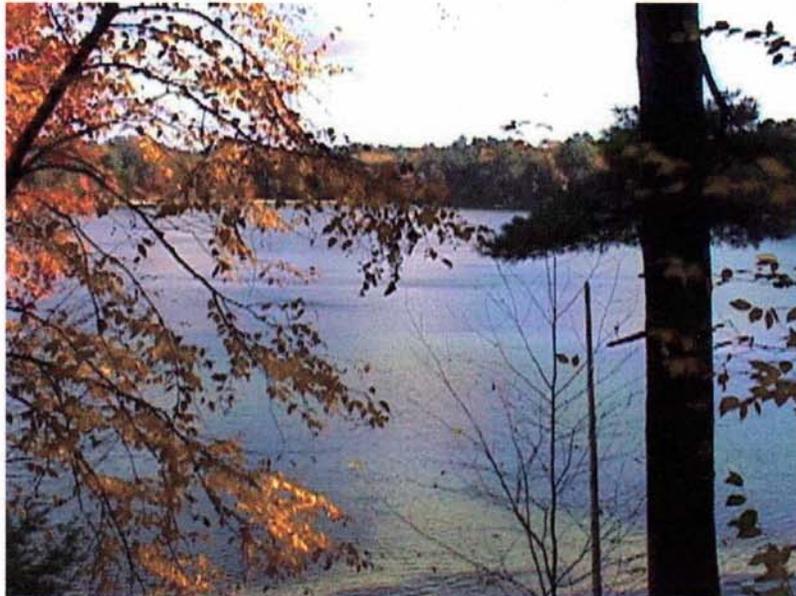


**White Pond Reservation and Conservation  
Land Management Plan**  
December 6, 2002



White Pond Reservation Task Force  
Ken Miller, Chairman  
Joan Turner  
Anne Miller  
Vic Salemme  
Lydia Rogers

## **WHITE POND RESERVATION AND CONSERVATION LAND MANAGEMENT PLAN**

### **1. Introduction**

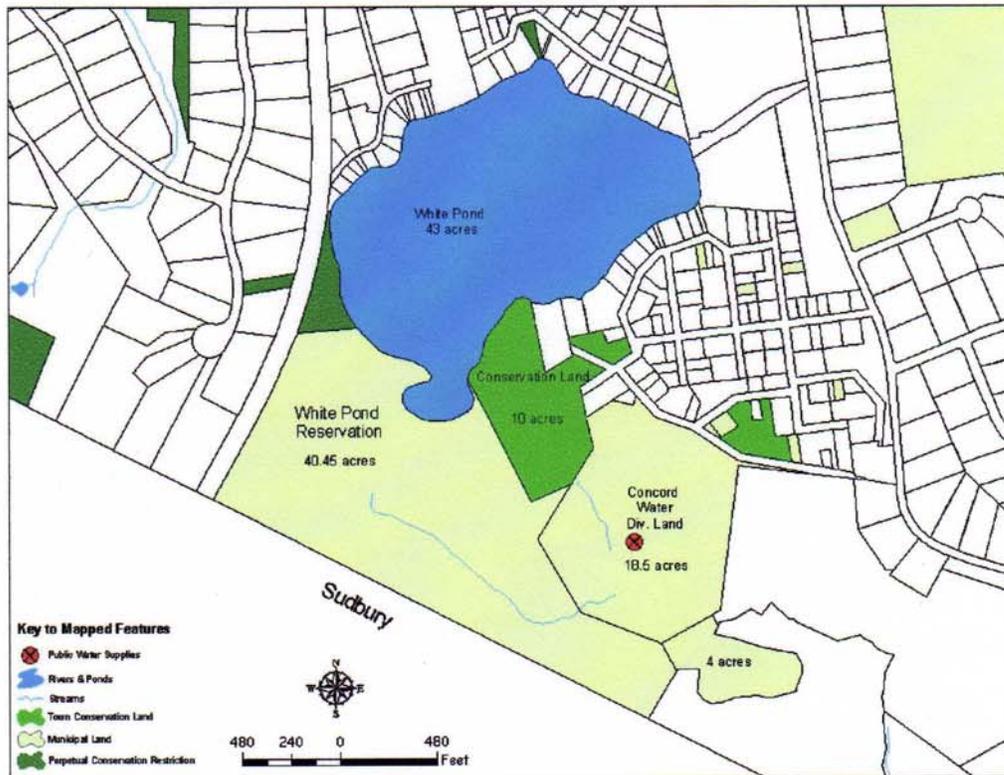
The town of Concord purchased 40.45 acres of land abutting White Pond from the Unisys Corporation in 1992 (The White Pond Reservation). This land was purchased as general purpose town land, not conservation land. From time of purchase to the present, this land has been de-facto conservation land, but since it was not under the official auspices of the Natural Resources Commission (NRC), no management of the land occurred. In the fall of 2000, the White Pond Advisory Committee persuaded the Board of Selectmen to place this land under the jurisdiction of the Natural Resources Commission to treat it as conservation land for a period of five years. It was also decided at that time to appoint a task force to create a management plan for this land to treat it as conservation land.

The task force was not appointed at that time for a number of reasons, leaving this land in limbo. Finally, a July 1, 2002 agreement between the Town Manager, Natural Resources Commission (NRC) and the White Pond Advisory Committee (WPAC) resulted in WPAC becoming tasked with creating the management plan with the assistance of Lydia Rogers, an associate member of NRC, with liaisons to NRC, the Board of Selectmen and the Town Manager. The 2002 Task Force views itself of an extension of the original 1992 Task Force simply completing the management plan that was never finished in 1992 and providing updates based on conditions that have changed in the interim years. The "First Preliminary Report of the White Pond Reservation Task Force" dated October 8, 1992 is attached to this document as Appendix I.

Since the adjacent White Pond Conservation Land forms a natural unit with the White Pond Reservation, both of them are being considered as one whole for the purpose of management.

