse building to provide employee break-rooms and storage space associated with the dispensary use. A paved parking lot will be constructed with a total of 41 parking spaces. Access and egress will be provided via a single paved driveway on Arc Road at the location of the existing driveway.

This TIA provides an assessment of the potential vehicular traffic to be generated by the proposed redevelopment, a review of the safety of the proposed site access /egress, and evaluation of the traffic operations on Arc Road following construction of the development.

The site is bounded by Aggregate Recycling Corporation (ARC) to the north and east, Arc Road to the west, and several commercial / industrial buildings to the south. The site location in relation to the surrounding roadways is shown on the map on Figure 1.



FIGURE I — SITE LOCATION MAP

## EXISTING CONDITIONS

### Harold Dow Highway (Route 236)

Harold Dow Highway (Route 236) is classified as rural minor arterial roadway in the vicinity of the Project site. It generally runs in a northwest-southeast direction and provides a connection between Interstate 95 (I-95) and Route 1 to the south and Routes 4 and 9 to the east. Adjacent to the site, the roadway contains one travel lane in each direction separated by a single dashed centerline. On-street parking is not permitted along either side of the roadway. The roadway has a posted speed limit of 45 miles per hour (45 MPH). Land uses along Harold Dow Highway (Route 236) are mainly commercial and industrial. Based on Maine Department of Transportation (MaineDOT) traffic volume counts, Harold Dow Highway (Route 236) carries an average annual daily traffic (AADT) volume of 15,075 vehicles per day.

### Arc Road

Arc Road is classified as a local roadway that provides local access to the Aggregate Recycling Corporation (ARC), Shipyard Waste Solutions (SWS), and automobile repair shop, and the subject site from Harold Dow Highway (Route 236). It generally runs in a north-south direction. Arc Road is not striped, but is approximately 24 feet wide of paved surface with 1-2 foot gravel shoulders, providing adequate width for a single lane of traffic in each direction. There is no posted speed limit on Arc Road, and no pedestrian or bicycle accommodations are provided.

### Dow Highway (Route 236) / Arc Road

Arc Road intersects Harold Dow Highway (Route 236) to form a three-way, unsignalized intersection. The Harold Dow Highway (Route 236) eastbound and westbound approaches east consist of an 8-foot shoulder and 12-foot general purpose travel lane separated by a single dashed centerline. Arc Road is unmarked but is approximately 24 feet wide, providing adequate width for a single lane in each direction. Although there are no STOP signs or STOP lines on Arc Road, the Arc Road southbound approach operates under an assumed stop-control, while the Harold Dow Highway (Route 236) eastbound and westbound approaches are free-flowing. There are no pedestrian or bicycle accommodations provided in the vicinity of the intersection; however, the existing 8-foot shoulders provide adequate width to accommodate bicycle travel.

## COLLISIONS

Collision data for the section of Harold Dow Highway (Route 236) between Bradstreet Lane and Depot Road were obtained from the Maine Department of Transportation for the period from 2015 – 2021 to include the most recent five-years of available crash data, as well as a full five years of crash data prior to any impacts associated with COVID-19. The detailed crash history is provided in the Appendix.

Based on the collision data, a total of three (3) collisions occurred along Harold Dow Highway (Route 236) near the intersection with Arc Road over the seven-year study period. Two of these collisions occurred with a deer, one of which occurred under dark conditions. The remaining collision was a rear-end collision that occurred at Dave's Auto Repair driveway during the morning peak hour. These collisions do not indicate a particular collision pattern and the low occurrence of crashes in the vicinity of the intersection indicates no significant safety issue exists.

## SIGHT DISTANCE

To identify potential safety concerns associated with site access and egress, sight distances have been evaluated at the proposed site driveway intersection with Arc Road, as well as at the intersection of Arc Road with Harold Dow Highway (Route 236) to determine if the available sight distances for vehicles exiting the site meet or exceed the minimum distances required for approaching vehicles to safely stop. The available sight distances were compared with minimum requirements, as established by the American Association of State Highway and Transportation Officials (AASHTO)<sup>1</sup>. AASHTO is the national standard by which vehicle sight distance is calculated, measured, and reported.

Sight distance is the length of roadway ahead that is visible to the driver. Stopping Sight Distance (SSD) is the minimum distance required for a vehicle traveling at a certain speed to safely stop before reaching a stationary object in its path. The values are based on a driver perception and reaction time of 2.5 seconds and a braking distance calculated for wet, level pavements. When the roadway is either on an upgrade or downgrade, grade correction factors are applied. Stopping sight distance is measured from an eye height of 3.5 feet to an object height of 2 feet above street level, equivalent to the taillight height of a passenger car. The SSD is measured along the centerline of the traveled way of the major road.

Intersection sight distance (ISD) is provided on minor street approaches to allow the drivers of stopped vehicles a sufficient view of the major roadway to decide when to enter the major roadway. By definition, ISD is the minimum distance required for a motorist exiting a minor street to turn onto the major street, without being overtaken by an approaching vehicle reducing its speed from the design speed to 70 percent of the design speed. ISD is measured from an eye height of 3.5 feet to an object height of 3.5 feet above street level. The use of an object height equal to the driver eye height makes intersection sight distances reciprocal (i.e., if one driver can see another vehicle, then the driver of that vehicle can also see the first vehicle). When the minor street is on an upgrade that exceeds 3 percent, grade correction factors are applied.

SSD is generally more important as it represents the minimum distance required for safe stopping while ISD is based only upon acceptable speed reductions to the approaching traffic stream. The ISD, however, must be equal to or greater than the minimum required SSD in order to provide safe operations at the intersection. In accordance with the AASHTO manual, *“If the available sight distance for an entering or crossing vehicle is at least equal to the appropriate stopping sight distance for the major road, then drivers have sufficient sight distance to anticipate and avoid collisions. However, in some cases, this may require a major-road vehicle to stop or slow to accommodate the maneuver by a minor-road vehicle. To enhance traffic operations, intersection sight distances that exceed stopping sight distances are desirable along the major road.”* Accordingly, ISD should be at least equal to the distance required to allow a driver approaching the minor road to safely stop.

The available SSD and ISD at the proposed site driveway intersection with Arc Road and the Arc Road intersection with Harold Dow Highway (Route 236) were measured and compared to minimum requirements as established by AASHTO for the enforced speed of 45 MPH on Harold Dow Highway (Route 236) and an assumed speed of 25 MPH on Arc Road. The required minimum sight distances are compared to the available distances, as shown in Table 1.

---

<sup>1</sup> *A Policy on Geometric Design of Highways and Streets*; American Association of State Highway and Transportation Officials (AASHTO); 2018.

**TABLE 1**  
**Sight Distance Summary**

Location/Direction	Minimum Required <sup>a</sup>	Measured	
		Stopping Sight Distance (feet)	Intersection Sight Distance (feet)
<b>Arc Road at Site Driveway:</b> <i>North of intersection (SB)</i> <i>South of intersection (NB)</i>	155 155	+400 360	+400 380
<b>Route 236 at Arc Road:</b> <i>East of intersection (WB)</i> <i>West of intersection (EB)</i>	360 360	+500 +500	380 <sup>b</sup> +500

<sup>a</sup> Values based on AASHTO requirements for minimum SSD based on posted speed of 45 MPH on Harold Dow Highway (Route 236) and an assumed speed of 25 MPH on Arc Road.

<sup>b</sup> ISD obstructed by SWS / ARC sign at 14.5 feet from edge of travelway. Vehicles can move up closer to roadway to see beyond the sign to +500 feet.

As indicated in Table 1, available sight distances at the site driveway intersection with Arc Road and the Arc Road intersection with Harold Dow Highway (Route 236) exceed AASHTO recommendations for minimum SSD in all directions. The ISD looking east (left) exiting Arc Road onto Harold Dow Highway (Route 236) is partially obstructed by the existing SWS / ARC sign on the northeast corner of the intersection when sight lines are measured 14.5 feet from the edge of the travelway. However, an 8-foot wide shoulder exists on Harold Dow Highway (Route 236), which allows a driver to inch closer to the edge of the travelway to see beyond the sign to a distance of over 500 feet.

## TRAFFIC VOLUMES

### 2022 Existing Conditions

Due to inclement weather conditions and COVID-19 impacts, GPI was not able to collect new turning movement counts at the study area intersection of Harold Dow Highway (Route 236) / Arc Road. However, GPI was able to obtain Automatic Traffic Recorder (ATR) counts collected by MaineDOT on Harold Dow Highway (Route 236) just west of Beech Road on September 16-17, 2019, prior to the start of COVID-19. In addition, GPI obtained trip generation data for the existing uses along Arc Road (including ARC, SWS, and Dave's Auto Repair) from a *Traffic Assessment*<sup>2</sup> prepared by Gorrill-Palmer Consulting Engineers, Inc. for the MSW transfer building on Arc Road. This count data was combined to estimate the 2022 Existing Conditions traffic volumes for the weekday AM (7:00 – 8:00 AM) and weekday PM (4:00 – 5:00 PM) peak hours. The trip generation data for Arc Road included a breakdown of vehicles by passenger vehicle and trucks, which was used to estimate the percentage of heavy vehicle trips on Arc Road.

### Trip Generation

The Project consists of constructing a 6,000 SF co-located medical and adult recreational marijuana dispensary. GPI utilized trip-generation rates published by the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 11<sup>th</sup> Edition*<sup>3</sup> for Land Use Code (LUC) 882 (Marijuana Dispensary) to estimate the trips generated by the proposed development.

The trip rates contained in the ITE *Trip Generation Manual* for LUC 882 (Marijuana Dispensary) are based on a limited number of data sources, mainly located in Colorado, Oregon, and California, and a few sites in Massachusetts. The trip rates were all calculated based on the square footage of the facility. A presentation on trip generation patterns at marijuana dispensaries in Massachusetts presented by the ITE Northeastern District Annual Meeting in May 2021 compiled trip rates from numerous facilities throughout the Commonwealth of Massachusetts. The findings of this study indicated that the trips rates based on the square footage of the dispensary varied widely between sites, as each site provided varying space for display of products, customer circulation, and waiting areas. The study found that the number of registers or points of sale within a facility provided more consistent trip rates between sites. As the proposed facility will provide large display cases and areas for viewing products, as well as large lounge areas for customers to wait for order to be processed, the proposed facility is likely to generate fewer trips per square foot as compared to facilities with more compact customer spaces.

GPI recently collected empirical trip generation counts at a similarly sized (5,800 SF) co-located medical and adult recreational marijuana dispensary with a total of 10 registers, operated by Patriot Care in Lowell, Massachusetts. As the Patriot Care facility is similar to the proposed facility in size and use, GPI estimated the trips to be generated by the proposed dispensary based on the empirical trip rates obtained from the Patriot Care facility. The trip estimates were calculated based on both square footage and number of registers. The detailed trip generation calculations are provided in the Appendix and the results are summarized in Table 2.

---

<sup>2</sup> *Traffic Assessment, Proposed MSW Transfer Building, Route 236, Eliot, Maine*; Gorrill-Palmer Consulting Engineers, Inc.; June 6, 2012.

<sup>3</sup> *Trip Generation Manual, 10<sup>th</sup> Edition*; Institute of Transportation Engineers; Washington, DC; September 2017.



**TABLE 2**  
**Trip Generation Summary**

Time Period/Direction	ITE Trip Rates (LUC 882) <sup>a</sup>	Empirical Trip Rates	
		Per 1,000 SF <sup>b</sup>	Per Register <sup>c</sup>
<b>Weekday Daily</b>	1,266	912	<b>441</b>
<b>Weekday AM Peak Hour:</b>			
<i>Enter</i>	33	24	<b>11</b>
<i>Exit</i>	<u>30</u>	<u>22</u>	<u>11</u>
<i>Total</i>	63	46	<b>22</b>
<b>Weekday PM Peak Hour:</b>			
<i>Enter</i>	57	41	<b>20</b>
<i>Exit</i>	<u>57</u>	<u>41</u>	<u>20</u>
<i>Total</i>	114	82	<b>40</b>
<b>Saturday Daily</b>	1,556	948	<b>458</b>
<b>Saturday Midday Peak Hour:</b>			
<i>Enter</i>	87	53	<b>26</b>
<i>Exit</i>	<u>86</u>	<u>53</u>	<u>25</u>
<i>Total</i>	173	106	<b>51</b>

<sup>a</sup> ITE LUC 882 (Marijuana Dispensary) based on 6,000 SF.

<sup>b</sup> Based on empirical trip generation rates per 1,000 SF collected at Patriot Care in Lowell, MA, applied to 6,000 SF proposed facility.

<sup>c</sup> Based on empirical trip generation rates per register collected at Patriot Care in Lowell, MA, applied to 5 proposed registers.

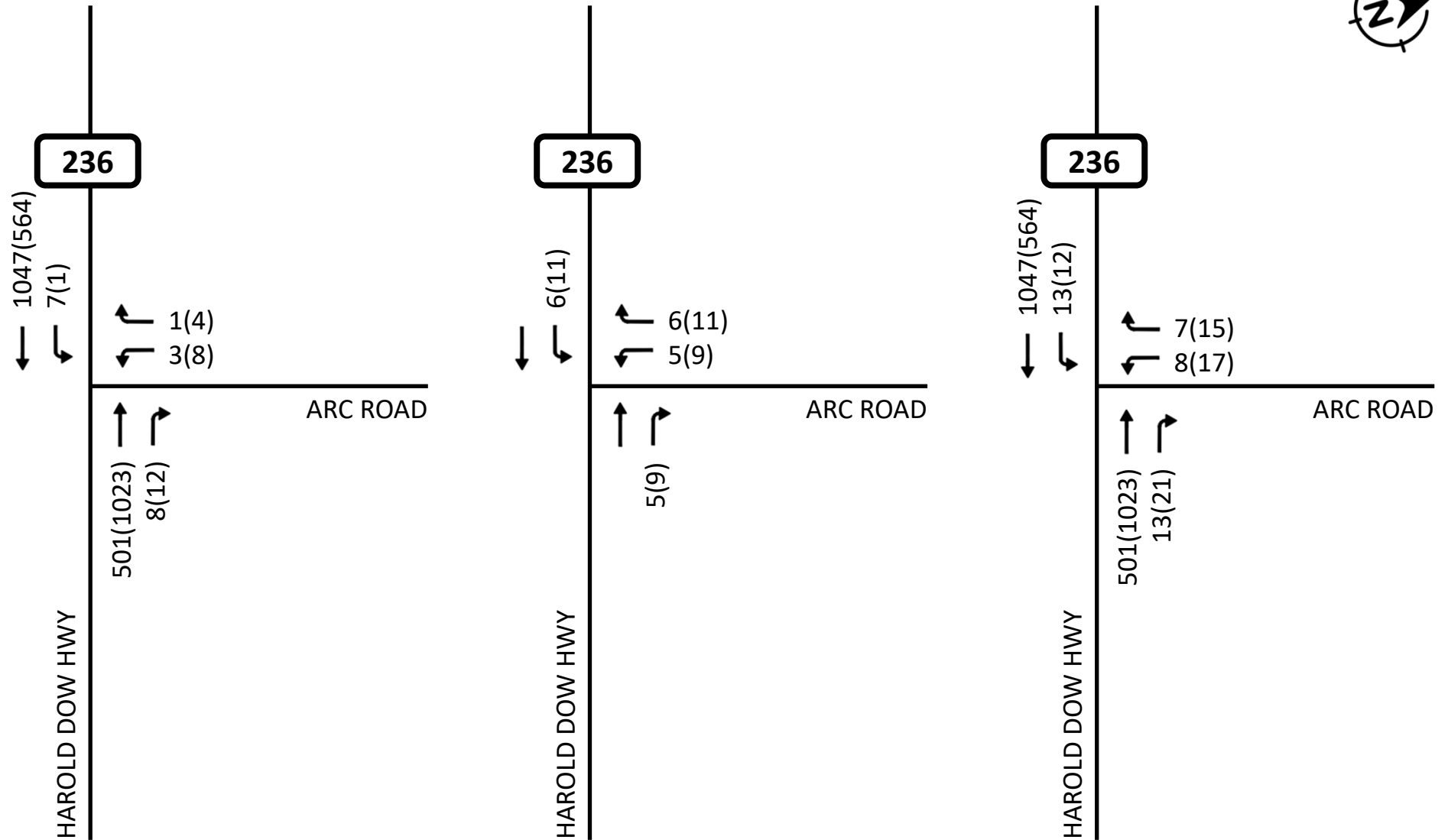
As shown in Table 2, the proposed marijuana dispensary is anticipated to generate 22 vehicle trips (11 entering and 11 exiting) during the weekday AM peak hour, 40 vehicle trips (20 entering and 20 exiting) during the weekday PM peak hour, and 51 vehicle trips (26 entering and 25 exiting) during the Saturday midday peak hour.

### Trip Distribution

Having estimated the volume of trips generated by the proposed dispensary, the next step is to distribute the site-generated trips to the adjacent roadway network. The distribution of site-generated trips was estimated based on a population gravity model for a 10-mile draw area surrounding the site based on 2020 U.S. Census population data and expected travel routes to/from the site. The detailed gravity model is provided in the Appendix. Based on the gravity model, approximately 55% of the site-generated trips are anticipated to travel to/from the west along Harold Dow Highway (Route 236) and the remaining 45% will travel to/from the east along Harold Dow Highway (Route 236).

### Build Traffic Volumes

The site-generated vehicle trips were distributed through the study area intersection and added to the Existing conditions traffic volumes to obtain the Build traffic volumes. The resulting traffic volumes are depicted in Figure 2 for the weekday AM and PM peak hours.



2022 EXISTING

SITE-GENERATED TRIPS

2022 BUILD

XX(X) = WEEKDAY AM (WEEKDAY PM)



FIGURE 2 – TRAFFIC VOLUMES

## CAPACITY & QUEUE ANALYSIS

Capacity and queue analysis was conducted at the study area location under 2022 Existing and 2022 Build traffic-volume conditions. The impact of site-generated traffic can be measured by comparing 2022 Existing to 2022 Build conditions.

### Methodology

The capacity analysis methodology is based on the concepts and procedures in the *Highway Capacity Manual* (HCM)<sup>4</sup> and is described in the Appendix.

For unsignalized intersections, the 95<sup>th</sup> percentile queue represents the length of queue of the critical minor-street movement that is not expected to be exceeded 95 percent of the time during the analysis period (typically one hour). In this case, the queue length is a function of the capacity of the movement and the movement's degree of saturation.

### Analysis Results

The results of the level-of-service (LOS) and queue analyses are shown in Table 3 and are discussed below. Capacity and queue analyses were conducted at the study area intersections utilizing *Synchro* software.<sup>5</sup> The capacity and queue analysis worksheets for all conditions are provided in the Appendix.

#### **Harold Dow Highway (Route 236) / Arc Road**

As shown in Table 3, all movements along Harold Dow Highway (Route 236) are anticipated to operate at level-of-service (LOS) A or B under all analysis conditions. With the addition of the traffic generated by the proposed dispensary, traffic existing Arc Road will operate at LOS D during the weekday AM peak hour and LOS E during the weekday PM peak hour. The volume-to-capacity (V/C) ratio will be well below 1.00, indicating there will be adequate capacity to accommodate the anticipated traffic volumes, and the queues are not anticipated to exceed two vehicles.

The results of the analysis indicate a decrease in delay exiting Arc Road under Build conditions during the weekday AM peak hour. It is important to note that the delay represents the average delay experienced by all vehicles on Arc Road. Under Existing conditions, approximately 75% of vehicles exiting Arc Road are trucks, which require longer gaps in traffic than passenger cars to exit and thus experience longer delays waiting for adequate gaps. Under Build conditions, the majority of traffic generated by the proposed marijuana dispensary will be passenger vehicles, which will be able to utilize shorter gaps in traffic to exit Arc Road and will therefore experience shorter delays compared to the existing trucks using Arc Road.

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<sup>4</sup> *Highway Capacity Manual* 6<sup>th</sup> Edition, Transportation Research Board; Washington, D.C.; 2016.

<sup>5</sup> *Synchro plus SimTraffic 11*; Trafficware LLC.; Sugar Land, TX; 2019.

**TABLE 3**  
**Intersection Capacity Analysis Summary**

Intersection/Peak Hour/Lane Group	2022 Existing				2022 Build			
	V/C <sup>a</sup>	Del. <sup>b</sup>	LOS <sup>c</sup>	Queue <sup>d</sup>	V/C	Del.	LOS	Queue
<b>Harold Dow Highway (Route 236) / Arc Road</b>								
<i>Weekday AM:</i>								
Route 236 EB left/through	0.01	9.3	A	<25	0.02	9.0	A	<25
Arc Road SB Approach	0.05	51.3	F	<25	0.12	34.3	D	<25
<i>Weekday PM:</i>								
Route 236 EB left/through	0.01	11.9	B	<25	0.02	11.3	B	<25
Arc Road SB Approach	0.12	41.7	E	<25	0.28	44.5	E	28

<sup>a</sup> Volume-to-capacity ratio.

<sup>b</sup> Average control delay in seconds per vehicle.

<sup>c</sup> Level of service.

<sup>d</sup> 95<sup>th</sup> percentile queue length in feet per lane (assuming 25 feet per vehicle).

## CONCLUSIONS

- The site was formerly occupied by a composting facility. As proposed, the Project consists of constructing a 6,000 SF co-located medical and adult recreational marijuana dispensary and redeveloping the existing building to provide ancillary services to the dispensary including employee breakrooms and storage space. Access and egress to the site will be provided via a single paved driveway on Arc Road at the location of the existing gravel driveway.
- Arc Road is not striped, but is approximately 24 feet wide with 1-2-foot gravel shoulders. Therefore, the roadway provides adequate width to accommodate two-way traffic flow for both passenger vehicles and truck traffic.
- Only three collisions occurred in the vicinity of the Harold Dow Highway (Route 236) / Arc Road intersection over the seven-year study period. Two of these occurred with a deer and one was a rear-end collision adjacent to Dave's Auto Repair driveway. These collisions do not indicate a particular collision pattern, and the low occurrence of collisions indicates a safety issue does not exist.
- The available sight SSD and ISD at the site driveway intersection with Arc Road and at the Arc Road intersection with Harold Dow Highway (Route 236) exceed AASHTO recommendations for safe operations.
- The proposed marijuana dispensary is anticipated to generate 22 vehicle trips (11 entering and 11 exiting) during the weekday AM peak hour, 40 vehicle trips (20 entering and 20 exiting) during the weekday PM peak hour, and 51 vehicle trips (26 entering and 25 exiting) during the Saturday midday peak hour.
- Traffic exiting Arc Road onto Route 236 is expected to operate at LOS E or better during the weekday AM and PM peak hour under Build conditions, the volume-to-capacity (V/C) ratio will be well below 1.00, indicating there will be adequate capacity to accommodate the anticipated traffic volumes, and queues are not expected to exceed two vehicles. All movements along Harold Dow Highway (Route 236) are expected to operate at LOS A or B under all analysis conditions. The additional traffic generated by the proposed marijuana dispensary is not anticipated to increase average delay on any given movement by more than three seconds per vehicle or increase queues by more than one vehicle.

**Based on the findings above, the proposed marijuana dispensary can be safely and efficiently accommodated along the existing roadway network. No project-specific mitigation is warranted based on the incremental impacts of the Project.**

**Michael Cuomo, Soil Scientist**  
6 York Pond Road, York, Maine 03909  
207 363 4532  
mcuomosoil@gmail.com

### **Wetland Restoration Sequence and Goals**

Well Field 44, LLC  
41 Route 236, Kittery  
19 September 2022

1. Two areas are to be restored. The larger is about 10,500 square feet at the westerly side of the project site. The second is about 2,500 square feet at the south easterly corner of the project site.
2. The limit of the restoration areas will be marked on the ground with paint. The toe of slope and top of slope will be marked. The slope will be no steeper than 3:1. The 3:1 slope limit applies to the edge where the restored wetland grade meets the fill/natural soils which will remain unaltered by the wetland restoration plan.
3. The applicant will secure a capable excavation or landscape contractor to perform the restoration. The contractor will be responsible for DigSafe mark-out. The wetland scientist will meet with the selected contractor to review the intent and goals of this restoration at a mutually convenient time and date. The restoration can not begin until after this meeting.
4. The contractor will notify the wetland scientist at least 48 hours in advance when work will occur. The wetland scientist will make site inspections while the restoration work is taking place.
5. The contractor will remove material from filled wetlands to the elevation of the remnant wetland. The work shall be sequenced so the contractor will not enter the wetland with equipment or vehicles. Any buried waste or large trash will be removed from the site and disposed of properly. Any clean fill will be reused on the site or removed from the site and placed legally elsewhere. A slope will be created from the toe of slope to the top of slope painted line. This work shall be completed to the satisfaction of the wetland scientist.
6. Exposed soils within the wetland shall be seeded with one of the

following wetland seed mixes at the rate the supplier specifies:

<https://newp.com/wp-content/uploads/2018/04/WETMIX2018.pdf>

<http://www.vermontwetlandplants.com/marsh-swamp-bog-mix/>

<https://www.stoneyridgeenv.com/environmental-permitting-plants-seeds.html>

7. Exposed soils within the wetland shall be mulched with salt marsh hay at the rate of 1 bale of hay per 500 square feet. Estimated wetland area to be seeded and mulched is +/-13,000 square feet.

8. 'Erosion Control Mix' or equivalent will be installed as a berm at the re-established wetland boundary toe of slope.

<https://www.casella.com/products/earthlife-products/mulch/erosion-control-mix>

9. Exposed upland soils on the newly created slope shall be seeded with one of the following and mulched at the rate of 1 bale of hay per 500 square feet.

<https://www.tractorsupply.com/tsc/product/barenbrug-k31-plus-clover-40-lb-25694>

<https://willistonvillagehardware.com/catalog/product/116751/agway-conservation-green-10-lb>

10. Seed and mulch shall be applied immediately upon finishing of any section of the work. Optimal time of year for seeding is autumn, winter, or spring. Seeding may be delayed depending on when the work is done. Mulching will proceed even if seeding is delayed.

11. When the above wetland restoration work is done, the wetland scientist will document with photos and send a report to Attar Engineering and the Planning Board and Code Enforcement Office. If the wetland restoration is not completed properly or left incomplete, the report to Attar Engineering and the Planning Board and Code Enforcement Office shall detail this.

12. A monitoring visit will be made by the wetland scientist about 12 months after finishing the wetland restoration work. If the restored wetlands are dominated by non-invasive species (75% area covered), the restoration will be considered 'complete'. A report with photos will be sent to Attar Engineering and the Planning Board and Code Enforcement Office.

13. Alternately, if the restored wetlands have more than 25%

coverage of invasive species, plant-specific treatment by a licensed herbicide applicator will be performed. One month later the wetland scientist will revisit the site and document invasive plant mortality. A report with photos will be sent to Attar Engineering and the Planning Board and Code Enforcement Office, and the restoration will be considered 'complete'.

End



**Michael Cuomo, Soil Scientist**  
6 York Pond Road, York, Maine 03909  
207 363 4532  
mcuomosoil@gmail.com

Memo to: Mike Sudek, Ken Wood, Attar Engineering  
From: Mike Cuomo  
Date: 19 September 2022  
Regarding: **Wetland Restoration Sequence and Goals**  
Well Field 44, LLC  
41 Route 236, Kittery

Some issues were raised by the Kittery Conservation Commission, which I addressed with edits to the Restoration Sequence. Changes are highlighted in blue on the attached.

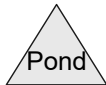
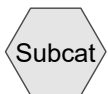
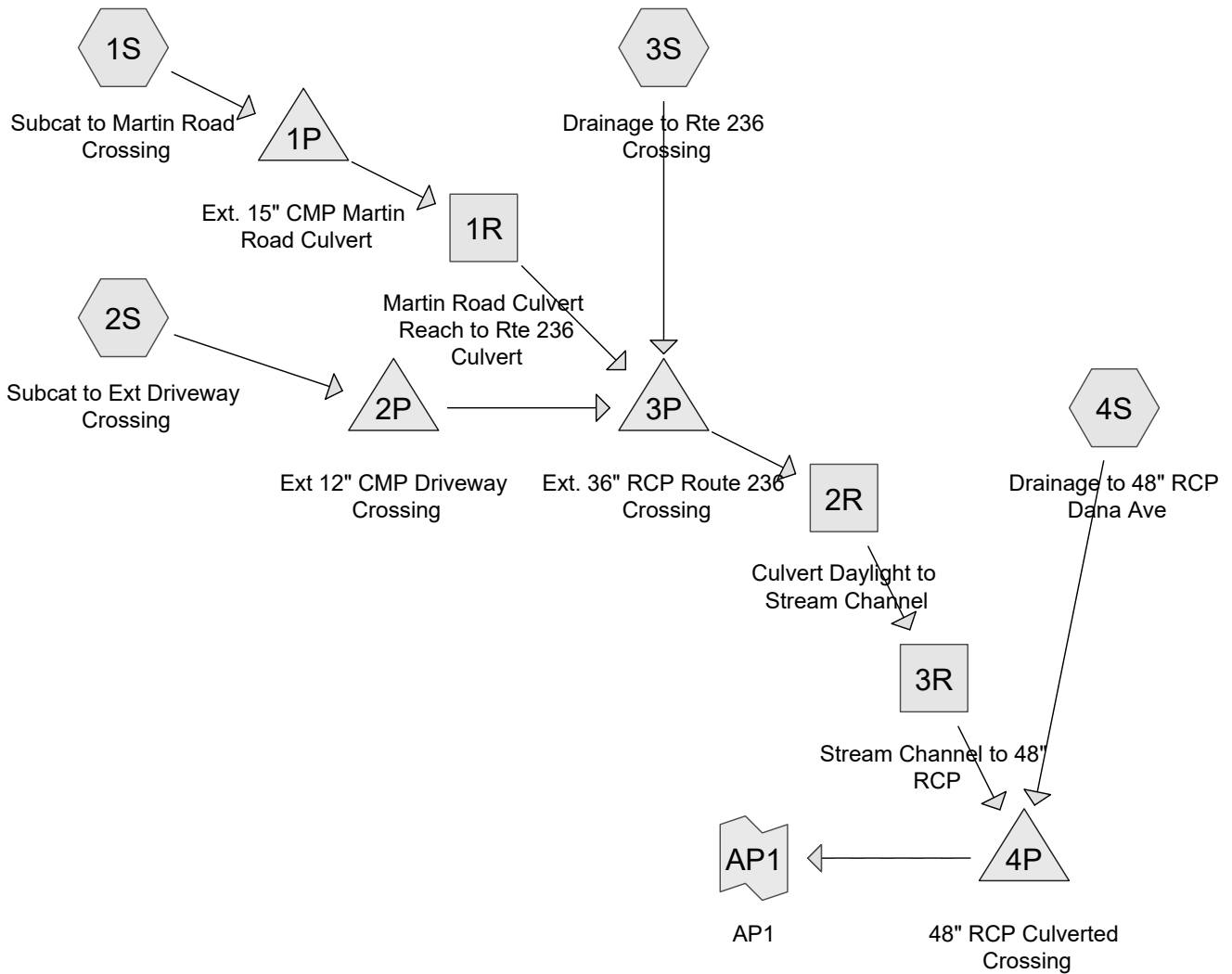
The general comment is best responded to in this memo.

**General Comment: are test pits to be performed in areas of wetland restoration?  
Is there a different procedure if hydric soils are found in areas of wetland fill  
removal?**

At the start of the fill removal stage of the wetland restoration, the wetland scientist will be on-site with the excavator and show them what fill is to be removed and the natural soil that is to remain.

It is assumed that natural hydric soils lie beneath the fill in the entire restoration area. The procedure would not change.

Please contact me if you need additional clarification.



**Routing Diagram for WF44 SWA EXT ENH**  
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**WF44 SWA EXT ENH**

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**Area Listing (all nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
13.869	46	2 acre lots, 12% imp, HSG A (1S, 2S, 4S)
7.322	77	2 acre lots, 12% imp, HSG C (1S, 2S, 4S)
58.579	82	2 acre lots, 12% imp, HSG D (1S, 2S, 4S)
4.395	39	>75% Grass cover, Good, HSG A (4S)
0.326	74	>75% Grass cover, Good, HSG C (4S)
1.521	80	>75% Grass cover, Good, HSG D (4S)
1.919	35	Brush, Fair, HSG A (4S)
16.165	77	Brush, Fair, HSG D (1S, 2S, 4S)
0.955	96	Gravel surface, HSG D (2S, 3S)
1.610	98	Paved parking, HSG A (4S)
1.934	98	Paved parking, HSG C (1S, 2S, 4S)
6.437	98	Paved parking, HSG D (1S, 2S, 3S, 4S)
15.347	36	Woods, Fair, HSG A (1S, 4S)
3.141	73	Woods, Fair, HSG C (1S, 4S)
25.562	79	Woods, Fair, HSG D (1S, 2S, 3S, 4S)
4.517	82	Woods/grass comb., Fair, HSG D (3S)
<b>163.600</b>	<b>73</b>	<b>TOTAL AREA</b>

**WF44 SWA EXT ENH**

Type III 24-hr 2 YEAR STORM Rainfall=3.33"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1S: Subcat to Martin** Runoff Area=1,905,022 sf 12.81% Impervious Runoff Depth>1.37"  
 Flow Length=2,053' Tc=38.0 min CN=80 Runoff=38.51 cfs 5.002 af

**Subcatchment 2S: Subcat to Ext** Runoff Area=1,929,172 sf 12.87% Impervious Runoff Depth>1.43"  
 Flow Length=3,194' Tc=60.4 min CN=81 Runoff=31.70 cfs 5.262 af

**Subcatchment 3S: Drainage to Rte 236** Runoff Area=310,792 sf 13.95% Impervious Runoff Depth>1.66"  
 Flow Length=1,095' Tc=17.3 min CN=84 Runoff=10.66 cfs 0.988 af

**Subcatchment 4S: Drainage to 48" RCP** Runoff Area=2,981,451 sf 10.60% Impervious Runoff Depth>0.43"  
 Flow Length=3,273' Tc=22.9 min CN=61 Runoff=17.72 cfs 2.468 af

**Reach 1R: Martin Road Culvert Reach to** Avg. Flow Depth=0.06' Max Vel=0.45 fps Inflow=1.31 cfs 0.677 af  
 n=0.070 L=744.0' S=0.0186 '/' Capacity=2,224.76 cfs Outflow=1.30 cfs 0.579 af

**Reach 2R: Culvert Daylight to Stream** Avg. Flow Depth=0.14' Max Vel=0.33 fps Inflow=10.04 cfs 2.590 af  
 n=0.070 L=294.0' S=0.0032 '/' Capacity=5,614.66 cfs Outflow=8.10 cfs 2.417 af

**Reach 3R: Stream Channel to 48" RCP** Avg. Flow Depth=0.20' Max Vel=0.51 fps Inflow=8.10 cfs 2.417 af  
 n=0.070 L=1,004.0' S=0.0050 '/' Capacity=2,436.66 cfs Outflow=5.28 cfs 2.065 af

**Pond 1P: Ext. 15" CMP Martin Road** Peak Elev=49.63' Storage=307,858 cf Inflow=38.51 cfs 5.002 af  
 15.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=1.31 cfs 0.677 af

**Pond 2P: Ext 12" CMP Driveway Crossing** Peak Elev=39.36' Storage=242,303 cf Inflow=31.70 cfs 5.262 af  
 12.0" Round Culvert n=0.013 L=30.0' S=0.0050 '/' Outflow=2.01 cfs 1.048 af

**Pond 3P: Ext. 36" RCP Route 236 Crossing** Peak Elev=36.33' Storage=3,207 cf Inflow=10.69 cfs 2.615 af  
 36.0" Round Culvert n=0.011 L=100.0' S=-0.0030 '/' Outflow=10.04 cfs 2.590 af

**Pond 4P: 48" RCP Culverted Crossing** Peak Elev=30.45' Storage=9,262 cf Inflow=17.98 cfs 4.532 af  
 Primary=16.14 cfs 4.440 af Secondary=0.00 cfs 0.000 af Outflow=16.14 cfs 4.440 af

**Link AP1: AP1** Inflow=16.14 cfs 4.440 af  
 Primary=16.14 cfs 4.440 af

**Total Runoff Area = 163.600 ac Runoff Volume = 13.720 af Average Runoff Depth = 1.01"**  
**88.05% Pervious = 144.047 ac 11.95% Impervious = 19.554 ac**

**WF44 SWA EXT ENH**

Type III 24-hr 10 YEAR STORM Rainfall=5.34"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1S: Subcat to Martin** Runoff Area=1,905,022 sf 12.81% Impervious Runoff Depth>2.95"  
 Flow Length=2,053' Tc=38.0 min CN=80 Runoff=82.60 cfs 10.765 af

**Subcatchment 2S: Subcat to Ext** Runoff Area=1,929,172 sf 12.87% Impervious Runoff Depth>3.02"  
 Flow Length=3,194' Tc=60.4 min CN=81 Runoff=66.98 cfs 11.159 af

**Subcatchment 3S: Drainage to Rte 236** Runoff Area=310,792 sf 13.95% Impervious Runoff Depth>3.36"  
 Flow Length=1,095' Tc=17.3 min CN=84 Runoff=21.18 cfs 1.995 af

