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# TB46: Chemical and Physical Properties of the Allagash, Hermon, Howland, and Marlow Soil Mapping Units

R. V. Rourke

C. Beek

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**CHEMICAL AND PHYSICAL PROPERTIES OF THE  
ALLAGASH, HERMON, HOWLAND AND  
MARLOW SOIL MAPPING UNITS**

**R. V. Rourke  
and  
C. Beek**

**SPECIFIC INFORMATION FOR  
SOILS ENGINEERING  
URBAN DEVELOPMENT PLANNING  
WATERSHED MANAGEMENT  
AGRICULTURAL SOIL AND WATER MANAGEMENT**

**TECHNICAL BULLETIN 46**

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SUMMARY

The classification of the soil mapping units studied was accurate except at the Family level in Allagash and Hermon. Additional sampling is needed to completely characterize Allagash soils because of the variation in texture within and between sites.

Hermon soils are loamy, and are probably skeletal. Howland soils can be separated from Peru soils by the presence of more than 45 percent silt in the Howland soil unit. Marlow soils had 35 to 50 percent silt in the B horizons thus they differed from Plaisted soils which generally have less than 30 percent silts in similar horizons.

Marlow and Howland soils changed little in sand, silt and clay content as depth increased. Hermon soils became sandier as depth increased. Variation in Allagash soil texture was inconsistent with depth or between sites.

Generally stone content increased within these soils as depth increased. Hermon was the only unit that increased in stone volume to nearly 35 percent.

Organic carbon content below the B<sub>21</sub> horizons decreased regularly with an increase in depth except in the Allagash mapping unit. The organic carbon content in Allagash soil was inconsistent between sites and with increasing depth.

Bulk density in the Allagash soil unit seldom reached values that prevent root growth. The density in Howland and Marlow increased to values that did limit root penetration in the fragipan.

Total water available for plant growth in the Allagash, Howland and Marlow mapping units to a 40 inch depth after correction for stone

nd density values is: Allagash, 5.29 inches; Howland, 4.77 inches; Marlow, 3.67 inches.

Cation exchange capacity was highest in the surface and decreased as depth increased. Variation in CEC within mapping units reflected varying base contents.

Soil reaction decreased as depth increased in the Allagash mapping unit. In Howland, Hermon and Marlow mapping units pH increased as depth increased.

Percolation test indicated that Allagash and Hermon soils had rates that were adequate for septic effluent removal. Howland and Marlow soils were found not suited for use as septic tank filter fields. The possibility of water-table contamination is present in Allagash and Hermon.

CHEMICAL AND PHYSICAL PROPERTIES OF THE ALLAGASH,  
HERMON, HOWLAND, AND MARLOW SOIL MAPPING UNITS

R.V. Rourke<sup>1</sup> and C. Beek<sup>2</sup>

INTRODUCTION

The soil resources of Maine can form a basis for community, recreational, industrial and agricultural planning (15). Soil maps that present the outline of various soil mapping units on aerial photographs have been published for Northeast and Southern Aroostook County, and Penobscot County. A soil map of Androscoggin and Sagadahoc Counties will be released soon by the Superintendent of Documents in Washington D.C. Counties where the field mapping has been completed and where publications are in preparation are Southern Somerset, Cumberland and Kennebec. The task of mapping the soil and publishing the data is the responsibility of the Soil Conservation Service of the U.S. Department of Agriculture. The Maine Agricultural Experiment Station contributes to this program by providing soils information that demonstrates those chemical or physical soil features that are peculiar to the various mapping units. These soil features will influence the success or ease by which a soil may be used for a particular purpose.

<sup>1</sup> Assistant Professor of Plant and Soil Sciences, Department of Plant and Soil Sciences, Maine Agricultural Experiment Station.

<sup>2</sup> Former technician, Department of Plant and Soil Sciences, Maine Agricultural Experiment Station.

The soils presented in this report were sampled at varying locations in Washington, Hancock, Aroostook and Piscataquis Counties. Other soils from these and other counties in Maine have been reported by the authors and other investigators (4,5,8,13,14,18).

This study was undertaken to ascertain the characteristics of the four mapping units so that their classification and interpretation as to use could be more sharply defined.

#### FIELD PROCEDURE

The field procedures followed involved making the site selection, describing the soil profile, sampling the soil, and making a percolation test. Sites were selected in cooperation with the Soil Scientists from the Soil Conservation Service, U.S.D.A. Each soil mapping unit was described and sampled at five sites. A square foot of soil was removed from each horizon for laboratory analyses. Soil cores were removed from those horizons that were not too stoney for the determination of moisture retention. At each site six percolation tests were made at random points about the sampling location. These tests were conducted at a 30 inch depth. Techniques used in the percolation tests were as described by the Department of Health, Education and Welfare (20).

#### LABORATORY PROCEDURE

The volume of coarse mineral material larger than 2 mm. was determined by screening the bulk horizontal samples and measuring the volume of stone by water displacement.

Particle size distribution was determined by screening and pipette analysis as described by Day (2). Dispersion was accomplished by overnight shaking in a dilute solution of sodium metaphosphate.

Soil cores were placed on porous ceramic plates and the moisture retention at pressures up to one bar were determined. Moisture values reported are on a stone free basis. Water retained by the soil at tensions greater than one bar were determined on disturbed, stone-free soil using a pressure membrane apparatus. Techniques of moisture measurement were as described by Richards (12). Available water was considered to be the difference in moisture retention at .33 and 15 bars.

Bulk density values were determined using cores taken in a field moist condition and oven-dried.

Organic carbon was determined on air-dry soil using a correction factor of 1.33. The Walkley-Black method as described by Allison (1) was used.

Exchangeable bases (Ca, Mg, K, Na) were determined by atomic absorption or flame emission. A 10 gram soil sample was leached with 300 ml. of 1.0N  $\text{NH}_4\text{OAc}$  at pH 7.0. Extracts containing Ca and Mg were diluted with  $\text{LaCl}_3$  in a 1:1 ratio to suppress the influence of P and Al.

Exchange acidity was measured by the barium chloride triethanolamine techniques as described by Peech (9). Soil reaction was measured in a 0.1M  $\text{CaCl}_2$  solution at ratio of solution to soil of 2:1. A second pH reading was obtained using a water:soil ratio of 1:1. These procedures were as described by Peech (10).



### SOIL CLASSIFICATION

The Allagash soils are well drained and are developing in sediments derived from glacial-fluvial or stream depositions. The mapping units are presently used in the Northeast Aroostook, Penobscot, Washington and Piscataquis soil survey areas. Allagash soils have been classified as Typic Haplorthods in the coarse-loamy over sandy or sandy-skeletal, mixed, frigid, family (19). They have between 20 and 27 inches of coarse loamy material above sands or loamy sands that extend to 40 inches. Under the present classification system (16) the mapping units of Allagash sampled differ from the central concept for the Allagash soil series. Site 1 was too high in very fine sands in the C<sub>2</sub> horizon to make a sandy textural classification below 28 inches. Site 2 was too high in soil material coarser than very fine sand in the profile above 31 inches and too fine in texture below 31 inches. The soil texture remained coarse loamy to depth of 32 inches (5 inches too deep) at site 3. At site 4 the profile is sandy between 13 and 27 inches and coarse loamy from 27 inches to 40 inches. At site 5 the profile was too fine above the sandy layer, being silt loam and loam rather than loam or sandy loam, to meet the series criteria. The variability of the Allagash soils is illustrated by these mapping units.

The Hermon soils are deep and well drained or somewhat excessively drained. They are developing in sandy glacial till that is high in material larger than 2 mm. in size. The soil is being mapped in Hancock, Washington, Penobscot, Waldo, Cumberland, Franklin, Oxford,

and Piscataquis Counties. The Hermon soils are classified as Typic Haplorthods in the sandy-skeletal, mixed, frigid family (19). The data presented in the Appendix indicates that the family texture of the mappings units sampled was loamy rather than sandy. Weighted averages of the coarse fragment volume indicate that site 1 was skeletal, sites 2,4 and 5 exceeded 30 percent stone, and site 3 exceeded 20 percent stone. The average coarse fragment content of a cubic inch within the control section was over 33 percent when all five sites were combined. Areas within the pedons sampled were selected to allow core removal for density and moisture measurements. This contributed to the less than 35 percent volume of stone. Although relatively stone free regions were selected for sampling, coarse fragment content restricted core removal in the C horizon to only two sites. The skeletal classification appears valid as judged by the preceeding comment.

Howland soils are developing in glacial till and are moderately-well to somewhat-poorly drained. The soil is extensive in Northern Maine being in the soil legends for surveys of Aroostook, Penobscot, Washington, Piscataquis, and Somerset Counties. Howland is classified as an Aquic Fragiorthod in the coarse-loamy, mixed, frigid, family (19). The data in the Appendix upheld this classification. The fragipan features of Howland are similar to some of those described by Grossman and Carlisle (6). Silt content is generally above 45 percent which separates this soil from the Peru soil series.

The Marlow mapping unit is a deep well-drained soil developed in glacial till. This mapping unit is presently in the legends of soil surveys in Washington, Hancock, Oxford and Franklin Counties. Marlow has been classified as a Typic Fragiorthod in the coarse-loamy mixed, frigid, family (19). Marlow soils differ from Plaisted in that the B horizons of Plaisted contain 25 to 30 percent silts, while the B horizons in Marlow have 30 to 50 percent silts. The Marlow soil has a fragipan that generally starts within 24 inches of the soil surface.

#### RESULTS AND DISCUSSION

The data reported reflect a range of soil characteristics within the mapping units sampled. Soil series are not reported as such since the range of characteristics in the profiles sampled at times exceeds the range allowed within the series. When the range, of a soil series is exceeded the profile then becomes a taxadjunct, phase, type, complex, association, undifferentiated group, variant or miscellaneous land type (17).

Composite tables have been compiled to compare and present the soils that were sampled. Comparisons are made by weighted means of eight inch depth zones within and between mapping units. The technique used to formulate the weighted mean has been presented in an earlier publication (14). Each of the profile descriptions and laboratory analyses are presented in the Appendix.

#### Particle Size Distribution

Figures 1 through 3 present the weighted means of sand, silt and clay in eight inch depth zones to 40 inches. The weighted means and range of each zone are presented in tabular form in Appendix Tables 1 through 3.

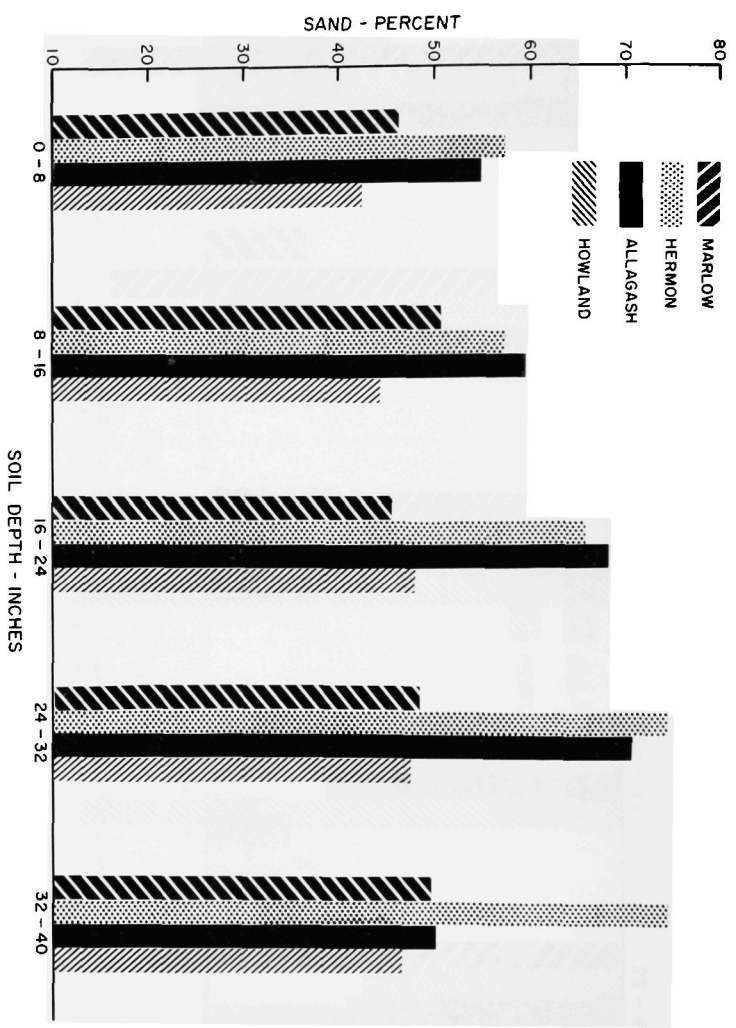


Figure 1. Sand (2.0-0.5mm.) content of 4 soil mapping units expressed as weighted means for 8-inch depth zones.

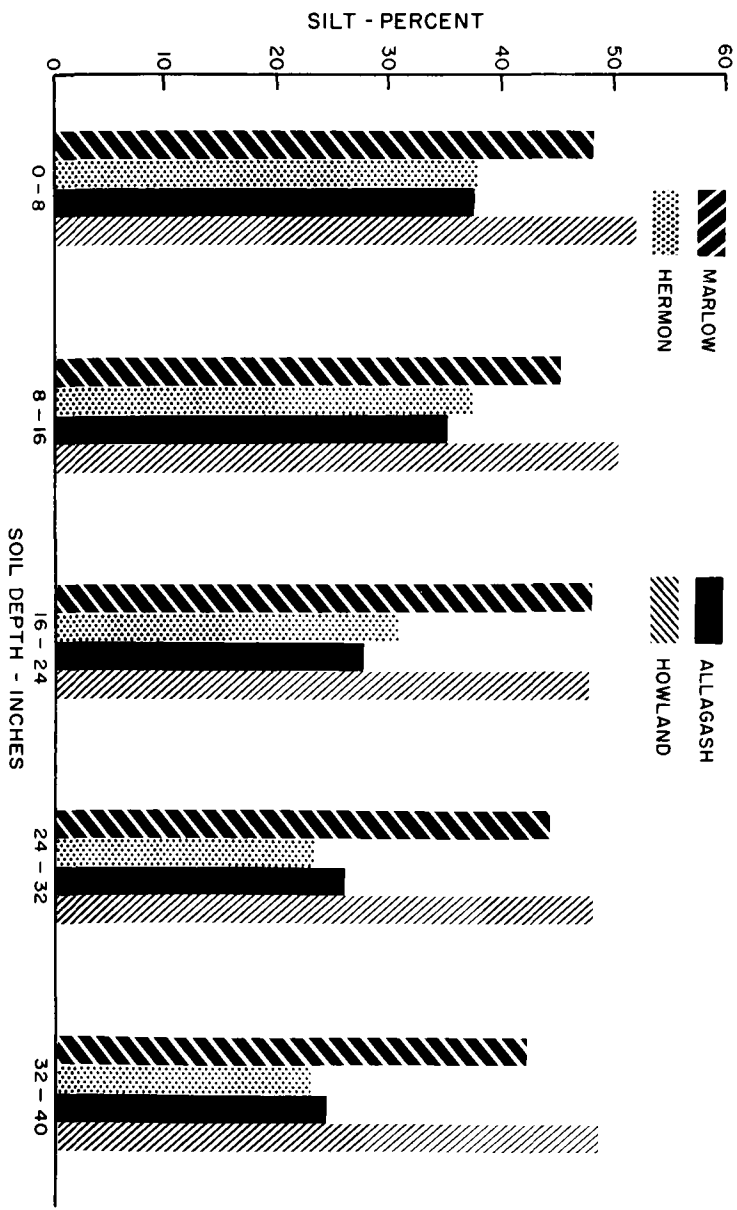
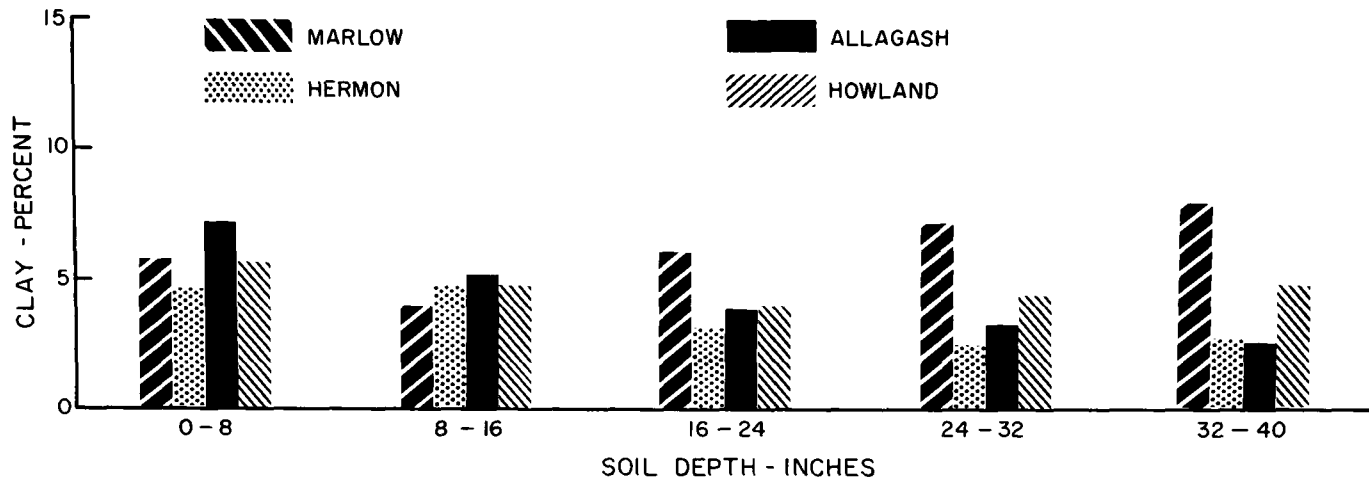


Figure 2. Silt (0.05-0.002mm.) content of 4 soil mapping units expressed as weighted means for 8-inch depth zones.



*Figure 3. Clay (<0.002mm.) content of 4 mapping units expressed as weighted means for 8-inch depth zones.*

The Marlow and Howland soils remained relatively constant in sand, silt and clay between the soil surface and 40 inches. Hermon soils increased in sand from the surface zone to the deepest measured zone. Silt values decreased steadily in the Hermon units as depth increased. Clay content of Hermon decreased steadily to the 24 to 32 inch depth then increased slightly at the 32 to 40 inch depth.

Allagash soils are shown in Figure 1 to increase in sand content as depth increased. The increase was not consistent at each site as may be noted from the range in content shown in Appendix Table 1. Appendix Table 2 indicates that the range in silt content within the Allagash soil is similar to the range in sand. Clay content of the Allagash soil is low and decreases steadily as depth increases. The wide variation in sand and silt content within the Allagash soil as depth increases may reflect depositional sequences of varying stream flow rates.

Howland soils reached a clay minimum in the 16 to 24 inch zone. Marlow soils had the lowest clay content in the 8 to 16 inch zone. The composite values of clay in Figure 3 indicate that there is not sufficient clay increase in Howland soils to indicate an argillic layer. The average increase of clay in the Marlow soil is sufficient to be argillic (16). The individual sites of Marlow that had a clay increase adequate to be argillic were 1,3 and 4. Clay films were not noted on the ped surfaces at these sites. The clay increase in these soils may or may not be illuvial clay. The clay increase was in the fragipan, and an increase of clay in this region of other fragipan soils has been noted previously (7,14). Clay orientation in the fragip and movement of clay into, or within, this layer has been described (6)

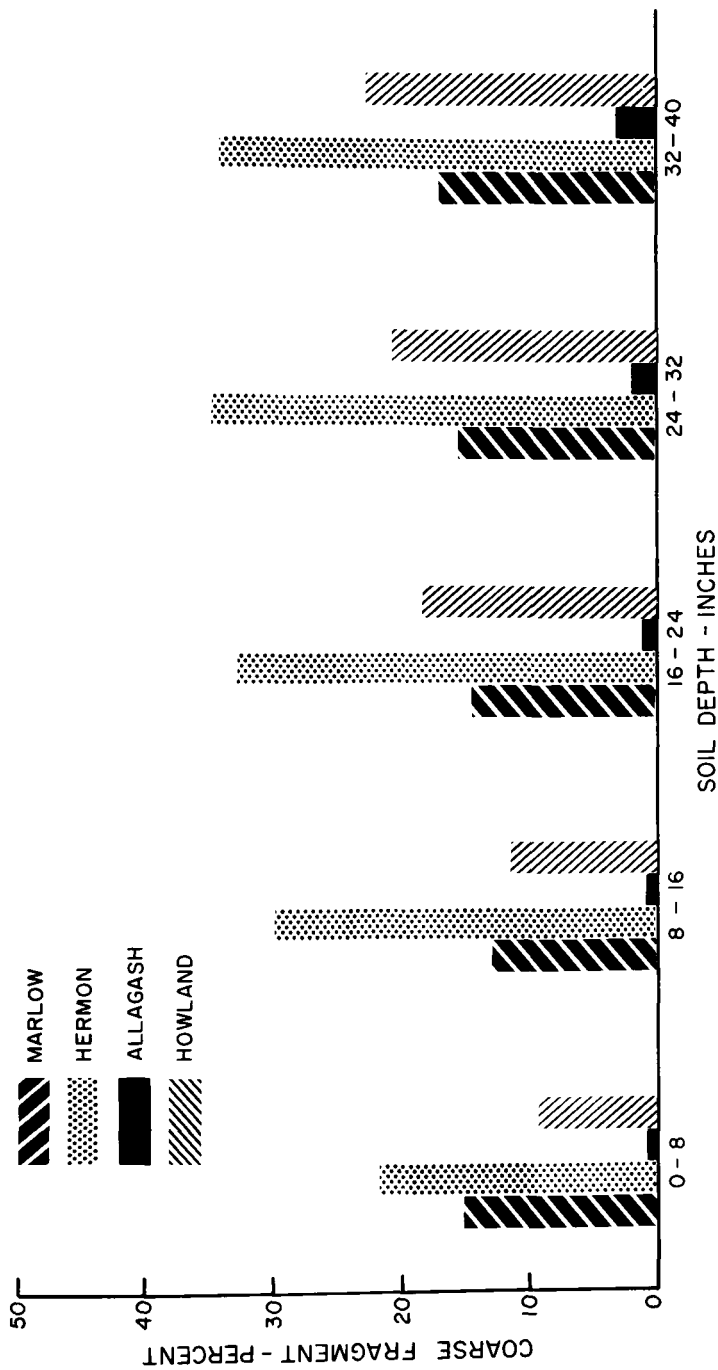


Figure 4. Weighted means of coarse fragment volume for 4 soil mapping units at 8-inch depth intervals expressed as percent of material larger than 2mm.



