

# Developing the Malden: Property Value Through River Restoration

## Introduction

The Malden River is a 2.3 mile long tributary of the Mystic River, bordered by Medford, Malden, and Everett within the Greater Boston Area of Massachusetts. Due to a history of industry on the banks of the river coupled with the effects of urbanization and development, the Malden River is now heavily degraded, with contaminant levels often exceeding federal safety standards for recreation. The poor health and subsequent negative public opinion of the river has deleterious effects on surrounding property values and development. Several studies have shown that river restoration projects have the potential to benefit surrounding property, outlining multipliers for incremental land value increases based on proximity to the river.

Other development initiatives, such as park development and hazard site cleanup, have the potential to also benefit land value within the Malden River area. This study was designed to see what type of value is created for properties when multiple initiatives are implemented for a comprehensive river restoration project. This project seeks to answer the following key questions:

- How might improved water quality and land conditions for the Mystic River with the provision of new recreational spaces likely affect land values?
- How might a river restoration project affect parcel value within a 1 kilometer radius?

Due to the limitation of governing areas to implement such restoration projects in lieu of budgetary restraints, a secondary task will be to prioritize specific sites for restoration that will have the largest impact on the highest density of homeowners and renters within the Malden River area.

## Methodology

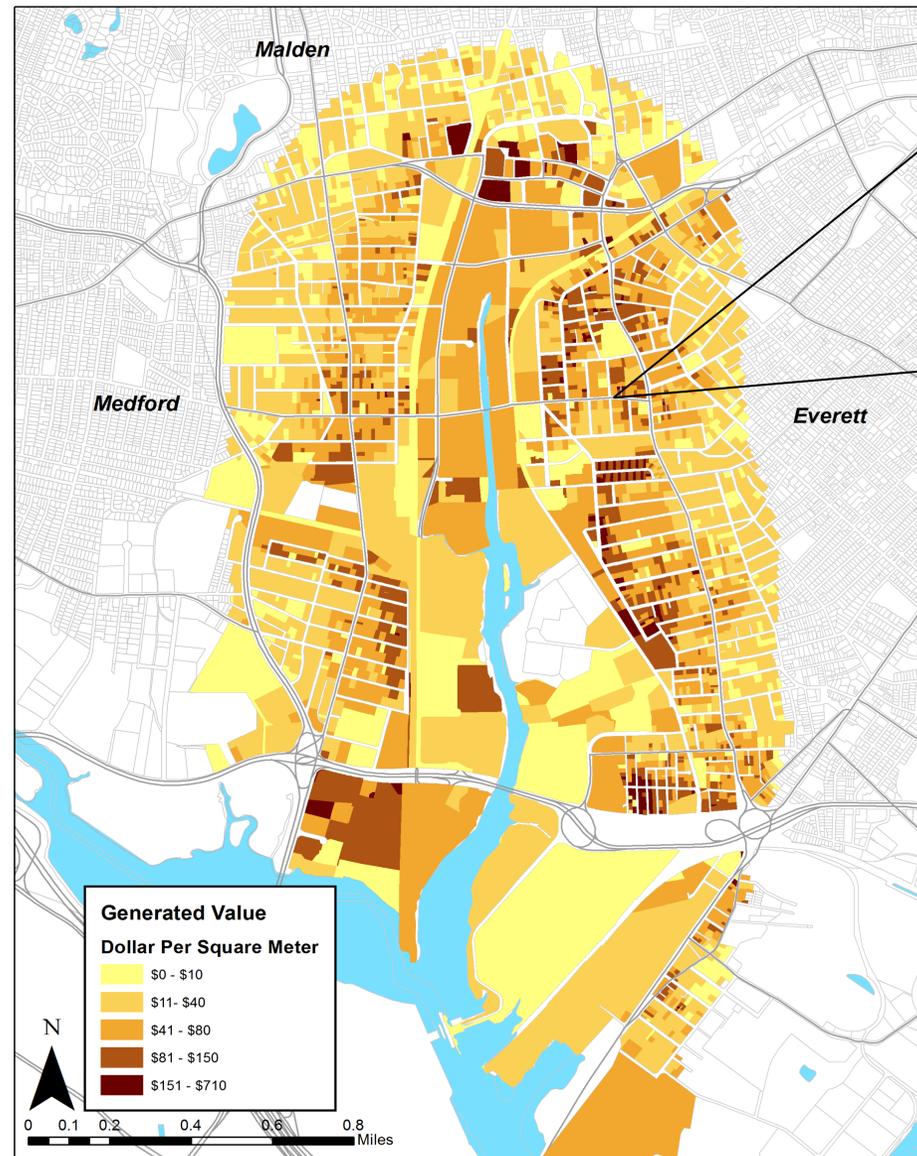
To begin, base layers from MassGIS were uploaded, including hydrography and roads. Tax Parcel data was then uploaded for the Medford, Malden, and Everett city areas surrounding the Malden River. After creating a polygon layer of the river that isolated the area from the Mystic River, a 1km buffer was created by selecting parcels by location to the polygon. By adding fields into the Attribute Table for 100 meter, 200 meter, 600 meter, and 1 kilometer parcels, and then using multipliers found in a literature review against the "Land Value" field, the study generated new totals for land value after restoration. This value was classified as "Restored Value", and was eventually