**Subcatchment 4S: Drainage to 48" RCP** Runoff Area=2,981,451 sf 10.60% Impervious Runoff Depth>1.42"  
 Flow Length=3,273' Tc=22.9 min CN=61 Runoff=74.23 cfs 8.109 af

**Reach 1R: Martin Road Culvert Reach to** Avg. Flow Depth=0.10' Max Vel=0.63 fps Inflow=3.23 cfs 1.848 af  
 n=0.070 L=744.0' S=0.0186 '/' Capacity=2,224.76 cfs Outflow=3.23 cfs 1.672 af

**Reach 2R: Culvert Daylight to Stream** Avg. Flow Depth=0.22' Max Vel=0.44 fps Inflow=20.01 cfs 5.737 af  
 n=0.070 L=294.0' S=0.0032 '/' Capacity=5,614.66 cfs Outflow=17.58 cfs 5.465 af

**Reach 3R: Stream Channel to 48" RCP** Avg. Flow Depth=0.35' Max Vel=0.71 fps Inflow=17.58 cfs 5.465 af  
 n=0.070 L=1,004.0' S=0.0050 '/' Capacity=2,436.66 cfs Outflow=13.26 cfs 4.927 af

**Pond 1P: Ext. 15" CMP Martin Road** Peak Elev=50.10' Storage=508,857 cf Inflow=82.60 cfs 10.765 af  
 15.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=3.23 cfs 1.848 af

**Pond 2P: Ext 12" CMP Driveway Crossing** Peak Elev=40.37' Storage=453,500 cf Inflow=66.98 cfs 11.159 af  
 12.0" Round Culvert n=0.013 L=30.0' S=0.0050 '/' Outflow=3.68 cfs 2.115 af

**Pond 3P: Ext. 36" RCP Route 236 Crossing** Peak Elev=37.07' Storage=5,794 cf Inflow=21.55 cfs 5.783 af  
 36.0" Round Culvert n=0.011 L=100.0' S=-0.0030 '/' Outflow=20.01 cfs 5.737 af

**Pond 4P: 48" RCP Culverted Crossing** Peak Elev=32.41' Storage=34,092 cf Inflow=75.43 cfs 13.035 af  
 Primary=65.45 cfs 12.881 af Secondary=0.00 cfs 0.000 af Outflow=65.45 cfs 12.881 af

**Link AP1: AP1** Inflow=65.45 cfs 12.881 af  
 Primary=65.45 cfs 12.881 af

**Total Runoff Area = 163.600 ac Runoff Volume = 32.028 af Average Runoff Depth = 2.35"**  
**88.05% Pervious = 144.047 ac 11.95% Impervious = 19.554 ac**

**WF44 SWA EXT ENH**

Type III 24-hr 25 YEAR STORM Rainfall=6.60"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1S: Subcat to Martin** Runoff Area=1,905,022 sf 12.81% Impervious Runoff Depth>4.02"  
 Flow Length=2,053' Tc=38.0 min CN=80 Runoff=111.47 cfs 14.658 af

**Subcatchment 2S: Subcat to Ext** Runoff Area=1,929,172 sf 12.87% Impervious Runoff Depth>4.10"  
 Flow Length=3,194' Tc=60.4 min CN=81 Runoff=89.98 cfs 15.120 af

**Subcatchment 3S: Drainage to Rte 236** Runoff Area=310,792 sf 13.95% Impervious Runoff Depth>4.47"  
 Flow Length=1,095' Tc=17.3 min CN=84 Runoff=27.89 cfs 2.660 af

**Subcatchment 4S: Drainage to 48" RCP** Runoff Area=2,981,451 sf 10.60% Impervious Runoff Depth>2.20"  
 Flow Length=3,273' Tc=22.9 min CN=61 Runoff=118.64 cfs 12.549 af

**Reach 1R: Martin Road Culvert Reach to** Avg. Flow Depth=0.12' Max Vel=0.68 fps Inflow=4.14 cfs 2.454 af  
 n=0.070 L=744.0' S=0.0186 '/ Capacity=2,224.76 cfs Outflow=4.14 cfs 2.248 af

**Reach 2R: Culvert Daylight to Stream** Avg. Flow Depth=0.27' Max Vel=0.49 fps Inflow=26.42 cfs 7.419 af  
 n=0.070 L=294.0' S=0.0032 '/ Capacity=5,614.66 cfs Outflow=23.88 cfs 7.116 af

**Reach 3R: Stream Channel to 48" RCP** Avg. Flow Depth=0.43' Max Vel=0.81 fps Inflow=23.88 cfs 7.116 af  
 n=0.070 L=1,004.0' S=0.0050 '/ Capacity=2,436.66 cfs Outflow=18.88 cfs 6.518 af

**Pond 1P: Ext. 15" CMP Martin Road** Peak Elev=50.41' Storage=652,211 cf Inflow=111.47 cfs 14.658 af  
 15.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/ Outflow=4.14 cfs 2.454 af

**Pond 2P: Ext 12" CMP Driveway Crossing** Peak Elev=40.96' Storage=605,373 cf Inflow=89.98 cfs 15.120 af  
 12.0" Round Culvert n=0.013 L=30.0' S=0.0050 '/ Outflow=4.34 cfs 2.567 af

**Pond 3P: Ext. 36" RCP Route 236 Crossing** Peak Elev=37.50' Storage=7,722 cf Inflow=28.74 cfs 7.474 af  
 36.0" Round Culvert n=0.011 L=100.0' S=-0.0030 '/ Outflow=26.42 cfs 7.419 af

**Pond 4P: 48" RCP Culverted Crossing** Peak Elev=33.69' Storage=59,635 cf Inflow=120.92 cfs 19.067 af  
 Primary=98.79 cfs 18.883 af Secondary=0.00 cfs 0.000 af Outflow=98.79 cfs 18.883 af

**Link AP1: AP1** Inflow=98.79 cfs 18.883 af  
 Primary=98.79 cfs 18.883 af

**Total Runoff Area = 163.600 ac Runoff Volume = 44.987 af Average Runoff Depth = 3.30"**  
**88.05% Pervious = 144.047 ac 11.95% Impervious = 19.554 ac**

**Summary for Subcatchment 1S: Subcat to Martin Road Crossing**

Runoff = 111.47 cfs @ 12.52 hrs, Volume= 14.658 af, Depth> 4.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25 YEAR STORM Rainfall=6.60"

Area (sf)	CN	Description
13,186	98	Paved parking, HSG C
84,109	98	Paved parking, HSG D
24,295	46	2 acre lots, 12% imp, HSG A
14,995	36	Woods, Fair, HSG A
157,513	77	2 acre lots, 12% imp, HSG C
30,028	73	Woods, Fair, HSG C
177,718	77	Brush, Fair, HSG D
362,281	79	Woods, Fair, HSG D
1,040,897	82	2 acre lots, 12% imp, HSG D
1,905,022	80	Weighted Average
1,661,002		87.19% Pervious Area
244,020		12.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	50	0.0750	0.12		<b>Sheet Flow, SF 1</b> Woods: Light underbrush n= 0.400 P2= 3.33"
18.4	875	0.0251	0.79		<b>Shallow Concentrated Flow, SCF 1</b> Woodland Kv= 5.0 fps
12.5	1,128	0.0022	1.50	1,953.86	<b>Channel Flow, CF 1</b> Area= 1,300.0 sf Perim= 701.0' r= 1.85' n= 0.070 Sluggish weedy reaches w/pools
38.0	2,053	Total			

**Summary for Subcatchment 2S: Subcat to Ext Driveway Crossing**

Runoff = 89.98 cfs @ 12.80 hrs, Volume= 15.120 af, Depth> 4.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25 YEAR STORM Rainfall=6.60"

Area (sf)	CN	Description
76,151	46	2 acre lots, 12% imp, HSG A
27,952	77	2 acre lots, 12% imp, HSG C
10,053	98	Paved parking, HSG C
31,291	96	Gravel surface, HSG D
63,490	98	Paved parking, HSG D
34,997	77	Brush, Fair, HSG D
333,371	79	Woods, Fair, HSG D
1,351,867	82	2 acre lots, 12% imp, HSG D
1,929,172	81	Weighted Average
1,680,913		87.13% Pervious Area
248,259		12.87% Impervious Area

**WF44 SWA EXT ENH**

Type III 24-hr 25 YEAR STORM Rainfall=6.60"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	50	0.0200	0.07		<b>Sheet Flow, SF 1</b> Woods: Light underbrush n= 0.400 P2= 3.33"
27.7	1,393	0.0281	0.84		<b>Shallow Concentrated Flow, SCF 1</b> Woodland Kv= 5.0 fps
20.6	1,751	0.0057	1.42	708.86	<b>Channel Flow, CF 1</b> Area= 500.0 sf Perim= 601.0' r= 0.83' n= 0.070 Sluggish weedy reaches w/pools
60.4	3,194	Total			

**Summary for Subcatchment 3S: Drainage to Rte 236 Crossing**

Runoff = 27.89 cfs @ 12.23 hrs, Volume= 2.660 af, Depth&gt; 4.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25 YEAR STORM Rainfall=6.60"

Area (sf)	CN	Description
10,297	96	Gravel surface, HSG D
43,366	98	Paved parking, HSG D
60,382	79	Woods, Fair, HSG D
196,747	82	Woods/grass comb., Fair, HSG D
310,792	84	Weighted Average
267,426		86.05% Pervious Area
43,366		13.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.8	50	0.0600	0.11		<b>Sheet Flow, SF 1</b> Woods: Light underbrush n= 0.400 P2= 3.33"
4.9	351	0.0569	1.19		<b>Shallow Concentrated Flow, SCF 1</b> Woodland Kv= 5.0 fps
4.6	694	0.0094	2.49	995.12	<b>Channel Flow, CF 1</b> Area= 400.0 sf Perim= 301.0' r= 1.33' n= 0.070 Sluggish weedy reaches w/pools
17.3	1,095	Total			

**Summary for Subcatchment 4S: Drainage to 48" RCP Dana Ave**

Runoff = 118.64 cfs @ 12.34 hrs, Volume= 12.549 af, Depth&gt; 2.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25 YEAR STORM Rainfall=6.60"



**WF44 SWA EXT ENH**

Type III 24-hr 25 YEAR STORM Rainfall=6.60"

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Area (sf)	CN	Description
70,148	98	Paved parking, HSG A
503,709	46	2 acre lots, 12% imp, HSG A
191,462	39	>75% Grass cover, Good, HSG A
83,574	35	Brush, Fair, HSG A
653,542	36	Woods, Fair, HSG A
60,996	98	Paved parking, HSG C
133,473	77	2 acre lots, 12% imp, HSG C
106,804	73	Woods, Fair, HSG C
14,197	74	>75% Grass cover, Good, HSG C
89,436	98	Paved parking, HSG D
158,927	82	2 acre lots, 12% imp, HSG D
66,269	80	>75% Grass cover, Good, HSG D
357,466	79	Woods, Fair, HSG D
491,448	77	Brush, Fair, HSG D
2,981,451	61	Weighted Average
2,665,338		89.40% Pervious Area
316,113		10.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	50	0.0550	0.23		<b>Sheet Flow, SF 1</b> Grass: Short n= 0.150 P2= 3.33"
3.2	376	0.0798	1.98		<b>Shallow Concentrated Flow, SCF 1</b> Short Grass Pasture Kv= 7.0 fps
4.8	321	0.0249	1.10		<b>Shallow Concentrated Flow, SCF 2</b> Short Grass Pasture Kv= 7.0 fps
7.4	1,522	0.0039	3.44	5,931.09	<b>Channel Flow, CF 1</b> Area= 1,725.0 sf Perim= 413.0' r= 4.18' n= 0.070 Sluggish weedy reaches w/pools
3.8	1,004	0.0109	4.36	1,962.74	<b>Channel Flow, CF 2</b> Area= 450.0 sf Perim= 163.0' r= 2.76' n= 0.070 Sluggish weedy reaches w/pools
22.9	3,273	Total			

**Summary for Reach 1R: Martin Road Culvert Reach to Rte 236 Culvert**

[79] Warning: Submerged Pond 1P Primary device # 1 OUTLET by 0.12'

Inflow Area = 43.733 ac, 12.81% Impervious, Inflow Depth > 0.67" for 25 YEAR STORM event  
 Inflow = 4.14 cfs @ 18.87 hrs, Volume= 2.454 af  
 Outflow = 4.14 cfs @ 19.41 hrs, Volume= 2.248 af, Atten= 0%, Lag= 32.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 0.68 fps, Min. Travel Time= 18.1 min  
 Avg. Velocity = 0.52 fps, Avg. Travel Time= 23.7 min

Peak Storage= 4,498 cf @ 19.11 hrs  
 Average Depth at Peak Storage= 0.12'  
 Bank-Full Depth= 4.00' Flow Area= 400.0 sf, Capacity= 2,224.76 cfs

50.00' x 4.00' deep channel, n= 0.070 Sluggish weedy reaches w/pools  
Side Slope Z-value= 12.5 '/' Top Width= 150.00'  
Length= 744.0' Slope= 0.0186 '/'  
Inlet Invert= 48.50', Outlet Invert= 34.65'



**Summary for Reach 2R: Culvert Daylight to Stream Channel**

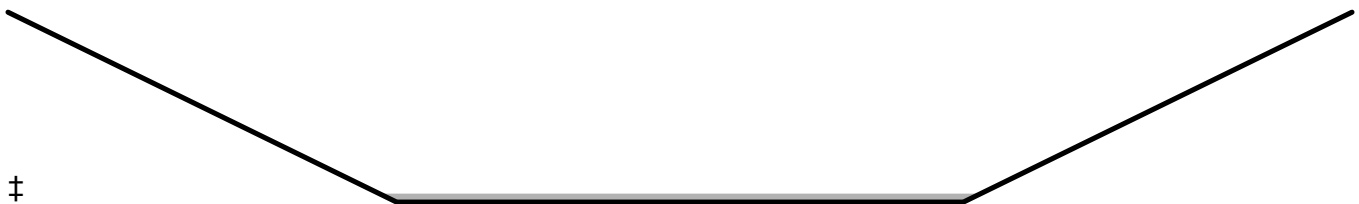
[79] Warning: Submerged Pond 3P Primary device # 1 by 0.27'

Inflow Area = 95.156 ac, 12.92% Impervious, Inflow Depth > 0.94" for 25 YEAR STORM event  
Inflow = 26.42 cfs @ 12.31 hrs, Volume= 7.419 af  
Outflow = 23.88 cfs @ 12.59 hrs, Volume= 7.116 af, Atten= 10%, Lag= 16.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Max. Velocity= 0.49 fps, Min. Travel Time= 9.9 min  
Avg. Velocity = 0.28 fps, Avg. Travel Time= 17.5 min

Peak Storage= 14,236 cf @ 12.42 hrs  
Average Depth at Peak Storage= 0.27'  
Bank-Full Depth= 6.00' Flow Area= 1,770.0 sf, Capacity= 5,614.66 cfs

175.00' x 6.00' deep channel, n= 0.070 Sluggish weedy reaches w/pools  
Side Slope Z-value= 20.0 '/' Top Width= 415.00'  
Length= 294.0' Slope= 0.0032 '/'  
Inlet Invert= 34.95', Outlet Invert= 34.00'



**Summary for Reach 3R: Stream Channel to 48" RCP**

[62] Hint: Exceeded Reach 2R OUTLET depth by 0.25' @ 12.90 hrs

Inflow Area = 95.156 ac, 12.92% Impervious, Inflow Depth > 0.90" for 25 YEAR STORM event  
Inflow = 23.88 cfs @ 12.59 hrs, Volume= 7.116 af  
Outflow = 18.88 cfs @ 13.15 hrs, Volume= 6.518 af, Atten= 21%, Lag= 33.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Max. Velocity= 0.81 fps, Min. Travel Time= 20.6 min  
Avg. Velocity = 0.46 fps, Avg. Travel Time= 36.4 min

Peak Storage= 23,402 cf @ 12.81 hrs  
 Average Depth at Peak Storage= 0.43'  
 Bank-Full Depth= 6.00' Flow Area= 660.0 sf, Capacity= 2,436.66 cfs

50.00' x 6.00' deep channel, n= 0.070 Sluggish weedy reaches w/pools  
 Side Slope Z-value= 10.0 '/' Top Width= 170.00'  
 Length= 1,004.0' Slope= 0.0050 '/'  
 Inlet Invert= 34.00', Outlet Invert= 29.00'



**Summary for Pond 1P: Ext. 15" CMP Martin Road Culvert**

Inflow Area = 43.733 ac, 12.81% Impervious, Inflow Depth > 4.02" for 25 YEAR STORM event  
 Inflow = 111.47 cfs @ 12.52 hrs, Volume= 14.658 af  
 Outflow = 4.14 cfs @ 18.87 hrs, Volume= 2.454 af, Atten= 96%, Lag= 381.1 min  
 Primary = 4.14 cfs @ 18.87 hrs, Volume= 2.454 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Starting Elev= 49.00' Surf.Area= 231,086 sf Storage= 119,579 cf  
 Peak Elev= 50.41' @ 18.87 hrs Surf.Area= 469,035 sf Storage= 652,211 cf (532,632 cf above start)  
 Flood Elev= 52.50' Surf.Area= 556,200 sf Storage= 1,713,635 cf (1,594,056 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= 178.3 min ( 981.3 - 803.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	48.00'	1,999,122 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
48.00	8,072	0	0
50.00	454,100	462,172	462,172
52.00	526,650	980,750	1,442,922
53.00	585,750	556,200	1,999,122

Device	Routing	Invert	Outlet Devices
#1	Primary	49.00'	<b>15.0" Round CMP_Round 15"</b> L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 49.00' / 48.50' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

**Primary OutFlow** Max=4.14 cfs @ 18.87 hrs HW=50.41' (Free Discharge)  
 ↳ **1=CMP\_Round 15"** (Inlet Controls 4.14 cfs @ 3.37 fps)

**Summary for Pond 2P: Ext 12" CMP Driveway Crossing**

Inflow Area = 44.288 ac, 12.87% Impervious, Inflow Depth > 4.10" for 25 YEAR STORM event  
 Inflow = 89.98 cfs @ 12.80 hrs, Volume= 15.120 af  
 Outflow = 4.34 cfs @ 19.12 hrs, Volume= 2.567 af, Atten= 95%, Lag= 378.8 min  
 Primary = 4.34 cfs @ 19.12 hrs, Volume= 2.567 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Starting Elev= 38.35' Surf.Area= 169,449 sf Storage= 57,800 cf  
 Peak Elev= 40.96' @ 19.12 hrs Surf.Area= 277,473 sf Storage= 605,373 cf (547,573 cf above start)  
 Flood Elev= 43.00' Surf.Area= 406,736 sf Storage= 1,309,652 cf (1,251,852 cf above start)

Plug-Flow detention time= 472.2 min calculated for 1.235 af (8% of inflow)  
 Center-of-Mass det. time= 163.5 min ( 982.2 - 818.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	38.00'	1,744,640 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
38.00	160,837	0	0
40.00	210,051	370,888	370,888
42.00	350,230	560,281	931,169
44.00	463,241	813,471	1,744,640

Device	Routing	Invert	Outlet Devices
#1	Primary	38.35'	<b>12.0" Round CMP_Round 12"</b> L= 30.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 38.35' / 38.20' S= 0.0050 ' / S= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

**Primary OutFlow** Max=4.34 cfs @ 19.12 hrs HW=40.96' (Free Discharge)  
 ↳1=CMP\_Round 12" (Inlet Controls 4.34 cfs @ 5.52 fps)

**Summary for Pond 3P: Ext. 36" RCP Route 236 Crossing**

[62] Hint: Exceeded Reach 1R OUTLET depth by 2.83' @ 12.30 hrs

Inflow Area = 95.156 ac, 12.92% Impervious, Inflow Depth > 0.94" for 25 YEAR STORM event  
 Inflow = 28.74 cfs @ 12.24 hrs, Volume= 7.474 af  
 Outflow = 26.42 cfs @ 12.31 hrs, Volume= 7.419 af, Atten= 8%, Lag= 4.7 min  
 Primary = 26.42 cfs @ 12.31 hrs, Volume= 7.419 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Starting Elev= 34.95' Surf.Area= 1,133 sf Storage= 586 cf  
 Peak Elev= 37.50' @ 12.31 hrs Surf.Area= 4,847 sf Storage= 7,722 cf (7,136 cf above start)  
 Flood Elev= 49.50' Surf.Area= 70,300 sf Storage= 171,270 cf (170,684 cf above start)

Plug-Flow detention time= 6.1 min calculated for 7.405 af (99% of inflow)  
 Center-of-Mass det. time= 2.4 min ( 917.0 - 914.6 )

**WF44 SWA EXT ENH**

Type III 24-hr 25 YEAR STORM Rainfall=6.60"

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Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	171,270 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.00	100	0	0
36.00	2,275	2,375	2,375
38.00	5,700	7,975	10,350
40.00	7,360	13,060	23,410
42.00	35,100	42,460	65,870
44.00	70,300	105,400	171,270

Device	Routing	Invert	Outlet Devices
#1	Primary	34.95'	<b>36.0" Round RCP_Round 36"</b> L= 100.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 34.65' / 34.95' S= -0.0030 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf

**Primary OutFlow** Max=26.28 cfs @ 12.31 hrs HW=37.49' (Free Discharge)

↑1=RCP\_Round 36" (Barrel Controls 26.28 cfs @ 4.89 fps)

**Summary for Pond 4P: 48" RCP Culverted Crossing**

[92] Warning: Device #2 is above defined storage

[62] Hint: Exceeded Reach 3R OUTLET depth by 4.37' @ 12.50 hrs

Inflow Area = 163.600 ac, 11.95% Impervious, Inflow Depth > 1.40" for 25 YEAR STORM event  
 Inflow = 120.92 cfs @ 12.34 hrs, Volume= 19.067 af  
 Outflow = 98.79 cfs @ 12.52 hrs, Volume= 18.883 af, Atten= 18%, Lag= 10.8 min  
 Primary = 98.79 cfs @ 12.52 hrs, Volume= 18.883 af  
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Peak Elev= 33.69' @ 12.52 hrs Surf.Area= 22,929 sf Storage= 59,635 cf

Plug-Flow detention time= 9.3 min calculated for 18.820 af (99% of inflow)  
 Center-of-Mass det. time= 6.2 min ( 875.5 - 869.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	29.00'	267,755 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
29.00	4,210	0	0
30.00	7,080	5,645	5,645
32.00	14,930	22,010	27,655
34.00	24,400	39,330	66,985
36.00	45,950	70,350	137,335
38.00	84,470	130,420	267,755

**WF44 SWA EXT ENH**

Type III 24-hr 25 YEAR STORM Rainfall=6.60"

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Device	Routing	Invert	Outlet Devices
#1	Primary	29.00'	<b>48.0" Round RCP_Round 48"</b> L= 120.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 29.00' / 28.00' S= 0.0083 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 12.57 sf
#2	Secondary	38.00'	<b>100.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b> 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) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

**Primary OutFlow** Max=98.61 cfs @ 12.52 hrs HW=33.68' (Free Discharge)

↑1=RCP\_Round 48" (Barrel Controls 98.61 cfs @ 8.44 fps)

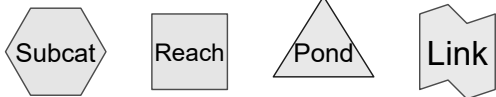
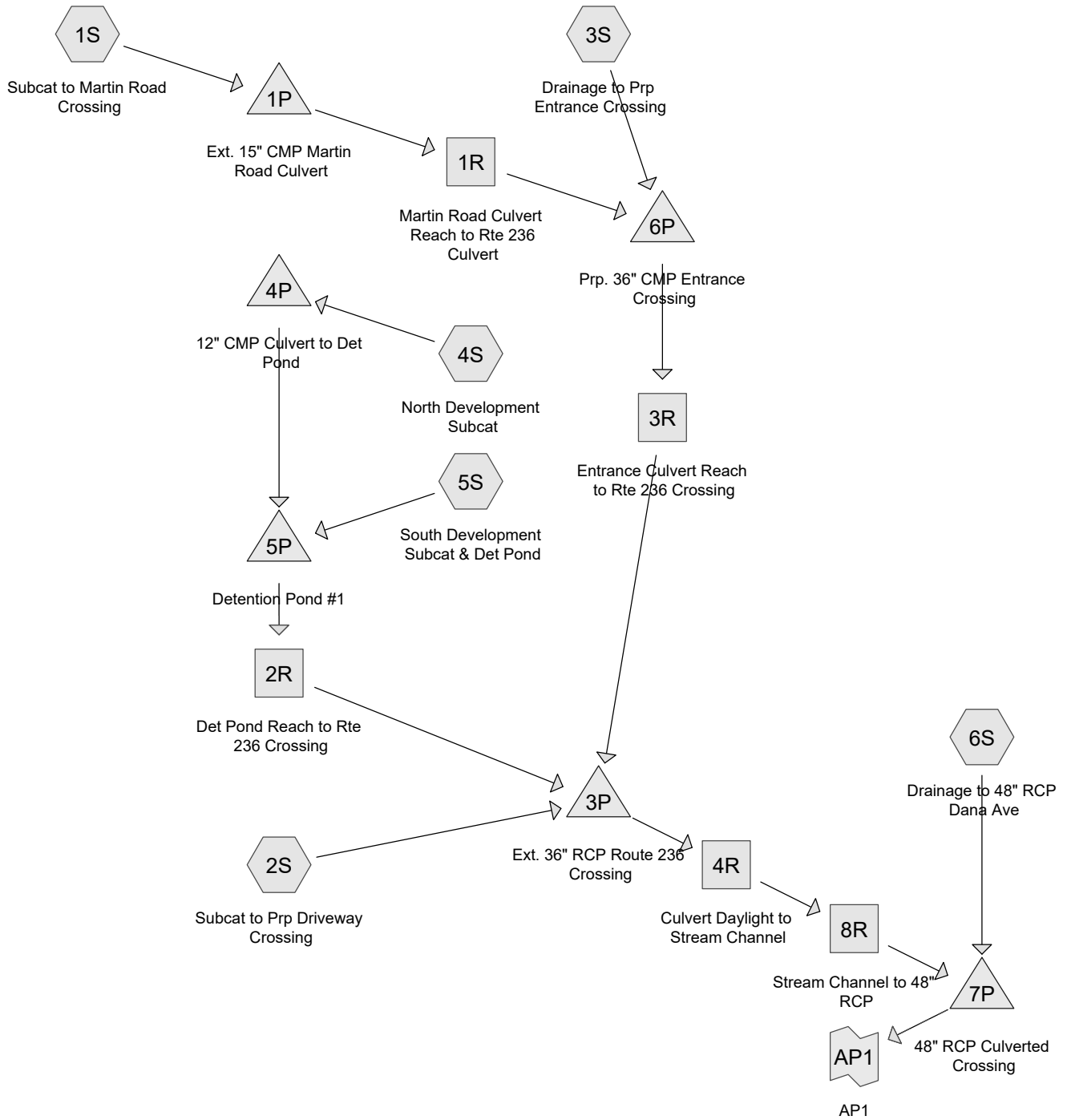
**Secondary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=29.00' (Free Discharge)

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

**Summary for Link AP1: AP1**

Inflow Area = 163.600 ac, 11.95% Impervious, Inflow Depth > 1.39" for 25 YEAR STORM event  
 Inflow = 98.79 cfs @ 12.52 hrs, Volume= 18.883 af  
 Primary = 98.79 cfs @ 12.52 hrs, Volume= 18.883 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs



**Routing Diagram for WF44 SWA DEV ENH**  
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# WF44 SWA DEV ENH

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## Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
13.869	46	2 acre lots, 12% imp, HSG A (1S, 2S, 6S)
7.322	77	2 acre lots, 12% imp, HSG C (1S, 2S, 6S)
58.664	82	2 acre lots, 12% imp, HSG D (1S, 2S, 6S)
4.395	39	>75% Grass cover, Good, HSG A (6S)
0.326	74	>75% Grass cover, Good, HSG C (6S)
2.061	80	>75% Grass cover, Good, HSG D (2S, 3S, 4S, 5S, 6S)
1.919	35	Brush, Fair, HSG A (6S)
16.165	77	Brush, Fair, HSG D (1S, 2S, 6S)
0.018	96	Gravel surface, HSG D (3S)
1.610	98	Paved parking, HSG A (6S)
1.934	98	Paved parking, HSG C (1S, 2S, 6S)
6.772	98	Paved parking, HSG D (1S, 2S, 3S, 4S, 5S, 6S)
0.012	98	Roofs, HSG D (4S, 5S)
15.347	36	Woods, Fair, HSG A (1S, 6S)
3.141	73	Woods, Fair, HSG C (1S, 6S)
25.873	79	Woods, Fair, HSG D (1S, 2S, 3S, 6S)
4.171	82	Woods/grass comb., Fair, HSG D (3S)
<b>163.600</b>	<b>73</b>	<b>TOTAL AREA</b>



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1S: Subcat to Martin** Runoff Area=1,905,022 sf 12.81% Impervious Runoff Depth>1.37"  
 Flow Length=2,053' Tc=33.8 min CN=80 Runoff=40.72 cfs 5.010 af

**Subcatchment 2S: Subcat to Prp** Runoff Area=1,946,168 sf 13.28% Impervious Runoff Depth>1.43"  
 Flow Length=3,232' Tc=61.6 min CN=81 Runoff=31.53 cfs 5.306 af

**Subcatchment 3S: Drainage to Prp** Runoff Area=278,095 sf 14.10% Impervious Runoff Depth>1.66"  
 Flow Length=880' Tc=15.9 min CN=84 Runoff=9.88 cfs 0.885 af

**Subcatchment 4S: North Development** Runoff Area=7,250 sf 64.19% Impervious Runoff Depth>2.34"  
 Flow Length=48' Slope=0.0950 '/' Tc=2.9 min CN=92 Runoff=0.51 cfs 0.032 af

**Subcatchment 5S: South Development** Runoff Area=8,451 sf 57.92% Impervious Runoff Depth>2.16"  
 Flow Length=44' Slope=0.1000 '/' Tc=2.6 min CN=90 Runoff=0.56 cfs 0.035 af

**Subcatchment 6S: Drainage to 48" RCP** Runoff Area=2,981,451 sf 10.60% Impervious Runoff Depth>0.43"  
 Flow Length=3,273' Tc=22.9 min CN=61 Runoff=17.72 cfs 2.468 af

**Reach 1R: Martin Road Culvert Reach to** Avg. Flow Depth=0.06' Max Vel=0.43 fps Inflow=1.31 cfs 0.685 af  
 n=0.070 L=529.0' S=0.0161 '/' Capacity=2,066.93 cfs Outflow=1.30 cfs 0.611 af

**Reach 2R: Det Pond Reach to Rte 236** Avg. Flow Depth=0.01' Max Vel=0.37 fps Inflow=0.67 cfs 0.052 af  
 n=0.070 L=226.0' S=0.0226 '/' Capacity=7,957.89 cfs Outflow=0.50 cfs 0.052 af

**Reach 3R: Entrance Culvert Reach to** Avg. Flow Depth=0.12' Max Vel=0.96 fps Inflow=5.86 cfs 1.386 af  
 n=0.070 L=147.0' S=0.0364 '/' Capacity=3,110.73 cfs Outflow=5.84 cfs 1.372 af

**Reach 4R: Culvert Daylight to Stream** Avg. Flow Depth=0.16' Max Vel=0.35 fps Inflow=9.76 cfs 4.796 af  
 n=0.070 L=294.0' S=0.0032 '/' Capacity=5,614.66 cfs Outflow=9.74 cfs 4.554 af

**Reach 8R: Stream Channel to 48" RCP** Avg. Flow Depth=0.29' Max Vel=0.63 fps Inflow=9.74 cfs 4.554 af  
 n=0.070 L=1,004.0' S=0.0050 '/' Capacity=2,436.66 cfs Outflow=9.64 cfs 4.072 af

**Pond 1P: Ext. 15" CMP Martin Road** Peak Elev=49.63' Storage=307,905 cf Inflow=40.72 cfs 5.010 af  
 15.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=1.31 cfs 0.685 af

**Pond 3P: Ext. 36" RCP Route 236 Crossing** Peak Elev=36.35' Storage=171,566 cf Inflow=36.66 cfs 6.729 af  
 36.0" Round Culvert n=0.013 L=100.0' S=-0.0030 '/' Outflow=9.76 cfs 4.796 af

**Pond 4P: 12" CMP Culvert to Det Pond** Peak Elev=41.38' Storage=87 cf Inflow=0.51 cfs 0.032 af  
 12.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=0.46 cfs 0.032 af

**Pond 5P: Detention Pond #1** Peak Elev=40.98' Storage=1,021 cf Inflow=1.00 cfs 0.067 af  
 Primary=0.67 cfs 0.052 af Secondary=0.00 cfs 0.000 af Outflow=0.67 cfs 0.052 af

**Pond 6P: Prp. 36" CMP Entrance Crossing** Peak Elev=41.43' Storage=10,690 cf Inflow=9.89 cfs 1.496 af  
 36.0" Round Culvert n=0.013 L=40.0' S=0.0125 '/' Outflow=5.86 cfs 1.386 af

**WF44 SWA DEV ENH**

*Type III 24-hr 2 YEAR STORM Rainfall=3.33"*

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**Pond 7P: 48" RCP Culverted Crossing**

Peak Elev=30.44' Storage=9,138 cf Inflow=17.74 cfs 6.540 af  
Primary=15.86 cfs 6.416 af Secondary=0.00 cfs 0.000 af Outflow=15.86 cfs 6.416 af

**Link AP1: AP1**

Inflow=15.86 cfs 6.416 af  
Primary=15.86 cfs 6.416 af

**Total Runoff Area = 163.600 ac Runoff Volume = 13.736 af Average Runoff Depth = 1.01"**  
**87.83% Pervious = 143.690 ac 12.17% Impervious = 19.910 ac**

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1S: Subcat to Martin** Runoff Area=1,905,022 sf 12.81% Impervious Runoff Depth>2.96"  
 Flow Length=2,053' Tc=33.8 min CN=80 Runoff=87.41 cfs 10.780 af

**Subcatchment 2S: Subcat to Prp** Runoff Area=1,946,168 sf 13.28% Impervious Runoff Depth>3.02"  
 Flow Length=3,232' Tc=61.6 min CN=81 Runoff=66.73 cfs 11.252 af

**Subcatchment 3S: Drainage to Prp** Runoff Area=278,095 sf 14.10% Impervious Runoff Depth>3.36"  
 Flow Length=880' Tc=15.9 min CN=84 Runoff=19.64 cfs 1.786 af

**Subcatchment 4S: North Development** Runoff Area=7,250 sf 64.19% Impervious Runoff Depth>4.18"  
 Flow Length=48' Slope=0.0950 '/' Tc=2.9 min CN=92 Runoff=0.88 cfs 0.058 af

**Subcatchment 5S: South Development** Runoff Area=8,451 sf 57.92% Impervious Runoff Depth>3.98"  
 Flow Length=44' Slope=0.1000 '/' Tc=2.6 min CN=90 Runoff=1.00 cfs 0.064 af

**Subcatchment 6S: Drainage to 48" RCP** Runoff Area=2,981,451 sf 10.60% Impervious Runoff Depth>1.42"  
 Flow Length=3,273' Tc=22.9 min CN=61 Runoff=74.23 cfs 8.109 af

**Reach 1R: Martin Road Culvert Reach to** Avg. Flow Depth=0.10' Max Vel=0.60 fps Inflow=3.23 cfs 1.865 af  
 n=0.070 L=529.0' S=0.0161 '/' Capacity=2,066.93 cfs Outflow=3.23 cfs 1.734 af

**Reach 2R: Det Pond Reach to Rte 236** Avg. Flow Depth=0.01' Max Vel=0.37 fps Inflow=1.16 cfs 0.107 af  
 n=0.070 L=226.0' S=0.0226 '/' Capacity=7,957.89 cfs Outflow=0.96 cfs 0.106 af

**Reach 3R: Entrance Culvert Reach to** Avg. Flow Depth=0.18' Max Vel=1.27 fps Inflow=11.98 cfs 3.343 af  
 n=0.070 L=147.0' S=0.0364 '/' Capacity=3,110.73 cfs Outflow=11.94 cfs 3.318 af

**Reach 4R: Culvert Daylight to Stream** Avg. Flow Depth=0.25' Max Vel=0.47 fps Inflow=21.57 cfs 10.925 af  
 n=0.070 L=294.0' S=0.0032 '/' Capacity=5,614.66 cfs Outflow=21.55 cfs 10.538 af

**Reach 8R: Stream Channel to 48" RCP** Avg. Flow Depth=0.46' Max Vel=0.85 fps Inflow=21.55 cfs 10.538 af  
 n=0.070 L=1,004.0' S=0.0050 '/' Capacity=2,436.66 cfs Outflow=21.44 cfs 9.772 af

**Pond 1P: Ext. 15" CMP Martin Road** Peak Elev=50.10' Storage=508,855 cf Inflow=87.41 cfs 10.780 af  
 15.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=3.23 cfs 1.865 af

**Pond 3P: Ext. 36" RCP Route 236** Peak Elev=37.24' Storage=329,926 cf Inflow=76.89 cfs 14.676 af  
 36.0" Round Culvert n=0.013 L=100.0' S=-0.0030 '/' Outflow=21.57 cfs 10.925 af

