

Stow Athletic Fields Master Plan

April 14, 2007

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STOW ATHLETIC FIELD MASTER PLAN

1.0 – Background and Master Plan Objectives

1.1 Background and Study Approach

Gale Associates, Inc. (Gale) has completed community or campus-wide athletic field master planning in over a dozen municipalities and universities to include Norwood, Sudbury, Gardner, Weymouth, Franklin, and Dartmouth and Springfield Colleges. Community athletic field master planning is typically a five step process:

- Assessment of current facilities (condition and potential for redevelopment).
- Assessment of current and future field demands/needs requirements.
- Assessment of available undeveloped parcels.
- Concept planning and schematic plans for expanded facilities.
- Scheduling and Cost Estimating.

A schematic flow chart describing the process followed by Gale in the completion of this study is provided as Enclosure 1.

As demonstrated within, there is a long standing and pervasive, Town-wide lack of athletic field space. Youth sports programs have grown in numbers, in diversity of sports, and in terms of gender equity, while the population of fields has actually declined. There is a great deal of analytical data and anecdotal evidence in support of this conclusion. For example:

- With the exception of a recent effort to provide 3 hours of field time per week (at the expense of soccer), there are no available fields in the community for lacrosse, despite the rapid growth of that sport over the past two years and projected in the future.
- There is no adult baseball venue (“90-foot” diamond) in the Town of Stow, despite active support for Babe Ruth baseball.
- Development league Little League baseball players are unable to practice and are limited to one game per week due to lack of field space.
- Stow accounts for 520 players on 50 teams in the Assabet Valley Little League while providing for only 12% of the field usage.
- Stow Soccer has some 620 participants in 45 teams and is projecting 5% growth in the next 5 years and is soliciting additional field space in Boxborough and Sudbury.

The current field inventory includes facilities, described in detail within, at Pine Bluff, Center, Bradley, Hale, and Pompo. One of the consequences of inadequate field space to meet the current demand described in this report is a generally poor condition of existing fields which cannot support the current program without breaking down. The fields are overused, inadequately maintained, and lack the 30-day rest period in either the fall or

spring growth season to re-establish the rootzone structure. They are generally poorly drained and unavailable for much of the spring season. Most importantly, the lack of an adequate stand of turf grass results in improper footing and inappropriately hard surfaces and constitutes a significant safety hazard.

In addition to the assessment of existing facilities, the preparation of a community-wide athletic field Master Plan typically includes the assessment of undeveloped parcels which may be reasonably available for the development of expanded athletic field space. Prior to the engagement of Gale, the Stow Recreation Working Group completed a thorough review of all open space, private, public and conservation acreage to determine the possibility of obtaining the land area required to meet the Town of Stow's outstanding needs resulting from 12 years of apparent failure to invest in required recreational facilities. A summary of these efforts is provided as Enclosure 2. Only two sites with significant development potential and reasonable availability were identified: the Snow parcel and the Pine Bluff parcel. Gale was directed to assess the athletic field development potential of these two parcels of land which could possibly be made available for recreational development. Again, these parcels are described in greater detail within this report.

The Pine Bluff Property is a parcel of land which is owned by the Town of Stow, MA (the Town) and zoned as recreation land. The parcel is approximately 31 acres, and includes the Town Beach, an existing soccer field, and related parking. The majority of the site is undeveloped and wooded. The parcel is bounded by Sudbury Road, Kingland Road, and Lake Boon. Although the topography and soils are most favorable for recreational development, there are constraints to development to include deeded setback requirements, nearby abutters, and several environmental receptors to include a vernal pool. As described later in the report, these constraints can be managed and the project impacts appropriately mitigated in a limited or even moderate recreational buildout.

The Town is considering the purchase of 13 acres of land (Snow Property) off of Old Bolton Road. There are many aspects of this property which make the back half of this parcel ideal for recreational development to include favorable topography and soils, sparse vegetative cover, lack of immediate residential abutters, and lack of environmentally sensitive areas.

1.2 Study Goals and Deliverables

Gale was engaged in the spring of 2007 to assist the Town with the development of an Athletic Field Master Plan. The overall goals for this planning effort are:

1. Assess the current requirements for athletic fields in the community and how they are currently being met. Define a planning program of additional field requirements.
2. Define the current population of fields in the community and generally assess their condition and, in general terms, their potential for future redevelopment.

3. Assess the prevailing site conditions at the Snow and Pine Bluff parcels and the opportunities and constraints inherent in each as they relate to potential for development of additional field space.

4. Define concepts for the possible development of each of the recreational parcels (Snow and Pine Bluff) and provide estimates of cost, permitting requirements, possible phasing, and the impact on the Town's ability to better support its field space requirements.

The resultant Athletic Field Master Plan is intended to identify and address the priority needs of the Recreation Department and the Town, make best use of available space, and provide cost-effective, yet state-of-the-art planning solutions for the potential development of the two parcels identified to better meet the demands of the current and future sports programs. It should be noted that like all recreational master plans, this is a work in progress that continues to evolve over time, and it will require periodic update as needs and facilities evolve.

In completing this planning effort, Gale has:

- Completed a preliminary evaluation of existing recreational facilities.
- Completed a series of user meetings to assess requirements and priorities.
- Met with the Stow Recreation Working Group regarding the Town-wide meetings they had conducted previously.
- Prepared a working base plan in AutoCad for each undeveloped parcel based on available information from the Town.
- Completed an informal wetlands delineation and characterization of the sites.
- Completed a preliminary geotechnical evaluation of the sites.
- Conducted a series of committee, community and user group meetings to evaluate various development strategies.

Please see the Gale Scope of Services at Enclosure 3 for a complete discussion of technical approach and scope of services.

The resultant Athletic Field Master Plan provides:

- A general assessment of existing facilities.
- A field demands analysis.
- A summary of the Town requirements for additional facilities (The Program).
- A schematic level layout of each of the undeveloped parcels.
- A phasing plan for accomplishing the renovation.
- An assessment of the required permitting effort.
- A summary of maintenance requirements for the proposed additional facilities.
- An estimate of the constructed cost for each phase.

2.0 – Inventory and Preliminary Assessment of Existing Stow Athletic Fields

Gale completed multiple site visits to the existing field sites in the Town to evaluate the existing facilities, and met multiple times with Town officials, user groups, and maintenance officials. Existing facilities were generally assessed for serviceability, code compliance, and handicap access, compliance with National Federation of State High School Associations (NFHS) or other applicable geometry standards, safety, and remaining useful life. We also provided a general assessment of the redevelopment potential of each site to better meet the needs of the Town and take best advantage of available space. Photo documents referenced within this narrative are provided, sequenced by number, at Enclosure 4.

2.1 Pine Bluff

2.1.1 General Description of Site. The existing Pine Bluff recreation area is comprised of approximately 31 acres which is accessed off of Sudbury Road on the south side of the Town. Approximately 5 acres of the site are developed for active recreation and the remainder is wooded. A complete description of this site is provided at Section 4.1.1. According to a former member of the Stow Conservation Commission, the existing fields were constructed by members of the Town following a series of noticed public hearings before the Stow Conservation Commission, which issued a Notice of Intent for the project.

2.1.2 Current Fields Provided. Currently, Pine Bluff provides one and a half playing fields. There is one 6 vs. 6 field and one full-sized 11 vs. 11 soccer field.

2.1.3 General Condition/Limitations. The fields are properly sized for the intended sports and generally have adequate planarity and drainage. The fields are not rested during the year and experience excessive overuse. At the end of the spring and fall, there is generally no turf on the fields. The Pine Bluff fields are irrigated. The irrigation has had repair problems in the past, but, with additional investment, 2006 was problem free.. There is insufficient and poorly organized on-site parking. The parking lot is dirt and requires periodic regrading. There are public restrooms available to the site. Presently, the site does not provide any ADA parking, accessible routes, or facilities. The access to the Town beach is a steep dirt embankment and very steep stairs.

2.1.4 Constraints and Potential for Redevelopment. As will be discussed in more detail in Section 4, this site has significant potential for the development of additional field space. With a limited to moderate 2-3 field development, the various zoning and environmental constraints and off site impacts can be adequately mitigated with thorough planning and design.

The park has a 100-foot wetland jurisdictional boundary on the west side of the site which is associated with Lake Boon. There also appears to be an uncertified vernal pool in the center portion of the site which may also have a 100-foot “no alteration” buffer.

Additionally, there is a 100-foot “no structure” setback defined in a deed restriction on the property.

As stated above, there is effectively a 100-foot buffer which surrounds the parcel. This is a part of the deed restriction and wetland jurisdictional boundaries. However, these buffers are not prohibitive to a limited to moderate athletic field buildout. The potential for redevelopment on the south side of the parcel as additional athletic fields and open space is good. The parcel is relatively flat and soils beneath the parcel are generally free draining.

2.2 Memorial Field at Bradley Lane

2.2.1 General Description of Site. Memorial Field at Bradley Lane is approximately 5 acres and accessed off of Great Road. The site is in a residential zoned portion of Town. The site is bordered by residential property and conservation land. The parcel was donated to the Town by a group of five families in honor of a fallen WWII soldier, for the purpose of a baseball and softball field.

2.2.2 Current Fields Provided. The Memorial Field provides for one adult 60-foot softball diamond. The outfield of the diamond is heavily utilized for soccer. This is the only area where adult softball is played in the Town.

2.2.3 General Condition/Limitations. Currently, the outfield is in poor condition. It has a marginal stand of turf and is poorly drained due to chronic overuse as the only adult softball field in Town and as an overscheduled soccer field. There is no rest period afforded during an active growing season. The site is not irrigated and the parking area for the field is a dirt parking area. The pathway to the field is also dirt and not ADA compliant.

2.2.4 Constraints and Potential for Redevelopment. The parcel is bounded by conservation land and Town forest on three sides. The other side is residential property. The edge of the playing area is immediately adjacent to a wetland resource area and much of the play is already within the 100-foot wetland buffer. Unlike proposed development at the Snow parcel or Pine Bluff parcel, any expansion at Bradley would involve direct alteration of a wetland, or as a minimum, alteration of a 100-foot buffer area. Additionally, it is unlikely that the available space would allow for the development of a second 60-foot diamond with non-conflicted outfields. Finally, the parcel reportedly has a deed restriction which allows for the play of softball and baseball only. As a result, it is uncertain whether the Town would be able to reconfigure the parcel for a renovated softball field and multi-purpose rectangular field. As a result of these constraints, we assess the redevelopment potential of Bradley to be minimal beyond renovation of the existing field. Even then, the Integrated Turf Management restrictions due to the immediate proximity of environmental receptors are likely to make its future maintenance a questionable investment.

2.3 Pompositicut School (“Pompo”)

2.3.1 General Description of Site. The Pompositicut School (Pompo) site is approximately 18 acres and is accessed off of Great Road (Route 117). The school is located just outside of the Stow Town Center. The school building itself occupies 80% of the useable acreage. There is ample parking which is ADA compliant. However, there are no accessible routes to the field.

2.3.2 Current Fields Provided. There is currently an undersized 6 vs. 6 soccer field at the site. The field was constructed by the Army Corp of Engineers. A second 6 vs. 6 soccer field exists, but with reconstruction of a culvert on Rte. 117, the field has become very wet and is unusable 90% of the year.

2.3.3 General Condition/Limitations. Based on interviews conducted with Town personnel, the field was not constructed with either an underdrain system or adequate surface drains. Additionally, the field construction incorporated poorly draining, heavy clay soils in the rootzone, contributing to the poor playing conditions. Over the years, the Town has tried making improvements, but many areas of the field have experienced differential settlement and continued poor drainage performance, resulting in a playing surface with large depressions and uneven slopes. Heavy soils, poor drainage and occasional overuse have resulted in an often unplayable surface. The fields are not irrigated and receive little maintenance, exacerbating the problem of turf quality. By the end of the fall and spring season, the turf is all but destroyed and in need of major rootzone regeneration.

2.3.4 Constraints and Potential for Redevelopment. There is no available land for either expansion or a more advantageous reconfiguration. The land which surrounds the field areas is either wetland or owned by the Town of Stow Conservation Commission. The field lies entirely within a jurisdictional buffer for the wetlands to the west. As a result of these constraints and the general lack of expansion space, we assess the redevelopment potential of Pompo to be minimal beyond renovation of the existing field. The rootzone should be reconstructed using a free-draining coarse sand, an underdrain system, an irrigation system, and a reduced schedule/program affording a rest period. Even then, the Integrated Turf Management restrictions due to the immediate proximity of environmental receptors are likely to make its future maintenance a questionable investment.

2.4 Center School

2.4.1 General Description of Site. The Center School site is approximately 14.9-acres and is accessed off of Great Road (Route 117). There are approximately 120 parking spaces and a sufficient number of ADA accessible parking spaces at the site. However, there are no ADA accessible routes to any of the athletic fields.

2.4.2 Current Fields Provided. There are presently 2 baseball diamonds at Center and a shared multi-purpose rectangular field. The fields are used daily from May

through November. There is one 60-foot Little League diamond and a 90-foot adult diamond that is used for both adult baseball and Little League baseball. The use of the 90-foot diamond for routine Little League play is unfortunate, as the infielders are playing on the infield grass, and the outfielders are playing on the infield clay skinned surface.

It is questionable whether the Center fields should be considered to address any of the Town's athletic current or future field needs. The school is likely to be expanded and all athletic fields will be demolished for the new wing of the building and for construction laydown areas. It is unlikely there will be any athletic space at Center School for up to three years, and it is questionable what athletic space will be put back and when.

2.4.3 General Condition/Limitations. Like all others in Town, the Center School fields are chronically overused, not irrigated, and not rested. They are used daily from May through November, never rested, not irrigated, poorly drained, and inadequately maintained. As noted above, one field is used for Little League but has a 90-foot geometry.

2.4.4 Constraints and Potential for Redevelopment. The western portions of the school site where the fields are located are within the 100-year floodplain as defined by FEMA Flood Insurance Rate Maps (FIRM). As a result, they cannot be raised without the creation of compensatory flood storage. There is a hill in the northeastern portion of the site, and any redevelopment would require a substantial effort for earth moving and clearing prior to the construction of the fields. Finally, as with each of the previous sites, Center is surrounded by jurisdictional wetland areas and conservation land. As a result of the uncertain future of the Center fields given the pending school expansion, along with the other development constraints (floodplain, topography, wetlands), we believe the expansion potential of this site or ability to reorganize to better meet the Town's needs is very limited.

