

GREEN'S FIELD UTILITY AND SITE ANALYSES

See Figure 3 for existing utilities.

Drainage – There is an existing Drainage Line located along the West Property Line. The Line Flows North to South, to Great Plain Avenue, which abuts the Site to the South. It is reported by the Town Engineer that the drainage system in the area is very flat and has capacity issues.

The proposed storm water system would need to comply with the standards of the Massachusetts Department of Environmental Protection (DEP) Storm water Management Policy. For this site the standards contained in the DEP Storm water Management Policy relate to the following:

- Control of water quantity
- Recharge to groundwater
- Water quality
- Erosion/sedimentation control
- Storm water maintenance

To control the quantity of storm water from the site underground detention/infiltration would be required. In addition, if surface parking were proposed storm water quality units would be required to satisfy the DEP's water quality requirements.

The disturbance of one or more acres of land for construction purposes triggers the need for a permit administered by the U. S. Environmental Protection Agency (EPA). The estimated total area of land disturbance for this project is projected to be greater than 1 acre. In accordance with the EPA's National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP) requirements, preparation of a Storm water Pollution Prevention Plan (SWPPP) is required. A Notice of Intent form is filed with the EPA and authorization to discharge is effective 7 days after the EPA posts the Notice of Intent filing on its website. A copy of the SWPPP is to be kept onsite during construction and adhered to by both the owner and contractor.

The proposed project would also need to comply with the Town's Phase II Storm water Management Plan (NPDES Phase II). One item from the category "Public Education and Outreach" would need to be chosen along with one item from the category "Public Involvement/Participation" would need to be chosen. An example of "Public Education and Outreach" would be to supply the Town with informational flyers on the importance of storm water management and an example of "Public Involvement/Participation" would be to stencil storm drains.

Gas – There is an existing gas line located within Great Plain Avenue and along the westerly property line. This line was installed as a system improvement in 1993 and ties into a stub on Pickering Street from the line within Great Plain Avenue. A service connection would be possible for the proposed Senior Center.

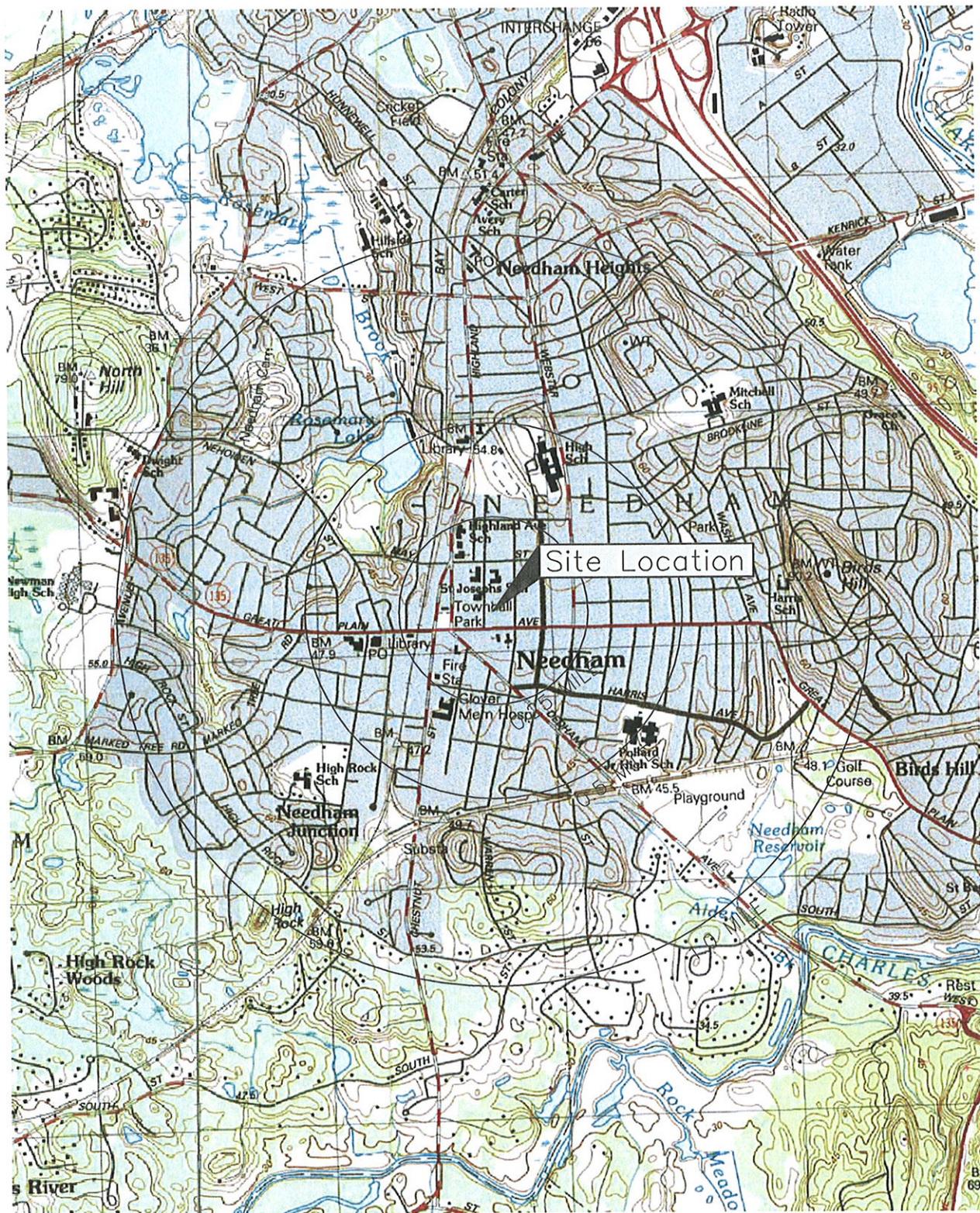
Sewer – Existing sewer lines are located within Great Plain Avenue and Pickering Street. The Pickering Street Line runs from North to South and ties into the system at Great Plain Avenue, which then runs away from the Site, heading from the East to the West. This line runs by gravity thru Needham and eventually ends up at Deer Island Treatment Plant.

