Date	October 13, 2021
To	Town of Cumberland Planning Board
From	Carla Nixon, Planning Director
Subject:	**Site Plan Review: Greely Road Gravel Pad Expansion**

I. REQUEST:

The Applicant is the Town of Cumberland. The Applicant is requesting site plan approval for the construction of a 43,475 sf gravel storage pad. The parcel is owned by the Yarmouth Water District. There is a ground lease for the use of the property to store plows, sanders, concrete supplies, pipe and other Public Works and Val Halla materials. There will be no storage of hazardous materials or fluids The parcel is shown on Tax Assessor Map R04, Lot 42. The access to the storage pad will be through the existing 12' wide gravel access path for the Val Halla storage yard; there will be no new entrance from Greely Road to this storage area.

The parcel is located in the Rural Residential 1 zoning district. Municipal uses and buildings; subject to site plan review, are permitted in these zones.

Doug Reynolds, P.E. of Gorrill Palmer Engineers, prepared the application and is the representative for the project. Dan Diffin, P.E., Sevee and Maher Engineers reviewed the application for the Planning Board.

II. REQUESTED WAIVERS:

1. High intensity soils survey
2. Hydro geologic evaluation
3. Traffic Study
4. Market Study
5. Location of proposed recreation areas (parks, playgrounds, other public areas)
6. Location and type of outdoor furniture and features such as benches, fountains.

III. PROJECT HISTORY: None

IV. DEPARTMENT HEAD REVIEWS:

Fire Chief Small: No comments
Police Chief Rumsey: No comments
Bill Longley, CEO: No comments

V. Cumberland Lands and Conservation Commission: No comments

VI. Findings of Fact – Site Plan Review

Sec. 229-10 Approval Standards and Criteria

The following criteria shall be used by the Planning Board in reviewing applications for site plan review and shall serve as minimum requirements for approval of the application. The application shall be approved unless the Planning Board determines that the applicant has failed to meet one or more of these standards. In all instances, the burden of proof shall be on the applicant who must produce evidence sufficient to warrant a finding that all applicable criteria have been met.

A. Utilization of the Site

Utilization of the Site - The plan for the development, including buildings, lots, and support facilities, must reflect the natural capabilities of the site to support development. Environmentally sensitive areas, including but not limited to, wetlands, steep slopes, floodplains, significant wildlife habitats, fisheries, scenic areas, habitat for rare and endangered plants and animals, unique natural communities and natural areas, and sand and gravel aquifers must be maintained and preserved to the maximum extent. The development must include appropriate measures for protecting these resources, including but not limited to, modification of the proposed design of the site, timing of construction, and limiting the extent of excavation.

The plan will minimize areas of disturbance and there will be no storage of hazardous materials on the site.

Based on the above facts, the Planning Board finds the standards of this section have been met.

B. Traffic, Circulation and Parking

(1) **Traffic Access and Parking**: Vehicular access to and from the development must be safe and convenient.

(a) Any driveway or proposed street must be designed so as to provide the minimum sight distance according to the Maine Department of Transportation standards, to the maximum extent possible.
There is no entrance from Greely Rd.

(b) Points of access and egress must be located to avoid hazardous conflicts with existing turning movements and traffic flows.
This standard has been met.

(c) The grade of any proposed drive or street must be not more than +3% for a minimum of two (2) car lengths, or forty (40) feet, from the intersection. **This standard has been met.**

(d) The intersection of any access/egress drive or proposed street must function: (a) at a Level of Service D, or better, following development if the project will generate one thousand (1,000) or more vehicle trips per twenty-four (24) hour period; or (b) at a level which will allow safe access into and out of the project if less than one thousand (1,000) trips are generated. **This standard has been met.**

(e) Where a lot has frontage on two (2) or more streets, the primary access to and egress from the lot must be provided from the street where there is less potential for traffic congestion and for traffic and pedestrians hazards. Access from other streets may be allowed if it is safe and does not promote short cutting through the site. **N/A**

(f) Where it is necessary to safeguard against hazards to traffic and pedestrians and/ or to avoid traffic congestion, the applicant shall be responsible for providing turning lanes, traffic directional islands, and traffic controls within public streets. **N/A**

(g) Accessways must be designed and have sufficient capacity to avoid queuing of entering vehicles on any public street.
This standard has been met.

(h) The following criteria must be used to limit the number of driveways serving a proposed project:
No use which generates less than one hundred (100) vehicle trips per day shall have more than one (1) two-way driveway onto a single roadway. Such driveway must be no greater than thirty (30) feet wide. No use which generates one hundred (100) or more vehicle trips per day shall have more than two (2) points of entry from and two (2) points of egress to a single roadway. The combined width of all accessways must not exceed sixty (60) feet**. N/A**

(2) Accessway Location and Spacing

Accessways must meet the following standards:

a. Private entrance / exits must be located at least fifty (50) feet from the closest unsignalized intersection and one hundred fifty (150) feet from the closest signalized intersection, as measured from the point of tangency for the corner to the point of tangency for the accessway. This requirement may be reduced if the shape of the site does not allow conformance with this standard. **N/A**

b. Private accessways in or out of a development must be separated by a minimum of seventy-five (75) feet where possible. **N/A**

(2) Internal Vehicular Circulation

The layout of the site must provide for the safe movement of passenger, service, and emergency vehicles through the site.

a. Projects that will be served by delivery vehicles must provide a clear route for such vehicles with appropriate geometric design to allow turning and backing. **N/A**
b. Clear routes of access must be provided and maintained for emergency vehicles to and around buildings and must be posted with appropriate signage (fire lane - no parking). **N.A**
c. The layout and design of parking areas must provide for safe and convenient circulation of vehicles throughout the lot. **This standard has been met.**
d. All roadways must be designed to harmonize with the topographic and natural features of the site insofar as practical by minimizing filling, grading, excavation, or other similar activities which result in unstable soil conditions and soil erosion, by fitting the development to the natural contour of the land and avoiding substantial areas of excessive grade and tree removal, and by retaining existing vegetation during construction. The road network must provide for vehicular, pedestrian, and cyclist safety, all season emergency access, snow storage, and delivery and collection services.This standard has been met.

Parking Layout and Design

Off street parking must conform to the following standards:

a. Parking areas with more than two (2) parking spaces must be arranged so that it is not necessary for vehicles to back into the street.
b. All parking spaces, access drives, and impervious surfaces must be located at least fifteen (15) feet from any side or rear lot line, except where standards for buffer yards require a greater distance. No parking spaces or asphalt type surface shall be located within fifteen (15) feet of the front property line. Parking lots on adjoining lots may be connected by accessways not exceeding twenty-four (24) feet in width.
c. Parking stalls and aisle layout must conform to the following standards.

Parking Angle	Stall Width	Skew Width	Stall Depth	Aisle Width
90°	9'-0"		18'-0"	24'-0" 2-way
60°	8'-6"	10'-6"	18'-0"	16'-0" 1-way
45°	8'-6"	12'-9"	17'-6"	12'-0" 1-way
30°	8'-6"	17'-0"	17'-0"	12'-0" 1 way

d. In lots utilizing diagonal parking, the direction of proper traffic flow must be indicated by signs, pavement markings or other permanent indications and maintained as necessary.
e. Parking areas must be designed to permit each motor vehicle to proceed to and from the parking space provided for it without requiring the moving of any other motor vehicles.
f. Provisions must be made to restrict the "overhang" of parked vehicles when it might restrict traffic flow on adjacent through roads, restrict pedestrian or bicycle movement on adjacent walkways, or damage landscape materials.

There is no parking propose.

(5) Building and Parking Placement. **N/A**

(6) Pedestrian Circulation

The site plan must provide for a system of pedestrian ways within the development appropriate to the type and scale of development. This system must connect the major building entrances/ exits with parking areas and with existing sidewalks, if they exist or are planned in the vicinity of the project. The pedestrian network may be located either in the street right-of-way or outside of the right-of-way in open space or recreation areas. The system must be designed to link the project with residential, recreational, and commercial facilities, schools, bus stops, and existing sidewalks in the neighborhood or, when appropriate, to connect the amenities such as parks or open space on or adjacent to the site.

There will be no pedestrian traffic to this area.

Based on the above facts, the Planning Board finds the standards of this section have been met

C. Stormwater Management and Erosion Control

(1) Stormwater Management. Adequate provisions must be made for the collection and disposal of all stormwater that runs off proposed streets, parking areas, roofs, and other surfaces, through a stormwater drainage system and maintenance plan, which must not have adverse impacts on abutting or downstream properties.
   (a) To the extent possible, the plan must retain stormwater on the site using the natural features of the site.
   (b) Unless the discharge is directly to the ocean or major river segment, stormwater runoff systems must detain or retain water such that the rate of flow from the site after development does not exceed the predevelopment rate.

(c) The applicant must demonstrate that on - and off-site downstream channel or system capacity is sufficient to carry the flow without adverse effects, including but not limited to, flooding and erosion of shoreland areas, or that he / she will be responsible for whatever improvements are needed to provide the required increase in capacity and / or mitigation.

(d) All natural drainage ways must be preserved at their natural gradients and must not be filled or converted to a closed system unless approved as part of the site plan review.

(e) The design of the stormwater drainage system must provide for the disposal of stormwater without damage to streets, adjacent properties, downstream properties, soils, and vegetation.

(f) The design of the storm drainage systems must be fully cognizant of upstream runoff which must pass over or through the site to be developed and provide for this movement.

(g) The biological and chemical properties of the receiving waters must not be degraded by the stormwater runoff from the development site. The use of oil and grease traps in manholes, the use of on-site vegetated waterways, and vegetated buffer strips along waterways and drainage swales, and the reduction in use of deicing salts and fertilizers may be required, especially where the development stormwater discharges into a gravel aquifer area or other water supply source, or a great pond.

A stormwater management plan was reviewed and approved by the Town Engineer.

Based on the above facts, the Planning Board finds the standards of this section have been met.

2. Erosion Control

(a) All building, site, and roadway designs and layouts must harmonize with existing topography and conserve desirable natural surroundings to the fullest extent possible, such that filling, excavation and earth moving activity must be kept to a minimum. Parking lots on sloped sites must be terraced to avoid undue cut and fill, and / or the need for retaining walls. Natural vegetation must be preserved and protected wherever possible.

(b) Soil erosion and sedimentation of watercourses and water bodies must be minimized by an active program meeting the requirements of the Maine Erosion and Sediment Control Handbook for Construction: Best Management Practices, dated March 1991, and as amended from time to time.

The Town Engineer has reviewed and approved the erosion control plan that will be in conformance with the Maine Erosion and Sediment Control manual.

Based on the above facts, the Planning Board finds the standards of this section have been met.

D. Water, Sewer and Fire Protection

(1) Water Supply Provisions

The development must be provided with a system of water supply that provides each use with an adequate supply of water. If the project is to be served by a public water supply, the applicant must secure and submit a written statement from the supplier that the proposed water supply system conforms with its design and construction standards, will not result in an undue burden on the source of distribution system, and will be installed in a manner adequate to provide needed domestic and fire protection flows.

There will be no water supply or sewage disposal required for this project. The parking area has been sized to allow a fire truck to pull in the drive aisle if needed.

Based on the above facts, the Planning Board finds the standards of this section have been met.

(2) Sewage Disposal Provisions

The development must be provided with a method of disposing of sewage which is in compliance with the State Plumbing Code. If provisions are proposed for on-site waste disposal, all such systems must conform to the Subsurface Wastewater Disposal Rules.

There will be no need for sewage disposal.

Based on the above facts, the Planning Board finds the standards of this section have been met.

(3) Utilities

The development must be provided with electrical, telephone, and telecommunication service adequate to meet the anticipated use of the project. New utility lines and facilities must be screened from view to the extent feasible. If the service in the street or on adjoining lots is underground, the new service must be placed underground.

No utilities are required.

Based on the above facts, the Planning Board finds the standards of this section have been met.

1. Fire Protection

There is a fire hydrant located 450' from the site.

Based on the above facts, the Planning Board finds the standards of this section have been met.

E. Water Protection

(1) Groundwater Protection. The proposed site development and use must not adversely impact either the quality or quantity of groundwater available to abutting properties or to the public water supply systems. Applicants whose projects involve on-site water supply or sewage disposal systems with a capacity of two thousand (2,000) gallons per day or greater must demonstrate that the groundwater at the property line will comply, following development, with the standards for safe drinking water as established by the State of Maine.

There will be no groundwater or hazardous materials discharged as a result of this project. There will be no on-site water supply or sewage disposal systems.

Based on the above facts, the Planning Board finds the standards of this section have been met.

(2) Water Quality

All aspects of the project must be designed so that:

a. No person shall locate, store, discharge, or permit the discharge of any treated, untreated, or inadequately treated liquid, gaseous, or solid materials of such nature, quantity, obnoxious, toxicity, or temperature that may run off, seep, percolate, or wash into surface or groundwaters so as to contaminate, pollute, or harm such waters or cause nuisances, such as objectionable shore deposits, floating or submerged debris, oil or scum, color, odor, taste, or unsightliness or be harmful to human, animal, plant, or aquatic life.

b. All storage facilities for fuel, chemicals, chemical or industrial wastes, and biodegradable raw materials, must meet the standards of the Maine Department of Environmental Protection and the State Fire Marshall's Office.

No substances described above will be stored or discharged in a way that could contaminate surface or groundwater.

Based on the above facts, the Planning Board finds the standards of this section have been met.

(3) Aquifer Protection (if applicable)

If the site is located within the Town Aquifer Protection Area a positive finding by the board that the proposed plan will not adversely affect the aquifer, is required.

The parcel is located in the Aquifer Protection Area. The use of the property for equipment storage will not adversely affect the aquifer.

Based on the above facts, the Planning Board finds the standards of this section have been met.

F. Floodplain Management

If any portion of the site is located within a special flood hazard area as identified by the Federal Emergency Management Agency, all use and development of that portion of the site must be consistent with the Town's Floodplain management provisions.

The location of the proposed storage area is within an area designated as Zone C-Area of Minimal Flooding.

Based on the above facts, the Planning Board finds the standards of this section have been met.

G. Historic and Archaeological Resources

If any portion of the site has been identified as containing historic or archaeological resources, the development must include appropriate measures for protecting these resources, including but not limited to, modification of the proposed design of the site, timing of construction, and limiting the extent of excavation.

There are no evident historic or archeological features on the site.

Based on the above facts, the Planning Board finds the standards of this section have been met.

H. Exterior Lighting

The proposed development must have adequate exterior lighting to provide for its safe use during nighttime hours, if such use is contemplated. All exterior lighting

must be designed and shielded to avoid undue glare, adverse impact on neighboring properties and rights - of way, and the unnecessary lighting of the night sky.

No exterior lighting is proposed.

Based on the above facts, the Planning Board finds the standards of this section have been met.

I. Buffering and Landscaping

(1) Buffering of Adjacent Uses
The development must provide for the buffering of adjacent uses where there is a transition from one type of use to another use and for the screening of mechanical equipment and service and storage areas. The buffer may be provided by distance, landscaping, fencing, changes in grade, and / or a combination of these or other techniques.

(2) Landscaping:
There are no proposed changes to the landscaping plan due to the minimal change in the amount of pavement.

A 50' existing vegetated buffer will remain between the site and Greely Rd. The other three sides are wooded and will be preserved the greatest extent possible.

Based on the above facts, the Planning Board finds the standards of this section have been met.

J. Noise
The development must control noise levels such that it will not create a nuisance for neighboring properties.

There will be no activities associated with the storage area that will result in noise.

Based on the above facts, the Planning Board finds the standards of this section have been met.

K. Storage of Materials
.1 Exposed nonresidential storage areas, exposed machinery, and areas used for the storage or collection of discarded automobiles, auto parts, metals or other articles of salvage or refuse must have sufficient setbacks and screening (such as a stockade fence or a dense evergreen hedge) to provide a visual buffer sufficient to minimize their impact on abutting residential uses and users of public streets.

.2 All dumpsters or similar large collection receptacles for trash or other wastes must be located on level surfaces which are paved or graveled. Where the dumpster or receptacle is located in a yard which abuts a residential or institutional use or a public street, it must be screened by fencing or landscaping.

.3 Where a potential safety hazard to children is likely to arise, physical screening sufficient to deter small children from entering the premises must be provided and maintained in good condition.

There will be no dumpster or trash receptacles on site. There is a gate from Greely Road that will prevent children from accessing the area.

Based on the above facts, the Planning Board finds the standards of this section have been met.

L. Capacity of the Applicant

The applicant must demonstrate that he / she has the financial and technical capacity to carry out the project in accordance with this ordinance and the approved plan.

Technical Capacity: The applicant has retained the services of a professional engineer and land surveyor.

Financial Capacity: Project improvements will be funded by the Town of Cumberland and public works employees will be utilized.

Based on the above facts, the Planning Board finds the standards of this section have been met.

229-11 EXPIRATION OF APPROVAL:

Construction of the improvements covered by any site plan approval must be substantially commenced within 12 months of the date upon which the approval was granted. If construction has not been substantially commenced within 12 months of the date upon which approval was granted, the approval shall be null and void. If construction has not been substantially completed within 24 months of the date upon which approval was granted or within a time period as specified by the Planning Board, the approval shall be null and void. The applicant may request an extension of the deadline to commence or complete construction prior to expiration of the period. Such request must be in writing and must be made to the Planning Board. The Planning Board may grant up to two one-year extensions to the period of any and all federal and state approvals and permits are current.

229-12 STANDARD CONDITION OF APPROVAL:

This approval is dependent upon and limited to the proposals and plans contained in the application and supporting documents submitted by the applicant. Any variation from the plans, proposals and supporting documents, except deminimus changes as so determined by the Town Planner which do not affect approval standards, is subject to review and approval of the Planning Board prior to implementation

X. PROPOSED CONDITIONS OF APPROVAL

1. A preconstruction conference shall be held prior to the start of construction.
2. All clearing limits are to be staked and inspected by the Town Engineer prior to the preconstruction conference.

SME
SEVEE & MAHER
ENGINEERS

4 Blanchard Road, P.O. Box 85A
Cumberland, ME 04021
Tel: 207.829.5016 • Fax: 207.829.5692
info@smemaine.com
smemaine.com

October 14, 2021

Ms. Carla Nixon, Town Planner
Town of Cumberland
290 Tuttle Road
Cumberland, Maine 04021

Subject: Peer Review of the Site Plan Review Application
Town Gravel Pad Storage Area
Greely Road, Cumberland, Maine

Dear Ms. Nixon:

As requested, Sevee & Maher Engineers, Inc. (SME) has prepared a peer review of the Site Plan Review Application for the Town of Cumberland's gravel pad storage area project off Greely Road. The review has been prepared based on the application material provided by Gorrill-Palmer dated September 2021.

The following comments remain unaddressed at the time of the preparation of this letter.

Chapter 229: Site Plan Review

SME has reviewed the applicable sections of Chapter 229 and has provided comments for those sections. The remaining sections have been reviewed and found to comply with Chapter 229 requirements.

Section 229-10C – Stormwater Management and Erosion Control

1. The limit of site disturbance appears to exceed one acre of area with the 43,475 square foot gravel pad and associated side slopes. Projects that disturb more than one acre require submission of a Maine Department of Environmental Protection Stormwater Management Permit by Rule. Please indicate if the project will submit the PBR application, or resize the limit of work to be less than one acre.
2. Please provide stormwater runoff calculations to demonstrate that the level spreader will control post-development peak flows to the pre-development peak flows.

Section 229-10E – Water Protection

3. The application notes that the equipment storage on the pad will be covered to avoid any potential run-off, seepage, or percolation into surface water or groundwater. Please provide information on the type of equipment stored on the gravel pad and how it will be covered.
4. Please confirm that there will be no on-site refueling of equipment on the gravel pad. The project site is within the Aquifer, therefore, If refueling is to occur, SME recommends that it happen in the adjacent equipment storage building with a spill kit provided.

Waiver Requests

SME has reviewed the list of waiver requests provided with the application and recommends approval.

Please feel free to call or email me at dpd@smemaine.com with any questions, or if you would like, I could meet with you to discuss our comments.

Sincerely,

SEVEE & MAHER ENGINEERS, INC.

Daniel P. Diffin, P.E.
Vice President/Civil Engineer

From: Doug Reynolds
To: Dan Diffin; Carla Nixon; Christina Silberman
Subject: RE: Gravel Pad Review
Date: Monday, October 18, 2021 8:09:03 AM
Attachments: image002.png
image003.png
image004.png
image005.png
TownGravelPadPeerReview Response.docx
Combined with hydrocad.pdf

Dan,

Based upon your comments, we reduced the size of the pad, such that we do not disturb more than an acre

I have responded to the remainder of your comments in the attached.

Let me know if you have any questions

Thanks

From: Dan Diffin <dpd@smemaine.com>
Sent: Wednesday, October 13, 2021 5:13 PM
To: Carla Nixon <cnixon@cumberlandmaine.com>; Christina Silberman <csilberman@cumberlandmaine.com>
Cc: Doug Reynolds <dreynolds@gorrillpalmer.com>
Subject: RE: Gravel Pad Review

Hi Carla,

Please find attached SME's peer review of the Town's Gravel Pad Storage Area off Greely Road in Cumberland.

I spoke with Doug about some of these comments already, and have copied him here.

Please don't hesitate to call or reply with any questions.

Thanks,

Dan

Daniel P. Diffin, P.E., LEED AP BD+C
Vice President/Senior Civil Engineer

Sevee & Maher Engineers, Inc.
4 Blanchard Road, P.O. Box 85A
Cumberland, ME 04021
Office: 207.829.5016
Cell: 207.240.3315
Fax: 207.829.5692

From: Carla Nixon <cnixon@cumberlandmaine.com>
Sent: Wednesday, October 13, 2021 3:45 PM
To: Christina Silberman <csilberman@cumberlandmaine.com>
Cc: 'Doug Reynolds (DReynolds@gorrillpalmer.com)' <DReynolds@gorrillpalmer.com>; Dan Diffin <dpd@smemaine.com>
Subject: Gravel Pad Review

Please upload the file. Dan Diffin will be sending a review document to us. When it arrives, please upload it.
Thank you.
Carla

Carla Nixon
Director of Planning, Town of Cumberland
207-829-2206
www.cumberlandmaine.com
290 Tuttle Road, Cumberland, Maine 04021

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1. The limit of site disturbance appears to exceed one acre of area with the 43,475 square foot gravel pad and associated side slopes. Projects that disturb more than one acre require submission of a Maine Department of Environmental Protection Stormwater Management Permit by Rule. Please indicate if the project will submit the PBR application, or resize the limit of work to be less than one acre. The area of the gravel pad has been reduced to approximately 0.8 acres, such that the developed area is under 1 acre
2. Please provide stormwater runoff calculations to demonstrate that the level spreader will control post-development peak flows to the pre-development peak flows. Stormwater calculations have been provided, showing that the post development flows are below predevelopment flows for the 2, 10 and 25 year storms

Section 229-10E – Water Protection

3. The application notes that the equipment storage on the pad will be covered to avoid any potential run-off, seepage, or percolation into surface water or groundwater. Please provide information on the type of equipment stored on the gravel pad and how it will be covered.

There will not be covered storage on this part of the site. This area will store public works structures, pipes, plows etc.

4. Please confirm that there will be no on-site refueling of equipment on the gravel pad. The project site is within the Aquifer, therefore, If refueling is to occur, SME recommends that it happen in the adjacent equipment storage building with a spill kit provided. Re-fueling will not occur at this site.

Waiver Requests

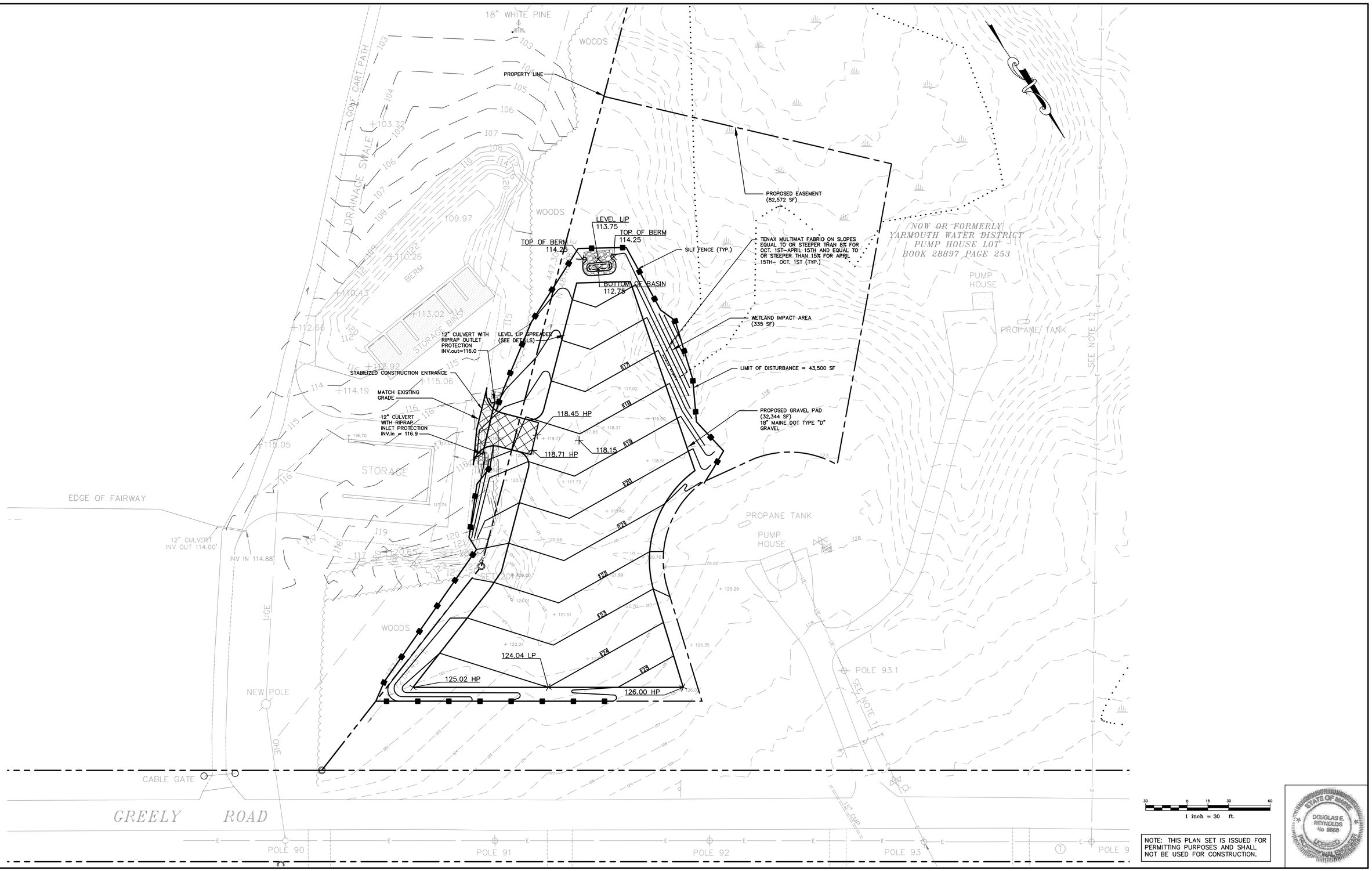
SME has reviewed the list of waiver requests provided with the application and recommends approval.

Please feel free to call or email me at dpd@smemaine.com with any questions, or if you would like, I could meet with you to discuss our comments.

Sincerely,

SEVEE & MAHER ENGINEERS, INC.