2.5 Hale School

2.5.1 General Description of Site. The Hale School site is approximately 16.56 acres. The parcel is irregularly shaped and the school occupies 70% of the readily buildable space on the parcel. The school is accessed off of Hartley Road. There is ample parking at the site, and the parking includes the required number of ADA accessible parking spaces. There are no accessible routes to athletic fields.

2.5.2 Current Fields Provided. Currently, the Hale School provides a single 60-foot Little League-type diamond.

2.5.3 General Condition/Limitations. The field condition is extremely poor. Based on interviews with Town staff, this condition results from historic overuse and failure to rebuild the destroyed rootzone or otherwise maintain it. It is likely also to result from inadequate drainage provisions and very heavy glacial till soils with a high silt content. Based on interviews with Town personnel, the Hale field is not used regularly due to the state of the turf, as it is considered to be unsafe.

2.5.4 Constraints and Potential for Redevelopment. The site is at the top of a hill, most likely a drumlin or kame deposit created by a glacier. The northern side of the site slopes through several private residences and down to Boxboro Road. Such formations are typically poorly drained with heavy silt and clay soils.

While there is some room for possible expanded field development on the north side of the site, any such development would require extensive cutting and filling of the slope and construction of a large retaining wall. Given the questionable soils at the site and the necessity for extensive earthwork and retainage, such expansion would likely not be cost-effective for the marginal increase in field space it affords. As a result, we assess the potential of this site to be fair beyond renovation of the existing field. It should have the rootzone reconstructed using a free-draining coarse sand, an underdrain system, an irrigation system, and a reduced schedule/program affording a rest period.

2.6 Conclusions

The table below provides a summary of Gale’s findings regarding the current population of Stow athletic fields:

Table 2.6
Field Assessment Summary

Location	Fields	Condition	Rested 30 Days	Expansion Potential
Pine Bluff	1 full-size rectangular 1 half-size rectangular	Very Poor	No	Very Good
Bradley	1 60-ft. softball/rectangular	Very Poor	No	Very Limited
Pompo	1 half-size rectangular	Very Poor	No	Very Limited
Center	1 90-ft. baseball 1 60-ft. baseball/rectangular	Very Poor	No	Very Limited
Hale	1 60-ft. baseball	Very Poor	No	Fair/Limited

***NOTE: Combinations fields are conflicted and cannot be scheduled concurrently and do not represent two fields.*

Total Inventory: 1 full-size soccer field
 2 half (6 vs. 6) soccer fields
 1 60-ft. softball field/rectangular field combination**
 2 60-ft. baseball field/rectangular field combination**
1 90-ft. baseball field (used as 60-ft.)
 6 total field equivalents

As demonstrated in Section 3 which follows, the Town has an extraordinary athletics program given its size. It is constrained from further growth based on unavailability and condition of fields. The current requirements of 130 athletic teams and 1,750 participants are being met in the Town by 6 poorly maintained, non-ADA accessible, unsafe field equivalents. This deficit is exacerbated by the field drainage conditions which severely limit field availability in the spring and following storm events.

The Pine Bluff parcel which was identified by the users as the most heavily scheduled facility also has the most potential of the existing facilities for expansion. As discussed in more detail below, this site has the area required and the topography, zoning, and geotechnical conditions to support additional recreational development in a responsible manner. Constraints and limitations associated with wetland buffers, vernal pool buffers, and deed restrictions can be addressed with sound engineering and planning. The other existing recreational field facilities in the Town we assessed have very limited potential to be significantly improved for additional field inventory.

3.0 – Current and Projected Demand Analysis

Gale met with the Stow Recreation Working Group to gain a general understanding of field scheduling and use. We then took written summaries from each of the field user groups. Finally, we met with each user group to further our understanding of field use and program constraints.

3.1 Lacrosse

Lacrosse is the fastest growing youth athletic sport in the country, and that trend holds true in Stow. The sport over the next five years in Stow is projected by League Officials to grow at a rate of over 200% for girls lacrosse. Boys lacrosse has demonstrated a 100% growth rate in 2006 and 2007 and is expected to grow over 100% again in the next five years. In order to be conservative, we have assumed a 50% growth rate over 5 years in our subsequent analysis.

Currently, the Town of Stow accounts for 50% of the participants in the Nashoba Valley Lacrosse League, while providing almost none of the field time. As the sport grows over the next five years, it is expected that a Stow Lacrosse League will likely be created and the Town consortium that it presently participates in will no longer be viable due to its large size.

3.1.1 Demand Data. Presently, there are approximately 225 participants in girls and boys lacrosse configured as 10 teams in six different age/sex groupings: Development – 1 team, Under 11 Boys – 2 teams, Under 13 Boys – 2 teams, Under 13 Girls – 1 team, Under 15 Boys – 3 teams, and Under 15 Girls – 1 team. There is also an adult team with Stow participation that practices and plays at Lincoln-Sudbury Regional High School (see User Group Demand Analysis at Enclosure 5). There is only currently one girls developmental lacrosse team. That is expected to change over the next two years where the boys and girls lacrosse programs are of the same size and number. The girls' field has different dimensions and is striped differently. By 2012, the program as it is presently set up as a consortium of towns, has a projected user group of approximately 1,000 kids participating. Stow will account for approximately 400 to 500 kids in the program.

The primary season is the spring season extending 12 to 14 weeks depending on age group, weather, and field availability. Assuming that each team intends to practice 2 times per week and play 1 game per week over a 14 week season, this represents a demand for 420 scheduled team events per spring season. If allowed to grow to full potential, that number could double in five years to 840 scheduled team uses per year without the addition of summer or fall leagues.

3.1.2 Current Field Use. Presently, Nashoba Youth Lacrosse uses fields provided by the Town of Bolton, MA. There is an undersized field used on weekdays for practice, and a single full-size field used for games on Sunday. These Bolton fields are used by a variety of sports, and the demands sustained by these fields results in a very poor quality of turf grass. The lack of an adequate stand of grass significantly alters the quality of developmental play and can be unsafe.

The field inventory in Stow does not allow for the use of fields for lacrosse, with the recent exception of a handful of hours.

3.1.3 Unresourced Requirements/Program Implications of Current Space.

Presently, Bolton does not have the field inventory for the future demand as their fields are already overscheduled. The Town of Bolton has imposed growth limitations on the league and additional field time is unavailable. Additionally, the field which lacrosse presently uses in Bolton is not regulation size. The current lack of field space does not allow for either summer clinics or camps, and certainly doesn't support the development of any type of fall league.

If the growth of Stow Lacrosse is as predicted by League Officials, and there is a demand for 630 scheduled team uses in 5 years, and if 40% of those are to be met in Stow consistent with the demographics of the League, that implies a need for 1.3 fields in Stow, based on a well-maintained field being able to sustain up to 250 team uses per year (see Enclosure 6, Current Field Need Assessment). This need could be met with a new, high use dedicated lacrosse field and additional time available on multi-purpose rectangular fields throughout the Town.

3.1.4 Lacrosse Recommendations. For the program to continue to grow at the rate which is indicated, more local fields will be required by lacrosse. At present growth rates, lacrosse requires an additional dedicated field. They also require the use of an additional shared multi-use rectangular field which can be shared with soccer. For developmental lacrosse, it is important that the fields utilized have a uniform playing surface.

3.2 Soccer

3.2.1 Demand Data. Presently, there are approximately 624 participants in Stow Soccer. Soccer has the most diverse user groups in the community. Leagues in Stow range from Munchkin Soccer to Adult over 40 years old leagues. Soccer as a whole has realized a growth of around 12-14% over the past 5 years. In some areas of the program, the growth is as high as 25%. According to league officials, these growth rates are expected to be sustained in the next 5 years due to increased interest in this sport. To be conservative, we have assumed a 5-year growth rate of 5% for Stow Soccer.

As may be noted in the User Group Demand Analysis spreadsheet at Enclosure 5, the 624 players are arrayed over 45 teams in 14 different age/gender groupings. Each of these groupings play 8-week seasons both spring and fall, and many have an 8-week summer league as well. While the actual scheduling among the Town's fields is very complex, it is conservative to say that if each team intends to play one game and conduct one practice a week over three 8-week seasons per year, there is a demand for 2,160 scheduled team events per year. This does not account for summer camps, clinics, and informal play which all place additional demands on fields.

3.2.2 Current field Use. Soccer utilizes the most fields in the Town. They use Pomp, Center, Bradley and Pine Bluff. As noted In Section 2.6, there is an inventory of 3 full-size fields and 2 half-size fields in the Town, counting a full-size field at center which will soon be unavailable for an indefinite period of time. Assuming that use is evenly distributed across this population of fields, and assuming the half-size fields can be considered on a one for one basis with the full-size fields if they are used for younger 6 vs. 6 age groups, then each field sees a demand of 432 scheduled events per year for soccer alone. The fields are not rested and in chronic disrepair, and will remain so regardless of the maintenance effort. If the projected growth rate of 5% is realized over the next five years, this translates to an average of 475 scheduled team uses per field per year.

3.2.3 Unresourced Requirements/Program Implications of Current Space. Every available space in the Town is utilized for soccer during the season, which is most of the year. Fields are destroyed by the end of the season, making play nearly impossible and possibly unsafe. If we assume that a well-maintained field can sustain up to 250 scheduled team uses per year, then there is a quantifiable deficit of 3.6 fields today and 4 fields in 5 years (see Enclosure 6).

3.2.4 Soccer Recommendations. Construction of three (3) high-use, multi-purpose rectangular fields.

3.3 Assabet Valley Little League (AVLL)

3.3.1 Demand Data. As reflected in the User Group Demand Analysis at Enclosure 5, there are approximately 600 children which participate in the AVLL. Stow accounts for approximately 280 participants of the league, or nearly 50%. These 600 participants are organized in 50 different teams over four developmental groupings over a 12 week spring season. There is also a four-team Jimmy Fund Program in the six week summer period.

Currently, practices are limited, and in the younger developmental leagues, precluded by lack of field space. However, it is the intent of the league to conduct an average minimum of 2 games and 1 practice, or a total of 3 scheduled team events per team per week. As a result, there is a current requirement for field space for 2,268 schedule team uses. If it were the Town's intent to provide for its share (50%) of these requirements, this would amount to 1,134 scheduled team events. The league has sustained a long-term steady growth rate, and a growth of 5% is anticipated over the next 5 years, bringing the projected field requirements to 1,191 scheduled team uses per year (see Field Needs Assessment at Enclosure 6).

3.3.2 Current Field Use. AVLL utilizes 9 fields in Maynard and Stow. Stow currently supplies less than 13% of the fields' usage time for the AVLL, with the remainder in Maynard. Additionally, because of the field quality issues, all of the Stow play is in the farm or developmental divisions, with minors and majors using Maynard fields exclusively.

In Stow, there are currently three 60-foot diamonds used by AVLL; 1 at Hale and 2 at Center. It is important to note that the Center fields may be unavailable due to school expansion and it is uncertain if or when they might be replaced. Assuming that there are 3 fields available they should be able to sustain 1,125 scheduled uses IF they were dedicated sole user fields. However, the Center fields, if they are available in the future, are combination dual-use fields, and unavailable on weekends due to soccer play.

3.3.3 Unresourced Requirements/Program Implications of Current Space.

The deficit of field space for baseball is to the point where farm baseball does not get the opportunity to practice; they only play games. During wet season, games go unplayed and practices are missed on a regular basis. This problem will only be amplified when the fields at Center School are taken out of the inventory for construction. According to league officials, the 2006 season farm baseball could have utilized two additional fields. If growth of 5 to 10% continues without the addition of field space, a cap on the amount of kids participating will have to be implemented.

3.3.4 Recommendations. AVLL requires the addition of two 60-foot diamond fields to play at its current size. This does not consider the possibility that the Center School will no longer be available for use for an undetermined amount of time once construction begins.

3.4 Men's Softball

3.4.1 Demand Data. Men's softball in Stow has been at capacity for the last 5 years. There are currently 160 participants organized in 16 teams which play in the league. The league does not expect to be able to grow; there are no other facilities in the Town which they can utilize. The season extends from mid-May through Labor Day, or 14 weeks. There are 2-3 practices followed by one game per week and an occasional practice (see User Group Demand Analysis at Enclosure 5). This results in a field space requirement of about 210 team uses per season. For planning purposes, a growth rate of 5% in 5 years has been assumed. This is conservative and below expected growth rates.

3.4.2 Current Field Use. Currently, there is one field available to men's softball. Memorial Field at Bradley Lane is their sole field. The field is now being used for soccer in the spring and fall, further reducing field availability and opportunity to rest.

3.4.3 Unresourced Requirements/Program Implications of Current Space. There are no unresourced requirements due to the fact that the program has not been allowed to grow over the last five years. If the program had field space to grow, the national average for growth is in the 5-7% growth range. However, assuming that not to be the case, the current field, if properly maintained and dedicated solely for adult softball, would likely be able to meet the demands of this group (see Current Field Needs Assessment at Enclosure 6).

3.4.4 Recommendations. It is recommended that men's softball be afforded an additional field so that their current facility can be rested and better maintained.

3.5 Babe Ruth Baseball

3.5.1 Demand Data. As reflected in the User Group Demand Analysis at Enclosure 5, Babe Ruth Baseball plays in the spring, summer, and fall. There are approximately 160 children in the league organized into 5 teams in the spring and fall, and 2 teams in the summer. Approximately 50% of the participants are from the Town of Stow. The spring and fall season are each 12 weeks long and the summer season is 8 weeks long. Each team intends to have 1 game and .5 practices per week, or 1.5 scheduled team events. As a result, there is a requirement for 576 scheduled team uses per year attributable to Babe Ruth. League officials have cited a modest 5% increase per year, so the 5 year projection would be 605 (see Current Field Needs Assessment at Enclosure 6).

3.5.2 Current Field Use. Adult baseball utilizes fields at Maynard High School and Crowe Park. The fields are used by a number of other users (e.g., Maynard High School) and are used everyday for multiple events from April to November. Especially during the spring, the fields are used 7 days a week and multiple games are scheduled from the early morning until sundown on weekends. Presently, Babe Ruth does not use any fields in Stow, while half of the Babe Ruth Baseball participants are from the Town of Stow, as noted above.

3.5.3 Unresourced Requirements/Program Implications of Current Space. Games which are scheduled and then rained out are difficult to make up during the season due to scheduling conflicts at Crowe Park and Maynard High School. The program growth is constrained due to the amount of available fields, and given the intensity of use, the fields are maintained aggressively resulting in fair turf condition. The deficit of fields has not impacted the size of the program and the amount of practices and games as of yet, however age and ability divisions cannot be formed due to limited space.

