Londonderry Open Space Task Force

Report to the Londonderry Planning Board and Town Council
June 2006
Londonderry Open Space Task Force

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Location of Maps
Section 1, Introduction

The following words from the Londonderry Master Plan, (Chapter IV, Livability-Enhancing Londonderry’s Environment) are the best introduction to the report of the 2005 Londonderry Open Space Task Force:

For the purposes of this plan, the term ‘natural environment’ is used to broadly discuss Londonderry’s air, water, and land resources including, but not limited to, the town’s scenery, air quality, aquifers, streams, soils, plants and animals. These features form an integrated, continuous natural network or matrix in which the town’s built environment and its key cultural and historic artifacts are embedded. This matrix provides the ecosystem services required to sustain a livable Londonderry.

The Task Force and staff, along with other Boards and Committees, look to the Master Plan to guide open space planning and protection, as they implement various modes of protection, where and how it is deemed most appropriate.

The Town Council charge to the Task Force was to “identify agricultural, open and undeveloped land in Londonderry and prioritize them as land that should be conserved from residential, commercial and industrial growth.” In doing so, the Town will create and sustain the livable Londonderry envisioned in the Master Plan.

The first effort of the Task Force was to identify the features of the town’s own matrix of natural resources and to assign relative values to the various resources. Mapping these resources throughout the town produced the network that links them together. Once key parcels were identified from the network, the Task Force suggested strategies and priorities as a guide for Londonderry’s open space protection efforts. The estimated cost associated with achieving the vision of the Master Plan could then be determined.

This report is organized to provide a summary of the Task Force work in the main body of the report. Detailed information on the technical methods, meeting minutes and presentation materials considered by the Task Force are contained in the appendices to this report. The final appendix is the list of parcels exceeding eight acres in size that the town should consider protecting. The entire list of parcels that contribute to Londonderry’s open space is available in electronic form from the Planning Department. The great majority of these parcels are not appropriate for town purchase or for easements, but are more appropriately managed through formal or informal voluntary agreements with landowners.

The Open Space Task Force met five times from January to May, 2006, on the last Wednesday of each month. Members included Mike Speltz (Chair); Mike Brown (Vice Chair and Budget Committee representative) Mark Oswald (Town Council rep); Art Rugg (Heritage Commission rep); Mary Soares (Planning Board rep); Paul DiMarco (Planning Board alternate); Lisa LaVallee (resident); Sandy Lagueux (Londonderry Trailways rep); Paul Nickerson (Conservation Commission rep); Elizabeth Durkin, (resident) and Kevin Foley (Recreation Commission rep). Staff support was provided by John Vogl, GIS Manager; Tim Thompson, Town Planner and Jaye Trottier, Secretary.
Section 2, Plan Development

Step 1

The first step in the development of the recommended plan was the identification of high value natural resources within the town. Staff suggested resource data and the Task Force selected the resources shown in Table 1 for evaluation. Each line in the table represents a natural resource that has been documented in the town’s Geographic Information System (GIS). The various resources were grouped into the five broad categories shown in yellow highlight. Round 1 and Round 2 Resource scores are described in Step 2.