Daniel P. Diffin, P.E.
Vice President/Civil Engineer



NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE
DOUGLAS E. REYNOLDS
No 9888
LICENSED
PROFESSIONAL ENGINEER

Rev.	Date	Revision

Issued For	Date	By
SITE PLAN REVIEW	9/27/21	DER

Design: AJK	Draft: AJK	Date: AUG 2021
Checked: DER	Scale: 1"=30'	Job No.: 3656.06

File Name: 3656-06-GP-PBASE.dwg

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207.772.2515

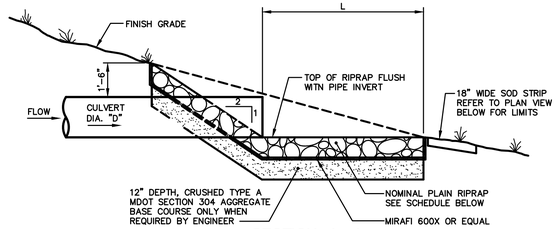
Drawing Name: **Layout, Grading, and Erosion Control Plan**

Project: **Equipment Storage Facility**
Greely Road, Cumberland, Maine 04201

Applicant: **Town of Cumberland**
Tuttle Road, Cumberland, Maine 04201

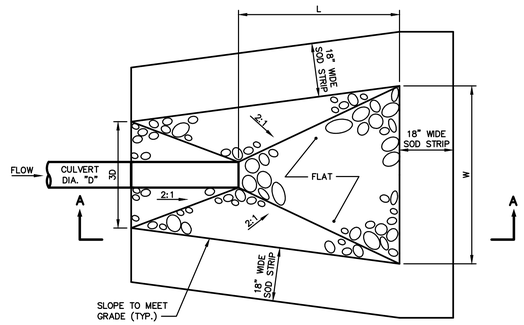
Drawing No. 2

U:\3656.06_Cumberland Storage Site Plan\2 - CAD\DWG\Gravel Pad Design\3656-06-GP-PBASE.dwg 10/14/2021 12:13 PM



SECTION A–A

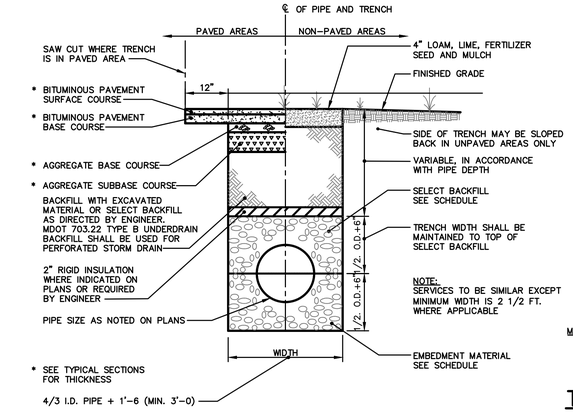
SCHEDULE					
	CULVERT DIAMETER (D)	LENGTH (L)	WIDTH (W)	STONE d50	RIPRAP THICKNESS
CULVERT	12"	8'	6'	6"	14"



PLAN VIEW

CULVERT OUTLET APRON

NOT TO SCALE



SCHEDULE OF TRENCH BACKFILL		
TYPE OF PIPE	EMBEDMENT MATERIAL	SELECT BACKFILL
CMP DUCTILE IRON RCP	MDOT 703.22 TYPE B UD BACKFILL	MDOT 703.22 TYPE B UD BACKFILL
PVC–SDR 35 HDPE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE	MDOT 703.22 TYPE B UD BACKFILL
PERFORATED PVC–SDR35 HDPE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE

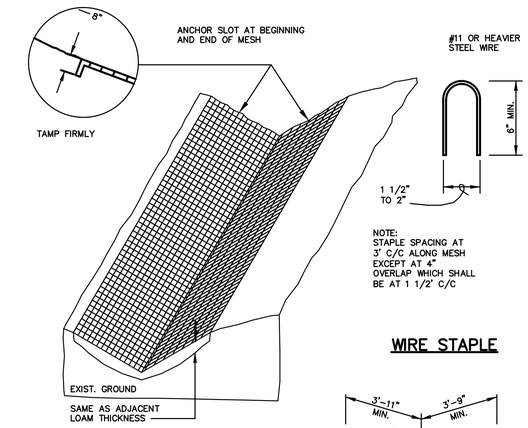
NOTE:
1. BRACING AND SHEETING OR OTHER TRENCH PROTECTION TO BE PROVIDED TO MEET APPLICABLE STATE AND O.S.H.A. SAFETY STANDARDS. ALL SUCH TRENCH PROTECTION TO BE THE RESPONSIBILITY OF THE CONTRACTOR.
2. INSTALL WARNING TAPE DIRECTLY ABOVE UTILITIES, 12" BELOW FINISH GRADE.

MINIMUM COVER	PIPE
2'–0"	DRAIN (1)
5'–5"	WATER
5'–0"	SEWER

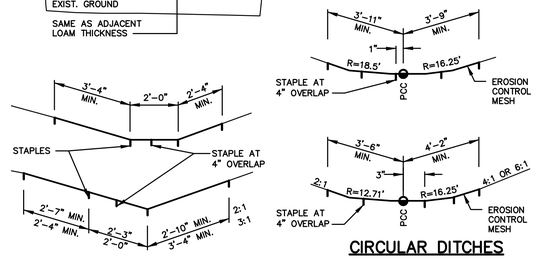
(1) COVER BETWEEN 2' AND 3' SHALL INCLUDE 4" RIGID INSULATION. COVER BETWEEN 3' AND 4' SHALL INCLUDE 2" RIGID INSULATION.

TRENCH SECTION

N.T.S.



WIRE STAPLE



CIRCULAR DITCHES

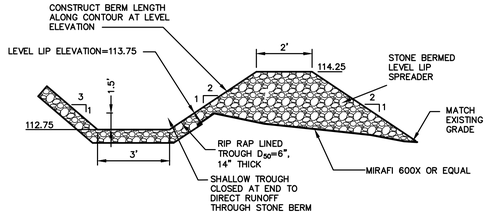
STAPLES AT EDGES, AT QUARTER POINTS, AT 4" OVERLAP

EROSION CONTROL MESH

NOT TO SCALE

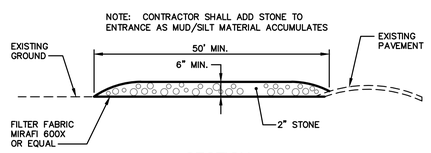
BERM STONE SIZE	
SIEVE DESIGNATION (US CUSTOMARY)	PERCENT BY WEIGHT PASSING
12 IN	100
6 IN	84–100
3 IN	68–83
1 IN	42–55
NO. 4	8–12

NOTE: PRIOR TO CONSTRUCTION OF ANY ONSITE DRAINAGE FEATURES, THE CONTRACTOR SHALL STAKE OUT THE LEVEL LIP SPREADERS FOR REVIEW BY GORRILL–PALMER. THE CONTRACTOR SHALL NOTIFY GORRILL–PALMER WHEN STAKE OUT IS COMPLETE, AND PROVIDE GROUND SURVEYED ELEVATIONS OF THE LEVEL LIP SPREADER LOCATION, GORRILL–PALMER WILL CONDUCT A SITE WALK WITHIN 48 HOURS TO CONFIRM LOCATION AND ORIENTATION TO VERIFY DESIGN INTENT.

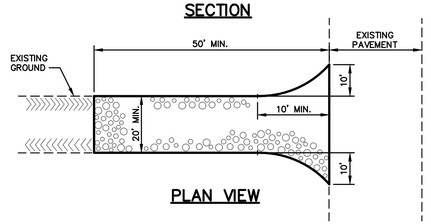


STONE BERM LEVEL LIP SPREADER

NOT TO SCALE



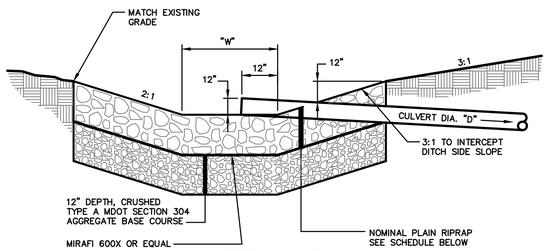
SECTION



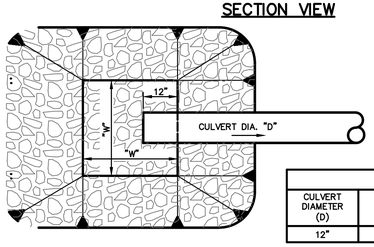
PLAN VIEW

STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE



SECTION VIEW



SCHEDULE			
CULVERT DIAMETER (D)	WIDTH (W)	STONE d50	RIPRAP THICKNESS
12"	36"	6"	14"

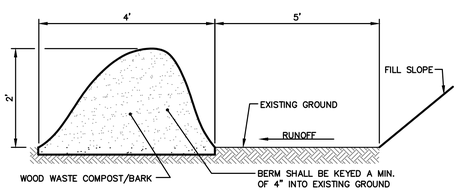
PLAN VIEW

CULVERT INLET APRON

NOT TO SCALE

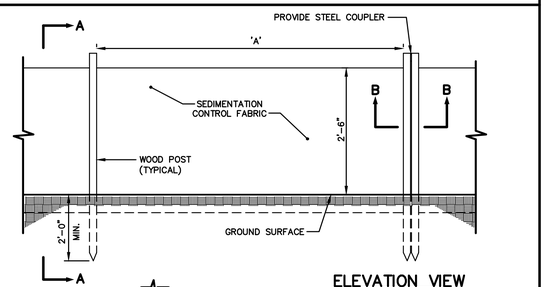
NOTES:

1. THE WOOD WASTE COMPOST/BARK MIX SHALL CONFORM TO THE FOLLOWNG STANDARDS:
   A. MOISTURE CONTENT – 30–60%
   B. pH – 5.0 – 8.0.
   C. SCREEN SIZE – 100% LESS THAN 3", MAX. 70% LESS THAN 1".
   D. NO LESS THAN 40% ORGANIC MATERIAL (DRY WEIGHT) BY LOSS OF IGNITION.
   E. NO STONES LARGER THAN 2" IN DIAMETER.
   F. SILTS, CLAYS OR SUGAR SANDS ARE NOT ACCEPTABLE IN THE MIX.
2. THE COMPOST BERM SHALL BE PLACED, UNCOMPACTED, ALONG A RELATIVELY LEVEL CONTOUR.
3. THE WOOD WASTE COMPOST/BARK FILTER BERM MAY BE USED IN LIEU OF SILTATION FENCE, AT THE TOE OF SHALLOW SLOPES, ON FROZEN GROUND, LEDGE OUT CROPS, VERY ROOTED FORESTED AREA OR AT THE EDGE OF GRAVEL PARKING AREAS.
4. BERMS SHALL REMAIN IN PLACE UNTIL UPSTREAM AREA IS COMPLETED OR 70% CATCH OF VEGETATION IS ATTAINED. BERMS SHALL BE REMOVED BY SPREADING SUCH THAT NATIVE EARTH CAN BE SEEN BELOW.
5. WOODWASTE COMPOST BARK FILTER SHALL NOT BE USED IN WETLAND AREAS.

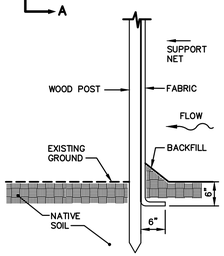


WOOD WASTE COMPOST/BARK FILTER BERM DETAIL

NOT TO SCALE

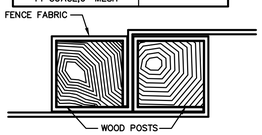


ELEVATION VIEW



SECTION A–A

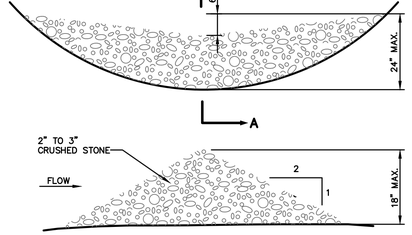
SILT FENCE	
SILT FENCE REINFORCEMENT	MAXIMUM SPACING "A"
NONE	6"
WIRE REINFORCE.MENT 14 GUAGE,6" MESH	10'



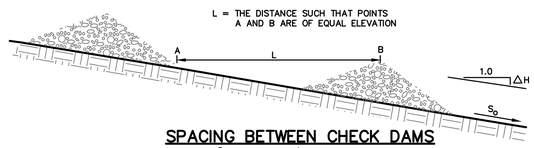
SECTION B–B

SILTATION FENCE

NOT TO SCALE



SECTION A–A



SPACING BETWEEN CHECK DAMS

S_o (FT./FT.)	L (FT.)
0.020	75
0.030	50
0.040	40
0.050	30
0.080	20
0.100	10

STONE CHECK DAM

NOT TO SCALE

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE — DOUGLAS E. REYNOLDS — No 9868 — LICENSED — PROFESSIONAL ENGINEER

Rev.	Date	Revision

Issued For	Date	By
SITE PLAN REVIEW	9/27/21	DER

Design: AJK	Draft: AJK	Date: AUG 2021
Checked: DER	Scale: N.T.S.	Job No.: 3656.06
File Name: 3656–06–GP–PBASE.dwg		

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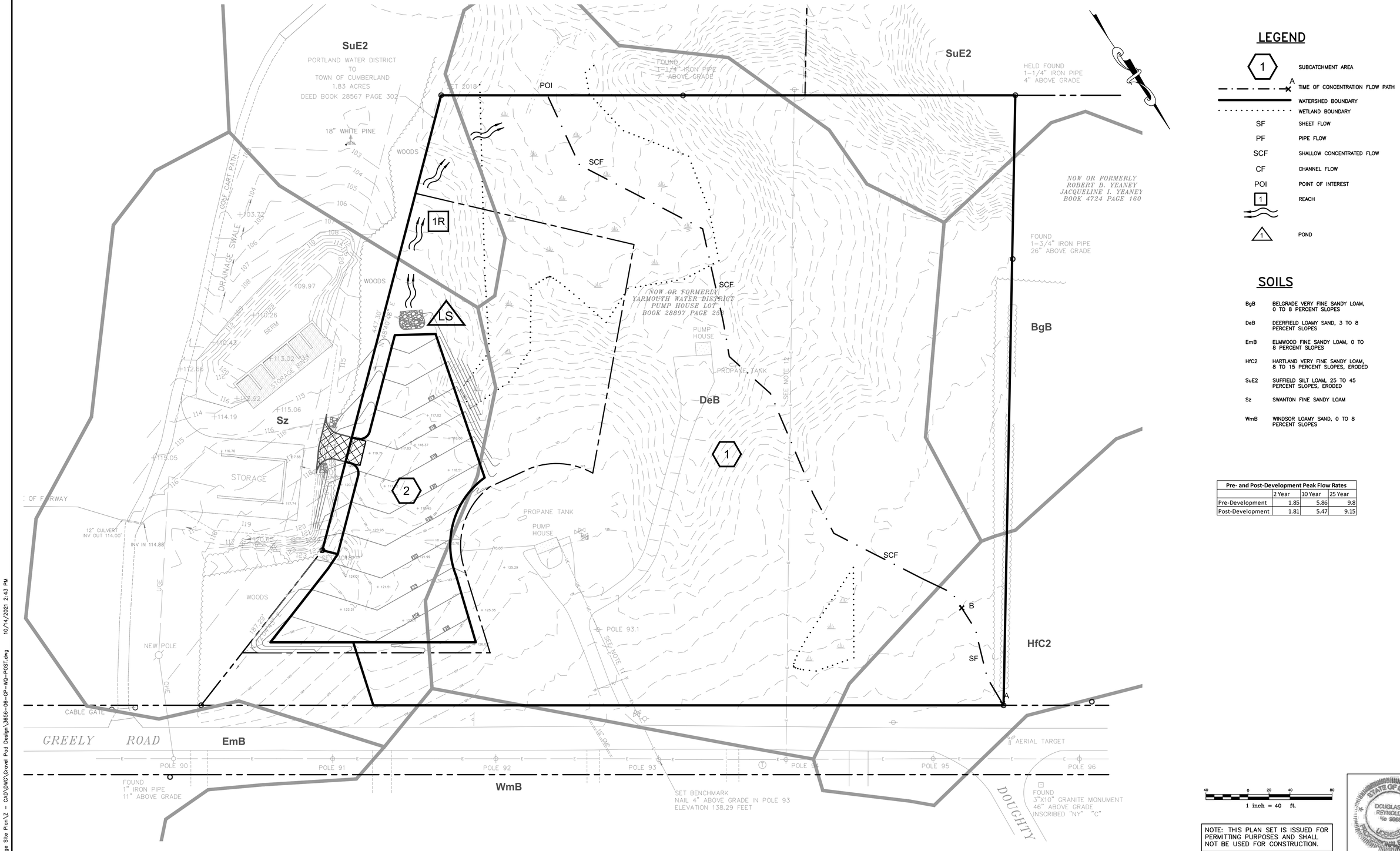
Drawing Name:	Details
Project:	Equipment Storage Facility Greely Road, Cumberland, Maine 04201
Applicant:	Town of Cumberland Tuttle Road, Cumberland, Maine 04201

Drawing No. 3

U:\3656.06_Cumberland Storage Site Plan\Z – CAD\DWG\Gravel Pad Design\3656–06–GP–PBASE.dwg 10/14/2021 3:35 PM



LEGEND

1	SUBCATCHMENT AREA
A	TIME OF CONCENTRATION FLOW PATH
	WATERSHED BOUNDARY
	WETLAND BOUNDARY
SF	SHEET FLOW
PF	PIPE FLOW
SCF	SHALLOW CONCENTRATED FLOW
CF	CHANNEL FLOW
POI	POINT OF INTEREST
1	REACH
1	POND

SOILS

BgB	BELGRADE VERY FINE SANDY LOAM, 0 TO 8 PERCENT SLOPES
DeB	DEERFIELD LOAMY SAND, 3 TO 8 PERCENT SLOPES
EmB	ELMWOOD FINE SANDY LOAM, 0 TO 8 PERCENT SLOPES
HfC2	HARTLAND VERY FINE SANDY LOAM, 8 TO 15 PERCENT SLOPES, ERODED
SuE2	SUFFIELD SILT LOAM, 25 TO 45 PERCENT SLOPES, ERODED
Sz	SWANTON FINE SANDY LOAM
WmB	WINDSOR LOAMY SAND, 0 TO 8 PERCENT SLOPES

Pre- and Post-Development Peak Flow Rates			
	2 Year	10 Year	25 Year
Pre-Development	1.85	5.86	9.8
Post-Development	1.81	5.47	9.15

40 0 20 40 80
1 inch = 40 ft.

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE
DOUGLAS E. REYNOLDS
No 9868
LICENSED
PROFESSIONAL ENGINEER

Rev.	Date	Revision

SITE PLAN REVIEW	9/27/21	DER
Issued For	Date	By

Design: –	Draft: –	Date: AUG 2021
Checked: DER	Scale: 1"=40'	Job No.: 3656.06

File Name: 3656-06-GP-WQ-POST.dwg

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Drawing Name: **Post Development Watershed Map**

Project: **Equipment Storage Facility**
Greely Road, Cumberland, Maine 04201

Applicant: **Town of Cumberland**
Tuttle Road, Cumberland, Maine 04201

Drawing No. **W2**

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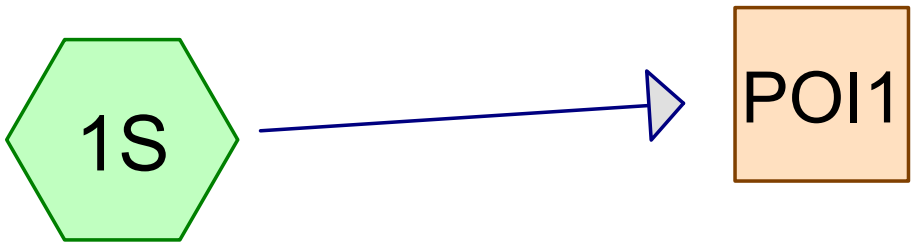


Onsite to wetland

POI 1

Subcat Reach Pond Link

Routing Diagram for Pre
Prepared by Gorrill Palmer, Printed 10/14/2021

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Onsite to wetland Runoff Area=350,195 sf 2.33% Impervious Runoff Depth=0.51"
Flow Length=770' Tc=37.6 min AMC Adjusted CN=64 Runoff=1.85 cfs 0.344 af

Reach POI1: POI 1 Inflow=1.85 cfs 0.344 af
Outflow=1.85 cfs 0.344 af

Total Runoff Area = 8.039 ac Runoff Volume = 0.344 af Average Runoff Depth = 0.51"
97.67% Pervious = 7.852 ac 2.33% Impervious = 0.188 ac

Summary for Subcatchment 1S: Onsite to wetland

Runoff = 1.85 cfs @ 12.66 hrs, Volume= 0.344 af, Depth= 0.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.10", AMC=3

	Area (sf)	CN	Adj	Description
*	8,170	98		Impervious
	50,140	70		Woods, Good, HSG C
	236,870	30		Woods, Good, HSG A
	40,185	77		Woods, Good, HSG D
	14,830	55		Woods, Good, HSG B
	350,195	44	64	Weighted Average, AMC Adjusted
	342,025			97.67% Pervious Area
	8,170			2.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.5	150	0.0233	0.09		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.30"
10.1	620	0.0420	1.02		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
37.6	770	Total			

Summary for Reach POI1: POI 1

Inflow Area = 8.039 ac, 2.33% Impervious, Inflow Depth = 0.51" for 2 YR event
Inflow = 1.85 cfs @ 12.66 hrs, Volume= 0.344 af
Outflow = 1.85 cfs @ 12.66 hrs, Volume= 0.344 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Onsite to wetland Runoff Area=350,195 sf 2.33% Impervious Runoff Depth=1.33"
Flow Length=770' Tc=37.6 min AMC Adjusted CN=64 Runoff=5.86 cfs 0.889 af

Reach POI1: POI 1 Inflow=5.86 cfs 0.889 af
Outflow=5.86 cfs 0.889 af

Total Runoff Area = 8.039 ac Runoff Volume = 0.889 af Average Runoff Depth = 1.33"
97.67% Pervious = 7.852 ac 2.33% Impervious = 0.188 ac

Summary for Subcatchment 1S: Onsite to wetland

Runoff = 5.86 cfs @ 12.58 hrs, Volume= 0.889 af, Depth= 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.60", AMC=3

	Area (sf)	CN	Adj	Description
*	8,170	98		Impervious
	50,140	70		Woods, Good, HSG C
	236,870	30		Woods, Good, HSG A
	40,185	77		Woods, Good, HSG D
	14,830	55		Woods, Good, HSG B
	350,195	44	64	Weighted Average, AMC Adjusted
	342,025			97.67% Pervious Area
	8,170			2.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.5	150	0.0233	0.09		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.30"
10.1	620	0.0420	1.02		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
37.6	770	Total			

Summary for Reach POI1: POI 1

Inflow Area = 8.039 ac, 2.33% Impervious, Inflow Depth = 1.33" for 10 YR event
Inflow = 5.86 cfs @ 12.58 hrs, Volume= 0.889 af
Outflow = 5.86 cfs @ 12.58 hrs, Volume= 0.889 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Onsite to wetland Runoff Area=350,195 sf 2.33% Impervious Runoff Depth=2.12"
Flow Length=770' Tc=37.6 min AMC Adjusted CN=64 Runoff=9.80 cfs 1.422 af

Reach POI1: POI 1 Inflow=9.80 cfs 1.422 af
Outflow=9.80 cfs 1.422 af

Total Runoff Area = 8.039 ac Runoff Volume = 1.422 af Average Runoff Depth = 2.12"
97.67% Pervious = 7.852 ac 2.33% Impervious = 0.188 ac

Summary for Subcatchment 1S: Onsite to wetland

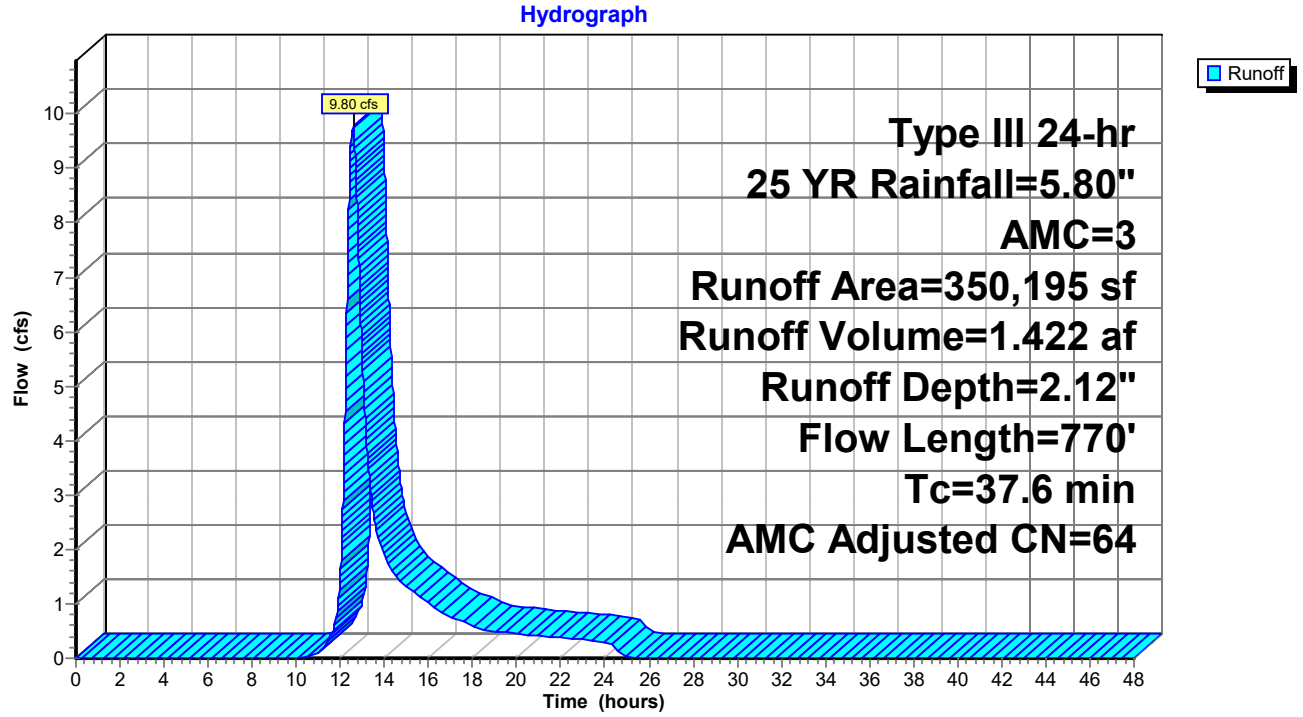
Runoff = 9.80 cfs @ 12.57 hrs, Volume= 1.422 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 YR Rainfall=5.80", AMC=3

	Area (sf)	CN	Adj	Description
*	8,170	98		Impervious
	50,140	70		Woods, Good, HSG C
	236,870	30		Woods, Good, HSG A
	40,185	77		Woods, Good, HSG D
	14,830	55		Woods, Good, HSG B
	350,195	44	64	Weighted Average, AMC Adjusted
	342,025			97.67% Pervious Area
	8,170			2.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.5	150	0.0233	0.09		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.30"
10.1	620	0.0420	1.02		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
37.6	770	Total			

