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We are pleased to make available the work of the Crystal Lake Task Force, a group of dedicated residents assembled in June 2007 to examine ways to enhance the community's enjoyment of the City-owned property at Crystal Lake. In June 2010, the Task Force submitted to the City the *Crystal Lake Bathhouse Public Park Master Plan.*

We sincerely appreciate the considerable effort that went into the creation of this report and its recommendations. The City is about to undertake an assessment of all of its public buildings as part of a new capital planning process in Newton. The work of the Task Force will certainly contribute to our understanding of the challenges and opportunities related to the Crystal Lake Bathhouse, one of nearly eighty City-owned buildings.

We look forward to continuing to collaborate with the Crystal Lake community as we make decisions about capital improvements in our City.

Robert DeRubeis
Commissioner
Parks & Recreation Department

Stephanie Kane Gilman
Commissioner
Public Buildings Department

CRYSTAL LAKE BATHHOUSE PUBLIC PARK MASTER PLAN

Submitted by:

CRYSTAL LAKE TASK FORCE of the CITY OF NEWTON

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June 2010

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Other sections posted separately on Newton CPC website.

Acknowledgments

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Appointed by the Mayor and Aldermen, the following individuals gave of their time, creativity, ideas, passion and devotion to develop the "best plan" for one of Newton's greatest natural assets.

Chair: Janice Bourque

Citizens: Jean Artin, Mary Carpenter, Jodi Detjen, Robert Fizek,
Sonya Kurzweil, Ray Kurzweil, Rhoda Kubrick,
Schuyler Larrabee, and Srdjan Nedeljkovic

Aldermen: Vicki Danberg, George Mansfield (former) and Ken Parker (former)

Parks & Recreation Commission: Fran Rice (former)

Newton Conservators: Ted Kuklinski (observer)

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Introduction

Background

One of two "great ponds" located within the City of Newton; Crystal Lake is an intensely used recreational space and plays a vitally important role in the lives of many Newton residents. Upwards to a thousand people per day participate in seasonal swim programs run by the Parks and Recreation Department at the Gil Champagne Bathhouse. The lake is stocked each spring with rainbow and brown trout, allowing for a "Catch and Release" fishing program, and other organized activities include a newly organized adult birding club.

Additionally, a great number of informal recreational activities take place around Crystal Lake on a daily basis: walking, picnicking, jogging, recreational reading, small animal study (birds, turtles, ducks), dog walking, various activities on the lawn, and simply sitting to take in the peaceful view and enjoy the outdoors.

Until recently, public access to the lake was limited to three city-owned parcels, each isolated from the others: The Gil Champagne Bathhouse and two open-space parcels, one at Levingston Cove and one at Cronin Cove. In early 2006, private property adjacent to the existing Crystal Lake Bathhouse entered the real estate market. With the urging of the community grassroots effort, **A Better Lake**, led by Robert Fizek, the Mayor and City of Newton began to explore the opportunity of creating additional parkland on Crystal Lake. In November 2006, Mayor Cohen engaged the public at a public forum at the Newton Library to gather feedback from the community on what they desired from the public facilities around Crystal Lake.

Due to the community's response, The City elected to take advantage of opportunities to expand and improve public access to the lake and its environs. Over the past few years two additional parcels, one at 20 Rogers Street and a portion of 230 Lake Avenue have been secured to supplement and expand recreational opportunities at Crystal Lake. The linkage of these parcels creates a continuous public-access zone stretching from Levingston Cove in the north to the bathhouse in the south, along the western edge of the lake.

The property at 20 Rogers Street immediately abuts the Gil Champagne Bathhouse parcel to the north and became available for sale in 2006. After much debate and discourse, the Newton Parks and Recreation Commission voted to recommend that the City use CPA funds to acquire the private property at 20 Rogers Street in order to expand the existing public swimming and recreation area. Upon the recommendation of the Community Preservation Committee and approval by the Board of Aldermen, the property was acquired by the City of Newton by eminent domain in May 2007. In January 2008, the dilapidated and fire-damaged colonial style house on the property was condemned and demolished and lawns were installed in its place.

The City then had the opportunity to purchase the adjacent property at 230 Lake Avenue which lay between 20 Rogers Street and the existing city-owned parcel at Levingston Cove. After much debate and community input, the City and the Board of Aldermen voted to participate in a partial 3-way purchase and sale involving the owner, the prospective buyer, and the City.

As part of the property transfer, the City acquired an 8,400 square foot property located between the house at 230 Lake Avenue and the 20 Rogers Street property. A conservation restriction was placed on the property, which contains a grove of cedar trees, a landscaped fountain and a patio to be kept in its current state and maintained by the new owner. The City also secured an easement for a public path along the lakefront of the property connecting Levingston Cove to the newly acquired public lands at 20 Rogers Street, adjacent to the bathhouse property. As part of the agreement, a preservation restriction was placed on the front of the house at 230 Lake Avenue. The public path was completed per the agreement in fall 2009. Recommendations for site design within the conservation restriction and connecting paths to those proposed for 20 Rogers Street and bathhouse sites are addressed in this master plan document.

The Task Force

Mayor David Cohen established the Crystal Lake Task Force (CLTF) in July 2007. The Task Force was charged with conducting a community planning process relating to the existing Crystal Lake property, to propose appropriate improvements to the facility and to the operations of the lake, to make recommendations on the best use of the newly acquired 20 Rogers Street and 230 Lake Avenue properties in connection with those operations, and in general to examine ways of enhancing and extending community enjoyment of the city's only public swimming beach and its environs. Ultimately the goal was to recommend a master plan for the newly enlarged City-owned land holdings at Crystal Lake.

Process

Chaired by Janice Bourque, the Crystal Lake Task Force held monthly meetings from August 2007-September 2009 and participated in community outreach to develop the proposal contained herein for a new bathhouse and expanded public park at Crystal Lake. The monthly discussions covered organization of the Task Force; the design review process; discussions of community comments and ideas; resolution on issues; appraisal review; plot plans, topography and tree inventory review; demolition and site stabilization of 20 Rogers Street; structural review of buildings; existing conditions inventory; and analysis of the Request for Qualifications to solicit the design services needed to develop the Master Plan.

In May 2008, the Board of Aldermen from the City's General Fund approved the funding for the Master Plan. The Newton Conservators also contributed $15,000 of their funds towards this effort. The City used these funds to contract with the architectural firms of Raymond Design Associates, Inc. (Gene Raymond, Jr., AIA, LEED AP, Principal) for the building and Pressley Associates, Inc. (Marion Pressley, ASLA, Principal) for site planning. Chaired by Janice Bourque, the Crystal Lake Task Force worked with the architects to develop the proposal contained herein for the newly expanded bathhouse and public park at Crystal Lake.

Numerous factors were taken into consideration during the development of the Master Plan. These included:

- Preservation of open space
- Accessibility of the building and site
- Runoff and drainage
- Contiguous walking opportunities
- Active and passive recreation
- Year round use of the building
- Design flexibility for current/future needs
- Heating and maintenance costs
- Architectural and historical nuances
- Community use and local Lake impact
- Traffic flow and parking
- Increased beach area
- Safety issues and emergency access
- Cost of improvements

By August 2008, the Task Force was prepared to work with the architects to translate their analysis and discussion into building and site options. By January 2009 numerous options were narrowed down to two final draft building and site options. These two options – a new building option and a partial restoration/addition option – were presented to the Mayor, the Aldermen and the community for feedback at a community meeting held at the Newton Public Library in January 2009. The majority of those present voted for the new building option.

From January to September 2009, the Task Force continued to refine the challenges and details with presentations before the Newton Historical Commission, the Newton Parks & Recreation Commission and the Newton

Conservation Commission. All of the Commissions were supportive of the plans and provided feedback. The minutes of those meetings are included in the Appendix of this report.

On September 21, 2009, the Parks and Recreation Commission voted in support of the Task Force final recommendation of a new bathhouse. The recommendation included construction of a new bathhouse that maintains the architectural elements of the original existing building façade (veranda, etc.), increased programming options and utility efficiency, increased beach area, an improved oval parking lot, handicap accessibility, new walkways and a contiguous path connecting the beach at the bathhouse to Levingston Cove.

It is with great pride and a sense of vision and accomplishment that Mayor David B. Cohen's Crystal Lake Task Force presents to the City and the Community a Master Plan for Crystal Lake.

Executive Summary

Crystal Lake is an important and beautiful asset for the Newton community. A great deal of time, commitment and effort was put forth by all of the parties involved in the creation of this master plan. It is the hope of all involved with the preparation of this document that it will guide the future of Crystal Lake and its environ to further improve this valuable community resource.

ES.1 Objective

Create a Master Plan for the City of Newton's Crystal Lake bathing beach, bathhouse, parkland, and parking area that would expand and improve this recreational facility and better serve the citizens of Newton.

Mayor David Cohen had established the Task Force in 2007 to conduct a community planning and information gathering process in order to propose improvements to the Crystal Lake facility and operations, including recommendations on the best use of the newly acquired 20 Rogers Street and 230 Lake Avenue properties, with a view to enhancing and extending community enjoyment of the city's only public swimming beach and its environs. To assist the Task Force in developing that plan, the City of Newton hired Raymond Design Associates, Inc. (architects) and Pressley Associates, Inc. (landscape architects)—collectively referred to hereafter as the 'Study Team')—in the spring of 2008. The Study Team developed a number of alternative plans, which the Task Force evaluated and modified. This process assisted the Crystal Lake Task Force in establishing the most appropriate Master Plan.

The master-planning process involved evaluating existing conditions, exploring alternatives, soliciting community input, and creating a development plan that would integrate the bathhouse and beach facility with the adjacent parcels at 20 Rogers Street and 230 Lake Avenue thereby creating an improved recreational and open space amenity serving Newton's citizenry.

ES.2 Final Recommendation

After developing and analyzing several options for the beach, bathhouse, parkland and parking area, the Task Force recommended the Option 3C site design (see diagram, page 8). This option includes a new bathhouse to be built in approximately the same location as the existing one, but further from the shoreline, thus expanding the existing beach area. The key features and advantages of Option 3C are:

- Expands the beach; 45% net gain of 3,200 sq.ft. with a total proposed beach area of 10,300 sq.ft.
- Reduces the site's impervious area, including the building and all paved areas, by 12%.
- Locates an oval 23-space parking lot directly in front of the new building. (Separate illustration, Fiqure 2 page 9).
- Preserves most of the newly acquired 20 Rogers Street parcel as open green space.
- Reduces the size of the bathhouse, creating maintenance efficiencies.
- Recalls, intentionally, the existing bathhouse. The design has a large hipped roof, two-level verandas on three sides to provide patrons with shelter and enjoyment, and the building is anchored into the landscape.
- Places the entrance to the building under a canopy directly facing the parking lot and Rogers Street.
- Includes a supervisor's office, a check-in counter that facilitates internal and external monitoring, a large lobby, men's and women's changing rooms, and a modest community meeting room.
- Connects the building's two levels with an internal stairway. The lower level includes the lifeguard locker room and a covered, open-air space between the guardroom and the beach.
- Uses exterior steps and an accessible ramp system to connect the main (upper) level of the bathhouse to the beach.

- Fits pedestrian routes, including handicap accessible routes, sensitively in the landscape and allows full and safe access throughout the parkland, as well as on and off the beach.
- Locates an emergency and maintenance vehicular route along the south (MBTA) side of the building, away from the major public-use areas of the site.
- Preserves most of the good-quality, desirable trees, although some trees will be removed to allow for the building, paving, and site. The vegetation plan seeks to replace or exceed the number of trees removed and to place them to enhance lake views and buffer views and noise of the MBTA tracks.
- Addresses storm water management and water quality through underground infiltration basins for the parking area and building's roof drain system; directed surface flow to a gravel-over-sand infiltration area set into the emergency access ('crane access') route; and rain gardens within the landscape.
- Relocates the building's existing sanitary sewer line uphill, away from the lake; it will no longer be near the shoreline.
- Supports off-season use of the building without compromising the safety of seasonal equipment and storage areas.

The final recommendation projects a smaller building than the current one, but one that is much more flexible and functional. It includes improved internal staff communication and will enable off-seasonal use of the facility without compromising the safety of seasonal equipment or storage areas. It includes an expanded and improved beach and preserves as much parkland as possible for passive recreation.

ES.3 Project Cost

The 'Total Project Cost' for Option 3C (New Bathhouse and Parkland) is $4.9 million dollars. This 'turn-key' budget includes a 35% multiplier on top of 'Estimated Construction Costs' to cover other costs, such as, furnishings and & equipment, design contingency, construction contingency, architectural, engineering and landscape design fees, etc. "Cost Estimates" and "Project Budgets" are expressed in 2009/10 dollars and are expected to escalate over time (see Cost Analysis Section 4).

ES.4 Background and Decision Process

The existing Gil Champagne Bathhouse and bathing beach at Crystal Lake have served Newton residents since 1930. In recent years, the City secured an adjoining parcel at 20 Rogers Street and an easement over land behind 230 Lake Avenue. These additions expand the existing parkland at Crystal Lake and provide a physical connection to another city-owned parcel along the shoreline at Levingston Cove. These additions presented an opportunity to develop a Master Plan for this entire city-controlled recreational resource.

The Study Team organized its work around a total of seven meetings with the Task Force and one community forum, all of which took place between May 2008 and January 2009. During the spring and summer of 2009, the Task Force presented preliminary findings and recommendations to various municipal committees, solicited input, and then endorsed a single master plan recommendation. During the fall of 2009, the study team helped the Task Force compile this Master Plan document.

Existing Conditions Analysis

The Study Team fully inventoried the physical conditions at the Gil Champagne Bathhouse, as well as various site features, circulation patterns, views, and vegetation on all three parcels. They obtained existing condition drawings of the bathhouse building from city archives and verified them for accuracy. They used a combination of site surveys prepared by the Newton Engineering Division, aerial photographs, and MassGIS data to develop site base plans. They supplemented the existing condition surveys with information from interviews with City of Newton officials familiar with the management and operations of the facility and with information the Task Force provided on neighborhood constraints. The analysis of existing conditions, operations, and future needs enabled them to compile a programmatic summary of major issues, opportunities and constraints.

Master Planning Elements

Following the analysis of existing conditions, the Study Team developed several options and presented them to the Task Force. All options addressed programming needs, building and site considerations, parking, community, and environmental concerns.

Throughout the master planning process, various citizens, officials, and Task Force members suggested alternative concepts for the bathhouse and/or site. The Task Force evaluated all suggestions and, where appropriate, wove these ideas into ongoing refinements under development by the study team. The Task Force explored nine master plan options, plus multiple variations of them, in detail. Each option was of different scope and configuration and each had 'pros' and 'cons'.

Programming, Building and Site Considerations

Pedestrian safety and improving pedestrian and vehicular circulation to, from, and within the expanded site influenced the design. The design also addresses conservation and stormwater issues, landscape and vegetation amenities, and neighborhood considerations, such as traffic safety, enhanced views of Crystal Lake, and the desirability of creating a connection along the shoreline to the city-owned parcel at Levingston Cove.

In general, the options that made use of the existing bathhouse provided more square footage than needed and were less flexible in terms of internal layout and site planning. New building options were slightly more expensive, but provided maximum layout and site planning flexibility. All building options incorporated the existing bathhouse's most positive architectural elements—its two-story façade with walk-out lower level at the beach, a hipped-roof massing, and a multi-sided veranda overlooking the beach and lake.

Site options were mainly shaped by the size, location and design of the bathhouse (existing building renovation, partial renovation/addition, or new building) and options for the location and layout of the parking and entrance/exit drives. Site grading and pedestrian accessibility were other important factors in the site designs. The Task Force explored the idea of locating a new building in various portions of the site, but early in the master plan process, they decided that any building should be placed on the existing 30 Rogers Street property. Such placement would maximize the open space and preserve the parkland and vistas of Crystal Lake gained by the acquisition of the 20 Rogers Street property. In addition, a bathhouse on the existing 30 Rogers Street parcel would shield the newly acquired parkland from the MBTA Green Line.

