

Greater Goose Pond Forest Management Plan Keene, NH

JULY 2006

City of Keene

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INTRODUCTION

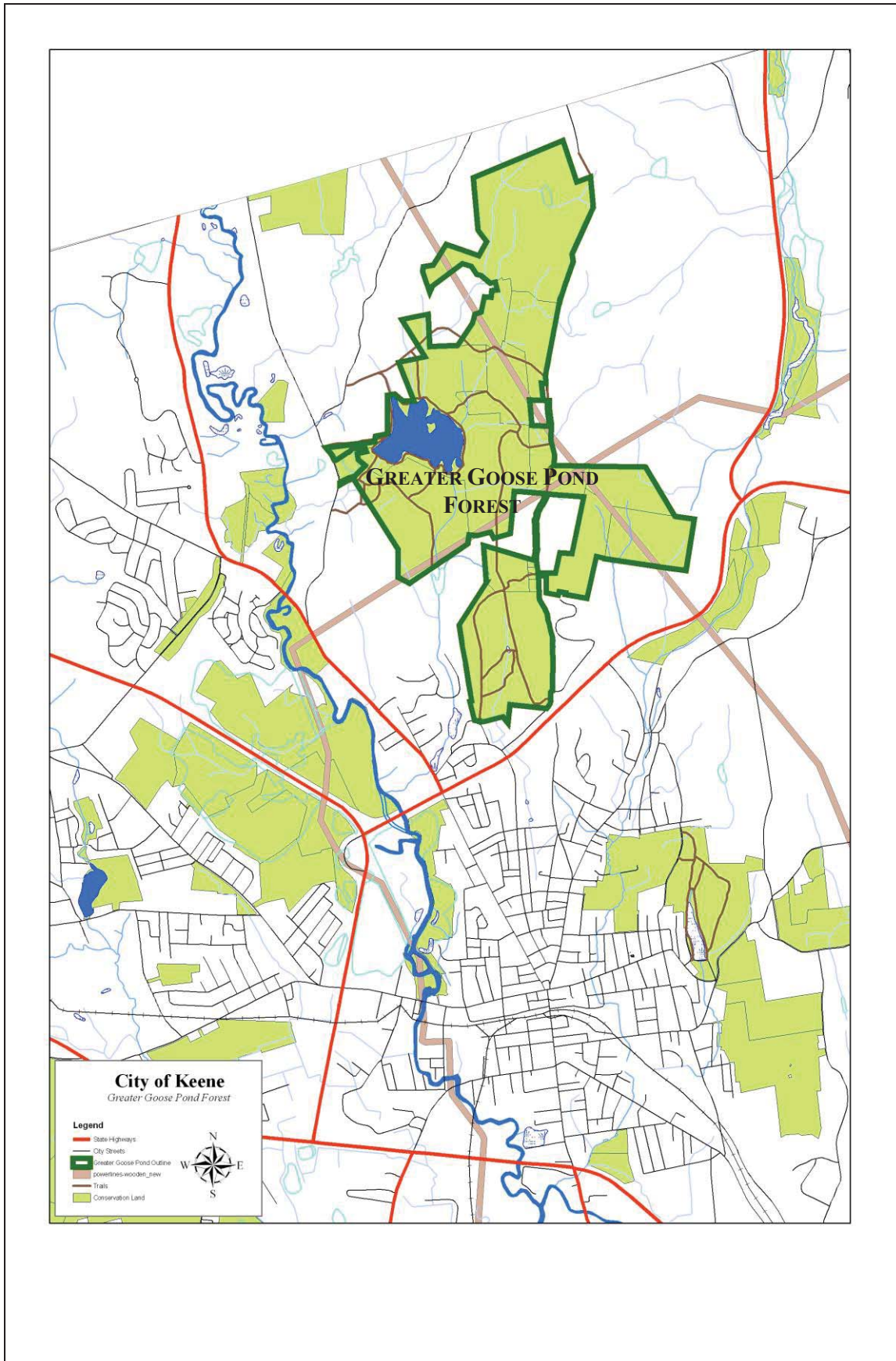
Greater Goose Pond Forest (GGPF) is located north of downtown Keene and is principally accessed from a parking area off East Surry Road (see map on page 3.). GGPF contains more than 1000 acres of forest, streams, wetlands, and sensitive habitats.

