Feasibility Study for the Future of Rosemary Pool

January 2014
Amended March 2014

Town of Needham

Permanent Public Building Committee

Park & Recreation Department

Prepared by:

Weston&Sampson
environmental/infrastructure consultants

ERRATA SHEET FOR
ALTERNATIVE FUTURES FOR ROSEMARY POOL

March 14, 2014

PAGE	LOCATION	READS / SHOWS	SHOULD READ / SHOW
16-17	Alternatives Matrix #2	9,700 sf pool with limited programming	11,000 sf pool with limited programming
16-17	Alternatives Matrix #3	19,700 sf pool within existing footprint	3a: 13,600 sf pool within existing footprint 3b: 19,700 sf pool within existing footprint
29	Alternative #3 Plan	19,700 sf pool within existing footprint	3a: 13,600 sf pool within existing footprint 3b: 19,700 sf pool within existing footprint
30	Bathhouse Plan	Alternate 3	Alternate 3a
30	Architectural	a. Similar code upgrades as outlined above but with higher fixture counts to accommodate the larger calculated bather load of 808.	a. Alternative 3a requires similar code upgrades as outlined above but with higher fixture counts to accommodate the larger calculated bather load of 808; Alternative 3b requires the architectural renovations as outlined in Alternative 4 to accommodate the larger calculated bather load of 1,100.
31	Alternative #3 Plan Enlargement	19,700 sf pool within existing footprint	3a: 13,600 sf pool within existing footprint 3b: 19,700 sf pool within existing footprint
39	Parking Lot Plan	Alternative 3 Parking Lot Plan	Alternative 4 Parking Lot Plan
Appendix G	Cost Details Alternative Three	Title: Rosemary Pool – Alternative THREE	Replace entire estimate with: Rosemary Pool – Alternative Three REV 3.17.14

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Acknowledgements

We gratefully recognize the passionate residents of the Town of Needham, especially those who came out to express their vision for Rosemary Pool and whose continued advocacy for swimming in Needham remains steadfast. The recommendations and priorities that are established within this document address directly the expressed hopes, concerns, needs and ideas of pool stakeholders. The alternatives presented here are wide-ranging, and recognize the basic fact that municipal governments like Needham, must continue to provide thorough analysis for any public investment in a time of great financial uncertainty. To this end it becomes essential that Needham residents who enjoy the benefits of this great place continue to advocate on its behalf and continue to be diligent custodians in a way that helps to best and highest use of this resource.

We believe that this Feasibility Study examines a thorough range of alternative futures while protecting and enhancing what is best about the place while providing an achievable strategy for dramatically enhancing both bather's experience and the natural resource that is Rosemary Lake.

We wish to express our appreciation Kate Fitzpatrick, Town Manager, and to members of the **Permanent Public Building Committee**: George Kent, Chair; Stuart Chandler, Natasha Espada, John Keene, Paul Salamone, Roy Schifilliti, Irwin Silverstein, members of the **Park and Recreation Commission**: Michael J. Retzky, Chairman; Cynthia J. Chaston, Vice Chairman; David C. DiCicco, Thomas M. Jacob and Matthew M. Toolan; the **Rosemary Pool Working** Group: Janice Berns, Director of Public Health; Steve Popper, Director of Design and Construction, Public Facilities Department; Hank Haff, Project Manager, Design and Construction; Patty Carey, Director of Park and Recreation Department and patron saint of Rosemary Pool; Ed Olsen, Superintendent pf Parks and Forestry; as well as Lee Newman, Director of Planning and Community Development, Patty Barry, Conservation Department Director and Anthony L. DelGaizo, Town Engineer, and other committed public and private servants who contributed in so many ways to the development of this Feasibility Study.

Thank you,

The Weston & Sampson Project Team
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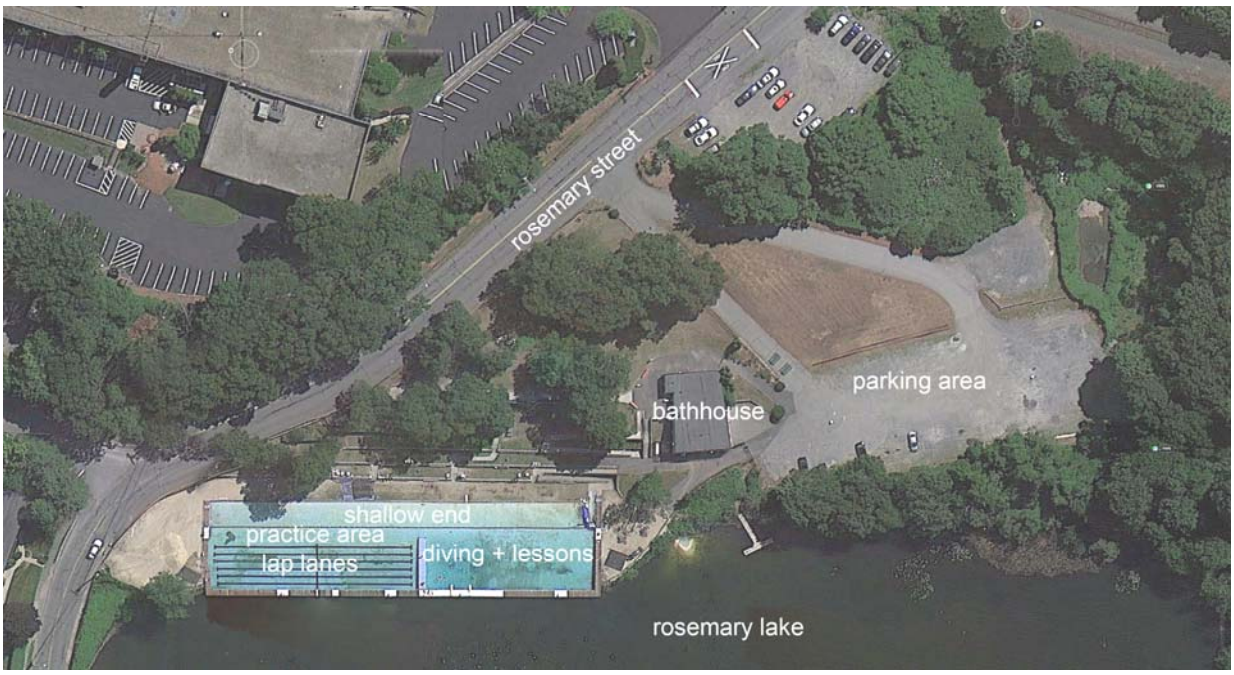
Introduction



This Feasibility Study was undertaken by the Needham Departments of Public Facilities and Park and Recreation on behalf of the residents of Needham. The 2000 Annual Town Meeting approved Article #63 which appropriated moneys for the Rosemary Pool Renovation Design. Numerous improvements to the grounds have been completed during the past decade. This study is using the remaining funds to study the feasibility of renovation / repair of the whole facility with the goal of extending the useful life of the forty year-old pool facility for at least another forty years.

Rosemary Lake is a man-made body of water. The lake was originally created as a water source for nearby manufacturers and was originally used as an ice pond, but by the early 1900's it was no longer needed for that purpose. By the 1940's, Rosemary Lake became the principal public swimming area for the Town of Needham. By the mid-1960's, the quality of the water was deemed not to be appropriate for long-term public swimming, so the Rosemary Reclamation Committee was formed to find solutions. As an "interim solution", the pool was built within the lake so that the swimming area could be served by a water filtration and chlorination system independent from the Lake. The pool has remained in operation for 40 years, but is now in need of comprehensive repairs.

The pool has about 20,000 visitors annually. The majority of visitors are Needham residents with season or daily passes, but the pool is also open to people from the surrounding towns. The LCWF agreement limits the rates charged to non-residents. This is the primary swimming pool facility in the Town of Needham.

The pool structure is a coffer dam, with corrugated steel walls and a painted asphalt floor forming an outdoor swimming pool. The east side of the pool abuts the stepping hillside and sloping lawn area. The pool is filled with water from the lake and / or rainfall, and is surrounded on three sides by sand. The west side is a coffer dam with cantilevered wood boardwalk on top. It was originally designed to have an exchange of water between the pool and the lake to keep the pressure on the walls constant, but since 2009, the valves are blocked after filling and any additional water needed in the pool comes from a nearby hydrant or from rain

water. The pool water is filtered and chlorinated, operating through a diatomaceous earth (DE) filter system, located uphill from the pool, in the lower level of the bathhouse building.

During the past several years in order to prepare the pool for the summer season, both the pool and lake must be drained in the spring because the coffer dam can no longer resist the lateral water pressure of the lake when the pool is drained. This process begins in early April, and the goal is to have all pre-season work completed by mid-May, so that the pool and lake can refill.

The ongoing permitting of the existing facility is complex. Rosemary Pool facility is currently operating under an extension of a Mass DEP Permit but it is complying with more stringent Order of Conditions granted by the Needham Conservation Commission. The current extension ends on September 15, 2018, and further extensions are not anticipated. In addition, the pool must receive a state permit of health code compliance, issued through the Needham Health Department in order to operate a public bathing facility. The permitting of any future changes will involve navigating through the complex regulatory requirements at the local, state and federal level.

Some of the original funding for the Rosemary Pool was provided by the Land and Water Conservation Fund (LWCF). This is a Federal Program (from the Executive Office of Environmental Affairs, National Park Service – Department of the Interior) that is administered through the Commonwealth of Massachusetts. Therefore any alterations to the pool will need to get federal and state approvals in addition to local approvals. A long term solution is needed within the next several years.

The specific tasks that were accomplished included:

- Investigation and assessment of existing information, the site, code and permitting requirements
- Development of design alternatives for repair, renovation or full replacement
- Production of a draft feasibility report followed by review
- Production of a final feasibility report

In the spring of 2013, the Town of Needham through its Permanent Public Building Committee (PPBC) and Park and Recreation Departments commissioned Weston & Sampson to complete a Feasibility Study for the Future of Rosemary Pool. In April 2013, the Town of Needham created a Rosemary Pool working group which represented various town officials. Weston & Sampson attended working sessions with the group and numerous field site visits as part of the reconnaissance effort to determine what needs, preferences, priorities, and potential future improvements were feasible for Rosemary Pool.

Based on information obtained during the initial meetings with all stakeholders, the review of existing information compiled from previous planning efforts at the pool, and a public “blue sky” session, a series of alternative futures were presented to the public at the Town Hall on December 9, 2013, where approximately three hundred people were in attendance. Throughout all of the meetings, many opinions were voiced on a wide range of approaches from the full removal of the pool and a return to lake swimming to an indoor pool with four-season use.

The four alternatives, as represented in this document, were presented to the Rosemary Pool working group. The alternatives represent a broad range of action which was developed based on the goals and aspirations of the majority of the individuals that participated in the planning process. It is understood that the PPBC and Park and Recreation Commission will select the alternative most suitable for the Town and that this preferred plan will be implemented over a period of time and when improvements are fully realized it will have achieved the primary community objectives as determined through public input, online survey and other stakeholder venues.

As part of this study, we visited the pool on several occasions; some as engineers and architects, others as a family of swimmers on the weekend. There is no question that Rosemary Pool is a tremendous asset to this Town. There is a strong sense of community at the complex, guards know swimmers by first name and who has passed their deep water test and who is still working on it. Parents have a high level of comfort allowing kids to move throughout the property without strict oversight. When asked what was most important about the pool visitors consistently commented on the setting of the pool within the picturesque Rosemary Lake.

Throughout the community engagement process several alternatives for swimming at Rosemary were introduced and advocated for. They ranged from the complete removal of the pool from the lake to a fully enclosed four-season pool with attendant recreation center. As the charge of this feasibility study was to explore alternatives to allow swimming at Rosemary Lake to continue beyond the permitting limitations, we focused on what would work best ***at this site only***. The 2002 Rosemary Lake Complex Facilities Plan explored the potential of a more robust facility, the parking implications and impacts to the site that would require an investment of $20+ million.

Four options were explored, and costs estimated and are outlined below:

1) Remove the pool completely; possible reuse of the building; possible use of the lake for swimming
2) Minor renovation of the pool and bathhouse.
3) Major renovation of the pool and bathhouse.
4) Fully replace the pool and remodel the bathhouse.

This report represents the culmination of the feasibility study process and includes cost estimate and permitting requirements for each option. The document contains narrative and graphic depictions of four alternative futures for Rosemary Pool with relevant sections dedicated to identifying the full extent of potential improvements.

It is important to note that a "Feasibility Study" is typically introductory and that the components of each alternative are not "cast in stone". It is fully intended and anticipated that as a preferred alternative is selected by the Town, the actual, detailed scope of improvements will generally follow the one of the alternatives contained in this report, but the precise scope will be refined and adjusted in order to respond to community input and town requirements.

Project Background

Rosemary Pool was built in 1972 in response to elevated bacteria levels and water turbidity that rendered water quality in Rosemary Lake unsuitable for swimming. The pool was intended as a 10-year, temporary solution and constructed using corrugated metal coffer dam sheeting to separate pool and lake water. By isolating the pool water, a treatment system of filtration and chlorination system ensures appropriate water quality for bathers. When it was originally built, it was the intention of the Town to pursue measures that would result in returning the lake waters to swimmable condition. The pool was a success, designed to accommodate 1,400 patrons with half of them in the water at any one time.

A public swimming facility at Rosemary Lake is an important amenity and has become part of Needham's identity. Advocates at public listening sessions relayed fond memories of three generations of family learning to swim and spending the better part of the summer poolside. Much of the love for this facility is credited to the unique setting of a pool in a lake. Scenic vistas of the wooded hills across the water and sun setting over the model yachting regattas make this swimming pool a distinct Needham gem.

As explained below, the pool relies on the draining of Rosemary Lake for annual maintenance. The permit for this activity expires in 2018 and will not be renewed. As a result, a plan of action is required if Needham is to maintain uninterrupted swimming capacity at this location. Weston & Sampson was commissioned by the Town of Needham to identify alternative futures for Rosemary Pool that would allow an educated decision to be made, and potentially voted on at Town Meeting in the Spring of 2014, and acted upon.

Community Participation

To understand and summarize public opinion on this matter, several opportunities to provide feedback were offered:

Permanent Public Building Committee Meetings

The Rosemary Pool Feasibility Study was a published agenda item at both the April 8, 2013 and June 3, 2013 meetings. In both cases proponents from the Community Center of Needham (CCN) organization attended to provide feedback.

Survey Monkey Online Survey

A comprehensive survey (included as Appendix D) was compiled with input from various Town departments and included suggestions from the CCN as well. This survey was distributed via email through several user groups including Rosemary Pool season pass holders and swim lesson participants, Needham Swim Team, and the Community Center of Needham.

Blue Sky Session | Public Hearing

With over 300 people in attendance on July 22, 2013, many with printed t-shirts provided by CCN in support of a new pool, there was a steady stream of input, opinion, reminiscing and passionate advocacy for a need to "do better" at Rosemary. Every comment was recorded as part of the public record and has been included as Appendix E.

Findings Summary Report Out | Public Hearing

With just under 300 people in attendance on December 9, 2013, the audience heard descriptions and cost estimates for the four alternatives. Several people spoke in support of swimming in Needham. Some felt the pool should be relocated but the majority of speakers supported Alternative 4, described in Section 6.

Public Input Meetings

Date	Public Hearing Location	Meeting Purpose
April 8, 2103	Needham Public Library	PPBC regular meeting – agenda item
June 3, 2013	Needham Town Hall	PPBC regular meeting – agenda item
July 8, 2013	Needham Town Hall	Park and Recreation Commission Meeting
July 22, 2013	Needham Town Hall	Blue Sky Public Hearing
August 26, 2013	Needham Public Library	PPBC regular meeting – agenda item
December 9, 2013	Needham Town Hall	Feasibility Study Report Back – Community Meeting

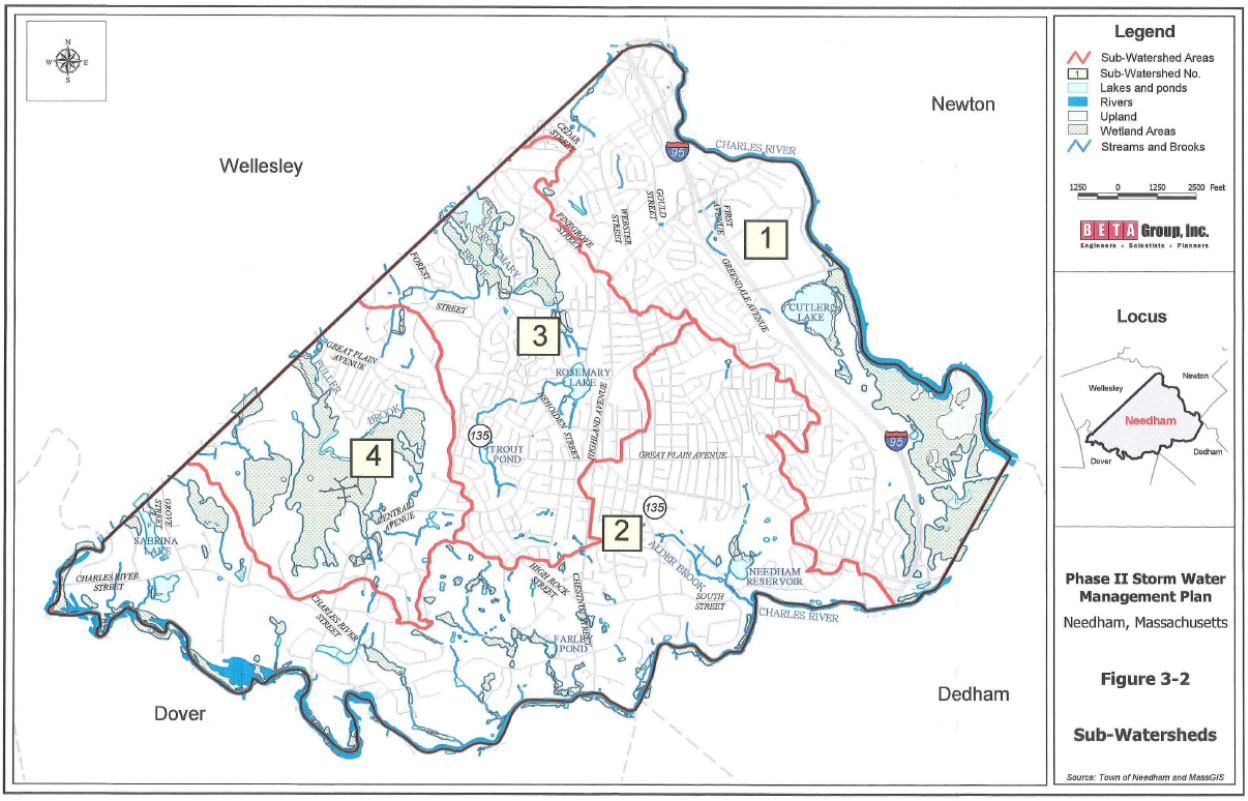
Existing Conditions

During the first few months of the project, representatives of Weston & Sampson gathered all available mapping and plan information to support the feasibility study efforts. The Town provided some existing mapping for the property and aerial photography was obtained for the development of all alternative plans and drawings.