TABLE 1, Resource Data and Weighting Scheme

<table>
<thead>
<tr>
<th>Resource Category</th>
<th>Round 1 Resource Score</th>
<th>Round 2 Resource Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Soil Conditions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Important Forest Soil Group I &amp; II</td>
<td>6.8</td>
<td>6.8</td>
</tr>
<tr>
<td>Local Agricultural Soils</td>
<td>2.0</td>
<td>2.8</td>
</tr>
<tr>
<td>Prime Agricultural Soils</td>
<td>8.5</td>
<td>7.8</td>
</tr>
<tr>
<td>State Agricultural Soils</td>
<td>1.5</td>
<td>2.3</td>
</tr>
<tr>
<td><strong>Soil Condition Total Score</strong></td>
<td>18.8</td>
<td>19.5</td>
</tr>
<tr>
<td><strong>Open Space Continuity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unfragmented Areas &gt; 50 acres</td>
<td>7.5</td>
<td>6.4</td>
</tr>
<tr>
<td>Unfragmented Areas &gt; 100 acres</td>
<td>7.5</td>
<td>8.4</td>
</tr>
<tr>
<td>Unfragmented Areas &gt; 500 acres</td>
<td>9.6</td>
<td>11.9</td>
</tr>
<tr>
<td><strong>Open Space Continuity Total Score</strong></td>
<td>24.6</td>
<td>26.6</td>
</tr>
<tr>
<td><strong>Water Quality</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquifer Transmissivity 0 - 2,000 ft³/day</td>
<td>5.4</td>
<td>4.1</td>
</tr>
<tr>
<td>Aquifer Transmissivity &gt; 2,000 ft³/day</td>
<td>9.4</td>
<td>8.9</td>
</tr>
<tr>
<td>Named wetlands and perennial streams &amp; 250' buffer</td>
<td>8.6</td>
<td>7.6</td>
</tr>
<tr>
<td>Unnamed wetlands and intermittent streams &amp; 100' buffer</td>
<td>4.9</td>
<td>7.8</td>
</tr>
<tr>
<td><strong>Water Quality Total Score</strong></td>
<td><strong>28.3</strong></td>
<td><strong>28.4</strong></td>
</tr>
<tr>
<td><strong>Views / Quality of Life</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scenic Views/Ridgelines &amp; Hilltops</td>
<td>9.3</td>
<td>7.9</td>
</tr>
<tr>
<td>Apple Way (200' buffer)</td>
<td>8.6</td>
<td>6.6</td>
</tr>
<tr>
<td>Active Farms</td>
<td>8.6</td>
<td>8.4</td>
</tr>
<tr>
<td>Slopes &gt; 25%</td>
<td>1.8</td>
<td>2.6</td>
</tr>
<tr>
<td><strong>Views / Quality of Life Total Score</strong></td>
<td><strong>28.3</strong></td>
<td><strong>25.5</strong></td>
</tr>
<tr>
<td><strong>Total Score</strong></td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Step 2

The second step was to assign relative weights to the various natural resources to establish their suitability for protection. Weights were assigned through a “Delphi” process during which individual OSTF members suggested a weighting scheme, then compared themselves to the group average, discussed differences and revised their
schemes. After the second iteration of this process the members had reached near consensus. Table 1 shows the relative weight, on a percentage basis, placed on each of the resources. For a more complete description of the data and its sources, see Appendix D, Technical Reference.

Staff then computed resource values across the entire town based on the weighting scheme shown in Table 1. Map 1 is a co-occurrence map that shows where multiple resources occur in the same area. The inset maps on Map 1 show, respectively, where areas of productive soils, open space continuity, water quality, views/quality of life and slopes occur. Each map is graduated by standard deviation to highlight areas of exceptional resource value. These maps provide the basis for all subsequent work by locating, in a spatial context, the highest value natural resource areas and therefore those areas of town most in need of protection.

Step 3

The third step was to define a “green infrastructure” as this term is used in the town’s Master Plan. This is the area that, if protected from development, should ensure that the services provided by nature to the town’s residents will continue indefinitely. These services include:

- Maintaining the quality of ground and surface water.
- Improving air quality.
- Providing sufficient habitat for plant and animal species now in Londonderry to remain in Londonderry, even in the face of a significant disturbance such as fire or insect infestation.
- Providing an opportunity for outdoor recreation for all Londonderry residents at a reasonable distance from their homes.
- Creating a pleasant and scenic environment in which to live.
- Creating interconnected green spaces that allow for trails connecting the various parts of town and allow for the movement of wildlife.

In addition to the previous maps of natural resources, the Task Force consulted two other maps. Map 2, nicknamed the “gravity model”, gave special weight to land that was near existing conservation land. Map 3, nicknamed the “10 to 10” map defined those lands that, if protected, would allow every Londonderry resident to be within no more than a ten minute walk to at least a ten-acre open space. In defining the green infrastructure (Map 4) the Task Force followed these general guidelines and constraints:

- Include areas of exceptionally high resource value for a particular category.
- Include areas where multiple resource values occur in the same place.
- Give added consideration to lands near existing conservation lands.
- Give added consideration to lands that allow each Londonderry resident reasonable access to open space.
- Avoid areas slated for industrial or commercial development, unless they contain exceptionally high quality resources.
• Include at least 25% of the town’s land area to ensure the sustainability of natural processes.
• Do not include over 50% of the town’s land area, to allow for future development.

As defined, the Green Infrastructure in Londonderry includes approximately 12,500 acres or 47% of the Town. This includes a wide diversity of land uses, including vacant properties and already developed or protected lands. *It is extremely important to note that landowners whose land falls within the green infrastructure are free to dispose of their land as they see fit, consistent with applicable laws and regulations. Inclusion of land within the green infrastructure is NOT an indication that the Town of Londonderry has any legal interest in the land or has any intention of taking the land for a public purpose.*

**Step 4**

In this step the green infrastructure was superimposed over the town’s tax maps to determine which ownerships or parts of ownerships were included in the green infrastructure. Staff computed the natural resource value of each parcel or partial parcel lying within the green infrastructure. The great majority of parcels had some development on them, however the developed portion was often located outside the green infrastructure which yielded a natural resource score of 0.