### **2. Description**

The White Pond area is usually considered to be the area from Powdermill Road on the north to the Concord-Sudbury line on the south, and from Plainfield Road on the east to Stone Root Lane on the west (see map, Figure 1). This area generally conforms to the most recent delineation of the watershed area and includes all the older, high-density development around the pond. Because the pond has a surface area greater than 10 acres (and greater than 20 acres, as required in more recent years), White Pond has been a "great pond" under Commonwealth law since 1647. As a great pond, the Commonwealth owns White Pond's water and the land beneath it, and abutting property owners own the land to the ordinary low water mark.



**Figure 1**  
**White Pond and Adjacent Lands**

White Pond is a kettle pond formed during the retreat of a glacier at the end of the last Ice Age (about 12,000 years ago). Over the years, the State has measured the depth and taken other data on the pond. Their data confirms that the pond is about 43 acres in area and about 60 feet deep at its deepest point. Because of glacial action, the soils beneath and around the pond are predominantly highly permeable sand and gravels.

The pond is a deep bowl with steep banks supporting mature white pine, white, black, and red oak, hemlock, red maple and black, grey, and paper birch trees, with some undergrowth along most of the shoreline. According to a study done in the 1970's by IEP, an environmental consulting firm, the depth to bedrock on the eastern side of the pond is about 100 feet, decreasing to 40 feet and less on the western side of the pond. The Soil Conservation Service describes the soil in the immediate watershed of the pond as primarily Hinckley loamy sand with 15% to 25% slopes. Since there are no inlets or outlets, White Pond is fed by groundwater. The watershed of the pond is estimated to be approximately 350 acres.

Detailed water quality and hydro geological information about the pond is available in the reports of Dr. William W. Walker, Jr. to the Concord Board of Health. Dr. Walker is

an environmental engineer; he studied the pond and its watershed from 1986 through 1990 as a consultant to the Board of Health.

White Pond is stocked by the State with rainbow and brown trout. It also has the standard indigenous fish (sunfish, largemouth and smallmouth bass, hornpout, etc.). The shoreline supports some muskrats and bullfrogs. There are also painted turtles, crayfish, and water snakes.

The pond has several resident kingfishers, frequent visits from mallards, Canada geese, common mergansers, great blue heron and double-crested cormorants, and infrequent visits from osprey, loons and sandpipers and other species of ducks, including wood ducks and mergansers. The pond serves, on rare occasions, as shelter for migrating birds such as buffleheads.

The watershed supports the usual mammals: e.g. raccoons, deer, coyotes, fox, skunks, squirrels, and chipmunks. There are also a good number of toads, wood frogs, spring peepers, and salamanders. Most of the usual bird feeder birds are present; there are also red-tail hawks, cardinals, Carolina wrens, phoebes, thrushes etc. as well as reports of indigo buntings on the south side of the pond. Occasionally, wild turkeys are also seen.

Indian campsites have been documented in the Plainfield-Anson Road area. Indian artifacts are also associated with an area (Strawberry Hill) in the uplands to the southeast of "Sachem's Cove" on the south side of the pond.

White Pond is in the "South Quarter" which was sparsely settled early in Concord's history. White Pond and the area around it were favorite haunts of Henry David Thoreau. The pond and its shores were described with great love and admiration by Thoreau in several of his works, including Walden. Other writers, such as William Ellery Channing and Ralph Waldo Emerson, also walked the area and wrote of the pond.

There were very few homes or structures in the watershed area until the 20th century. There was a farm on the south side of the pond and farms in the general area, even in earlier times. There also was some logging done around the shores of the pond. Development in the modern sense of the word began in the 1920's and '30's and was primarily intended for summer camps. Consequently, lots were extraordinarily small, especially those close to the pond. One development on the west side of the pond had lots as small as 1750 square feet that were built on. By the 1960's there was a very high density of residences in some areas near the pond and a steady increase in the number of homes converted from summer to all-year use. Lots in the original development areas are protected from having to meet present local zoning standards. Under Commonwealth law, Chapter 40A, Section 5A, any lot of at least 5000 square feet with 50 feet of frontage can be a buildable lot, if it was laid out and recorded prior to the establishment of local zoning laws.

Today, most homes in the area are year-round residences. There are approximately 225 homes within easy walking distance of the pond; of these, some 95 are in the watershed

and of these, about 33 abut the pond. All of these homes have on-site sewage disposal and many have private wells. Many of the on-site disposal systems are very old; often there are no septic tanks and sewage goes directly to a cesspool.

The primary public access is the State road on the northeast side of the pond next to the White Pond Association beach. There is limited parking, with access to the water for boats. A second access for walk-in visitors, and with limited parking, is past the end of Dover Street on Varick Street. This access leads to Town-owned Conservation land and shoreline. The streets immediately around the pond do not meet Town standards and have not been accepted by the Town. They are privately-owned ways over which the public may pass. On-street parking is by permit only on these privately-owned streets and permits are available to White Pond area residents only. On-street parking is not allowed at all on nearby Town-accepted public ways (Stone Root Lane, Powdermill Road, etc.).

The stocking of the pond with rainbow and brown trout by the State's Department of Wildlife and Fisheries along with a healthy population of bass results in the pond being of great interest to fishermen. There are fishermen on the pond or along the shore throughout the year.

There are many forms of recreational boating. The Town of Concord has banned all internal combustion engines on the pond, but boats with electric motors are allowed and used primarily by fishermen. Canoes, kayaks, sailboards, and inflatable boats of unlimited variety are commonly seen on the pond.

The White Pond Association operates a seasonal swimming area with lifeguards for its membership of approximately 700 families. The Association beach is open from the end of May until the beginning of September. There are several shoreline properties which are "common land" for various neighborhoods around the pond and which are used by their residents for swimming and recreation. The State public access area is not set up for swimming and the Town has proscribed swimming from Town-owned land on the Pond.

