

A Methodology for Valuing Town Conservation Land

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Abstract

This paper presents a methodology for rating existing or potential conservation land according to ten criteria weighted to reflect the needs of the local community in which the land is located. The ratings may be used to determine priority for public acquisition. The methodology may also be used to establish a dollar “replacement value” for an existing parcel of conservation land, reflecting both its market value as well as its value for other public interests such as conservation, recreation, views, or resource protection. The replacement value may be used as a starting point in negotiations for compensation in the event that the parcel is removed from conservation land status through eminent domain or other mechanism.

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A Methodology for Valuing Town Conservation Land

Introduction

The process of determining the value of a particular parcel of land has always been more art than science. Professional appraisal organizations have made great progress in standardizing methodologies and establishing codes of practice, but valuation still contains elements of subjectivity. This remains true even in situations where the property is non-unique and the market provides sufficient comparative information to establish a value with high confidence.

In recent years land valuation concepts have been stretched by the need to meet a new challenge: determining the value of land which because of its special environmental qualities is precluded, through deed restriction or other means, from ever being altered from its natural, undeveloped state. Conservation land is said to have “public interest value” because it provides products and services such as drinking water, scenic views, storm damage protection, wildlife habitat or recreation opportunities. Valuing such land presents several special difficulties.

For one thing, conservation lands are by definition unique, and there are few comparable sales or resale data to guide valuation. For another, appraisals are based on the highest and best use of the property, which is defined as the most profitable economic use. This standard is unsatisfactory for lands that produce significant public goods or services that are valued by the public at large but not traded in markets. Finally, conservation value is ultimately an expression of the benefit to all the individuals within a community, not just those who buy and sell property.

Despite these difficulties lay public officials and the taxpayers they represent are often faced with the task of placing a dollar value on conservation land. The question may arise in one of several contexts. In one common situation, a community must decide whether or not to spend public resources to meet the cost of protecting the public interest in a particular parcel, whether through fee simple purchase, purchase of development rights, or granting of special tax status.

A second situation occurs where conservation needs exceed available resources, and the community must choose between several possibilities. How does the community objectively compare the conservation values of several different parcels? Even in communities where there has been a systematic attempt to rank conservation priorities, the methodologies are usually rudimentary.

Finally, a rare situation may arise where land which has been set aside for conservation, supposedly in perpetuity, is subsequently taken by eminent domain by a public agency for some other overriding public purpose. How does the community determine a basis for compensation, monetary or other?

While the appraisal profession is struggling to incorporate a workable definition of public interest value into the practice of valuation, it does not appear that the matter will be settled soon. In the meantime, local citizens and officials need an approach for determining the value of conservation land.

This paper presents a methodology that may be used to analyze, express and compare the value of lands that have been or are considered being dedicated for conservation use by a particular

community. Several expressions of value are suggested which may be used singly or in combination, depending on need.

The **conservation rating** of a particular site is a measure of how well it satisfies certain predetermined conservation criteria established by the community. The rating is a numerical score which indicates the relative public interest value of the parcel within that specific community. Note that because the conservation criteria are weighted, two different communities might (and in fact probably would) derive different conservation ratings for an identical land parcel.

The **conservation value** of a site is that site's conservation rating converted to a dollar value by expressing it as a percentage (low, medium or high) of the average assessed value of land in the community. This procedure factors in the size of the parcel; i.e., a larger site will have more conservation value.

The **market value** of the site is the price that it would bring in an open and competitive market, according to its highest and best economic use and assuming that it is not restricted for conservation purposes. The market value may be determined by a professional appraisal or estimated through a series of calculations we suggest below. This calculation factors in location-specific real estate values.

Finally, the **replacement value** of a property is equal to its conservation value added to its market value, thereby incorporating both the economic value of the property as well as its public interest value. The replacement value may be utilized to estimate the relative worth of a potential conservation purchase, or as a starting point for negotiations to determine compensation for existing conservation land in the event of a taking by another unit of government.

Each of these values is explained in more detail in the following sections. An example drawn from a real world situation is used to illustrate the procedures and concepts. Finally, the appendix includes worksheets, and in electronic versions of this paper, a computer spreadsheet, for applying the methodology to other situations.

Methodology

Step 1: Conservation Rating

The first step in determining the conservation rating of a particular property is to determine the land conservation priorities of the particular community in which the model is being applied. This is accomplished by rating the following criteria on a scale of 0-100 so that the total of the scores add up to 100 points. The result is a relative weighting of each criterion expressed as a percentage of the whole.