From the large set of parcels in the green infrastructure (approximately 2,400), the Task Force limited detailed consideration to those parcels over 8 acres in size and in private ownership. Parcels of lesser size were presumed likely to remain in their current condition or, if developed, were considered as not critical to the integrity of the green infrastructure.

Roughly 170 parcels greater than 8 acres in size fell within the green infrastructure. These parcels were separated into two groups: roughly 76 parcels that were already developed to some extent and an additional 94 undeveloped parcels. The Task Force examined each of these undeveloped 170 parcels, shown on Map 5, to determine a protection strategy for each parcel. The strategies were further grouped into “high cost” (114) and “low/no cost” (56) protection strategies. These strategies included:

• Purchase by the town to be held as town-owned conservation land (high cost).
• Purchase of a conservation easement by the town over part or all of the property (high cost).
• Protection by regulation, such as state wetland regulations and/or the town’s Conservation Overlay District (low/no cost).
• Establishment of a management agreement that would ensure the land was managed in a way compatible with maintaining the green infrastructure (low/no cost).
Section 3, Priorities

The Town Council charged the Task Force to recommend a prioritized list of land to be protected, and such a list is provided at Appendix E. The list is presented in tax map and parcel number order. Thus the relative position of a parcel in Appendix E does not indicate a priority relative to the other parcels on the list. Rather, the list elevates these 172 parcels in priority over the other roughly 10,000 parcels in Londonderry. The many properties within the green infrastructure, but not appearing at Appendix E, due to their smaller size are still vital to the success of the Open Space Plan. However, due to their smaller size, the most appropriate protection strategy is likely to be cooperation with landowners to ensure the sensitive parts of the properties are properly managed. Note that Appendix E separates properties to be protected by high- versus low/no-cost strategies.

The Task Force believes that every parcel in Appendix E is worthy of protection as each is an important link in the green infrastructure that should be protected using appropriate, site specific means. Further, the Task Force believes protection priorities should be based on three broad criteria:

1. The “threshold” criterion of being within the green infrastructure.
2. The “competitive” criterion of cost per resource value, computed at the time a purchase is considered.
3. The “qualitative” set of criteria that includes: geography (key links, abutting land); threat of development; ability to get outside money; sales price; possible bargain sale; cost avoidance if no development (self-paying).

The “threshold” criterion acts as a broad filter that identifies both parcels of interest to the town and parcels that are best dedicated to further development.

The competitive criterion is a strictly computational criterion that assumes that all other factors are equal. The Task Force has recommended this competitive criterion over total parcel resource value, because financial resources are the limiting constraint in executing the open space plan. This criterion promotes the greatest amount of conservation value for the least amount of dollars. Unfortunately, the competitive criterion can only be applied to a specific parcel at a specific sale price. This means that the cost per resource value cannot be used to compare a large number of parcels, such as the 172 parcels recommended for protection at Appendix E. Nonetheless, this criterion can be used to evaluate specific offers from willing sellers of land or conservation easements, and these offers can then be compared to the cost effectiveness of other open space purchases made in the past and adjusted for inflation.

The qualitative factors provide for the intervention of human judgment on a case-by-case basis. This judgment must be exercised by the Conservation Commission, as they recommend parcels for protection, and the Town Council, as they consider the Conservation Commissions recommendations, all subject to input from the public.
In reality, it is these “qualitative” criteria that will play the most important role, for the simple reason that the town can only acquire interests in open space form *willing sellers*. At any given point in time the number of willing sellers is likely to be few in number.
Section 4, Financial Planning

In one sense the time horizon of this plan is indefinite: it looks forward to the day when Londonderry is both “conserved out” and “built out”. In reality, given the pace of development in southern New Hampshire, it appears that “build out” is roughly 10-40 years in the future. This very rough timeframe has limited use in computing the total cost of the Open Space program for two reasons: first the two extremes differ by a factor of four, and second, predicting the rate of inflation, much less the level of real estate values even 10 years into the future would be highly speculative. Instead, the Task Force believes the town should take an adaptive approach to financial planning: the recommendations of this plan represent a “best guess” as to what we need to do in the near term to execute the Open Space Plan. However, since our ability to predict costs beyond the near term is very limited, the Task Force recommends reviewing the open space financial plan on an annual basis, in conjunction with the Capital Improvement Plan process.