3.5.4 Recommendations. The development of an additional 90-foot diamond in the Town to help ease the scheduling difficulties in Maynard is recommended. At present growth, there will be need for a total of 1-2 90-foot diamonds in the community.

3.6 Conclusions and Planning Program Recommendations

A quantitative analysis of new field requirements is complicated by the joint use of facilities by multiple Towns; however, it is clear that Stow's athletic leagues are severely under resourced. The table at Enclosure 6 summarizes the demand data analysis:

With intensive maintenance and a 30-day rest period during an active growth season, a field has the ability to sustain an average of 250 90-minute events per year. Stow Soccer alone utilizes five fields (3 full, 2 half) across the Town at various locations. These fields, if properly maintained, have the ability to safely accommodate 1,250 events a year. Stow Soccer has a yearly requirement of nearly 2,160 events per year. Sustaining this type of demand on a population of fields that is inadequate to do so only accelerates the

deterioration, regardless of the maintenance effort expended. The implications are threefold:

1. Each of the various athletic programs will be limited in their growth and will not meet the needs of significant numbers of potential program participants.
2. The quality of play based on field quality will be insufficient for the intended sport. This is particularly true for lacrosse.
3. The Town will incur significant liability risk as the fields deteriorate further to an unplayable, unsafe condition.

Based on the analysis above, and assuming that the fields in Center, if lost for use for some period of time will be replaced in kind, Gale recommends the construction of the following fields to meet the projected needs of the Town for field space:

- 4 multi-purpose rectangular fields (3 if one is synthetic)
- 2-3 60-foot diamonds (2 if one is synthetic)
- 1 90-foot diamond

This will just handle the present use and, particularly if there is a synthetic turf component of the buildout, will leave room for some growth among all user groups.

Finally, the various Town informational meetings conducted by the Stow Recreation Working Group and by Gale identified several other potential program elements that should be considered in the development of additional field space. The first is obviously sufficient off-street parking to meet the new field needs. Secondly, there was much comment about the possibility of a bandstand-type pavilion. This could possibly be incorporated into a site building otherwise used for concessions, restrooms and on-site storage. For this type of development, such facilities are often funded by private donations or in-kind labor. There is also a stated demand for hard court space (basketball, tennis, and hockey). Lastly, any new field complex should consider the incorporation of a walking or jogging trail. Such a trail could potentially include workout stations and/or environmentally related interpretive eco-signage or displays.

4.0 – Assessment of Undeveloped Parcels

Based on locally available information, Gale compiled an existing conditions base plan suitable for planning purposes for both the Pine Bluff and Snow parcels. They are provided as Enclosures 7 and 8. These plans are not suitable for the preparation of permitting or design documents, and a full topographic and property line survey will be required in any subsequent phase of the project.

4.1 The Pine Bluff Parcel

See Aerial Photo, Site Photos, and Existing Conditions Plan at Enclosure 9.

4.1.1 General Site Description. The Pine Bluff site was purchased by the Town with the intent of preservation of open space for active recreational purposes. The parcel is approximately 31 acres in size and is bounded by Lake Boon, Kingland Road, and Sudbury Road. As described elsewhere, a 5-acre portion of the site is currently developed for a soccer field and associated parking. There is a small rest room facility on-site that serves both the athletic fields and a small Town beach. The remainder of the site is heavily wooded with mixed soft and hardwood species and brush. A dozen or so Sudbury Road single-family homes immediately abut the parcel along the eastern property line. The property is zoned for recreation, and there are deed restrictions that, among other things, impose a 100-foot development buffer along all property lines.

4.1.2 Geology and Topography. In terms of geology and topography, the site is well suited for recreational development. The soils mapping for the site, the lack of wetland areas and impoundments, tree growth and our limited observation suggest that the soils in the area are Hinckley Loam Sand. These are characteristically free draining soils with good engineering and agronomic properties. Given the free draining nature of the soils and the relative elevation of the adjacent Lake Boon, we conclude that the separation to groundwater will be in excess of 10 feet.

The entire site, with the exception of the potential vernal pool depression and the area within 75-100 feet of the Lake Boon shore, lies approximately 25 feet above the lake elevation on a relatively flat plateau. Site grades around this plateau are only 1-2 percent.

4.1.3 Environmental Assessment. On March 27, 2006, a wetland scientist from Gale conducted field inspections of two properties within the Town of Stow, MA. The purpose of the field inspections was to conduct a preliminary habitat assessment and to approximately locate potential resource areas on the sites that would be subject to jurisdiction under the Massachusetts Wetlands Protection Act (MWPA, M.G.L. c. 131, s. 40) and its Regulations (310 CMR 10.00) as well as the Town's Wetland Protection Bylaw.

The site is located south of the Pine Bluff Recreational Facility and east of Lake Boon in Stow, MA (refer to Locus Map). According to the United States Geological Survey (USGS)

topographic map (1987), the nearest body of water on or in the vicinity of the site is Lake Boon, which abuts the western property border.

According to the Massachusetts Natural Heritage Atlas 12th Edition, no estimated habitats of rare wildlife, priority habitat of rare species, or certified vernal pools are located on the site (refer to the attached copies of the Natural Heritage Atlas at Enclosure 9). The nearest such habitats are located approximately ¼-mile northeast of the site. The nearest certified vernal pool is mapped approximately ½-mile north of the site.

No areas within the Town of Stow are identified as Areas of Critical Environmental Concern (ACEC) according to the *ACEC Program Guide* (June 1993, Executive Office of Environmental Affairs). The *ACEC Program Guide* defines an ACEC as “...an area containing concentrations of highly significant environmental resources that has been formally designated by the Commonwealth’s Secretary of Environmental Affairs....”.

Two significant wetland areas were noted on the property. The criteria used for identifying wetland areas included vegetation, topography, and hydrologic conditions. Hydrologic conditions and vegetation were the primary factors used to mark the approximate edge of the wetlands.

1. Lake Boon is located along the western border of the site. According to the Wetlands Protection Act, areas associated with Lake Boon subject to jurisdiction would be Inland Bank (Bank), Land Under Water bodies (LUW), and Bordering Land Subject to Flooding (BLSF). Any proposed alteration of land within 100 feet of this area would be subject to approval under Notice of Intent filing with the Stow Conservation Commission under the Wetlands Protection Act.

2. An isolated depression was noted to the immediate south of the Pine Bluff Parking area. The wooded depression at its deepest point contained standing water with no identifiable inlet or outlet. Based on Gale’s observations, this isolated area may potentially contain vernal pool species. The areas observed which may be subject to jurisdiction under the Wetlands Protection Act included Isolated Land Subject to Flooding (ILSF) and Bordering Land Subject to Flooding (BLSF). Gale’s planning for development on the Pine Bluff parcel has assumed that this area may be certified in the future as a vernal pool and subject to protection.

The Pine Bluff parcel does not lie with a 100 year floodplain. There is no apparent spill history or evidence of site contamination.

4.1.4 Historical/Archeological Findings. Based on available information, the Pine Bluff parcel may be archaeologically sensitive and may contain archaeological sites associated with pre-contact (ancient) Native American and historic period Euro American occupation. Through study of private artifact collections, the Stow Historical Commission has documented Native American stone tools found in the vicinity of Pine Bluff when the area was in agricultural land use. A number of known pre-contact period Native American archaeological sites are located in proximity to the Pine Bluff project area along the Assabet

River, and within the Assabet River National Wildlife Refuge (former Fort Devens Sudbury Annex), both north and south of Hudson Road. As a result of previous archaeological surveys within the refuge, 27 pre-contact Native American sites were identified, mostly in the vicinity of Puffer Pond and Taylor Brook.

Following consultation with the Massachusetts Historical Commission (MHC), the Stow Historical Commission recommended that the Town have an archaeological survey conducted at the proposed Pine Bluff recreational facility expansion. MHC concurred with this assessment and recommended that an intensive (locational) archaeological survey (950 CMR 70) be conducted within the Pine Bluff parcel.

The goal of the intensive (locational) archaeological survey will be to locate and identify any significant archaeological deposits that may be present within the project area, and to make recommendations regarding the need for additional archaeological testing or mitigation if necessary. It is important to note that no additional recreation development at Pine Bluff will begin until this archeological survey is complete.

4.1.5 Constraints to Recreational Development and Conclusions. There are both opportunities and constraints to additional recreational development at the Pine Bluff parcel. The available space, zoning, topography, and soils all contribute to make this site very favorable for the development of supplemental athletic fields and related recreational development.

Deed restrictions which create a 100-foot “no structure” buffer, and the proximity of residential abutters somewhat limit the extent of development. The jurisdictional buffers to the potential vernal pool that lies within the central portion of the parcel, along with the Lake Boon resource area, do not overly constrain development. However, the proximity of these environmental receptors requires that stormwater management and natural turf management standards will need to be established and rigorously maintained. The Integrated Turf Management Plan would be prescriptive and include a long-term water quality monitoring component. The implication of the potential historical significance of the site will not be fully known until an archeological survey is completed in any subsequent planning or design phase. Finally, any development at the Pine Bluff parcel must fully consider off-site impacts as they relate to noise, traffic, trash, and security.

Assuming that historical concerns can be favorably resolved, the Pine Bluff parcel has significant potential for either a limited (1-2 field) or moderated (3-4 field) development of needed athletic space. Such development could be completed in a responsible and environmentally sensitive fashion, preserving substantial buffers and open space. Any such development would require careful design of stormwater facilities, turf management practices, vehicular movement, and off-site impact mitigation. Given the favorable aspects of the site and its size, none of these design requirements associated with a limited 2 field buildout or a moderate 3-4 field buildout appear to be difficult or prohibitively costly.

4.2 The Snow Parcel

See Aerial Photo, Site Photos, and Existing Conditions Plan at Enclosure 10.

4.2.1 General Site Description. The Snow parcel is currently under consideration for purchase by the Town of Stow. The Town completed a preliminary evaluation of the parcel and prepared the report at Enclosure 11 summarizing their findings. The lot is a cleared, 13-acre parcel with frontage on Old Bolton Road adjacent to the Bose property. The parcel is rectangular in shape with a width of approximately 385 feet and an overall length of 1,475 feet. The site is zoned as residential and we are unaware of any encumbrances or restrictions on the parcel. There is evidence of recent agricultural use of the parcel. There are several residential homes to the immediate west of the parcel.

4.2.2 Geology and Topography. As may be noted in the USGS soil mapping for the site, the soils consist of Merrimac Fine Sandy Loam. These are well drained soils with moderate to moderately rapid permeability and good engineering characteristics.

The site is essentially level with a small depression centrally located. No development proposal for the site would be constrained by earthwork requirements. It appears that there is 6-10 feet of separation to groundwater, and that the parcel may overlay an aquifer with sufficient yield for irrigation water withdrawal.

4.2.3 Environmental Assessment. The Snow property is located on Old Bolton Road west of the Bose Complex in Stow, MA (refer to locus map). According to the United States Geological Survey (USGS) topographic map (1987), the nearest body of water on or in the vicinity of the site is an unnamed perennial stream located some 300 feet south of the property. It does not appear that development of the site would be subject to either the Rivers Protection Act nor the Wetland Protection Act.

According to the Massachusetts Natural Heritage Atlas 12th Edition, no estimated habitats of rare wildlife, priority habitat of rare species, or certified vernal pools are located on the site (refer to the attached copies of the Natural Heritage Atlas, Enclosure 10). The nearest such habitats are located approximately ¼-mile northeast of the site. The nearest certified vernal pool is mapped approximately ½-mile north of the site. The site does not lie within a 100 year flood plain.

No areas within the Town of Stow are identified as Areas of Critical Environmental Concern (ACEC) according to the *ACEC Program Guide* (June 1993, Executive Office of Environmental Affairs). The *ACEC Program Guide* defines an ACEC as "...an area containing concentrations of highly significant environmental resources that has been formally designated by the Commonwealth's Secretary of Environmental Affairs....".

One significant wetland area was noted to the south of the property. This area is most likely associated with the unnamed perennial stream. Due to its distance from areas to be

altered, the area observed would not likely be subject to jurisdiction under the Wetlands Protection Act including Bordering Vegetated Wetlands (BVW).

4.2.4 Constraints to Recreational Development and Conclusions. There are few constraints to the development of recreational fields at the Snow parcel. The soils and groundwater condition, topography, lack of vegetative cover, roadway line of site and level of service, and lack of environmental receptors make this a favorable site. If development were slated for the “rear” half of the parcel, direct abutter impacts could be mitigated.

Perhaps the largest constraint to field development is the lot shape, which is long and relatively narrow. Any fields would need to be “stacked” on the lot, one wide. Additionally, any development would require site design features (mounding, fencing, landscaping plantings, etc.) to buffer off-site impacts for the few direct abutters. Assuming the Town is able to procure this parcel and to make it available for use as recreational field development, it is most suitable for this purpose and should be the Town’s top priority in any field development effort. Assuming up to one-half of the parcel might be made available for recreational development, it would be possible to develop up to two, high-intensity use fields at this site. Any development should be toward the “rear: of the parcel to mitigate impacts on residential abutters.

5.0 – Schematic/Concept Design Summary

Following the assessment of existing facilities and the quantification of field requirements, Gale was requested to consider two planning scenarios. The first, and more desirable of these, is the development primarily of the Snow parcel with a more limited development of the Pine Bluff parcel. The second alternative is the development of the Pine Bluff parcel only, assuming the Snow parcel is unavailable. The results of the schematic planning effort are discussed below.

5.1 Course of Action 1 – Aggressive Development of Snow Parcel and Limited Development of Pine Bluff

5.1.1 Snow Property Development. In this development scenario, the intent for the Snow property would be fairly aggressive development to meet the majority of the Town’s program needs on this site, given its advantages and relative lack of constraints. With approximately one-half of the parcel, we believe it is feasible to develop two multi-purpose ball fields (one of which is a 90-foot adult diamond) with rectangular field overlays. Given the program demands intended to be met at this location, there is emphasis on the possible use of synthetic turf to enhance near all-weather availability and to minimize maintenance and operations costs. For purposes of our cost estimating, we have assumed a single field as athletic (see layout plan at Enclosure 12).