Most of the land abutting the pond is privately owned. However, the combination of town land (conservation and the White Pond Reservation) and Stone Root conservation land totals about 1/3 of the shoreline of the pond. There are informal trails to the south and west of the pond on both Town-owned and private land, which are used for hiking, horseback riding, cross-country skiing and similar activities.

## **2.1 The Frost Farm Development**

The 1992 purchase of the 40.45 acre Reservation land from Unisys by the town of Concord also involved a comparable land purchase by the town of Sudbury, since the Unisys land was partially in Sudbury and partially in Concord. The Sudbury land housed the actual building used by Unisys (now the Cummings Building) as well as other open land in field and forest. Like Concord, Sudbury bought the land as general purpose town land rather than conservation land.

The Sudbury Affordable Housing committee pushed to place a 55 and over affordable housing development of condos for Sudbury residents on this land. This was finally approved in 2001 and construction began at that time on the Frost Farm development just across the Concord line in Sudbury. This development involves 48 units and creates a virtual village bordering the White Pond Reservation. Part of the agreement that went with the 1992 purchase allows Sudbury residents access to the pond via the White Pond Reservation; however, they must follow the rules and regulations that Concord has set up for this land.

The presence of so many new residents on the south side of the pond further creates a sense of urgency to implement a management plan for this land.

### **3. Goals of the 2002 Task Force (Phase 1)**

Since the Task Force has only had a few months to create a management plan, it was decided to focus on a Phase 1 plan at first, and to follow with a final part later. Phase 1 would include the most pressing issues to be addressed in the management of the town owned lands.

The Task Force has established five goals for Phase 1:

1. Preserve and protect water quality of the pond.
2. Preserve and protect the watershed.
3. Enhance and preserve wildlife habitat
4. Encourage appropriate recreational activities
5. Transfer the White Pond Reservation to Natural Resources Commission as conservation land. Possibly include the four acres of town land known as "Dung Hole Meadow" to NRC as conservation land as well.

### **3.1 Preserve and Protect Water Quality of the Pond**

#### **3.1.1 Background and Today's Status**

In the 1980's, algal blooms on the pond indicated that water quality problems had developed. This led to a Town-funded water quality and hydrogeologic study (1986-1990) by Dr. William W. Walker, Jr., coordinated by the Board of Health, with the support of the White Pond Advisory Committee. Dr. Walker's fundamental conclusion was that the pond was already mesotrophic because of the high level of nutrients, primarily phosphorus, reaching the pond. Dr. Walker identified the primary sources of nutrient loading of the pond as being several areas where surface water run-off could flow directly into the pond, and the number (and probable condition) of on-site sewage disposal systems in close proximity to the pond.

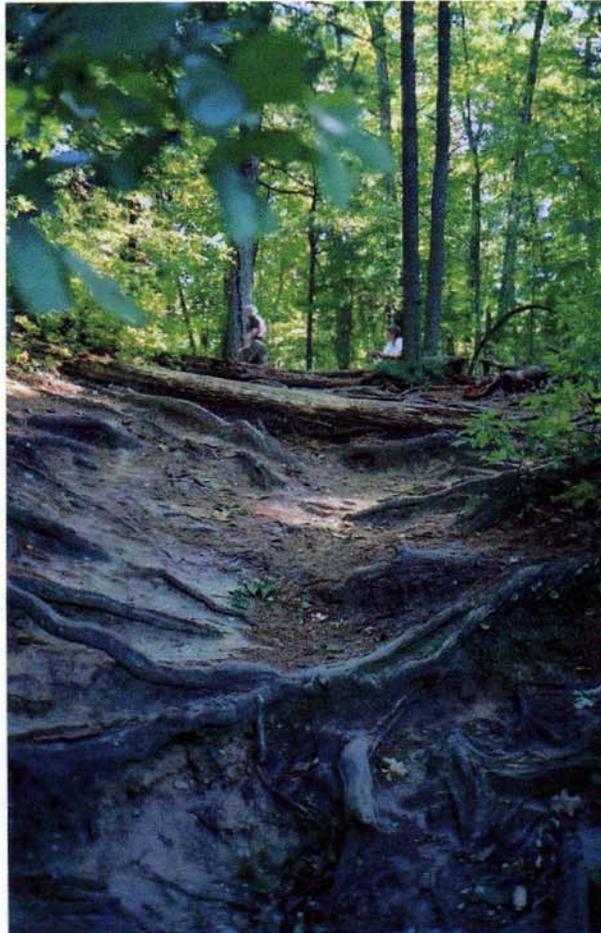
Also in the 1980's, hazardous waste disposal problems showed up on the Sperry (Unisys) site, which abuts the pond and which the Concord portion is now the White Pond Reservation. Fortunately, there were no indications (then or now) that there was any

impact on the pond. Remedial treatment of the groundwater on the old Unisys site has been ongoing, and it now appears that the groundwater has largely been cleaned up.

In 2000, there was a giardia outbreak that was attributed to swimming in White Pond after investigation by the State Board of Health. Giardia is a disease caused by a cyst pathogen spread by feces, usually animal feces (most commonly beaver). The White Pond Advisory Committee worked with the Concord Board of Health to get the White Pond Association to make sure diapered children do not swim at the Association Beach. Sanitary conditions at the bathroom facility at the Association beach were also improved. Yearly testing of the water was then started by the Concord Board of Health where coliform bacteria were tested to determine overall health of the water. Since the time of the outbreak, water quality has tested to be of high quality. Judith Sprott, a current member of the Waste Water Planning committee, also does periodic secchi testing to determine water clarity.

Erosion and uncontrolled surface run-off degrade the pond's water quality. Combined with tree cutting and other unregulated changes to the vegetation, these problems along the shoreline lead to loss of plant diversity and animal habitat, as well as diminishing the 'natural' beauty of the shoreline. The most egregious erosion areas along the shore of the White Pond Reservation and the conservation land were corrected by action from the 1992 Task Force (see Appendix I), notably the re-vegetating of the former Unisys beach area at Sachem's Cove.