Subcatchment 1S: Onsite to wetland

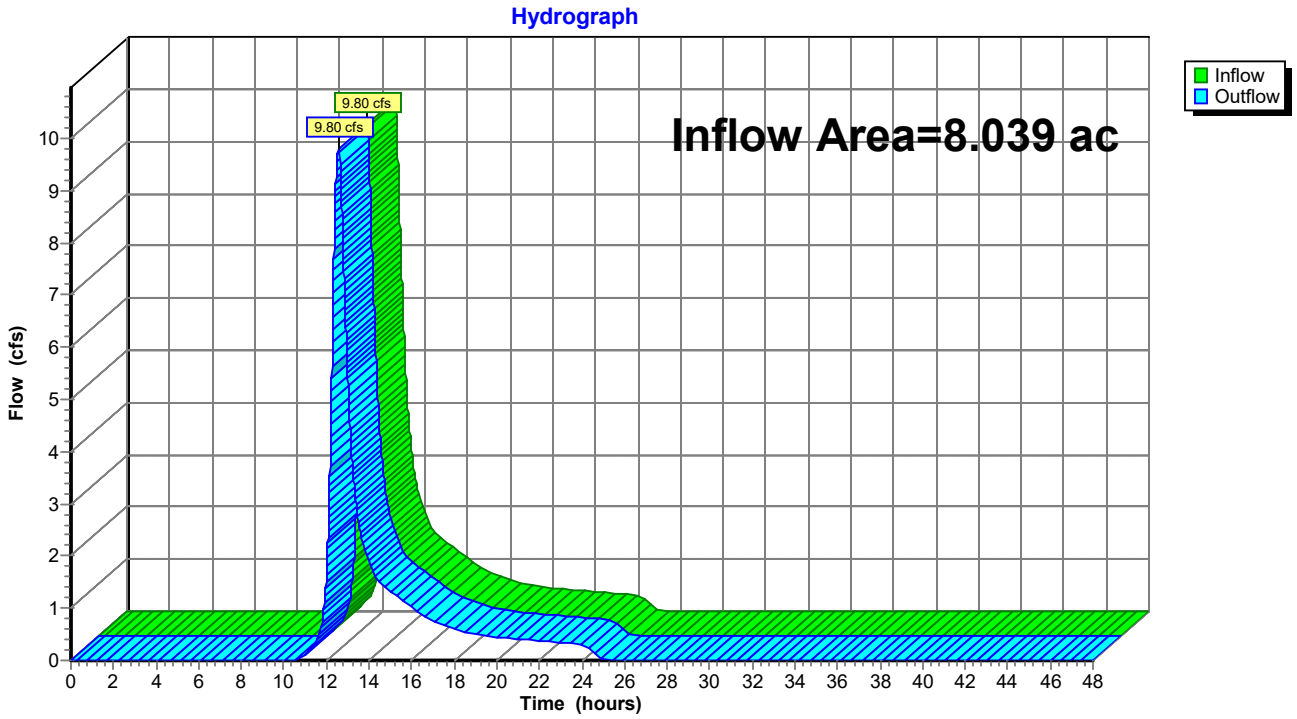


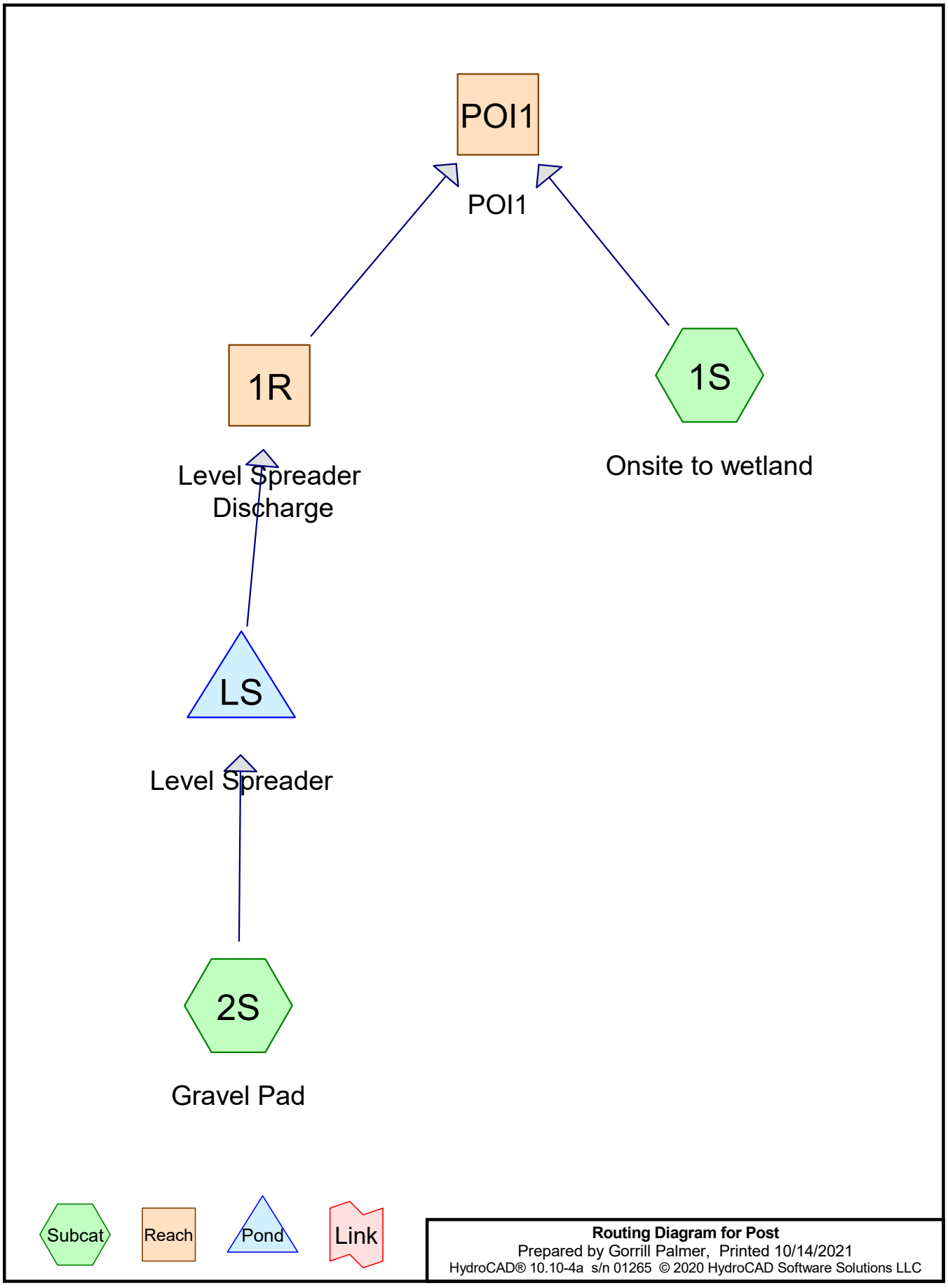
Summary for Reach POI1: POI 1

Inflow Area = 8.039 ac, 2.33% Impervious, Inflow Depth = 2.12" for 25 YR event
Inflow = 9.80 cfs @ 12.57 hrs, Volume= 1.422 af
Outflow = 9.80 cfs @ 12.57 hrs, Volume= 1.422 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach POI1: POI 1





Routing Diagram for Post
Prepared by Gorrill Palmer, Printed 10/14/2021

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Onsite to wetland Runoff Area=322,560 sf 2.53% Impervious Runoff Depth=0.40"
Flow Length=770' Tc=37.6 min AMC Adjusted CN=61 Runoff=1.17 cfs 0.249 af

Subcatchment 2S: Gravel Pad Runoff Area=32,344 sf 100.00% Impervious Runoff Depth=2.98"
Tc=6.0 min AMC Adjusted CN=99 Runoff=2.26 cfs 0.185 af

Reach 1R: Level Spreader Discharge Avg. Flow Depth=0.17' Max Vel=0.27 fps Inflow=2.23 cfs 0.181 af
n=0.400 L=265.0' S=0.0566 '/' Capacity=8.47 cfs Outflow=1.43 cfs 0.181 af

Reach POI1: POI1 Inflow=1.81 cfs 0.430 af
Outflow=1.81 cfs 0.430 af

Pond LS: Level Spreader Peak Elev=113.93' Storage=185 cf Inflow=2.26 cfs 0.185 af
Outflow=2.23 cfs 0.181 af

Total Runoff Area = 8.147 ac Runoff Volume = 0.434 af Average Runoff Depth = 0.64"
88.58% Pervious = 7.217 ac 11.42% Impervious = 0.930 ac

Summary for Subcatchment 1S: Onsite to wetland

Runoff = 1.17 cfs @ 12.69 hrs, Volume= 0.249 af, Depth= 0.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.10", AMC=3

	Area (sf)	CN	Adj	Description
*	8,170	98		Impervious
	50,140	70		Woods, Good, HSG C
	234,025	30		Woods, Good, HSG A
	15,395	77		Woods, Good, HSG D
	14,830	55		Woods, Good, HSG B
	322,560	41	61	Weighted Average, AMC Adjusted
	314,390			97.47% Pervious Area
	8,170			2.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.5	150	0.0233	0.09		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.30"
10.1	620	0.0420	1.02		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
37.6	770	Total			

Summary for Subcatchment 2S: Gravel Pad

Runoff = 2.26 cfs @ 12.08 hrs, Volume= 0.185 af, Depth= 2.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.10", AMC=3

	Area (sf)	CN	Adj	Description
*	32,344	98		Gravel Pad
	32,344	98	99	Weighted Average, AMC Adjusted
	32,344			100.00% Impervious Area

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

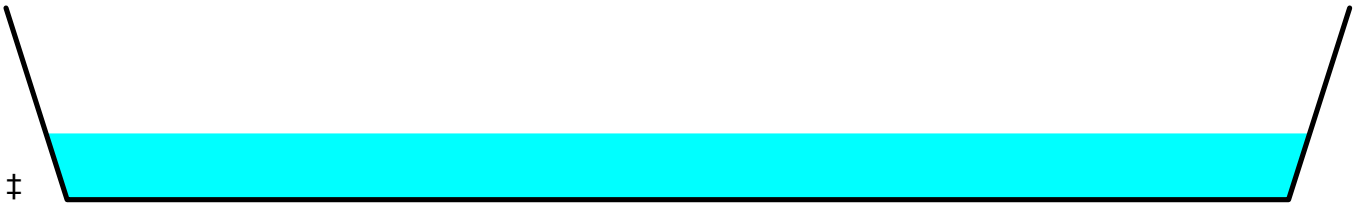
Summary for Reach 1R: Level Spreader Discharge

Inflow Area = 0.743 ac,100.00% Impervious, Inflow Depth = 2.93" for 2 YR event
Inflow = 2.23 cfs @ 12.08 hrs, Volume= 0.181 af
Outflow = 1.43 cfs @ 12.18 hrs, Volume= 0.181 af, Atten= 36%, Lag= 5.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.27 fps, Min. Travel Time= 16.3 min
Avg. Velocity = 0.05 fps, Avg. Travel Time= 84.6 min

Peak Storage= 1,398 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.17' , Surface Width= 31.04'
Bank-Full Depth= 0.50' Flow Area= 15.8 sf, Capacity= 8.47 cfs

30.00' x 0.50' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 3.0 '/' Top Width= 33.00'
Length= 265.0' Slope= 0.0566 '/'
Inlet Invert= 113.75', Outlet Invert= 98.75'



Summary for Reach POI1: POI1

Inflow Area = 8.147 ac, 11.42% Impervious, Inflow Depth = 0.63" for 2 YR event
Inflow = 1.81 cfs @ 12.54 hrs, Volume= 0.430 af
Outflow = 1.81 cfs @ 12.54 hrs, Volume= 0.430 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Pond LS: Level Spreader

Inflow Area = 0.743 ac,100.00% Impervious, Inflow Depth = 2.98" for 2 YR event
Inflow = 2.26 cfs @ 12.08 hrs, Volume= 0.185 af
Outflow = 2.23 cfs @ 12.08 hrs, Volume= 0.181 af, Atten= 1%, Lag= 0.1 min
Primary = 2.23 cfs @ 12.08 hrs, Volume= 0.181 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 113.93' @ 12.13 hrs Surf.Area= 261 sf Storage= 185 cf

Plug-Flow detention time= 23.1 min calculated for 0.181 af (98% of inflow)
Center-of-Mass det. time= 11.5 min (756.0 - 744.5)

Volume	Invert	Avail.Storage	Storage Description
#1	112.75'	283 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
112.75	45	0	0
113.00	105	19	19
113.75	220	122	141
114.00	275	62	203
114.25	365	80	283

Device	Routing	Invert	Outlet Devices
#1	Primary	113.75'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=2.10 cfs @ 12.08 hrs HW=113.93' TW=113.90' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 2.10 cfs @ 0.59 fps)

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Onsite to wetland Runoff Area=322,560 sf 2.53% Impervious Runoff Depth=1.14"
Flow Length=770' Tc=37.6 min AMC Adjusted CN=61 Runoff=4.42 cfs 0.701 af

Subcatchment 2S: Gravel Pad Runoff Area=32,344 sf 100.00% Impervious Runoff Depth=4.48"
Tc=6.0 min AMC Adjusted CN=99 Runoff=3.36 cfs 0.277 af

Reach 1R: Level Spreader Discharge Avg. Flow Depth=0.23' Max Vel=0.32 fps Inflow=3.32 cfs 0.274 af
n=0.400 L=265.0' S=0.0566 '/' Capacity=8.47 cfs Outflow=2.27 cfs 0.274 af

Reach POI1: POI1 Inflow=5.47 cfs 0.975 af
Outflow=5.47 cfs 0.975 af

Pond LS: Level Spreader Peak Elev=113.99' Storage=201 cf Inflow=3.36 cfs 0.277 af
Outflow=3.32 cfs 0.274 af

Total Runoff Area = 8.147 ac Runoff Volume = 0.978 af Average Runoff Depth = 1.44"
88.58% Pervious = 7.217 ac 11.42% Impervious = 0.930 ac

Summary for Subcatchment 1S: Onsite to wetland

Runoff = 4.42 cfs @ 12.58 hrs, Volume= 0.701 af, Depth= 1.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.60", AMC=3

	Area (sf)	CN	Adj	Description
*	8,170	98		Impervious
	50,140	70		Woods, Good, HSG C
	234,025	30		Woods, Good, HSG A
	15,395	77		Woods, Good, HSG D
	14,830	55		Woods, Good, HSG B
	322,560	41	61	Weighted Average, AMC Adjusted
	314,390			97.47% Pervious Area
	8,170			2.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.5	150	0.0233	0.09		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.30"
10.1	620	0.0420	1.02		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
37.6	770	Total			

Summary for Subcatchment 2S: Gravel Pad

Runoff = 3.36 cfs @ 12.08 hrs, Volume= 0.277 af, Depth= 4.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.60", AMC=3

	Area (sf)	CN	Adj	Description
*	32,344	98		Gravel Pad
	32,344	98	99	Weighted Average, AMC Adjusted
	32,344			100.00% Impervious Area

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

Summary for Reach 1R: Level Spreader Discharge

Inflow Area = 0.743 ac,100.00% Impervious, Inflow Depth = 4.43" for 10 YR event
Inflow = 3.32 cfs @ 12.08 hrs, Volume= 0.274 af
Outflow = 2.27 cfs @ 12.17 hrs, Volume= 0.274 af, Atten= 32%, Lag= 5.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.32 fps, Min. Travel Time= 13.6 min
Avg. Velocity = 0.06 fps, Avg. Travel Time= 75.1 min

Peak Storage= 1,855 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.23' , Surface Width= 31.37'
Bank-Full Depth= 0.50' Flow Area= 15.8 sf, Capacity= 8.47 cfs

30.00' x 0.50' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 3.0 '/' Top Width= 33.00'
Length= 265.0' Slope= 0.0566 '/'
Inlet Invert= 113.75', Outlet Invert= 98.75'

‡

Summary for Reach POI1: POI1

Inflow Area = 8.147 ac, 11.42% Impervious, Inflow Depth = 1.44" for 10 YR event
Inflow = 5.47 cfs @ 12.53 hrs, Volume= 0.975 af
Outflow = 5.47 cfs @ 12.53 hrs, Volume= 0.975 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Pond LS: Level Spreader

Inflow Area = 0.743 ac,100.00% Impervious, Inflow Depth = 4.48" for 10 YR event
Inflow = 3.36 cfs @ 12.08 hrs, Volume= 0.277 af
Outflow = 3.32 cfs @ 12.08 hrs, Volume= 0.274 af, Atten= 1%, Lag= 0.1 min
Primary = 3.32 cfs @ 12.08 hrs, Volume= 0.274 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 113.99' @ 12.13 hrs Surf.Area= 274 sf Storage= 201 cf

Plug-Flow detention time= 16.2 min calculated for 0.274 af (99% of inflow)
Center-of-Mass det. time= 8.4 min (747.8 - 739.4)

Volume	Invert	Avail.Storage	Storage Description
#1	112.75'	283 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
112.75	45	0	0
113.00	105	19	19
113.75	220	122	141
114.00	275	62	203
114.25	365	80	283

Device	Routing	Invert	Outlet Devices
#1	Primary	113.75'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=3.11 cfs @ 12.08 hrs HW=113.98' TW=113.95' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 3.11 cfs @ 0.66 fps)

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Onsite to wetland Runoff Area=322,560 sf 2.53% Impervious Runoff Depth=1.87"
Flow Length=770' Tc=37.6 min AMC Adjusted CN=61 Runoff=7.80 cfs 1.156 af

Subcatchment 2S: Gravel Pad Runoff Area=32,344 sf 100.00% Impervious Runoff Depth=5.68"
Tc=6.0 min AMC Adjusted CN=99 Runoff=4.23 cfs 0.351 af

Reach 1R: Level Spreader Discharge Avg. Flow Depth=0.27' Max Vel=0.36 fps Inflow=4.19 cfs 0.348 af
n=0.400 L=265.0' S=0.0566 '/' Capacity=8.47 cfs Outflow=2.97 cfs 0.348 af

Reach POI1: POI1 Inflow=9.15 cfs 1.504 af
Outflow=9.15 cfs 1.504 af

Pond LS: Level Spreader Peak Elev=114.04' Storage=213 cf Inflow=4.23 cfs 0.351 af
Outflow=4.19 cfs 0.348 af

Total Runoff Area = 8.147 ac Runoff Volume = 1.507 af Average Runoff Depth = 2.22"
88.58% Pervious = 7.217 ac 11.42% Impervious = 0.930 ac

Summary for Subcatchment 1S: Onsite to wetland

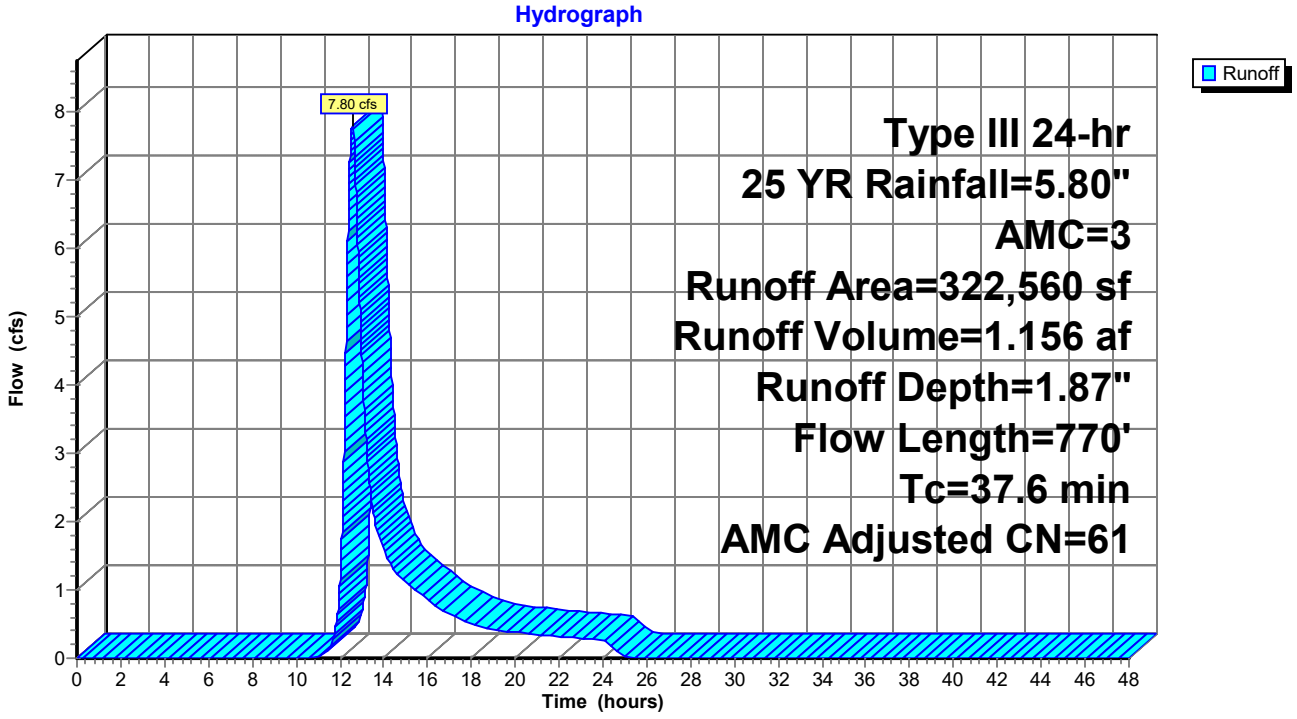
Runoff = 7.80 cfs @ 12.57 hrs, Volume= 1.156 af, Depth= 1.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 YR Rainfall=5.80", AMC=3

	Area (sf)	CN	Adj	Description
*	8,170	98		Impervious
	50,140	70		Woods, Good, HSG C
	234,025	30		Woods, Good, HSG A
	15,395	77		Woods, Good, HSG D
	14,830	55		Woods, Good, HSG B
	322,560	41	61	Weighted Average, AMC Adjusted
	314,390			97.47% Pervious Area
	8,170			2.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.5	150	0.0233	0.09		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.30"
10.1	620	0.0420	1.02		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
37.6	770	Total			

Subcatchment 1S: Onsite to wetland



Summary for Subcatchment 2S: Gravel Pad

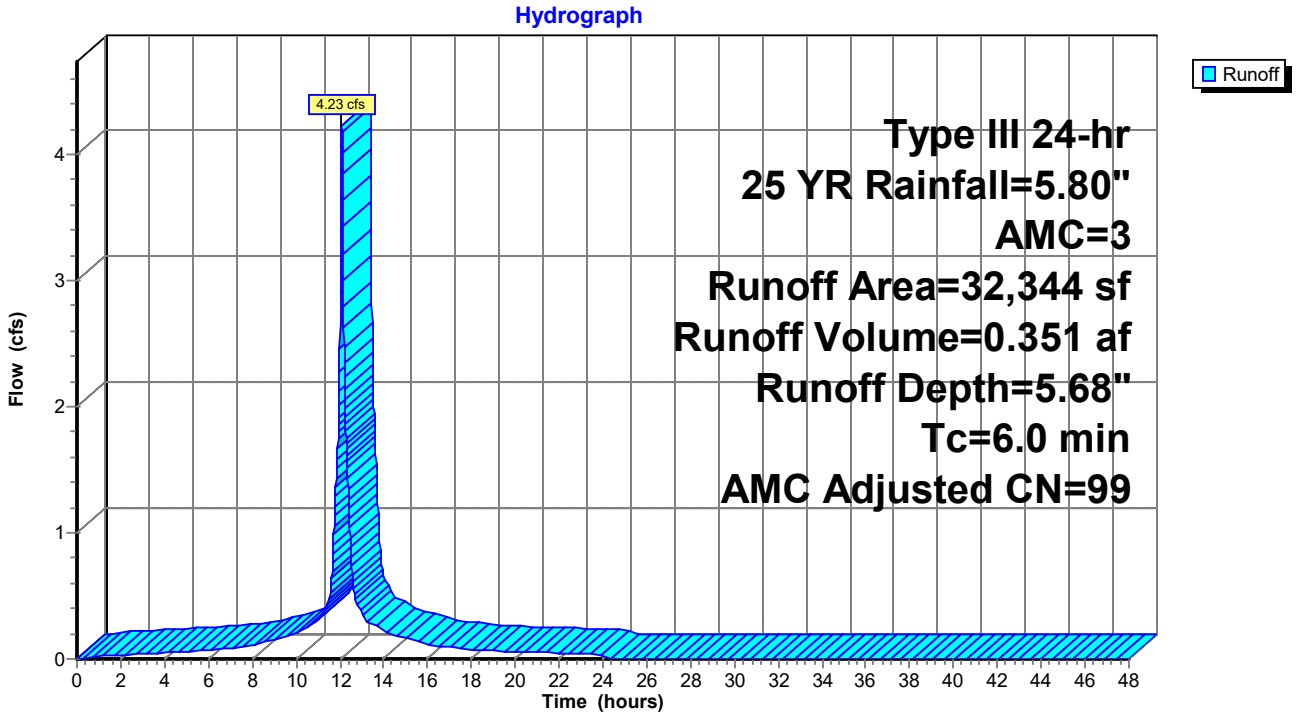
Runoff = 4.23 cfs @ 12.08 hrs, Volume= 0.351 af, Depth= 5.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 YR Rainfall=5.80", AMC=3

	Area (sf)	CN	Adj	Description
*	32,344	98		Gravel Pad
	32,344	98	99	Weighted Average, AMC Adjusted
	32,344			100.00% Impervious Area

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

Subcatchment 2S: Gravel Pad



Summary for Reach 1R: Level Spreader Discharge

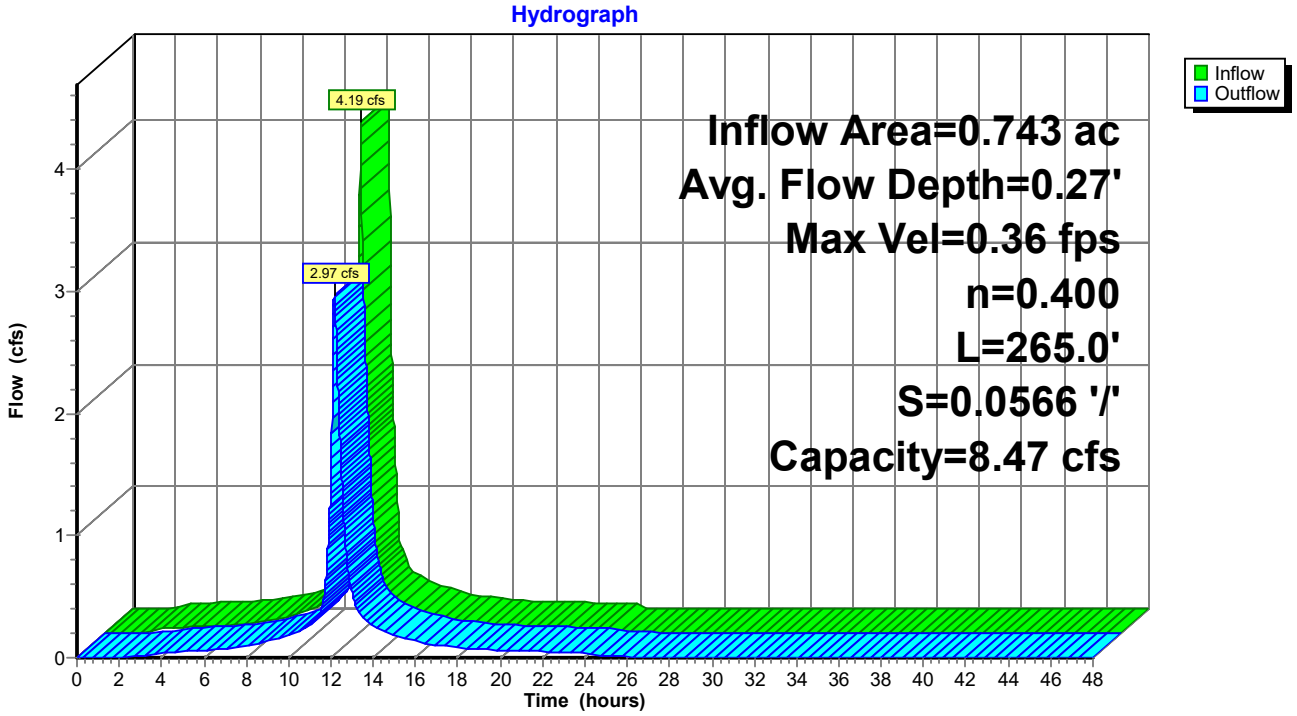
Inflow Area = 0.743 ac,100.00% Impervious, Inflow Depth = 5.63" for 25 YR event
Inflow = 4.19 cfs @ 12.08 hrs, Volume= 0.348 af
Outflow = 2.97 cfs @ 12.16 hrs, Volume= 0.348 af, Atten= 29%, Lag= 4.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.36 fps, Min. Travel Time= 12.3 min
Avg. Velocity = 0.06 fps, Avg. Travel Time= 69.9 min