subtracted from the land value field to get "Value Made", a final field that was calculated to assess total value created. In addition, polygons were selected for ideal park creation spaces with their own buffers. The process for selecting parcels within the buffer was similar to the previous methodology for river restoration, and the field "park multiplier" was created. A final MassGIS data layer was created by merging C21e and AUL site data, labeled "Hazard Sites". These sites were also given a buffer and a multiplier field, labeled "hazard multiplier". Restored value calculated all of the multipliers for river buffers, the park buffers, and the hazard site restoration buffers. Statistics run on the Value made field eventually determined the total sum of value created. Due to the sheer multitude of hazard sites, the buffer data was combined with parcel data to determine the highest unit homeowner density within each area. The top ten hazard sites with the highest unit densities were given priority and marked as "Prioritized Hazard Sites". These site areas are considered ideal restoration projects for governing bodies with limited financial resources that need to consider fewer options.

Land Value	Shape Area (sq. meters)	park multiplier	hazard multiplier	1 km parcel	200m parcel	600m parcel	Restored Value	Value Made
2475000	2092.13727	171385	171385	0	0	0	44692	384332
2043300	1560.06274	30030	30030	0	0	0	36076	286216
1641000	525.96230	21150	21150	0	0	0	20870	16470
1260000	1407.21274	20950	20950	0	0	0	37453	311460
1427700	1050.67306	21655	21655	0	0	0	25070	212736
1423000	1104.11312	21060	21060	0	0	0	25490	20870
1371000	446.08201	20065	20065	0	0	0	15471	125230
1001000	612.97208	16210	16210	0	0	0	14530	109800
1011000	617.45730	16210	16210	0	0	0	14530	109800
1030000	758.44072	16420	16420	0	0	0	15640	12130

Total Value Created: \$230,785,473.87



## Results

The total value that was created exceeded \$230 million dollars for parcel value. This data is represented in the main map, which normalized the restored land value data against the shape area of the parcel to determine each dollar per square meter that was generated from the parcel. Data shows that the collaborative restoration benefited primarily apartment and homeowner properties, as almost all of the property within 1 kilometer of the river is composed of industrial and commercial property. The Medford and Everett residential areas seem particularly benefited by the collaborative restoration project. Overall, the largest impact seems to occur within the 2000-600 km zones.