- Flood Control
- Water Supply
- Protection of Water Quality (from pollutants, sediment)
- Maintenance of Biological Diversity/Wildlife Habitat
- Buffer from Undesirable Land Uses
- Recreational Opportunity/Character-Building/Spiritual
- Production of Natural Resources

- Scenic Views
- Historic Resources
- Education

This exercise should be completed without any specific parcel of land in mind, and need only be done once for any given community. Since the result will be a declaration of community conservation priorities, a broad cross-section of community interests should be involved in the process, and existing policy documents such as open space and recreation plans should be utilized as input.

Next, the particular parcel is rated according to how well it meets each of the above criteria on a 0-3 scale, using the following guidelines.

Flood Control

- 3 High Natural Valley Storage Capacity
- 2 Medium Storage Capacity
- 1 Low Storage Capacity
- 0 No Flood Control Benefit

Water Supply

- 3 Existing Zone I or Capable of Producing a Yield for Public Supply
- 2 Existing Zone II
- 1 Existing Zone III
- 0 No Potential as a Water Supply Source or Ground Water Recharge Area

Protection of Water Quality/Soil Erosion

- 3 Protects Class A Waters
- 2 Protects Class B Waters
- 1 Protects Class C Waters
- 0 Not Adjacent to Any Waterway

Maintenance of Biological Diversity/Wildlife Habitat

- 3 Site is listed in a State Natural Heritage Atlas as having National or Statewide Significance or Provides a Corridor Linking other Open Lands
- 2 Site has Local Significance as a Habitat Area - Unique Features
- 1 Site is of Common Distinction - No Rare or Unique Features
- 0 Site Does Not Provide a Significant Habitat Function

Buffer from Undesirable Uses

- 3 Site Buffers Public (i.e., school or hospital) or Large Private (i.e., residential neighborhood with greater than 20 dwelling units) Sensitive Receptors from Adjacent Nuisance (light, unsightly views, noise, or odors)
- 2 Site Buffers Small Private (neighborhood with less than 20 dwelling units) Sensitive Receptors from Adjacent Nuisance
- 1 Site Buffers Non-Sensitive Receptors (i.e., commercial areas) from Adjacent Nuisance
- 0 Site does not serve a Buffering Role

Recreational Opportunity/Character-Building/Spiritual

- 3 Site is a Destination Point Drawing People for Recreational Activity or Site is an Existing Handicapped Accessible Site
- 2 Site Meets a Priority for Future Need Mentioned in the Open Space and Recreation Plan or in Other Planning Documents
- 1 Site is not Mentioned in any Current Planning Documents, but is important
- 0 Not applicable

(Use the Recreation Worksheet (Table 1) below as a guide for determining overall recreation rating.)

Table 1: Recreation Worksheet			
Recreational Value	Recreational Rating		
	High	Medium	Low
Nature Appreciation			
Hiking			
Hunting/Fishing			
Picnicking			
Biking			
Boating			
Horseback Riding			
Motorized Recreational Vehicles			
Solitude, Personal Reflection			
Stress Reliever			
Active Ball Fields			

Production of Natural Resources

- 3 Site Currently Used for Timber and /or Firewood, Agricultural Production / Community Gardens
- 2 Site has Significant Potential to be Used for Timber and /or Firewood, Agricultural Production / Community Gardens
- 1 Site Provides Little or Limited Opportunity for Natural Resource Production or Community Gardens
- 0 No Opportunity for Natural Resource Production or Community Gardens

Scenic Views

- 3 Site Provides Distinctive Landscape Value or Character Viewable from a Public Way or Provides a Point from which to See Significant Wide-angle Unobstructed Views. Currently Identified with Regional Value
- 2 Site Recognized as a Distinctive Visual Element in Town or Provides a Point from which to See Significant Wide-angle, but Obstructed Views.
- 1 Site Provides Interesting Landscape Features that are not Readily Accessible (e.g. must hike in to view or see view).
- 0 Site does not Provide any Scenic Qualities.