Created from a smaller pond and bog system in 1868, Goose Pond served as the City's first water reservoir and piped water supply. The land around Goose Pond, and the pond itself, were restricted from public use to protect the pond's water quality.

In 1984, the City of Keene removed Goose Pond from its water supply system. Its removal opened the forty-two acre pond and surrounding forest to the public for hiking, biking, fishing cross-country skiing, and other low-impact recreational activities.

Out of Keene's twenty-six different parks and open spaces, GGPF is the largest. After opening GGPF to the public, the City envisioned the property as a forested park where the citizens of Keene could experience the natural beauty of a large woodland area. To maintain this vision, the City created a master plan for GGPF in 1985, and later revised the plan in 1992. The 1992 Greater Goose Pond Forest Master Plan (1992 Master Plan) is still in effect.

According to the 1992 Master Plan, Goose Pond should serve the focal point for a nature preserve area. Additionally, trail systems, access to the Pond, key areas of public use, vistas, and forest management practices are to afford the public the ultimate natural experience. Recommendations made in the 1992 Master Plan sought to "improve the trail system... while concurrently proceeding with the identification of important natural areas and with land acquisitions needed to consolidate the area" (1992 Master Plan 3). In the context of the 1992 Master Plan, the overall objective of a management plan for GGPF is to provide "sound management that benefits the overall Goose Pond area and forest" (1992 Master Plan, 31).



Along with 1992 Master Plan, the Management Plan Guidelines for Land Owned by the City of Keene (Land Management Guidelines) were also taken into account while developing a management plan for GGPF. The Land Management Guidelines, created by Keene's Conservation Commission in 1998, outline a process for drafting land management plans for the City's Conservation Lands to ensure that specific property aspects are taken into account during plan development. Property aspects addressed by the guidelines are:

- Natural Resources
- Biodiversity
- Vistas, Trail Corridors, and Greenways
- Species Preserves
- Water Resources
- Buffer Zones
- Harvesting
- Recreation

In following with the process set by the Land Management Guidelines, Mayor Blastos authorized a sub-committee in October 2004 to review the above property aspects for GGPF and create a management plan for the property. During their review, the sub-committee relied on several property inventories conducted for GGPF. The sub-committee also authorized a timber inventory¹ for a portion of the property in April 2005. Inventories referenced by the sub-committee during the management process were:

- Brannon – *Timber Cruise Report for GGPF* (2005)
- Hilke – *Vegetation Analysis of the City of Keene's Grant Parcel in GGPF* (2005)
- Dubois & King, Inc. – *Natural Resource Inventory for GGPF* (2002)
- Van de Poll – *Deer Wintering and Vernal Pool Assessment of the GGPF* (1996)
- Van de Poll – *Vegetation Analysis of Four "Biologically Significant Interest Areas" of the GGPF* (1995)

¹ Despite the fact that several previous natural resource inventories (NRIs) had been completed for the property, the sub-committee felt that little data existed about GGPF's timber resources and that a timber cruise was necessary. The inventory was designed and completed with the assistance of Antioch New England Graduate School and Keene High School's AP Environmental Science classes.

- Mills – *Preliminary Assessment of the Surface Water Resources of the Goose Pond Watershed* (1994)

Beyond written inventories, the sub-committee sought the professional advice of consulting foresters, ecologists, and trail specialists in regards to potential management options for GGPF. The sub-committee also conducted a survey² of users of GGPF, abutting landowners, and the public at large to more fully understand what aspects of GGPF are most enjoyed by the public. The sub-committee extends its thanks to:

- Tom Wessels – Forest Ecologist, Antioch New England Graduate School
- Leo Maslan – NH Licensed Forester
- Josh Ryan – Trail Design Specialist, Timber & Stone
- Tom Sintros – Teacher, Keene High School
- Hunter Carbee – NH Timberland Owner’s Association
- John Buschbaum – NH Licensed Forester, Certified Logger, and Wetland Scientist
- Tim Fleury – NH Cooperative Extension

GOAL

GGPF should continue as a natural, open space resource where the citizens of Keene can enjoy nature. This goal is consistent with the long term goal of the 1992 Master Plan which “...is to maintain the natural beauty of the GGPF while encouraging public use. The area should provide the citizens of Keene a large woodland area accessible only on foot, ski, peddle bike, or snowshoe from various points and laced with clearly marked trails and woods roads which lead to ponds, nature walks and scenic vistas” (1992 Master Plan, 3). Recommendations developed during the planning process are those that will benefit the area and its existing uses.