5.1.1.1 Multi-Purpose Athletic Fields. The Snow development should include a minimum of two, full-sized, high quality multi-purpose rectangular fields which can be used for soccer, field hockey, lacrosse, and football. At least one of these fields should be a filled-synthetic turf installed by an industry leader with an effective under-drainage system. The synthetic turf field(s) should afford a minimum 65-yard wide soccer field. It should be permanently striped for three events - American football, soccer, and lacrosse with permanent tufted lines. Guide marking will also be tufted into the turf to facilitate the painting of other lines (e.g., field hockey) as needed by Town personnel.

The natural turf fields should be constructed with a coarse grained, free-draining rootzone with adequate under-drainage, be fully irrigated, and include a premium athletic turf grass cultivar. The finished grade should be somewhat higher to limit flooding and allow for early spring use most years. The decision to use sod or seed should be based on budget and the immediate need for field space. An automatic irrigation system should be installed so that the field can be better maintained using on-site water withdrawal. An irrigation well should be installed to maximize the irrigation on the site.

5.1.1.2 Baseball Diamonds. The park development at Snow should include the construction of at least one high-quality 90-foot adult baseball diamond with under-drainage, proper orientation, spectator seating, and geometry compliance suitable for Babe Ruth and MIAA competition.

The park development should include the construction of at least one high-quality 60-foot combination softball/Little League diamond with under-drainage, proper orientation,

spectator seating, and geometry compliance for MIAA(softball) and Little League competition. A portable mound and a fully carpeted infield (i.e., no clay) would allow use for both purposes.

Ball fields should include comprehensive amenity packages to include dugouts, benches, backstops, fencing, scoring, foul poles, and Beam clay skinned infields, unless synthetic turf is used. Outfield fencing could be installed using collapsible PVC fencing that is removable and stackable in containers when the field is to be used for rectangular sports.

5.1.1.3 Hardscape/Basketball and Tennis/Deck Hockey/Ice Hockey.

The park development could include two basketball courts and a minimum of two tennis courts. Hardscape courts should be located centrally to buffer abutter impacts of noise and light (if lighted). Courts should be dark green on light green in color to soften their appearance. They should be surrounded by 8-foot fencing to control ball overflight.

The courts will be surfaced with a tough acrylic. They will have a berm and water supply and drain and have the ability to be flooded in the winter time and act as an outdoor hockey rink. Fencing and net posts would be sleeved for easy removal and capping. Alternatively, if not in use for tennis or basketball, they could be used for deck hockey in the summer.

5.1.1.4 Other Snow Facilities/Amenities

Spectator Seating. The concept design for Snow includes limited spectator seating located between the two fields that could be oriented in either direction. The proposed spectator seating which is fully ADA accessible and meets life safety code should be installed with a capacity of approximately 100 seats, which could be relocated as desired.

Bathroom Facilities. The planning/design program of concessions and bathroom facilities generally includes a new centrally located combined bathroom and concessions building which should be developed to support all recreation venues in the park. The concessions should allow for multiple service windows and be fully ADA accessible. It would provide power and equipment for some limited on-site food preparation and sale of pre-packaged products. The concessions building should allow for vending machine access and drinking fountains when the full concessions are not open.

The concessions/toilet building should allow for a limited amount of on-site storage and a small administration area that may serve as an aide station. The open air, covered pavilion at the front of the building could serve as a bandstand or organizational area. The bathroom building shall contain approximately 6-8 bathroom fixtures for both the men's and women's facilities, and would require the development of an on-site septic system for wastewater disposal.

For purposes of our budget development, we have assumed this building could be privately funded or provided by "in kind" construction donations.

Off-Street Parking. Parking should be located at the front of the recreational development so vehicles do not penetrate into the working areas of the narrow site. This location would allow for the joint use of parking with other Town facilities to be developed on the front half of the site. There should be approximately 100 spaces provided to account for field and court use using industry standards. The current plan provides for 126 spaces. For special events, the hard court space contiguous with the parking lot could be used as supplemental parking. The impervious surfaces created by the parking lot, access drive and hardscape courts will need to be properly drained and the drainage system must treat and attenuate any offsite flows to at or below the exiting condition. The park entrances and gateways should be generally strengthened by plantings, architectural features, signage, etc.

Security Lighting. The park development will require the installation of minimal security lighting along the entrance drive, on parking lot islands, and on the restroom building. These will be the minimal number required by the Town Planning Regulations and be photo cell activated.

Athletic Lighting. In order to make best use of the new fields at Snow, particularly in the case of a synthetic turf field, we recommend that consideration be given to lighting at least one field. The proposed lights would ideally be located deep within the parcel away from abutters, and employ the latest “green” light control technology. This technology can effectively control the amount of light glare and spill off-site such that post development illumination levels at the property line do not exceed pre-development illumination. The incorporation of lighting into the project results in a synthetic turf combination field like that proposed that represents over two premium field equivalents in terms of its ability to sustain use without loss of turf quality. For purposes of budget development, we have assumed the Snow project will provide lighting conduit only, and actual lighting is treated as an alternate bid item.

5.1.2 Pine Bluff. Under this development scenario, the majority of the program requirements for additional field space would be met at Snow, particularly if one or more of the proposed Snow fields are lighted with synthetic turf. As a result, the Pine Bluff development could be less intense and lower in priority (see phasing discussion below). We believe that the Pine Bluff development should include a dedicated (as opposed to dual use) 60-foot Little League-type diamond and a minimum sized multi-purpose rectangular field suitable for lacrosse and youth soccer.

5.1.2.1 Multi-Purpose Athletic Field. The Pine Bluff development should include a single minimum-sized, high quality multi-purpose rectangular field which can be used for youth soccer, field hockey, and lacrosse. This natural turf field should be constructed with a coarse grained, free draining root zone with adequate under-drainage, be fully irrigated, and include a premium athletic turf grass cultivar. The finished grade should be somewhat higher to limit flooding and allow for early spring use most years. The decision to use sod or seed should be based on budget and the immediate need for field space. An automatic irrigation system should be installed so that the field can be better

maintained using on-site water withdrawal. An irrigation well should be installed to maximize the irrigation on the site.

This field would be located in the central portion of the site to afford the maximum possible buffers to both the lake shore and the residential abutters. As noted on the schematic plan, the buffer to both would average 120 feet and be a minimum of 100 feet.

5.1.2.2 Baseball Diamond. The Pine Bluff development should include the construction of one high-quality 60-foot softball/Little League diamond with under-drainage, proper orientation, spectator seating, and geometry compliance for MIAA (softball) and Little League competition. This would not be a combination field; rather, a dedicated Little League field. It should include an amenity package to include formal dugouts, benches, backstops, fencing, scoring, foul poles, and Beam clay skinned infields. Outfield fencing could be permanent 4-foot dark green vinyl clad chain link.

5.1.2.3 Other Pine Bluff Facilities/Amenities

Spectator Seating. The concept design for Pine Bluff includes minimal spectator seating located on the first base side of the baseball diamond. It would consist of a portable aluminum bleacher accommodating 50 seats. In the fall, it could be relocated to the rectangular field. The proposed spectator seating would be fully ADA accessible and meeting life safety code.

Bathroom Facilities. The existing public restroom building at Pine Bluff would be used to support the proposed fields as well. This may require a building renovation and expansion of the tank and leaching field, however no new facility is proposed.

Off-Street Parking. Minimal parking should be located at the front of the recreational development so vehicles do not penetrate into the working areas of the narrow site. This parking will be designed as the minimum to support the two new fields only. Existing parking for the existing soccer field off of Sudbury Road and the beach front would be unchanged.

There should be approximately 60 new spaces provided to account for field use using industry standards. The current plan provides for 60 spaces. The impervious surfaces created by the parking lot and access drive will need to be properly drained and the drainage system must treat and attenuate any off-site flows to, at, or below the exiting condition. The park entrances and gateways should be generally strengthened by plantings, architectural features, and minimal signage, etc.

Security Lighting. The park development will require the installation of limited security lighting along the entrance drive and on parking lot islands. These will be the minimal number required by the Town Planning Regulations and be photo cell activated.

Athletic Lighting. None.

5.1.3 Conclusions. Under development Course of Action 1, as reflected in the Table at Enclosure 13, nearly all of the unresourced or under resourced program requirements identified by Gale are met. The minimalist approach to the development of Pine Bluff results in the alteration of less than 4.7 acres or 15% of the site while providing unaltered buffers of woodland averaging 120 feet in width, with a minimum of 100 feet.

5.2 Course of Action 2 – Moderate Development of the Pine Bluff Parcel

If the Snow parcel is unavailable for development for additional athletic field space, given the development constraints at Pine Bluff, it is unlikely that the Town’s programmed needs for athletic space can be met. The Stow Recreation Working Group prepared some original concept plans for how Pine Bluff might be developed which were overly aggressive and intense given the prevailing site constraints. However, with a moderate 3 field development at Pine Bluff, incorporating at least one field in synthetic turf, the majority of the priority needs can be met. While this would result in more potential for environmental impacts and abutter/off-site impacts (noise, traffic, etc.) in the Lake Boon area than the smaller 2 field development described above, we believe that this layout could be planned and designed in an environmentally sensitive fashion in accordance with all relevant design standards, regulations, and permitting requirements. However, until an actual survey, geotechnical investigation, wetlands delineation, and archeological survey are completed as part of the project design effort, this remains an assumption.

5.2.1 Multi-Purpose Athletic Fields. The “Pine Bluff only” development should include two minimum-sized, (195’ x 340’) high-quality multi-purpose rectangular fields which can be used for youth soccer, field hockey, and lacrosse. One of them would be a stand alone dedicated field, and the other would be a combination field overlaid with a 60-foot Little League diamond. The synthetic combination field should be a filled-synthetic turf installed by an industry leader with an effective under-drainage system. The synthetic turf field(s) should afford a minimum 65-yard wide soccer field. In addition to Little League baseball, it should be permanently striped for three events - American football, soccer, and lacrosse with permanent tufted lines. Guide marking will also be tufted into the turf to facilitate the painting of other lines (e.g., field hockey) as needed by Town personnel. The synthetic field should be located more proximate to the potential vernal pool and the Lake Boon waterfront than the natural turf fields so as to mitigate potential water quality issues associated with natural turf. This location also allows for parking in both the north and south ends of the Pine Bluff parcel to access this most heavily scheduled venue.

This natural turf field should be constructed with a coarse grained, free draining root zone with adequate under-drainage, be fully irrigated, and include a premium athletic turf grass cultivar. The finished grade should be somewhat higher to limit flooding and allow for early spring use most years. The decision to use sod or seed should be based on budget and the immediate need for field space. An automatic irrigation system should be installed so that the field can be better maintained using on-site water withdrawal. An irrigation well should be installed to maximize the irrigation on the site.

This second natural turf field would be located in the southern portion of the site adjacent to proposed parking off of Kingland Road. As noted on the schematic plan, in this scheme the buffer to both rectangular fields would average 110 feet and be a minimum of 100 feet.

5.2.2 Baseball Diamond. The "Pine Bluff only" development should include the construction of two high-quality 60-foot softball/Little League diamonds with under-drainage, proper orientation, spectator seating, and geometry compliance for MIAA (softball) and Little League competition. As noted above, one would be a combination field, rather than a dedicated Little League field, and be a synthetic turf installation. Both fields should include an amenity package to include dugouts, benches, backstops, fencing, scoring, foul poles, and Beam clay skinned infields in the case of the natural turf field. Outfield fencing could be permanent 4-foot dark green vinyl clad chain link at the dedicated field, and temporary fencing could be installed on the synthetic turf combination field.

5.2.3 Other Pine Bluff Facilities/Amenities

Spectator Seating. The second concept design for Pine Bluff includes minimal spectator seating. It would consist of 4 sets of portable aluminum bleachers accommodating 50 seats each. In spring, they would be positioned for baseball and in the fall, they could be relocated to the rectangular fields. The proposed spectator seating would be fully ADA accessible and meet life safety code.

Bathroom Facilities. Under this option, the existing public restroom building at Pine Bluff would be used to support the proposed fields as well. This may require a building renovation and expansion of the tank and leaching field; however, no new facility is proposed.

Off-Street Parking. Minimal parking should be located at the front of the recreational development so vehicles do not penetrate into the working areas of the narrow site. This parking will be designed as the minimum to support the three new fields only. Existing parking for the existing soccer field off of Sudbury Road and the beach front would be formalized and expanded somewhat.

There should be approximately 80 new spaces provided to account for field use using industry standards. The current plan provides for 68 spaces in a new parking lot off of Kingland Road, and the balance of new spaces included in a reconfigured lot off of the Sudbury Road entrance. The impervious surfaces created by the parking lot and access drive will need to be properly drained and the drainage system must treat and attenuate any off-site flows to at or below the exiting condition. The park entrances and gateways should be generally strengthened by plantings, architectural features, and minimal signage, etc.

Security Lighting. The park development will require the installation of limited security lighting along the entrance drive, and on parking lot islands. These will be the minimal number required by the Town Planning Regulations and be photo cell activated.

Athletic Lighting. None.



5.2.4 Conclusions. Under development Course of Action 2, as reflected in the Table at Enclosure 13, most of the unresourced or under resourced program requirements identified by Gale are met. The somewhat more intense approach to the development of Pine Bluff results in the alteration of 8.0 acres or 26% of the site, while providing unaltered buffers of woodland averaging 110 feet in width, with a minimum of 100 feet. Again, with central location of limited facilities, maintenance of all required natural buffers, creative use of mounding and plantings, and other landscape treatments, the development impact on viewscapes and noise will be reduced to the extent possible.

6.0 – Project Schedule and Phasing

There are primarily four considerations when formulating a phasing plan for the implementation of an athletic field Master Plan: operational requirements (the need to keep some facilities in play); accomplishing the most high-use facilities first, priority of need for specific field types, and fiscal constraints. This discussion of phasing addresses each of the development strategies/alternatives described above.

6.1 Course of Action 1 – Aggressive Development of Snow Parcel and Limited Development of Pine Bluff.

It may be possible to complete the proposed Stow athletic field development in two phases: All facilities at Snow in Phase 1 in year one, and remaining facilities at Pine Bluff in year 3.

The goal of the Town would be to construct the synthetic and natural turf fields in the summer of 2008 at Snow, and if there is a synthetic turf component to the project, this field(s) would be usable to support the fall 2008 season as they are immediately available for use. Any natural turf fields at Snow, if seeded before Oct 1, 2008 would be available in late summer 2009. If sodded, they would be available in late spring 2009.