A sewer service would be possible for the proposed Senior Center. Dependent upon final location the tie in would be in either Pickering Street or Great Plain Avenue. A sewer connection permit would be required from the local DPW Department. This would require a plan and profile of the proposed connection.

Water – There are existing water lines located within both Great Plain Avenue and Pickering Street. There are three service connections from the Pickering Street Line, which run to a hydrant and sprinkler system well at Greene's Field. Dependent upon final location of the proposed building, some of these service connections may need to be removed or re-routed. A new service connection would be possible for the proposed Senior Center. A fire service connection would also be required. A service connection permit would be required from the local DPW Department.

Elec/Tele/Cable – Electric, Telephone, and Cable services are available in the downtown area. There are existing overhead lines which run down Great Plain Avenue. Service connections for electric, telephone and cable would be possible for the Senior Center.

Environmental Issues – There are no wetlands on the site or within 100 feet of the site. The site is not within a floodplain. A permit from the Conservation Commission would not be required. It has been reported by the Town Engineer that that water table in this area is approximately 7-8 feet below grade so any proposed structures such as the underground structured parking that lie in the water table would need to be water-proofed.



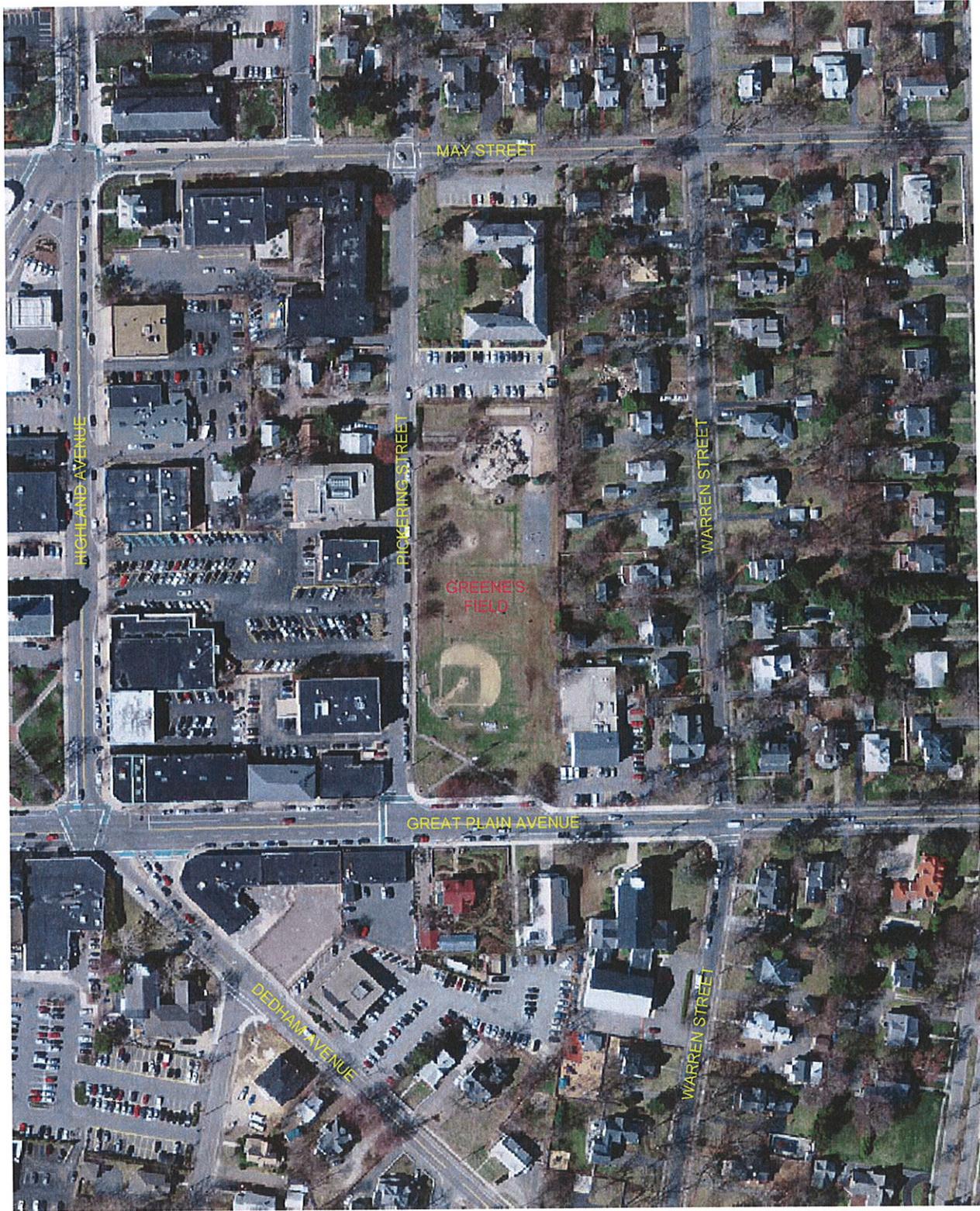
Greene's_Field_USGS.dwg

Greene's Field
Needham, MA



Site Location Map

Figure
1



Greene's_Field_Aerial.dwg

0 200 Feet

Greene's Field
Needham, MA



TETRA TECH RIZZO

Aerial

Figure
2



Greene's_Field_Existing Utilities.dwg

Greene's Field
Needham, MA

0 100 Feet



Existing Utilities

Figure
3



- PROPERTY LINE
- - - DRAIN LINE
- - - ELECTRIC LINE
- LIGHT POLE
- - - GAS LINE
- - - SEWER LINE
- - - WATER LINE

Greene's_Field_Schematic Utilities1.dwg

Greene's Field
Needham, MA



Option 1
Schematic Utilities

Figure
4



Greene's_Field_Schematic Utilities2.dwg

Greene's Field
Needham, MA



Option 2
Schematic Utilities

Figure
5

ROSEMARY HILL UTILITY AND SITE ANALYSES

See Figure 3 for existing utilities and Figure 4 for Schematic Utilities.

Drainage – There is an existing drainage line that enters the site in the northeast corner, from the Railroad Easement. The line runs east to west, across the northeast portion of the site and into Rosemary Street. The line eventually discharges into Rosemary Lake via the Spillway, located on the north side of the lake. During a recent site visit, it was noted that a headwall drains onto the site and into a detention pond in the northeast corner of the site. An outlet to this basin was not visible.

