

Attachment 1

Wetland Delineation Report

**Wetlands, Stream and Vernal Pool
Survey Report**

**Sugarloaf Resort –
West Mountain Expansion**
Carrabassett Valley, Maine

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Wetlands, Streams and Vernal Pools Delineation Report – West Mountain Expansion Project

Introduction

On behalf of the Boyne Resorts (Boyne), Vanasse Hangen Brustlin, Inc. (VHB) conducted on-site wetland and waterbody delineations, and identification of potential vernal pools within a study area for a proposed expansion of the Sugarloaf Resort known as the West Mountain, in Carrabassett Valley, Maine. The purpose of this report is to document wetlands and water resources that fall under the federal jurisdiction of the U.S. Army Corps of Engineers (USACE) and the Clean Water Act (CWA), and under the state jurisdiction of the Maine Department of Environmental Protection (Maine DEP) and the Maine Natural Resources Protection Act (NRPA).

In addition to describing the identified wetland resource areas, this report describes the existing conditions within the study area, and the methodologies employed for identification of wetlands and water resources.

Description of the Study Area

The approximately 565-acre Study Area is the forested north flank of Sugarloaf Mountain south of West Mountain Road, west of Bucksaw Drive, east of and to the summit of the West Mountain Lift (approximate coordinates 45.056241, -70.323507). See Appendix 1 for a Site Location Map. The Study Area ranges from approximately 1,340-feet above-sea-level (asl) at West Mountain Road to approximately 2,900-feet asl at the top of the chairlift. The area is sloped to the north, more steeply at the upper elevations than lower on the slope. Waters from on-site streams drain into the South Branch of the Carrabassett River (HUC 12: 010300030401) which, at its closest approach is approximately 0.2-miles from the northwest corner of the Study Area. The USGS National Hydrography Dataset (NHD) does not show any mapped streams within this Study Area. Likewise, the National Wetlands Inventory (NWI) has not mapped any wetlands within the Study Area.

Land-use history within the Study Area is characterized by logging activities with an extensive network of logging roads and skid trails present. Much of the forestland appears to have been cut multiple times, including within the last 10 years. The Study Area is surrounded by and includes ski infrastructure (trails, lifts, snowmaking equipment) particularly to the southeast, where the main mountain operations are concentrated.



Condominium and residential developments are present east and west of the Study area and a golf course sits to the north between the Study Area and the South Branch of the Carrabassett River. Southwest of the West Mountain Lift summit is the least developed portion of the Study Area with some recent logging at lower, hardwood dominated slopes and mature softwood forest at the highest elevations.

The upper slopes of the Study Area are characterized by sub-alpine fir forest with balsam fir (*Abies balsamic*), mountain ash (*Sorbus americana*), black spruce (*Picea mariana*), and heart-leaved paper birch (*Betula cordifolia*). Mid-elevation slopes are logging-disturbed mixed hardwood and softwood forest, with abundant yellow birch (*Betula alleghaniensis*), balsam fir, red spruce (*Picea rubens*), and striped maple (*Acer pennsylvanica*), understories of hobblebush (*Viburnum lantanoides*), mountain maple (*Acer spicatum*), witch-hazel (*Hamamelis virginiana*), with scattered white pine (*Pinus strobus*) and northern white cedar (*Thuja occidentalis*), and hemlock (*Tsuga canadensis*). Lower elevation forests consisted of northern hardwood forest with sugar maple (*Acer saccharum*), American beech (*Fagus americana*), paper birch (*Betula papyrifera*), and yellow birch (*Betula alleghaniensis*) dominating. Common plants observed in wetlands include red maple (*Acer rubrum*), balsam fir, yellow birch, jewelweed (*Impatiens capensis*), nodding sedge (*Carex gynandra*), sensitive fern (*Onoclea sensibilis*), northeastern mannagrass (*Glyceria melicaria*), steeplebush (*Spiraea tomentosa*), broad-leaved cattail (*Typha latifolia*), bulrushes (*Scirpus spp.*), and willows (*Salix spp.*). Legacy logging roads are prominent within the Study Area, often influencing hydrology and vegetation via soil compaction and erosional rills.

The Study Area is underlain by the Silurian Rangeley Formation, "B" member, a highly metamorphosed sedimentary bedrock. Surficial geology is mostly extensive bedrock outcrops with only a thin cover of soil and vegetation; surficial deposits are essentially absent (USGS, 2021). Soils on site are very stony with much of the Study Area being characterized by boulders under thin soils. Dominant soils underlying the Study area include Marlow-Peru association (15-35% slopes), very stony; Peru-Marlow association (3-15% slopes), very stony; Peru fine sandy loam (8-15% slopes), very stony; and Lyman-Tunbridge-Abram complex (15-35% slopes) (USDA/NRCS Websoil Survey). The steep, rocky soils create emerging/losing streams and wetland features due to the subterranean porosity of the bouldery mountain slope. A Natural Resources Conservation Service (NRCS) soils map is included as Appendix 2.

Methodology

Wetlands

VHB ecologists conducted initial wetland delineation field work within the survey area during the spring of 2020 and then revisited the site in July and October of this same year. VHB delineated the boundary of wetlands in accordance with the *Army Corps of Engineers 1987 Wetland Delineation Manual* (1987 Manual) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0)* (Regional Supplement). All wetland delineations were conducted using Routine Determination Methods, which require that a wetland must contain a dominance of hydrophytic vegetation, hydric soils, and evidence of hydrology to be considered a wetland. Wetland boundaries were



located and demarcated with flagging and flag locations were recorded in the field using a Trimble® GPS unit capable of sub-meter accuracy, post-processed, and transferred and incorporated onto project mapping.

VHB completed one wetland and one upland Regional Supplement data form along the boundary of each identified wetland system to document the boundary. Additional field notes were also taken to record the classification of each wetland in accordance with the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin Classification), general site characteristics, unique qualities observed during the site assessment, and other considerations relevant to support the investigation findings. Wetlands functions and values were assessed with reference to the USACE New England District's *The Highway Methodology Workbook Supplement: Wetland Functions and Values - A Descriptive Approach*. VHB took representative photographs of each wetland, drew labeled field sketches of the wetland boundary on an aerial photograph-based map, and recorded notes on the flagging sequence for each wetland.

Wetlands of Special Significance (WOSS)

Following delineations, VHB evaluated if wetlands met the Wetlands of Special Significance (WOSS) criteria. Wetlands of Special Significance are defined in NRPA Chapter 310: Wetlands and Waterbodies Protection Section 4. According to Chapter 310, WOSS include all coastal wetlands and great ponds, and freshwater wetlands that exhibit one or more of the following characteristics:

- “(1) Critically imperiled or imperiled community. The freshwater wetland contains a natural community that is critically imperiled (S1) or imperiled (S2) as defined by the Natural Areas Program.
- (2) Significant wildlife habitat. The freshwater wetland contains significant wildlife habitat as defined by 38 M.R.S.A. § 480-B (10).
- (3) Location near coastal wetland. The freshwater wetland area is located within 250 feet of a coastal wetland.
- (4) Location near GPA great pond. The freshwater wetland area is located within 250 feet of the normal high water line, and within the same watershed, of any lake or pond classified as GPA under 38 M.R.S.A. § 465-A.
- (5) Aquatic vegetation, emergent marsh vegetation or open water. The freshwater wetland contains under normal circumstances at least 20,000 square feet of aquatic vegetation, emergent marsh vegetation or open water, unless the 20,000 or more square foot area is the result of an artificial ponds or impoundment.
- (6) Wetlands subject to flooding. The freshwater wetland area is inundated with floodwater during a 100-year flood event based on flood insurance maps produced by the Federal Emergency Management Agency or other site-specific information.
- (7) Peatlands. The freshwater wetland is or contains peatlands, except that the department may determine that a previously mined peatland, or portion thereof, is not a wetland of special significance.



(8) River, stream or brook. The freshwater wetland area is located within 25 feet of a river, stream or brook.”

Waterbodies

VHB also evaluated the presence or absence of waterbodies within the project area. Streams were evaluated in accordance with the State of Maine Natural Resources Protection Act criteria and definitions. A river, stream or brook is defined by the NRPA in Title 38 M.R.S.A. §§ 480-A, as a channel between defined banks. The channel is created by surface water and has two or more of the following five characteristics:

- The channel is depicted as a solid or broken line on the most recent edition of the U.S. Geological Survey 7.5-minute series topographic map, or 15-minute series topographic map if the 7.5 minutes series is unavailable;
- The channel contains or is known to contain flowing water continuously for a period of at least 6 months of the year in most years;
- The channel bed is primarily composed of mineral material such as sand and gravel, parent material or bedrock that has been deposited or scoured by water;
- 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.

The Army Corps Maine General Permit does not include a definition of river, stream or brook. However, the ordinary highwater mark (OHWM or OHW) of watercourses was identified following USACE’s Regulatory Guidance Letter No. 05-05 Ordinary High Water Mark Identification (2005).

Vernal Pools

A full vernal pool survey was conducted by VHB scientists during the spring of 2020 to confirm and identify vernal pool features within the survey area, including those regulated by the USACE and the Maine DEP. The Maine DEP defines “vernal pools, also referred to as seasonal forested pools, as natural temporary to semi-permanent bodies of water that occur in shallow depressions that typically fill with water during the spring or fall and may dry during the summer. Vernal pools have no permanent inlet or outlet and have no viable populations of predatory fish. A vernal pool may provide the primary breeding habitat for wood frogs (*Rana sylvatica*), spotted salamanders (*Ambystoma maculatum*), blue-spotted salamanders (*Ambystoma laterale*), and fairy shrimp (*Eubranchipus* sp.), as well as valuable habitat for other plants and wildlife, including several rare, threatened, and endangered species. A vernal pool intentionally created for the purposes of compensatory mitigation is included in this definition.”

DEP further differentiates vernal pools as ‘significant’ (regulated under NRPA) and ‘non-significant’ (not regulated under NRPA). Significant vernal pool habitat consists of a vernal pool depression and that portion of the critical terrestrial habitat within 250 feet of the spring or fall high water mark of the depression. Whether a vernal pool is a significant vernal pool is determined by the number and type of



pool-breeding amphibian egg masses in a pool, the presence of fairy shrimp, or use by certain rare, threatened, or endangered species that commonly requires a vernal pool to complete a critical portion of its life-history as specified in NRPA Chapter 335 Significant Wildlife Habitat Rules Section 9(B). Table 1 identifies the Chapter 335 abundance criteria required for wood frogs (*Rana sylvatica*), spotted salamanders (*Ambystoma maculatum*), blue-spotted salamanders (*Ambystoma laterale*), fairy shrimp (*Eubbranchipus* sp.), and certain state-listed species to define an area as a significant vernal pool.

Table 1: NRPA Chapter 335 Significant Wildlife Habitat Rules Abundance Criteria for Significant Vernal Pools	
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.
Certain rare, threatened, or endangered species ¹	Presence

¹ Per NRPA Chapter 335 Section 9(B), examples of vernal pool dependent state-listed endangered or threatened species include, but are not limited to, Blanding's turtle (*Emydoidea blandingii*), spotted turtle (*Clemmys guttata*), and ringed boghaunter dragonflies (*Williamsonia lintneri*). The rare species that must be considered are limited to: wood turtle (*Glyptemys insculpta*), ribbon snake (*Thamnophis sauritus*), swamp darner dragonflies (*Epiaschna heros*), and comet darner dragonflies (*Anax longipes*).

The USACE Maine General Permit applies a somewhat different definition of 'vernal pool' and states "a vernal pool, also referred to as a seasonal forest pool, is a temporary to semi-permanent body of water occurring in a shallow depression that typically fills during the spring or fall and may dry during the summer. Vernal pools have no permanent inlet or outlet and no viable populations of predatory fish. A vernal pool may provide the primary breeding habitat for wood frogs (*Rana sylvatica*), spotted salamanders (*Ambystoma maculatum*), blue-spotted salamanders (*Ambystoma laterale*), and fairy shrimp (*Eubbranchipus spp.*), as well as valuable habitat for other plants and wildlife, including several rare, threatened, and endangered species. A vernal pool intentionally created for the purposes of compensatory mitigation is included in this definition. For the purposes of this GP, the presence of any of the following species in any life stage in any abundance level/quantity would designate the waterbody as a vernal pool: fairy shrimp, blue spotted salamanders, spotted salamanders or wood frogs. However, they should preclude sustainable populations of predatory fish.

General Condition 20. Vernal Pools of the Department of the Army General Permits for the State of Maine states the following:

- a. A Preconstruction Notification (PCN) is required if a discharge of dredged or fill material is proposed within a vernal pool depression located within waters of the U.S.



b. GC 20(a) above does not apply to projects that are within a municipality that meets the provisions of a Corps-approved vernal pool Special Area Management Plan (SAMP) and are otherwise eligible for SV, and the applicant meets the requirements to utilize the vernal pool SAMP.

At its discretion, the Corps may determine during permit review that a waterbody should not be regulated as a vernal pool based on available evidence. The USACE's Maine General Permit specifies Vernal Pool Management Areas as: the Vernal Pool Depression (includes the vernal pool depression up to the spring or fall high water mark, and includes any vegetation growing within the depression), the Vernal Pool Envelope (area within 100 feet of the Vernal Pool Depression's edge) and the Critical Terrestrial Habitat (area within 100-750 feet of the Vernal Pool Depression's edge).

The USACE does not differentiate vernal pools as 'significant' or 'non-significant' based on the abundance of biological indicators. As stated in the USACE definition, the presence of any of the specified indicator species in any abundance qualifies a feature as a regulated vernal pool. An additional important distinction between the USACE and the Maine DEP definition of vernal pools is that under the Maine DEP rules, a vernal pool must be 'natural' in origin, where under the USACE rules a vernal pool may be natural or manmade.

VHB completed meander surveys throughout the entire study area to identify areas of seasonally ponded water, and other inundated areas such as slow flowing streams and waterbodies where vernal pool biological indicators may potentially occur. Ponded and inundated areas identified were thoroughly surveyed for evidence of vernal pool indicator species, including wood frogs, spotted salamanders, blue-spotted salamanders, and fairy shrimp including the presence of individuals, tadpoles/ larvae, egg masses, or spermatophores. Evidence of rare, threatened, or endangered species known to utilize vernal pool habitat was also documented by direct observation of individuals. The occurrence of biological vernal pool indicators was quantitatively tallied for each surveyed potential vernal pool.

If biological vernal pool indicators were present, additional information on the vernal pool location, habitat and geomorphic setting, hydrologic attributes, and evidence of anthropogenic alteration was recorded. This information was recorded on the Maine Department of Inland Fisheries and Wildlife (MDIF&W) Vernal Pool Assessment Form, which is the documentation methodology required by the Maine DEP and MDIF&W, and is also accepted by the USACE.



Study Results

Using the methodologies described above, VHB environmental scientists conducted wetland resource area delineations. The following subsections provide a description of each identified resource type.

Wetlands

In total, VHB delineated 103 wetlands, with the average size being 0.16-acres. Palustrine Emergent (PEM) and Palustrine Forested (PFO) were present within the Study Area. In general, wetlands within the Study Area are groundwater-driven, often occurring at the topography breaks where water flowing through underfoot boulders is forced to the surface and creates open canopy seeps with organic soils. Whether due to the hydrologic impacts of the logging roads, or the coincidental placement of the roads where topography is least steep, many of the legacy logging roads display wetland parameters.

For photographs of typical on-site wetland features, refer to the Representative Site Photographs in Appendix 3. A listing of each wetland surveyed, including key characteristics, is provided in Appendix 4 and natural resource mapping is provided in Appendix 5.

PFO Wetlands

Forested wetlands are characterized by woody vegetation that is at least six meters tall (Cowardin et al. 1979). VHB delineated 37 PFO wetlands within the Study Area which include a mix of needle-leaved evergreen and broad-leaved deciduous vegetation. Forested wetlands make approximately 11.3 acres (2%) of the Study Area. Common tree species included balsam fir, green ash (*Fraxinus pennsylvanica*), yellow birch and red maple. Herbaceous species common to forested wetlands include sensitive fern, spotted touch-me-not, nodding sedge and eastern rough sedge (*Carex scabrata*). Often forested wetlands have an open canopy towards the middle, with tree species dominating wetland edges and overhanging the wetland. PFO wetland hydrology is groundwater-driven and permanently saturated soils are common.

PEM Wetlands

Emergent wetlands are characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens (Cowardin et al. 1979). VHB delineated 66 emergent wetlands covering approximately 5.8 acres (1%) within the Study Area. Common species include sensitive fern, eastern rough sedge, nodding sedge, woolgrass (*Scirpus cyperinus*), green bulrush (*Scirpus atrovirens*), dwarf red blackberry (*Rubus pubescens*), interrupted fern (*Osmunda claytoniana*), broad-leaved cattail, bluejoint grass (*Calamagrostis canadensis*) and northeastern manna grass. Often PEMs occur in recently logged areas that were likely PFOs prior to harvesting. As such, delineated PEMs often have woody vegetation that was not tall or dominant enough to qualify as PFO or Palustrine Scrub-shrub. These species included willows, steplebush, balsam fir, yellow birch and green ash, among others. Delineated PEM wetlands commonly have organic-matter rich soil, often enough to qualify as a Histosol. Groundwater discharge in the form of open-canopy seeps plays a large role in creating wetland areas on the sloped terrain.



WOSS

Of the 103 wetland areas delineated, portions of 38 wetlands meet the NRPA WOSS criteria based on being located within 25 feet of a delineated stream (see Criteria 8 above). No other WOSS criteria were met by any wetland within the Study Area. Those portions of these wetlands located within 25 feet of a stream are considered WOSS areas. WOSS areas are displayed on the Natural Resources Map (Appendix 5) with the associated 75-foot area adjacent to the Protected Natural Resource.

Waterbodies

VHB ecologists conducted stream delineation fieldwork within the Study Area between June and July 2020. During this effort, 34 streams were delineated within the Study Area, primarily based on those meeting NRPA definition criteria (b) and (c) as listed above. Of the 34 delineated streams, there are 7 perennial reaches and 27 intermittent reaches. These 34 streams are displayed on the Natural Resources Map with associated 75-foot buffer for Protected Natural Resources. The Study Area also contains several ephemeral channels, often associated with legacy logging roads, which, due to ephemeral flow regime and/or lack of a defined mineral channel, are not believed to be federal or state jurisdictional. These features were therefore not included on the Natural Resources Map.

As mentioned in the Site Description above, the Study Area is characterized by steep bouldery slopes that offer abundant opportunity for subterranean water movement. As shown in Appendix 5, there are a number of streams that appear as "segments" that emerge from springs or seeps between boulders and disappear underground downslope. Similarly, there are streams that have a perennial flow regime in upper reaches and an intermittent in lower reaches, a trend not common in landscapes with less subterranean water movement. Also of note at Sugarloaf is the tendency for streams to display signs of flashy spring flows following snowmelt, such as sediment and gravel deposits. These early-season high flows are likely augmented by snowmaking that places more water on the landscape than natural snow levels.

The average OHW width for delineated streams is approximately 3.5 feet and the average water depth is approximately 1.5 inches. For additional technical details pertaining to each delineated stream, refer to the Summary of Delineated Streams table in Appendix 4 and the mapping provided in Appendix 5.

Vernal Pools

VHB did not identify any significant vernal pools within the Study Area during the Spring 2020 survey, nor during the follow-up survey in July. During the 2020 vernal pool (VP) assessment, VHB ecologists documented 6 VPs within the Study Area but based on field observations. Observed VPs are small and associated with human-created depressions such as ditches and skidder ruts except for VP 2, which is in a potentially natural depression within a softwood swamp.

Based on the Maine DEP criteria listed above, none of the VPs were found to be significant. No VPs within the Study Area contained enough egg masses to qualify as significant. No fairy shrimp, state-listed threatened, endangered, or species of special concern were observed in any of the VPs. The Maine State VP Assessment Forms, site photographs and associated GIS shapefiles for all VPs were submitted to Maine Department of Inland Fisheries and Wildlife (MDIFW) on February 5, 2021. MDIFW provided a response letter on February 25,



2021 confirming the non-significant status of the six VPs because either: 1. the features do not meet the definition of a VP under the Significant wildlife habitat rules, 06-096 CMR 335(9) or 2. the VPs do not meet the biological standards for exceptional wildlife use of the significant wildlife habitat rules, 06-096 CMR 335(9)(B). Please see Appendix 6 for correspondence from the MDIFW regarding VPs. Therefore, activities within 250 feet of the pools are not regulated under NRPA unless there are other protected natural resources nearby such as streams or freshwater wetlands.

