

**Preliminary Assessment of the Surface Water Resources
of the Goose Pond Watershed in Keene, NH.**

**Funded and completed by DAVID MILLS
Antioch New England Graduate School**

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INTRODUCTION

Abstract- The "Goose Pond forest" is a property owned by the City of Keene in the northern part of Keene, NH. It consists of a beautiful pond (Goose Pond) of about 42 acres in size surrounded by hills, woods, streams and trails. The property serves as a recreation and solitude mecca for the general public. Ongoing talk of proposals to log this property to varying degrees have prompted interest in doing studies on the Natural Resources on the property to determine what is there, what needs protection, and where if anywhere the cutting of trees should occur and to what degree. This study constitutes just a portion of such a Natural Resource Inventory. It is, nonetheless, an important first step in the inventory of one of Keene's greatest open space areas.

This study of the water resources on the Goose Pond Property in Keene, NH. was carried out during the Spring of 1994, with the field work mostly done in April and May of this year. I did an assessment of the surface water supplies including the ponds, streams and associated wetlands. The wetlands were located and assessed following methods outlined in the 1989 Federal Manual for Identifying and Delineating Jurisdictional Wetlands within the limitations imposed by winter conditions. Wetland location and assessment was undertaken through the use of aerial photos, existing maps, soils and on site identification of trees and shrubs. Potentially hydric soils of the Goose Pond area were mapped using information provided by the SCS Cheshire County Soils book. Given the conditions present in this area during winter and early spring months (i.e. snow cover) I did not take into consideration the herbaceous layer. Using the Routine-On Site Method of the 1989 Federal Manual and the local topographical, NWI, and SCS soils maps, 6 wetlands were located and assessed. They ranged from about 1 acre to over 40 acres for Goose Pond. All were in the Goose Pond watershed and on city owned land with the exception of the forested wetland draining out of Goose Pond to the south east. This wetland, however, was and is on city owned land. Generally, the wetlands were found to be in depressional areas though not necessarily at lower elevations. The study revealed that topography and hydrologic alterations, such as a beaver dam, can create conditions favorable to wetland development.

Overview and Purpose:

What is now Goose Pond was originally a much smaller pond with an associated bog which was dammed and used as a water supply for the city of Keene in 1868. All of the land around the pond was posted and thus off limits to most of Keene's citizens until 1984 when the city removed Goose Pond from the City's water supply

system (Matteson et. al., 1993). The city of Keene developed a plan in 1984 and revised it in 1992 for the protection of the lands around Goose Pond. Today Goose Pond and its adjacent forests serve as a focal point for recreation, solitude, and nature study for the citizens of Keene. There are currently competing ideas as to just how this land should be "managed" ie preserved, logged, or in some way altered. The so-called "Greater Goose Pond Forest" contains several wetlands. This study will be a first step in learning where all these wetlands are, what there size is, and what type they are. Unfortunately, time limitations and winter/spring conditions did not allow for actual delineations of the wetlands. However, this assessment can be seen as an important first step.

In conducting this study I have utilized the Goose Pond Plan 1992 Revision, the Keene 1:25000 topographical map, the SCS Cheshire County Soils map (sheet # 18), and the National Wetlands Inventory map for Keene which is also on a 1:25000 scale. Aerial photos 1-10 - 1-13 and 2-10 - 2-12 were examined for a preliminary view of the landscape. I further consulted The 1989 Federal Manual and the Wetland Classification system of Cowardin (Cowardin et. al.) for wetland verification and classification. Finally several books aided in tree and shrub identification (Petrides, 1988; Magee, 1981; Campbell et. al., 1975) and plant indicator statuses were obtained from the National List of Plant Species that occur in Wetlands: 1988 National Summary (Reed, 1988).

The hypothesis considered in this study relates to the location of the wetlands to the surrounding topography. Briefly, I hypothesized that the wetlands of the Goose Pond Watershed should

be found in low lying areas such as near Goose Pond as this is the lowest point of land within the watershed. Additionally, these wetlands should be associated with streams and/or ponds as water tends to collect in and flow through depressions.

Justification: The city of Keene is interested in a complete inventory of the Greater Goose Pond Forest as there is the possibility of various types of forest management occurring there in the future. While Goose Pond has been disconnected from Keene's Water supply, it remains a popular recreation source for the town's citizens. This inventory would act as a part of a complete inventory of its natural resources. Knowing where the wet soils are located can be indicative of where the wetlands are found. Additionally, knowing the areas where human activities can have the largest effect on water quality within the water courses and associated wetlands (ie steep slopes near the pond, streams, riparian habitat) is useful. These are areas that would be best left alone for at least aesthetic reasons, and possibly for health reasons.

Description of study Site: Goose Pond was located in the northern section of Keene, NH. The pond was surrounded by forested hills which collectively make up what is considered the "Greater Goose Pond Forest." Originally a part of the water supply for the city of Keene, NH. the pond was disconnected from the town's water supply in 1984. Goose pond and its surrounding lands persist as a reserve enjoyed by the residents of the Keene area. It is a popular area for hiking, solitude, picnicking, and nature study. The area

comprising the Greater Goose Pond Forest covers an area of about 1000 acres, is owned by the city of Keene and at the time of this study was being considered for some future management such as selective timber harvest.

The area under study includes the Goose Pond Watershed and the adjacent forested wetland to the southeast of the pond. An electrical power line bisects this area north of Goose Pond running northwest to southeast. A parking lot off of Surry East Road provides access to the study area. The scrub-shrub wetlands adjacent to this parking lot are not within the Goose Pond watershed and are also privately owned. They were therefor not included in this study. The city owned Drummund Hill parcel lies outside of the Goose Pond watershed to the south and was not contiguous with the rest of the city owned land. It was not included within this study.

Gunn Road runs in a north northeasterly direction from Surry East Road and dead ends at a farm near the Keene-Gilsum town line. There are several houses, in addition to the farm along this road and there for, one can presume that septic systems also exist along this road. The wetlands in the northern end of the watershed can be reached from Gunn Road by following the steel tower electric power line south easterly from Gunn Road. The northern most wetland lies at the top of the watershed just over the Keene-Gilsum town line.

Access to the watershed is further aided by foot trails. From the parking lot, a hiking trail leads to the pond (a 5 minute walk)

*Area
adj to
Drummund
Hill
is not included
in study*

where it joins a trail that completely encircles the pond. The area around the dam located at the southwestern shore of the pond is largely clear of vegetation and was one of the more visited sections of the pond. Travelling to the more remote areas, such as north of the power line, along the northern shore of the pond and around or through the forested wetland off of the southeastern shore can provide considerable solitude and even a "wilderness" type of experience. The pond itself still looks pure and is the site of many birds and other wildlife. Standing at the south end of the pond, the electric power line to the north is the only artificial disturbance of the landscape. From the northern end, the grassy area near the dam is the only alteration visible. Generally, the areas closest to Surry road on the west gave the least "wild" feeling as more people and sounds of cars became evident.

Steep slopes and glacial till make up most of the landscape. Therefore, stony soils are common and level areas hard to find. Stonewalls running along the trail and in various areas close to the pond are indications that the area that is the Goose Pond watershed was once cleared of trees. Like most of New England, the Goose Pond watershed does not possess virgin stands of trees.

Goose Pond is fed by two major perennial streams to the north and drained by two perennial streams to the south. Most of the forests are of mixed hardwoods with Eastern Hemlock and White Pine scattered about. Eastern Hemlock's are found especially in shady areas such as along streams and in narrow valleys.