**Pond 4P: 12" CMP Culvert to Det Pond** Peak Elev=41.52' Storage=128 cf Inflow=0.88 cfs 0.058 af  
 12.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=0.80 cfs 0.058 af

**Pond 5P: Detention Pond #1** Peak Elev=41.23' Storage=1,331 cf Inflow=1.77 cfs 0.122 af  
 Primary=1.16 cfs 0.107 af Secondary=0.00 cfs 0.000 af Outflow=1.16 cfs 0.107 af

**Pond 6P: Prp. 36" CMP Entrance Crossing** Peak Elev=41.91' Storage=18,995 cf Inflow=19.73 cfs 3.521 af  
 36.0" Round Culvert n=0.013 L=40.0' S=0.0125 '/' Outflow=11.98 cfs 3.343 af

**WF44 SWA DEV ENH**

*Type III 24-hr 10 YEAR STORM Rainfall=5.34"*

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**Pond 7P: 48" RCP Culverted Crossing** Peak Elev=32.38' Storage=33,650 cf Inflow=74.68 cfs 17.880 af  
Primary=64.71 cfs 17.664 af Secondary=0.00 cfs 0.000 af Outflow=64.71 cfs 17.664 af

**Link AP1: AP1**

Inflow=64.71 cfs 17.664 af  
Primary=64.71 cfs 17.664 af

**Total Runoff Area = 163.600 ac Runoff Volume = 32.050 af Average Runoff Depth = 2.35"**  
**87.83% Pervious = 143.690 ac 12.17% Impervious = 19.910 ac**

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1S: Subcat to Martin** Runoff Area=1,905,022 sf 12.81% Impervious Runoff Depth>4.03"  
 Flow Length=2,053' Tc=33.8 min CN=80 Runoff=118.01 cfs 14.678 af

**Subcatchment 2S: Subcat to Prp** Runoff Area=1,946,168 sf 13.28% Impervious Runoff Depth>4.10"  
 Flow Length=3,232' Tc=61.6 min CN=81 Runoff=89.68 cfs 15.247 af

**Subcatchment 3S: Drainage to Prp** Runoff Area=278,095 sf 14.10% Impervious Runoff Depth>4.48"  
 Flow Length=880' Tc=15.9 min CN=84 Runoff=25.86 cfs 2.381 af

**Subcatchment 4S: North Development** Runoff Area=7,250 sf 64.19% Impervious Runoff Depth>5.34"  
 Flow Length=48' Slope=0.0950 '/' Tc=2.9 min CN=92 Runoff=1.12 cfs 0.074 af

**Subcatchment 5S: South Development** Runoff Area=8,451 sf 57.92% Impervious Runoff Depth>5.14"  
 Flow Length=44' Slope=0.1000 '/' Tc=2.6 min CN=90 Runoff=1.27 cfs 0.083 af

**Subcatchment 6S: Drainage to 48" RCP** Runoff Area=2,981,451 sf 10.60% Impervious Runoff Depth>2.20"  
 Flow Length=3,273' Tc=22.9 min CN=61 Runoff=118.64 cfs 12.549 af

**Reach 1R: Martin Road Culvert Reach to** Avg. Flow Depth=0.12' Max Vel=0.65 fps Inflow=4.14 cfs 2.476 af  
 n=0.070 L=529.0' S=0.0161 '/' Capacity=2,066.93 cfs Outflow=4.14 cfs 2.323 af

**Reach 2R: Det Pond Reach to Rte 236** Avg. Flow Depth=0.02' Max Vel=0.37 fps Inflow=1.39 cfs 0.142 af  
 n=0.070 L=226.0' S=0.0226 '/' Capacity=7,957.89 cfs Outflow=1.18 cfs 0.141 af

**Reach 3R: Entrance Culvert Reach to** Avg. Flow Depth=0.21' Max Vel=1.40 fps Inflow=15.81 cfs 4.494 af  
 n=0.070 L=147.0' S=0.0364 '/' Capacity=3,110.73 cfs Outflow=15.76 cfs 4.465 af

**Reach 4R: Culvert Daylight to Stream** Avg. Flow Depth=0.30' Max Vel=0.53 fps Inflow=28.44 cfs 14.857 af  
 n=0.070 L=294.0' S=0.0032 '/' Capacity=5,614.66 cfs Outflow=28.42 cfs 14.391 af

**Reach 8R: Stream Channel to 48" RCP** Avg. Flow Depth=0.54' Max Vel=0.94 fps Inflow=28.42 cfs 14.391 af  
 n=0.070 L=1,004.0' S=0.0050 '/' Capacity=2,436.66 cfs Outflow=28.32 cfs 13.463 af

**Pond 1P: Ext. 15" CMP Martin Road** Peak Elev=50.41' Storage=652,236 cf Inflow=118.01 cfs 14.678 af  
 15.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=4.14 cfs 2.476 af

**Pond 3P: Ext. 36" RCP Route 236** Peak Elev=37.72' Storage=439,521 cf Inflow=103.25 cfs 19.853 af  
 36.0" Round Culvert n=0.013 L=100.0' S=-0.0030 '/' Outflow=28.44 cfs 14.857 af

**Pond 4P: 12" CMP Culvert to Det Pond** Peak Elev=41.59' Storage=153 cf Inflow=1.12 cfs 0.074 af  
 12.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=1.01 cfs 0.074 af

**Pond 5P: Detention Pond #1** Peak Elev=41.39' Storage=1,548 cf Inflow=2.25 cfs 0.157 af  
 Primary=1.39 cfs 0.142 af Secondary=0.00 cfs 0.000 af Outflow=1.39 cfs 0.142 af

**Pond 6P: Prp. 36" CMP Entrance Crossing** Peak Elev=42.17' Storage=24,440 cf Inflow=26.09 cfs 4.703 af  
 36.0" Round Culvert n=0.013 L=40.0' S=0.0125 '/' Outflow=15.81 cfs 4.494 af

**WF44 SWA DEV ENH**

*Type III 24-hr 25 YEAR STORM Rainfall=6.60"*

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**Pond 7P: 48" RCP Culverted Crossing** Peak Elev=33.67' Storage=59,091 cf Inflow=120.38 cfs 26.012 af  
Primary=98.27 cfs 25.736 af Secondary=0.00 cfs 0.000 af Outflow=98.27 cfs 25.736 af

**Link AP1: AP1**

Inflow=98.27 cfs 25.736 af

Primary=98.27 cfs 25.736 af

**Total Runoff Area = 163.600 ac Runoff Volume = 45.012 af Average Runoff Depth = 3.30"**  
**87.83% Pervious = 143.690 ac 12.17% Impervious = 19.910 ac**

**Summary for Subcatchment 1S: Subcat to Martin Road Crossing**

Runoff = 118.01 cfs @ 12.46 hrs, Volume= 14.678 af, Depth> 4.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25 YEAR STORM Rainfall=6.60"

Area (sf)	CN	Description
13,186	98	Paved parking, HSG C
84,109	98	Paved parking, HSG D
24,295	46	2 acre lots, 12% imp, HSG A
14,995	36	Woods, Fair, HSG A
157,513	77	2 acre lots, 12% imp, HSG C
30,028	73	Woods, Fair, HSG C
177,718	77	Brush, Fair, HSG D
362,281	79	Woods, Fair, HSG D
1,040,897	82	2 acre lots, 12% imp, HSG D
1,905,022	80	Weighted Average
1,661,002		87.19% Pervious Area
244,020		12.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	50	0.0750	0.29		<b>Sheet Flow, SF 1</b> Range n= 0.130 P2= 3.33"
18.4	875	0.0251	0.79		<b>Shallow Concentrated Flow, SCF 1</b> Woodland Kv= 5.0 fps
12.5	1,128	0.0022	1.50	1,953.86	<b>Channel Flow, CF 1</b> Area= 1,300.0 sf Perim= 701.0' r= 1.85' n= 0.070 Sluggish weedy reaches w/pools
33.8	2,053	Total			

**Summary for Subcatchment 2S: Subcat to Prp Driveway Crossing**

Runoff = 89.68 cfs @ 12.81 hrs, Volume= 15.247 af, Depth> 4.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25 YEAR STORM Rainfall=6.60"

Area (sf)	CN	Description
76,151	46	2 acre lots, 12% imp, HSG A
27,952	77	2 acre lots, 12% imp, HSG C
10,053	98	Paved parking, HSG C
34,997	77	Brush, Fair, HSG D
73,197	98	Paved parking, HSG D
13,850	80	>75% Grass cover, Good, HSG D
354,389	79	Woods, Fair, HSG D
1,355,579	82	2 acre lots, 12% imp, HSG D
1,946,168	81	Weighted Average
1,687,756		86.72% Pervious Area
258,412		13.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	50	0.0200	0.07		<b>Sheet Flow, SF 1</b> Woods: Light underbrush n= 0.400 P2= 3.33"
27.7	1,393	0.0281	0.84		<b>Shallow Concentrated Flow, SCF 1</b> Woodland Kv= 5.0 fps
21.8	1,789	0.0053	1.37	683.53	<b>Channel Flow, CF 1</b> Area= 500.0 sf Perim= 601.0' r= 0.83' n= 0.070 Sluggish weedy reaches w/pools
61.6	3,232	Total			

**Summary for Subcatchment 3S: Drainage to Prp Entrance Crossing**

Runoff = 25.86 cfs @ 12.21 hrs, Volume= 2.381 af, Depth> 4.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25 YEAR STORM Rainfall=6.60"

Area (sf)	CN	Description
767	96	Gravel surface, HSG D
39,205	98	Paved parking, HSG D
3,521	80	>75% Grass cover, Good, HSG D
52,906	79	Woods, Fair, HSG D
181,696	82	Woods/grass comb., Fair, HSG D
278,095	84	Weighted Average
238,890		85.90% Pervious Area
39,205		14.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.8	50	0.0600	0.11		<b>Sheet Flow, SF 1</b> Woods: Light underbrush n= 0.400 P2= 3.33"
4.9	351	0.0569	1.19		<b>Shallow Concentrated Flow, SCF 1</b> Woodland Kv= 5.0 fps
3.2	479	0.0094	2.49	995.12	<b>Channel Flow, CF 1</b> Area= 400.0 sf Perim= 301.0' r= 1.33' n= 0.070 Sluggish weedy reaches w/pools
15.9	880	Total			

**Summary for Subcatchment 4S: North Development Subcat**

[49] Hint: Tc<2dt may require smaller dt

Runoff = 1.12 cfs @ 12.05 hrs, Volume= 0.074 af, Depth> 5.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25 YEAR STORM Rainfall=6.60"



Area (sf)	CN	Description
308	98	Roofs, HSG D
4,346	98	Paved parking, HSG D
2,596	80	>75% Grass cover, Good, HSG D
7,250	92	Weighted Average
2,596		35.81% Pervious Area
4,654		64.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	48	0.0950	0.28		<b>Sheet Flow, SF 1</b> Grass: Short n= 0.150 P2= 3.33"

**Summary for Subcatchment 5S: South Development Subcat & Det Pond**

[49] Hint: Tc<2dt may require smaller dt

Runoff = 1.27 cfs @ 12.04 hrs, Volume= 0.083 af, Depth> 5.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25 YEAR STORM Rainfall=6.60"

Area (sf)	CN	Description
210	98	Roofs, HSG D
4,685	98	Paved parking, HSG D
3,556	80	>75% Grass cover, Good, HSG D
8,451	90	Weighted Average
3,556		42.08% Pervious Area
4,895		57.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	44	0.1000	0.28		<b>Sheet Flow, SF 1</b> Grass: Short n= 0.150 P2= 3.33"

**Summary for Subcatchment 6S: Drainage to 48" RCP Dana Ave**

Runoff = 118.64 cfs @ 12.34 hrs, Volume= 12.549 af, Depth> 2.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25 YEAR STORM Rainfall=6.60"

Area (sf)	CN	Description
70,148	98	Paved parking, HSG A
503,709	46	2 acre lots, 12% imp, HSG A
191,462	39	>75% Grass cover, Good, HSG A
83,574	35	Brush, Fair, HSG A
653,542	36	Woods, Fair, HSG A
60,996	98	Paved parking, HSG C
133,473	77	2 acre lots, 12% imp, HSG C
106,804	73	Woods, Fair, HSG C
14,197	74	>75% Grass cover, Good, HSG C
89,436	98	Paved parking, HSG D
158,927	82	2 acre lots, 12% imp, HSG D
66,269	80	>75% Grass cover, Good, HSG D
357,466	79	Woods, Fair, HSG D
491,448	77	Brush, Fair, HSG D
2,981,451	61	Weighted Average
2,665,338		89.40% Pervious Area
316,113		10.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	50	0.0550	0.23		<b>Sheet Flow, SF 1</b> Grass: Short n= 0.150 P2= 3.33"
3.2	376	0.0798	1.98		<b>Shallow Concentrated Flow, SCF 1</b> Short Grass Pasture Kv= 7.0 fps
4.8	321	0.0249	1.10		<b>Shallow Concentrated Flow, SCF 2</b> Short Grass Pasture Kv= 7.0 fps
7.4	1,522	0.0039	3.44	5,931.09	<b>Channel Flow, CF 1</b> Area= 1,725.0 sf Perim= 413.0' r= 4.18' n= 0.070 Sluggish weedy reaches w/pools
3.8	1,004	0.0109	4.36	1,962.74	<b>Channel Flow, CF 2</b> Area= 450.0 sf Perim= 163.0' r= 2.76' n= 0.070 Sluggish weedy reaches w/pools
22.9	3,273	Total			

**Summary for Reach 1R: Martin Road Culvert Reach to Rte 236 Culvert**

[79] Warning: Submerged Pond 1P Primary device # 1 OUTLET by 0.12'

Inflow Area = 43.733 ac, 12.81% Impervious, Inflow Depth > 0.68" for 25 YEAR STORM event  
 Inflow = 4.14 cfs @ 18.79 hrs, Volume= 2.476 af  
 Outflow = 4.14 cfs @ 19.16 hrs, Volume= 2.323 af, Atten= 0%, Lag= 21.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 0.65 fps, Min. Travel Time= 13.5 min  
 Avg. Velocity = 0.50 fps, Avg. Travel Time= 17.7 min

Peak Storage= 3,347 cf @ 18.93 hrs  
 Average Depth at Peak Storage= 0.12'  
 Bank-Full Depth= 4.00' Flow Area= 400.0 sf, Capacity= 2,066.93 cfs

50.00' x 4.00' deep channel, n= 0.070 Sluggish weedy reaches w/pools  
Side Slope Z-value= 12.5 '/' Top Width= 150.00'  
Length= 529.0' Slope= 0.0161 '/'  
Inlet Invert= 48.50', Outlet Invert= 40.00'



**Summary for Reach 2R: Det Pond Reach to Rte 236 Crossing**

[79] Warning: Submerged Pond 5P Primary device # 1 OUTLET by 0.02'

Inflow Area = 0.360 ac, 60.82% Impervious, Inflow Depth > 4.71" for 25 YEAR STORM event  
Inflow = 1.39 cfs @ 12.15 hrs, Volume= 0.142 af  
Outflow = 1.18 cfs @ 12.49 hrs, Volume= 0.141 af, Atten= 15%, Lag= 20.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Max. Velocity= 0.37 fps, Min. Travel Time= 10.1 min  
Avg. Velocity = 0.37 fps, Avg. Travel Time= 10.1 min

Peak Storage= 720 cf @ 12.32 hrs  
Average Depth at Peak Storage= 0.02'  
Bank-Full Depth= 4.00' Flow Area= 1,200.0 sf, Capacity= 7,957.89 cfs

200.00' x 4.00' deep channel, n= 0.070 Sluggish weedy reaches w/pools  
Side Slope Z-value= 25.0 '/' Top Width= 400.00'  
Length= 226.0' Slope= 0.0226 '/'  
Inlet Invert= 39.75', Outlet Invert= 34.65'



**Summary for Reach 3R: Entrance Culvert Reach to Rte 236 Crossing**

[79] Warning: Submerged Pond 6P Primary device # 1 OUTLET by 0.21'

Inflow Area = 50.117 ac, 12.97% Impervious, Inflow Depth > 1.08" for 25 YEAR STORM event  
Inflow = 15.81 cfs @ 12.45 hrs, Volume= 4.494 af  
Outflow = 15.76 cfs @ 12.50 hrs, Volume= 4.465 af, Atten= 0%, Lag= 2.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Max. Velocity= 1.40 fps, Min. Travel Time= 1.7 min  
Avg. Velocity = 0.83 fps, Avg. Travel Time= 2.9 min

Peak Storage= 1,653 cf @ 12.47 hrs  
Average Depth at Peak Storage= 0.21'  
Bank-Full Depth= 4.00' Flow Area= 400.0 sf, Capacity= 3,110.73 cfs

50.00' x 4.00' deep channel, n= 0.070 Sluggish weedy reaches w/pools  
Side Slope Z-value= 12.5 '/' Top Width= 150.00'  
Length= 147.0' Slope= 0.0364 '/'  
Inlet Invert= 40.00', Outlet Invert= 34.65'



**Summary for Reach 4R: Culvert Daylight to Stream Channel**

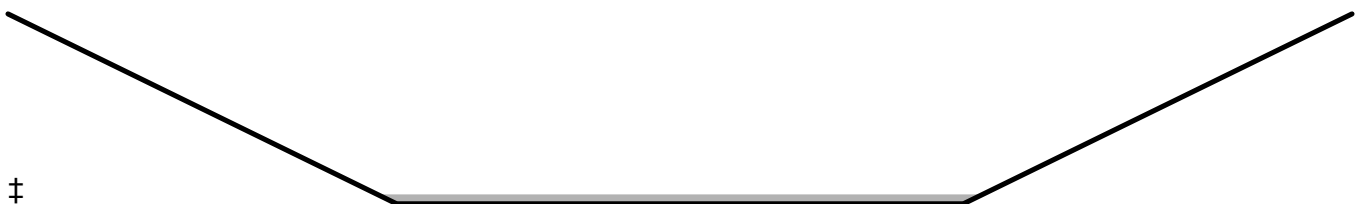
[79] Warning: Submerged Pond 3P Primary device # 1 by 0.30'

Inflow Area =	95.156 ac, 13.30% Impervious, Inflow Depth > 1.87"	for 25 YEAR STORM event
Inflow =	28.44 cfs @ 14.20 hrs, Volume=	14.857 af
Outflow =	28.42 cfs @ 14.46 hrs, Volume=	14.391 af, Atten= 0%, Lag= 16.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Max. Velocity= 0.53 fps, Min. Travel Time= 9.3 min  
Avg. Velocity = 0.35 fps, Avg. Travel Time= 13.8 min

Peak Storage= 15,849 cf @ 14.31 hrs  
Average Depth at Peak Storage= 0.30'  
Bank-Full Depth= 6.00' Flow Area= 1,770.0 sf, Capacity= 5,614.66 cfs

175.00' x 6.00' deep channel, n= 0.070 Sluggish weedy reaches w/pools  
Side Slope Z-value= 20.0 '/' Top Width= 415.00'  
Length= 294.0' Slope= 0.0032 '/'  
Inlet Invert= 34.95', Outlet Invert= 34.00'



**Summary for Reach 8R: Stream Channel to 48" RCP**

[62] Hint: Exceeded Reach 4R OUTLET depth by 0.25' @ 15.00 hrs

Inflow Area =	95.156 ac, 13.30% Impervious, Inflow Depth > 1.81"	for 25 YEAR STORM event
Inflow =	28.42 cfs @ 14.46 hrs, Volume=	14.391 af
Outflow =	28.32 cfs @ 15.00 hrs, Volume=	13.463 af, Atten= 0%, Lag= 32.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 0.94 fps, Min. Travel Time= 17.8 min  
 Avg. Velocity = 0.59 fps, Avg. Travel Time= 28.2 min

Peak Storage= 30,307 cf @ 14.70 hrs  
 Average Depth at Peak Storage= 0.54'  
 Bank-Full Depth= 6.00' Flow Area= 660.0 sf, Capacity= 2,436.66 cfs

50.00' x 6.00' deep channel, n= 0.070 Sluggish weedy reaches w/pools  
 Side Slope Z-value= 10.0 '/' Top Width= 170.00'  
 Length= 1,004.0' Slope= 0.0050 '/'  
 Inlet Invert= 34.00', Outlet Invert= 29.00'



**Summary for Pond 1P: Ext. 15" CMP Martin Road Culvert**

Inflow Area = 43.733 ac, 12.81% Impervious, Inflow Depth > 4.03" for 25 YEAR STORM event  
 Inflow = 118.01 cfs @ 12.46 hrs, Volume= 14.678 af  
 Outflow = 4.14 cfs @ 18.79 hrs, Volume= 2.476 af, Atten= 96%, Lag= 380.0 min  
 Primary = 4.14 cfs @ 18.79 hrs, Volume= 2.476 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Starting Elev= 49.00' Surf.Area= 231,086 sf Storage= 119,579 cf  
 Peak Elev= 50.41' @ 18.79 hrs Surf.Area= 469,037 sf Storage= 652,236 cf (532,657 cf above start)  
 Flood Elev= 52.50' Surf.Area= 556,200 sf Storage= 1,713,635 cf (1,594,056 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= 179.8 min ( 979.5 - 799.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	48.00'	1,999,122 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
48.00	8,072	0	0
50.00	454,100	462,172	462,172
52.00	526,650	980,750	1,442,922
53.00	585,750	556,200	1,999,122

Device	Routing	Invert	Outlet Devices
#1	Primary	49.00'	<b>15.0" Round CMP_Round 15"</b> L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 49.00' / 48.50' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

**Primary OutFlow** Max=4.14 cfs @ 18.79 hrs HW=50.41' (Free Discharge)

↑1=CMP\_Round 15" (Inlet Controls 4.14 cfs @ 3.37 fps)

**Summary for Pond 3P: Ext. 36" RCP Route 236 Crossing**

[62] Hint: Exceeded Reach 2R OUTLET depth by 3.06' @ 14.20 hrs

[62] Hint: Exceeded Reach 3R OUTLET depth by 2.95' @ 14.25 hrs

Inflow Area = 95.156 ac, 13.30% Impervious, Inflow Depth > 2.50" for 25 YEAR STORM event  
 Inflow = 103.25 cfs @ 12.79 hrs, Volume= 19.853 af  
 Outflow = 28.44 cfs @ 14.20 hrs, Volume= 14.857 af, Atten= 72%, Lag= 84.6 min  
 Primary = 28.44 cfs @ 14.20 hrs, Volume= 14.857 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Starting Elev= 34.95' Surf.Area= 60,733 sf Storage= 34,073 cf

Peak Elev= 37.72' @ 14.20 hrs Surf.Area= 248,964 sf Storage= 439,521 cf (405,448 cf above start)

Flood Elev= 49.50' Surf.Area= 452,670 sf Storage= 2,826,250 cf (2,792,177 cf above start)

Plug-Flow detention time= 198.1 min calculated for 14.075 af (71% of inflow)

Center-of-Mass det. time= 113.1 min ( 951.6 - 838.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	2,826,250 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.00	11,000	0	0
36.00	115,700	126,700	126,700
38.00	271,050	386,750	513,450
40.00	389,500	660,550	1,174,000
42.00	405,040	794,540	1,968,540
44.00	452,670	857,710	2,826,250

Device	Routing	Invert	Outlet Devices
#1	Primary	34.95'	<b>36.0" Round RCP_Round 36"</b> L= 100.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 34.65' / 34.95' S= -0.0030 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

**Primary OutFlow** Max=28.44 cfs @ 14.20 hrs HW=37.72' (Free Discharge)

↑1=RCP\_Round 36" (Barrel Controls 28.44 cfs @ 4.89 fps)

**Summary for Pond 4P: 12" CMP Culvert to Det Pond**

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.166 ac, 64.19% Impervious, Inflow Depth > 5.34" for 25 YEAR STORM event  
 Inflow = 1.12 cfs @ 12.05 hrs, Volume= 0.074 af  
 Outflow = 1.01 cfs @ 12.08 hrs, Volume= 0.074 af, Atten= 10%, Lag= 1.8 min  
 Primary = 1.01 cfs @ 12.08 hrs, Volume= 0.074 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Peak Elev= 41.59' @ 12.08 hrs Surf.Area= 339 sf Storage= 153 cf

Plug-Flow detention time= 6.1 min calculated for 0.074 af (99% of inflow)  
 Center-of-Mass det. time= 4.4 min ( 750.8 - 746.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	41.00'	1,743 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
41.00	175	0	0
42.00	450	313	313
44.00	980	1,430	1,743

Device	Routing	Invert	Outlet Devices
#1	Primary	41.00'	<b>12.0" Round CMP_Round 12"</b> L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 41.00' / 40.50' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.98 cfs @ 12.08 hrs HW=41.58' (Free Discharge)  
 ↑1=CMP\_Round 12" (Inlet Controls 0.98 cfs @ 2.05 fps)

**Summary for Pond 5P: Detention Pond #1**

- [82] Warning: Early inflow requires earlier time span
- [92] Warning: Device #4 is above defined storage
- [79] Warning: Submerged Pond 4P Primary device # 1 INLET by 0.39'

Inflow Area = 0.360 ac, 60.82% Impervious, Inflow Depth > 5.22" for 25 YEAR STORM event  
 Inflow = 2.25 cfs @ 12.05 hrs, Volume= 0.157 af  
 Outflow = 1.39 cfs @ 12.15 hrs, Volume= 0.142 af, Atten= 38%, Lag= 6.1 min  
 Primary = 1.39 cfs @ 12.15 hrs, Volume= 0.142 af  
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Peak Elev= 41.39' @ 12.15 hrs Surf.Area= 1,376 sf Storage= 1,548 cf

Plug-Flow detention time= 68.8 min calculated for 0.142 af (90% of inflow)  
 Center-of-Mass det. time= 35.7 min ( 786.7 - 751.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	40.00'	4,360 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
40.00	890	0	0
41.00	1,200	1,045	1,045
42.00	1,650	1,425	2,470
43.00	2,130	1,890	4,360

Device	Routing	Invert	Outlet Devices
#1	Primary	40.00'	<b>12.0" Round CMP_Round 12"</b> L= 40.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 40.00' / 39.75' S= 0.0063 ' S= 0.0063 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	40.60'	<b>6.0" Vert. Orifice/Grate X 2.00</b> C= 0.600
#3	Device 1	42.00'	<b>2.0" x 2.0" Horiz. Orifice/Grate</b> C= 0.600 in 24.0" Grate (1% open area) Limited to weir flow at low heads
#4	Secondary	43.00'	<b>20.0' long x 4.0' breadth Broad-Crested Rectangular Weir</b> 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) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

**Primary OutFlow** Max=1.39 cfs @ 12.15 hrs HW=41.39' (Free Discharge)

↑ **1=CMP\_Round 12"** (Passes 1.39 cfs of 2.81 cfs potential flow)

↑ **2=Orifice/Grate** (Orifice Controls 1.39 cfs @ 3.53 fps)

↑ **3=Orifice/Grate** ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=40.00' (Free Discharge)

↑ **4=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

### Summary for Pond 6P: Prp. 36" CMP Entrance Crossing

[62] Hint: Exceeded Reach 1R OUTLET depth by 2.13' @ 12.45 hrs

Inflow Area = 50.117 ac, 12.97% Impervious, Inflow Depth > 1.13" for 25 YEAR STORM event  
 Inflow = 26.09 cfs @ 12.21 hrs, Volume= 4.703 af  
 Outflow = 15.81 cfs @ 12.45 hrs, Volume= 4.494 af, Atten= 39%, Lag= 14.0 min  
 Primary = 15.81 cfs @ 12.45 hrs, Volume= 4.494 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Peak Elev= 42.17' @ 12.45 hrs Surf.Area= 22,976 sf Storage= 24,440 cf  
 Flood Elev= 46.00' Surf.Area= 48,500 sf Storage= 89,900 cf

Plug-Flow detention time= 31.5 min calculated for 4.494 af (96% of inflow)  
 Center-of-Mass det. time= 17.7 min ( 901.1 - 883.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	40.00'	89,900 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
40.00	140	0	0
42.00	20,630	20,770	20,770
44.00	48,500	69,130	89,900

Device	Routing	Invert	Outlet Devices
#1	Primary	40.50'	<b>36.0" Round CMP_Round 36"</b> L= 40.0' CMP, square edge headwall, Ke= 0.500



Inlet / Outlet Invert= 40.50' / 40.00' S= 0.0125 '/ Cc= 0.900  
 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

**Primary OutFlow** Max=15.80 cfs @ 12.45 hrs HW=42.17' (Free Discharge)

↑1=CMP\_Round 36" (Barrel Controls 15.80 cfs @ 5.66 fps)

**Summary for Pond 7P: 48" RCP Culverted Crossing**

[92] Warning: Device #2 is above defined storage

[62] Hint: Exceeded Reach 8R OUTLET depth by 4.51' @ 12.50 hrs

Inflow Area = 163.600 ac, 12.17% Impervious, Inflow Depth > 1.91" for 25 YEAR STORM event  
 Inflow = 120.38 cfs @ 12.34 hrs, Volume= 26.012 af  
 Outflow = 98.27 cfs @ 12.52 hrs, Volume= 25.736 af, Atten= 18%, Lag= 10.6 min  
 Primary = 98.27 cfs @ 12.52 hrs, Volume= 25.736 af  
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Peak Elev= 33.67' @ 12.52 hrs Surf.Area= 22,817 sf Storage= 59,091 cf

Plug-Flow detention time= 8.8 min calculated for 25.650 af (99% of inflow)  
 Center-of-Mass det. time= 5.7 min ( 914.1 - 908.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	29.00'	267,755 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
29.00	4,210	0	0
30.00	7,080	5,645	5,645
32.00	14,930	22,010	27,655
34.00	24,400	39,330	66,985
36.00	45,950	70,350	137,335
38.00	84,470	130,420	267,755

Device	Routing	Invert	Outlet Devices
#1	Primary	29.00'	<b>48.0" Round RCP_Round 48"</b> L= 120.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 29.00' / 28.00' S= 0.0083 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 12.57 sf
#2	Secondary	38.00'	<b>100.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b> 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) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

**Primary OutFlow** Max=98.11 cfs @ 12.52 hrs HW=33.66' (Free Discharge)

↑1=RCP\_Round 48" (Barrel Controls 98.11 cfs @ 8.43 fps)

**Secondary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=29.00' (Free Discharge)

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

**Summary for Link AP1: AP1**

Inflow Area = 163.600 ac, 12.17% Impervious, Inflow Depth > 1.89" for 25 YEAR STORM event  
Inflow = 98.27 cfs @ 12.52 hrs, Volume= 25.736 af  
Primary = 98.27 cfs @ 12.52 hrs, Volume= 25.736 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

**Well Field 44 Cannabis Dispensary - Existing Condition Peak Flows**

Analysis Point	2 Year Storm (cfs)	10 Year Storm (cfs)	25 Year Storm (cfs)
AP1	16.14	65.45	98.79

Rainfall Event Totals (in.)	
2-Year	3.33
10-Year	5.34
25-Year	6.60

**Well Field 44 Cannabis Dispensary - Developed Condition Peak Flows**

Analysis Point	2 Year Storm (cfs)	10 Year Storm (cfs)	25 Year Storm (cfs)
AP1	15.86	64.71	98.27

**Well Field 44 Cannabis Dispensary - Change in Peak Flows**

Analysis Point	2 Year Storm (cfs)	10 Year Storm (cfs)	25 Year Storm (cfs)
AP1	-0.28	-0.74	-0.52

**Headwater Elevations: 25-Year Rainfall Event**

Analysis Point	Existing Elev. (ft)	Developed Elev. (ft)	Location in Analysis
1P	50.41	50.41	Martin Road Crossing (15" CMP)
2P	40.96	N/A	Ext. On-Site Driveway: 12" Culvert Removed
3P	37.50	37.72	Route 236 Crossing (36" RCP)
7P	33.69	33.67	Dana Ave Crossing (48" RCP)



## WELL FIELD 44 CANNABIS DISPENSARY 41 ROUTE 236 (HAROLD L. DOW HIGHWAY), KITTERY, MAINE

### OPERATION AND MAINTENANCE PROGRAM STORMWATER MANAGEMENT BMP'S

This project contains specific Best Management Practices (BMP's) for the conveyance, storage, and treatment of stormwater and the prevention of erosion. These BMP's consist of level lip spreaders and detention ponds. All components should be inspected quarterly, and after every significant rain event of 1" in any 24-hour period.

The party responsible for implementing this Operation and Maintenance Program (O & M Program) shall be the property owner or owner's representative.

#### **Stormwater Detention Areas**

The Stormwater Detention Areas shall be inspected to ensure that there is no channeling of stormwater and that no debris accumulates within the detention areas. The vegetative cover conditions shall be maintained. The inlets and outlets shall be inspected for erosion and any evidence of debris that could clog the culverts. Emergency spillways and level spreaders shall be inspected for any evidence of rilling and channeling and shall be maintained to promote a level, sheet-flow discharge.

#### **Snow Removal**

Snow shall be stockpiled only in the approved snow storage areas. Plowing of snow into wetland areas or detention ponds is prohibited. Additionally, a mostly sand mix (reduced salt) shall be applied during winter months to prevent excessive salt from leaching into wetland areas. Excess sand shall be removed from the storage areas, all paved surfaces and adjacent areas each spring.

#### **Seeding, Fertilizing and Mulching**

All exposed soil materials and stockpiles must be either temporarily or permanently seeded, fertilized and mulched in accordance with plan specifications. This is one of the most important features of the Erosion Control Plan, which will provide both temporary and permanent stabilization. Eroded or damaged lawn areas must be repaired until a 75% effective growth of vegetation is established and permanently maintained.

#### **Culverted Crossings**

Proper erosion and sedimentation controls shall be established upstream of the thin wetland section that flows along the eastern edge of the property at the toe of slope of Route 236 (Harold L. Dow Highway), as well as the existing 36" RCP culverted crossing of Route 236 that receives runoff from the on-site wetlands. Construction sequencing of the proposed entrance and proposed 36" CMP culverted crossing of said entrance shall utilize the existing southerly gravel drive and ensure that stormwater flow is uninterrupted at all times in the above-mentioned section of wetlands as depicted on the plan set.

#### **Record Keeping (During Construction)**

The construction inspector shall maintain documentation of all inspections as well as maintenance or corrective actions that were taken in response to the inspection. This

documentation shall be maintained for at least three years after the site is permanently stabilized. The scope of construction inspections shall include, but not be limited to, the inspection of the sediment and erosion control measures as well as material storage areas and all points at which vehicles access the site.

### **Record Keeping (Post Construction)**

Routine maintenance and inspections will be accomplished by the owner or a third party contracted by the owner. The inspector shall have knowledge of erosion and stormwater control, including the standards and conditions of the permit.

All inspections accomplished in accordance with this program shall be documented on the attached Inspection & Maintenance Log. Copies of the Log shall be kept by the property owner or owner's representative, and be made available to the Department (Maine Department of Environmental Protection) or Town of Kittery, upon request.

All post-construction documentation, such as inspection and cleaning logs shall be maintained for at least five years.

Additional responsibilities to include, on or by July 1 of each year, providing a completed and signed certification to the Code Enforcement Officer in a form provided by the Town, if requested, certifying that the person has inspected the stormwater management facilities and that they are adequately maintained and functioning as intended by the stormwater management plan, or that they require maintenance or repair, describing any required maintenance and any deficiencies found during inspection of the stormwater management facilities and, if the stormwater management facilities require maintenance or repair of deficiencies in order to function as intended by the approved stormwater management plan, the person must provide a record of the required maintenance or deficiency and corrective action(s) taken.