Summary

The information contained in this report was collected to provide detailed, on-site information regarding wetland, waterbody, and vernal pool resources falling under the jurisdiction of the USACE and the Maine DEP within the study area. VHB identified 103 wetland resource areas and 34 streams. These features are regulated by the USACE under the Clean Water Act and by the Maine DEP under the Natural Resources Protection Act.

Six vernal pools were identified. but were determined by the Maine DIFW to be non-significant.

References

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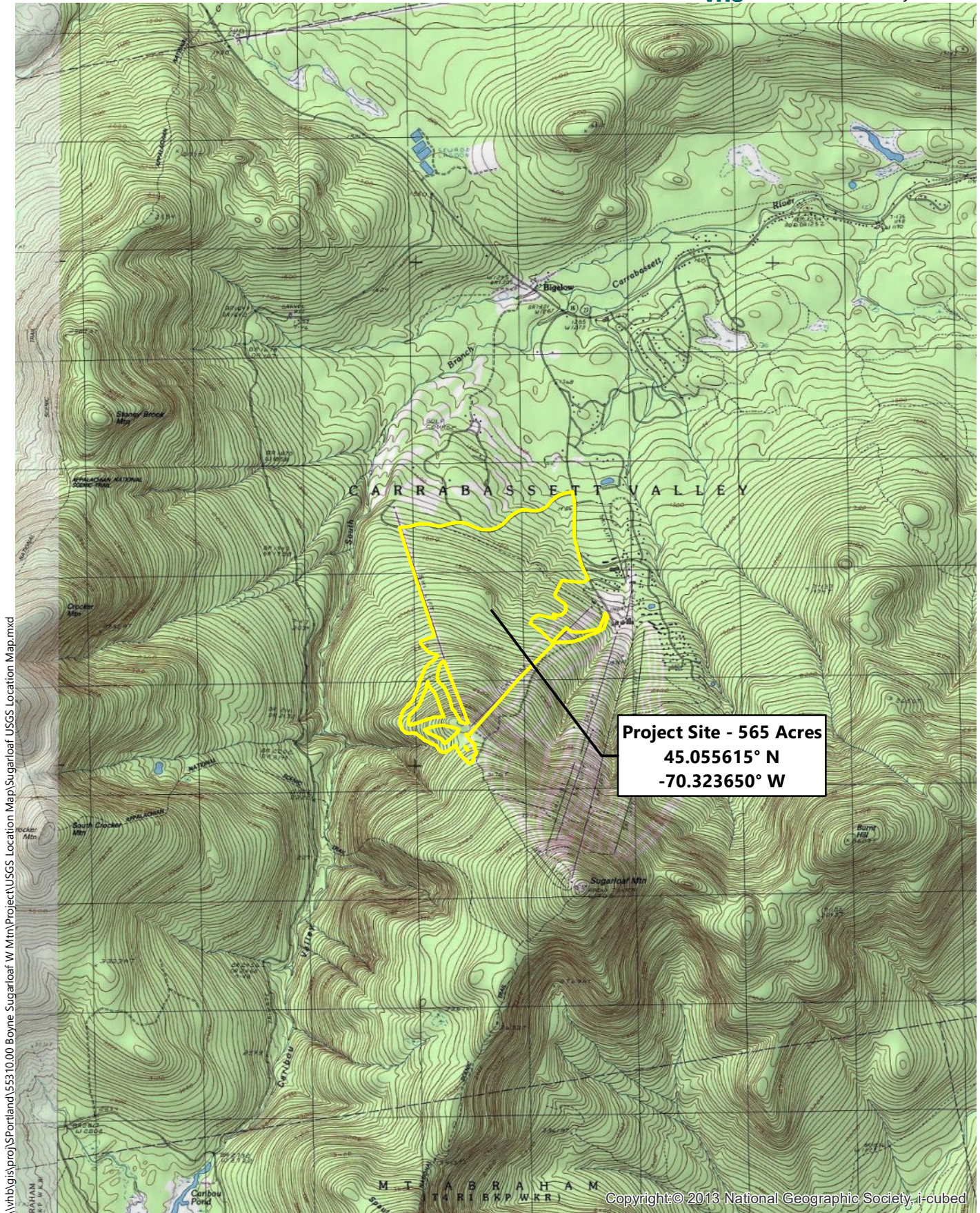
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APPENDIX 1
USGS LOCUS MAP



\\vhb\gis\proj\Portland\55310.00 Boyne Sugarloaf W Mtn\Project\USGS Location Map\Sugarloaf USGS Location Map.mxd

Project Site - 565 Acres
45.055615° N
-70.323650° W



Sugarloaf West Mountain

Carrabassett Valley, Maine

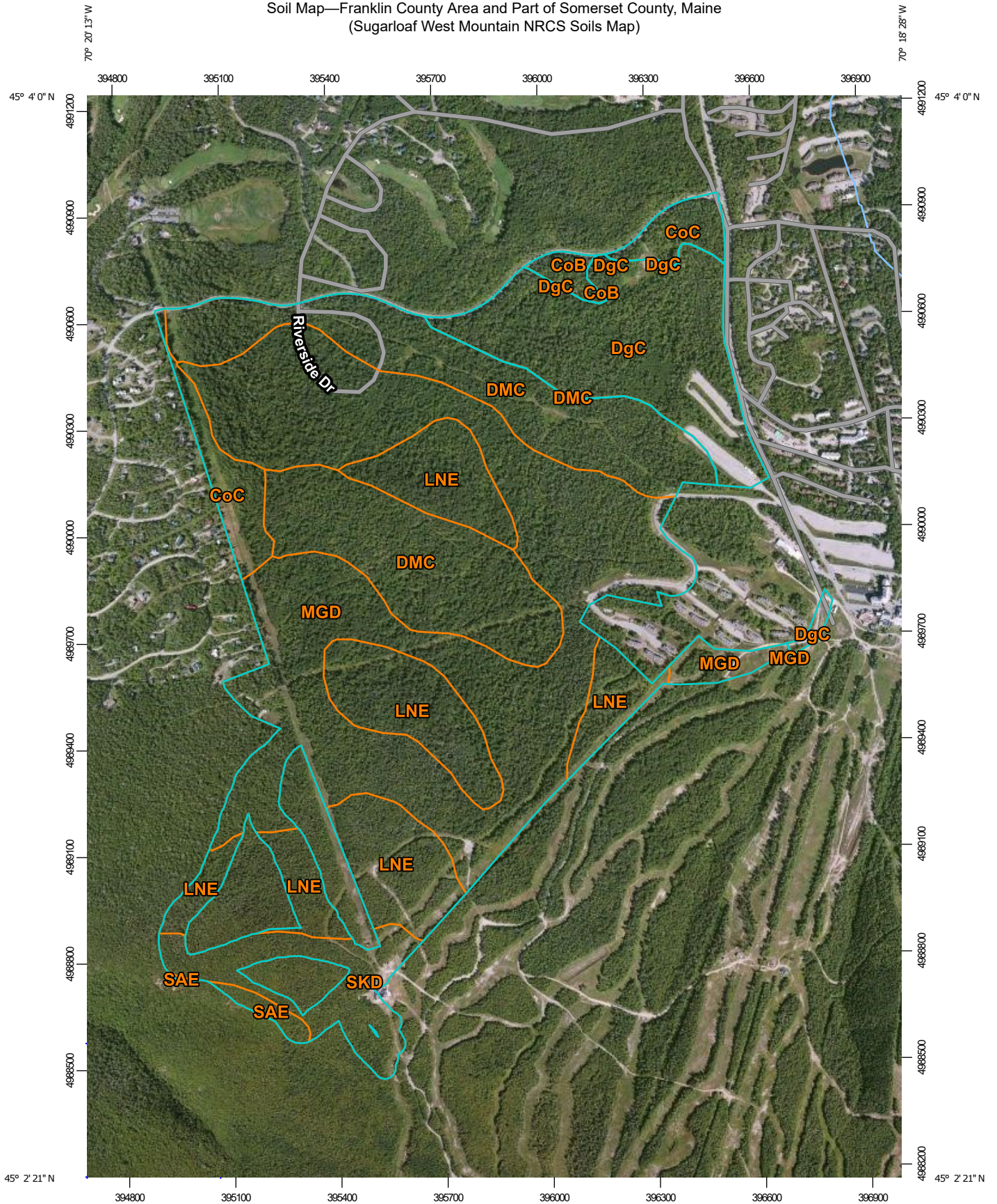
Location Map

Project Area (VHB)

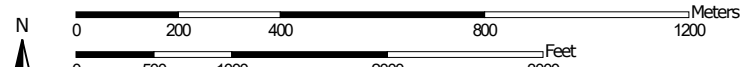
Sources:
USA Topo Basemap - Copyright:© 2013 National Geographic Society, i-cubed

APPENDIX 2
NRCS SOILS REPORT

Soil Map—Franklin County Area and Part of Somerset County, Maine
(Sugarloaf West Mountain NRCS Soils Map)



Map Scale: 1:14,800 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge ticks: UTM Zone 19N WGS84



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

2/24/2021
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Soil Map—Franklin County Area and Part of Somerset County, Maine
(Sugarloaf West Mountain NRCS Soils Map)

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)




















Soils






 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features






-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features

Water Features

 Streams and Canals

Transportation

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

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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

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

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

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

Soil Survey Area: Franklin County Area and Part of Somerset County, Maine
Survey Area Data: Version 22, Jun 8, 2020

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

Date(s) aerial images were photographed: Aug 19, 2010—Jul 16, 2011

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CoB	Colonel fine sandy loam, 0 to 8 percent slopes, very stony	4.2	0.7%
CoC	Colonel fine sandy loam, 8 to 15 percent slopes, very stony	22.8	4.0%
DgC	Peru fine sandy loam, 8 to 15 percent slopes, very stony	72.3	12.8%
DMC	Peru-Marlow association, 3 to 15 percent slopes, very stony	121.0	21.4%
LNE	Lyman-Tunbridge-Abram complex, 15 to 35 percent slopes, rocky	98.0	17.4%
MGD	Marlow-Peru association, 15 to 35 percent slopes, very stony	214.1	37.9%
SAE	Saddleback-Mahoosuc-Sisk association, very steep, very stony	3.7	0.6%
SKD	Sisk-Surplus association, moderately steep, very stony	28.7	5.1%
Totals for Area of Interest		564.8	100.0%

APPENDIX 3

REPRESENTATIVE SITE PHOTOGRAPHS



Figure 1: View to the north from the top of existing West Mountain Lift.

Boyne Resorts Wetland Delineation Photographs

PROJECT NUMBER
55310.00

Sugarloaf West Mountain

Carrabassett Valley, Maine

Contents:

- I. Wetlands
- II. Waters
- III. Vernal Pools

I. Wetlands



NO. 1

DESCRIPTION

Wetland 2020-115. Seepage from hillslope to ditch adjacent to parking lot in eastern Study Area.



NO. 2

DESCRIPTION

Wetland 2020-5 adjacent to the upper crossroad in middle of Study Area. Representative of naturalizing wetland skid road.



NO. 3

DESCRIPTION

Wetland 2020-11 in center of Study Area. Representative of seepage-fed, graminoid-dominated emergent wetlands.



NO. 4

DESCRIPTION

Wetland 2020-108 in eastern Study area. Representative of scrub-shrub seepage-fed wetlands at lower elevations on West Mountain.



NO. 5

DESCRIPTION

Wetland 2020-6 is the highest elevation delineated wetland. Representative of upper elevation seepage-fed wetlands.



NO. 6

DESCRIPTION

Wetland 2020-25 in northeast portion of Study Area. Representative of softwood swamps on West Mountain.



NO. 7

DESCRIPTION

Wetland 2020-31: emergent seepage slope adjacent to West Mountain Road in northern Study Area.



NO. 8

DESCRIPTION

Understory of Wetland 2020-35. Large palustrine forested wetland in center of Study Area.



NO. 9

DESCRIPTION

Wetland 2020-131 in western Study Area. Representative of open canopy, emergent seepage wetlands on West Mountain.



NO. 10

DESCRIPTION

Close up of representative seepage-affinity wetland plants in Wetland 2020-129. Notice surface saturation and organic-rich soil.



NO. 11

DESCRIPTION

Wetland 2020-421 in northeastern Study Area.



NO. 12

DESCRIPTION

Emergent portion of Wetland 2020-1 in ski trail, southeastern Study Area.

II. Waters



NO. 13

DESCRIPTION

Up-gradient view of lower reaches of unnamed perennial Stream 2020-TOB-1 in northeastern Study Area.



NO. 14

DESCRIPTION

Down-gradient view of perennial Stream 2020-TOB-1 in reach between upper and lower cross roads.



NO. 15

DESCRIPTION

Down-gradient view of upper reaches of perennial Stream 2020-SC-1 (becomes Stream 2020-TOB-1 in its wider lower reaches) above the upper cross road.



NO. 16

DESCRIPTION

Up-gradient view of intermittent stream channel of Stream 2020-SC-311 in north-central Study Area.



NO. 17

DESCRIPTION

Intermittent channel of Stream 2020-SC-16 in eastern Study Area.



NO. 18

DESCRIPTION

Down-gradient view of perennial stream channel of Stream 2020-SC-210.



NO. 19

DESCRIPTION

Down-gradient view of ditched intermittent stream 2020-SC-201 at Western boundary of Study Area.



NO. 20

DESCRIPTION

Down-gradient view of intermittent channel of Stream 2020-SC-202 in middle of Study Area.



NO. 21

DESCRIPTION

Intermittent Stream 2020-SC-200
in southern Study Area.



NO. 22

DESCRIPTION

Down-gradient view of ditched
Stream 2020-SC-120 in eastern
Study Area.

III. Vernal Pools



NO. 23

DESCRIPTION

Vernal Pool 1 in roadside excavation in eastern Study Area.



NO. 24

DESCRIPTION

Vernal Pool 2 in skidder rut in center of Study Area.



NO. 25

DESCRIPTION

Vernal Pool 3 in softwood swamp Wetland 2020-35.



NO. 26

DESCRIPTION

Vernal Pool 4 in skidder rut in western Study Area.



NO. 27

DESCRIPTION

Vernal Pool 5 in skidder rut in Wetland 2020-35.



NO. 28

DESCRIPTION

Vernal Pool 6, in skidder rut in western Study Area.

APPENDIX 4

SUMMARY OF WETLAND AND WATERWAYS SURVEYED

Summary of Delineated Wetlands

Project: Sugarloaf West Mountain

Client: Boyne Resorts

Location: Carrabassett Valley, Maine

Delineator(s): L. Keszey, M. Jackman, R. Scott

Delineation Date(s): May 20-22nd, June 9-12th and 22-26th, 2020

Prepared By: VHB (L. Keszey, 2.10.21)



VHB Delineated Wetlands							
Wetland ID ¹	Delineated Area (Square Feet)	Cowardin Classification ²	Hydrology Indicator	Hydric Soil Indicator	WOSS Present ³	Typical Vegetation	Comments
2020-107	4118	PEM	Surface Water (A1),High Water Table (A2),Saturation (A3)	Histic Epipedon (A2)	NO	<i>Glyceria melicaria, Osmunda claytoniana, Calamagrostis canadensis</i>	Seepage forest
2020-111	3060	PEM	Saturation (A3), Water-Stained Leaves (B9)	Histosol (A1)	NO	<i>Carex scabrata, Rubus pubescens</i>	Ephemeral drainage become diffuse in wetland
2020-115	922	PEM	Surface Water (A1),High Water Table (A2),Saturation (A3),Saturation Visible on Aerial (C9)	Depleted Matrix (F3)	NO	<i>Typha latifolia, Scirpus microcarpus</i>	Groundwater discharge to ditch next to parking lot
2020-120	5183	PEM	Saturation (A1)	Histic Epipedon (A2)	NO	<i>Carex scabrata, Carex stipata, Carex gynandra</i>	Seepy swale
2020-123	2192	PEM	High Water Table (A2),Saturation (A3)	Histosol (A1)	NO	<i>Carex stipata, Carex gynandra, Onoclea sensibilis</i>	Seepage adjacent to naturalizing skid road
2020-124	1674	PEM	High Water Table (A2),Saturation (A3),Surface Water (A1),Shallow Aquitard (D3)	Histosol (A1)	NO	<i>Carex scabrata, Carex gynandra, Betula alleghaniensis</i>	Seepage slope with emergent hydrophytes
2020-126	366	PEM	Saturation (A3),Water-Stained Leaves (B9),Thin Muck Surface (C7)	Histosol (A1)	NO	<i>Carex gynandra, Fraxinus pennsylvanica, Rubus pubescens</i>	Small low topography seepage
2020-129	1343	PEM	Saturation (A3),Surface Water (A1),Thin Muck Surface (C7),Water-Stained Leaves (B9)	Histosol (A1)	NO	<i>Carex gynandra, Dryopteris intermedia, Onoclea sensibilis</i>	Discharge slope and runoff from road waterbar.
2020-13	903	PEM	Saturation (A3),High Water Table (A2),Water-Stained Leaves (B9)	Histosol (A1)	NO	<i>Onoclea sensibilis, Parathelypteris noveboracensis</i>	Naturalized skid road with ephemeral in and outflow

Summary of Delineated Wetlands

Project: Sugarloaf West Mountain

Client: Boyne Resorts

Location: Carrabassett Valley, Maine

Delineator(s): L. Keszey, M. Jackman, R. Scott

Delineation Date(s): May 20-22nd, June 9-12th and 22-26th, 2020

Prepared By: VHB (L. Keszey, 2.10.21)



VHB Delineated Wetlands							
Wetland ID ¹	Delineated Area (Square Feet)	Cowardin Classification ²	Hydrology Indicator	Hydric Soil Indicator	WOSS Present ³	Typical Vegetation	Comments
2020-18	765	PEM	Saturation (A3), Drainage Patterns (B10), Water-Stained Leaves (B9)	Histic Epipedon (A2)	NO	<i>Carex scabrata, Carex scabrata</i>	Wet naturalized skid roads
2020-19	1068	PEM	Saturation (A3), Oxidized Rhizospheres on Living Roots (C3)	Histic Epipedon (A2)	NO	<i>Carex scabrata, Fraxinus pennsylvanica, Osmunda claytoniana</i>	Seepage from toe of slope
2020-20	1905	PEM	Saturation (A3), Oxidized Rhizospheres on Living Roots (C3)	Histic Epipedon (A2)	NO	<i>Carex scabrata, Fraxinus pennsylvanica, Osmunda claytoniana</i>	Seepage from toe of slope
2020-201	731	PEM	Surface Water (A1), High Water Table (A2), Saturation (A3), Water Marks (B1), Water-Stained Leaves (B9)	Histosol (A1)	NO	<i>Athyrium asplenoides</i>	Seep from skidder road
2020-209	5915	PEM	High Water Table (A2), Surface Water (A1), Saturation (A3), Water-Stained Leaves (B9)	Depleted Matrix (F3)	NO	<i>Osmunda claytoniana, Glyceria melicaria, Onoclea sensibilis</i>	Forest opening with shallow groundwater
2020-22	11068	PEM	Saturation (A3), Water-Stained Leaves (B9)	Histosol (A1)	NO	<i>Onoclea sensibilis, Osmunda claytoniana</i>	Seep from toe of slope
2020-24	5159	PEM	Water-Stained Leaves (B9), Drainage Patterns (B10)	Redox Dark Surface (F6)	NO	<i>Onoclea sensibilis, Matteuccia struthiopteris</i>	Drainage from ski slope to forest
2020-27	1128	PEM	Saturation (A3), Water-Stained Leaves (B9), Drainage Patterns (B10)	Histosol (A1)	NO	<i>Ranunculus acris, Onoclea sensibilis, Equisetum arvense</i>	Groundwater discharge to roadside ditch
2020-29	1044	PEM	Saturation (A3), Oxidized Rhizospheres on Living Roots (C3), Water-Stained Leaves (B9), Geomorphic Position (D2)	Redox Dark Surface (F6)	NO	<i>Carex crinita, Onoclea sensibilis</i>	Diffuse stream in flat topography along road.