Goose Pond
Watershed

METHODS AND MATERIALS

The first step in this study was to obtain a map from which to derive a working base map. The USGS topographical map for Keene was used. The portion of the map containing the study area (originally at a scale of 1:25000) was xeroxed and enlarged by 1.25 % to 1:20000. This enlargement permitted the investigator to rectify the topographical map to the same scale (1:20000) of the SCS soil map. Transparency paper was overlaid on the topographical map. The pond and all streams were traced in blue. The watershed was delineated in green (dashed lines) by drawing at right angles to the topographical lines and keeping any streams draining away from Goose Pond outside of the Watershed boundary.

The boundaries of the city owned land were obtained by taking a map of the city land from the Department of Parks and Recreation and adjusting it with the xerox enlarger until the scale matched up with the topographical base map. This map of the city land can also be found on the back of the 1992 Plan revision.

With the city land, pond, streams, and watershed boundaries all drawn, the next step was to get an idea of the location of the wetlands. A National Wetland Inventory (NWI) map was used. The map was at a 1:25000 scale and was enlarged by 1.25 % to 1:20000. These maps do not contain all wetlands, but they do contain the major ones. The NWI maps also classify the wetlands. The watershed, streams, ponds, wetlands, and city owned "Goose Pond Forest" boundaries are shown on the topographical map in figure 1.

A general soils map for the study area was obtained using sheet # 18 of the SCS Cheshire County Soil Survey. Areas indicating poorly or very poorly drained soil were outlined. These are soils that are, or could potentially be, hydric. Consequently, these are the only areas that could contain wetlands as hydric soils are one of the 3 mandatory criteria for the existence of a jurisdictional wetland (as defined by the 1989 Federal Manual). A xeroxed copy of this soils map is shown in figure 2A. A key the soils is found in figure 2B.

The total distance of all streams within the watershed as well as within the boundaries of the city owned "Goose Pond Forest" were determined (see figure 3). This was done using a map wheel obtained from the library of Antioch New England Graduate School. The map wheel provided stream distance in centimeters (map wheel contained an inches scale as well). The resulting figure in centimeters was converted via calculations into both kilometers and miles for the actual stream distances.

Aerial photos 1-10, 1-11, 1-12, 1-13 and 2-10, 2-11, and 2-12 were viewed at Keene city Hall, Department of Planning. These aerial photos provided a 3 dimensional view of the landscape, thus revealing topography. Even though images are a little exaggerated, the aeriels give an idea of the land's topographic layout and consequently where the depressional areas are, a useful feature in locating wetlands.

In order to actually assess the wetlands within the study area field work was necessary. The wetlands visited included those

marked on the NWI map and located within the watershed of Goose pond. NWI maps give a good "first view" of the location of wetlands. One forested wetland was indicated on the NWI map but was not located within the watershed. This wetland was visited because of its size, isolation and resulting significance. Two wetlands visited were not indicated on the NWI map. They were at the top of the Goose Pond watershed and were indicated on the USGS topographical map.

Once the wetland in question was located in the field a 10 square meter plot was set up well within the wetland community. This was done using a 50 meter measuring tape. The boundaries of the plot were marked off using red flagging tape. Within the plot all of the trees and shrubs were identified. This was done using plant ID resources (Petrides, 1988; Campbell 1975). Trees were those plants over 20 feet tall and > 5 inches DBH. Shrubs were 3-20 feet tall and 1"-5" DBH. Saplings were less than 5" DBH and over 20 feet in height (Van de Poll 1994 Personal Communication). The wetland indicator status of each tree or shrub was obtained with the aid of the text National Plant Species that Occur in Wetlands: 1988 National Summary. The percent of hydrophytes within the plot were calculated. Any hydrologic adaptations of non hydrophytes (not water adapted plants) were observed and noted. A similar plot was set up in the adjacent upland and the same procedure followed. The herbaceous layer was not considered in this study.

Using a soil auger, soil cores were taken in each plot of wetlands 1, 2, 4, and 5. With the aid of Munsell Color Charts The

color of the soil matrix was examined. If a chroma of 2 or less was obtained at 20 inches or 50 cm, and other indications of hydric soil and hydrology existed, the soil was considered hydric.

Data sheets for the Routine On-Site method were used. Given the size of the forested wetland south of Goose Pond, 3 wetland plots were done in an attempt to approximate the intermediate method.

The largest wetland in the study area was that of Goose Pond itself. This wetland consisted of the pond and the immediate bordering vegetation. Therefore, a plot 50 meters by one meter was set up opposite where the entrance trail hits the pond trail. The plot was set up in this manner in an attempt to show that this wetland is influenced more by the rise and fall of the pond's water level than by other factors and thus was made bigger and much more narrow than the other plots.

This assessment provided information on the existence and vegetational composition of the wetlands visited. The size, in acres, of each wetland, as well as for the entire watershed, was calculated (See figure 4). For purposes of determining wetland acreage, the wetland boundaries on the NWI maps were taken as the actual wetland boundaries.

RESULTS

With the use of the map wheel, it was determined that there were 7.26 miles or 11 km of streams with in the Goose Pond Watershed. The city owned "Goose Pond Forest" contained 6.0 miles or 9.6 km of streams.

Miles of
streams

In all, 6 wetlands were located and assessed in this study. All were within the watershed of Goose Pond with the exception of the Forested wetland draining to the Southeast of the pond. This wetland was included in the study because of its size and the fact that its northern end bordered Goose Pond, being separated only by about 5 feet of ground over which the path crossed. Specifics on the data collected are found in Appendix A.

The first wetland visited was listed as a forested wetland on the NWI map. It borders the south east shore of Goose Pond and flows in a southerly direction. Given the size of this wetland, 3 wetland plots and two upland plots were set up.

This wetland actually started as more of a shrub-scrub wetland with standing water its the northern end towards Goose Pond. As one heads south the wetland quickly becomes dominated by trees. A mixture of Birch, Pine, Hemlock, Alder and other species (Plot 1A) grades gradually towards a nearly completely Hemlock dominated wetland (Plot 1D Southward). This wetland was special because of its size (approximately 10 acres) and the feeling of isolation it offers. There was little to no disturbance to this wetland and it is easy to get lost if one has no compass! Soils are saturated and clayey. The Soils are predominately Greenwood Mucky Peat, which is on the New Hampshire hydric soils list. While the herbaceous layer was not recorded, an abundance of mosses and Goldthread (Coptis groenlandica) were observed. These are plants that are commonly found in wetland areas (Reed, 1988).

The second Wetland considered was Goose Pond. Due to the Size

Wetland #1
10 acres

and Depth of Goose Pond (about 42 acres and greater than 6.6 feet deep) it is considered a Lacustrine wetland. See Appendix B for Wetland Classification definitions (taken from Cowardin, et. al.). Most of Goose Pond contained open water. Most of the soils around Goose pond were upland soils. As mentioned in the introduction, Goose Pond owes its existence to the construction of a dam at the south end. Therefore the surrounding soils were originally of an upland variety (see soil map figure 2A). The immediate shore line (to about 1-2 meters inland) is influenced by the waters of Goose Pond and therefore has developed hydrophytic vegetation and hydric soil immediately adjacent to the water's edge. Leatherleaf and High Bush Blueberry dominate along the water's edge. It is interesting to note here that in areas where land falls steeply to the water, upland vegetation is found right down to the water line. Other areas with gradually sloping shores had wider zoneations of leatherleaf and High Bush Blueberry as indicated through on-site observation.