To achieve this goal, final Snow site design would commence in the summer of 2007, and project permitting would be completed by January 1, 2008. Construction plans and specifications would be completed by February 1, 2008 with a public bid period from February 1 to March 1, 2008. Construction contract award, mobilization, and submittal review would be complete by May 1, 2008. Construction could begin on June 1st and the synthetic turf project could be complete by the end of August. The other project elements would be completed by spring 2009. The majority of the comparable projects completed by Gale have essentially met this schedule.

The design and permitting of the second priority fields at Pine Bluff could be completed in 2008 with bidding and construction in 2009.

6.2 Course of Action 2 –Moderate Development of Pine Bluff Only

This 3 field project would be most cost-effective if built as a single-phase procurement. The goal of the Town would be to construct the fields in the summer of 2008 at Pine Bluff, and if there was a synthetic turf component to the project, this field(s) would be usable to support the fall 2008 season as they are immediately available for use. Any natural turf fields at Pine Bluff, if seeded before Oct 1, 2008, would be available in late summer 2009. If sodded, they would be available in late spring 2009.

To achieve this goal, final Pine Bluff site design would commence in the summer of 2007, and project permitting would be completed by February 1, 2008. Construction plans and specifications would be completed by March 1, 2008 with a public bid period from March to

April 2008. Construction contract award, mobilization, and submittal review would be complete by May 1, 2008. Construction could begin on June 1st and the synthetic turf project could be complete by the end of August. The other project elements would be completed by spring 2009.

6.3 Project Phasing/Schedule Conclusions

Upon approval of one course of action or the other, the initiating project would be designed, permitted and constructed in accordance with the flow chart provided as Enclosure 14. In either course of action, the top priority should be to complete the synthetic component of the project as part of the initiating project. Assuming that initiating project is designed in the summer fall of 2007, permitted in the winter 2007-2008, bid in the early spring 2008, and construction commences in May or June 2008, then play on the synthetic surface(s) could commence in the fall 2008 sports season.

7.0 – Estimated Project Costs

The preliminary project cost estimate for the Stow Athletic Field Master Plan is presented as Enclosure 15. This estimate is based upon very schematic quantities, and while suitable for preliminary project budget development, it is subject to change during the design development and permitting process. This estimate is consistent with recent bid results for analogous public projects at prevailing wage rates.

The estimate includes a construction contingency of 10%, and an estimate of “soft” costs for survey, geotechnical investigation, design, permitting, and construction administration, also taken as 10%. We have assumed that the project(s) would be public construction at prevailing wage in 2008-2009. We have assumed no “in-kind” services from Town contractors or donors.

One of the most expensive aspects of the project, and therefore one to which the cost estimate is most sensitive, is synthetic turf. We have assumed that the turf will be installed by an industry leader (e.g., Field Turf Pro-Series) at a cost of \$4.90/S.F. or \$500,000 for the carpet and infill alone.

We have also included the possible lighting of the synthetic turf field at Snow under Development Alternative 1 as an “Add” alternative. The lighting of this field by MUSCO Lighting using 60-80’ towers results in a budget cost of \$300,000. The concessions/restroom pavilion building will be approximately 40’ x 40’ at a cost of approximately \$175 /S.F., or \$280,000. This is also treated as an add alternate.

Under Development Alternative 1, the overall cost to construct the project as shown on the attached schematic drawings is approximately \$1,715,100 for Phase 1 at Snow, and \$884,000 for Phase 2 at Pine Bluff.

Under Development Alternative 2, the overall cost to construct the project as shown on the attached schematic drawings is approximately \$1,821,000 for the single project phase at Pine Bluff.

8.0 – Summary of Permitting Requirements

The discussion of the likely permitting scenario will be limited to the first development option (Snow and Pine Bluff), as the permitting requirements for the Pine Bluff only development scenario are essentially the same.

8.1 Local Issued Permits

8.1.1 Wetlands Protection Act/Stow Conservation Commission. The Pine Bluff development will possibly involve work within 100 feet of a jurisdictional wetland resource area, and therefore be subject to permitting under the Wetlands Protection Act. Following formal delineation of the wetland area, the project will require a Notice of Intent filing with the Stow Conservation Commission. The filing will require complete sedimentation and erosion control design, stormwater management calculations, and an Integrated Turf Management Plan. The filing will include a noticed public hearing. Following the closing of the public hearing, the Conservation Commission will have 30 days to Issue an Order of Conditions, stipulating how the project is to be accomplished with respect to the wetland concerns. This Order is subject to appeal to DEP by abutters or other interested parties.

8.1.2 Site Plan Approval, Stow Planning Board. There are several aspects of the proposed developments which will likely trigger a requirement for Site Plan Approval with the Stow Planning Board, such as change in seating, change in use, change in lighting, and change in parking. The Site Plan Approval will require an application to the Planning Board and a noticed public hearing. The Planning Board will issue a record of decision after closing the public hearing.

8.1.3 Zoning Board of Appeals. It is not yet apparent whether the design of the Pine Bluff or Snow fields will require relief from Zoning regulations; however, one or both may. Any waiver or variance will trigger a filing with the Stow Zoning Board of Appeals and result in a noticed public hearing.

8.1.4 Miscellaneous Local Permits

Curb alteration. The project possibly involves modification of curb cuts/entrances off of Sudbury Street, Kingland Road, and Old Bolton Road, which we understand are local roads. The Town Engineer would be the permitting granting authority for this requirement.

On-Site Wastewater Treatment. Any modification to the on-site septic system at Pine Bluff or any new system proposed for Snow would require a Septic System Construction permit from the Stow Board of Health.

Building Permit. The construction of the concessions/rest room building will require a building permit. This will likely be “pulled” by the successful general contractor at the time of construction.

Well Permits. The development of on-site wells for either irrigation or potable water will require local permitting. The volume of water required (well less than 100,000 gallons per day) for irrigation will not trigger a state groundwater withdrawal permit requirement.

8.2 State Permits

At this point, it does **not** appear that the project would result in any state level permitting requirements. The possible exceptions are:

- **A DEP Superseding Order of Conditions** - if the local Order of Conditions from the Conservation Commission is appealed.
- **Massachusetts Environmental Protection Act (MEPA).** If the results of the intensive archeological survey at Pine Bluff results in its designation as a site of historical significance with the State Historical Commission, the development would require the preparation and filing of an Environmental Notification Form (ENF). Following the ENF review by the Secretary's office, a more comprehensive Environmental Impact Review (EIR) may be required.

8.3 Federal Permits

The project will require a permit application under the National Pollution Discharge Elimination System (NPDES) requirement and the Corps of Engineers Water Quality Certification. For these filings, the designer will need to prepare a Stormwater Pollution Prevention Plan (SWPPP). These permits will likely be issued under the general programmatic permit and not require public hearings or site meetings.

Section 9.0 – Maintenance Projections

Regardless of the athletic field expansion option the Town adopts, Snow plus Pine Bluff or Pine Bluff alone, the implementation of this Master Plan will result in the creation of some combination of synthetic and natural turf fields. Below is a very preliminary notional estimate of what is required to maintain each field by type.

9.1 Natural Turf Field Annual Maintenance Program

Task	Labor* (Man Days)	Materials**	Allowance
Winterize/Dewinterize/Repair Irrigation	3 MD	Parts	\$500.00
Provide Irrigation weekly, .5-1 inch		400,000 gal	\$2,500.00
Cut grass weekly x 20 weeks	10 MD	fuel	\$100.00
Stripe Fields weekly x 20 weeks	10 MD	lime	\$200.00
Fertilize per ITMP	2 MD	fertilizer, fuel	\$400.00
Aerate, top dress, overseed, PH Adjust	4 MD	loam, seed, fuel	\$200.00
General maint./fall & spring cleanup	<u>4 MD</u>	fuel	<u>\$200.00</u>
	33 MD		\$4,100.00

* Does not include supervisor time

** Does not include equipment capitol cost or depreciation

Based on this very rough estimate, the cost to maintain a high-quality natural turf athletic field annually is 33 Man Days x 8 hours per day x an assumed labor rate of \$24/hour, or \$6,336 plus \$4,100 in materials for a total of **\$10,436**. Each community is different, as are maintenance policies; however, this is a reasonable figure.

9.2 Synthetic Turf Field Annual Maintenance Program

Task	Labor* (Man Days)	Materials**	Allowance
Groom w/ Groomer 6 per year	3 MD	(groomer part of field cost)	
General maint./fall & spring cleanup	<u>2 MD</u>	fuel	<u>\$200.00</u>
	5 MD		\$200.00

* Does not include supervisor time

** Does not include equipment capitol cost or depreciation

Based on this very rough estimate, the cost to maintain a synthetic turf athletic field annually is 5 Man Days x 8 hours per day x an assumed labor rate of \$24/hour, or \$960 plus \$200 in materials for a total of **\$1,160**.

This limited analysis does not take into consideration the need to replace the carpet of the synthetic turf field at about year 14-16. The current planning figure is \$300,000 – \$400,000.

This limited analysis also does not take into consideration the maintenance savings on other fields in the community based on the amount of demand that can be shifted to the very durable, low maintenance synthetic fields.

9.3 Maintenance Conclusions. Assuming that these rough estimates are suitable for planning purposes, then the additional maintenance costs to the Town or user groups for each of the two strategies above are:

Course of Action 1 – Intensive Development of Snow and Limited development of Pine Bluff

Synthetic Turf at Snow	\$ 1,160
Natural Combination Field at Snow	\$10,436
Natural Baseball field at Pine Bluff	\$10,436
Natural Rectangular Field at Pine Bluff	<u>\$10,436</u>
	\$32,468/year

Course of Action 2 –Moderate Development of Pine Bluff

Synthetic Turf at Pine Bluff	\$ 1,160
Natural Baseball field at Pine Bluff	\$10,436
Natural Rectangular Field at Pine Bluff	<u>\$10,436</u>
	\$22,032/year

Section 10.0 – Overview of Synthetic Turf System Characteristics

Both courses of action anticipate the possible development of a synthetic turf combination field providing high-quality durable fields for baseball, soccer, lacrosse, field hockey and football in one footprint. The current generation of synthetic turf, called “In-Filled Turf” was first manufactured and patented by the company FieldTurf about 10 years ago, with the first such field in New England installed at UMASS Lowell in 1999 (designed by Gale). This generation of turf has fibers of polyethylene tufted into a 3-ply carpet backing which is then placed on a prepared stone base and anchored to a concrete curb which circumscribes the field. It is then top dressed with approximately 2 inches of sand and rubber crumb which affords the surface its footing and resiliency. See Enclosure 16 for synthetic turf cross sections and details. The primary advantages of this technology are high durability, low maintenance, environmental sensitivity, permanent markings, all-weather availability, improved safety, and immediate availability. The primary disadvantages are temperature and increased initial and replacement costs. This report will briefly discuss each of these attributes.

10.1 High Durability. It is well documented that a synthetic turf equals approximately 2.5 high quality grass field equivalents in terms of its ability to sustain use without degradation of the turf quality or safety.

10.2 Low maintenance. All of the intense maintenance requirements associated with well managed natural turf (mowing, striping, watering, fertilizing, etc.) are eliminated. The synthetic turf field comes with a specified groomer that can be towed by any truck or tractor. About once per month, the groomer is towed around the field to fluff up the fiber and level the infill.

10.3 Environmental Sensitivity. Because the synthetic turf requires no fertilizer or pesticides, it is considered by most to be more environmentally friendly than managed natural turf. Additionally, the USEPA has noted with favor that each field represents the recycling of some 12,000 tires. Finally, because the fields are not irrigated, there is a water savings of over 400,000 gallons per year (.5 inches applied over 100,000SF, weekly for 16 weeks).

Opponents of synthetic turf have recently raised questions of potentially dangerous leachate from the ground rubber crumb and possible health risks. There have been no studies that have demonstrated that under field conditions there are leachate or health risks. At Enclosure 17 is a compendium of technical papers addressing these questions which all conclude that these materials are inert under field conditions and pose no significant risk.

Gale provided the raw materials for several brands of synthetic turf to an independent testing lab at the request of the Town of Wayland, and had the Synthetic Precipitate leaching Potential Test (SPLP) performed in accordance with the EPA protocol to assess the long-term leaching potential of these systems. The test results of each product showed all

tested levels of contaminants at least 10 times below the state drinking water standard (Enclosure 18).

10.4 Permanent Markings. Fields may be permanently striped in various colors for between one and five sports. This eliminates the need for weekly striping of the fields and the resultant stripes are crisp and clear under all conditions.

10.5 All-Weather Availability. The fields are designed to drain vertically in excess of 16 inches per hour and can be played on during and immediately after a rain event without ponding or loss of footing. In the winter, they can be plowed with no effect on the 8-year warranty. These fields allow for practice and play a month earlier in the spring and a month later in the fall.

10.6 Immediate Availability. While no two sites are the same, the development of the synthetic turf field, from ground breaking to ribbon cutting, is typically 90 days. And once completed, it is immediately ready for use. This contrasts sharply from a seeded natural turf field where, depending on the time of the year seeding takes place, can take up to 18 months for satisfactory grow-in to allow for play.

10.7 Improved Player Safety. The previous generation of synthetic turf, the knitted nylon Astro-turf type surface, was known to be hard, abrasive like a brillo pad, and to have “foot lock” issues leading to knee and hip injuries. The current in-filled turf fields play like grass, and studies by leading sports medicine officials, the NCAA, and the NFL have concluded that it is as safe as a high-quality stand of natural turf. More importantly, it is much safer than a poorly maintained or broken down municipal field.

10.8 Increased Temperature. The in-filled synthetic turf fields tend to play somewhat hotter than natural turf fields. Each field that Gale has designed has had water couplings available close to the field to water it down if needed to mitigate the heat. Very few current field owners feel they need to cool the fields in this manner. In a recent survey of the owners of synthetic turf fields designed by Gale, 50% responded that they thought the heat differential was “no problem”, 50% responded it was a minor problem, and no one responded that it was a moderate problem, significant problem or severe problem. No respondent had seen or heard of a heat-related injury related to the turf.

10.9 Initial and Replacement Costs. Clearly, the most significant disadvantage of the new in-filled synthetic turf is initial cost. As a rule of thumb, these fields cost \$9 per square foot to construct with approximately \$5 of this cost attributable to the carpet and infill alone. Given a typical 90,000 SF soccer field installation, the initial development cost can be around \$800,000 at prevailing wage for public construction. The cost of a comparable, high-end irrigated, under-drained natural turf field is approximately \$350,000. Over the 14-16 year life cycle cost comparison of these alternatives, the synthetic turf option is still slightly more expensive despite the maintenance savings over natural turf. However when the durability is factored in, the cost per use greatly favors synthetic.