Peak Storage= 2,186 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.27' , Surface Width= 31.61'
Bank-Full Depth= 0.50' Flow Area= 15.8 sf, Capacity= 8.47 cfs

30.00' x 0.50' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 3.0 '/' Top Width= 33.00'
Length= 265.0' Slope= 0.0566 '/'
Inlet Invert= 113.75', Outlet Invert= 98.75'

Reach 1R: Level Spreader Discharge

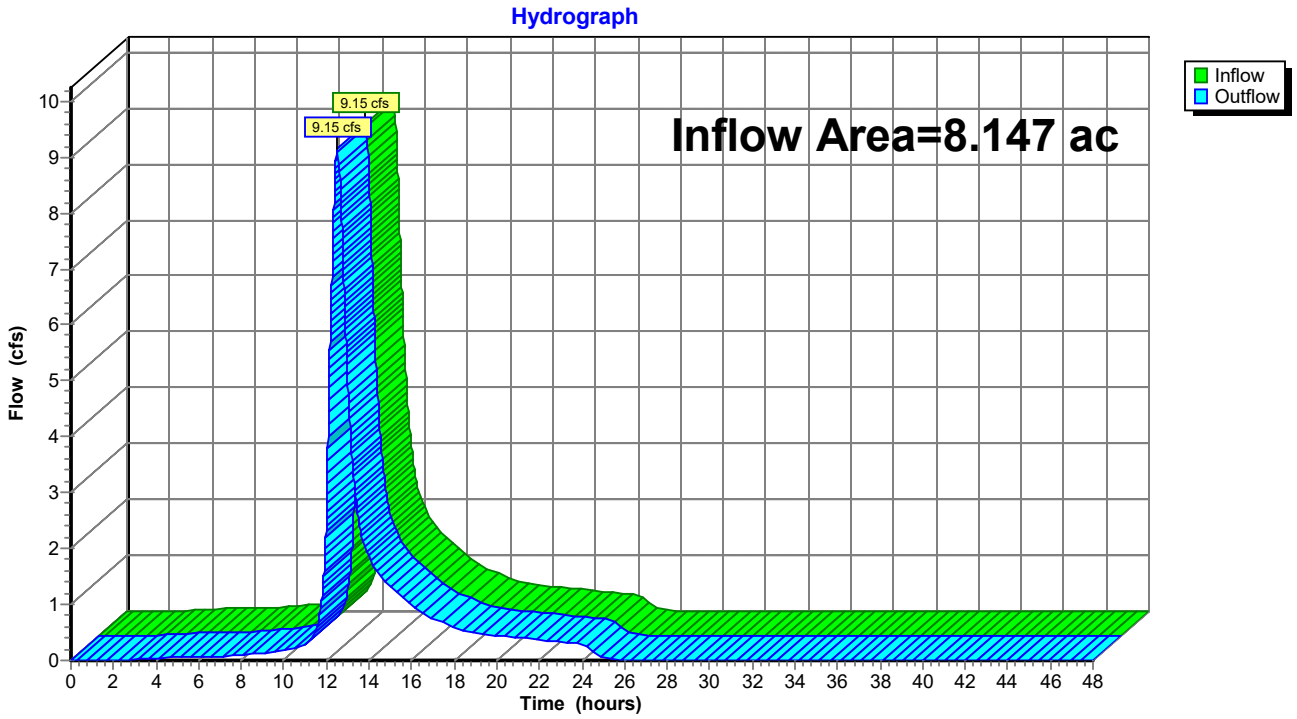


Summary for Reach POI1: POI1

Inflow Area = 8.147 ac, 11.42% Impervious, Inflow Depth = 2.22" for 25 YR event
Inflow = 9.15 cfs @ 12.50 hrs, Volume= 1.504 af
Outflow = 9.15 cfs @ 12.50 hrs, Volume= 1.504 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach POI1: POI1



Summary for Pond LS: Level Spreader

Inflow Area = 0.743 ac,100.00% Impervious, Inflow Depth = 5.68" for 25 YR event
Inflow = 4.23 cfs @ 12.08 hrs, Volume= 0.351 af
Outflow = 4.19 cfs @ 12.08 hrs, Volume= 0.348 af, Atten= 1%, Lag= 0.1 min
Primary = 4.19 cfs @ 12.08 hrs, Volume= 0.348 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 114.04' @ 12.13 hrs Surf.Area= 288 sf Storage= 213 cf

Plug-Flow detention time= 13.1 min calculated for 0.348 af (99% of inflow)
Center-of-Mass det. time= 6.9 min (743.9 - 737.0)

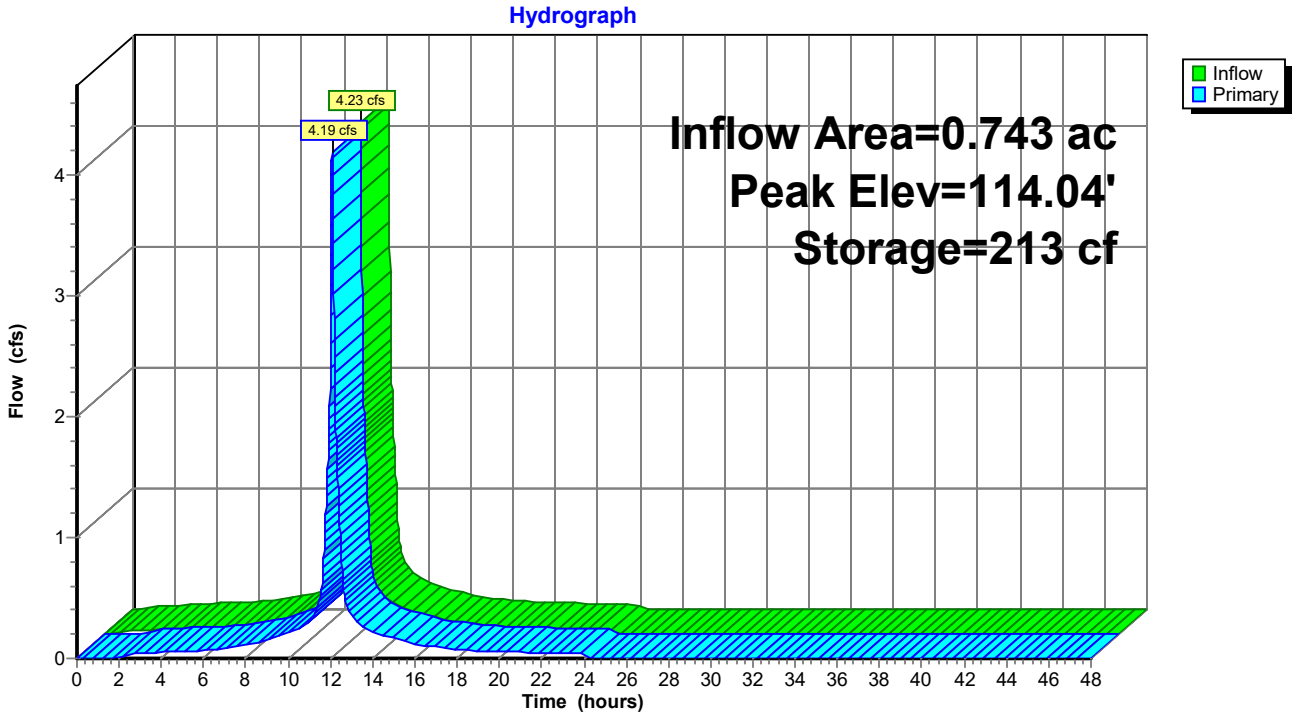
Volume	Invert	Avail.Storage	Storage Description
#1	112.75'	283 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
112.75	45	0	0
113.00	105	19	19
113.75	220	122	141
114.00	275	62	203
114.25	365	80	283

Device	Routing	Invert	Outlet Devices
#1	Primary	113.75'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=3.90 cfs @ 12.08 hrs HW=114.02' TW=113.99' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 3.90 cfs @ 0.71 fps)

Pond LS: Level Spreader



From: Dan Diffin
To: Doug Reynolds; Carla Nixon; Christina Silberman
Subject: Re: Gravel Pad Review
Date: Monday, October 18, 2021 8:40:37 AM
Attachments: image002.png
image003.png
image004.png
image005.png

Thank you, Doug.

Carla and Christina, this satisfies my outstanding comments on this project.

Thanks,

Dan

Get Outlook for iOS

From: Doug Reynolds <dreynolds@gorrillpalmer.com>
Sent: Monday, October 18, 2021 8:08:20 AM
To: Dan Diffin <dpd@smemaine.com>; Carla Nixon <cnixon@cumberlandmaine.com>; Christina Silberman <csilberman@cumberlandmaine.com>
Subject: RE: Gravel Pad Review

Dan,

Based upon your comments, we reduced the size of the pad, such that we do not disturb more than an acre

I have responded to the remainder of your comments in the attached.

Let me know if you have any questions

Thanks

From: Dan Diffin <dpd@smemaine.com>
Sent: Wednesday, October 13, 2021 5:13 PM
To: Carla Nixon <cnixon@cumberlandmaine.com>; Christina Silberman <csilberman@cumberlandmaine.com>
Cc: Doug Reynolds <dreynolds@gorrillpalmer.com>
Subject: RE: Gravel Pad Review

Hi Carla,

Please find attached SME's peer review of the Town's Gravel Pad Storage Area off Greely Road in Cumberland.

I spoke with Doug about some of these comments already, and have copied him here.

Please don't hesitate to call or reply with any questions.

Thanks,

Dan

Daniel P. Diffin, P.E., LEED AP BD+C
Vice President/Senior Civil Engineer

Sevee & Maher Engineers, Inc.
4 Blanchard Road, P.O. Box 85A
Cumberland, ME 04021
Office: 207.829.5016
Cell: 207.240.3315
Fax: 207.829.5692

From: Carla Nixon <cnixon@cumberlandmaine.com>
Sent: Wednesday, October 13, 2021 3:45 PM
To: Christina Silberman <csilberman@cumberlandmaine.com>
Cc: 'Doug Reynolds (DReynolds@gorrillpalmer.com)' <DReynolds@gorrillpalmer.com>; Dan Diffin <dpd@smemaine.com>
Subject: Gravel Pad Review

Please upload the file. Dan Diffin will be sending a review document to us. When it arrives, please upload it.
Thank you.
Carla

Carla Nixon
Director of Planning, Town of Cumberland
207-829-2206
www.cumberlandmaine.com
290 Tuttle Road, Cumberland, Maine 04021

Total Control Panel Login

To: csilberman@cumberlandmaine.com Remove this sender from my allow list

From: dpd@smemaine.com

You received this message because the sender is on your allow list.

Relationships.
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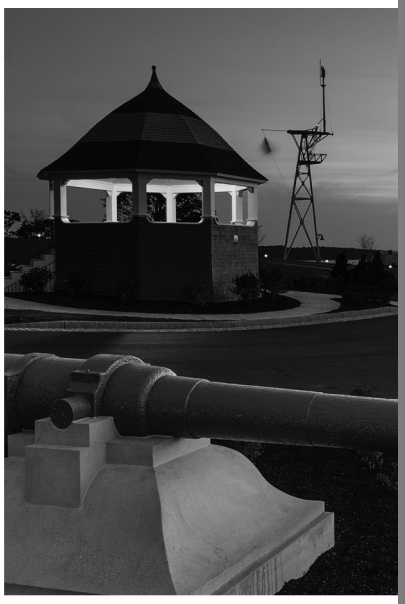


Town of Cumberland Gravel Pad Storage Area

Site Plan Review Application

Cumberland, Maine

PREPARED FOR:
Town of Cumberland
290 Tuttle Road
Cumberland, ME 04021

September 2021

SUBMITTED BY:
Gorrill Palmer
707 Sable Oaks Drive
Suite 30
So. Portland, ME 04106
207.772.2515

GORRILL PALMER

707 Sable Oaks Drive | Suite 30
South Portland, Maine 04106
207.772.2515

September 28, 2021

Ms. Carla Nixon
Town Planner
Town of Cumberland
290 Tuttle Road
Cumberland, ME 04021

Subject: **Site Plan Review for Gravel Storage Pad**
Tax Map R04/Lot 42

Dear Carla,

The Town of Cumberland has retained **Gorrill Palmer (GP)** to prepare plans and permit applications for a Site Plan Review submission for the construction of a Gravel storage area on the Yarmouth Water District parcel off Greely Road in Cumberland (Tax Map R04, Lot 42). Section 229-2.B.1 of the Town of Cumberland Ordinances states that the construction of impervious areas over 3,000 square feet is subject to Planning Board site plan review. The project results in less than 1 acre of total disturbed area on the site. Figure 1 attached to this letter is a location map depicting the project site.

Site Description and Proposed Use

The Yarmouth Water District owned parcel is approximately 8.3± acres in size and is located partially the Medium Density Residential (MDR) Zone and partially in the Rural Residential 1 (RR1) Zone. The project site is located entirely within the RR1 Zone. The entrance to the gravel pad is the only portion of the proposed development within the Val Halla Golf and Recreation Center Overlay District.

The project site is located off Greely Road approximately 800 feet east of the Doughty Road intersection. The site for the gravel pad is located along the eastern property line of the Yarmouth Water District parcel and is currently undeveloped. Two pump houses and a paved access drive exist on the parcel. Access to the site will be provided through the Val Halla Golf course dry storage yard. Access to Greely Road will be through the existing 12' wide gravel access path for the Val Halla storage yard. Figure 2 attached to this letter includes photos from a site visit dated 8-17-2021.

The Town of Cumberland has entered into a Ground Lease with the Yarmouth Water District. The Town of Cumberland is the applicant, and the Yarmouth Water District will remain the Owner of the property. The proposed gravel pad is approximately 43,475 sf in area and will be used for storage of potentially plows, sanders, concrete supplies (manholes) pipe and other public works and golf course type materials and no hazardous materials or fluids. Since the construction will result in the creation of greater than 3,000 square feet of impervious area, the project requires a Site Plan Review. The attachments to this letter contain the required information for a Site Plan Review.

Conclusion

As required by the Town Ordinance, GP on behalf of the Town of Cumberland has submitted this application package for Site Plan Review. The project team looks forward to the Planning Staff and Board's review of this project.

Sincerely,

Gorrill Palmer

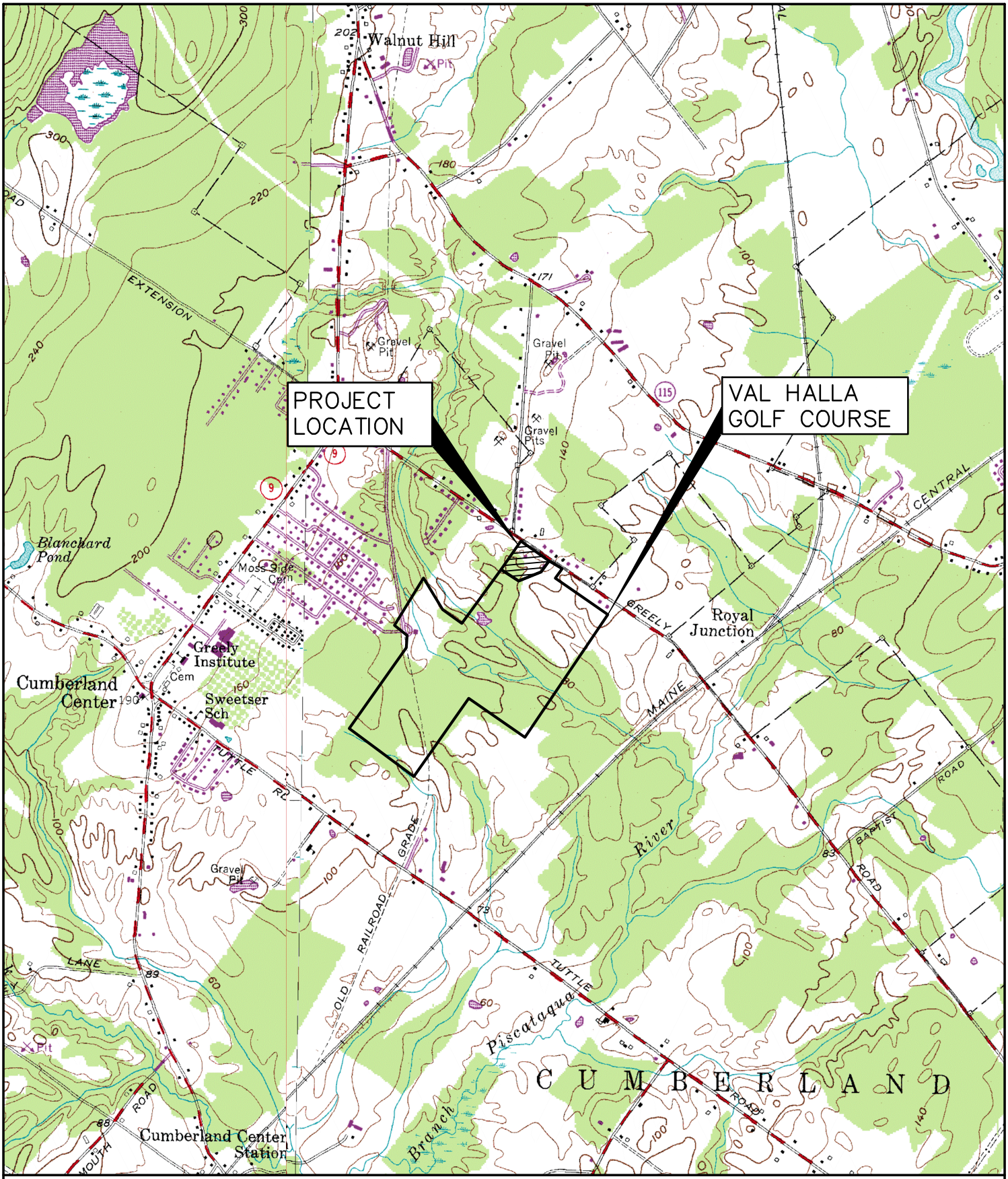
Douglas Reynolds, PE
Project Manager

Copy: William Shane, PE – Town Manager

Attachments:
A – USGS Location Map (Figure 1)
B – Site Photos from 8-17-2021 (Figure 2)

u:\3656.06_cumberland storage site plan\p applications\local\site plan review - adjacent pad\0_cover letter.doc

Attachment A
Figure 1 – USGS Project Location Map



U.S.G.S. Location Map

Greely Road - Cumberland, Maine

U.S.G.S. Cumberland Center & Yarmouth, State-7.5 Minute Series (Topographic)

Design: AJK	Date: AUG. 2021	GORRILL PALMER	Figure 1
Draft: CEH	Job No.: 3656.06		
Checked: DER	Scale: None		
File Name: 3656-06-LOC.dwg			

Relationships. Responsiveness. Results.
www.gorrillpalmer.com
207.772.2515

Attachment B
Figure 2 – 8-17-2021 Site Photos

Photo 1 – Approximate location of proposed gravel pad location as viewed from the adjacent pump house.

Photo 2 – Approximate location of level spreader outfall.

SECTION I
Completed Site Plan Application

SITE PLAN REVIEW
Town of Cumberland

Appendix C
Planning Board Site Plan Review Application

Applicant's name Town of Cumberland

Applicant's address 290 Tuttle Road, Cumberland ME 04021

Cell phone _____ Home phone _____ Office phone (207) 829-5559

Email Address _____

Project address 262 Greely RD

Project name Gravel Pad Expansion

Describe project Construction of a gravel storage yard, accessed via Val Halla storage yard on Greely Road.

Number of employees N/A

Days and hours of operation N/A

Project review and notice fee Review fee: $500; Notice fee: $150 - N/A

Name of representative Douglas Reynolds, PE - Project Manager; Gorrill Palmer

Contact information: Cell: (207) 329-5584 Office: (207) 772-2515

What is the applicant's interest in the property?

Own_____Lease__x__Purchase and sale agreement_____(provide copy of document)
If you are not the owner, list owner's name, address and phone number _____
Yarmouth Water District, 181 Sligo Road, Yarmouth ME 04096, 207-846-5821

If you are not the owner, list owner's name, address and phone number _____

Boundary Survey
Submitted? Yes __x__ No _____ Partial

Are there any deed restrictions or easements? Yes __x__ No_____If yes, provide information and show easement location on site plan.

Building Information
Are there existing buildings on the site? Yes __x__ No_____Number: __2__
Will they be removed? Yes _____ No__x__(Note: A demolition permit is required 10 days prior to demolition.)

Will a new structure(s) be built on the site? Yes _____ No __x__
Describe: N/A
Number of new buildings __0__
Square footage __N/A__
Number of floor levels including basement N/A

Parking
Number of existing parking spaces N/A
Number of new parking spaces 0
Number of handicapped spaces 0
Will parking area be paved? ____Yes ___No

Entrance
Location: N/A
Width_____Length _____
Is it paved?_____Yes__x___No__x___If not, do you plan to pave it?

Where will snow storage for entrance and parking be located? Show on site plan.

Utilities

Water: Public water N/A Well_____(Show location on site plan.)

Sewer/septic: Public sewer N/A Private septic_____Show location on site plan and submit HHE-200 septic design or location of passing test pit locations if new system is proposed. Also show any wells on abutting properties within 200 feet of the site.

Electric: On site? Yes x No _____
Show location of existing and proposed utilities on the site plan and indicate if they are above or below ground.

Signs
Number: 0
Size: N/A
Material: N/A
Submit sign design and completed sign application.
Will the sign be lighted? No Submit information on type and wattage of lights.
Show location of sign(s) on the site plan.

Natural Features
Show location of any of the following on the site plan:
River_____Stream_____Wetland __x__ Pond _____ Lake _____ Stone walls _____
Are there any other historic or natural features? No

Lighting
Will there be any exterior lights? Yes _____ No__x___Show location on site plan (e.g., pole fixtures, wall packs on building) and provide fixture and lumen information.

Trees
Show location of existing trees on the site plan and indicate if any are to be removed.

Landscaping
Is there existing landscaping on the site? Yes _____ No__x___Show type and location on site plan.

Is new landscaping proposed? (Note: if property has frontage on Route 100, a twenty-five-foot landscape easement to the Town is required.) No

Buffering
Show any existing or proposed buffering measures for adjacent properties, e.g., plantings, fences. A 50 foot buffer will be maintained between the storage yard and Greely Road.

Erosion Control
Has an erosion and sedimentation control plan been submitted? Yes __x__ No _____

Stormwater Management Plan
Provide stormwater information for both pre and post development of the site. Show location of any detention areas and/or culverts on the site plan.

Fire Protection
Location of nearest hydrant 450' Sprinklers? Yes _____ No __x__
Do you plan to have an alarm system? Yes_____No__x__Please contact the Fire/EMS Department at 829-4573 to discuss any Town or state requirements.

Trash
Will trash be stored inside N/A outside_____. If outside, will a dumpster be used? Yes_____No__x__. Show location on site plan and show type of screening proposed (e.g., fencing, plantings).