Wetlands 3-6 were located at the northern end of the watershed. To access them, Gunn Road was followed to the steel tower electric Power line. The power line was followed southeasterly to the 3rd tower. Here, in a topographic low point lay wetland # 3 which was about 1 acre in size. The NWI map classifies it as an emergent wetland. Mostly dead trees scattered through open water were visible, but it is possible that emergents become visible later in the season. Aside from dead standing trees, numerous red maples were found in groups of 3-4 each. This

1400-42
ACRES

area
on 1/10/1975
pond location

Wetland #
3
1 acre in
size

wetland graded almost imperceptibly into wetland # 4, a forested Red Maple dominated wetland about 2 acres in size. These two wetlands are hydrologically integrated. Two aspects of the fauna of these wetlands were immediately evident. One was the loud chorus of quacking Wood Frogs indicating that many amphibians inhabit this wetland. The other was the evidence of current Beaver activity. The wetland owes much of its current existence to at least two beaver dams, one at the south end of the emergent wetland near the power line and the other near the north end of this wetland. A Beaver lodge was visible near the southeast shore of the Palustrine Emergent wetland. All around the shores, downed trees showed evidence of beaver activity such as teeth marks on the wood. Hydric soils were assumed to be present in the emergent wetland because 1) the ground is permanently inundated by several feet of water, 2) facultative plants (i.e. Red Maple) dominate the living vegetation, and 3) the wetland boundary along the shore was abrupt.

Leaving the forested wetland, the perennial stream (flowing due north of the wetland) was followed to the headwaters of the watershed. The stream eventually branched, one fork turning east, the other fork continuing northward. In each case, the stream ended in an area that was in a shallow topographic bowl with no defined stream flowing through it. The stream forked in several directions and ended in swampy area. This is typical of headwaters situations (personal communication; Ryner, 1994). Each of these wetlands (#5 and #6) were small and were essentially Black and Yellow Birch swamps of 1 and 2 acres respectively. These wetlands

1/2
- 12/16/10
of 12/16/10
Stream

were significant because 1) of their isolation from the pedestrian traffic around Goose Pond and 2) they represent the origin of one of the principle perennial streams flowing into Goose Pond. These wetlands were not classified on the NWI map. However, site visits revealed that they are clearly Palustrine Forested Black and yellow Birch Dominated wetlands.

DISCUSSION

As previously mentioned, Goose Pond represented not only the most prominent feature in the watershed in question, but was also at the heart of the Goose Pond Forest and therefor was the focal point for visitors. The current plan for the Goose Pond area (Matteson, 1993) calls for maintaining the lands as a wilderness region accessible to the public. Therefor, any recommendations should focus on preserving the aesthetics and water quality of this lovely pond. While the pond is no longer part of the city water supply, people do relax around it, fish from it, and occasionally swim in it.

Approximately 7 miles of streams flow through the Goose Pond watershed draining mostly from the northern end of the watershed into the Pond. Most of the streams (see map, figure in the Goose Pond watershed flow from and through wetlands.

The NWI map located and classified the major wetlands in the study area. However, smaller wetlands (ie an acre or less) such as at the headwaters of the watershed were not marked on the NWI map. This is evidence that these maps should be used as a guide and not

as a definitive resource.

It should also be noted that the boundaries of the city owned "Goose Pond Forest" are very approximate. They were drawn from the map on the back page of the 1992 revision of the Plan for the Greater Goose Pond Forest and rectified with the Xerox enlarger to the scale of the topographic base map.

Most of the human influences (disturbances) are concentrated near the access point which is the parking lot on Surry East Road. People also tend to congregate near the dam at the southwest end of Goose Pond. An additional parking lot at the south end of the Drummond Hill Parcel could relieve some of the congestion that occasionally occurs at the present parking lot.

Gunn Road runs in a northerly direction paralleling the western boundary of the watershed. There are a few houses along this road and at least one farm at the end of the road near the Keene-Gilsum town line. The city of Keene should focus on this area for land acquisition. It is possible that in the future people may find the area adjacent to Gunn road attractive for development and residences. If not carefully controlled this could potentially effect the views from the eastern shore of Goose Pond. Residences along Gunn road are outside of the Goose Pond watershed. Therefore, any septic leakage would not flow into Goose Pond.

An electric transmission line bisects the watershed running from the northwest to southeast. One of the steel towers is visible from Goose Pond. The city should carefully monitor this transmission line, especially the application of any herbicides

around the Palustrine Forested/Emergent wetland. This wetland is home to considerable wildlife including Beaver and Wood Frogs.

Future land acquisition should focus on the western portion of the watershed. The eastern end is relatively isolated and probably not very attractive to development since it is separated from route 10 by steep forested slopes. The western side of the watershed is close to Gunn Road which could be provide access to development. Additionally, acquisition connecting the Drummund Hill Parcel to the main portion of the Goose Pond Forest could provide additional protection to the wilderness character of the Forested Wetland at the southeast edge of Goose Pond (Wetland #1).

Future attempts to selectively log the forest should avoid the wetlands evaluated in this study and areas immediately adjacent to streams. Effort should be made to prevent erosion of slopes which could cause siltation into the streams and eventually degrade the quality and character(aesthetically especially) of Goose Pond. Given the character of the region (frequently steep slopes), the area does not lend itself to clear cutting. Therefor, only selective methods of cutting should be considered if any logging is to be done.

CONCLUSIONS

6 wetlands were evaluated in this study. 4 of them were located and mapped on the NWI map. Two others were located at the headwaters of the watershed. There are undoubtedly other small

wetlands within the watershed that were not located in this study. Furthermore, limitations on time provided opportunity for only a preliminary assessment and not a full assessment or delineation of the wetlands.

In general, the hypothesis was confirmed. The wetlands found were associated with streams or ponds and were located in depressional areas. However, disturbances, such as beaver dams, can create ponding of water that topography alone would not. An example of this is the forested and adjoining emergent wetland adjacent to the power line where beavers have dammed the stream.

Recommendations made in the discussion section will be helpful in maintaining the aesthetic and ecological integrity of the watershed. One additional recommendation, if time and finances permit, would be to walk over the entire watershed and locate all of the minor wetlands that may not have been picked up in this study. Finally, an accurate delineation of at least the larger wetlands (such as those on the NWI map) would be advisable.

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NWI Map for Keene, NH. 1:25000 scale