However, many areas along the town owned shoreline suffer from bad erosion, caused by de-facto trails down steep banks created by fishermen, illegal swimmers and other users of the land. Figure 2 shows an example on the ridge by Sachem's Cove.



**Figure 2**  
**Bank Erosion at Sachem's Cove**

### **3.1.2 Proposed Remedies**

De-facto trails are created to a large extent by the fact that there are no established trails. The remedy is to create a trail system with clear signage and to block off de-facto trails and add signage to keep people off. In some places, the offending area may need to be re-vegetated with native shrubs and/or trees and contoured to divert runoff into the adjacent vegetative areas. If runoff into the pond from areas with soil is eliminated, a significant source of phosphorous pollution will be removed. Water testing in the summer of 2002 showed exceptional clarity of the water; there is speculation that it was due to the drought causing a falloff of erosion into the pond.

The trail system should be planned and managed by Natural Resource Commission personnel augmented by volunteers. Many volunteers can be garnered from residents from the White Pond area and other interested parties. Addition of appropriate trail signage should be compatible with trail signage in other conservation areas of the town. It

is expected that with a heavy utilization of volunteer help that the cost burden will be minimal.

A second possible source of water contamination is from domestic animals. Horses are commonly ridden on the town land abutting the pond and often come down to the beach. When this occurs, horses may defecate into the pond, causing contamination of the water. Signage should be placed along the pond prohibiting horses from the shoreline.

Dogs are also commonly left off leashes for walks on the town land abutting the pond. It is also common for them to swim in the pond. Signage should state that dogs are not allowed to swim in the pond.

Lastly, there is a large amount of (human) illegal swimming in the pond, especially in Sachem's Cove. Swimming is not allowed, except for residents of the pond or their guests, Stone Root Lane residents and their guests on their common land abutting the pond, and members of the White Pond Association at the Association beach. Although swimming is not allowed and signage is in place prohibiting swimming, it is not enforced. It is recommended that more patrols, especially on hot summer days, by police and/or conservation officers be put into effect for enforcement. This was also a recommendation of the 1992 Task Force.

It should be noted that there is a potential liability issue for the town if an illegal swimmer drowned or was seriously hurt.

#### Remedy Summary:

1. Create a formal trail system on the town lands abutting the pond. Close off de-facto trails and provide signage to keep people off steep banks. Re-vegetate the de-facto trails where needed and provide erosion controls on them.
2. Provide signage to control domestic animals, e.g. keep horses off the shoreline and make a no swimming rule for dogs.
3. Enforce the no swimming rule on town land with the use of patrols by police and/or conservation officers especially on hot summer days.
4. Continue a program of water quality testing by the Board of Health to detect trends and insure the health of the pond.

### **3.2 Preserve and Protect the Watershed**

The White Pond Reservation and White Pond conservation land are both heavily wooded and otherwise vegetated which is good for protecting the watershed. Protection of the watershed is not only important for protecting the pond, but also to protect the groundwater feeding the nearby town well.

Given that the land is already vegetated, the action to protect and preserve the watershed is to make sure that no dwellings or roads are placed on the land and that trees and other native vegetation are preserved. Creation of a more formal trail system with erosion

control on these trails accompanied by the closure of de-facto trails also helps preserve the watershed by reducing erosion to a minimum. Appropriate trail signage reinforces usage of the real trails.

Litter is also a problem. There should be signage indicating "carry in, carry out" to encourage users of town land not to litter and to take any trash back with them when they leave.

Action recommendations:

1. No dwellings or roads should be built on the Reservation land.
2. Vegetation should be left in a natural state.
3. Formal trail system should be set up with appropriate signage and trail erosion control.
4. Appropriate signage should be put in place to encourage users of the land to carry out any trash they bring in.

### **3.3 Enhance and Preserve Wildlife Habitat**

The wildlife habitat that is in question is a combination of aquatic and woodland as well as the junction of the two. The vegetation is woodland that is prevalent on sandy soils, i.e. pines and oaks predominate. The animals that inhabit this land are typical of the area; deer, coyote, fox, raccoon, red and grey squirrel, chipmunk, skunk etc. for mammals, and numerous bird species. Many of the bird species are aquatic and use the pond for food, e.g. fish and aquatic plants. Herons, mallard ducks, cormorants, and kingfishers are very common. Uncommon species are also seen, e.g. wood ducks, osprey, mergansers, and other duck species.

There is a healthy population of amphibians and reptiles. Painted turtles are common in the pond. Bull frogs and other frog species are commonly seen (and heard). Tree frogs are common.

The pond itself supports a healthy fish population. The deep water allows the stocked trout to survive through the hot summer months, and the pond is considered one of the best fishing spots in eastern Massachusetts. Many large trout and bass are caught every year by fishermen. Crayfish are also found regularly in the pond.

The Dung Hole Meadow area (the 4 acre piece on the map in Figure 1) is a swampy area and has a resident population of beavers as well as a heron rookery.

The diversity of the wildlife in the area is enhanced by making sure that the combination of protected lands (Concord conservation land, White Pond Reservation, town well land, Dung Hole Meadow, and Stone Root conservation land), which forms a 70 acre+ contiguous parcel, has some corridors to other open land. On the south side, the well land borders on farm land and Sudbury conservation land; there is also a small corridor to other lands over the old railroad tracks.

The actions needed to enhance and preserve this wildlife habitat are straightforward:

1. Preserve the quality of the pond water (see section 3.1.2)
2. Preserve the watershed (see section 3.2)
3. Preserve corridors to other open land to enhance transfer of wildlife populations.

### **3.4 Encourage Appropriate Recreational Activities**

White Pond and the associated town lands are a unique asset for the town. Although smaller than Walden (43 acres vs. 56 acres), abutting public lands are a town rather than state owned resource. Such assets should be enjoyed by the residents of the town but in a way that does not abuse that asset.