### Coarse Fragment Volume

Coarse fragment content is presented in Figure 4 and in Appendix Table 4 as weighted means. The volume of stones in each horizon sampled and their size distribution is presented with the profile description in the Appendix. Coarse fragment content varied as much between sites as it did between soils. Hermon soils approached the skeletal classification below 16 inches. The sampling procedure may have biased the stone volume data concerning the Hermon because the verticle profile sampled was selected to allow core removal. Average stone content increased as depth increased in the Allagash, Howland and Marlow mapping units.

### Organic Carbon

Appendix Table 5 and Figure 5 present weighted means of the organic carbon content of the four mapping units. Organic carbon decreased irregularly at sites 2,3 and 4 in the Allagash mapping unit. Organic carbon content decreased steadily as depth increased below the B<sub>21</sub> horizon in Howland, Hermon and Marlow mapping units.

The inconsistent decrease of organic carbon in the Allagash soil may reflect old surfaces. This soil was water deposited and therefore, was subject to flooding and deposition in the past. Those layers in the profile that increased in organic carbon in relation to the horizon above may be former stable surfaces that have been buried by subsequent flooding and deposition.

Highest organic content was in the surface of the moderately-well drained Howland. The presence of excessive moisture near the surface prevents rapid organic matter oxidation. There was a peak organic content in the B<sub>21</sub> horizon at several sites. A peak in this layer

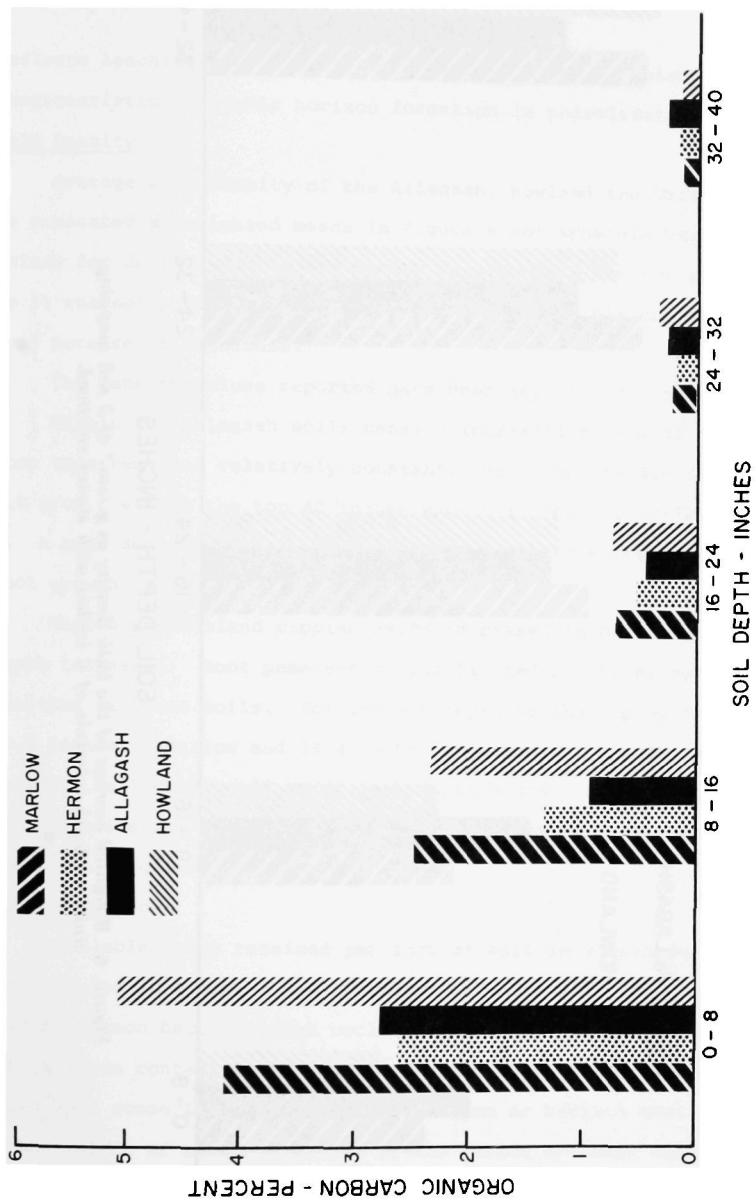
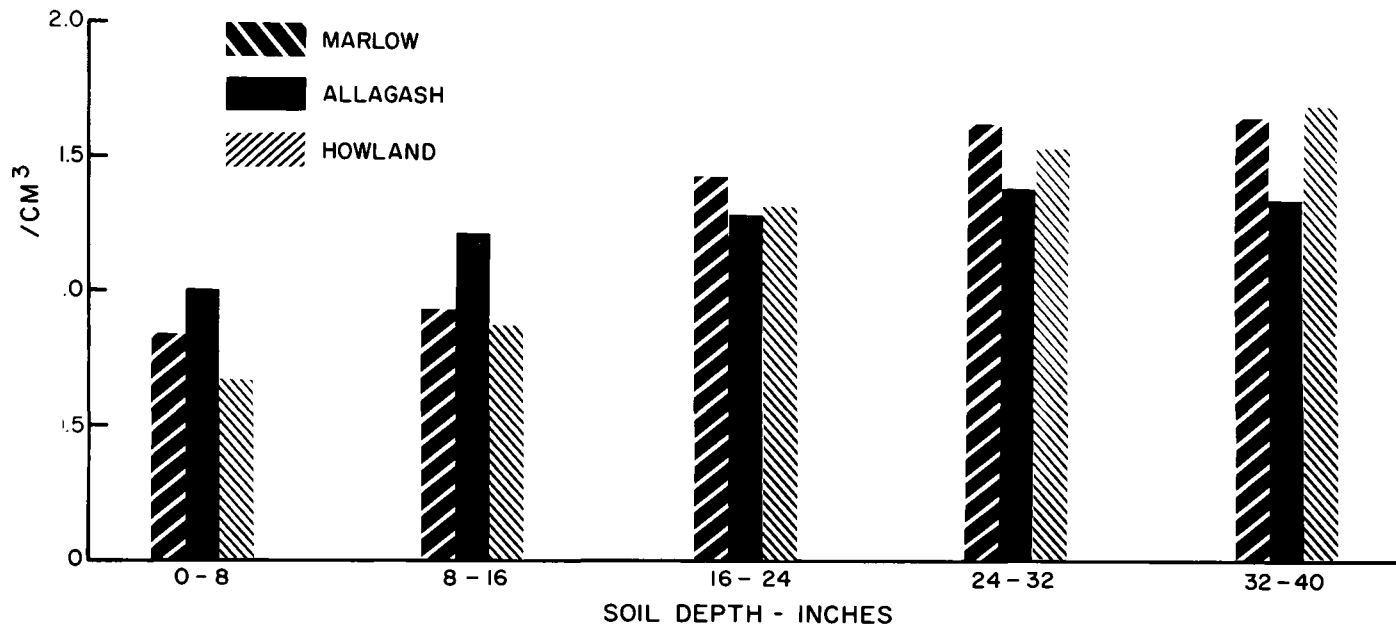


Figure 5. Weighted means of organic carbon content in 8-inch depth zones of 4 soil mapping units.



**Figure 6. Weighted average of the bulk density as g./cm.<sup>3</sup> of 3 soil mapping units at depth intervals of 8 inches with stones removed.**

effects leaching and deposition of organic material which is characteristic of spodic horizon formation in podzolization.

#### Bulk Density

Average bulk density of the Allagash, Howland and Marlow soils is presented as weighted means in Figure 6 and Appendix Table 6. Values for depth zones in the Hermon mapping unit are not presented as it was not possible to measure bulk density in all horizons of this soil because of stoniness.

The density values reported have been adjusted for stone content.

Within the Allagash soils density increased to the 16 to 24 inch zone then remained relatively constant. Bulk density did not exceed 1.5 g/cm.<sup>3</sup> within the top 40 inches except in the B<sub>2</sub> horizon at site 3. A bulk density of more than 1.5 g/cm.<sup>3</sup> has been reported to reduce root growth (3,11,21).

Marlow and Howland mapping units increased in bulk density as depth increased. Root penetration was limited by the presence of a fragipan in these soils. The average depth to the top of the pan was 22.4 inches in Marlow and 19.4 inches in Howland. The density of these pans was reflected in 24 to 40 inch depth zones. Root growth in Howland soils was also influenced by a fluctuating water table in and above the fragipan.

#### Water Retention

Available water retained per inch of soil in 8-inch depth zones is presented in Figure 7 and Appendix Table 7. Data is not presented for the Hermon because cores could not be removed from horizons having a high stone content. The amount of water reported in the table is based upon stone free soil. Thus each zone or horizon must be adjusted by the volume of stone to arrive at the amount of water held when

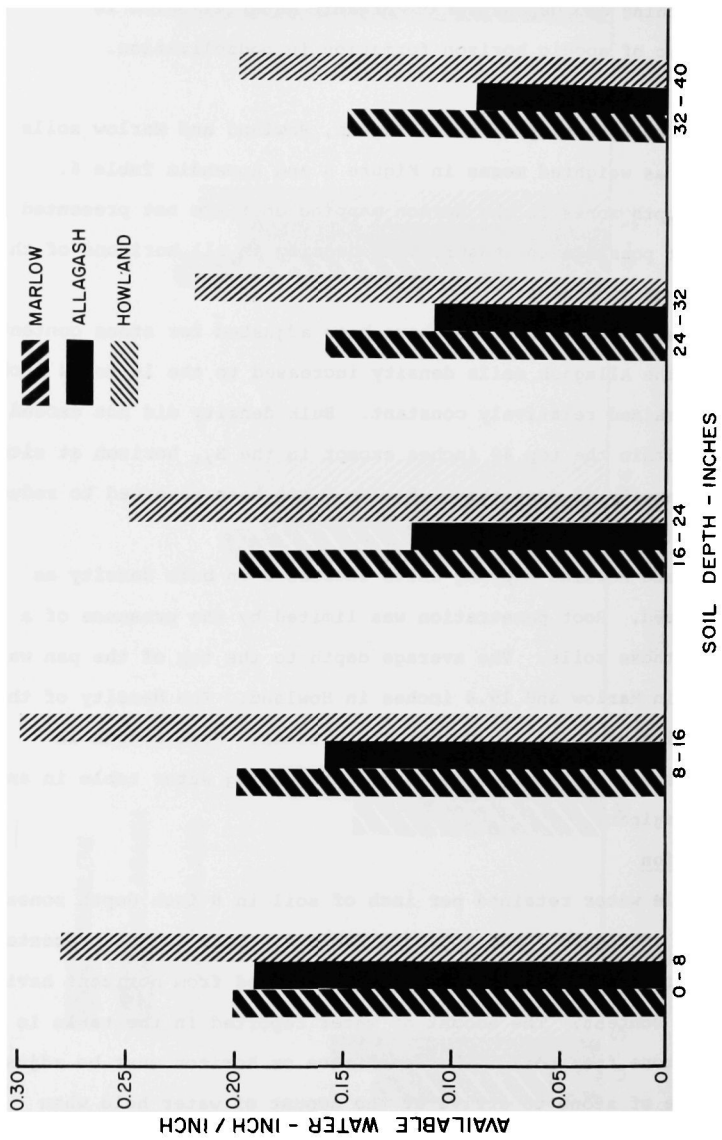


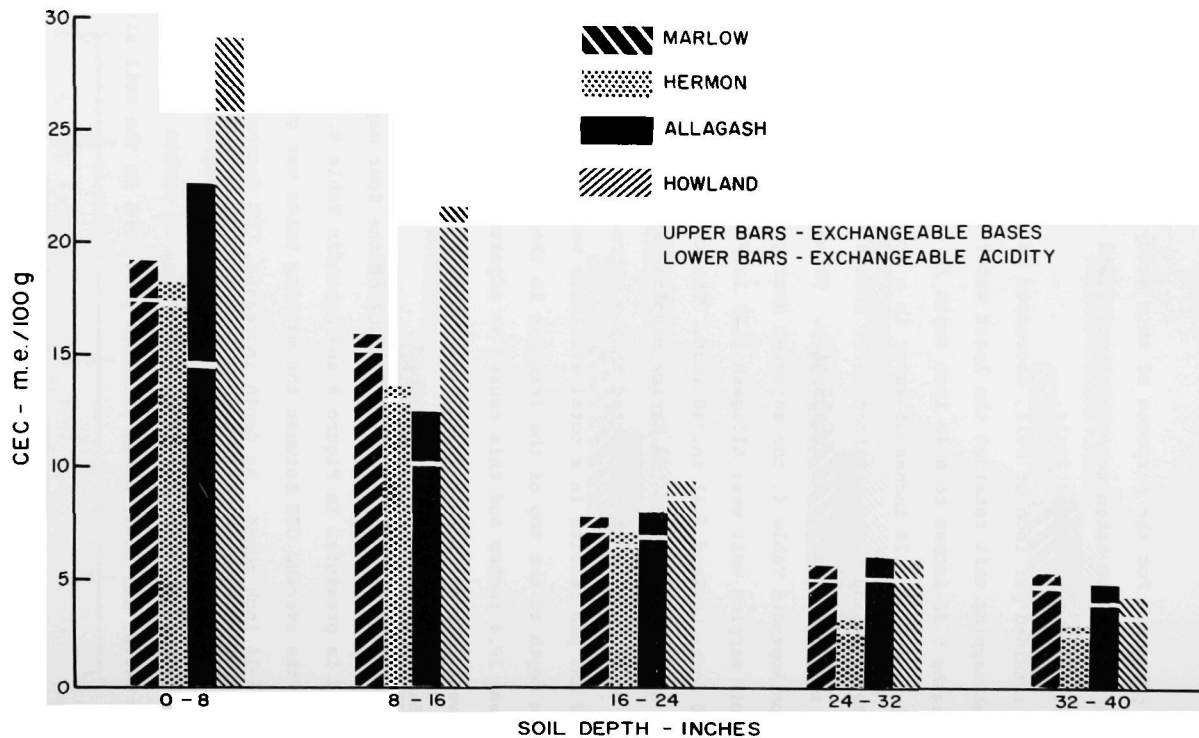
Figure 7. Weighted average of inches of water retained per inch of stone free soil in five 8-inch depth increments in 3 soil mapping units between 0.33 and 15 Bars.

stones are present. For the purposes of this study water retention at 0.33 and 15 bars was taken to approximate field capacity and permanent wilting point respectively.

Water retained per inch of soil, decreased as depth increased. The Allagash mapping unit retained the least water in a plant available form, averaging 5.36 inches to a 40 inch depth in a stone free profile. Marlow soils averaged 7.28 inches of water in a stone free 40 inch soil profile. Howland soils retained 10.00 inches of available water in a stone free soil profile 40 inches deep. Using coarse fragment volumes from Appendix Table 4, the adjusted average water content for each soil mapping unit was; Allagash 5.29 in./40 inch; Marlow 6.20 in./40 inch; Howland 8.41 in./40 inch. The average depth to the top of the fragipan in the Marlow mapping unit was 24.4 inches. Below this depth rooting is restricted thus a correction for the presence of the pan results in a total available water of 3.67 inches. The average depth to the top of the fragipan in the Howland soil mapping unit was 19.4 inches and this caused an adjustment in the available water content resulting in 4.77 inches being retained.

#### Cation Exchange Capacity

Average cation exchange capacities (CEC) of the four mapping units studied is presented in Figure 8 and Appendix Table 8. Variation in the average CEC between the mapping units was greatest in the 0-8 and 8-16 inch zones. As depth increased, CEC decreased in each mapping unit. It has been previously noted (8) that zones having the highest CEC also have the highest organic carbon content. The organic matter has contributed exchange positions to the soil site complex.



**Figure 8. Weighted means of cation exchange capacity as m.e./100 g. of the particles less than 2mm. in diameter in 4 soil mapping units at 8-inch intervals to 40 inches.**

Exchange acidity (EA) was highest in the surface zone and decreased steadily within each soil as depth increased. Appendix table 9 and Figure 8 present EA of the four mapping units. Since A and exchangeable bases are added to calculate CEC, the steady decline of EA indicates that the variation in CEC is in the amount of basic cations present. The presence of a large number of bases in the upper two soil zones frequently reflects additions of bases from farming operations. As seen in Figure 8 exchangeable bases decreased more rapidly than EA as depth increased.

#### Soil Reaction

Soil acidity was measured in a soil:water and in a soil:salt solution mixture. The weighted means of five depth zones to 40 inches are presented in Figures 9 and 10. Numerical means and ranges for each zone are presented in Appendix Tables 10 and 11.

Mean soil reaction between the four mapping units when measured in water was highest in the Allagash soils. Within the Allagash unit average pH declined only slightly as depth increased. This trend is unlike that in the other units which had initially a very low pH in the surface that increased as depth zones beneath the surface increased.

The pH values obtained using a soil:salt solution are presented in Figure 10. The Allagash soil had the highest average pH in the top 16 inches. Hermon and Allagash soils had similar pH in the 16 to 24 inch zone and Hermon soils had a higher pH in the 24 to 40 inch zones. Allagash again decreased in pH as depth increased. The change in pH relationship between the lower layers of Hermon and Allagash soils



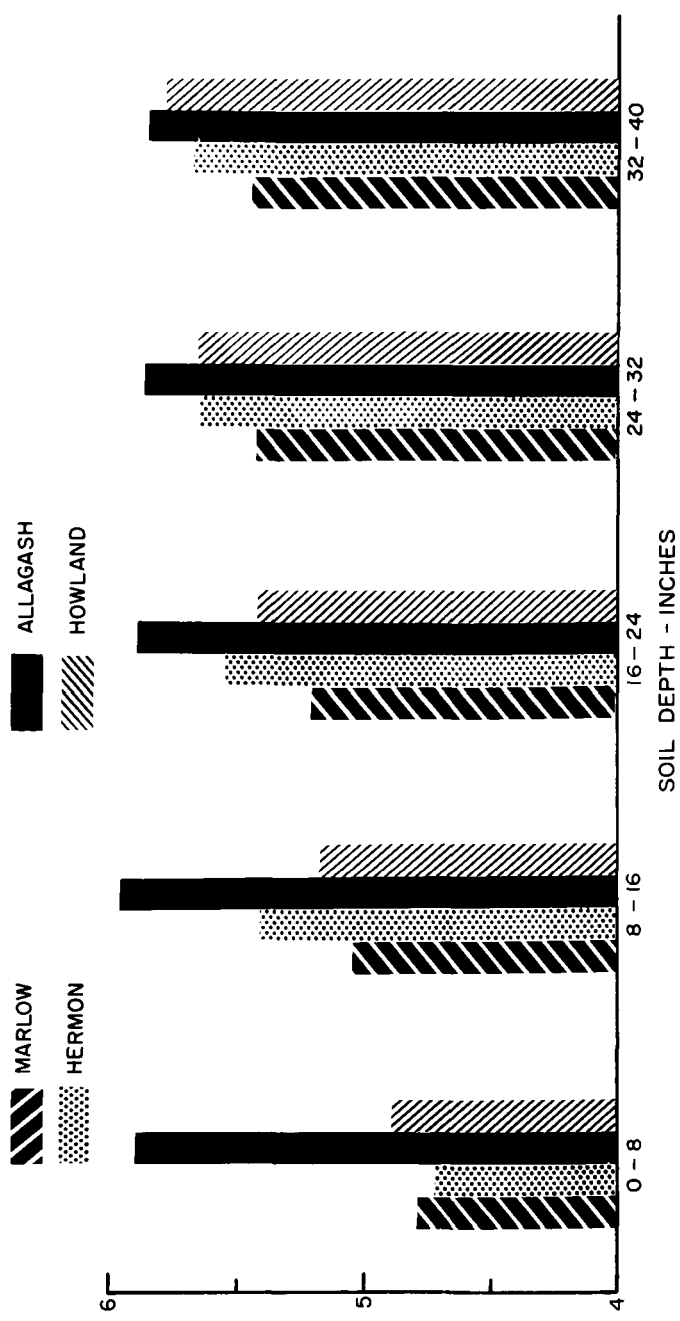


Figure 9. Soil reaction in a 1:1 water:soil mixture as the weighted mean of 8-inch depth intervals to 40 inches for 4 soil mapping units.