Parking

After detailed consideration of several options for pedestrian and vehicular circulation throughout the site and several parking lot configurations, the Task Force adopted the oval parking lot layout. The lot provides the same number of currently existing 24 spaces. A parking space increase was considered. Numerous factors such as encouraging car turnover, mitigating abutter impact, and maintaining open space were reviewed. These factors supported maintaining the existing number of spaces.

Emergency and Maintenance Vehicle Access

The recommended emergency and maintenance vehicle route on the 'MBTA' side of the bathhouse is the most practical solution of all other options considered. It eliminates the steeply paved ramps on the northern, 'park' side of the bathhouse and facilitates an aesthetically pleasing park solution to pedestrian beach access. The recommended vehicle access route can be graded less steeply and a gravel/sand pathway surface could serve double duty as a stormwater management tool, recharging groundwater supplies and improving water quality in the lake.

Pedestrian Access

The existing bathhouse site provides no accessible paths. The proposed new pedestrian routes meet accessible grading requirements and would provide a system of gently sloped walks combined with handicap access ramps

where absolutely necessary. The entire site, from Rogers Street down to the bathing beach and over to 230 Lake Avenue will be accessible under the proposed master plan.

The Master Plan includes ideas on the best way to connect the open space at Rogers Street to the Levingston Cove area via the 230 Lake Avenue property. Through a legal agreement with the City, a portion of the property along the shoreline is a dedicated conservation easement on which the city can develop an accessible public pathway. The recommended Master Plan site layout diagram details a successful pedestrian connection among all these open-space parcels.

Other Considerations

Other site issues involving conservation, permitting, and stormwater management were major factors in the development of the site Master Plan layout. Stormwater flow on the existing bathhouse parcel pools at the entrance to the bathhouse, streams alongside the building and then flows into the lake in an 'untreated' state. The study team worked closely with the Newton Engineering Division of the Department of Public Works in considering design alternatives to improve stormwater control and for new sewer lines to serve the project.

Community Forum and Subsequent Commission Input

On January 22, 2009, the Task Force and Study Team held a Community Forum at the Newton Public Library. They informed attendees about their work and the conclusions and findings they had made to date. Most important, they solicited the community's input on the two preferred Master Plan Options the Task Force was considering. A straw poll at the meeting favored the new bathhouse option.

After this initial community forum, and before making its final master plan recommendations, the Task Force solicited additional input and advice from the Conservation, Historical, and Parks & Recreation Commissions. All three commissions recognized the Task Force's thorough and exhaustive work. In varying degrees, each endorsed the merits of the Master Plan option calling for the construction of a new bathhouse and its associated site development, though none took a formal vote (see Commission meeting minutes in Appendix).

Implementation Analysis

The construction of a new bathhouse would pose a question as to the best approach in addressing the operation of the seasonal swim programs. Two potential options exist: a suspension of seasonal programs at Crystal Lake for one summer or a fast tracked Construction Management at Risk approach. Both approaches are presented and discussed in Section 3.2 Preferred Master Plan and a decision can be made once the project moves into the final design and planning stage.

ES.5 Conclusion

This Master Plan would provide the City with an attractive, flexible and cost-effective new bathhouse, as well as a delightful and functional park that stretches all along the western shoreline of Crystal Lake, from the existing bathhouse parcel all the way to Levingston Cove. The implementation of this Master Plan will significantly increase accessible open space and recreational opportunities within the City for all Newton citizens to enjoy.

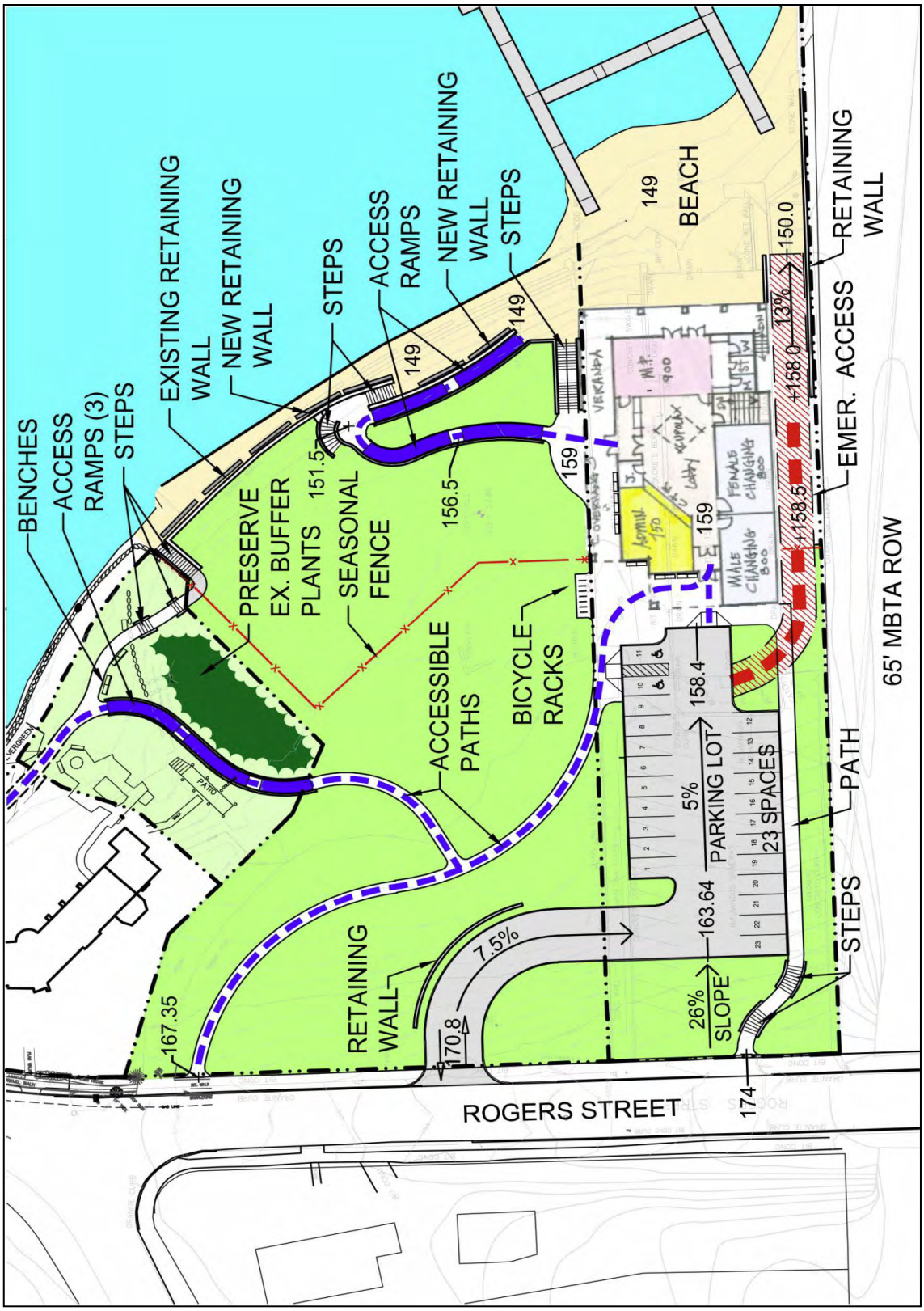

Figure 1: Recommended Building & Site (not parking lot)

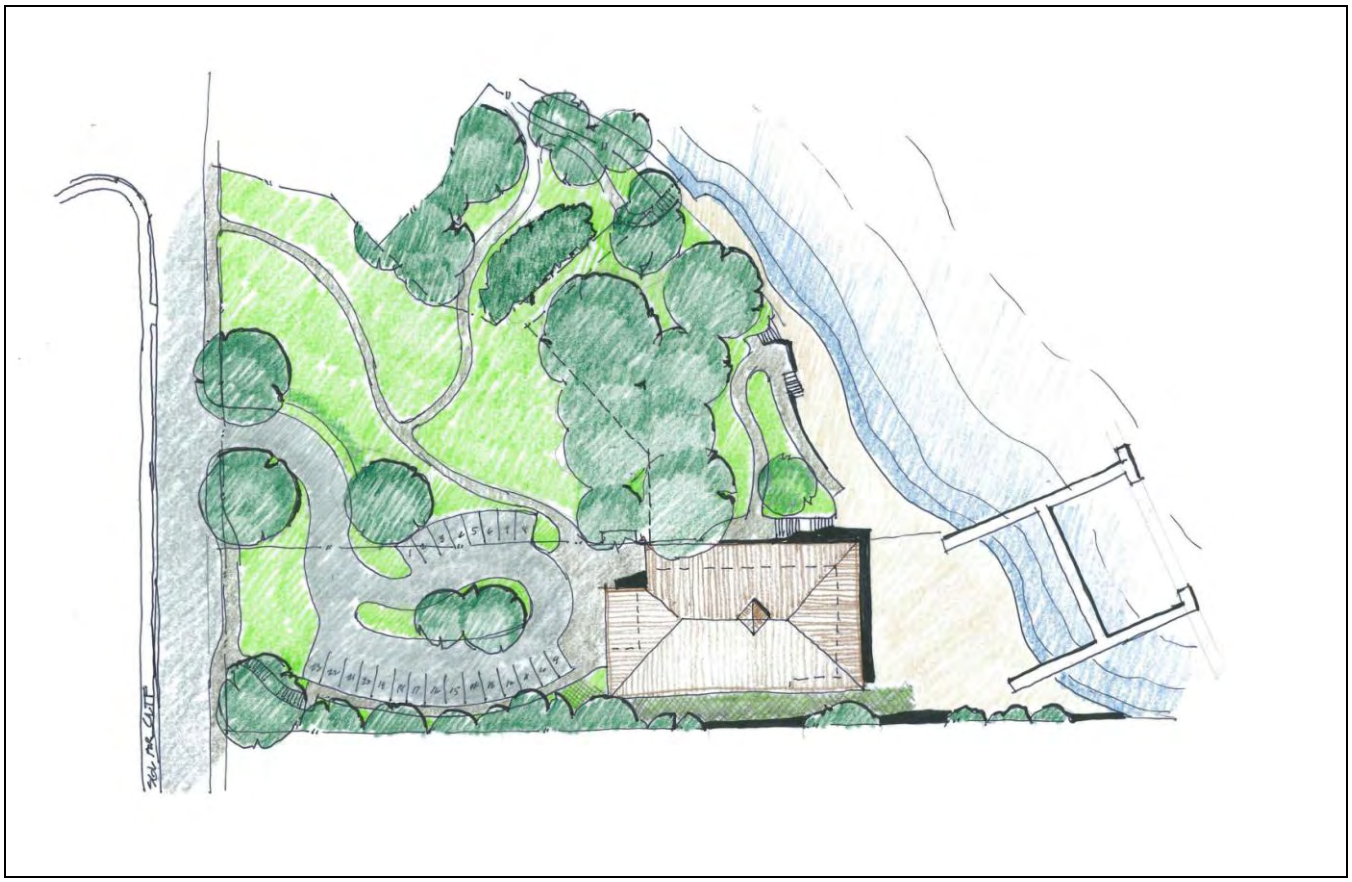

Figure 2: Recommended Oval Parking Lot

Existing Conditions Analysis

1.1 Overview

On May 7, 2008 the Study Team first presented an analysis of existing site and building conditions to the Task Force. This analysis enabled Task Force members to understand fully the project's issues, opportunities, and constraints. Knowledge of existing conditions added to the Task Force members' personal experiences with the site and facilitated developing plans on how to program interior and exterior spaces.

Task Force members supplemented the documentation on the current uses and conditions at Crystal Lake Park with a detailed history of the site and its uses as far back as the 1600's (included in the Appendices).

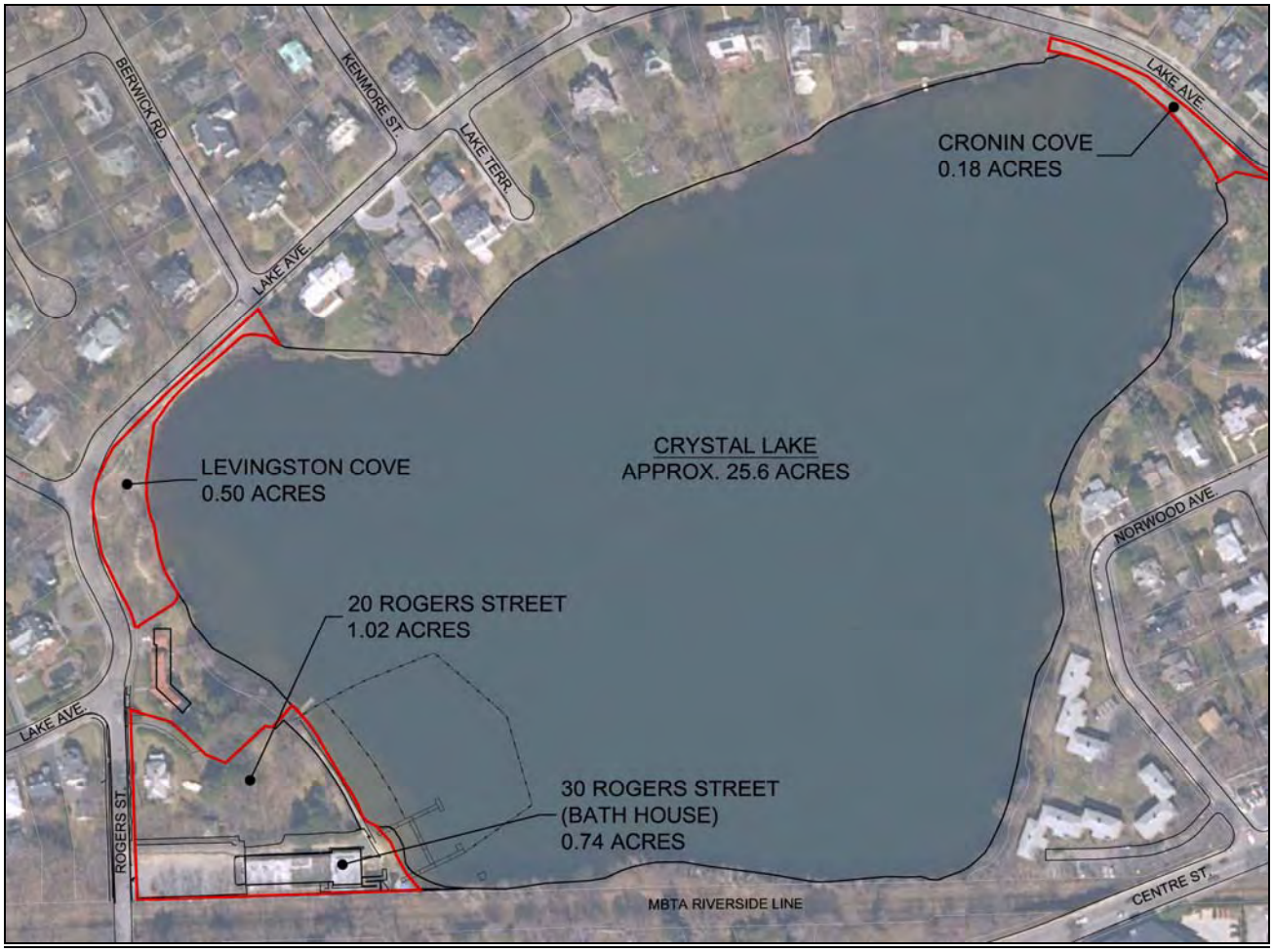

Figure 1: Aerial View of Crystal Lake

1.2 General Site Description

Crystal Lake Park is located along the southwestern shore of Crystal Lake, immediately north of the Massachusetts Bay Transit Authority (MBTA) Green Line. The property is comprised of two lots, 30 Rogers Street (containing the existing Bathhouse) and 20 Rogers Street (site of former residential dwelling that was removed in January 2008). The 30 Rogers Street parcel is 0.74 acres and the 20 Rogers Street parcel is 1.02 acres. When combined, the total park area is 1.76 acres (76,666 sq.ft.).