Town regulations spell out appropriate recreational activities:

- Fishing
- Hiking
- Boating (no motor boats)
- Wildlife viewing
- Other passive recreation

Explicitly not allowed are:

- Swimming except at White Pond Association beach, by residents and their guests, and by Stone Root Lane residents on their common land
- Fires
- Alcohol
- Motor vehicles
- Activities after dark

Suggested new regulations from previous sections would add to the “not allowed” list the following:

- No horses on pond shores
- No dog swimming

Aside from residents of Concord using the pond for swimming, either at the White Pond Association beach or by residents of the pond, the town owned abutting land and the pond itself are an underutilized resource by town citizens. Yet, the land and the pond are heavily used by people from out of town, mainly for illegal swimming or for fishing. This is a town resource and the Task Force would like to have policies to publicize the area for town residents to use while at the same time discouraging illegal use by those from out of town.

The Task Force feels that we should encourage more usage of the White Pond lands and the pond by town residents while at the same controlling the crowds of non-residents of the pond that use the pond for illegal swimming. The Task Force makes the following suggestions to help these goals:

1. The Varick Street parking area that serves as an entrance to the White Pond conservation area and the town well lands has only three parking spots. It is believed that this could be increased to ten spots. The Task Force recommends that this parking area add seven parking spots at Varick Street and designate them for Concord residents only. (See Figure 3 for a picture of this area).
2. Add signage to ban parking on Alden Street. It has been determined that a large number of illegal out of town swimmers park on this street.
3. Provide patrols to stop illegal swimming. Such patrols would be by the police, a conservation officer or by other interested citizens who may be deputized.
4. Publicize White Pond in Concord, including interesting wildlife sightings and history of the area. This could be via articles in the local paper and a White Pond web site and electronic forum.



**Figure 3**  
**Varick Street Parking Area**

### **3.5 Transfer the White Pond Reservation and Dung Hole Meadow Town Lands to Natural Resources Commission as Conservation Land**

The Task Force feels strongly that the 40.45 acre White Pond Reservation and the small 4 acre adjacent Dung Hole Meadow parcels should be permanently protected as conservation land. In late November, 2002, Ken Miller, Chairman of the Task Force, presented to the Natural Resources Commission to get their support and sponsorship for a warrant article to convert these lands to conservation lands. There was general support for

this position, but there was a last minute wrinkle. The Waste Water Committee wants to keep open the option of using a piece of the White Pond Reservation for a waste water treatment plant for the White Pond area.

The White Pond area has been identified as the area in greatest need of waste water remedies due to the small lots in the area and many dwellings and septic systems/cesspools close to the pond and thus adversely affecting pond water quality. The Waste Water Planning Committee is having trouble finding a site for a waste water plant for the area and does not want to preclude any options at this time.

A second meeting between Chairman Ken Miller of the Task Force and Bill Edgerton of Public Works and the Natural Resources Committee was held at their December 4 meeting. The result of that meeting was that the Natural Resource Committee would not sponsor a warrant article for transfer of the White Pond Reservation to conservation for Town Meeting in the spring of 2003. However, it was only willing to wait one year for the Waste Water Planning Committee to complete their plans and is prepared to support a warrant to transfer the Reservation (and possibly Dung Hole Meadow) to conservation land for the 2004 Town Meeting. The Task Force will support this position for one year only.

If the Waste Water Planning Committee decides that the preferred site for the waste water plant for the White Pond area should be on the Reservation land, the Task Force will review the plan and will make a judgment at that time whether to support it or not.