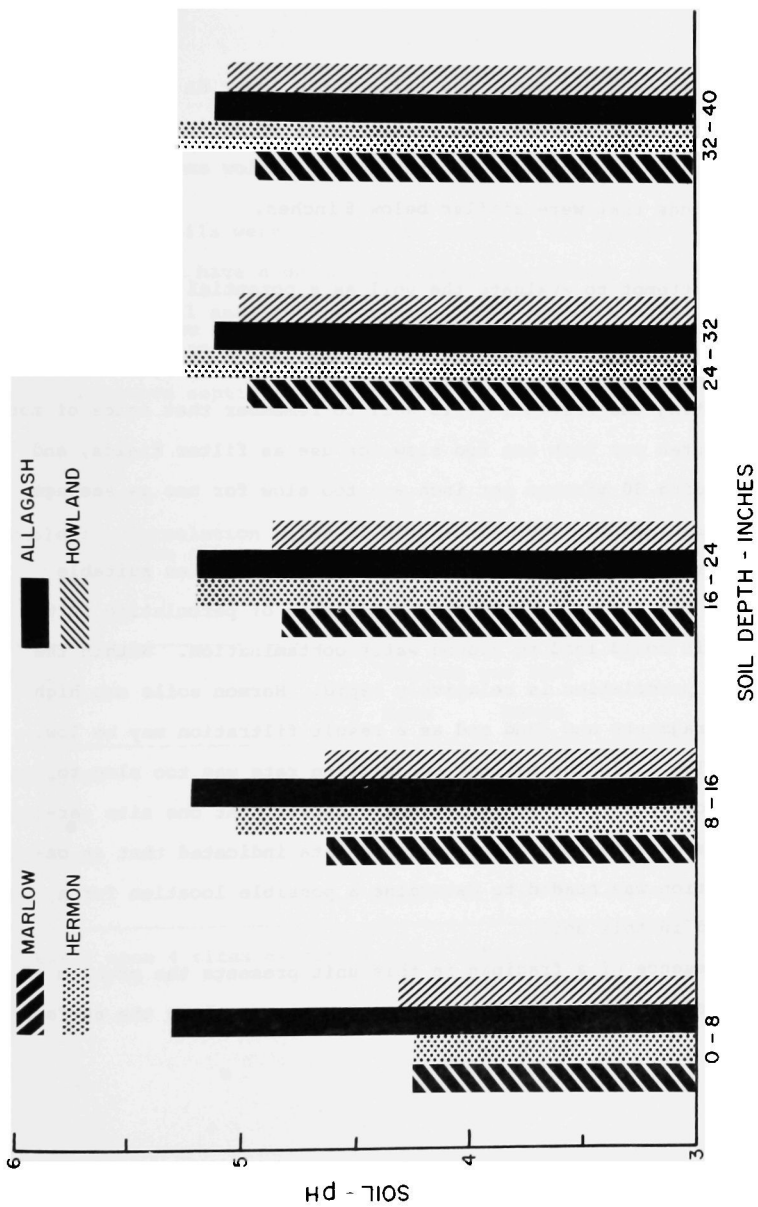


Figure 10. Soil reaction in a 2:1 CaCl<sub>2</sub>:soil mixture as the weighted mean of 8-inch depth intervals to 40 inches for 4 soil mapping units.

as measured in salt and water may reflect the lower EA in the Hermon soil. Marlow soils increased in pH to the 24 to 32 inch zone and decreased slightly in the 32 to 40 inch zone. Marlow and Howland soils had pH readings that were similar below 8 inches.

### Percolation

In an attempt to evaluate the soil as a potential receptacle for septic wastes the percolation rate for each site was measured. Percolation rates for the soils in this report are shown in Table 1. In interpreting the results, it is well to remember that rates of more than 60 minutes per inch are too slow for use as filter fields, and rates exceeding 30 minutes per inch are too slow for use as seepage pits (20).

Allagash and Hermon soils percolated water at rates suitable for seepage pit disposal. The very rapid rate of percolation in the Allagash unit could lead to ground water contamination. Within the Hermon unit percolation is relatively rapid. Hermon soils are high in coarse fragments and sand and as a result filtration may be low.

In Marlow soils the average percolation rate was too slow to be used successfully for septic sewage disposal. At one site percolation was satisfactory. The range of data indicated that an on-site evaluation was needed to determine a possible location for a filter field in this soil.

The presence of a fragipan in this unit presents the problem of down slope seepage as a result of lateral movement along the surface of the pan.

Howland soils were found to be unsuited for septic sewage disposal. They have a water table near the surface during periods of high rainfall and low evaporation. The presence of a fragipan within the top 30 inches further reduces the ability of this soil unit to remove septic tank waste from the environment.

Table 1. Percolation rates of four soil mapping units, each at five sites, at a depth of 30 inches.

Soil	Minutes per Inch	
	Mean	Range
Allagash	3.9	1.7 to 6.4
Hermon	14.9	5.5 to 26.7
Howland	320.2*	75.8 to 576.9
Marlow	76.4	22.3 to 125.2

\* Based upon 4 sites as site 1 had a water table above 30 inches.

### CONCLUSIONS

Variation in soil texture has prevented accurate placement of the Allagash mapping unit at the family level.

Hermon soils are loamy skeletal.

Howland soils have 45 percent or more silt in the control section.

Marlow soils contained 35 to 50 percent silt in the B horizons.

Soil texture changed little from the surface to a 40 inch depth in Marlow and Howland soils. Hermon soils became sandier as depth increased.

Organic carbon decreased as depth below the B<sub>21</sub> horizon increased except in the Allagash mapping unit.

Root growth could be limited by high density in the lower sequum of Howland and Marlow.

Allagash soils retained more available water than Howland or Marlow when adjustments were made for coarse fragments and density.

Cation exchange capacity was highest in the surface soil layers.

Highest pH values were in the surface of Allagash but in the lower depths in Howland, Marlow and Hermon.

Percolation rates indicated that Marlow and Howland soils were not satisfactory for use as septic filter fields.

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APPENDIX



Table 1. Weighted means and range of the sand (2.0 mm-0.05 mm.) content of 4 soil mapping units expressed as percent at 8-inch depth intervals.

Soil	0-8"		8-16"		16-24"		24-32"		32-40"	
	$\bar{x}$	Range	$\bar{x}$	Range	$\bar{x}$	Range	$\bar{x}$	Range	$\bar{x}$	Range
Allagash	54.9	(35.6-69.2)	59.4	(32.0-82.5)	68.1	(32.0-84.0)	70.5	(39.2-85.8)	73.8	(53.4-91.5)
Hermon	57.2	(48.3-63.2)	57.5	(51.6-68.8)	65.6	(52.5-76.0)	74.2	(71.0-76.0)	74.2	(73.2-76.0)
Howland	42.3	(32.0-51.3)	44.4	(35.0-55.2)	48.0	(39.2-55.2)	47.5	(38.2-55.2)	46.7	(38.1-56.5)
Marlow	46.0	(36.6-52.9)	50.4	(35.0-68.8)	45.7	(35.0-57.1)	48.5	(39.7-65.6)	49.5	(44.1-65.6)

Table 2. Weighted means and range of the silt (0.05-0.002 mm) content of 4 soil mapping units expressed as percent at 8-inch depth intervals.

Soil	0-8"		8-16"		16-24"		24-32"		32-40"	
	$\bar{x}$	Range	$\bar{x}$	Range	$\bar{x}$	Range	$\bar{x}$	Range	$\bar{x}$	Range
Allagash	37.9	(22.4-51.2)	35.5	(13.9-56.2)	28.0	(13.3-49.1)	26.2	(11.3-56.3)	23.6	(7.0-56.3)
Hermon	38.0	(31.9-45.0)	37.8	(28.2-42.0)	31.2	(21.6-41.2)	23.3	(21.6-26.6)	23.1	(21.6-25.1)
Howland	52.1	(45.6-62.4)	50.8	(42.8-60.6)	48.1	(42.8-58.7)	48.2	(41.4-60.5)	48.4	(41.4-60.6)
Marlow	48.2	(40.8-58.0)	45.6	(29.3-55.0)	48.2	(41.0-55.0)	44.3	(32.9-50.0)	42.6	(32.9-47.3)

Table 3. Weighted means and range of the clay (<0.002 mm) content of 4 soil mapping units expressed as percent at 8-inch depth intervals.

Soil	0-8"		8-16"		16-24"		24-32"		32-40"	
	$\bar{x}$	Range	$\bar{x}$	Range	$\bar{x}$	Range	$\bar{x}$	Range	$\bar{x}$	Range
Allagash	7.2	(2.5-13.5)	5.1	(2.4-11.8)	3.9	(1.8-11.8)	3.3	(1.5-4.4)	2.6	(1.5-3.4)
Hermon	4.7	(2.2-6.8)	4.8	(2.2-6.8)	3.2	(2.2-6.3)	2.5	(1.5-3.2)	2.7	(1.5-3.2)
Howland	5.7	(3.1-11.2)	4.8	(2.0-7.5)	4.0	(2.0-7.4)	4.4	(1.3-7.9)	4.8	(1.3-7.9)
Marlow	5.8	(3.2-8.4)	4.0	(1.9-10.0)	6.1	(1.8-14.3)	7.2	(1.5-14.3)	7.9	(1.5-11.5)

Table 4. Weighted means and range of coarse fragment volume by percent at 8-inch depth intervals based upon material larger than 2 mm. in 4 soil mapping units.

Soil	0-8"		8-16"		16-24"		24-32"		32-40"	
	$\bar{x}$	Range	$\bar{x}$	Range	$\bar{x}$	Range	$\bar{x}$	Range	$\bar{x}$	Range
Allagash	0.8	(0.1-2.1)	0.7	(0.0-1.9)	1.1	(0.1-3.1)	1.9	(0.0-14.4)	3.0	(0.0-14.4)
Hermon	21.9	(4.7-37.9)	29.9	(16.8-50.5)	32.8	(17.1-50.5)	34.4	(17.1-46.4)	33.9	(26.8-41.2)
Howland	9.3	(2.0-26.3)	11.3	(5.0-20.5)	18.4	(8.3-34.3)	21.9	(8.6-34.3)	22.4	(8.6-30.0)
Marlow	15.2	(10.1-55.6)	12.9	(7.8-20.9)	14.4	(7.1-21.7)	15.4	(7.1-25.7)	17.0	(9.3-25.7)

Table 5. Weighted means and range of organic carbon content of 8-inch depth zones in 4 soil mapping units.

Soil	0-8"		8-16"		16-24"		24-32"		32-40"	
	$\bar{x}$	Range	$\bar{x}$	Range	$\bar{x}$	Range	$\bar{x}$	Range	$\bar{x}$	Range
Allagash	2.7	(1.5-8.6)	1.0	(0.4-2.4)	0.4	(0.1-0.9)	0.3	(0.1-0.9)	0.3	(0.1-0.8)
Hermon	2.6	(1.2-4.1)	1.3	(0.2-2.4)	0.5	(0.1-1.2)	0.2	(0.1-0.5)	0.2	(0.1-0.4)
Howland	5.1	(2.1-16.2)	2.3	(1.3-5.9)	0.8	(0.4-2.0)	0.3	(0.1-0.9)	0.2	(0.1-0.4)
Marlow	4.1	(1.8-5.3)	2.5	(1.5-4.2)	0.7	(0.2-2.3)	0.2	(0.1-0.3)	0.2	(0.1-0.2)

Table 6. Weighted means and range of bulk density as g./cc. at 8-inch stone free depth intervals to 40 inches in 3 soil mapping units.

Soil	0-8"		8-16"		16-24"		24-32"		32-40"	
	$\bar{x}$	Range	$\bar{x}$	Range	$\bar{x}$	Range	$\bar{x}$	Range	$\bar{x}$	Range
Allagash	1.0	(0.8-1.3)	1.2	(0.9-1.4)	1.3	(1.0-1.4)	1.4	(1.2-1.5)	1.3	(1.2-1.4)
Howland	0.7	(0.3-1.1)	0.9	(0.5-1.1)	1.3	(0.8-1.6)	1.5	(1.3-1.7)	1.7	(1.5-1.8)
Marlow	0.8	(0.6-1.1)	0.9	(0.8-1.3)	1.4	(0.9-1.7)	1.6	(1.5-1.7)	1.6	(1.6-1.7)

Table 7. Weighted means and range of inches of water retained in each inch of 8-inch depth intervals of stone free soil in 3 soil mapping units shown as the difference between water held at 0.33 and 15 bars.

Soil	<u>0-8"</u>		<u>8-16"</u>		<u>16-24"</u>		<u>24-32"</u>		<u>32-40"</u>	
	$\bar{x}$	Range	$\bar{x}$	Range	$\bar{x}$	Range	$\bar{x}$	Range	$\bar{x}$	Range
Allagash	0.19	(0.14-0.22)	0.16	(0.10-0.22)	0.12	(0.08-0.21)	0.11	(0.07-0.24)	0.09	(0.05-0.18)
Howland	0.28	(0.17-0.46)	0.30	(0.20-0.40)	0.25	(0.17-0.34)	0.22	(0.15-0.34)	0.20	(0.15-0.30)
Marlow	0.20	(0.15-0.23)	0.20	(0.15-0.26)	0.20	(0.15-0.24)	0.16	(0.12-0.21)	0.15	(0.12-0.20)

Table 8. Weighted means and range of C.E.C. in 8-inch depth zones in 4 soil mapping units expressed as me./100 g. soil.

Soil	<u>0-8"</u>		<u>8-16"</u>		<u>16-24"</u>		<u>24-32"</u>		<u>32-40"</u>	
	$\bar{x}$	Range	$\bar{x}$	Range	$\bar{x}$	Range	$\bar{x}$	Range	$\bar{x}$	Range
Allagash	22.6	(17.5-46.0)	12.7	(4.7-22.6)	8.0	(3.4-13.5)	6.0	(2.6-10.5)	4.9	(2.4-7.7)
Hermon	18.2	(11.6-28.4)	13.7	(8.0-25.8)	7.1	(3.1-12.3)	3.1	(2.4-6.0)	2.9	(2.4-3.4)
Howland	29.1	(15.1-47.2)	21.7	(6.7-43.1)	9.4	(6.3-20.0)	5.9	(3.1-9.0)	4.2	(3.1-5.3)
Marlow	19.1	(12.5-26.6)	16.0	(11.8-23.1)	7.7	(4.6-14.2)	5.6	(3.6-6.8)	5.4	(3.6-6.6)

Table 9. Weighted means and range of exchange acidity in 8-inch depth zones in 4 soil mapping units expressed as me./100 g. soil.

Soil	0-8"		8-16"		16-24"		24-32"		32-40"	
	$\bar{x}$	Range	$\bar{x}$	Range	$\bar{x}$	Range	$\bar{x}$	Range	$\bar{x}$	Range
Allagash	14.4	(9.5-18.9)	10.1	(4.2-2.15)	6.8	(2.9-11.6)	5.0	(2.2-8.5)	3.8	(1.9-6.5)
Hermon	17.2	(9.1-27.9)	13.2	(3.8-25.2)	6.7	(2.7-11.9)	2.7	(2.0-5.6)	2.6	(2.0-3.4)
Howland	25.7	(11.7-42.5)	20.9	(6.2-42.5)	8.7	(5.9-19.5)	5.0	(2.5-8.1)	3.2	(2.5-4.4)
Marlow	17.4	(11.2-25.8)	15.2	(11.2-21.9)	7.2	(4.2-13.8)	5.0	(3.2-6.0)	4.7	(3.2-5.6)

Table 10. Weighted means and range of soil reaction in a 1:1 soil-water solution presented in 8-inch depth classes.

Soil	0-8"		8-16"		16-24"		24-32"		32-40"	
	$\bar{x}$	Range	$\bar{x}$	Range	$\bar{x}$	Range	$\bar{x}$	Range	$\bar{x}$	Range
Allagash	5.9	(5.3-6.45)	6.0	(5.4-6.45)	5.9	(5.7-6.35)	5.9	(5.65-6.05)	5.9	(5.65-6.15)
Hermon	4.7	(3.6-5.6)	5.4	(5.05-5.75)	5.6	(5.05-5.8)	5.7	(5.45-5.8)	5.7	(5.6-5.8)
Howland	4.9	(4.1-5.5)	5.2	(4.65-5.7)	5.4	(5.05-5.7)	5.7	(5.05-6.1)	5.8	(5.35-6.1)
Marlow	4.8	(3.65-5.15)	5.1	(4.6-5.4)	5.2	(4.8-5.5)	5.4	(5.25-5.75)	5.4	(5.25-5.75)

Table 11. Weighted means and range of soil reaction in a 2:1 0.01M CaCl<sub>2</sub>-soil solution in 8-inch depth classes.

Soil	0-8"		8-16"		16-24"		24-32"		32-40"	
	$\bar{x}$	Range	$\bar{x}$	Range	$\bar{x}$	Range	$\bar{x}$	Range	$\bar{x}$	Range
Allagash	5.2	(4.7-5.95)	5.2	(4.8-5.6)	5.2	(4.8-5.5)	5.1	(4.6-5.45)	5.1	(4.6-5.5)
Hermon	4.2	(3.3-5.2)	5.0	(4.45-5.4)	5.2	(4.85-5.4)	5.2	(4.85-5.4)	5.2	(5.1-5.4)
Howland	4.3	(3.55-4.9)	4.6	(4.2-5.0)	4.9	(4.5-5.0)	5.0	(4.75-5.35)	5.1	(4.9-5.35)
Marlow	4.2	(3.2-4.55)	4.6	(4.2-4.9)	4.8	(4.5-5.05)	5.0	(4.5-5.25)	4.9	(4.5-5.25)

ALLAGASH MAPPING UNIT

Site 1

Location: High Street, Milo, Piscataquis County, Maine.

<u>Horizon</u>	<u>Depth</u>	<u>Description</u>
Ap	0-8"	Dark yellowish brown (10YR 4/4) loam; weak thin platy structure; friable; abrupt smooth boundary.
B <sub>21</sub>	8-8.8"	Strong brown (7.5YR 5/6) silt loam; weak fine granular structure; friable; abrupt irregular boundary.
B <sub>22</sub>	8.8-13.5"	Dark yellowish brown (10YR 4/4) very fine sandy loam; weak fine granular structure; friable; abrupt smooth boundary.
B <sub>23</sub>	13.5-22"	Light olive brown (2.5Y 5/4) very fine sandy loam; weak fine granular structure; friable; abrupt smooth boundary.
C <sub>1</sub>	22-28"	Olive (5Y 5/3) very fine sandy loam; single grain; loose; abrupt smooth boundary.
C <sub>2</sub>	28-40"	Olive (5Y 5/3) loamy fine sand; single grain; loose.

Depth (In.)	Horizon	TOTAL			SAND					SILT	
		Sand (2-05)	Silt (.05-.002)	Clay (<.002)	Very Coarse (2-1)	Coarse (1-1/2) Percent of <2mm.	Medium (.5-.25)	Fine (.25-.1)	Very Fine (.1-.05)	(.05-.02)	(.02-.002)
0-8	A <sub>p</sub>	44.13	49.99	5.88	0.42	1.77	5.16	15.34	21.44	35.51	14.48
8-8.8	B <sub>21</sub>	42.99	54.00	3.01	0.20	1.29	3.41	13.42	24.67	38.36	15.64
8.8-13.5	B <sub>22</sub>	50.51	47.08	2.41	0.54	3.22	7.69	17.77	21.29	34.83	12.25
13.5-22	B <sub>23</sub>	60.90	36.31	2.79	0.33	1.93	7.90	25.83	24.91	28.71	7.60
22-28	C <sub>1</sub>	58.54	39.55	1.91	0.05	0.63	2.87	20.49	34.50	32.97	6.58
28-40	C <sub>2</sub>	73.60	24.94	1.46	0.21	1.02	4.29	32.58	35.50	21.46	3.48

Depth (In.)	Horizon	WATER CONTENT (Bar Pressure)									Bulk Density g/cc	Available Water in/in.
		0.059 pct.	0.1 pct.	0.33 pct.	0.67 pct.	1.0 pct.	2.0 pct.	3.0 pct.	5.0 pct.	15.0 pct.		
0-8	A <sub>p</sub>	44.0	38.7	29.5	28.4	24.6		12.9	12.0	10.4	1.01	0.19
8-8.8	B <sub>21</sub>	54.6	46.9	33.5	30.3	28.4		16.0	13.6	11.8	0.95	0.21
8.8-13.5	B <sub>22</sub>	36.0	28.1	18.6	16.0	14.2		9.0	7.9	6.4	1.16	0.14
13.5-22	B <sub>23</sub>	26.0	19.7	13.6	12.0	10.8		5.5	4.9	3.9	1.41	0.14
22-28	C <sub>1</sub>	23.3	17.7	9.1	7.9	6.8		3.7	2.8	2.1	1.39	0.10
28-40	C <sub>2</sub>	26.4	19.8	10.1	8.3	5.9		2.7	2.1	1.6	1.44	0.12

Depth (In.)	Horizon	COARSE FRAGMENTS (Percent by Volume)								TOTAL		
		3+ inches	3-2 inches	2-1.5 inches	1.5-1 inches	1-1/2 inches	1-1/4 inches	1-1/8 inches	1/2-1/4 inches		1/4-1/8 inches	
0-8	A <sub>p</sub>									<0.1	<0.1	<0.1
8-8.8	B <sub>21</sub>											
8.8-13.5	B <sub>22</sub>											
13.5-22	B <sub>23</sub>									<0.1	<0.1	<0.1
22-28	C <sub>1</sub>											<0.1
28-40	C <sub>2</sub>											

Depth (In.)	Horizon	Organic Carbon pct.	pH		Exchangeable Bases				Acidity	CEC (Sum)	Base Saturation (Sum) pct.
			0.1M CaCl <sub>2</sub>	H <sub>2</sub> O 1:1	Ca	Mg	Na	K			
			meq/100 g.								
0-8	A <sub>p</sub>	1.48	4.7	5.3	1.3	<0.1	<0.1	0.3	18.9	20.7	8.7
8-8.8	B <sub>21</sub>	2.02	4.9	5.65	0.7	<0.1	<0.1	0.2	21.5	22.6	4.9
8.8-13.5	B <sub>22</sub>	1.00	4.95	5.4	0.5	<0.1	0.1	<0.1	13.0	13.8	5.8
13.5-22	B <sub>23</sub>	0.40	5.05	5.7	0.2	<0.1	<0.1	<0.1	7.2	7.7	6.5
22-28	C <sub>1</sub>	0.13	5.2	5.95	0.2	<0.1	<0.1	<0.1	7.4	7.9	6.3
28-40	C <sub>2</sub>	0.09	5.25	5.85	0.1	<0.1	<0.1	<0.1	2.2	2.6	15.4



ALLAGASH MAPPING UNIT

Site 2

Location: Medford Road, Milo, Piscataquis County, Maine.