Weston & Sampson representatives also undertook a considerable amount of field reconnaissance work to observe how facilities are used, better understand the physical characteristics of the site and to record the conditions of all natural and man-made features at the property. The following is a summary of our findings.

Topography

The overall site topography is mostly informed by the fact that Rosemary Lake sits at a natural low point within a larger watershed that covers Area 3 on the map below. In fact, it was the damming of the brook back in the 1700's that created this man made resource. From Rosemary Street in the north east corner of the site to the water's edge, there is a difference in elevation of approximately 20 feet. The entrance drive and pedestrian paths steepness are a direct result of this significant grade change. Further, the steep grades have increased the speed in which storm water moves across the site, increasing the effects of erosion and amount of siltation and turbidity in the lake.



The steep grades have greatly informed the development of the site to date. The parking and access routes are all sub-optimal for general vehicular and pedestrian use. Improvements to the site within the last 12 – 15 years have created storm water management interventions as well as improvement to the terraced seating area that supports the pool. However, these grading and drainage techniques are costly to install and maintain as they are working against the natural conditions of the site.

Vegetation

Existing vegetation at Rosemary Lake is characterized as follows:

- Mostly deciduous shade trees made up of Maples (Norway, Red and Sycamore), with some Oak, Horse Chestnut and Ash.
- Evergreens sporadically appear across the site.
- A significant number of mature or over-mature shade trees that are in a state of decline.

As future projects are planned, it will be essential to include major tree planting work in order to provide an attractive park landscape for future generations. Tree plantings are critical elements in any park setting as they provide:

- Shade for those seeking relief from the hot summer sun
- A place for a picnic or social gathering
- Aesthetic qualities that benefit a neighborhood
- Refuge for birds/wildlife
- Visual screening to reduce impacts of various park activities to surrounding properties

Deciduous shade trees make up most of the wooded area throughout the park.

Neighborhood Setting

The aerial image to the right gives a good overview of neighborhood context surrounding Rosemary Pool. Town buildings (library, high school) and commercial / retail along Highland Avenue abut single family homes and some apartment complexes.

The aerial image to the right gives a good overview of neighborhood context surrounding Rosemary Pool. Town buildings (library, high school) and commercial / retail along Highland Avenue abut single family homes and some apartment complexes.

Rosemary Pool is located about a half of a mile to the north of Town Hall and Needham Square.

Surrounding thoroughfares include:

Rosemary Street- is a busy roadway with steep grades that connects the high school and library down the hill to the lake and beyond. A dam with sluice gate under Rosemary Street is used to control the water elevation and for the annual draining required to maintain the pool. There has been at least one account of a car careening down Rosemary Street or Hillside Avenue into the lake.

Highland Avenue- runs north to south with commercial and municipal buildings on both sides. It is the major thoroughfare through town.

Hillside Avenue- runs parallel to Highland Avenue and ends at a relatively steep "T" configuration at the intersection with Rosemary Street.

The Commuter Rail – brings the train and the whistle that goes along with 32 times a day to and from South Station in Boston. There are at grade crossings and four station locations throughout Town. Rosemary Lake is nearly mid-way between the Needham Heights and Needham Center stops.

Parking, Access and Park Circulation

Access to the site is from Rosemary Street. There is a driveway for pool users and staff that splits at the top of a steep incline. The steeper of the two legs of drive is typically closed and used by pedestrians during the summer. There is a vehicular gate at the west end of the pool near the lake dam used for maintenance access.

The parking lot, shown above, is a combination of asphalt and crushed stone that has been terraced into the otherwise steeply sloping landscape. Once on site most of the pedestrian routes are paved with bituminous asphalt. Steeply sloped walks and drives are the result of the severe topography across the site. Wooded footpaths can be traced around the lake through the heavily vegetated banks. Most are informal hiking paths, none providing universal access.

Within the actual confines of the park, parking is accommodated in two lots. The first, at the pool complex, is an aging asphalt and gravel parking lot that sits at the same elevation as the bathhouse, a secondary lot is up at Rosemary Street and used in the off-season by Sudbury Farms for employee parking and not immediately obvious that it is associated with the lake. The second, off of Rosemary Street, is a small gravel lot that supports about twelve cars for non-swimming uses such as viewing the lake and model yachting.

With its current use and layout parking is at a premium and often takes on a life of its own with as many cars fitting into the unmarked parking lots as possible creating potentially unsafe conditions.

Park Entrances & Edges

At community meetings it was noted that many of the park edges and views into the park lack character and definition. In places, old shade trees help to form the park edge which yields more positive feelings. Along many other edges, a lack of definition at park entrance locations and deteriorated fencing systems give an appearance that is less pleasing. In order to clarify park entrance points, improve park aesthetics and neighborhood aesthetics community members seek to include park entrance and edge improvements to elevate the presence of the park within the community and provide more visual connections.

The treatment of the lake edge along Rosemary Street is somewhat stark and do not serve the lake and pool aesthetically.

Rosemary Lake

The land now under Rosemary Lake was first a wide meadow. In the early 1700's a dam was built which backed up Rosemary Creek and created a mill pond, now known as Rosemary Lake. There used to be a saw mill, a grist mill and factories which used water from the lake. In addition the lake was used for ice making in the winter. Daniel Cobb bought a mill and tried to weave silk from the worms who fed on mulberry trees. In 1933, the Needham Board of Trade made the first swimming beach on the lake. In 1943, the town bought the area.

As one of the most significant downstream catchments of Rosemary Creek, and the recipient of much run off from streets, parking lots and surrounding neighborhoods and businesses, the lake became impacted by high bacteria levels and turbidity (clarity) which made the water unsafe for public swimming. In response to this plight, the pool was installed in 1972 as a temporary measure until the lake water could be brought back up to swimming standards.

A report and recommendations to Park and Recreation Commission was furnished by the Rosemary Lake Advisory Committee in 1970 outlines the original problem and various approaches taken to rehabilitate the lake. The engineering firm of Metcalf and Eddy was engaged and offered a range of recommendations for both short and long-term solutions.

A 1971 memorandum from Mike Rozos, the Director of Park and Recreation, to the Park and Recreation Commissioners and the Rosemary Lake Reclamation Committee Members, outlines the proposed improvements for both the pool and supporting bathhouse. The Department of Natural Resources was involved in outlining requirements for 50% reimbursement of Land and Water Conservation Funds to go towards the implementation of this construction. An interesting note is that the facility was being designed to last a minimum of ten years. There are continued obligations that go with the Land and Water Conservation Funds for future use of the site as recreational open space. This is a Federal Program (from the Executive Office of Environmental Affairs, National Park Service – Department of the Interior) that is administered through the Commonwealth of Massachusetts. Therefore any alterations to the pool will need to get federal and state approvals in addition to local approvals.

Water Quality Issues

It has been suggested that the lake be returned to a swimming venue like surrounding towns are able to offer. While this is a compelling idea, one that captured the attention of the town over 40 years ago, it is a complicated one to make a reality. The causes of the poor water quality in Rosemary Lake include:

1. An extensive profile of muddy silt exists along the bottom of the lake. This silt is formed by many contributors that include organics that create high levels of nitrogen and phosphorus. These chemical nutrients promote the growth of algae and support the development of e. coli bacteria within the pond. The algae effects water clarity, which restricts the life guards ability to clearly see swimmers; e.

coli bacteria is toxic to humans and the lake continues to produce test results that indicate unsafe levels of exposure.

2. In addition to the silt, the three tributaries to Rosemary Lake are carrying storm water run-off from the larger watershed area. Contained within this storm water are contaminants resulting from roadway debris like heavy metals from brake dust and petroleum residue from operational fluids. Further, the use of fertilizers on residential and institutional lawns loads a high level of phosphorus and nitrogen into the water. These tributaries also carry fecal coli from animal waste.

While there have been many efforts to improve these conditions, they are far from remedied. Improvements the Town has made include the removal of most septic systems within town and several storm water quality improvement devices through the construction work done for the Lake Drive Drainage Improvements, the Library Addition/Rehabilitation and the High School Addition/Renovation projects. Despite these efforts, which have other far reaching benefits to the overall quality of the Town, Rosemary Lake continues to receive very high levels of nutrients, bacteria, and siltation from upstream.

Previous Studies and Research

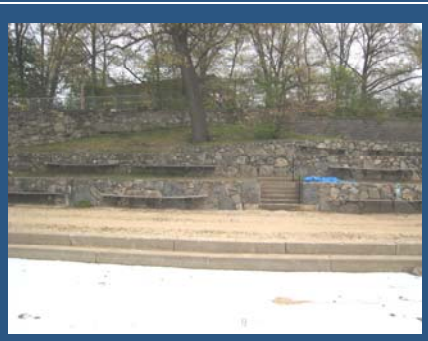
A detailed summary of the existing conditions of the site, pool, bathhouse and filtration system can be found in Appendix A which includes an excerpt from the 1998 Rosemary Pool Report by CBI Consulting Inc. This summary includes a description of the relationship that exists between environmental interests of Rosemary Lake and the maintenance requirements of the metal coffer dam which cannot withstand the pressure of the lake water if the pool is empty. In order to maintain the pool each Spring and ready it for swimming, the lake must be drained. While an existing permit with the DEP allows this use, it will expire and not be renewed in 2018 essentially ending the ability for Rosemary Pool to function as it does today.

In January 2001 Rizzo Associates completed a Phase I Environmental Site Assessment for the property. This assessment, included as Appendix B, includes additional information about the site including topography, geology and groundwater.

In February 2002, Bargmann Hendrie + Archetype, Inc. completed the "Rosemary Lake Complex Facilities Plan" which explored the implications of a multi-use recreation complex to include town departments, a senior center and community center including indoor pool and underground parking. At a price tag of roughly $26,000,000 the plan has not moved forward. Since that time a Senior Center at 200 Hillside Avenue and a Public Service Administration Building at 500 Dedham Avenue have been constructed and provide venues for those functions respectively, as well as space at the renovated Town Hall. Even with those programmatic requirements removed from the complex, the cost of building a recreation center with indoor pool and gymnasium will remain at a premium on this site based on the grades and natural resource areas in close proximity. An excerpt from that plan is included as Appendix C.

Existing Pool Facilities

The chart below identifies general conditions summaries for the major facilities and features associated with Rosemary Pool. More detailed information is provided in subsequent sections. In general, the facility suffers from a lack of recent capital improvements and detioration that is beyond what can be corrected through on-going maintenance efforts by town forces.

Facility	Condition | Assessment	Photograph
Driveways, Parking Lots and Pathways	The pathways within the pool facility are asphalt and comply with the Americans with Disabilities Act requirements. 2002 improvements created barrier-free access between the pool and the bathrooms. While worn paths through the wooded areas that surround the lake are enjoyable to traverse, they are not well-known nor serving the full cross section of the community or providing universal access for all.	
Bathhouse	Access to the bathhouse is difficult as pedestrians access the building at the top floor, but park their cars at the parking lot more closely aligned with the elevation of the bottom floor. Interior features are aging and not laid out to best maximize use of the building for programming requirements.	
Filtration System	This filter system has been repaired dozens of time in order to keep it functioning at a very basic level. Currently, failures in the filtration system have caused occasional pool closures which influences the perception of the cleanliness of this pool. Aging components of the system are no longer readily available for replacement.	
Terraced Seating Area	One must enter the site from above then traverse down through a series of ramps to access this seating. A select few mature shade trees offer sought-after shade. A modest node of small children's play equipment and some grass is available for dry play opportunities. The terraces themselves have been repaired with drainage and irrigation in an attempt to get a healthy stand of turf for sitting. The terracing has been successful in reducing the amount of run-off that enters the pool.	

Sand Beach	There are three areas of sand beach around the pool. The area closest to Rosemary Street is used for volleyball, older kids play and provides a truck access from the street at the elevation of the pool. The beach closest to the parking lot is mostly used by the littlest of children for digging and playing. The main band of sand along the entire frontage of the pool is tempting to dig in, but as unpredictable holes and mounds of sand may create an unsafe walking surface, digging here is not allowed.	
Pool	Once considered a temporary fix while the water quality of the lake was improved to swimming levels, this metal coffer dam enclosure set within the lake offers a unique experience to those who can see past the surface rust and asphalt floor and enjoy the qualities that make it so endearing to many.	

Pool Programming

The following chart outlines the existing pool programming schedule which is active from June through August each year. There are often additional special events that include family fun night, etc. that are not reflected on this chart but do play a large role in the overall contributions Rosemary Pool makes to the quality of life in Needham.

Pool programming is as follows:

Time of Day	Program	Area of Pool	Comments
9:00 am – 12:00 pm Monday - Friday	Swim Lessons x 5 levels	Shallow End + East Deep End	Includes adaptive swimming and 1 on 1 lessons
9:30 am – 11:00 am	Swim Team	5 Lap Lanes	
12:00 pm – 12:30 pm	Changing of the Guards	POOL CLOSED	Start of lunch breaks
12:30 pm – 7:45 pm *with 15 minute rest every 45 minutes*	Public Swim	Entire Pool	Lap lanes are for lap swimming and water walking only. Swimmers must pass deep water test to go past second buoy lines, clinics are offered to prepare swimmers for the test

Bathhouse Building

The existing bathhouse is a robust structure of concrete block masonry walls with precast concrete plank floors and roof structure on two levels. While not the most aesthetically sensitive design for a public swimming facility, it is functional and well-built with a high level of structural integrity. Weston & Sampson's architects and structural engineers confirm the data included in the 9/18/98 study performed by CBI Consulting Inc. (Appendix A). Since that report was completed there have been changes to the Americans with Disabilities Act which applies additional requirements for improvements to bring the building into basic compliance. The scope of this work is identified in Alternative 1.

While the removal of the bathhouse is being considered as part of the full range of alternative futures for this site, the building is so sound and well-constructed that repair, renovation or reuse of this building is recommended should there continue to be town-supported programming of any kind at this site. Part of the renovation program would include façade and roofline improvements that would soften the aesthetic presence of the building and allow it to contribute to the overall sense of place at Rosemary Lake, as opposed to detracting from it as it does now. Alternatives such as cladding the walls, a pitched or decked roof, and additional fenestration to allow for more visual connection into and out of the building are explored through all four alternatives.

Facility Improvements

For a temporary facility designed to last a minimum of ten years, Rosemary Pool and the attendant bathhouse building and site features have performed remarkably well. Since the construction of the facility in 1972 and 1973 a number of repairs and general improvements have been made:

- **Filtration System**: There have been ongoing efforts to keep the pool filtration system running in a reliable manner. Elevation changes between the pool and filter room, the quality of the water received from the lake, and the intense use during summer months put additional strain on the mechanical systems used to keep the water clean. Diatomaceous earth is used as the filtration medium to remove particulate and bacteria from the water. While a very effective filter that is still used today, this form of filtration is considered antiquated and includes concerns about the use of this finite resource as well as proper disposal of the materials once they are no longer effective. The attendant pumps, pipes and valves range from newly replaced to original equipment making it difficult to maintain reliable performance and predict routine maintenance needs. Each new season brings with it a list of mandatory part replacements in order to get the system up and running.

- **Site**: The erosion and run off from the slope above the pool was wreaking havoc with the quality of the water, the stability of the site, and the ability for bathers to rest comfortably when not in the water. In addition, it was difficult for someone with mobility assistance devices to safely traverse the site from parking lot to check in and locker rooms on the second floor of the bathhouse to the actual water level of the pool. To mitigate these issues, significant earthwork of terracing the hillside, drainage and irrigation systems were installed in 2002. To move between the various levels of the site without encountering a barrier, a series of handicap accessible ramps were installed. In addition, storm water from the expanded library and high school was directed through a detention system located to the east of the existing parking area.

- **Building**: The building received a new roof membrane due to leaking and the fact that the original roof had reached the end of its useful life. Improvements are further detailed in Appendix A.

Permitting:

If not for the expiration of the current environmental permit that allows the draining of the lake for annual spring maintenance in 2018, it is possible the pool would continue to exist as it does for years to come. And while the pool itself does not present a challenge to the ecology and quality of Rosemary Lake, based on completed studies and evaluations, the DEP perceives that required annual draining of the lake does. It has been make clear that the Department of Environmental Protection and the Needham Conservation Commission will not renew the existing permit nor endorse any pool operations that require draining the lake. As such, this feasibility study has reviewed only the alternatives that will enable the pool to function independently of lake water levels. Additional information on the permitting required for the pool and potential alternatives is provided as part of the options analysis.

Summary of Constraints:

In evaluating this site for continued support of Needham's public swimming program, several constraints presented themselves. These constraints do not make future development impossible, but they do impact the time and money that will be required to make some of the alternative futures for this pool a reality. The following elements present some level of challenge to the redevelopment of a swimming venue at this location:

Site:
- Steeply sloping limiting effective access and best use of surface area
- Catchment for significant water shed area
- Size and capacity of site is relatively limited given land area due to steep slopes

Environmental:
- Permit requirements for any future site disturbance and renovation work
- Existing wetlands
- Rosemary Lake as a resource area

Building:
- Expensive to relocate or modify significantly

Construction Costs:
- Outlined in Appendix G

Alternative Futures for Rosemary Pool

Throughout the community engagement process several alternatives for swimming at Rosemary were introduced and advocated for. They ranged from the complete removal of the pool from the site to a fully enclosed four-season pool with attendant recreation center. As the charge of this feasibility study was to explore alternatives to allow swimming at Rosemary Lake to continue beyond the permitting limitations, Weston & Sampson focused on what would work best ***at this site only***. The 2002 Rosemary Lake Complex Facilities Plan explored the potential of a more robust facility, the parking implications and impacts to the site that would require an investment of tens of millions of dollars. Due to the funding limitations for a winterized building including indoor pool, a fully enclosed four-season indoor pool has been included as a potential future phase.

The four options that were explored, estimated for costs and reviewed for permitting requirements are outlined below:

1) Remove the pool completely.

   1a – remove the pool and the building and restore the site to a passive recreation resource

   1b – remove the pool and repurpose the building to support town functions and recreational programming

   1c – remove the pool, return to lake swimming and repair the building in support of swimming activities

2) Minor Renovations.

   Renovate the pool in place with a smaller footprint [642 batherload] and minor modifications to the site and bathhouse to bring the facility into compliance with accessibility, safety and health codes for a swimming facility.

3) Major Renovations

   3a – renovate the pool within the existing footprint with 13,600 sf of water sheet [808 batherload]. This allows for renovations to the bathhouse that would improve operations and use while keeping the existing program in the same locations; locker and bathrooms and main entrance at the top level, pool filtration and storage at the bottom level. A footprint for the potential of a future indoor pool as an expansion to the existing building is included as a placeholder.