Aside from the Lake and the MBTA Green Line, the surrounding parcels are residential, with the exception of another small (0.5 acre) open-space parcel to the north along the shoreline, known as Levingston Cove. Levingston Cove is separated from the park by a single 0.54 acre residential lot known at 230 Lake Avenue. Recently, 230 Lake Avenue changed hands. One of the conditions of the sale (worked out in conjunction with the City) was that a portion of the property along the shoreline would be reserved for public access through a conservation restriction, providing an opportunity exists to connect the City's Levingston Cove parcel at the north edge of the shoreline to the existing 1.76 acre Crystal Lake Park and Bathhouse in the south via walking paths.

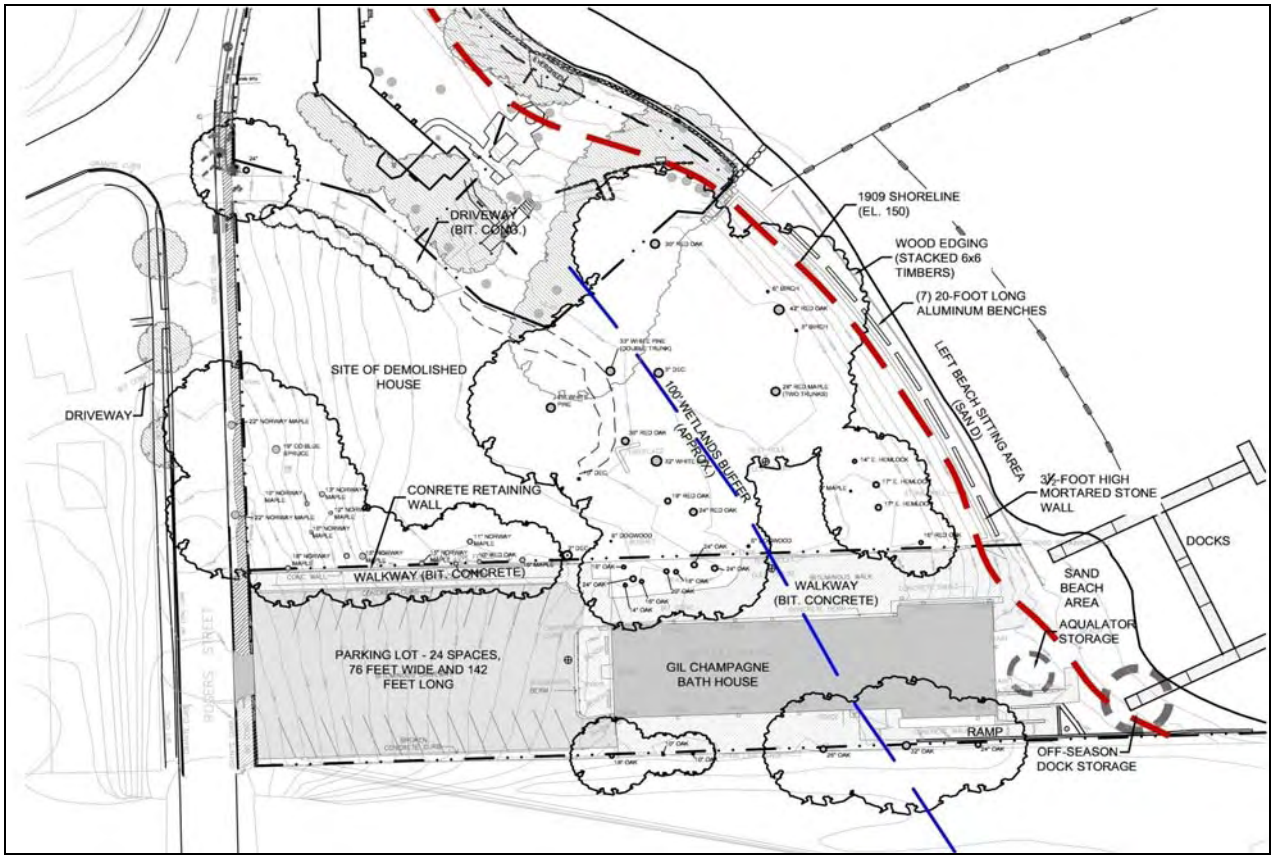

Figure 2: Existing Tree Inventory and Location

The property at 230 Lake Avenue is now subdivided into two lots. The residence sits on 'Lot 1', which is 0.35 acres and abuts the street on the uphill side of the lot. The City owns and controls via a conservation restriction 'Lot 2', a 0.19 acre parcel abutting the shoreline. This parcel contains a small garden pond. In the fall of 2009, the City completed a five-foot wide stabilized stonedust path, parallel to the shoreline and within the easement on 'Lot 2' behind the house. In the future, the City intends to extend the path through 'Lot 2' and into the Crystal Lake Park on the 20 Rogers Street parcel. The City of Newton Engineering Division of the Department of Public Works designed plans for the 230 Lake Avenue path; those plans were not part of this Master Plan.

Crystal Lake Park includes the Bathhouse, a parking area, pathways, a sandy beach, and several retaining walls. The Bathhouse is situated on the southeastern part of the site about 60 feet away from the Crystal Lake shoreline, although this distance varies with the water level and amount of sand on the beach. The bituminous concrete parking area, 142 feet long and 76 feet wide, is located immediately to the west of the building, on the uphill portion of the site, with direct entry from Rogers Street. There are a total of 24 angled parking spaces, including

two designated handicapped spaces. Park patrons must turn around within the existing lot and exit onto Rogers Street via the same entry point.

Running parallel to the north side of the lot is an eight-foot wide, steeply sloped, bituminous concrete pedestrian pathway leading from Rogers Street to the Bathhouse. This pathway continues along the northern side of the Bathhouse to the shoreline, widening to twenty feet as it descends down to the 7,100 square foot beach area. This wider pathway allows crane access to the beach for the purpose of installing and removing the seasonal dock used by patrons and staff for swimming programs.

There is a concrete retaining wall along the north edge of the pedestrian walks abutting the parking lot and bathhouse. This wall retains the higher parking lot and paths on the 30 Rogers Street parcel from the lower parkland on the adjacent 20 Rogers Street parcel. A chain-link fence separates the walkway from the parking area and the retaining wall.

On the southeastern corner of the bathhouse, a concrete handicap ramp extends into the site toward the MBTA right-of-way, leading bathhouse patrons from the upper level of the bathhouse to the beach. This ramp, installed in 1981, is an addition to the original bathhouse. This ramp is only accessible from the covered veranda of the bathhouse. It is visually and physically separated from the main pedestrian route to the beach along the north side of the bathhouse.

The total impervious area of the Crystal Lake Park site is 30,000 sq.ft., all of which is located on the 30 Rogers Street parcel. The remaining 46,660 sq.ft. of the site is comprised of lawn, sandy beach and miscellaneous wooded areas. The 7,100 sq.ft. sandy beach area runs along the entire eastern edge of the park. Portions of the beach area adjacent to the Bathhouse have sand directly on top of the bituminous concrete paved area , which is currently used for crane access. Here the sand descends directly into the water.

The northern portion of sandy beach is a narrow strip of beach behind the 20 Rogers Street parcel, known as the "Left Beach Seating Area." The bank (shoreline) of this portion of beach is defined by a stacked pressure-treated lumber edge, from which a sandy, level area of minimal width runs along the shoreline and contains a series of twenty-foot long aluminum benches. A three- to four-foot high stone and mortar retaining wall separates this part of the beach from the grassy open space above. The aluminum benches serve as the only designated seating area directly on the beach. During the summer, picnic tables are placed on the paved area along the north side of the bathhouse and in the lawn areas on the 20 Rogers Street parcel.

During the swim season (approximately two months running from mid-June through mid-August), access to the beach is restricted to seasonal or daily permit-holders only, via a chain-link fence system. The chain link fence system on the bathhouse parcel is permanent. During the swim season, a temporary fence system restricts access to the lawn area above the narrow left beach seating area on the 20 Rogers Street parcel. Thus, out of the entire park, only the uphill end (street side) of the 20 Rogers Street property is fully open to all during the summer. To gain access to the water, patrons must enter the bathhouse through its front door on the uphill (parking lot) end of the building, check in, and then exit either onto the north side of the building, with its steep path down to the beach, or to the non-conforming handicap ramp on the southeast corner of the building via the covered veranda.

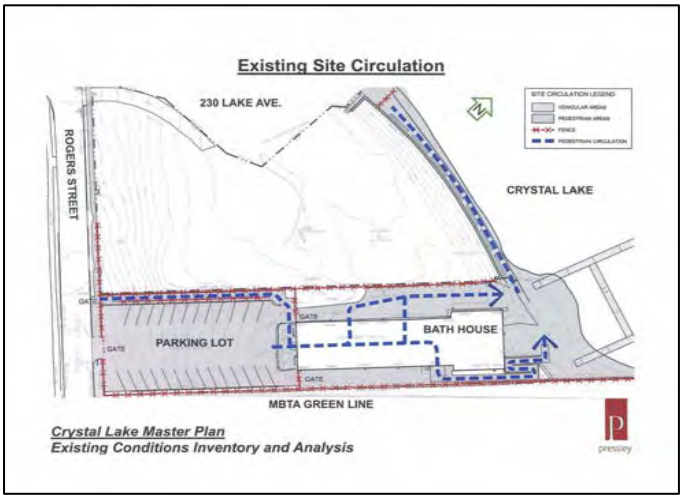

Figure 3: Existing Site Circulation

During the swim season, the City deploys modular docks in the lake and in an "H" formation. Staff remove the docks at the end of the season and stack them in the far southeastern corner of the site. An aqualator, used to maintain water quality, is also placed in the water during the swim season and is stored alongside the docks during the off-season. To move these large items into and out of the water, a large crane is brought on the site at the beginning and end of each swim season. The crane, as well as emergency and maintenance vehicles, must use the twenty-foot wide path on the north side (park side) of the Bathhouse to gain access to the beach.

Site Topography

The Newton Engineering Division provided topographic surveys of the site and its adjacent area. The landscape descends from Rogers Street toward Crystal Lake in a terraced fashion, with a relatively flat terraced area between the slope coming off Rogers Street and the second slope down to the beach area. On the 'landscaped' 20 Rogers Street parcel, the slopes on the uphill portion of the site, along Rogers Street, and running down toward the semi-flat terraced area (site of the removed house), vary from 12 to 20%. East of the terraced area, running down to the stone retaining wall along the 'left beach seating area', the slopes again become steep, varying from 22 to 24%.

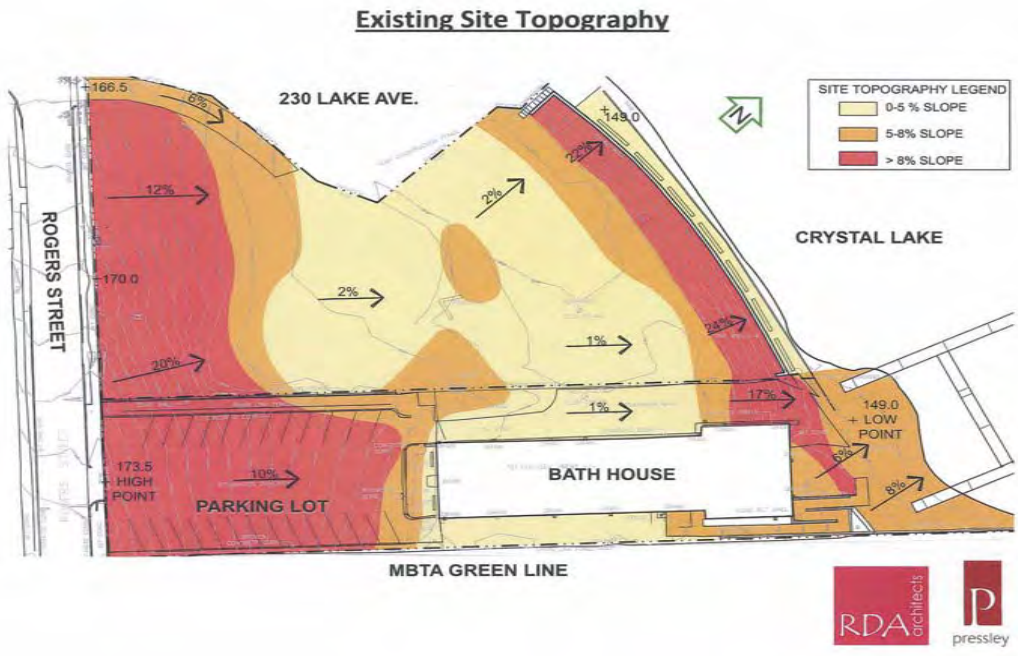

Figure 4: Existing Site Topography

Within the parking lot on the 30 Rogers Street parcel, the grades transition from elevation 173 at Rogers Street to elevation 159, the approximate finished first-floor elevation of the Bathhouse. The resulting average longitudinal slope of the existing parking lot is 10%, well exceeding the current acceptable design standard for public parking lots. This is critical because the only designated pedestrian entrance into the site is on the pathway along the retaining wall that runs parallel to the parking area. Thus, neither the parking area including designated handicap parking areas, nor the pedestrian route to the Bathhouse and beach are considered handicap accessible.

The paved area on the north side of the Bathhouse, where beach patrons exit after checking in, is relatively flat. However at the northeastern corner of the Bathhouse, the paved path to the beach drops off at a steep 17% slope. This steep slope is the main way to and from the beach for most users and is not handicap accessible. Mobility-impaired patrons must instead travel either through the building or around the veranda to the separate handicap ramp located on the opposite side of the building.

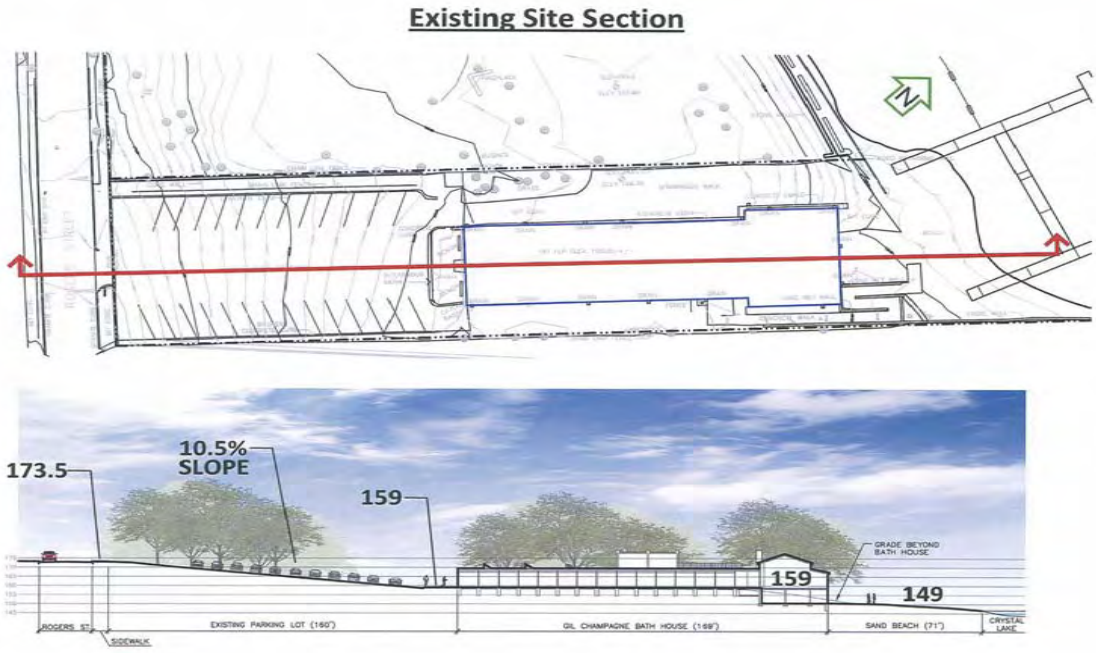

Figure 5: Existing Slope of Parking Lot, Bathhouse and Beach Area

Vegetation

Site vegetation within the park is mostly a mix of large deciduous shade trees and a few evergreen trees. Since the 30 Rogers Street parcel is mostly taken up by the Bathhouse, parking, associated paved areas, and beach, most of the site vegetation occurs on the 20 Rogers Street parcel. There are however approximately eight large trees off the northwest corner of the Bathhouse on the 30 Rogers Street parcel. There is also a row of mature oak trees south of the Bathhouse that shades the 30 Rogers Street parcel, but these are on the MBTA side of the property line.