² The sub-committee initiated a user survey for GGPF in September 2005. Surveys were passed out at the East Surry Road parking area (with the help of Keene High School’s AP Environmental Science classes); mailed to abutting land owners and housing developments; posted on-line at the City Parks – Greater Goose Pond webpage; and made available at the Parks and Recreation Department, Keene City Hall, and public library for citizens to complete. 202 surveys were returned to the Planning Department.

COMMITTEE FINDINGS

The following summary of GGPF's natural and recreational resources is the result of the sub-committee's review of the available information given above.

NATURAL RESOURCES

The primary bedrock geology found at GGPF is largely Oliverian gneiss, more specifically quartz diorite gneiss, which was formed sometime in the middle Devonian period 310 million years ago. While the formation of the bedrock geology found in GGPF occurred hundreds of millions of years ago, the landscape and soils we find in the forest today have their origins in the most recent period of glacial activity, occurring approximately 15,000 years ago (Dubois & King 2002).

Topographically, the area is characterized by moderately steep to very steep slopes east and northeast of the pond. Areas to the south and southwest of the pond are flatter and correspond with the outlet of the pond and a large wetland complex. Goose Pond is located in a basin surrounded by a landscape that reaches 1,000 feet in elevation to the east, 900 feet in the north, 700 feet to the northwest, and drops off to 600 feet to the south and southwest within the boundaries of GGPF. The mean water level of the pond is approximately 635 feet. (1985 Master Plan)

The forest resources of GGPF are most characteristic of a *hemlock-beech-oak-pine* forest (Brannon 2005; 5). *Hemlock-beech-oak-pine* forest is a sub-category of the Northern Hardwood Forest classification and is a "broadly defined community found on glacial till and terrace soils of low to mid elevations..." (Sperduto and Nichols 2004; 59). According to the Natural Resource Inventory (NRI) completed by Dubois & King, there are four dominant vegetation cover types in GGPF (14). The cover types are:

1. Forest dominated by hardwood trees,
2. Forest dominated by softwood trees,
3. Forest dominated by a mix of hardwood and softwood trees, and

4. Wetland areas

Of the four cover types listed in the NRI, the hardwood forest cover type is dominated by red oak, beech, and red maple. White birch, black birch, gray birch and large-toothed poplar/aspen are also present in the hardwood cover type. A mix of eastern hemlock and white pine dominates the softwood forest stands in GGPF. Mixed hardwood/softwood stands tend to be a varied mixture of the previous two cover types. Vegetation types found in wetlands differ from wetland to wetland, depending on conditions such as inflow and outflow of water, pH, nutrient levels, etc. According to Dubois and King, the most common wetland species found in GGPF are: red maple; high-bush blueberry; yellow birch; meadowsweet; marsh fern; cinnamon fern; sphagnum moss; and goldthread. Also, GGPF harbors several fens³, which exhibit a great diversity of wetland flora and fauna. (Dubois and King 2002; 14-15).

Abundant wildlife can be found in GGPF. While the NRI by Dubois and King primarily lists animal species that are associated with the varying cover types found in the forest, numerous wildlife and wildlife signs have been observed during various field studies within GGPF including: deer; small rodents (mice, mole, vole); chipmunks; red-squirrel; pileated woodpecker; coyote; kingfisher; turkey; red efts (juvenile red-spotted newts); skunk; chickadees; grouse; bear; weasel; hairy woodpecker; salamander; beaver; and green frogs. The 1992 Master Plan indicates sightings of or signs of fox, mink, fisher cat, and snowshoe hare. The 1985 Master Plan provides a table of bird species sighted and likely to be found at Goose Pond. In 1970, Goose Pond was stocked with large-mouth bass by the NH Department of Fish and Game.

BIODIVERSITY & SPECIES PRESERVES

Biodiversity refers to the variety of plants, animals, microorganisms, their genes, and the ecosystem of which they are a part. Species richness is perhaps the simplest form of biodiversity and indicates the number of species within a given area. To date, no conclusive study has been completed for GGPF and the surrounding landscape to map the species richness of the area or study other biodiversity indicators.