<u>Horizon</u>	<u>Depth</u>	<u>Description</u>
A <sub>P</sub>	0-9"	Dark brown (10YR 4/3) fine sandy loam; weak fine granular structure; friable; abrupt smooth boundary.
A +A <sub>P 2</sub>	9-12"	Yellowish brown (10YR 5/4) and gray (10YR 6/1) fine sandy loam; weak fine granular structure; friable abrupt wavy boundary.
B <sub>21</sub>	12-18"	Reddish brown (5YR 4/3) loamy fine sand; weak fine granular structure; friable; abrupt wavy boundary.
B <sub>22</sub>	18-24"	Yellowish brown (10YR 5/6) loamy fine sand; weak fine granular structure; friable; abrupt wavy boundary.
B <sub>23</sub>	24-27"	Light olive brown (2.5Y 5/4) loamy fine sand; weak fine granular structure; loose; clear wavy boundary.
C <sub>1</sub>	27-31"	Olive (5Y 5/3) loamy fine sand with yellowish red (5YR 4/8) stains; simple grain; loose; abrupt wavy boundary.
IIIC <sub>2</sub>	31-36"	Olive (5Y 5/4) silt loam; single grain; loose; abrupt wavy boundary.
IIIC <sub>3</sub>	36-40"	Olive (5Y 5/3) very fine sandy loam; single grain; loose.

Depth (In.)	Horizon	TOTAL			SAND					SILT	
		Sand (2-05)	Silt (.05-.002)	Clay (<.002)	Very Coarse (2-1)	Coarse (1-1.5) Percent of <2mm	Medium (1-25)	Fine (25-1)	Very Fine (1-05)	(.05-.02)	(.02-.002)
0-9	Ap	68.98	27.32	3.70	0.20	0.70	6.83	37.19	24.06	18.62	8.70
9-12	Ap+A <sub>2</sub>	68.71	27.29	4.00	0.18	1.06	6.10	37.22	24.15	15.41	11.88
12-18	B <sub>21</sub>	75.42	21.93	2.65	0.12	1.46	6.93	41.99	24.92	14.06	7.87
18-24	B <sub>22</sub>	83.33	14.89	1.78	0.97	1.34	8.46	46.26	26.30	11.01	3.88
24-27	B <sub>23</sub>	84.89	12.66	2.45	0.27	1.44	10.18	48.84	24.16	11.41	1.25
27-31	C <sub>1</sub>	76.21	21.18	2.61	0.09	1.06	8.60	39.03	27.43	18.36	2.82
31-36	IIC <sub>2</sub>	39.25	56.34	4.41	<0.01	0.22	1.76	11.54	25.72	44.22	12.12
36-40	IIIC <sub>3</sub>	53.39	43.20	3.41	<0.01	0.16	1.31	14.51	37.40	37.60	5.60

Depth (In.)	Horizon	WATER CONTENT (Bar Pressures)									Bulk Density g/cc.	Available Water in/in.
		0.059 pct.	0.1 pct.	0.33 pct.	0.67 pct.	1.0 pct.	2.0 pct.	3.0 pct.	5.0 pct.	15.0 pct.		
0-9	Ap	48.3	40.9	34.9	32.6	29.9		12.3	10.9	9.9	0.88	0.22
9-12	Ap+A <sub>2</sub>	30.4	24.5	19.2	17.5	16.5		10.8	9.8	7.7	1.19	0.14
12-18	B <sub>21</sub>	35.7	29.5	23.1	21.6	20.4		8.8	8.2	6.3	1.01	0.17
18-24	B <sub>22</sub>	26.5	15.6	12.2	11.8	11.0		5.5	4.9	4.2	1.17	0.09
24-27	B <sub>23</sub>	18.6	10.3	7.7	7.2	6.5		3.6	3.3	2.5	1.39	0.07
27-31	C <sub>1</sub>	18.2	12.5	8.0	7.0	6.2		3.4	3.0	2.2	1.40	0.08
31-36	IIC <sub>2</sub>	26.3	23.2	17.2	15.2	13.6		6.8	5.2	3.4	1.28	0.18
36-40	IIIC <sub>3</sub>	27.3	20.5	10.7	8.9	7.5		3.8	3.4	2.2	1.43	0.12

Depth (In.)	Horizon	COARSE FRAGMENTS (Percent by Volume)							TOTAL
		3+ inches	3-2 inches	2-1.5 inches	1.5-1 inches	1-1.75 inches	.75-50 inches	.50-25 inches	
0-9	Ap		0.5					<0.1	<0.6
9-12	Ap+A <sub>2</sub>							<0.1	<0.1
12-18	B <sub>21</sub>							<0.1	<0.1
18-24	B <sub>22</sub>							<0.1	<0.1
24-27	B <sub>23</sub>							<0.1	<0.1
27-31	C <sub>1</sub>							<0.1	<0.1
31-36	IIC <sub>2</sub>							<0.1	<0.1
36-40	IIIC <sub>3</sub>							<0.1	<0.1

Depth (In.)	Horizon	Organic Carbon pct.	pH		Exchangeable Bases				Acidity	CEC (Sum)	Base Saturation (Sum) pct.
			.01M CaCl <sub>2</sub>	H <sub>2</sub> O	meq/100 g.						
			2.1	1.1	Ca	Mg	Na	K			
0-9	Ap	2.35	5.3	6.05	5.7	<0.1	<0.1	0.3	12.5	18.7	32.2
9-12	Ap+A <sub>2</sub>	1.36	5.35	6.05	2.5	<0.1	0.1	0.3	10.9	13.9	21.6
12-18	B <sub>21</sub>	0.90	5.5	6.1	1.0	<0.1	<0.1	0.2	10.9	12.3	11.4
18-24	B <sub>22</sub>	0.48	5.4	5.95	0.5	<0.1	<0.1	0.1	8.2	9.0	8.9
24-27	B <sub>23</sub>	0.27	5.35	5.95	0.2	<0.1	<0.1	0.1	5.6	6.1	8.2
27-31	C <sub>1</sub>	0.21	5.35	5.95	0.2	<0.1	<0.1	0.1	5.1	5.6	8.9
31-36	IIC <sub>2</sub>	0.37	5.2	5.95	0.3	<0.1	<0.1	0.1	6.5	7.1	8.4
36-40	IIIC <sub>3</sub>	0.12	5.3	5.95	0.2	<0.1	<0.1	0.1	3.5	4.4	11.4

ALLAGASH MAPPING UNIT

Site 3

Location: J. Reardon Farm, Milo, Piscataquis County, Maine.

<u>Horizon</u>	<u>Depth</u>	<u>Description</u>
A <sub>p</sub> +B <sub>21</sub>	0-11"	Dark yellowish brown (10YR 3/4) mixed with strong brown (7.5YR 5/8) and yellowish red (5YR 4/8) very fine sandy loam; weak fine granular structure; friable; abrupt smooth boundary.
B <sub>22</sub>	11-15"	Light olive brown (2.5Y 5/4) with areas of strong brown (7.5YR 5/8) and dark brown (7.5YR 4/4) fine sandy loam; weak fine granular structure; friable; abrupt smooth boundary.
B <sub>23</sub>	15-20"	Olive (5Y 5/3) fine sandy loam; single grain; loose; clear smooth boundary.
B <sub>24</sub>	20-24"	Olive (5Y 4/3) with dark brown (7.5YR 4/4) stains about roots, loamy sand; single grain; loose; clear smooth boundary.
B <sub>25</sub>	24-32"	Olive (5Y 5/3) very fine sandy loam; single grain; loose; clear smooth boundary.
IIC	32-40"	Dark olive gray (5Y 3/2) and light olive gray (5Y 6/2) fine sand; single grain; loose.

Depth (In.)	Horizon	TOTAL			SAND						(05-02)	(02-002)
		Sand (2-05)	Silt (05-002)	Clay (< 002)	Very Coarse (2-1)	Coarse (1-5) Percent of <2mm.	Medium (.5-25)	Fine (.25-1)	Very Fine (1-05)			
0-11	Ap+B <sub>2</sub> 1	61.62	35.86	2.52	1.04	3.62	7.83	22.31	26.82	28.42	7.44	
11-15	B <sub>22</sub>	59.91	37.67	2.42	1.27	4.36	9.43	18.57	26.28	29.79	7.88	
15-20	B <sub>23</sub>	70.03	26.77	3.20	3.21	4.52	17.87	21.18	23.25	21.11	5.66	
20-24	B <sub>24</sub>	78.89	18.35	2.76	0.11	3.50	26.38	27.86	21.04	16.18	2.17	
24-32	B <sub>25</sub>	63.39	33.06	3.55	0.11	2.29	11.75	28.88	20.36	26.04	7.02	
32-42	IIC	91.48	7.01	1.51	0.11	3.64	15.11	57.19	15.43	5.73	1.28	

Depth (In.)	Horizon	WATER CONTENT (Bar Pressure)										Bulk Density g./cc.	Available Water in./in.
		0.059 pct.	0.1 pct.	0.33 pct.	0.67 pct.	1.0 pct.	2.0 pct.	3.0 pct.	5.0 pct.	15.0 pct.			
0-11	Ap+B <sub>2</sub> 1	34.2	26.9	20.1	19.0	17.5		9.4	7.9	7.2	1.12	0.14	
11-15	B <sub>22</sub>	26.9	21.0	13.2	11.6	10.3		5.5	4.9	3.8	1.27	0.12	
15-20	B <sub>23</sub>	23.6	18.8	9.7	8.2	6.8		3.7	2.8	2.1	1.39	0.10	
20-24	B <sub>24</sub>	21.2	14.2	6.9	5.4	4.0		2.6	2.0	1.5	1.39	0.08	
24-32	B <sub>25</sub>	22.2	19.3	11.4	8.7	6.9		3.5	2.6	1.8	1.50	0.14	
32-42	IIC	7.7	5.3	4.6	3.9	2.6		1.9	1.5	1.2	1.43	0.05	

Depth (In.)	Horizon	COARSE FRAGMENTS (Percent by Volume)									
		3+ inches	3-2 inches	2-1.5 inches	1.5-1 inches	1-.75 inches	.75-.50 inches	.50-.25 inches	.25 in- 2 mm.	TOTAL	
0-11	Ap+B <sub>2</sub> 1								<0.1	<0.1	
11-15	B <sub>22</sub>								<0.1	0.1	
15-20	B <sub>23</sub>							<0.1	<0.1	<0.1	
20-24	B <sub>24</sub>							<0.1	<0.1	<0.1	
24-32	B <sub>25</sub>							<0.1	<0.1	<0.1	
32-42	IIC							<0.1	<0.1	<0.1	

Depth (In.)	Horizon	Organic Carbon pct.	pH		Exchangeable Bases				Acidity	CEC (Sum)	Base Saturation (Sum) pct.
			.01M CaCl <sub>2</sub>	H <sub>2</sub> O	Ca	Mg	Na	K			
			2:1	1:1	meq./100 g.						
0-11	Ap+B <sub>2</sub> 1	1.48	5.55	6.45	4.7	0.5	<0.1	0.2	12.0	17.5	31.4
11-15	B <sub>22</sub>	0.59	5.25	6.05	1.0	<0.1	<0.1	0.1	6.8	8.1	16.0
15-20	B <sub>23</sub>	0.16	5.35	6.05	0.2	<0.1	<0.1	0.1	4.2	4.7	10.6
20-24	B <sub>24</sub>	0.88	5.4	6.05	0.1	<0.1	<0.1	0.1	2.9	3.3	12.1
24-32	B <sub>25</sub>	0.88	5.45	6.05	0.5	<0.1	<0.1	0.1	3.4	4.2	19.0
32-42	IIC	0.76	5.5	6.15	0.2	<0.1	<0.1	<0.1	1.9	2.4	20.8

ALLAGASH MAPPING UNIT

Site 4

Location: Dupram Farms, Washburn, Aroostook County, Maine.

<u>Horizon</u>	<u>Depth</u>	<u>Description</u>
A <sub>p</sub>	0-4"	Dark reddish brown (5YR 3/2) sandy loam; moderate medium granular structure; friable; abrupt smooth boundary.
A <sub>2</sub> +B <sub>21</sub>	4-8"	Dark brown (7.5YR 4/4) and gray (10YR 6/1) sandy loam; weak medium platy structure; friable; abrupt wavy boundary.
B <sub>22</sub>	8-13"	Dark yellowish brown (10YR 4/4) sandy loam; moderate medium granular structure; friable; abrupt wavy boundary.
B <sub>23</sub>	13-18"	Olive brown (2.5Y 4/4) loamy sand; single grain; friable; abrupt smooth boundary.
B <sub>24</sub>	18-27"	Very dark grayish brown (5Y 3/2) and olive brown (5Y 4/4) loamy sand; single grain; loose; clear wavy boundary.
B <sub>25</sub>	27-33"	Olive brown (2.5Y 4/4) loamy fine sand; single grain; friable; clear wavy boundary.
IIC	33-40"	Very dark grayish brown (2.5Y 3/2) and light brownish gray (2.5Y 6/2) fine sandy loam; single grain; friable.

Depth (In.)	Horizon	Sand (2-05)	Silt (.05-.002)	Clay (<.002)	Percent of <2mm						(05-.02)	(02-.002)
					Very Coarse (2-1)	Coarse (1-.5)	Medium (.5-.25)	Fine (.25-.1)	Very Fine (.1-.05)			
0-4	Ap	58.93	27.61	13.46	2.66	8.04	20.29	19.88	8.06	15.11	12.50	
4-8	A <sub>2</sub> + B <sub>21</sub>	69.25	22.45	8.30	3.71	8.43	23.28	23.58	10.25	13.94	8.51	
8-13	B <sub>22</sub>	75.12	18.16	6.72	3.34	9.66	26.83	25.66	9.63	11.91	6.25	
13-18	B <sub>23</sub>	82.49	13.94	3.57	2.27	6.28	26.14	36.48	11.32	10.94	3.00	
18-27	B <sub>24</sub>	84.02	13.27	2.71	3.03	6.99	23.40	38.50	12.10	10.23	3.04	
27-33	B <sub>25</sub>	82.25	14.86	2.89	0.67	3.10	16.40	45.57	16.51	11.57	3.29	
33-40	IIC	70.64	26.16	3.20	0.93	2.05	8.84	35.58	23.24	19.42	6.74	

WATER CONTENT (Bar Pressure)

Depth (In.)	Horizon	Water Content (%)									Bulk Density g/cc	Available Water in./in.
		0.059 pct	0.1 pct.	0.33 pct	0.67 pct.	1.0 pct.	2.0 pct.	3.0 pct.	5.0 pct.	15.0 pct.		
0-4	Ap	57.3	53.2	49.8	48.4	46.6		28.5	24.8	23.0	0.77	0.21
4-8	A <sub>2</sub> + B <sub>21</sub>	30.4	27.4	23.5	22.5	21.1		12.0	10.8	9.7	1.26	0.17
8-13	B <sub>22</sub>	24.9	22.5	18.9	18.2	17.5		7.8	6.8	6.0	1.35	0.17
13-18	B <sub>23</sub>	21.1	17.8	12.4	11.0	9.6		4.4	3.7	3.2	1.36	0.12
18-27	B <sub>24</sub>	18.8	13.2	8.6	8.1	6.8		3.5	3.0	3.0	1.36	0.08
27-33	B <sub>25</sub>	16.7	12.1	7.8	7.4	5.5		3.6	3.2	2.7	1.34	0.07
33-40	IIC	13.9	12.0	7.2	6.2	5.2		4.1	3.5	2.5	1.22	0.06

COARSE FRAGMENTS (Percent by Volume)

Depth (In.)	Horizon	Fragment Size (inches)								TOTAL
		3+ inches	3-2 inches	2-1.5 inches	1.5-1 inches	1-.75 inches	.75-.50 inches	.50-.25 inches	.25 in - 2 mm	
0-4	Ap					<0.1	0.2	0.3	0.3	<0.9
4-8	A <sub>2</sub> + B <sub>21</sub>				0.2	0.2	0.1	0.2	0.2	0.9
8-13	B <sub>22</sub>				0.5	0.1	0.1	0.3	0.7	1.7
13-18	B <sub>23</sub>				0.1	0.1	0.2	0.3	1.2	1.9
18-27	B <sub>24</sub>						0.3	0.6	1.8	2.7
27-33	B <sub>25</sub>					0.1	0.1	0.2	0.6	1.0
33-40	IIC				0.1	<0.1	0.1	0.1	0.3	<0.7

Depth (In.)	Horizon	Organic Carbon pct.	pH		Exchangeable Bases				Acidity	CEC (Sum)	Base Saturation (Sum) pct
			.01M CaCl <sub>2</sub>	H <sub>2</sub> O	Ca	Mg	Na	K			
			2.1	1.1	meq./100 g.						
0-4	Ap	8.57	5.95	6.25	23.4	5.8	0.2	3.4	13.2	46.0	71.3
4-8	A <sub>2</sub> + B <sub>21</sub>	2.46	5.85	6.45	6.4	2.0	<0.1	2.1	9.5	20.1	52.7
8-13	B <sub>22</sub>	1.22	5.6	6.35	3.5	0.7	<0.1	2.1	8.5	14.9	43.0
13-18	B <sub>23</sub>	0.35	5.4	6.35	1.3	0.1	<0.1	1.2	5.0	7.7	35.1
18-27	B <sub>24</sub>	0.21	5.0	5.9	0.7	<0.1	<0.1	0.9	4.4	6.2	29.0
27-33	B <sub>25</sub>	0.19	4.6	5.75	0.6	<0.1	<0.1	0.6	4.5	5.9	23.7
33-40	IIC	0.20	4.7	5.7	0.9	<0.1	<0.1	1.1	4.6	6.8	32.4

ALLAGASH MAPPING UNIT

Site 5

Location: Dupram Farms, Washburn, Aroostook County, Maine.

<u>Horizon</u>	<u>Depth</u>	<u>Description</u>
A <sub>p</sub>	0-8"	Dark yellowish brown (10YR 4/4) silt loam; moderate medium granular structure; friable; abrupt smooth boundary.
A <sub>p</sub> +B <sub>21</sub>	8-17"	Yellowish brown (10YR 5/4) with areas of dark yellowish brown (10YR 4/4) silt loam; moderate fine platy structure; friable; clear smooth boundary.
B <sub>22</sub>	17-24"	Yellowish brown (10YR 5/6) loam; weak fine granular structure; friable; clear smooth boundary.
B <sub>23</sub>	24-28"	Light olive brown (2.5Y 5/4) loam; weak medium platy structure; friable; clear smooth boundary.
IIC	28-40"	Olive brown (2.5Y 4/4) loamy sand; single grain; loose.

Depth (In.)	Horizon	Sand (2-05)	Silt (.05-.002)	Clay (.<.002)	Very Coarse (2-1)	Coarse (1-5)	Medium (.5-.25)	Fine (.25-.1)	Very Fine (1-.05)	(.05-.02)	(.02-.002)
0-8	Ap	35.55	51.19	13.26	1.26	4.43	8.46	11.06	10.34	26.75	24.44
8-17	Ap+B <sub>21</sub>	32.00	56.23	11.77	0.48	2.23	4.67	10.97	13.65	32.04	24.19
17-24	B <sub>22</sub>	42.01	49.09	8.90	1.16	4.06	9.30	14.33	13.16	25.51	23.58
24-28	B <sub>23</sub>	44.40	47.17	8.43	1.44	5.33	11.13	14.30	12.20	25.03	22.14
28-40	IIC	85.77	11.32	2.91	6.80	16.82	37.90	19.72	4.53	5.40	5.92

Depth (In.)	Horizon	WATER CONTENT (Bar Pressures)									Bulk Density g/cc	Available Water In./In.
		0.059 pct	0.1 pct	0.33 pct.	0.87 pct.	1.0 pct.	2.0 pct.	3.0 pct	5.0 pct	15.0 pct.		
0-8	Ap	40.6	38.8	33.0	32.6	31.8		17.4	14.8	13.0	0.96	0.19
8-17	Ap+B <sub>21</sub>	31.7	29.5	22.8	20.3	19.1		12.7	10.0	6.1	1.24	0.21
17-24	B <sub>22</sub>	30.0	29.0	23.6	21.1	19.3		11.0	8.9	6.6	1.17	0.20
24-28	B <sub>23</sub>	27.5	26.5	23.6	21.9	20.2		10.0	8.3	6.1	1.39	0.24
28-40	IIC	12.3	11.4	9.2	8.6	8.3		4.5	4.0	2.8	1.24	0.08

Depth (In.)	Horizon	COARSE FRAGMENTS (Percent by Volume)								TOTAL
		3+ inches	3-2 inches	2-1.5 inches	1.5-1 inches	1-.75 inches	.75-.50 inches	.50-.25 inches	.25 in- 2 mm.	
0-8	Ap				0.4	0.1	0.4	0.7	0.5	2.1
8-17	Ap+B <sub>21</sub>			0.3		0.2	0.3	0.3	0.2	1.3
17-24	B <sub>22</sub>		0.8		0.4	0.2	0.2	0.7	0.8	3.1
24-28	B <sub>23</sub>						0.1	0.6	0.7	1.4
28-40	IIC			0.2	0.5	0.6	1.8	4.5	6.8	14.4

Depth (In.)	Horizon	Organic Carbon pct.	pH		Exchangeable				Acidity	CEC (Sum)	Base Saturation (Sum) pct
			.01M CaCl <sub>2</sub>	H <sub>2</sub> O	Bases						
			2.1	1.1	Ca	Mg	Na	K			
			meq/100 g.								
0-8	Ap	2.86	4.8	5.4	5.0	0.2	<0.1	0.3	17.4	23.0	24.3
8-17	Ap+B <sub>21</sub>	0.92	4.8	5.7	1.6	<0.1	<0.1	0.1	11.6	13.5	14.1
17-24	B <sub>22</sub>	0.51	4.9	5.8	1.5	<0.1	<0.1	0.1	9.6	11.4	15.8
24-28	B <sub>23</sub>	0.41	4.8	5.7	1.7	<0.1	<0.1	0.1	8.5	10.5	19.0
28-40	IIC	0.20	4.8	5.65	1.4	<0.1	<0.1	0.1	5.3	7.0	24.3



## HERMON MAPPING UNIT

## Site 1

Location: Route 182 T<sub>10</sub>SD Hancock County, Maine .