Many of the trees on 20 Rogers Street parcel north of the bathhouse appear to have been planted as part of the former residential lot but some trees may have naturally grown from seed. All areas disturbed by the removal of the house and its driveway were successfully seeded to lawn in spring 2008. At the 230 Lake Avenue Lot 2 site, which abuts the 20 Rogers Street parcel along the shoreline, there is a dense grouping of evergreen and deciduous trees and shrubby undergrowth that buffer the 230 Lake Avenue parcel from the 20 Rogers Street parcel.

On May 1, 2008, the City of Newton conducted a detailed survey that identified and evaluated the existing trees on the 20 Rogers Street parcel noting species, size and general condition. Trees on the site include eastern white pine (*Pinus strobus*), northern red oak (*Quercus rubra*), eastern hemlock (*Tsuga canadensis*), red maple (*Acer rubrum*), Norway maple (*Acer platanoides*), European white birch (*Betula pendula),* and a single Colorado blue spruce (*Picea pungens*). There are also a few kousa dogwoods (*Cornus kousa*). A row of arborvitae (*Thuja sp*.) delineates the location of the 20 Rogers Stree former driveway. The tree survey concluded that most trees are in good condition. The main exceptions are three large hemlocks that are in poor condition due to an insect infestation and severe limb dieback.

Conservation Issues

A March 27, 2009, memo from LEC Environmental Associates to Pressley Associates (see Appendix) contains detailed information on site conservation issues and procedures for permitting any improvements. This letter includes information pertaining to floodplain designation, Natural Heritage designation, wildlife habitat, and state and federal wetland and waterway regulations that pertain to this property. The letter highlights the major conservation issues as follows:

- Crystal Lake is designated as a 'Great Pond' and thus falls under the jurisdiction of Chapter 91 Waterways Regulations.
- A 100-Foot Buffer Zone exists within the site, the beginning of which is as defined from the bank of Crystal Lake.
- The FEMA Floodplain Designation is Zone C: Areas of minimal flooding.
- No areas of rare species habitat or certified vernal pools are located within the site according to the 2006 Natural Heritage Atlas.

Stormwater Issues

Due to the topography of the site and the lack of adequate stormwater controls, stormwater management is a major issue on the existing site. No adequate drainage systems or structures have been installed on site. Stormwater runoff flows over the parking lot pavement directly to the Bathhouse, resulting in a need to install sandbags at the doorway in order to prevent flooding into the building when there are heavy rains. The flow of this stormwater continues unabated alongside the building and directly into the lake, thus potentially impacting the water quality of Crystal Lake.

In 2007, the Newton Engineering Division developed a stormwater control plan that included catchbasins, underground leaching basins, and roof drain pipe receptors. Subterranean ledge exists in the areas proposed for the large leaching basins. Since this Master Plan was envisioned, most of the proposed stormwater improvements have not been implemented. Only the roof drain pipe receptors were connected into underground French drains.

Zoning Issues

According to the City of Newton, zoning does not apply to this site as it is a city-owned property.

Site Utilities

A six-inch sanitary sewer line leaves from the southeastern corner of the Bathhouse. runs under the handicap ramp, and proceeds to a sewer manhole about 30 feet away. Based on a 1976 survey and plan entitled "The Crystal Lake Bathhouse and Property" (F-12 Plan), the sewer is only 3.15 ft deep at this manhole. The depth is very shallow and could present a problem for any proposed site work in the area. Based upon Sewer Plan #22327, dated January 20, 1930, the eight-inch sewer line exiting the same manhole traverses under the MBTA Green Line tracks and connects to the sewer main on Allerton Road. According to the Newton Engineering Division, this sewer line frequently backs up and is a maintenance liability due to its age, the relative flatness (0.5%) of its cross section, and its location under the tracks.

1.3 General Building Description

The Gil Champagne Bathhouse is the only building located within the park. It is located on the 30 Rogers Street parcel, downhill from the parking lot and only slightly above the beach area and seasonal docks. It is a long rectangular building, running perpendicular to Rogers Street and parallel to the MBTA Green Line tracks. The majority of its enclosed space is contained on the first floor, accessible from the parking lot. A small portion of the Bathhouse, encompassing only 15% of its footprint, is a two level structure. It contains a small walk-out lower level abutting the beach, taking advantage of the sloped nature of the site.

The Bathhouse is only occupied during the summer season primarily to support beach and swim-related activities. During the swim season, the Bathhouse serves as the official 'gateway' to the beach and the seasonally fenced off

lower lawn area on the 20 Rogers Street parcel (as described previously). Patrons enter from the parking lot into a check-in area, complete with counter and basket storage, from which they may use the changing rooms and exit the building into the park. During the off-season, the building is used for storage related to the seasonal programs and is heated to a minimal level to maintain finishes and water containing systems. The seasonal temporary fence that controls access to the beach and the lower lawn area on 20 Rogers Street is removed allowing public access to the beach and shoreline.

Figure 6: View of Bathhouse and Parking Lot from Rogers Street

Massing

When viewed from the street or parking lot, the building appears to be a flat-roofed single-story utilitarian structure with very little architectural interest, for over 85% of its unadorned footprint. The parking lot façade is 'lifeless', marked only by a pair of austere flush doors and two small windows. When viewed from the beach and shoreline however, the building exhibits a different and more interesting character. From the waterside, the building consists of a two-story façade accented by a hipped roof veranda overlooking the beach and lake. A second, higher, hipped roof sits over a horizontal band of clerestory windows, sheltering what was once a formal lakeside multi-purpose room, complete with fireplace for use during the winter skating season. The veranda at the first floor (upper) level wraps three sides of the building and is open to the elements, except for its hip roof above. It provides a protected open-air sanctuary during storms and a pleasant space from which to view activities on the beach and lake below. This veranda and the 'stacked' pair of hip roofs are the most attractive and significant architectural elements of the building, especially when viewed from across the lake, from either Levingston or Cronin Cove.

Figure 7: Lake View of Bathhouse, Beach and Park

Figure 8: Side View of Bathhouse, Beach and Park

Figure 9: Roger Street View of Park Side of Bathhouse

Figure 10: Rogers St. View of MBTA Side of Bathhouse

Figure 11: Left Beach Area with Benches

Internal Layouts

The upper (first floor) level of the Bathhouse contains approximately 6,000 gross square feet of enclosed area. At 166 feet long by only 36 feet wide, it is long and narrow. The floor plate is divided in half by a long row of exposed steel columns that march down its spine for the length of the building, posing a constraint on any future internal reconfigurations.

The first floor contains all of the administrative and public-use areas. Upon entering the Bathhouse from the parking lot, there is a large waiting and check-in area, used by visitors that often include large groups of campers. On the south side of the building (along MBTA track) there are a series of rooms: the administrative office, first aid room and the public changing and bathroom areas. Further towards the rear, or lake-end of the building, is a large multi-purpose room with fireplace. Beyond that is a smaller multi-purpose room surrounded on three sides by an outdoor hipped-roof veranda. This room is naturally lit by clerestory windows and topped by another hipped roof. It has been subdivided into a storage room and small room, both of which are used by summer camps. There are two exterior doors that lead to the veranda. The door on the south side of this room leads to an outdoor shower area and the handicap ramp serving the beach.

The rooms along the north side (open park area) of the first floor are limited to a storage room containing the fire alarm panel and two adjoining, but separate, stairways leading to the roof deck above. There are two doorways leading to the beach or lawn area via a paved surface.

Finishes throughout the first floor are utilitarian with painted concrete floors, block walls and a dropped acoustic tile ceiling with recessed acrylic-lens lighting fixtures. This dropped ceiling covers two of three clerestory skylights that used to provide natural light to the waiting and check-in area. Exposed mechanical ductwork hangs

below the dropped ceiling. The bathroom and changing rooms need of modernization. The women's changing room has stalls, while the men's changing room is wide open.

The small lower (ground floor) level of the Bathhouse contains 1,600 gross sq.ft. of enclosed area. It is divided between an 850 sq.ft. lifeguard locker and changing room and a 520 sq.ft. storage room. The only access to both rooms is via a separate overhead garage doors facing the beach, the bottoms of which are rotting. There is no internal stairwell or elevator connection between the first floor and ground floor. Therefore staff must go outside the building and use either the steeply paved walk along the north side of the building or the handicap ramp on the south side to access the other floor. Conditions in the lower floor spaces are extremely primitive. The ceiling is exposed concrete with surface-mounted electrical conduits and little in the way of mechanical systems, as might be expected in a converted former storage area. Part of the storage room ceiling exhibits concrete failure where rusted reinforcing rods have spauled the concrete. There are no sanitary (bathroom) facilities on this level.

Roof Deck

A 1,900 sq.ft. roof deck was constructed on top of the western flat roofed portion of the Bathhouse (parking lot side), directly behind the hipped roof portion of the building on the lake end. It is accessible from the first floor via two separate, though adjoining stairwells. The open-air deck is screened from view on all four sides by a 6 to 8 foot high wooden fence that also serves as a guard to prevent falls. This same screening prevents any view of the lake or adjoining landscape. The original purpose of the roof deck was to provide additional sunbathing space on the congested site, however, shortly after opening its use was discontinued due to safety concerns involving objects being thrown off the roof. It should also be noted that the two adjoining stairwells do not meet either the intent or the letter of the Massachusetts State Building Code, which now requires a much greater horizontal distance between these two required means of egress. The roof deck as it exists has no architectural or programmatic significance.

Building Systems

The lower part of the buildings structural system is comprised of a concrete foundation supporting a steel roof superstructure and block exterior bearing walls with a stucco finish. The 36 foot wide flat-roofed portion of the building is divided into two bays by a row of steel columns running down the middle of its length, supporting a ridge beam with roof joists sloped very slightly to gutters at the exterior walls. The first floor is a slab on grade in the flat-roofed portion of the building and a structural floor slab at the hipped-roof and veranda portion. The building does not meet current structural codes for resisting lateral loads and it is code deficient in many other aspects. However, though it is clearly not presenting any imminent danger of structural collapse at present and is not required to be upgraded as long as there is no change of use or significant renovations planned, in which case upgrades would undoubtedly be required.

The condition of existing mechanical, plumbing and electrical systems are also out of compliance with current codes and good engineering practice, though serviceable for the limited seasonable use of the building. The boiler is jammed into a janitor's closet with no additional room and no fresh air intake and presents a potential code violation. Its exposed flue breeching runs horizontally below the hung ceiling system before rising vertically through one of the former skylight openings which has been closed in. A water heater is enclosed in a plywood closet and both electrical and fire alarm panels are located within jam-packed storage rooms. Bathroom and toilet facility fixtures and accessories, including accommodations for accessibility, are extremely out of date. None of the existing systems would be salvageable, or appropriate to use in a renovated or new building.

Building Envelope

Exterior walls of the original building are painted stucco over structural clay tile block. The wall system is in poor condition with numerous cracks and failures visible. Windows and doors are a combination of original and replacement units, all of which are in serviceable, but in poor condition. An extensive restoration program would be required to limit water infiltration and further damage.

Historical Significance

The Gil Champagne Bathhouse is not listed on any local or national register of historic structures. However, since the building is over 50 years old, a review by the Newton Historical Commission would be required to demolish the existing structure upon recommendations of the Master Plan not to require its continued use.

Figure 12: Original Building- Stucco Over Clay Tile Block

Figure 14: Exterior Bathhouse Lower Level Guardroom Door-Sandbags to Prevent Flooding