³ “Fens are peat-forming wetlands that receive nutrients from sources other than precipitation: usually from upslope sources through drainage from surrounding mineral soils and from groundwater movement. Fens differ from bogs because they are less acidic and have higher nutrient levels” (U.S. EPA).

Despite a lack of in depth biological study, Van de Poll's 1995 and 1996 studies indicate the presence of several "Biologically Significant Interest Areas"⁴ (BSIAs) within GGPF. BSIAs identified by Van de Poll are two fens, a large deer wintering area, and several vernal pools. In his studies, Van de Poll documented: green wood orchid and large flowered purple orchid, which are listed as species of "special concern" in New Hampshire; green adder's mouth, which is listed as a "threatened" plant within the State; and, Jefferson salamander complex, which is a hybridization of the "rare to the State" Jefferson's salamander (*Abystoma jeffersonianum*) and the more common blue-spotted salamander (*Abystoma caeruleum*) (Van de Poll 1995 & 1996).

Dubois and King note that they found no rare, threatened, or endangered species or natural communities of concern during their 2001-2002 fieldwork in GGPF. Despite inconsistency between findings, Van de Poll's and Dubois and King's studies are not mutually exclusive. The results of scientific studies within GGPF, and the surrounding area, should be considered as a whole body of knowledge regarding the property. Also, it is important to recognize that the current body of knowledge for GGPF is not definitive and needs to be built upon through continued study.

According to the City's Land Management Guidelines, species preserves are intended to protect species of interest and their associated habitat. Currently, no such areas have been established within GGPF. Van de Poll's studies provide the most specific information regarding species of concern and sensitive areas⁵ within GGPF and could serve as a basis for setting aside species preserve areas.

⁴ In Van de Poll's study, BSIAs are defined as:

1. Any unusual or rare natural community whose basic nature could be dramatically and/or permanently altered by direct human activity,
2. Any natural community that is exemplary, relative to the surrounding Monadnock region, and whose basic nature could be dramatically and/or permanently altered by direct human activity.
3. Any habitat that supports or has the documented potential to support state or federally listed rare and endangered species.
4. Any are of exceptionally high species richness relative to the surrounding area (such as an existing wetland)
5. Any are by virtue of its uniqueness would provide valuable scientific and or educational benefits.

(Van de Poll 1995; 1)

⁵ Sensitive areas refer to locations where the natural communities present may be easily impaired by a human or natural disturbance.

WATER RESOURCES

GGPF contains many water resources that are of value including streams, wetlands, and open water. Goose Pond is the largest water resource on the property. Contributing water feeds into the Pond from two perennial streams to the north and several intermittent streams.

Water leaves the pond via two perennial streams – one seeps from the earthen dam located on the southern shore of the pond and the second is fed by the spillway at the pond’s western edge. According to Mill’s study, there is a total of seven miles of streams within the GGPF and many wetlands (Mills 13).

Water quality monitoring does not take place at Goose Pond because the Pond is not maintained to meet health criteria for swimmable or drinkable waters. However, results from the user survey (Appendix I – GGPF User Survey Results) indicate that Goose Pond is the favorite feature⁶ of GGPF. Periodic water quality monitoring can diagnose changes within the pond’s watershed and help maintain the quality of GGPF’s most enjoyed resource.

BUFFER ZONES

Buffer zones are naturally vegetated upland areas adjacent to wetlands or surface water resources. Buffers help reduce the adverse effects of human activities on these resources. Buffer zones also serve important habitat and connectivity⁷ functions for wildlife. Location, connectivity, buffer width, and edge effect⁸ all influence the value of buffers for wildlife.

Typically, the width and effectiveness of buffers varies depending upon site-specific conditions such as slope gradient, runoff velocity, soils, vegetation, topography, and land use. A buffer width of 100 feet is necessary to remove sixty percent or more of the pollutants carried by runoff. However, a buffer width of 100 feet provides wildlife benefits only to species that are aquatic or stay close to the water’s edge.

⁶ Survey question 10 asked respondents to write in their favorite features of GGPF. Out of the 164 responses to question 10, 54% (89) referred to the Pond as their favorite feature.

⁷ Buffer zones provide important connectivity functions between habitats for wildlife.

⁸ Edge effect refers to “the boundary between natural habitats, especially forests, and disturbed or developed land. ...When an edge is created to any natural ecosystem, and the area outside the boundary is a disturbed or unnatural system, the natural ecosystem is seriously affected for some distance in from the edge” (Wikipedia).