   3b - renovate the pool within the same footprint with 19,700 sf of water sheet [1,111 batherload]. This requires the bathhouse be completely renovated in order to accommodate the increased fixture count to put entrance and management functions as well as locker rooms and bathrooms on the lower level, offices and function rooms for public use would be located on the top level. A separate filtration building would be created to the western edge of the pool. A footprint for the potential of a future indoor pool as an expansion to the existing building is included as a placeholder.

4) Replace the pool completely with a new footprint [1076 batherload] recessed into the site, raised up in elevation so the pool site higher than the lake. The bathhouse would be completely renovated to put entrance and management functions as well as locker rooms and bathrooms on the lower level, offices and function rooms for public use would be located on the top level. A separate filtration building would be created to the western edge of the pool. A footprint for the potential of a future indoor pool as an expansion to the existing building is included as a placeholder.

Alternative 1 – Remove the Pool

1a – Remove the pool and the building

Scope of Work:

- demolish pool
- restore bank
- demolish building

Demolition:

Building Demolition:

A screening-level hazardous materials assessment should completed. This will provide a basic level of knowledge of suspect materials requiring abatement and corresponding costs. A full hazardous material assessment will be required for preparation of abatement within the final design documents. As part of this study a visual-level hazardous materials screening was performed and no hazardous materials were seen in the building. It is possible there are hazardous materials in the roof or under the roof sheeting. If the building roof is demolished or renovated, samples for testing will be required from the roof.

Pool Demolition:

a. Pool demolition would involve full removal of sheet piles from the lake. This may be achieved used a pile driving rig to back the sheets out vertically. The feasibility of this option should be further developed by consultation with in-house geotechnical engineers and with an experienced sheet-piling contractor (e.g., Sea and Shore Contracting). Technical issues will include condition of piles for removal, access for

equipment, and subsurface conditions/soil saturation. The pool sheet pile walls have a mastic sealant between the joints and the seat and there is also a mastic seal on the deck. A sample of the sealant will need to be tested for hazardous materials.

b. The sheet piles appear to be in good condition. If the sheet piles are degraded below the lake bottom, full removal may not be possible. In this case, sheet piles would be cut and removed at some depth (typically 2-3 feet) below the lake bottom. Excavation and backfilling of lake sediments would be required in this case. Technical issues include access for equipment and permitting for lake excavation/backfilling.

c. The pool design drawings dated 1971 appear to reference a drawing/contract no. (PMA-22) for the sheet piling details.

d. The 1971 pool design drawings also note that logs for boreholes located in the lake were included in the pool design specifications. These were recovered from the original consultant and have been included in Appendix H.

Structural:

a. Lowering the lake water may be necessary to perform construction operations, however, consideration of a temporary coffer dam as a viable option may avoid lake draining / lowering.

b. The existing steel sheet piling is PMA 22, has a low section modulus which is subject to deflect under loading. Design drawings suggest a 2 ft. maximum difference between the water elevation in the lake and the water elevation in the pool when full.

c. The removal of the pool would be done in a sequence that would allow for the removal of the interior pool floor and associated piping and backfilling trenches.

d. Removing the existing concrete curb.

e. Dismantling the boardwalk.

f. Pulling out the steel sheet piling.

Environmental:

Permitting of the decommissioning would require a Notice of Intent from the Conservation Commission and potential coordination with DEP.

a. Once the pool structure is removed, the existing vegetated bank areas can be connected to improve ecological function, aesthetics and habitat capacity.

b. These improvements would be combined with a site plan that leveraged the existing terracing for potential passive recreational use and the consideration of water access by non-motorized craft.

Under all scenarios the water quality of the run-off entering the lake from the surrounding site would be reviewed for potential improvement. There are several areas of erosion that are contributing to the siltation of the lake.

Permitting Summary:

a. For any improvements, a Notice of Intent must be filed with the Conservation Commission and will undoubtedly involve the DEP's review given the history of the site.

b. A permit from the Army Corp of Engineers will likely be required for any bank stabilization improvements or creation.

c. A 401 Water Quality Certification will be required if disturbance impact is greater than 5000 square ft.

1b – Remove the pool and repurpose the building

Scope of Work

- demolish pool
- restore bank
- repurpose building – bring building up to code

Re-Programming:

a. Determine the new use of the building and develop a new program of spaces that meet the needs of the Town if no longer used for swimming.

Demolition:

a. Selective demolition of building components may necessitate hazardous materials abatement. Screening level hazardous materials survey is recommended.

Structural:

a. Basic building improvements to bring the building up to code may require some structural design, new lintels, penetrations, connections.
b. Keep shell of building largely intact and implement building improvements to bring the building up to code. Perform a Chapter 34 code review to identify what structural modifications will be required

Architectural:

The existing facility has a number of conditions that are not in conformance with either the current edition of the Massachusetts Architectural Access Board regulations (521 CMR). These areas of non-conformance will need to be addressed during a "basic repair" project, and will require some degree of reconfiguration within the second level of the pool building.

a. The primary conditions that require floor plan reconfiguration include the following:

1. The two toilet rooms outside of the locker rooms (noted as "SP. Men" and "SP. Women" on the 1974 plans) do not meet the requirements of 521 CMR. The door into each space is too narrow (2'8" vs. 3'0") and the rooms themselves are too narrow (4'4" vs. 6'0"). It is recommended that these two rooms be combined into a single room that would be fitted out to function as a unisex, accessible toilet / shower room, as well as a family toilet / shower / changing room.

2. The corridor leading to the women's facilities is not wide enough to meet 521 CMR (2'10" vs. 3'0").

3. The doors leading into the Men's locker room do not meet the requirement of 521 CMR (18" wall space required beyond the door frame on the knob side of the opening).

4. Clear dimensions in the existing Women's shower room are less than allowed in 521 CMR, and do not comply with what is considered good practice.

5. The Men's shower room is not accessible due to the 7.5" step at the entrance.

6. There needs to be an accessible shower stall provided with grab bars and a seat. Since placing these devices at the current outdoor shower would not be practical, one such shower stall will need to be provided in each of the gender's facilities.

7. Existing benches in both the Men's and Women's facilities are too close together to allow accessible movements.

8. Existing ADA bathrooms would be turned into family bathrooms with universal access.

b. Resolution of the conditions noted above will generate additional space on the floor, which should be allocated to provide more generous life guard room, ticket room and first aid room, as well as some storage.

1c – Remove the pool, return to lake swimming and bring building up to code

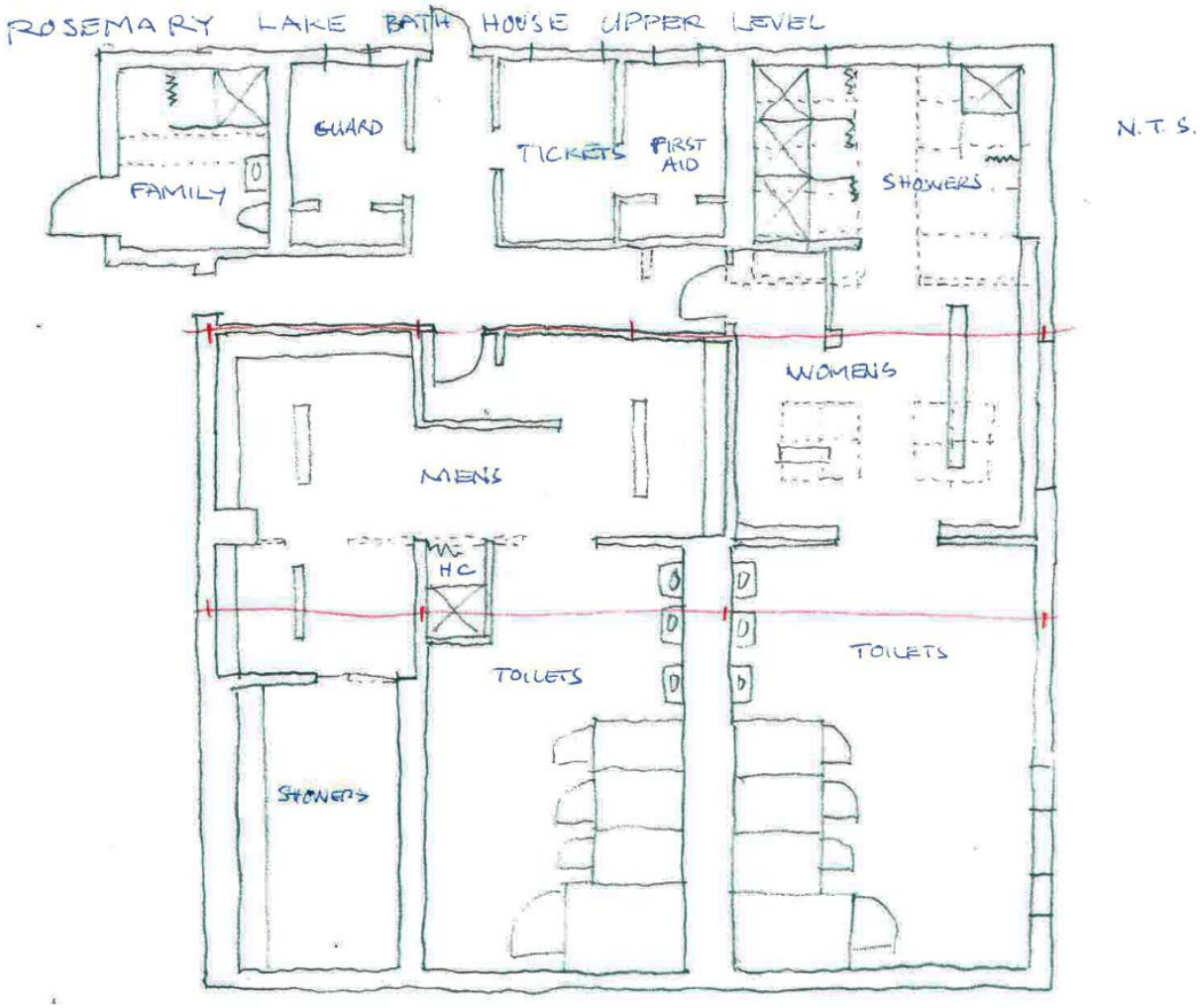
Scope of Work

- demolish pool
- restore bank
- repair building – bring building up to code for swimming function
- rehabilitate Rosemary Lake for swimming

Architectural:
The existing facility has a number of conditions that are not in conformance with either the current edition of the Massachusetts Architectural Access Board regulations (521 CMR), or the current version of the Massachusetts Department of Health Minimum Standards for Swimming Pools (105 CMR 435). These areas of non-conformance will need to be addressed during a "basic repair" project, and will require a substantial degree of reconfiguration within the second level of the pool building.

a. There is no CMR code that provides guidance on the number of fixtures required for a swimming beach, however, if one was to take the bather load of 160, the following fixtures would be required:
    1. Male toilets: 4, or 3 plus 1 urinal
    2. Male lavatories: 3
    3. Male showers: 4
    4. Female toilets: 4
    5. Female lavatories: 3
    6. Female showers: 4

b. The existing number of plumbing fixtures can be substantially reduced (currently 10 toilets and 6 showers for each gender). The two outdoor showers may count towards the overall number of required showers, if that is acceptable to the Board of Health to support lake swimming functions.



Environmental implications of swimming in the lake:

Rosemary Lake, as it exists today, is the catchment area for a portion of Needham including its roads, parking lots, industrial, commercial and residential land uses. While several improvements have been made in the four decades since the construction of Rosemary Pool, the quality of the water in the lake still suffers from high levels of nutrients and contaminants from off-site sources. As noted in Section 4 – Existing Conditions the causes of the poor water quality in Rosemary Lake include:

1. An extensive profile of muddy silt exists along the bottom of the lake. This silt is formed by many contributors that include organics that create high levels of nitrogen and phosphorus. These chemical nutrients promote the growth of algae and support the development of e. coli bacteria within the pond. The algae effects water clarity, which restricts the life guards ability to clearly see swimmers. E coli bacteria is toxic to humans and the lake continues to produce test results that indicate unsafe levels of exposure.

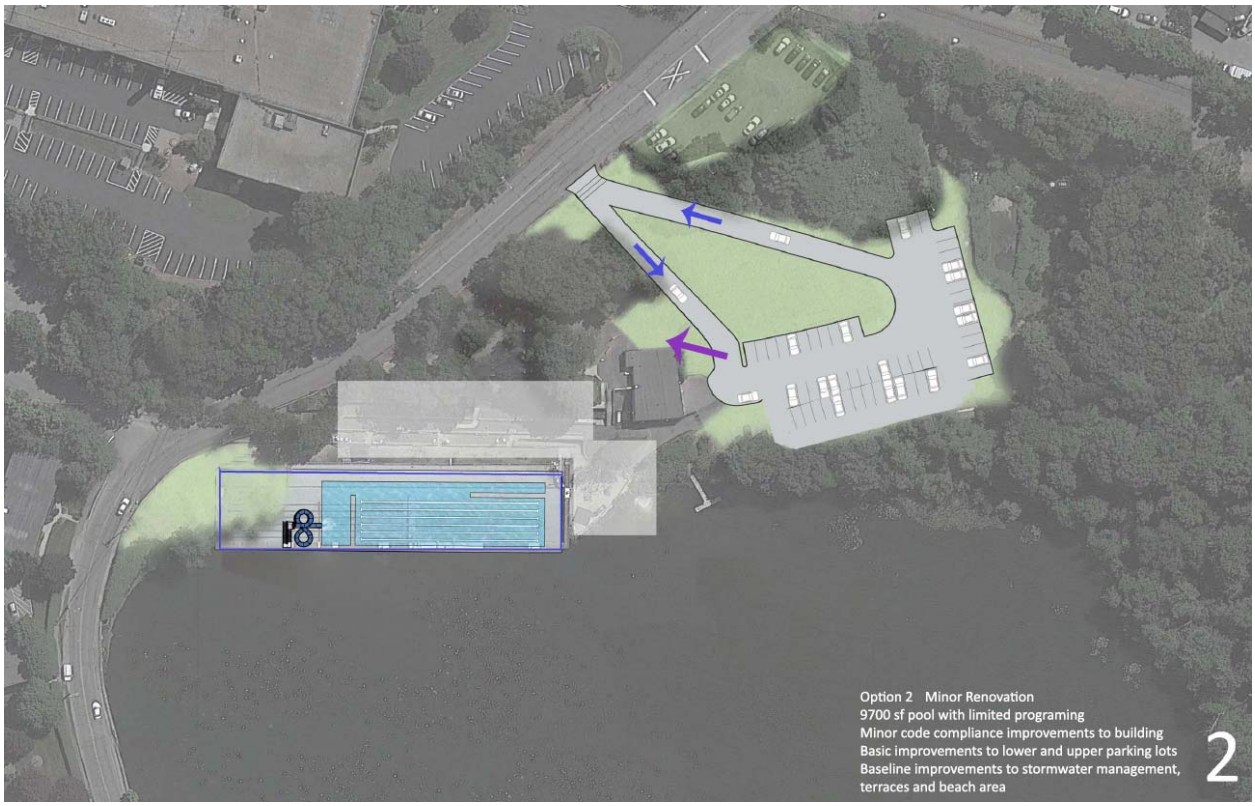
2. In addition to the silt, the three tributaries to Rosemary Lake are carrying storm water run-off from the larger watershed area. Contained within this storm water are contaminants resulting from roadway debris like heavy metals from brake dust and petroleum residue from operational fluids. Further, the use of fertilizers on residential and institutional lawns loads a high level of phosphorus and nitrogen into the water. These tributaries also carry fecal coli from animal waste.

In order to fully remedy these conditions it would be necessary to inventory the entire upper watershed of the lake to understand the current nutrients and contaminants posing a threat to the quality of water at Rosemary Lake. The surface area of the watershed would be mapped into sub-areas and characterized into various

classes of composition, permeability and potential threat. These sub-areas would then each need to be analyzed individually to understand which parcels have a negative impact on water quality and what interventions are required to mitigate them. This effort is significant. A study of this magnitude would take months of time, tens of thousands of dollars and the result would be a report that identifies future improvements that then need to be funded, designed, and constructed in order for water quality improvement to be realized.

It is likely the total effort to rehabilitate Rosemary Lake for swimming would take over a decade of time and tens of millions of dollars to implement.

Alternative 2 – Minor Renovations



Scope of Work

- Construct permanent pool walls within the footprint of the existing pool
- Demolish existing pool walls and demolish limited pool equipment
- Basic site improvements
- Basic building improvements to bring the building up to code
- Basic filtration room improvements – replace pumps, upgrade filter

Demolition:

a. Pool Wall Demolition:

See comments on Alternative 1. Also, potential use of existing pool walls as a cofferdam for new pool construction or as formwork for new pool walls will be evaluated. Construction of new pool walls will require geotechnical boring information from within the existing footprint of the pool to assess location-specific conditions.

b. Pool Wall Stabilization:

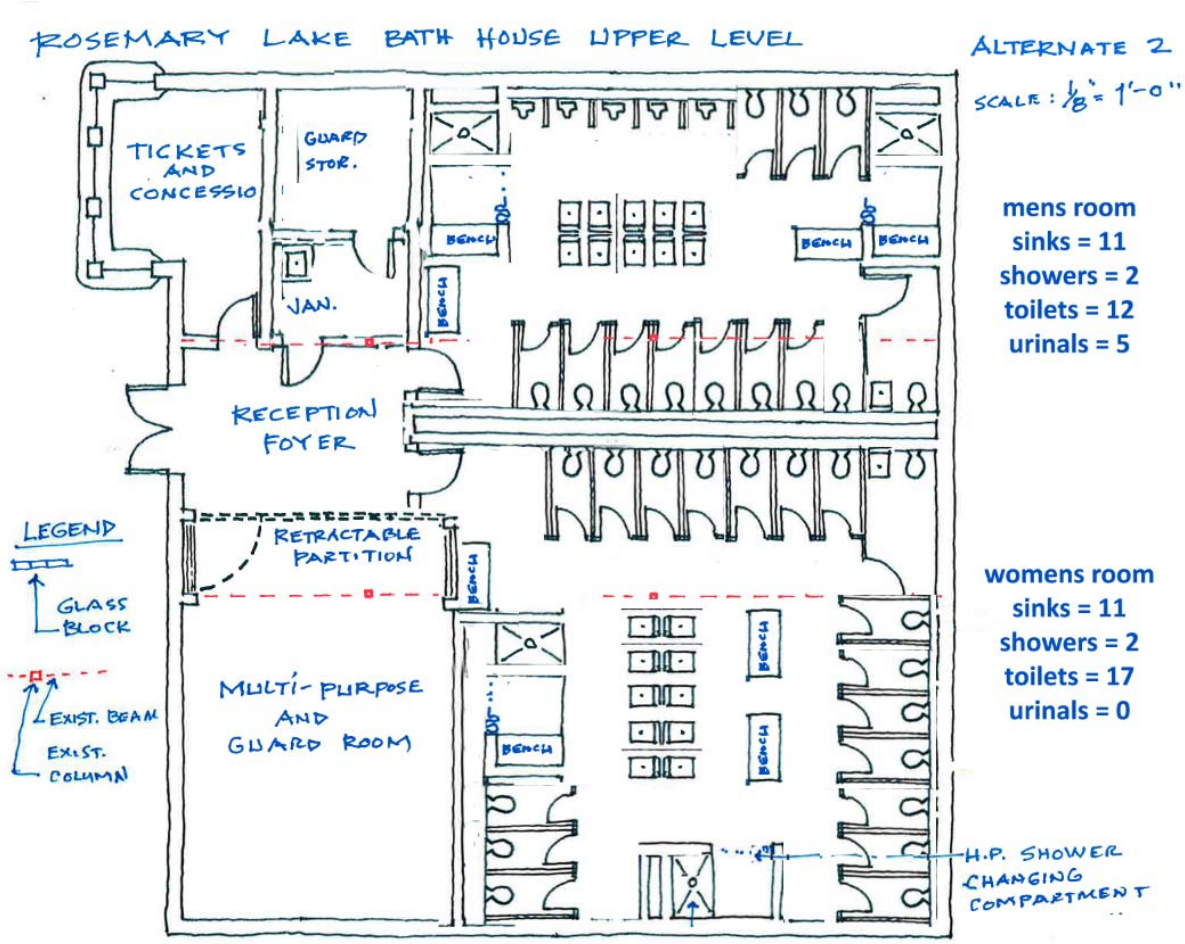
It may also be possible to stabilize the exterior cofferdams from the inside of the pool and leave existing walls in place. This would be a temporary fix that may last 10-15 years of additional pool use but should be considered a stop gap only.

c. Basic Building Improvements:

Selective demolition of building components may necessitate hazardous materials abatement. Screening level hazardous survey is recommended.