Technical Capacity
List and provide contact information for all consultants who worked on the project, for example: licensed land surveyor, licensed soils evaluator, professional engineer, attorney, etc.
_____x_____

Financial Capacity
Please indicate how project will be financed. If obtaining a bank loan, provide a letter from the bank ____x_____

- Zoning district: RR1/MDR
- Minimum lot size: 4 acres/2 acres
- Classification of proposed use: Municipal Use
- Parcel size: 8.3 acres
- Frontage: 763'
- Setbacks: Front >50' Side >30' Rear >75'
- Board of Appeals Required? No
- Tax Map R04 Lot 42 Deed book 28897 Deed page 0253
- Floodplain map number 230162 0015 B Designation Zone C
- Vernal pool identified? No
- Is parcel in a subdivision? No
- Outside agency permits required:
  MDEP Tier 1 N/A MDEP Tier 2 _____ Army Corps of Engineers _____
  MDEP general construction (stormwater) permit (for disturbance of 1 acre or more)
- MDOT entrance permit No
- MDOT traffic movement permit No
- Traffic study required No
- Hydrogeologic evaluation No
- Market study No
- Route 1 Design Guidelines? N/A
- Route 100, VMU or TCD Design Standards? N/A

Applicant's signature _____

Submission date: _____

PLANNING BOARD SITE PLAN REVIEW
SUBMISSION CHECKLIST

FOR ALL PROJECTS:

Submission Requirement	**Provide Location in Application Packet (e.g., plan sheet number, binder section, narrative**	**If requesting a waiver, indicate below:**
Example: Erosion Control	*Plan Sheet E-1*	
General Information:		
Completed Site Plan Application Form	Section 1	
Names and addresses of all consultants	Section 2	
Narrative describing existing conditions and the proposed project	Section 3	
Evidence of right, title or interest (deed, option, etc.)	Section 4	
Names and Addresses of all property owners within 200 feet	Section 5	
Boundaries of all contiguous property under control of owner	Section 6	
Tax map and lot numbers	Section 6	
Area of the parcel	Section 1	
FEMA Floodplain designation & map #	Section 1	
Zoning classification	Section 1	
Evidence of technical and financial capability to carry out the project	Section 7	
Boundary survey	Plan Sheet 1	
List of waiver requests on separate sheet with reason for request.	Section 8	
Proposed solid waste disposal plan	N/A	
Existing Conditions Plan showing:		
Name, registration number and seal of person who prepared plan	Plan Sheet 1	
North arrow, date, scale, legend	Plan Sheet 1	
Area of the parcel	Plan Sheet 1	
Setbacks and building envelope	Plan Sheet 1	
Utilities, including sewer & water, culverts & drains, on-site sewage	Plan Sheet 1	
Location of any septic systems	N/A	
Location, names, widths of existing public or private streets ROW's	Plan Sheet 1	

Location, dimension of ground floor elevation of all existing buildings	N/A	
Location, dimension of existing driveways, parking, loading, walkways	Plan Sheet 1	
Location of intersecting roads & driveways within 200 feet of the site	Plan Sheet 1	
Wetland areas	Plan Sheet 1	
Natural and historic features such as water bodies, stands of trees, streams, graveyards, stonewalls, floodplains	N/A	
Direction of existing surface water drainage across the site & off site	Plan Sheet 1	
Location, front view, dimensions and lighting of existing signs	N/A	
Location and dimensions of existing easements & copies of documents	N/A	
Location of nearest fire hydrant or water supply for fire protection	Plan Sheet 1	
Proposed Development Site Plan showing:		
Name of development	Plan Sheet 2	
Date	Plan Sheet 2	
North arrow	Plan Sheet 2	
Scale	Plan Sheet 2	
Legend	Plan Sheet 2	
Landscape plan	N/A	
Stormwater management	Section 3	
Wetland delineation	Plan Sheet 2	
Current & proposed stands of trees	N/A	
Erosion control plan	Section 9	
Landscape plan	No proposed exterior lighting	N/A
Lighting/photometric plan	No proposed exterior lighting	N/A
Location and dimensions of all proposed buildings	N/A	
Location and size of utilities, including sewer, water, culverts and drains	Plan Sheet 2	
Location and dimension of proposed on-site septic system; test pit locations and nitrate plumes	N/A	
Location of wells on subject property and within 200' of the site	N/A	
Location, names and widths of existing and proposed streets and ROW's	Plan Sheet 2	

Location and dimensions of all accessways and loading and unloading facilities	Plan Sheet 2	
Location and dimension of all existing and proposed pedestrian ways	N/A	
Location, dimension and # of spaces of proposed parking areas, including handicapped spaces	N/A	
Total floor area and ground coverage of each proposed building and structure	N/A	
Proposed sign location and sign lighting	N/A	
Proposed lighting location and details	N/A	
Covenants and deed restrictions proposed	N/A	
Snow storage location	N/A	
Solid waste storage location and fencing/buffering	No Solid Waste	N/A
Location of all fire protection	N/A	
Location of all temporary & permanent monuments	N/A	
Street plans and profiles	N/A	

ADDITIONAL REQUIREMENTS FOR MAJOR SITE PLAN PROJECTS:

Submission Requirement	**Provide Location in Application Packet (e.g., plan sheet number, binder section, narrative**	**If requesting a waiver, indicate below:**
High intensity soils survey		Waiver Requested
Hydro geologic evaluation		Waiver Requested
Traffic Study		Waiver Requested
Market Study		Waiver Requested
Location of proposed recreation areas (parks, playgrounds, other public areas)		Waiver Requested
Location and type of outdoor furniture and features such as benches, fountains.		Waiver Requested

SECTION 2
List of Consultants

GORRILL PALMER

707 Sable Oaks Drive, Suite 30
South Portland, Maine 04106
207.772.2515

List of Consultants

Civil Engineer:

Name	Gorrill Palmer
Address	707 Sable Oaks Drive Suite 30 South Portland, ME 04106
Telephone	(207) 772-2515

Surveyor:

Name	Boundary Points Professional Land Surveying, LLC
Address	P.O. Box 175 Cumberland, ME 04021
Telephone	(207) 854-1015

SECTION 3
Project Narrative

GORRILL PALMER

707 Sable Oaks Drive, Suite 30
South Portland, Maine 04106
207.772.2515

PROJECT NARRATIVE

Gorrill Palmer has been retained by the Town of Cumberland to prepare a Site Plan Review Application for the construction of a gravel storage area located adjacent to the Val Halla storage yard off Greely Road on the parcel shown on the Town of Cumberland's Tax Map R04, Lot 42. The Town has executed a Lease Agreement with the Owner of the Parcel, Yarmouth Water District, to allow the construction of a gravel storage yard. The following narrative is provided in accordance with Section 229-10 of the Town Ordinance to meet the approval standards and criteria for Site Plan Review. Standards and criteria are stated as they appear in the ordinance and a description and/or response of how the ordinance is met is written in **bold** following the standard:

A. Utilization of the site. The plan for the development, including buildings, lots, and support facilities, must reflect the natural capabilities of the site to support development. Environmentally sensitive areas, including but not limited to wetlands, steep slopes, floodplains, significant wildlife habitats, fisheries, scenic areas, habitat for rare and endangered plants and animals, unique natural communities and natural areas, and sand and gravel aquifers, must be maintained and preserved to the maximum extent. The development must include appropriate measures for protecting these resources, including but not limited to modification of the proposed design of the site, timing of construction, and limiting the extent of excavation. **The Town is proposing to construct a gravel storage yard within land lease area on the Yarmouth Water District parcel as an expansion of the recently constructed storage area on the Val Halla Golf Course Property. No fuel or hazardous material storage is proposed as part of the development. Excavation will be limited to the greatest practical extent as shown on the plans.**

B. Traffic Circulation and Parking

(1) Traffic access and parking. Vehicular access to and from the development must be safe and convenient.

(a) Any driveway or proposed street must be designed so as to provide the minimum sight distance according to the Maine Department of Transportation standards, to the maximum extent possible. **No new driveways or streets are proposed for the development as access will be the provided through the Val Halla storage area.**

(b) Points of access and egress must be located to avoid hazardous conflicts with existing turning movements and traffic flows. **The site utilizes an existing gated point of access and egress off Greely Road and the development proposes no change in use for the existing site. Therefore, no impact is anticipated on traffic flows.**

(c) The grade of any proposed drive or street must be not more than +3% for a minimum of two car lengths, or 40 feet, from the intersection. **Grades at Greely Road will not be changed for this application.**

(d) The intersection of any access/egress drive or proposed street must function:

[1] At a Level of Service D, or better, following development if the project will generate 1,000 or more vehicle trips per twenty-four-hour period; or **N/A**

[2] At a level which will allow safe access into and out of the project if fewer than 1,000 trips are generated. **Addition traffic will continue to be limited, as the expanded use will storage for pipe and structures and other materials that would be used by pubic works, as needed.**

(e) Where a lot has frontage on two or more streets, the primary access to and egress from the lot must be provided from the street where there is less potential for traffic

congestion and for traffic and pedestrians hazards. Access from other streets may be allowed if it is safe and does not promote short cutting through the site. **N/A**

(f) Where it is necessary to safeguard against hazards to traffic and pedestrians and/or to avoid traffic congestion, the applicant shall be responsible for providing turning lanes, traffic directional islands, and traffic controls within public streets. **N/A**

(g) Accessways must be designed and have sufficient capacity to avoid queuing of entering vehicles on any public street. **N/A**

(h) The following criteria must be used to limit the number of driveways serving a proposed project:

[1] No use which generates fewer than 100 vehicle trips per day shall have more than one two-way driveway onto a single roadway. Such driveway must be no greater than 30 feet wide. **Existing driveway generates fewer than 100 vehicle trips per day with only one driveway onto a single roadway and is less than 30 feet wide.**

[2] No use which generates 100 or more vehicle trips per day shall have more than two points of entry from and two points of egress to a single roadway. The combined width of all accessways must not exceed 60 feet. **N/A**

(2) Accessway location and spacing. Accessways must meet the following standards:

(a) Private entrances/exits must be located at least 50 feet from the closest unsignalized intersection and 150 feet from the closest signalized intersection, as measured from the point of tangency for the corner to the point of tangency for the accessway. This requirement may be reduced if the shape of the site does not allow conformance with this standard. **This application does not propose changes to access on Greely Road**

(b) Private accessways in or out of a development must be separated by a minimum of 75 feet where possible. **N/A.**

(3) Internal vehicular circulation. The layout of the site must provide for the safe movement of passenger, service, and emergency vehicles through the site.

(a) Projects that will be served by delivery vehicles must provide a clear route for such vehicles with appropriate geometric design to allow turning and backing. **N/A.**

(b) Clear routes of access must be provided and maintained for emergency vehicles to and around buildings and must be posted with appropriate signage ("Fire Lane - No Parking"). C**lear routes of access will be provided around the stored material.**

(c) The layout and design of parking areas must provide for safe and convenient circulation of vehicles throughout the lot. **The site will primarily be used by utility vehicles from the golf course and public works pickup trucks. As there will be limited vehicular access to the site, adequate space for parking is provided on site and does not interfere with vehicular circulation throughout the site.**

(d) All roadways must be designed to harmonize with the topographic and natural features of the site insofar as practical by minimizing filling, grading, excavation, or other similar activities which result in unstable soil conditions and soil erosion, by fitting the development to the natural contour of the land and avoiding substantial areas of excessive grade and tree removal, and by retaining existing vegetation during construction. The road network must provide for vehicular, pedestrian, and cyclist safety, all-season emergency access, snow storage, and delivery and collection services. **N/A.**

(4) Parking layout and design. Off street parking must conform to the following standards:

(a) Parking areas with more than two parking spaces must be arranged so that it is not necessary for vehicles to back into the street. **N/A.**

(b) All parking spaces, access drives, and impervious surfaces must be located at least 15 feet from any side or rear lot line, except where standards for buffer yards require a greater distance. No parking spaces or asphalt-type surface shall be located within 15 feet of the front property line. Parking lots on adjoining lots may be connected by accessways not exceeding 24 feet in width. **No impervious surfaces are located within 15' of any property line.**

(c) Parking stalls and aisle layout must conform to the following standards: **N/A.**

Parking Angle	Stall Width	Skew Width	Stall Depth	Aisle Width
90°	9' 0"	-	18' 0"	24' 0" 2-way
60°	8' 6"	10' 6"	18' 0"	16' 0" 1-way
45°	8' 6"	12' 9"	17' 6"	12' 0" 1-way
30°	8' 6"	17' 0"	17' 0"	12' 0" 1-way

(d) In lots utilizing diagonal parking, the direction of proper traffic flow must be indicated by signs, pavement markings or other permanent indications and maintained as necessary **N/A.**

(e) Parking areas must be designed to permit each motor vehicle to proceed to and from the parking space provided for it without requiring the moving of any other motor vehicles. **N/A.**

(f) Provisions must be made to restrict the overhang of parked vehicles when it might restrict traffic flow on adjacent through roads, restrict pedestrian or bicycle movement on adjacent walkways, or damage landscape materials. **N/A.**

(5) Building and parking placement

(a) The site design should avoid creating a building surrounded by a parking lot. Parking should be to the side and preferably in the back. In rural, uncongested areas buildings should be set well back from the road so as to conform to the rural character of the area. If the parking is in front, a generous, landscaped buffer between the road and parking lot is to be provided. Unused areas should be kept natural, as field, forest, wetland, etc. **The storage pad is set well back from the road and the existing 50 foot vegetated buffer will be preserved between the pad and Greely Road.**

(b) Where two or more buildings are proposed, the buildings should be grouped and linked with sidewalks; tree planting should be used to provide shade and break up the scale of the site. Parking areas should be separated from the building by a minimum of five to 10 feet. Plantings should be provided along the building edge, particularly where building facades consist of long or unbroken walls. **N/A.**

(6) Pedestrian circulation. The site plan must provide for a system of pedestrian ways within the development appropriate to the type and scale of development. This system must connect the major building entrances/exits with parking areas and with existing sidewalks, if they exist or are planned in the vicinity of the project. The pedestrian network may be located either in the street right-of-way or outside of the right-of-way in open space or recreation areas. The system must be designed to link the project with residential, recreational, and commercial facilities, schools, bus stops, and existing sidewalks in the neighborhood or, when appropriate, to connect the amenities such as parks or open space on or adjacent to the site. **NA**

C. Stormwater Management and Erosion Control

(1) Stormwater management. Adequate provisions must be made for the collection and disposal of all stormwater that runs off proposed streets, parking areas, roofs, and other surfaces through a stormwater drainage system and maintenance plan, which must not have adverse impacts on abutting or downstream properties. **Existing runoff generally flows north to south, ultimately discharging to the wetland area along the southern property line and is tributary to the existing pond located at the eleventh hole. Existing upland stormwater runoff in the northeast corner of the site is collected in a drainage swale and directed to an existing 12" culvert east of the existing storage building. The culvert runs under the existing gravel golf cart path and stormwater discharges via sheet flow to the fairway. Runoff from the site ultimately discharges to the East Branch of the Piscataqua River in the southeastern boundary of the Val Halla parcel. The gravel pad has been graded to direct runoff to a gutter in the center of the pad to direct flow to a level spreader, which has been designed based on the Maine DEP BMP Technical Design Manual (see section 9 for sizing calculations). Since the level spreader discharges runoff via sheet flow to the wetland area, the applicant anticipates that the development will result in an insignificant change in flow at this discharge point. Since the gravel pad collects a portion of the area that was previously tributary to the existing culvert, therefore, by inspection, the applicant anticipates that the development will result in an insignificant change in flow at this discharge point.**

(a) To the extent possible, the plan must retain stormwater on the site using the natural features of the site. **The gravel pad has been graded to direct runoff to a gutter in the center of the pad, which directs flow to a level spreader before discharging to the wetland area. Upland stormwater runoff will be diverted around the site and collected in an existing 12" culvert and the existing drainage swale which convey runoff to the pond located at the eleventh hole south of the proposed equipment storage building.**

(b) Unless the discharge is directly to the ocean or major river segment, stormwater runoff systems must detain or retain water such that the rate of flow from the site after development does not exceed the predevelopment rate. **The applicant does not anticipate a significant change in flow leaving the site in the post development condition as a result of the development.**

(c) The applicant must demonstrate that on- and off-site downstream channel or system capacity is sufficient to carry the flow without adverse effects, including but not limited to flooding and erosion of shoreland areas, or that he/she will be responsible for whatever improvements are needed to provide the required increase in capacity and/or mitigation. **No offsite impacts are anticipated because the stormwater runoff from the development drains to existing drainage ways within the site. The applicant shall be responsible for any improvements necessary to mitigate any potential erosion issues resulting from the development.**

(d) All natural drainageways must be preserved at their natural gradients and must not be filled or converted to a closed system unless approved as part of the site plan review. **Existing drainage swales will be preserved and will not be filled.**

(e) The design of the stormwater drainage system must provide for the disposal of stormwater without damage to streets, adjacent properties, downstream properties, soils, and vegetation. **Stormwater runoff will be conveyed on site without any anticipated damages to streets, properties, soils, or vegetation.**

(f) The design of the storm drainage systems must be fully cognizant of upstream runoff which must pass over or through the site to be developed and provide for this movement. **The site receives upland flow from a relatively small area containing runoff from a portion of Greely Road and a wooded area between the site and the roadway. Upland stormwater runoff will be conveyed around the site via a grassed swale to an existing 12" culvert.**

(g) The biological and chemical properties of the receiving waters must not be degraded by the stormwater runoff from the development site. The use of oil and grease traps in manholes, the use of on-site vegetated waterways and vegetated buffer strips along waterways and drainage swales, and the reduction in use of deicing salts and fertilizers may be required, especially where the development stormwater discharges into a gravel aquifer area or other water supply source or a great pond. **Equipment storage on the site will be covered and prevented from degrading receiving waters to the greatest extent. The site utilizes vegetated drainage swales to mitigate degradation of receiving waters from stormwater runoff.**

(2) Erosion Control

(a) All building, site, and roadway designs and layouts must harmonize with existing topography and conserve desirable natural surroundings to the fullest extent possible, such that filling, excavation and earthmoving activity must be kept to a minimum. Parking lots on sloped sites must be terraced to avoid undue cut and fill and/or the need for retaining walls. Natural vegetation must be preserved and protected wherever possible. **Fill and excavation have been minimized on site for building and site construction. No retaining walls are proposed, natural vegetation has been preserved where possible, and disturbed areas will be stabilized with mulch and/or erosion control mesh in swales and steep slopes.**

(b) Soil erosion and sedimentation of watercourses and water bodies must be minimized by an active program meeting the requirements of the Maine Erosion and Sediment Control Handbook for Construction: Best Management Practices, dated March 1991, and as amended from time to time. **Construction will adhere to the most recent revision of the Maine Erosion and Sediment Control Handbook for Construction and the Erosion Control Narrative in Section 9 of this application.**

D. Water, Sewer, and Fire Protection.

(1) Water supply provisions. The development must be provided with a system of water supply that provides each use with an adequate supply of water. If the project is to be served by a public water supply, the applicant must secure and submit a written statement from the supplier that the proposed water supply system conforms to its design and construction standards, will not result in an undue burden on the source of distribution system, and will be installed in a manner adequate to provide needed domestic and fire protection flows. **A water supply is not proposed for the gravel pad. The nearest hydrant is located approximately 450' from the site on Greely Road.**

(2) Sewage disposal provisions. The development must be provided with a method of disposing of sewage which is in compliance with the State Plumbing Code. If provisions are proposed for on-site waste disposal, all such systems must conform to the Subsurface Wastewater Disposal Rules. **No sewage will be generated from the gravel pad; therefore, no sewage disposal is proposed.**

(3) Utilities. The development must be provided with electrical, telephone, and telecommunication service adequate to meet the anticipated use of the project. New utility lines and facilities must be screened from view to the extent feasible. If the service in the street or on adjoining lots is underground, the new service must be placed underground. **No power is proposed to the gravel pad.**

E. Water Protection

(1) Groundwater protection. The proposed site development and use must not adversely impact either the quality or quantity of groundwater available to abutting properties or to the public water supply systems. Applicants whose projects involve on-site water supply or sewage disposal systems with a capacity of 2,000 gallons per day or greater must demonstrate that the groundwater at the property line will comply, following development, with the standards for safe drinking water as established by the State of Maine. **No impact to groundwater is anticipated for the proposed development. No water supply or sewage disposal systems are proposed for the gravel pad.**

(2) Water quality. All aspects of the project must be designed so that:

(a) No person shall locate, store, discharge, or permit the discharge of any treated, untreated, or inadequately treated liquid, gaseous, or solid materials of such nature, quantity, obnoxiousness, toxicity, or temperature that may run off, seep, percolate, or wash into surface water or groundwater so as to contaminate, pollute, or harm such waters or cause nuisances, such as objectionable shore deposits, floating or submerged debris, oil or scum, color, odor, taste, or unsightliness, or be harmful to human, animal, plant, or aquatic life. **Equipment storage on site shall be covered to prevent any potential run off, seepage, or percolation into surface water or groundwater. No hazardous waste will be stored on site, pipes, structures, etc. only.**

(b) All storage facilities for fuel, chemicals, chemical or industrial wastes, and biodegradable raw materials must meet the standards of the Maine Department of Environmental Protection and the State Fire Marshal's office. **No fuel, chemicals, chemical or industrial wastes, or biodegradable raw materials will be stored on site.**

(3) Aquifer protection. If the site is located within the areas designated as aquifer protection (AP) on the Official Aquifer Protection Map, a positive finding by the Board (if Staff Review, the Town Planner or Staff Review Committee) that the proposed plan will not adversely affect the aquifer is required in accordance with the standards set forth in Chapter 315, Article V, Aquifer Protection, of this Code. **The site appears to be located within the areas designated as an Aquifer Protection area on the Official Aquifer Protection Map. The development does not propose a use listed in Section 315-36.B.2 that requires a positive finding by the Planning Board.**

F. Floodplain management. If any portion of the site is located within a special flood hazard area as identified by the Federal Emergency Management Agency, all use and development of that portion of the site must be consistent with Chapter 105, Floodplain Management, of this Code. **The site is located an area of minimal flooding shown on the Flood Insurance Rate Map listed in Section 1. Therefore, Chapter 105 does not apply.**

G. Historic and archaeological resources. If any portion of the site has been identified as containing historic or archaeological resources, the development must include appropriate measures for protecting these resources, including but not limited to modification of the proposed design of the site, timing of construction, and limiting the extent of excavation. **No portion of the site has been identified as containing historic or archaeological resources.**

H. Exterior lighting. The use of exterior lights shall be minimized to the greatest extent possible. Exterior lighting of commercial buildings, parking areas and signs shall only be allowed during the actual hours of operation and one hour prior to and one hour following the hours of operation. Low level pedestrian lighting (no greater than 14' in height) is permitted at doorways but must be shielded to restrict the maximum apex angle of the cone of illuminations to 150 degrees. The proposed development must have adequate exterior lighting to provide for its safe use during nighttime hours, if such use is contemplated. All other light fixtures shall be motion-sensing set to illuminate a limited area when motion is detected and turned off when the detected motion ceases for a reasonable period of time. All exterior lighting must utilize full cut-off fixtures to avoid glare and adverse impact on neighboring properties and rights- of-way, and the unnecessary lighting of the night sky **No exterior lighting is proposed on the site.**

I. Buffering and Landscaping.

(1) Buffering of adjacent uses. The development must provide for the buffering of adjacent uses where there is a transition from one type of use to another use and for the screening of mechanical equipment and service and storage areas. The buffer may be provided by distance, landscaping, fencing, changes in grade, and/or a combination of these or other techniques. **A 50-foot existing vegetated buffer will be maintained between the site and Greely Road. Additionally, all other sides are wooded and will be preserved to the greatest extent practicable within the 15-foot side setback.**

(2) Landscaping. Landscaping must be provided as part of site design. The landscape plan for the entire site must use landscape materials to integrate the various elements on site, preserve and enhance the particular identity of the site, and create a pleasing site character. The landscaping should define street edges, break up parking areas, soften the appearance of the development, and protect abutting properties. **No plantings are proposed for this project.**

J. Noise. The development must control noise levels such that it will not create a nuisance for neighboring properties. **Noise levels on site will not create a nuisance for neighboring properties.**

K. Storage of materials.

(1) Exposed nonresidential storage areas, exposed machinery, and areas used for the storage or collection of discarded automobiles, auto parts, metals or other articles of salvage or refuse must have sufficient setbacks and screening (such as a stockade fence or a dense evergreen hedge) to provide a visual buffer sufficient to minimize their impact on abutting residential users and users of public streets. **A 50-foot vegetated buffer will remain between the site and Greely Road.**

(2) All dumpsters or similar large collection receptacles for trash or other wastes must be located on level surfaces which are paved or graveled. Where the dumpster or receptacle is located in a yard which abuts a residential or institutional use or a public street, it must be screened by fencing or landscaping. **No dumpsters are proposed for the gravel pad.**

(3) Where a potential safety hazard to children is likely to arise, physical screening sufficient to deter small children from entering the premises must be provided and maintained in good condition. **No potential safety hazards to children are anticipated to arise from the gravel pad.**

L. Capacity of the applicant. The applicant must demonstrate that he/she has the financial and technical capacity to carry out the project in accordance with this chapter and the approved plan. **See Section 7 of this application.**

M. Design and Performance Standards.

(1) Route 100 Design Standards. All development in the Village Center Commercial, Village Office Commercial I and II, and the MUZ Districts shall be consistent with the Town of Cumberland Route 100 Design Standards; in making a determination of consistency, the Planning Board (if

Staff Review, the Town Planner or Staff Review Committee) may utilize peer review analysis provided by qualified design professionals. **N/A.**

(2) Route 1 Design Guidelines. All development in the Office Commercial North and Office Commercial South Districts is encouraged to be consistent with the Route 1 Design Guidelines. **N/A.**

(3) Town Center District Performance Standards. All development in the Town Center District is encouraged to be consistent with the Town Center District Performance Standards. **N/A.**

(4) Village Mixed-Use Performance Standards. All development in the Village Mixed-Use Zone (VMUZ) is encouraged to be consistent with the VMUZ Performance Standards. **N/A.**

SECTION 4
Title, Right, and Interest

Eric Gagnon
Superintendent

Yarmouth Water District
PO Box 419, 181 Sligo Road
Yarmouth, Maine 04096
(207) 846-5821 fax (207) 846-1240
www.YarmouthWaterDistrict.org

Irving C. Felker, Jr.
Chairman, Board of Trustees

March 8, 2021

William R. Shane, P.E., Town Manager
Town of Cumberland
Cumberland Town Hall
290 Tuttle Road, Cumberland, ME 04021
Hand-delivered

Re: Ground Lease, 262 Greely Road, Cumberland, Maine

Dear Bill:

As you know, the Yarmouth Water District's proposed ground lease to the Town of Cumberland of a 1.9-acre parcel of land at 262 Greely Road (the "Ground Lease") required review and certification from the Maine Public Utilities Commission (the "PUC" or the "Commission"). On January 21, 2021, the District submitted the Ground Lease to the PUC along with a Motion seeking certification that the Ground Lease (1) does not require Commission authorization under state law, and (2) does not constitute a "sale of water resource land," as defined under state law and PUC regulations, and is therefore exempt from the requirements that would apply to a sale of water resource land.

I am pleased to report that on February 17, 2021, the PUC granted the District's Motion in all respects. Specifically, the Commission found that, pursuant to 35-A M.R.S. § 1101(4), the Ground Lease does not require Commission authorization under 35-A M.R.S. § 1101(1)(A). Further, the Commission found that the Ground Lease does not constitute a sale of water resource land within the meaning of 35-A M.R.S. § 6109 and Chapter 691 of the Commission's Rules, because the term of the Ground Lease is not more than twenty years. A copy of the PUC Order is enclosed for your reference. A copy of the Ground Lease, as negotiated between the District and the Town and submitted to the PUC on January 21, 2021, is also enclosed.

In light of the PUC's order, the District and the Town may now move forward with executing the Ground Lease.

Sincerely,

Eric Gagnon
Superintendent

Enclosures

cc: James N. Katsiaficas, Esq. (via e-mail)
Joseph C. Siviski, Esq. (vie e-mail)
Alyssa C. Tibbetts, Esq. (via e-mail)

GROUND LEASE

This Ground Lease (the "Lease") is entered into as of the 8th day of March, 2021 (the "Effective Date"), by and between **YARMOUTH WATER DISTRICT**, a Maine quasi-municipal corporation with a mailing address of P.O. Box 419, Yarmouth, Maine 04096 (hereinafter referred to as "Landlord"), and **TOWN OF CUMBERLAND**, a municipal corporation organized and existing under the laws of State of Maine, with a mailing address of 290 Tuttle Road, Cumberland, Maine 04021 (hereinafter referred to as "Tenant").

W I T N E S S E T H:

WHEREAS, Landlord is owner of certain real property known as 262 Greely Road located in the Town of Cumberland, County of Cumberland, State of Maine, being more particularly described in that certain deed recorded in the Cumberland County Registry of Deeds in Book 28897, Page 253 and as identified by the Town of Cumberland Tax Assessor as Tax Map R04, Lot 42 (hereinafter "Property"); and

WHEREAS, Tenant desires to lease a portion of the Property and Landlord is willing to lease such portion to Tenant.

NOW, THEREFORE, in consideration of the mutual covenants, agreements and conditions set forth herein, the parties agree as follows:

Section 1. Demise and Description

Landlord does hereby lease, demise and let to Tenant an approximately 1.9-acre portion of the Property, more particularly shown and attached as Exhibit A (the "Leased Premises"). The Leased Premises shall include, if necessary, access easement rights over the Property to connect to Greely Road.

Section 2. Term

The initial term of this Lease shall be for a period of twenty (20) years commencing on the Effective Date. This Lease shall automatically renew for additional twenty (20) year renewal terms unless Tenant provides written notice to the Landlord of its intent not to renew the Lease at least 90 days prior to the commencement of the next renewal term.

Section 3. Annual Rent

For each calendar year during the term of this Lease, Tenant shall pay Landlord an annual rent of One Dollar ($1.00).

Section 4. Use and Occupancy

(a) The parties acknowledge that the Property, specifically including the Leased Premises, is immediately adjacent to a water supply well and protecting the quality of surface and groundwater is of utmost importance. Tenant's use of the Leased Premises shall comply with the aquifer protection standards for all areas designated as Aquifer Protection on the Town of Cumberland's official Aquifer Protection Map, pursuant to Article V of the Town of Cumberland Zoning Ordinance.

(b) Allowable Uses of Leased Parcel. Tenant may use or occupy the Leased Premises or any portion thereof for the storage of the following acceptable materials: clean inert soil, stone, rock and concrete from source locations known not to have been contaminated by Hazardous Materials (as defined below). Notwithstanding the prohibitions in Section 4.(c) below, subject to prior approval of the Landlord, Tenant may also use or occupy the Leased Premises for the storage of other materials, including but not limited to plows, sanders, pipe(s), aggregates, concrete supplies (such as catch basins or manholes), frames and grates, chains or other public works or golf course related equipment, provided that such public works and/or golf course related equipment does not contain any fluids that may be hazardous to the aquifer and water supply.