Figure 15: Exterior Bathhouse - Stucco Over Concrete Block at Ground Level

Figure 16: Exterior Bathhouse - Windows, Stucco and Roof Drainage

Figure 17: Exterior Bathhouse Wall - Stucco Over Clay Tile

Figure 18: Interior Bathhouse - Ceiling Tiles

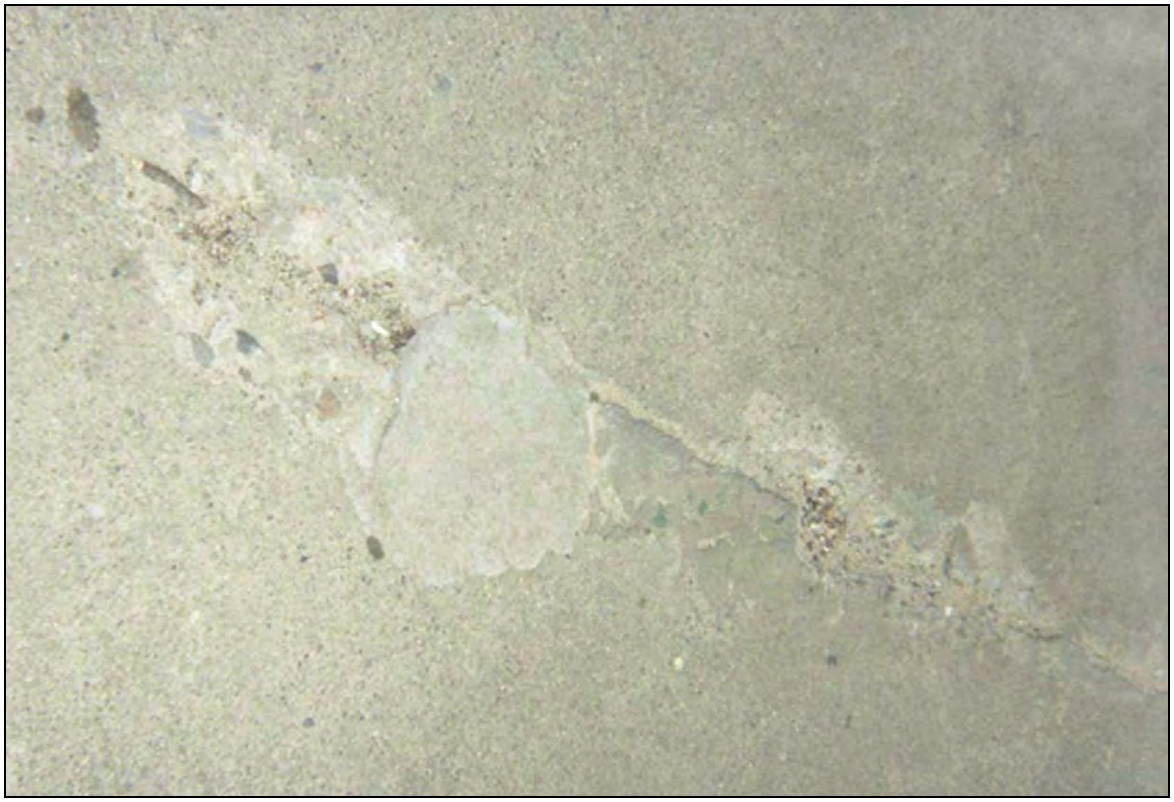

Figure 19: Interior Bathhouse Wall

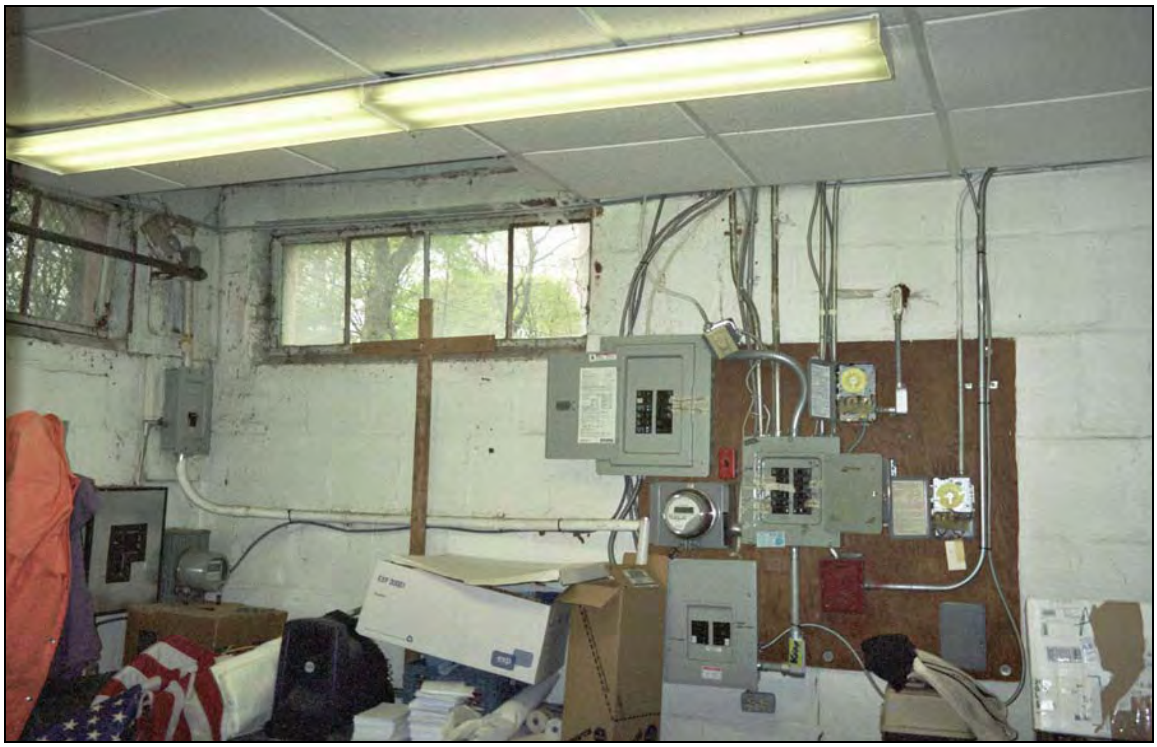

Figure 20: Interior Bathhouse - Utility Room

Figure 21: Exterior Bathhouse - Handicap Access Ramp Along MBTA Tracks

Figure 22: Exterior Bathhouse - Shower

Figure 23: Interior Bathhouse - Single Floor Drain

Figure 24: Interior Bathhouse - Windows

Figure 25: Interior Bathhouse - Bathroom Stalls

Figure 26: Interior Bathhouse - Ceiling

Figure 27: Interior Bathroom - Corridor Leading from Front Desk to Fireplace

Figure 28: Interior Bathhouse - Parking Lot Door Leading to Front Receiving Room

Programming

2.1 Overview

The Task Force and the Study Team conducted interviews and discussions with the professional staff charged with managing the existing park and bathhouse to gain understanding of existing issues and deficiencies, pro-active opportunities, and future goals for the park. The following program statements serve as the basis for evaluating the pros and cons of each development option presented to the Task Force for consideration throughout the master planning process.

2.2 Site Program

The Task Force identified pedestrian circulation, vehicular circulation, beach experience, conservation and stormwater issues, and landscape and vegetation issues as the major programmatic elements that form the basis of the proposed master plan for the site.

Pedestrian Circulation

The proposed site plan must:

- Work with the placement and internal layout of the bathhouse to control access onto the seasonal beach area (via permit) while allowing use of all other open space adjacent to the beach and controlled lawn area adjacent to the bathhouse.
- Provide for complete handicap accessibility from the Rogers Street sidewalk into the park, to the bathhouse building, and from the bathhouse onto the beach while minimizing impact on the landscape.
- Connect the Crystal Lake Park to Levingston Cove via the conservation easement on 'Lot 2' of the 230 Lake Avenue property.

Vehicular Circulation

The proposed master plan:

- Should create a new parking area and driveway that more sensitively fits within the park landscape, successfully addresses the steep topography of the site and maintains the same number of parking spaces as currently exists.
- Must create a new parking area that meets accessibility and stormwater management regulations.
- Must clearly delineate vehicular entry and exit points with good sightlines along Rogers Street.
- Must define a safe emergency and maintenance vehicular route from Rogers Street to the beach, including ambulance and crane access.

Beach Experience

The proposed master plan:

- Must provide a clear, safe access route from the bathhouse to the beach.
- Should explore opportunities for increasing the square footage of available beach area.

Conservation and Stormwater

The proposed master plan site design:

- Must comply with state and federal environmental regulations. The study team must delineate applicable regulations and permitting requirements.
- Should incorporate effective and modern stormwater management techniques.

Vegetation and Landscape

The proposed master plan:

- Must protect desirable and healthy existing vegetation to the greatest extent possible.
- Should provide a conceptual landscape design for new trees and shrubs, including buffering of the adjacent MBTA tracks and Rogers Street.
- Should protect and enhance views to Crystal Lake.
- Should enhance the quality of park space.
- Should provide new opportunities for outdoor seating and picnic areas.
- Should create an equitable division between the active (swimming by permit) seasonal area and the passive, year-around adjacent open space.

2.3 Building Program

The Task Force identified patron circulation during the swim season, community use of the building, administrative management, and maintenance as the major programmatic elements that should form the basis of the proposed master plan for the building.

Seasonal Patron Circulation

The proposed master plan for the building:

- Must ensure that access to the beach and adjacent lawn during the swimming season is through the bathhouse.
- Must provide simple, efficient circulation of upwards of a thousand daily seasonal patrons through the bathhouse onto the beach and lawn.
- Must provide a clear, safe, accessible route from the bathhouse to the beach.
- Must provide appropriate toilet facilities; these may be combined with changing facilities.
- Should move the outdoor shower area to the 'park' side of the bathhouse for better supervision.

Community Use of the Building

The proposed master plan for the building:

- Must allow for community use of a multi-purpose room with toilet facilities.
- Should provide flexible community access and use of a multi-purpose room during the off season; designed to increase energy efficiency for the entire bathhouse.
- Should, if possible, provide community use of the multi-purpose room during the swim-season.
- Should evaluate the pros and cons of segregating a community multi-purpose room in a separate building.

Administrative Management

The proposed master plan for the building:

- Must allow for proper supervision of changing and toilet rooms.
- Must provide one multi-purpose room for the seasonal program.
- Must facilitate oversight of the multi-purpose room by staff during seasonal programs.
- Must facilitate proper supervision of exterior spaces such as the parking lot and park to the greatest extent possible.
- Must provide a large check-in lobby for camp programs.
- Should provide internal circulation to the lower level (desirable, nor required).
- Should provide toilet facilities on the lower level for the lifeguards.

Maintenance and Operating Costs

The proposed master plan for the building:

- Should be designed to maximize efficiency and minimize operating and maintenance costs.
  Note: None of the building systems in the existing building are suitable for continued use.

- Should consider a smaller footprint since this usually translates into lower maintenance costs. Should use ‘green’ building elements that defray long-term operating costs (desirable, not required).

The gross square footage of the existing bathhouse is 8,200 sq.ft., which provides 6,245 sq.ft. of program and storage space. Not included in the 8,200 sq.ft. are the veranda on the upper level (925 sq.ft.) and the roof deck (2,350 sq.ft.) which is closed to public use.

The proposed building program calls for just under 4,000 net sq.ft. of program and storage space. This translates into approximately 5,200 gross square feet of building—3,000 square feet less than exists presently. This suggests that the City may choose either to renovate more space than the building program calls for or to demolish part or all of the existing bathhouse and construct a smaller facility.

If the City determines that the best Master Plan Option is to construct a separate community-use building and bathhouse on the site, redundant program spaces such as entry lobbies, toilet facilities, and the multi-purpose room would be required. The combined gross square footage of two separate facilities would be in the range of 6,000 gross sq.ft.

A building program summary is included here for record purposes.

Crystal Lake Bath House + Community Program
RDA Architects, Inc. Update: 8-08-08

Existing Conditions

BATH HOUSE:

		Net SF	Occupancy	Comments:
BATH HOUSE	**Staff Areas**			
	Administrative Office	115	2 admin	overcrowded / needs more storage
	storage closet	0	-	
	First Aid Office	50	-	overcrowded
	Check-In Counter	175	2-3 staff	
	Guard Station	850	15 guards	combined stor. office + lockers
	changing	0	-	included in 850 SF
	storage	0	-	included in 850 SF
	Staff Bathroom (First Floor)	0	-	incl. in core bathroom facilities
	Staff Bathroom (Basement)	0	-	serves guards
	Kitchen	30	-	refrigerator + microwave only
	Public Areas			
	Waiting / Lobby	825	2 - 3 staff	300 kids coming + 300 kids going
	Vending	50	2 machines	
	Male Changing	260	0 stalls	doubles as off-season storage
	Female Changing	260	6 stalls	doubles as off-season storage
	Male Toilet	160	4 fixtures / 2 sinks	4 / 3 Req'd Min.
	Female Toilet	160	3 fixtures / 2 sinks	4 / 3 Req'd Min.
	Family Bathroom	0	-	
	Storage			
	Administrative Storage	120	-	
	Custodial Storage	90	-	FACP in storage room
	Unused Basement Storage	520	-	not used
	Mechanical			
	Electrical Room	0	-	electrical panel in admin. Storage
	Janitor's Closet	30	-	doubles as Boiler room
	Boiler Room	0	-	boiler in janitors closet
	Total Net Square Footage:	3,695		
	Total Gross Square Footage:			

COMMUNITY PROGRAM:

		Net SF	Occupancy	Comments:
COMMUNITY BLDG.	**Summer Camp Areas**			
	Camp Check-In	100	1 counselor	
	counter	100	-	
	Small Multi-Purpose	450	25 Kids	SF is sufficient for day camps
	Large Multi-Purpose	1400	100 Kids	SF is sufficient for day camps
	staff counter	150	-	
	fireplace	150	-	
	multi-purpose storage	200	-	
	Total Net Square Footage:	2,550		
ATTACHED	**Public Areas**			
	Multi-Purpose Community Room			
	storage			
	Public Bathroom			
	Total Net Square Footage:			
	Total Gross Square Footage:			
DETACHED	**Public Areas**			
	Multi-Purpose Community Room			
	storage			
	Male Bathroom			
	Female Bathroom			
	Staff Bathroom			
	Unassigned SF			
	Mechanical			
	Custodial Storage			
	Electrical Room			
	Mechanical Room			
	Total Net Square Footage:			
	Total Gross Square Footage:			

		Net SF	Occupancy	Comments:
TOTAL	Total Net Square Footage:	6,245		
	Unassigned SF	1,955		
	Total Gross Square Footage	8,200	= 6,600 SF - Footprint	
			1,600 SF - Below	
			925 SF - Veranda (Not Included)	
			2,350 SF - Roof Deck (Not Included)	
	Net to Gross Ratio	1.3		

Proposed Space Needs

BATH HOUSE:

		Net SF	Difference	Occupancy	Comments:
BATH HOUSE	**Staff Areas**				
	Administrative Office	150	35	2 admin	DCAM Minimum
	storage closet	50	50	-	
	First Aid Office	80	30	1 staff	DCAM Minimum
	Check-In Counter	175	0	2-3 staff	
	Guard Station	120	-730	15 guards	DCAM Minimum for office
	changing	0	0	-	
	storage	600	600	-	
	Staff Bathroom (First Floor)	0	0	-	incl. in core bathroom facilities
	Staff Bathroom (Basement)	130	130	1 M / 1 F	serves guards
	Kitchen	50	20	-	kitchennete only
	Public Areas				
	Waiting / Lobby	0	-825	-	outdoor area only
	Vending	0	-50		outdoor area only
	Male Changing	300	40	6 stalls	
	Female Changing	300	40	6 stalls	
	Male Toilet	350	190	6 fixtures / 4 sinks	sized for shared community building
	Female Toilet	400	240	6 fixtures / 4 sinks	sized for shared community building
	Family Bathroom	0	0	outdoor access	optional
	Storage				
	Administrative Storage	120	0	-	
	Custodial Storage	90	0	-	
	Unused Basement Storage	0	-520	-	
	Mechanical				
	Electrical Room	80	80	-	
	Janitor's Closet	30	0	-	
	Boiler Room	120	120	-	
	Total Net Square Footage:	3,145	-550		
	Total Gross Square Footage:	4,089	Gross SF - Bath House Program Only		

COMMUNITY PROGRAM:

		Net SF	Difference	Occupancy	Comments:
COMMUNITY BLDG.	**Summer Camp Areas**				
	Camp Check-In	0	-100	1 counselor	
	counter	0	-100	-	
	Small Multi-Purpose	0	-450	-	no indoor day camps
	Large Multi-Purpose	0	-1400	50 occupants	no indoor day camps
	staff counter	0	-150	-	
	fireplace	0	-150	-	
	multi-purpose storage	0	-200	-	
ATTACHED	**Public Areas**				
	Multi-Purpose Community Room	750	750	50 occupants	no indoor day camps
	storage	100	100	-	
	Public Bathroom	0			combined w/ bath house facilities
	Total Net Square Footage:	850	-2550		
	Total Gross Square Footage:	1,105	Gross SF - Attached Community Room		
DETACHED	**Public Areas**				
	Multi-Purpose Community Room	750	750	50 occupants	
	storage	100	100	-	
	Male Bathroom	60	60	1 fixture / 1 sink	
	Female Bathroom	60	60	1 fixture / 1 sink	
	Staff Bathroom	60	60	1 HCP Unisex	Plumbing Code Minimum
	Unassigned SF	150	150	-	
	Mechanical				
	Custodial Storage	100	100	-	
	Electrical Room	80	80	-	
	Mechanical Room	120	120	-	
	Total Net Square Footage:	1,480			
	Total Gross Square Footage:	1,924	Gross SF - Detached Community Building		

		Net SF	Difference	
TOTAL	Total Net Square Footage:	3,995	-3,100	
	Unassigned SF	1,199		
	Total Gross Square Footage	5,194	Gross SF - Combined Bath House / Community Option	
		6,013	Gross SF - Seperate Bath House / Community Buildings	
	Net to Gross Ratio	1.3		

Recommended Solution

3.1 Overview

On January 22, 2009, a draft version of the Task Force's findings was presented at a Community Forum held at the Newton Public Library. Titled "A Vision for Crystal Lake", the presentation included an analysis of the existing site and building conditions, the programming elements, and detailed descriptions of the two preferred master plan options that had been identified to date (2A-Addition/Renovation and 3C-New Bathhouse). A table of comparisons and cost estimates was also presented for each of the options as well.

Questions and comments were solicited from the audience and responded to by Task Force members and representatives from the Study Team. Option 3C (the new building option) was preferred by those in attendance, however, the Task Force was committed to meeting with various city commissions and to solicit further input before making a final recommendation.

Commission Hearings

On February 23, 2009, members of the Task Force presented the Task Force's findings and its Two Preferred Master Plan Options to the Newton Parks & Recreation Commission for their review and input, though they specifically did not request any formal vote from the Commission at that time. A series of questions and answers ensued regarding everything from on-street pick-up and drop-off to issues regarding the entrance drive and pedestrian pathway configurations, green building techniques, year-round community use, cost allowances, and bike racks. Task Force members indicated they would return with a final recommendation for a Commission vote.

On March 26, 2009, members of the Task Force made a similar presentation to the Newton Historical Commission in order to introduce their findings to the Commission and garner their input. Commission members expressed interest in Option 2A, which involved renovation of the lake-side portion of the existing bathhouse, though it was acknowledged that the full demolition of the existing bathhouse and construction of a new facility did make sense from a functional viewpoint. Commission staff verified during the meeting that, based upon its date of construction, the building was not a WPA (Works Project Administration) project from the Great Depression era. No formal action was taken to support either of the Two Preferred Master Plan Options.