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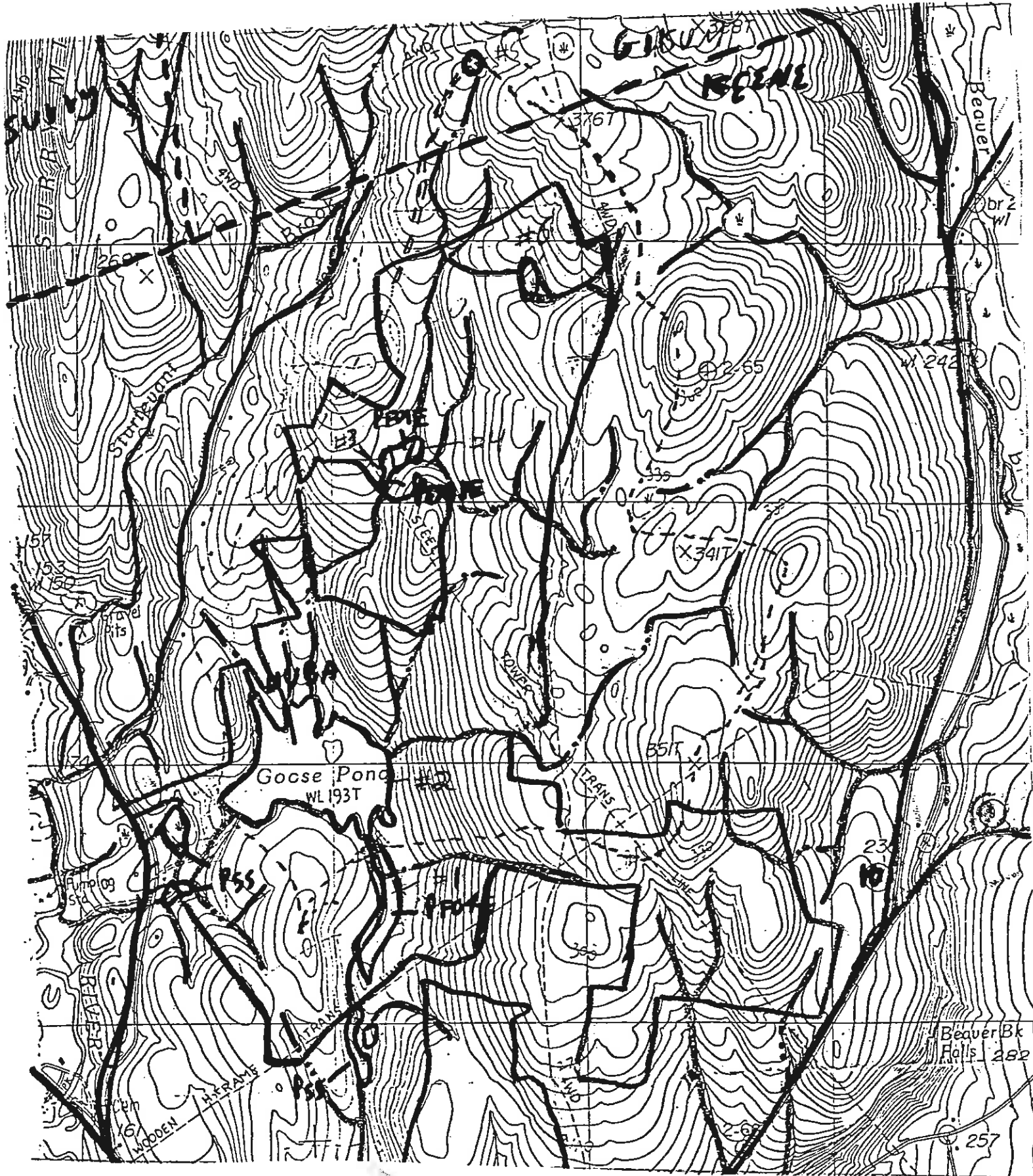


Figure 1
Topographic Base Map
--- = watershed boundary
Scale = 1:20,000 (Metric)



Figure 2 A
 SCS Soil Map
 Scale = 1:20,000
 --- = watershed boundaries
 (61D) = potentially hydric soil (poorly + very poorly drained)

Soils of Goose Pond Watershed
From SCS Soil Survey of Cheshire County

22	Cotton Fine Sandy Loam	ED
57	Becket Fine sandy Loam	WD
61	Tunbridge-Lyman Rock Outcrop Complex	WD
73	Berkshire Fine sandy loam, very stony	WD
107	Rippowam Saco Complex	VP and PD*
143	Monadnock Fine sandy loam, very stony	WD
161	Lyman-Tunbridge rock outcrop Complex	WD
169	Sunapee Fine Sandy Loam, V stony	MWD
295	Greenwood Mucky Peat	VPD *
347B	Lyme and Moosilaukee soils, very stony	PD, SPD*
395	Chocorua Mucky Peat	VPD*
365	Berkshire and Monadnock Soils, ext. stony	WD
495	Ossipee Mucky Peat	VPD *
647B	Pillsbury Fine Sandy Loam	PD to SPD*

*Potentially Hydric Soils are #'s 295, 347B, 395, ~~607~~, and 495, 647
These soils are listed as poorly or very poorly drained

Figure 2B
Legend of Soils of
Goose Pond Watershed

Figure 3
Total Stream Distance in Goose Pond Watershed
and Greater Goose Pond Forest

Stream Distance
Calculated with Map wheel

Watershed 55 cm = 11,000 meters or 11 km.
55cm on map = 23 inches on map = 38333 feet on ground = 7.26 miles
of streams in watershed.

For Goose Pond Forest: 55-13 + 6 = 48 cm on map.
48 cm x 200 meters = 9600 meters = 9.6 km on ground.
19 inches x 20000 = 380,000 inches = 31666.667 feet = 5.997 = 6.0
miles.
6.0 miles of streams in Goose Pond Forest Land.

David Mills
NRI

Calculations to determine size of one acre.
@ 1:20000 scale

1 acre = 43,560 square feet = 208.71 feet X 208.71 feet.
1 acre = 63.63 meters X 63.63 meters = 4049 square meters.

on map 1 cm = 200 meters = 656 feet on ground.

209 feet/656 feet/cm on map = .32 cm on map.

Therefore, on map .32 cm X .32 cm = 1 acre

square of .3 cm X .3 cm = one acre. Most accurate Possible given ruler limitations.

One square on graph paper = .6 cm X .6 cm
.09 cm x 4 = .36 cm (.6 X .6).

Therefor, one square = four (4) acres.

Acreage is approximate!

	Wetland Classification	
Wetland # 1	PFO4E	10 acres
Wetland # 2	LUBA (Goose Pond).....	42 acres
Wetland # 3	PEM 1E (Beaver Pond).....	0.5-1.0 acre
Wetland # 4	PFO 1E	2 acres
Wetland # 5	(PF).....	1 acre
Wetland # 6	(PF).....	2 acres

Goose Pond Watershed = about 943 acres.
Squares counted. One inch square = 64 acres.

City owned Land (Goose Pond Plan) 1,046 acres.

Figure 4
Acreage Calculations

This graph paper used in acreage calculations

APPENDIX A

Data Sheets (Wetlands 1-6)

PLOT 1A Located 7 meters 2600 from pipe near Goose Pond. Plot is 10 meters square.

DATA FORM 1
WETLAND DETERMINATION

Applicant Name: _____ Application Number: _____ Project Name: Goose Pond watershed
 State: NH County: Cheshire Legal Description: _____ Township: _____ Range: _____
 Date: 4/18/94 Plot No.: 1A Section: _____

Vegetation [list the three dominant species in each vegetation layer (5 if only 1 or 2 layers)]. Indicate species with observed morphological or known physiological adaptations with an asterisk.

# of Individuals	Species	Indicator Status	Species	Indicator Status
	<u>Trees</u>		<u>Herbs</u>	
2	1. White Pine	FACUP	7.	N/A
2	2. Black Birch	FACW	8.	
1	3. Yellow Birch	FAC*	9.	
	<u>Saplings/shrubs</u>		<u>Woody vines</u>	
15	4. Eastern Hemlock	FACUP	10.	N/A
4	5. Speckled Alder	FACWET*	11.	
3	6. White Pine	FACUP	12.	

% of species that are OBL, FACW, and/or FAC: 60. Other indicators: _____
 Hydrophytic vegetation: Yes No . Basis: 75% species are hydrophytic.

Soil
 Series and phase: Green wood On hydric soils list? Yes ; No
 Mottled: Yes ; No . Mottle color: _____; Matrix color: _____.
 Gleyed: Yes No . Other indicators: Munsell color 5Y 3-2 @ 3.0 cm
 Hydric soils: Yes No ; Basis: chroma under 2 in top soil saturated soil.

Hydrology
 Inundated: Yes ; No . Depth of standing water: _____
 Saturated soils: Yes ; No . Depth to saturated soil: 0 11 0 cm
 Other indicators: _____
 Wetland hydrology: Yes ; No . Basis: _____
 Atypical situation: Yes ; No
 Normal Circumstances? Yes No
 Wetland Determination: Wetland ; Nonwetland _____

Comments: _____

Determined by: David Mills

Plot 1B Located 10 meter 900 from pipe
 Plot is 10 meters square

DATA FORM 1
 WETLAND DETERMINATION

Applicant Name: _____ Application Number: _____ Project Name: Goose Pond w
 State: NH County: Cheshire Legal Description: _____ Township: _____ Range: _____
 Date: 4/18/94 Plot No.: 1B Section: _____

Vegetation [list the three dominant species in each vegetation layer (5 if only 1 or 2 layers)]. Indicate species with observed morphological or known physiological adaptations with an asterisk.