(c) Prohibited Uses of Leased Parcel. Tenant shall not use or occupy the Leased Premises or any portion thereof for the storage of leachable materials or equipment containing potential contaminants the Leased Parcel; in particular, Tenant shall not store or use the following on the Leased Premises:

(1) Hazardous Materials, hazardous substances, or hazardous wastes
(2) chemicals
(3) fertilizers or herbicides
(5) road salt
(6) motorized equipment with motors or fluids

(d) Landlord shall have the right, at any time, to enter and inspect the Leased Premises to ensure the use and occupancy of the Leased Premises by Tenant is in compliance with the terms and conditions of this Lease.

Section 5. Leased Premises Relocation

In the event that Landlord, in its reasonable discretion, determines that use of a portion or all of the Leased Premises as a water resource or supply is necessary, Tenant agrees to cooperate with the Landlord in relocating the Leased Premises and any and all equipment stored thereon to a mutually agreeable location on the Property, and Landlord and Tenant shall share equally in the reasonable expense of such relocation.

Section 6. Assignment and Subletting

Tenant may not assign this Lease or sublet the Leased Premises or any portion thereof without the prior written consent of Landlord, which consent shall not be unreasonably withheld, conditioned, or delayed.

Section 7. Taxes

The parties acknowledge that there are no real or personal property taxes attributable to the Property or Leased Premises.

Section 8. Construction of Buildings and Improvements

(a) During the term of this Lease, Tenant is hereby authorized by Landlord to maintain and construct improvements to the Leased Premises to provide reasonable cover to the equipment and materials to be stored on the Leased Premises, provided that such improvements comply with the terms and conditions of Section 4 of this Lease, and the same shall be constructed without cost or expense to Landlord in a good and workmanlike manner and in accordance with the terms and conditions of this Lease and the requirements of all laws, ordinances, codes, orders, rules and regulations of all governmental authorities having jurisdictions over the Leased Premises.

(b) Tenant has the right to pave or improve the surface of the Leased Premises with hot bituminous pavement, gravel, sand, fill, or reclaim.

Section 9. Compliance with Laws

During the term of this Lease, Tenant shall promptly comply with all present and future laws, ordinances, orders, rules, regulations and requirements of the applicable federal, state, county, or municipal governments or any of their departments, bureaus, boards, commissions and officials thereof with respect to the Leased Premises, the buildings and improvements thereon or hereafter erected thereon by Tenant, or the use or occupancy thereof, whether said compliance shall be ordered or directed to or against Landlord or Tenant or both, except to the extent that Landlord has any obligations under this Lease. Tenant shall have the right, after prior written notice to Landlord, to contest by appropriate legal proceedings, which shall be conducted diligently and in good faith in the name of Landlord or Tenant or both and without cost or expense to Landlord, the validity or applicability of any law, ordinance, order, rule, or regulation of the nature hereinabove referred to in this Section, and Tenant shall have the right to delay observance thereof and compliance therewith until such contest is finally determined and is no longer subject to appeal, provided that observance and compliance therewith, pending the prosecution of such proceeding, may be legally delayed without subjecting Landlord to any criminal liability or fine.

Section 10. Partial Invalidity

If any term, covenant, condition, or provision of this Lease or the application thereof to

any person or circumstances shall, at any time or to any extent, be invalid or unenforceable, the remainder of this Lease, or the application of such term or provision to persons or circumstances other than those as to which this Lease is held invalid, or unenforceable, shall not be affected thereby, and each term, covenant, condition, and provision of this Lease shall be valid and be enforced to the fullest extent permitted by law.

Section 11. Written Notices

Whenever under the terms of this Lease a written notice is required, or whenever a written notice or communication is sent, the same shall be accomplished by U.S. mail, e-mail, facsimile or similar method, addressed as follows:

To Landlord: Yarmouth Water District
Attn: Eric Gagnon, Superintendent
P.O. Box 419
Yarmouth, ME 04096
e-mail: egagnon@yarmouthwaterdistrict.org

with a copy to: James Katsiaficas
Perkin Thompson PA
One Canal Plaza
Portland, ME 04112
e-mail: jkatsiaficas@perkinsthompson.com

To Tenant: Town of Cumberland
Attn: William Shane, Town Manager
290 Tuttle Road, Cumberland, Maine 04021
e-mail: wshane@cumberlandmaine.com

with a copy to: Alyssa C. Tibbetts
Jensen Baird Gardner & Henry
Ten Free Street, P.O. Box 4510
Portland, ME 04112-4510
e-mail: atibbetts@jbgh.com

Section 12. Binding on Successors and Assigns

Except as otherwise provided in this Lease, all covenants, agreements, provisions, and conditions of this Lease shall be binding on and inure to the benefit of the parties hereto, their respective personal representatives, successors, and assigns. No modification or termination of this Lease shall be binding unless evidenced by an agreement, in writing, signed by Landlord and Tenant.

Section 13. Captions

The captions of the sections in this instrument are solely for convenience and shall not be

deemed a part of this instrument for the purpose of construing the meaning thereof, or for any other purpose.

Section 14. Surrender

Upon the expiration of the term or any extended term of this Lease, or any earlier termination thereof, Tenant shall surrender to Landlord possession of the Leased Premises and all improvements constructed and installed thereon, provided that if Tenant shall not then be in default under any of the covenants and conditions hereof, Tenant may remove or cause to be removed all personal property, removable buildings, and equipment located on the Leased Premises.

Section 15. Quiet Enjoyment

Landlord agrees, covenants, and warrants that as long as Tenant faithfully performs the agreements, terms, covenants, and conditions of this Lease within the grace periods and extended periods for any unavoidable delays as set forth herein, Tenant shall peaceably and quietly have, hold, and enjoy the Leased Premises for the term and extensions thereof hereby granted without molestation or disturbance by or from Landlord, except as provided in Section 5 hereof, and free of any and all encumbrances created or suffered by Landlord.

Section 16. No Waiver

No waiver of any covenant or condition contained in this Lease or of any breach of any such covenant or condition shall constitute a waiver of any subsequent breach of such covenant or condition by either party, or justify or authorize the non-observance on any other occasion of the same or any other covenant or condition hereof of either party.

Section 17. Interpretation

This Lease shall be construed in accordance with the laws of the State of Maine. Whenever the contents of any provision shall require it, the singular number shall include the plural number, and vice versa, and the neuter gender shall include the masculine and feminine gender.

Section 18. Environmental Matters

Tenant shall not, and shall not permit any third party to use, generate, store, or dispose of any Hazardous Materials (as defined below) on, under, about, or within the Leased Premises in violation of any Environmental Laws (as defined below). As used herein, "Hazardous Materials" shall mean any: contaminants, oils, asbestos, PCBs, hazardous substances, or hazardous wastes as defined by federal, state, or local environmental laws, regulations, or administrative orders or other materials the removal of which are required or the maintenance of which are prohibited or regulated by any federal, state, or local governmental authorities having jurisdiction over all or any portion of the Leased Premises. As used herein, "Environmental Laws" shall mean any laws, regulations, ordinances, and/or administrative orders applicable to

all or any portion of the Leased Premises, which govern Hazardous Materials.

In the event of any contamination by Hazardous Materials or violation of Environmental Laws, except that caused by the conduct of Landlord, its agents, employees, contractors or other tenants, occurring during the term of this Lease or any renewal thereof, Tenant shall pay the full costs of all investigations, studies, proceedings, and cleanup that may be required and shall pay to have the Leased Premises, as well as any affected areas contiguous to the Leased Premises, restored to its or their precontamination condition.

Tenant shall indemnify, defend and save Landlord harmless from any and all costs, fees, penalties and charges assessed against or imposed upon Landlord (including reasonable attorneys' fees and costs) as a result of Tenant's use, disposal, transportation, generation and/or sale of Hazardous Materials.

IN WITNESS WHEREOF, Landlord and Tenant have caused this Lease to be signed effective as of the Effective Date.

WITNESS:

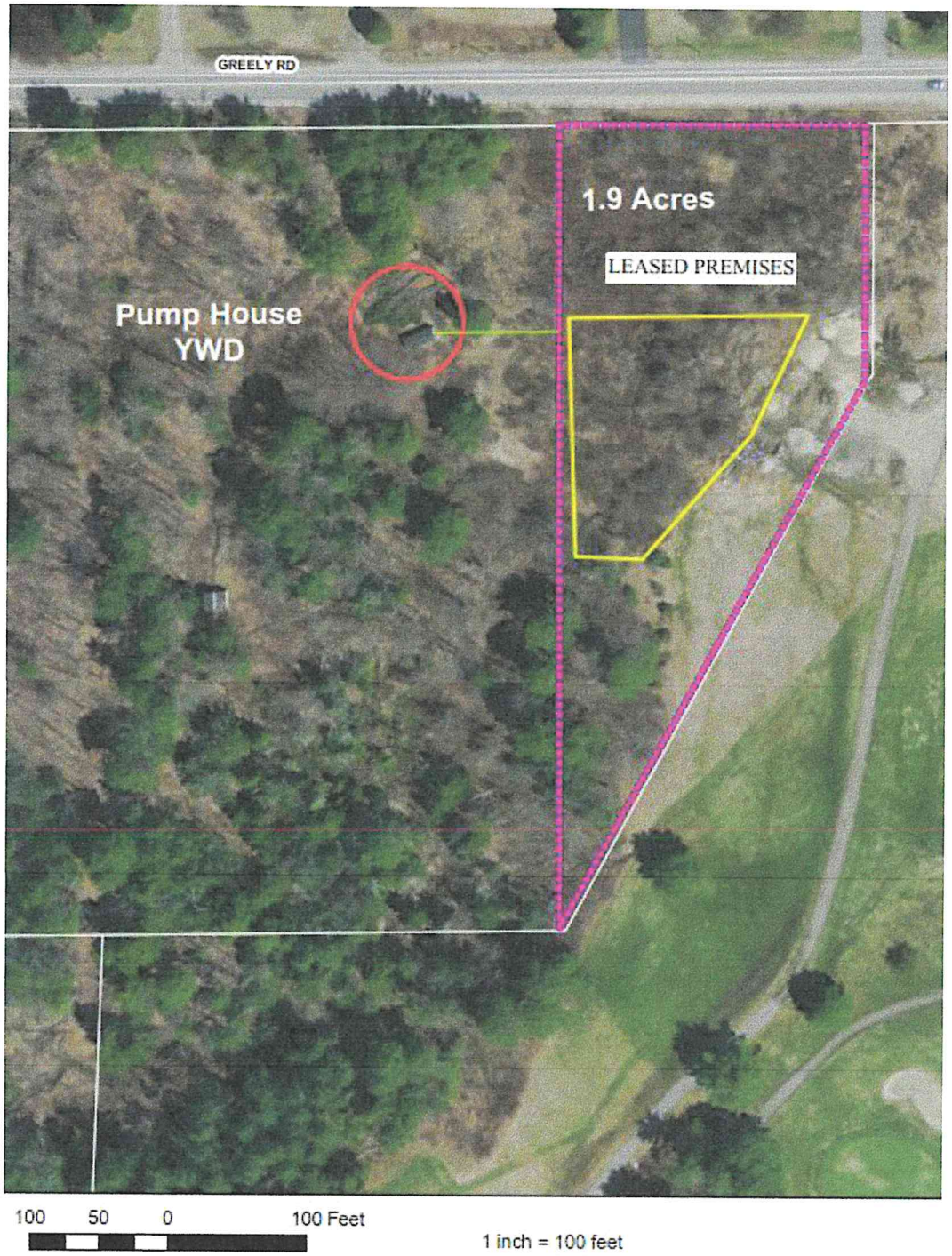
LANDLORD
YARMOUTH WATER DISTRICT

By _____
Eric Gagnon
Its Superintendent
Date: 3/5/2021

TENANT
TOWN OF CUMBERLAND

By _____
William Shane
Its Town Manager
Date: 3/8/21

Exhibit A
Leased Premises



STATE OF MAINE
PUBLIC UTILITIES COMMISSION

Docket No. 2021-00016

February 17, 2021

YARMOUTH WATER DISTRICT
Request for Certification under 35-A M.R.S. § 1101(4)

ORDER

BARTLETT, Chair; WILLIAMSON and DAVIS, Commissioners

I. SUMMARY

By this Order, the Commission certifies, pursuant to 35-A M.R.S. § 1101(4), that the Ground Lease between the Yarmouth Water District (the District) and the Town of Cumberland (Cumberland) filed on January 21, 2021 does not require Commission authorization under 35-A M.R.S. § 1101(1)(A). Further, the Commission finds that the Ground Lease does not constitute a sale of water resource land within the meaning of 35-A M.R.S. § 6109 and Chapter 691 of the Commission's Rules

II. PROCEDURAL HISTORY

On January 21, 2021, the District notified the Commission of its intent to enter into a Ground Lease between the District and Cumberland. The Ground Lease involves a 1.9-acre parcel at the southeastern end of the District's property. The District states that Cumberland intends to use the leased land for storage purposes. The term of the Ground Lease is 20 years with the ability to renew the lease for additional 20-year terms.

On January 29, 2021, the Commission provided notice of the District's request and an opportunity for interested persons comment on the request, as well as an opportunity for interested persons to intervene in this proceeding. The Commission did not receive any petitions to intervene nor did the Commission receive any comments regarding the District's request.

III. LEGAL STANDARDS

A. 35-A M.R.S. § 1101(1)(A)

Section 1101(1)(A) of Title 35-A requires a public utility to secure an order of authorization from the Commission before it may:

> Sell, lease, assign, mortgage or otherwise dispose of or encumber the whole or part of its property that is necessary or useful in the performance of its duties to the public, or any part of the property under construction for the performance

> of its duties to the public, or its franchises, permits or rights under them.

Section 1101(4) authorizes the Commission to exempt certain transactions from the requirements of Section 1101(1). Specifically, Section 1101(4) allows the Commission to certify that certain transactions relating to utility property do not require Commission authorization where the property sought to be transferred does not materially affect the ability of the utility to perform its public service.

B. 35-A M.R.S. § 6109 and Chapter 691 of the Commission's Rules

Section 6109 governs the sale or transfer of land by a consumer-owned water utility such as the District. Section 6109 imposes several requirements on a consumer-owned water utility that intends to sell or transfer land or property owned by the utility that is used for the purposes of providing a source of supply or land adjoining the source of supply.

Chapter 691 of the Commission's Rules implements section 6109 and establishes additional requirements for the sale or transfer of water resource land by a consumer-owned water utility. Section 1(B) of Chapter 691 defines a "sale" of "water resource land" as

> a conveyance or transfer of title to water resource land from the utility to another person or entity. For the purposes of this rule, "sale" shall also mean an assignment of a property right, a land lease of more than twenty years, a grant of an easement or any other encumbrance of the land, whereby the utility gives up for consideration rights to the use of a substantial part of the land surface. "Sale" does not include a transfer in accordance with or pursuant to statutory or contractual rights which predate the effective date of this rule. "Sale" does not include sales of land or easement to public utilities for public utility purposes. "Sale" does not include transfers to municipalities or state agencies that could be subject to condemnation under eminent domain proceedings.

IV. DISCUSSION AND DECISION

According to the District, approximately 6.9 acres of mostly undeveloped land surrounding the District's water supply well and abutting the to-be-leased 1.9-acre parcel will remain under the District's ownership and exclusive control for future use and the District will retain its existing, dedicated access to the leased parcel via Greely Road. Further, the District states that Cumberland's proposed use of the leased parcel will be for storage purposes which will not interfere with the District's performance of its duties to the public.

The District also describes several conditions in the Ground Lease intended to protect the District's water supply: Cumberland's use of the leased parcel will comply with the aquifer protection standards for all areas designated as Aquifer Protection on the Town of Cumberland's official Aquifer Protection Map; Cumberland will not store or use hazardous materials, hazardous substances, hazardous wastes, chemicals, fertilizers or herbicides, road salt, or motorized equipment with motors or fluids on the leased parcel; the District retains the ability to relocate the leased parcel to another location on District property if, in the reasonable discretion of the District, it determines that it is necessary to do so for the District to perform its duties to the public; and Cumberland will not itself, and will not permit any third party to use, generate, store, or dispose of any hazardous materials on, under, about, or within the leased parcel in violation of any environmental laws.

Based on the foregoing, the Commission finds, pursuant to 35-A M.R.S. § 1101(4), that the Ground Lease will not materially affect the ability of the District to perform its duties to the public.

The Commission further finds that the Ground Lease is not a "sale" within the meaning of Section 6109 or Chapter 691, because the term of the lease does not exceed twenty years. Accordingly, the Commission finds that neither Section 6109 nor Chapter 691 are applicable to the Ground Lease.

V. ORDERING PARAGRAPHS

Accordingly, the Commission

ORDERS

1. That, pursuant to 35-A M.R.S. § 1101(4), the Commission certifies that the Ground Lease between the Yarmouth Water District and the Town of Cumberland filed on January 21, 2021 does not require Commission authorization under 35-A M.R.S. § 1101(1)(A); and

2. That 35-A M.R.S. § 6109 and Chapter 691 of the Commission's Rules do not apply to the Ground Lease between the Yarmouth Water District and the Town of Cumberland.

3. That the Commission's certification under 35-A M.R.S. § 1101(4) and findings with regard to 35-A M.R.S. § 6109 and Chapter 691 apply only to the current 20-year term of the Ground Lease; any subsequent renewals of the Ground Lease will require specific Commission certification and findings at the time of the renewals.

Dated at Hallowell, Maine this Seventeenth Day of February, 2021

BY ORDER OF THE COMMISSION

/s/Harry Lanphear

Administrative Director

COMMISSIONERS VOTING FOR: Bartlett
Williamson
Davis

NOTICE OF RIGHTS TO REVIEW OR APPEAL

5 M.R.S. § 9061 requires the Public Utilities Commission to give each party at the conclusion of an adjudicatory proceeding written notice of the party's rights to seek review of or to appeal the Commission's decision. The methods of review or appeal of Commission decisions at the conclusion of an adjudicatory proceeding are as follows:

1. Reconsideration of the Commission's Order may be requested under Section 11(D) of the Commission's Rules of Practice and Procedure (65-407 C.M.R. ch. 110) within **20** days of the date of the Order by filing a petition with the Commission stating the grounds upon which reconsideration is sought. Any petition not granted within **20** days from the date of filing is denied.

2. Appeal of a final decision of the Commission may be taken to the Law Court by filing, within **21** days of the date of the Order, a Notice of Appeal with the Administrative Director of the Commission, pursuant to 35-A M.R.S. § 1320(1)-(4) and the Maine Rules of Appellate Procedure.

3. Additional court review of constitutional issues or issues involving the justness or reasonableness of rates may be had by the filing of an appeal with the Law Court, pursuant to 35-A M.R.S. § 1320(5).

Pursuant to 5 M.R.S. § 8058 and 35-A M.R.S. § 1320(6), review of Commission Rules is subject to the jurisdiction of the Superior Court.

Note: The attachment of this Notice to a document does not indicate the Commission's view that the particular document may be subject to review or appeal. Similarly, the failure of the Commission to attach a copy of this Notice to a document does not indicate the Commission's view that the document is not subject to review or appeal.

SECTION 5
Names and Addresses of All Property Owners within 200'

Abutters within 200'
Cumberland Gravel Pad Storage Site
JN 3656.06

Tax Map R04

ABUTTERS:
Lots: 41,

Map R04/Lot 41
Town of Cumberland
290 Tuttle Road
Cumberland, ME 04021-9321

Tax Map R06

ABUTTERS:
Lots: 6B, 7, 7A, 7D,

Map R06/Lot 6B
Davis Gary S
279 Greely Rd.
Cumberland Center, ME 04021

Map R06/Lot 7
Melissa A Duffy
307 Greely Rd.
Cumberland Center, ME 04021

Map R06/Lot 7A
Nancy C Codere
PO BOX 443
Cumberland Center, ME 04021

Map R06/Lot 7D
Jacklyn Nadeau
276 Greely Rd.
Cumberland Center, ME 04021

SECTION 6
Tax Map

PROJECT PARCEL

CLASSIFIED FARMLAND

CLASSIFIED FARMLAND

CMP TRANSMISSION LINE / RAVEN FARM SUBSTATION

CENTRAL MAINE POWER TRANSMISSION LINE

GREELY ROAD

TUTTLE ROAD

TWIN BROOK

Maps Prepared by:

Spatial Alternatives
207.846.2355
www.spatialalternatives.com

Tax Sheets are intended for assessing purposes only.
Boundary locations are approximate and should not be used for conveyance of property.

Legend

ROW/Easements
Farmland and Tree Growth
ROW
Roads
Tax Parcels
Town Owned or Cemetery
Utility
Water
Parcels
Open Space
Railroad

Town of Cumberland, Maine

1,000
Feet

Index Map

R05 R04 R02 R03 R01

N

Cumberland Tax Map
R04
Map updated to: April 1, 2018

SECTION 7
Technical and Financial Capacity

GORRILL PALMER

707 Sable Oaks Drive, Suite 30
South Portland, Maine 04106
207.772.2515

Technical Capacity

The Town of Cumberland has retained Gorrill Palmer to prepare plans and permit applications for the construction of the gravel pad storage area. Doug Reynolds, P.E. represents Gorrill Palmer as the Project Manager for this project. In addition to Gorrill Palmer, Boundary Points Professional Land Surveying, LLC has been retained to prepare existing survey conditions and provide as-built information for the gravel pad storage area.

Since forming Gorrill Palmer in June of 1998, the principals of Gorrill Palmer have completed a number of General Engineering Services projects on behalf of the Town of Cumberland, including:

Name of Project	Type of Project	Year Completed
Mill Road Culvert	Culvert Replacement	2016
Middle Road at Greely Road Culvert	Drainage Improvements	2016
Route 1 Roadway Improvements	Roadway	2017
Summit Gas Observation	Construction Observation	Since 2015
Route 9 Roadway Improvements	Roadway	2019

Post Construction Phase

After construction, the project will be managed and maintained by the applicant, the Town of Cumberland, who currently owns and maintains the existing stockpile area on the Val Halla Parcel.

Financial Capacity

The Town of Cumberland has the financial capacity to fund the construction of the gravel pad storage area using the Town's General Funds.

SECTION 8
Waiver Requests

POTENTIAL WAIVER REQUESTS

The Accompanying Waiver Table provides a description of potential waiver requests.

POTENTIAL WAIVER REQUESTS

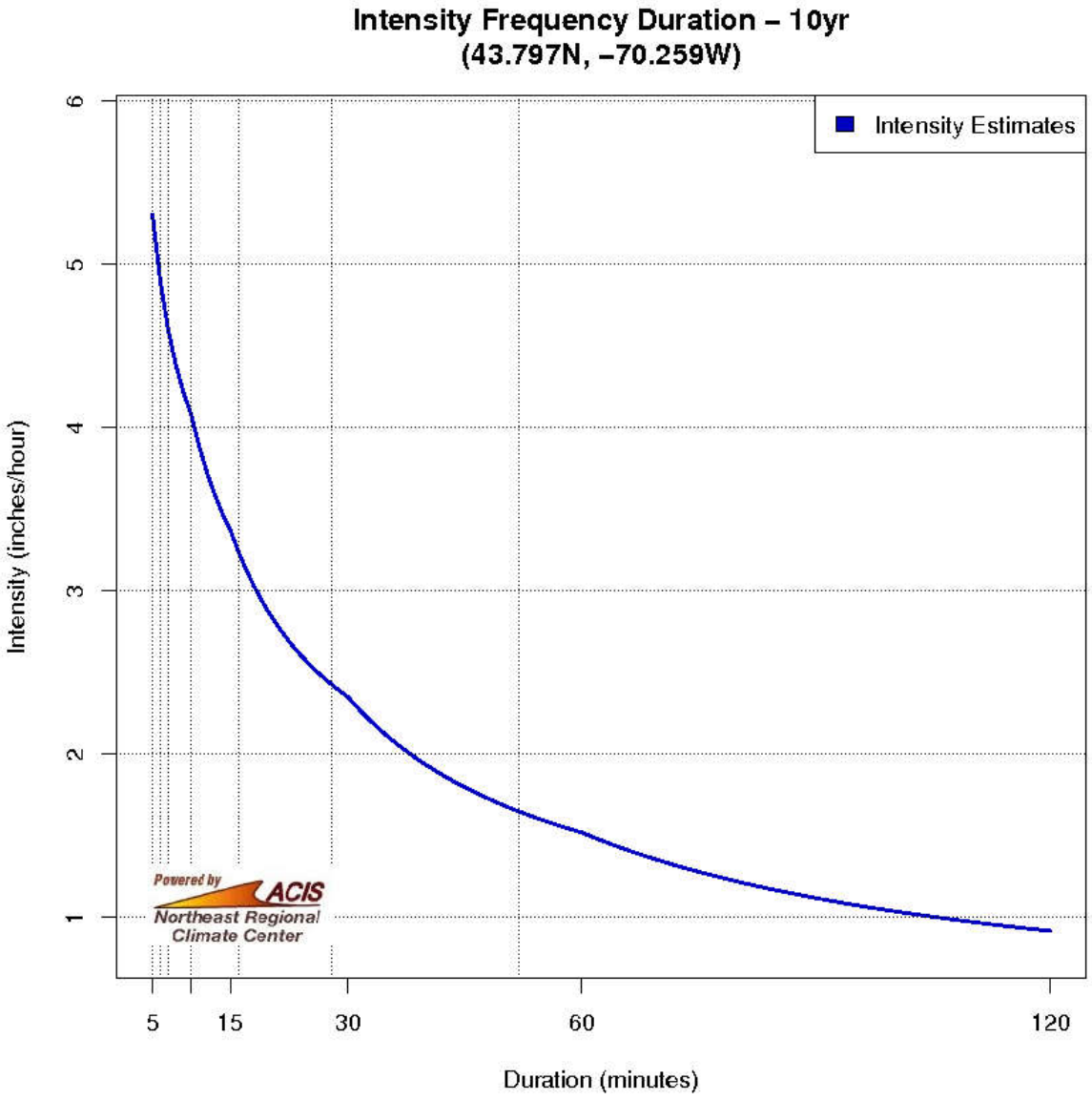
Standard: Cite Ordinance	**Cite Standard Language:** Cite specific language of applicable Ordinance	**Justification for Potential Waiver Request:** Document reasons for the potential waiver request.
Proposed Solid Waste Disposal Plan	*Section 229-10.K.2.: All dumpsters or similar large collection receptacles for trash or other wastes must be located on level surfaces which are paved or graveled. Where the dumpster or receptacle is located in a yard which abuts a residential or institutional use or a public street, it must be screened by fencing or landscaping.*	The proposed use will not generate any solid waste and, as such, no dumpsters or trash receptacles will be required on site.
Lighting/Photometric Plan	*Section 229-10.H: Exterior lighting. The use of exterior lights shall be minimized to the greatest extent possible. Exterior lighting of commercial buildings, parking areas and signs shall only be allowed during the actual hours of operation and one hour prior to and one hour following the hours of operation. Low level pedestrian lighting (no greater than 14' in height) is permitted at doorways but must be shielded to restrict the maximum apex angle of the cone of illuminations to 150 degrees. The proposed development must have adequate exterior lighting to provide for its safe use during nighttime hours, if such use is contemplated. All other light fixtures shall be motion-sensing set to illuminate a limited area when motion is detected and turned off when the detected motion ceases for a reasonable period of time. All exterior lighting must utilize full cut-off fixtures to avoid glare and adverse impact on neighboring properties and rights- of-way, and the unnecessary lighting of the night sky.*	No exterior lighting is proposed as part of the proposed development.
High intensity soils survey		The development does not qualify as a major site plan; therefore, a High intensity soils survey is not required.
Hydro geologic evaluation		The development does not qualify as a major site plan; therefore, a Hydro geologic evaluation survey is not required.
Traffic Study		The development does not qualify as a major site plan; therefore, a traffic study is not required.
Market Study		The development does not qualify as a major site plan; therefore, a traffic study is not required.
Locations of proposed recreation areas (parks, playgrounds, other public areas)		The development does not qualify as a major site plan; therefore, recreation areas are not required.