After consultation with ecologists and a review of scientific studies on the function and effectiveness of buffer zones, the sub-committee determined that varying buffer widths be established to protect specific resources (see Policy Recommendations).

RECREATION

GGPF offers many exceptional recreational uses for the citizens of Keene. Given the established regulations for GGPF⁹, many passive recreational activities are possible on the property. The most appropriate activities are: hiking; cross-country skiing; biking; fishing; non-motorized boating; picnicking (carry in, carry out); and other passive activities that afford enjoyment of the natural, quiet setting. Other activities may be acceptable, such as horseback riding, however appropriate areas need to be established for such purposes.

Although there are several access points to GGPF, accessibility poses a problem especially at the East Surry Road parking area. When respondents to the user survey were asked to indicate which access points they use to enter GGPF, 77.1 percent (155) noted that they access the park from the East Surry Road parking area. The second most used access point for GGPF is a dirt shoulder on East Surry Road south of the parking area where a hiking trail meets the road. Only 19.3 (38) percent of people surveyed use this secondary access point (see user survey – question 7).

The East Surry Road parking area is the only “official” parking area for GGPF and can accommodate a maximum of 8-10 cars. At times when many people are visiting the park, the parking area fills quickly and people are forced to park on the shoulder of East Surry Road. The limited capacity of the parking area was a common theme expressed in the user survey as something to improve about the park.

⁹ *Unauthorized Uses:*

1. No person shall be allowed in the area from dusk till dawn without written permission of the Director of Parks and Recreation.
2. No alcoholic beverages shall be allowed.
3. No open fires shall be allowed without the written permission of the Parks and Recreation Director and proof of permit from proper fire officials.
4. No swimming shall be allowed.
5. No motorized vehicles shall be allowed.

Beyond the single parking area, there are limited recreational amenities located at GGPF.

Current amenities include:

- Two trash cans – located at the parking area (1) and on Goose Pond’s southwestern shore (1)
- One Kiosk – located at the parking area

TRAIL CORRIDORS, VISTAS, & GREENWAYS

A broad trail network crisscrosses the majority of GGPF (Appendix II – Trail Map). The City maintains eight major trails, and recreational users of GGPF have cut an extensive network of side trails. Some concern exists regarding user-cut trails¹⁰ over potential for increased erosion and impact on sensitive natural/wildlife areas.

According to information gathered during the user survey, the trail system is the second most favorite¹¹ aspect of GGPF, with the trail around Goose Pond receiving the highest amount of use (approximately eighty percent of people (162) surveyed indicated that they visit the pond area). Trails on the eastern hillside, visible from the pond, and Drummer Hill rank second and third in use at forty and thirty percent respectively.

While trails are a favorite feature of GGPF, users also indicated that they would like to see the trail system improved and properly maintained¹². In response to maintenance concerns, the sub-committee consulted with a trail maintenance specialist to determine maintenance priorities for the Goose Pond Trail. (Appendix III– Goose Pond Trail Report)

The 1992 Master Plan recommends that the “trail system should be designed to connect all properties” (33). Presently, all parcels in the GGPF are connected by the City maintained trail system except the Paquette and Minister’s Lots. If new trails are considered for these

¹⁰ The term “user-cut trails” refers to the extensive trail system created and maintained by recreational users of GGPF. Most user cut trails are located on Drummer Hill and the Minister’s Lot for mountain biking purposes.

¹¹ Survey question 10 asked respondents to write in their favorite features of GGPF. Out of the 164 responses to question 10, 37% (61) referred to the trail system as a favorite feature.

¹² Survey question 11 asked respondents to write in things they would change or improve about GGPF. Out of 134 responses to question 11, 29% (39) indicated that the trail system needed improvement. Common themes for trail improvement included: bridges over water crossings; better trail markings; posted trail maps; fixing muddy areas; better winter maintenance; improved bike trails; and keeping existing trails clear.

areas in the future, they should link to the existing trail network or be designed to create loops for walkers.

There are few expansive views of the surrounding region along the existing trail system, most of which are created when trails cross the right of way for PSNH's transmission lines. Typically, most views found along the trail system for GGPF are confined forest views and views across Goose Pond of the surrounding hillsides.