Summary of Delineated Wetlands

Project: Sugarloaf West Mountain

Client: Boyne Resorts

Location: Carrabassett Valley, Maine

Delineator(s): L. Keszey, M. Jackman, R. Scott

Delineation Date(s): May 20-22nd, June 9-12th and 22-26th, 2020

Prepared By: VHB (L. Keszey, 2.10.21)



VHB Delineated Wetlands							
Wetland ID ¹	Delineated Area (Square Feet)	Cowardin Classification ²	Hydrology Indicator	Hydric Soil Indicator	WOSS Present ³	Typical Vegetation	Comments
2020-30	12542	PEM	Saturation (A3), Drainage Patterns (B10)	Depleted Matrix (F3)	NO	<i>Carex scabrata, Onoclea sensibilis</i>	Legacy ski trail
2020-301	547	PEM	High Water Table (A2), Water-Stained Leaves (B9), Drainage Patterns (B10)	Histosol (A1)	NO	<i>Rubus pubescens, Impatiens capensis</i>	Small depressional seep drains via ephemeral channel
2020-302	930	PEM	High Water Table (A2), Water-Stained Leaves (B9),	Redox Dark Surface (F6)	NO	<i>Carex scabrata, Onoclea sensibilis</i>	Groundwater discharge slope
2020-31	1698	PEM	Saturation (A3), Oxidized Rhizospheres on Living Roots (C3), Water-Stained Leaves (B9), Geomorphic Position (D2)	Redox Dark Surface (F6)	NO	<i>Carex crinita, Onoclea sensibilis</i>	Groundwater discharge to ditch adjacent to West Mountain Road
2020-37	2621	PEM	Saturation (A3), Water-Stained Leaves (B9)	Histosol (A1)	NO	<i>Glyceria melicaria, Onoclea sensibilis, Carex scabrata</i>	Logging disturbed opening with seepage
2020-38	4986	PEM	Water-Stained Leaves (B9), Saturation (A3), Drainage Patterns (B10)	Depleted Matrix (F3)	NO	<i>Carex crinita</i>	Narrow drainage seep located in and adjacent to old skidder road
2020-39	751	PEM	Saturation (A3), Water-Stained Leaves (B9)	Histosol (A1)	NO	<i>Carex scabrata, Rubus pubescens</i>	Groundwater discharge slope
2020-400	4476	PEM	Surface Water (A1), Saturation (A3), Water-Stained Leaves (B9), Drainage Patterns (B10)	Histic Epipedon (A2)	NO	<i>Fraxinus pennsylvanica, Glyceria melicaria</i>	Open seep with ashes at edges
2020-401	532	PEM	Saturation (A3), High Water Table (A2)	Histic Epipedon (A2)	NO	<i>Carex scabrata, Osmunda claytoniana, Betula cordifolia</i>	Seepy forest opening

Summary of Delineated Wetlands

Project: Sugarloaf West Mountain

Client: Boyne Resorts

Location: Carrabassett Valley, Maine

Delineator(s): L. Keszey, M. Jackman, R. Scott

Delineation Date(s): May 20-22nd, June 9-12th and 22-26th, 2020

Prepared By: VHB (L. Keszey, 2.10.21)



VHB Delineated Wetlands							
Wetland ID ¹	Delineated Area (Square Feet)	Cowardin Classification ²	Hydrology Indicator	Hydric Soil Indicator	WOSS Present ³	Typical Vegetation	Comments
2020-402	3650	PEM	Saturation (A3),High Water Table (A2)	Histosol (A1)	NO	<i>Carex scabrata, Onoclea sensibilis, Acer rubrum</i>	Open seepy area
2020-41	849	PEM	Surface Water (A1),High Water Table (A2),Saturation (A3),Water-Stained Leaves (B9)	Histosol (A1)	NO	<i>Carex gynandra, Onoclea sensibilis</i>	Seepy swale
2020-417	5446	PEM	Saturation (A3),Water-Stained Leaves (B9)	Histic Epipedon (A2)	NO	<i>Eutrochium maculatum, Onoclea sensibilis</i>	In topographic bread associated with naturalized skidder road
2020-420	1600	PEM	Saturation (A3),Water-Stained Leaves (B9)	Redox Dark Surface (F6)	NO	<i>Glyceria melicaria, Onoclea sensibilis, Carex scabrata</i>	Open canopy seep- potentially naturalized log landing.
2020-44	6631	PEM	Oxidized Rhizospheres on Living Roots (C3),Saturation (A3)	Redox Dark Surface (F6)	NO	<i>Carex crinita, Onoclea sensibilis</i>	Naturalizing logging road with seepage
2020-47	1175	PEM	Saturation (A3),Water-Stained Leaves (B9),Thin Muck Surface (C7)	Histosol (A1)	NO	<i>Onoclea sensibilis, Rubus pubescens</i>	Groundwater discharge from toe of slope
2020-5	420	PEM	Water-Stained Leaves (B9),Drainage Patterns (B10),Saturation (A3)	Redox Dark Surface (F6)	NO	<i>Carex scabrata</i>	Seepage from naturalized skidder road
2020-501	759	PEM	Saturation (A3),Surface Water (A1),Thin Muck Surface (C7)	Histosol (A1)	NO	<i>Carex scabrata</i>	Seepy swale
2020-52	2165	PEM	Saturation (A3),Water-Stained Leaves (B9)	Histosol (A1)	NO	<i>Rubus pubescens, Osmunda claytoniana</i>	Groundwater discharge slope

Summary of Delineated Wetlands

Project: Sugarloaf West Mountain

Client: Boyne Resorts

Location: Carrabassett Valley, Maine

Delineator(s): L. Keszey, M. Jackman, R. Scott

Delineation Date(s): May 20-22nd, June 9-12th and 22-26th, 2020

Prepared By: VHB (L. Keszey, 2.10.21)



VHB Delineated Wetlands							
Wetland ID ¹	Delineated Area (Square Feet)	Cowardin Classification ²	Hydrology Indicator	Hydric Soil Indicator	WOSS Present ³	Typical Vegetation	Comments
2020-53	5822	PEM	Saturation (A3),Water-Stained Leaves (B9)	Histosol (A1)	NO	<i>Carex crinita, Onoclea sensibilis</i>	Seepage in naturalized skidder road in relatively flatter topography
2020-6	472	PEM	Saturation (A3),Surface Water (A1),Thin Muck Surface (C7)	Histosol (A1)	NO	<i>Dryopteris intermedia, Carex scabrata</i>	Small seep with ephemeral outflow
2020-7	713	PEM	Saturation (A3),Surface Water (A1),Thin Muck Surface (C7)	Histosol (A1)	NO	<i>Dryopteris intermedia, Carex scabrata</i>	Small seep with ephemeral outflow
2020-8	1008	PEM	Saturation (A3),Surface Water (A1),Thin Muck Surface (C7)	Histosol (A1)	NO	<i>Oxalis montana, Onoclea sensibilis</i>	Seep in open forest
2020-1	15363	PEM	Saturation (A3),High Water Table (A2),Water-Stained Leaves (B9),Iron Deposits (B5),Shallow Aquitard (D3)	Histosol (A1)	YES	<i>Onoclea sensibilis,Carex crinita</i>	Ski slope with groundwater discharge drains to stream 2020-SC-1
2020-10	2117	PEM	High Water Table (A2),Saturation (A3),Water-Stained Leaves (B9)	Redox Dark Surface (F6)	YES	<i>Carex scabrata,Onoclea sensibilis</i>	Naturalizing skidder road
2020-12	27994	PEM	High Water Table (A2),Water-Stained Leaves (B9),Drainage Patterns (B10),Saturation (A3), Microtopographic Relief (D4)	Histic Epipedon (A2)	YES	<i>Carex scabrata,Rubus pubescens</i>	Large, cutover complex with wetland microtopography
2020-125	1358	PEM	Saturation (A3),High Water Table (A2),Hydrogen Sulfide Odor (C1),Presence of Reduced Iron (C4),Thin Muck Surface (C7)	Histosol (A1)	YES	<i>Onoclea sensibilis,Carex gynandra,Salix bebbiana</i>	Seepy opening in forest
2020-17	8538	PEM	Saturation (A3),Drainage Patterns (B10),Water-Stained Leaves (B9)	Histic Epipedon (A2)	YES	<i>Carex scabrata,Carex scabrata</i>	Wet naturalized skid roads

Summary of Delineated Wetlands

Project: Sugarloaf West Mountain

Client: Boyne Resorts

Location: Carrabassett Valley, Maine

Delineator(s): L. Keszey, M. Jackman, R. Scott

Delineation Date(s): May 20-22nd, June 9-12th and 22-26th, 2020

Prepared By: VHB (L. Keszey, 2.10.21)



VHB Delineated Wetlands							
Wetland ID ¹	Delineated Area (Square Feet)	Cowardin Classification ²	Hydrology Indicator	Hydric Soil Indicator	WOSS Present ³	Typical Vegetation	Comments
2020-204	1344	PEM	Saturation (A3)	Histosol (A1)	YES	<i>Carex scabrata, Glyceria melicaria</i>	Seepy stream-side bowl
2020-205	5839	PEM	Surface Water (A1), High Water Table (A2), Saturation (A3), Water-Stained Leaves (B9)	Histosol (A1)	YES	<i>Carex scabrata, Glyceria melicaria</i>	Discharge slope
2020-21	5159	PEM	Saturation (A3), Water-Stained Leaves (B9)	Histosol (A1)	YES	<i>Rubus pubescens, Osmunda claytoniana</i>	Seep from toe of slope
2020-25	8533	PEM	Saturation (A3), Water-Stained Leaves (B9), Drainage Patterns (B10)	Depleted Matrix (F3)	YES	<i>Onoclea sensibilis, Abies balsamea</i>	Forested wetland with drainage patterns
2020-28	804	PEM	Saturation (A3), Water-Stained Leaves (B9)	Redox Dark Surface (F6)	YES	<i>Onoclea sensibilis</i>	Toe of slope feature drains to culvert
2020-4	1652	PEM	Surface Water (A1), Saturation (A3), Water-Stained Leaves (B9), Drainage Patterns (B10)	Histic Epipedon (A2)	YES	<i>Rubus pubescens, Carex scabrata</i>	Seepage from break in slope
2020-40	360	PEM	Surface Water (A1), Saturation (A3), Water-Stained Leaves (B9), Drainage Patterns (B10)	Histic Epipedon (A2)	YES	<i>Impatiens capensis, Thalictrum pubescens</i>	Wet swale associated with historic skid road
2020-407	43336	PEM	Surface Water (A1), High Water Table (A2), Saturation (A3), Water-Stained Leaves (B9)	Histosol (A1)	YES	<i>Glyceria melicaria, Carex scabrata, Onoclea sensibilis</i>	Seep with logging history
2020-408	670	PEM	Saturation (A3), Water-Stained Leaves (B9), Drainage Patterns (B10)	Redox Dark Surface (F6)	YES	<i>Carex scabrata, Fraxinus pennsylvanica</i>	Forested wetland with drainage patterns

Summary of Delineated Wetlands

Project: Sugarloaf West Mountain

Client: Boyne Resorts

Location: Carrabassett Valley, Maine

Delineator(s): L. Keszey, M. Jackman, R. Scott

Delineation Date(s): May 20-22nd, June 9-12th and 22-26th, 2020

Prepared By: VHB (L. Keszey, 2.10.21)



VHB Delineated Wetlands							
Wetland ID ¹	Delineated Area (Square Feet)	Cowardin Classification ²	Hydrology Indicator	Hydric Soil Indicator	WOSS Present ³	Typical Vegetation	Comments
2020-409	692	PEM	Saturation (A3),Water-Stained Leaves (B9),Drainage Patterns (B10)	Redox Dark Surface (F6)	YES	<i>Onoclea sensibilis, Rubus pubescens</i>	Groundwater discharge to intermittent stream
2020-411	1805	PEM	Saturation (A3),Water-Stained Leaves (B9)	Depleted Below Dark Surface (A11)	YES	<i>Carex crinita, Onoclea sensibilis</i>	Toe of slope feature becomes diffuse down slope
2020-413	350	PEM	Saturation (A3),Water-Stained Leaves (B9)	Histic Epipedon (A2)	YES	<i>Carex scabrata</i>	Seepy swale drains to stream
2020-416	837	PEM	Saturation (A3),Water-Stained Leaves (B9)	Histic Epipedon (A2)	YES	<i>Onoclea sensibilis</i>	Seepy swale
2020-418	1758	PEM	Saturation (A3),Water-Stained Leaves (B9)	Histosol (A1)	YES	<i>Carex crinita, Onoclea sensibilis</i>	Seepage from topography break in forest
2020-419	956	PEM	Saturation (A3),Water-Stained Leaves (B9)	Histosol (A1)	YES	<i>Carex scabrata</i>	Groundwater discharge to stream
2020-421	1434	PEM	Saturation (A3),Water-Stained Leaves (B9), Geomorphic Position (D2)	Histosol (A1)	YES	<i>Carex gynandra, Onoclea sensibilis</i>	Open canopy seep along stream
2020-43	1087	PEM	Saturation (A3),Water-Stained Leaves (B9)	Redox Dark Surface (F6)	YES	<i>Solanum dulcamara, Onoclea sensibilis</i>	Emergent vegetation dominated seepage clearing at toe of slope
2020-49	757	PEM	Saturation (A3),Water-Stained Leaves (B9), Geomorphic Position (D2)	Histosol (A1)	YES	<i>Onoclea sensibilis, Carex scabrata</i>	Seepy bench along stream

Summary of Delineated Wetlands

Project: Sugarloaf West Mountain

Client: Boyne Resorts

Location: Carrabassett Valley, Maine

Delineator(s): L. Keszey, M. Jackman, R. Scott

Delineation Date(s): May 20-22nd, June 9-12th and 22-26th, 2020

Prepared By: VHB (L. Keszey, 2.10.21)



VHB Delineated Wetlands							
Wetland ID ¹	Delineated Area (Square Feet)	Cowardin Classification ²	Hydrology Indicator	Hydric Soil Indicator	WOSS Present ³	Typical Vegetation	Comments
2020-50	1131	PEM	Saturation (A3),Water-Stained Leaves (B9)	Histosol (A1)	YES	<i>Carex crinita, Onoclea sensibilis</i>	Seepage near naturalized log landing
2020-51	827	PEM	Saturation (A3),Water-Stained Leaves (B9)	Histosol (A1)	YES	<i>Acer rubrum, Osmunda claytoniana, Carex gynandra</i>	Seepy area along stream
2020-9	8106	PEM	Saturation (A3),Surface Water (A1),Thin Muck Surface (C7)	Histosol (A1)	YES	<i>Scirpus atrovirens, Onoclea sensibilis</i>	Naturalized logging roads with seepage
2020-101	1066	PFO	Saturation (A3),High Water Table (A2),Water-Stained Leaves (B9)	Histosol (A1)	NO	<i>Carex scabrata, Betula alleghaniensis</i>	Naturalizing skidder rut
2020-102	2065	PFO	Saturation (A3),High Water Table (A2),Water-Stained Leaves (B9)	Histosol (A1)	NO	<i>Carex scabrata, Rubus pubescens</i>	Seep in logged forest
2020-108	3473	PFO	Saturation (A3),Oxidized Rhizospheres on Living Roots (C3)	Depleted Below Dark Surface (A11)	NO	<i>Parathelypteris noveboracensis, Fraxinus pennsylvanica, Calamagrostis canadensis</i>	Open flat area with sandy soils
2020-117	730	PFO	Surface Water (A1),High Water Table (A2),Saturation (A3)	Histosol (A1)	NO	<i>Fraxinus pennsylvanica, Carex scabrata</i>	Small seep with muck
2020-118	6523	PFO	High Water Table (A2),Saturation (A3)	Redox Dark Surface (F6)	NO	<i>Fraxinus pennsylvanica, Carex gynandra, Osmunda claytoniana</i>	Open canopy seep
2020-119	1429	PFO	Saturation (A3)	Histic Epipedon (A2)	NO	<i>Rubus pubescens, Glyceria melicaria, Acer pensylvanicum</i>	Open seep within birch glade

Summary of Delineated Wetlands

Project: Sugarloaf West Mountain

Client: Boyne Resorts

Location: Carrabassett Valley, Maine

Delineator(s): L. Keszey, M. Jackman, R. Scott

Delineation Date(s): May 20-22nd, June 9-12th and 22-26th, 2020

Prepared By: VHB (L. Keszey, 2.10.21)



VHB Delineated Wetlands							
Wetland ID ¹	Delineated Area (Square Feet)	Cowardin Classification ²	Hydrology Indicator	Hydric Soil Indicator	WOSS Present ³	Typical Vegetation	Comments
2020-121	4154	PFO	High Water Table (A2), Saturation (A3), Geomorphic Position (D2)	Histic Epipedon (A2)	NO	<i>Carex scabrata, Osmunda claytoniana, Betula alleghaniensis</i>	Seep within forest opening
2020-122	2733	PFO	High Water Table (A2), Saturation (A3), Thin Muck Surface (C7)	Histosol (A1)	NO	<i>Carex gynandra, Carex scabrata, Osmunda claytoniana</i>	Stream spreads out into logged forest
2020-127	3160	PFO	Saturation (A3), Shallow Aquitard (D3)	Depleted Below Dark Surface (A11)	NO	<i>Carex gynandra, Fraxinus pennsylvanica, Rubus pubescens</i>	Naturalizing legacy logging road
2020-128	235	PFO	Saturation (A3), High Water Table (A2), Water-Stained Leaves (B9)	Histosol (A1)	NO	<i>Rubus pubescens, Galium trifidum, Circaea alpina</i>	Small seep goes underground downslope.
2020-130	1900	PFO	Saturation (A3), Water-Stained Leaves (B9), Hydrogen Sulfide Odor (C1), Thin Muck Surface (C7), Shallow Aquitard (D3)	Histosol (A1)	NO	<i>Carex scabrata, Onoclea sensibilis, Fraxinus pennsylvanica</i>	Open canopy seep
2020-131	3793	PFO	Saturation (A3), Oxidized Rhizospheres on Living Roots (C3)	Depleted Below Dark Surface (A11)	NO	<i>Calamagrostis canadensis, Onoclea sensibilis, Fraxinus pennsylvanica</i>	Groundwater discharge from toe of slope
2020-16	926	PFO	High Water Table (A2), Saturation (A3), Water-Stained Leaves (B9), Oxidized Rhizospheres on Living Roots (C3)	Redox Dark Surface (F6)	NO	<i>Onoclea sensibilis</i>	Between skid roads
2020-200	812	PFO	Surface Water (A1), Saturation (A3), Water Marks (B1), Water-Stained Leaves (B9)	Histosol (A1)	NO	<i>Glyceria canadensis</i>	Narrow seep
2020-208	12577	PFO	Surface Water (A1), High Water Table (A2), Saturation (A3), Water-Stained Leaves (B9)	Redox Dark Surface (F6)	NO	<i>Glyceria melicaria, Onoclea sensibilis</i>	Seepy forest opening

Summary of Delineated Wetlands

Project: Sugarloaf West Mountain

Client: Boyne Resorts

Location: Carrabassett Valley, Maine

Delineator(s): L. Keszey, M. Jackman, R. Scott

Delineation Date(s): May 20-22nd, June 9-12th and 22-26th, 2020

Prepared By: VHB (L. Keszey, 2.10.21)



VHB Delineated Wetlands							
Wetland ID ¹	Delineated Area (Square Feet)	Cowardin Classification ²	Hydrology Indicator	Hydric Soil Indicator	WOSS Present ³	Typical Vegetation	Comments
2020-226	4496	PFO	Saturation (A3)	Histosol (A1)	NO	<i>Onoclea sensibilis, Betula alleghaniensis, Carex scabrata</i>	Seepage opening
2020-227	1051	PFO	Saturation (A3)	Histosol (A1)	NO	<i>Betula alleghaniensis, Carex scabrata</i>	Open seep in forest
2020-23	637	PFO	Water-Stained Leaves (B9), Drainage Patterns (B10)	Redox Dark Surface (F6)	NO	<i>Onoclea sensibilis, Betula alleghaniensis</i>	Wet swale with recent soil deposits
2020-32	12963	PFO	High Water Table (A2), Saturation (A3), Water-Stained Leaves (B9), Drainage Patterns (B10), Geomorphic Position (D2)	Histic Epipedon (A2)	NO	<i>Onoclea sensibilis</i>	Naturalizing skidder ruts at toe of slope
2020-34	38888	PFO	Surface Water (A1), Water-Stained Leaves (B9)	Redox Dark Surface (F6)	NO	<i>Carex crinita</i>	Naturalizing skidder road and log landing drains to wet woods
2020-403	3642	PFO	Saturation (A3), High Water Table (A2)	Histosol (A1)	NO	<i>Carex scabrata, Acer rubrum, Carex gynandra</i>	Seepage at toe of slope to naturalized log landing
2020-404	77569	PFO	Surface Water (A1), High Water Table (A2), Saturation (A3), Water-Stained Leaves (B9)	Redox Dark Surface (F6)	NO	<i>Carex scabrata, Carex gynandra, Acer rubrum</i>	Water bar and groundwater discharge in ski trail dumps into open, disturbed forest with logging history
2020-410	553	PFO	Saturation (A3), High Water Table (A2)	Histic Epipedon (A2)	NO	<i>Carex scabrata, Osmunda claytoniana, Betula cordifolia</i>	Seepy forest opening
2020-412	2276	PFO	Saturation (A3), Water-Stained Leaves (B9)	Redox Dark Surface (F6)	NO	<i>Onoclea sensibilis</i>	Seepage drains to ditch along West Mountain Access Road