POTENTIAL WAIVER REQUESTS

Standard: Cite Ordinance	**Cite Standard Language:** Cite specific language of applicable Ordinance	**Justification for Potential Waiver Request:** Document reasons for the potential waiver request.
Locations and type of outdoor furniture and features such as benches, fountains.		The development does not qualify as a major site plan; therefore, outdoor furniture and features are not required.

SECTION 9
Level Lip Spreader Sizing Calculations
&
Erosion and Sedimentation Control Narrative

Level Spreader Sizing Calcuations		
(Based on rational method for the 10 year storm event)		
Gravel Pad Area	0.998	Acres
C (assumed)	0.8	
i*	4.89	in/hr
Q = C x i x A	3.90	CFS
* Assumed time of concentration of 5 minutes, see IDF Curve for Cumberland Maine (10-year storm)		
Level Spreader Inflow	3.90	CFS
Required Length/cfs inflow	4	LF
Length Required	15.6	LF
Length Provided	16.5	LF



Time (mins)	Intensity (in/hr)
5	5.30
6*	4.89
7*	4.60
8*	4.38
9*	4.21
10	4.07
11*	3.88
12*	3.72
13*	3.59
14*	3.47
15	3.37
16*	3.24
17*	3.13
18*	3.03
19*	2.94
20*	2.86
21*	2.79
22*	2.72
23*	2.66

24*	2.61
25*	2.56
26*	2.51
27*	2.46
28*	2.42
29*	2.39
30	2.35
31*	2.30
32*	2.25
33*	2.20
34*	2.16
35*	2.11
36*	2.07
37*	2.04
38*	2.00
39*	1.97
40*	1.94
41*	1.91
42*	1.88
43*	1.85
44*	1.82
45*	1.80
46*	1.77
47*	1.75
48*	1.73
49*	1.71
50*	1.69
51*	1.67
52*	1.65
53*	1.63
54*	1.61
55*	1.60
56*	1.58
57*	1.56
58*	1.55
59*	1.53
60	1.52
61*	1.50
62*	1.48
63*	1.46
64*	1.44
65*	1.43
66*	1.41
67*	1.39
68*	1.38
69*	1.36
70*	1.35
71*	1.33
72*	1.32
73*	1.31
74*	1.29
75*	1.28
76*	1.27
77*	1.25
78*	1.24
79*	1.23
80*	1.22
81*	1.21
82*	1.20
83*	1.19
84*	1.18
85*	1.17
86*	1.16
87*	1.15
88*	1.14

89*	1.13
90*	1.12
91*	1.11
92*	1.10
93*	1.09
94*	1.08
95*	1.08
96*	1.07
97*	1.06
98*	1.05
99*	1.05
100*	1.04
101*	1.03
102*	1.02
103*	1.02
104*	1.01
105*	1.00
106*	1.00
107*	0.99
108*	0.98
109*	0.98
110*	0.97
111*	0.97
112*	0.96
113*	0.95
114*	0.95
115*	0.94
116*	0.94
117*	0.93
118*	0.93
119*	0.92
120	0.92

*values for noted rows are calculated estimates

EROSION AND SEDIMENTATION CONTROL
BASIC STANDARDS

1. Overview

This Exhibit demonstrates the developer has made adequate provision for controlling erosion and sedimentation.

2. Introduction

Gorrill-Palmer has been retained by the Town of Cumberland to prepare plans and assist in the preparation of permit applications for a proposed gravel pad storage area located off Greely Road. Figure 1 is an excerpt from the U.S.G.S. quadrangle maps showing the project location. The proposed development includes the construction of a 43,475 sf gravel pad and associated stormwater management facilities.

The plans prepared by Gorrill Palmer include the infrastructure necessary to serve the project. This narrative contains the constructability, planning and erosion control measures appropriate for the site.

3. Narrative

3.1 Existing Conditions and Soil Types

The site is located on Lot 42 on Tax Map R04. Currently, a portion of the lot is developed with two pump houses and an access drive. The site consists of an undeveloped portion of the site, making up an area of approximately 2 acres of the 8.3-acre lot. The site is located along the eastern property line of the lot. The lot has approximately 763 feet of frontage on Greely Road. The current land uses abutting the proposed project site are as follows:

- North – Residential
- East – Municipal Storage Facility/Golf Course
- South – Golf Course
- West – Residential

The site generally slopes from north to south, with slopes ranging from 3% to 35%. A portion of the site in the northeast corner of the lot drains to the east to an existing culvert that outlets to the Val Halla Golf Course. Elevations on-site range from 138' at the northwesterly corner of the lot to 100' at the southern property line.

On-site soils are obtained from the York County Medium Intensity Soil Survey. A portion of the survey follows this page. The susceptibility of soils to erosion is indicated on a relative "K" scale of values over a range of 0.02 to 0.69, where higher values are indicative of more erodible soils. The following table lists the soils found on site and their K values:

K VALUE		
Type	**Subsurface**	**Substratum**
Deerfield	0.20	0.20
Elmwood	0.20	0.20
Hartland	0.32	0.32
Suffield	0.32	0.32
Swanton	0.20	0.20
Windsor		

Based on a review of the K Values, the on-site soils have a moderate to low susceptibility to erosion.

3.2 Existing Erosion Problems

Gorrill Palmer is not aware of any existing erosion problems on the project site.

3.3 Critical Areas

Critical areas on the site that will need special attention regarding erosion control are fill areas, cut areas, and perimeter side slopes. Side slopes throughout the site generally vary from 3H:1V to 2H:1V and may require additional measures to prevent erosion.

3.4 Protected Natural Resources

A wetland is located within the southern portion of the site. Based upon FEMA maps, the site is not located within a Zone A 100-year floodplain.

3.5 Erosion Control Measures and Site Stabilization

The primary points that are emphasized by the Erosion and Sedimentation Control Plan to be implemented for this project are as follows:

- Development of a careful construction phasing, sequence and schedule.
- Rapid revegetation of denuded areas to minimize the duration of soil exposure.
- Rapid stabilization of drainage paths to avoid rill and gully erosion.
- Maintenance grading at daily shutdown to minimize rutting and erosion issues from overnight rain events.
- The use of on-site measures to capture sediment (sedimentation basins, silt fence, etc.)

The following temporary and permanent erosion and sedimentation control devices will be implemented as part of the site development. These devices shall be installed as indicated on the plans or as described within this report. For further reference, see the Maine Erosion and Sediment Control Handbook for Construction: Best Management Practices.

A. Dewatering

Water from construction trench dewatering shall pass first through a filter bag or secondary containment structure (e.g. hay bale lined pool) prior to discharge. The discharge site shall be selected to avoid flooding, icing, and sediment discharges to a protected resource. In no case shall the filter bag or containment structure be located within 50 feet of a protected natural resource.

B. Inspection and Monitoring

Maintenance measures shall be applied as needed during the entire construction season. After each rainfall, snow storm or period of thawing and runoff, the site contractor shall perform a visual inspection of all installed erosion control measures and perform repairs as needed to insure their continuous function. Following the temporary and/or final seeding and mulching, the contractor shall in the spring inspect and repair any damages and/or unestablished spots. Established vegetative cover means a minimum of 90% of areas vegetated with vigorous growth.

C. Temporary Erosion Control Measures

The following measures are planned as temporary erosion/sedimentation control measures during construction:

1. Crushed stone-stabilized construction entrance shall be placed at the proposed site entrance as shown on the plans.

2. Siltation fence or wood waste compost berms shall be installed downstream of any disturbed areas to trap runoff- borne sediments until grass areas are revegetated. The silt fence and/or wood waste compost berms shall be installed per the details provided in this package and inspected at least once a week and before and immediately after a storm event of 0.5 inches or greater, and at least daily during prolonged rainfall. Repairs shall be made if there are any signs of erosion or sedimentation below the fence or berm line. If there are signs of undercutting at the center or the edges, or impounding of large volumes of water behind the fence or berm, the barrier shall be replaced with a stone check dam. Wood waste compost berms are not to be used adjacent to wetland areas that are not to be disturbed.

3. Straw mulch including hydroseeding is intended to provide cover for denuded or seeded areas until revegetation is established. Mulch placed between April 15th and October 15th on slopes of less than 15 percent shall be anchored by applying water; mulch placed on slopes of equal to or steeper than 15 percent shall be covered by a fabric netting and anchored with staples in accordance with manufacturer's recommendation. Fabric netting and staples shall be used on disturbed areas within 50' of lakes, streams, and wetlands regardless of the upstream slope. Mulch placed between October 15th and April 15th on slopes equal to or steeper than 8 percent shall be covered with a fabric netting and anchored with staples in accordance with the manufacturer's recommendations. Slopes steeper than 3:1 and equal to or flatter than 2:1, which are to be revegetated, shall receive curlex blankets by American Excelsior or equal. Slopes steeper than 2:1 shall receive riprap as noted on the plans. The mulch application rate for both temporary and

permanent seeding is 75 lbs per 1000 sf as identified in Attachment A of this section. Mulch shall not be placed over snow.

4. Temporary stockpiles of stumps, grubbings, or common excavation will be protected as follows:

a) Temporary stockpiles shall not be located within 100 feet of any wetlands which will not be disturbed and shall be located away from drainage swales.

b) Stockpiles shall be stabilized within 7 days by either temporarily seeding the stockpile by a hydroseed method containing an emulsified mulch tackifier or by covering the stockpile with mulch, such as straw, or erosion control mix.

c) Stockpiles shall be surrounded by sedimentation barrier at the time of formation.

5. All denuded areas that are within 100 feet of an undisturbed wetland, which have been rough graded and are not located within a building pad, parking area, or access drive subbase area, shall receive mulch or erosion control mesh fabric within 48 hours of initial disturbance of soil. All areas within 100 feet of an undisturbed wetland shall be mulched prior to any predicted rain event regardless of the 48 hour window. In other areas, the time period may be extended to 7 days.

6. For work, which is conducted between October 15th and April 15th of any calendar year, all denuded areas, shall be covered with mulch or erosion control mix, applied at twice the normal application rate and anchored with a fabric netting. The time period for applying mulch shall be limited to 2 days for all areas.

7. The surrounding roadway infrastructure shall be swept to control mud and dust as necessary. Additional stone shall be added to the stabilized construction entrance to minimize the tracking of material off the site and onto the surrounding roadways.

8. During grubbing operations stone check dams shall be installed at any evident concentrated flow discharge points and as directed on the Erosion Control Plans.

9. Silt fencing with a maximum stake spacing of 6 feet should be used, unless the fence is supported by wire fence reinforcement of minimum 14 gauge and with a maximum mesh spacing of 6 inches, in which case stakes may be spaced a maximum of 10 feet apart. The bottom of the fence shall be anchored.

10. Wood waste compost/bark berms may be used in lieu of siltation fencing. Berms shall be removed and spread in a layer not to exceed 3" thick once upstream areas are completed and a 90% catch of vegetation is attained.

11. Storm drain catch basin inlet protection shall be provided through the use of stone sediment barriers or approved sediment bags (such as Silt Sack). Installation details are provided in the plan set. The barriers shall be inspected after each rainfall and repairs made as necessary. Sediment shall be removed and the barrier restored to its original dimensions when the sediment has accumulated to ½ the design depth of the barrier. The barrier shall be removed when the tributary drainage area has been stabilized.

12. Water and/or calcium chloride shall be furnished and applied in accordance with MDOT specifications – Section 637 – Dust Control.

13. Loam and seed is intended to serve, as the primary permanent revegetative measure for all denuded areas not provided with other erosion control measures, such as riprap. Application rates are provided in Attachment A of this section. Seeding shall not occur over snow.

D. Permanent Erosion Control Measures

The following permanent erosion control measures have been designed as part of the Erosion/Sedimentation Control Plan:

1. All areas disturbed during construction, but not subject to other restoration (paving, riprap, etc.) will be loamed, limed, fertilized, mulched, and seeded. Fabric netting, anchored with staples, shall be placed over the mulch in areas as noted in **Temporary Erosion Control Measures** paragraph 3 of this report. All areas within 100 feet of an undisturbed wetland shall be mulched prior to any predicted rain event regardless of the 48 hour window. Native topsoil shall be stockpiled and reused for final restoration when it is of sufficient quality.

2. All storm drain pipe outlets shall have riprap aprons at their outlet to protect the outlet and receiving channel from scour and deterioration. Installation details are provided in the plan set. The aprons shall be installed and stabilized to the extent practicable prior to directing runoff to the tributary pipe or culvert.

5. Implementation Schedule

The following construction sequence shall be required to ensure the effectiveness of the erosion and sedimentation control measures are optimized:

It is anticipated that construction within the development will commence in Fall of 2021 and be completed by Fall of 2022.

Note: For all grading activities, the contractor shall exercise extreme caution not to overexpose the site by limiting the disturbed area.

1. Install access drive culvert and riprap inlet and outlet protection as shown on plans prior to installing stabilized construction entrance at the proposed driveway for the site.

2. Install perimeter silt fence and/or wood waste berms prior to grubbing respective areas.

3. Clear and grub site. Install stone check dams at any evident concentrated flow discharge points.

4. Commence installation of drainage appurtenances.

5. Commence earthwork and grading to subgrade.

6. Continue earthwork and grading to subgrade as necessary for construction.

7. Complete remaining earthwork operations.

8. Complete installation of level spreader.

9. Install sub-base and base gravel.

10. Loam, lime, fertilize, seed and mulch disturbed areas and complete all landscaping.

11. Once the site is stabilized and a 90% catch of vegetation has been obtained, remove all temporary erosion control measures.

12. Touch up loam and seed.

Note: All denuded areas not subject to final paving, riprap, or gravel shall be revegetated.

Prior to construction of the project, the contractor shall submit to the owner a schedule for the completion of the work, which will satisfy the following criteria:

1. The above construction sequence should generally be completed in the specified order; however, several separate items may be constructed simultaneously. Work must also be scheduled or phased to reduce the extent of the exposed areas as specified below. The intent of this sequence is to provide for erosion control and to have structural measures such as silt fence and construction entrances in place before large areas of land are denuded.

2. The work shall be conducted in sections which shall:

a) Limit the amount of exposed area to those areas in which work is expected to be undertaken during the proceeding 30 days.

b) Revegetate disturbed areas as rapidly as possible. All areas shall be permanently stabilized within 7 days of final grading or before a storm event; or temporarily stabilized within 48 hours of initial disturbance of soil for areas within 100 feet of an undisturbed wetland and 7 days for all other areas. Areas within 100 feet of an undisturbed wetland shall be mulched prior to any predicted rain event regardless of the 48 hour window.

c) Incorporate planned inlets and drainage system as early as possible into the construction phase. The ditches shall be immediately lined or revegetated as soon as their installation is complete.

6. Erosion, Sedimentation and Stabilization Control Plan

Erosion and Sedimentation Control Plans are included in the plan set.

7. Details and Specifications

Erosion and Sedimentation details, notes, and specifications are included in the plan set.

8. Winter Stabilization Plan

The winter construction period is from November 1 through April 15. If the construction site is not stabilized with pavement, a road gravel base, 75% mature vegetation cover or riprap by November 15 then the site needs to be protected with over-winter stabilization. An area considered open is any area not stabilized with pavement; vegetation, mulching, erosion control mats, riprap or gravel base on a road.

Winter excavation and earthwork shall be completed such that any area left exposed can be controlled by the contractor. Limit the exposed area to those areas in which work is expected to be under taken during the proceeding 15 days and that can be mulched in one day prior to any snow event.

All areas shall be considered to be denuded until the subbase gravel is installed in roadway/parking areas or the areas of future loam and seed have been loamed, seeded and mulched. Hay and straw mulch rate shall be a minimum of 150 lbs./1,000 s.f. (3 tons/acre) and shall be properly anchored.

The contractor shall install any added measures which may be necessary to control erosion/sedimentation from the site dependent upon the actual site and weather conditions. Continuation of earthwork operations on additional areas shall not begin until the exposed soil surface on the area being worked has been stabilized, in order to minimize areas without erosion control protection.

8.1 Soil Stockpiles

Stockpiles of soil or subsoil shall be mulched for over winter protection with hay or straw at twice the normal rate or at 150 lbs/1,000 s.f. (3 tons per acre) or with a four-inch layer of woodwaste erosion control mix. This shall be done within 24 hours of stocking and re-established prior to any rainfall or snowfall. Any soil stockpile shall not be placed (even covered with hay or straw) within 100 feet from any natural resources.

8.2 Natural Resource Protection

Any areas within 100 feet from any natural resources, if not stabilized with a minimum of 75% mature vegetation catch, shall be mulched by December 1 and anchored with plastic netting or protected with erosion control mats. During winter construction, a double line of sediment barriers (i.e. silt fence backed with hay bales or erosion control mix) shall be placed between any natural resource and the disturbed area. Projects crossing the natural resource shall be protected a minimum distance of 100 feet on either side from the resource. Existing projects not stabilized by December 1 shall be protected with the second line of sediment barrier to ensure functionality during the spring thaw and rains.

8.3 Sediment Barriers

During frozen conditions, sediment barriers shall consist of wood waste filter berms as frozen soils prevent proper installation of hay bales and silt fence.

8.4 General Mulching

An area shall be considered denuded until areas of future loam and seed have been loamed, seeded and mulched. Straw mulch shall be applied at a rate of 150 lb. per 1,000 square feet or 3 tons/acre (twice the normal accepted rate of 75-lbs./1,000 s.f. or 1.5 tons/acre) and shall be properly anchored. Mulch shall not be spread on top of snow. The snow shall be removed down to a one-inch depth or less prior to application. After each day of final grading, the area shall be properly stabilized with anchored straw or erosion control matting. An area shall be considered to have been stabilized when exposed surfaces have been either mulched with straw or hay at a rate of 150 lb. per 1,000 square feet (3 tons/acre) and adequately anchored such that the ground surface is not visible though the mulch.

Between the dates of November 1 and April 15, all mulch shall be anchored by peg line, mulch netting, asphalt emulsion chemical, or wood cellulose fiber. When ground surface is not visible through the mulch then cover is sufficient. After November 1st, mulch and anchoring of all bare soil shall occur at the end of each final grading workday.

8.5 Slope and Ditch Mulching

Slopes shall not be left exposed for any extended time of work suspension unless fully mulched and anchored with peg and netting or with erosion control blankets. Mulching shall be applied at a rate of 230 lbs/1,000 s.f. on all slopes greater than 8%.

Mulch netting shall be used to anchor mulch in all drainage ways with a slope greater that 3% for slopes exposed to direct winds and for all other slopes greater that 8%. Erosion control blankets shall be used in lieu of mulch in all drainage ways with slopes 8%. Erosion control mix can be used to substitute erosion control blankets on all slopes except ditches.

8.6 Seeding

Between the dates of October 15 and April 1st, loam or seed will not be required. During periods of above freezing temperatures finished areas shall be fine graded and either protected with mulch or temporarily seeded and mulched until such time as the final treatment can be applied. If the date is after November 1st and if the exposed area has been loamed, final graded with a uniform surface, then the area may be dormant seeded at a rate of 3 times higher than specified for permanent seed and then mulched. Dormant seeding may be selected to be placed prior to the placement of mulch and fabric netting anchored with staples. If dormant seeding is used for the site, all disturbed areas shall receive 4" of loam and seed at an application rate of 5 lbs/1,000 s.f. All areas seeded during the winter shall be inspected in the spring for adequate catch. All areas insufficiently vegetated (less than 75% catch) shall be revegetated by replacing loam, seed and mulch. If dormant seeding is not used for the site, all disturbed areas shall be revegetated in the spring.

9. Standards for Timely Stabilization of Construction Sites During Winter

9.1 Ditches and Channels

The Contractor shall construct and stabilize all stone-lined ditches and channels on the site by November 15. The Contractor shall construct and stabilize all grass-lined ditches and channels on the site by September 1. If the Contractor fails to stabilize a ditch or channel to be grass-

lined by September 1, then the Contractor will take one of the following actions to stabilize the ditch for late fall and winter.

Install a sod lining in the ditch -- The Contractor shall line the ditch with properly installed sod by October 1. Proper installation includes the Contractor pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, watering the sod to promote root growth into the disturbed soil, and anchoring the sod with jute or plastic mesh to prevent the sod strips from sloughing during flow conditions.

Install a stone lining in the ditch --The Contractor shall line the ditch with stone riprap by November 15. The Contractor shall hire a registered professional engineer to determine the stone size and lining thickness needed to withstand the anticipated flow velocities and flow depths within the ditch. If necessary, the Contractor shall regrade the ditch prior to placing the stone lining so to prevent the stone lining from reducing the ditch's cross-sectional area.

9.2 Disturbed Slopes

The Contractor shall construct and stabilize stone-covered slopes by November 15. The Contractor shall seed and mulch all slopes to be vegetated by September 1. The department shall consider any area having a grade greater than 15% to be a slope. If the Contractor fails to stabilize any slope to be vegetated by September 1, then the Contractor shall take one of the following actions to stabilize the slope for late fall and winter.

Stabilize the soil with temporary vegetation and erosion control mats -- By September 1 the Contractor shall seed the disturbed slope with winter rye at a seeding rate of 3 pounds per 1,000 square feet and apply erosion control mats over the mulched slope. The Contractor shall monitor growth of the rye over the next 30 days. If the rye fails to grow at least three inches or cover at least 75% of the disturbed slope by November 1, then the Contractor shall cover the slope with a layer of woodwaste compost as described in item iii of this standard or with stone riprap as described in item iv of this standard.

Stabilize the slope with sod -- The Contractor shall stabilize the disturbed slope with properly installed sod by September 1. Proper installation includes the Contractor pinning the sod onto the slope with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil. The Contractor shall not use late-season sod installation to stabilize slopes having a grade greater than 33% (3H:1V).

Stabilize the slope with woodwaste compost -- The Contractor shall place a six-inch layer of woodwaste compost on the slope by November 15. Prior to placing the woodwaste compost, the Contractor shall remove any snow accumulation on the disturbed slope. The Contractor shall not use woodwaste compost to stabilize slopes having grades greater than 50% (2H:1V) or having groundwater seeps on the slope face.

Stabilize the slope with stone riprap -- The Contractor shall place a layer of stone riprap on the slope by November 15. The Contractor shall hire a registered professional engineer to determine the stone size needed for stability and to design a filter layer for underneath the riprap.

9.3 Disturbed Soils

By September 15 the Contractor shall seed and mulch all disturbed soils on areas having a slope less than 15%. If the Contractor fails to stabilize these soils by this date, then the Contractor shall take one of the following actions to stabilize the soil for late fall and winter.

Stabilize the soil with temporary vegetation -- By September 1 the Contractor shall seed the disturbed soil with winter rye at a seeding rate of 3 pounds per 1000 square feet, lightly mulch the seeded soil with hay or straw at 75 pounds per 1000 square feet, and anchor the mulch with plastic netting. The Contractor shall monitor growth of the rye over the next 30 days. If the rye fails to grow at least three inches or cover at least 75% of the disturbed soil before November 1, then the Contractor shall mulch the area for over-winter protection as described below.

Stabilize the soil with sod -- The Contractor shall stabilize the disturbed soil with properly installed sod by September 15. Proper installation includes the Contractor pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil.

Stabilize the soil with mulch -- By November 15 the Contractor shall mulch the disturbed soil by spreading hay or straw at a rate of at least 150 pounds per 1000 square feet on the area so that no soil is visible through the mulch. Prior to applying the mulch, the Contractor shall remove any snow accumulation on the disturbed area. Immediately after applying the mulch, the Contractor will anchor the mulch with plastic netting to prevent wind from moving the mulch off the disturbed soil.

10. Maintenance of Facilities

The stormwater facilities will be maintained by the Applicant, the Town of Cumberland, or their assigned heirs. The contract documents will require the contractor to designate a person responsible for maintenance of the sedimentation control features during construction as required by the Erosion Control Report. Long-term operation/maintenance recommended for the stormwater facilities is presented below.

The responsible party may contract with such professionals, as may be necessary in order to comply with this provision and may rely on the advice of such professionals in carrying out its duty hereunder, provided, that the following operation and maintenance procedures are hereby established as a minimum for compliance with this section.

Inspection and Maintenance Frequency and Corrective Measures:
The following areas, facilities, and measures will be inspected and the identified deficiencies will be corrected. Clean-out must include the removal and legal disposal of any accumulated sediments and debris.

Vegetated Areas:
Inspect slopes and embankments early in the growing season to identify active or potential erosion problems. Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows. The facilities will be inspected after major storms and any identified deficiencies will be corrected.

Roadways and Parking Surfaces: Clear accumulations of winter sand in parking lots and along roadways at least once a year, preferably in the spring. Accumulations on pavement may be removed by pavement sweeping. Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader. Repair potholes and other roadway obstructions and hazards. Plowing and sanding of paved areas shall be performed as necessary to maintain vehicular traffic safety.

Housekeeping

As part of the Stormwater Permit, the applicant is required to meet the standards in Appendix C of the Chapter 500 Rules. The following procedures are hereby established as a minimum for compliance with this section. For further information on the procedures listed below, refer to Chapter 500 rules – Appendix C.

Spill Prevention:
Appropriate spill prevention, containment, and response planning/implementation shall be used to prevent pollutants from being discharged from materials on site.

Groundwater Protection:
During construction, hazardous materials with the potential to contaminate groundwater shall not be stored or handled in areas of the site which drain to an infiltration area.

Fugitive Sediment and Dust:
Appropriate measures shall be taken to ensure that activities do not result in noticeable erosion of the soils and water and/or calcium chloride shall be used to ensure that activities do not result in fugitive dust emissions during or after construction.

Debris and Other Materials:
Litter, construction debris, and chemicals exposed to stormwater must be prevented from becoming a pollutant source.

Trench or Foundation De-watering:
Water collected through the process of trenching and/or de-watering must be removed from the ponded area, and must be spread through natural wooded buffers or other areas that are specifically designed to collect the maximum amount of sediment possible.

Non-stormwater Discharges:
Identify and prevent contamination by non-stormwater discharges.

11. Conclusion

The Applicant has provided temporary and permanent erosion control measures and specified a sequence of construction as measures to minimize erosion and sedimentation.

12. Attachments

Attachment A - Seeding Plan

SEEDING PLAN

Project: Equipment Storage Facility at Val Halla – Cumberland

Site Location: Cumberland, ME

☐ Permanent Seeding ☒ Temporary Seeding

1. Instruction on preparation of soil: Prepare a good seed bed for planting method used.
2. Apply lime as follows: _____# / acres, OR 138 # /M Sq. Ft.
3. Fertilize with _____ pounds of _____ N-P-K/ac. OR 13.8 pounds of 10-10-10 N-P-K/M Sq. Ft.
4. Method of applying lime and fertilizer: Spread and work into the soil before seeding.
5. Seed with the following mixture:

   50% Winter Rye

   50% Annual Rye

6. Mulching instructions: Apply at the rate of _____per acre, OR 75 pounds per M. Sq. Ft.

	Amount	Unit # Tons. Etc.
7. TOTAL LIME	138	#/1000 sq. ft.
8. TOTAL FERTILIZER	13.8	#/1000 sq. ft.
9. TOTAL SEED	1.03	#/1000 sq. ft.
10. TOTAL MULCH	75	#/1000 sq. ft.
11. TOTAL other materials, seeds, etc.		
12. REMARKS		

Spring seeding is recommended; however, late summer (prior to September 1) seeding can be made. Permanent seeding should be made prior to August 5 or as a dormant seeding after the first killing frost and before the first snowfall. If seeding cannot be done within these seeding dates, temporary seeding and mulching shall be used to protect the site. Permanent seeding shall be delayed until the next recommended seeding period.