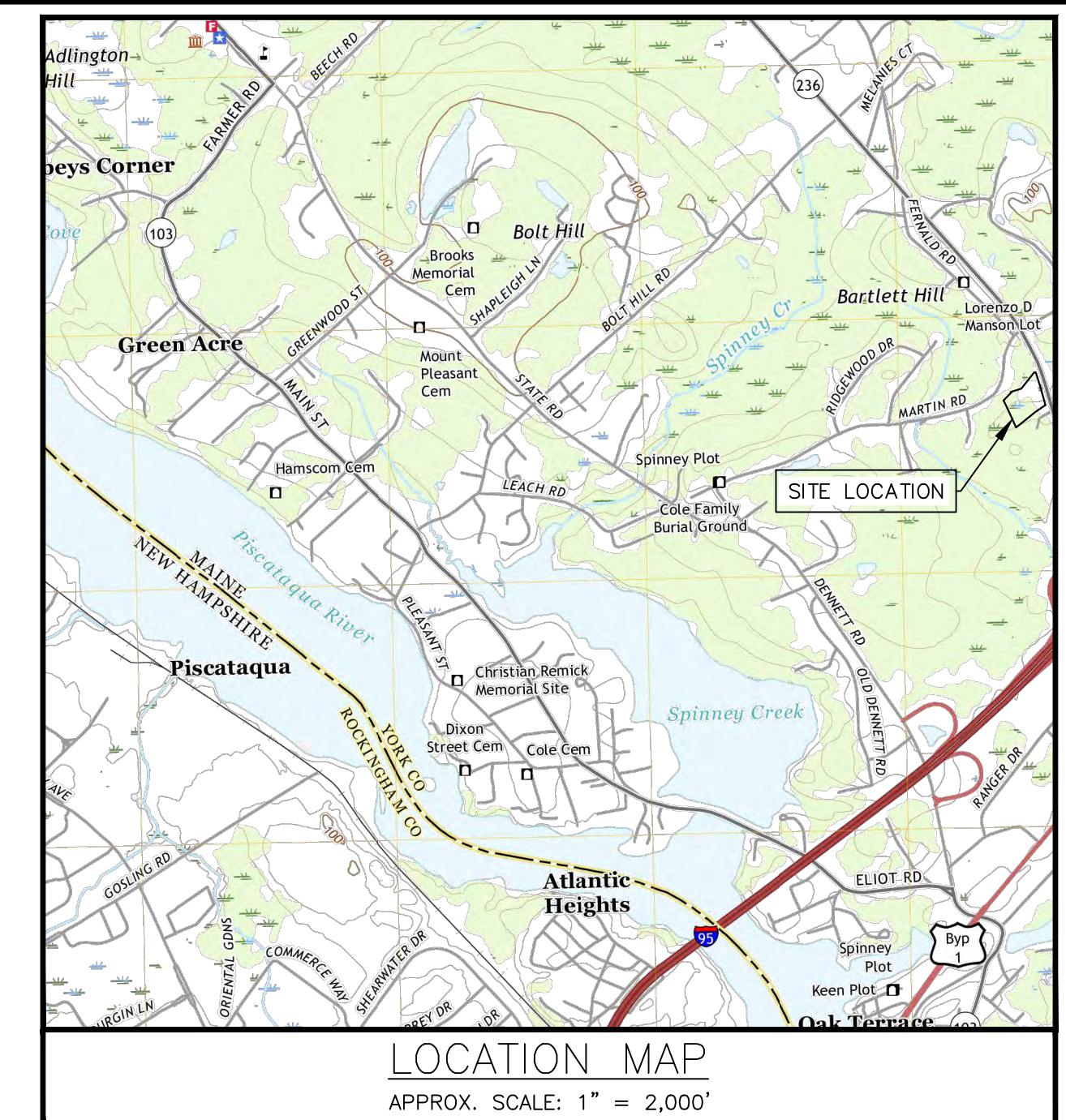
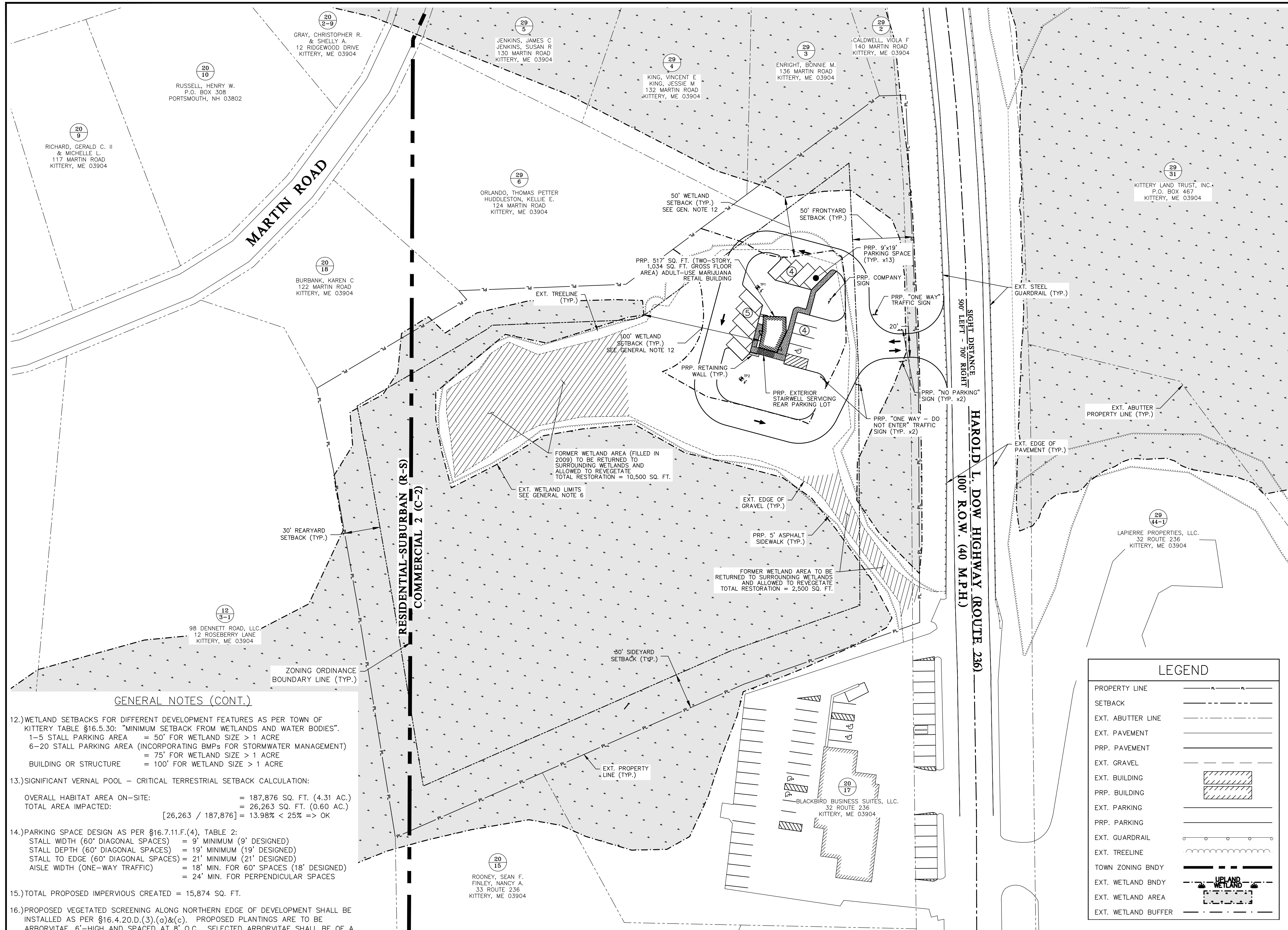
### **Re-certification (as noted in Appendix B. of Chapter 500 Stormwater Management)**

Submit a certification of the following to the Department within three months of the expiration of each five-year interval from the date of issuance of the permit noting the following;

- (a) **Identification and repair of erosion problems.** All areas of the project site have been inspected for areas of erosion, and appropriate steps have been taken to permanently stabilize these areas.
- (b) **Inspection and repair of stormwater control system.** All aspects of the stormwater control system have been inspected for damage, wear, and malfunction, and appropriate steps have been taken to repair or replace the system, or portions of the system.
- (c) **Maintenance.** The erosion and stormwater maintenance plan for the site is being implemented as written, or modifications to the plan have been submitted to and approved by the Department, and the maintenance log is being maintained.

Municipalities with separate storm sewer systems regulated under the Maine Pollutant Discharge Elimination System (MPDES) Program may report on all regulated systems under their control as part of their required annual reporting in lieu of separate certification of each system. Municipalities not regulated by the MPDES Program, but that are responsible for maintenance of permitted stormwater systems, may report on multiple stormwater systems in one report.





**GENERAL NOTES**

- THIS PLAN DEPICTS THE DEVELOPMENT OF THE SUBJECT PARCEL INTO AN ADULT-USE MARIJUANA RETAIL STORE SERVICED BY A PAVED TRAVELWAY AND ASSOCIATED PARKING LOT. THE PROPOSED TRAVELWAY AND PARKING HAVE BEEN DESIGNED IN ACCORDANCE WITH THE TOWN OF KITTERY §16.5.27: 'STREETS AND PEDESTRIANWAYS/SIDEWALKS SITE DESIGN STANDARDS'.
  - THE SUBJECT PARCEL, LOCATED OFF OF HAROLD L. DOW HIGHWAY (ROUTE 236), IS IDENTIFIED AS LOT 1 ON TAX MAP 29, CONTAINS APPROXIMATELY 4.44 ACRES, AND IS LOCATED IN THE COMMERCIAL-2 AND RESIDENTIAL-SUBURBAN ZONING DISTRICTS. ALL DEVELOPMENT RELATED TO THIS PROJECT SHALL TAKE PLACE WITHIN THE COMMERCIAL-2 DISTRICT.
  - DIMENSIONAL REQUIREMENTS FOR THE 'C-2' ZONING DISTRICT AS PER §16.4.20.D.(2):
 

MINIMUM LOT SIZE:	40,000 SQ. FT. (1 ACRE)
MINIMUM SETBACKS:	50' FRONTYARD 30' SIDEYARD 30' REARYARD
MAXIMUM BUILDING HEIGHT:	40'
MAXIMUM IMPERVIOUS COVERAGE:	40%
MINIMUM STREET FRONTAGE:	150'
  - ALL EXISTING BOUNDARY INFORMATION AND ON-SITE CONDITIONS ARE AS PER PLAN REFERENCE 1. EXISTING CONTOURS ARE DEPICTED FROM STATE LIDAR IMAGERY. EXISTING CONDITIONS OF ABUTTING PROPERTIES ARE APPROXIMATE.
  - PARKING REQUIREMENTS AS PER §16.7.11.F.(4).(d):
 

RETAIL STORES	= 1 SPACE/175 SQ.FT. GROSS FLOOR AREA
	= [517 SQ. FT. TOTAL FLOOR AREA] x 2 FLOORS
	= [1,034 SQ. FT.] / 175 SQ. FT. => 5.91 SPACES
	=> 6 SPACES REQUIRED (13 PROPOSED, 1 ADA)
  - A WETLAND DELINEATION WAS PERFORMED ON NOVEMBER 22, 2021 IN ACCORDANCE WITH THE STANDARDS OF THE 1987 U.S. ARMY CORPS OF ENGINEERS WETLAND DELINEATION MANUAL. THIS DELINEATION WAS PERFORMED BY MICHAEL CUOMO, C.W.S. #211 AND LINEWORK DEPICTED ON THIS PLAN SET WAS SURVEY-LOCATED BY ATTAR ENGINEERING, INC.
  - TOTAL PROPOSED WETLAND IMPACTS = 1,367 SQ. FT. THIS DEVELOPMENT ALSO PROPOSES TO RESTORE ~13,000 SQ. FT. OF PREVIOUSLY-FILLED WETLANDS ON-SITE. REFER TO THE ATTACHED WETLAND RESTORATION NARRATIVE PREPARED BY PROJECT WETLAND SCIENTIST MICHAEL CUOMO.
  - THE CONTRACTOR MUST CONTACT DIG SAFE AND ALL LOCAL UTILITIES PRIOR TO THE START OF CONSTRUCTION TO VERIFY THE LOCATION OF EXISTING SUBSURFACE UTILITIES AND CONDITIONS. LOCATING AND PROTECTING ANY UNDERGROUND OR ABOVE-GROUND UTILITY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
  - ALL PROPOSED SIGNS SHALL COMPLY WITH REQUIREMENTS OF THE GENERAL PERFORMANCE STANDARDS OUTLINED IN §16.5.23: "SIGNS"
  - THE PROPOSED DEVELOPMENT SHALL BE SERVICED BY MUNICIPAL WATER AND MUNICIPAL SEWER. ALL UTILITY MATERIALS, SIZES, AND CONSTRUCTION PRACTICES SHALL BE IN ACCORDANCE WITH THE KITTERY SEWER DISTRICT (KSD) AND KITTERY WATER DISTRICT (KWD).
  - THE NEAREST FIRE HYDRANT IS APPROXIMATELY 500' NORTHERLY, LOCATED AT THE INTERSECTION OF MARTIN ROAD AND FERNALD ROAD AS PER THE TOWN OF KITTERY GIS. A NEW HYDRANT IS PROPOSED FOR THIS DEVELOPMENT AND DEPICTED ON THE GRADING & UTILITIES PLAN (SHEET 3).
- GENERAL NOTES CONTINUED ELSEWHERE ON SHEET 1 --

**GENERAL NOTES (CONT.)**

- WETLAND SETBACKS FOR DIFFERENT DEVELOPMENT FEATURES AS PER TOWN OF KITTERY TABLE §16.5.30: "MINIMUM SETBACK FROM WETLANDS AND WATER BODIES".
 

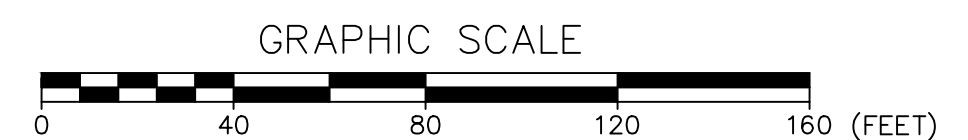
1-5 STALL PARKING AREA	= 50' FOR WETLAND SIZE > 1 ACRE
6-20 STALL PARKING AREA (INCORPORATING BMPs FOR STORMWATER MANAGEMENT)	= 75' FOR WETLAND SIZE > 1 ACRE
BUILDING OR STRUCTURE	= 100' FOR WETLAND SIZE > 1 ACRE
- SIGNIFICANT VERNAL POOL - CRITICAL TERRESTRIAL SETBACK CALCULATION:
 

OVERALL HABITAT AREA ON-SITE:	= 187,876 SQ. FT. (4.31 AC.)
TOTAL AREA IMPACTED:	= 26,263 SQ. FT. (0.60 AC.)
	[26,263 / 187,876] = 13.98% < 25% => OK
- PARKING SPACE DESIGN AS PER §16.7.11.F.(4), TABLE 2:
 

STALL WIDTH (60° DIAGONAL SPACES)	= 9' MINIMUM (9' DESIGNED)
STALL DEPTH (60° DIAGONAL SPACES)	= 19' MINIMUM (19' DESIGNED)
STALL TO EDGE (60° DIAGONAL SPACES)	= 21' MINIMUM (21' DESIGNED)
AISLE WIDTH (ONE-WAY TRAFFIC)	= 18' MIN. FOR 60° SPACES (18' DESIGNED)
	= 24' MIN. FOR PERPENDICULAR SPACES
- TOTAL PROPOSED IMPERVIOUS CREATED = 15,874 SQ. FT.
- PROPOSED VEGETATED SCREENING ALONG NORTHERN EDGE OF DEVELOPMENT SHALL BE INSTALLED AS PER §16.4.20.D.(3).(a)&(c). PROPOSED PLANTINGS ARE TO BE ARBORVITAE, 6'-HIGH AND SPACED AT 8' O.C. SELECTED ARBORVITAE SHALL BE OF A DEER-RESISTANT SUBSPECIES (THUJA - AMERICAN PILLAR OR APPROVED EQUAL). SPECIFIC PLANNING LOCATIONS SHALL BE DETERMINED IN A POST-CONSTRUCTION BUFFER SURVEY.
- AS PER GUIDANCE RECEIVED FROM THE MDOT SOUTHERN REGION TRAFFIC ENGINEER, THE PROPOSED ENTRANCE FROM ROUTE 236 SHALL HAVE APPROPRIATE GUARDRAIL END SHOE TREATMENTS AS DEPICTED IN THE MAINE DEPARTMENT OF TRANSPORTATION STANDARD DETAILS MANUAL, SECTION 606.

**LEGEND**

PROPERTY LINE	---
SETBACK	---
EXT. ABUTTER LINE	---
EXT. PAVEMENT	---
PRP. PAVEMENT	---
EXT. GRAVEL	---
EXT. BUILDING	▨
PRP. BUILDING	▨
EXT. PARKING	---
PRP. PARKING	---
EXT. GUARDRAIL	---
EXT. TREELINE	---
TOWN ZONING BNDY	---
EXT. WETLAND BNDY	---
EXT. WETLAND AREA	---
EXT. WETLAND BUFFER	---

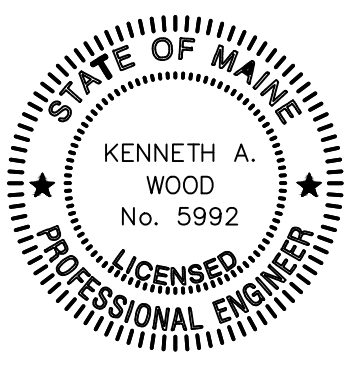


**TOWN OF KITTERY PLANNING BOARD**  
FINAL SITE PLAN APPROVED:

###/###/####	DATE

- 1.) "STANDARD BOUNDARY SURVEY" FOR PROPERTY AT 41 ROUTE 236, KITTERY, YORK COUNTY, MAINE. OWNED BY JUDY B. HALEY AND JOHN E. HALEY. PREPARED BY NORTH EASTERLY SURVEYING, INC. PLAN DATED 05/06/2008 AND RECORDED AT THE YORK COUNTY REGISTRY OF DEEDS IN PLAN BOOK 329, PAGE 37.
- INDEX OF SHEETS:**
- |   |                                   |
|---|-----------------------------------|
| 1.) PRELIMINARY SITE PLAN                     | TAX MAP 29, LOT 1:                |
| 2.) EXISTING CONDITIONS PLAN                  | GREEN GRASS LLC,                  |
| 3.) GRADING & UTILITIES PLAN                  | 32 ROUTE 236, UNIT 1              |
| 4.) EROSION & SEDIMENTATION CONTROL DETAILS   | KITTERY, ME 03904                 |
| 5.) SITE DETAILS                              | Y.C.R.D. DEED BOOK 18924, PAGE 10 |
| 6.) STORMWATER: EXISTING CONDITIONS           |                                   |
| 7.) STORMWATER: DEVELOPED CONDITIONS          |                                   |
| 8.) STORMWATER: EXPANDED DEVELOPED CONDITIONS |                                   |
| 9.) PHOTOMETRIC PLAN                          |                                   |
| 10.) LANDSCAPING PLAN                         |                                   |
| 11.) BOUNDARY SURVEY                          |                                   |

NO.	DESCRIPTION	DATE
D	PRELIMINARY REVIEW REVISIONS	09/29/22
C	PRELIMINARY REVIEW REVISIONS	08/04/22
B	PRELIMINARY REVIEW REVISIONS	07/13/22
A	SITE PLAN REVIEW APPLICATION	06/30/22
NO.	DESCRIPTION	DATE



PRELIMINARY SITE PLAN  
WELL FIELD 44 CANNABIS DISPENSARY  
41 ROUTE 236, KITTERY, ME 03904

FOR:  
WELL FIELD 44, LLC.  
8 DEXTER LANE UNIT 8  
KITTERY, MAINE 03904

**ATTAR ENGINEERING, INC.**  
CIVIL • STRUCTURAL • MARINE • SURVEYING  
1284 STATE ROAD - ELIOT, MAINE 03903  
PHONE: (207)439-6023 FAX: (207)439-2128

SCALE: 1" = 40'	APPROVED BY:	DRAWN BY: MJS
DATE: 04/26/22	FILE: WF44 DEV.BASE.DWG	REVISION DATE: D : 09/29/22
JOB NO: C277-21	SHEET: 1	

STATE OF MAINE  
YORK COUNTY ss. REGISTRY OF DEEDS  
RECEIVED \_\_\_\_\_, 20\_\_\_\_  
AT \_\_\_\_\_, M., AND RECORDED IN  
PLAN BOOK \_\_\_\_\_, PAGE \_\_\_\_\_  
ATTEST \_\_\_\_\_ REGISTER



LEGEND	
PROPERTY LINE	---
SETBACK	---
EXT. ABUTTER LINE	---
EXT. PAVEMENT	---
EXT. GRAVEL	▨
EXT. BUILDING	▩
EXT. PARKING	▧
EXT. GUARDRAIL	—○—
EXT. TREELINE	—○—
TOWN ZONING BNDY	—+—
EXT. WETLAND BNDY	—W—
EXT. WETLAND AREA	▨
EXT. WETLAND BUFFER	---
EXT. SEWER LINE	—S—
EXT. SEWER MANHOLE	⊙
EXT. WATER LINE	—W—
EXT. OVERHEAD ELEC	—OHU—
EXT. POWER POLE	⊕
EXT. MAJOR CONTOUR	---XXX---
EXT. MINOR CONTOUR	---XXX---

GRAPHIC SCALE



TAX MAP 29, LOT 1

EXISTING CONDITIONS PLAN  
WELL FIELD 44 CANNABIS DISPENSARY  
41 ROUTE 236, KITTERY, ME 03904

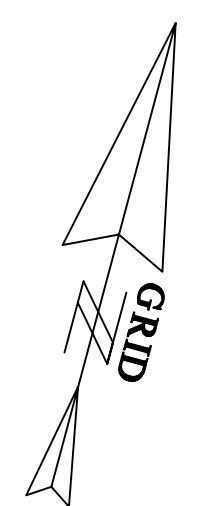
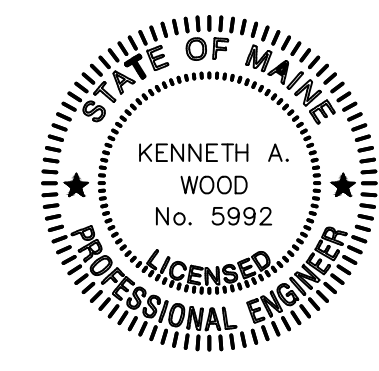
FOR: WELL FIELD 44, LLC.  
8 DEXTER LANE UNIT 8  
KITTERY, MAINE 03904

**ATTAR ENGINEERING, INC.**  
CIVIL ♦ STRUCTURAL ♦ MARINE ♦ SURVEYING  
1284 STATE ROAD - ELIOT, MAINE 03903  
PHONE: (207)439-6023 FAX: (207)439-2128

SCALE: 1" = 40'	APPROVED BY:	DRAWN BY: MJS
DATE: 04/26/22		REVISION DATE: D : 09/29/22

JOB NO: C277-21 FILE: WF44 DEV.BASE.DWG SHEET: 2

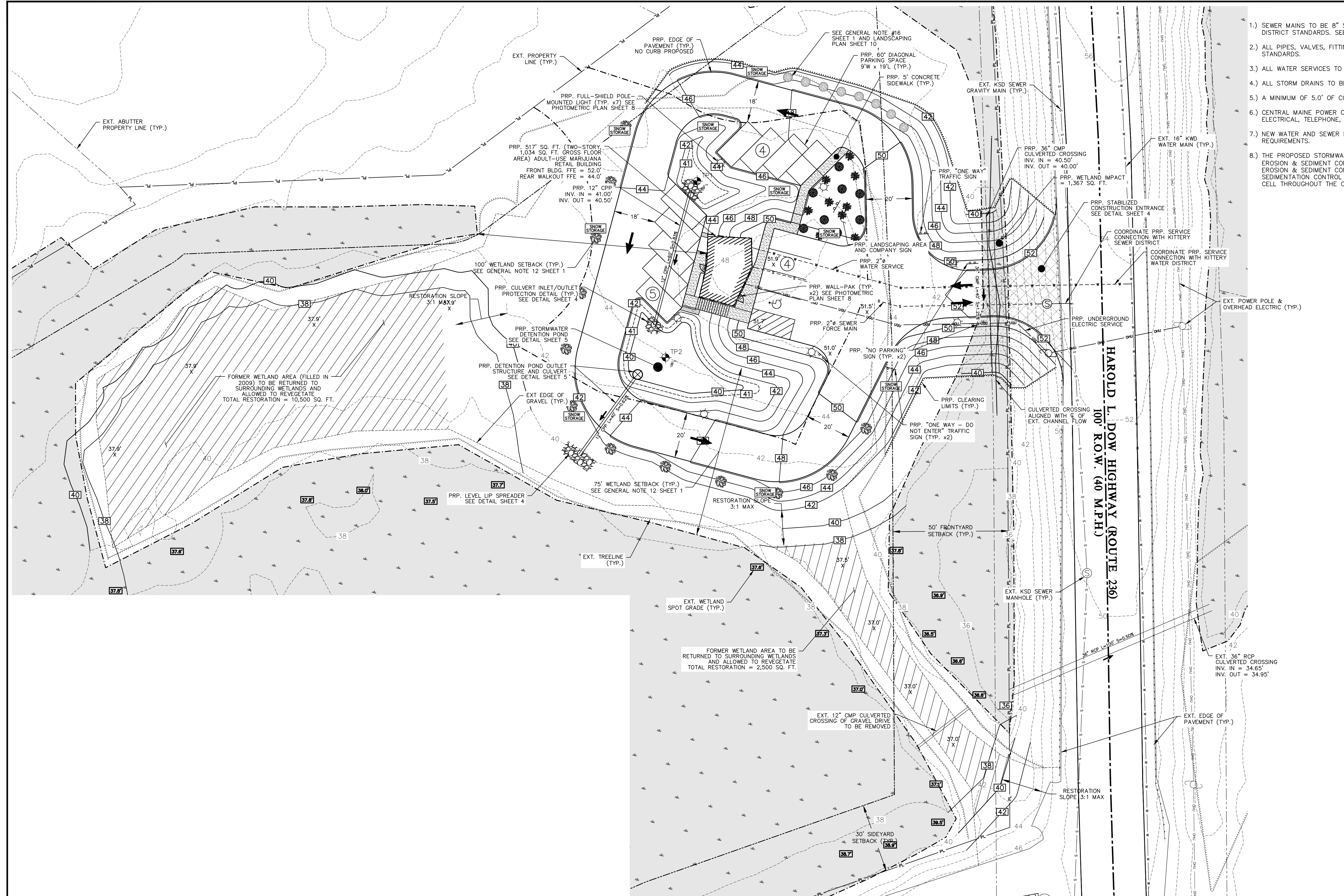
NO.	DESCRIPTION	DATE
D	PRELIMINARY REVIEW REVISIONS	09/29/22
C	PRELIMINARY REVIEW REVISIONS	08/04/22
B	PRELIMINARY REVIEW REVISIONS	07/13/22
A	SITE PLAN REVIEW APPLICATION	06/30/22
	REVISIONS	





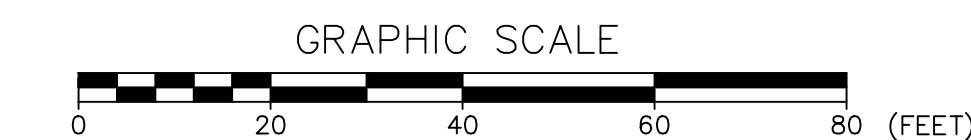
GENERAL NOTES

- 1.) SEWER MAINS TO BE 8" SDR 35 PVC. ALL OTHER APPURTENANCES SHALL MEET KITTERY SEWER DISTRICT STANDARDS. SEE DETAIL FOR TYPICAL INDIVIDUAL SERVICE SIZES.
- 2.) ALL PIPES, VALVES, FITTINGS, AND CONNECTIONS SHALL MEET CURRENT KITTERY WATER DISTRICT STANDARDS.
- 3.) ALL WATER SERVICES TO BE EQUIPPED WITH CURB STOPS.
- 4.) ALL STORM DRAINS TO BE ADS N-12 (PE) OR APPROVED EQUAL.
- 5.) A MINIMUM OF 5.0' OF COVER SHALL BE MAINTAINED OVER ALL WATER LINES.
- 6.) CENTRAL MAINE POWER COMPANY WILL PREPARE THE ELECTRICAL PLAN FOR CONSTRUCTION. ALL ELECTRICAL, TELEPHONE, AND CABLE SERVICES WILL BE UNDERGROUND.
- 7.) NEW WATER AND SEWER LINES SHALL BE TESTED IN ACCORDANCE WITH RESPECTIVE DISTRICT REQUIREMENTS.
- 8.) THE PROPOSED STORMWATER BMP REPRESENTS A LIMITED AREA TO BE CONSTRUCTED WITH ALL EROSION & SEDIMENT CONTROL MEASURES IN PLACE. THIS "CELL" SHALL BE PROTECTED BY EROSION & SEDIMENT CONTROL BEST MANAGEMENT PRACTICES AS REQUIRED BY THE EROSION & SEDIMENTATION CONTROL PLAN. EROSION & SEDIMENT CONTROL SHALL BE MAINTAINED FOR THE CELL THROUGHOUT THE COMPLETION OF THE ENTIRE PROJECT.



LEGEND

PROPERTY LINE	---
SETBACK	---
EXT. ABUTTER LINE	---
EXT. PAVEMENT	---
PRP. PAVEMENT	---
EXT. GRAVEL	---
EXT. BUILDING	---
PRP. BUILDING	---
EXT. PARKING	---
PRP. PARKING	---
EXT. GUARDRAIL	---
EXT. TREELINE	---
PRP. TREELINE	---
TOWN ZONING BNDY	---
EXT. WETLAND BNDY	---
EXT. WETLAND AREA	---
EXT. WETLAND BUFFER	---
EXT. SEWER LINE	---
EXT. SEWER MANHOLE	---
PRP. SEWER LINE	---
EXT. WATER LINE	---
PRP. WATER LINE	---
EXT. OVERHEAD ELEC	---
EXT. POWER POLE	---
PRP. U.G. ELECTRIC	---
EXT. MAJOR CONTOUR	---
EXT. MINOR CONTOUR	---
PRP. MAJOR CONTOUR	---
PRP. MINOR CONTOUR	---
PRP. SPOT GRADE	---



TAX MAP 29, LOT 1

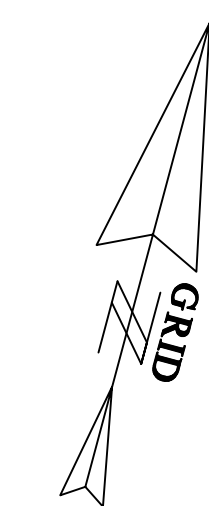
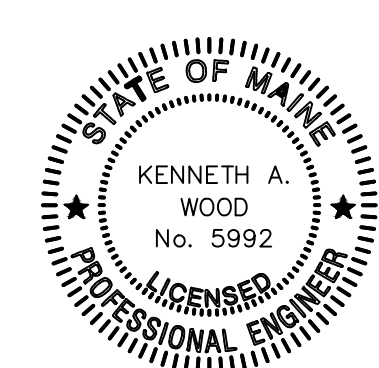
GRADING & UTILITIES PLAN  
WELL FIELD 44 CANNABIS DISPENSARY  
41 ROUTE 236, KITTERY, ME 03904

FOR:  
WELL FIELD 44, LLC.  
8 DEXTER LANE UNIT 8  
KITTERY, MAINE 03904

**ATTAR ENGINEERING, INC.**  
CIVIL • STRUCTURAL • MARINE • SURVEYING  
1284 STATE ROAD - ELIOT, MAINE 03903  
PHONE: (207)439-6023 FAX: (207)439-2128

SCALE: 1" = 20'	APPROVED BY:	DRAWN BY: MJS
DATE: 04/26/22		REVISION DATE: D : 09/29/22
JOB NO: C277-21	FILE: WF44 DEV BASE.DWG	SHEET: 3

NO.	DESCRIPTION	DATE
D	PRELIMINARY REVIEW REVISIONS	09/29/22
C	PRELIMINARY REVIEW REVISIONS	08/04/22
B	PRELIMINARY REVIEW REVISIONS	07/13/22
A	SITE PLAN REVIEW APPLICATION	06/30/22
	REVISIONS	



## EROSION & SEDIMENTATION CONTROL NOTES

- PRIOR TO ANY SNOW EVENT, SILTATION FENCE OR HAY BALE BARRIERS WILL BE INSTALLED DOWNSLOPE OF ALL STRIPPING OR CONSTRUCTION OPERATIONS. A DOUBLE SILT FENCE BARRIER SHALL BE INSTALLED DOWNSLOPE OF ANY SOIL MATERIAL STOCKPILES. SILT FENCES SHALL BE INSPECTED AFTER EACH RAIN EVENT AND DAILY DURING PROLONGED RAIN. SILT AND SOIL PARTICLES ACCUMULATING BEHIND THE FENCE SHALL BE REMOVED AFTER EACH SIGNIFICANT RAIN EVENT AND IN NO INSTANCE SHOULD ACCUMULATION EXCEED 1/2 THE HEIGHT OF THE FENCE. TORN OR DAMAGED AREAS SHALL BE REPAIRED.
- TEMPORARY AND PERMANENT VEGETATION AND MULCHING IS AN INTEGRAL COMPONENT OF THE EROSION AND SEDIMENTATION CONTROL PLAN. ALL AREAS SHALL BE INSPECTED AND MAINTAINED UNTIL THE DESIRED VEGETATIVE COVER IS ESTABLISHED. THESE CONTROL MEASURES ARE ESSENTIAL TO EROSION PREVENTION AND ALSO REDUCE COSTLY REWORK OF GRADED AND SHAPED AREAS.
- SEEDING, FERTILIZER AND LIME RATES AND TIME OF APPLICATION WILL BE DEPENDENT ON SOIL REQUIREMENTS. TEMPORARY VEGETATION SHALL BE MAINTAINED IN THESE AREAS UNTIL PERMANENT SEEDING IS APPLIED. ADDITIONALLY, EROSION AND SEDIMENTATION MEASURES SHALL BE MAINTAINED UNTIL PERMANENT VEGETATION IS ESTABLISHED.
- ALL LAWN AREA, OUTER POND SIDE SLOPES AND SWALES SHALL BE PERMANENTLY SEEDED WITH THE FOLLOWING MIXTURE: 20 LB/ACRE CREEPING RED FESCUE, 2 LB/ACRE REDTOP AND 20 LB/ACRE TALL FESCUE FOR A TOTAL OF 42 LB/ACRE. FERTILIZER AND LIME RATES SHALL BE DEPENDENT ON SOIL TESTING. IN THE ABSENCE OF SOIL TESTS, FERTILIZE WITH 10-20-20 (N-P205-K201) AT 800 LB/ACRE AND LIME AT 3 TONS/ACRE. MULCH WITH HAY AT 70-90 LB/1000 S.F. 4" OF LOAM SHALL BE APPLIED PRIOR TO SEEDING.
- POND BOTTOMS AND INNER POND SIDESLOPES SHALL BE PERMANENTLY SEEDED WITH THE FOLLOWING MIXTURE: 20 LB/ACRE CREEPING RED FESCUE, 8 LB/ACRE BIRDSFOOT TREFOIL AND 20 LB/ACRE TALL FESCUE FOR A TOTAL OF 48 LB/ACRE. SEE THE ABOVE NOTE FOR FERTILIZER, LIME AND MULCHING RATES.
- TEMPORARY VEGETATION OF ALL DISTURBED AREAS, MATERIAL STOCKPILES AND OTHER SUCH AREAS SHALL BE ESTABLISHED BY SEEDING WITH EITHER WINTER RYE AT A RATE OF 112 LB/ACRE OR ANNUAL RYEGRASS AT A RATE OF 40 LB/ACRE. WINTER RYE SHALL BE USED FOR FALL SEEDING AND ANNUAL RYEGRASS FOR SHORT DURATION SEEDING. SEEDING SHALL BE ACCOMPLISHED BEFORE OCTOBER 1. TEMPORARY STABILIZATION WITH MULCH OF DISTURBED AREAS SHALL TAKE PLACE WITHIN 7 DAYS OF THE CESSATION OF CONSTRUCTION ACTIVITIES IN AN AREA THAT WILL NOT BE WORKED FOR MORE THAN 7 DAYS. AREAS WITHIN 75 FEET OF A WETLAND OR WATERBODY SHALL BE TEMPORARILY STABILIZED WITH MULCH WITHIN 48 HOURS OF THE INITIAL DISTURBANCE OR PRIOR TO ANY STORM EVENT, WHICHEVER COMES FIRST.
- TEMPORARY SEEDING OF DISTURBED AREAS SHALL BE ACCOMPLISHED BEFORE OCTOBER 1. PERMANENT SEEDING SHALL BE ACCOMPLISHED BEFORE SEPTEMBER 15.
- ALL SEEDED AREAS SHALL BE MULCHED WITH HAY AT A RATE OF 2 BALES (70-90 LB) PER 1000 S.F. OF SEEDED AREA.
- ALL DISTURBED AREAS ON THE SITE SHALL BE PERMANENTLY STABILIZED WITHIN 7 DAYS OF FINAL GRADING OR TEMPORARILY STABILIZED PER E&S NOTE 6. PERMANENT STABILIZATION MEANS 90% COVER WITH MATURE, HEALTHY PLANTS FOR PLANTED AREAS AND FOR SODDED AREAS, COMPLETE BINDING OF SOD ROOTS INTO THE UNDERLYING SOIL WITH NO SLUMPING OF THE SOD OR DIE-OFF.
- A STABILIZED CONSTRUCTION ENTRANCE SHALL BE INSTALLED AT ALL ACCESSES TO PUBLIC ROADS (SEE PLAN). TEMPORARY CULVERTS SHALL BE PROVIDED AS REQUIRED.
- SLOPES BETWEEN 2:1 AND 3:1 (INCLUDING 3:1) SHALL BE TREATED WITH POLYJUTE OPEN WEAVE GEOTEXTILE (OR EQUIVALENT) AFTER SEEDING. JUTE MATS SHALL BE ANCHORED PER MANUFACTURER'S SPECIFICATIONS. SLOPES BETWEEN 2:1 AND 1.5:1 (INCLUDING 2:1) SHALL BE ANCHORED WITH RIPRAP. SLOPES ARE PROHIBITED FROM BEING STEEPER THAN 1.5:1.
- EXCESSIVE DUST CAUSED BY CONSTRUCTION OPERATIONS SHALL BE CONTROLLED BY APPLICATION OF WATER OR CALCIUM CHLORIDE.
- THE CONTRACTOR MAY OPT TO USE EROSION CONTROL MIX BERM AS A SEDIMENT BARRIER IN LIEU OF SILTATION FENCE OR HAY BALE BARRIERS WITH APPROVAL FROM THE INSPECTING ENGINEER.
- SEDIMENT BARRIERS SHALL BE DOUBLED WITH 75' OF WETLANDS OR OTHER PROTECTED NATURAL RESOURCES.
- TEMPORARY E&S CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS OF PERMANENT STABILIZATION. ACCUMULATED SEDIMENTS SHALL BE REMOVED AND THE AREA STABILIZED.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATE HOUSEKEEPING PRACTICES DURING THE CONSTRUCTION OF THE PROJECT. THESE STANDARDS CAN BE FOUND IN THE FOLLOWING DOCUMENT: MDEP CHAPTER 500 (STORMWATER MANAGEMENT), APPENDIX C: HOUSEKEEPING. HOUSEKEEPING PRACTICES INCLUDE, BUT ARE NOT LIMITED TO, SPILL PREVENTION, GROUNDWATER PROTECTION, FUGITIVE SEDIMENT AND DUST, DEBRIS AND OTHER MATERIALS, EXCAVATION DEWATERING, AUTHORIZED NON-STORMWATER DISCHARGES AND UNAUTHORIZED NON-STORMWATER DISCHARGES. ANY SPILL OR RELEASE OF HAZARDOUS SUBSTANCES MUST BE REPORTED TO THE MDEP; FOR OIL SPILLS, CALL 1-800-482-0777; FOR SPILLS OF TOXIC OR HAZARDOUS MATERIAL, CALL 1-800-452-4664.
- WHENEVER PRACTICABLE, NO DISTURBANCE ACTIVITIES SHOULD TAKE PLACE WITHIN 50 FEET OF ANY PROTECTED NATURAL RESOURCE. IF DISTURBANCE ACTIVITIES TAKE PLACE BETWEEN 30 FEET AND 50 FEET OF ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED. IF DISTURBANCE ACTIVITIES TAKE PLACE LESS THAN 30 FEET FROM ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED AND DISTURBED AREAS MUST BE TEMPORARILY OR PERMANENTLY STABILIZED WITHIN 7 DAYS.
- ALL SEDIMENT BARRIERS AND EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE START OF CONSTRUCTION.
- SEDIMENT BARRIERS SHALL BE INSTALLED DOWN-GRADIENT OF STOCKPILES, AND STORMWATER SHALL BE PREVENTED FROM RUNNING ONTO STOCKPILES.
- THE PROPOSED STORMWATER MANAGEMENT AREAS INTENDED FOR USE AS PERMANENT, POST-CONSTRUCTION BMP'S SHALL BE USED TO TEMPORARILY MANAGE FLOWS DURING CONSTRUCTION. THESE BMP'S SHALL BE MAINTAINED DURING THEIR TEMPORARY USE BY INSTALLING THE APPROPRIATE MEASURES DURING CONSTRUCTION, INCLUDING UNDERDRAINS, SOIL FILTER MEDIA, ETC. SEDIMENT REMOVAL AND SLOPE STABILIZATION SHALL TAKE PLACE AS NECESSARY FOR TEMPORARY CONSTRUCTION MANAGEMENT.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATE HOUSEKEEPING PRACTICES DURING THE CONSTRUCTION OF THE PROJECT. THESE STANDARDS CAN BE FOUND IN THE FOLLOWING DOCUMENT: MDEP CHAPTER 500 (STORMWATER MANAGEMENT), APPENDIX C: HOUSEKEEPING. HOUSEKEEPING PRACTICES INCLUDE, BUT ARE NOT LIMITED TO, SPILL PREVENTION, GROUNDWATER PROTECTION, FUGITIVE SEDIMENT AND DUST, DEBRIS AND OTHER MATERIALS, EXCAVATION DEWATERING, AUTHORIZED NON-STORMWATER DISCHARGES AND UNAUTHORIZED NON-STORMWATER DISCHARGES (DETAILED BELOW).