<u>Horizon</u>	<u>Depth</u>	<u>Description</u>
O <sub>1</sub>	3-1"	Beech leaves and pine needles.
O <sub>2</sub>	1-0"	Black (10YR 2/1) organic matter.
A <sub>2</sub>	0-3"	Gray (10YR 5/1) sandy loam; weak fine and very fine granular structure; very friable; abrupt wavy boundary.
B <sub>21</sub> <sup>h</sup>	3-4"	Dark reddish brown (5YR 3/4) gravelly coarse sandy loam; weak very fine granular structure; very friable; abrupt wavy boundary.
B <sub>22</sub> <sup>ir</sup>	4-11"	Yellowish red (5YR 4/6) gravelly coarse sandy loam; weak very fine granular structure; very friable; clear wavy boundary.
B <sub>23</sub>	11-20"	Yellowish brown (10YR 5/6) gravelly coarse sandy loam; weak very fine granular structure; very friable; clear wavy boundary.
B <sub>3</sub>	20-24"	Light olive brown (2.5Y 5/4) gravelly coarse sandy loam; weak very fine granular structure; friable; clear wavy boundary.
C <sub>1</sub>	24-30"	Grayish brown (2.5Y 5/2) gravelly loamy coarse sand; single grain; firm in place, loose when removed. Some pebbles have a coating of fine sand.
C <sub>2</sub>	30-40"	Like horizon above.

Depth (In.)	Horizon	Sand (2-05)	Silt (05-002)	Clay (< 002)	Very Coarse (2-1)	Percent of <2mm				Very Fine (1-05)	(05-02)	(02-002)
						Coarse (1-5)	Medium (5-25)	Fine (25-1)				
0-3	A <sub>2</sub>	63.18	33.00	3.82	10.41	12.65	12.86	16.23	11.03	17.75	15.25	
3-11	B <sub>21</sub> + B <sub>22</sub>	62.74	31.89	5.37	15.45	13.86	11.80	13.13	8.50	17.16	14.73	
11-20	B <sub>23</sub>	57.79	38.26	3.95	13.53	12.30	12.21	12.25	7.50	21.25	17.01	
20-24	B <sub>3</sub>	66.45	30.20	3.35	15.31	15.02	13.67	14.15	8.30	15.64	14.56	
24-30	C <sub>1</sub>	73.92	23.66	2.42	15.76	17.64	16.47	15.75	8.30	13.00	10.66	
30-40	C <sub>2</sub>	73.81	22.94	3.25	21.24	17.93	13.97	13.31	7.36	12.63	10.31	

Depth (In.)	Horizon	WATER CONTENT (Bar Pressures)										Bulk Density g/cc.	Available Water in/in.
		0.05W pct.	0.1 pct.	0.33 pct.	0.67 pct.	1.0 pct.	2.0 pct.	3.0 pct.	5.0 pct.	15.0 pct.			
0-3	A <sub>2</sub>	29.4	27.1	19.4	18.0	17.5		10.0	9.0	7.5	0.95	0.11	
3-11	B <sub>21</sub> + B <sub>22</sub>	45.5	39.5	30.0	29.8	29.2		14.0	12.1	10.7	0.74	0.14	
11-20	B <sub>23</sub>	31.3	28.4	19.1	17.8	16.9		9.1	7.5	5.0	1.09	0.15	
20-24	B <sub>3</sub>							4.7	4.2	2.4			
24-30	C <sub>1</sub>							3.2	2.4	1.6			
30-40	C <sub>2</sub>							2.4	2.3	1.1			

Depth (In.)	Horizon	COARSE FRAGMENTS (Percent by Volume)									TOTAL
		3+ inches	3-2 inches	2-1.5 inches	1.5-1 inches	1-.75 inches	.75-.50 inches	50-25 inches	25 in - 2 mm.		
0-3	A <sub>2</sub>			2.7	1.9	1.3	1.2	2.0	4.1	13.2	
3-11	B <sub>21</sub> + B <sub>22</sub>	2.3	2.4	1.3	3.1	2.5	2.8	4.5	6.4	25.3	
11-20	B <sub>23</sub>	24.3	1.4	2.1	2.6	2.7	4.8	4.6	8.0	50.5	
20-24	B <sub>3</sub>	18.2	1.4	2.6	2.5	1.9	1.9	3.4	5.5	37.4	
24-30	C <sub>1</sub>	17.3	3.1	1.0	3.9	2.4	4.1	5.4	9.2	46.4	
30-40	C <sub>2</sub>	6.0	4.9	3.9	3.8	2.9	3.7	5.9	10.1	41.2	

Depth (In.)	Horizon	Organic Carbon pct.	pH		Exchangeable Bases				Acidity	CEC (Sum)	Base Saturation (Sum) pct.
			0.1M CaCl <sub>2</sub>	H <sub>2</sub> O	Ca	Mg	Na	K			
			2:1	1:1	meq/100 g.						
0-3	A <sub>2</sub>	2.69	3.75	4.35	1.9	0.1	< 0.1	0.4	9.1	11.6	21.6
3-11	B <sub>21</sub> + B <sub>22</sub>	2.41	4.8	5.4	0.7	< 0.1	< 0.1	0.1	18.1	19.1	5.2
11-20	B <sub>23</sub>	0.66	5.25	5.55	0.2	< 0.1	< 0.1	< 0.1	7.9	8.4	6.0
20-24	B <sub>3</sub>	0.26	5.3	5.6	0.1	< 0.1	< 0.1	< 0.1	4.6	5.0	8.0
24-30	C <sub>1</sub>	0.17	5.3	5.6	< 0.1	< 0.1	< 0.1	< 0.1	2.8	3.2	12.5
30-40	C <sub>2</sub>	0.10	5.3	5.65	< 0.1	< 0.1	< 0.1	< 0.1	2.2	2.6	15.4

HERMON MAPPING UNIT

Site 2

Location: One and one half miles north of Unknown Lakes, T<sub>4</sub>ND  
Hancock County, Maine.

<u>Horizon</u>	<u>Depth</u>	<u>Description</u>
O <sub>2</sub>	1-0"	Black (10YR 2/1) organic matter.
A <sub>2</sub>	0-2"	Gray (10YR 6/1) gravelly coarse sandy loam; weak thin platy structure; friable; abrupt wavy boundary.
B <sub>21</sub> h	2-2.5"	Yellowish red (5YR 4/6) gravelly coarse sandy loam; weak fine granular structure; friable; abrupt broken boundary.
B <sub>22</sub> ir	2.5-9"	Strong brown (7.5YR 5/8) gravelly coarse sandy loam; weak fine granular structure; friable; clear wavy boundary.
B <sub>23</sub>	9-13"	Yellowish brown (10YR 5/8) gravelly coarse sandy loam; weak fine granular structure; friable; clear smooth boundary.
B <sub>3</sub>	13-23"	Light olive brown (2.5Y 5/4) gravelly coarse sandy loam; single grain; loose; clear smooth boundary.
C	23-40"	Olive (5Y 5/3) gravelly loamy coarse sand; single grain; loose. Caps of sand or silt on the tops of the stones.

Depth (In.)	Horizon	TOTAL									
		Sand (2-05)	Silt (05-002)	Clay (< 002)	Very Coarse (2-1)	Coarse (1-5)	Medium (5-25)	Fine (25-1)	Very Fine (1-05)	(.05-.02)	(.02-.002)
0-2	A <sub>2</sub>	61.47	33.30	5.23	13.38	13.96	12.07	13.51	8.55	17.89	15.41
2-9	B <sub>21</sub> + B <sub>22</sub>	61.93	33.50	4.57	13.27	15.30	12.62	12.73	8.01	17.18	16.32
9-13	B <sub>23</sub>	62.01	32.86	5.13	14.81	14.02	13.31	12.66	7.21	16.98	15.88
13-23	B <sub>3</sub>	68.29	28.16	3.55	18.09	16.24	13.27	13.11	7.58	15.86	12.30
23-40	C	76.02	21.59	2.39	25.61	19.94	13.91	11.15	5.41	8.45	13.14

Depth (In.)	Horizon	WATER CONTENT (Bar Pressures)									Bulk Density g./cc.	Available Water In./in.
		0.059 pct.	0.1 pct.	0.33 pct.	0.67 pct.	1.0 pct.	2.0 pct.	3.0 pct.	5.0 pct.	15.0 pct.		
0-2	A <sub>2</sub>	33.1	29.9	21.7	19.8	18.1		10.2	8.5	7.8	0.85	0.12
2-9	B <sub>21</sub> + B <sub>22</sub>	44.0	39.2	30.2	28.5	28.2		16.9	15.1	11.2	0.74	0.14
9-13	B <sub>23</sub>	31.5	27.7	19.3	18.0	17.3		10.1	8.2	5.8	1.02	0.14
13-23	B <sub>3</sub>	20.4	18.0	11.7	10.0	8.7		4.1	3.1	2.0	1.25	0.12
23-40	C							3.0	2.5	1.2		

Depth (In.)	Horizon	COARSE FRAGMENTS (Percent by Volume)								TOTAL
		3+ inches	3-2 inches	2-1.5 inches	1.5-1 inches	1-.75 inches	.75-.50 inches	.50-.25 inches	.25 in.-2 mm.	
0-2	A <sub>2</sub>	12.6	2.4	1.0	2.8	0.7	0.8	1.6	3.2	25.1
2-9	B <sub>21</sub> + B <sub>22</sub>	23.4	2.2	1.6	1.3	0.4	1.2	2.7	5.1	37.9
9-13	B <sub>23</sub>	12.8	2.1	1.9	2.3	1.8	3.7	7.3	9.8	41.7
13-23	B <sub>3</sub>		0.8	0.2	1.4	2.0	4.4	11.0	16.3	36.1
23-40	C			0.2	0.9	1.5	3.8	8.9	11.5	26.8

Depth (In.)	Horizon	Organic Carbon pct.	pH		Exchangeable Bases				Acidity	CEC (Sum)	Base Saturation (Sum) pct.
			.01M CaCl <sub>2</sub>	H <sub>2</sub> O	meq./100 g.						
			2	1	Ca	Mg	Na	K			
0-2	A <sub>2</sub>	2.75	3.65	4.3	1.2	0.1	0.1	0.1	13.4	14.9	10.1
2-9	B <sub>21</sub> + B <sub>22</sub>	2.36	4.9	5.2	0.5	<0.1	0.1	0.1	17.8	18.6	4.3
9-13	B <sub>23</sub>	0.97	5.25	5.35	0.5	<0.1	0.1	<0.1	9.8	10.6	7.5
13-23	B <sub>3</sub>	0.20	5.4	5.75	0.2	<0.1	<0.1	<0.1	3.8	4.3	11.6
23-40	C	0.12	5.4	5.8	0.1	<0.1	<0.1	<0.1	2.7	3.1	12.9

## HERMON MAPPING UNIT

## Site 3

Location: Dark Cove, Sysladobsis Lake, T<sub>5</sub>ND, Washington County, Maine.

<u>Horizon</u>	<u>Depth</u>	<u>Description</u>
O <sub>1</sub>	3-1"	Leaves, wood, litter.
O <sub>2</sub>	1-0"	Dark reddish brown (2.5YR 3/4) organic matter.
A <sub>2</sub>	0-5"	Light gray (10YR 7/2) gravelly coarse sandy loam; weak fine granular structure; very friable; abrupt wavy boundary.
B <sub>21h</sub>	5-15"	Strong brown (7.5YR 5/6) sandy loam; weak fine granular structure; very friable; clear wavy boundary.
B <sub>22</sub>	15-20"	Yellowish brown (10YR 5/6) gravelly coarse sandy loam; weak fine granular structure; very friable; clear wavy boundary.
B <sub>3</sub>	20-25"	Yellowish brown (10YR 5/4) loamy coarse sand; weak fine granular structure; friable; clear wavy boundary.
C	25-40"	Light olive brown (2.5Y 5/4) gravelly loamy coarse sand; single grain; loose.

Depth (In.)	Horizon	Sand (2-05)	Silt (05-002)	Clay (1-002)	Percent of <2mm.							(05-02)	(02-002)
					Very Coarse (2-1)	Coarse (1-5)	Medium (5-25)	Fine (25-1)	Very Fine (1-05)				
0-5	A <sub>2</sub>	60.39	36.78	2.83	11.20	14.62	12.47	13.63	8.47	18.52	18.26		
5-15	B <sub>2 1</sub>	51.60	41.65	6.75	11.46	12.17	10.88	10.42	6.67	20.09	21.56		
15-20	B <sub>2 2</sub>	68.83	28.18	2.99	15.36	16.44	15.01	14.16	7.86	13.67	14.51		
20-25	B <sub>2 2</sub>	71.00	26.56	2.44	13.70	17.06	16.09	15.67	8.48	12.60	13.96		
25-40	C <sub>3</sub>	73.25	23.68	3.07	14.20	18.18	16.83	15.73	8.31	12.51	11.17		

Depth (In.)	Horizon	WATER CONTENT (Bar Pressure)										Bulk Density g/cc.	Available Water in/in
		0.059 pct	0.1 pct	0.33 pct	0.67 pct	1.0 pct	2.0 pct	3.0 pct	5.0 pct	15.0 pct			
0-5	A	31.1	28.5	20.4	17.6	16.1		7.1	5.9	5.9	1.07	0.16	
5-15	B <sub>2</sub>	45.1	41.0	31.4	31.0	30.7		15.8	14.3	11.4	0.85	0.17	
15-20	B <sub>2 1</sub>	17.0	14.8	10.0	9.7	9.4		6.4	5.6	4.0	1.33	0.08	
20-25	B <sub>2 2</sub>	15.5	13.8	9.3	8.6	7.8		4.8	4.1	2.8	1.29	0.08	
25-40	C <sub>3</sub>	18.8	15.3	10.4	9.2	8.8		3.3	2.7	1.6	1.42	0.12	

Depth (In.)	Horizon	COARSE FRAGMENTS (Percent by Volume)								TOTAL
		3+ inches	3-2 inches	2-1.5 inches	1.5-1 inches	1-0.75 inches	.75-.50 inches	.50-.25 inches	25 in - 2 mm.	
0-5	A <sub>2</sub>	7.3	2.8	0.9	1.8	0.8	1.0	2.0	6.0	22.6
5-15	B <sub>2</sub>		3.8	0.4	2.0	0.9	1.1	2.7	5.9	16.8
15-20	B <sub>2 1</sub>		2.9		2.5	1.4	1.9	4.2	9.7	22.6
20-25	B <sub>2 2</sub>		0.8	0.7	1.0	1.0	1.4	3.1	9.1	17.1
25-40	C <sub>3</sub>	3.4	1.1	1.3	1.5	1.6	1.8	4.4	12.5	27.6

Depth (In.)	Horizon	Organic Carbon pct.	pH			Exchangeable Bases				Acidity	CEC (Sum)	Base Saturation (Sum) pct.
			.01M CaCl <sub>2</sub>	H <sub>2</sub> O	1:1	Ca	Mg	Na	K			
			2:1	2	1:1							
0-5	A <sub>2</sub>	1.75	3.3	3.6	0.1	<0.1	<0.1	<0.1	11.2	11.6	3.4	
5-15	B <sub>2</sub>	2.69	4.45	5.05	0.3	<0.1	<0.1	<0.1	25.2	25.8	2.3	
15-20	B <sub>2 1</sub>	0.49	4.9	5.3	0.1	<0.1	<0.1	<0.1	9.2	9.6	4.2	
20-25	B <sub>2 2</sub>	0.48	4.85	5.45	<0.1	<0.1	<0.1	<0.1	5.6	6.0	6.7	
25-40	C <sub>3</sub>	0.16	5.1	5.6	<0.1	<0.1	<0.1	<0.1	2.7	3.1	12.9	

HERMON MAPPING UNIT

Site 4

Location: Route 1, Orland, Hancock County, Maine.

<u>Horizon</u>	<u>Depth</u>	<u>Description</u>
O <sub>1</sub>	2-1"	Beech, maple and white birch leaves.
O <sub>2</sub>	1-0"	Very dark brown (10YR 2/2) organic matter.
A <sub>2</sub>	0-3"	Gray (10YR 6/1) fine sandy loam; weak very fine granular structure; very friable; abrupt wavy boundary.
B <sub>21</sub>	3-4"	Dark reddish brown (5YR 3/3) gravelly fine sandy loam; weak very fine granular structure; very friable; abrupt wavy boundary.
B <sub>22</sub>	4-7"	Yellowish red (5YR 5/6) gravelly fine sandy loam; weak very fine granular structure; very friable; clear wavy boundary.
B <sub>23</sub>	7-24"	Yellowish brown (10YR 5/6) gravelly sandy loam; weak fine and very fine granular structure; very friable; clear wavy boundary.
C	24-40"	Grayish brown (2.5Y 5/2) gravelly loamy sand; single grain; loose.

Depth (In.)	Horizon	TOTAL			SAND					SILT	
		Sand (2-85)	Silt (.05-.002)	Clay (<.002)	Very Coarse (2-1)	Coarse (1-.5)	Medium (.5-.25)	Fine (.25-.1)	Very Fine (.1-.05)	(.05-.02)	(.02-.002)
0-3	A <sub>2</sub>	51.63	45.02	3.35	7.93	9.33	9.06	13.23	12.08	26.12	18.90
3-7	B <sub>21</sub> +B <sub>22</sub>	53.93	43.21	2.86	9.64	9.33	9.46	13.28	12.22	27.50	15.71
7-24	B <sub>23</sub>	57.60	40.15	2.25	9.13	10.52	11.09	15.07	11.79	25.58	14.57
24-40	C	73.45	25.08	1.47	10.73	13.40	14.51	21.45	13.36	17.42	7.66

Depth (In.)	Horizon	WATER CONTENT (Bar Pressure)									Bulk Density g/cc	Available Water in./in.
		0.059 pct.	0.1 pct.	0.33 pct.	0.67 pct.	1.0 pct.	2.0 pct.	3.0 pct.	5.0 pct.	15.0 pct.		
0-3	A <sub>2</sub>	58.2	47.2	34.1	32.4	31.2		11.7	8.5	8.0	0.78	0.20
3-7	B <sub>21</sub> +B <sub>22</sub>	91.6	68.2	50.8	48.8	46.9		18.7	17.7	14.7	0.64	0.23
7-24	B <sub>23</sub>	61.4	50.0	34.4	28.1	27.3		10.2	8.7	6.8	0.87	0.24
24-40	C							2.3	2.5	1.6		

Depth (In.)	Horizon	COARSE FRAGMENTS (Percent by Volume)								TOTAL
		3+ inches	3-2 inches	2-1.5 inches	1.5-1 inches	1-75 inches	.75-.50 inches	.50-.25 inches	.25 in - 2 mm	
0-3	A <sub>2</sub>				0.5	0.2	0.6	1.2	2.2	4.7
3-7	B <sub>21</sub> +B <sub>22</sub>	15.4	2.7	1.3	1.6	2.2	2.3	3.8	4.8	34.1
7-24	B <sub>23</sub>	11.8	4.9	1.4	2.8	1.2	1.6	2.7	3.9	30.3
24-40	C	8.2	3.0	1.6	3.2	2.1	3.0	5.1	9.0	35.2

Depth (In.)	Horizon	Organic Carbon pct.	pH		Exchangeable Bases				Acidity	CEC (Sum)	Base Saturation (Sum) pct
			.01M CaCl <sub>2</sub>	H <sub>2</sub> O	Bases						
			2:1	1:1	Ca	Mg	Na	K			
0-3	A <sub>2</sub>	4.08	3.5	4.1	1.2	<0.1	<0.1	0.1	12.1	13.6	11.0
3-7	B <sub>21</sub> +B <sub>22</sub>	3.96	4.6	4.95	0.2	<0.1	<0.1	<0.1	27.9	28.4	1.8
7-24	B <sub>23</sub>	1.16	5.2	5.6	0.1	<0.1	<0.1	<0.1	11.9	12.3	3.2
24-40	C	0.37	5.25	5.75	<0.1	<0.1	<0.1	<0.1	2.0	2.4	16.7



## HERMON MAPPING UNIT

## Site 5

Location: 8.5 miles west of Grand Lake Stream, Washington County, Maine.

<u>Horizon</u>	<u>Depth</u>	<u>Description</u>
O <sub>2</sub>	3-0"	Black (10YR 2/1) organic matter.
A <sub>2</sub>	0-3"	Pinkish gray (5YR 6/2) fine sandy loam; weak very fine granular structure; very friable; abrupt wavy boundary.
B <sub>21</sub> <sup>h</sup>	3-8"	Yellowish red (5YR 4/6) loam; weak fine granular structure; very friable; clear wavy boundary.
B <sub>22</sub> <sup>ir</sup>	8-12"	Strong brown (7.5YR 5/6) gravelly sandy loam; weak very fine granular structure; very friable; clear wavy boundary.
B <sub>3</sub>	12-18"	Yellowish brown (10YR 5/4) gravelly sandy loam; weak very fine granular structure; very friable; clear wavy boundary.
C	18-40"	Light olive brown (2.5Y 5/4) gravelly loamy coarse sand; single grain; loose. Caps of sand or silt on the tops of the stones.