The proposed storm water system would need to comply with the standards of the Massachusetts Department of Environmental Protection (DEP) Storm water Management Policy. For this site the standards contained in the DEP Storm water Management Policy relate to the following:

- Protection of wetlands and water bodies
- Control of water quantity
- Recharge to groundwater
- Water quality
- Erosion/sedimentation control
- Storm water maintenance

To control the quantity of storm water from the site above ground detention could be proposed. The storm water from the additional paved surface areas would need to be treated to meet DEP requirements; this could be accomplished by the addition of deep sump catch basins and a forebay with the proposed detention basin(s).

The estimated total area of land disturbance for this project is projected to be greater than 1 acre. In accordance with the EPA's National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP) requirements, preparation of a Storm water Pollution Prevention Plan (SWPPP) is required. A Notice of Intent form is filed with the EPA and authorization to discharge is effective 7 days after the EPA posts the Notice of Intent filing on its website. A copy of the SWPPP is to be kept onsite during construction and adhered to by both the owner and contractor.

The proposed project would also need to comply with the Town's Phase II Storm water Management Plan. One item from the category "Public Education and Outreach" would need to be chosen along with one item from the category "Public Involvement/Participation" would need to be chosen.

Gas – There is an existing gas line in Rosemary Street. A service connection would be possible for the proposed Senior Center.

Sewer – There is an existing Town gravity sewer which runs thru the site and continues down Rosemary Street. The sewage then flows into the West Street pump station and eventually into the Deer Island Treatment Plant. The bath house at Rosemary Lake has an existing sewer service connection that ties into the 8" sewer line located within Rosemary Street, in the Northwest corner of the Site.

A sewer service would be possible for the proposed Senior Center. Dependent upon final location and elevation the tie in would be in either on-site or in Rosemary Street. A sewer connection permit would be required from the local DPW Department. This would require a plan and profile of the proposed connection.

Water – There is a 12" water line located within Rosemary Street, located to the north of the site. The Bath House has a 4" service connection on the North Side of the Building.

A new service connection would be possible for the proposed Senior Center. A fire service connection would also be required. A service connection permit would be required from the local DPW Department.

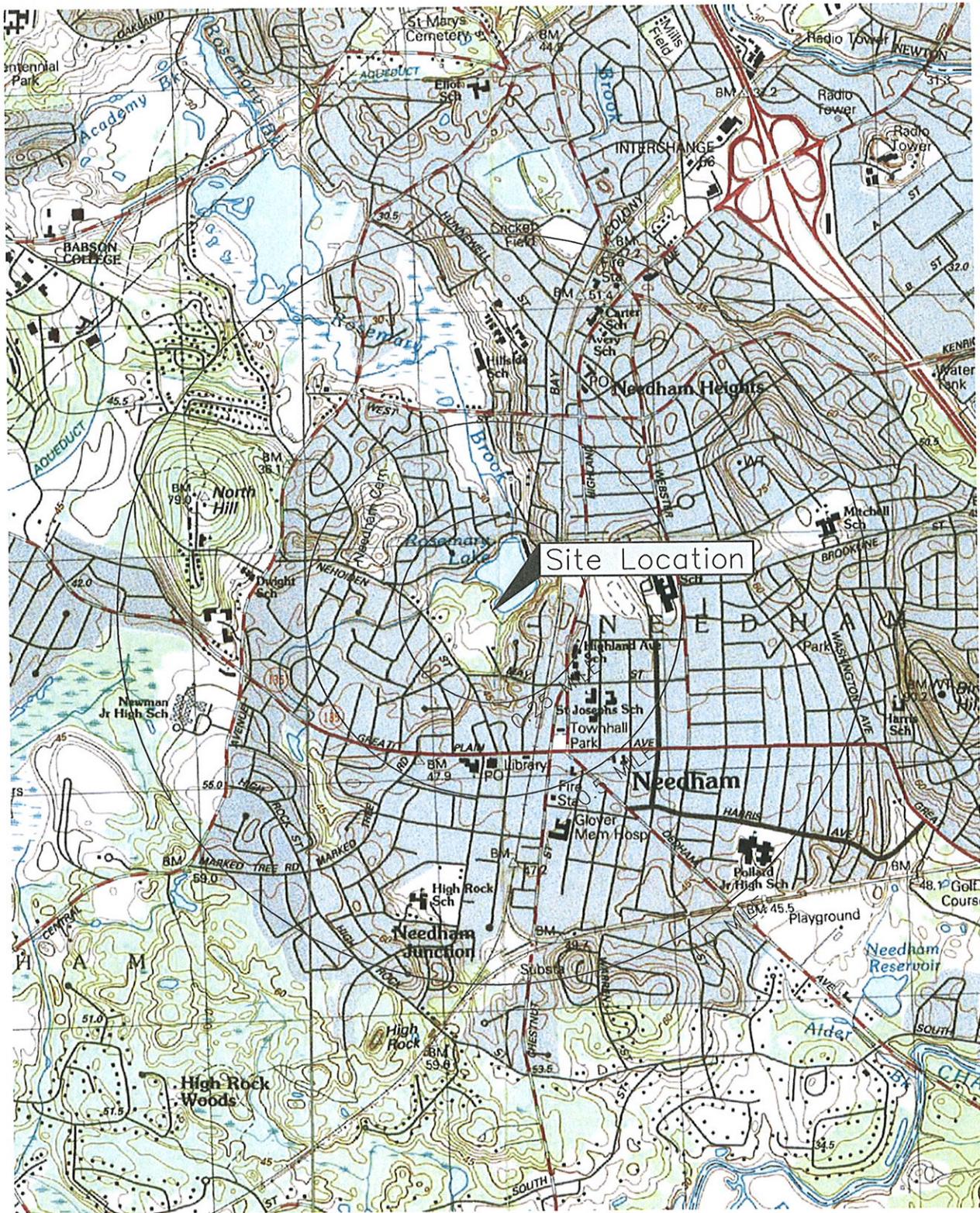
Elec/Tele/Cable – Electric, Telephone, and Cable connections are available on-site or within Rosemary Street. There are existing utility poles which run down Rosemary Street. Service connections would be possible for the Senior Center.