Species	Indicator Status	Species	Indicator Status
<u>Trees</u>		<u>Herbs</u>	
4 1. Eastern Hemlock	FAC u P	7.	
4 2. White Pine	FAC u P	8.	N/A
3.		9.	
<u>Saplings/shrubs</u>		<u>Woody vines</u>	
4.		10.	
5. N/A		11.	N/A
6.		12.	

% of species that are OBL, FACW, and/or FAC: 0%. Other indicators: _____

Hydrophytic vegetation: Yes _____ No . Basis: no hydrophytic plants or adaptations for hydrophytic conditions

Soil

Series and phase: Lyme/Massiluvke On hydric soils list? Yes ; No _____

Mottled: Yes _____; No . Mottle color: N/A; Matrix color: @solum 7.5 YR 4-4

Gleyed: Yes _____; No . Other indicators: N/A

Hydric soils: Yes _____; No ; Basis: chroma above 2, no saturation

Hydrology

Inundated: Yes _____; No . Depth of standing water: _____

Saturated soils: Yes _____; No . Depth to saturated soil: _____

Other indicators: _____

Wetland hydrology: Yes _____; No . Basis: _____

Atypical situation: Yes _____; No

Normal Circumstances? Yes _____; No

Wetland Determination: Wetland _____; Nonwetland

Comments: _____

Determined by: David Mills

PLOT 1C 100 Paces (65 meters) 180° from southeast
edge of Plot 1A,

DATA FORM 1
WETLAND DETERMINATION

Applicant Name: _____ Application Number: _____ Project Name: _____
State: NH County: Cheshire Legal Description: _____ Township: NVE Range: _____
Date: 4/18/94 Plot No.: 1C Section: _____

Vegetation [list the three dominant species in each vegetation layer (5 if only 1 or 2 layers)]. Indicate species with observed morphological or known physiological adaptations with an asterisk.

<u>Species</u>		<u>Indicator Status</u>	<u>Species</u>		<u>Indicator Status</u>
<u>Trees</u>					
6	1. Eastern Hemlock	FACUP	<u>Herbs</u>		
4	2. Red oak*	FACUP	7.		
	3.		8.		N/A
			9.		
<u>Saplings/shrubs</u>					
	4. Eastern Hemlock		<u>Woody vines</u>		
4	5. Red oak*	none	10.		
	6.		11.		N/A
			12.		

% of species that are OBL, FACW, and/or FAC: 0%. Other indicators: N/A.
Hydrophytic vegetation: Yes ___ No Basis: no hydrophytes

or upland plants w/ hydrophytic vegetation

Soil

Series and phase: _____ On hydric soils list? Yes ___; No ___.
Mottled: Yes ___; No Mottle color: _____; Matrix color: _____.
Gleyed: Yes ___ No Other indicators: _____
Hydric soils: Yes ___ No ; Basis: _____

Hydrology

Inundated: Yes ___; No . Depth of standing water: _____
Saturated soils: Yes ___; No . Depth to saturated soil: _____
Other indicators: _____
Wetland hydrology: Yes ___; No . Basis: _____
Atypical situation: Yes ___; No .
Normal Circumstances? Yes No ___.
Wetland Determination: Wetland _____; Nonwetland

Comments: no hydrophytic plants or wetland hydrology present

Determined by: David Mills

PLOT 1D North eastern end 12 meters west of Plot 1C
 100 Paces south of 1A (65 meters south of 1A).

DATA FORM 1
 WETLAND DETERMINATION

Applicant Name: _____ Application Number: _____ Project Name: _____
 State: VA County: Cheshire Legal Description: _____ Township: _____ Range: _____
 Date: 4/18/94 Plot No.: 1D Section: _____

Vegetation [list the three dominant species in each vegetation layer (5 if only 1 or 2 layers)]. Indicate species with observed morphological or known physiological adaptations with an asterisk.

Species	Indicator Status	Species	Indicator Status
<u>Trees</u>			
1. Eastern Hemlock	*FAC UP	7.	
2. Red maple	FAC	8.	
3. White pine	FAC UP	9.	
<u>Saplings/shrubs</u>			
4.		10.	
5.		11.	
6.		12.	

% of species that are OBL, FACW, and/or FAC: 33. Other indicators: _____

Hydrophytic vegetation: Yes No ____ Basis: Hemlock dominated
 BUT Hemlocks are adapted to hydrophytic conditions. - propped roots

Soil
 Series and phase: Greenwood On hydric soils list? Yes ; No ____
 Mottled: Yes ; No ____ Mottle color: _____; Matrix color: _____
 Gleyed: Yes No ____ Other indicators: _____
 Hydric soils: Yes No ____; Basis: Munsell color N5 @ 50cm

Hydrology
 Inundated: Yes ; No ____ Depth of standing water: couple inches
 Saturated soils: Yes ; No ____ Depth to saturated soil: _____
 Other indicators: _____
 Wetland hydrology: Yes ; No ____ Basis: _____
 Atypical situation: Yes ____; No
 Normal Circumstances? Yes No ____
 Wetland Determination: Wetland ; Nonwetland _____

Comments: Soil is soaked, gley soils present.
 Hemlocks dominate with adaptations such as propped roots.

Determined by: David Mills
 B2

PLOT 1 E located 50% way between 1A and 1D.

DATA FORM 1
WETLAND DETERMINATION

Applicant Name: _____ Application Number: _____ Project Name: _____
State: NH County: Cheshire Legal Description: _____ Township: XXX Range: _____
Date: 4/18/94 Plot No.: 1 E Section: _____

Vegetation [list the three dominant species in each vegetation layer (5 if only 1 or 2 layers)]. Indicate species with observed morphological or known physiological adaptations with an asterisk.

	Species	Indicator Status	Species	Indicator Status
<u>Trees</u> <u>E. pennsylvanica</u>				
13	1. Green Ash	FACW	<u>Herbs</u>	
1	2. Red Maple	FAC	7.	
2	3. Paper Birch	FACUP	8.	N/A
			9.	
<u>Saplings/shrubs</u>				
26	4. Eastern Hemlock	FACUP	<u>Woody vines</u>	
	5.		10.	N/A
	6.		11.	
			12.	

% of species that are OBL, FACW, and/or FAC: 50%. Other indicators: _____
Hydrophytic vegetation: Yes No . Basis: wetland dominated by Green Ash (FACW) and Eastern Hemlock which has wetland adaptations

Soil
Series and phase: Greenwood On hydric soils list? Yes ; No .
Mottled: Yes ; No . Mottle color: _____; Matrix color: _____.
Gleyed: Yes No Other indicators: _____
Hydric soils: Yes No ; Basis: Munsell color 5Y4-2 from 12 inches or 30cm mottles present

Hydrology
Inundated: Yes ; No . Depth of standing water: 12" from surface.
Saturated soils: Yes ; No . Depth to saturated soil: _____.
Other indicators: _____
Wetland hydrology: Yes ; No . Basis: _____
Atypical situation: Yes ; No .
Normal Circumstances? Yes No .
Wetland Determination: Wetland ; Nonwetland

Comments: Substrate is mossy with lots of old thread (FACW) present
Determined by: David Mills

Plot 2A
 1 meter wide, 50 meters long - along shore of Goose Pond
 located opposite path
 1200 to Pt of land opposite shore

DATA FORM 1
 WETLAND DETERMINATION

Applicant Name: _____ Application Number: _____ Project Name: _____
 State: MA County: Cheshire Legal Description: _____ Township: _____ Range: _____
 Date: _____ Plot No.: 2A Section: _____

Vegetation [list the three dominant species in each vegetation layer (5 if only 1 or 2 layers)]. Indicate species with observed morphological or known physiological adaptations with an asterisk.