Depth (In.)	Horizon	TOTAL			SAND					SILT	
		Sand (2-05)	Silt (.05-.002)	Clay (<.002)	Very Coarse (2-1)	Percent of <2mm			Very Fine (1-.05)	(05-.02)	(02-.002)
						Coarse (1-.5)	Medium (.5-.25)	Fine (.25-.1)			
0-3	A <sub>2</sub>	55.31	41.12	3.57	7.26	10.48	12.07	15.27	10.23	21.01	27.11
3-8	B <sub>21</sub>	48.33	42.72	8.95	7.99	10.25	10.16	12.27	7.66	19.18	23.54
8-12	B <sub>22</sub>	51.60	42.03	6.37	9.19	11.20	11.04	12.40	7.77	18.58	23.45
12-18	B <sub>3</sub>	52.49	41.19	6.32	9.68	11.32	11.47	12.79	7.23	15.68	25.51
18-40	C	74.55	22.21	3.24	13.79	17.34	17.36	18.33	7.73	9.30	12.91

Depth (In.)	Horizon	WATER CONTENT (Bar Pressure)									Bulk Density g./cc.	Available Water In./In
		0.059 pct.	0.1 pct.	0.33 pct.	0.67 pct.	1.0 pct.	2.0 pct.	3.0 pct.	5.0 pct.	15.0 pct.		
0-3	A	43.6	38.6	30.5	27.6	26.4		9.4	7.5	5.5	0.91	0.23
3-8	B <sub>21</sub>	82.1	66.4	53.1	52.4	51.7		18.3	15.8	12.6	0.72	0.29
8-12	B <sub>22</sub>	53.8	44.4	32.4	29.9	29.2		12.2	10.4	8.2	0.96	0.23
12-18	B <sub>3</sub>	37.0	31.4	22.9	20.4	19.5		7.3	6.5	4.4	1.12	0.21
18-40	C							4.5	2.5	1.9		

Depth (In.)	Horizon	COARSE FRAGMENTS (Percent by Volume)									TOTAL
		3+ inches	3-2 inches	2-1.5 inches	1.5-1 inches	1-.75 inches	.75-.50 inches	.50-.25 inches	.25 in.- 2 mm.		
0-3	A <sub>2</sub>	5.0	5.1	1.1	0.8	0.2	0.3	0.8	2.0	15.3	
3-8	B <sub>21</sub>		0.9	0.3	1.1	1.1	0.7	1.2	3.3	8.6	
8-12	B <sub>22</sub>		3.2	1.1	1.4	1.7	1.7	2.7	8.0	19.8	
12-18	B <sub>3</sub>	3.6	0.6	4.7	1.5	1.1	1.9	3.9	6.1	23.4	
18-40	C	5.6	3.8	2.8	4.3	2.4	3.1	4.9	11.7	38.6	

Depth (In.)	Horizon	Organic Carbon pct.	pH		Exchangeable				Acidity	CEC (Sum)	Base Saturation (Sum) pct.
			.01M CaCl <sub>2</sub> 2:1	H <sub>2</sub> O 1:1	Bases						
					Ca	Mg	Na	K			
			meq./100 g.								
0-3	A <sub>2</sub>	1.90	3.65	4.45	1.6	<0.1	<0.1	0.1	10.1	12.0	15.8
3-8	B <sub>21</sub>	2.59	4.65	5.0	0.6	<0.1	<0.1	0.1	22.8	23.7	3.8
8-12	B <sub>22</sub>	1.20	5.0	5.5	0.2	<0.1	<0.1	<0.1	13.5	14.0	3.6
12-18	B <sub>3</sub>	0.64	5.1	5.4	0.2	<0.1	<0.1	<0.1	7.5	8.0	6.2
18-40	C	0.16	5.2	5.6	0.1	<0.1	<0.1	<0.1	3.0	3.4	11.8

HOWLAND MAPPING UNIT

Site 1

Location: Lake View, Piscataquis County, Maine

Horizon	Depth	Description
O <sub>2</sub>	2-0"	Loose leaves and twigs.
A <sub>1</sub>	0-2"	Very dark gray (10YR 3/1) silt loam; moderate medium granular structure; friable; abrupt smooth boundary.
B <sub>21</sub> +A <sub>2</sub>	2-3"	Dusky red (2.5YR 3/2) with pockets of A <sub>2</sub> gray (10YR 6/1) silt loam; weak fine granular structure; friable; abrupt smooth boundary.
B <sub>22</sub>	3-7"	Dark reddish brown (5YR 3/4) silt loam; weak fine granular structure; friable; abrupt smooth boundary.
B <sub>23</sub>	7-15"	Dark yellowish brown (10YR 4/4) fine sandy loam with common medium distinct yellowish brown (10YR 5/8) and grayish brown (2.5Y 5/2) mottles; weak fine granular structure; friable; abrupt smooth boundary.
C <sub>1x</sub>	15-26"	Grayish brown (2.5Y 5/2) gravelly fine sandy loam with common medium distinct yellowish brown (10YR 5/8) mottles; strong coarse platy structure; very firm; diffuse wavy boundary.
C <sub>2x</sub>	26-40"	Olive gray (5Y 5/2) gravelly fine sandy loam with common medium distinct yellowish brown (10YR 5/8) mottles; massive; very firm.

Depth (In.)	Horizon	TOTAL			SAND					SILT	
		Sand (2-05)	Silt (.05-.002)	Clay (<.002)	Very Coarse (2-1)	Coarse (1-5) Percent of <2mm.	Medium (.5-25)	Fine (.25-1)	Very Fine (1-1.05)	(.05-.02)	(.02-.002)
0-2	A <sub>1</sub>	44.58	50.82	4.60	3.40	5.43	7.66	14.94	13.15	30.22	20.60
2-7	B <sub>21</sub> <sup>1</sup> +B <sub>22</sub>	43.62	52.28	4.10	3.39	5.17	7.33	14.25	13.48	26.55	25.73
7-15	B <sub>23</sub>	51.31	45.58	3.11	5.94	7.74	9.17	15.34	13.12	26.87	18.71
15-26	C <sub>1x</sub> <sup>2</sup>	55.24	42.81	1.95	6.61	8.76	10.01	16.14	13.72	25.74	17.07
26-40	C <sub>2x</sub>	56.52	41.45	2.03	9.75	8.65	8.87	14.91	14.34	26.15	15.30

Depth (In.)	Horizon	WATER CONTENT (Bar Pressure)										Bulk Density g./cc.	Available Water in/in.
		0.059 pct.	0.1 pct.	0.33 pct.	0.67 pct.	1.0 pct.	2.0 pct.	3.0 pct.	5.0 pct.	15.0 pct.			
0-2	A <sub>1</sub>	238.3	184.5	158.5	147.2	132.8		33.3	22.2	21.0	0.26	0.36	
2-7	B <sub>21</sub> <sup>1</sup> +B <sub>22</sub>	75.7	59.7	45.0	41.5	37.8		12.6	11.2	9.9	0.73	0.26	
7-15	B <sub>23</sub>	62.9	54.2	45.7	42.1	39.4		9.3	7.9	7.2	0.90	0.35	
15-26	C <sub>1x</sub> <sup>2</sup>	23.4	21.2	16.3	13.0	11.3		2.8	2.6	1.6	1.59	0.23	
26-40	C <sub>2x</sub>	20.0	18.1	12.0	8.8	7.7		1.8	1.6	0.7	1.74	0.20	

Depth (In.)	Horizon	COARSE FRAGMENTS (Percent by Volume)								TOTAL
		3+ inches	3-2 inches	2-1.5 inches	1.5-1 inches	1-75 inches	.75-.50 inches	.50-.25 inches	.25 in.-2 mm.	
0-2	A <sub>1</sub>	7.9			1.2	0.4	0.3	0.4	0.4	10.6
2-7	B <sub>21</sub> <sup>1</sup> +B <sub>22</sub>			0.5	0.8	0.5	0.7	1.1	1.7	5.3
7-15	B <sub>23</sub>	1.3		1.2	1.9	0.9	0.9	1.5	2.6	10.3
15-26	C <sub>1x</sub>	3.7	0.7	2.6	2.4	1.8	1.7	2.9	4.7	20.5
26-40	C <sub>2x</sub>	10.0	4.0	1.6	2.1	2.3	1.9	3.0	5.1	30.0

Depth (In.)	Horizon	Organic Carbon pct.	pH		Exchangeable Bases				Acidity	CEC (Sum)	Base Saturation (Sum) pct.
			.01M CaCl <sub>2</sub>	H <sub>2</sub> O	Ca	Mg	Na	K			
			2:1	1:1							
0-	A <sub>1</sub>										
0-2	B <sub>21</sub> <sup>1</sup> +B <sub>22</sub>	11.00	4.4	4.9	21.6	1.2	<0.1	0.2	24.1	47.2	48.9
2-7	B <sub>23</sub>	3.32	4.45	5.05	2.6	<0.1	<0.1	0.1	21.1	24.0	12.1
7-15	C <sub>1x</sub>	2.16	4.6	5.25	0.7	<0.1	<0.1	0.1	19.6	20.6	4.8
15-26	C <sub>2x</sub>	0.41	4.95	5.7	0.2	<0.1	<0.1	<0.1	6.2	6.7	7.5
26-40	C <sub>2x</sub>	0.14	5.35	6.05	0.2	<0.1	<0.1	<0.1	2.6	3.1	16.1

HOWLAND MAPPING UNIT

Site 2

Location: Brownville, Piscataquis County, Maine

Horizon	Depth	Description
O <sub>2</sub>	1-0"	Loose leaves and twigs.
A <sub>2</sub>	0-2"	Gray (10YR 6/1) silt loam; weak thin platy structure; friable; abrupt irregular boundary.
B <sub>21</sub>	2-4"	Dark reddish brown (2.5YR 3/4) loam; moderate medium granular structure; friable; abrupt smooth boundary.
B <sub>22</sub>	4-7"	Dark brown (7.5YR 4/4) silt loam; weak fine granular structure; friable; abrupt smooth boundary.
B <sub>23</sub>	7-12"	Dark yellowish brown (10YR 4/4) silt loam with common medium distinct gray (5Y 5/1) and yellowish red (5YR 4/6) mottles; weak fine granular structure; abrupt wavy boundary.
B <sub>3</sub>	12-18"	Light yellowish brown (2.5Y 6/4) fine sandy loam with common medium distinct gray (5Y 5/1), pale olive (5Y 6/3) and dark brown (7.5YR 4/4) mottles; moderate medium platy structure; firm; clear smooth boundary. Top of prisms are in this horizon.
Clx	18-30"	Pale olive (5Y 6/3) fine sandy loam with common medium faint gray (5Y 6/1) and prominent dark brown (7.5YR 4/4) mottles; coarse prismatic structure with prism interiors being strong medium platy; very firm; diffuse wavy boundary.
C2x	30-40"	Pale olive (5Y 6/3) gravelly fine sandy loam with a few medium faint gray (5Y 6/1) and prominent dark brown (7.5YR 4/4) mottles; massive; very firm.

Depth (in.)	Horizon	TOTAL			SAND					SILT	
		Sand (2-05)	Silt (05-.002)	Clay (< 002)	Very Coarse (2-1)	Coarse (1-3)	Medium (5-25)	Fine (25-1)	Very Fine (1-05)	(.05-.02)	(.02-.002)
0-2	A <sub>2</sub>	44.52	50.11	5.37	3.10	5.43	8.58	15.04	12.37	23.08	27.03
2-4	B <sub>2</sub>	40.60	48.19	11.21	4.32	5.18	7.51	13.11	10.48	21.12	27.07
4-7	B <sub>2</sub> <sup>1</sup>	42.61	51.41	6.98	4.16	5.60	7.82	13.22	10.81	25.04	26.37
7-12	B <sub>2</sub> <sup>2</sup>	41.93	52.89	5.18	5.53	6.27	8.00	12.68	9.45	24.89	28.00
12-18	B <sub>2</sub> <sup>3</sup>	47.99	47.47	4.54	6.23	7.80	9.78	14.33	9.85	23.33	24.14
18-30	C <sub>1</sub> x	50.55	43.42	6.03	5.19	8.25	10.86	15.86	10.39	21.09	22.33
30-40	C <sub>2</sub> x	49.82	44.31	5.87	6.72	7.92	10.18	14.90	10.10	20.16	24.15

Depth (in.)	Horizon	WATER CONTENT (Bar Pressure)										Bulk Density g/cc	Available Water in./in.
		0.059 pct.	0.1 pct.	0.33 pct.	0.67 pct.	1.0 pct.	2.0 pct.	3.0 pct.	5.0 pct.	15.0 pct.			
0-2	A <sub>2</sub>	37.7	32.4	27.6	24.8	22.2		8.6	6.9	5.3	1.09	0.24	
2-4	B <sub>2</sub>	81.0	68.1	53.3	48.6	45.2		15.7	15.3	11.6	0.74	0.31	
4-7	B <sub>2</sub> <sup>1</sup>	68.0	56.5	42.2	38.4	35.1		12.9	12.1	9.1	0.84	0.28	
7-12	B <sub>2</sub> <sup>2</sup>	55.0	48.3	35.2	30.0	27.1		10.5	9.5	6.6	0.93	0.26	
12-18	B <sub>2</sub> <sup>3</sup>	40.8	35.2	28.8	24.4	22.1		7.0	6.7	3.8	1.14	0.28	
18-30	C <sub>1</sub> x	20.3	18.1	14.0	12.3	11.3		6.1	4.8	2.8	1.54	0.17	
30-40	C <sub>2</sub> x	17.4	16.6	14.6	13.0	11.5		5.4	4.7	1.9	1.69	0.21	

Depth (in.)	Horizon	COARSE FRAGMENTS (Percent by Volume)									TOTAL
		3+ inches	3-2 inches	2-1.5 inches	1.5-1 inches	1-1.5 inches	.75-50 inches	.50-25 inches	.25 in - 2 mm.		
0-2	A <sub>2</sub>				0.8	0.6	1.1	1.9	1.9	6.3	
2-4	B <sub>2</sub> <sup>1</sup>		4.6		0.4	0.3	0.5	1.0	1.5	6.3	
4-7	B <sub>2</sub> <sup>2</sup>						0.5	0.8	0.7	2.0	
7-12	B <sub>2</sub> <sup>3</sup>				0.1	0.5	0.6	1.4	3.5	6.1	
12-18	B <sub>2</sub> <sup>3</sup>			0.6	0.2	0.7	1.3	3.1	7.5	13.4	
18-30	C <sub>1</sub> x	1.4	1.4	1.1	1.6	1.1	1.9	3.2	8.0	19.7	
30-40	C <sub>2</sub> x	3.2	2.5	1.3	2.4	2.0	2.6	3.7	6.4	24.1	

Depth (in.)	Horizon	Organic Carbon pct.	pH		Exchangeable				Acidity	CEC (Sum)	Base Saturation (Sum) pct.
			.01M CaCl <sub>2</sub>	H <sub>2</sub> O	Bases						
			2:1	1:1	Ca	Mg	Na	K			
0-2	A <sub>2</sub>	2.45	3.55	4.3	3.0	<0.1	<0.1	0.2	11.7	15.1	22.5
2-4	B <sub>2</sub> <sup>1</sup>	3.89	3.85	4.55	3.0	0.1	<0.1	0.2	30.5	33.9	10.0
4-7	B <sub>2</sub> <sup>2</sup>	2.60	4.1	4.80	1.0	<0.1	<0.1	0.2	23.8	25.2	5.6
7-12	B <sub>2</sub> <sup>3</sup>	2.13	4.5	5.0	0.5	<0.1	<0.1	0.1	21.4	22.2	3.6
12-18	B <sub>2</sub> <sup>3</sup>	1.35	4.5	5.25	1.2	<0.1	<0.1	0.1	14.5	16.0	9.4
18-30	C <sub>1</sub> x	0.42	4.85	5.6	1.2	<0.1	<0.1	0.1	7.5	9.0	16.7
30-40	C <sub>2</sub> x	0.13	5.0	5.7	0.9	<0.1	<0.1	<0.1	4.1	5.3	22.6

HOWLAND MAPPING UNIT

Site 3

Location: Lake Onawa, Elliottsville, Piscataquis County, Maine

Horizon	Depth	Description
A <sub>2</sub>	0-1"	Gray (10YR 6/1) fine sandy loam; weak thin platy structure; friable; abrupt broken boundary.
B <sub>21</sub>	0-6"	Dark red (2.5YR 3/6) fine sandy loam; strong moderate granular structure; friable; abrupt wavy boundary.
B <sub>22</sub>	6-12"	Light olive brown (2.5 5/4) fine sandy loam; moderate medium granular structure; friable; abrupt wavy boundary.
B <sub>23</sub>	12-19"	Light olive brown (2.5Y 5/4) fine sandy loam with many fine distinct light olive gray (5Y 6/2) and yellowish brown (10YR 5/8) mottles; moderate thin platy structure; firm; abrupt wavy boundary.
C <sub>1x</sub>	19-27"	Light olive brown (2.5Y 5/4) fine sandy loam; with common medium distinct light olive gray (5Y 6/2) and yellowish brown (10YR 5/8) mottles; strong medium platy structure; very firm; abrupt wavy boundary.
C <sub>2x</sub>	27-40"	Olive gray (5Y 5/2) gravelly silt loam with few fine faint light gray (5Y 7/1) and olive yellow (5Y 6/8) mottles; coarse prismatic structure with prism interiors being massive; extremely firm.

Depth (In.)	Horizon	TOTAL			SAND					SILT	
		Sand (<05)	Silt (05-002)	Clay (<.002)	Very Coarse (2-1)	Coarse (1-5) Percent of <2mm.	Medium (.5-25)	Fine (25-1)	Very Fine (.1-05)	(05-02)	(02-002)
0-6	A <sub>2</sub> +B <sub>21</sub>	45.49	49.90	4.61	3.83	6.56	8.38	14.52	12.20	26.13	23.77
6-12	B <sub>22</sub>	47.81	48.53	3.66	6.77	7.58	8.79	13.85	10.82	24.87	23.66
12-19	B <sub>23</sub>	48.63	47.11	4.26	6.32	7.67	8.98	14.66	11.00	23.58	23.53
19-27	C <sub>1x</sub>	53.51	44.27	3.22	5.62	7.47	9.84	17.35	12.23	21.60	22.67
27-40	C <sub>2x</sub>	42.69	50.22	7.09	5.31	6.74	6.97	12.87	10.80	20.54	29.68

Depth (In.)	Horizon	WATER CONTENT (Bar Pressures)									Bulk Density g/cc	Available Water In/in
		0.059 pct	0.1 pct	0.33 pct	0.67 pct	1.0 pct	2.0 pct	3.0 pct	5.0 pct	15.0 pct		
0-6	A <sub>2</sub> +B <sub>21</sub>	61.9	56.3	46.9	45.0	44.8		20.8	20.6	18.0	0.59	0.17
6-12	B <sub>22</sub>	56.2	50.7	38.9	35.8	34.6		16.2	13.2	11.3	0.74	0.20
12-19	B <sub>23</sub>	37.8	35.6	28.8	25.9	25.2		10.0	9.0	6.7	1.09	0.24
19-27	C <sub>1x</sub>	27.8	25.9	20.9	17.6	16.5		6.0	4.8	3.5	1.45	0.25
27-40	C <sub>2x</sub>	15.7	15.2	12.8	10.5	9.2		8.8	6.3	3.9	1.72	0.15

Depth (In.)	Horizon	COARSE FRAGMENTS (Percent by Volume)									TOTAL
		3+ inches	3-2 inches	2-1.5 inches	1.5-1 inches	1-0.75 inches	.75-.50 inches	.50-.25 inches	.25 in - 2 mm		
0-6	A <sub>2</sub> +B <sub>21</sub>				0.1	0.1	0.3	1.0	1.7		3.2
6-12	B <sub>22</sub>				0.4	0.3	0.8	1.8	1.7		5.0
12-19	B <sub>23</sub>			0.1	0.2	0.1	0.3	1.6	6.0		8.3
19-27	C <sub>1x</sub>				0.4	0.6	0.5	2.5	11.0		15.0
27-40	C <sub>2x</sub>	6.2	0.3	1.1	1.0	0.5	1.0	2.7	9.5		22.3

Depth (In.)	Horizon	Organic Carbon pct.	pH		Exchangeable				Acidity	CEC (Sum)	Base Saturation (Sum) pct
			.01M CaCl <sub>2</sub> 2:1	H <sub>2</sub> O 1:1	Bases						
			Ca	Mg	Na	K	meq./100 g				
0-6	A <sub>2</sub> +B <sub>21</sub>	5.21	4.6	5.2	4.1	0.2	<0.1	0.2	29.5	34.1	13.5
6-12	B <sub>22</sub>	2.59	4.9	5.35	0.9	<0.1	<0.1	0.1	21.4	22.6	5.3
12-19	B <sub>23</sub>	1.34	5.0	5.55	0.6	<0.1	<0.1	0.1	13.1	14.0	6.4
19-27	C <sub>1x</sub>	0.54	5.0	5.6	0.5	<0.1	<0.1	0.1	6.5	7.3	11.0
27-40	C <sub>2x</sub>	0.16	5.1	6.1	2.0	0.1	<0.1	0.2	2.5	4.9	49.0



## HOWLAND MAPPING UNIT

### Site 4

Location: Brighton, Piscataquis County, Maine

Horizon	Depth	Description
A <sub>1</sub>	0-3"	Very dark brown (10YR 2/2) silt loam; weak fine granular structure; friable; abrupt irregular boundary.
A <sub>2</sub>	3-6"	Light gray (10YR 6/1) silt loam; weak thin platy structure; friable; abrupt irregular boundary.
B <sub>21</sub>	6-10"	Dark reddish brown (2.5YR 2/4) silt loam; moderate medium granular structure; friable; abrupt smooth boundary.
B <sub>22</sub>	10-16"	Yellowish brown (10YR 5/8) silt loam; weak fine granular structure; friable; abrupt wavy boundary.
B <sub>23</sub>	16-26"	Light olive brown (2.5Y 5/4) silt loam with common fine and medium faint and distinct light brownish gray (2.5Y 6/2) and dark yellowish brown (10YR 4/4) mottles; strong thin platy structure; firm; abrupt smooth boundary.
C <sub>1x</sub>	26-33"	Light olive gray (5Y 6/2) silt loam with common medium faint gray (5Y 6/1) and light gray (5Y 7/2) mottles; strong medium platy structure; very firm; abrupt smooth boundary.
C <sub>2x</sub>	33-40"	Light olive gray (5Y 6/2) silt loam with many medium faint gray (5Y 6/1) mottles; coarse prismatic structure with prism interiors being massive; very firm.