SEEDING PLAN

Project: Equipment Storage Facility at Val Halla - Cumberland

Site Location: Cumberland, ME

☒ Permanent Seeding ☐ Temporary Seeding

1. Instruction on preparation of soil: Prepare a good seed bed for planting method used.
2. Apply lime as follows: _____# / acres, OR 138 # /M Sq. Ft.
3. Fertilize with _____ pounds of _____ N-P-K/ac. OR 18.4 pounds of 10-20-20 N-P-K/M Sq. Ft.
4. Method of applying lime and fertilizer: Spread and work into the soil before seeding.
5. Seed with the following mixture:

   40% Creeping Red Fescue

   30% Charger II Perennial Ryegrass

   20% KenBlue Kentucky Bluegrass

   10% Tiffany Chewings Fescue
6. Mulching instructions: Apply at the rate of _____per acre, OR 75 pounds per M. Sq. Ft.

	Amount	Unit # Tons. Etc.
7. TOTAL LIME	138	#/1000 sq. ft.
8. TOTAL FERTILIZER	18.4	#/1000 sq. ft.
9. TOTAL SEED	1.03	#/1000 sq. ft.
10. TOTAL MULCH	75	#/1000 sq. ft.
11. TOTAL other materials, seeds, etc.		
12. REMARKS		

Spring seeding is recommended, however, late summer (prior to September 1) seeding can be made. Permanent seeding should be made prior to August 5 or as a dormant seeding after the first killing frost and before the first snowfall. If seeding cannot be done within these seeding dates, temporary seeding and mulching shall be used to protect the site. Permanent seeding shall be delayed until the next recommended seeding period.

SECTION 10
Plan Set

SURVEYOR'S NOTES

THIS SURVEY PLAN IS ONLY VALID IF AUTHENTIC EMBOSSED SEAL AND SIGNATURE OF CERTIFYING PROFESSIONAL APPEAR ON THE FACE OF THIS SURVEY PLAN.

REFERENCE IS MADE TO THE CONTRACTUAL AGREEMENT BETWEEN THE PROFESSIONAL LAND SURVEYOR AND THE CLIENT.

THIS SURVEY PLAN IS SUBJECT TO POSSIBLE REVISION UPON RECEIPT OF A CERTIFIED TITLE OPINION.

ON THE BASIS OF MY KNOWLEDGE, INFORMATION AND BELIEF I CERTIFY EXCLUSIVELY TO THE CLIENT THAT THIS SURVEY PLAN, MADE TO THE NORMAL STANDARD OF CARE, SUBSTANTIALLY CONFORMS TO THE MAINE BOARD OF LICENSURE FOR LAND SURVEYOR STANDARDS.

NO CERTIFICATION IS MADE TO THE EXISTENCE OR NONEXISTENCE OF HAZARDOUS SUBSTANCES, ENVIRONMENTALLY SENSITIVE AREAS, UNDERGROUND UTILITIES, UNDERGROUND STRUCTURES, OR REAL ESTATE TITLE.

THE SOURCE OF BEARINGS FOR THIS LAND SURVEY WAS MAINE STATE PLANE WEST ZONE NAD 1983.

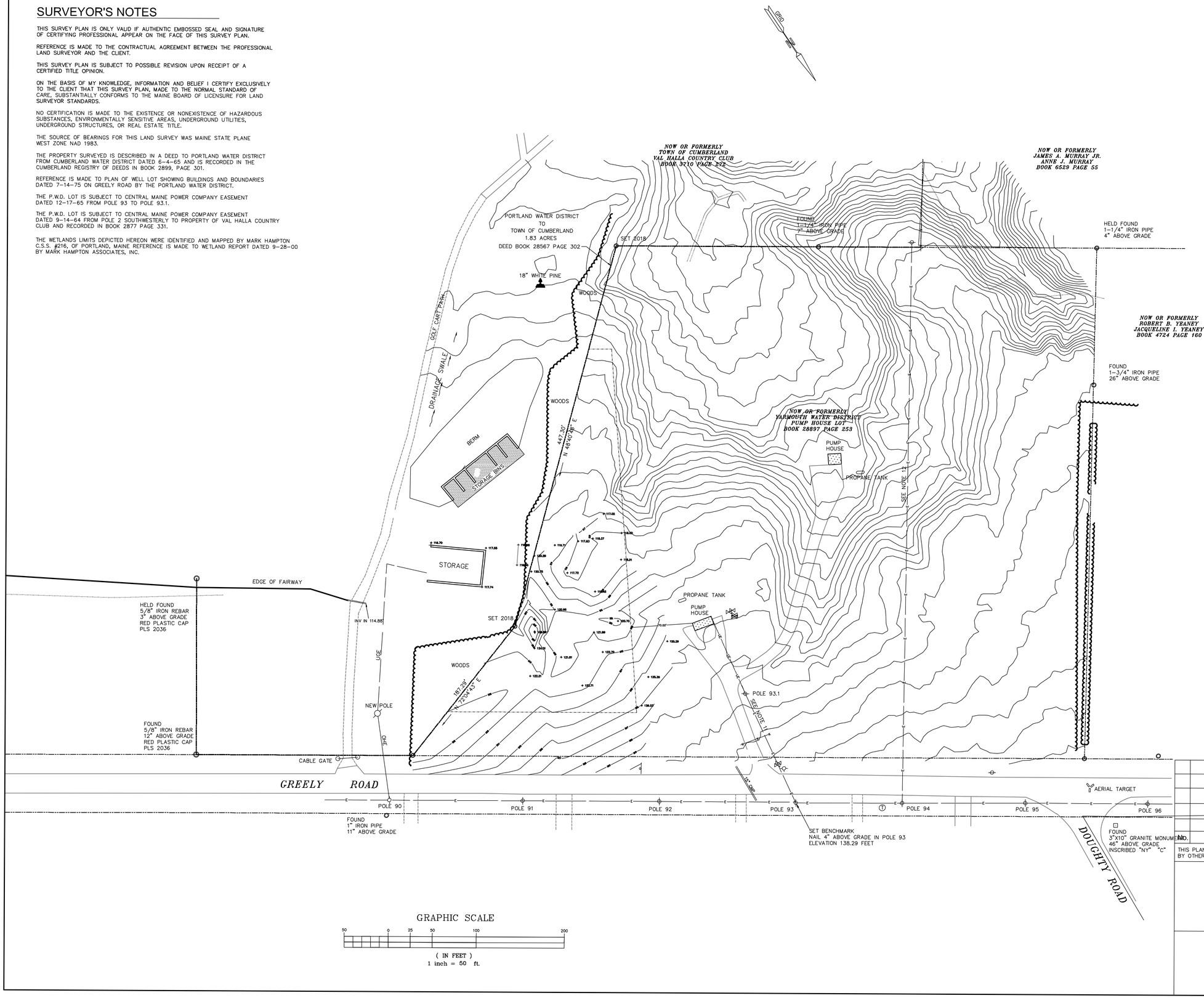
THE PROPERTY SURVEYED IS DESCRIBED IN A DEED TO PORTLAND WATER DISTRICT FROM CUMBERLAND WATER DISTRICT DATED 6-4-65 AND IS RECORDED IN THE CUMBERLAND REGISTRY OF DEEDS IN BOOK 2899, PAGE 301.

REFERENCE IS MADE TO PLAN OF WELL LOT SHOWING BUILDINGS AND BOUNDARIES DATED 7-14-75 ON GREELY ROAD BY THE PORTLAND WATER DISTRICT.

THE P.W.D. LOT IS SUBJECT TO CENTRAL MAINE POWER COMPANY EASEMENT DATED 12-17-65 FROM POLE 93 TO POLE 93.1.

THE P.W.D. LOT IS SUBJECT TO CENTRAL MAINE POWER COMPANY EASEMENT DATED 9-14-64 FROM POLE 2 SOUTHWESTERLY TO PROPERTY OF VAL HALLA COUNTRY CLUB AND RECORDED IN BOOK 2877 PAGE 331.

THE WETLANDS LIMITS DEPICTED HEREON WERE IDENTIFIED AND MAPPED BY MARK HAMPTON C.S.S. #216, OF PORTLAND, MAINE REFERENCE IS MADE TO WETLAND REPORT DATED 9-28-00 BY MARK HAMPTON ASSOCIATES, INC.



GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

LEGEND

EXISTING	DESCRIPTION	PROPOSED
	PROPERTY LINE	
	ADJOINER LINE	
	BUILDING SETBACK	
	EASEMENT	
	CENTER LINE	
	MONUMENT	
	IRON PIPE	
	IRON ROD	
	5/8" IRON REBAR	
	DRILL HOLE	
	BUILDING	
	WET LANDS	
	EDGE WETLAND	
	SIGN	
	STREAM	
	ROCK OUTCROP	
	EDGE PAVEMENT	
	GRAVEL ROAD	
	CURB LINE	
	EDGE WATER	
	TREE LINE	
	TP-7 TEST PIT	
	MW-8 MONITORING WELL	
124	CONTOURS	
G	GAS	
W	WATER	
S	SEWER	
SD	STORM DRAIN	
E	ELECTRIC LINES	
	MAIL BOX	
	GATE VALVE	
	LIGHT POLE	
	UTILITY POLE	
	HYDRANT	
	CATCH BASIN	
	MAN HOLE	
	POTABLE WELL	
	CULVERT	
o	CHAIN LINK FENCE	
x	BARB WIRE FENCE	
o	WOODEN FENCE	
	STONE WALL	
	CONIFEROUS TREE	
	DECIDUOUS TREE	
	BENCH MARK	

No.	Revision	Date

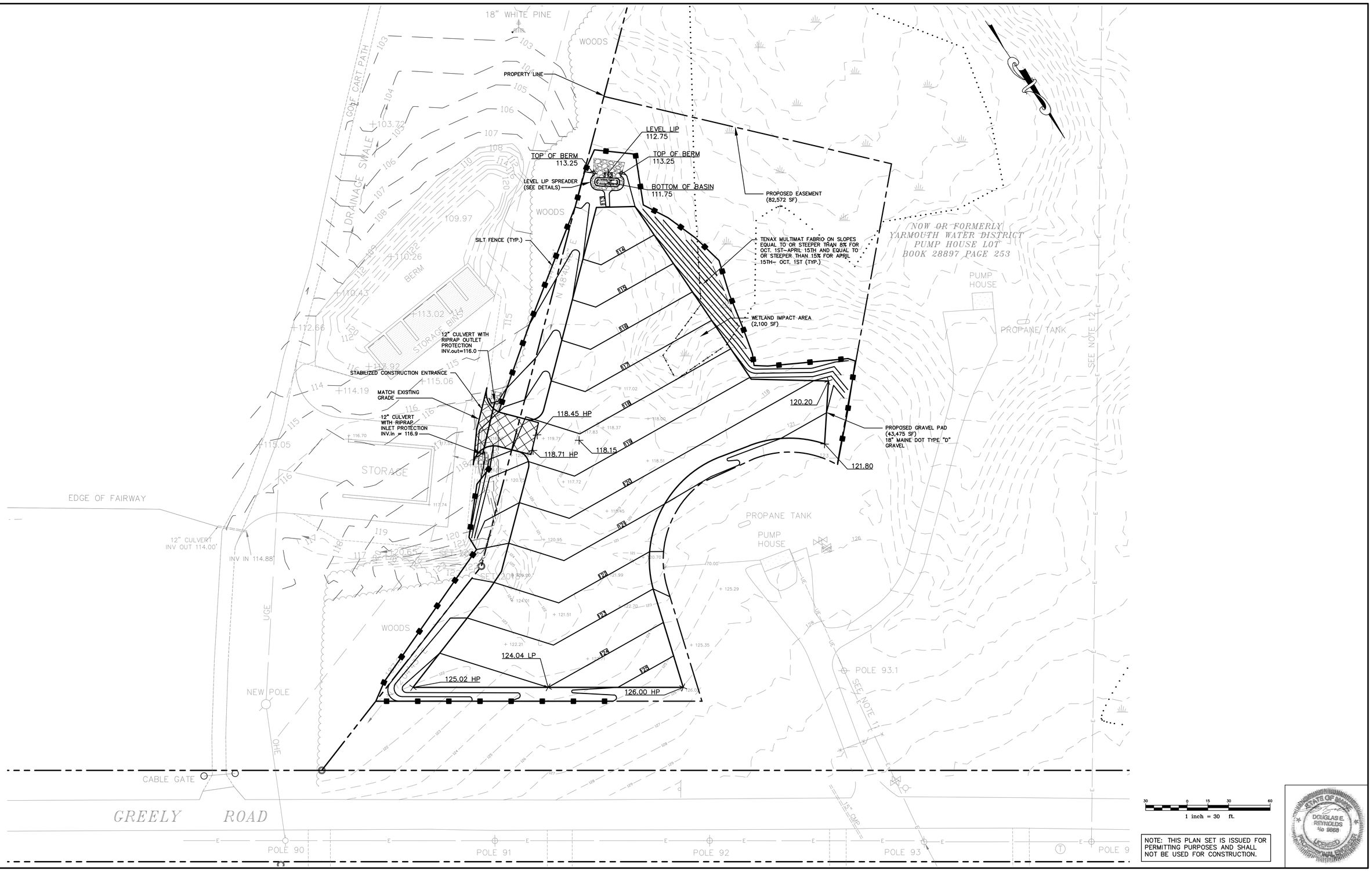
Scale:	1" = 50'
Project No:	2020072
AutoCAD Release:	2016
Drawn By:	DB
Field Date:	9-1-2020
Plan Date:	8-18-2021

ADDITIONAL TOPOGRAPHIC SURVEY FOR TOWN OF CUMBERLAND ON VAL HALLA PROPERTY CUMBERLAND MAINE

1

Boundary Points
PROFESSIONAL LAND SURVEYING, LLC
P.O. BOX 175
CUMBERLAND MAINE 04021-0175

STATE OF MAINE
DAVID BOUFFARD
2282
PROFESSIONAL LAND SURVEYOR



Rev.	Date	Revision

SITE PLAN REVIEW	9/27/21	DER
Issued For	Date	By

Design: AJK	Draft: AJK	Date: AUG 2021
Checked: DER	Scale: 1"=30'	Job No.: 3656.06
File Name: 3656-06-GP-PBASE.dwg		

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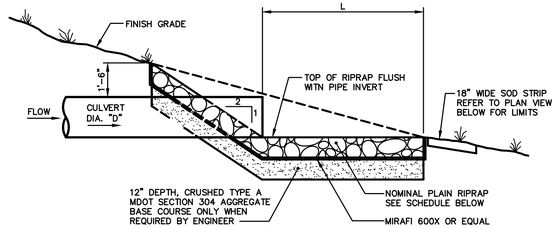
Drawing Name: **Layout, Grading, and Erosion Control Plan**

Project: **Equipment Storage Facility**
Greely Road, Cumberland, Maine 04201

Applicant: **Town of Cumberland**
Tuttle Road, Cumberland, Maine 04201

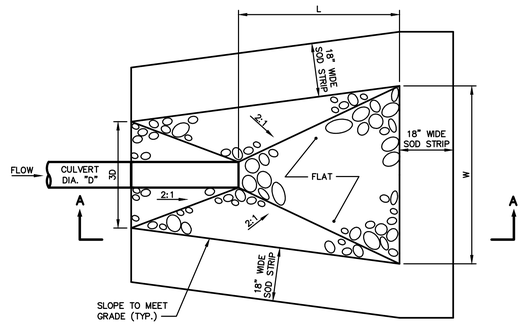
Drawing No. 2

U:\3656.06_Cumberland Storage Site Plan\2 - CAD\DWG\Gravel Pad Design\3656-06-GP-PBASE.dwg 9/30/2021 9:03 AM



SECTION A–A

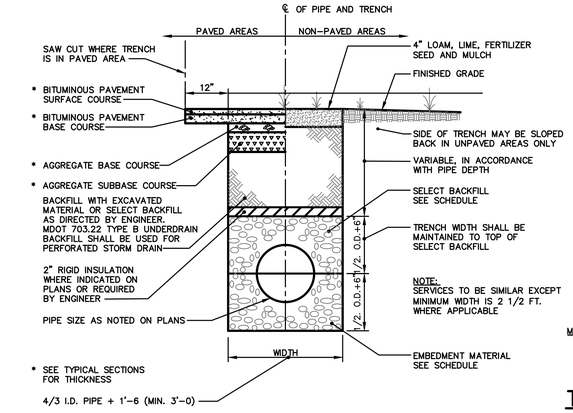
SCHEDULE					
	CULVERT DIAMETER (D)	LENGTH (L)	WIDTH (W)	STONE d50	RIPRAP THICKNESS
CULVERT	12"	8'	6'	6"	14"



PLAN VIEW

CULVERT OUTLET APRON

NOT TO SCALE



SCHEDULE OF TRENCH BACKFILL		
TYPE OF PIPE	EMBEDMENT MATERIAL	SELECT BACKFILL
CMP DUCTILE IRON RCP	MDOT 703.22 TYPE B UD BACKFILL	MDOT 703.22 TYPE B UD BACKFILL
PVC–SDR 35 HDPE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE	MDOT 703.22 TYPE B UD BACKFILL
PERFORATED PVC–SDR35 HDPE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE

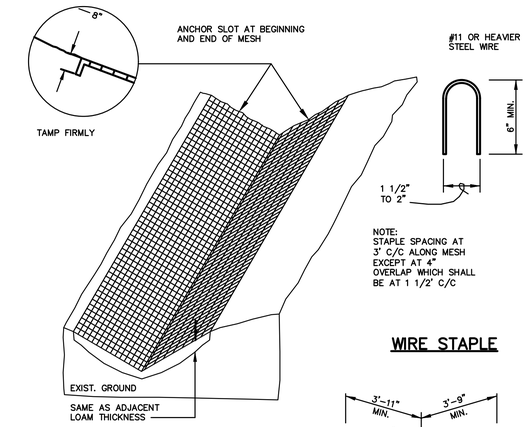
NOTE:
1. BRACING AND SHEETING OR OTHER TRENCH PROTECTION TO BE PROVIDED TO MEET APPLICABLE STATE AND O.S.H.A. SAFETY STANDARDS. ALL SUCH TRENCH PROTECTION TO BE THE RESPONSIBILITY OF THE CONTRACTOR.
2. INSTALL WARNING TAPE DIRECTLY ABOVE UTILITIES, 12" BELOW FINISH GRADE.

MINIMUM COVER	PIPE
2'–0"	DRAIN (1)
5'–5"	WATER
5'–0"	SEWER

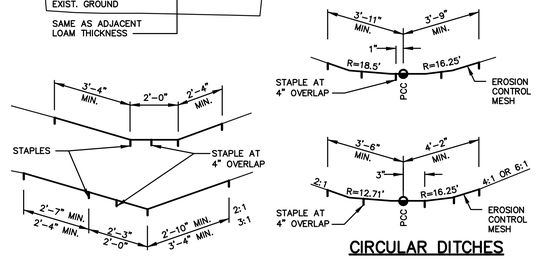
(1) COVER BETWEEN 2' AND 3' SHALL INCLUDE 4" RIGID INSULATION. COVER BETWEEN 3' AND 4' SHALL INCLUDE 2" RIGID INSULATION.

TRENCH SECTION

N.T.S.



WIRE STAPLE



CIRCULAR DITCHES

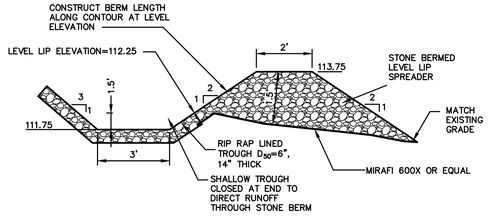
STAPLES AT EDGES, AT QUARTER POINTS, AT 4" OVERLAP

EROSION CONTROL MESH

NOT TO SCALE

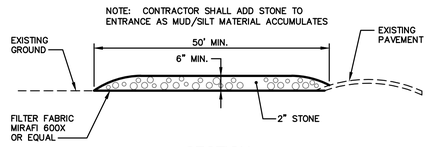
BERM STONE SIZE	
SIEVE DESIGNATION (US CUSTOMARY)	PERCENT BY WEIGHT PASSING
12 IN	100
6 IN	84–100
3 IN	68–83
1 IN	42–55
NO. 4	8–12

NOTE: PRIOR TO CONSTRUCTION OF ANY ONSITE DRAINAGE FEATURES, THE CONTRACTOR SHALL STAKE OUT THE LEVEL LIP SPREADERS FOR REVIEW BY GORRILL–PALMER. THE CONTRACTOR SHALL NOTIFY GORRILL–PALMER WHEN STAKE OUT IS COMPLETE, AND PROVIDE GROUND SURVEYED ELEVATIONS OF THE LEVEL LIP SPREADER LOCATION, GORRILL–PALMER WILL CONDUCT A SITE WALK WITHIN 48 HOURS TO CONFIRM LOCATION AND ORIENTATION TO VERIFY DESIGN INTENT.

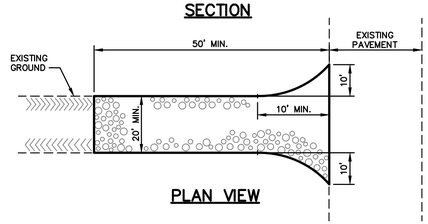


STONE BERM LEVEL LIP SPREADER

NOT TO SCALE



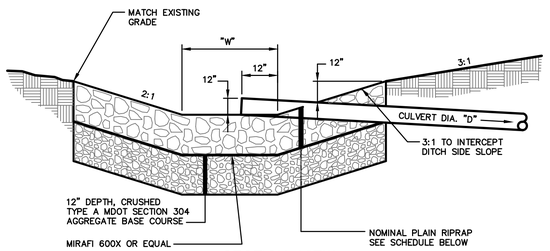
SECTION



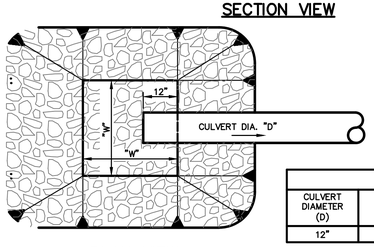
PLAN VIEW

STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE



SECTION VIEW



SCHEDULE			
CULVERT DIAMETER (D)	WIDTH (W)	STONE d50	RIPRAP THICKNESS
12"	36"	6"	14"

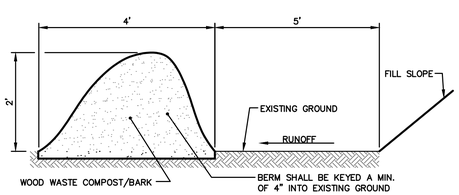
PLAN VIEW

CULVERT INLET APRON

NOT TO SCALE

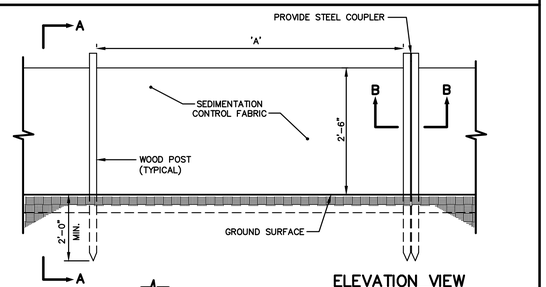
NOTES:

1. THE WOOD WASTE COMPOST/BARK MIX SHALL CONFORM TO THE FOLLOWING STANDARDS:
   A. MOISTURE CONTENT – 30–60%
   B. pH – 5.0 – 8.0.
   C. SCREEN SIZE – 100% LESS THAN 3", MAX. 70% LESS THAN 1".
   D. NO LESS THAN 40% ORGANIC MATERIAL (DRY WEIGHT) BY LOSS OF IGNITION.
   E. NO STONES LARGER THAN 2" IN DIAMETER.
   F. SILTS, CLAYS OR SUGAR SANDS ARE NOT ACCEPTABLE IN THE MIX.
2. THE COMPOST BERM SHALL BE PLACED, UNCOMPACTED, ALONG A RELATIVELY LEVEL CONTOUR.
3. THE WOOD WASTE COMPOST/BARK FILTER BERM MAY BE USED IN LIEU OF SILTATION FENCE, AT THE TOE OF SHALLOW SLOPES, ON FROZEN GROUND, LEDGE OUT CROPS, VERY ROOTED FORESTED AREA OR AT THE EDGE OF GRAVEL PARKING AREAS.
4. BERMS SHALL REMAIN IN PLACE UNTIL UPSTREAM AREA IS COMPLETED OR 70% CATCH OF VEGETATION IS ATTAINED. BERMS SHALL BE REMOVED BY SPREADING SUCH THAT NATIVE EARTH CAN BE SEEN BELOW.
5. WOODWASTE COMPOST BARK FILTER SHALL NOT BE USED IN WETLAND AREAS.

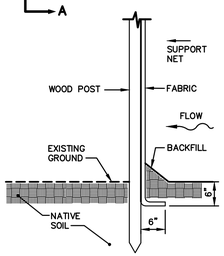


WOOD WASTE COMPOST/BARK FILTER BERM DETAIL

NOT TO SCALE

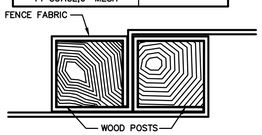


ELEVATION VIEW



SECTION A–A

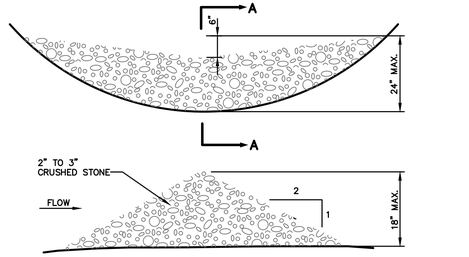
SILT FENCE	
SILT FENCE REINFORCEMENT	MAXIMUM SPACING "A"
NONE	6"
WIRE REINFORCE.MENT 14 GUAGE,6" MESH	10'



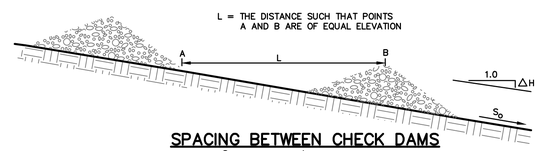
SECTION B–B

SILTATION FENCE

NOT TO SCALE



SECTION A–A



SPACING BETWEEN CHECK DAMS

S_o (FT./FT.)	L (FT.)
0.020	75
0.030	50
0.040	40
0.050	30
0.080	20
0.100	10

STONE CHECK DAM

NOT TO SCALE

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE
DOUGLAS E. REYNOLDS
No 9868
LICENSED
PROFESSIONAL ENGINEER

Rev.	Date	Revision

Issued For	Date	By
SITE PLAN REVIEW	9/27/21	DER

Design: AJK	Draft: AJK	Date: AUG 2021
Checked: DER	Scale: N.T.S.	Job No.: 3656.06
File Name: 3656–06–GP–PBASE.dwg		

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Drawing Name:	Details
Project:	Equipment Storage Facility Greely Road, Cumberland, Maine 04201
Applicant:	Town of Cumberland Tuttle Road, Cumberland, Maine 04201

Drawing No. 3

U:\3656.06_Cumberland Storage Site Plan\Z – CAD\DWG\Gravel Pad Design\3656–06–GP–PBASE.dwg 9/30/2021 9:03 AM