Species	Indicator Status	Species	Indicator Status
<u>Trees</u>		<u>Herbs</u>	
1. <u>None</u>		7.	
2.		8. <u>N/A</u>	
3.		9.	
<u>Saplings/shrubs</u>		<u>Woody vines</u>	
4. <u>Leatherleaf 380</u>	<u>OBL</u>	10. <u>N/A</u>	
5. <u>High Bush Blueberry 145</u>	<u>FACW</u>	11.	
6.		12.	
% of species that are OBL, FACW, and/or FAC: <u>100%</u> . Other indicators: _____			
Hydrophytic vegetation: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> . Basis: <u>all plants in plot are OBL to FACW.</u>			

Soil F3C
 Series and phase: Berkshire Fine sandy loam On hydric soils list? Yes ; No
 Mottled: Yes ; No . Mottle color: 2.5YR4/2; Matrix color: 2.5YR4/2
 Gleyed: Yes No Other indicators: _____
 Hydric soils: Yes No ; Basis: chroma 2.0 at 15 cm

Hydrology
 Inundated: Yes ; No . Depth of standing water: _____
 Saturated soils: Yes ; No . Depth to saturated soil: _____
 Other indicators: _____
 Wetland hydrology: Yes ; No . Basis: _____
 Atypical situation: Yes ; No
 Normal Circumstances? Yes No
 Wetland Determination: Wetland ; Nonwetland

Comments: area is lacustrine wetland. Hydrophytes exist due to influence of Goose Pond which exists due to dam @ south end. Soil not originally hydric.
F3C is Berkshire Fine Sandy Loam well drained soil 1555 soil survey
 Determined by: David Mills
 B2

**DATA FORM
ROUTINE ONSITE DETERMINATION METHOD¹**

Field Investigator(s): David Mills Date: 4/19/94
 Project/Site: 10M west of base pond shore State: NH County: Cheshire
 Applicant/Owner: City of Keene Plant Community #/Name: _____
 Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community? Upland
 Yes No _____ (If no, explain on back)
 Has the vegetation, soils, and/or hydrology been significantly disturbed? 2B
 Yes _____ No (If yes, explain on back)

VEGETATION

Dominant Plant Species		Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1.	<u>Red oak</u>	<u>13</u>	<u>FACUP</u>	<u>Tree</u>	11.	_____
2.	<u>Red oak</u>	<u>21</u>	<u>FACUP</u>	<u>Sapling</u>	12.	_____
3.	<u>Red oak</u>	<u>10</u>	<u>FACUP</u>	<u>Shrub</u>	13.	_____
4.	<u>High bush blueberry</u>	<u>1</u>	<u>FACWET</u>	<u>Shrub</u>	14.	_____
5.	<u>Witch Hazel</u>	<u>2</u>	<u>FAC-</u>	<u>Shrub</u>	15.	_____
6.	_____	_____	_____	_____	16.	_____
7.	_____	_____	_____	_____	17.	_____
8.	_____	_____	_____	_____	18.	_____
9.	_____	_____	_____	_____	19.	_____
10.	_____	_____	_____	_____	20.	_____

Percent of dominant species that are OBL, FACW, and/or FAC 0%
 Is the hydrophytic vegetation criterion met? Yes No _____
 Rationale: Red oak dominant in this plot. It is an upland tree.

Soil type 73C

SOILS

Series/phase: Berkshire Fine sandy loam Subgroup: 2
 Is the soil on the hydric soils list? Yes _____ No Undetermined _____
 Is the soil a Histosol? Yes _____ No Histic epiedon present? Yes _____ No
 Is the soil: Mottled? Yes _____ No Gleyed? Yes _____ No
 Matrix Color: 50cm 7.5 YR 4-6 Mottle Colors: _____
 Other hydric soil indicators: N/A
 Is the hydric soil criterion met? Yes _____ No
 Rationale: _____

HYDROLOGY

Is the ground surface inundated? Yes _____ No Surface water depth: N/A
 Is the soil saturated? Yes _____ No
 Depth to free-standing water in pit/soil probe hole: none reached
 List other field evidence of surface inundation or soil saturation: _____
 Is the wetland hydrology criterion met? Yes _____ No
 Rationale: _____

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes _____ No
 Rationale for jurisdictional decision: vegetation is upland to FACUP and soils do not qualify as hydric

¹ This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

² Classification according to "Soil Taxonomy."

**DATA FORM
ROUTINE ONSITE DETERMINATION METHOD¹**

Field Investigator(s): David Mills Date: 4/20/94
 Project/Site: Goose Pond water shed State: _____ County: _____
 Applicant/Owner: City of Keene Plant Community #/Name: Beaver Pond
 Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community?
 Yes No _____ (If no, explain on back)

Has the vegetation, soils, and/or hydrology been significantly disturbed?
 Yes No _____ (If yes, explain on back)

Plot 3
10 m² south west edge of pond.

Beaver dam has raised water level.

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. <u>Acer rubrum</u>	<u>IS</u>	<u>FAC</u>	11. _____	_____	_____
2. <u>Picea canadensis</u>	<u>I</u>	<u>FACVP</u>	12. _____	_____	_____
3. _____	_____	_____	13. _____	_____	_____
4. _____	_____	_____	14. _____	_____	_____
5. _____	_____	_____	15. _____	_____	_____
6. _____	_____	_____	16. _____	_____	_____
7. _____	_____	_____	17. _____	_____	_____
8. _____	_____	_____	18. _____	_____	_____
9. _____	_____	_____	19. _____	_____	_____
10. _____	_____	_____	20. _____	_____	_____

Percent of dominant species that are OBL, FACW, and/or FAC 100%

Is the hydrophytic vegetation criterion met? Yes No _____

Rationale: Hydrophytes + Red maple + Liriodendron + living sedge

SOILS

Series/phase: Lyme + Moor 1A/C 347B Subgroup: 2

Hydric soil assumed present. Hydrophytes dominant, inundated soil by pond.

Is the soil on the hydric soils list? Yes No _____ Undetermined _____

Is the soil a Histosol? Yes No _____ Histic epipedon present? Yes _____ No _____

Is the soil: Mottled? Yes _____ No _____ Gleyed? Yes _____ No

Matrix Color: N/A Mottle Colors: N/A

Other hydric soil indicators: _____

Is the hydric soil criterion met? Yes _____ No _____

Rationale: Hydric soil assumed present as per on-site Routine Method. Sedges, hydrophytes, Liriodendron, Acer rubrum

HYDROLOGY

Is the ground surface inundated? Yes No _____ Surface water depth: To 2 or 3 feet

Is the soil saturated? Yes No _____

Depth to free-standing water in pit/soil probe hole: N/A

List other field evidence of surface inundation or soil saturation. N/A

Is the wetland hydrology criterion met? Yes No _____

Rationale: inundation due to beaver dam

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes No _____

Rationale for jurisdictional decision: Red maple in pond, prevalence of Red Maple (FAC)

1. Meadow Sweet outside flat near water, inundation of water

¹ This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

² Classification according to "Soil Taxonomy."