Structural:

a. Goal is to construct a new pool within the existing foot print of the existing pool wall system. Establish the minimum required to maintain a new pool without the need drain the lake for routine maintenance.
   1. Construct permanent pool walls.
      i. Cast-in-place concrete walls and floors.
      ii. Replicate Life Guard walkway around perimeter (3) sides
      iii. 5 feet deep at deep end (for slide feature).
      iv. Uplift concerns –
         1. Implement the use of hydrostatic relief valves
         2. Install hold-down piles
         3. Oversize concrete footings for additional dead weight
   2. Demolish existing pool walls – see the decommission steps outlined in Alternate 1 above.
   3. Basic building improvements to bring the building up to code may require some structural design, new lintels, penetrations, connections.
   4. Keep shell of building largely intact and implement building improvements to bring the building up to code. Perform a Chapter 34 code review to identify what structural modifications will be required.



Architectural:
The existing facility has a number of conditions that are not in conformance with either the current edition of the Massachusetts Architectural Access Board regulations (521 CMR), or the current version of the Massachusetts Department of Health Minimum Standards for Swimming Pools (105 CMR 435). These areas of non-conformance will need to be addressed and the bathrooms reconfigured to fit the new requirements for fixtures.

a. Based on the calculated pool capacity of 642 bathers, the requirements for plumbing fixtures as defined by 105 CMR 435 is as follow:
    1. Male toilets: 12 plus 5 urinals
    2. Male sinks: 11
    3. Male showers: 17*
    4. Female toilets: 17
    5. Female sinks: 11
    6. Female showers: 17*

    *Showers can be provided through a combination in indoor and outdoor fixtures

Aquatics:

a. Filter Room Improvements
    1. This filter is antiquated, and care must be taken when dealing with the media. Code requires a collector tank between the filter and discharge to the backwash drain. There is currently an exterior concrete structure used to separate the DE media from the backwash prior to discharging to Rosemary Lake. Further investigation is required to confirm the local approval for the backwash discharge to Rosemary Pond.
        i. The discharge of D.E. media to sewers (or anywhere else) is a violation of code. Currently the used D.E. media is captured in a pit and removed by hand by pool staff. The DPW then removes the material from an enclosed location in the parking lot for proper disposal. It will be determined if replacement parts are available. If the replacement parts for the existing D.E. filter are not available, it is recommended the D.E. filter be replaced with an industry standard high rate sand filter system.

b. Backwash Drain
    1. Our field investigations revealed that the backwash line from the filter building dumps to a drain just outside the building. We do not know the final location of the drain pipe. However, the topography and direction of the receiving drainpipe would suggest that the backwash water is currently deposited in the pond. According to Massachusetts State code 105 CMR 435.26; 105 CMR 435.26 (2) No waste water resulting from draining a swimming, wading or special purpose pool or backwash water may be discharged into a storm drain without approval of the agency having control over such facilities. The current backwash pipe discharges directly to Rosemary Pond. We will continue our review of the approval for the discharge of the backwash to Rosemary Pond to confirm that the current arrangement does meet code.

c. Disinfection
    1. The current system utilizes sodium hypochlorite to disinfect the pool water. This type of disinfection is currently acceptable for this application. However, this is a hazardous liquid and requires proper storage. Due to the size of the pool, they currently store the chlorine in a 1,200 gallon vessel, and 400 gallon vessel. There are risks with this arrangement. First,

it is a large amount of hazardous chemical to store. The tank takes up a lot of space, reducing the area for the rest of the equipment. Furthermore, the disinfectant is stored in an unheated building. The chemical loses its potency over time, and when subjected to cold temperatures. The amount of chemical left in the vessel over the winter is nowhere near its original strength for the next season. Also, it appears that even with the large exhaust ran running 24 hours a day during the season, there is not adequate ventilation within the filter room. This will accelerate the deterioration of metal equipment in the room.

i. Per Mass State Building Code, sodium hypochlorite is a Class 1 oxidizer and at the quantities currently stored in the building, the space needs to be fully sprinkled AND stored in approved enclosures.

2. We recommend an ultraviolet light disinfection system be installed. This equipment can be easily integrated into the current piping configuration, and is extremely effective with a broader range of disinfection than is offered by chlorine alone. Massachusetts State code requires a minimum residual free chlorine value in pools. Therefore, chlorine will still have to be utilized, but at a much lower capacity, We estimated that one 55-gallon drum could be kept on site, and may only need to be changed out once per season.

3. If the UV is added, the proposed volumes of chemicals would be below the code-exempt quantities that would dictate a Hazardous Use Group, as long as the materials are stored in approved enclosures and the space in which they are stored is fully sprinkled. W&S to determine the COST to properly store the High Hazard materials versus installing the UV system.

d. Electrical Equipment –

1. The electrical disconnect switches and conduits are deteriorated from the corrosive atmosphere and need to be replaced.

e. Mechanical Equipment/Piping

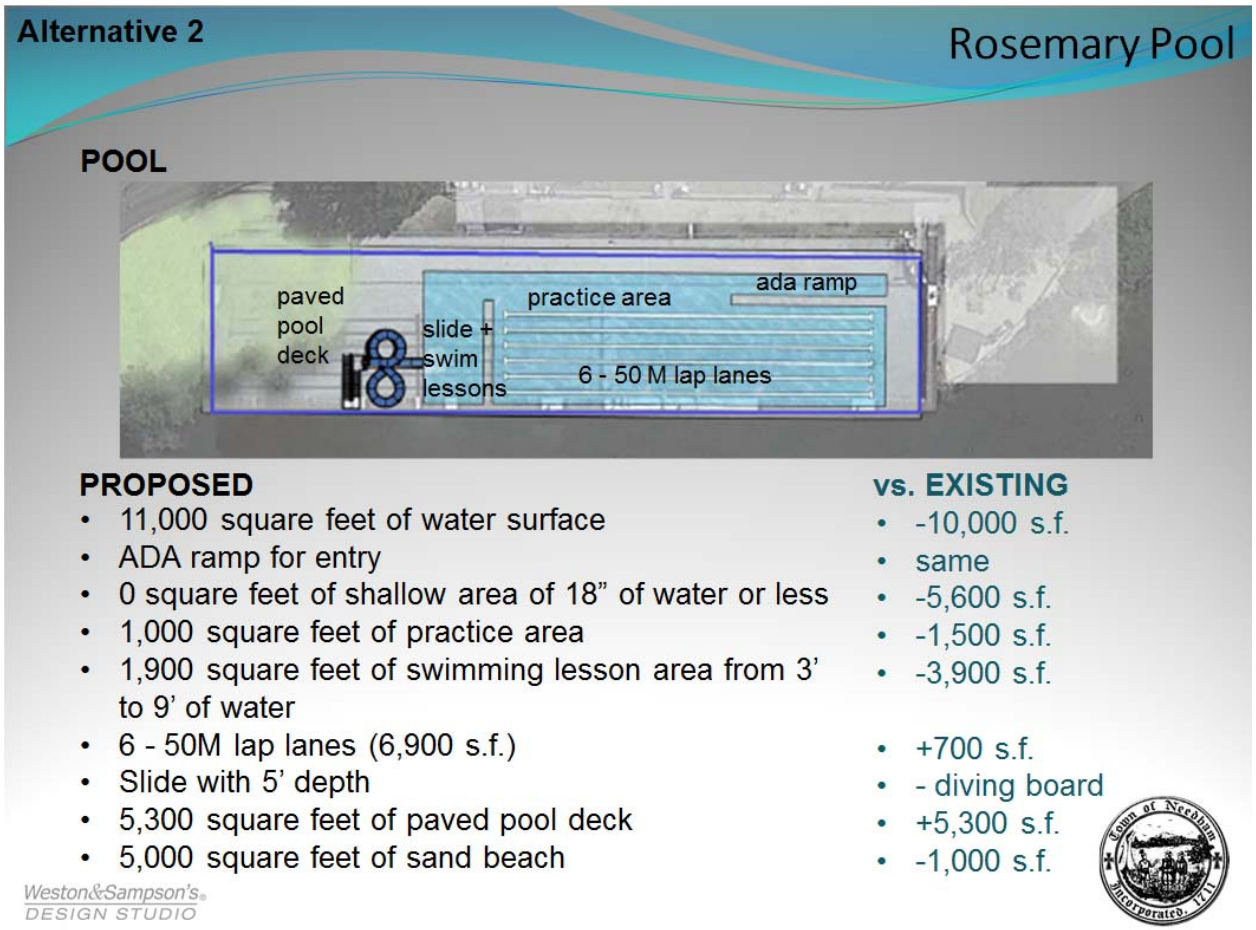
There are several issues with the equipment and piping as outlined below:

1. A majority of the piping and valves are deteriorated to the point that they require replacement.
2. The return pump is sitting on rotted threaded rod. A concrete pad needs to be installed and the pump properly anchored to it.
3. Urgent repair is required should the facility continue to operate as it exists today.

f. Pool Design:

The intent of this “basic repair” scenario is to keep costs and construction time to the minimum. While it may be intuitive to simply recreate a pool as similar as possible to the existing structure that is not the most cost effective course of action. A smaller pool within the existing footprint would offer cost savings that would not only affect up front construction expenses but also filtration upgrade costs, and operations and maintenance over the life of the renovated pool. The precise size of this reduced footprint would be carefully considered based on use and program requirements but as a point of departure, the existing pool has a 21,000 square foot water sheet. If the pool were designed to accommodate 250 bathers at one time a pool half that size (10,000 s.f.), would be appropriate. This

would result in less cast-in-place concrete walls and floors, less pool water to filter, and overall a smaller physical plant to maintain.



Environmental:

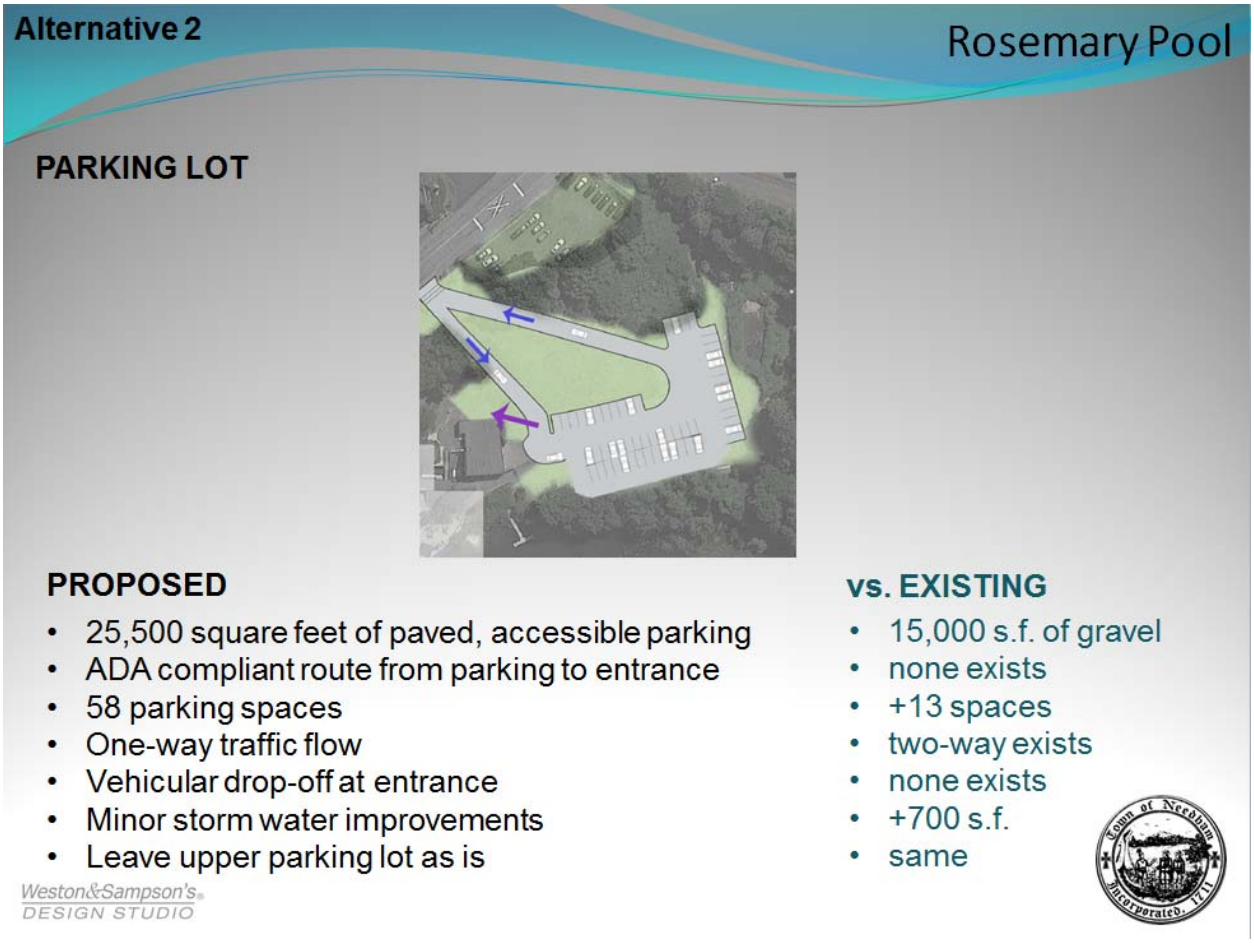
a. Under this scenario, new pool walls would be constructed within the existing coffer dam walls. The existing coffer dam walls would then be removed. A considerably smaller pool within the existing pool footprint, may allow for additional bank creation at either end of the pool. Depending on the reconfigured geometry of the pool walls and water depths of the lake, a continuous bank condition may be possible on the exterior of the pool walls.

b. The improvements to the filtration system and ongoing operations of the pool would offer significant benefit to water quality in the lake through improved backwash operations and filtration media.

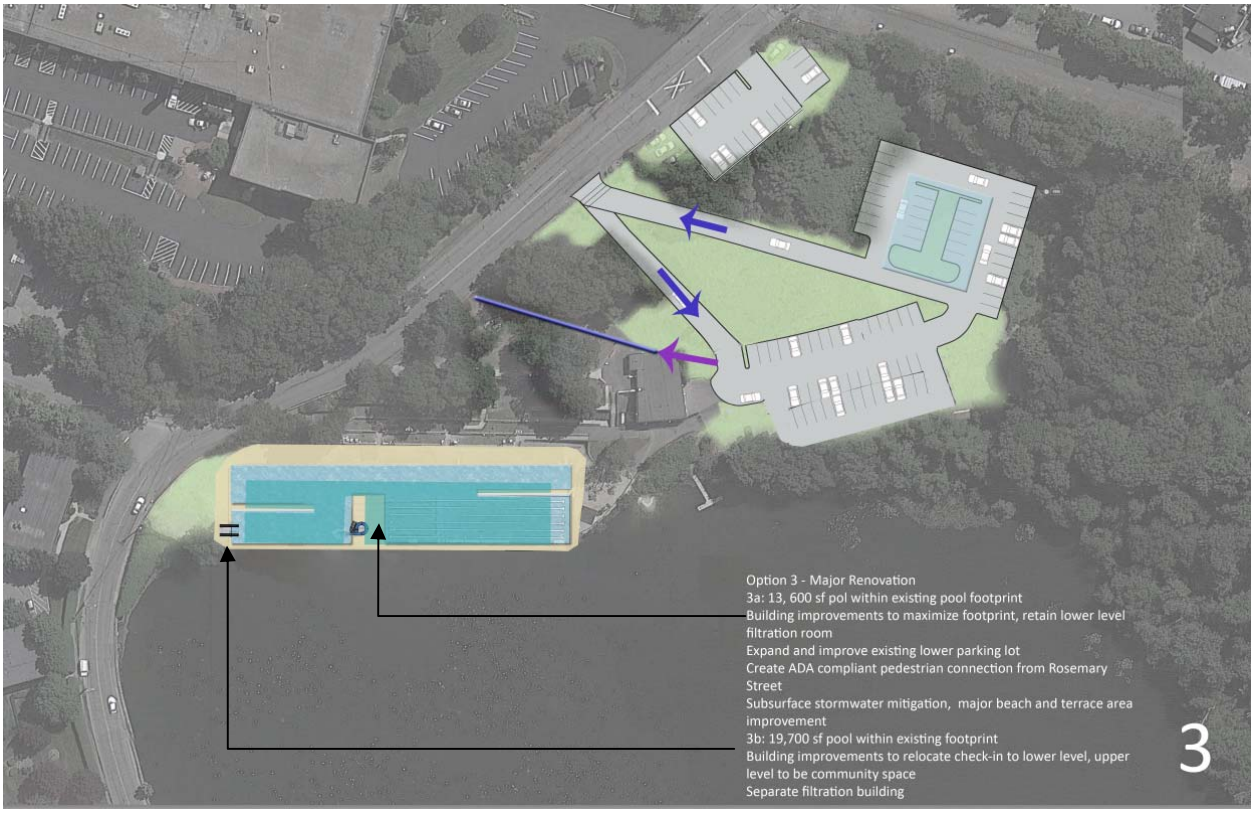
Site:

a. Under a minor repair scenario the site improvements will include the repair and restoration of the terraced seating area to improve accessibility and eliminate persistent erosion issues through the application of a permeable ground surface that will remain stable and comfortable without the requirement of mowing and irrigation for maintenance.
b. The beach areas surrounding the pool will be modified to ensure that while play and experiential value are maintained, the ability to maintain water clarity and limit migration of particulate into the pool would be increased.

c. Parking and access would be improved through the organization, permeable paving (if only used during the summer and not subjected to snow removal), and striping of formal parking alignments. This will increase safety and improve water quality entering the lake from the immediate surrounds.