Wetlands and Other Land Features – According to MA GIS, there are no Wetlands located on Site.

Rosemary Lake is labeled as a Q3 Flood Zone, according to MA GIS. This MA GIS Layer, created using FIRM Map Data, is labeled as a Zone A. A Zone A is an area that is inundated by 100-year flooding, for which no BFE's have been determined. The lake will have a resource area associated with its boundary. From this area there will be a 100 foot buffer zone from the edge of the water. There is also a 25 foot no disturb zone associated with the resource area.

Since the Site is located within 100-feet of a resource area, any work proposed within the 100-foot buffer zone will require the filing of a Notice of Intent with the Needham Conservation Commission. A Notice of Intent (NOI) would be prepared describing project impacts for submission to the Needham Conservation Commission. The NOI would include a report describing site characteristics, the proposed project and resulting impacts, wetland delineation methodology and review, the regulatory jurisdiction of the Massachusetts Wetlands Protection Act (MWPA) and the Local By-Law over the project. Based on schematic site plans, the wetland impacts will be limited to buffer zone issues, and no direct alteration of resource areas will occur.

This site has a fairly significant elevation change from the entrance to the Site on Rosemary Street and the adjacent railroad tracks, to the existing parking area/Bath House. There is the potential for a significant amount of earthwork. Due to the proximity of the Lake a well developed erosion control plan would need to be developed.