Depth (In.)	Horizon	TOTAL					SAND					SILT	
		Sand (2-04)	Silt (05-002)	Clay (< 002)	Very Coarse (2-1)	Coarse (1-5)	Medium (5-25)	Fine (25-1)	Very Fine (1-05)	(05-02)	(02-002)		
			Percent of < 2mm										
0-3	A <sub>1</sub>	33.76	58.21	8.03	3.76	2.96	3.96	9.63	13.45	34.42	23.79		
3-6	A <sub>2</sub>	31.95	62.39	5.66	1.82	2.54	3.60	9.91	14.08	35.41	26.98		
6-10	B <sub>21</sub>	36.03	56.49	7.48	3.42	3.66	5.67	10.84	12.44	32.52	23.97		
10-16	B <sub>22</sub>	35.01	60.61	4.38	3.43	3.61	4.23	10.53	13.21	33.71	26.90		
16-26	B <sub>23</sub>	39.21	58.72	2.07	3.76	4.34	4.99	11.82	14.30	32.26	26.46		
26-33	C <sub>1X</sub>	38.16	60.54	1.30	4.49	4.59	4.52	10.99	13.57	31.77	28.77		
33-40	C <sub>2X</sub>	38.08	60.56	1.36	4.62	4.26	4.46	11.00	13.74	31.31	29.25		

Depth (In.)	Horizon	WATER CONTENT (Bar Pressure)									Bulk Density g/cc.	Available Water in/in.
		0.059 psi	0.1 psi	0.33 psi	0.67 psi	1.0 psi	2.0 psi	3.0 psi	5.0 psi	15.0 psi		
0-3	A <sub>1</sub>	130.3	120.1	98.8	93.6	91.2		31.1	28.9	24.1	0.46	0.34
3-6	A <sub>2</sub>	76.0	70.3	61.1	56.8	54.6		10.5	10.1	7.1	0.86	0.46
6-10	B <sub>21</sub>	128.9	118.6	102.2	99.1	97.7		24.6	23.2	18.2	0.48	0.40
10-16	B <sub>22</sub>	80.2	75.4	65.0	61.8	60.8		14.7	13.6	10.2	0.72	0.39
16-26	B <sub>23</sub>	38.5	37.4	33.3	29.4	27.8		6.1	5.0	3.7	1.15	0.34
26-33	C <sub>1X</sub>	26.0	25.1	21.7	17.9	16.2		3.7	3.3	1.7	1.50	0.30
33-40	C <sub>2X</sub>	19.9	19.7	17.8	14.4	12.2		3.1	2.7	1.2	1.75	0.29

Depth (In.)	Horizon	COARSE FRAGMENTS (Percent by Volume)									TOTAL
		3+ inches	3-2 inches	2-1.5 inches	1.5-1 inches	1-75 inches	.75-.50 inches	.50-.25 inches	.25 in.-2 mm.		
0-3	A <sub>1</sub>		2.9		0.4	0.1	0.7	0.2	0.1	3.9	
3-6	A <sub>2</sub>	6.4		2.3	1.8	0.6	0.8	0.8	0.6	13.3	
6-10	B <sub>21</sub>		5.3	1.6	1.0	0.7	0.6	0.9	1.9	12.0	
10-16	B <sub>22</sub>		1.2	1.3	1.3	0.3	0.5	1.0	3.0	8.6	
16-26	B <sub>23</sub>	4.4		0.3	0.5	0.6	0.4	1.7	4.4	12.3	
26-33	C <sub>1X</sub>			0.6	0.9	0.7	0.9	1.6	3.9	8.6	
33-40	C <sub>2X</sub>	2.7	0.5		0.5	0.4	0.6	1.8	4.1	10.6	

Depth (In.)	Horizon	Organic Carbon pct.	pH		Exchangeable Bases				Acidity	CEC (Sum)	Base Saturation (Sum) pct.
			0.1M CaCl <sub>2</sub>	H <sub>2</sub> O	Ca	Mg	Na	K			
			2.1	1.1							
0-3	A <sub>1</sub>	16.22	3.65	4.1	3.4	0.4	<0.1	0.4	38.0	42.3	10.2
3-6	A <sub>2</sub>	3.50	3.85	4.2	0.5	<0.1	<0.1	0.1	20.1	20.9	3.8
6-10	B <sub>21</sub>	5.90	4.2	4.65	0.3	<0.1	<0.1	0.1	42.5	43.1	1.4
10-16	B <sub>22</sub>	3.06	4.4	4.75	0.2	<0.1	<0.1	<0.1	27.8	28.3	1.8
16-26	B <sub>23</sub>	0.87	4.75	5.05	<0.1	<0.1	<0.1	<0.1	8.1	8.5	4.7
26-33	C <sub>1X</sub>	0.38	4.9	5.35	0.1	<0.1	<0.1	<0.1	4.4	4.8	8.3
33-40	C <sub>2X</sub>	0.24	5.0	5.4	<0.1	<0.1	<0.1	<0.1	2.9	3.3	12.1

HOWLAND MAPPING UNIT

Site 5

Location: West of Ship Pond Stream, Willimantic, Piscataquis County, Maine.

<u>Horizon</u>	<u>Depth</u>	<u>Description</u>
O <sub>1</sub>	2-0"	Loose leaves.
B <sub>21</sub>	0-3"	Dark red (2.5YR 3/6) fine sandy loam; moderate medium granular structure; friable; abrupt wavy boundary.
B <sub>22</sub>	3-11"	Yellowish brown (10YR 5/6) silt loam; moderate medium granular structure; friable; abrupt irregular boundary.
B <sub>23</sub>	11-19"	Olive (5Y 5/4) silt loam with common medium faint light gray (5Y 7/2) and olive yellow (5Y 6/8) mottles; weak medium granular structure; friable; abrupt wavy boundary.
C <sub>1x</sub>	19-30"	Olive gray (5Y 4/2) gravelly fine sandy loam common medium faint light gray (5Y 7/2) and olive yellow (5Y6/8) mottles; strong medium platy structure; very firm; abrupt wavy boundary. Silt caps on top of stones.
C <sub>2x</sub>	30-40"	Olive gray (5Y 4/2) gravelly loam with few fine faint light gray (5Y 7/2) and olive yellow (5Y 6/8) mottles; extremely firm; massive.

Depth (In.)	Horizon	TOTAL									
		Sand (2-05)	Silt (05-.002)	Clay (< .002)	Very Coarse (2-1)	Coarse (1-.5)	Medium (.5-.25)	Fine (.25-.1)	Very Fine (.1-.05)	(.05-.02)	(.02-.002)
Percent of <2mm.											
0-3	B <sub>21</sub>	49.73	45.93	4.34	8.45	9.16	9.72	13.87	8.53	19.23	26.70
3-11	B <sub>22</sub>	41.24	52.21	6.55	10.38	9.82	7.62	7.90	5.52	16.67	35.54
11-19	B <sub>23</sub>	41.76	50.84	7.40	11.67	9.87	7.38	7.39	5.45	14.93	35.91
19-30	C <sub>1X</sub>	45.47	47.95	6.58	10.23	9.00	7.88	10.30	8.06	19.05	28.90
30-40	C <sub>2X</sub>	46.49	45.59	7.92	9.08	9.24	8.30	11.13	8.74	18.89	26.70

Depth (In.)	Horizon	WATER CONTENT (Bar Pressures)									Bulk Density g/cc	Available Water In./in.
		0.059 pct	0.1 pct	0.33 pct.	0.67 pct.	1.0 pct.	2.0 pct	3.0 pct	5.0 pct.	15.0 pct		
0-3	B <sub>21</sub>	92.8	79.9	64.6	61.6	59.9		23.9	23.4	20.2	0.44	0.20
3-11	B <sub>22</sub>	79.7	68.2	54.7	50.0	48.0		14.7	13.4	10.2	0.64	0.28
11-19	B <sub>23</sub>	59.0	55.0	45.2	39.7	37.7		13.7	11.9	9.1	0.81	0.29
19-30	C <sub>1X</sub>	20.9	20.4	19.6	17.6	14.5		6.5	5.0	3.4	1.31	0.21
30-40	C <sub>2X</sub>	16.1	15.5	13.9	12.6	11.4		6.6	5.0	3.0	1.52	0.16

Depth (In.)	Horizon	COARSE FRAGMENTS (Percent by Volume)								TOTAL
		3+ inches	3-2 inches	2-1.5 inches	1.5-1 inches	1-.75 inches	.75-.50 inches	.50-.25 inches	.25 in - 2 mm	
0-3	B <sub>21</sub>			3.0	4.8	5.2	4.7	5.2	3.4	26.3
3-11	B <sub>22</sub>			1.0	2.0	1.7	2.5	4.6	6.8	18.6
11-19	B <sub>23</sub>		0.7	0.4	1.3	1.7	2.4	4.7	8.1	19.3
19-30	C <sub>1X</sub>	6.1	2.5	3.1	1.7	1.8	2.4	5.3	11.4	34.3
30-40	C <sub>2X</sub>	2.0	2.1	0.6	1.4	1.2	1.8	5.4	11.0	25.5

Depth (In.)	Horizon	Organic Carbon pct.	pH		Exchangeable Bases				Acidity	CEC (Sum)	Base Saturation (Sum) pct.
			.01M CaCl <sub>2</sub>	H <sub>2</sub> O	Ca	Mg	Na	K			
			2:1	1:1	meq./100 g.						
0-3	B <sub>21</sub>	6.76	4.4	5.15	1.9	<0.1	0.1	0.2	32.5	34.8	6.6
3-11	B <sub>22</sub>	2.40	4.75	5.5	0.2	<0.1	0.1	0.1	20.1	20.6	2.4
11-19	B <sub>23</sub>	2.05	4.75	5.15	0.2	<0.1	<0.1	<0.1	19.5	20.0	2.5
19-30	C <sub>1X</sub>	0.45	4.9	5.5	0.1	<0.1	<0.1	0.1	5.9	6.3	6.3
30-40	C <sub>2X</sub>	0.14	4.95	5.65	0.3	<0.1	<0.1	0.1	3.9	4.5	13.3

## MARLOW MAPPING UNIT

## Site 1

Location: Blue Hill, Hancock County, Maine.

<u>Horizon</u>	<u>Depth</u>	<u>Description</u>
Ap	0-10"	Dark brown (10YR3/3) fine sandy loam; moderate, fine, granular structure; friable; abundant roots; abrupt wavy boundary. (9-11 inches thick)
A <sub>2</sub>	10-11"	Gray (10YR6/1) fine sandy loam; weak, very thin, platy structure; very friable; abundant roots; abrupt broken boundary. (0-1 inch thick)
B <sub>21</sub> h	11-14"	Dark reddish brown (5YR3/3) fine sandy loam; weak fine and medium, granular structure; very friable; abundant roots; abrupt wavy boundary. (3-4 inches thick)
B <sub>22</sub> ir	14-15"	Strong brown (7.5YR5/8) fine sandy loam; weak, fine and medium granular structure; very friable; abundant roots; abrupt broken boundary. (0-1 inch thick)
B <sub>23</sub>	15-20"	Yellowish brown (10YR5/4) and dark yellowish brown (10YR4/4) silt loam; weak fine and medium granular structure; friable; plentiful roots; abrupt smooth boundary. (4-6 inches thick)
B <sub>3</sub>	20-24"	Olive brown (2.5Y4/4) broken and light olive brown (2.5Y5/4) crushed fine sandy loam; moderate, thin and medium, platy structure; firm; few roots between plates; abrupt smooth boundary. (3-4 inches thick) Coatings on 25% of the plates are yellowish red (5YR4/6).
C <sub>1</sub> x	24-30"	Olive brown (2.5Y4/4) broken and light olive brown (2.5Y5/4) crushed fine sandy loam; moderate, medium and thick platy structure; very firm and brittle; no roots; gradual wavy boundary. (6-9 inches thick)
C <sub>2</sub> x	30-40"	Olive brown (2.5Y4/4) broken and light olive brown (2.5Y5/4) crushed loam; moderate, medium platy structure; very firm and brittle.

Depth (In.)	Horizon	TOTAL			SAND					SILT	
		Sand (2-05)	Silt (05-002)	Clay (<002)	Very Coarse (2-1)	Coarse (1-5) Percent of <2mm	Medium (.5-25)	Fine (25-1)	Very Fine (1-05)	(.05-.02)	(.02-.002)
0-10	A <sub>p</sub>	52.91	40.77	6.32	5.28	11.69	10.65	14.04	11.25	21.92	18.85
10-15	B <sub>21</sub> +B <sub>22</sub>	48.45	47.52	4.03	4.68	6.68	10.80	14.63	11.66	22.36	25.16
15-20	B <sub>23</sub>	35.04	55.00	9.96	4.65	5.50	6.34	9.91	8.64	22.40	32.60
20-24	B <sub>3</sub>	48.85	45.65	5.50	6.64	7.48	8.96	14.11	11.66	21.68	23.97
24-30	C <sub>1x</sub>	47.52	44.80	7.68	5.66	9.01	9.93	13.12	9.80	18.65	26.15
30-40	C <sub>2x</sub>	45.59	43.85	10.56	5.06	8.60	10.20	12.69	9.04	17.89	25.96

Depth (In.)	Horizon	WATER CONTENT (Bar Pressures)									Bulk Density g/cc.	Available Water in/in.
		0.059 pct.	0.1 pct.	0.33 pct.	0.67 pct.	1.0 pct.	2.0 pct.	3.0 pct.	5.0 pct.	15.0 pct.		
0-10	A <sub>p</sub>	48.2	45.6	41.1	40.1	40.1	27.4	22.6	19.9	18.2	0.88	0.20
10-15	B <sub>21</sub> +B <sub>22</sub>	50.5	49.0	41.7	38.8	34.7	22.3	20.1	16.6	14.4	0.96	0.26
15-20	B <sub>23</sub>	44.0	41.2	34.5	31.4	30.1	18.0	15.0	12.6	9.8	0.99	0.24
20-24	B <sub>3</sub>	17.9	17.5	15.8	14.7	14.0	8.9	8.3	6.8	5.3	1.60	0.17
24-30	C <sub>1x</sub>	18.1	17.6	16.6	16.1	15.8	13.5	12.2	10.3	7.4	1.72	0.16
30-40	C <sub>2x</sub>	17.7	17.5	16.6	15.9	15.5	13.2	12.4	10.2	7.1	1.71	0.16

Depth (In.)	Horizon	COARSE FRAGMENTS (Percent by Volume)								
		3+ inches	3-2 inches	2-1.5 inches	1-1.5 inches	1-75 inches	.75-.50 inches	.50-.25 inches	.25 in.-2 mm.	TOTAL
0-10	A <sub>p</sub>	5.8		1.5	1.3	0.3	0.6	1.1	2.5	13.1
10-15	B <sub>21</sub> +B <sub>22</sub>			0.7	1.0	0.7	1.1	1.5	2.8	7.8
15-20	B <sub>23</sub>	10.2	1.7	0.4	0.2	0.7	0.5	1.9	5.3	20.9
20-24	B <sub>3</sub>		1.0		0.4		0.2	0.8	4.8	7.2
24-30	C <sub>1x</sub>		1.5	0.4	0.8	0.2	0.7	1.5	5.8	10.9
30-40	C <sub>2x</sub>		1.2	0.4	1.0	0.6	0.5	1.3	5.6	10.6

Depth (In.)	Horizon	Organic Carbon pct.	pH		Exchangeable Bases				Acidity	CEC (Sum)	Base Saturation (Sum) pct.
			.01M CaCl <sub>2</sub>	H <sub>2</sub> O	Bases						
			2:1	1:1	Ca	Mg	Na	K			
0-10	A <sub>p</sub>	4.95	4.55	5.15	1.8	0.3	0.1	0.1	15.3	17.6	13.1
10-15	B <sub>21</sub> +B <sub>22</sub>	3.03	4.55	5.05	0.9	0.1	0.1	0.1	16.5	17.7	6.8
15-20	B <sub>23</sub>	1.54	4.75	5.2	0.1	<0.1	<0.1	0.1	11.8	12.2	3.3
20-24	B <sub>3</sub>	0.45	4.9	5.3	<0.1	<0.1	<0.1	0.1	6.0	6.4	6.2
24-30	C <sub>1x</sub>	0.23	5.0	5.6	0.4	<0.1	<0.1	0.2	6.0	6.8	11.8
30-40	C <sub>2x</sub>	0.15	5.2	5.75	0.6	0.2	<0.1	0.2	5.5	6.6	16.7

## MARLOW MAPPING UNIT

## Site 2

Location: Ellsworth, Hancock County, Maine

<u>Horizon</u>	<u>Depth</u>	<u>Description</u>
O <sub>2</sub>	3-0"	Black (10YR2/1) silt loam; weak, fine, granular structure; very friable; abundant roots; abrupt, wavy boundary. (2-3 inches thick)
A <sub>2</sub>	0-1"	Gray (10YR5/1) gravelly silt loam; weak, fine and medium, granular structure; friable; abundant roots; abrupt broken boundary. (0-2 inch thick)
B <sub>21h</sub>	1-3"	Dark reddish brown (5YR3/3) fine sandy loam; weak, fine and medium, granular structure; friable; abundant roots; abrupt wavy boundary. (1-3 inches thick)
B <sub>22ir</sub>	3-9"	Strong brown (7.5YR5/6) fine sandy loam; weak, fine and medium, granular structure; friable; abundant roots; cleary wavy boundary. (5-7 inches thick)
B <sub>23</sub>	9-16"	Yellowish brown (10YR5/6) fine sandy loam; weak, medium and thick, platy structure; friable; plentiful roots; clear wavy boundary. (6-8 inches thick)
B <sub>3</sub>	16-21"	Light olive brown (2.5Y5/4) fine sandy loam; weak, medium platy structure; friable; few roots; clear wavy boundary. (4-6 inches thick)
C <sub>1x</sub>	21-27"	Olive (5Y5/3) gravelly fine sandy loam; moderate, thick and very thick, platy structure; firm and brittle; very few root hairs between peds; diffuse wavy boundary. Strong brown (7.5YR5/6) stains about root hairs on 5% of ped surface. (5-7 inches thick)
C <sub>2x</sub>	27-40"	Like horizon above except gravelly sandy loam texture

Depth (In.)	Horizon	TOTAL			SAND						
		Sand (2-05)	Silt (.05-.002)	Clay (<.002)	Very Coarse (2-1)	Coarse (1-.5) Percent of <2mm	Medium (.5-.25)	Fine (.25-.1)	Very Fine (.1-.05)	(.05-.02)	(.02-.002)
3-0	O <sub>2</sub>	38.50	53.24	8.26	5.35	6.41	6.81	10.23	9.70	29.33	23.91
0-1	A <sub>2</sub>	40.28	55.12	4.60	7.40	7.14	6.59	9.82	9.33	27.75	27.37
1-9	B <sub>21</sub> + B <sub>22</sub>	50.20	46.58	3.22	8.08	9.11	8.61	13.35	11.05	27.11	19.47
9-16	B <sub>23</sub>	55.95	41.85	2.20	8.44	10.38	10.07	14.24	12.82	27.45	14.40
16-21	B <sub>3</sub>	54.62	42.97	2.41	7.04	8.66	11.38	14.90	12.64	23.86	19.11
21-27	C <sub>1x</sub>	57.13	41.05	1.82	7.56	9.13	10.97	16.29	13.18	23.53	17.52
27-40	C <sub>2x</sub>	65.57	32.93	1.50	10.08	13.26	13.20	16.91	12.12	19.09	13.84

Depth (In.)	Horizon	WATER CONTENT (Bar Pressures)										Bulk Density g/cc	Available Water In/In.
		0.059 pct.	0.1 pct.	0.33 pct.	0.67 pct.	1.0 pct.	2.0 pct.	3.0 pct.	5.0 pct.	15.0 pct.			
3-0	O <sub>2</sub>	199.4	185.5	137.6	133.2	132.5	48.0	34.6	33.2	32.9	0.24	0.25	
0-1	A <sub>2</sub>	38.3	35.6	29.1	25.8	25.0	12.0	8.6	8.1	7.5	1.07	0.23	
1-9	B <sub>21</sub> + B <sub>22</sub>	62.5	54.1	42.6	41.0	40.6	20.3	19.5	17.8	16.1	0.76	0.20	
9-16	B <sub>23</sub>	37.6	35.2	27.0	23.9	23.6	17.3	13.3	12.1	10.6	1.03	0.17	
16-21	B <sub>3</sub>	26.1	24.4	20.0	18.2	17.3	9.6	8.9	7.0	5.2	1.40	0.21	
21-27	C <sub>1x</sub>	18.3	17.1	13.7	12.3	11.7	7.8	6.9	5.3	4.1	1.61	0.15	
27-40	C <sub>2x</sub>	14.4	13.2	10.5	9.6	9.0	6.7	6.2	4.9	3.3	1.70	0.12	

Depth (In.)	Horizon	COARSE FRAGMENTS (Percent by Volume)									TOTAL
		3+ inches	3-2 inches	2-1.5 inches	1.5-1 inches	1-.75 inches	.75-.50 inches	.50-.25 inches	.25 in-2 mm.		
3-0	O <sub>2</sub>	1.4		1.2	<0.1	0.2	0.1	0.2	0.6	3.8	
0-1	A <sub>2</sub>	26.4		11.0	4.9	2.0	2.5	3.4	5.4	55.6	
1-9	B <sub>21</sub> + B <sub>22</sub>	5.1	1.6	1.3	1.5	0.9	1.2	1.7	3.7	17.0	
9-16	B <sub>23</sub>		2.0	0.4	1.1	0.8	1.1	2.5	5.7	13.6	
16-21	B <sub>3</sub>		1.2	1.0	2.0	0.7	1.0	2.7	6.4	15.0	
21-27	C <sub>1x</sub>	2.4		2.0	1.6	0.9	2.0	3.4	9.4	21.7	
27-40	C <sub>2x</sub>	2.0	1.8	0.6	1.4	0.7	1.5	6.1	7.8	21.9	

Depth (In.)	Horizon	Organic Carbon pct.	pH		Exchangeable Bases				Acidity	CEC (Sum)	Base Saturation (Sum) pct.
			.01M CaCl <sub>2</sub>	H <sub>2</sub> O	Ca	Mg	Na	K			
			2:1	1:1	meq/100 g.						
3-0	O <sub>2</sub>	18.35	3.15	3.8	2.1	1.6	0.1	0.4	31.8	36.0	11.7
0-1	A <sub>2</sub>	2.21	3.35	4.0	<0.1	0.2	<0.1	0.1	13.7	14.2	3.5
1-9	B <sub>21</sub> + B <sub>22</sub>	3.27	4.2	4.6	<0.1	0.1	<0.1	0.1	20.5	20.9	1.9
9-16	B <sub>23</sub>	1.46	4.6	4.8	<0.1	<0.1	<0.1	0.1	12.0	12.4	3.2
16-21	B <sub>3</sub>	0.48	4.75	5.0	<0.1	<0.1	<0.1	0.1	5.0	5.4	7.4
21-27	C <sub>1x</sub>	0.24	5.0	5.3	<0.1	<0.1	<0.1	0.1	4.2	4.6	8.7
27-40	C <sub>2x</sub>	0.24	5.25	5.25	<0.1	<0.1	<0.1	<0.1	4.0	4.4	9.1



## MARLOW MAPPING UNIT

## Site 3

Location: Orland, Hancock County, Maine.