Alternative 3 – Major Renovations



Scope of Work

- Demolish existing pool walls and pool equipment
- Keep most of existing pool footprint, construct permanent pool walls with slight modification to allow zero entry
- Moderate site improvements and improved parking
- Keep shell of building largely intact improve building to improve functionality with program remaining on existing floors
- Fully replace filtration system in existing filter room

Demolition:

Pool Wall Demolition: See comments on Alternatives 1 and 2.

Building Improvements: See comments on Alternative 2.

Structural:

Goal is to construct a new pool within the existing foot print of the existing pool wall system, but maximize the programming through modifications to the pool shell. Similar to above, establish the minimum required to maintain a new pool without the need drain the lake for routine maintenance.

a. Keep most of pool footprint; construct permanent pool walls with modification to allow for zero-depth entry.
b. Demolish existing pool walls – see the demolition steps outlined in Alternate 1 above.

c. Identify the basic site improvements that will require a structural design, such as new retaining walls, modifications to existing, grade changes adjacent to the building.

d. Keep shell of building largely intact and implement building improvements to bring the building up to code and improve functionality on the existing floors. Perform a chapter 34 code review to identify what structural modifications will be required

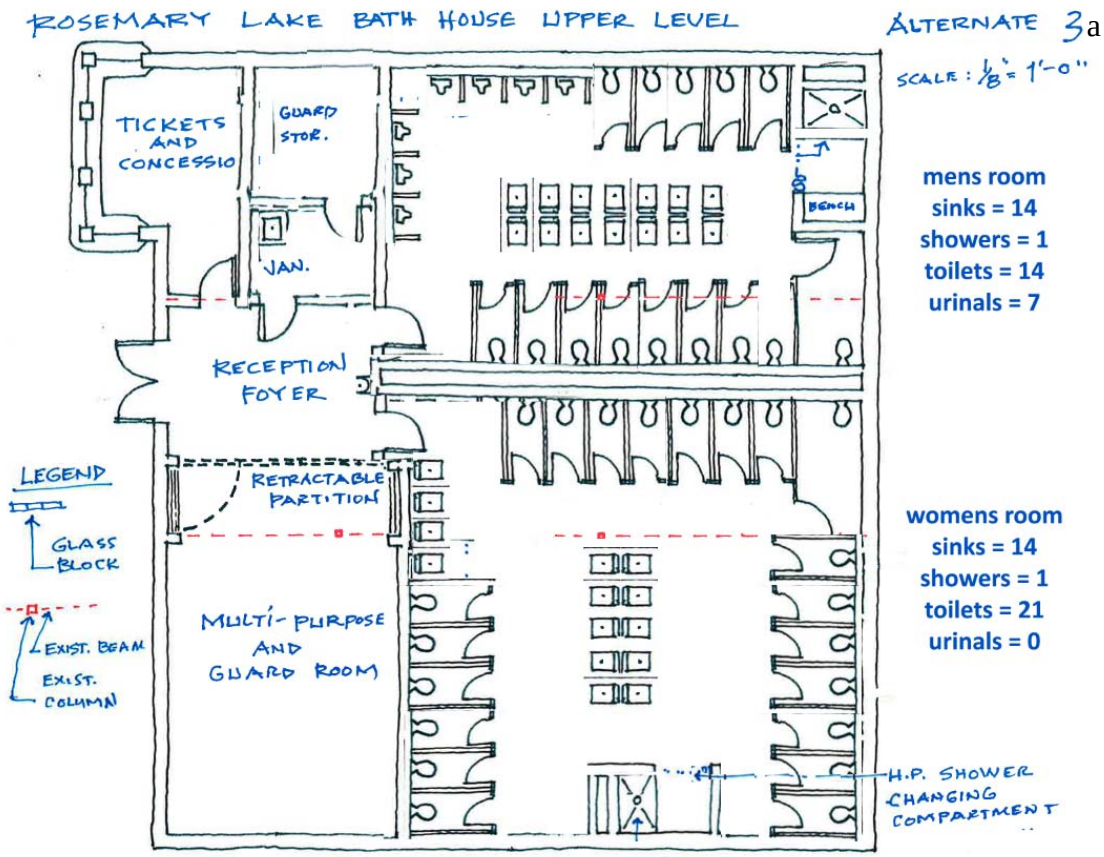
Architectural:

a. Alternative 3a requires similar code upgrades as outlined above but with higher fixture counts to accommodate the larger calculated bather load of 808; Alternative 3b requires the architectural renovations as outlined in Alternative 4 to accommodate the larger calculated bather load of 1,100.

b. In addition, the exterior wall can be overlaid with fiber cement clapboards and trim to modify the image of the building.

c. It is also possible for the existing roof to be converted into a deck. The original plans called for a 2 inch concrete topping to be poured over 8 inch precast floor planks. By addenda the topping was deleted. If the roof was stripped down to the precast plank, and a 2 inch topping installed, the deck would be suitable for pedestrian traffic, with the addition of a code-compliant railing system and stair. However, it is likely that local code officials would insist that a handicapped elevator be installed to provide full access to the roof deck.

d. Upper floor would be renovated to improve use patterns and circulation and ease operations and on site management.

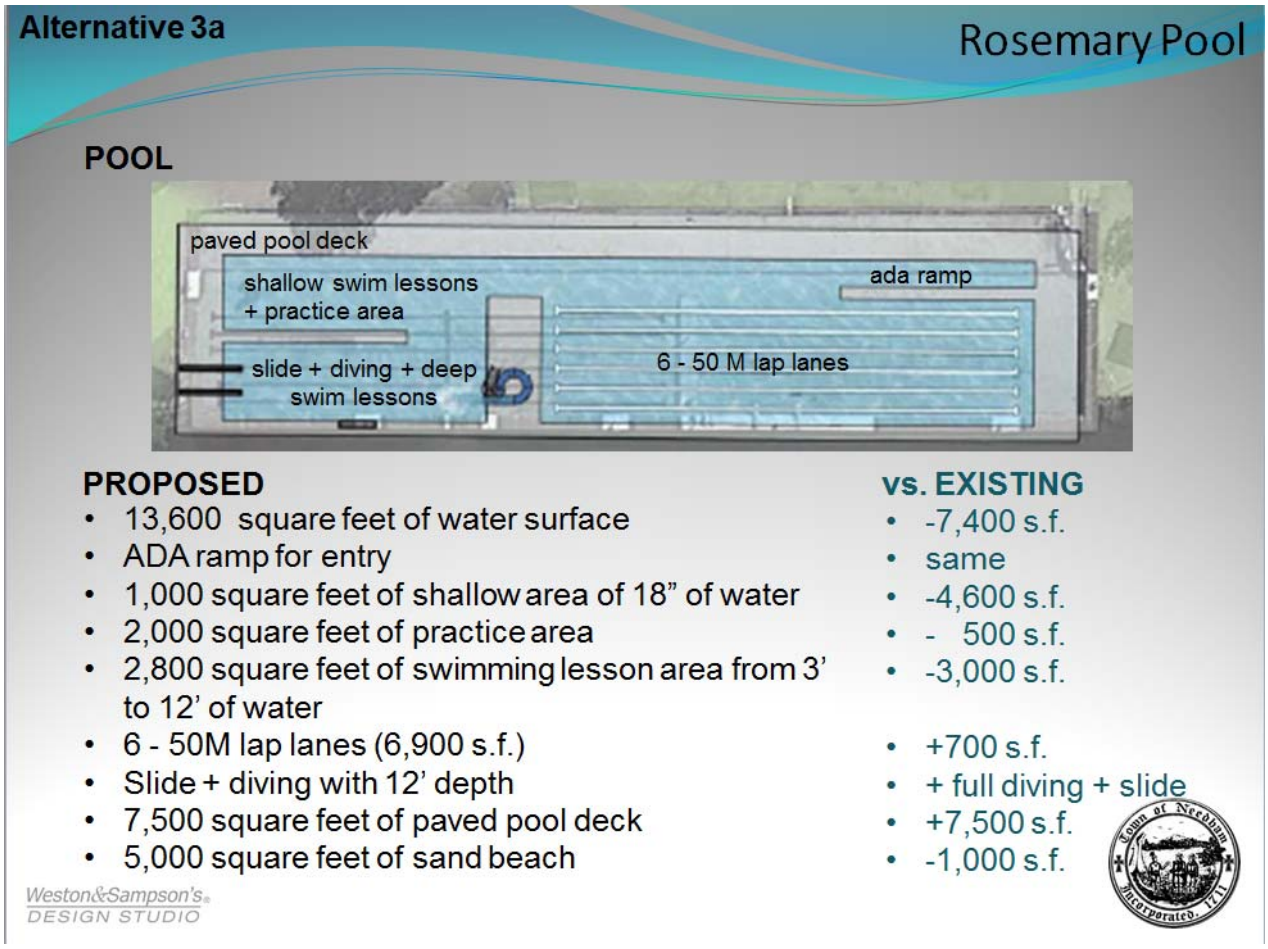


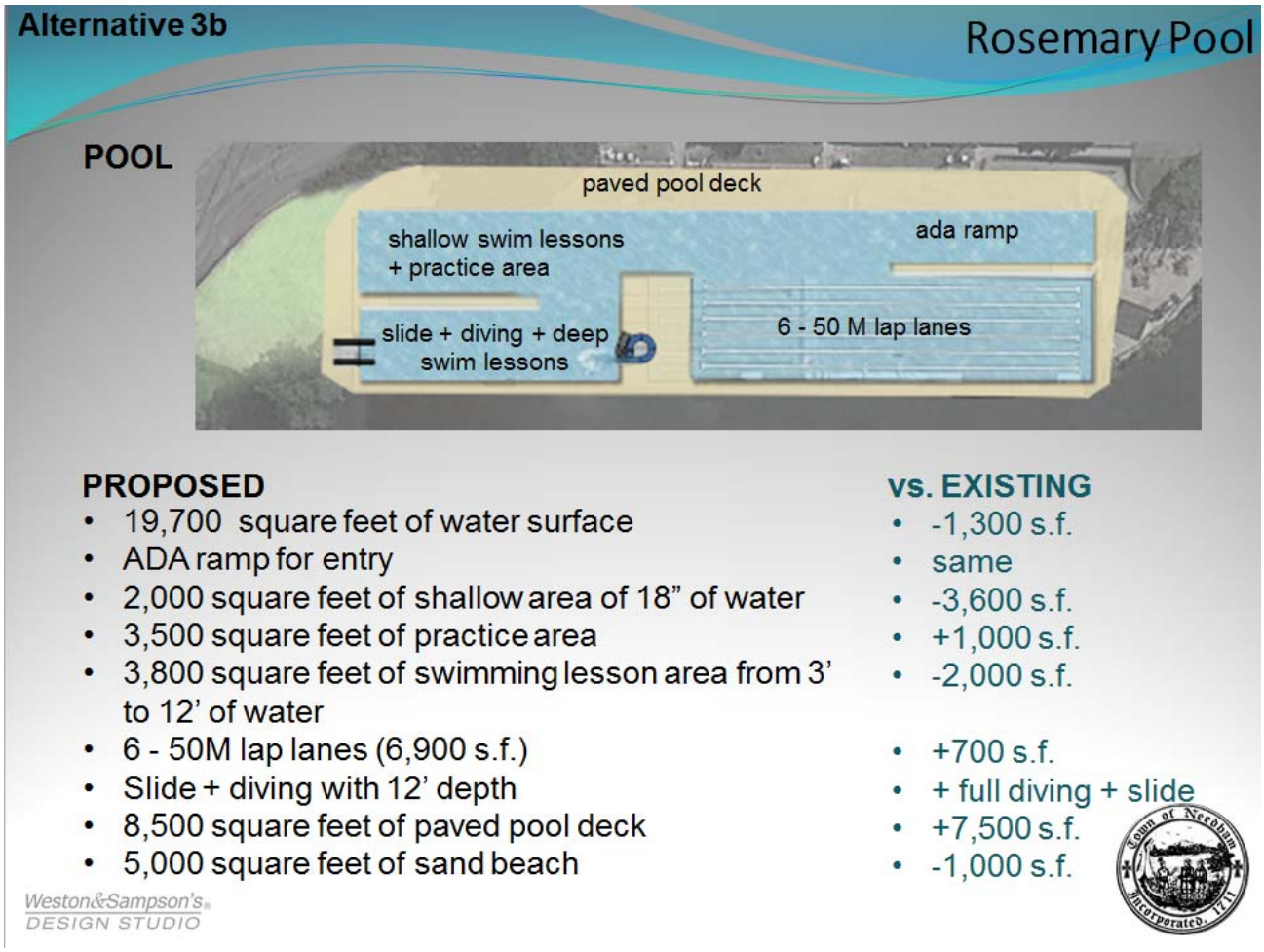
Filter Room Improvements:

a. The existing filter room would be gutted and completely renovated with new state of the art equipment that will optimize operations and ease maintenance requirements.

Pool Design:

a. Under this more robust repair scenario, the pool footprint reduction would be as minimal as possible to maintain pool size, capacity and programming goals. The proposed size would be determined based on the construction constraints of building within the existing coffer dam walls. Additional modifications for enhanced program capacity may also be considered. These improvements may include:
   1. Zero-depth entry sequence and removal of the existing ramp with handrails.
   2. Improvement to the diving board, queuing area and deck access.
   3. Inclusion of a water slide feature.





Environmental:

a. Given the location of the existing walls and the depth of the lake at the interface of the pool structure, it is likely that the bank conditions on either side of the pool would remain the same. Lake water would be in direct contact with the outer pool walls on three sides but these new walls would be structurally capable of supporting the load of the lake water when the pool is drained. Apart from the elimination of the lake draining requirements for pool maintenance, there would not be more significant ecological or environmental improvement as it relates to the lake bank.

Site:

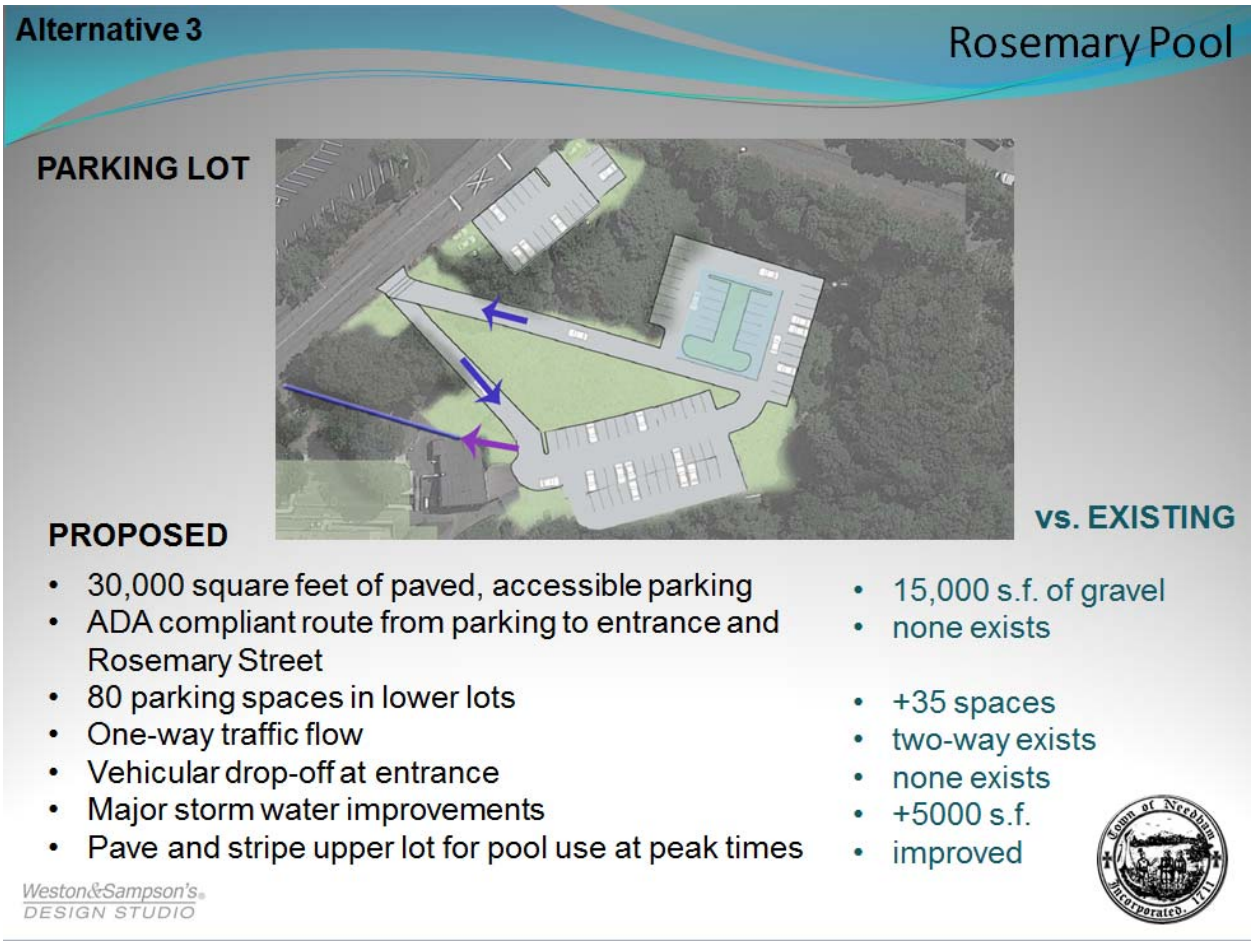
a. See improvements outlined in Alternative 2.

b. In addition, lower parking and access would be completely altered to make best and highest use of the flat land and create more through the integration of retaining structures and storm water improvements. The lower parking lot would be terraced into two formal parking zones with subsurface infiltration chambers to support storm water management. The existing detention basin would be relocated and altered for higher level performance.

c. Park entrances will be upgraded to be more visible, more attractive and logically situated to provide safe, convenient and ADA compliant access to park locations and facilities.