Historically the town has succeeded in leveraging its own resources with federal, state and private dollars, so that nearly 30% of Londonderry open space acquisition has been funded with non-town dollars. The Task Force assumes, in the absence of better information, that this rate can be sustained, at least in the near term.

For the period of fiscal years 2003 through 2007 Londonderry voters have authorized $8,000,000 in open space funding, for an annual average of $1,600,000. This does not include the $2.8 million appropriation to reduce the scope of a large residential project south of Home Depot.

Since the Task Force assumed an equal level of effort over the period of open space protection, and since, as discussed above, it is not possible to predict how much time is left before the town is essentially built out, the question of how much funding to dedicate on an annual basis is largely a question of risk. The risk is that the point of build out will be reached before the Open Space Plan acquisition effort is complete. At too low a level of annual funding, the town may not be able to protect the parcels recommended for protection in this report, because they will be developed before the town has raised sufficient funds to protect them. At too high a level of annual funding, taxpayers may feel they simply cannot afford to support open space acquisition, even though they support the concept of open space protection.

The solution to this dilemma is to follow the adaptive financial management approach discussed above. The Task Force recommends that the town consider annual funding levels that voters have supported in the past, but that the town commit to annual reviews of this level of funding to ensure the risk of not completing the planned open space acquisitions does not become too high.

The following table illustrates two scenarios at three levels of annual funding that bracket past funding levels. The Task Force believes the choice of a specific funding level,
within the range provided below is a policy decision that must be balanced by the town’s leadership with all the other competing demands on town resources. The Task Force notes that, unlike many capital projects, the acquisition of open space adds an appreciating rather than a depreciating asset to the town. In addition, most studies conclude that open space has a net positive effect on taxes, because it reduces the future cost of town services.

In one scenario, the town acquires parcels at roughly their current equalized valuation. This is optimistic because it does not consider that costs are likely to rise over time. In the second scenario, the town acquires the parcels as if they have already been subdivided and approved for development. This is pessimistic in the sense that the town would hope to acquire the land before it is approved for development, but, like the first scenario, it does not account for rising prices.

<table>
<thead>
<tr>
<th>Sample Annual Acquisition Funding Levels (constant dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual town funding</td>
</tr>
<tr>
<td>Outside funding @30%</td>
</tr>
<tr>
<td>Total annual funding</td>
</tr>
<tr>
<td>Years till completion (low)</td>
</tr>
<tr>
<td>Years till completion (high)</td>
</tr>
</tbody>
</table>
Section 4, Recommendations

The Londonderry Open Space Task Force recommends:

1. The green infrastructure identified in this plan should be adopted as the town’s goal for open space preservation.
2. The parcels identified in Appendix E should be pursued for protection using the strategies indicated.
3. The town work expeditiously and cooperatively with owners of developed parcels within the recommended green infrastructure to ensure their appropriate management.
4. The Town re-examine the recommendations of this Task Force at no more than three year intervals and review the open space financing plan annually, as part of the Capital Improvement Plan process.
5. The Capital Improvement Plan include an annual open space investment of one to two million dollars, consistent with other capital needs.
Londonderry, NH
Co-Occurrence of Natural Resources

Map 1A

Combined co-occurrence value, by standard deviation

Resource values presented on this map were extracted by members of the Londonderry Open Space Task Force in January 2006 during a consensus building workshop. These resources were ranked using a seven point scale developed by the GIS Manager and include the following layers:

- Scenic Views
- Habitats & Hops
- Active Farming
- Forest Continuity
- Unfragmented Areas > 50 acres
- Unfragmented Areas > 100 acres
- Unfragmented Areas > 500 acres
- Water Quality
- Aquifer Transparency > 1,000 ft./day
- Aquifer Transparency > 3,000 ft./day
- Rarified Reaches and perennial streams 5,250 buffer
- Uncurbed Reaches and intermittent streams 5,100 buffer

Co-occurrence of highest ranking specialist features

Standard Deviation of Total Resource Value

0 - 1 Std. Dev.
1 - 2 Std. Dev.
2 - 3 Std. Dev.
3+ Std. Dev.
Existing Conservation Areas

Combination of features ranked in the second (or higher) standard deviation

- Highest Scoring Resources (combined)
- Highest Scoring Water Resources
- Highest Scoring Forest Resources
- Highest Scoring Quality of Life Resources
- Highest Scoring Soil Resources
- Existing Conservation Areas
Map 2

Weighted Proximity of Conservation Areas

- Areas of High Connectivity
- Areas of Low Connectivity
- Conservation Areas > 10 acres