Summary of Delineated Wetlands

Project: Sugarloaf West Mountain

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Delineation Date(s): May 20-22nd, June 9-12th and 22-26th, 2020

Prepared By: VHB (L. Keszey, 2.10.21)



VHB Delineated Wetlands							
Wetland ID ¹	Delineated Area (Square Feet)	Cowardin Classification ²	Hydrology Indicator	Hydric Soil Indicator	WOSS Present ³	Typical Vegetation	Comments
2020-45	4644	PFO	Geomorphic Position (D2),Oxidized Rhizospheres on Living Roots (C3),Saturation (A3)	Depleted Matrix (F3)	NO	<i>Carex crinita, Onoclea sensibilis</i>	Seepage from toe of slope with logging legacy
2020-46	5241	PFO	Saturation (A3),High Water Table (A2),Water-Stained Leaves (B9),Drainage Patterns (B10),Shallow Aquitard (D3)	Histic Epipedon (A2)	NO	<i>Galium palustre, Carex crinita</i>	Seepage from topography break in forest
2020-100	2814	PFO	Saturation (A3),High Water Table (A2),Water-Stained Leaves (B9)	Histosol (A1)	YES	<i>Carex scabrata, Rubus pubescens, Betula alleghaniensis</i>	Seepy swale with organic soils
2020-116	6352	PFO	Surface Water (A1),High Water Table (A2),Drift Deposits (B3),Water-Stained Leaves (B9),Drainage Patterns (B10)	Depleted Below Dark Surface (A11)	YES	<i>Abies balsamea, Acer rubrum, Calamagrostis canadensis</i>	Parking lot ditch ends in wet swale in forest
2020-202	2478	PFO	High Water Table (A2),Surface Water (A1),Saturation (A3)	Histosol (A1)	YES	<i>Carex scabrata, Glyceria melicaria</i>	Seepage slope
2020-203	1201	PFO	High Water Table (A2),Surface Water (A1),Saturation (A3)	Histosol (A1)	YES	<i>Carex scabrata, Glyceria melicaria</i>	Seepage slope
2020-206	1696	PFO	High Water Table (A2),Surface Water (A1),Saturation (A3)	Histosol (A1)	YES	<i>Carex scabrata, Glyceria melicaria</i>	Seepage slope
2020-300	5953	PFO	High Water Table (A2),Water-Stained Leaves (B9),Drainage Patterns (B10)	Depleted Matrix (F3)	YES	<i>Onoclea sensibilis, Fraxinus pennsylvanica</i>	Disturbed groundwater discharge area
2020-33	1654	PFO	Saturation (A3),Water-Stained Leaves (B9)	Redox Dark Surface (F6)	YES	<i>Carex crinita</i>	Skid road associated wetland drains to stream

Summary of Delineated Wetlands

Project: Sugarloaf West Mountain

Client: Boyne Resorts

Location: Carrabassett Valley, Maine

Delineator(s): L. Keszey, M. Jackman, R. Scott

Delineation Date(s): May 20-22nd, June 9-12th and 22-26th, 2020

Prepared By: VHB (L. Keszey, 2.10.21)

VHB Delineated Wetlands							
Wetland ID ¹	Delineated Area (Square Feet)	Cowardin Classification ²	Hydrology Indicator	Hydric Soil Indicator	WOSS Present ³	Typical Vegetation	Comments
2020-35	159508	PFO	Surface Water (A1),Water-Stained Leaves (B9)	Histosol (A1)	YES	<i>Acer rubrum, Abies balsamea, Betula alleghaniensis</i>	Softwood swamp in relatively flatter topography
2020-414	107445	PFO	Water-Stained Leaves (B9),Saturation (A3),Oxidized Rhizospheres on Living Roots (C3),Geomorphic Position (D2),Drainage Patterns (B10)	Depleted Matrix (F3),Redox Dark Surface (F6)	YES	<i>Onoclea sensibilis,Betula alleghaniensis</i>	Large wetland with much groundwater movement from upslope
2020-42	2037	PFO	Saturation (A3),Oxidized Rhizospheres on Living Roots (C3),Drainage Patterns (B10)	Depleted Matrix (F3)	YES	<i>Carex crinita,Acer rubrum</i>	Seepage from naturalizing log landing
2020-48	2654	PFO	Saturation (A3),Water-Stained Leaves (B9),Thin Muck Surface (C7)	Redox Dark Surface (F6),Depleted Matrix (F3)	YES	<i>Carex crinita,Rubus pubescens</i>	Naturalizing old skidder road

¹All wetlands field delineated per the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northeast and North Central Region*. U.S. Army Corps of Engineers. 2012

²Classification follows Cowardin, L.M., Carter, V., Golet, F.C. and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitat of the United States*. U.S. Fish and Wildlife Service. FWS/OBD-79/31.

³ Under Chapter 310 of NRPA, wetlands in Maine receive additional protection when they qualify as Wetlands of Special Significance ("WOSS"). Wetlands that qualify at WOSS within the Study Area meet the following criteria: (8)River, stream, or brook. The freshwater wetland area is located within 25 feet of a river, stream, or brook (DEP, 2019)

Summary of Delineated Streams

Project: Sugarloaf West Mountain

Client: Boyne Resorts

Location: Carrabassett Valley, Maine

Delineator(s): L. Keszey, M. Jackman, R. Scott, K. Maines

Delineation Date(s): May 20-22nd, June 9-12th and 22-26th, 2020

Prepared By: VHB (L. Keszey, 2.10.21)

VHB Delineated Streams							
Stream ID	Delineated Area (Square Feet)	Cowardin Classification ²	Dominant Substrate	Water Depth (Inches)	Flow Regime (Ephemeral, Intermittent, or Perennial) ²	NRPA Criteria	Comments
2020-JD-17	None	5	Sand	1	Intermittent	B, C	Ditched stream in Eastern Study Area along parking lot starts outside of Study Area and flows into ephemeral channel
2020-SC-1	2020-1	2.5	Cobble	2	Intermittent	B, C	Intermittent channel in eastern Study Area flows from groundwater discharge in ski slope to join 2020-SC-2
2020-SC-10	2020-35	2	Cobble	1	Intermittent	B, C	Stream channel from groundwater discharge slope to Wetland 2020-35, subterranean in some reaches.
2020-SC-101	None	3	Cobble, organic	2	Intermittent	B, C	Seepy stream channel goes subterranean. In upper elevations of eastern Study Area.
2020-SC-102	2020-100	3.0	Cobble, Gravel	3	Intermittent	B, C	Defined channel goes underground at times before joining 2020-SC-5
2020-SC-104	None	2.0	Organic	1	Intermittent	B, C	Seepy swale forms defined channel before joining 2020-SC-102

Summary of Delineated Streams

Project: Sugarloaf West Mountain

Client: Boyne Resorts

Location: Carrabassett Valley, Maine

Delineator(s): L. Keszey, M. Jackman, R. Scott, K. Maines

Delineation Date(s): May 20-22nd, June 9-12th and 22-26th, 2020

Prepared By: VHB (L. Keszey, 2.10.21)

VHB Delineated Streams							
Stream ID	Delineated Area (Square Feet)	Cowardin Classification ²	Dominant Substrate	Water Depth (Inches)	Flow Regime (Ephemeral, Intermittent, or Perennial) ²	NRPA Criteria	Comments
2020-SC-11	2020-12	2	Cobble	1	Intermittent	B, C	Intermittent channel flowing from seepage slope to Wetland 2020-12, subterranean in some reaches
2020-SC-125	None	3.5	Cobble	2	Intermittent	C, D	Seepy swale forms defined channel before flowing east through culvert out of Study Area.
2020-SC-18	2020-50	2	Gravel	1	Intermittent	B, C	Channel originates from seepage from wetland 2020-50 to culvert under lower cross road.
2020-SC-2	None	5.0	Cobble	3	Intermittent	B, C	Steep gradient stream in eastern Study Area originates from ski trail groundwater discharge then flows north to join Stream 2020-SC-1
2020-SC-200	None	2.0	Cobble, Organic	2	Intermittent	B, C	High elevation intermittent stream channel in southwestern Study Area goes underground just outside of Study Area, flowing west.
2020-SC-201	None	2.5	Cobble	1	Intermittent	B, C	Ditched/culverted intermittent stream flows west outside of Study Area.

Summary of Delineated Streams

Project: Sugarloaf West Mountain

Client: Boyne Resorts

Location: Carrabassett Valley, Maine

Delineator(s): L. Keszey, M. Jackman, R. Scott, K. Maines

Delineation Date(s): May 20-22nd, June 9-12th and 22-26th, 2020

Prepared By: VHB (L. Keszey, 2.10.21)

VHB Delineated Streams							
Stream ID	Delineated Area (Square Feet)	Cowardin Classification ²	Dominant Substrate	Water Depth (Inches)	Flow Regime (Ephemeral, Intermittent, or Perennial) ²	NRPA Criteria	Comments
2020-SC-202	2020-9, 2020-10, 2020-202, 2020-204, 2020-205, 2020-206, 2020-407	3.0	Cobble, Organic	1	Intermittent	B, C	Seepage outflow from Wetland 2020-9 forms defined channel and flows north through a number of other Wetlands. Often diffuse within delineated wetlands.
2020-SC-205	2020-17, 2020-21, 2020-421, 2020-300	4.0	Cobble, Boulder	3	Intermittent	B, C	Defined stream channel with flashy flows, likely straightened in portions.
2020-SC-211	2020-125, 2020-28	3	Sand, gravel	1	Intermittent	B, C	Developing channel flows north from Wetland 2020-125 in northern Study Area.
2020-SC-212	None	2	Gravel, organic	1	Intermittent	B, C	Intermittent channel originates from wetland seeps and joins ditch along West Mountain Road
2020-SC-216	2020-416, 2020-40, 2020-49	5	Boulder, Cobble	1	Intermittent	B, C	Stream in center of Study Area is braided at times and goes subterranean in logging road at bottom of channel

Summary of Delineated Streams

Project: Sugarloaf West Mountain

Client: Boyne Resorts

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Delineator(s): L. Keszey, M. Jackman, R. Scott, K. Maines

Delineation Date(s): May 20-22nd, June 9-12th and 22-26th, 2020

Prepared By: VHB (L. Keszey, 2.10.21)

VHB Delineated Streams							
Stream ID	Delineated Area (Square Feet)	Cowardin Classification ²	Dominant Substrate	Water Depth (Inches)	Flow Regime (Ephemeral, Intermittent, or Perennial) ²	NRPA Criteria	Comments
2020-SC-218	2020-42, 2020-33,	7	Boulder, Gravel	1	Intermittent	B, C	High gradient stream flowing north in center of Study Area through natural vally with much sand and gravel deposition
2020-SC-30	None	2	Sand	1	Intermittent	B, C	Culvert under northern cross road creates short intermittent stream segment that goes subterranean at the northern terminus
2020-SC-304	2020-418	2	Cobble	2	Intermittent	B, C	Upper reaches of Stream 2020-SC-22 south of the northern cross road. In natural valley, but braided and subterranean at times
2020-SC-31	None	2	Cobble, Gravel	1	Intermittent	B, C	High gradient stream channel with much gravel deposits. Joins Stream 2020-SC-216 in central Study Area and flows north.
2020-SC-311	None	3	Cobble	1	Intermittent	B, C	Stream channel sometimes subterranean and with lots of leaf and gravel deposits from flashy spring flows, becomes ephemeral north of culvert.
2020-SC-316	2020-411	1.5	Organic	2	Intermittent	B, C	Seepy short stream channel ends in Wetland 2020-411

Summary of Delineated Streams

Project: Sugarloaf West Mountain

Client: Boyne Resorts

Location: Carrabassett Valley, Maine

Delineator(s): L. Keszey, M. Jackman, R. Scott, K. Maines

Delineation Date(s): May 20-22nd, June 9-12th and 22-26th, 2020

Prepared By: VHB (L. Keszey, 2.10.21)

VHB Delineated Streams							
Stream ID	Delineated Area (Square Feet)	Cowardin Classification ²	Dominant Substrate	Water Depth (Inches)	Flow Regime (Ephemeral, Intermittent, or Perennial) ²	NRPA Criteria	Comments
2020-SC-318	2020-419, 2020-51	2	Organic	2	Intermittent	B, C	Stream originates from groundwater discharge from Wetland 2020-419 and becomes Stream 2020-SC-212 below culvert
2020-SC-33	2020-43	1	Gravel, organic	1	Intermittent	B, C	Poorly defined stream channel in center of Study Area becomes diffuse downslope
2020-SC-36	None	1	Boulder, Cobble	1	Intermittent	B, C	Erosion within skid road creates stream channel that joins 2020-SC-123
2020-SC-5	2020-4	2.5	Cobble	1	Intermittent	B, C	Steep rocky channel goes subterranean in some reaches
2020-SC-1	None	4.0	Cobble	2	Perennial	B, C	Perennial reach of stream below confluence with 2020-SC-2
2020-SC-120	None	10	Gravel	1	Perennial	B, C	Perennial stream originates from outside of Study Area and enters eastern Study Area via large culvert. Likely constructed channel

Summary of Delineated Streams

Project: Sugarloaf West Mountain

Client: Boyne Resorts

Location: Carrabassett Valley, Maine

Delineator(s): L. Keszey, M. Jackman, R. Scott, K. Maines

Delineation Date(s): May 20-22nd, June 9-12th and 22-26th, 2020

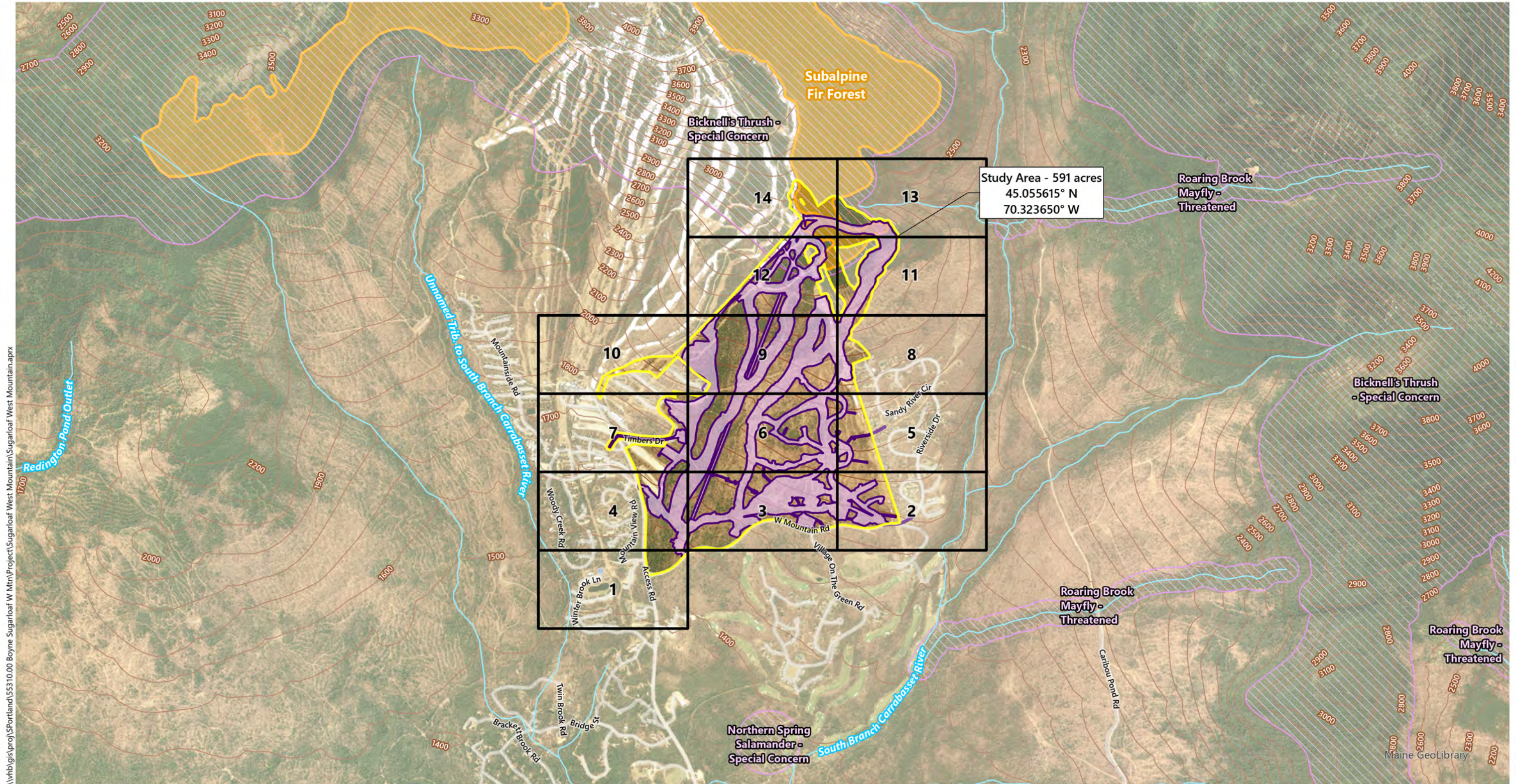
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VHB Delineated Streams							
Stream ID	Delineated Area (Square Feet)	Cowardin Classification ²	Dominant Substrate	Water Depth (Inches)	Flow Regime (Ephemeral, Intermittent, or Perennial) ²	NRPA Criteria	Comments
2020-SC-123	2020-48	4	Gravel	1	Perennial	B, C	Perennial stream in center of Study Area with apparent straightening along logging road.
2020-SC-126	None	4	Cobble	1	Perennial	B, C	Small side channel of Stream 2020-TOB-1
2020-SC-210	None	5	Cobble	2	Perennial	B, C	Perennial channel flowing north below confluence of Streams 2020-SC-123 and 2020-SC-5 in eastern Study Area.
2020-SC-22	2020-413, 2020-414	4	Gravel	1	Perennial	B, C	From culverted Stream 2020-Sc-304, this channel flows north in the center of the Study Area before becoming diffuse in Wetland 2020-414.
2020-TOB-1	2020-116	13	Boulder, Cobble	3	Perennial	B, C	Lower, perennial reaches of significant stream that crosses under West Mountain Road via bridge in the northeast corner of the Study Area.

¹ U.S. Army Corps of Engineers. 2005. *Regulatory Guidance Letter. Subject: Ordinary High Water Mark Identification. No. 05-05.*

² Stream flow regimes determined based on qualitative observations of in stream hydrology indicators and geomorphic characteristic and are subject to professional judgment.