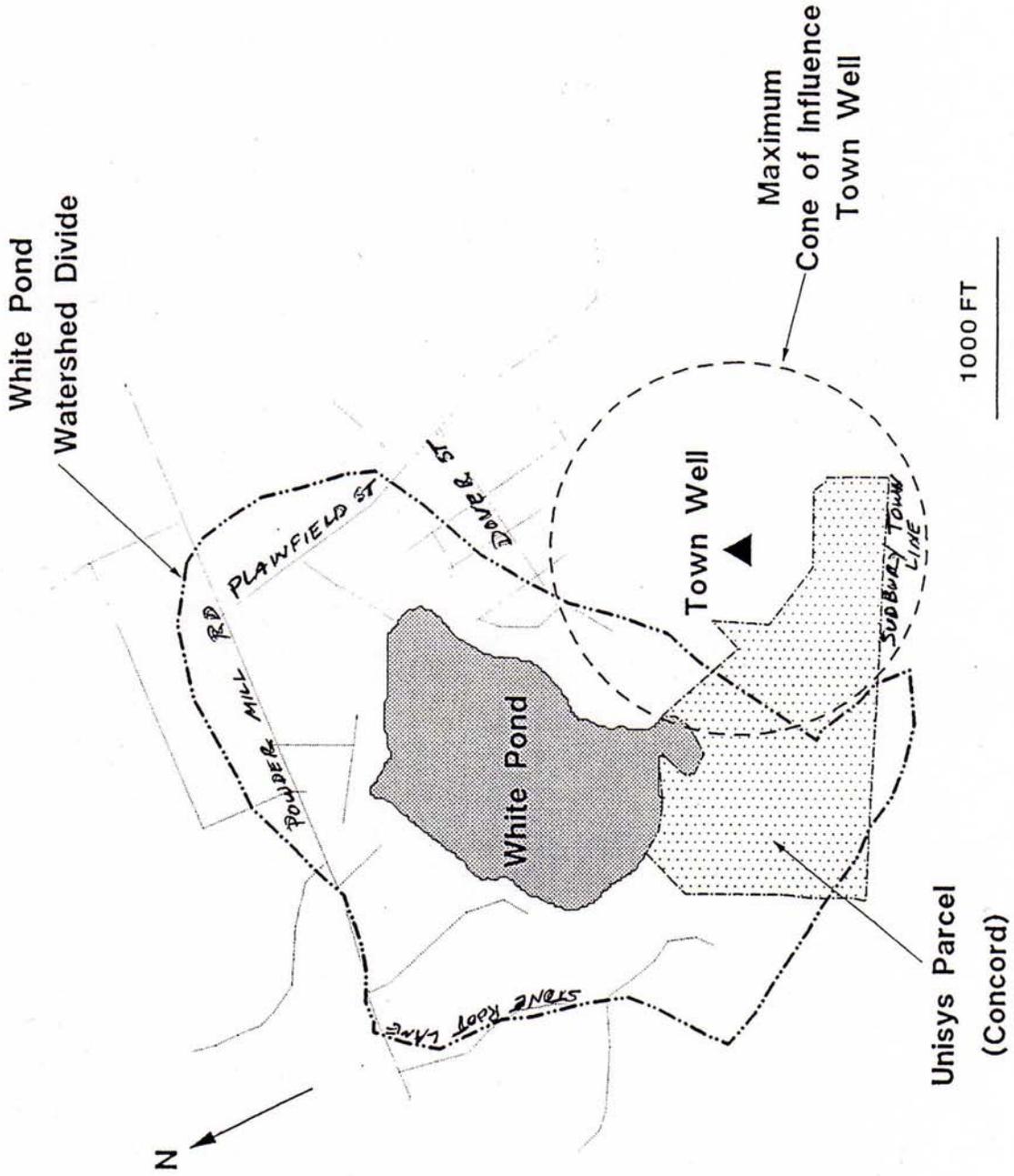
**Actions:**

1. Treat the White Pond Reservation as if it were conservation land in the near term
2. Garner support from Natural Resources Commission, Town Manager, and the Board of Selectmen to place a warrant article for the 2004 Town Meeting that transfers the White Pond Reservation land and Dung Hole Meadow land to Natural Resources Commission for permanent protection as conservation land.

## **APPENDIX I**

### **FIRST PRELIMINARY REPORT OF THE WHITE POND RESERVATION TASK FORCE OCTOBER 8, 1992**

# WHITE POND ADVISORY COMMITTEE



**White Pond Advisory Committee Recommendations**  
**to the**  
**Strategic Municipal Land Use Task Force**

White Pond and Walden are great crystals, lakes of light ... precious stones... but being liquid, ample and secured to us forever, we disregard them.  
Henry David Thoreau, *Walden*, p. 199

**A. Introduction**

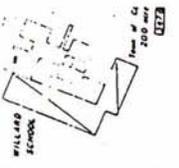
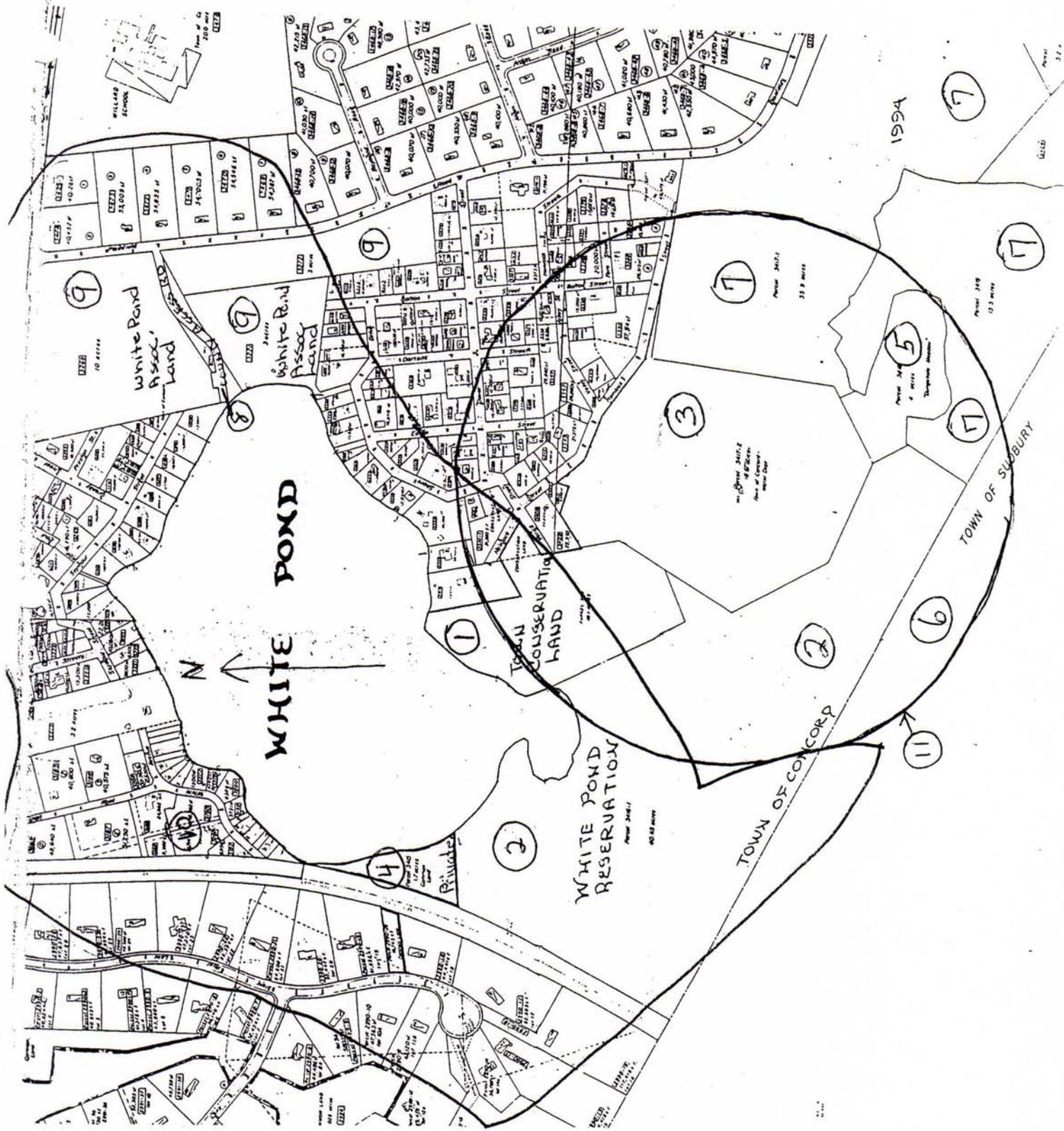
The White Pond Advisory Committee (WPAC) wishes to thank the Strategic Municipal Lands Task Force for the opportunity to submit information regarding its perspective on land-related issues in the White Pond community. WPAC's long-term vision focuses on the natural resources in the community, particularly in terms of what is necessary to enable the residents of Concord to benefit from these natural resources. The three primary natural resources in the White Pond community are: 1) the pond itself, 2) the Town well-field, and 3) the undeveloped land in the area. In addition, the community with many neighbors who both use and contribute to maintaining and improving the Pond and natural resources should not be overlooked.