10.10 Conclusions Related to Synthetic Turf. The synthetic turf field is equivalent to over two high quality natural turf fields. It can sustain three times the use, be available under all weather conditions, provide a safer playing surface, limit irrigation water use, and reduce maintenance costs. Given the demands for playing fields in the Town of Stow and the limited space and resources available to develop those needs, the synthetic turf option may prove to be a good investment, and we recommend that it be given strong consideration in this instance.

Section 11.0 – Conclusions and Recommendations

As detailed herein, the existing athletic facilities in Stow are obsolete, non-accessible, and require intensive maintenance and severely limited use to maintain a reasonably healthy and safe stand of natural turf. They are insufficient in number to meet the current and future requirements of the Town. Town fields require general redevelopment to gain compliance with applicable codes, to make better use of available space, and better meet the needs of the Town. Unfortunately, there are numerous constraints to redevelopment of existing facilities other than Pine Bluff and the results are not cost-effective solutions.

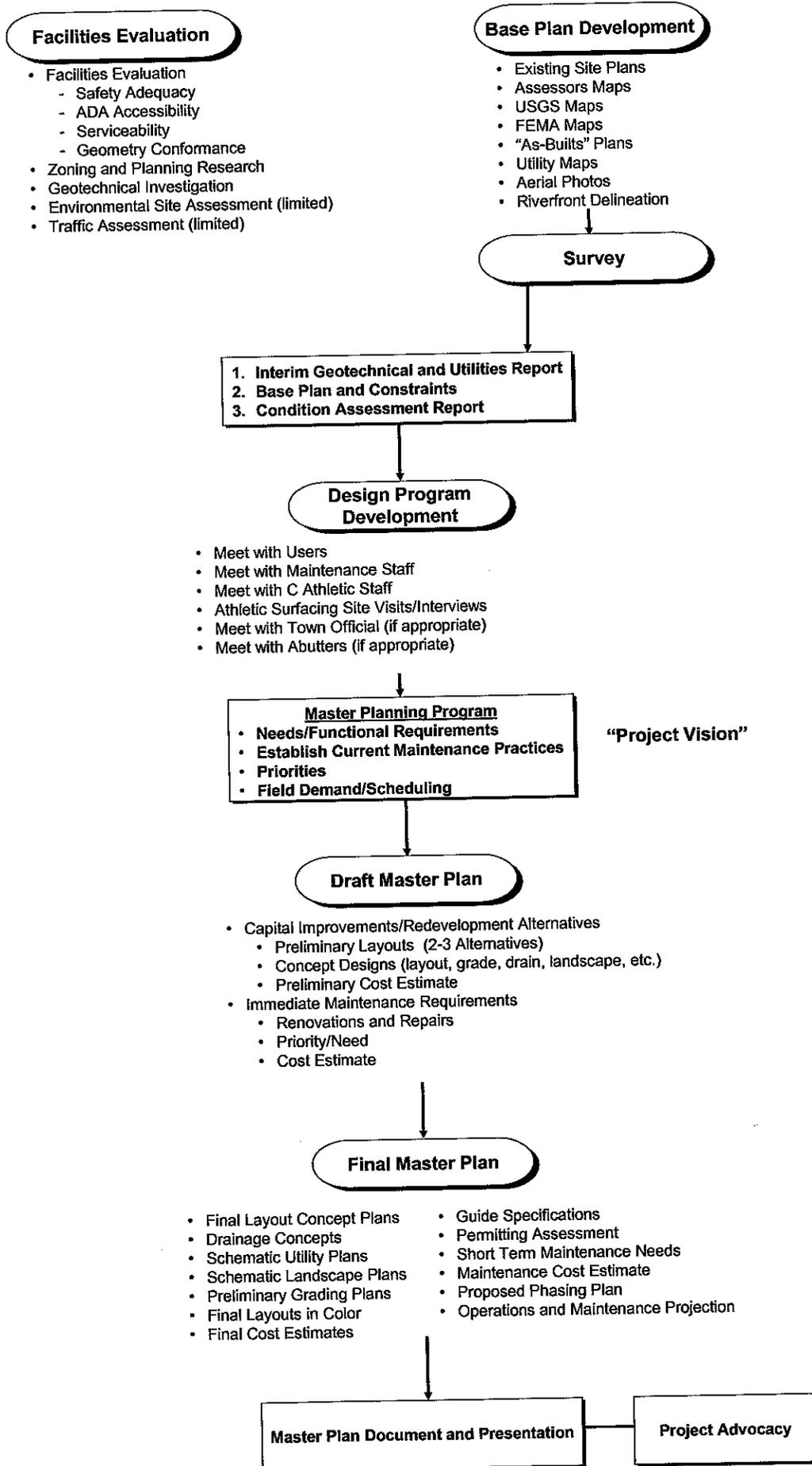
The Stow Athletic Field Master Plan detailed herein addresses these requirements and results in an arrangement of fields and facilities that will provide fully accessible, code compliant, geometry compliant, safe and efficient athletic and recreation infrastructure that will better enable the Town to meet its growing requirements. As reflected in the Demand Analysis Results Spreadsheet at Enclosure 13, with the addition of the fields proposed in this Master Plan under Course of Action 1, the field use rates fall within acceptable sustainable limits, assuming that the 60-foot Center diamonds remain in the mix.

If included, the resultant synthetic turf fields will be safer and extremely durable. It/they will provide an all-weather surface that will allow for significantly more use and will take the burden off other fields within the community. It will drain freely and require virtually no maintenance (water, fertilizer, pesticides, lime, aeration, top dressing, stripping, plowing, etc.), allowing for the diversion of maintenance resources to other fields.

The Master Plan provides a detailed project budget, phasing plan, schematic plan set, an estimate of maintenance requirements, and summary of permitting requirements that will provide a roadmap for the Town to achieve the intended Master Plan development.

Gale appreciates the opportunity to assist the Town with this planning effort and looks forward to future opportunities to assist with the Master Plan implementation.

PROJECT APPROACH



Site Options Review

The Stow Recreation Directors Working Group (SRDWG) has been studying the land/site options available to the town for the creation of additional active recreation facilities. This effort has been ongoing since October 2006. The review process has included the determination of the required land characteristics, review of the towns currently owned active and passive recreation land, review of land offered for sale to the town from the Board of Selectman's 2006 request for purchase of land for general municipal use and privately owned parcels identified by the SRDWG and others.

In mid-February with no other sites identified the SRDWG decided that the best parcels to pursue were the Pine Bluff Recreation Area (already owned by the town) and the Snow Property (a 13 acre flat, dry farm field that was offered to the town as a result of the Selectman's request to purchase land).

Determination of Land Characteristics:

Active recreation playing fields such as soccer fields and baseball diamonds require large, flat, dry parcels with adequate access. The geometry of the parcel must also be appropriate to fit large rectangle multipurpose playing fields. An example is an 11 v 11 soccer field which requires 350' x 220'. Efficient development and ongoing maintenance strategies dictate that multiple fields are clustered together. The aforementioned characteristics require a minimum useable area of at least 7 acres.

Active Recreation Land:

In light of over 2,000 acres of preserved open space within the Town of Stow, there is only 36 acres of active recreation land under the management of the Stow Recreation Commission. The 36 acres is split between two sites Memorial Field at Bradley Lane and the Pine Bluffs Recreation Area on Sudbury Road.

Memorial field is sited on a 5 acre parcel located in the center of town. This parcel is located at the end of Bradley Lane a narrow dead end road off of Rt. 117. The entire parcel is used. It is configured with a 11 v 11 soccer field and a 60' softball diamond. The parking area is shared with the town forest passive land and its hiking trails.

The Pine Bluffs Recreation area is sited on a 31 acre parcel located adjacent to Lake Boon. This parcel is accessed from Sudbury Road. The land was purchased by the town in 1975. Its use is limited to "recreation, playground and swimming". The site currently has a parking area, playground structure, 11 v 11 soccer field, small 6 v 6 soccer field, seasonal bathroom facility, and town swimming beach. There are approximately 22 acres unused. With exception of a small vernal pool the site is flat, dry and wooded.

Passive / Conservation Land:

The Town of Stow owns over 1,140 acres of open space conservation land. This land is under the management of the Conservation Commission. It's use is restricted to "passive recreation" only. This does not allow for any organized team sport activities. There is also an additional 1000+ acres of private, state and federally owned land located in Stow. The SRDWG has considered the conversion of "passive use restricted land" for active recreation. Discussions with members of Open Space and Conservation Commission committee has lead the SRDWG to consider options of other than passive land conversion.

Private Land:

A number of parcels of land were identified by the SRDWG, citizens, and land owners. The Crow Island parcel was not formally offered to the town to purchase. The owner did casually offer to sell the land for \$2M. With exception of Crowe Island located within the Assebet River, the other parcels were not for sale, offered for lease/rent or not available for use. The SRDWG is looking to fund a majority of the development of the recreation facilities through the use of Community Preservation Act funds, Massachusetts Executive Office of Environmental Affairs Urban Development Self Help Grant Funds and other sources that can not be used on land not "owned" by the town. In some cases deed restrictions are required to be added.

Future Land Opportunities:

Although two parcels, Pine Bluff Recreation Area and Snow Property, have been identified, the intended development either one or both of these parcels will not fulfill the current or projected future need for additional recreation facilities. The SRDWG will continue pursue future land that becomes available.



RECREATIONAL MASTER PLAN TOWN OF STOW

STATEMENT OF SCOPE

The goals of this project are:

- To review the Town's requirements as defined by the RFS Committee for athletic and recreation facilities currently, and in the future.
- To provide preliminary master planning, resulting in a well-integrated development plan for the King Land Recreation Complex (KRC) parcel site that best meets the needs of the community.
- To evaluate the feasibility of and to prepare schematic level master plans for the use of the parcel for expanded facilities.

This project would be completed in five phases as follows:

- Phase 1 - Background Investigation and Base Map Development
- Phase 2 - Site Investigation
- Phase 3 - Community Outreach and Facilities Program Development
- Phase 4 - Schematic Planning
- Phase 5 - Master Plan Development

Phase 1 - Background Investigation and Facilities Assessment and Base Map Development

Project Startup meeting. Gale will conduct an initial meeting with the RFS working group to review the final project scope, planning milestones, and to introduce the project team within 1-2 weeks of a notice to proceed. We will also begin the design program development, at this initial meeting.

Background Investigation. Gale will collect and review information bearing on the proposed development to include previous studies and surveys that have been performed, zoning, planning, health, and conservation regulations that may apply, and other related materials. Further, we will review applicable portions of the MA State Building Code and Americans with Disabilities Act, and the local and state permit requirements.

Assessment of Existing Facilities and Requirements. Gale will conduct a limited facilities inventory and condition assessment of the existing athletic facilities within the Town (e.g. Pine Bluffs and Bradley) to gain a general understanding of the current constraints and needs within the Town. This inventory will generally assess the current athletic facilities and conditions. Given the funding available and primary focus of this study (a Master Plan for KRC), this inventory will not include an in-depth assessment of



each venue, but rather a general assessment of available facilities and will be based largely on input from RFS and user groups.

Base Plan Development. Also during this initial phase, we assume the Town will assist Gale to compile information pertinent to the project as may be available, and Gale will develop a working base plan for the Complex in AutoCAD 2006 based on information provided by the Town and otherwise reasonably available. This will include, but not be limited to, site plan information available, surveys by others, assessor's maps, Stow GIS data (if any), USGS maps, FEMA floodplain maps, and any "as built" drawings for existing drainage and utility systems within the KRC and Snow Property (SP) parcels.

Using the available information, we will develop an existing conditions base plan for the parcels in AutoCAD 2006, suitable for Master Planning purposes. This base map will not include property line or easement research or topographic survey, nor will it include actual wetlands delineation/flagging or surveyed topography. These services will be required subsequently for detailed design and preparation of construction/bid documents.

Phase 2 – Site Investigation

Wetlands Assessment. Our wetlands specialist will provide a preliminary evaluation of the site's environmental resource area constraints as they bear on site redevelopment at both the KRC and SP parcels. This will include a site visit to generally sketch wetland resource area boundaries. We will generally assess the likelihood of critical habitat, vernal pools, and other sensitive environmental resource areas. Floodplain elevations will be based on existing FEMA mapping. This Scope of Services will not result in an actual delineation of the wetlands, (hanging flags, and location by survey) that will be required in the preparation of actual permitting plans in the future.

Utilities Study. Gale will assess existing utilities (electric, gas, wastewater, drainage, and water) as may exist within the parcels and within adjacent roadways, based on record locations and aboveground appurtenances. We will obtain and review record information related to the existing on-site system at the Pine Bluffs Recreation Area from the Board of Health.

Preliminary Traffic Assessment. Gale will provide a preliminary assessment of traffic implications for the proposed development. We will review any reasonably available traffic studies for other development in the area, and review available data from MassHighway or the Town related to local ADT and levels of service as may be reasonably available.

Based on the anticipated development scenarios, we will estimate additional peak hour trip generation and parking requirements. For both development scenarios, we will evaluate adequacy of parking, traffic and pedestrian movement, emergency vehicle access, and truck turning radii as appropriate.



Phase 3 - Program Development and Community Outreach

We will conduct a meeting with Town officials and user groups to refine the needs of the community and the associated priorities. We will meet with school and league officials to evaluate youth demographic trends and athletic team requirements. We would meet with various user groups as designated by the Town to include, as applicable, Youth Sport Boards such as Pop Warner, Babe Ruth and Little League, Youth Soccer, Youth Lacrosse, and others as appropriate. For purposes of this proposal, we assume that this can be accomplished in one evening meeting.

The intent of this meeting is to establish current demand on athletic facilities, identify shortfalls, establish priorities, verify desired field geometries, and desirable amenities (e.g., required on-site storage). We would evaluate the need for site improvements such as seating, site lighting, sports lighting, irrigation, concessions, public toilets, turf types, fences, etc. We will evaluate field requirements by user, how they are being met, and shortfalls. We assume that each user group representative will provide a summary of their program, growth trends, current field requirements, and unresourced field requirements, preferably in hard copy.

Based on the results of this initial round of programming/community outreach meeting, Gale would produce a design program tabulation with prioritized functional requirements for this site. We would look for the Town to review and concur with this design program prior to the development of design schematics.