## Limitations

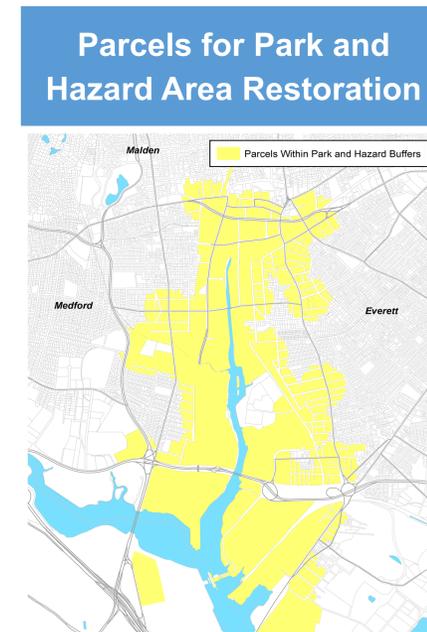
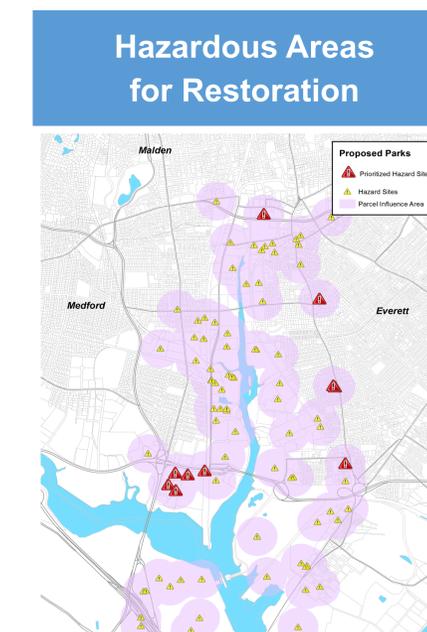
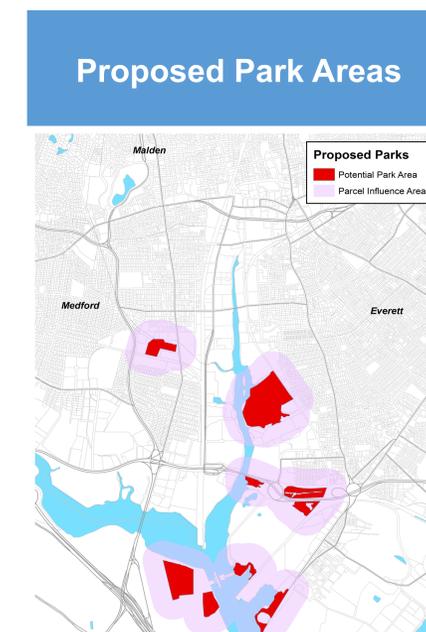
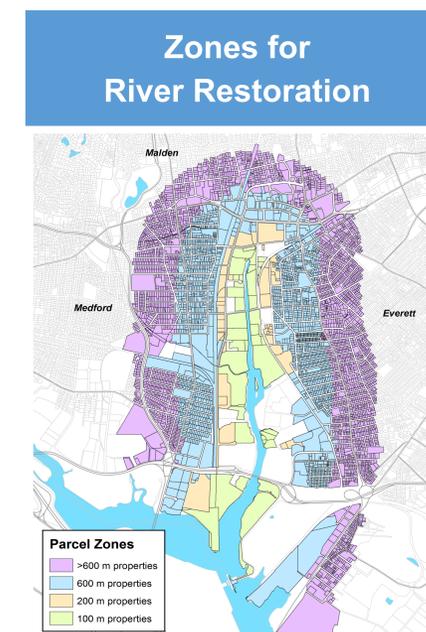
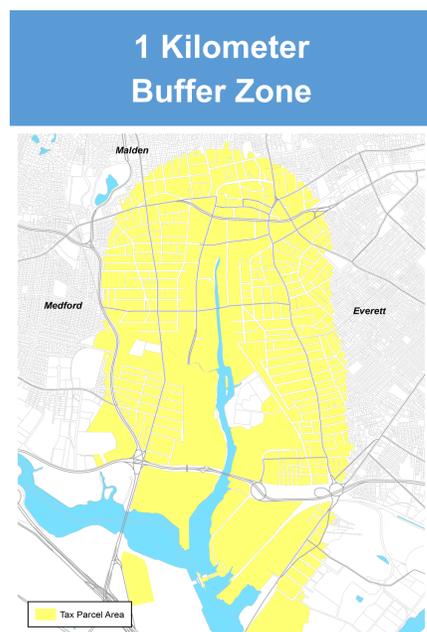
One apparent limitation in the study is the lack of contributed multipliers for each hazard site. The parcels all had a base multiplier given for hazard data regardless of the amount of hazard sites cleaned up in their vicinity. Furthermore, certain parcels

would not highlight in the buffer zones due to their centroid location. Another obvious limitation is that the tax parcel data was developed by Mass GIS in 2013, meaning the accuracy of the information is already a couple of years old.

Most importantly, the parcels are considered independent of the community that they reside in. No considerations were made regarding the potential for community settings to affect the multiplier. Moving forward, it will be important to take each parcel into consideration with community dynamics factored as a variable in the multiplier and land totals.

## Conclusion

There is considerable value to be generated with a comprehensive restoration project, with the potential to largely benefit homeowners. The tangible benefits of water restoration can be found by assessing land value after such projects occur. Such information is invaluable to citizens, governing agencies, and organizations that would like to see larger efforts in restoration occur. Moving forward, the next steps in terms of information gathering would be to assess the costs of such projects in relation to total value generated and to prioritize specific projects as a result. In addition, due to the sheer size of potential restoration areas, specific sites should be prioritized akin to the demonstrated model from the hazard sites project.



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