<u>Horizon</u>	<u>Depth</u>	<u>Description</u>
Ap	0-8"	Dark brown (10YR3/3) silt loam; moderate, very fine and fine, granular structure; very friable; abundant roots; abrupt, wavy boundary. (8-10 inches thick)
A <sub>2</sub>	8-9"	Light gray (10YR6/1) fine sandy loam; weak, very thin, platy structure; very friable; abundant roots; abrupt broken boundary. (0-1 inch thick)
B <sub>21</sub> <sup>h</sup>	9-10"	Dusky red (2.5YR3/2) fine sandy loam; weak, very fine and fine, granular structure; friable; plentiful roots; abrupt broken boundary. (0-1 inch thick)
B <sub>22</sub> <sup>ir</sup>	10-14"	Strong brown (7.5YR5/6) fine sandy loam; weak, fine, granular structure; friable; plentiful roots; abrupt wavy boundary. (2-4 inches thick)
B <sub>23</sub>	14-17"	Yellowish brown (10YR5/4) fine sandy loam; weak, very fine and fine, granular structure; friable; plentiful roots; clear wavy boundary. (2-4 inches thick)
B <sub>3</sub>	17-21"	Olive brown (2.5Y4/4) loam; weak, thin and medium. platy structure; friable; few roots; clear wavy boundary. (3-5 inches thick)
C <sub>1</sub> <sup>x</sup>	21-30"	Olive brown (2.5Y4/4) broken and light olive brown (2.5Y5/4) crushed loam; moderate, thick, platy structure; firm and brittle; very few roots; gradual wavy boundary. (8-10" inches thick)
C <sub>2</sub> <sup>x</sup>	30-40"	Olive brown (2.5Y4/4) loam; moderate, thick and very thick, platy structure; very firm and brittle; no roots.

Depth (In.)	Horizon	TOTAL			SAND					SILT		
		Sand (2-05)	Silt (05-002)	Clay (<.002)	Very Coarse (2-1)	Percent of <2mm				Very Fine (.1-05)	(.05-02)	(.02-002)
						Coarse (1-3)	Medium (.5-25)	Fine (25-1)	Very Fine (.1-05)			
0-9	A <sub>P</sub>	39.33	52.25	8.42	5.92	5.39	6.27	10.44	11.31	20.97	31.28	
9-14	B <sub>21</sub> +B <sub>22</sub>	55.43	41.87	2.70	4.98	6.44	11.08	18.69	14.24	22.34	19.53	
14-17	B <sub>23</sub>	54.28	42.68	3.04	6.87	9.22	10.96	14.82	12.41	23.19	19.49	
17-21	B <sub>3</sub>	42.36	49.71	7.93	4.22	5.71	7.90	12.81	11.72	22.33	27.38	
21-30	C <sub>1x</sub>	39.73	46.01	14.26	4.15	5.03	7.48	12.41	10.66	19.16	26.85	
30-40	C <sub>2x</sub>	46.51	41.95	11.54	4.27	6.66	9.81	14.82	10.95	18.09	23.86	

Depth (In.)	Horizon	WATER CONTENT (Bar Pressures)									Bulk Density g/cc.	Available Water in /in
		0.059 pct.	0.1 pct.	0.33 pct.	0.67 pct.	1.0 pct.	2.0 pct.	3.0 pct.	5.0 pct.	15.0 pct.		
0-9	A <sub>P</sub>	50.4	47.2	40.5	38.6	37.6	22.8	22.1	19.5	18.8	0.96	0.21
9-14	B <sub>21</sub> +B <sub>22</sub>	71.8	65.5	59.0	49.4	47.8	30.3	26.1	22.9	20.7	0.75	0.24
14-17	B <sub>23</sub>	30.1	28.8	24.4	21.2	19.7	14.3	12.2	10.2	8.8	1.30	0.20
17-21	B <sub>3</sub>	20.2	19.7	18.2	17.2	16.4	11.6	10.4	8.3	6.4	1.69	0.20
21-30	C <sub>1x</sub>	17.5	17.3	16.4	15.8	15.5	13.1	12.2	10.6	6.7	1.69	0.16
30-40	C <sub>2x</sub>	17.9	17.7	16.7	15.6	15.5	13.0	12.2	10.2	7.7	1.60	0.14

Depth (In.)	Horizon	COARSE FRAGMENTS (Percent by Volume)								TOTAL
		3+ inches	3-2 inches	2-1.5 inches	1.5-1 inches	1-75 inches	.75-50 inches	.50-25 inches	25 in- 2 mm.	
0-9	A <sub>P</sub>			1.1	1.8	0.6	1.2	1.7	3.7	10.1
9-14	B <sub>21</sub> +B <sub>22</sub>				0.3	0.3	0.6	1.6	3.1	15.1
14-17	B <sub>23</sub>			0.7	0.3	0.5	0.8	2.4	6.9	11.6
17-21	B <sub>3</sub>	11.0		2.2	1.1	0.4	0.4	0.6	3.1	19.8
21-30	C <sub>1x</sub>		0.3		0.4	0.2	0.4	1.2	4.6	7.1
30-40	C <sub>2x</sub>			0.9	0.5	0.8	0.6	1.5	5.0	9.3

Depth (In.)	Horizon	Organic Carbon pct.	pH		Exchangeable				Acidity	CEC (Sum)	Base Saturation (Sum) pct
			.01M CaCl <sub>2</sub>	H <sub>2</sub> O	Bases						
					Ca	Mg	Na	K			
			meq./100 g.								
0-9	A <sub>P</sub>	4.23	4.45	5.15	2.1	0.2	<0.1	0.1	15.1	17.6	14.2
9-14	B <sub>21</sub> +B <sub>22</sub>	3.38	4.6	5.25	0.9	0.1	<0.1	<0.1	21.9	23.1	5.2
14-17	B <sub>23</sub>	1.54	4.75	5.3	0.2	<0.1	<0.1	<0.1	11.9	12.4	4.0
17-21	B <sub>3</sub>	0.58	4.85	5.2	<0.1	<0.1	<0.1	0.1	7.0	7.4	5.4
21-30	C <sub>1x</sub>	0.16	4.7	5.4	0.4	0.1	<0.1	0.1	5.3	6.0	11.7
30-40	C <sub>2x</sub>	0.11	4.5	5.35	0.5	0.2	<0.1	0.2	5.2	6.2	16.1

## MARLOW MAPPING UNIT

## Site 4

Location: Ellsworth, Hancock County, Maine

<u>Horizon</u>	<u>Depth</u>	<u>Description</u>
A <sub>p</sub>	0-7"	Very dark grayish brown (10YR3/2) silt loam; moderate fine granular structure; very friable; abundant roots; abrupt wavy boundary. (7-9 inches thick)
A <sub>2</sub>	7-8"	Light gray (10YR6/1) silt loam; weak, very thin, platy structure; very friable, abundant roots; abrupt wavy boundary. (1-3 inches thick)
B <sub>21</sub> h	8-9"	Dusky red (2.5YR3/2) sandy loam; weak very fine, granular structure; friable; abundant roots; abrupt, wavy boundary. (0.5-1 inch thick)
B <sub>22</sub> ir	9-11"	Yellowish red (5YR4/6) sandy loam; weak very fine granular structure; friable; abundant roots; abrupt wavy boundary. (2-3 inches thick)
B <sub>23</sub>	11-17"	Yellowish brown (10YR5/6) fine sandy loam; weak, very fine and fine granular structure; friable; plentiful roots; abrupt smooth boundary. (5-6 inches thick)
B <sub>3</sub>	17-23"	Light olive brown (2.5Y5/4) fine sandy loam; weak, thick, platy structure; friable; few roots; clear wavy boundary. (5-7 inches thick)
C <sub>1x</sub>	23-30"	Olive (5Y5/3) fine sandy loam; moderate medium platy structure; firm and brittle; no roots; gradual wavy boundary. (6-8 inches thick)
C <sub>2x</sub>	30-40"	Olive (5Y5/3) loam; moderate, medium and very thick, platy structure; firm and brittle.

Depth (in.)	Horizon	TOTAL			SAND							(05-02)	(02-002)
		Sand (2-05)	Silt (05-002)	Clay (< 002)	Very Coarse (2-1)	Coarse (1-3) Percent of <2mm	Medium (1.5-25)	Fine (25-1)	Very Fine (1-05)				
0-8	A <sub>D</sub>	44.09	50.34	5.57	5.70	6.75	7.56	12.58	11.50	24.11	26.23		
8-11	B <sub>21</sub> + B <sub>22</sub>	68.81	29.27	1.92	8.72	12.76	14.45	18.51	14.37	19.09	10.18		
11-17	B <sub>23</sub>	45.90	47.58	0.52	7.07	7.54	8.21	12.15	10.93	23.80	23.78		
17-23	B <sub>3</sub>	45.30	48.87	5.83	6.58	7.53	8.01	12.56	10.62	24.10	24.77		
23-30	C <sub>1</sub> x	48.28	46.87	4.85	7.78	7.98	8.42	13.46	10.64	20.10	26.77		
30-40	C <sub>2</sub> x	44.06	46.84	9.10	6.02	7.37	8.38	12.28	10.01	20.57	26.27		

Depth (in.)	Horizon	WATER CONTENT (Bar Pressure)										Bulk Density g/cc.	Available Water in/in.
		0.059 pct.	0.1 pct.	0.31 pct.	0.67 pct.	1.0 pct.	2.0 pct.	3.0 pct.	5.0 pct.	15.0 pct.			
0-8	A <sub>D</sub>	56.9	54.0	43.0	40.2	39.0	18.0	17.3	16.2	15.8	0.75	0.20	
8-11	B <sub>21</sub> + B <sub>22</sub>	57.1	50.5	38.3	34.7	34.0	22.5	21.5	21.3	20.0	0.83	0.15	
11-17	B <sub>23</sub>	40.4	37.0	26.3	22.6	21.3	12.3	11.3	10.2	9.0	1.00	0.17	
17-23	B <sub>3</sub>	24.8	23.9	20.9	18.1	16.7	8.4	7.7	5.9	4.7	1.40	0.23	
23-30	C <sub>1</sub> x	17.9	17.4	15.7	14.0	12.9	8.6	7.8	6.0	4.0	1.51	0.18	
30-40	C <sub>2</sub> x	15.8	15.2	13.4	12.5	12.0	9.4	8.6	6.9	4.2	1.67	0.15	

Depth (in.)	Horizon	COARSE FRAGMENTS (Percent by Volume)								TOTAL
		3+ inches	3-2 inches	2-1.5 inches	1.5-1 inches	1-0.75 inches	0.75-0.5 inches	0.5-0.25 inches	0.25 in. - 2 mm	
0-8	A <sub>D</sub>	6.4			0.7	1.0	0.7	1.7	3.2	13.7
8-11	B <sub>21</sub> + B <sub>22</sub>				0.8	0.5	0.7	1.9	5.5	9.4
11-17	B <sub>23</sub>			0.3	0.4	0.1	0.6	1.7	6.2	9.3
17-23	B <sub>3</sub>				0.4	0.6	0.7	2.0	7.2	10.9
23-30	C <sub>1</sub> x		1.4	1.2	1.6	1.1	1.4	2.7	8.7	18.1
30-40	C <sub>2</sub> x	11.8	1.8	2.2	0.7	0.5	0.8	1.3	6.6	25.7

Depth (in.)	Horizon	Organic Carbon pct.	pH		Exchangeable				Acidity	CEC (Sum)	Base Saturation (Sum) pct.
			.01M CaCl <sub>2</sub>	H <sub>2</sub> O 1:1	Bases						
			Ca	Mg	Na	K	meq./100 g.				
0-8	A <sub>D</sub>	4.24	4.4	5.0	1.8	0.2	<0.1	<0.1	16.8	19.0	11.6
8-11	B <sub>21</sub> + B <sub>22</sub>	3.27	4.9	5.35	1.4	0.1	<0.1	<0.1	20.7	22.4	7.6
11-17	B <sub>23</sub>	1.49	4.9	5.4	0.3	<0.1	<0.1	<0.1	11.2	11.8	5.1
17-23	B <sub>3</sub>	0.62	4.95	5.4	<0.1	<0.1	<0.1	<0.1	7.6	8.0	5.0
23-30	C <sub>1</sub> x	0.74	5.0	5.5	<0.1	<0.1	<0.1	0.1	6.0	6.4	6.2
30-40	C <sub>2</sub> x	0.13	4.85	5.6	0.2	0.1	<0.1	0.1	5.6	6.1	8.2

## MARLOW MAPPING UNIT

## Site 5

Location: Dedham, Hancock County, Maine

<u>Horizon</u>	<u>Depth</u>	<u>Description</u>
O <sub>1</sub>	5-4"	Loose leaves and branches.
O <sub>2</sub>	4-0"	Black (5YR2/1); weak very fine granular structure; very friable; abundant roots; abrupt smooth boundary. (3-4 inches thick)
A <sub>2</sub>	0-3"	Light gray (10YR6/1) silt loam; weak, very thin, and thin, platy structure; very friable; abundant roots; abrupt wavy boundary. (1-5 inches thick)
B <sub>21</sub> <sup>h</sup>	3-4"	Very dusky red (2.5YR2/2) gravelly fine sandy loam; weak, very fine, granular structure; very friable; abundant roots; abrupt wavy boundary. (0.5-1 inch thick)
B <sub>22</sub> <sup>ir</sup>	4-8"	Dark reddish brown (2.5YR3/4) gravelly fine sandy loam; weak, very fine and fine granular structure; friable; abundant roots; abrupt wavy boundary. (3-5 inches thick)
B <sub>23</sub>	8-17"	Yellowish brown (10YR5/6) gravelly silt loam; weak, thin and medium platy structure; friable; plentiful roots; clear wavy boundary. (8-10 inches thick)
B <sub>3</sub>	17-23"	Light olive brown (2.5Y5/6) silt loam; weak, thick, platy structure; friable; few roots; clear smooth boundary. (5-7 inches thick)
C <sub>1</sub> <sup>x</sup>	23-30"	Light olive brown (2.5Y5/4) fine sandy loam; moderate thick and very thick platy structure; firm and brittle; very few roots; gradual wavy boundary. (6-8 inches thick)
C <sub>2</sub> <sup>x</sup>	30-40"	Same as horizon above except gravelly fine sandy loam; moderate very thick platy structure.

Depth (In.)	Horizon	TOTAL			SAND							
		Sand (2-05)	Silt (05-002)	Clay (<.002)	Very Coarse (2-1)	Coarse (1-5)	Medium (1.5-25)	Fine (25-1)	Very Fine (1-05)	(.05-.02)	(.02-.002)	
4-0	O <sub>2</sub>											
0-3	A <sub>2</sub>	36.66	58.02	5.32	2.86	4.04	5.74	11.70	12.32	29.34	28.68	
3-8	B <sub>21</sub> +B <sub>22</sub>	49.30	45.04	5.66	6.55	7.52	8.54	14.27	12.42	23.08	21.96	
8-17	B <sub>23</sub>	41.12	54.86	4.02	5.96	6.17	7.43	11.48	10.08	27.27	27.59	
17-23	B <sub>3</sub>	42.26	52.42	5.32	6.45	6.88	7.71	11.56	9.66	25.00	27.42	
23-30	C <sub>1</sub> x	43.91	49.55	6.54	6.15	6.65	7.91	12.50	10.70	21.63	27.92	
30-40	C <sub>2</sub> x	45.92	47.32	6.76	6.20	7.09	8.50	13.15	10.98	20.26	27.06	

Depth (In.)	Horizon	WATER CONTENT (Bar Pressure)										Bulk Density g./cc.	Available Water in./in.
		0.059 pct.	0.1 pct.	0.33 pct.	0.67 pct.	1.0 pct.	2.0 pct.	3.0 pct.	5.0 pct.	15.0 pct.			
4-0	O <sub>2</sub>	229.0	212.8	201.7	197.6	197.0	91.7	90.1	87.6	77.3	0.17	0.21	
0-3	A <sub>2</sub>	29.2	26.7	20.2	17.6	16.7	10.6	8.6	7.1	7.0	1.14	0.15	
3-8	B <sub>21</sub> +B <sub>22</sub>	80.7	74.6	60.1	57.3	57.2	26.1	25.4	24.4	24.1	0.61	0.22	
8-17	B <sub>23</sub>	47.9	42.7	33.0	31.0	30.4	17.1	15.6	13.7	12.5	0.87	0.18	
17-23	B <sub>3</sub>	25.9	24.8	21.5	19.3	18.2	11.6	10.5	8.3	6.2	1.44	0.22	
23-30	C <sub>1</sub> x	21.7	20.8	18.1	16.3	15.2	9.2	8.2	6.0	4.4	1.54	0.21	
30-40	C <sub>2</sub> x	19.8	19.2	16.8	15.2	14.2	8.8	7.8	5.9	3.8	1.57	0.20	

Depth (In.)	Horizon	COARSE FRAGMENTS (Percent by Volume)								TOTAL
		3+ inches	3-2 inches	2-1.5 inches	1.5-1 inches	1-.75 inches	.75-.50 inches	.50-.25 inches	.25 in.-2 mm.	
4-0	O <sub>2</sub>	5.4			0.1		<0.1	<0.1	0.4	6.1
0-3	A <sub>2</sub>				2.2	1.1	1.7	2.3	3.6	10.9
3-8	B <sub>21</sub> +B <sub>22</sub>		5.7	3.6	2.2	1.2	1.6	2.2	4.3	20.8
8-17	B <sub>23</sub>		1.9	3.9	1.5	1.5	1.7	2.4	3.8	16.7
17-23	B <sub>3</sub>		3.2	0.6	1.6	0.7	1.3	2.5	4.8	14.7
23-30	C <sub>1</sub> x	2.8			1.4	0.8	1.9	2.9	6.3	16.1
30-40	C <sub>2</sub> x	2.0	1.0	0.9	2.5	0.9	1.7	2.9	5.7	17.6

Depth (In.)	Horizon	Organic Carbon pct.	pH		Exchangeable Bases				Acidity	CEC (Sum)	Base Saturation (Sum) pct.
			.01M CaCl <sub>2</sub>	H <sub>2</sub> O	Ca	Mg	Na	K			
			2.1	1.1	meq./100 g.						
4-0	O <sub>2</sub>	29.92	3.15	3.6	7.8	1.8	0.2	1.4	43.2	54.4	20.6
0-3	A <sub>2</sub>	1.76	3.2	3.65	0.9	0.2	<0.1	0.1	11.2	12.5	10.4
3-8	B <sub>21</sub> +B <sub>22</sub>	5.32	4.1	4.5	0.4	0.2	<0.1	0.1	25.8	26.6	3.0
8-17	B <sub>23</sub>	2.26	4.5	4.8	<0.1	0.1	<0.1	0.1	13.8	14.2	2.8
17-23	B <sub>3</sub>	0.86	4.75	5.05	<0.1	<0.1	<0.1	0.1	7.3	7.7	5.2
23-30	C <sub>1</sub> x	0.32	5.05	5.35	<0.1	<0.1	<0.1	0.1	4.2	4.6	8.7
30-40	C <sub>2</sub> x	0.17	4.9	5.3	<0.1	<0.1	<0.1	0.1	3.2	3.6	11.1

**Chemical and Physical Properties of the Allagash,  
Hermon, Howland and Marlow Soil Mapping Units**

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