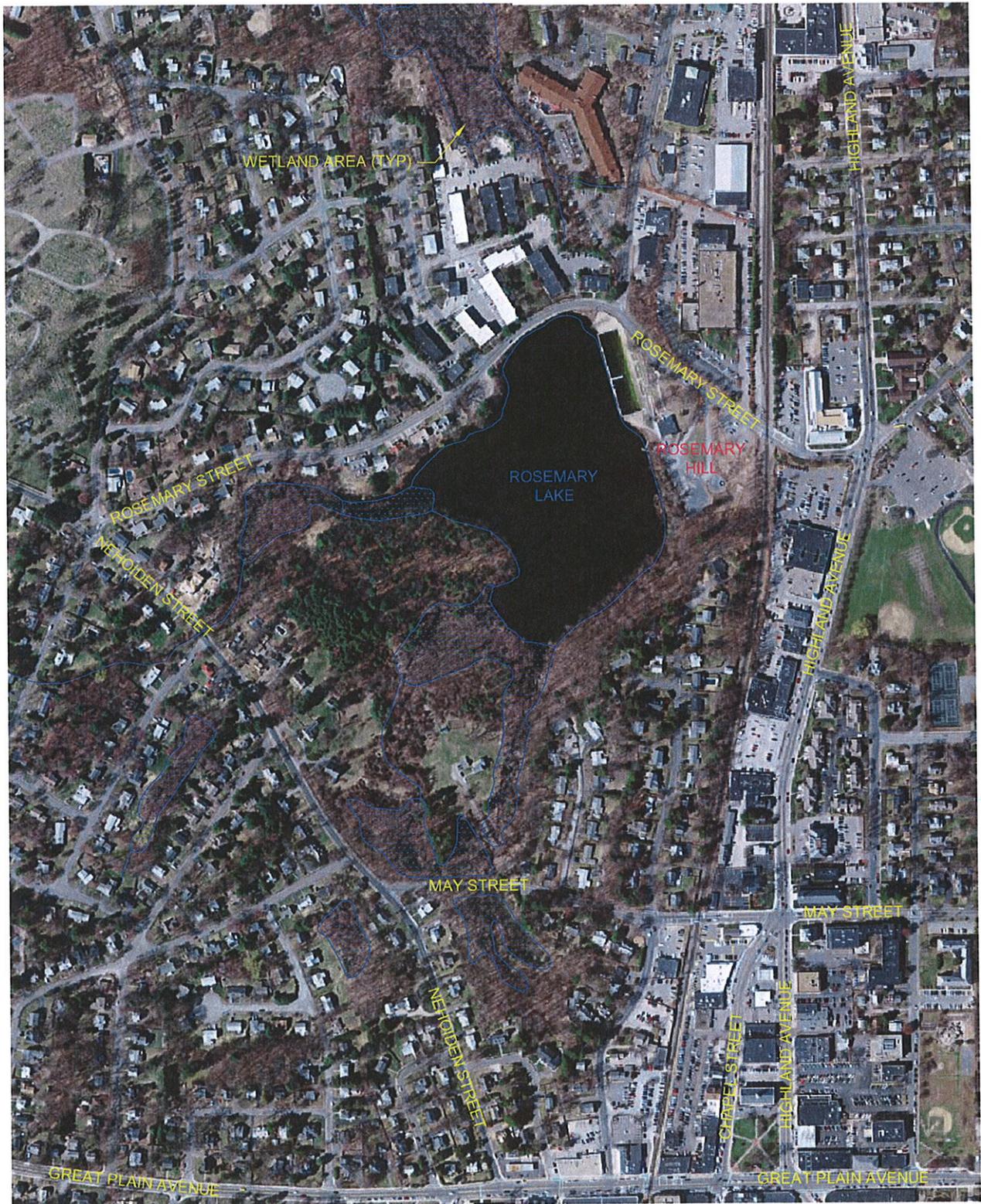
Rosemary_Hill_USGS.dwg

Rosemary Hill
Needham, MA



Site Location Map

Figure
1



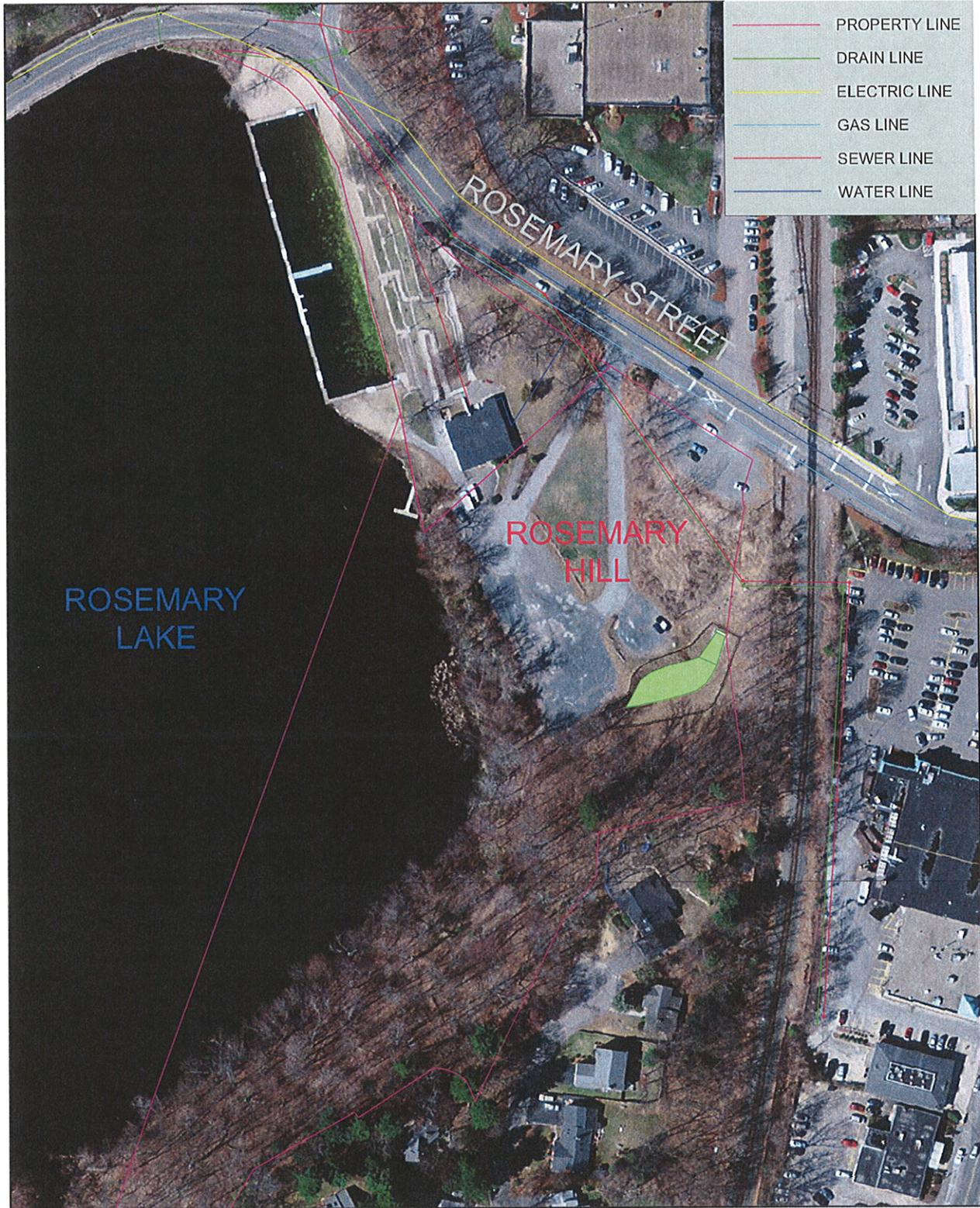
Rosemary_Hill_Aerial.dwg

Rosemary Hill
Needham, MA



Aerial

Figure
2



Rosemary_Hill_Existing Utilities.dwg

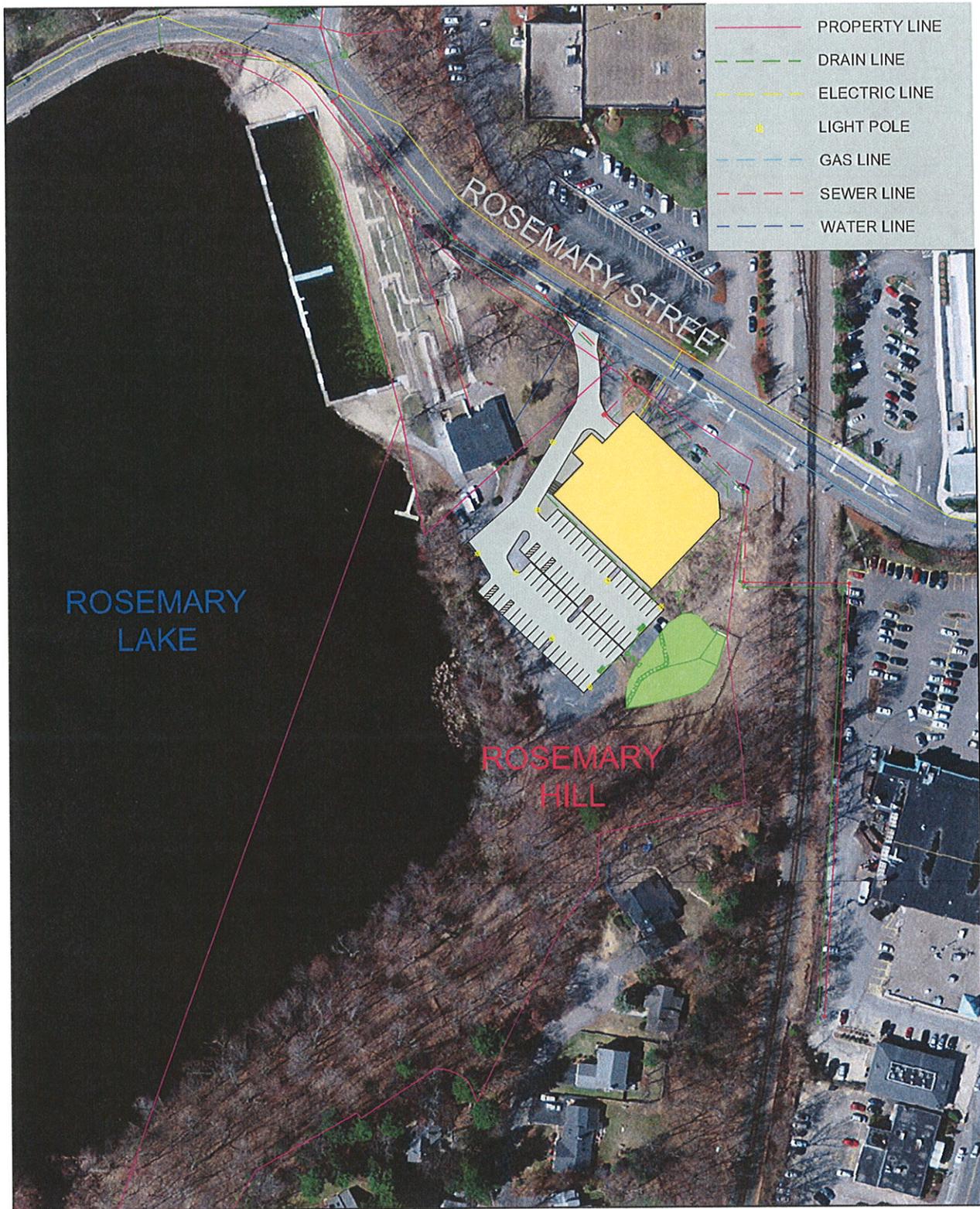


Rosemary Hill
 Needham, MA



Existing Utilities

Figure
3



Rosemary_Hill_Schematic Utilities.dwg

Rosemary Hill
Needham, MA



Schematic Utilities

Figure
4

RIDGE HILL UTILITY AND SITE ANALYSES

See Figure 3 for existing utilities and Figure 4 for Schematic Utilities.

Drainage – There is no existing drainage infrastructure on-site or adjacent to the site entrance on Charles River Street.

The proposed storm water system would need to comply with the standards of the Massachusetts Department of Environmental Protection (DEP) Storm water Management Policy. For this site the standards contained in the DEP Storm water Management Policy relate to the following:

- Protection of wetlands and water bodies
- Control of water quantity
- Recharge to groundwater
- Water quality
- Erosion/sedimentation control
- Storm water maintenance

To control the quantity of storm water from the site above ground detention could be proposed. It is reported that the soils in the area do not percolate well and that the drainage near the existing compound is poor; therefore the final location of the storm water basin would need further investigation. The storm water from the additional paved surface areas would need to be treated to meet DEP requirements; this could be accomplished by the addition of deep sump catch basins and a forebay with the proposed detention basin(s).

The estimated total area of land disturbance for this project is projected to be greater than 1 acre. In accordance with the EPA's National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP) requirements, preparation of a Storm water Pollution Prevention Plan (SWPPP) is required. A Notice of Intent form is filed with the EPA and authorization to discharge is effective 7 days after the EPA posts the Notice of Intent filing on its website. A copy of the SWPPP is to be kept onsite during construction and adhered to by both the owner and contractor.

The proposed project would also need to comply with the Town's Phase II Storm water Management Plan. One item from the category "Public Education and Outreach" would need to be chosen along with one item from the category "Public Involvement/Participation" would need to be chosen.

Gas – There is an existing gas line located within Charles River Street, but there is no service connection to the existing site. A high pressure gas line runs in an easement on the westerly side of the site.

If a gas service is desired to the proposed site it is recommended that the existing gas line within Charles River Street is used. To do so a tap and a valve will need to be installed. To accomplish this, the two valves that are in between the connection point would need to be shut off/have the line cleared before the line could be tapped with a new valve for the connection point to the site. This calls for a temporary period where gas service gets shut down in the area while the connection is made. A new line would need to be installed onto the site, as well as any necessary appurtenances required by the gas service. The gas company would install the line but the trench would need to be dug by the owner. Proposed length of service line will be approximately 1,800 L.F.

