

Bill LaBelle
Septic System Design & Inspections
207-537-5900
58 Megan Lane
Mariaville, Maine 04605

Preliminary Septic Soil Report

Date: May 2018

Client: Greg Johnston -- GF Johnston & Associates, PO Box 197, SW Harbor, Maine 04679

Land Information: 8.8 Acres off US Route 1 in Gouldsboro

Purpose of Investigation: Preliminary soils suitability for septic systems for a proposed subdivision.

Findings: Found 6 preliminary septic soil sites as follows, also see the attached Google earth image for approximate Test Pit locations and site information.

TP #1 & #2 = Classification 3-C - Limiting Factor - SGWT @ 15" to 18"

TP #3 & #4 = Classification 3-C - Limiting Factor - SGWT @ 16" to 18"

TP #5 & #6 = Classification 3-C - Limiting Factor - SGWT and/or restrictive layer @ 18" to 20"

TP #7 & #8 = Classification 3-D/AIII - Limiting Factor - Ledge @ 22" and/or SGWT @ 13"

TP #9 & #10 = Classification 3-C/AIII - Limiting Factor - Ledge @ 22"

TP #11 & #12 = Classification 3-C - Limiting Factor - SGWT @ 20"

This report was done using the guidelines set forth in the State of Maine Subsurface Wastewater Disposal Rules "SWDR" in effect at the time of this report. "SWDR" as well as Environmental Rules and Regulations change from time to time and those future changes could affect the findings of this report. Also note, this report was done to determine suitability for septic system installation only; you still need to check with the proper town or state officials to determine if permits can be obtained for any proposed development of the property.

If you have any questions regarding this matter or would like to further complete Full Septic Designs, please contact me at 207-537-5900.