Historic Resources

- 3 Features are Listed on State or Federal Register of Historic Places or Documented Ancient Uses of Site are Present
- 2 Features are Listed on Local Inventory of Significant Historic, Cultural or Archeological Value
- 1 Features are Not Listed on any Inventory but Contain Significant Historic, Cultural or Archeological value
- 0 Not Applicable

Education

- 3 Site Currently Serves or is Planned to Serve as a Destination for Organized Environmental Educational Programs (e.g. interpretive trails, outdoor classroom, observation platforms)
- 2 Site has Potential as Educational Resource (proximity to school, existing trail system in place, demonstrates a range of educational lessons (succession, diversity of habitat) and is Scarce (lack of existence of other educational sites).
- 1 Site has Potential to Supplement Existing Environmental Education Areas or Other Comparable Sites are Available in Town.
- 0 Not Much Potential or Needs are Met by Other Sites in Town.

Finally, the site rating for each criterion is then multiplied by the community weight for that criterion to arrive at a weighted rating. The weighted ratings of each of the ten criteria are then summed to arrive at the total conservation rating for the site.

Step 2: Conservation Value

To express the conservation rating in dollars, the average assessed value of land per acre in the town is first determined by dividing the total assessed value of land (not including buildings) by the number of assessed acres in the town. The result is multiplied by the number of acres of the site being analyzed and then by the appropriate adjustment range from the Table 2.

Table 2: Conservation Value Adjustment	
Conservation Rating	Adjustment Range
0-149	0 - 10%
150-249	11 - 25%
250+	26 - 35%

Step 3: Market Value

The approximate market value of the property can be determined in one of two ways. Ideally, if time and resources permit, a professional appraiser can be retained to estimate value. However, if this is not possible a crude estimate of market value can be derived utilizing information available from the community assessing, planning and building departments as follows.

1. First, the median sales price per house lot is calculated for sites in the same zoning district.
2. Next, the average lot yield per acre is calculated based on available development information.
3. These numbers are translated into an estimated gross value per acre. The estimated market value is the raw land cost prior to the developer effort to create the lots. Therefore, the gross revenue per acre (the lot yield multiplied by the median sales price per lot) is reduced by the developer expenses, including profit. The developer costs may vary from town to town, but 50% is a reasonable figure.

Note that this estimate of market value assumes an “average” site (i.e. the site meets a standard profile, similar to others in town in terms of development potential and amenities) and presumes that the town-wide average lot yield would be obtained on parcels with development potential.

Step 4: Replacement Value

The replacement value is equal to the conservation value added to the estimated market value. The value will be a range, and should be considered as a starting point for negotiations to arrive at compensation for conservation land that is to be converted to other uses.

Discussion

The concept of adding a conservation value (a type of public interest value) to the market value (highest and best economic use) of a property raises at least a couple of important questions. For example, conservationists may worry that such a practice will raise the price of conservation. That is, a private landowner, when approached by a government agency or non-profit organization interested in purchasing a property for conservation purposes, may cite the property’s conservation value as justification for raising the asking price.

The authors believe this fear is unfounded. For one thing, many if not most landowners who sell a whole or partial interest in their land for conservation purposes do so for altruistic reasons and/or for tax benefits and do not necessarily care about receiving the maximum sales price. For another, it is not a competitive situation. That is, there is not likely to be more than one conservation buyer, and therefore it is unlikely that the conservation buyer would have to pay more than market value.

Another question arises when town conservation land, for example, is needed by another government agency for a legitimate public purpose. Is it then legitimate for the town to demand something more than market value (i.e., replacement value) in compensation? In addressing this question, it is important to consider that in all likelihood the reason the property has conservation status in the first place is because it possesses one or more unique or rare attributes. While it may be quite possible for the town to acquire another property of equivalent *economic* value, it may be impossible to acquire another property with equivalent *conservation* value at any price.

In fact, one might argue that by conferring conservation status on a parcel the community at large has determined that its value exceeds market value. In such a situation it seems perfectly reasonable to expect that compensation should reflect the unique qualities of that which is being lost.

Applied Example

As an example, the methodology proposed above was applied to a 36-acre parcel of town conservation land in Weston, Massachusetts. The site is desired by the Massachusetts Water Resources Authority as the location for a covered surface water supply reservoir serving metropolitan Boston. Following are the critical data and calculations that were used for this valuation.