## ROAD & DRIVEWAY CONSTRUCTION NOTES

- ROADS & DRIVEWAYS TO BE CONSTRUCTED IN ACCORDANCE WITH THE APPROPRIATE CROSS SECTION DETAIL. GRAVEL FILL TO BE COMPACTED TO 95% MODIFIED PROCTOR IN ACCORDANCE WITH ASTM D 1557. LIFT THICKNESSES TO BE A MAXIMUM OF 6".
- ALL STUMPS, ORGANIC MATERIAL, ROCKS AND BOULDERS TO BE REMOVED TO A MINIMUM DEPTH OF 24" BELOW SUBBASE.
- ALL STUMPS, LEDGE AND LARGE BOULDERS TO BE REMOVED FROM THE CONSTRUCTION AREA. THE CONSTRUCTION AREA SHALL BE CLEARED AND ROUGH GRADED.
- ALL CULVERTS TO BE ADS N-12 (HDPE) OR APPROVED EQUAL. CULVERT INLETS AND OUTLETS TO BE PROTECTED IN ACCORDANCE WITH THE CULVERT INLET/OUTLET PROTECTION DETAIL.
- THE CONTRACTOR MUST CONTACT DIG SAFE AND ALL LOCAL UTILITIES PRIOR TO THE START OF CONSTRUCTION TO VERIFY THE LOCATION OF EXISTING SUBSURFACE UTILITIES AND CONDITIONS. LOCATING AND PROTECTING ANY UNDERGROUND OR ABOVE GROUND UTILITY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

## E&S INSPECTION/MAINTENANCE DURING CONSTRUCTION

- INSPECTION AND CORRECTIVE ACTION.** INSPECT DISTURBED AND IMPERVIOUS AREAS, EROSION CONTROL MEASURES, MATERIALS STORAGE AREAS THAT ARE EXPOSED TO PRECIPITATION, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE. INSPECT THESE AREAS AT LEAST ONCE A WEEK, PRIOR TO COMPLETING PERMANENT STABILIZATION MEASURES, AS WELL AS BEFORE AND WITHIN 24 HOURS AFTER A STORM EVENT WHICH PRODUCES 0.5 INCHES OR MORE WITHIN SAID 24 HOUR PERIOD. A TOWN-APPOINTED ENGINEER WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT, SHALL CONDUCT THE INSPECTIONS AND SHALL ALSO ENSURE THAT THE RECOMMENDED MAINTENANCE IS PERFORMED.
- MAINTENANCE.** IF BEST MANAGEMENT PRACTICES (BMPs) NEED TO BE REPAIRED, THE REPAIR WORK SHOULD BE INITIATED UPON DISCOVERY OF THE PROBLEM BUT NO LATER THAN THE END OF THE NEXT WORKDAY. IF ADDITIONAL BMPs OR SIGNIFICANT REPAIR OF BMPs ARE NECESSARY, IMPLEMENTATION MUST BE COMPLETED WITHIN 7 CALENDAR DAYS AND PRIOR TO ANY STORM EVENT WHICH PRODUCES 0.5 INCHES OR MORE WITHIN A 24 HOUR PERIOD. ALL MEASURES MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION UNTIL AREAS ARE PERMANENTLY STABILIZED.
- DOCUMENTATION.** KEEP A LOG (REPORT) SUMMARIZING THE INSPECTIONS AND ANY CORRECTIVE ACTION TAKEN. THE LOG MUST INCLUDE THE NAME(S) AND QUALIFICATIONS OF THE PERSON MAKING THE INSPECTIONS; THE DATE(S) OF THE INSPECTIONS; AND MAJOR OBSERVATIONS PERIOD THE OPERATION AND MAINTENANCE OF EROSION AND SEDIMENTATION CONTROLS, MATERIALS STORAGE AREAS, AND VEHICLES ACCESS POINTS TO THE PARCEL. MAJOR OBSERVATIONS MUST INCLUDE BMPs THAT NEED MAINTENANCE, BMPs THAT FAILED TO OPERATE AS DESIGNED OR PROVED INADEQUATE FOR A PARTICULAR LOCATION, AND LOCATION(S) WHERE ADDITIONAL BMPs ARE NEEDED. FOR EACH BMP REQUIRING MAINTENANCE, BMP NEEDING REPLACEMENT, AND LOCATION NEEDING ADDITIONAL BMPs, NOTE IN THE LOG THE CORRECTIVE ACTION TAKEN AND WHEN IT WAS TAKEN. THE LOG MUST BE MADE ACCESSIBLE TO DEPARTMENT STAFF AND A COPY MUST BE PROVIDED UPON REQUEST. THE PERMITTEE SHALL RETAIN A COPY OF THE LOG FOR A PERIOD OF AT LEAST THREE YEARS FROM THE COMPLETION OF PERMANENT STABILIZATION.

## WINTER CONSTRUCTION NOTES (01 NOVEMBER THRU 15 APRIL)

- EXPOSED AREAS SHOULD BE LIMITED TO AN AREA THAT CAN BE MULCHED IN ONE DAY.
- AN AREA SHALL BE CONSIDERED STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED WITH HAY AT A RATE OF 140-180 LB/1000 S.F. (DOUBLE THE NORMAL RATE) OR DORMANT SEEDED, MULCHED AND ADEQUATELY ANCHORED BY AN APPROVED ANCHORING TECHNIQUE. IN ALL CASES, MULCH SHALL BE APPLIED SO THAT THE SOIL SURFACE IS NOT VISIBLE THROUGH THE MULCH.
- FROM OCTOBER 15 TO APRIL 1, LOAM AND SEED WILL NOT BE REQUIRED. DURING PERIODS OF TEMPERATURES ABOVE FREEZING, DISTURBED AREAS SHALL BE FINE GRADED AND PROTECTED WITH MULCH OR TEMPORARILY SEEDED AND MULCHED UNTIL PERMANENT SEEDING CAN BE APPLIED. AFTER NOVEMBER 1, DISTURBED AREAS MAY BE LOAMED, FINE GRADED AND DORMANT SEEDED AT A RATE 200-300% HIGHER THAN THE SPECIFIED PERMANENT SEEDING RATE. IF CONSTRUCTION CONTINUES DURING FREEZING WEATHER, DISTURBED AREAS SHALL BE GRADED BEFORE FREEZING AND TEMPORARILY STABILIZED WITH MULCH. DISTURBED AREAS SHALL NOT BE LEFT OVER THE WINTER OR FOR ANY OTHER EXTENDED PERIOD OF TIME UNLESS STABILIZED WITH MULCH.
- FROM NOVEMBER 1 TO APRIL 15 ALL MULCH SHALL BE ANCHORED BY EITHER PEG LINE, MULCH NETTING, TRACK OR WOOD CELLULOSE FIBER. MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL DRAINAGEWAYS WITH SLOPES GREATER THAN 3%, SLOPES EXPOSED TO DIRECT WINDS AND FOR SLOPES GREATER THAN 8%. MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL AREAS WITH SLOPES GREATER THAN 15%. AFTER OCTOBER 1, THE SAME APPLIES TO ALL SLOPES GREATER THAN 8%.
- DURING WINTER CONSTRUCTION, DORMANT SEEDING OR MULCH AND ANCHORING SHALL BE APPLIED TO ALL DISTURBED AREAS AT THE END OF EACH WORKING DAY.
- SNOW SHALL BE REMOVED FROM AREAS OF SEEDING AND MULCHING PRIOR TO PLACEMENT.
- ALL VEGETATED DITCH LINES THAT HAVE NOT BEEN STABILIZED BY NOVEMBER 1, OR WILL BE WORKED DURING THE WINTER CONSTRUCTION PERIOD, MUST BE STABILIZED WITH AN APPROPRIATE STONE LINING BACKED BY AN APPROPRIATE GRAVEL BED OR GEOTEXTILE UNLESS SPECIFICALLY RELEASED FROM THIS STANDARD BY THE MDEP.

## CONSTRUCTION HOUSEKEEPING PUNCHLIST

- ALL DISTURBED AREAS SHALL BE PERMANENTLY STABILIZED, AND PLANTINGS SHALL BE ESTABLISHED (GRASS SEEDS HAVE GERMINATED WITHIN 90% VEGETATIVE COVER).
- ALL TRASH, SEDIMENTS, DEBRIS, OR ANY SOLID WASTE SHALL BE REMOVED FROM STORMWATER CHANNELS, CATCH BASINS, DETENTION STRUCTURES, DISCHARGE POINTS, AND LEVEL SPREADERS.
- ALL EROSION AND SEDIMENTATION DEVICES SHALL BE REMOVED (SILTATION FENCES AND POSTS, DIVERSIONS AND SEDIMENT STRUCTURES, ETC.)
- ALL DELIVERABLES (CERTIFICATIONS, SURVEY INFORMATION, AS-BUILT PLANS, REPORTS, NOTICES OF TERMINATION, ETC.) IN ACCORDANCE WITH ALL PERMIT REQUIREMENTS SHALL BE SUBMITTED TO THE TOWN, THE MAINE DEP, HOMEOWNER'S ASSOCIATION, OWNER, AND/OR ALL APPROPRIATE ENTITIES.

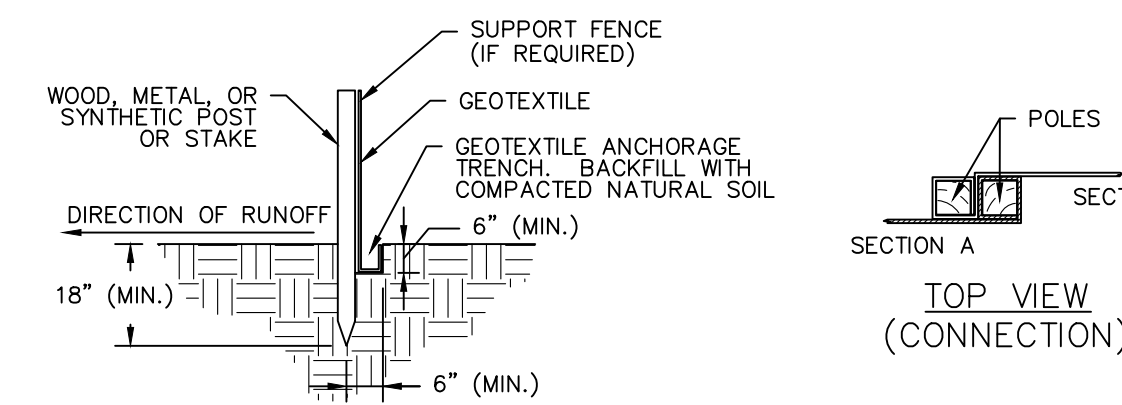
## STORMWATER DISCHARGE REQUIREMENTS

AUTHORIZED NON-STORMWATER DISCHARGES. IDENTIFY AND PREVENT CONTAMINATION BY NON-STORMWATER DISCHARGES. WHERE ALLOWED NON-STORMWATER DISCHARGES EXIST, THEY MUST BE IDENTIFIED AND STEPS SHOULD BE TAKEN TO ENSURE THE IMPLEMENTATION OF APPROPRIATE POLLUTION PREVENTION MEASURES FOR THE NON-STORMWATER COMPONENT(S) OF THE DISCHARGE. AUTHORIZED NON-STORMWATER DISCHARGES ARE:

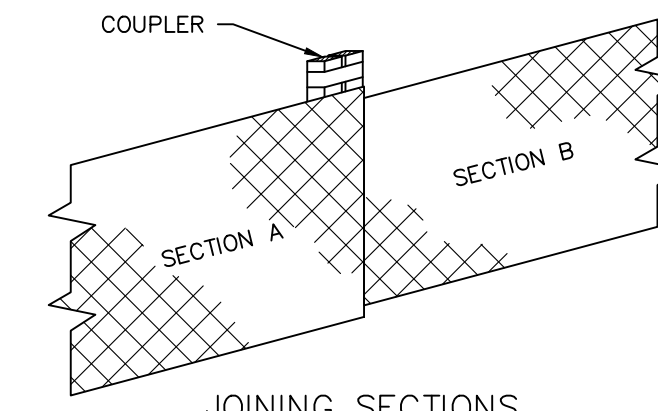
- DISCHARGES FROM FIREFIGHTING ACTIVITY;
- FIRE HYDRANT FLUSHINGS;
- VEHICLE WASHWATER IF DETERGENTS ARE NOT USED AND WASHING IS LIMITED TO THE EXTERIOR OF VEHICLES (ENGINE, UNDERCARRIAGE AND TRANSMISSION WASHING IS PROHIBITED);
- DUST CONTROL RUNOFF IN ACCORDANCE WITH PERMIT CONDITIONS AND APPENDIX C(3);
- ROUTINE EXTERNAL BUILDING WASHDOWN, NOT INCLUDING SURFACE PAINT REMOVAL, THAT DOES NOT INVOLVE DETERGENTS;
- PAVEMENT WASHWATER (WHERE SPILLS/LEAKS OF TOXIC OR HAZARDOUS MATERIALS HAVE NOT OCCURRED, UNLESS ALL SPILLED MATERIAL HAD BEEN REMOVED) IF DETERGENTS ARE NOT USED;
- UNCONTAMINATED AIR CONDITIONING OR COMPRESSOR CONDENSATE;
- UNCONTAMINATED GROUNDWATER OR SPRING WATER;
- FOUNDATION OR FOOTER DRAIN-WATER WHERE FLOWS ARE NOT CONTAMINATED;
- UNCONTAMINATED EXCAVATION DEWATERING (SEE REQUIREMENTS IN APPENDIX C(5))
- PORTABLE WATER SOURCES INCLUDING WATERLINE FLUSHINGS
- LANDSCAPE IRRIGATION

UNAUTHORIZED NON-STORMWATER DISCHARGES. THE DEPARTMENT'S APPROVAL UNDER THIS CHAPTER DOES NOT AUTHORIZE A DISCHARGE THAT IS MIXED WITH A SOURCE OF NON-STORMWATER, OTHER THAN THOSE DISCHARGES IN COMPLIANCE WITH APPENDIX C (6). SPECIFICALLY, THE DEPARTMENT'S APPROVAL DOES NOT AUTHORIZE DISCHARGES OF THE FOLLOWING:

- WASTEWATER FROM THE WASHOUT OR CLEANOUT OF CONCRETE, STUCCO, PAINT, FORM RELEASE OILS, CURING COMPOUNDS OR OTHER CONSTRUCTION MATERIALS;
- FUELS, OILS OR OTHER POLLUTANTS USED IN VEHICLE AND EQUIPMENT OPERATION AND MAINTENANCE;
- SOAPS, SOLVENTS, OR DETERGENTS USED IN VEHICLE AND EQUIPMENT WASHING; AND
- TOXIC OR HAZARDOUS SUBSTANCES FROM A SPILL OR OTHER RELEASE

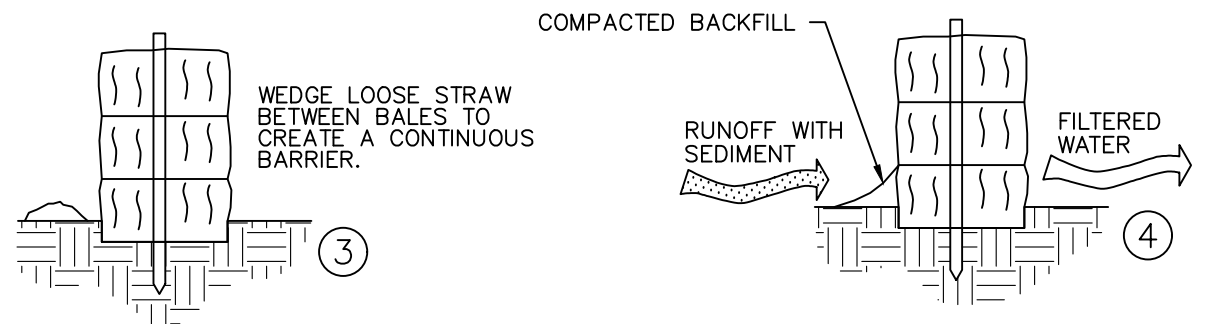
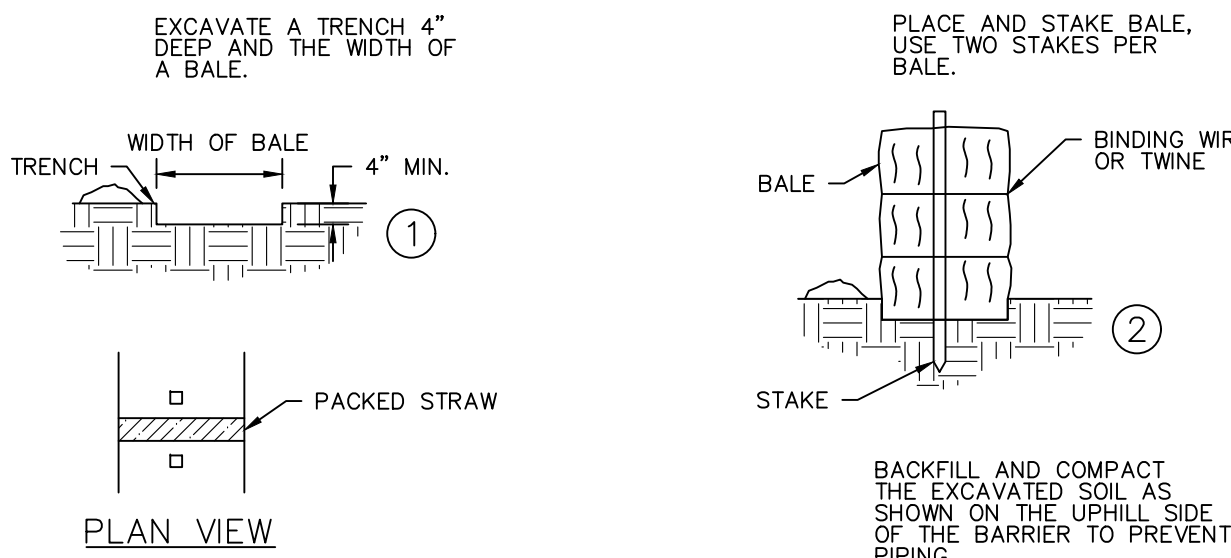


TOE-IN METHOD



JOINING SECTIONS  
THE COUPLER CAN BE ANY ACCEPTABLE DEVICE USED TO TIE THE POLES TOGETHER

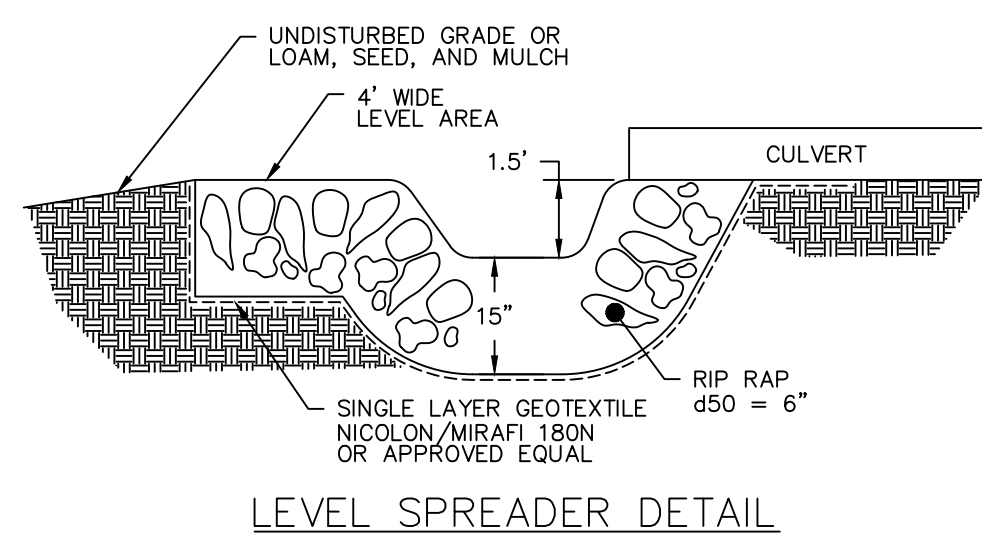
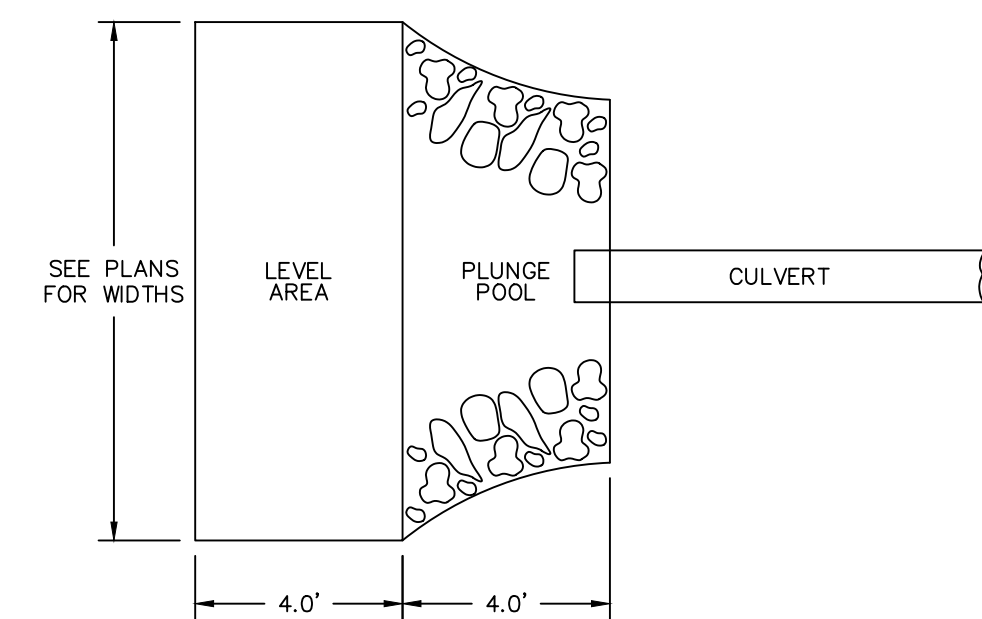
## TEMPORARY SILT FENCE - NTS



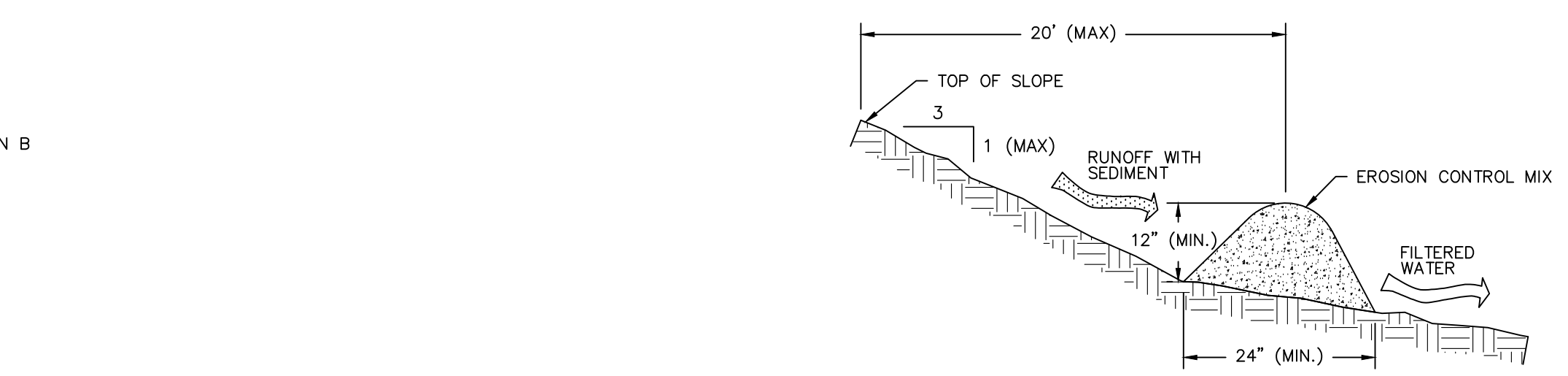
PLAN VIEW

- NOTES:
- PLACE BALES IN A SINGLE ROW, LENGTHWISE ON THE CONTOUR.
  - PLACE BALES 10' AWAY FROM THE TOE OF SLOPE.
  - IN SLOPING AREAS WHERE SURFACE FLOW FOLLOWS THE BALE LINE, INSTALL PERPENDICULAR BALE CHECKS AT APPROPRIATE INTERVALS (100' MAX.)

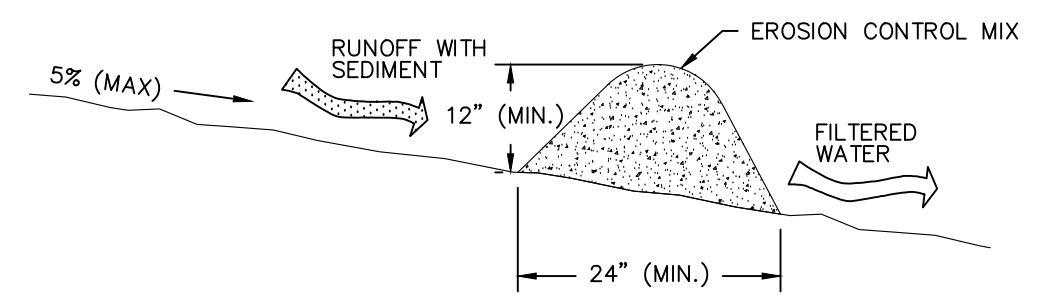
## HAY BALE BARRIER - NTS



LEVEL SPREADER DETAIL

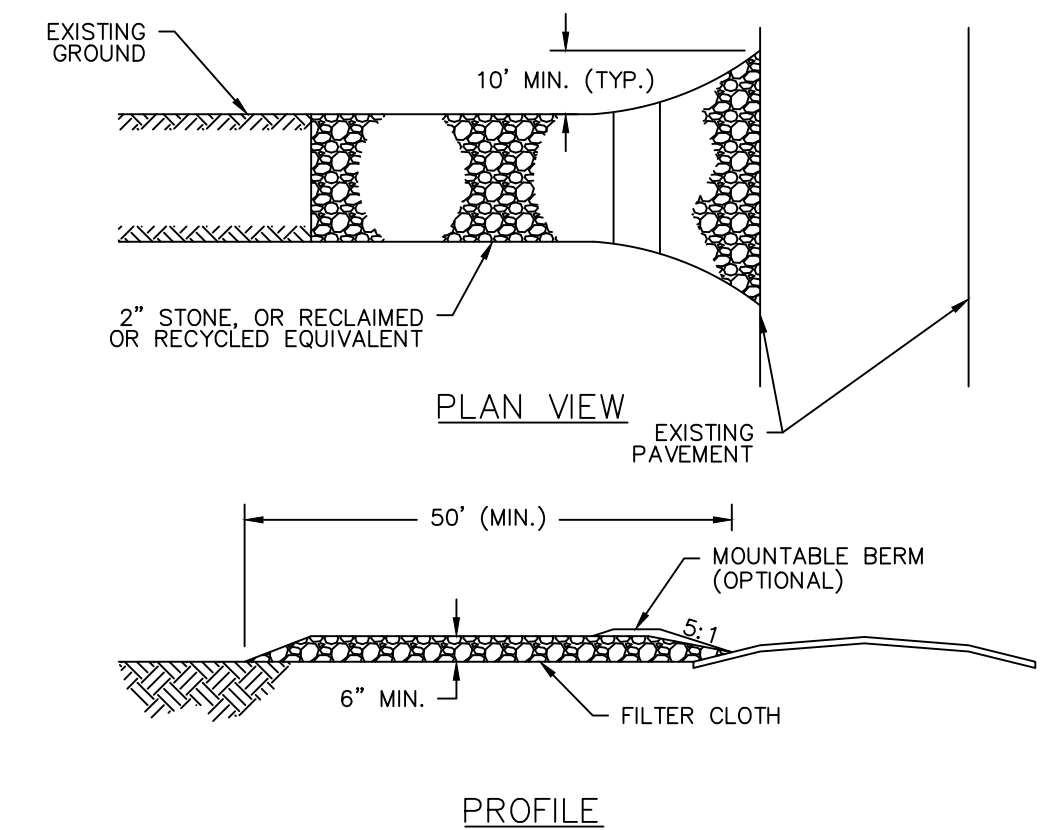


TOP VIEW  
(CONNECTION)



- EROSION CONTROL MIX COMPOSITION STANDARDS:
- THE ORGANIC MATTER CONTENT SHALL BE BETWEEN 80 AND 100% DRY WEIGHT BASIS.
  - PARTICLE SIZE BY WEIGHT SHALL BE 100% PASSING A 6" SCREEN AND A MINIMUM OF 70% MAXIMUM OF 85% PASSING A 0.75" SCREEN.
  - THE ORGANIC PORTION NEEDS TO BE FIBROUS AND ELONGATED.
  - LARGE PORTIONS OF SILTS, CLAYS, OR FINE SANDS ARE NOT ACCEPTABLE IN THE MIX.
  - SOLUBLE SALTS CONTENT SHALL BE < 4.0 mmhos/cm
  - THE pH SHOULD FALL BETWEEN 5.0 AND 8.0.

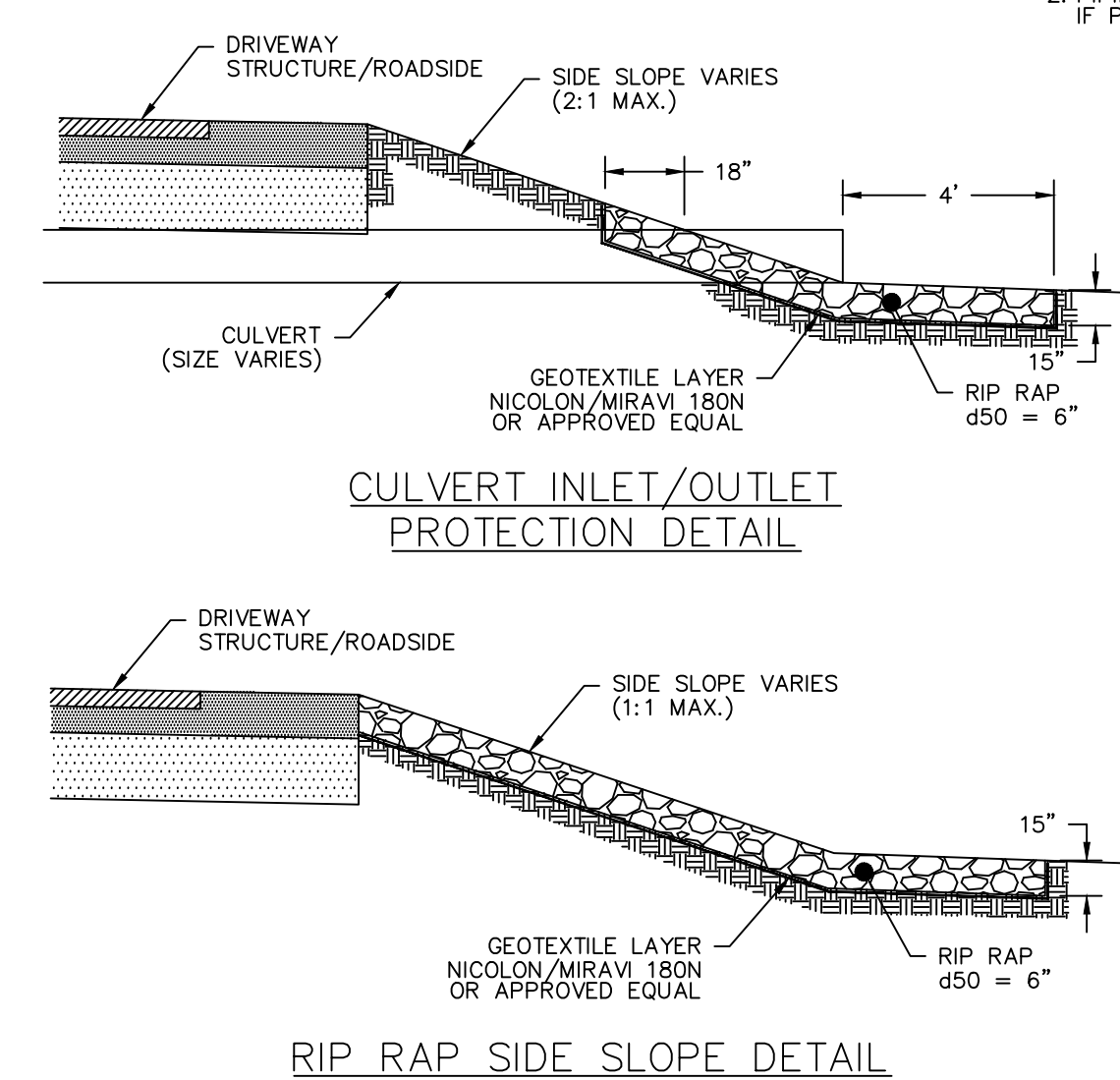
## EROSION CONTROL MIX BERM - NTS



PLAN VIEW

- NOTES:
- GEOTEXTILE: PLACE FILTER CLOTH OVER ENTIRE AREA TO BE COVERED WITH AGGREGATE. FILTER CLOTH WILL NOT BE REQUIRED ON A SINGLE FAMILY RESIDENTIAL LOT.
  - PIPING OF SURFACE WATER UNDER ENTRANCE SHALL BE PROVIDED AS REQUIRED. IF PIPING IS IMPOSSIBLE, A MOUNTABLE BERM WITH A 5:1 SLOPE WILL BE PERMITTED.