Sincerely,

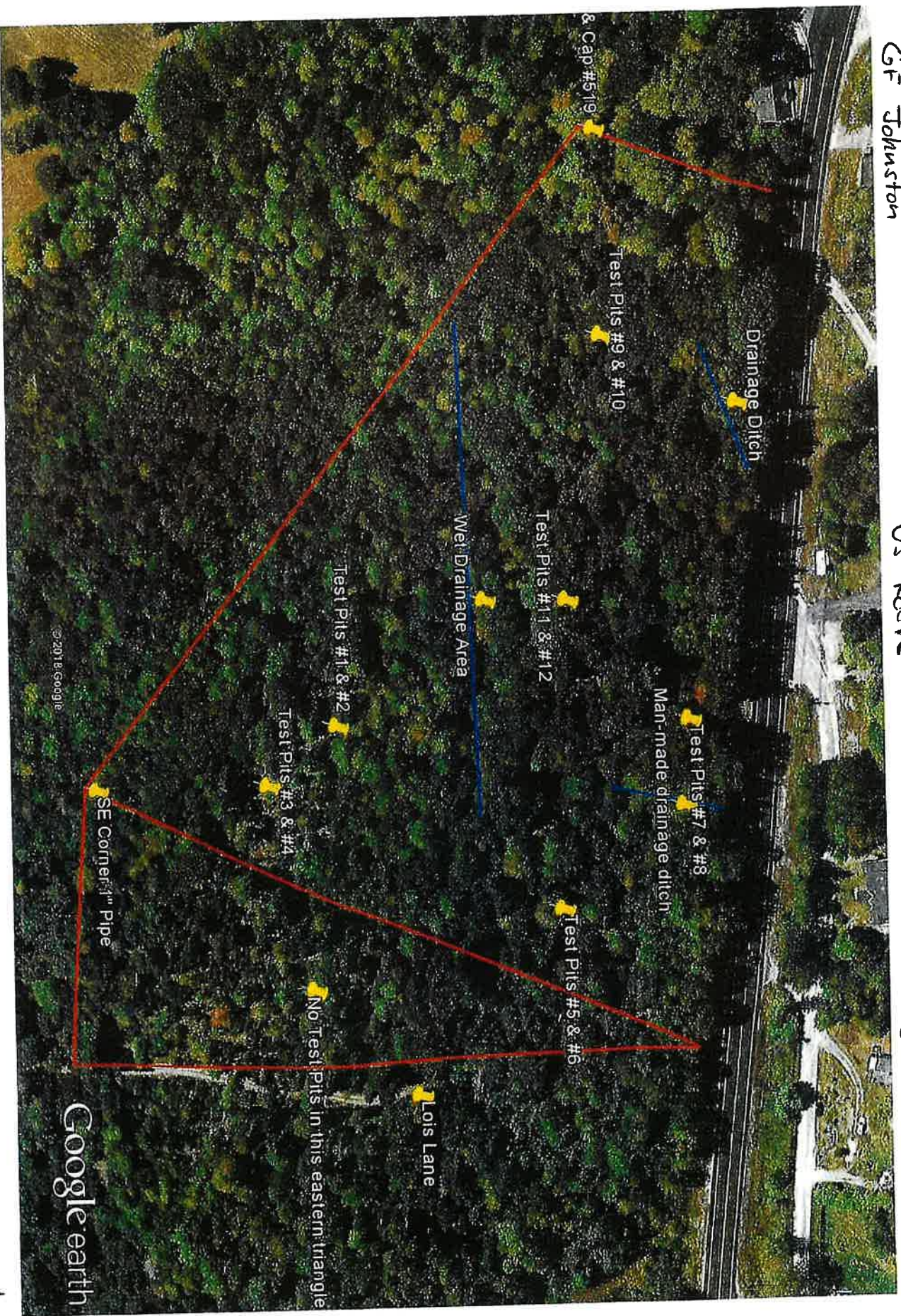


Bill LaBelle
SE #319

GIF Johnston

US Route

Gaulskens



& Cap #519

Test Pits #9 & #10

Drainage Ditch

Test Pits #11 & #12

Wet Drainage Area

Test Pits #1 & #2

Test Pits #3 & #4

Man-made drainage ditch

Test Pits #7 & #8

Test Pits #5 & #6

SE Corner 1\"/>

No Test Pits in this eastern triangle

Lois Lane

Google earth

Google earth

feet
meters



900





MOYSE
ENVIRONMENTAL
SERVICES, INC.

Environmental and
Land Use Consulting

September 12, 2018

G. F. Johnston and Associates
Mr. Greg Johnston, P.E.
58 Hillcrest, Suite #2
Southwest Harbor, ME 04679

RE: Protected Resources and Soil Suitability Report
Proposed "Jones Ridge Subdivision" - House Lots
US Route 1 and Lois Lane
Gouldsboro, Maine

INTRODUCTION

As requested, we completed a protected resource and preliminary site evaluations for soil suitability for the proposed "Jones Ridge Subdivision" (seven house lots) off Rte. 1 and Lois Lane in Gouldsboro, ME (see Site Location Maps attached). We understand that Mr. Andy Ray is proposing to offer these house lots for sale as sites for typical, single-family residences. The purpose of our evaluation work was to identify and map any protected resources and assess the suitability of the soils on each lot for a conventional subsurface wastewater disposal (septic system), including describing any restrictions that the site conditions may pose for the project.

Completion of resource identification and mapping, and confirming that the soils are suitable for a septic system before you move forward with any residential development project is common "due diligence". Also, they are typically required as part of most projects' planning, design and permitting phases, including permit applications to the Maine Department of Environmental Protection (DEP) and the Town of Gouldsboro.

SITE INVESTIGATION

We completed our field work on June 04, 2018. We used a Sketch Plan provided by G. F. Johnston and Assoc. to guide for our field work (see Subdivision Plan attached). The lots are all wooded, except for a few small clearings. It appears that the site was selectively cut somewhat about 25± years ago, but there is minimal land disturbance.

Off-site Review - Moyses Environmental Services completed an off-site review. This review included published/GIS mapping to help ensure that there are no reasonably anticipated protected resource issues on the site, from sources like US Fish and Wildlife, Maine Inland Fisheries and Wildlife, Maine Geological Survey, FEMA, National Wetland Inventory (NWI) and Soil Conservation Service (now the NRCS). These sources maintain records of sites that have or may have unique natural features, such as floodplains, sand & gravel aquifers, significant wildlife habitat and areas containing rare or threatened plant or animal species (see appropriate maps attached).