Step 1: Conservation Rating

A panel of five Weston citizens with experience in conservation issues weighted the ten conservation criteria, and the 36-acre site was then rated according to how well it satisfied the criteria as shown in Table 3 below:

Table 3: Weston Conservation Rating			
	Community Weight	Site Rating	Weighted Rating
Flood Control	2	2	4
Water Supply	6	2	12
Water Quality	12	1	12
Biological Diversity/Wildlife H	10	1	10
Buffer from Undesirable Uses	15	2	30
Recreation	29	2	58
Natural Resources	4	2	8
Scenic Views	13	2	26
Historic Resources	3	0	0
Education	6	0	0
	<i>100</i>		<i>160</i>

The conservation rating for the property is therefore 160.

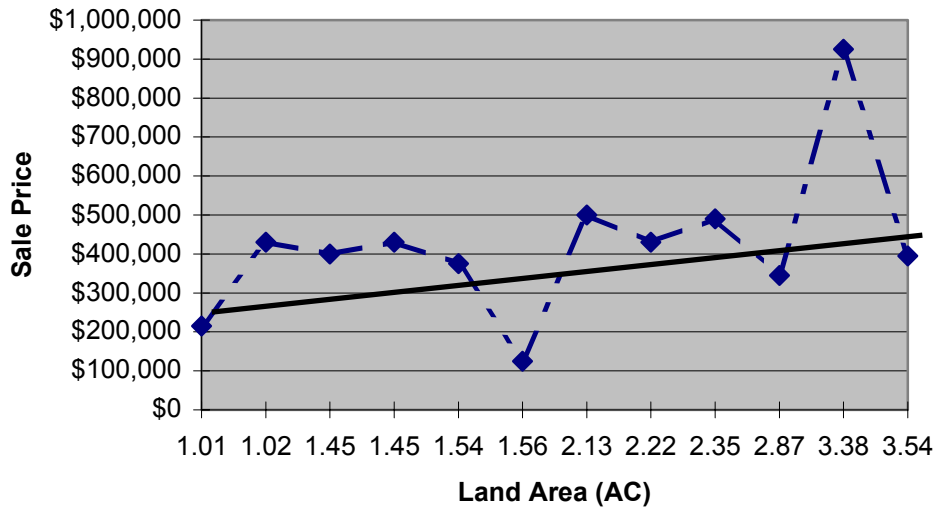
Step 2: Conservation Value

The total assessment of land (not including buildings) in Weston is \$1,201,446,925. The total land area assessed is 9,441 acres, yielding an average assessed value per acre of \$127,258. Multiplying by the 36 acres in the example gives a total of \$4,581,288. From Table 1 we see that the adjustment range for a conservation rating of 160 is 10 - 25%. Applying this range to the figure of \$4,581,288 we get a conservation value range of \$458,129 to \$1,145,326.

Step 3: Determine the Market Value

The figure below portrays lot sales information for the Residential A zoning district in Weston for the period January 1, 1996 through October 31, 1996. A total of 12 lots sold with sales prices ranging from \$125,000 to \$925,000. The median sales price for these lots is \$415,000.

Lot Sales in Weston



Calculate the average lot yield per acre by considering recent subdivisions. Table 4 below identifies recently subdivided land in Weston within the Residential A zone. Given a total of 47 lots created on a total land area of 105.52 acres, the average lot yield is one lot per 2.25 acres or 0.44 lots per acre.

Table 4: Lot Yield of Recent Subdivisions in Weston				
Subdivision/Owner	Location	Area (ac)	District	Lots
The Birches	Route 30	45.27	Res. A	18
Sanderson Land	Love Lane	20.25	Res. A	12
Colchester Realty Tr.	Concord Road	5.51	Res. A	3
Carney	Fairview/Saddle Hill Rd	8.00	Res. A	3
Concord Glen	Concord Road	11.61	Res. A	5
Whitehouse Estates	South Ave. (Route 30)	14.88	Res. A	6
	<i>TOTAL</i>	<i>105.52</i>		<i>47</i>

Therefore, using a mean lot sale price of \$415,000 and an average lot yield of 0.44 lots/acre, the gross revenue would be \$182,600 per acre. The estimated market value, assuming a 50% developer expense including profit, would then be \$91,300 per acre. For the example, estimated market value is calculated at 36 acres times \$91,300 per acre, or \$3,286,800.

Replacement Value

As shown in Step 2, the conservation value of the example parcel is between \$458,129 and \$1,145,326. This range, when added to the estimated market value of \$3,286,800 determined in step 3, results in an estimated replacement value of \$3,744,929 to \$4,432,126.