## STABILIZED CONSTRUCTION ENTRANCE

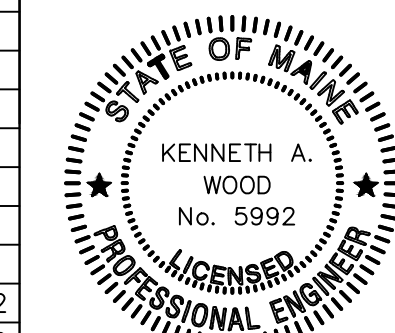


CULVERT INLET/OUTLET PROTECTION DETAIL

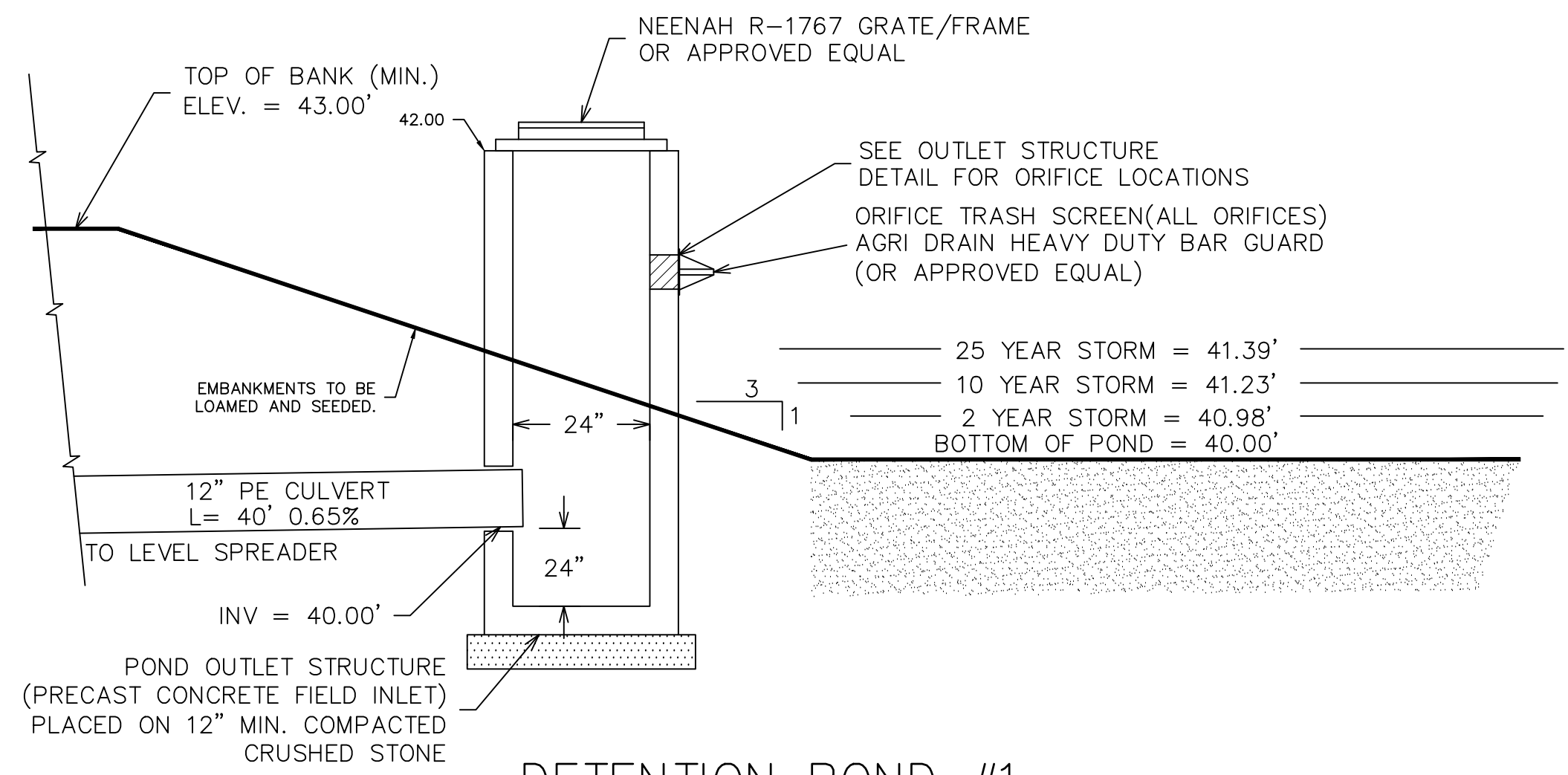
RIP RAP SIDE SLOPE DETAIL

NO.	DESCRIPTION	DATE
C	PRELIMINARY REVIEW REVISIONS	09/29/22
B	PRELIMINARY REVIEW REVISIONS	08/04/22
A	SITE PLAN REVIEW APPLICATION	06/30/22
NO.	DESCRIPTION	DATE
REVISIONS		

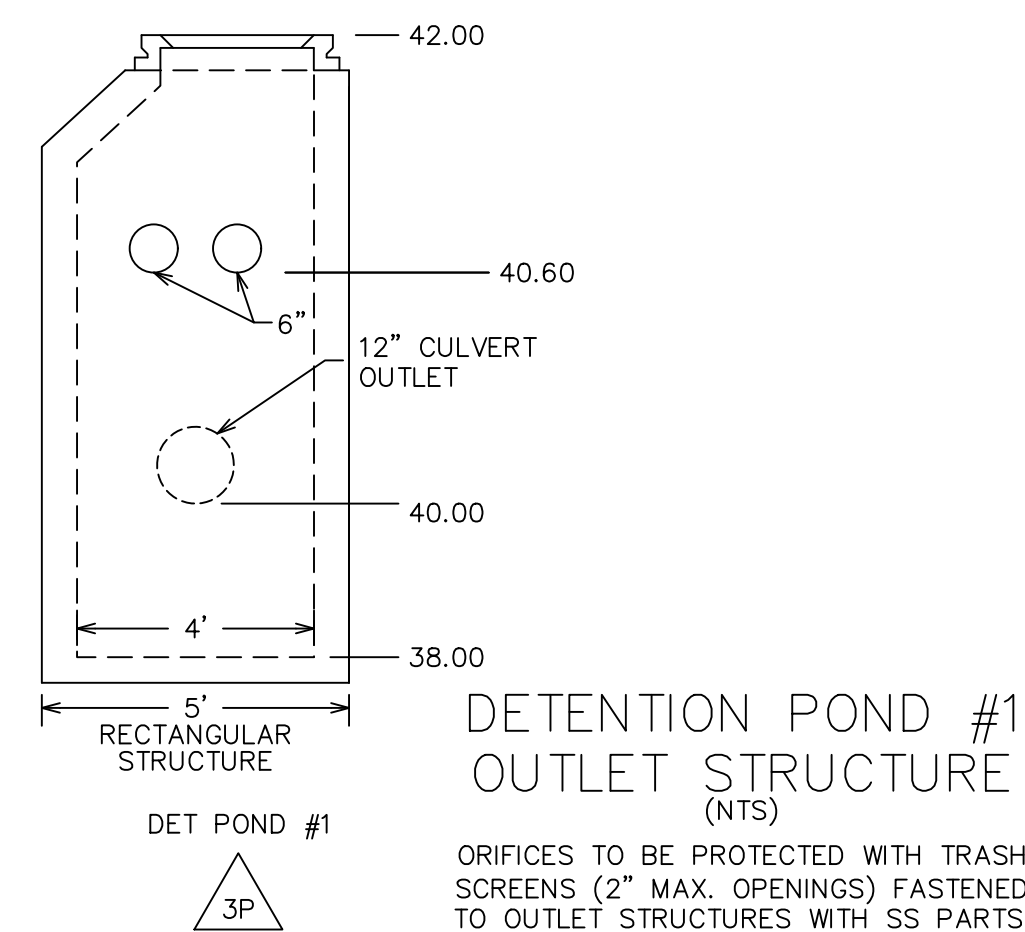
NO.	DESCRIPTION	DATE
C	PRELIMINARY REVIEW REVISIONS	09/29/22
B	PRELIMINARY REVIEW REVISIONS	08/04/22
A	SITE PLAN REVIEW APPLICATION	06/30/22
NO.	DESCRIPTION	DATE
REVISIONS		



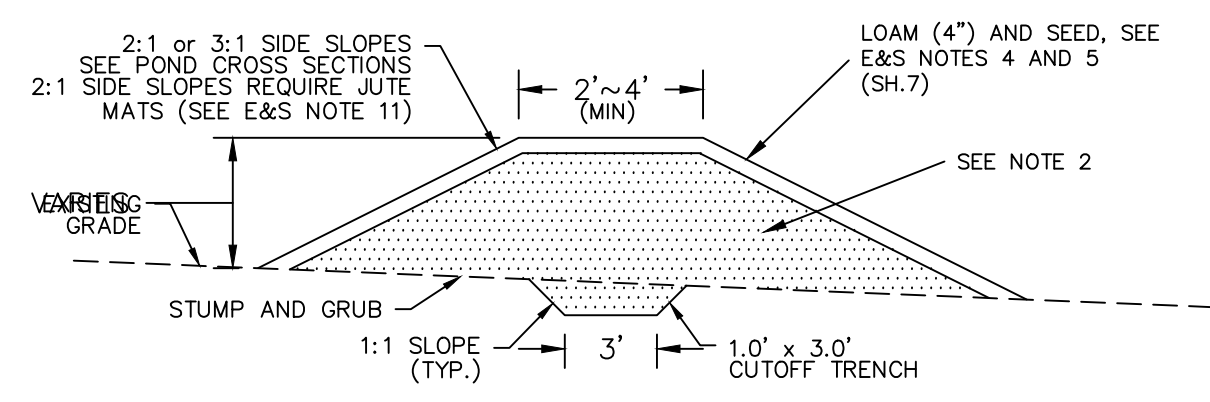
EROSION & SEDIMENTATION CONTROL DETAILS WELL FIELD 44 CANNABIS DISPENSARY 41 ROUTE 236, KITTERY, ME 03904		
FOR: WELL FIELD 44, LLC. 8 DEXTER LANE UNIT 8 KITTERY, MAINE 03904		
ATTAR ENGINEERING, INC. CIVIL • STRUCTURAL • MARINE • SURVEYING 1284 STATE ROAD - ELIOT, MAINE 03903 PHONE: (207)439-6023 FAX: (207)439-2128		
SCALE: AS NOTED	APPROVED BY:	DRAWN BY: MJS
DATE: 04/26/22	FILE: WF44 DEV BASE.DWG	REVISION DATE: C : 09/29/22
JOB NO: C277-21	SHEET: 4	



**DETENTION POND #1**  
(NTS)  
NOTES: PIPE JOINTS TO BE WATER TIGHT

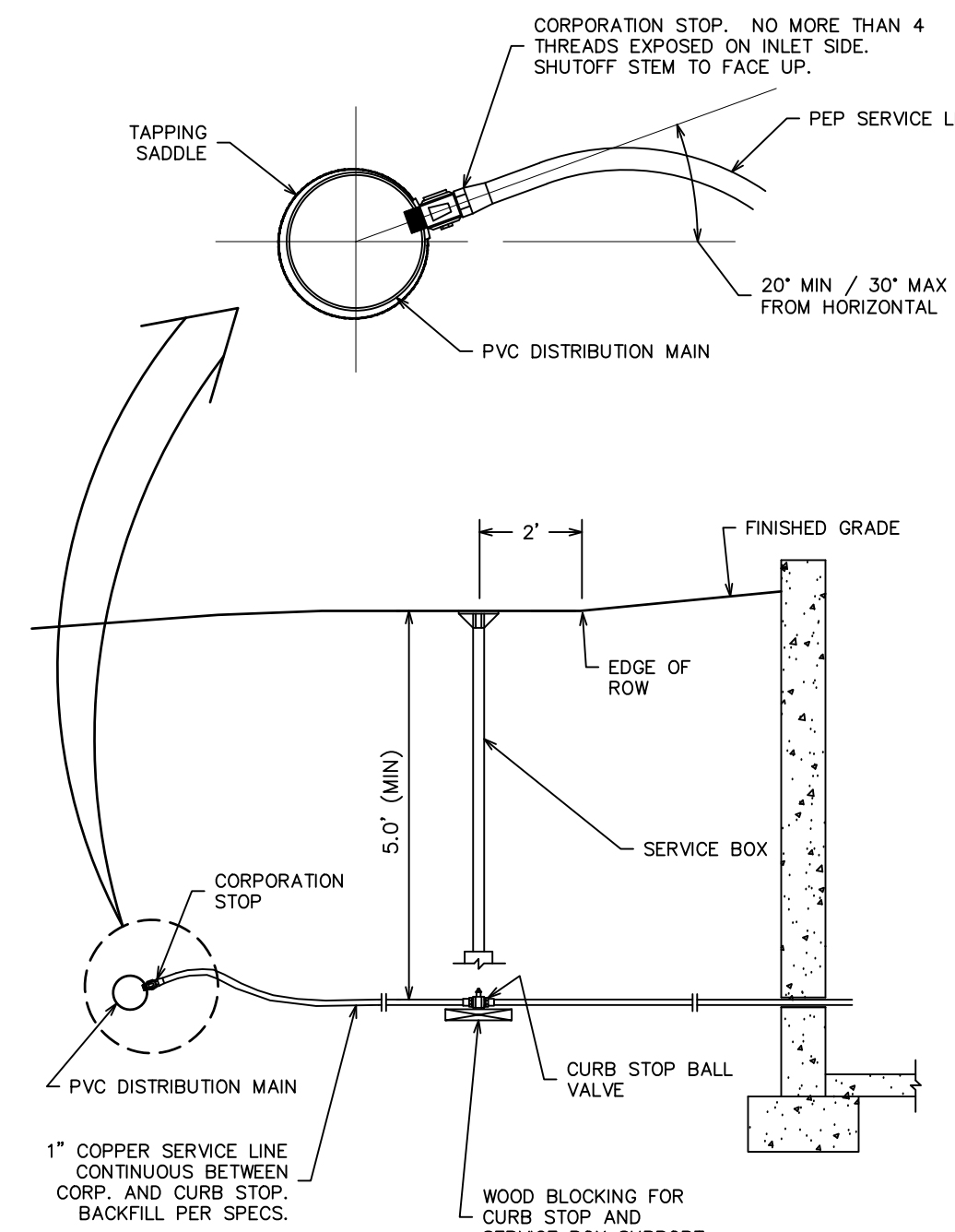


**DETENTION POND #1 OUTLET STRUCTURE**  
(NTS)  
ORIFICES TO BE PROTECTED WITH TRASH SCREENS (2" MAX. OPENINGS) FASTENED TO OUTLET STRUCTURES WITH SS PARTS.

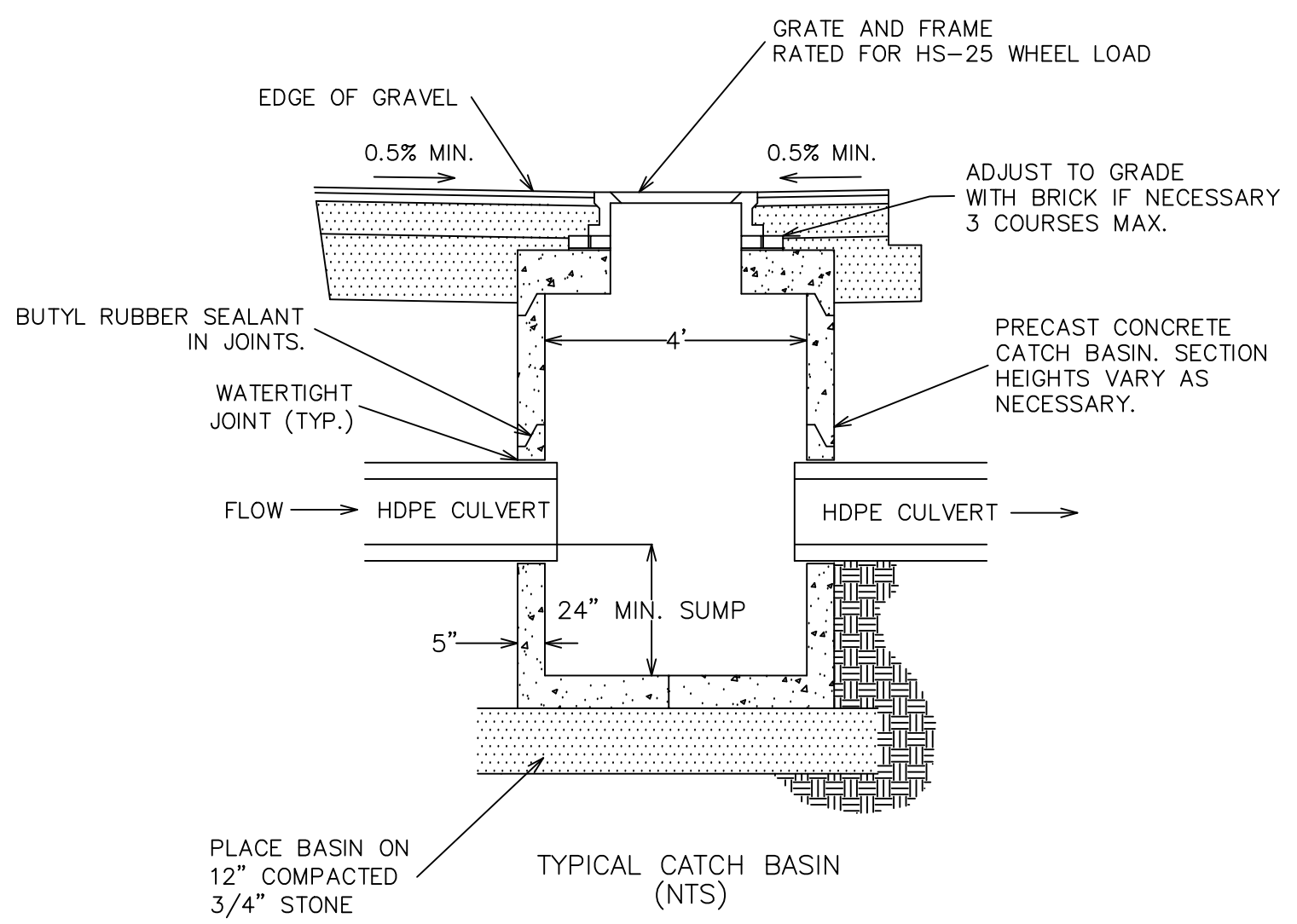


**FILTER POND EMBANKMENT AND BERM DETAIL**  
SCALE: 1" = 5'

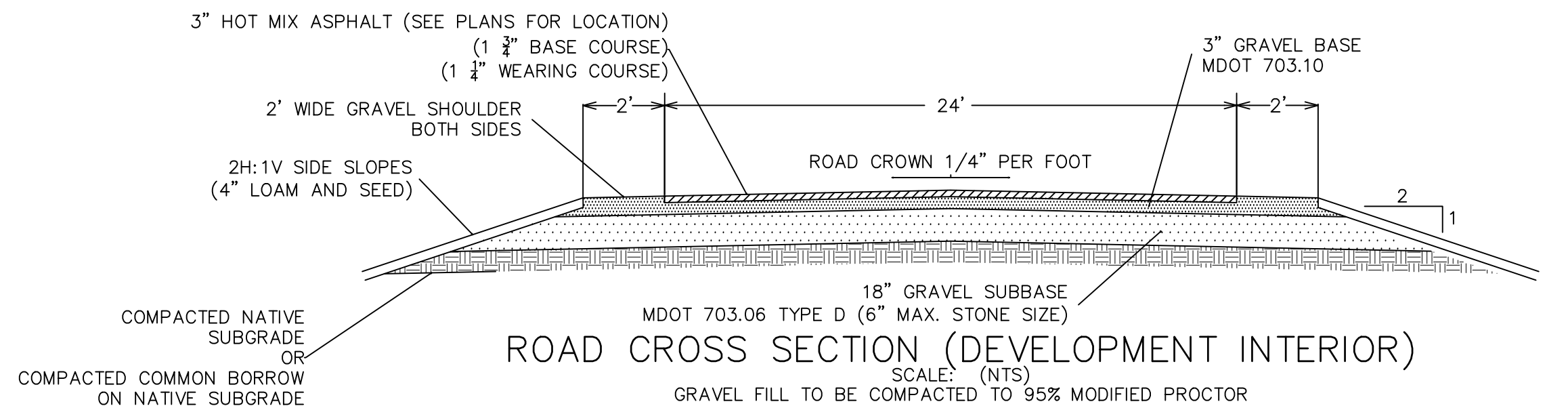
- EMBANKMENT CONSTRUCTION NOTES**
1. ALL ORGANIC MATERIAL, STUMPS, ROCKS AND BOULDERS SHALL BE REMOVED TO A MINIMUM DEPTH OF 24" BELOW SUBGRADE OF THE BASIN EMBANKMENT. ALL EXCAVATIONS BELOW THE BASIN EMBANKMENT SHALL HAVE A MINIMUM SLOPE OF 1H : 1V.
  2. ALL BASIN EMBANKMENT FILL MATERIAL SHALL BE WELL GRADED BORROW WITH A MINIMUM OF 20% FINES CONTENT. EMBANKMENT FILL SHALL BE PLACED IN 12" (MAX.) LIFTS AND BE COMPACTED TO 95% MODIFIED PROCTOR. A CUTOFF TRENCH SHALL BE EXCAVATED AS SHOWN PRIOR TO CONSTRUCTION OF EMBANKMENT.
  3. DETENTION BASIN AND ALL EXCAVATIONS SHALL BE KEPT FREE OF WATER DURING CONSTRUCTION.



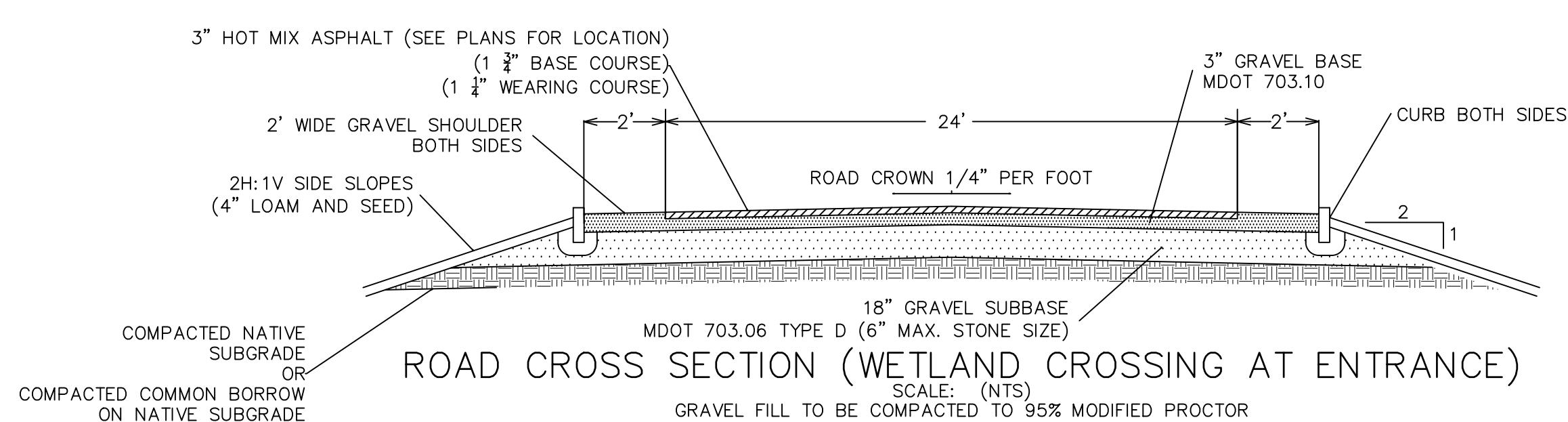
**WATER SERVICE DETAIL**  
(NTS)



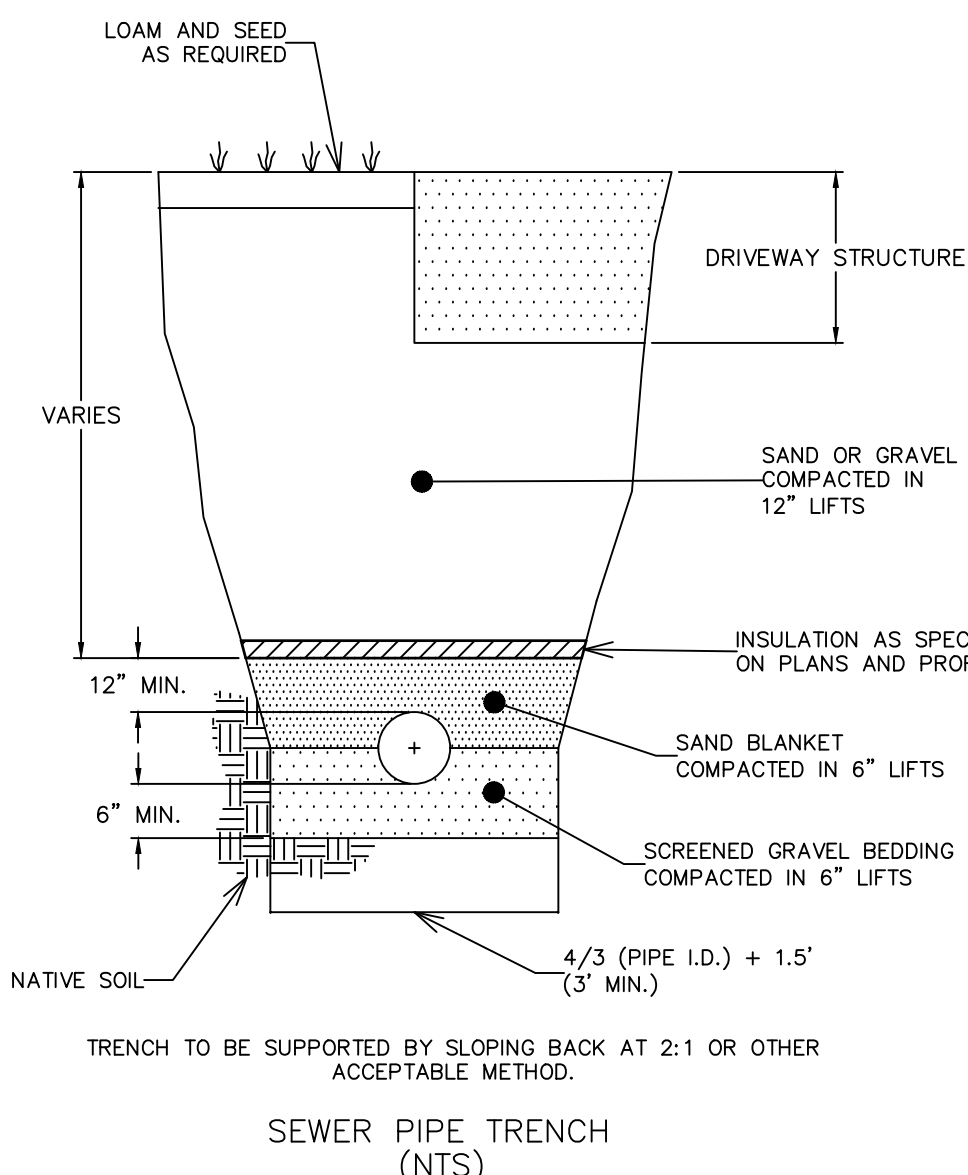
**TYPICAL CATCH BASIN**  
(NTS)



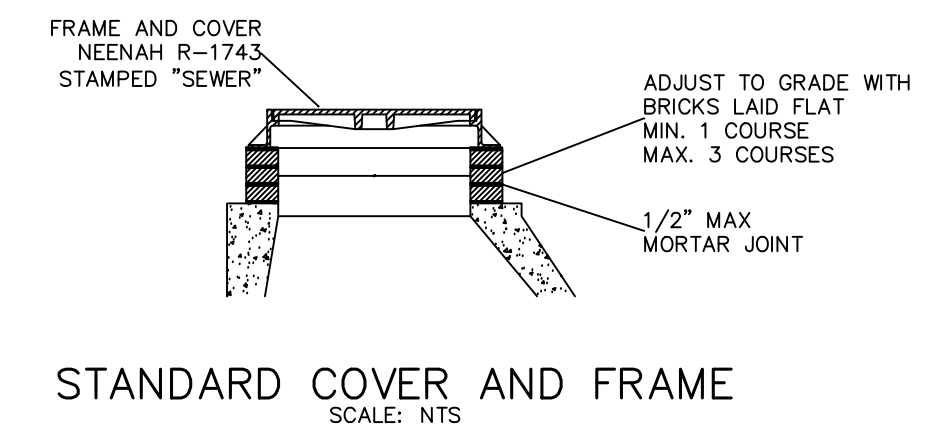
**ROAD CROSS SECTION (DEVELOPMENT INTERIOR)**  
SCALE: (NTS)  
GRAVEL FILL TO BE COMPACTED TO 95% MODIFIED PROCTOR



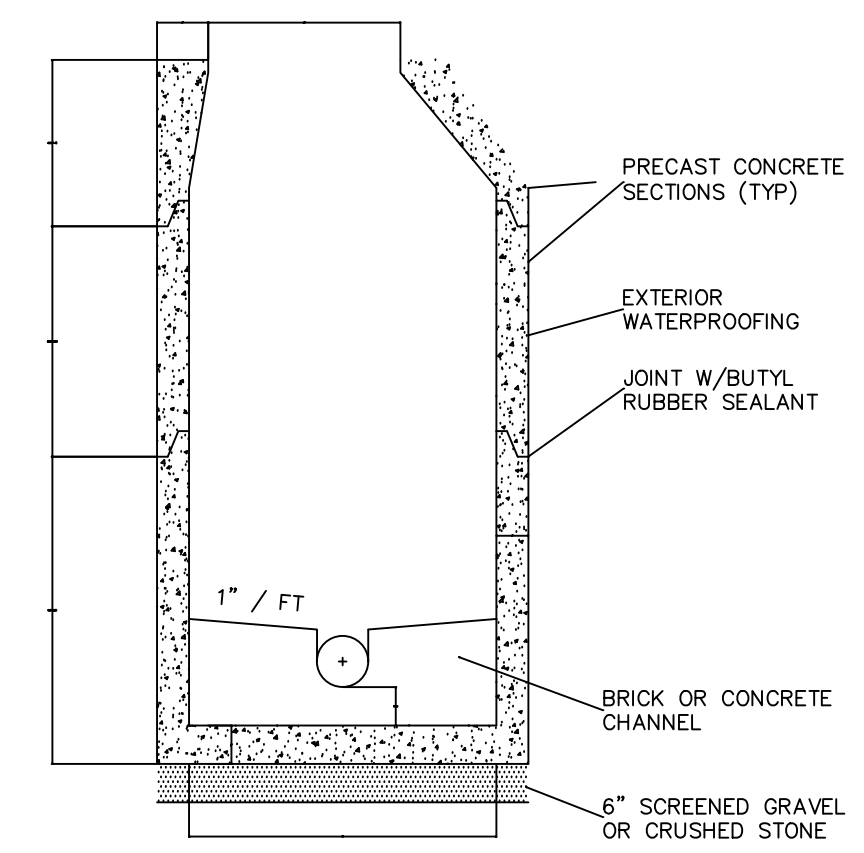
**ROAD CROSS SECTION (WETLAND CROSSING AT ENTRANCE)**  
SCALE: (NTS)  
GRAVEL FILL TO BE COMPACTED TO 95% MODIFIED PROCTOR



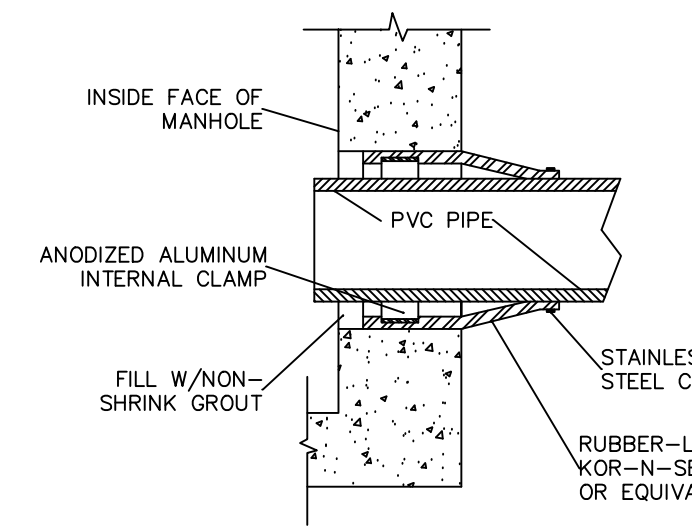
**SEWER PIPE TRENCH**  
(NTS)



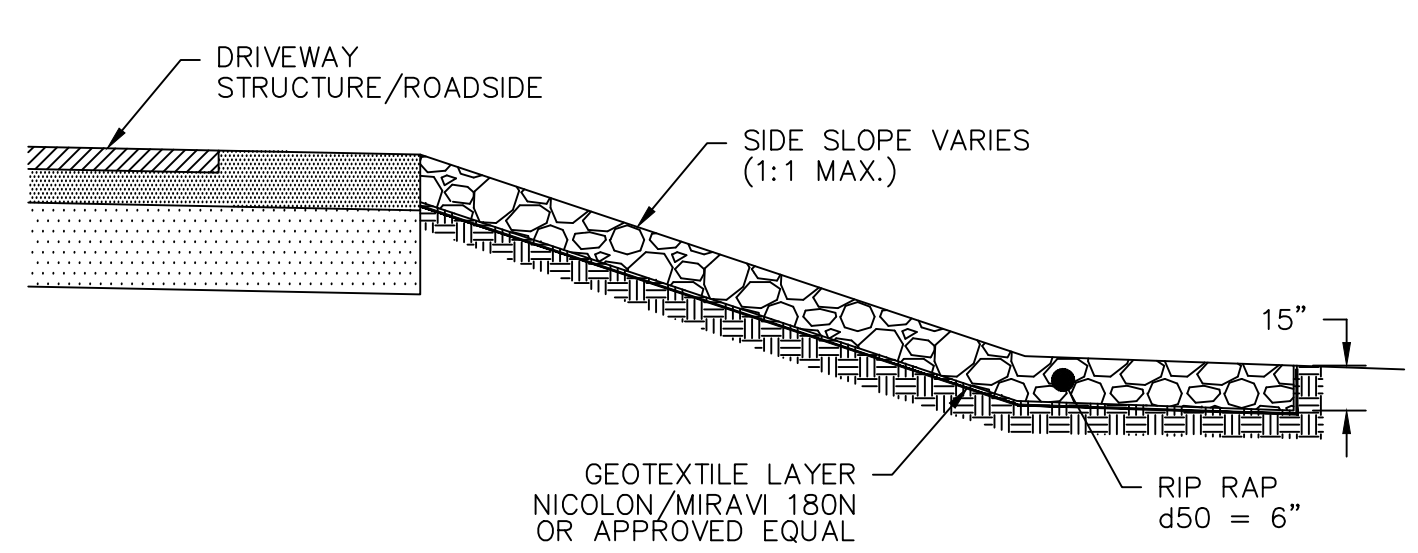
**STANDARD COVER AND FRAME**  
SCALE: NTS



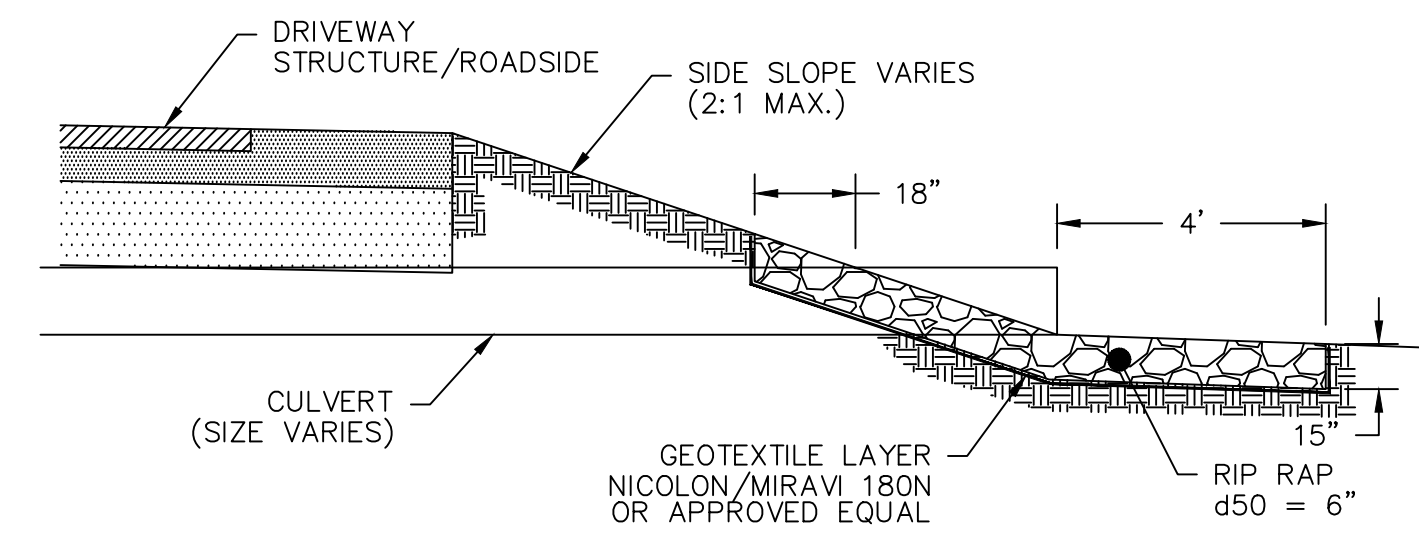
**TYPICAL SANITARY MANHOLE**  
SCALE: NTS