**DATA FORM
ROUTINE ONSITE DETERMINATION METHOD¹**

Field Investigator(s): David Mills Date: 4/20/94
 Project/Site: Goose Pond Watershed State: NH County: Cheshire
 Applicant/Owner: City of Keene Plant Community #/Name: _____
 Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community? PLOT # 4
 Yes No _____ (If no, explain on back)
 Has the vegetation, soils, and/or hydrology been significantly disturbed?
 Yes _____ No (If yes, explain on back)

Dominant Plant Species	Indicator Status	Stratum	VEGETATION		
			Dominant Plant Species	Indicator Status	Stratum
1. <u>Acer rubrum</u> ^{indiv.} <u>lf</u>	<u>EAC</u>	<u>Tree</u>	11. _____	_____	_____
2. <u>Dead shrubs</u>	_____	<u>Shrub</u>	12. _____	_____	_____
3. <u>Thuja canadensis</u>	<u>FACW</u>	<u>Seedling</u>	13. _____	_____	_____
4. _____	_____	_____	14. _____	_____	_____
5. _____	_____	_____	15. _____	_____	_____
6. _____	_____	_____	16. _____	_____	_____
7. _____	_____	_____	17. _____	_____	_____
8. _____	_____	_____	18. _____	_____	_____
9. _____	_____	_____	19. _____	_____	_____
10. _____	_____	_____	20. _____	_____	_____

Percent of dominant species that are OBL, FACW, and/or EAC 50%
 Is the hydrophytic vegetation criterion met? Yes _____ No
 Rationale: 1 of 2 living species are fac - EAC w/ Acer rubrum accounts for over 90% of live individual trees/shrubs

SOILS

Series/phase: Lyme/Mossilavice Subgroup: 2
 Is the soil on the hydric soils list? Yes No _____ Undetermined _____
 Is the soil a Histosol? Yes No _____ Histic epiedon present? Yes _____ No _____
 Is the soil: Mottled? Yes No _____ Gleyed? Yes _____ No
 Matrix Color: 5Y 4-1 & 8H Mottle Colors: _____
 Other hydric soil indicators: _____
 Is the hydric soil criterion met? Yes No _____
 Rationale: chromium reduction is other part of soil

HYDROLOGY

Is the ground surface inundated? Yes No _____ Surface water depth: water at surface w/ just below
 Is the soil saturated? Yes _____ No
 Depth to free-standing water in pit/soil probe hole: 6"
 List other field evidence of surface inundation or soil saturation: _____
 Is the wetland hydrology criterion met? Yes No _____
 Rationale: saturation + inundation present

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes No _____
 Rationale for jurisdictional decision: Everet wetland dominated by Red maple soil saturated to weak surface

¹ This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.
² Classification according to "Soil Taxonomy."

**DATA FORM
ROUTINE ONSITE DETERMINATION METHOD¹**

Field Investigator(s): David Mills Date: _____
 Project/Site: False Pond watershed State: NH County: Cheshire
 Applicant/Owner: City of Keene Plant Community #/Name: PLT5A
 Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community?
 Yes No _____ (If no, explain on back)

Has the vegetation, soils, and/or hydrology been significantly disturbed?
 Yes _____ No (If yes, explain on back)

PLT5A - Headwaters
 of watershed
 10 meter² plot

VEGETATION

Dominant Plant Species	#	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. <u>Betula nigra</u>	<u>7</u>	<u>FACW</u>	<u>Tree</u>	11. _____	_____	_____
2. <u>Betula alleghaniensis</u>	<u>3</u>	<u>FAC</u>	<u>Tree</u>	12. _____	_____	_____
3. <u>Isoetes canadensis</u>	<u>2</u>	<u>EACV</u>	<u>Tree</u>	13. _____	_____	_____
4. <u>Betula nigra</u>	<u>8</u>	<u>FACW</u>	<u>Sapling</u>	14. _____	_____	_____
5. <u>B. alleghaniensis</u>	<u>8</u>	<u>FAC</u>	<u>Sapling</u>	15. _____	_____	_____
6. _____	_____	_____	_____	16. _____	_____	_____
7. _____	_____	_____	_____	17. _____	_____	_____
8. _____	_____	_____	_____	18. _____	_____	_____
9. _____	_____	_____	_____	19. _____	_____	_____
10. _____	_____	_____	_____	20. _____	_____	_____

Percent of dominant species that are OBL, FACW, and/or FAC 92%

Is the hydrophytic vegetation criterion met? Yes No _____

Rationale: 25% of trees + shrubs sampled were hydrophytes

SOILS

Series/phase: 164B Sunapee Fine Sandy Loam Subgroup:² _____

Is the soil on the hydric soils list? Yes _____ No Undetermined _____

Is the soil a Histosol? Yes _____ No Histic epipedon present? Yes _____ No _____

Is the soil: Mottled? Yes _____ No _____ Gleyed? Yes _____ No

Matrix Color: _____ Mottle Colors: _____

Other hydric soil indicators: _____

Is the hydric soil criterion met? Yes _____ No _____

Rationale: _____

HYDROLOGY

Is the ground surface inundated? Yes No _____ Surface water depth: standing water @ surface

Is the soil saturated? Yes No _____

Depth to free-standing water in pit/soil probe hole: N/A

List other field evidence of surface inundation or soil saturation. _____

Is the wetland hydrology criterion met? Yes No _____

Rationale: _____

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes No _____

Rationale for jurisdictional decision: Prevalence of hydrophytic vegetation and soil saturation

¹ This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

² Classification according to "Soil Taxonomy."

**DATA FORM
ROUTINE ONSITE DETERMINATION METHOD¹**

Field Investigator(s): David Mills Date: 4/20/94
 Project/Site: Wapese Pond watershed State: NH County: cheshire
 Applicant/Owner: city of Keene Plant Community #/Name: Plot 5B
 Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community?
 Yes No (If no, explain on back)

Has the vegetation, soils, and/or hydrology been significantly disturbed?
 Yes No (If yes, explain on back)

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. <u>Fagus grandifolia</u>	<u>6</u> FACU	<u>STRUB</u>	11. _____	_____	_____
2. <u>Tsuga canadensis</u>	<u>1</u> FACU	<u>STRUB</u>	12. _____	_____	_____
3. <u>Isyga canadensis</u>	<u>2</u> FACU	<u>TREE</u>	13. _____	_____	_____
4. <u>Acer rubrum</u>	<u>6</u> FAC	<u>TREE</u>	14. _____	_____	_____
5. <u>Quercus rubra</u>	<u>2</u> FACU-	<u>TREE</u>	15. _____	_____	_____
6. <u>Ulmus americana</u>	<u>1</u> FACW-	<u>TREE</u>	16. _____	_____	_____
7. _____	_____	_____	17. _____	_____	_____
8. _____	_____	_____	18. _____	_____	_____
9. _____	_____	_____	19. _____	_____	_____
10. _____	_____	_____	20. _____	_____	_____

Percent of dominant species that are OBL, FACW, and/or FAC 60%
 Is the hydrophytic vegetation criterion met? Yes No

Rationale: > 50% hydrophytes in a wide more individuals are not hydrophytic

SOILS

Series/phase: 61D Tunbridge-Lyman Subgroup: 2

Is the soil on the hydric soils list? Yes No Undetermined _____

Is the soil a Histosol? Yes No Histic epiedon present? Yes No

Is the soil: Mottled? Yes No Gleyed? Yes No

Matrix Color: 5Y 4/4 @ 50 cm Mottle Colors: N/A

Other hydric soil indicators: _____

Is the hydric soil criterion met? Yes No

Rationale: @ 50 cm chroma is not < 2 unless, 5Y 4/4.