APPENDIX 5
NATURAL RESOURCES MAPPING



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- Map Sheet Index (VHB)
- Proposed LOD (VHB)
- Study Area (VHB)
- NHD Stream (USDA)
- Contours 100 Feet (MG)
- Endangered Threatened and Special Concern Wildlife (IFW/Persons)
- Rare/Exemplary Natural Community (MNAP)

Sugarloaf West Mountain

Carrabasset Valley, Maine

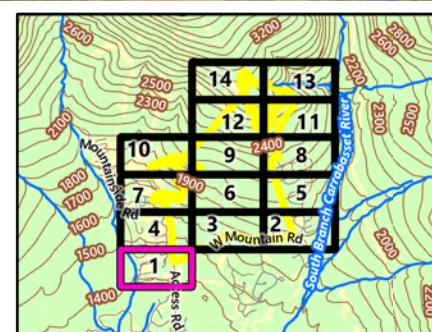
VHB's field natural resource assessments conducted on various dates: vernal pools between 5/19/20-6/12/20 (Keszezy/Jackman); wetland/waters between 6/8/20-6/26/20 (Keszezy/Jackman/Scott/Maines); RTE plant survey 5/19/20-6/26/20 and 8/9/20-8/10/20 (Fenner, Keszezy, Jackman)

Sources:
Background Imagery by Maine Geolibary (Collected in 2016)
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VHB - 2020-2021

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- Parcel Boundary (MEGIS)
- Observed Bridge (VHB)
- Delineated Wetland (VHB)
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- Observed Culvert Invert (VHB)
- Adjacent (within 75 ft) to a Protected Resource Area (VHB)
- 10 ft Contour (SMC)
- Vernal Pool Point (VHB)
- Corps Wetland Data Plot (VHB)
- Roaring Brook Mayfly/Northern Spring Salamander Habitat (Persons)



Sugarloaf West Mountain

Carrabasset Valley, Maine

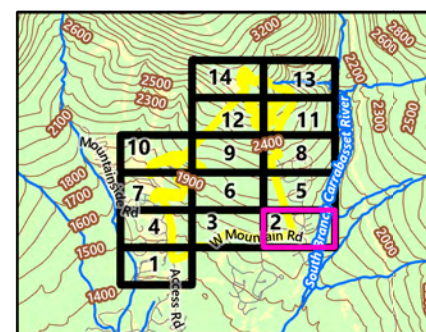
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USDA (U.S. Department of Agriculture - 2019)
VHB - 2020-2021

Natural Resources
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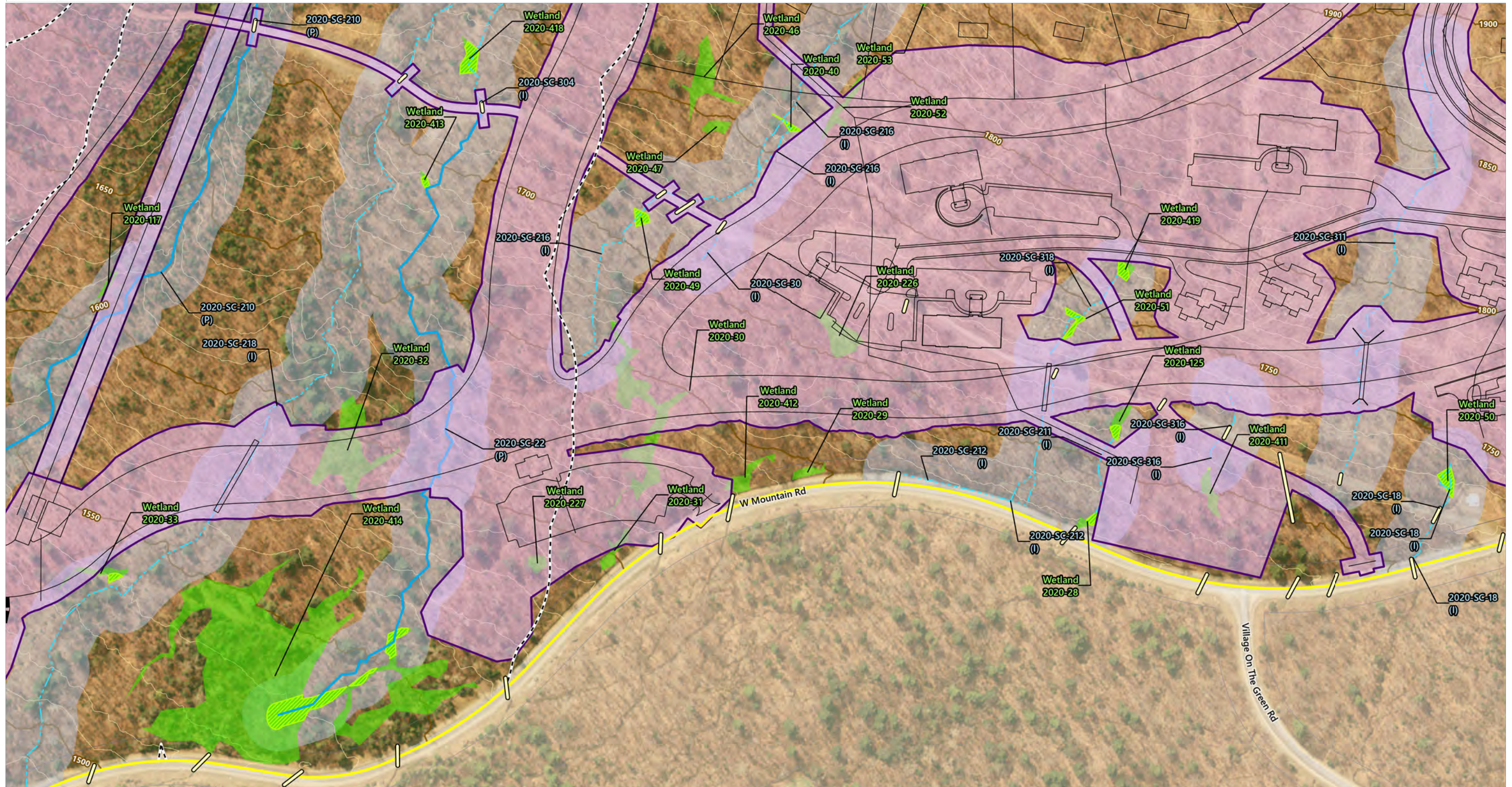
Sugarloaf West Mountain

Carrabasset Valley, Maine

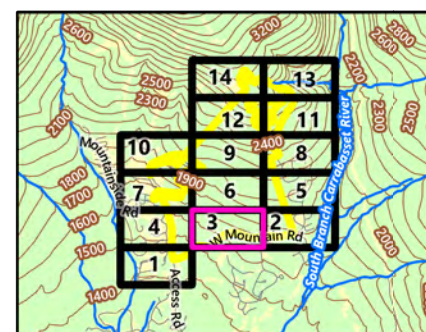
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VHB - 2020-2021

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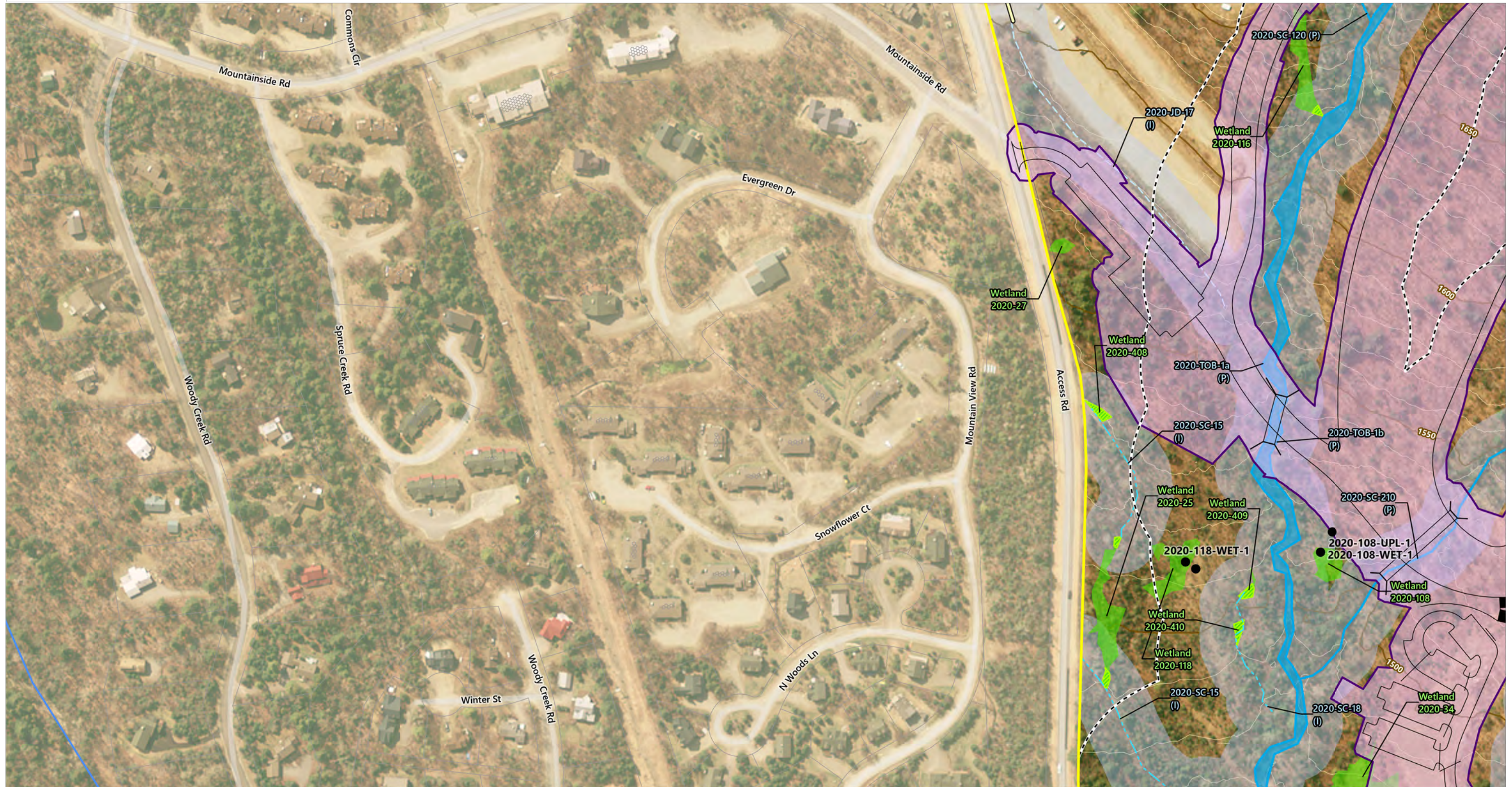
Sugarloaf West Mountain

Carrabassett Valley, Maine

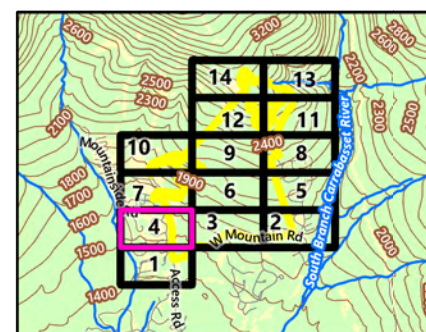
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Natural Resources
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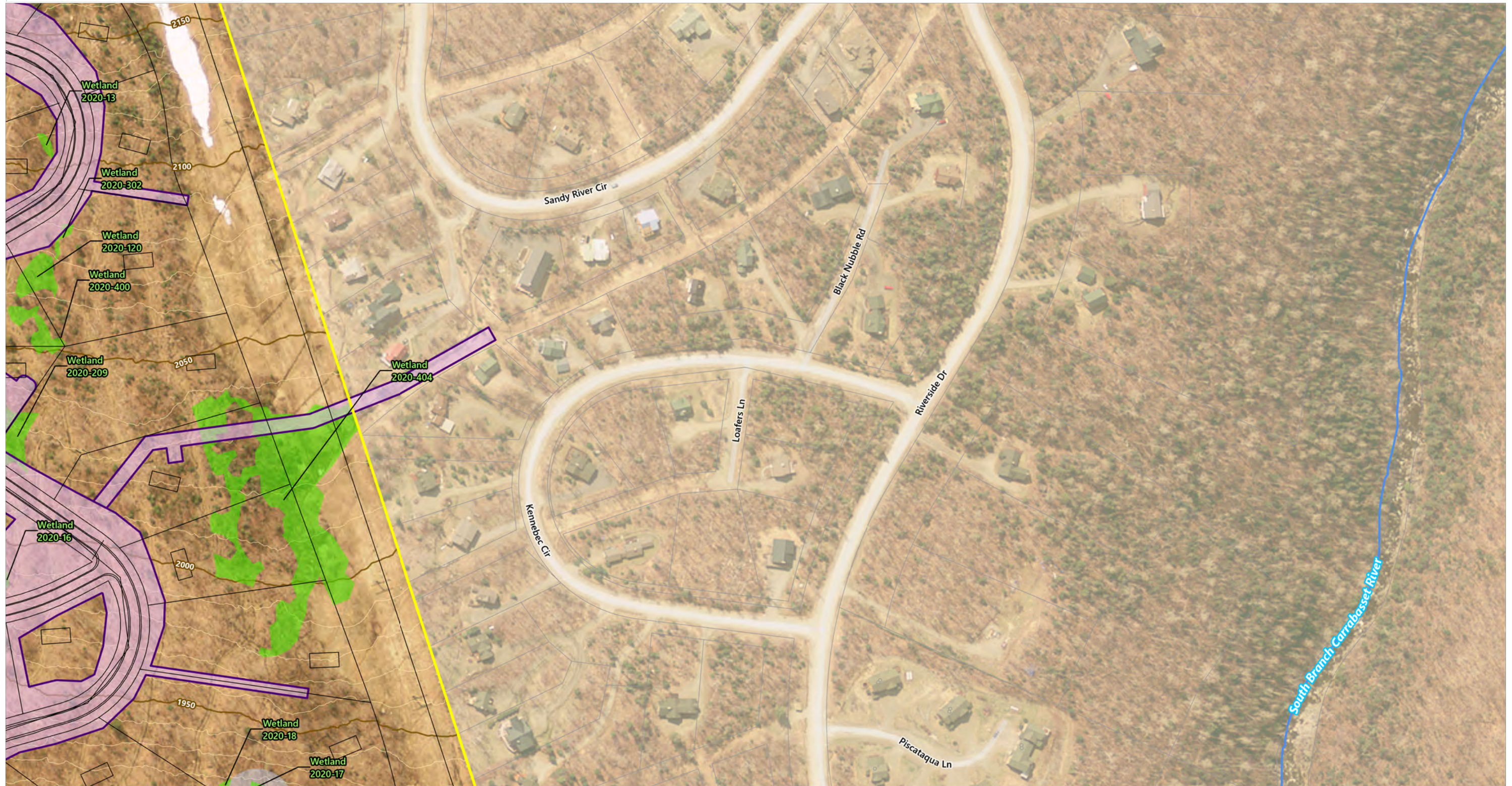
Sugarloaf West Mountain

Carrabassett Valley, Maine

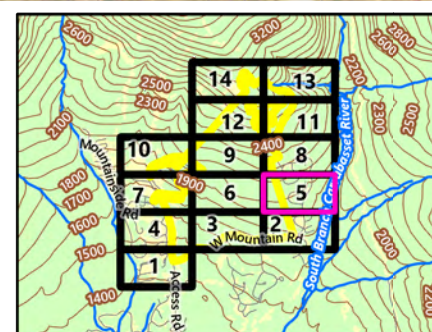
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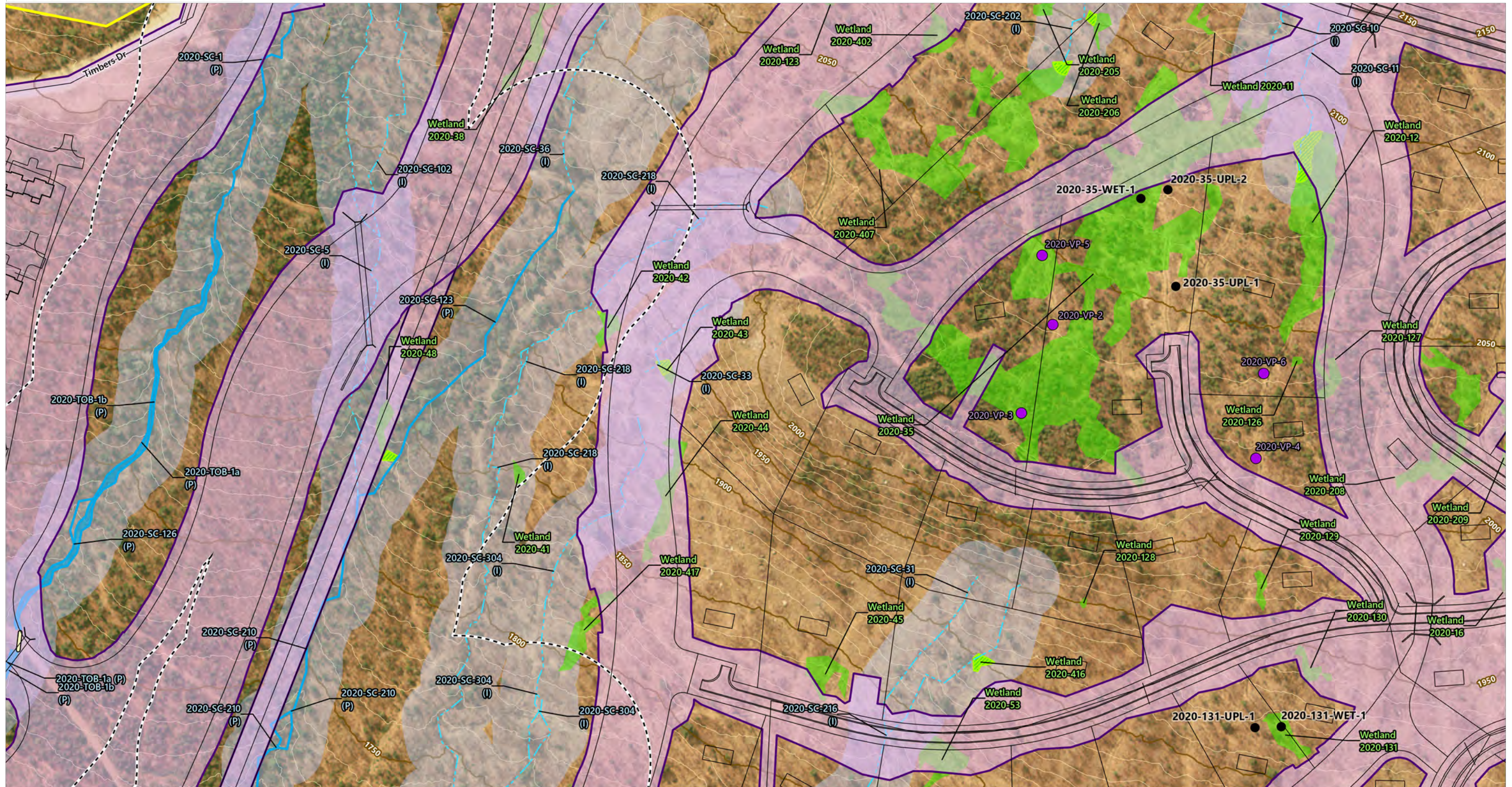
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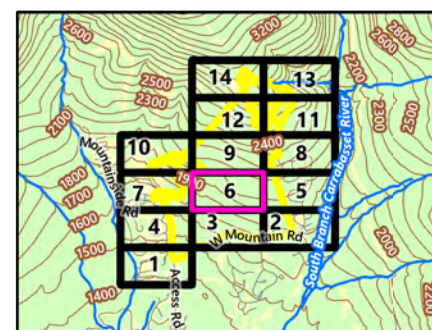
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Sugarloaf West Mountain

Carrabassett Valley, Maine

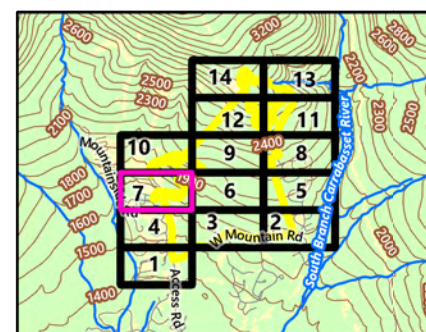
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Carrabassett Valley, Maine