This Scope of Services does not include a Town-wide needs assessment survey. Gale can provide such a survey if required for an additional fee to be determined.

Phase 4 - Schematic Design Development and Cost Estimates

Based on our background investigation, site assessment, base plan development, and community outreach/program development efforts, Gale will prepare up to two (2) schematic concept layouts for the Stow athletic facilities improvements, one for the KRC only scenario, and one for the KRC plus SP scenario. Gale will develop a preliminary site layout plan for the parcels to address demand shortfalls, the need to rest fields, access and safety issues identified, and the need for future growth. These will each reflect the proposed layout of athletic facilities to include: hard courts surfaces, multipurpose athletic fields, the types and locations of baseball/softball fields, parking provisions, on-site storage and site amenities, signage, site lighting (if any) and other significant site features.



The alternate layout plans for the Complex may be generally based on the following criteria:

- Orientation of the fields in consideration of prevailing winds and sun
- Orientation of the fields so as to maximize the use of available space and meet projected demand and priorities
- Optimal traffic flow (both pedestrian and vehicular); provide supplemental/overflow parking for special events (e.g., soccer tournaments)
- Sensitivity to environmental concerns; provide wetlands mitigation and replication as required (if any)
- Cost effectiveness and efficiency of the proposed redevelopment layout
- Optimal use of available space to meet demands such as redundant use of fields (e.g., one full size layout field meets the standard for two youth soccer fields in the transverse direction)
- Preservation of options for future development such as future site buildings
- Enhanced aesthetics throughout the site consistent with the character of the Town
- Localized and general drainage improvements; improvement of stormwater management practices
- Designation of landscape buffers to mitigate off-site impacts (noise, light, trash, and trespassing)
- Development of sufficient field space and a maintenance regimen that allows for resting fields during the fall or spring growth period.
- Development of site amenities to include spectator seating, storage, rest rooms, concessions, pavilion, etc.
- Provision of miscellaneous site equipment such as goals, trash receptacles, score boards, benches, bollards, etc.)
- ADA accessibility throughout
- Compliance with applicable governing body, state and federal geometry standards for fields
- Development of hardscape facilities (tennis and basketball, deck hockey, etc.) as called for in the program
- Engineered turf and rootzone design specific to the site and maintenance and use strategies
- Consideration of one or more multi-purpose fields incorporating synthetic field
- Identification of potential passive enhancements at the parcel such as eco-trails with interpretive signage
- Improvements to both site lighting and athletic lighting
- Irrigation facilities, possible well development
- Upgrade to required utilities (sewer, water, electricity)

The advantages and disadvantages and associated costs of each item alternative will be provided.



Phase 5 - Master Plan Development

Following the development of the athletic complex layout alternatives, Gale will meet again with RFS and designated user groups to present our preliminary findings and recommendations, and to obtain feedback and direction for the preparation of the final layouts (one meeting).

Based on the comments received and consensus layout, Gale will finalize the Master Plan layouts, cost estimates, product selections, etc. Cost estimates will be based upon data collected from having publicly bid over a dozen athletic and recreation redevelopment projects in just the past year. Estimates will include an estimate of "soft costs" for final engineering, survey, permitting and construction administration.

We will then consider the phasing of the Master Plan implementation. Phasing will consider priority of need, the need to keep a number of sites fully functional at any given time, and fiscal constraints. The phasing plan will clearly define the scope of the initiating project.

Based on the layout and phasing, Gale will define a permitting scenario which identifies the required permits, the filing requirements (to include filing fees), the likelihood of success and a permitting timeline.

Gale's final submission will be a bound Master Plan that will include the following deliverables:

- A compiled existing conditions base plan and constraints mapping for the Complex, based on information provided by the Town
- Photo documentation describing current conditions of KRC and SP
- A discussion of KRC and SP
- A discussion of KRC and SP environmental constraints
- A design program which identifies functional requirements and priorities
- A colored layout redevelopment plan for the Complex (computer, plan view only)
- A phasing plan for each project and project timeline for the Complex
- A cost estimate and breakdown for the Complex (by phase)
- A permitting requirements list and strategy



Note:

1. Based on the proposal fee, this Master Plan study will not address specific recommendations for the redevelopment of existing recreational facilities elsewhere in the Town, nor will it address the development potential of other parcels within the Town.
2. While we will check with the local and state historical agencies and determine if the site has known historical/archeological significance, this Scope of Services does not include an archeological study or survey.
3. This Scope of Services does not include:
 - a. A formal traffic study.
 - b. Topographic or property line study.
 - c. A geotechnical investigation.
 - d. A wetlands delineation or habitat study.
4. This study will not result in actual permitting or construction documents.



Photograph 1: View of Pine Bluffs Field, large wet depression in the middle field. The home in the background is on the opposite side of Sudbury Road.



Photograph 2: View of low saturated depression in the middle of Pine Bluffs soccer field.



Photograph 3: View of Kingland Rd.



Photograph: 4 View of Memorial Field at Bradley Lane



Photograph 5: View of the Center School playground and Fields and background.



Photograph 6: View of Hale School Field, foreground show the change in grade.



Photograph 7: View of “Pompo” fields. The background is the 6 vs. 6 field which is used regularly by Stow Soccer. The foreground is the 6 vs. 6 field which is used during extremely dry conditions.



Photograph 8: “Pompo” Field note the jurisdictional buffer between the fields and on the left hand side of the fields.

Asabet Valley Little League
Summary Table

Field	Type	Physical Limitations	Location	Condition	Usage	Availability	Slots Per Week
DJ's	60' Baseball	None	Maynard High School (Maynard)	Excellent	Major baseball	After 5pm weekdays; most weekends	15
Keenan	60' Softball (skinned)	None	Maynard High School (Maynard)	Excellent	Major softball	After 5pm weekdays; most weekends	15
Tennis Court	60' Baseball	No outfield fence; outfield grass requires work every spring after freshman football season	Maynard High School (Maynard)	Fair	Minor baseball	After 5pm weekdays; most weekends	15
New Fowler	60' Baseball/Softball Hybrid (grass infield)	No outfield fence; use with Mayard Middle School softball	New Fowler Middle School (Maynard)	Fair	Minor baseball	After 5pm weekdays; most weekends	15
Coolidge	60' Softball (pebbled infield)	No outfield fence; pebbled surface prevents sliding	Coolidge School (Maynard)	Poor	Farm softball	After 5pm weekdays; most weekends	15
T-Ball fields	90' Diamond/Multi-use open grass	Unmaintained; Incorrect field dimensions; no fencing on secondary open field diamonds	Maynard High School (Maynard)	Poor	T-Ball	After 5pm weekdays; most weekends	30
Hale	60' Softball (skinned)	No outfield fence; No outfield fence; incorrect field dimensions	Hale Middle School (Stow)	Good	Minor and Farm baseball	After 5pm weekdays	5
Center Left	90' diamond baseball	incorrect field dimensions	Center School (Stow)	Poor	Farm baseball	After 5pm weekdays	5
Center Right	60' baseball	No outfield fence; no dugout fencing	Center School (Stow)	Poor	Farm baseball	After 5pm weekdays	5

¹ Weekdays after 5pm allow for a single 2 hour slot. Weekend days allow 5 for 2 two hour slots (8am-10am; 10am-12pm; 12pm-2pm; 2pm-4)

Division	Games Per Week	Practices Per Week	Team Slots Per Week	Teams	Division Slots Per Week	Fields Used	Slots Available	Difference
Major Baseball	2	2	3.25	5	16.25	DJ's	15	-1.25
Major Softball	2	2	3.25	5	16.25	Keenan Tennis Court/New	15	-1.25
Minor Baseball	2	2	3.25	12	39	Fowler/Hale ²	32.5	-6.5
Farm Baseball	2	1	2.25	13	29.25	Center/Hale ³	12.5	-16.75
Farm Softball	2	1	2.25	5	11.25	Coolidge	15	3.75
T-Ball	2	0	1.25	10	12.5	T-Ball Fields	30	17.5

² Two teams share a field during a game only so each game only requires 1/2 a slot. In order to have slots to make up rainouts we assume one out of every four games is rained out. We do not make up rained out practices.

³ Split Hale between Minor and Farm baseball

Notes

1. T-Ball and Farm softball are the only fields which can support the number of teams we have scheduled to play there.
2. We cannot use the surplus of field slots on Coolidge and the T-Ball for other divisions because of the poor field conditions.
3. The shortfall in the other divisions totals 25.75 2-hour slots.
4. Assuming a full-time field provides 15 2-hour slots per week, AVLL last year could have fully used 2 more full-time fields.
5. These are 2006 numbers and do not account for growth.
6. AVLL typically grows around 5% each year, although we have had spikes as high as 10%.
7. The greatest shortfall in fields occurs in the Farm baseball division. We deal with this by not scheduling practices during the season. This is unfortunate because the Farm level is where children could benefit most from practice.
8. Stow accounts for 46% of the children in the Assabet Valley Little League.
9. Stow provides 12.5% of the field time available to AVLL.

Soccer

	<u>Munchkins</u>	<u>Transitions</u>	<u>U8</u>	<u>U10</u> <u>BOYS</u>	<u>U10</u> <u>GIRLS</u>	<u>U12</u> <u>BOYS</u>	<u>U12</u> <u>GIRLS</u>	<u>U14</u> <u>BOYS</u>	<u>U14</u> <u>GIRLS</u>	<u>U16</u> <u>BOYS</u>	<u>U16</u> <u>GIRLS</u>
Age	4-5	5-6	6-7	8-9	8-9	10-11	10-11	12-13	12-13	14-15	14-15
Sex	M/F	M/F	M/F	M	F	M	F	M	F	M	F
# Teams	1	1	10-11	6	6	2	3	1	1	1	1
# of Players	60	60	110	60	60	30	42	18	18	18	18
Season Length	8 weeks (Fall& Spring) + 8 week summer leagues										
Season Played	2 + summer league										
Projected Growth (5 yrs)	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Past Growth (5 yrs)	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Present Field Uses and Locations (Games)	Pompo	Center	Center/ Pompo	Pine Bluff							
Practices	n/a	n/a	Pompo/Center/Pine Bluff/Bradley								
Field Size	55x70 yds		50x60 yds			55x70 yds		60x100 yds			
Field Condition	Poor										
Field Amenities	None										

Multiple Camps Throughout Summer at Pine Bluff

Adult Pick-up Games April-October at Bradley or Pine Bluff

Bradley and Pine Bluff also support MAPLE soccer practices and matches, and women's league soccer

Men's Softball

Age		Adult
Sex		Men
# Teams		16
# of Players		160
Season Length		May-Labor Day
Season Played		Summer
Projected Growth (5 yrs)		None - At Max Capacity
Past Growth (5 yrs)		None - At Max Capacity
Present Field Uses and Locations		Memorial Field on Bradley Lane
Field Size		60 Ft. Diamond
Field Condition		Poor
Field Amenities		Backstop

Nationally Mens Softball grows at a rate of 5 to 7%.

Women's Soccer

	Over 30	Over 40
Age	30+	40+
Sex	Women	Women
# Teams	1	1
# of Players	15	15
Season Length	10 weeks	10 weeks
Season Played	spring/fall	spring/fall
Projected Growth (5 yrs)	none	none
Past Growth (5 yrs)	none	none
Present Field Uses and Locations	Pine Bluff	Pine Bluff
Field Size	11v11	11v11
Field Age	13 yrs	13 yrs
Field Condition	poor	poor
Field Amenities	none	none

Club Soccer

Bandits

	Games		Practices
Age	Youth		Youth
Sex	Boys and Girls		Boys and Girls
# Teams	6		3
# of Players	60		30
Season Length	10 Weeks		10 Weeks
Season Played	Spring and Fall		Spring and Fall
Projected Growth (5 yrs)	NA		NA
Past Growth (5 yrs)	NA		NA
Present Field Uses and Locations	Memorial Field at Bradley Lane		Pompositicut School
Field Size	11 v 11		11 v 11
Field Condition	Poor		Poor

Games on Sunday, noon to 6 PM Games on Sunday, noon to 6 PM

Practice at Pompo Saturday morning Practice at Pompo Saturday morning 11:30 to 2:30 (3 teams)

Babe Ruth

	Spring	Summer	Fall
Age	13-15	13-18	13 - 18
Sex	M	M	M
# Teams	5	5	2
# of Players	65	65-70	30
Season Length	3 months	3 Months	2 months
Season Played	Spring	Summer	Fall
Projected Growth (5 yrs)	10-15 players per year	None	none
Past Growth (5 yrs)	Added 2 expansion teams 24-28 players	60 - 65 players	30 players
	Crowe Park - Maynard	Crowe Park - Maynard	Crowe Park - Maynard
Field Size	90 ft diamond	90 ft diamond	90 ft diamond
Field Age	15 years	15 years	15 years
Field Condition	O.K	O.K	O.K
Field Amenities	Concession stand, Porto-Pot, Batting Cage	Concession stand, Porto-Pot, Batting Cage	Concession stand, Porto- Pot, Batting Cage

One field in Maynard. Servicing both Maynard and Stow. Constant use 9 AM to 6 PM most weekends and near constant use weekdays during the summer.

The summer program consists of 4 Lou Tomkins All Star Teams (13 yr old, 13/14 year old, 15/16 year old & 16 -18 year old) and one Babe Ruth team for the players who do not make the all star team. Crowe Park is used 7 days a week for practice and games. Maynard hosted 2 Lou Tomkins tournaments last year and will probably host them again this year. Crowe Park does not get any rest from the end of March to the first of November. We are hoping to use the middle school field this summer because of possible scheduling conflicts but their field isn't in the greatest shape.

The fall league consists of 2 teams (13-15 & 16-18). They play their games on weekend days and the field isn't really used during the week for practice.