Sewer – There are no Existing Sewer Lines located on-site or within Charles River Street adjacent to the Site entrance. There are currently three subsurface sewage disposal systems on-site. The individual systems serve the main house, the barn/ranger house and the garage/bathrooms respectively. The main house septic system was updated in 2003 to comply with State

Environmental Code Title IV criteria and the existing cesspool system was abandoned. The location of this system is just below the gravel parking area. The sewage is currently pumped to this location as the system elevation is higher than that at the main house. From a prior study it is reported that the septage from barn/ranger house also is pumped to this location. The septage from the garage flows to a cesspool located adjacent to the garage.

There is an existing sewer line at the intersection of Whitman Road within Charles River Street, which is approximately 600 L.F. from the entrance to the Site. There is also a gravity sewer line in Pheasant Landing Road which ties into the sewer network at Whitman Road. Due to the topography and the elevation of the Town sewer system at these locations a gravity connection to the Town's sewer system is not feasible.

The proposed system would need to be pumped into the Town's system. The existing system would need to be re-designed to handle the additional flow from the proposed Senior Center. While a connection to the Town's system at Pheasant landing Road would be shorter in distance than a connection at Whitman Road an easement would need to be obtained from an adjacent abutter as the connection location would be on private property. For a connection at Whitman Road some minor additional costs would be incurred due to having to dig within Charles River Street to install the line, and replace the road in kind. A sewer connection permit would be required from the local DPW Department. This would require a plan and profile of the proposed connection.

Water – There is an existing water line within Charles River Street that enters the Site near the Site entrance. This 6" line runs from the street to the North (through the Field on the West of the entry drive) to a hydrant located approximately 140 feet from the main house. A 2" water service branches off of this line and connects to the main house. From the main house a 1-1/2" line connects to the ranger house and garage.

It is anticipated that a new domestic service line and a new fire service line could be run from the existing 6" line if the pressure was deemed adequate. A hydrant flow test should be performed to determine the available pressure. If the pressure is deemed inadequate then a booster pump could be added. A service connection permit would be required from the local DPW Department

Elec/Tele/Cable – There are existing Electric, Telephone, and Cable connections on-site. It is reported that the site is currently serviced by a 25kVA 120/240 single phase pad mount transformer. The lines from the transformer to the building are underground. It is anticipated that the transformer would need to be upgraded to supply 3-phase power and the underground conduits would need to be upgraded to and from the transformer.

Wetlands and Other Land Features – There are wetlands on-site. They are predominantly located to the north and east of the existing buildings. Prior to any development the wetlands would need to be certified to establish a wetlands boundary.

The fields located to the west and east of the entry drive are shown as NHESP BioMap supporting natural landscape, according to MA GIS. As such, these fields are described as Undeveloped Land.

Areas around the site wetlands are labeled as NHESP Living Water Critical Supporting Watersheds, according to MA GIS. These areas have the highest potential to sustain or degrade core habitats.