Improvements at primary entrance locations might typically include:

i. New pavements
ii. New park signage
iii. New gateway features (piers, columns, arbors etc)
iv. Tree plantings
v. Benches
vi. Other landscape enhancements



d. At present, park edges are quite varied. In places, they are somewhat undefined with no fencing and informal shade tree growth. In conjunction with recommendations to improve entrances into the park, it is similarly suggested that a more thoughtful, consistent approach to upgrading the most visible park edges be employed. Work at these locations would include:

i. Suitable fencing or wood guardrail
ii. Shade tree plantings
iii. Evergreen tree plantings
iv. Interior trail network that creates more permeable edges for pedestrian access

Alternative 4 – Pool Replacement and Building Remodeling

Scope of Work

- Demolish existing pool walls and pool equipment
- Completely remove existing pool with new footprint set back on site
- Significant site, pedestrian circulation and parking improvements
- Reconnect natural bank
- Construct separate pool mechanical building
- Accommodate four-season use through the inclusion of a bubble structure.
- Consider a splash pad feature to extend season of use.
- Move bathrooms and other guest service uses to lower level for improved user experience and pedestrian flow.
- Reuse existing building to greatest extent possible and consider expansion to support additional programming for community center related activities.

Demolition:

a. Pool Wall Demolition: See comments on Alternatives 1 and 2.
b. Building Improvements: See comments on Alternative 3.

Structural:
The goal of Alternate 4 will be to completely remove existing pool and reconstruct a new pool set back away from the current pool limits within the lake. Reconfigure the existing building based on the programming requirements for the facility and construct a new pool mechanical building on site, location to be determined.

a. Completely remove the existing pool – see the decommission steps outlined in Alternate 1 above.

b. Design a new cast-in-place or gunite style pool on a new footprint set back further into site than the current pool, towards the east.
c. Design a new separate pool mechanical building.
d. Relocate bathrooms and other guest services to lower level of the existing bathhouse.
e. Make modifications and re-use existing building to greatest extent possible.

Geotechnical and Structural Testing:

a. There is an indication on Sheet 1 of 6, that at least two borings were taken BH1 and BH3, but the boring logs were not made part of the drawing set. If the boring logs are not available, a minimum of four borings should be drilled within the foot print of the proposed new pool. If the boring logs are available, then one or two supplemental boring should be taken at the center of the proposed new pool.
b. Another boring should be taken at the center of the proposed mechanical building.
c. Test for lead paint on the existing steel sheet piling.
d. The existing hollow core plank shop drawings should be made available to the design team to confirm the live load design criteria. The design drawings call for 100 psf, refer to the Notes listed on 1974 drawings. The design was altered during the addenda phase in 1974, deleting the rooftop seating area and the roofing system changed; refer to Sheet A-4R. The design loading criteria may have also been changed as a result.
e. If the plank shop drawings cannot be found, it will not be possible to definitively establish the capacity of the planks. Construction above the roof will require a separate structural floor system.

Architectural:

a. Under this Alternative, the pool equipment would be removed from the existing building, with replacement equipment to be placed in a separate, dedicated mechanical building elsewhere on the site.

b. Bather facilities are moved to the ground level of the exiting building under this scenario, placing them closer to the level of the pool, thus minimizing the need for bathers to climb stairs or ramps. The ticket office and first aid station would also need to be relocated to the ground floor.

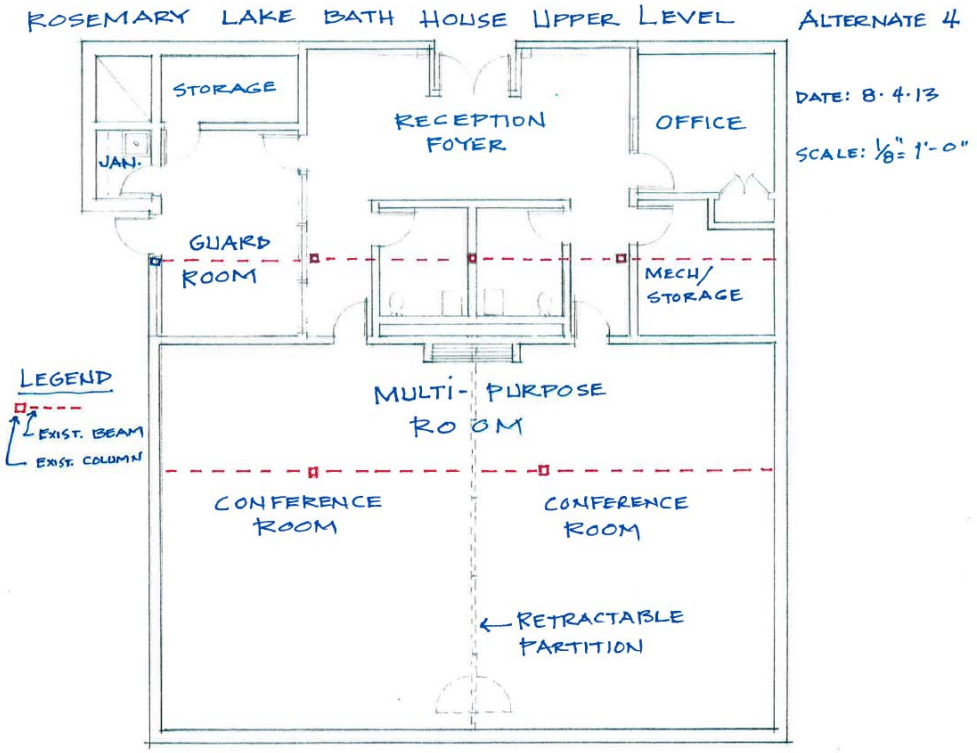
c. Given that the rear half of the ground floor is below the surface of the surrounding finish grade, more substantive mechanical equipment will be required to provide the code-required ventilation of these spaces, particularly toilet and shower rooms. An appropriately sized mechanical room and supply/return air ducts will be required.

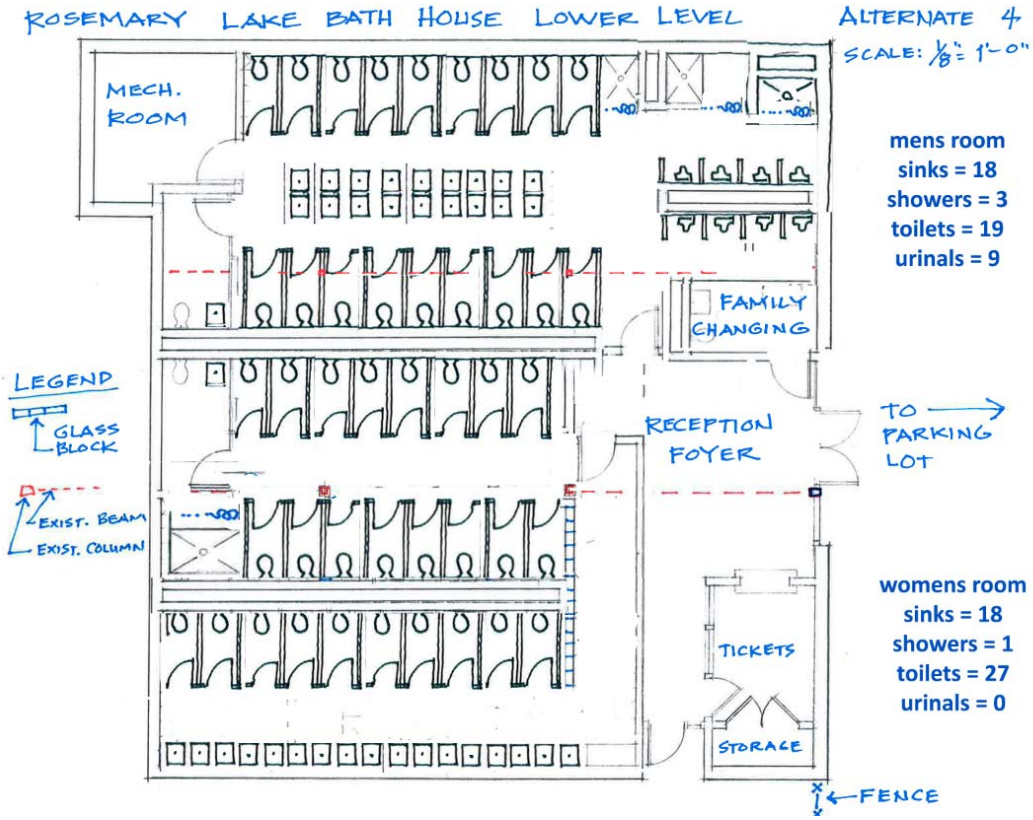
d. The calculated bather load for this scenario is 1076 requiring significantly more fixtures than previous scenarios. The pool design can be refined to reduce bather load as appropriate to create a balanced use of existing floor plate between bathroom fixtures and actual bathing and changing space.

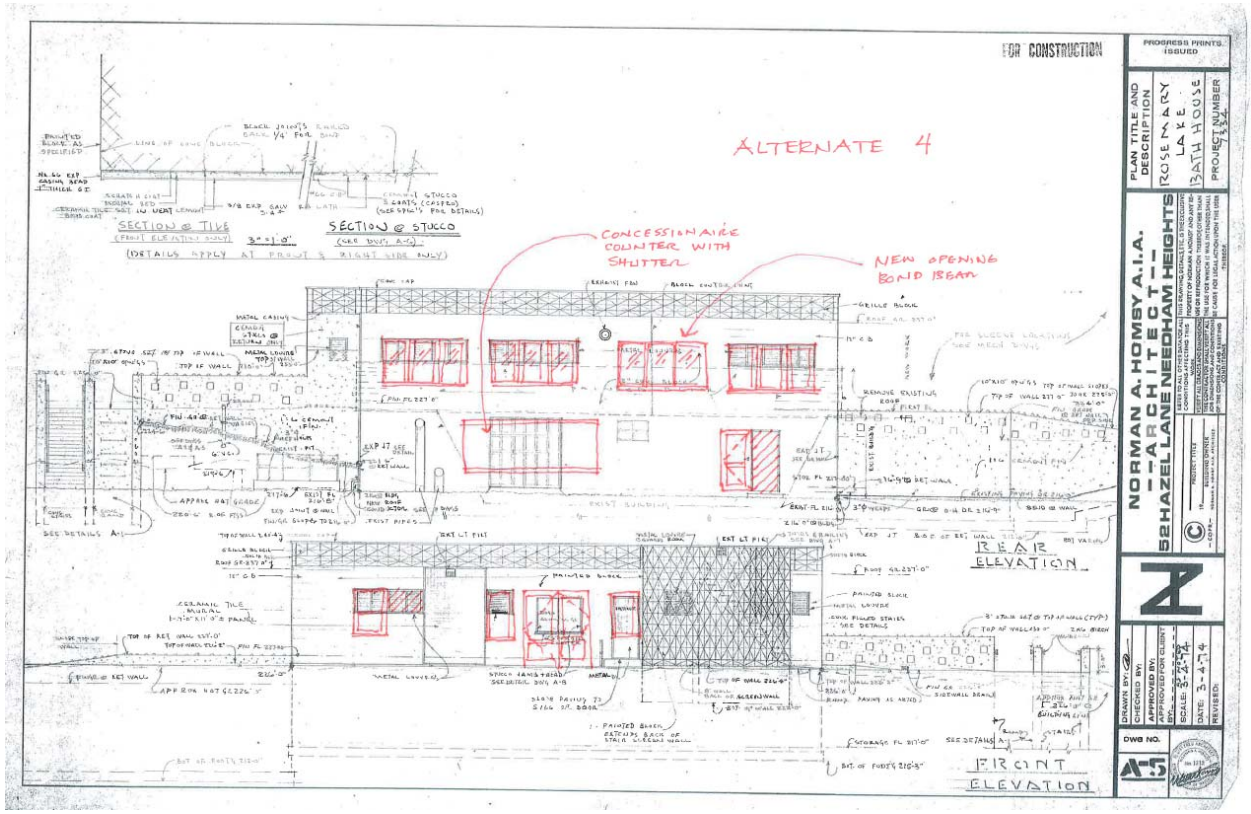
This scenario provides the opportunity at the second floor of the existing building to create generous space to support administrative functions along with life guard facilities. There also is an opportunity to adapt the substantial portion of existing second floor for other Recreation Department programming, and to create a number of window openings to allow views onto Rosemary Lake and the pool.

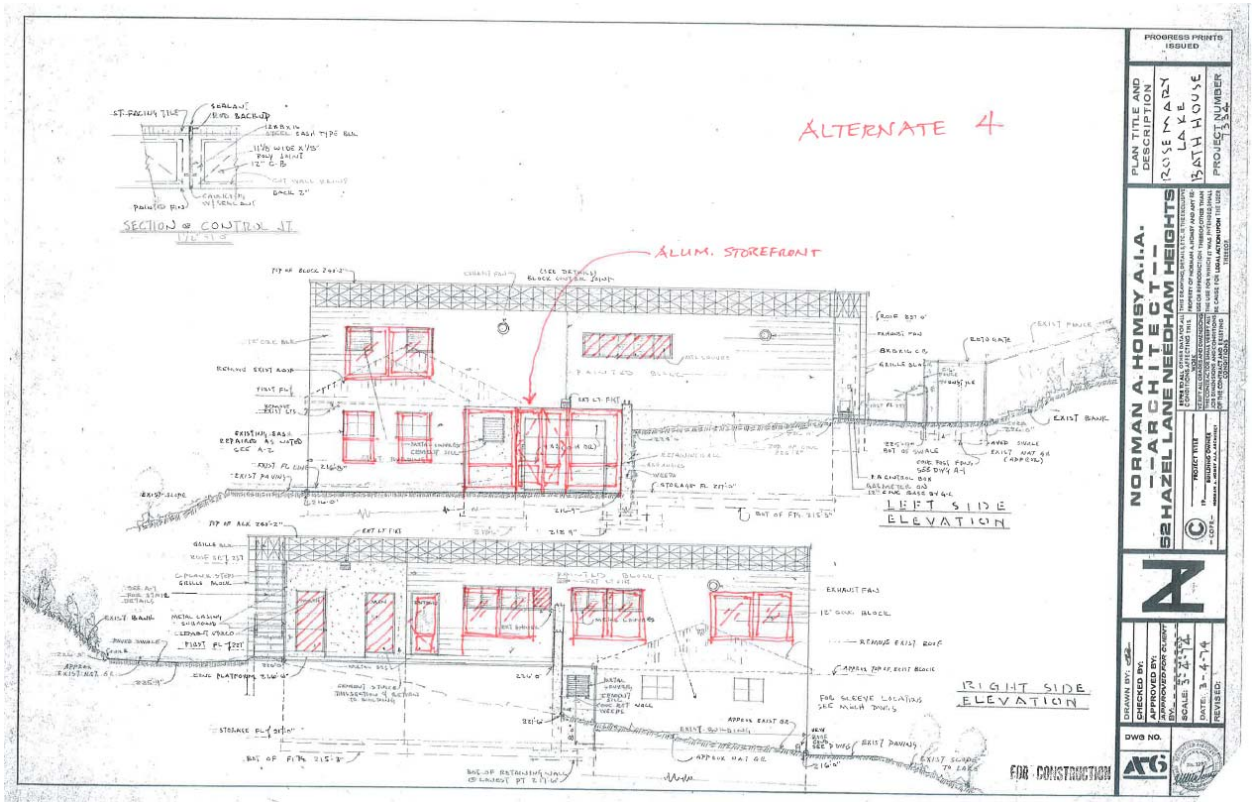
a. The pool mechanical building should be constructed of sturdy, utilitarian material such a concrete block.

b. The mechanical building and the existing building can both be overlaid with fiber cement clapboards and trim to improve aesthetic character.







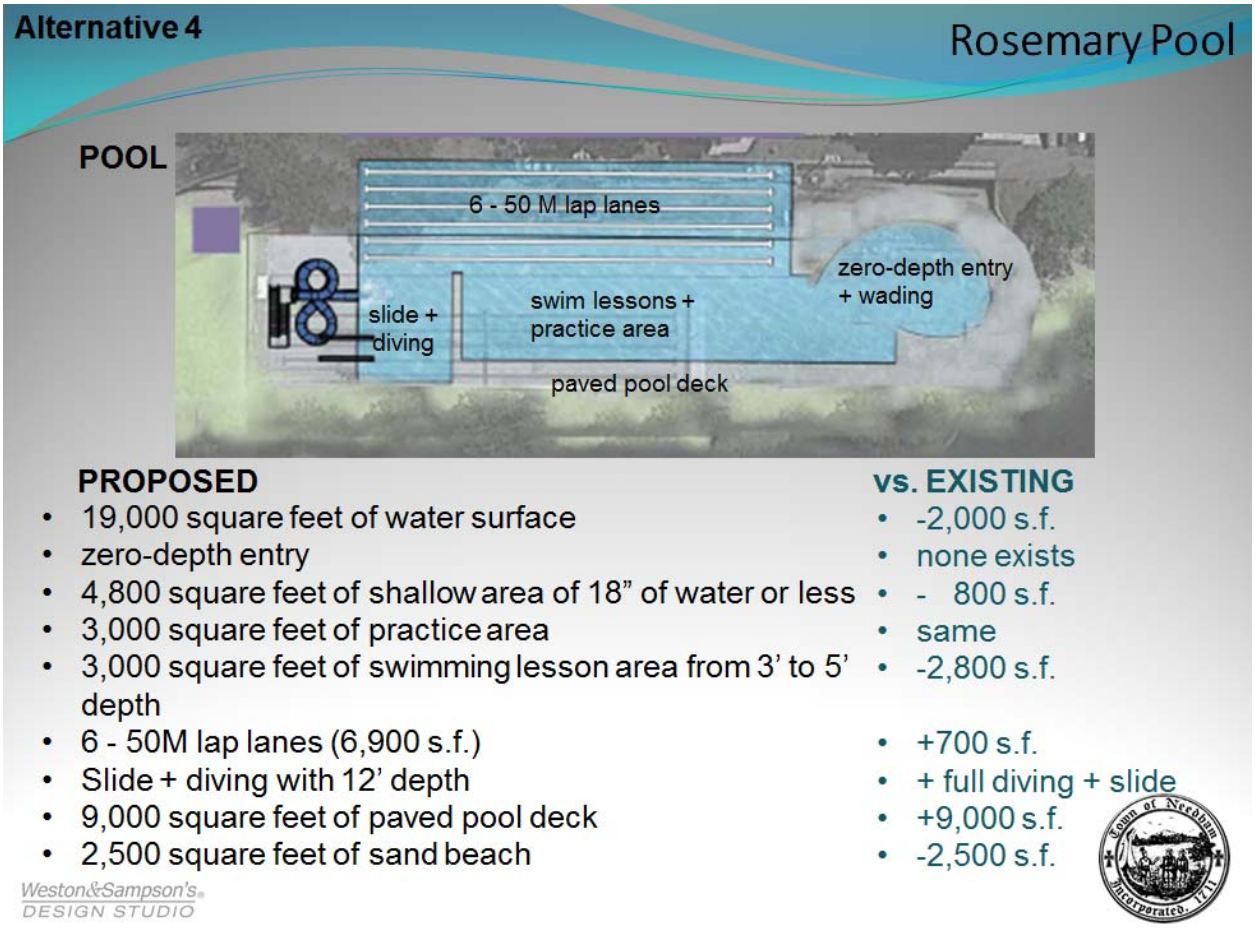


Filter Room Improvements:

a. There are significant benefits to relocating the filtration equipment in its own stand-alone structure. Both from a building programming and site experience perspective and from a pool operations stand point. A separate filter building gives the town the ability to truly separate the swimming functions and the operational/maintenance requirements of the pool. A new building can be compact and appropriately designed for improved aesthetics on the site. In addition, a separate filter building offers maximum flexibility in the pool repair scenarios. Environmental permitting considerations will inform the final location of a new building.