HYDROLOGY

Is the ground surface inundated? Yes No Surface water depth: N/A

Is the soil saturated? Yes No

Depth to free-standing water in pit/soil probe hole: _____

List other field evidence of surface inundation or soil saturation. _____

Is the wetland hydrology criterion met? Yes No

Rationale: _____

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes No

Rationale for jurisdictional decision: Plot is next to defined stream draining from wetland soil is well drained

¹ This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

² Classification according to "Soil Taxonomy."

**DATA FORM
ROUTINE ONSITE DETERMINATION METHOD¹**

Field Investigator(s): David Mills Date: 4/27/94
 Project/Site: Goss Pond Watershed State: NH County: Cheshire
 Applicant/Owner: City of Keene Plant Community #/Name: Plot 6A
 Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community? wetland at right fork of stream,
 Yes No (If no, explain on back)
 Has the vegetation, soils, and/or hydrology been significantly disturbed?
 Yes No (If yes, explain on back)

VEGETATION

Dominant Plant Species	#	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. <u>Pinus strobus</u>	<u>1</u>	<u>FACV</u>	<u>Tree</u>	11. _____	_____	_____
2. <u>Acer rubrum</u>	<u>1</u>	<u>FAC</u>	<u>"</u>	12. _____	_____	_____
* 3. <u>Quercus kurra</u>	<u>4</u>	<u>FACV</u>	<u>"</u>	13. _____	_____	_____
4. <u>Betula nigra</u>	<u>6</u>	<u>FACW</u>	<u>"</u>	14. _____	_____	_____
5. <u>Betula nigra</u>	<u>5</u>	<u>FACW</u>	<u>Sapling</u>	15. _____	_____	_____
6. <u>Tsuga canadensis</u>	<u>1</u>	<u>FACV</u>	<u>Seedling</u>	16. _____	_____	_____
7. _____	_____	_____	_____	17. _____	_____	_____
8. _____	_____	_____	_____	18. _____	_____	_____
9. _____	_____	_____	_____	19. _____	_____	_____
10. _____	_____	_____	_____	20. _____	_____	_____

Percent of dominant species that are OBL, FACW, and/or FAC 60%
 Is the hydrophytic vegetation criterion met? Yes No
 Rationale: > 50% hydrophytes

SOILS

Series/phase: Lyme-Mossilauke (347B) Subgroup:² _____
 Is the soil on the hydric soils list? Yes No Undetermined _____
 Is the soil a Histosol? Yes No Histic epipedon present? Yes No
 Is the soil: Mottled? Yes No Gleyed? Yes No
 Matrix Color: 5Y 5/2 @ 15cm Mottle Colors: _____
 Other hydric soil indicators: 5Y 5/1 @ 35cm
 Is the hydric soil criterion met? Yes No
 Rationale: _____

HYDROLOGY

Is the ground surface inundated? Yes No Surface water depth: _____
 Is the soil saturated? Yes No
 Depth to free-standing water in pit/soil probe hole: 15cm
 List other field evidence of surface inundation or soil saturation:
In hollows there is saturated moss/soil + water visible
 Is the wetland hydrology criterion met? Yes No
 Rationale: soil saturated within 12" of surface

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes No
 Rationale for jurisdictional decision: > 50% hydrophytes + chroma of roots

¹ This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.
² Classification according to "Soil Taxonomy."

propped roots

**DATA FORM
ROUTINE ONSITE DETERMINATION METHOD¹**

Field Investigator(s): David Mills Date: 4/27/94
 Project/Site: Geese Land Watershed State: NH County: Cheshire
 Applicant/Owner: City of Keene Plant Community #/Name: Plot 6 B
 Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community?
 Yes No (If no, explain on back)
 Has the vegetation, soils, and/or hydrology been significantly disturbed?
 Yes No (If yes, explain on back)

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. <u>QUERCUS VARIETA</u>	<u>FACV</u>	<u>Trees</u>	11. _____	_____	_____
2. <u>Fragaria grandifolia</u>	<u>FACV</u>	<u>TREE</u>	12. _____	_____	_____
3. <u>PINUS STRATUS</u>	<u>FACV</u>	<u>TREE</u>	13. _____	_____	_____
4. <u>TSUGA CANADENSIS</u>	<u>FACV</u>	<u>sapling</u>	14. _____	_____	_____
5. <u>BETULA VITR</u>	<u>FACW</u>	<u>II</u>	15. _____	_____	_____
6. <u>BETULA PUMILA</u>	<u>FACW</u>	<u>II</u>	16. _____	_____	_____
7. <u>Fragaria grandifolia</u>	<u>FACV</u>	<u>sapling</u>	17. _____	_____	_____
8. _____	_____	_____	18. _____	_____	_____
9. _____	_____	_____	19. _____	_____	_____
10. _____	_____	_____	20. _____	_____	_____

Percent of dominant species that are OBL, FACW, and/or FAC: 14%
 Is the hydrophytic vegetation criterion met? Yes No
 Rationale: 50% SPECIES OF PLOT are hydrophytes

SOILS

Series/phase: Tunbridge-Lyman Subgroup:² _____
 Is the soil on the hydric soils list? Yes No Undetermined _____
 Is the soil a Histosol? Yes No Histic epipedon present? Yes No
 Is the soil: Mottled? Yes No Gleyed? Yes No
 Matrix Color: 5Y 4/3 Mottle Colors: N/A
 Other hydric soil indicators: _____
 Is the hydric soil criterion met? Yes No
 Rationale: En Kamb Not 2 or less at 50cm

HYDROLOGY

Is the ground surface inundated? Yes No Surface water depth: _____
 Is the soil saturated? Yes No
 Depth to free-standing water in pit/soil probe hole: ~ 50 inches CM
 List other field evidence of surface inundation or soil saturation: _____
 Is the wetland hydrology criterion met? Yes No
 Rationale: Soil water table at 45 cm free water 1750 cm this level will recede in summer

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes No
 Rationale for jurisdictional decision: Upland vegetation dominates
Munsel Chroma not 2 or less.

¹ This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

² Classification according to "Soil Taxonomy."

Appendix B
Classification of Wetlands and Definitions

Wetland Classification Definitions
From Wetlands and Deepwater habitats by Cowardin et. al.

Wetland # 1: Palustrine Forested Wetland

Palustrine System:

All non tidal wetlands that have open water less than 20 acres and are less than 6.6 feet deep at low water with no wave formed or bedrock shoreline and salinity derived salts of less than 0.5 %.

Palustrine Forested Wetland:

Characterized by woody vegetation that is 6 meters tall or taller. Includes only nontidal water regimes.

Wetland # 2:

Goose Pond: Lacustrine Unconsolidated Bottom wetland.

Lacustrine System: all wetlands and deepwater habitats with following characteristics: Lacking vegetation with greater than 30% aerial coverage, situated in topographic depression or dammed river channel, total area exceeds 20 acres or if under 20 acres has wave formed or bedrock shoreline and water in deepest section is at least 6.6 feet or 2 meters deep at low water. Salinity must be less than 0.5%.

Unconsolidated Bottom: Includes all wetland and deepwater habitats with at least 25% cover of particles smaller than stones and a vegetative cover of less than 30%. Water regimes restricted to subtidal, permanently flooded, intermittently flooded and semi permanently flooded.

Wetland # 3:

Palustrine System (see definition under wetland #1)
Emergent Wetland:

Characterized by erect, rooted herbaceous hydrophytes, excluding mosses and lichens. Includes all water regimes except subtidal and irregularly exposed.

NWI map characterized wetland # 3 as a Palustrine emergent wetland. I did not see emergent herbaceous vegetation during site visit in April. Most of wetland was open water with Red Maple and dead trees.

Wetlands # 4-6 Palustrine Forested Wetlands. Definitions above.