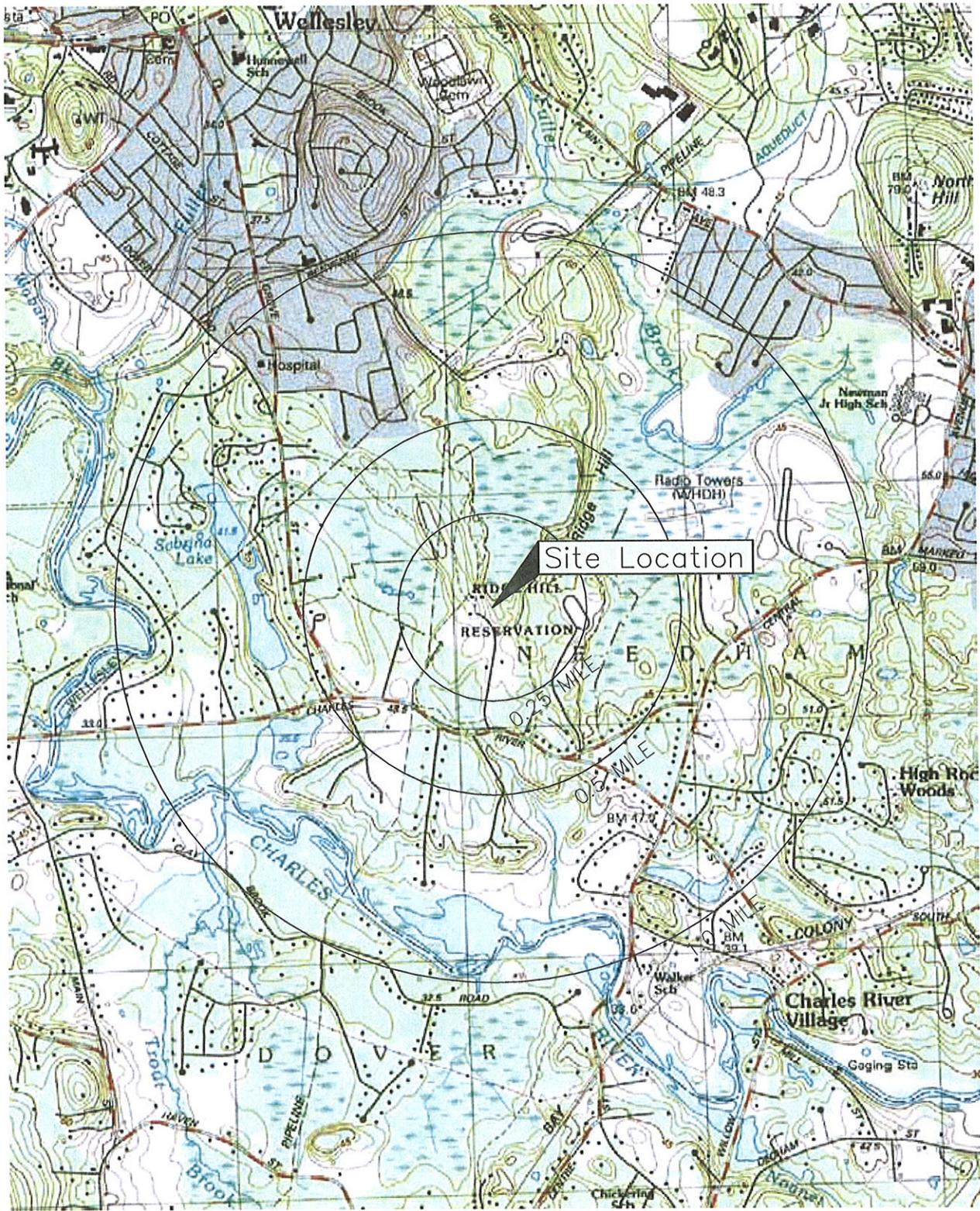
A wetland area to the east of the buildings is labeled as a Q3 Flood Zone, according to MA GIS. This MA GIS Layer, created using FIRM Map Data, is labeled as a Zone AH. A Zone AH is an area that is inundated by 100-year flooding, for which no Base Flood Elevations (BFE) have been determined. Flood depths tend to range from 1-3 feet.

There is a Certified Vernal Pool located on the opposite side of Charles River Street, approximately 1000' down the road from the entrance, adjacent to the Southwest corner of the Site and does not impact the project.

The Site is located within 100-feet of a wetland resource area. If any work is proposed within the 100-foot buffer zone the project will be required to file a Notice of Intent with the Needham Conservation Commission.

A Notice of Intent (NOI) would be prepared describing project impacts for submission to the Needham Conservation Commission. The NOI would include a report describing site characteristics, the proposed project and resulting impacts, wetland delineation methodology and review, the regulatory jurisdiction of the Massachusetts Wetlands Protection Act (MWPA) and the Local By-Law over the project. Based on schematic site plans, the wetland impacts will be limited to buffer zone issues, and no direct alteration of resource areas will occur.

It should be noted that any Utility Installation that will potentially occur from Charles River Street would have to either be installed through one of the fields, along the edge of the access road, or within the access road. As such, additional sawcutting, road excavation/replacement, and erosion control measures would need to be implemented.