The WPAC recommends that the Town plan for the future by identifying how these natural resources are to be safeguarded for future residents of Concord, and what town departments should be responsible for carrying out those plans. WPAC has identified a number of parcels of undeveloped land and provided information about their importance in safeguarding the pond and the well field, as well as their importance as natural habitats and recreation areas. We recommend that the Municipal Land Task Force evaluate these key parcels in its planning process. Should the members of the WPAC be able to assist in collecting further information needed by the Municipal Land Task Force, we would be happy to do so.

**B. Description**

For the purposes of our analysis, we have defined the White Pond neighborhood as bounded by Powder Mill Road to the North, Plainfield Road to the East, Route 117 to the South and the eastern property line of the Stone Root Lane development to the West. The total acreage of this area, excluding the pond, is approximately 214 acres. Of this land, 55 acres or 26% is developed.

The area mapped on the following page shows the pond itself, the larger watershed area (in green), the location of the town well and well field – zone 1, and the cone of influence (blue) surrounding the well referred to as zone 2 of the town well field.



White Pond  
Assoc.  
Land

WHITE POND

TOWN  
CONSERVATION  
LAND

WHITE POND  
RESERVATION

TOWN OF CONCORP

TOWN OF SUBBURY

N

1994

7

7

7

9

9

9

3

5

7

1

2

6

2

11

4

Page 319  
133 acres

Page 317.1  
31.9 acres

Page 346.1  
40.43 acres

Page 349  
133 acres

Original Sale  
of 1720  
Part of Concorp  
before 1700

Page 349  
133 acres  
Thompson's

The eleven key parcels are listed below and identified by number on the preceding map. Detailed information on each parcel with relevant maps and documentation are provided as attachments to this document.

- A. Land to the West and South of White Pond
  - 1. White Pond Conservation Land (10 acres)
  - 2. The White Pond Reservation (40 acres)
  - 3. Town Well Field - Zone 1 (18.1 acres)
  - 4. Stone Root Lane Common Land (1.7 acres)
  - 5. Dunge Hole Meadow (4 acres)
  - 6. Land owned by the town of Sudbury (total 15 acres)
  - 7. Land owned by Steve and Joan Verrill (29.5 acres)
  
- B. Land to the East of White Pond
  - 1. Public Boat Access
  - 2. White Pond Associates land (15+ acres)
  
- C. Residential Parcels
  - 1. Heart Leaf Pond (.5 acres)
  - 2. Zone 2 of town well field

### **C. History**

The White Pond area was developed initially as a summer colony and was bordered by agricultural land. These origins explain the small lot sizes - in one section lots are as small as 1750 square feet - that exist on the neighborhoods bordering the North and West sides of the pond and those in the Dover Street neighborhood. These small lot sizes have resulted in extremely high density in the residential areas immediately surrounding the pond. Approximately 33 homes border the pond, built on or immediately above the slope. Approximately 95 additional homes are located in the watershed of the pond, and approximately 225 homes are within easy walking distance of the pond. These homes all depend on sewage systems for waste disposal; and some have private wells. Many of the older sewage disposal systems do not have septic tanks and the waste goes immediately to a cesspool. The use of on-site sewage systems magnifies the potential impact of the settlement density on well and pond water quality. Friends of White Pond, a citizen action group, has sponsored a twice-yearly sewage disposal system pumping program to encourage regular maintenance of systems in the watershed.

The pond is classified as a great pond, and as such the water and land beneath it are owned by the Commonwealth to the average low water mark. The pond is easily accessible to the approximately 225 families within walking distance and parking is provided for other users. The pond and its surroundings are used for swimming, boating, windsurfing and fishing in the summer, and ice fishing and sometimes skating in the winter. The White Pond Beach Association operates a lifeguarded beach during the summer for its 150 members - most of whom are Concord families; three residential areas have rights of way that allow them to access the pond for swimming and

boating; and bordering houses have their own pond frontage. There is a road and parking provided for public boat access and the state stocks the pond with rainbow and brown trout. In addition, the southwestern part of the pond is bordered by large wooded areas consisting of different types of town owned or commonly owned land. Limited parking is provided by the Concord access to this land. During the summer, many people park at a distance and walk in. This land has a number of trails used by hikers and horseback riders. This part of the pond closely borders an abandoned rail line leading to West Concord on one side and toward Sudbury on the other, where it extends into a green belt that includes Sudbury Great Meadows. The land can also be accessed from Sudbury where parking is ample.

The town has a well field in the White Pond area that has been in operation since the 1970s. It is about 80 feet deep and can produce approximately 500 gallons per hour. It is located to the South of the Pond and has a zone 1 area that cannot be developed. The Zone 2 area has recently been mapped to determine the groundwater drainage area. Zone 2 includes the entire area defined above except a few residences in the Dover Street neighborhood on the South side of the pond and to the East of Zone 1.