While part of a large portion of relatively unfragmented forest habitat, GGPF is not part of a protected greenway¹³. However, the amendment to the City's Open Space Master Plan (1990), recommends that "The planning Board and the Conservation Commission should work together to develop a land protection and/or acquisition plan for linking the Surry Dam area with the Goose Pond area" (City of Keene Open Space Master Plan, 2).

HARVESTING

Active timber harvesting in GGPF has not taken place since 1985 and 1986 when selected harvests of the Minister's Lot and Drummer Hill were completed. In 1991, a selective harvest was planned for areas near Goose Pond, however the plan was never implemented due to public concerns. Timber harvesting, while often a controversial topic, can contribute to: species preservation; improved forest health and diversity; the maintenance of vistas; facilitate the expansion of trail networks; and generate revenue for future land management and acquisition.

In the case of GGPF, "the overall objective of the [timber] management plan should be sound management to improve the stands of species... and to benefit the overall Goose Pond area and forest" (1992 Master Plan 31). GGPF contains a wealth of timber resources, some of which may be suitable for active timber management. Harvesting is a viable use of the property, however there presently is not enough data regarding forest resources to

¹³ Greenways are defined as "corridors of various widths linked together in much the same way as our networks of highways and railroads have been linked." Greenways are typically utilized for the following purposes: 1) as a recreational greenway which typically links trails and other recreational resources; 2) as an ecological greenway, which link significant natural corridors and open spaces to provide for wildlife migration, biodiversity, and nature study; and 3) cultural and historic greenways which are places or trails with historic or cultural significance that provide educational, scenic, recreational, and economic benefit (New England Greenway Vision Plan).

appropriately determine where or how timber management should occur. While the sub-committee conducted a rough timber inventory (Appendix IV – Timber Inventory and Appendix V – Grant Parcel Vegetation Analysis) in April 2005, another more detailed and comprehensive inventory needs to be completed by a qualified forester, wildlife biologist, or forest ecologist before any timber management is planned.

The user survey results indicate active forest management is not considered a management priority for users and abutting landowners of GGPF. In fact, sustainable forestry and timber harvest ranked the lowest out of ten given future management options, polling at fourteen and eight percent respectively (see Question 12 – GGPF User Survey Results). Many comments submitted in the user survey (see Questions 10 and 11 – GGPF User Survey Results) suggest that respondents do not prefer active timber management.

If a harvesting plan is pursued, it should initially focus on areas within GGPF that have been historically managed for timber prior to the City’s acquisition of the land (Drummer Hill and the Minister’s Lot), use ecologically sound forestry practices to help limit environmental impacts to GGPF, and involve the public as much as possible during the planning process. The Forest Stewardship Council¹⁴ (FSC) has developed comprehensive criteria for timber management activities for forests in the Northeast that are environmentally appropriate, socially beneficial, and economically viable which could serve as a guideline for timber management practices in GGPF (Appendix VI – Additional Information Forestry Resources). Once completed, the harvest area should be monitored for various ecological impacts in order to determine whether or not harvesting should be expanded into other portions of the forest.

Additionally, the 1992 Master Plan recommends that a “no cut zone” be established around Goose Pond (30). The 1992 Master Plan also suggests that several areas be included in a no

¹⁴ The Forest Stewardship Council (FSC) is an international organization that accredits third-party certifiers such as SmartWood. Forest management operations that meet the FSC principles and criteria for environmental, economic, and social standards are awarded FSC certification which provides global recognition for sustainable forest practices. In developing its forestry standards FSC brought together multiple stakeholder groups whose livelihoods or lifestyles are connected to the world’s forests. Stakeholder groups include: environmental and social groups; the timber trade and forestry profession; indigenous people’s organizations; responsible corporations; community forestry groups; and forest product certification groups.

cut zone: the majority of land within the Goose Pond basin; areas prone to erosion; the large wetland to the south of the Pond; and the perennial stream to the north of the Pond (30-31).

Harvesting on public lands has been a sensitive issue in the community and many feel strongly that public lands should be left alone rather than actively managed. If the City decides to pursue timber harvesting in GGPF, it would be best served by taking the longest view of the management process, defining steps, and imagining as many ways as possible to include the public at large.