Conclusion

Decisions involving the acquisition or disposition of town conservation land should not be made strictly on a quantitative basis; subjective judgment is also required. Nevertheless a process for valuing conservation property which is consistent, rational and incorporates community priorities will lead to better decisions. The authors hope that the methodology presented in this paper is a step towards that goal.

Appendix

Valuation Spreadsheet and Valuation Worksheet

Following are the Valuation Spreadsheet and Valuation Worksheet to be utilized in rating and estimating the replacement value of conservation land. If this document is being viewed on a computer, double click on the Valuation Spreadsheet to open a Microsoft Excel spreadsheet. The spreadsheet requires entry of certain data and will calculate the conservation rating, conservation value, estimated market value, and a replacement value range for a given site.

The Valuation Worksheet allows the user to manually calculate the same values as the spreadsheet.

Valuation Worksheet

Step 1: Conservation Rating

Multiply the Site Rating (see text) by the previously-determined Community Weight to obtain the Weighted Rating for each conservation value. Sum the Weighted Ratings to get the Conservation Rating for the site.

Value	Site Rating (Site Rating 0-3)	Community Weight (Community Weight rate 0-100)	Weighted Rating (Weighted Rating CW)
Flood Control			
Water Supply			
Water Quality			
Biological Diversity/ Wildlife Habitat			
Buffer			
Recreational Opportunity			
Natural Resources			
Scenic Views			
Historic Resources			
Education			
TOTAL		100	

Determine Conservation Adjustment Range:

<u>Conservation Rating</u>	<u>Adjustment range</u>
0-149	0 - 10%
150-249	11 - 25%
250+	26 - 35%

Step 2: Conservation Value

Divide the total assessed value of the land portion of all property in the community by the total acreage that this assessment covers to yield the average assessed value per acre. Multiply the per acre value by the total acreage of the subject site. Multiply the result by the appropriate conservation adjustment range according to the conservation rating determined in Step 1 to obtain a conservation value range (low to high).

$$\begin{array}{r}
 \$ \underline{\hspace{2cm}} \\
 \text{Total Assessment of} \\
 \text{Land in Town (not including} \\
 \text{buildings)}
 \end{array}
 \div
 \begin{array}{r}
 \underline{\hspace{2cm}} \\
 \text{Total Acres Assessed}
 \end{array}
 =
 \begin{array}{r}
 \$ \underline{\hspace{2cm}} \\
 \text{Ave. Assessed} \\
 \text{Value per acre}
 \end{array}$$

$$\begin{array}{r}
 \$ \underline{\hspace{2cm}} \\
 \text{Ave. Assessed} \\
 \text{Value per acre}
 \end{array}
 \times
 \begin{array}{r}
 \underline{\hspace{2cm}} \\
 \text{\# acres of site}
 \end{array}
 \times
 \begin{array}{r}
 \underline{\hspace{2cm}} \\
 \text{Adjustment Range (\%)}
 \end{array}
 =
 \begin{array}{r}
 \$ \underline{\hspace{2cm}} \\
 \text{Conservation} \\
 \text{Value Range}
 \end{array}$$

Step 3: Market Value

Obtain a professional appraisal of the subject parcel, or go through the following exercise:

- i. Identify mean sale price per lot (ML) for sites in the same zoning district as subject (from Assessor’s information).
- ii. Determine the average number of lots yielded per acre (LYA) within this zoning district (from Planning or Building Dept., utilizing zoning regulations and/or comparable recent subdivisions).
- iii. Calculate potential gross revenue per acre.

$$\frac{\text{Mean Sales Price}}{\text{per lot}} \times \frac{\text{Ave. Lot Yield}}{\text{per acre}} = \frac{\text{Potential Gross Revenue}}{\text{per acre}}$$

- iv. Estimate market value per acre. Market value equals the potential gross revenue minus a developer’s profit margin of 50%. While 50% is a reasonable margin, the amount should be adjusted for a particular community.

$$\frac{\text{Potential Gross Revenue per acre}}{\text{per acre}} \times \frac{50\%}{\text{per acre}} = \frac{\text{Estimated Market Value}}{\text{per acre}}$$

Step 4: Replacement Value

Calculate the replacement value by adding the conservation value determined in Step 2 to the estimated market value determined in Step 3.

$$\frac{\text{Conservation Value}}{\text{Conservation Value}} + \frac{\text{Market Value}}{\text{Market Value}} = \boxed{\$ \text{ Replacement Value}}$$