Wetlands - Our wetland determinations were based primarily on the procedures outlined in the 1987 Army Corps of Engineers Wetlands Delineation Manual and the identification criteria of the 2010 Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral & Northeast Region was also referred to later, but there are no differences in the approach for these wetlands. For an area to be a jurisdictional "wetland", it must possess three criteria:

1. *Predominance of hydrophytic vegetation*
2. *Predominance of hydric soils*
3. *Predominance of wetland hydrology*

A wetland delineation is an evaluation of an area to determine if that area is dominated (greater than 50 percent occurrence) by these three criteria. The National List of Plant Species That Occur in Wetlands: Maine was used to identify the indicator status of the hydrophytic vegetative species. Hydric soil determinations were based on the New England Interstate Water Pollution Control Commission's Manual: Field Indicators for Identifying Hydric Soils in New England. Soils information obtained from the USDA Soil Conservation Service (SCS) mapping was also used to supplement the findings of our wetland delineation fieldwork. Wetland hydrology is identified based on the presence of strong hydrology indicators as described in the above manuals. The wetland boundaries were marked with pre-labeled ("Wetland"), pink-glo flagging. See photos and map attached.

Vernal Pool Assessment - We completed an "off-season" Vernal Pool Assessment, outside of the recommended identification period. A typical assessment usually requires at least two site visits, and commonly three visits, to ensure that we examine any PVP's when they may be active for both wood frogs (late April to early May) and salamanders (early May to mid-May, or so). However, we did not identify any PVPs during our visit, so we did not make any further investigations subsequent to June 4th.

For reference, currently, both the Corps and DEP have rules regulating the disturbance of vernal pools and the land neighboring vernal pools. A vernal pool is considered *significant* when the abundance criteria threshold for any one of the four species is exceeded. The criteria for each of the four species are provided below for reference, as stated in the NRPA Chapter 335.

Species	Abundance Criteria
Fairy shrimp	Presence in any life stage
Blue spotted salamanders	Presence of 10 or more egg masses
Spotted salamanders	Presence of 20 or more egg masses
Wood frogs	Presence of 40 or more egg masses

Each VP is marked with labeled, lime-glo and red flagging. Adequate field data is then collected to complete a Vernal Pool Survey Form, along with photos, for each VP to record our observations.

Stream Identification - Moyses Environmental Services also completed a stream determination for this site. Pursuant to the Maine NRPA, for a drainage way to be called a "stream", it must have a channel between defined banks. The channel must have been created by the action of surface water and has to possess 2 or more of the following characteristics:

- It is depicted as a solid or broken line on the most recent 7.5' USGS topographic map
- It contains or is known to contain flowing water continuously for at least 6 months of the year in most years
- The channel bed is composed primarily of mineral material such as sand and gravel, parent material or bedrock, that has been deposited or scoured
- The channel contains aquatic animals, such as fish, aquatic insects or mollusks in the water, or if no surface water is present, within the stream bed
- The channel contains aquatic vegetation and is essentially devoid of upland vegetation

Typical photos were taken. See photos and map attached.

The wetland flags and stream normal high water line and other related site features of note were subsequently located by Moyses Environmental Services using a sub-meter Trimble Pro 6H Global Positioning System (GPS) unit. Once this GPS data was processed, we overlaid our mapping on to a base plan of the site provided by G.F. Johnston.

Soils - On June 4, 2018, we made several hand dug test pits/auger borings to examine the existing soil conditions within the subdivision area, being sure to look at most of the proposed house lots. Soils investigations by others looked at Lots 1 through 5, but we looked at a few of these lots while we were on-site doing the wetland delineation work just to confirm their suitability. We examined the soil characteristics of each profile down to a depth of 2 feet or less, where we consistently encountered what appeared to be bedrock. Where appropriate we noted color, texture, consistency, depth to mottling, depth to restrictive layers and related soil properties. Limiting factors, such as depth to ledge, restrictive layers (dense substrata) and seasonally perched water table were logged where found. The soil profiles were logged and are provided on the attached "Soil Conditions Summary Table – Form E". The hand test pits/auger borings were marked with labeled ("HTB #") orange with black striped flagging, and their location is shown on the attached plan. We also have reviewed the published soils mapping completed by the USGS, USDA Soil Conservation Service (now the NRCS) and the Maine Geological Survey (MGS) to compare to our findings on-site (see copy of maps attached).