On April 23, 2009, members of the Task Force made a presentation to the Newton Conservation Commission for input prior to the final determination as to which of the two options the Task Force should recommend. Task Force representatives informed the Commission that the master plan provides mitigation in the form of reduced impervious surface on the site, improved stormwater management systems and the re-routing of existing and potential sewage piping away from the lake and to a new connection up at Rogers Street in order to eliminate existing sewer problems on site. Conservation Commission member Green expressed support for the new building Option 3C, though the Commission as a whole did not take a formal vote on a preferred option. A vote requiring the City to file a Notice of Intent for the proposed work was taken and approved.

Over the summer months, the Task Force continued to assess the pros and cons of its Two Preferred Master Plan Options. In early September 2009, the Task Force reviewed a proposal for an oval parking lot option presented by member S. Larrabee. The Task Force enthusiastically endorsed the oval parking lot plan, described in detail in Section 3.3, over the previously proposed closed parking option. As the September meeting concluded, the Task Force formally voted to endorse Master Plan Option 3C, the new bathhouse construction option but with the oval parking lot plan in lieu of the parking lot imaged in the 3C option. It was acknowledged that the oval parking lot plan was a sketch-level study and changes might be required for successful implementation. The oval plan visually reduced the mass of the parking lot and integrated the parkland more sensitively into the bathhouse parcel (see Section 2.2 Site Program-vehicular circulation). The Parks & Recreation staff commented that the oval parking lot plan's inclusion of a drop-off lane along Rogers Street was a beneficial feature, similar to the 'live

parking only' lay-by in front of the Newton Free Library on Homer Street. The new 'drop off site' would provide a better place for buses and families to drop off/pick up of youngsters during camp times at the Lake.
On September 21, Task Force Chairman Bourque returned to the Newton Parks & Recreation Commission to inform them of the Task Forces' final recommendation. The Parks and Recreation Commission asked a wide-ranging series of questions regarding the revised parking lot, improved accessibility, expanded beach area and drop-off safety. When asked for her opinion, the Parks & Recreation Commissioner responded that she agreed with the community consensus that a new building, as expressed in Master Plan Option 3C with the oval parking configuration would be the best option for the City going forward. The Commission reviewed the rationale behind the decision and voted to endorse Option 3C with the oval parking lot option for the Crystal Lake Master Plan, as supported by the Task Force.

3.2 Preferred Master Plan Option 3C

Only a few drawings and conceptual plans detailing Option 3C are provided in this section in order to avoid redundancy. For the full set, refer to Section 5.5 (Two Preferred Master Plan Options), as well as the Executive Summary. What follows in this Section is a detailed description of the recommended option.

The new bathhouse building is situated on the site in relatively the same location as the existing bathhouse. In order to provide additional beach area and to allow for the relocation of emergency and maintenance vehicular access to the beach on the south side of the bathhouse (alongside the MBTA right-of-way), the new building is located further away from both the lake and the southern property line. An easement onto the MBTA right-of-way is not required due to the slight repositioning of the bathhouse from its existing position on the site.

The new bathhouse is a smaller building than exists currently, thereby providing additional space on the uphill portion of the 30 Rogers Street parcel in order to re-grade and reconfigure the parking area and entrance drive to be less steep and to conform to both handicap access regulations and good engineering practices. The new entrance to the building is under a lit canopy directly facing the parking lot. A double door vestibule leads directly into a large lobby with a cathedral ceiling in square cupola flooding the lobby with natural light. As a 'green' feature, use of natural daylight eliminates the need for excessive electrical lighting (thereby reducing operational costs), and would improve the spirits of staff and patrons alike.

A long check-in counter is situated immediately to your right, angled out of the circulation path. It has a direct supervisory view to the changing rooms directly across from it. The check-in counter is part of an administrative suite that would contain the director's office, as well as a first aid station and lockers/baskets for patrons. The administrative area has exterior windows on two sides that allow for supervision of the parking lot/building entry and a significant portion of the seasonal lawn north of the bathhouse. Finishes are rugged and serviceable.

Public toilet facilities are provided within the male and female changing rooms immediately to the right as one enters the lobby. In addition to the bathrooms, these changing rooms provide cubicles in which to change, and lockers for patron belongings. Located on the south side of the building, these utilitarian rooms provide an excellent sound and visual buffer to the MBTA Green Line directly abutting the building. Again, the finishes will be rugged and serviceable. Painted concrete block walls, plaster ceilings and tile or epoxy flooring finishes would be almost indestructible and appropriate in these unsupervised areas. Though not shown, consideration might be given to a 'family' changing room in which members of the opposite sex could assist their children in private.

A 900 sq.ft. community/multi-purpose room abuts the lobby at the lakeside end of the building, taking advantage of the best views on the site. This community/multi-purpose room would also benefit from a cathedral ceiling and could well make use of skylights and/or clerestory windows to flood it with natural light. French doors and floor-length windows would frame views to the lake and lawn through a covered veranda that wraps two of its sides. A vestibule with a drinking fountain leads to two self-contained toilet rooms on the south side of the building that are dedicated to the multi-purpose room. Similar to the changing rooms, this toilet core will shield the multi-purpose room from noise and distractions emanating from the MBTA rail line.

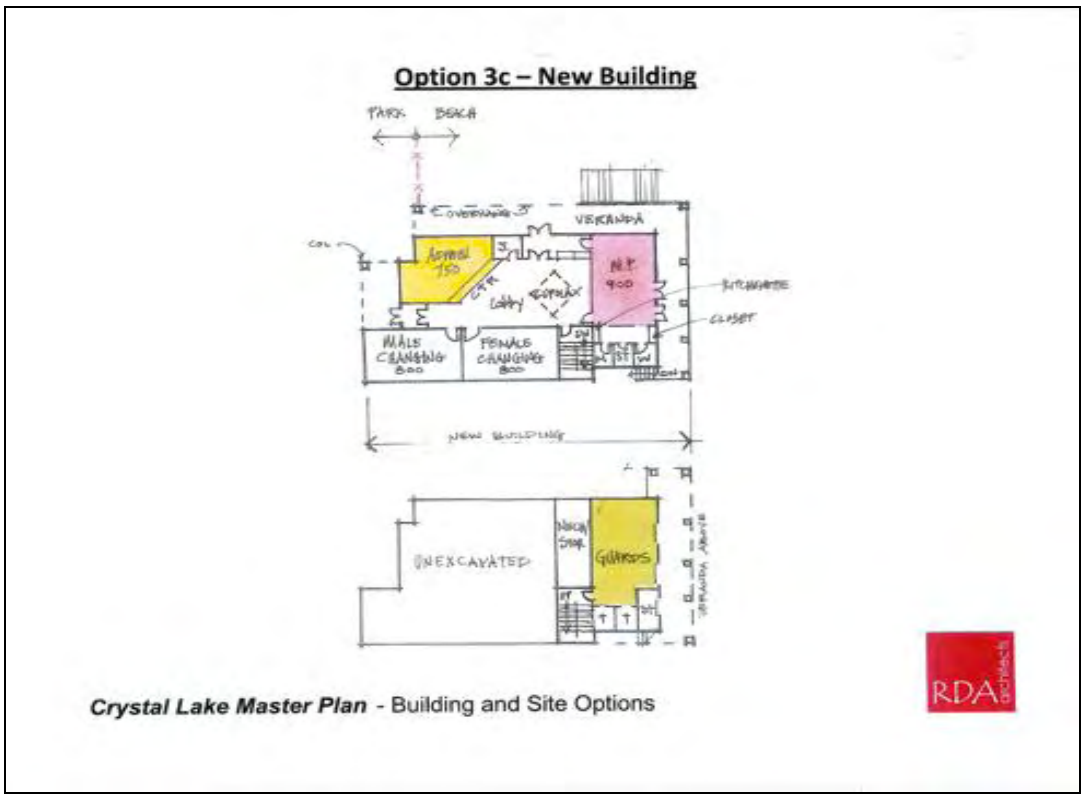

Figure 1: Internal layout of new bathhouse

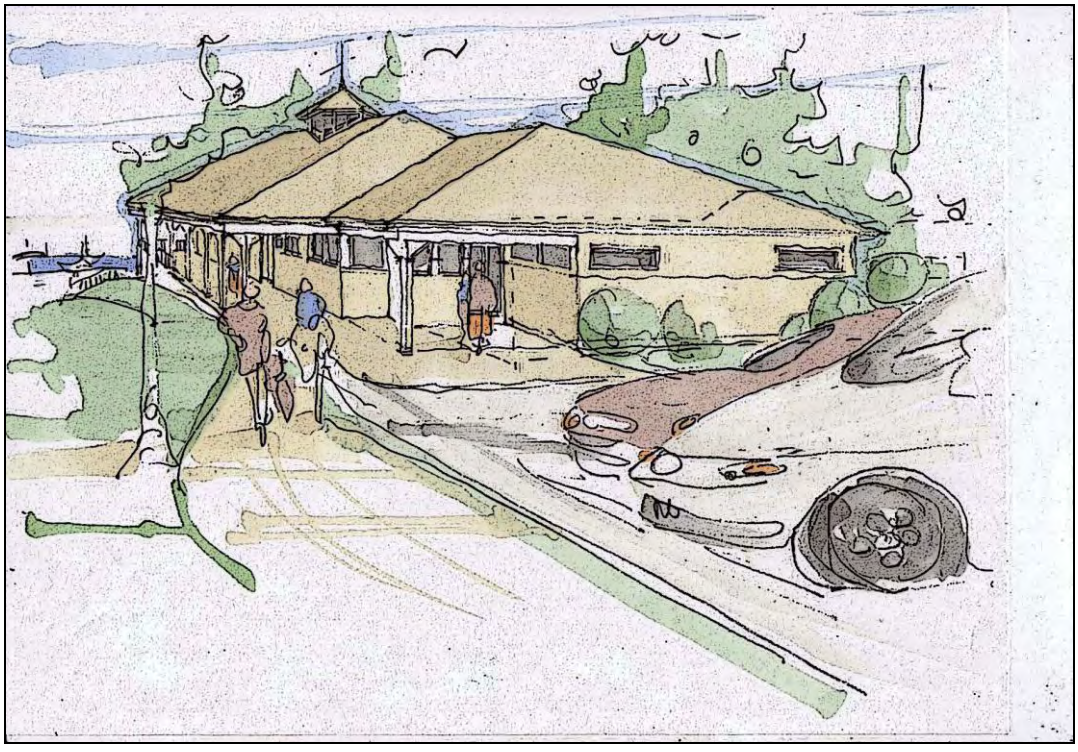

Figure 1: External conceptual view of new bathhouse

Another door leads directly to an entrance vestibule facing the park. Seasonal patrons will access the beach through the entrance vestibule. Community groups will also use the entrance vestibule to access the multi-purpose room during the off-season for various meetings or events. Because the multi-purpose room has dedicated toilet facilities and access via this separate exterior vestibule, it can be used at any time during the off-season without the need to open or heat the entire bathhouse. It should be noted however that the bathhouse could certainly be opened in conjunction with the multi-purpose room for large events. The bathhouse lobby provides another pleasant and large gathering space, immediately adjacent to the multi-purpose room.

A communicating stairwell connects the upper lobby with the lifeguard space on the lower level and provides the final link in a complete buffer along the 'MBTA' side of the building. The lifeguard locker room on the lower level opens up to the beach area in front of the bathhouse with a combination of overhead doors. An intermediate zone of covered, but open-air space would be provided under the veranda above, between the guard room and the beach itself. This would provide shelter to lifeguards and/or beach patrons in the event of a quick storm or shower. Dedicated toilet and storage facilities are provided for staff on this level.

The exterior massing of the building is reminiscent of the best features of the existing bathhouse. A large hipped roof covers the building and verandas on three sides and anchors the building into the landscape. The lack of gable end walls means that the eave line is at 'human scale' around the entire perimeter of the building, which is appropriate for relaxation and recreation, especially for the many small children that take advantage of seasonal programs at the lake.

The large veranda on the upper level is much more delicately scaled than the existing one, allowing a better sense of openness and connection between the landscape and the interior portions of the building. The veranda extends much further than the existing one and provides greater opportunity for shelter and enjoyment by patrons. When viewed from the lake, or from across the lake, the two-level veranda wrapping the beach and park sides of the building breaks up the two-story façade and offers a great deal of depth and interest to the building.

Overall, the proposed new building is very flexible and practical in terms of layout and community use. It is also very responsive to the aesthetic and practical issues involved with buffering the park from the adjacent MBTA rail line and presenting an appropriate and pleasing face to the neighborhood and community.

The new emergency and maintenance access route to the beach, designed to allow for large vehicles, including fire trucks and ambulances, begins at the end of the lot and runs along the southern side of the building. The emergency and maintenance access way will be gated off at the building to allow only authorized vehicles.

There are two pedestrian entry points into the property, both leading to the bathhouse building. Because the southwestern corner of property is the steepest and is in close proximity to the proposed parking area, the southern pedestrian entrance is restricted and will require steps. The northern entrance allows for more flexibility in grading, thus a fully accessible path (maximum 5% slope) can be constructed without ramps. A spur path leads into 'Lot 2' of the 230 Lake Avenue parcel, thus completing the pedestrian connection to Levingston Cove.

The proposed finished floor elevation for the new bathhouse has a ten-foot vertical change down to the beach elevation. Exterior steps, near one of the building's entrances on the north (park) side, lead down to the beach at the building's northeastern corner, just below the veranda above. In association with these steps, an accessible ramp curves north into the seasonal lawn on the 20 Rogers Street parcel before turning back in a southerly direction to reach the beach, again at the northeast corner of the bathhouse. Halfway down the ramp is a small viewing area that looks out over Crystal Lake and steps that lead down to the 'Left Beach'. These steps provide an alternate way of moving to and from the beach and the lawn area overlooking the lake. The southern half of the existing retaining wall is relocated, flowing with the ramps and steps while also providing more beach area. Other retaining walls associated with the ramp system work to minimize disturbance of the existing park landscape and vegetation.