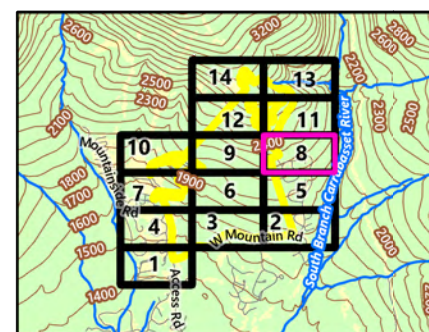
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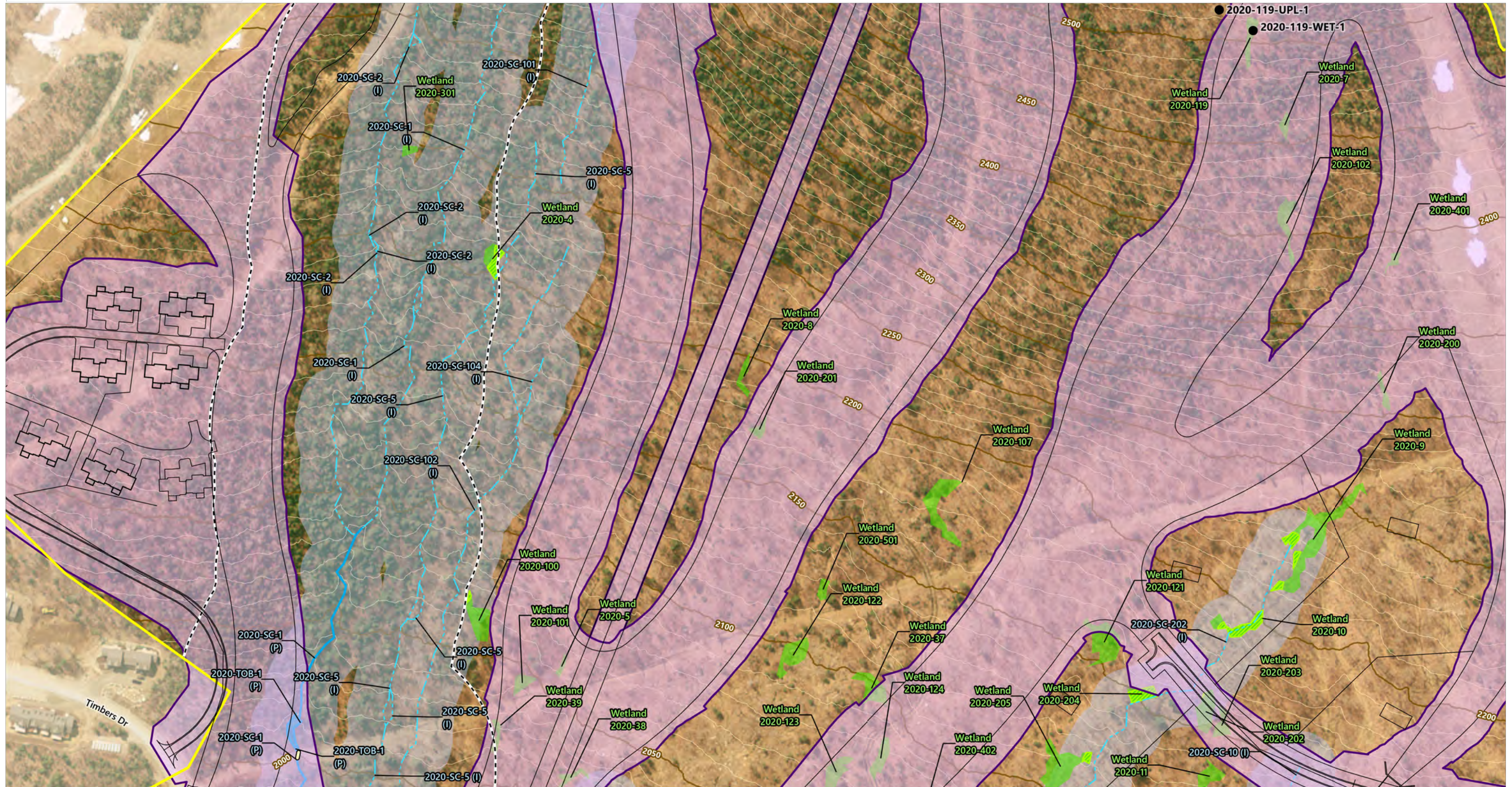
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Carrabassett Valley, Maine

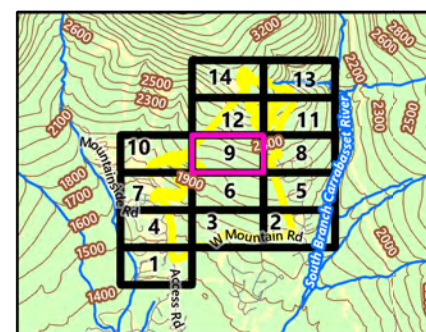
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Sugarloaf West Mountain

Carrabassett Valley, Maine

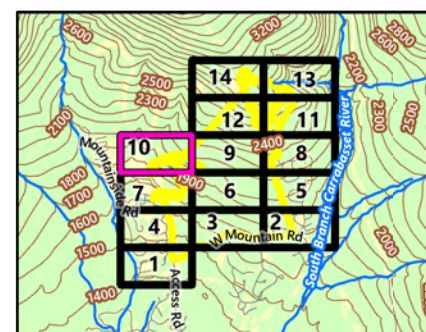
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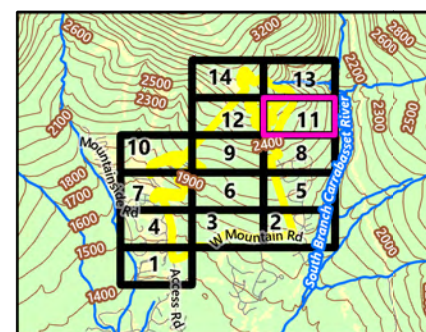
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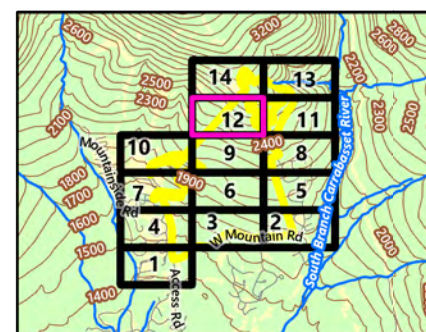
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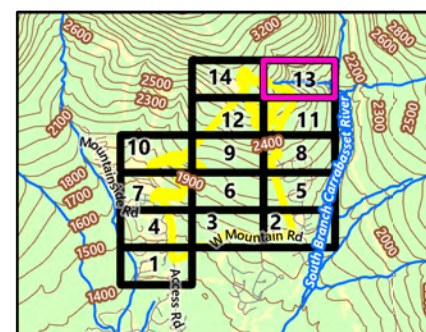
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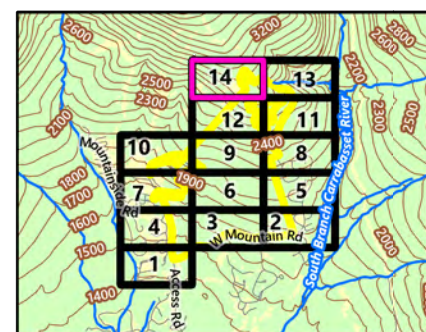
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Carrabassett Valley, Maine

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APPENDIX 6
CORRESPONDENCE ON VERNAL POOLS



Maine State Vernal Pool Assessment Form



INSTRUCTIONS:

- Complete all 3 pages of form thoroughly. Most fields are required for pool registration.
- Clear photographs of a) the pool AND b) the indicators (one example of each species egg mass) are required for all observers.

Observer's Pool ID: 2020-VP-1

MDIFW Pool ID: _____

1. PRIMARY OBSERVER INFORMATION

- a. Observer name: Mitchell Jackman
- b. Contact and credentials previously provided? No (submit Addendum 1) Yes

2. PROJECT CONTACT INFORMATION

- a. Contact name: same as observer other Sean Hale, SHale@vhb.com 207-536-2588
- b. Contact and credentials previously provided? No (submit Addendum 1) Yes
- c. Project Name: Sugarloaf West Mountain Development

3. LANDOWNER CONTACT INFORMATION

- a. Are you the landowner? Yes No If no, was landowner permission obtained for survey? Yes No
- b. Landowner's contact information (required)
- Name: Karl Strand Phone: 207-237-6903
- Street Address: 5092 Access Rd City: Carrabassett Valley State: ME Zip: 04947
- c. Large Projects: check if separate project landowner data file submitted

4. VERNAL POOL LOCATION INFORMATION

a. Location Township: Carrabassett Valley

Brief site directions to the pool (using mapped landmarks):

Located on fist turn of Bucksaw lane in roadside excavation at end of ditched channel drains into woods.

b. Mapping Requirements

i. USGS topographic map OR aerial photograph with pool clearly marked.

ii. GPS location of vernal pool (use Datum NAD83 / WGS84)

Longitude/Easting: -70.316864 Latitude/Northing: 45.056488

Coordinate system: WGS84

- Check one: GIS shapefile
 - send to Jason.Czapiga@maine.gov; observer has reviewed shape accuracy (Best)
- The pool perimeter is delineated by multiple GPS points. (Excellent)
 - Include map or spreadsheet with coordinates.
- The above GPS point is at the center of the pool. (Good)
- The center of the pool is approximately _____ m ft in the compass direction of _____ degrees from the above GPS point. (Acceptable)



Maine State Vernal Pool Assessment Form



5. VERNAL POOL HABITAT INFORMATION

a. Habitat survey date (only if different from indicator survey dates on page 3): 5/20/20 6/8/20

b. Wetland habitat characterization

■ Choose the best descriptor for the landscape setting:

- Isolated depression
- Floodplain depression
- Pool associated with larger wetland complex
- Other: _____

■ Check all wetland types that best apply to this pool:

- Forested swamp
- Shrub swamp
- Peatland (fen or bog)
- Emergent marsh
- Wet meadow
- Lake or pond cove
- Abandoned beaver flowage
- Active beaver flowage
- Slow stream
- Floodplain
- Mostly unvegetated pool
- ATV or skidder rut
- Dug pond or borrow pit
- Roadside ditch
- Other: _____

c. Vernal pool status under the Natural Resources Protection Act (NRPA)

i. Pool Origin: Natural Natural-Modified Unnatural Unknown

If modified, unnatural or unknown, describe any modern or historic human impacts to the pool (**required**):

Excavated area adjacent to road and ditch

ii. Pool Hydrology

■ Select the pool's estimated hydroperiod AND provide rationale in box (**required**):

- Permanent
- Semi-permanent (drying partially in all years and completely in drought years)
- Ephemeral (drying out completely in most years)
- Unknown

Explain:

Dry later in year during wetland delineation site visit

■ Maximum depth at survey: 0-12" (0-1 ft.) 12-36" (1-3 ft.) 36-60" (3-5 ft.) >60" (>5 ft.)

■ Approximate size of pool (at spring highwater): Width: 10 m ft Length: 15 m ft

■ Predominate substrate in order of increasing hydroperiod:

- Mineral soil (bare, leaf-litter bottom, or upland mosses present)
- Mineral soil (sphagnum moss present)
- Organic matter (peat/muck) shallow or restricted to deepest portion
- Organic matter (peat/muck) deep and widespread

■ Pool vegetation indicators in order of increasing hydroperiod (check all that apply):

- Terrestrial nonvascular spp. (e.g. haircap moss, lycopodium spp.)
- Dry site ferns (e.g. spinulose wood fern, lady fern, bracken fern)
- Moist site ferns (e.g. sensitive fern, cinnamon fern, interrupted fern, New York fern)
- Moist site vasculars (e.g. skunk cabbage, jewelweed, blue flag iris, swamp candle)
- Sphagnum moss (anchored or suspended)
- Wet site ferns (e.g. royal fern, marsh fern)
- Wet site shrubs (e.g. highbush blueberry, maleberry, winterberry, mountain holly)
- Wet site graminoids (e.g. blue-joint grass, tussock sedge, cattail, bulrushes)
- Aquatic vascular spp. (e.g. pickerelweed, arrowhead)
- Floating or submerged aquatics (e.g. water lily, water shield, pond weed, bladderwort)
- No vegetation in pool

■ Faunal indicators (check all that apply):

- Fish
- Bullfrog or Green Frog tadpoles
- Other: _____

iii. Inlet/Outlet Flow Permanency

Type of inlet or outlet (a seasonal or permanent channel providing water flowing into or out of the pool):

- No inlet or outlet
- Intermittent inlet or outlet
- Permanent inlet or outlet (channel with well-defined banks and permanent flow)
- Other or Unknown (explain): _____



Maine State Vernal Pool Assessment Form



6. VERNAL POOL INDICATOR INFORMATION

a. Indicator survey dates: 5/20/2020 6/8/2020

b. Indicator abundance criteria and pool survey effort

- Is pool depression bisected by 2 ownerships (straddler pool)? Yes No
- Was the entire pool surveyed for egg masses? Yes No; what % of entire pool surveyed? _____
- For each indicator species, indicate the exact number of egg masses, confidence level for species determination, and egg mass maturity. Separate cells are provided for separate survey dates.

INDICATOR SPECIES	Egg Masses (or adult Fairy Shrimp)						Tadpoles/Larvae ⁴				
	Visit #1	Visit #2	Visit #3	Confidence Level ¹		Egg Mass Maturity ²		Observed		Confidence Level ¹	
Wood Frog	13	8		3	3	F/M	A/H		100		3
Spotted Salamander	3	7		3	3	F	A				
Blue-spotted Salamander											
Fairy Shrimp ³											

1-Confidence level: 1 = <60%, 2 = 60-95%, 3 = >95%

2-Egg mass maturity: F= Fresh (<24 hrs), M= Mature (round embryos), A= Advanced (loose matrix, curved embryos), H= Hatched or Hatching

3-Fairy shrimp: X = present

4-Tadpoles/larvae: X = present

c. Rarity criteria

- Note any rare species associated with vernal pools. Observations should be accompanied by photographs.

SPECIES	Method of Verification*			CL**	SPECIES	Method of Verification*			CL**
	P	H	S			P	H	S	
Blanding's Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Wood Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Spotted Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Ribbon Snake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ringed Boghaunter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

*Method of verification: P = Photographed, H = Handled, S = Seen

**CL - Confidence level in species determination: 1= <60%, 2= 60-95%, 3= >95%

d. Optional observer recommendation:

- SVP Potential SVP Non Significant VP Indicator Breeding Area

e. General vernal pool comments and/or observations of other wildlife:

Mosquito larvae and log cabin caddis in man made ditch excavation substrate gravel road material and organic matter cattails and carex vegetation

Send completed form and supporting documentation to: Maine Dept. of Inland Fisheries and Wildlife
Attn: Vernal Pools
650 State Street, Bangor, ME 04401

NOTE: Digital submission (to Jason.Czapiga@maine.gov) of vernal pool field forms and photographs is only acceptable for projects with 3 or fewer assessed pools; larger projects must be mailed as hard copies.

For MDIFW use only Reviewed by MDIFW Date: _____ Initials: _____

This pool is: Significant Potentially Significant but lacking critical data Not Significant due to: does not meet biological criteria. does not meet MDEP vernal pool criteria.

Comments: _____

Sugarloaf West Mountain
Maine Vernal Pool Form Photographs
May/June 2020



Figure 1: Vernal Pool 1 Overview



Figure 2: Vernal Pool 1- Wood Frog



Figure 3: Vernal Pool 1- Spotted Salamander



Maine State Vernal Pool Assessment Form



INSTRUCTIONS:

- Complete all 3 pages of form thoroughly. Most fields are required for pool registration.
- Clear photographs of a) the pool AND b) the indicators (one example of each species egg mass) are required for all observers.

Observer's Pool ID: 2020-VP-2

MDIFW Pool ID: _____

1. PRIMARY OBSERVER INFORMATION

- a. Observer name: Mitchell Jackman
- b. Contact and credentials previously provided? No (submit Addendum 1) Yes

2. PROJECT CONTACT INFORMATION

- a. Contact name: same as observer other Sean Hale, Shale@vhb.com 207-536-2588
- b. Contact and credentials previously provided? No (submit Addendum 1) Yes
- c. Project Name: Sugarloaf West Mountain Development

3. LANDOWNER CONTACT INFORMATION

- a. Are you the landowner? Yes No If no, was landowner permission obtained for survey? Yes No
- b. Landowner's contact information (required)
- Name: Karl Strand Phone: 207-237-6903
- Street Address: 5092 Access Rd City: Carrabassett Valley State: ME Zip: 04947
- c. Large Projects: check if separate project landowner data file submitted

4. VERNAL POOL LOCATION INFORMATION

a. Location Township: Carrabassett Valley

Brief site directions to the pool (using mapped landmarks):

Located in woods road skidder rut in large softwood swamp located below the mid mountain cut over trail between Bucksaw road and the West Mountain Lift.

b. Mapping Requirements

i. USGS topographic map OR aerial photograph with pool clearly marked.

ii. GPS location of vernal pool (use Datum NAD83 / WGS84)

Longitude/Easting: -70.326089 Latitude/Northing: 45.055872

Coordinate system: WGS 84

- Check one: GIS shapefile
 - send to Jason.Czapiga@maine.gov; observer has reviewed shape accuracy (Best)
- The pool perimeter is delineated by multiple GPS points. (Excellent)
 - Include map or spreadsheet with coordinates.
- The above GPS point is at the center of the pool. (Good)
- The center of the pool is approximately _____ m ft in the compass direction of _____ degrees from the above GPS point. (Acceptable)



Maine State Vernal Pool Assessment Form



5. VERNAL POOL HABITAT INFORMATION

a. Habitat survey date (only if different from indicator survey dates on page 3): 5/20/20 6/8/20

b. Wetland habitat characterization

■ Choose the best descriptor for the landscape setting:

- Isolated depression
- Floodplain depression
- Pool associated with larger wetland complex
- Other: _____

■ Check all wetland types that best apply to this pool:

- Forested swamp
- Shrub swamp
- Peatland (fen or bog)
- Emergent marsh
- Wet meadow
- Lake or pond cove
- Abandoned beaver flowage
- Active beaver flowage
- Slow stream
- Floodplain
- Mostly unvegetated pool
- ATV or skidder rut
- Dug pond or borrow pit
- Roadside ditch
- Other: _____

c. Vernal pool status under the Natural Resources Protection Act (NRPA)

i. Pool Origin: Natural Natural-Modified Unnatural Unknown

If modified, unnatural or unknown, describe any modern or historic human impacts to the pool (**required**):

Skidder rut in old woods road

ii. Pool Hydrology

■ Select the pool's estimated hydroperiod AND provide rationale in box (**required**):

- Permanent
- Semi-permanent (drying partially in all years and completely in drought years)
- Ephemeral (drying out completely in most years)
- Unknown

Explain:

Dry later in year during wetland delineation site visit

■ Maximum depth at survey: 0-12" (0-1 ft.) 12-36" (1-3 ft.) 36-60" (3-5 ft.) >60" (>5 ft.)

■ Approximate size of pool (at spring highwater): Width: 10 m ft Length: 2 m ft

■ Predominate substrate in order of increasing hydroperiod:

- Mineral soil (bare, leaf-litter bottom, or upland mosses present)
- Mineral soil (sphagnum moss present)
- Organic matter (peat/muck) shallow or restricted to deepest portion
- Organic matter (peat/muck) deep and widespread

■ Pool vegetation indicators in order of increasing hydroperiod (check all that apply):

- Terrestrial nonvascular spp. (e.g. haircap moss, lycopodium spp.)
- Dry site ferns (e.g. spinulose wood fern, lady fern, bracken fern)
- Moist site ferns (e.g. sensitive fern, cinnamon fern, interrupted fern, New York fern)
- Moist site vasculars (e.g. skunk cabbage, jewelweed, blue flag iris, swamp candle)
- Sphagnum moss (anchored or suspended)
- Wet site ferns (e.g. royal fern, marsh fern)
- Wet site shrubs (e.g. highbush blueberry, maleberry, winterberry, mountain holly)
- Wet site graminoids (e.g. blue-joint grass, tussock sedge, cattail, bulrushes)
- Aquatic vascular spp. (e.g. pickerelweed, arrowhead)
- Floating or submerged aquatics (e.g. water lily, water shield, pond weed, bladderwort)
- No vegetation in pool

■ Faunal indicators (check all that apply):

- Fish
- Bullfrog or Green Frog tadpoles
- Other: _____

iii. Inlet/Outlet Flow Permanency

Type of inlet or outlet (a seasonal or permanent channel providing water flowing into or out of the pool):

- No inlet or outlet
- Intermittent inlet or outlet
- Permanent inlet or outlet (channel with well-defined banks and permanent flow)
- Other or Unknown (explain): _____



Maine State Vernal Pool Assessment Form



6. VERNAL POOL INDICATOR INFORMATION

a. Indicator survey dates: 5/20/2020 6/8/2020

b. Indicator abundance criteria and pool survey effort

- Is pool depression bisected by 2 ownerships (straddler pool)? Yes No
- Was the entire pool surveyed for egg masses? Yes No; what % of entire pool surveyed? _____
- For each indicator species, indicate the exact number of egg masses, confidence level for species determination, and egg mass maturity. Separate cells are provided for separate survey dates.

INDICATOR SPECIES	Egg Masses (or adult Fairy Shrimp)						Tadpoles/Larvae ⁴				
	Visit #1	Visit #2	Visit #3	Confidence Level ¹		Egg Mass Maturity ²		Observed		Confidence Level ¹	
Wood Frog	3	3		3	3	F	A				
Spotted Salamander		1			3		M				
Blue-spotted Salamander											
Fairy Shrimp ³											

1-Confidence level: 1 = <60%, 2 = 60-95%, 3 = >95%

2-Egg mass maturity: F= Fresh (<24 hrs), M= Mature (round embryos), A= Advanced (loose matrix, curved embryos), H= Hatched or Hatching

3-Fairy shrimp: X = present

4-Tadpoles/larvae: X = present

c. Rarity criteria

- Note any rare species associated with vernal pools. Observations should be accompanied by photographs.