FUTURE MANAGEMENT DECISIONS

Citizens and civic groups have expressed concern over GGPF's lack of permanent protection. (Appendix VII – Friends of Open Spaces Letter) As the City of Keene and the Monadnock region continue to grow development threats in the area will shift in unpredictable ways. Permanently preserving key open spaces, like GGPF, ensures that those open spaces are available to others in the future to enjoy. While the parcels that comprise GGPF are in the Conservation zoning district and show as conservation lands in the City's Land Use Plan, the zoning legislation and Land Use Plan do not provide permanent protection. Under statute, the City Council can amend the zoning ordinance and Land Use Plan as it sees fit. While the development of GGPF for housing or other purposes seems highly unlikely now, development threats change over time as unforeseen circumstances arise.

Additionally, consideration should be given to implementing a Land Stewardship Program to help manage the various City-owned conservation lands. The focus of a Land Stewardship Program is to actively involve the community in the management, maintenance, and stewardship of City conservation land. Additionally, the program could synthesize and manage the various studies, inventories, and management plans that exist for each area, which would further streamline the management process. For example, a Land Stewardship Program could assist the land management process for City conservation lands by:

- Ensuring consistency in the development of management plans and their implementation;
- Maintaining a management database for all City conservation lands;
- Recommending future areas of study for City conservation lands;

- Organizing civic groups in volunteer maintenance efforts (i.e. trail maintenance and water quality monitoring);
- Conduct education and outreach programs about the City's natural resources; and
- Facilitating positive community relations regarding land management decisions.

If a Land Stewardship Program were created, activities it could undertake in relation to the management of GGPF are:

- Monitor user made trails for detrimental effects to the forest. Close user made trails that impact sensitive areas or cause excessive erosion..
- Organize volunteer efforts to help maintain the trail system, utilizing local schools and civic groups for support.
- Develop a natural studies outreach program to educate the community about Keene's natural resources and park management.
- Organize a water quality-monitoring program, using the Volunteer Lake Assessment Program protocol supported by NH Department of Environmental Services, for Goose Pond in order to establish baseline water quality data.

Implementing a stewardship program is important because as the community continues to develop, City conservation lands should be managed as a single resource to maintain their ecological viability. Conservation land provides not only aesthetic and recreational benefits but vital ecological benefits (such as flood storage, water supply, and purification of resources) that enhance Keene's quality of life. Integrated management of City conservation lands will help to ensure that these ecological functions are maintained and protected.

RECOMMENDATIONS

After reviewing all of the available information, the sub-committee has grouped its recommendations for GGPF into three categories: policy recommendations, actionable recommendations, and study recommendations.

Policy recommendations reflect the overarching goals for the management of GGPF.

Actionable recommendations are directives for immediate action to enhance management capabilities and the recreational enjoyment of GGPF.

Study recommendations are intended to identify areas where more research is needed regarding GGPF for future management decisions.

The following recommendations are based upon the sub-committee's deliberations about the current and future management of GGPF. In order to appropriately implement the recommendations made in this plan, affected City Departments and Boards should work together to assign management responsibilities. The Sub-committee understands that coordination and implementation of this plan is the primary responsibility of the Parks and Recreation Department

Policy Recommendations

It is the policy of the City to identify, monitor, and protect species and natural communities that are significant to GGPF, the region, and the State. To accomplish this policy, land managers should:

- Monitor for, manage, maintain, and collect information on the following:
 - The presence of species, floral and faunal, which are significant to GGPF, the Monadnock Region, and the State.
 - Known Biologically Significant Interest Areas (BSIAs). Positive evidence of human impact on BSIAs should be met with notices discouraging use.
 - The health of GGPF's natural communities for areas that are being degraded.
 - The presence of invasive exotic species¹⁵ which may significantly alter the structure and function of the ecosystem.
- Utilize buffer zones to protect the following resource values:
 - GGPF's water resources, including wetlands and vernal pools. The minimum width around water resources associated with a timber harvest

¹⁵ "Exotic species are those artificially introduced from their natural geographic range to a new area where they may become invasive, significantly altering the structure and function of the new system by naturally expanding both their population and distribution range. ... Invasive exotics pose lasting and pervasive threats, establishing self-sustaining populations in natural areas, often out-competing with and otherwise harming indigenous species" (University of Richmond)