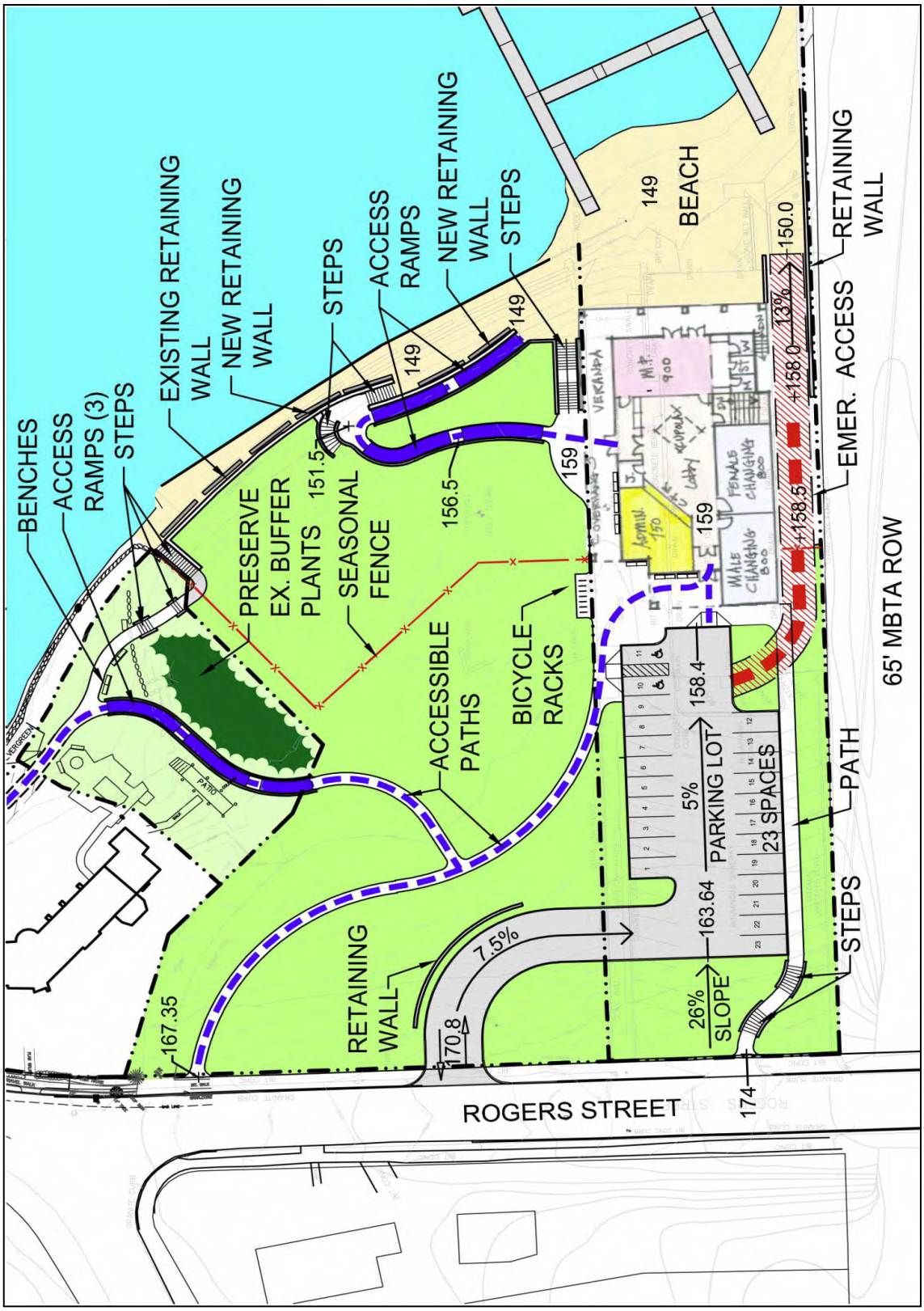

Figure 3: Site Layout of new bathhouse and adjoining park (parking lot replaced with Fig 4: Oval parking lot)

Although Option 3C requires the removal of several existing trees to make way for the building, paving, and site grading, most of the good-quality, desirable trees existing on the 20 Rogers Street parcel will remain undisturbed, and will continue to provide shade over the park's lawn areas. The vegetation plan for 3C seeks to replace, and even exceed, the number of trees removed by construction. Additional shade trees will be native species suitable for the site conditions. These trees, along with a variety of shrub species, will enhance the park landscape, framing views to the lake while also buffering the site from views to, and noise from, the Green Line tracks.

The site design continues to incorporate the existing seven benches along the base of the retaining wall along the shoreline. Although not specifically addressed in this Master Plan, there are multiple opportunities to add other benches around the bathhouse building and elsewhere on the site. Picnic tables can be sited in the lawn areas, both within and outside the temporary seasonal fence. Bicycle racks are proposed near the northwest corner of the bathhouse, adjacent to the entrance. As shown, the seasonal fence is located in approximately the same location and with the same alignment as the existing seasonal fence. This fence will be removed at the end of swim season to fully connect the shoreline to the park.

Overall, by relocating the new building away from the water and modifying the retaining wall, there is a net gain of 3,200 sq.ft. of beach, for a total proposed beach area of 10,300 sq.ft. This is a 45% increase over existing conditions. The amount of impervious area within the site, including the building and all paved areas, is reduced from existing conditions under Option 3C. Existing impervious area is 30,230 sq.ft. Option 3C reduces this impervious area by 12% to 26,550 sq.ft. Some of this reduction in impervious area goes into increasing the pervious beach area, but there is also an increase in pervious landscaped area as well.

Working with recommendations from the Newton Engineering Division and LEC Environmental Consultants (See Appendix for LEC letter dated March 27, 2009), Option 3C incorporates several stormwater controls. Underground infiltration basins are connected to catchbasins in the parking areas and to the building's roof drain system as well. This provides a method of leaching surface and roof flow back into the groundwater table instead of into the lake, which is desirable. Surface flow will also be directed to a gravel-over-sand infiltration area that is set into the emergency access ('crane access') route. Landscaped rain gardens can be established in various areas of the landscape as another way of allowing the infiltration of rainwater into the soil from both surface flow and from the roof of the building. An allowance of $75,000 for these stormwater management measures was factored into the overall site cost estimate.

As noted previously, the sewer outflow system for the existing bathhouse has a number of issues. Recent backups in the system pose a threat to the lake resource, and the location of the pipe under the Green Line tracks creates a maintenance problem. The location and elevation of the existing sewer line, positioned under the existing handicap ramp, and the location of the existing sewer manhole precludes the proposed alignment of the new emergency access route alongside the MBTA right-of-way. If the existing sewer line is not relocated, this emergency vehicle route would be forced back onto the opposite (park) side of the building, thus interfering with this valuable public resource as indicated in the Initial Master Plan Options in Section 5.3 Alternative Solutions.

Working in cooperation with the Newton Engineering Division, it was determined that relocating the sewer line and pumping sewage to different sanitary sewer line on Rogers Street was the best solution. A December 2008 cost estimate, prepared for Mr. Frank Nichols in the Engineering Division, puts the cost for the new system to Rogers Street at approximately $88,000. This amount was included in the overall site cost estimate prepared for this option.

3.3 Preferred Oval Parking Lot Option

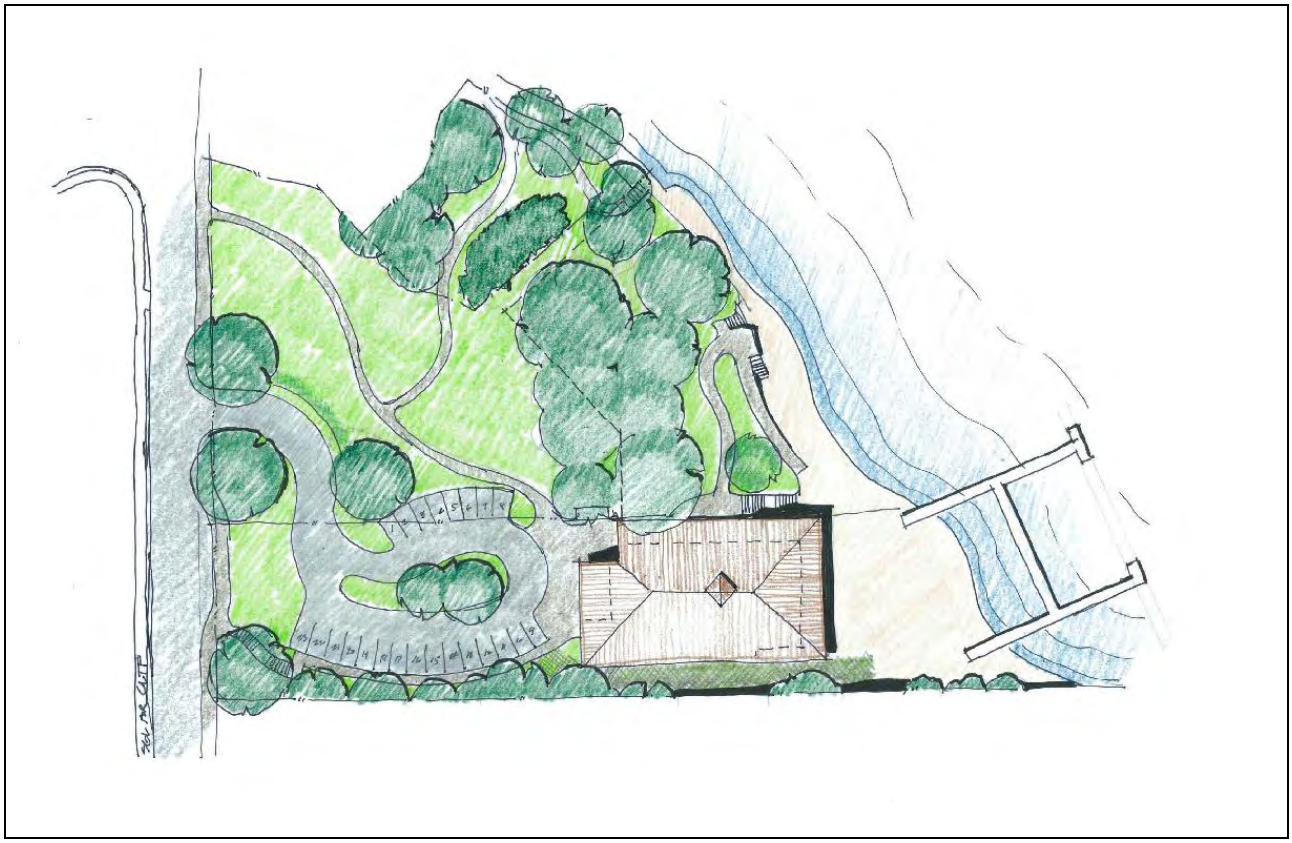

Figure 4: Recommended oval parking lot configuration

The closed ended parking initially diagramed in option 3C provided vehicular access into the site from a single curb cut on the 20 Rogers Street parcel, in the approximate mid-point of the combined 20 and 30 Rogers Street properties. The two-way, 130-foot long driveway has a relatively modest pitch averaging 7.5% down to the parking area. In order to avoid filling in the existing grassy open space on the 20 Rogers Street property, a retaining wall will need to be built along the upper end of the driveway, on the downhill side.

The closed ended parking lot is situated on approximately the same part on the site as the existing lot and is aligned with the centerline of the proposed building. The parking area has a total of 23 parking spaces with the two spaces nearest the building reserved for handicap parking. The maximum slope within the lot is 5%, with 2% or less required around the handicap spaces per accessibility regulations.

However, the Task Force felt it was important to provide a parking lot with easier traffic flow and more sensitively integrated into the parkland and the new bathhouse parcel. During the September 2009 Task Force meeting Schuyler Larrabee presented a conceptual oval parking lot option that appears to be a solid planning concept that addresses some of the concerns regarding the dead-end parking lot layout shown in the recommended master plan and will be explored in greater depth if and when the master plan moves into a formal design stage.

The Oval Parking Lot Option shows a singular two-way vehicular entrance/exit drive to and from the parking lot, similar to the parking lot layout shown in the Master Plan Option 3C. By mimicking the 3C drive, it is clear that site grading has been considered and could be made to work.

The one-way vehicular circulation pattern within the parking lot provides a full turnaround and eliminates the undesirable dead end condition proposed in the 3C parking area. It proposes a total of twenty-three parking spaces and also has a landscaped island to break up the expanse of pavement. These are all desirable components.

A portion of the parking lot encroaches into the lawn space on the 20 Rogers Street parcel, which is an area the Task Force had previously hoped to protect to the fullest extent possible. The Task Force accepted the trade-off of the inclusion of a landscaped island in the parking lot for the modest intrusion into the 20 Rogers parcel.

A careful review of the parking lot layout by the study team (subsequent to the Task Force's final vote) revealed that the travel lanes and stalls within the parking area are dimensionally too small as drawn, and that the turning radius is too tight to meet good engineering practice. In applying current standards, the parking lot size would have to increase slightly, which in turn would require a further encroachment into the open space on the 20 Rogers Street parcel. The accessible path on the northern side of the lot would have to be relocated within the park; however, any impact on the amount of pervious surface would be minimal.

Two options exist to address pedestrian access to the bathhouse from the end of Rogers Street closest to the MBTA overpass. A stairway system could be installed which would require pedestrians to walk across the parking lot to access the bathhouse (as occurs today). This would eliminate the need to push the parking lot any further north into the lawn space on the 20 Rogers Street parcel, but could be a safety issue given the 'drive-through' configuration of the lot, as opposed to the existing dead-end configuration in which cars travel at a slower rate of speed. The second option would be to push the entire parking area another ten feet north into the 20 Rogers Street parcel to allow for a proper pedestrian stairway and walk system along the southern edge of the lot, as was shown in the recommended master plan site layout drawings.

A clear and designated entrance onto the emergency/maintenance route from the parking area is not indicated. Two parking spaces would be lost to make way for a dedicated emergency access entry point, though the potential certainly exists to locate these two spaces elsewhere. Grading for this plan was not indicated. Mr. Larrabee's presentation to the Task Force included a recommendation that the retaining walls be replaced with vegetated rip-rapped slopes, which would be less expensive and more naturalistic than retaining walls. However if retaining walls are selected it can be assumed that the amount of retaining walls required would be the same as for the parking and drive configuration diagramed in Option 3C.

This plan is more conceptual and does present some issues expressed by the Task Force during the earlier parts of the Master planning process. However, during the final Task Force September 2009 meeting, the Task Force endorsed the Oval Parking Lot Option.

3.4 Implementation Analysis

The improvements proposed in this Master Plan will result in construction within the Bank Resource Area and 100-foot Buffer Zone, placing the project within the Newton Conservation Commission's jurisdiction. Therefore, a Notice of Intent Application will need to be filed with the Newton Conservation Commission for pre-construction review, as was determined during the Commission's preliminary review meeting in April 2009. Conformance with the applicable regulatory performance standards will have to be demonstrated as the project goes into design.

Ledge is a potential obstacle on the site that should be studied during the final design phase of the project. The Newton Engineering Division conducted sub-surface explorations in 2007 for the potential construction of storm water leaching galleries. Test pits (TP-0 and TP-1) indicated the presence of ledge within six feet of the surface on the 30 Rogers Street parcel. However, another boring at the site did not indicate ledge within the depth needed for the galleries (approximately 7 feet). This boring location is within the approximate area proposed in this Master Plan for the new leaching basin. Since no additional borings were performed specifically for this Master

Plan, subterranean ledge may show up in other areas of the site in which site improvements and/or grading are proposed. Because the new building proposed in Option 3C is located within the same general area as the existing bathhouse, it might be assumed that ledge would not be a major issue in the construction of the building, but it is difficult to state this categorically. Borings are not possible within the footprint of the existing building and it should be noted that the new lower level will be positioned further back into the existing slope than currently exists.

The construction of a new bathhouse would pose a question as to the best approach in addressing the operation of the seasonal swim programs. There are two potential options that could be considered.

Option 1

Option 1 would require suspension of seasonal programs at Crystal Lake for one summer. A scenario would be to award a construction contract in time to allow for the demolition of the existing building immediately after a summer season concludes. A potential sixteen month construction schedule would have the new building up and open for business by spring a year and a half later. This would result in the loss of only one summer of recreational programming. With careful timing and coordination, the foundations and steel superstructure for the new bathhouse could be installed during the fall (assuming the steel contract had been let out at least three months prior) and enclosure of the building envelope could be complete prior to a hard winter freeze, allowing for the efficient installation of interior mechanical and electrical systems, interior partitions, etc.

If the City chose to provide temporary bathhouse facilities in order to avoid any loss of recreational programming during the construction period, it would be technically possible to do so, though the expense of installing such facilities on the 20 Rogers Street parcel would be very significant. This expense has not been accounted for within the project budgets provided in this study. Such a move would also interfere to a certain extent with the sitework envisioned on the 20 Rogers Street parcel, causing either delays, additional expenses, or both. For all these reasons, the City could suspend seasonal activities at the Crystal Lake Bathhouse for one season during the reconstruction of the bathhouse and adjacent park areas.

Option 2

Option 2 would employ Construction Management at Risk, which allows a contractor to be selected earlier in the design process, and shortens the overall project schedule, more so than is possible under the traditional design/bid/build approach. The demolition and early site work could begin at the end of a shortened season, perhaps August 1st. An aggressive construction schedule with good coordination and pre-purchase of the long-lead items such as steel, masonry, plumbing and mechanical equipment could allow for enclosure of the building before the advent of cold weather. The critical time for completion would be the following May or into June. If the work actually begins in earnest on the site with demolition in August, then the time period for the buildings would be 10-11 months. This would be a tight construction schedule but potentially achievable. Potentially, the building could be available for 'beneficial occupancy' (not completely finished) by June or by the end of June.