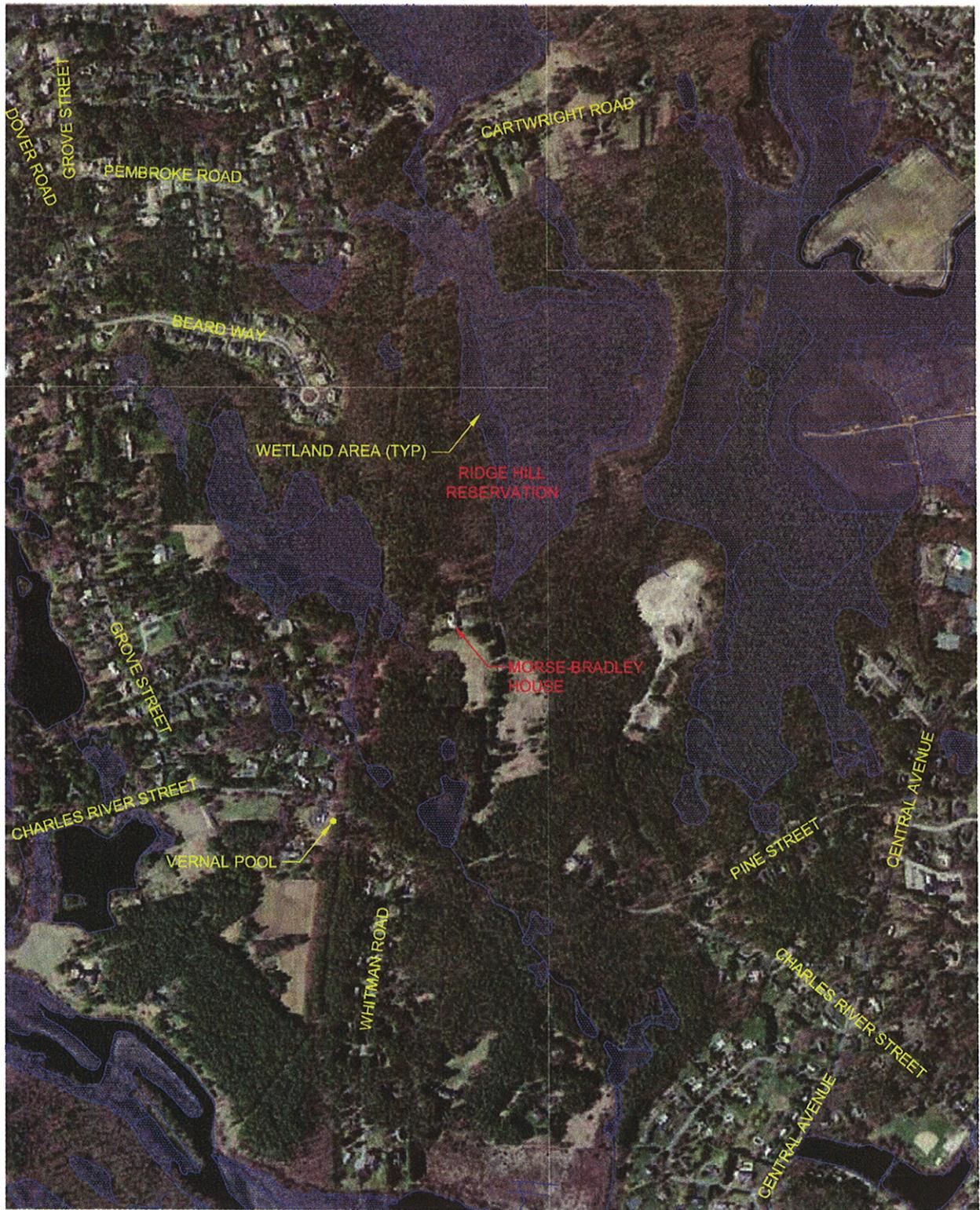
Ridge_Hill_USGS.dwg

Ridge Hill Reservation
Needham, MA



Site Location Map

Figure
1



Ridge_Hill_Aerial.dwg



Ridge Hill Reservation
Needham, MA



Aerial

Figure
2



Ridge_Hill_Existing Utilities.dwg



Ridge Hill Reservation
Needham, MA



Existing Utilities

Figure
3



Ridge_Hill_Schematic Utilities.dwg



Ridge Hill Reservation
Needham, MA



Schematic Utilities

Figure
4

PARKING

Senior centers have a distinct pattern of usage. This has a direct correlation to parking needs. Based on BH+A's experience and from speaking with senior center staff members in Needham and other communities, it is a misnomer that most visitors to senior centers stay for prolonged periods of time. What occurs instead is a regular flow of cars to and from the senior center throughout the day as visitors arrive for particular program offerings. Using standard zoning calculations to determine the amount of parking needed for this pattern is ineffective as older drivers travel in smaller numbers than prefigured for the general population. The result is new facilities with an insufficient amount of parking. For this reason BH+A employs alternative methods to determine the parking count.

The first approach is to look at the occupancy load based on the actual number of occupants or the area of each space in conjunction with the use pattern of each space at different times of the day, 10:00 AM, 12:00 AM and 2:00 PM. This yields a range of 75 to 134 spaces required in a typical day.

The second approach is to employ standards formulated for senior centers. The Massachusetts Executive Office of Elder Affairs recommends the provision of one parking space for every 80 square feet to 200 square feet of gross floor area. Where a facility falls within that range is determined by mass transit options available and placement within communities of particular types of density. In other words, senior centers served by a number of mass transit options and placed in a central location of a high-density neighborhood have a lower need (1 space per 200 gross square feet), while senior centers not served by mass transit and located in a rural setting have a higher need (1 space per 80 gross square feet).

In order to verify the effectiveness of this approach, BH+A researched a number of local senior centers. The following chart compares the amount of parking for the Needham Senior Center with that provided for other senior centers with a variety of similar characteristics. These characteristics include location within a town with a similarly-sized senior population, location of the senior center with respect to neighborhood density, the age of the facility, the size of the facility, or a combination of the preceding items. Towns with notably inadequate and outdated facilities are excluded, as are towns with smaller populations and disproportionately large senior centers. Based on this analysis and discussions with the administrators of the senior center, BH+A arrived at 125 parking spaces. This yields an "area per parking space" calculation of 160 square feet per parking space based on a 20,000 square feet facility.

Community	2000 Census 60+ population	2010 projected 60+ population	Senior Center Area (gsf)	Year Built	Parking Spaces	Area per Space	Executive Director Comments
Barnstable	10,508	11,593	18,000	n/a	94	191	sufficient 80% of time, but is adjacent to overflow parking.
Beverly	7,637	8,598	18,000	n/a	52	346	50 adjacent overflow spaces, not enough on most days. 120 ppl = 100 cars.
Franklin	3,263	4,552	16,000	2007	90	178	Insufficient parking even with good transit.
Mashpee	1,536	3,053	11,000	2006	110	100	adjacent to overflow parking; up to 200-250 cars during large events.
Methuen	8,208	9,103	18,000	1985	56	321	good transit, central location, parking overflows at large events.
Needham Proposed	6,371	6,725	20,000	TBD	125	160	