#### **D. Water Quality of the Pond**

White Pond is a kettle pond of approximately 43 acres and a maximum depth of more than 60 feet. The pond is surrounded by steep, sandy slopes and has no tributaries. It is fed from run-off and ground water. The pond has been studied in recent years by Dr. William Walker, an environmental engineer, whose testing indicates that the pond has extraordinarily clear water compared to other Massachusetts ponds. He believes that the small area of direct run-off, and the lack of tributaries has contributed to the continued clarity of the pond. However, in recent years the pond has experienced extended periods of murkiness due to high levels of algae. These periods may signal that the continued high water quality of the pond is increasingly at risk.

The greatest threat to the water quality of the pond is from phosphates that encourage the growth of water plants such as algae, thereby depleting oxygen and making the pond less hospitable to fish and, because of the resulting murkiness and algal blooms, less attractive to human users. (This nutrient does not, however, represent a health hazard to human users of the pond.) Road and land run-off and sewage system discharges from nearby disposal systems are likely to be the biggest sources of phosphates. Thus, the slopes rising from the pond, the roads whose run-off drains to the slopes, and the waste disposal systems of the houses immediately surrounding the pond have the biggest impact on the amount of phosphates reaching the pond. The disposal systems and roads that do not drain directly into the pond filter through the soil and enter the ground water. This filtering tends to reduce the nutrients and any other contaminants in rainwater and other run-off by the time it reaches the ground water. Dr. Walker's studies of the pond showed some evidence that the flow of groundwater that feeds the pond is from North to South for most of the year. If this is the case, then the septic systems to the North of the pond have more impact on the pond than those to the South.

The Town Well Field at White Pond is fed by the same groundwater source as the pond itself. It is not clear to what extent drawing from the well may affect the water level of the pond.

## E. Key Issues

### *Water Quality*

- The biggest threat to the pond is the concentration of nutrients reaching it. Limiting nutrients requires addressing road run-off, erosion of undeveloped and developed land in the drainage area of the pond, the performance of sewage disposal systems bordering the pond, especially those to the North, and the continued preservation of bordering open land in an undeveloped state.
- The further development of open lots in already dense residential areas may also have impact on the quality of well water.

### *Recreation Land*

- The relative isolation of town land to the South of the pond together with its great attractiveness is one of the great features of the newly acquired White Pond Reservation land. There is also, however, a potential for improper or overuse of this land. Risks include fire, unattended swimming in Sachem's cove, bank erosion with nutrient rich run-off, crowding of shore areas and heavy foot traffic and illegal parking in nearby residential areas.

### *Multiple and Unrelated Town Department Jurisdictions*

- A number of different laws and corresponding town departments govern different aspects of land and water use. These differing responsibilities appear uncoordinated. Uniform planning is needed to ensure that these various responsibilities are carried out in a way that is consistent with an overall policy that safeguards the pond's water quality in the short and long term:
  - Natural Resources: safeguarding all land around the pond including conservation and reservation land by enforcing Wetlands Protection Act for construction within 100 feet of the pond; actively managing town-owned lands.
  - Public Works: road building and road drainage
  - Water Department: well maintenance
  - Planning Board: administration of ground water conservancy district that regulates the amount of sewage that can be disposed of by any one home and the amount allowed per unit of new construction
  - Public Health: administration of Zone 2 well head, including aspects of sewage disposal; a testing of pond water safety
  - Police: patrol of neighborhood and town land; response to parking and improper use of recreation land
  - White Pond Advisory Committee: review and analyze issues of concern to the White Pond area; advise Bd of Selectmen
- In addition, the town of Sudbury owns land bordering Concord's land on the South of the pond and provides an entrance to Concord's conservation and reservation land, requiring joint and coordinated efforts by both towns to manage access and usage.

## F. Recommendations

The White Pond Advisory Committee, having set priorities for land use based on the criteria established above, recommends that the Town of Concord take action as follows:

- Develop a comprehensive land management plan for the White Pond area to manage the pond and bordering land as a conservation and recreational resource. The plan should focus on maintenance and improvement of the water quality of White Pond as an explicit and primary goal and include provision for appropriate recreational and residential use, monitoring of nutrients and algae content of pond water, establishing priorities for the protection and improvement of water quality, and necessary management to discourage or prevent inappropriate uses.
- Assign responsibility for oversight and enforcement of this plan to the Natural Resources Commission, with the requirement that the
- Commission be notified when the work of other Town departments affects the White Pond area, and actively participates in public decision making about the methods of carrying out that work so that it will be consistent with the land management plan.
- The White Pond Advisory Committee recommends the following considerations be addressed in the plan:
  - Investigate strategies to improve waste disposal systems bordering the pond that do not perform effectively, including accessing state funds available to towns at no interest to be used to provide low interest loans as necessary to assist homeowners upgrade their systems.
  - Work with White Pond neighborhoods to organize repair of roads that border the pond and contribute to run-off. Road paving should be carefully planned to ensure drainage away from the pond.
  - Contribute any available town expertise to assist the White Pond Beach Association to plan for and implement landscaping to reduce run-off from the slope behind the beach.
  - Contribute town expertise to assist the residents of Stone Root Lane with a plan to address the erosion on the banks of their common land that lead down to the shore.
  - Seek to purchase any land immediately bordering White Pond that is potentially buildable. This would include Heart Leaf Pond, a wetland providing important habitat for White Pond wildlife and serving as an important recharge area filter protecting the pond.
  - Complete any legal procedures needed to clear the title of the DungeHole meadow to the Town's ownership.
- Use Town 61A options to purchase land currently used for agricultural purposes if it becomes available.
- Strengthen coordination with the town of Sudbury to manage access and use of the land abutting the White Pond Reservation land for recreational purposes.