Beneficial occupancy would provide staff, public toilets, showers, and locker rooms for the lifeguards. It is unlikely that meeting rooms, changing rooms, administrative office, etc. would be usable. This would permit the next year's swim season to begin with the provision of necessary sanitary facilities.

3.5 Sustainable Design- Potential Green Design

Green design refers to sustainable design and energy conservation measures and is a rapidly evolving field. This section is not comprehensive but presents initial green design considerations for the bathhouse at Crystal Lake.

Zero Net Energy

Zero Net Energy refers to the total energy use of a building over the course of a year. Very few buildings can be built which do not draw electrical power from the utility grid, but it is entirely possible to include features that generate electrical energy and push electrical energy back into the grid.

Photovoltaics

There are a number of ways in which photovoltaics, panels or glass windows with the proper materials in them, can be applied to the new bathhouse. These would generate electrical power, which reduce the net energy drawn from the grid while the building is in use. But since the bathhouse is not used full time all year round, the power generated while the building is vacant is completely put back into the utility grid.

Solar Hot Water

Solar Tubes are very highly efficient collectors that heat water to near 200 degrees. This water can be cycled through a manifold in a hot water tank, heating potable water for use in showers, sinks or other human consumption uses. It could also be used to temper water in footbaths on the way to or from the beach which will encourage people to use them.

Rainwater collection

Rainwater can be collected from the roof, stored in a tank, and used for flushing toilets, rinsing down decks or for watering landscaping in areas subject to heavy foot traffic.

Natural Lighting and Ventilation

The bathhouse roofline could be revised to incorporate a clerestory around all four sides of the building, permitting the interior of the building to be flooded with natural light. This allows the artificial lighting to be turned off the majority of the time, becoming necessary only late in the day, at night, or when the sky is very cloudy. These same clerestory windows can be operable, so that the building can be cooled in summer by means of gravity ventilation; the warm air in the building rises and escapes through the clerestory windows, and is replaced by cooler air through the windows and doors at floor level. This is an ancient system that has fallen into disuse in the age of mechanical ventilation systems.

Site Lighting

All lighting for the parking area, pathways in the park, and around the beach area could be solar powered. These fixtures are available now and will be even more efficient and effective over time.

Sustainable Material Selection

With care, every material choice in the building could reflect a concern for the natural environment. Wood could be from rapidly renewable forests. Exterior materials will be selected not only for their durability but also for their ability to assist the building in maintaining an even temperature. Brick, takes a long time to heat up and can protect the interior from becoming too warm. When it has warmed, the brick will then release that heat into the now cooling building. Concrete and recycled wood phenolic resin composite clapboards are a very effective and sustainable material. Paving material for the deck outside the building could be a playground paving material made from recycled rubber products, including tires, tennis shoes and other rubber products. These are easy on the feet and protect people if and when they fall.

Public education

These concepts and materials could be used with appropriate signage and informational materials as a teaching tool to show patrons how their environment can be cared for and to encourage them to think carefully about how they construct or repair their own homes.

Cost Analysis

4.1 Overview

Total 'Project Costs' for each of the Two Preferred Master Plan Options (See Section 5.5 Two Preferred Master Plan Options) were developed by the Study Team and are included here for reference.

- The Option 3C Recommended Solution 'New Bathhouse' plan has a 'Project Cost' of $4.9 million dollars.
- The Option 2A 'Addition/Renovation' plan has a 'Project Cost' of $4.28 million dollars.

These are 'turn-key' budgets that include a 35% multiplier on top of the 'construction costs' to cover miscellaneous budget items over and above the cost of building and site construction. These budget items would include such costs as design fees, furnishings & equipment, construction contingency funds, etc.

It is important to note that these 'Cost Estimates' and 'Project Budgets' are expressed in 2009 dollars and that they will escalate as time goes on.

4.2 Range of Construction Costs – Site

Site construction budgets were developed by Pressley Associates and include all items shown on the Two Preferred Master Plan Options. These cost estimates include all site demolition (tree removals, full pavement removal, etc.) and all site improvements such as paving, ramps, steps, curbing and curb cuts, retaining walls, site furnishings and lighting, grading, planting, and lawns, as well as allowances for sewer and stormwater improvements. As with any site construction project, there may be unknown factors that cannot be anticipated at the conceptual design level of a Master Plan. Therefore a contingency is factored into the cost estimates.

Because the site designs for the Two Preferred Master Plan Options (2A –Addition/Renovation and 3C-New Bathhouse) are basically the same, there is no significant difference in site construction cost between these two options. Option 2A totaled $870,000 for the work on the 20 and 30 Rogers Street parcels, with an additional $30,000 for the work on 'Lot 2' of the 230 Lake Ave parcel. Option 3C totaled $852,000 for the work on the 20 and 30 Rogers Street parcels, with an additional $30,000 for the work on 'Lot 2' of the 230 Lake Ave parcel.

The slight cost difference between these two options is attributed to the amount of paving necessary to provide pedestrian circulation around the bathhouse and paving for the driveway based upon the site location for the parking lot.

4.3 Range of Construction Costs – Building

Building construction budgets were developed for both of the Two Preferred Master Plan Options by PM&C professional cost estimators, working in conjunction with Raymond Design Associates. These construction budgets are conceptual in nature given the level of detail available in a master plan study. However, the construction budgets provide the City with an appropriate 'order of magnitude' budget for each option and can be used to assess the relative expense of each option when compared to the other.

The construction estimates for the bathhouse building are based on square footage takeoffs and appropriate cost-per-square-foot allowances. A 'Design Contingency' line item was added to cover unknown, but probable program improvements that will most likely be added when the project goes into the design phase. The site construction estimates discussed above were reviewed by an independent Task Force consultant and found to be accurate. They were folded into the estimates compiled by PM&C.

PM&C

CRYSTAL LAKE BATHOUSE MASTERPLAN
Comparitive Design Options
Newton, MA

19-Jan-09

Preliminary Design Options Estimate

MAIN CONSTRUCTION COST SUMMARY

		GSF	Cost per SF	Estimated Construction Cost (ECC)	Construction Start	Escalated to construction start at 6% p.a.
OPTION 3C		*8,850*	*total gsf*	*$* *382* *per sq.ft.*		
		7,600	*heated gsf*			
Demolish existing	building	9,300	$ 15.00	$139,500	Sep-09	$147,870
New Building		7,600	$ 260.00	$1,976,000	Sep-09	$2,094,560
New Veranda		1,250	$ 150.00	$187,500	Sep-09	$198,750
#20 & #30 Rogers St. Site Work				$855,000	Sep-09	$906,300
#230 Lake Ave. Lot #2 Site Work				$30,000	Sep-09	$31,800
Sub Tot Constr Cost:						**$3,379,280**
Design Contingency		10%				**$337,928**
Soft Costs		35%				**$1,182,748**
Total Project Cost:						**$4,899,956**

3C Cost Estimate

Page 1

PMC - Project Management Cost

Figure 1: Total Project Cost Estimate for Recommended "New" Bathhouse Option 3C

PM&C

CRYSTAL LAKE BATHOUSE MASTERPLAN
Comparitive Design Options
Newton, MA

19-Jan-09

Preliminary Design Options Estimate

MAIN CONSTRUCTION COST SUMMARY

	GSF	Cost per SF	Estimated Construction Cost (ECC)	Construction Start	Escalated to construction start at 6% p.a.
OPTION 2A	*6,950 total gsf*		$ *411 per sq.ft.*		
	6,250 heated gsf				
Demolish portion of existing building	5,800	$ 15.00	$87,000	Sep-09	$92,220
Building Renovation	2,600	$ 200.00	$520,000	Sep-09	$551,200
Veranda Renovation	700	$ 125.00	$87,500	Sep-09	$92,750
New Addition	3,650	$ 300.00	$1,095,000	Sep-09	$1,160,700
#20 & #30 Rogers St. Site Work			$873,000	Sep-09	$925,380
#230 Lake Ave. Lot #2 Site Work			$30,000	Sep-09	$31,800
Sub Tot Constr Cost:					**$2,854,050**
Design Contingency	15%				**$428,108**
Soft Costs	35%				**$998,918**
Total Project Cost:					**$4,281,076**

2A Cost Estimate

Page 1

PMC - Project Management Cost

Figure 2: Total Project Cost Estimate for a "Renovated" Bathhouse Option 2A

Site Cost Estimates

Option 2a		Option 3c	
Site Demo / Prep:	$128,000	Site Demo / Prep:	$128,000
Hardscape:	$280,000	Hardscape:	$260,000
Landscape:	$90,000	Landscape:	$95,000
Grading:	$30,000	Grading:	$30,000
Site Lighting:	$45,000	Site Lighting:	$45,000
Stormwater:	$75,000	Stormwater:	$75,000
Sewer System:	$77,000	Sewer System:	$77,000
SubTotal:	$725,000	SubTotal:	$710,000
Contingency (20%)	$145,000	Contingency (20%)	$142,000
Total	$870,000	Total	$852,000

Crystal Lake Master Plan - Building and Site Options

Figure 3: Site Cost (Only) for the Recommended "New" Bathhouse Option 3C vs. "Renovated" Bathhouse with Addition Option 2A

Site Cost Estimates

230 Lake Avenue Lot 2 – 0.19 Acres

Site Demo / Prep:	$5,000
Paths and Ramps:	$15,000
Grading and Seeding:	$5,000
SubTotal:	$25,000
Contingency (20%)	$5,000
Total	$30,000

Crystal Lake Master Plan - Building and Site Options

Figure 4: Site Cost Estimate (Only) to Connect 230 Lake Ave. Easement and Additional Land to Existing Park

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Crystal Lake Master Plan - Site Cost Estimate

Option 3C

December 17, 2008

Item	Quantity	Unit	Unit Price	Total
Bituminous concrete walkway - pedestrian depth	2,800	SF	$5.25	$14,700
Bituminous concrete walkway - vehicular depth	9,800	SF	$6.50	$63,700
Concrete paving - vehicular depth	0	SF	$9.50	$0
Concrete paving - pedestrian depth RAMPs	840	SF	$15.00	$12,600
Concrete paving - pedestrian depth	3,950	SF	$7.50	$29,625
Extra for decorative pavers	0	LS	$10,000.00	$0
Access Drive for crane/emergency - graded gravel surface	2,700	SF	$5.00	$13,500
Ramp handrails	290	LF	$35.00	$10,150
Step handrails	155	LF	$35.00	$5,425
Steps	300	SF	$50.00	$15,000
Stonedust paths	0	SF	$3.50	$0
Bituminous concrete patch at curb - vehicular	120	SF	$12.00	$1,440
Install retaining wall along crane/emergency access	165	LF	$150.00	$24,750
Install new retaining walls	840	FSF	$40.00	$33,600
Install new ramp retaining wall	300	FSF	$30.00	$9,000
6" granite curb in concrete cradle	665	LF	$40.00	$26,600
Stormwater controls allowance	1	LS	$75,000.00	$75,000
Benches	1	LS	$2,000.00	$2,000
Bike Racks	1	LS	$2,200.00	$2,200
Site Lighting	1	LS	$45,000.00	$45,000
Allowance for sewer line improvements	1	LS	$77,000.00	$77,000
Grading allowance	1	LS	$30,000.00	$30,000
Lawn loam and seed	25,000	SF	$1.00	$25,000
Install new trees	22	EA	$1,250.00	$27,500
Install new shrubs. Etc.	6,000	SF	$7.00	$42,000
Remove existing parking lot and parking lot sidewalk	13,350	SF	$2.25	$30,038
Remove existing parking lot retaining wall	140	LF	$80.00	$11,200
Remove ex. Paved driveways alongside bldg	6,550	SF	$2.25	$14,738
Remove ex. Beach retaining wall	120	LF	$70.00	$8,400
Remove ex. h/c ramp and walls	1,100	SF	$5.00	$5,500
Additional site demo	1	LS	$25,000.00	$25,000
Clear additional vegetation for grading and site work	1	LS	$5,000.00	$5,000
Remove existing large trees	23	EA	$1,200.00	$27,600

SubTotal	**$713,265**
Contingency @ 20%	**$142,653**
Total with Contingency	**$855,918**

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Figure 5: Site Cost Estimate for Recommended New Bathhouse Option 3C

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Crystal Lake Master Plan - Site Cost Estimate

Option 2A

December 17, 2008

Item	Quantity	Unit	Unit Price	Total
Bituminous concrete walkway - pedestrian depth	2,900	SF	$5.25	$15,225
Bituminous concrete walkway - vehicular depth	10,350	SF	$6.50	$67,275
Concrete paving - vehicular depth	2,725	SF	$9.50	$25,888
Concrete paving - pedestrian depth RAMPs	850	SF	$15.00	$12,750
Concrete paving - pedestrian depth	330	SF	$7.50	$2,475
Extra for decorative pavers	0	LS	$10,000.00	$0
Access Drive for crane/emergency - graded gravel surface	2,200	SF	$5.00	$11,000
Ramp handrails	290	LF	$35.00	$10,150
Step handrails	155	LF	$35.00	$5,425
Steps	450	SF	$50.00	$22,500
Stonedust paths	0	SF	$3.50	$0
Bituminous concrete patch at curb - vehicular	120	SF	$12.00	$1,440
Install retaining wall along crane/emergency access	160	LF	$150.00	$24,000
Install new retaining wall	1,110	FSF	$40.00	$44,400
Install new ramp retaining wall	300	FSF	$30.00	$9,000
6" granite curb in concrete cradle	700	LF	$40.00	$28,000
Stormwater controls allowance	1	LS	$75,000.00	$75,000
Benches	1	LS	$2,000.00	$2,000
Bike Racks	1	LS	$2,200.00	$2,200
Site Lighting	1	LS	$45,000.00	$45,000
Allowance for sewer line improvements	1	LS	$75,000.00	$75,000
Grading allowance	1	LS	$30,000.00	$30,000
Lawn loam and seed	21,500	SF	$1.00	$21,500
Install new trees	22	EA	$1,250.00	$27,500
Install new shrubs. Etc.	5,800	SF	$7.00	$40,600
Remove existing parking lot and parking lot sidewalk	13,350	SF	$2.25	$30,038
Remove existing parking lot retaining wall	140	LF	$80.00	$11,200
Remove ex. Paved driveways alongside bldg	6,550	SF	$2.25	$14,738
Remove ex. Beach retaining wall	120	LF	$70.00	$8,400
Remove ex. h/c ramp and walls	1,100	SF	$5.00	$5,500
Additional site demo	1	LS	$25,000.00	$25,000
Clear additional vegetation for grading and site work	1	LS	$5,000.00	$5,000
Remove existing large trees	23	EA	$1,200.00	$27,600

SubTotal	**$725,803**
Contingency @ 20%	**$145,161**
Total with Contingency	**$870,963**

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Figure 6: Site Cost Estimate for "Renovated" Bathhouse Option 2A

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Crystal Lake Master Plan - Site Cost Estimate

0.19 Acre Conservation Restriction Area

December 17, 2008

Item	Quantity	Unit	Unit Price	Total
Bituminous concrete walkway - pedestrian depth	0	SF	$5.25	$0
Bituminous concrete walkway - Pedestrian ramp	550	SF	$8.00	$4,400
Steps	45	SF	$50.00	$2,250
Ramp handrails	184	LF	$35.00	$6,440
Step handrails	0	LF	$25.00	$0
Stonedust paths	550	SF	$3.50	$1,925
Clear existing vegetation for grading and site work	1	LS	$2,000.00	$2,000
Grading allowance	1	LS	$2,500.00	$2,500
Lawn loam and seed	2,250	SF	$1.00	$2,250
Remove/repair existing stone wall	1	LS	$2,500.00	$2,500
			SubTotal	**$24,265**
			Contingency @ 20%	**$4,853**
			Total with Contingency	**$29,118**

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Figure 7: Site Cost Estimate for Conservation Restriction Area at 230 Lake Avenue