Pool Design:
With a full renovation the town is afforded the freedom to reconsider ideal pool location within the site. Given the environmental constraints and inherent challenges of having a pool "within" a lake, an alternative location should at the very least be considered.

a. The unique location and experience of this swimming facility is not to be underestimated and can be implemented in a far more sustainable manner than currently exists. Through the community process we will determine the most beloved qualities of Rosemary Pool that are to be protected and enhanced to the greatest extent possible. Should those qualities include the experience of swimming in a pool while overlooking the lake, then a design that captures this experience will be crafted. We are confident that this design can not only enhance the bather's experience, but also greatly improve the ecological and environmental relationship of the pool to Rosemary Lake.



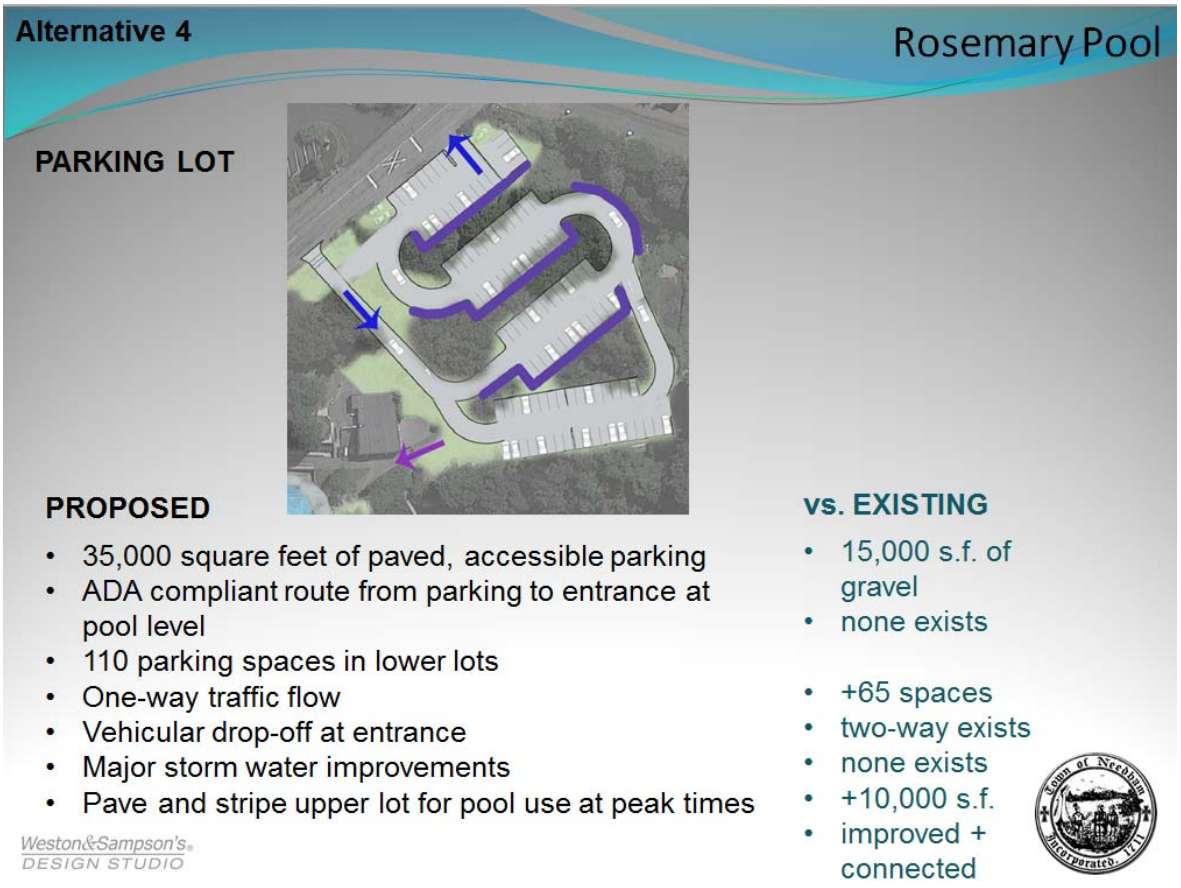
Environmental:

a. A renovated pool and building scenario offers flexibility in the final locations of outer walls as they relate to the resource areas of lake and lake bank. It also allows for the establishment of recreated bank and/or beach conditions along the lake edge that would support the environmental and ecological function of Rosemary Lake.

Site:

a. Interior Paths- at present, Rosemary Lake has several informal walking paths that meander through the wooded landscape and connect the park to surrounding neighborhood resources. Recommendations include the establishment of additional pathways to connect to important park facilities, expand existing wooded trails and to provide improved ADA compliance. Existing pathways will be upgraded to include increased widths and shade tree and park bench installations to improve park aesthetics and the enjoyment of park patrons. A two-tiered hierarchy of pathways is envisioned with the added width and amenities typical along the two main, primary pathways and narrower, unembellished pathways serving as secondary connectors.

b. Landscape and planting improvements shall include:
   i. Installation of new shade trees to replace and supplement the large number of trees that are mature, damaged or diseased
   ii. Installation of new park furnishings including benches, picnic tables, trash receptacles, bike racks, fences and informational signage
   iii. Installation of interpretive signage to convey the unique cultural, social and historical aspects of the property



Future Build Out of Four Season Facility

This study considers two alternatives to accommodate the desire for a four-season swimming facility at Rosemary Pool: a bubble structure and the construction of an indoor pool connected to the existing bathhouse building.

Seasonal Bubble Structure

A bubble structure, while less expensive to install, requires an incredibly intense level of operation and maintenance in order to keep it functioning at a high level. Through research conducted of other existing bubbled pool facilities in New England there are several factors to consider before embarking on this path.
The bubble is removed in the summer to make best use of the benefits of an outdoor pool. This requires a considerable amount of labor in both the spring and the fall to put up and take down the structure. Summer storage is required. The structure is carefully folded and stored on palettes that cannot be stacked and must be in a relatively controlled environment to ensure the enclosure membrane is not exposed to extreme temperatures or moisture while not in use.

The operation of putting up and taking down the bubble can take anywhere from one to four weeks depending on the size of the crew and expertise in installation. There are electrical, HVAC, and other mechanical connections that must be made to ensure climate control and proper air circulation are achieved. The New England winters can be very cold. The bubble membrane is not the most efficient barrier for maintaining a heated environment. As a result, hot air must be constantly moving through the bubble in order to keep it inflated and maintain a comfortable climate for use.

Most bubble structures rely on a combination of air and structural members for support. The more structural members, the more expensive it is and the longer it takes to install. When hot air is the primary method of support it is critical that the system have alarms and alerts and 24/7 surveillance as well as a significant backup generator to ensure the bubble does not deflate over the pool. Bubbles deflate due to a number of reasons. First, if the bubble structure is compromised through a rip that allows air to escape. Given the tension of the membrane, it is common to have small tears expand rapidly. Second, if the bubble is loaded by an external weight, it will collapse. Most often in New England, this external weight is snow.

Snow removal can become a full-time operation at a bubble structure. The domed shape of the membrane causes the snow to slide from the highest point down along the structure until it hits the ground. Continued snowfall will follow this same course building a bank along the side of the bubble. Once this bank reaches a certain height, it will collapse the bubble from the side. Snow removal operations must be done with very small equipment and in many cases by hand with a shovel due to the delicate nature of the membrane itself. Snow must be moved to another location to make room for the next potential snowfall.

Should the bubble deflate and collapse onto the pool the risk of freezing and damage to the pool structure itself is high. In some cases the repair of the bubble will take longer than the pool can

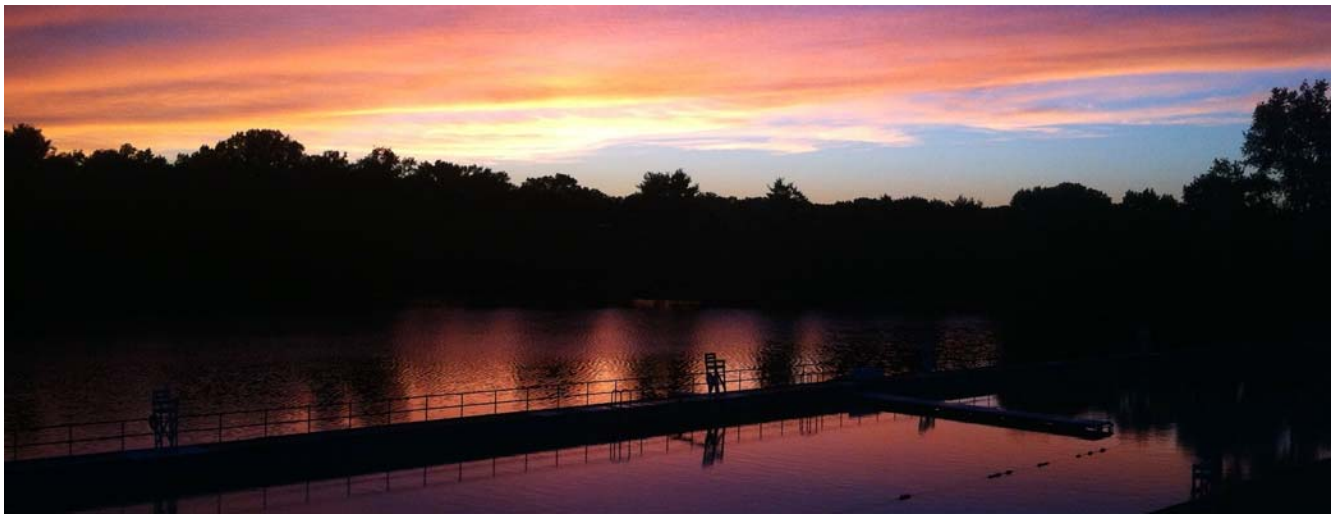
remain exposed to winter conditions and the pool is either drained or covered and heated in order to prevent further facility damage.

The investment in a bubble includes the membrane, which is custom sized to the individual facility, the heating and ventilation system, lighting, and a backup generator with enough power to support these functions should there be loss of power. In 2013 dollars, this is estimated to be a $600,000 investment. In order to make this feasible at Rosemary Pool, the existing bathhouse would require renovation in order to connect the bathhouse facilities to the bubble to allow swimmers to use the pool without exiting the structure. The final cost of these renovations is likely to approach $500,000 in 2013 dollars, but final designs would need to be completed to confirm these estimates.

Natatorium

The second alternative for year-round swimming is the construction of an indoor pool. In order to accommodate this at Rosemary Pool, a Natatorium (or pool room) would be built as an addition to the existing bathhouse building. The cost of this addition may exceed the Town's ability to fund such an improvement at this time, therefore a 20,000 square foot area on the site will be maintained and protected as a place holder for the future construction of the Natatorium when funding is raised or becomes available. The physical realization of this placeholder may require regarding and retaining structures during the first phase of improvements to the pool. Given the area required and the existing site constraints it is likely that a temporary, and less costly, approach may be taken initially with the intention that more robust site infrastructure be installed when the Natatorium expansion becomes a reality.

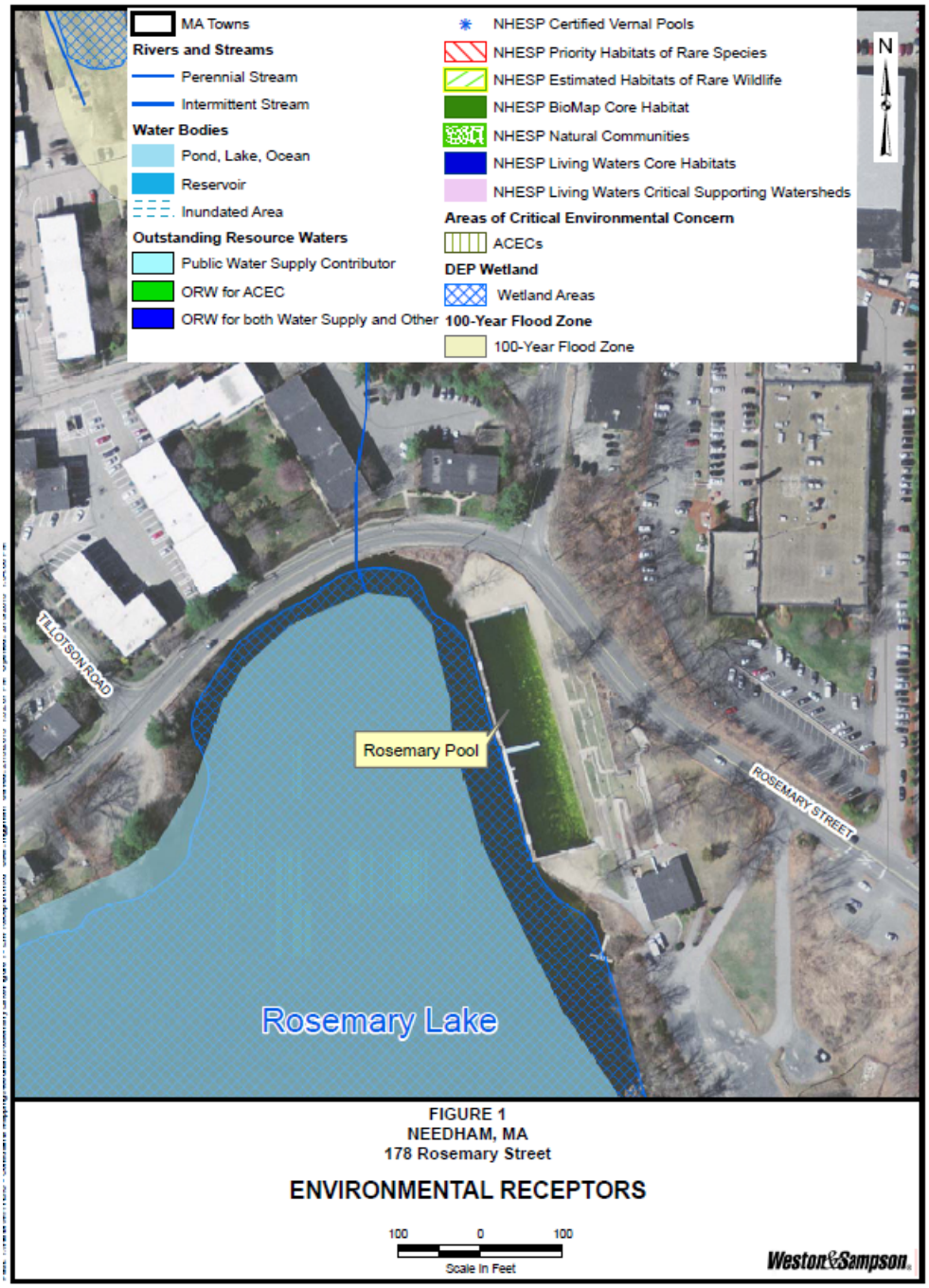
No matter what alternative is selected, Rosemary Lake will continue to be an important open space resource with programs that contribute in a very positive way to the daily lives of so many of Needham's residents. It was agreed by all, that a park that hosts activities for residents aged 1 to 101 is the type of place that is desired and that the appropriate uses that are intended within this great park setting are what will tend to discourage inappropriate use and help to ensure the maintenance of a safe and healthy environment for generations to come.



Permitting

Given the long history of permitting negotiations and the required coordination and approvals from both local and state agencies, the permitting considerations for any alternative future at Rosemary Pool are quite significant.

The following summarizes all of the alternatives and appropriate permitting assumed at this time. Further, Weston & Sampson has approached DEP to informally vet potential alternatives. The outcome of this outreach has also been included for future reference.



The future alternatives for the Rosemary Pond Pool will potentially require a variety of permits. The permitting requirements will essentially hinge upon the amount of disturbance that will occur to the Pond both during construction and due to final design. Storm water management issues are a relatively minor issue unless substantial changes to the parking lot and other upland areas are undertaken. These impacts are unlikely as the primary focus of the project is modifications to the pool and associated building structures and not the entire reprogramming of the site for alternate recreational activities (except Alternative 1 which removes the pool completely).

Environmental Site Conditions/Resources

Review of available environmental resource databases suggests no severe environmental restrictions exist for the site (Figure 1). In general the relatively urban area and previous site work/activity relegate the environmental issues to be primarily associated with Rosemary Lake and its associated ecology. No vernal pools are mapped within the project area, no Areas of Critical Environmental Concern (ACEC's) and no Natural Heritage and Endangered Species Habitats exist within the project boundaries. Instead resource areas fall within the "wetlands and waterways" concerns. Wetland flagging was performed at the site on 5/20/2013. Flags were placed along the top of the bank from WSE-1 to WSE-12. In addition to identifying resource areas designated as bank, obvious attention must be paid to the land under water at the clearly defined limits of the land itself.

Permitting Requirements
Due to the extensive length of the bank and the current pool wall, which abuts the pond, all but Alternative 3 of the planned alternatives considered for Rosemary Pool Complex will require the following environmental permits:

- Massachusetts Environmental Protection Agency (MEPA)
- Notice of Intent (NOI)
- 401 Water Quality Certification
- Army Corps of Engineers
- National Pollutant Discharge Elimination System (NPDES) Construction Site Dewatering

At this time no alternative includes the extension or addition of features into the pond and therefore a Chapter 91 License is not deemed necessary. The complexity of the permit and the degree of scrutiny/review by permitting agencies will vary depending on potential impact and ultimate benefits or improvements based on the long-term solution/design. While general permit descriptions are provided in attachment I, a strategy or approach to the alternatives is discussed below and schedule for all permits is provided in attachment II. Without actual designs in place final impact areas and construction management techniques cannot be absolutely known at this time. However, work within the water resource or along the bank is assumed to require the insulation of a coffer dam structure either using sheet piling or porta-dam style system.

Description of Environmental Permitting

Local:

Notice of Intent (NOI):
Under the Massachusetts Wetlands Protection Act (WPA), a notice of intent (NOI) must be filed with the local conservation commission when there is construction in or near a wetland resource. The

purpose of this notice is to ensure a "no net loss of wetlands" policy. The NOI is actually an application for work and describes both the type of work to be done and the types and boundaries of the wetland resource areas in the area of work. The NOI may be approved with or without site specific conditions by the conservation commission. If it is approved with conditions, an order of conditions (OOC) is issued by the commission (see below).

Due to the proximity of the pool to wetland resource areas all alternatives will require a NOI to ensure that the proposed work does not have a detrimental effect on resources protected under the WPA.