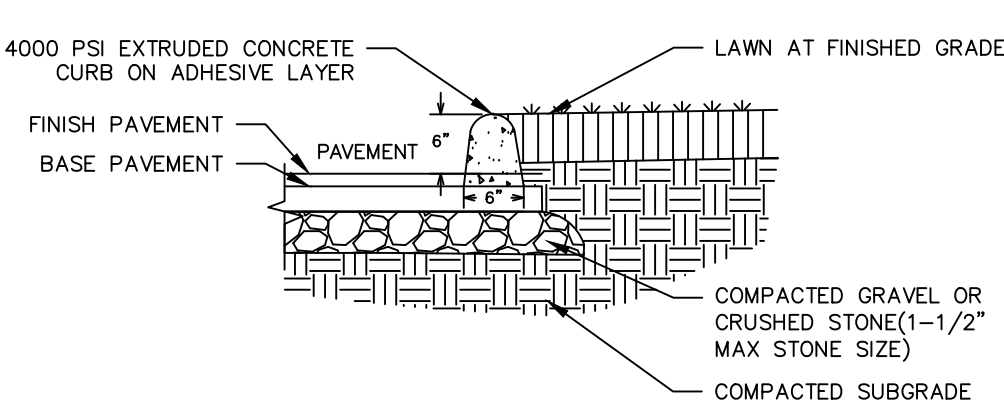
**TYPICAL BOOT GASKET**  
SCALE: NTS



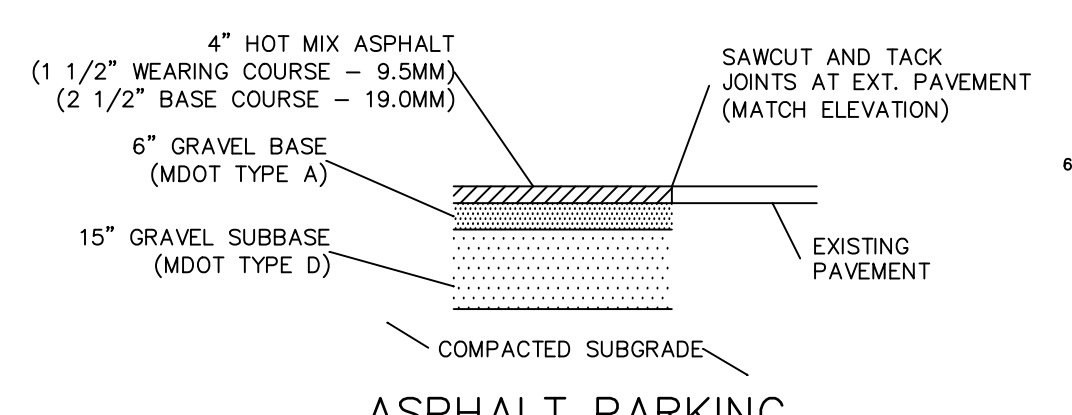
**RIP RAP SIDE SLOPE DETAIL**



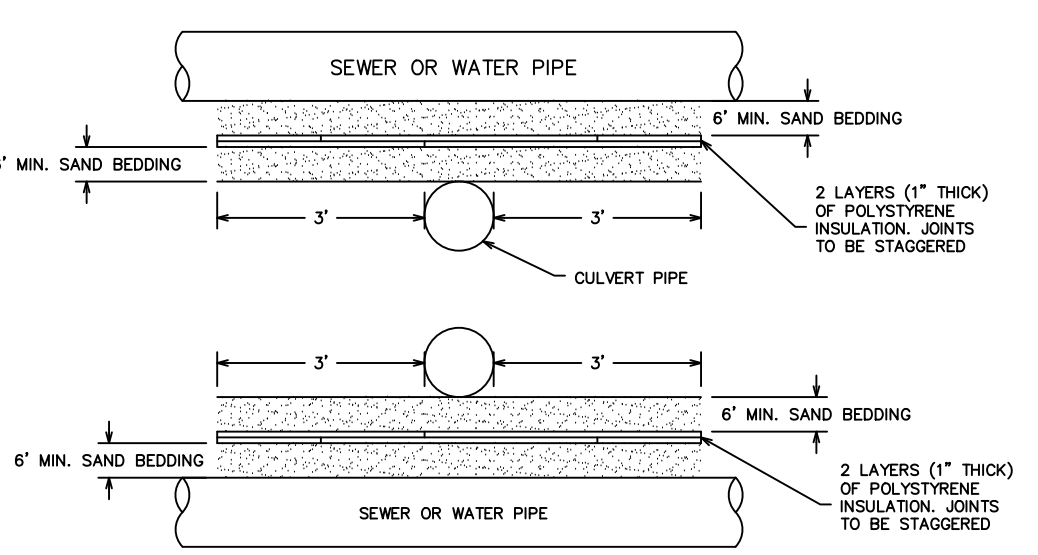
**CULVERT INLET/OUTLET PROTECTION DETAIL**



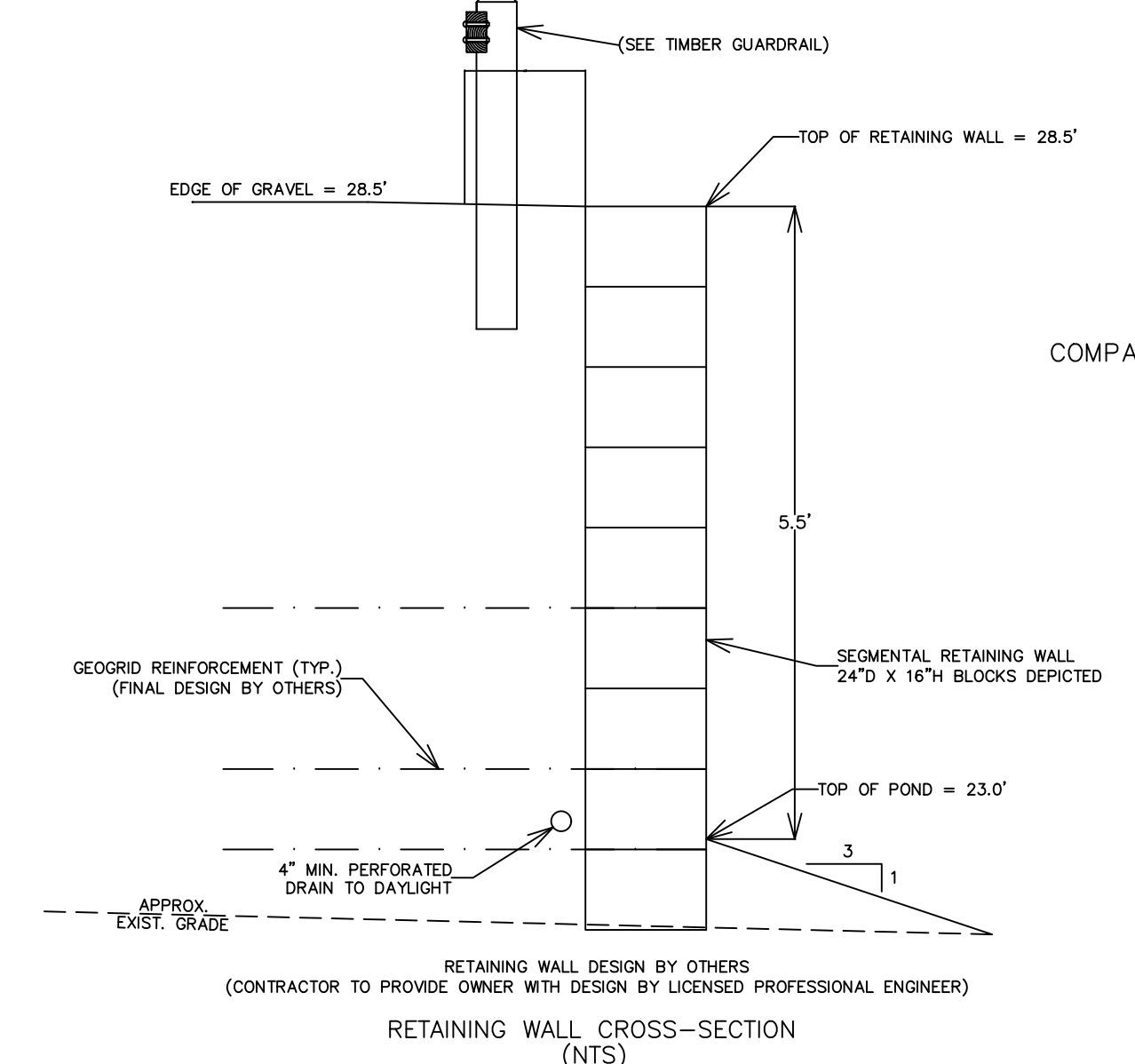
**EXTRUDED CONCRETE CURB DETAIL**  
(NTS)



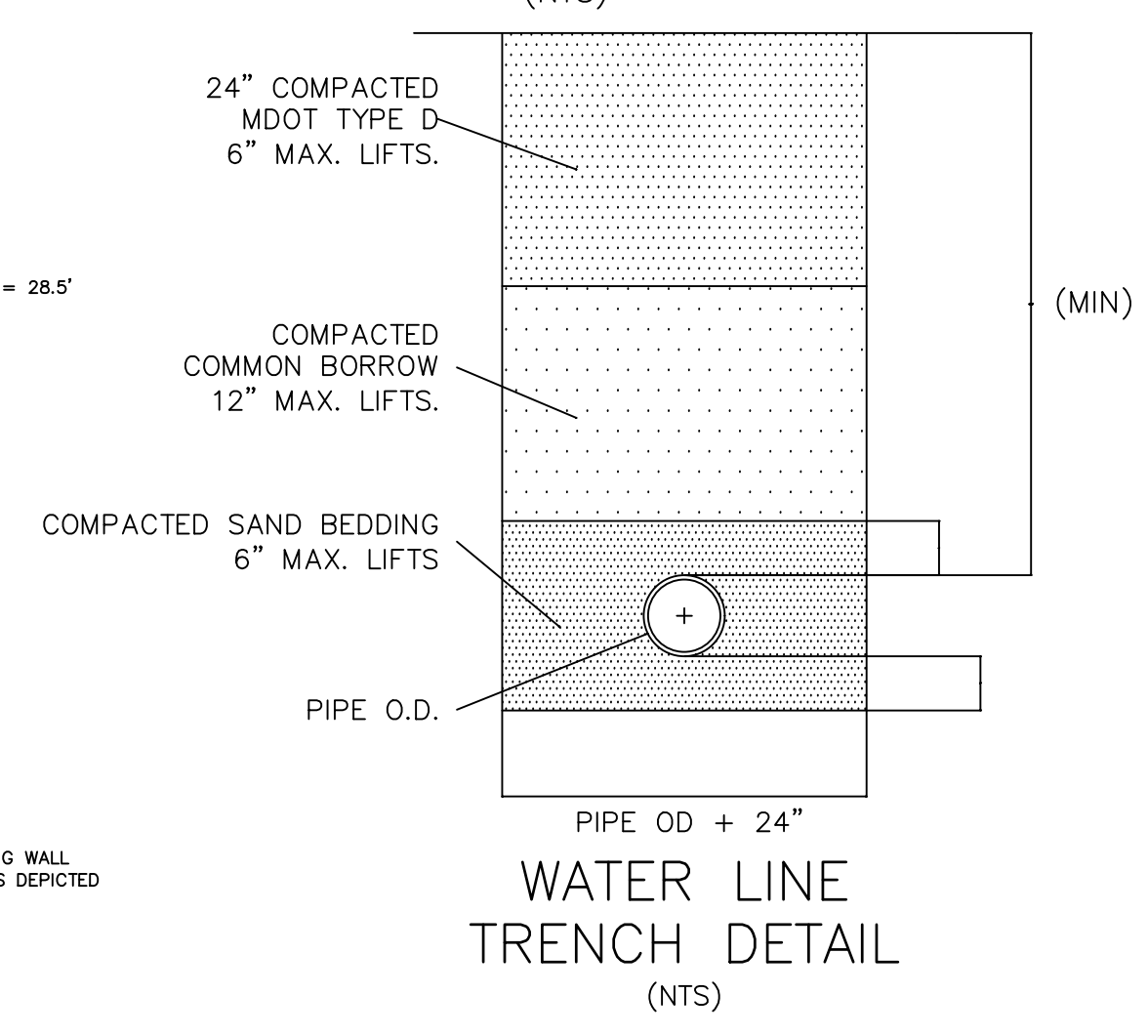
**ASPHALT PARKING CROSS SECTION**  
(NTS)  
GRAVEL FILL TO BE COMPACTED TO 95% MODIFIED PROCTOR



**CULVERT CROSSING**  
(NTS)

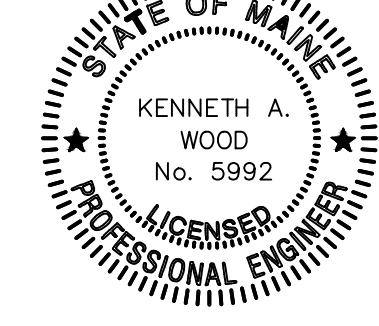


**RETAINING WALL CROSS-SECTION**  
(NTS)



**WATER LINE TRENCH DETAIL**  
(NTS)

NO.	DESCRIPTION	DATE
D	PRELIMINARY REVIEW REVISIONS	09/29/22
C	PRELIMINARY REVIEW REVISIONS	08/04/22
B	PRELIMINARY REVIEW REVISIONS	07/13/22
A	SITE PLAN REVIEW APPLICATION	06/30/22
NO.	DESCRIPTION	DATE



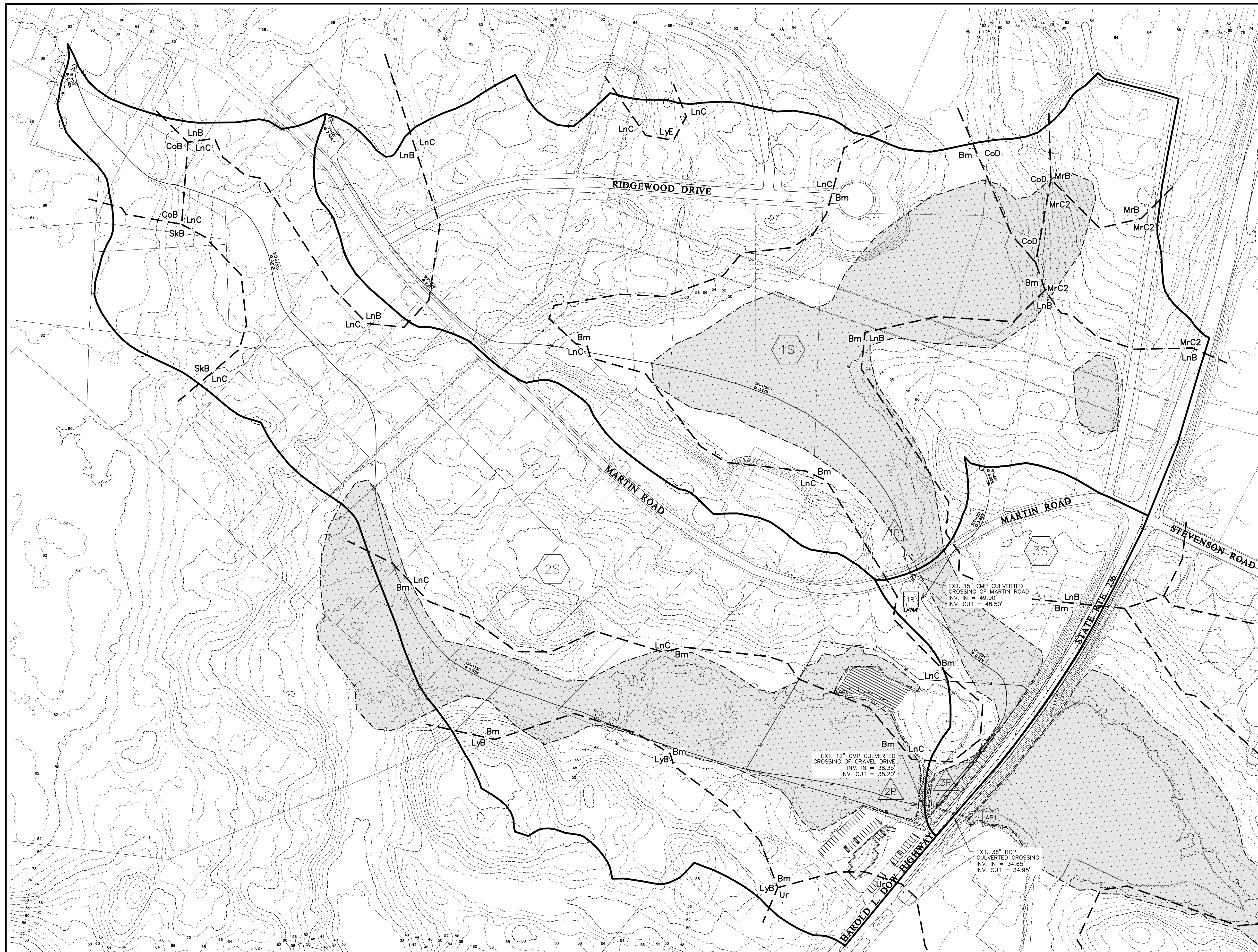
TAX MAP 29, LOT 1

SITE DETAILS  
WELL FIELD 44 CANNABIS DISPENSARY  
41 ROUTE 236, KITTERY, ME 03904

FOR:  
WELL FIELD 44, LLC.  
8 DEXTER LANE UNIT 8  
KITTERY, MAINE 03904

**ATTAR ENGINEERING, INC.**  
CIVIL • STRUCTURAL • MARINE • SURVEYING  
1284 STATE ROAD - ELIOT, MAINE 03903  
PHONE: (207)439-6023 FAX: (207)439-2128

SCALE: AS NOTED	APPROVED BY: MJS	DRAWN BY: MJS
DATE: 04/26/22	REVISION DATE: D : 09/29/22	
JOB NO: C277-21	FILE: WF44 DEV BASE.DWG	SHEET: 5



**SOILS LEGEND**

SYMBOL	SOIL SERIES NAME	HSC	SLOPES
Bm	BIDDEFORD MUCKY PEAT	D	0-3%
CoB	COLTON GRAVELLY SANDY LOAM	A	0-8%
CoD	COLTON GRAVELLY SANDY LOAM	A	15-25%
LnB	LYMAN LOAM, ROCKY	D	3-8%
LnC	LYMAN LOAM, ROCKY	D	8-15%
LyB	LYMAN-ROCK OUTCROP COMPLEX	D	0-3%
LyE	LYMAN-ROCK OUTCROP COMPLEX	D	15-80%
MrB	MARLOW FINE SANDY LOAM	C	3-8%
MrC2	MARLOW FINE SANDY LOAM	C	8-15%
SkB	SKERRY FINE SANDY LOAM	C/D	0-8%
Ur	URBAN LAND	-	N/A
HeC	HERMON SANDY LOAM	A	8-15%
Ra	RAYNHAM SILT LOAM	C/D	0-3%
Sc	SCANTIC SILT LOAM	D	0-3%

**FLOW TYPES**

SF	SHEET FLOW
SCF	SHALLOW CONCENTRATED FLOW
CF	CHANNEL FLOW

NOTE: SOILS INFORMATION IS TAKEN FROM CUSTOM SOIL RESOURCE REPORT FOR YORK COUNTY, MAINE, MEDIUM INTENSITY, INFORMATION GATHERED FROM THE NATIONAL RESOURCES CONSERVATION SERVICE (NRCS). SURVEY AREA DATA IS VERSION 20, DATED 08/31/2021.

- SUBCATCHMENT
- REACH
- POND (LEVEL SPREADER)
- ANALYSIS POINT

LEGEND	
PROPERTY LINE	
EXT. ABUTTER LINE	
EXT. GRAVEL	
EXT. PAVEMENT	
EXT. BUILDING	
EXT. WETLAND BNDY	
EXT. WETLAND AREA	
EXT. MAJOR CONTOUR	
EXT. MINOR CONTOUR	
EXT. STORM LINE	
EXT. GUARDRAIL	
SOIL TYPE BOUNDARY	
EXT. SUBCATCHMENT	
EXT. To FLOW LINE	
EXT. To GRADE CALC	

TAX MAP 29, LOT 1

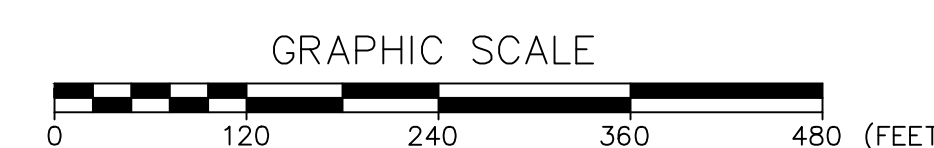
STORMWATER: EXISTING CONDITIONS  
WELL FIELD 44 CANNABIS DISPENSARY  
41 ROUTE 236, KITTERY, ME 03904

FOR:  
WELL FIELD 44, LLC.  
8 DEXTER LANE UNIT 8  
KITTERY, MAINE 03904

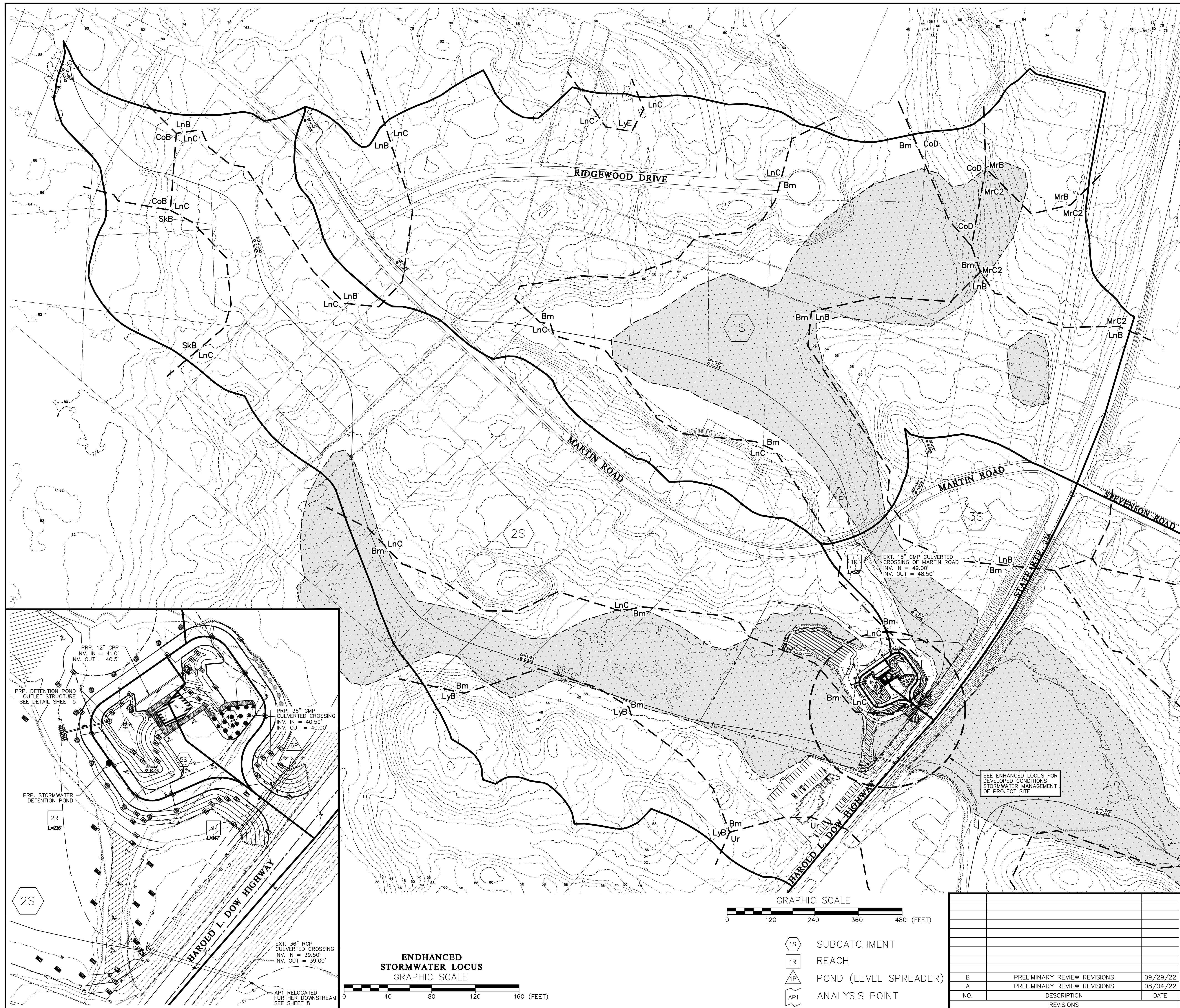
**ATTAR ENGINEERING, INC.**  
CIVIL ♦ STRUCTURAL ♦ MARINE ♦ SURVEYING  
1284 STATE ROAD - ELIOT, MAINE 03903  
PHONE: (207)439-6023 FAX: (207)439-2128



SCALE: 1" = 120'	APPROVED BY:	DRAWN BY: MJS
DATE: 07/13/22		REVISION DATE: B : 09/29/22
JOB NO: C277-21	FILE: WF44 DEV.BASE.DWG	SHEET: 6



NO.	DESCRIPTION	DATE
B	PRELIMINARY REVIEW REVISIONS	09/29/22
A	PRELIMINARY REVIEW REVISIONS	08/04/22
	REVISIONS	



Well Field 44 Cannabis Dispensary - Existing Condition Peak Flows			
Analysis Point	2 Year Storm (cfs)	10 Year Storm (cfs)	25 Year Storm (cfs)
AP1	6.79	13.31	17.45

Rainfall Event Totals (in.)	
2-Year	3.33
10-Year	5.34
25-Year	6.60

Well Field 44 Cannabis Dispensary - Developed Condition Peak Flows			
Analysis Point	2 Year Storm (cfs)	10 Year Storm (cfs)	25 Year Storm (cfs)
AP1	4.03	11.10	16.31

Well Field 44 Cannabis Dispensary - Change in Peak Flows			
Analysis Point	2 Year Storm (cfs)	10 Year Storm (cfs)	25 Year Storm (cfs)
AP1	-2.76	-2.21	-1.14

Headwater Elevations: 25-Year Rainfall Event			
Analysis Point	Existing Elev. (ft)	Developed Elev. (ft)	Location in Analysis
1P	50.41	50.41	Martin Road Crossing (15' CMP)
2P	42.01	N/A	Ext. On-Site Driveway: 12' Culvert Removed
3P	41.34	40.34	Route 236 Crossing (36" RCP)

**SOILS LEGEND**

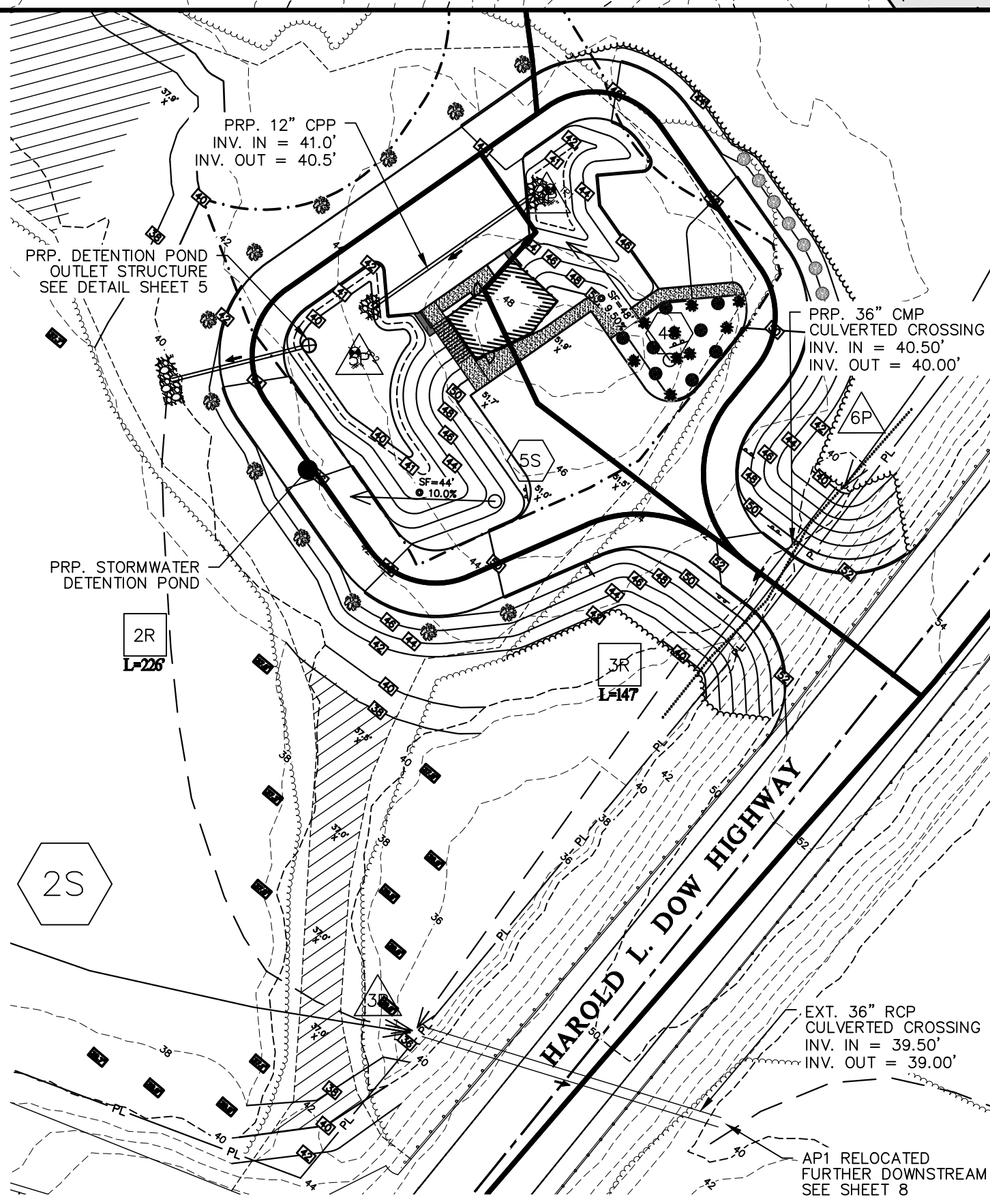
SYMBOL	SOIL SERIES NAME	HSG	SLOPES
Bm	BIDDEFORD MUCKY PEAT	D	0-3%
CoB	COLTON GRAVELLY SANDY LOAM	A	0-8%
CoD	COLTON GRAVELLY SANDY LOAM	A	15-25%
LnB	LYMAN LOAM, ROCKY	D	3-8%
LnC	LYMAN LOAM, ROCKY	D	8-15%
LyB	LYMAN-ROCK OUTCROP COMPLEX	D	0-3%
LyE	LYMAN-ROCK OUTCROP COMPLEX	D	15-80%
MrB	MARLOW FINE SANDY LOAM	C	3-8%
MrC2	MARLOW FINE SANDY LOAM	C	8-15%
SkB	SKERRY FINE SANDY LOAM	C/D	0-8%
Ur	URBAN LAND	-	N/A
HeC	HERMON SANDY LOAM	A	8-15%
Ro	RAYNHAM SILT LOAM	C/D	0-3%
Sc	SCANTIC SILT LOAM	D	0-3%

**FLOW TYPES**

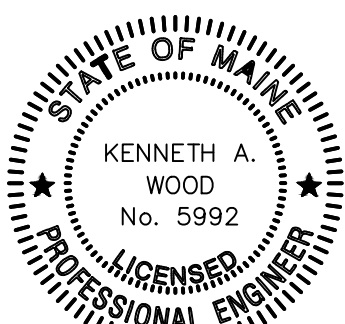
SF	SHEET FLOW
SCF	SHALLOW CONCENTRATED FLOW
CF	CHANNEL FLOW

NOTE: SOILS INFORMATION IS TAKEN FROM CUSTOM SOIL RESOURCE REPORT FOR YORK COUNTY, MAINE, MEDIUM INTENSITY, INFORMATION GATHERED FROM THE NATIONAL RESOURCES CONSERVATION SERVICE (NRCS). SURVEY AREA DATA IS VERSION 20, DATED 08/31/2021.