SPECIES	Method of Verification*			CL**	SPECIES	Method of Verification*			CL**
	P	H	S			P	H	S	
Blanding's Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Wood Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Spotted Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Ribbon Snake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ringed Boghaunter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

*Method of verification: P = Photographed, H = Handled, S = Seen

**CL - Confidence level in species determination: 1= <60%, 2= 60-95%, 3= >95%

d. Optional observer recommendation:

- SVP Potential SVP Non Significant VP Indicator Breeding Area

e. General vernal pool comments and/or observations of other wildlife:

Mosquito larvae and log cabin caddis in skidder rut in dip shallow soils to bedrock

Send completed form and supporting documentation to: Maine Dept. of Inland Fisheries and Wildlife
Attn: Vernal Pools
650 State Street, Bangor, ME 04401

NOTE: Digital submission (to Jason.Czapiga@maine.gov) of vernal pool field forms and photographs is only acceptable for projects with 3 or fewer assessed pools; larger projects must be mailed as hard copies.

For MDIFW use only Reviewed by MDIFW Date: _____ Initials: _____

This pool is: Significant Potentially Significant but lacking critical data Not Significant due to: does not meet biological criteria. does not meet MDEP vernal pool criteria.

Comments:

Sugarloaf West Mountain
Maine Vernal Pool Form Photographs
May/June 2020



Figure 1: Vernal Pool 2 Overview



Figure 2: Vernal Pool 2- Spotted Salamander



Maine State Vernal Pool Assessment Form



INSTRUCTIONS:

- Complete all 3 pages of form thoroughly. Most fields are required for pool registration.
- Clear photographs of a) the pool AND b) the indicators (one example of each species egg mass) are required for all observers.

Observer's Pool ID: 2020-VP-3

MDIFW Pool ID: _____

1. PRIMARY OBSERVER INFORMATION

- a. Observer name: Mitchell Jackman
- b. Contact and credentials previously provided? No (submit Addendum 1) Yes

2. PROJECT CONTACT INFORMATION

- a. Contact name: same as observer other Sean Hale, Shale@vhb.com 207-536-2588
- b. Contact and credentials previously provided? No (submit Addendum 1) Yes
- c. Project Name: Sugarloaf West Mountain Development

3. LANDOWNER CONTACT INFORMATION

- a. Are you the landowner? Yes No If no, was landowner permission obtained for survey? Yes No
- b. Landowner's contact information (required)
- Name: Karl Strand Phone: 207-237-6903
- Street Address: 5092 Access Rd City: Carrabassett Valley State: ME Zip: 04947
- c. Large Projects: check if separate project landowner data file submitted

4. VERNAL POOL LOCATION INFORMATION

a. Location Township: Carrabassett Valley

Brief site directions to the pool (using mapped landmarks):

Located in large softwood swamp located just below mid mountain cut over trail. VP is on the west side of the main skid road through softwood cut. Area is a slight forested depression with spruce cedar and fir overstory.

b. Mapping Requirements

i. USGS topographic map OR aerial photograph with pool clearly marked.

ii. GPS location of vernal pool (use Datum NAD83 / WGS84)

Longitude/Easting: -70.325837 Latitude/Northing: 45.056374

Coordinate system: WGS 84

- Check one: GIS shapefile
 - send to Jason.Czapiga@maine.gov; observer has reviewed shape accuracy (Best)
- The pool perimeter is delineated by multiple GPS points. (Excellent)
 - Include map or spreadsheet with coordinates.
- The above GPS point is at the center of the pool. (Good)
- The center of the pool is approximately _____ m ft in the compass direction of _____ degrees from the above GPS point. (Acceptable)



Maine State Vernal Pool Assessment Form



5. VERNAL POOL HABITAT INFORMATION

a. Habitat survey date (only if different from indicator survey dates on page 3): 5/20/20 6/8/20

b. Wetland habitat characterization

■ Choose the best descriptor for the landscape setting:

- Isolated depression
- Floodplain depression
- Pool associated with larger wetland complex
- Other: _____

■ Check all wetland types that best apply to this pool:

- Forested swamp
- Shrub swamp
- Peatland (fen or bog)
- Emergent marsh
- Wet meadow
- Lake or pond cove
- Abandoned beaver flowage
- Active beaver flowage
- Slow stream
- Floodplain
- Mostly unvegetated pool
- ATV or skidder rut
- Dug pond or borrow pit
- Roadside ditch
- Other: _____

c. Vernal pool status under the Natural Resources Protection Act (NRPA)

i. Pool Origin: Natural Natural-Modified Unnatural Unknown

If modified, unnatural or unknown, describe any modern or historic human impacts to the pool (**required**):

Unclear if area was impacted by cutting of the softwood swamp shallow depression with shallow soils adjacent to main woods road.

ii. Pool Hydrology

■ Select the pool's estimated hydroperiod AND provide rationale in box (**required**):

- Permanent
- Semi-permanent (drying partially in all years and completely in drought years)
- Ephemeral (drying out completely in most years)
- Unknown

Explain:

Dry later in year during wetland delineation site visit

■ Maximum depth at survey: 0-12" (0-1 ft.) 12-36" (1-3 ft.) 36-60" (3-5 ft.) >60" (>5 ft.)

■ Approximate size of pool (at spring highwater): Width: 10 m ft Length: 15 m ft

■ Predominate substrate in order of increasing hydroperiod:

- Mineral soil (bare, leaf-litter bottom, or upland mosses present)
- Mineral soil (sphagnum moss present)
- Organic matter (peat/muck) shallow or restricted to deepest portion
- Organic matter (peat/muck) deep and widespread

■ Pool vegetation indicators in order of increasing hydroperiod (check all that apply):

- Terrestrial nonvascular spp. (e.g. haircap moss, lycopodium spp.)
- Dry site ferns (e.g. spinulose wood fern, lady fern, bracken fern)
- Moist site ferns (e.g. sensitive fern, cinnamon fern, interrupted fern, New York fern)
- Moist site vasculars (e.g. skunk cabbage, jewelweed, blue flag iris, swamp candle)
- Sphagnum moss (anchored or suspended)
- Wet site ferns (e.g. royal fern, marsh fern)
- Wet site shrubs (e.g. highbush blueberry, maleberry, winterberry, mountain holly)
- Wet site graminoids (e.g. blue-joint grass, tussock sedge, cattail, bulrushes)
- Aquatic vascular spp. (e.g. pickerelweed, arrowhead)
- Floating or submerged aquatics (e.g. water lily, water shield, pond weed, bladderwort)
- No vegetation in pool

■ Faunal indicators (check all that apply):

- Fish
- Bullfrog or Green Frog tadpoles
- Other: _____

iii. Inlet/Outlet Flow Permanency

Type of inlet or outlet (a seasonal or permanent channel providing water flowing into or out of the pool):

- No inlet or outlet
- Intermittent inlet or outlet
- Permanent inlet or outlet (channel with well-defined banks and permanent flow)
- Other or Unknown (explain): _____



Maine State Vernal Pool Assessment Form



6. VERNAL POOL INDICATOR INFORMATION

a. Indicator survey dates: 5/20/2020 6/8/2020

b. Indicator abundance criteria and pool survey effort

- Is pool depression bisected by 2 ownerships (straddler pool)? Yes No
- Was the entire pool surveyed for egg masses? Yes No; what % of entire pool surveyed? _____
- For each indicator species, indicate the exact number of egg masses, confidence level for species determination, and egg mass maturity. Separate cells are provided for separate survey dates.

INDICATOR SPECIES	Egg Masses (or adult Fairy Shrimp)						Tadpoles/Larvae ⁴				
	Visit #1	Visit #2	Visit #3	Confidence Level ¹		Egg Mass Maturity ²		Observed		Confidence Level ¹	
Wood Frog	5	5		3	3	F	A/H		50		3
Spotted Salamander	4	8			3	F	A				
Blue-spotted Salamander											
Fairy Shrimp ³											

1-Confidence level: 1 = <60%, 2 = 60-95%, 3 = >95%

2-Egg mass maturity: F= Fresh (<24 hrs), M= Mature (round embryos), A= Advanced (loose matrix, curved embryos), H= Hatched or Hatching

3-Fairy shrimp: X = present

4-Tadpoles/larvae: X = present

c. Rarity criteria

- Note any rare species associated with vernal pools. Observations should be accompanied by photographs.

SPECIES	Method of Verification*			CL**	SPECIES	Method of Verification*			CL**
	P	H	S			P	H	S	
Blanding's Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Wood Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Spotted Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Ribbon Snake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ringed Boghaunter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

*Method of verification: P = Photographed, H = Handled, S = Seen

**CL - Confidence level in species determination: 1= <60%, 2= 60-95%, 3= >95%

d. Optional observer recommendation:

- SVP Potential SVP Non Significant VP Indicator Breeding Area

e. General vernal pool comments and/or observations of other wildlife:

Mosquito larvae and log cabin caddis shallow soils to bedrock slight depression holds maximum 5" of water before discharge. Softwood cover over most of pool cornus sp growing adjacent, in pool vegetation consisting of wetland graminoides and moss.

Send completed form and supporting documentation to: Maine Dept. of Inland Fisheries and Wildlife
Attn: Vernal Pools
650 State Street, Bangor, ME 04401

NOTE: Digital submission (to Jason.Czapiga@maine.gov) of vernal pool field forms and photographs is only acceptable for projects with 3 or fewer assessed pools; larger projects must be mailed as hard copies.

For MDIFW use only Reviewed by MDIFW Date: _____ Initials: _____

This pool is: Significant Potentially Significant but lacking critical data Not Significant due to: does not meet biological criteria. does not meet MDEP vernal pool criteria.

Comments:

Sugarloaf West Mountain
Maine Vernal Pool Form Photographs
May/June 2020



Figure 1: Vernal Pool 3 Overview



Figure 2: Vernal Pool 3- Spotted Salamander



Figure 3: Vernal Pool 3- Wood Frog



Maine State Vernal Pool Assessment Form



INSTRUCTIONS:

- Complete all 3 pages of form thoroughly. Most fields are required for pool registration.
- Clear photographs of a) the pool AND b) the indicators (one example of each species egg mass) are required for all observers.

Observer's Pool ID: 2020-VP-4

MDIFW Pool ID: _____

1. PRIMARY OBSERVER INFORMATION

- a. Observer name: Mitchell Jackman
- b. Contact and credentials previously provided? No (submit Addendum 1) Yes

2. PROJECT CONTACT INFORMATION

- a. Contact name: same as observer other Sean Hale, Shale@vhb.com 207-536-2588
- b. Contact and credentials previously provided? No (submit Addendum 1) Yes
- c. Project Name: Sugarloaf West Mountain Development

3. LANDOWNER CONTACT INFORMATION

- a. Are you the landowner? Yes No If no, was landowner permission obtained for survey? Yes No
- b. Landowner's contact information (required)
- Name: Karl Strand Phone: 207-237-6903
- Street Address: 5092 Access Rd City: Carrabassett Valley State: ME Zip: 04947
- c. Large Projects: check if separate project landowner data file submitted

4. VERNAL POOL LOCATION INFORMATION

a. Location Township: Carrabassett Valley

Brief site directions to the pool (using mapped landmarks):

Located in woods road skidder rut 1250' due east from the end of the West Mountain Lift access path (off Riverside Dr and Sandy River Circle intersect). Below VHB mapped Wetland identified as 2020-12

b. Mapping Requirements

i. USGS topographic map OR aerial photograph with pool clearly marked.

ii. GPS location of vernal pool (use Datum NAD83 / WGS84)

Longitude/Easting: -70.32771 Latitude/Northing: 45.056631

Coordinate system: WGS 84

- Check one: GIS shapefile
 - send to Jason.Czapiga@maine.gov; observer has reviewed shape accuracy (Best)
- The pool perimeter is delineated by multiple GPS points. (Excellent)
 - Include map or spreadsheet with coordinates.
- The above GPS point is at the center of the pool. (Good)
- The center of the pool is approximately _____ m ft in the compass direction of _____ degrees from the above GPS point. (Acceptable)



Maine State Vernal Pool Assessment Form



5. VERNAL POOL HABITAT INFORMATION

a. Habitat survey date (only if different from indicator survey dates on page 3): 5/21/20 6/8/20

b. Wetland habitat characterization

■ Choose the best descriptor for the landscape setting:

- Isolated depression
- Floodplain depression
- Pool associated with larger wetland complex
- Other: _____

■ Check all wetland types that best apply to this pool:

- Forested swamp
- Shrub swamp
- Peatland (fen or bog)
- Emergent marsh
- Wet meadow
- Lake or pond cove
- Abandoned beaver flowage
- Active beaver flowage
- Slow stream
- Floodplain
- Mostly unvegetated pool
- ATV or skidder rut
- Dug pond or borrow pit
- Roadside ditch
- Other: _____

c. Vernal pool status under the Natural Resources Protection Act (NRPA)

i. Pool Origin: Natural Natural-Modified Unnatural Unknown

If modified, unnatural or unknown, describe any modern or historic human impacts to the pool (**required**):

Skidder rut in old woods road

ii. Pool Hydrology

■ Select the pool's estimated hydroperiod AND provide rationale in box (**required**):

- Permanent
- Semi-permanent (drying partially in all years and completely in drought years)
- Ephemeral (drying out completely in most years)
- Unknown

Explain:

Dry later in year during wetland delineation site visit

■ Maximum depth at survey: 0-12" (0-1 ft.) 12-36" (1-3 ft.) 36-60" (3-5 ft.) >60" (>5 ft.)

■ Approximate size of pool (at spring highwater): Width: 5 m ft Length: 2 m ft

■ Predominate substrate in order of increasing hydroperiod:

- Mineral soil (bare, leaf-litter bottom, or upland mosses present)
- Mineral soil (sphagnum moss present)
- Organic matter (peat/muck) shallow or restricted to deepest portion
- Organic matter (peat/muck) deep and widespread

■ Pool vegetation indicators in order of increasing hydroperiod (check all that apply):

- Terrestrial nonvascular spp. (e.g. haircap moss, lycopodium spp.)
- Dry site ferns (e.g. spinulose wood fern, lady fern, bracken fern)
- Moist site ferns (e.g. sensitive fern, cinnamon fern, interrupted fern, New York fern)
- Moist site vasculars (e.g. skunk cabbage, jewelweed, blue flag iris, swamp candle)
- Sphagnum moss (anchored or suspended)
- Wet site ferns (e.g. royal fern, marsh fern)
- Wet site shrubs (e.g. highbush blueberry, maleberry, winterberry, mountain holly)
- Wet site graminoids (e.g. blue-joint grass, tussock sedge, cattail, bulrushes)
- Aquatic vascular spp. (e.g. pickerelweed, arrowhead)
- Floating or submerged aquatics (e.g. water lily, water shield, pond weed, bladderwort)
- No vegetation in pool

■ Faunal indicators (check all that apply):

- Fish
- Bullfrog or Green Frog tadpoles
- Other: _____

iii. Inlet/Outlet Flow Permanency

Type of inlet or outlet (a seasonal or permanent channel providing water flowing into or out of the pool):

- No inlet or outlet
- Intermittent inlet or outlet
- Permanent inlet or outlet (channel with well-defined banks and permanent flow)
- Other or Unknown (explain): _____



Maine State Vernal Pool Assessment Form



6. VERNAL POOL INDICATOR INFORMATION

a. Indicator survey dates: 5/20/2020 6/8/2020

b. Indicator abundance criteria and pool survey effort

- Is pool depression bisected by 2 ownerships (straddler pool)? Yes No
- Was the entire pool surveyed for egg masses? Yes No; what % of entire pool surveyed? _____
- For each indicator species, indicate the exact number of egg masses, confidence level for species determination, and egg mass maturity. Separate cells are provided for separate survey dates.

INDICATOR SPECIES	Egg Masses (or adult Fairy Shrimp)						Tadpoles/Larvae ⁴				
	Visit #1	Visit #2	Visit #3	Confidence Level ¹		Egg Mass Maturity ²		Observed		Confidence Level ¹	
Wood Frog	3	3		3	3	F	A				
Spotted Salamander		2			3		M				
Blue-spotted Salamander											
Fairy Shrimp ³											

1-Confidence level: 1 = <60%, 2 = 60-95%, 3 = >95%

2-Egg mass maturity: F= Fresh (<24 hrs), M= Mature (round embryos), A= Advanced (loose matrix, curved embryos), H= Hatched or Hatching

3-Fairy shrimp: X = present

4-Tadpoles/larvae: X = present

c. Rarity criteria

- Note any rare species associated with vernal pools. Observations should be accompanied by photographs.

SPECIES	Method of Verification*			CL**	SPECIES	Method of Verification*			CL**
	P	H	S			P	H	S	
Blanding's Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Wood Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Spotted Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Ribbon Snake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ringed Boghaunter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

*Method of verification: P = Photographed, H = Handled, S = Seen

**CL - Confidence level in species determination: 1= <60%, 2= 60-95%, 3= >95%

d. Optional observer recommendation:

- SVP Potential SVP Non Significant VP Indicator Breeding Area

e. General vernal pool comments and/or observations of other wildlife:

Mosquito larvae and log cabin caddis in skidder rut in dip shallow soils to bedrock. Date of survey outside wood frog survey window for the region due to deep snow conditions on upper mountain surveys were pushed back.

Send completed form and supporting documentation to: Maine Dept. of Inland Fisheries and Wildlife
Attn: Vernal Pools
650 State Street, Bangor, ME 04401

NOTE: Digital submission (to Jason.Czapiga@maine.gov) of vernal pool field forms and photographs is only acceptable for projects with 3 or fewer assessed pools; larger projects must be mailed as hard copies.

For MDIFW use only Reviewed by MDIFW Date: _____ Initials: _____

This pool is: Significant Potentially Significant but lacking critical data Not Significant due to: does not meet biological criteria. does not meet MDEP vernal pool criteria.

Comments: _____

Sugarloaf West Mountain
Maine Vernal Pool Form Photographs
May/June 2020



*Figure 1: Vernal Pool 4
Overview*



Figure 2: Vernal Pool 4 – Spotted Salamander



Maine State Vernal Pool Assessment Form



INSTRUCTIONS:

- Complete all 3 pages of form thoroughly. Most fields are required for pool registration.
- Clear photographs of a) the pool AND b) the indicators (one example of each species egg mass) are required for all observers.

Observer's Pool ID: 2020-VP-5

MDIFW Pool ID: _____

1. PRIMARY OBSERVER INFORMATION

- a. Observer name: Mitchell Jackman
- b. Contact and credentials previously provided? No (submit Addendum 1) Yes

2. PROJECT CONTACT INFORMATION

- a. Contact name: same as observer other Sean Hale, Shale@vhb.com 207-536-2588
- b. Contact and credentials previously provided? No (submit Addendum 1) Yes
- c. Project Name: Sugarloaf West Mountain Development

3. LANDOWNER CONTACT INFORMATION

- a. Are you the landowner? Yes No If no, was landowner permission obtained for survey? Yes No
- b. Landowner's contact information (required)
- Name: Karl Strand Phone: 207-237-6903
- Street Address: 5092 Access Rd City: Carrabassett Valley State: ME Zip: 04947
- c. Large Projects: check if separate project landowner data file submitted

4. VERNAL POOL LOCATION INFORMATION

a. Location Township: Carrabassett Valley

Brief site directions to the pool (using mapped landmarks):

Located in large softwood swamp located just below mid mountain cut over trail. VP in the main skid road through softwood cut.

b. Mapping Requirements

- i. USGS topographic map OR aerial photograph with pool clearly marked.
- ii. **GPS location of vernal pool (use Datum NAD83 / WGS84)**
- Longitude/Easting: -70.326004 Latitude/Northing: 45.055479
- Coordinate system: WGS84
- Check one: GIS shapefile
 - send to Jason.Czapiga@maine.gov; observer has reviewed shape accuracy (Best)
- The pool perimeter is delineated by multiple GPS points. (Excellent)
 - Include map or spreadsheet with coordinates.
- The above GPS point is at the center of the pool. (Good)
- The center of the pool is approximately _____ m ft in the compass direction of _____ degrees from the above GPS point. (Acceptable)



Maine State Vernal Pool Assessment Form



5. VERNAL POOL HABITAT INFORMATION

a. Habitat survey date (only if different from indicator survey dates on page 3): 5/20/20 6/8/20

b. Wetland habitat characterization

■ Choose the best descriptor for the landscape setting:

- Isolated depression
- Floodplain depression
- Pool associated with larger wetland complex
- Other: _____

■ Check all wetland types that best apply to this pool:

- Forested swamp
- Shrub swamp
- Peatland (fen or bog)
- Emergent marsh
- Wet meadow
- Lake or pond cove
- Abandoned beaver flowage
- Active beaver flowage
- Slow stream
- Floodplain
- Mostly unvegetated pool
- ATV or skidder rut
- Dug pond or borrow pit
- Roadside ditch
- Other: _____

c. Vernal pool status under the Natural Resources Protection Act (NRPA)

i. Pool Origin: Natural Natural-Modified Unnatural Unknown

If modified, unnatural or unknown, describe any modern or historic human impacts to the pool (**required**):

Located in 2 skidder ruts in old woods road located 10' apart

ii. Pool Hydrology

■ Select the pool's estimated hydroperiod AND provide rationale in box (**required**):

- Permanent
- Semi-permanent (drying partially in all years and completely in drought years)
- Ephemeral (drying out completely in most years)
- Unknown

Explain:

Dry later in year during wetland delineation site visit

■ Maximum depth at survey: 0-12" (0-1 ft.) 12-36" (1-3 ft.) 36-60" (3-5 ft.) >60" (>5 ft.)