- is 150 feet, as recommended by the 1992 Master Plan, except for Goose Pond where the recommended buffer width is 300 feet from the trail surrounding the pond.
- Sensitive natural areas and wildlife species from management activities and user impact.
 - Known amphibian breeding areas (vernal pools) and their associated upland habitats during management activities. Caution should be used when undertaking management activities near potential vernal pools.
 - Deer wintering areas during the winter months.
- Continue the following management practices:
 - Enforcement of existing recreational policies.
 - Maintenance of the Goose Pond watershed area (land north of the East/West PSNH transmission line) as a natural area for low-impact use.
 - Institute the following management practices:
 - Require a licensed forester, who adheres to the comprehensive management guidelines set by the Forest Stewardship Council (FSC) and NH Best Management Practices, to prepare any forestry plans for GGPF.
 - Allow for a community-wide public process before any decision to implement a forestry plan.
 - Require approval of both the GGPF Management Plan and future forestry plans by the City Council and Conservation Commission.
 - Incorporate, as appropriate, logging roads into the trail network upon completion of forestry activities.
 - Use proceeds from the sale of timber resources only for: future resource inventories and/or management activities on City conservation lands; or for the acquisition of additional City-owned conservation lands.
 - Set up a Conservation Fund separate from the City's General Fund to ensure timber revenue will be utilized for conservation purposes.
 - Monitor user-made trails for detrimental effects to the forest. Close user-made trails that impact sensitive areas or cause excessive erosion.

- Work to establish a Land Stewardship Program for City-owned conservation lands.
- If new trails are considered in the future, they should link to the existing trail network or be designed to create loops for walkers.
- Ensure all management activities coincide with and uphold the recommendations and intent of this management plan.
- Adjust management priorities when previously unknown species of interest are documented or conservation priorities change.

Actionable Recommendations

- ❑ Have the Conservation Commission determine the most appropriate step(s) to maintain all parcels of GGPF as conservation land and take necessary steps to place GGPF parcels in permanent conservation.
- ❑ Place kiosks at all commonly used entrances to GGPF to provide the following information to park users:
 - Existing recreational policies
 - *Carry in, carry out* signs
 - Information on the water quality impact of pet wastes
 - Locations of provided pet waste bags and waste receptacles, similar to those found at Ashuelot River Park, to encourage pet owners to pick up pet waste
 - Notices educating users about the effects of land fragmentation on wildlife and to discourage further construction of user made trails
 - An updated trail map of City-maintained trails
- ❑ Improve and maintain the trail around Goose Pond. Follow recommendations provided in Ryan's trail assessment and report. (See full plan.)
 - Organize volunteer efforts to help maintain trail system. Utilize local schools and civic groups for support.

- ❑ Place appropriate signage on existing City-maintained, blazed trails and at junctions of these trails. Signage should include: trail names, distance, difficulty, direction, and acceptable recreational uses.
- ❑ Hire a consulting, licensed forester, who adheres to sustainable, ecologically sound forestry principles, to conduct a timber study in GGPF. The resultant study must be submitted to the Conservation Commission and City Council for review and approval prior to implementation.
- ❑ Hire an intern or form a citizens committee to develop a Land Stewardship Program for the City and natural studies outreach program to educate the community about Keene's natural resources and park management.
- ❑ Enhance the management capabilities of City staff and land managers by:
 - Compiling all current inventories and biological studies into a single management database to increase decision-making efficiency. Incorporate future studies into the database as the studies are completed.
 - Create a map of established buffer zones and incorporate buffer zone data into the management database.

Study Recommendations

- Request further study of natural resources and biodiversity indicators within GGPF and the surrounding region. Create a cooperative program with local schools and civic groups to complete necessary studies in a timely manner.
- Determine areas that are significant for wildlife migration, wintering, habitat, and food. Create protected wildlife corridors to maintain wildlife diversity. Work to link wildlife corridors through GGPF to corridors of regional importance.

- Review the effects of timber management activities conducted in GGPF to assess their impact on the area's natural communities and to determine if timber management activities should be expanded to other portions of GGPF.

- Conduct a feasibility study to correct parking and safety issues at the East Surry Road parking area. Determine location for a secondary parking area.

CONCLUSION

GGPF provides an excellent natural and recreational resource to the City of Keene. Management of the area should continue with the goal of maintaining “the natural beauty of the Greater Goose Pond Forest while encouraging public use” established in the 1992 Master Plan. While little needs to change regarding current management, the given recommendations will ensure that the exceptional quality of GGPF as an open space and recreational resource is maintained.

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