LEGEND	
PROPERTY LINE	---
EXT. ABUTTER LINE	---
EXT. GRAVEL	---
EXT. PAVEMENT	---
PRP. PAVEMENT	---
PRP. PARKING	---
EXT. BUILDING	---
PRP. BUILDING	---
EXT. WETLAND BNDY	---
EXT. WETLAND AREA	---
EXT. MAJOR CONTOUR	XXX
EXT. MINOR CONTOUR	XXX
PRP. MAJOR CONTOUR	XXX
PRP. MINOR CONTOUR	XXX
PRP. SPOT GRADE	102.0' x
EXT. STORM LINE	D
PRP. STORM LINE	D
EXT. GUARDRAIL	---
PRP. WETLAND IMPACT	---
SOIL TYPE BOUNDARY	---
PRP. SUBCATCHMENT	---
PRP. Tc FLOW LINE	---
PRP. Tc GRADE CALC	Sf=xxx' x,xxx'
PRP. SILTATION FENCE	---



NO.	DESCRIPTION	DATE
B	PRELIMINARY REVIEW REVISIONS	09/29/22
A	PRELIMINARY REVIEW REVISIONS	08/04/22
	REVISIONS	

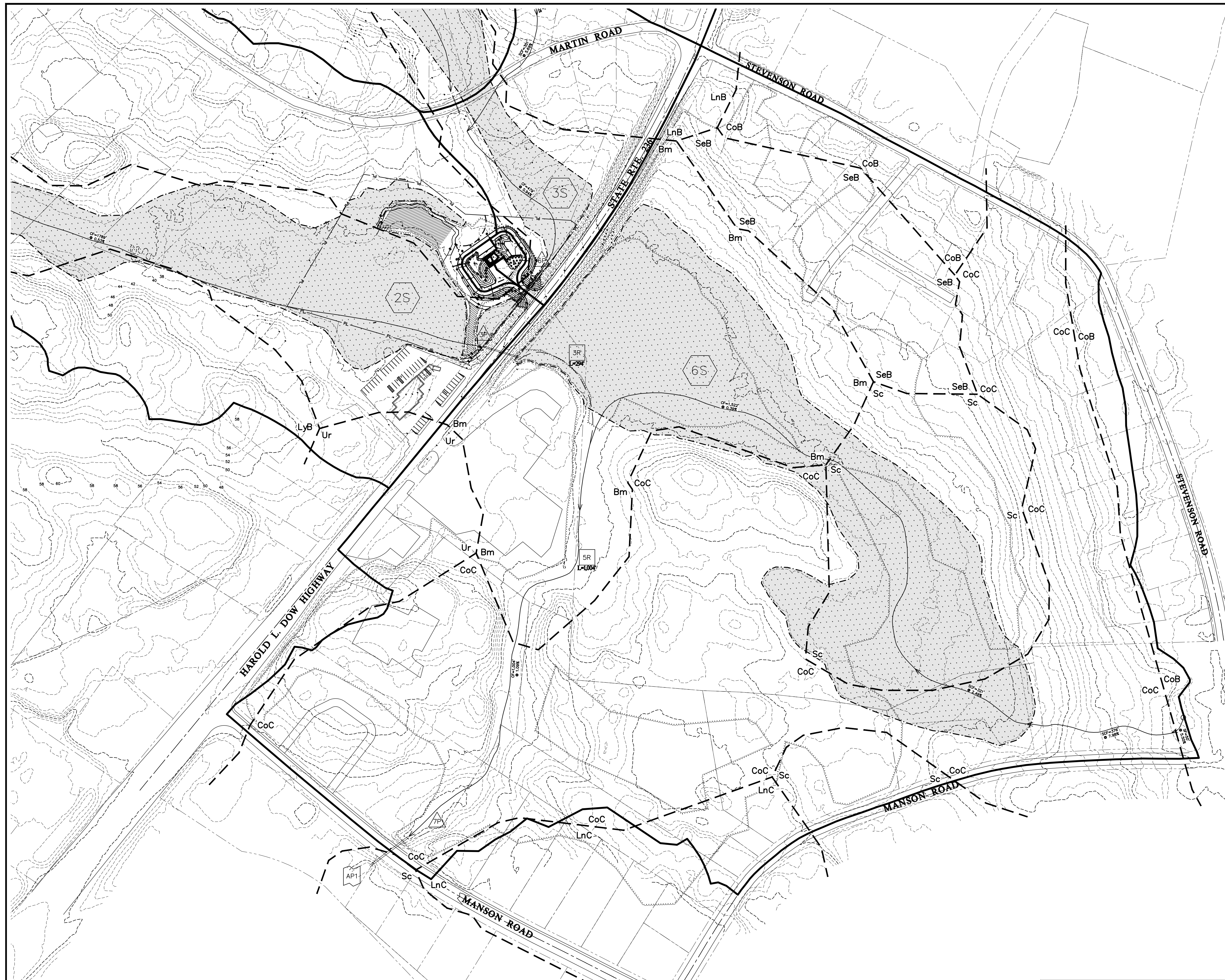


STORMWATER: DEVELOPED CONDITIONS  
WELL FIELD 44 CANNABIS DISPENSARY  
41 ROUTE 236, KITTERY, ME 03904

FOR: WELL FIELD 44, LLC.  
8 DEXTER LANE UNIT 8  
KITTERY, MAINE 03904

**ATTAR ENGINEERING, INC.**  
CIVIL • STRUCTURAL • MARINE • SURVEYING  
1284 STATE ROAD - ELIOT, MAINE 03903  
PHONE: (207)439-6023 FAX: (207)439-2128

SCALE:	APPROVED BY:	DRAWN BY:
1" = 120'	MJS	MJS
DATE:		REVISION DATE:
07/13/22		B : 09/29/22
JOB NO: C277-21	FILE: WF44 DEV.BASE.DWG	SHEET: 7



Well Field 44 Cannabis Dispensary - Existing Condition Peak Flows			
Analysis Point	2 Year Storm (cfs)	10 Year Storm (cfs)	25 Year Storm (cfs)
AP1	16.14	65.45	98.79

Rainfall Event Totals (in.)	
2-Year	3.33
10-Year	5.34
25-Year	6.60

Well Field 44 Cannabis Dispensary - Developed Condition Peak Flows			
Analysis Point	2 Year Storm (cfs)	10 Year Storm (cfs)	25 Year Storm (cfs)
AP1	15.86	64.71	98.27

Well Field 44 Cannabis Dispensary - Change in Peak Flows			
Analysis Point	2 Year Storm (cfs)	10 Year Storm (cfs)	25 Year Storm (cfs)
AP1	-0.28	-0.74	-0.52

Headwater Elevations: 25-Year Rainfall Event			
Analysis Point	Existing Elev. (ft)	Developed Elev. (ft)	Location in Analysis
1P	50.41	50.41	Martin Road Crossing (15' CMP)
2P	40.96	N/A	Ext. On-Site Driveway: 12' Culvert Removed
3P	37.50	37.72	Route 236 Crossing (36' RCP)
7P	33.69	33.67	Dana Ave Crossing (48' RCP)

**SOILS LEGEND**

SYMBOL	SOIL SERIES NAME	HSG	SLOPES
Bm	BIDDEFORD MUCKY PEAT	D	0-3%
CoB	COLTON GRAVELLY SANDY LOAM	A	0-8%
CoD	COLTON GRAVELLY SANDY LOAM	A	15-25%
LnB	LYMAN LOAM, ROCKY	D	3-6%
LnC	LYMAN LOAM, ROCKY	D	8-15%
LyB	LYMAN-ROCK OUTCROP COMPLEX	D	0-3%
LyE	LYMAN-ROCK OUTCROP COMPLEX	D	15-80%
MrB	MARLOW FINE SANDY LOAM	C	3-8%
MrC2	MARLOW FINE SANDY LOAM	C	8-15%
SkB	SKERRY FINE SANDY LOAM	C/D	0-8%
Ur	URBAN LAND	-	N/A
HeC	HERMON SANDY LOAM	A	8-15%
Ro	RAYNHAM SILT LOAM	C/D	0-3%
Sc	SCANTIC SILT LOAM	D	0-3%

**FLOW TYPES**

SF	SHEET FLOW
SCF	SHALLOW CONCENTRATED FLOW
CF	CHANNEL FLOW

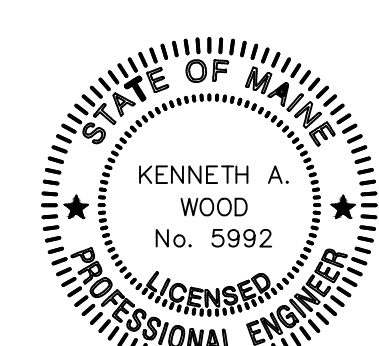
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LEGEND	
PROPERTY LINE	---
EXT. ABUTTER LINE	----
EXT. GRAVEL	----
EXT. PAVEMENT	----
PRP. PAVEMENT	----
PRP. PARKING	----
EXT. BUILDING	▨
PRP. BUILDING	▨
EXT. WETLAND BNDY	▨
EXT. WETLAND AREA	▨
EXT. MAJOR CONTOUR	XXX
EXT. MINOR CONTOUR	XXX
PRP. MAJOR CONTOUR	XXX
PRP. MINOR CONTOUR	XXX
PRP. SPOT GRADE	102.0' x
EXT. STORM LINE	D
PRP. STORM LINE	D
EXT. GUARDRAIL	○
PRP. WETLAND IMPACT	▨
SOIL TYPE BOUNDARY	----
PRP. SUBCATCHMENT	----
PRP. Tc FLOW LINE	○
PRP. Tc GRADE CALC	○
PRP. SILTATION FENCE	----



- 1S SUBCATCHMENT
- 1R REACH
- 1P POND (LEVEL SPREADER)
- AP1 ANALYSIS POINT

NO.	DESCRIPTION	DATE



TAX MAP 29, LOT 1  
 STORMWATER: EXPANDED DEVELOPED CONDITIONS  
 WELL FIELD 44 CANNABIS DISPENSARY  
 41 ROUTE 236, KITTERY, ME 03904

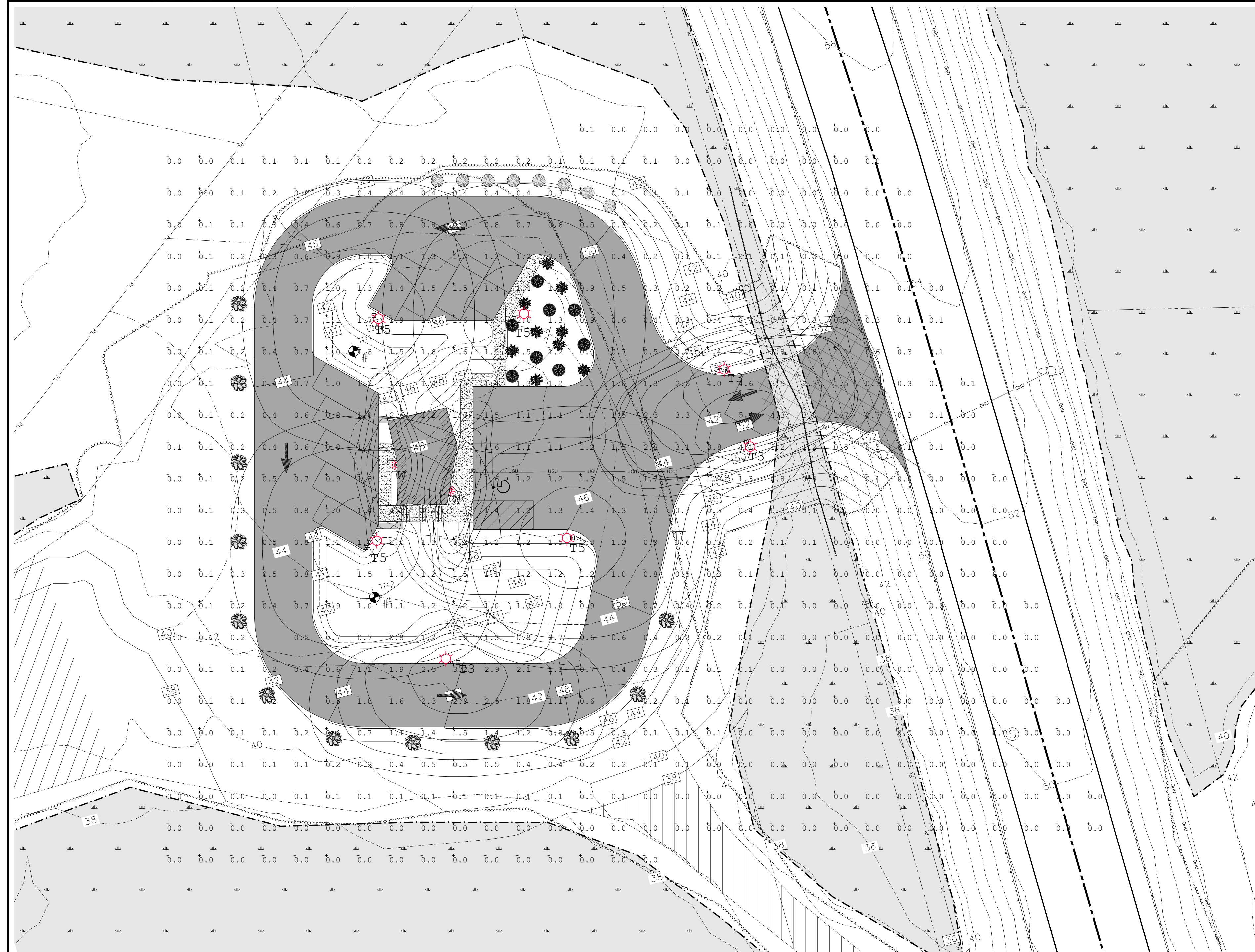
FOR: WELL FIELD 44, LLC.  
 8 DEXTER LANE UNIT 8  
 KITTERY, MAINE 03904

**ATTAR ENGINEERING, INC.**  
 CIVIL • STRUCTURAL • MARINE • SURVEYING  
 1284 STATE ROAD - ELIOT, MAINE 03903  
 PHONE: (207)439-6023 FAX: (207)439-2128

SCALE: 1" = 120'  
 DATE: 09/29/22

APPROVED BY: MJS  
 REVISION DATE: - - -

JOB NO: C277-21 FILE: WF44 DEV.BASE.DWG SHEET: 8



Symbol	Qty	Label	Arrangement	Description
	3	T3	Single	GPC-SA1A-735-U-T3 / SSS4A15SFN1 (15' AFG)
	4	T5	Single	GPC-SA1A-735-U-5WQ / SSS4A15AFN1 (15' AFG)
	2	W	Single	MERU-LED-ACEM-CXX-IH / WALL MTD 10' AFG

**MERU Series**  
LED GENERAL & EMERGENCY LIGHTING

**PRODUCT DESCRIPTION**  
The MERU Series is an architectural, low-profile outdoor light, offering "normally On" AC and emergency lighting with powerful LED illumination. The housing is fully sealed and gasketed, and has an IP65 rating. Designed for wall mounting with universal KCO pattern in back-plate for easy installation to most standard size junction boxes. Includes a single 1/2" NPT conduit entry in the top, center of the housing. Illumination provided by 8 high power LEDs which achieve 1,600 lumens in AC and 600 lumens in emergency. LED color at 4000K.

**PRODUCT SPECIFICATIONS**  
**CONSTRUCTION**  
Die cast aluminum housing with superior heat sink • Scratch resistant Polyester powder coat finish • UV resistant polycarbonate lens • Snap-fit housing and mounting plate are held together by four stainless steel clips • Universal mounting pattern molded into the back plate • 1/2" threaded top access for surface conduit installation • Silicone rubber seal with hollow center, shape adaptive design protects the electrical components • Junction box response seal is attached to the back plate for a weather proof installation • Dark Bronze or White textured finish.

**ELECTRICAL**  
Dual voltage 120/277V AC 60Hz input • Solid state charging and switching • Battery low voltage disconnect • AC power indicator and test switch at the bottom of the unit • Standard with Self Diagnostics to monitor proper operation.

**LAMPS**  
Supplied with eight (8) LG SMD 4000K LEDs • L70 > 72,000hours • 17 Watts total (23 Watts with HI option) • 1600 Lumens in AC mode, 600 Lumens in Emergency mode • Full cut-off optics for Dark Sky compliance.

**BATTERY**  
Maintenance-free, long-life rechargeable NiCad battery will operate for a minimum of 90 minutes in the event of a power outage • 24 hour recharge after 90 minute discharge.

**CODE COMPLIANCE**  
UL924 • Listed for wet location applications (0°C-50°C) • Optional "IH" cold weather package for (-40°C-50°C) • IP65 Rated • NEMA 101 Life Safety Code compliant • NEC and OSHA compliant • DLC Listed • RoHS Compliant

**WARRANTY**  
5-year warranty. Product specifications subject to change without notice.

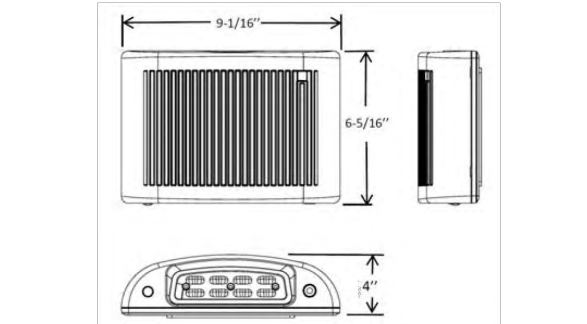
**INSTALLATION**  
**MOUNTING**  
Suitable for indoor or outdoor wall mounting on junction box, or with surface conduit using the supplied 1/2" threaded top access • Mounting plate has molded universal mounting pattern for simple mounting over junction box.

**ORDERING INFORMATION**

Model	operation mode	housing color	options
MERU-LED	ACEM - General & Emergency Lighting	DB - Dark Bronze	Self-Diagnostics & Photocell (sold separately)
	AC - General Lighting	WH - White	IH - Internal Heater
		BK - Black	PIR - Passive Infra-Red Motion Sensor
		NK - Nickel	

Ordering Example: MERU-AC24DB

Mule Lighting, Inc. 46 Baker Street Providence, RI 02905 800 556-7690 P 401 941-2929 F www.mulelighting.com



ACEM Model (NiCad Battery Backup)

**Integral photocell:** Unit operates as a dusk to dawn luminaire and in the event of a power failure as an emergency light.  
**Remote Switched:** The integral photocell can be deleted to allow remote switching for normal operation. In the event of a power failure unit operates as an emergency light.



**McGraw-Edison**

**DESCRIPTION**  
The Gallon™ Pedestrian Companion LED luminaire's appearance is complementary with the Gallon area and site luminaire bringing a modern architectural style to lighting applications. Flexible mounting options accommodate a variety of pole configurations and mounting heights, allowing it to be offered as a pedestrian site lighting solution. The Gallon family of LED products deliver exceptional performance with patented, high efficiency AccuLED Optics™, providing uniform and energy conscious lighting for parking lots, building and security lighting applications.

**SPECIFICATION FEATURES**  
**Construction**  
Driver enclosure thermally isolated from optics for optimal thermal performance. Overall construction passes a 1.5G vibration test to ensure mechanical integrity.

**Optics**  
Choice of sixteen patented, high-efficiency AccuLED Optics. The optics are precisely designed to shape the distribution maximizing efficiency and application spacing. AccuLED Optics create consistent distributions with the scalability to meet customized application requirements. Offered standard in 4000K (-/- 2700K CCT and minimum 70 CRI). Optional 3000K, 5000K and 6000K CCT. Greater than 90% lumen maintenance expected at 60,000 hours. Available in standard 1A drive current and optional 1200mA, 800mA, and 600mA drive currents.

**Electrical**  
LED drivers are mounted for ease of maintenance. 120/277V 60/50/60Hz, 347V or 480V 60Hz operation. 480V is compatible for use with 480V Wye systems only. Drivers are provided standard with 0.10V dimming. An optional Eaton proprietary surge protection module is available and designed to withstand 10kV of transient line surge. The Gallon Pedestrian LED luminaire is suitable for operation in -40°C to 40°C ambient environments. For applications with ambient temperatures exceeding 40°C, specify the HA (High Ambient) option.

**Mounting**  
The innovative quick mounting arm attaches to new or existing 4.5" round or square poles with 1-1/2" to 4-7/8" drilling patterns without re-drilling. The mast arm adapter fits horizontal 2-3/8" round.

**Finish**  
Housing finished in super durable TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. Standard colors include black, bronze, gray, white, dark platinum and graphite metallic. RAL and custom color matches available. Consult the McGraw-Edison Architectural Colors brochure for the complete selection.

**Warranty**  
Five-year warranty.

**1-2 Light Squares Solid State LED AREA/SITE LUMINAIRE**

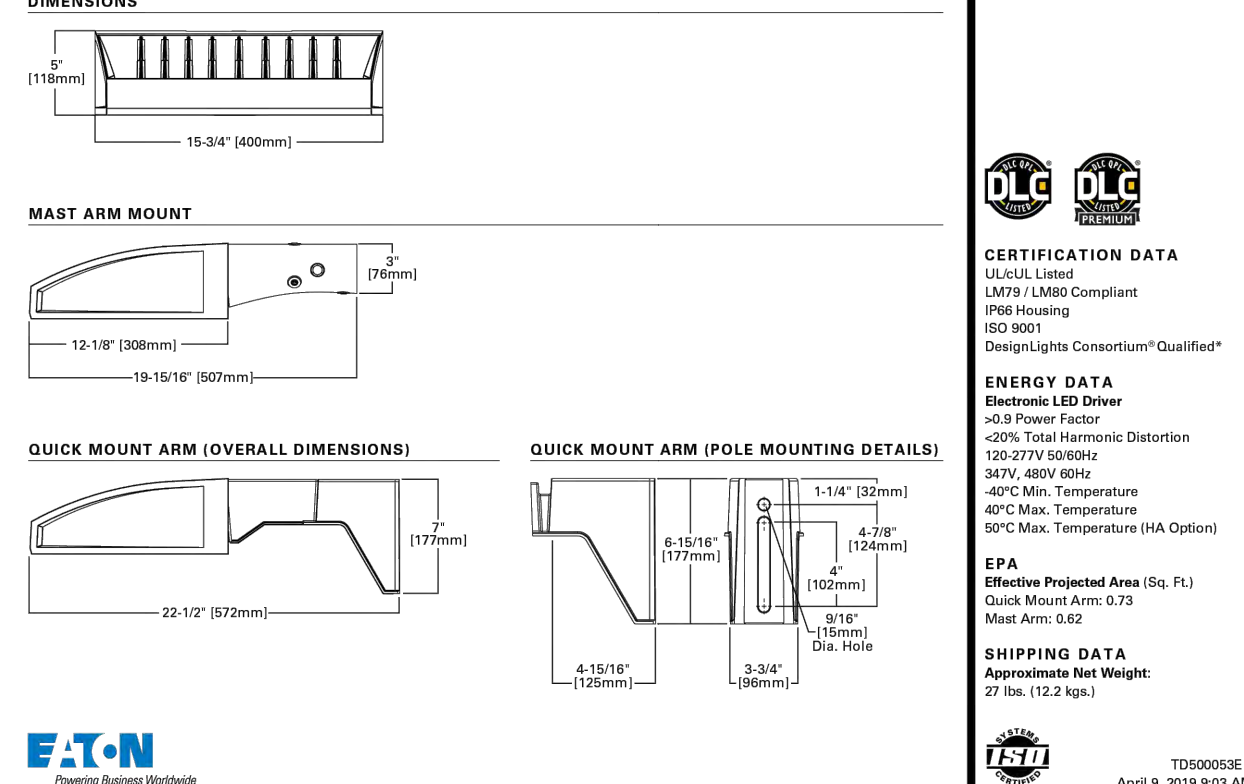
**CERTIFICATION DATA**  
UL924 Listed  
LM78 LM81 Compliant  
IP65 Housing  
IEC 60529  
DesignLights Consortium™ Qualified\*

**ENERGY DATA**  
Beckham LED Driver  
0.9 Power Factor  
20% Total Harmonic Distortion  
100-277V 50/60Hz  
347V 480V 60Hz  
40°C Max. Temperature  
40°C Max. Temperature (HA Option)  
50°C Max. Temperature (HA Option)

**EPA**  
Illuminance Projected Area (Sq. Ft.)  
Quick Mount Arm: 0.75  
Mast Arm: 0.62

**SHIPPING DATA**  
Approximate Net Weight:  
27 lbs. (12.2 kg)

17500026N  
April 9, 2018 9:01 AM



**MERU Series**  
LED GENERAL & EMERGENCY LIGHTING

**PHOTOMETRICS**

Note: Meets Life Safety Code standard minimum illuminance of 0.1 FC and average illuminance of 1.0 FC. Illustration shown is a guideline for corridor center-to-center with 9 ft mounting height and Minimum 80-50-20 reflectance values.

Mounting Height	Center to center distance
7.2ft	45ft
9ft	60ft
10ft	65ft

**SELF DIAGNOSTICS**

Included Self Diagnostic

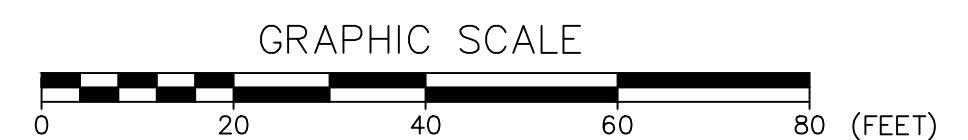
Diagnostic Indicator / Test Switch	Included Self Diagnostic	Manual Testing
Green LED	Power On	Press button once - 5 minute test
Red LED	Battery Status Fail	Press button twice - 5 minute test
Yellow LED	Battery Capacity Failure	Press button three times - 30 minute test
Red LED	Temperature Fail	Press button 4 times - 30 minute test
Red LED	LED Failure	Press button 5 times - 30 minute test

PIR sensor (option)  
Test Switch & AC Indicator Light

Mule Lighting, Inc. 46 Baker Street Providence, RI 02905 800 556-7690 P 401 941-2929 F www.mulelighting.com

**LEGEND**

PROPERTY LINE	
SETBACK	
EXT. ABUTTER LINE	
EXT. PAVEMENT	
PRP. PAVEMENT	
EXT. GRAVEL	
EXT. BUILDING	
PRP. BUILDING	
EXT. PARKING	
PRP. PARKING	
EXT. GUARDRAIL	
EXT. TREELINE	
PRP. TREELINE	
TOWN ZONING BNDY	
EXT. WETLAND BNDY	
EXT. WETLAND AREA	
EXT. WETLAND BUFFER	
EXT. OVERHEAD ELEC	
EXT. POWER POLE	
PRP. LIGHT FIXTURE	
PRP. U.G. ELECTRIC	
EXT. MAJOR CONTOUR	
EXT. MINOR CONTOUR	
PRP. MAJOR CONTOUR	
PRP. MINOR CONTOUR	

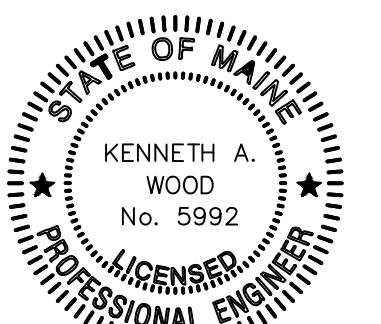


TAX MAP 29, LOT 1

PHOTOMETRIC PLAN  
WELL FIELD 44 CANNABIS DISPENSARY  
41 ROUTE 236, KITTERY, ME 03904

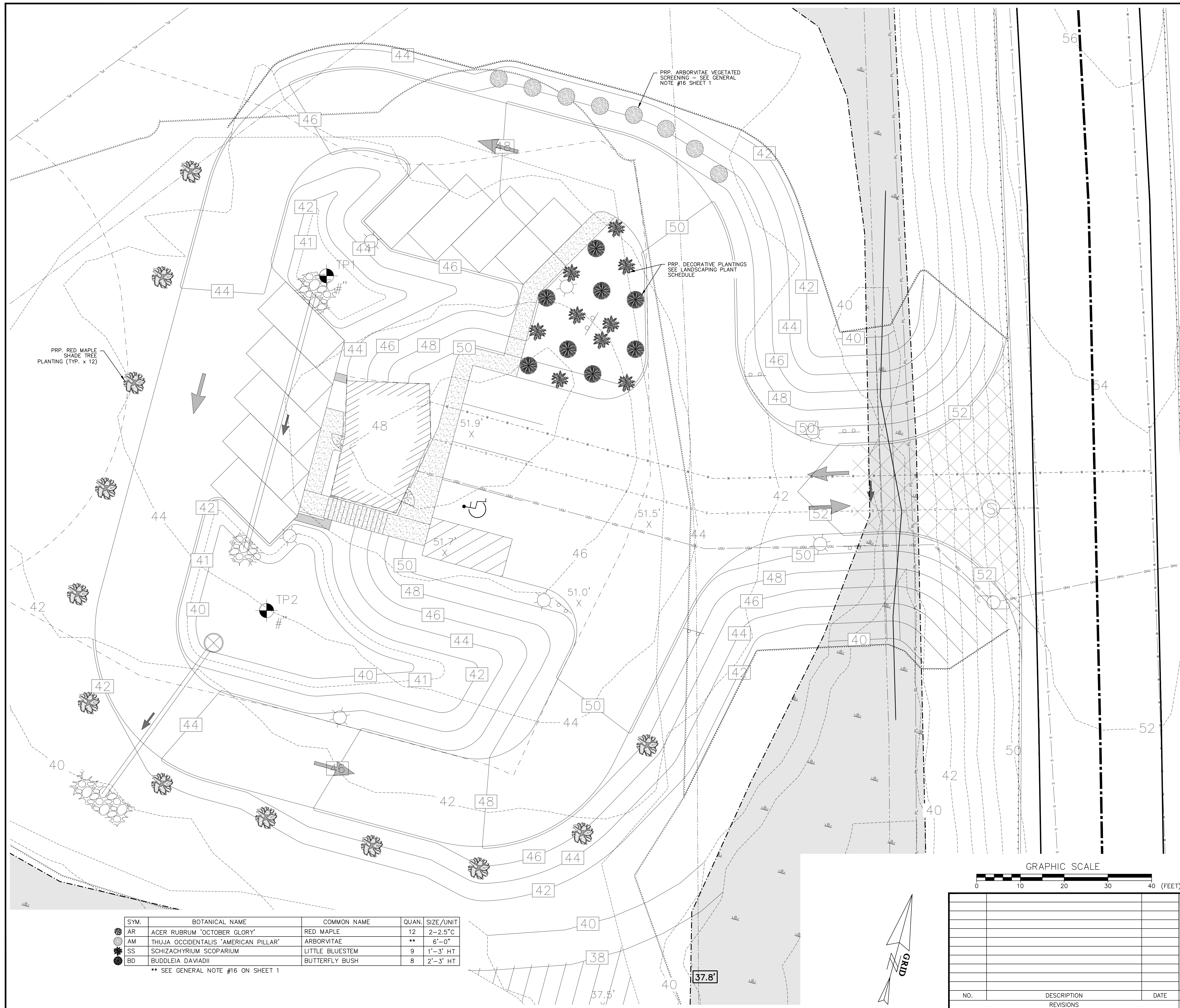
FOR:  
WELL FIELD 44, LLC.  
8 DEXTER LANE UNIT 8  
KITTERY, MAINE 03904

**ATTAR ENGINEERING, INC.**  
CIVIL • STRUCTURAL • MARINE • SURVEYING  
1284 STATE ROAD - ELIOT, MAINE 03903  
PHONE: (207)439-6023 FAX: (207)439-2128



SCALE: 1" = 20'	APPROVED BY:	DRAWN BY: MJS
DATE: 08/04/22		REVISION DATE: A : 08/25/22
JOB NO: C277-21	FILE: WF44 DEV.BASE.DWG	SHEET: 9

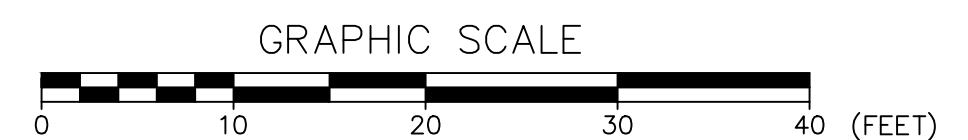
NO.	DESCRIPTION	DATE
A	INCLUDE MISSING LIGHT POLE	08/25/22
REVISIONS		



LEGEND	
PROPERTY LINE	---
SETBACK	---
EXT. ABUTTER LINE	---
EXT. PAVEMENT	---
PRP. PAVEMENT	---
EXT. GRAVEL	---
EXT. BUILDING	---
PRP. BUILDING	---
EXT. PARKING	---
PRP. PARKING	---
EXT. GUARDRAIL	---
PRP. TREELINE	---
EXT. TREELINE	---
TOWN ZONING BNDY	---
EXT. WETLAND BNDY	---
EXT. WETLAND AREA	---
EXT. WETLAND BUFFER	---
EXT. SEWER LINE	S
EXT. SEWER MANHOLE	⊙
PRP. SEWER LINE	PS PS PS PS
EXT. WATER LINE	W
PRP. WATER LINE	PW PW PW PW
EXT. OVERHEAD ELEC	OHU
EXT. POWER POLE	⊕
PRP. U.G. ELECTRIC	UGU
EXT. MAJOR CONTOUR	XXX
EXT. MINOR CONTOUR	XXX
PRP. MAJOR CONTOUR	XXX
PRP. MINOR CONTOUR	XXX
PRP. SPOT GRADE	102.0' X

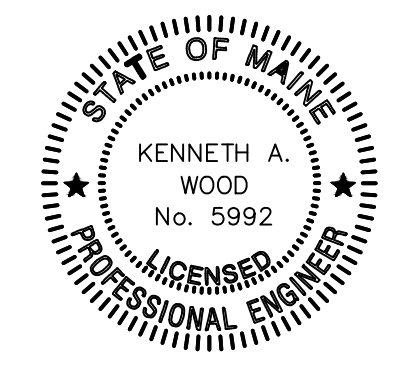
SYM.	BOTANICAL NAME	COMMON NAME	QUAN.	SIZE/UNIT
AR	ACER RUBRUM 'OCTOBER GLORY'	RED MAPLE	12	2-2.5" C
AM	THUJA OCCIDENTALIS 'AMERICAN PILLAR'	ARBORVITAE	**	6'-0"
SS	SCHIZACHYRIUM SCOPARIUM	LITTLE BLUESTEM	9	1'-3' HT
BD	Buddleia DAVIADII	BUTTERFLY BUSH	8	2'-3' HT

\*\* SEE GENERAL NOTE #16 ON SHEET 1



TAX MAP 29, LOT 1

NO.	DESCRIPTION	DATE



LANDSCAPING PLAN  
WELL FIELD 44 CANNABIS DISPENSARY  
41 ROUTE 236, KITTERY, ME 03904

FOR: WELL FIELD 44, LLC.  
8 DEXTER LANE UNIT 8  
KITTERY, MAINE 03904

**ATTAR ENGINEERING, INC.**  
CIVIL ♦ STRUCTURAL ♦ MARINE ♦ SURVEYING  
1284 STATE ROAD - ELIOT, MAINE 03903  
PHONE: (207)439-6023 FAX: (207)439-2128

SCALE: 1" = 10'	APPROVED BY:	DRAWN BY: MJS
DATE: 09/29/22	FILE: WF44 DEV.BASE.DWG	REVISION DATE: - : -
JOB NO: C277-21	SHEET: 10	



**Michael Cuomo, Soil Scientist**  
6 York Pond Road, York, Maine 03909  
207 363 4532  
mcuomosoil@gmail.com

**TEST PIT DATA**

Client: Attar Engineering, Inc.  
Location: Well Field 44, LLC, 41 Route 236, Kittery  
Date: 29 September 2022

**Test Pit Number: 1**

<u>Depth</u>	<u>Description</u>
0-20"	Light olive brown gravelly fine sandy loam fill, massive, firm (compacted by traffic).
20-40"	Light olive brown gravelly fine sandy loam fill, massive, friable.
40-52"	Dark gray very fine sandy loam fill and topsoil, massive, friable, redox.
52-60"	Gray fine sandy loam, blocky, friable, redox.
60-72"	Light yellowish brown fine sandy loam, blocky, friable, redox.

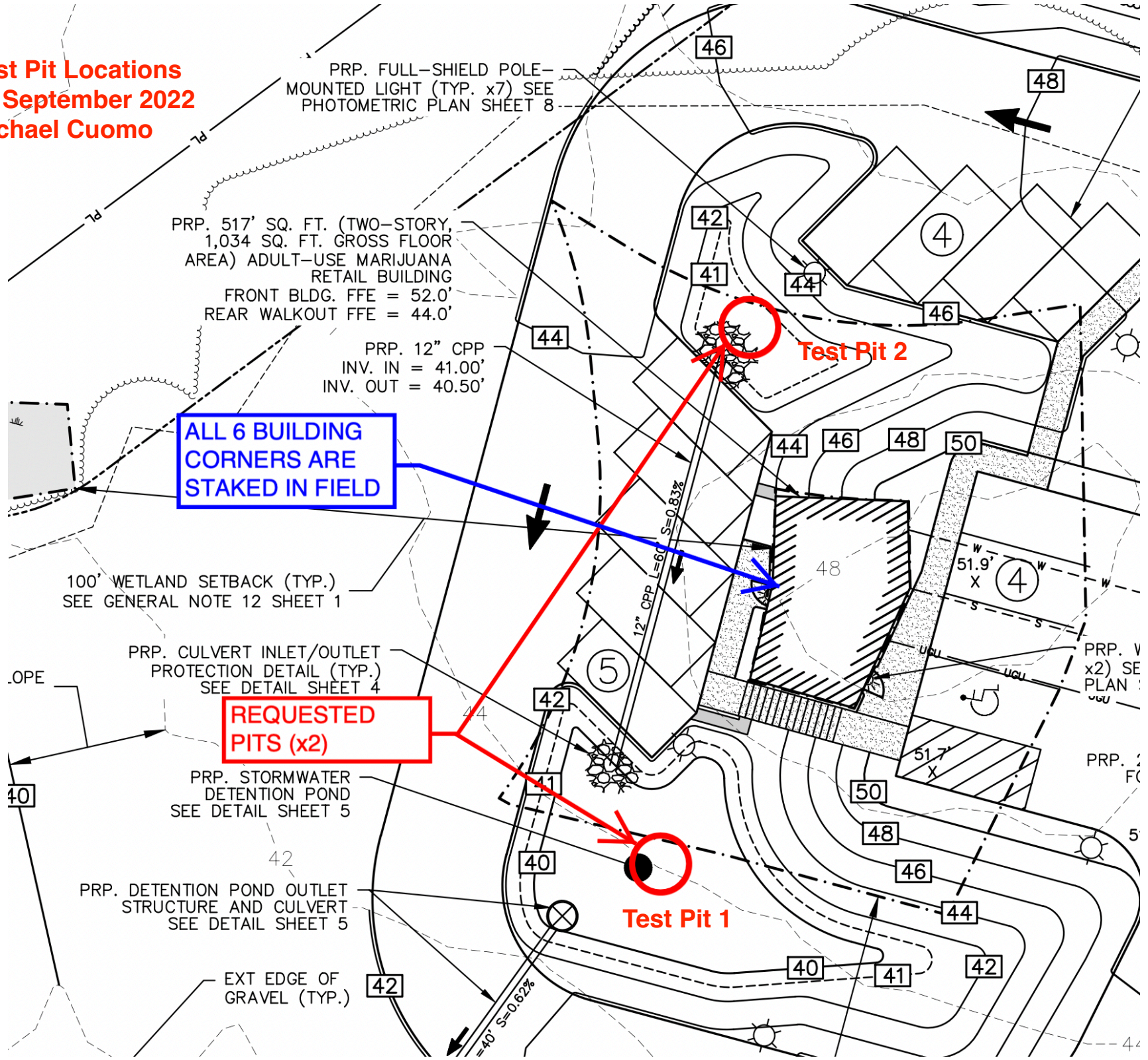
Soil Name: Fill  
Drainage Class: Moderately well drained  
Depth to Seasonal High Water Table: 40"  
Depth to Bedrock: none

**Test Pit Number: 2**

<u>Depth</u>	<u>Description</u>
0-5"	Dark brown fine sandy loam fill, granular, friable.
5-22"	Yellowish brown fine sandy loam with some fill, blocky, friable.
22-30"	Light gray silt loam, blocky, firm, redox.
30-44"	Olive brown silt loam, blocky, firm, redox.
44-72"	Olive stony fine sandy loam, massive, friable, redox.

Soil Name: Fill  
Drainage Class: Moderately well drained  
Depth to Seasonal High Water Table: 22"  
Depth to Bedrock: none

**Test Pit Locations**  
**29 September 2022**  
**Michael Cuomo**



PRP. FULL-SHIELD POLE-MOUNTED LIGHT (TYP. x7) SEE PHOTOMETRIC PLAN SHEET 8

PRP. 517' SQ. FT. (TWO-STORY, 1,034 SQ. FT. GROSS FLOOR AREA) ADULT-USE MARIJUANA RETAIL BUILDING  
FRONT BLDG. FFE = 52.0'  
REAR WALKOUT FFE = 44.0'

PRP. 12" CPP  
INV. IN = 41.00'  
INV. OUT = 40.50'

**ALL 6 BUILDING CORNERS ARE STAKED IN FIELD**

100' WETLAND SETBACK (TYP.)  
SEE GENERAL NOTE 12 SHEET 1

PRP. CULVERT INLET/OUTLET PROTECTION DETAIL (TYP.)  
SEE DETAIL SHEET 4

**REQUESTED PITS (x2)**

PRP. STORMWATER DETENTION POND  
SEE DETAIL SHEET 5

PRP. DETENTION POND OUTLET STRUCTURE AND CULVERT  
SEE DETAIL SHEET 5

EXT EDGE OF GRAVEL (TYP.)

**Test Pit 2**

**Test Pit 1**

12" CPP L=60' S=0.83%

40' S=0.62%