■ Approximate size of pool (at spring highwater): Width: 3 m ft Length: 15 m ft

■ Predominate substrate in order of increasing hydroperiod:

- Mineral soil (bare, leaf-litter bottom, or upland mosses present)
- Mineral soil (sphagnum moss present)
- Organic matter (peat/muck) shallow or restricted to deepest portion
- Organic matter (peat/muck) deep and widespread

■ Pool vegetation indicators in order of increasing hydroperiod (check all that apply):

- Terrestrial nonvascular spp. (e.g. haircap moss, lycopodium spp.)
- Dry site ferns (e.g. spinulose wood fern, lady fern, bracken fern)
- Moist site ferns (e.g. sensitive fern, cinnamon fern, interrupted fern, New York fern)
- Moist site vasculars (e.g. skunk cabbage, jewelweed, blue flag iris, swamp candle)
- Sphagnum moss (anchored or suspended)
- Wet site ferns (e.g. royal fern, marsh fern)
- Wet site shrubs (e.g. highbush blueberry, maleberry, winterberry, mountain holly)
- Wet site graminoids (e.g. blue-joint grass, tussock sedge, cattail, bulrushes)
- Aquatic vascular spp. (e.g. pickerelweed, arrowhead)
- Floating or submerged aquatics (e.g. water lily, water shield, pond weed, bladderwort)
- No vegetation in pool

■ Faunal indicators (check all that apply):

- Fish
- Bullfrog or Green Frog tadpoles
- Other: _____

iii. Inlet/Outlet Flow Permanency

Type of inlet or outlet (a seasonal or permanent channel providing water flowing into or out of the pool):

- No inlet or outlet
- Intermittent inlet or outlet
- Permanent inlet or outlet (channel with well-defined banks and permanent flow)
- Other or Unknown (explain): _____



Maine State Vernal Pool Assessment Form



6. VERNAL POOL INDICATOR INFORMATION

a. Indicator survey dates: 5/21/2020 6/8/2020

b. Indicator abundance criteria and pool survey effort

- Is pool depression bisected by 2 ownerships (straddler pool)? Yes No
- Was the entire pool surveyed for egg masses? Yes No; what % of entire pool surveyed? _____
- For each indicator species, indicate the exact number of egg masses, confidence level for species determination, and egg mass maturity. Separate cells are provided for separate survey dates.

INDICATOR SPECIES	Egg Masses (or adult Fairy Shrimp)						Tadpoles/Larvae ⁴				
	Visit #1	Visit #2	Visit #3	Confidence Level ¹		Egg Mass Maturity ²		Observed		Confidence Level ¹	
Wood Frog											
Spotted Salamander	2	2		3	3	F	A				
Blue-spotted Salamander											
Fairy Shrimp ³											

1-Confidence level: 1 = <60%, 2 = 60-95%, 3 = >95%

2-Egg mass maturity: F= Fresh (<24 hrs), M= Mature (round embryos), A= Advanced (loose matrix, curved embryos), H= Hatched or Hatching

3-Fairy shrimp: X = present

4-Tadpoles/larvae: X = present

c. Rarity criteria

- Note any rare species associated with vernal pools. Observations should be accompanied by photographs.

SPECIES	Method of Verification*			CL**	SPECIES	Method of Verification*			CL**
	P	H	S			P	H	S	
Blanding's Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Wood Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Spotted Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Ribbon Snake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ringed Boghaunter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

*Method of verification: P = Photographed, H = Handled, S = Seen

**CL - Confidence level in species determination: 1= <60%, 2= 60-95%, 3= >95%

d. Optional observer recommendation:

- SVP Potential SVP Non Significant VP Indicator Breeding Area

e. General vernal pool comments and/or observations of other wildlife:

Mosquito larvae and log cabin caddis shallow soils

Send completed form and supporting documentation to: Maine Dept. of Inland Fisheries and Wildlife
Attn: Vernal Pools
650 State Street, Bangor, ME 04401

NOTE: Digital submission (to Jason.Czapiga@maine.gov) of vernal pool field forms and photographs is only acceptable for projects with 3 or fewer assessed pools; larger projects must be mailed as hard copies.

For MDIFW use only Reviewed by MDIFW Date: _____ Initials: _____

This pool is: Significant Potentially Significant but lacking critical data Not Significant due to: does not meet biological criteria. does not meet MDEP vernal pool criteria.

Comments:

Sugarloaf West Mountain
Maine Vernal Pool Form Photographs
May/June 2020



Figure 1: Vernal Pool 5 Overview



Figure 2: Vernal Pool 5- Spotted Salamander



Maine State Vernal Pool Assessment Form



INSTRUCTIONS:

- Complete all 3 pages of form thoroughly. Most fields are required for pool registration.
- Clear photographs of a) the pool AND b) the indicators (one example of each species egg mass) are required for all observers.

Observer's Pool ID: 2020-VP-6

MDIFW Pool ID: _____

1. PRIMARY OBSERVER INFORMATION

- a. Observer name: Mitchell Jackman
- b. Contact and credentials previously provided? No (submit Addendum 1) Yes

2. PROJECT CONTACT INFORMATION

- a. Contact name: same as observer other Sean Hale, Shale@vhb.com 207-536-2588
- b. Contact and credentials previously provided? No (submit Addendum 1) Yes
- c. Project Name: Sugarloaf West Mountain Development

3. LANDOWNER CONTACT INFORMATION

- a. Are you the landowner? Yes No If no, was landowner permission obtained for survey? Yes No
- b. Landowner's contact information (required)
- Name: Karl Strand Phone: 207-237-6903
- Street Address: 5092 Access Rd City: Carrabassett Valley State: ME Zip: 04947
- c. Large Projects: check if separate project landowner data file submitted

4. VERNAL POOL LOCATION INFORMATION

a. Location Township: Carrabassett Valley

Brief site directions to the pool (using mapped landmarks):

Located in woods road skidder rut 1250' due east from the end of the West Mountain Lift access path (off Riverside Dr and Sandy River Circle intersect). Below VHB mapped Wetland identified as 2020-12 above VP-4

b. Mapping Requirements

i. USGS topographic map OR aerial photograph with pool clearly marked.

ii. GPS location of vernal pool (use Datum NAD83 / WGS84)

Longitude/Easting: -70.327772 Latitude/Northing: 45.056149

Coordinate system: WGS 84

- Check one: GIS shapefile
 - send to Jason.Czapiga@maine.gov; observer has reviewed shape accuracy (Best)
- The pool perimeter is delineated by multiple GPS points. (Excellent)
 - Include map or spreadsheet with coordinates.
- The above GPS point is at the center of the pool. (Good)
- The center of the pool is approximately _____ m ft in the compass direction of _____ degrees from the above GPS point. (Acceptable)



Maine State Vernal Pool Assessment Form



5. VERNAL POOL HABITAT INFORMATION

a. Habitat survey date (only if different from indicator survey dates on page 3): 5/21/20 6/8/20

b. Wetland habitat characterization

■ Choose the best descriptor for the landscape setting:

- Isolated depression
- Floodplain depression
- Pool associated with larger wetland complex
- Other: _____

■ Check all wetland types that best apply to this pool:

- Forested swamp
- Shrub swamp
- Peatland (fen or bog)
- Emergent marsh
- Wet meadow
- Lake or pond cove
- Abandoned beaver flowage
- Active beaver flowage
- Slow stream
- Floodplain
- Mostly unvegetated pool
- ATV or skidder rut
- Dug pond or borrow pit
- Roadside ditch
- Other: _____

c. Vernal pool status under the Natural Resources Protection Act (NRPA)

i. Pool Origin: Natural Natural-Modified Unnatural Unknown

If modified, unnatural or unknown, describe any modern or historic human impacts to the pool (**required**):

Skidder rut in old woods road

ii. Pool Hydrology

■ Select the pool's estimated hydroperiod AND provide rationale in box (**required**):

- Permanent
- Semi-permanent (drying partially in all years and completely in drought years)
- Ephemeral (drying out completely in most years)
- Unknown

Explain:

Dry later in year during wetland delineation site visit

■ Maximum depth at survey: 0-12" (0-1 ft.) 12-36" (1-3 ft.) 36-60" (3-5 ft.) >60" (>5 ft.)

■ Approximate size of pool (at spring highwater): Width: 6 m ft Length: 3 m ft

■ Predominate substrate in order of increasing hydroperiod:

- Mineral soil (bare, leaf-litter bottom, or upland mosses present)
- Mineral soil (sphagnum moss present)
- Organic matter (peat/muck) shallow or restricted to deepest portion
- Organic matter (peat/muck) deep and widespread

■ Pool vegetation indicators in order of increasing hydroperiod (check all that apply):

- Terrestrial nonvascular spp. (e.g. haircap moss, lycopodium spp.)
- Dry site ferns (e.g. spinulose wood fern, lady fern, bracken fern)
- Moist site ferns (e.g. sensitive fern, cinnamon fern, interrupted fern, New York fern)
- Moist site vasculars (e.g. skunk cabbage, jewelweed, blue flag iris, swamp candle)
- Sphagnum moss (anchored or suspended)
- Wet site ferns (e.g. royal fern, marsh fern)
- Wet site shrubs (e.g. highbush blueberry, maleberry, winterberry, mountain holly)
- Wet site graminoids (e.g. blue-joint grass, tussock sedge, cattail, bulrushes)
- Aquatic vascular spp. (e.g. pickerelweed, arrowhead)
- Floating or submerged aquatics (e.g. water lily, water shield, pond weed, bladderwort)
- No vegetation in pool

■ Faunal indicators (check all that apply):

- Fish
- Bullfrog or Green Frog tadpoles
- Other: _____

iii. Inlet/Outlet Flow Permanency

Type of inlet or outlet (a seasonal or permanent channel providing water flowing into or out of the pool):

- No inlet or outlet
- Intermittent inlet or outlet
- Permanent inlet or outlet (channel with well-defined banks and permanent flow)
- Other or Unknown (explain): _____



Maine State Vernal Pool Assessment Form



6. VERNAL POOL INDICATOR INFORMATION

a. Indicator survey dates: 5/20/2020 6/8/2020

b. Indicator abundance criteria and pool survey effort

- Is pool depression bisected by 2 ownerships (straddler pool)? Yes No
- Was the entire pool surveyed for egg masses? Yes No; what % of entire pool surveyed? _____
- For each indicator species, indicate the exact number of egg masses, confidence level for species determination, and egg mass maturity. Separate cells are provided for separate survey dates.

INDICATOR SPECIES	Egg Masses (or adult Fairy Shrimp)						Tadpoles/Larvae ⁴				
	Visit #1	Visit #2	Visit #3	Confidence Level ¹		Egg Mass Maturity ²		Observed		Confidence Level ¹	
Wood Frog											
Spotted Salamander	3	5		3	3	F	A				
Blue-spotted Salamander											
Fairy Shrimp ³											

1-Confidence level: 1 = <60%, 2 = 60-95%, 3 = >95%

2-Egg mass maturity: F= Fresh (<24 hrs), M= Mature (round embryos), A= Advanced (loose matrix, curved embryos), H= Hatched or Hatching

3-Fairy shrimp: X = present

4-Tadpoles/larvae: X = present

c. Rarity criteria

- Note any rare species associated with vernal pools. Observations should be accompanied by photographs.

SPECIES	Method of Verification*			CL**	SPECIES	Method of Verification*			CL**
	P	H	S			P	H	S	
Blanding's Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Wood Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Spotted Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Ribbon Snake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ringed Boghaunter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

*Method of verification: P = Photographed, H = Handled, S = Seen

**CL - Confidence level in species determination: 1= <60%, 2= 60-95%, 3= >95%

d. Optional observer recommendation:

- SVP Potential SVP Non Significant VP Indicator Breeding Area

e. General vernal pool comments and/or observations of other wildlife:

Mosquito larvae and log cabin caddis in skidder rut in dip shallow soils to bedrock

Send completed form and supporting documentation to: Maine Dept. of Inland Fisheries and Wildlife
Attn: Vernal Pools
650 State Street, Bangor, ME 04401

NOTE: Digital submission (to Jason.Czapiga@maine.gov) of vernal pool field forms and photographs is only acceptable for projects with 3 or fewer assessed pools; larger projects must be mailed as hard copies.

For MDIFW use only Reviewed by MDIFW Date: _____ Initials: _____

This pool is: Significant Potentially Significant but lacking critical data Not Significant due to: does not meet biological criteria. does not meet MDEP vernal pool criteria.

Comments:

Sugarloaf West Mountain
Maine Vernal Pool Form Photographs
May/June 2020



Figure 1: Vernal Pool 6 Overview



Figure 2: Vernal Pool 6- Spotted Salamander



JANET T. MILLS
GOVERNER

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION



MELANIE LOYZIM
ACTING COMMISSIONER

February 25, 2021

Sean Hale
VHB
500 Southborough Drive, Suite 105B
South Portland, ME 04106

Re: Vernal Pool Significance Determination, Pool ID #s 4236, 4237, 4234, 4235, 4238, 4239–
Carrabassett Valley

Dear Sean Hale:

Vernal pools are temporary to semi-permanent wetlands occurring in shallow depressions that typically fill during the spring and dry during the summer or in drought years. They provide important breeding and foraging habitat for a wide variety of specialized wildlife species including several rare, threatened, and endangered species.

Based on your field surveys, it has been determined that the vernal pools identified above on the property of Karl Strand are NOT SIGNIFICANT because either: 1. the features do not meet the definition of a vernal pool under the Significant Wildlife Habitat rules, 06-096 CMR 335(9) or 2. the vernal pools do not meet the biological standards for exceptional wildlife use of the Significant Wildlife Habitat rules, 06-096 CMR 335(9)(B). Therefore, activities within 250 feet of the pools are not regulated under the Natural Resources Protection Act (NRPA) unless there are other protected natural resources nearby such as streams or freshwater wetlands. I have attached a copy of the database printout that verifies the State's findings with respect to your surveys.

I want to also advise you that the pool areas on the property can be considered freshwater wetlands and therefore direct pool alterations may require permitting under the NRPA.

The Department will notify the landowner of the pool status under separate cover. If you have any questions or need further clarification, please contact Mark Stebbins at 207-592-4810 or email at: Mark.N.Stebbins@maine.gov

Sincerely,

Nicholas D. Livesay, Director
Bureau of Land Resources

cc. town file

AUGUSTA
17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
(207) 287-7688 FAX: (207) 287-7826

BANGOR
106 HOGAN ROAD, SUITE 6
BANGOR, MAINE 04401
207-941-4570 FAX: (207) 941-4584

PORTLAND
312 CANCO ROAD
PORTLAND, MAINE 04103
(207) 822-6300 FAX: (207) 822-6303

PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04769
(207) 764-0477 FAX: (207) 760-3143

IFW Recommendations for Significant Vernal Pool Determinations

The following is a list of pools and IFW's recommendations for whether or not they qualify as Significant Vernal Pools, one of Maine's Significant Wildlife Habitats.

Data current as of: Thursday, February 25, 2021

IFW's Pool ID: 4234 Twp: Carrabassett Valley UTM Coordinates of Pool Center: 396313 E, 4990069 N
Observer's ID: 2020-VP-1 ProjectType: Sugarloaf West Mountain Development

Landowner: Karl Strand
5092 Access Road
Carrabassett Valley, ME 04947
(207) 237-6903

Contact: Sean Hale - VHB
500 Southborough Drive, Suite 105B
South Portland, ME 04106
(207) 536-2588 shale@vhb.com

Survey Date: 5/20/2020 Additional Survey Dates: 06/08/2020

IFW's Recommendation: RED: NOT SIGNIFICANT, does not meet the vernal pool definition

IFW Comments: Pool provides some habitat for wood frogs and spotted salamanders but does not meet egg mass criteria. Pool also appears to be of unnatural origin (man made ditch).

IFW's Pool ID: 4235 Twp: Carrabassett Valley UTM Coordinates of Pool Center: 395586 E, 4990012 N
Observer's ID: 2020-VP-2 ProjectType: Sugarloaf West Mountain Development

Landowner: Karl Strand
5092 Access Road
Carrabassett Valley, ME 04947
(207) 237-6903

Contact: Sean Hale - VHB
500 Southborough Drive, Suite 105B
South Portland, ME 04106
(207) 536-2588 shale@vhb.com

Survey Date: 5/20/2020 Additional Survey Dates: 06/08/2020

IFW's Recommendation: RED: NOT SIGNIFICANT, does not meet the vernal pool definition

IFW Comments: Pool provides some habitat for wood frogs and spotted salamander but does not meet egg mass criteria. Pool also may be on unnatural origin (old skidder rut).

IFW's Pool ID: 4236 Twp: Carrabassett Valley UTM Coordinates of Pool Center: 395606 E, 4990068 N
Observer's ID: 2020-VP-3 ProjectType: Sugarloaf West Mountain Development

Landowner: Karl Strand
5092 Access Road
Carrabassett Valley, ME 04947
(207) 237-6903

Contact: Sean Hale - VHB
500 Southborough Drive, Suite 105B
South Portland, ME 04106
(207) 536-2588 shale@vhb.com

Survey Date: 5/20/2020 Additional Survey Dates: 06/08/2020

IFW's Recommendation: RED: NOT SIGNIFICANT, does not meet the biological criteria

IFW Comments: Pool provides some habitat for wood frogs and spotted salamander but does not meet egg mass criteria.

IFW's Pool ID: 4237 Twp: Carrabassett Valley UTM Coordinates of Pool Center: 395459 E, 4990099 N
Observer's ID: 2020-VP-4 ProjectType: Sugarloaf West Mountain Development

Landowner: Karl Strand
5092 Access Road
Carrabassett Valley, ME 04947
(207) 237-6903

Contact: Sean Hale - VHB
500 Southborough Drive, Suite 105B
South Portland, ME 04106
(207) 536-2588 shale@vhb.com

Survey Date: 5/20/2020 Additional Survey Dates: 06/08/2020

IFW's Recommendation: RED: NOT SIGNIFICANT, does not meet the biological criteria

IFW Comments: Pool provides some habitat for wood frogs and spotted salamanders but does not meet egg mass criteria. Pool may also be of unnatural origin (skidder rut) but unclear from photo provided.

IFW Recommendations for Significant Vernal Pool Determinations

The following is a list of pools and IFW's recommendations for whether or not they qualify as Significant Vernal Pools, one of Maine's Significant Wildlife Habitats.

Data current as of: Thursday, February 25, 2021

IFW's Pool ID: 4238 Twp: Carrabassett Valley UTM Coordinates of Pool Center: 395591 E, 4989969 N
Observer's ID: 2020-VP-5 ProjectType: Sugarloaf West Mountain Development

Landowner: Karl Strand
5092 Access Road
Carrabassett Valley, ME 04947
(207) 237-6903

Contact: Sean Hale - VHB
500 Southborough Drive, Suite 105B
South Portland, ME 04106
(207) 536-2588 shale@vhb.com

Survey Date: 5/21/2020 Additional Survey Dates: 06/08/2020

IFW's Recommendation: RED: NOT SIGNIFICANT, does not meet the vernal pool definition

IFW Comments: Pool provides some habitat for spotted salamander but does not meet egg mass criteria. Pool also appears to be of unnatural origin (old skidder rut).

IFW's Pool ID: 4239 Twp: Carrabassett Valley UTM Coordinates of Pool Center: 395453 E, 4990045 N
Observer's ID: 2020-VP-6 ProjectType: Sugarloaf West Mountain Development

Landowner: Karl Strand
5092 Access Road
Carrabassett Valley, ME 04947
(207) 237-6903

Contact: Sean Hale - VHB
500 Southborough Drive, Suite 105B
South Portland, ME 04106
(207) 536-2588 shale@vhb.com

Survey Date: 5/20/2020 Additional Survey Dates: 06/08/2020

IFW's Recommendation: RED: NOT SIGNIFICANT, does not meet the vernal pool definition

IFW Comments: Pool provides some habitat for spotted salamander but does not meet egg mass criteria. Pool also appears to be unnatural in origin (skidder rut).