The current Maine Subsurface Wastewater Disposal Rules, dated August 03, 2015, require that a minimum of 9 inches of free-draining soil be present for the standard installation of a septic system outside of any shoreland zone. We understand that the homes proposed for these lots will likely be at least typical three-bedroom dwellings. A three-bedroom home theoretically generates about 270 gallons of wastewater per day (gpd). That is the design flow that we used to estimate the system capacity needs and disposal field size requirements to guide our on-site investigation.

SUMMARY OF FINDINGS

Please refer to the attached subdivision plan by G. F. Johnston and Associates and the Photo Pages for more detailed information while reviewing the following text. The NWI mapping did not identify any wetlands on the site. The SCS soil survey did not identify any hydric soils as the dominant soil type. No sand & gravel aquifers or special wildlife habitats have been mapped in the area either. Our findings agreed with that published mapping somewhat, as the soils are similar to that mapped by the SCS and there are only a few wetlands and one stream on the site. Note that the protected resources found will not affect the development activities proposed.

Wetlands - Only one large wetland was identified on the site, in the northeasterly corner on proposed Lot 7 (see Photo Pages and Plan attached). This is a forested wetland along its perimeter where it is seasonally saturated, with persistent scrub shrub vegetation dominating the central portion that is seasonally inundated and "wet" most of the year. The other three wetlands are small, forested wetlands that lie along the southwesterly site limits on Lots 3 and 4.

Vernal Pools - No potential vernal pools were identified, except for the ponded portion of the large wetland described above. However, given that wetland is drained by a stream, it does not meet the definition of vernal pool as they are isolated pools and seasonally ponded, and have no inlets or outlets.

Stream – We identified one perennial stream, along the easterly site boundary, beginning near the easterly end of the boundary shared by Lot 6 and Lot 7 where it drains the large wetland. This stream has segments that may dry up in late July and August during more droughty conditions, but is otherwise flowing most of the year. It does not likely have any fisheries value and appears to simply be a conveyance of water collected by that large wetland on Lot 7.

Soils - Under provisions of the Rules, suitable soils were found for installing a wastewater disposal field on each proposed lot. The soil profile conditions are primarily either 2AII or 2AIII, with dominant soil textures ranging from gravelly loams and gravelly fine sandy loams (see Soil Conditions Summary Table attached). There was evidence of a seasonally high water table at about 16 inches in depth over a firm substratum and bedrock on Lot 6. There was no seasonal watertable on the other lots as they are mostly shallow to

moderately deep to bedrock and well drained. Depth to bedrock should be considered for the planning of driveways, house foundations and utility placements, along with the septic system installations. Backhoe-dug test pits are highly recommended to confirm the subsurface conditions on a given lot prior to finalizing any construction plans.

Based on our observations, a chamber-type disposal field is likely the most feasible option on the more sloping areas and either a bed or chamber system (or alternative) will be viable on the more level lots. The final location and design of a septic system will depend on the final development plans of the home on each lot. A "low-profile" septic tank will likely be required given the shallow nature of the soils, but that depth should be confirmed with a backhoe. The proper installation of a septic system relative to the dwellings, wells (owner's and abutter's), wetlands, property lines, etc. are all necessary considerations to comply with the Rules.

The soils on this site are suitable for most aspects of development, with the proper planning, design and implementation of current construction practices. A large percentage of the development in the greater Gouldsboro area has been constructed on these common soils over the years. Any excavations for foundations, placement of underground utilities and subsurface drainage must consider their relatively shallow depth. The Maine DEP's "Best Management Practices (BMPs) for Construction" should be followed closely, with the proper installation and maintenance of erosion and sediment control measures until the site is permanently stabilized again. Stabilization of disturbed soils as soon as possible should be emphasized in any measures that will be implemented, particularly on the steeper slopes and adjacent to wetlands and the stream. Topsoil may need to be added to re-establish vegetation in excavated areas where relatively infertile, denser subsoils or ledge are exposed. Also, be advised that there are local, Town of Gouldsboro development ordinances and Maine DEP regulations that must be complied with. We recommend that all pertinent local, state and federal resource protection and development regulations be reviewed thoroughly, and understood, to ensure that any project here will be in compliance.

We will gladly design a new septic system for each lot at your request. Thank you for the opportunity to assist G.F. Johnston and Associates with this project. Please contact us if you have any questions

Sincerely,

MOYSE ENVIRONMENTAL SERVICES, INC.



David W. Moyse, LSE, CSS

cc: File