The time needed to complete the filing of an NOI is approximately 3 weeks. Once the application is complete allow 2 weeks before the hearing and another 2 weeks after the hearing to receive the order of conditions from the conservation commission. Often conservation commissions will continue a hearing if it feels the project has not met specific performance standards in the WPA. A continuance will extend the schedule an additional 2 weeks.

> *Order of Conditions*:
> If the NOI is approved with conditions, an order of conditions (OOC) is issued by the commission. These conditions are special, project-specific regulations that are set forth by the commission and must be adhered to by the petitioner.
>
> The local conservation commission will issue the order of conditions approximately 2 weeks after the NOI hearing date, unless continued. Following the issuance there is a 10 day appeal period, after which the OOC must be recorded at the Registry of Deeds.

State:

Notice of Intent (NOI):
In addition to submitting an NOI to the local conservation commission a copy must be sent to MassDEP for their review. The review periods for MassDEP meet the timeline for the local NOI submittal listed above. The NOI is not approved by MassDEP, however they may issue comments or include conditions for the OOC. If they feel that the Conservation Commission has not acted in the interests of the WPA they could appeal any OOC issued by the commission. In addition, if the OOC is appealed by any of the appellants authorized in the Water Protection Act then MassDEP will take over review of the project.

401 Water Quality Certification:
A 401 Water Quality Certificate (WQC) is issued by the state and is needed for projects that would impact waters of the commonwealth, including wetlands, by either dredging greater than 100 cubic yards or filling (this includes dewatered areas) greater than 5,000 ft^2. This certificate ensures that a dredging or filling project that may potentially result in the discharge of pollutants into a resource area is in compliance with Massachusetts Surface Water Quality Standards and the Massachusetts Wetlands Protection Act. It also ensures that the project will minimize impacts to Massachusetts's waters and wetlands.

Due to the proximity of the pool to wetland resource areas any alternative that will require 100 CY of dredge or greater than 5,000 ft^2 of impact will require a 401 WQC to ensure that the proposed work is in compliance with both the MA Surface Water Quality Standards and the Massachusetts Wetlands Protection Act. Based on the need to dewater immediately adjacent to the pool to demolish the existing wall, we assume that the 5,000 ft^2 threshold will be met.

The time needed to secure a 401 Water Quality Certification permit is approximately 2 - 3 months after applications are submitted, including a 21 day Appeal Period. It is best to consult with your contact at MassDEP during the design phase to ensure that the final plans will be acceptable once submitted.

Massachusetts Environmental Policy Act (MEPA) review:

The purpose for a MEPA review is to inform project participants, including state agencies, of potential environmental impacts due to a proposed project. This review occurs while the project is still in its planning stage. The interested party will prepare a document which will identify all required state agency actions and describes how the project will comply with the regulatory standards and requirements. The state agencies will then have to review the proposal and show any other points in the document that need additional description or analysis prior to the agency action (often the approval of an environmental permit).

A project will have to go through the MEPA review process if they equal or exceed MEPA thresholds. A complete list of thresholds can be seen in 301 CMR 11.03. The applicable triggers for this project would be the alteration of 5,000 ft^2 of bordering vegetated wetland or the alteration of ½ acre of any other type of wetland, both of which would require an Environmental Notification Form (ENF). Based on the alternatives and the need to work within Rosemary Lake we assume these triggers will be met.

Once an ENF is filed it will be reviewed by a MEPA agent, a Notice will be placed in the Environmental Monitor and a Public Hearing will be held. After the hearing the MEPA agent will finalize their review. At the end of the ENF review, it will be determined if an Environmental Impact Report (EIR) will need to be filed. At this time we do not anticipate the having to file an EIR, as the project will most likely not trigger any of the EIR thresholds. No permits can be issued until the state agrees that the environmental impacts have been fully described and all plans to avoid, minimize and mitigate adverse effects are in place.

The time to go through the MEPA review process if an EIR is not needed is approximately 3 months. If an EIR is needed, the MEPA review may take upwards of 7 months or more.

Mass Endangered Species Act Review/Natural Heritage and Endangered Species Program:

The Natural Heritage & Endangered Species Program (NHESP), part of the Massachusetts Division of Fisheries and Wildlife, is one of the programs forming the Natural Heritage network. NHESP is responsible for the conservation and protection of hundreds of species that are not hunted, fished, trapped, or commercially harvested in the state.

The Program's highest priority is protecting the 178 species of vertebrate and invertebrate animals and 264 species of native plants that are officially listed as Endangered, Threatened or of Special Concern in Massachusetts.

All projects in Massachusetts must be checked against the newest NHESP Habitat map as part of the Mass Endangered Species Act (MESA) Review, to ensure that any planned work will not constitute a "take" of any endangered or threatened species habitat. This process has been folded into the NOI permit application and therefore, if the project requires the submittal of an NOI then the MESA review is filed as part of that document.

This project area has been checked against the Mass GIS servers 2008 NHESP habitat maps and show that the work area exists outside any marked habitats. Therefore, a NHESP permit is not necessary.

Federal:

U.S. Army Corps of Engineers 404 Clean Water Act permit:
A section 404 Clean Water Act permit is issued by the US Army Corps of Engineers (ACOE) and is required for projects that involve the discharge of dredged or fill material into waters or wetlands of the United States. These projects must comply with the conditions found in the Massachusetts Programmatic General Permit (PGP). There are three levels of PGP review, Category I for impacts < 5,000 ft^2 of inland wetlands, Category II for impacts between 5,000 ft^2 and 1 acre and Individual permits for impacts > 1 acre. In addition, the ACOE also issues Category II permits for inland bank disturbances greater than 100 linear feet.

Due to the proximity of the pool to wetland resource areas any alternative that will require 5,000 ft^2 of impact or includes the creation or stabilization of greater than 100 linear feet of bank will be required to submit a Category II permit.

If the project does impact > 5,000 ft^2 then a document describing the proposed project will need to be filed with the Corps for review and authorization.

The time needed to secure a section 404 permit is approximately 2-3 months after the final construction design is complete. It is best to consult with your contact at U.S. Army Corps during the design phase to ensure that the final plans will be acceptable once submitted.

National Pollutant Discharge Elimination System (NPDES) – General Construction Permit and Stormwater Pollution Prevention Plan (SWPPP):

Under the NPDES provisions of the Clean Water Act, the U.S. Environmental Protection Agency (EPA) regulates water quality, sediment, and pollutant discharge of stormwater runoff from construction sites. Operators of large and small construction activities must obtain coverage under a National Pollutant Discharge Elimination System (NPDES) construction stormwater permit. A large construction activity is generally one that will disturb five or more acres of land. A small construction activity will disturb one or more but less than five acres of land.

Construction projects that propose the alteration of more than 1 acre of land must obtain coverage under the NPDES Stormwater Construction General Permit. The project proponent must submit a one page registration form known as a Notice of Intent to EPA and must develop and implement a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP details construction activities, erosion control measures, and inspection schedules to be implemented during construction to ensure that the construction activities do not have an adverse impact on wetlands and waterways.

This project will require the submittal of the NPDES permit with the accompanying SWPPP as it will alter more than 1 acre of land. The time needed to secure a NPDES permit is approximately 1-2 months.

Alternative 1

a. Decommissioning of the pool with restoration of the pond bank will face little opposition from most environmental permitting agencies. Impact minimization will generally focus on construction activities, final bank location, stabilization techniques, removal of demolition material, and plant restoration plans. Additional issues may include future site uses and any modifications to storm water systems that are undertaken as a result of demolition/decommissioning activities.
b. Permitting under MEPA for decommissioning may be handled through a request for advisory opinion, if disturbance is held to under 5,000 square feet in resource areas and bank restoration plans are satisfactory to other agencies. Similarly, the Army Corps Permits Section 404 General Permit should be favorably received as this becomes essentially a restoration project. A 401 Water Quality Certificate would focus heavily on maintaining runoff during construction and the removal of any walls/sheet piling from resource areas.
c. Local Conservation Commission permitting for a decommissioning or demolition project can become contentious unless construction monitoring and maintenance of environmental controls are well designed for site activities. This is generally confirmed through an acceptable SWPPP. The SWPPP will be used to file a NPDES construction site dewatering permit at the same time as the NOI.

Alternatives 2 and 4

These two alternatives can be approached in a similar fashion to the environmental permits. Conceptually both alternatives would result in a smaller footprint for the pool system and restoration of a more natural bank. Final bank location, slope, materials of construction and recreational access will impact the long-term conditions that may be placed on the site under permitting effort. In general however, all of the permits under Alternative 1 will be required. Under MEPA, it is no longer advisable to file for a Request for Advisory opinion, instead an ENF with conceptual plans and identified impacts/protections should be submitted. Work within the pond and restoration of the natural bank conditions should be viewed favorably but protections under the construction activities will be required for an:

- NOI
- NPDES
- 401 WQ Certificate

Alternative 3

Only Alternative 3 considers maintaining the current footprint of the pool. Structural fixes along the waterfront wall will require disruption of the existing water resource area. Final disposition of the wall facing the pool will be of concern to most permitting agencies. Any concept which allows for some incremental reduction in the footprint of the pool, and the restoration of the natural bank conditions will reduce the permitting difficulties.

Most importantly long-term maintenance activities on the pond side of any structure should be reduces significantly or eliminated. Care should be taken in the design of the final wall/bank to avoid footprint expansion into the pond. Designs that require additional volumetric storage in the pond or loss of resource will undoubtedly require mitigation or compensatory resource construction in Rosemary Lake and will increase design and construction costs as well as permitting difficulty. As noted previously, additional structures within the pond (e.g. expansion) would add the requirement of a Chapter 19 Certificate.

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MEMORANDUM

TO: Cheri Ruane, Patricia Carey, Steven Popper, Henry Haff

FROM: Anthony Zerilli, Blake A. Martin

DATE: October 18, 2013

SUBJECT: Discussion with MassDEP's Ms. Rachel Freed
Rosemary Pond Pool Project, Needham MA

On October 17, 2013 personnel from Weston & Sampson discussed the Rosemary Pond Pool Project (Needham MA) with Ms. Rachel Freed from MassDEP in a phone conversation. What follows is a description of that conversation:

Ms. Freed discussed her understanding of the project, its history, and DEP's current standing on the project based on existing conditions and maintenance operations. It is DEP's contention that the project as it currently exists, is not a permittable project due primarily to the lowering of the pond. Although there are other pools that abut ponds in the Commonwealth, the agency has no other documentation and knows of no other pools that require severe lowering of a pond for seasonal maintenance. Ms. Freed then discussed their regulatory review of the project, which included her understanding of the issuance of the order of conditions, 3 year extensions, 6 year renewals, appeal process, and utilization of the permit extension act. She also stated that every year they hear from numerous abutters about the impacts caused by draining the pond and receive dozens of photographs and complaints.

Ms. Freed raised four major concerns:

- The pool is located within the Pond, and although other pools in the state have the same arrangement no other pool requires the draining of the pond to maintain it.
- Consideration should be made to either move the pool away from the pond shore (upland) or create a barrier between the pool and the pond so that future maintenance will not require draining of the pond.
    - If this barrier is built within the pond, outside the footprint of the pool, then "land under water" impacts would need to be quantified.
- If the pool remains on the pond and is not moved upland then a thorough Alternative Analysis (Cost Analysis) must be completed to show why it was not economically feasible. This analysis must show how each cost was calculated and why it was included in each alternative. This will be looked at very closely as she mentioned it several times.
- How stormwater is handled on site is also a major concern to DEP. She stated that an existing Superseding Order of Conditions was still outstanding on this site. She thought that it wasn't connected to the Pool but rather to the new school/library drainage.

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After listening to her concerns W&S personnel described the direction that the Town was taking with their feasibility study. Although specific options were not discussed the general ideas of creating a project that:

- will not require draining the pond to conduct maintenance;
- will provide some separation from the pool and the pond (wall or earthen embankment);
- will take place in the existing footprint, no encroachment on the pond (therefore not requiring long-term resource impacts related to encroaching on "land under water");
- will correct and improve stormwater onsite.

Ms. Freed was very happy to hear about the direction the Town was taking and thought that if a pool could be created that would not require the drawdown of the Pond, than almost all of their issues with the pool project would be resolved. In fact, she mentioned that DEP had offered the earthen embankment idea to the town during the initial permitting appeal process.

Ms. Freed stated that she would very much like to hear the conclusions of the study and would be a participant in future discussions if the Town would like. She was also careful to say that this is not a DEP permit and would be handled at a Local level once final permit submittals were completed. However, DEP will be keeping a close eye on the project.

Other key items that came out of the conversation:

- Ms. Freed did not believe that DEP would have any issues with the discharge of pool water (post de-chlorination) to the pond when the pool needed to be drained, or the withdrawal of the water from the pond when the pool needed to be filled, assuming both were undertaken in a controlled fashion.
- The town should look into the existing Superseding Order of Conditions for stormwater on site to help develop new stormwater practices as part of this project.
- The current pool itself is not considered Land Under Water. Therefore any work within the existing footprint will not have Land Under Water impacts. These impacts would only be realized if the barrier between the pond and the pool were built outside of the existing wall and therefore, in the pond.
- Impact calculations, if any, should be calculated as:
    - Construction Impacts,
    - Stormwater Impacts, and
    - Long-term Maintenance Impacts.
- Construction methods that would allow for work to be completed without a significant drawdown would be looked upon favorably.
- With the understanding that the new pool may not be built for a few years, any utilization of maintenance methods for annual maintenance activities for the existing pool that would avoid drawing down the pond until the new pool is built, would also be looked upon favorably.

Operating Budget Considerations

The Operating Budget Summary included below identifies the initial breakdown of costs associated with the operation of Rosemary Pool as it exists today. All costs are estimated in current (2013) dollars, have been rounded and are estimated based on information gathered from the Town.

Direct Cost	Budget	Notes
Pool Staff	$105,000	22 staff members
Chlorine and Filter Supplies	$25,000	
Annual Building and Grounds	$10,000	Pool paint, building supplies, landscaping supplies
Energy	$9,000	Electricity and natural gas
Contractors	$6,000	Plumbing, pump, welding
Operations	$5,000	Admissions, clothing, certifications, phones, water testing, special events
Miscellaneous	$5,000	Contingency
Internal Assistance		
DPW Sewer / Water	$3,000	Pre-season testing of lake/stream; assistance with filter system
DPW Parks / Forestry	$10,000	Pre-season cleaning/painting/initial landscaping

A general number to use for the cost of operation is $180,000 for one summer, including costs that continue throughout the year.

Some of these numbers can fluctuate over a summer, depending on weather conditions or mechanical issues, as examples. The season is roughly ten weeks, plus some staff work about 3 additional weeks in the pre-season.

Not Included: The hours provided by the Park and Recreation Director, Assistant Director, Recreation Supervisor, and Administrative Specialist. The cost of their time spent on current pool operations would still be spent whether there is a summer outdoor pool or not.

If a year-round indoor pool was added into the operation, the department would need to hire at least a full-time aquatics director at an estimated $50,000-60,000 per year, and be included in the department's operating budget. There would also be a need for full-time maintenance staff and other staff related to guarding, instruction and admissions.

Budget:
Currently, the direct expenses for Rosemary Pool are in Park and Recreation's Operating Budget, as are the salaries for the administrative staff. The revenue that is collected is deposited into the Town's General Fund and is not available to be spent directly by the department.

Park and Recreation also has a Revolving Fund. The funds that are collected can be spent directly by the department. The type of MA approved revolving fund that Needham has adopted does not allow for any funds to be spent on employees who receive benefits. It can only be spent on non-benefit employees and expenses. Most of the fall/winter/spring programs, athletic field lights, and tennis court badges/expenses are currently in the Revolving Fund. If a year-round pool was built, it is possible to operate it through the revolving fund, but some expenses, including the aquatics director, would not be eligible to be spent from this fund.

A third type of budget is an Enterprise Fund. Though not a legal requirement, an Enterprise Fund tends to cover all direct and indirect costs related to a municipal function. Needham has enterprise funds for Water and Sewer, funded through fees charged for those services. It is possible that a year-round facility would be required to operate as an Enterprise Fund, with a decision made on how much would need to be covered by fees and what might be subsidized through an operating budget appropriation. Park and Recreation does not currently have an Enterprise Fund. Some Park and Recreation departments have them for specific operations, i.e. golf course, skating rink.

Revenue:
There is no requirement that the fees for programs/services offered through the Operating Budget be self-sufficient. Many services provided by Park and Recreation do not have a fee associated with them – including playgrounds, public restrooms, and trails – but all have costs related to them.

Fees cannot be legally charged to "make money" – they have to be related to the service provided and to the cost of operating that service/program. As an "outrageous" example, Park and Recreation cannot increase fees at the pool to cover the costs of hiring a new librarian. Park and Recreation can increase fees at the pool to cover more of the direct costs related to its operation.

"Scholarships" are offered for all programs offered by the department, including season passes to Rosemary Pool and swim lessons. There is no funding to cover these costs, so it is a "loss" to the department's revenues. In recent years, the cost of pool related scholarships has ranged from $16,000-20,000.

The fees charged for Rosemary Pool used to cover the direct costs, but were never enough to cover the indirect costs. Until recently, the DPW budget paid for chlorine and other filter supplies as well as electricity, so there was a loss of more than $30,000 each year, at a minimum. Those expenses are now reflected in the Park and Recreation budget. Depending on the actual operating costs in a particular summer, the revenue collected can cover anywhere from 45% - 55% of the direct costs.

Summer 2011	$80,000
Summer 2012	$79,000
Summer 2013	$67,000 (started season late due to school schedule

Timeline and Phasing

With the September 2018 DEP permit expiration date looming, decisions on which alternative should be designed and permitted will inform funding and financing requirements. Further, it is the goal of the Town to avoid any loss of summer swimming at Rosemary Pool. Given that goal, design, bidding, and construction sequencing must be completed during specific timeframes. Preceding the design/bid/build process, the funding and financing package must be in place. Once the preferred alternative is chosen and the total project cost determined, a series of administrative actions must be completed to confirm funding. The schedule on the following page illustrates the points of decision that must occur in order for the project to proceed on a schedule that accommodates the time required for design and permitting, bidding and construction before the expiration of the DEP permit.

Each alternative has an estimated design/permitting schedule (shown on the following page). These vary between alternatives based on the amount of time anticipated to perform each task. The more significant the alteration to the lake bank, the more permitting time required. The larger and more complex the building and pool shell become, more design time will be required.

Working backwards from the 9/2018 DEP permit expiration date, it is important to note that the goal is to schedule design, permitting, bidding and construction so that there is no interruption in the summer swimming program at Rosemary Pool. Currently the season begins in June and concludes at the end of August each year. At the very latest, construction would need to be completed between 9/2018 and 6/2019 in order for this approach to be successful. This also assumes that the winter season will not extend itself too far into the Spring of 2019 which would defer construction later into the calendar year.

It is possible, and potentially preferable given the likely escalation in costs that will occur, that these phases could be completed prior to the 2018/2019 off-season. Those alternative courses of action are illustrated on the following pages.