Lacrosse

	Development	U11 Boys	U13 Boys	U13 Girls	U15 Boys	U15 Girls
Age	U9	Grade 3,4	Grade 5,6	Grade 4,5,6	Grade 7,8	Grade 7,8
Sex	Boys	Boys	Boys	Girls	Boys	Girls
# Teams	1	2	2	1	3	1
# of Players	16	45	43	16	57	14
Season Length	12 -14 weeks	12 -14 weeks	12 -14 weeks	12 -14 weeks	12 -14 weeks	12 -14 weeks
Season Played	Spring	Spring	Spring	Spring	Spring	Spring
Projected Growth (5 yrs)	100	100	100	200	100	200
Past Growth (5 yrs)	NA	NA	NA	NA	NA	NA
Present Field Uses and Locations	Bolton	Bolton	Bolton	Bolton	Bolton	Bolton
Fall Ball	--	25	35	--	40	--

Fall Ball (fall 2006 was first season, all played in Bolton at Tower field)

Adult leagues play in Sudbury at Lincoln/Sudbury High School

Current Field Needs Assessment

Program	Number Participants	Percent Stow	Teams	Weeks	Events Per Week	Scheduled Team Uses	Projected Growth	Projected Tm Uses	Town Share	Current Fields	Tm Use Availability	Deficit	Required Fields*	Program Recommend
Lacrosse	225	50%	10	14	3	420	50%	630	315	0	0	-315	-1.3	1-2 fields
AVLL	580	50%	54	14	3	2268	5%	2381	1191	3	750	-441	-1.8	1-2 fields
Soccer	624	100%	45	24	2	2160	5%	2268	2268	5	1250	-1018	-4.072	3-4 fields
Babe Ruth	160	50%	12	32	1.5	576	5%	605	302	0	0	-302.4	-1.2096	1 field
Adult Softball	160	100%	10	14	1.5	210	5%	221	221	1	250	none	no change	no change
											(does not consider use of rectangular field)			
Totals	1749		131			5634		6104.7						

Assumptions:

1. The Town intends to provide the prorated share of field space based on percent of Stow participants
2. The (2) 60-ft diamonds at Center remain as part of field inventory, long term.
3. The fields are properly maintained and can sustain 250 scheduled team uses per year.



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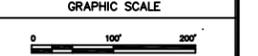
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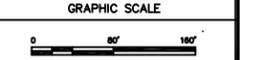
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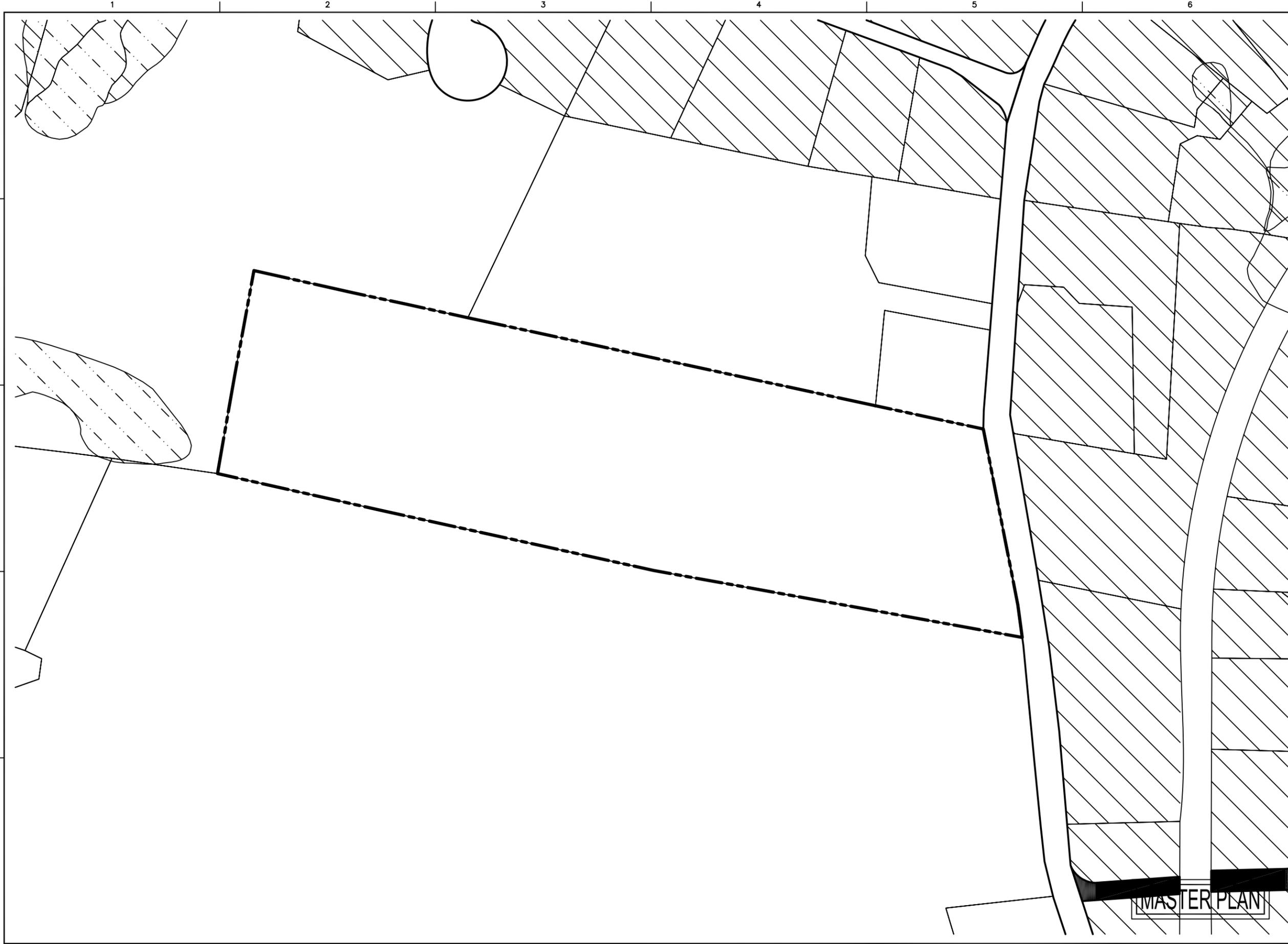
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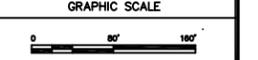
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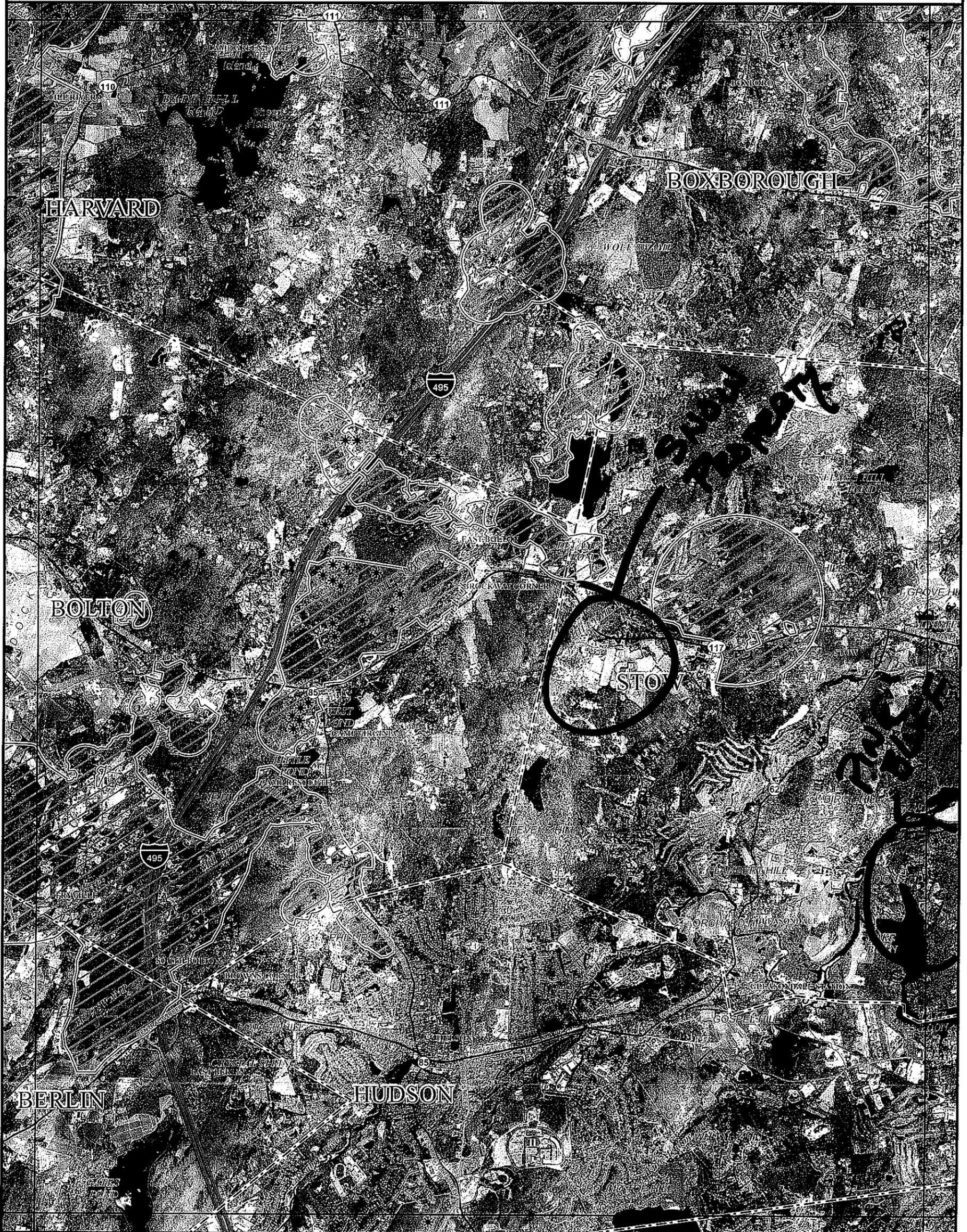
Priority Habitats and Estimated Habitats - Effective October 1, 2006

Priority Habitats for use with the MA Endangered Species Act Regulations (321 CMR 10)

Estimated Habitats for use with the MA Wetlands Protection Act Regulations (310 CMR 10)

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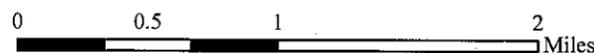
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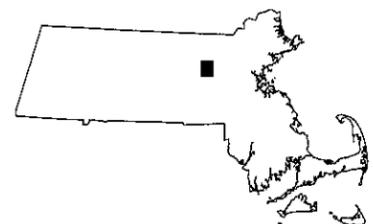
 **Priority Habitat of Rare Species**

 **Priority Habitat of Rare Species and also Estimated Habitat of Rare Wildlife**

*** Certified Vernal Pool (as of July 14, 2006)**



Hudson Quad





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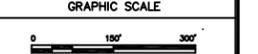
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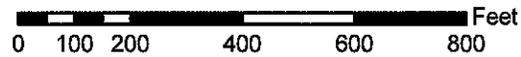
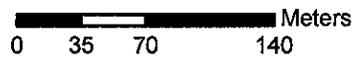
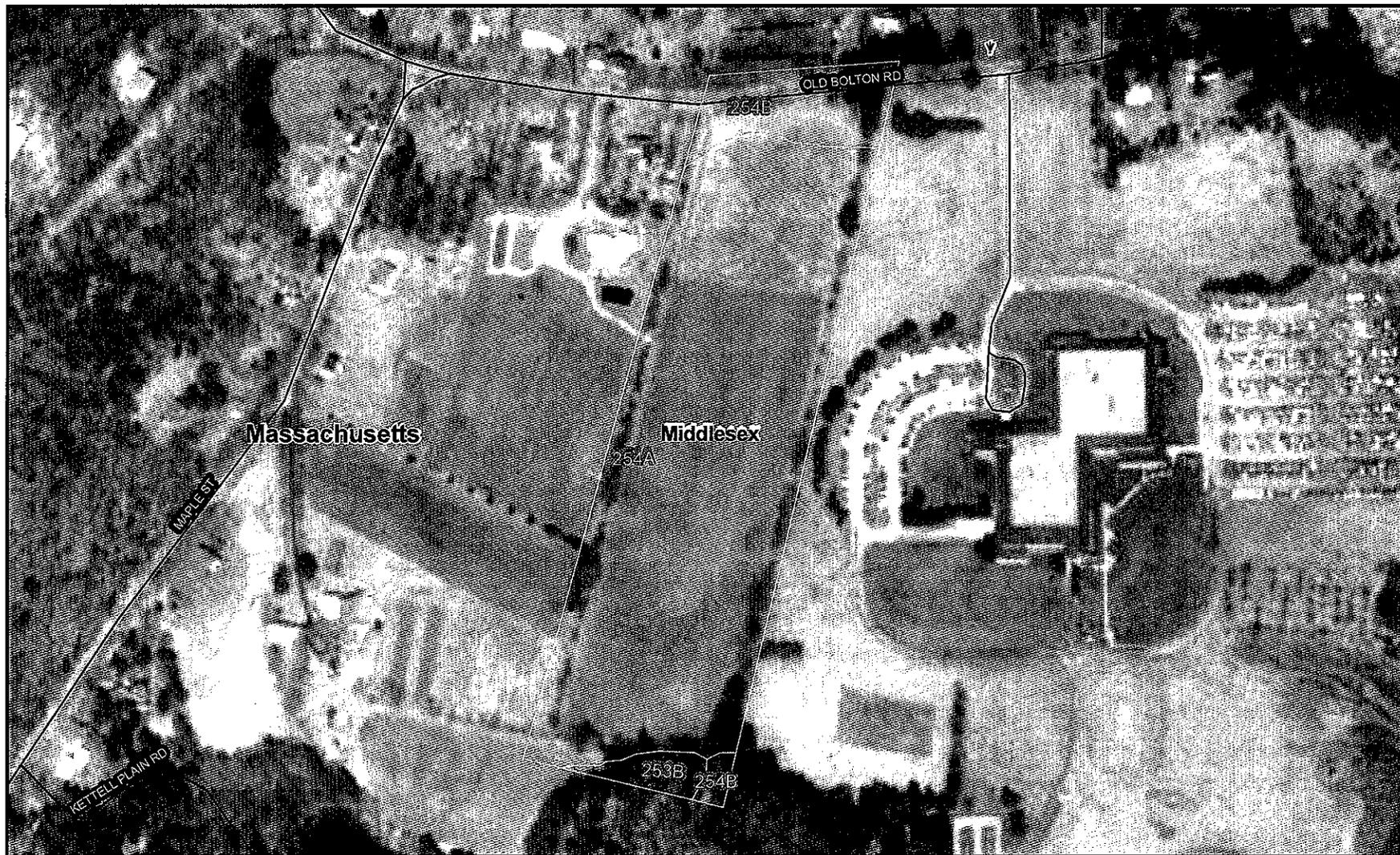
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MASTER PLAN

SOIL SURVEY OF MIDDLESEX COUNTY, MASSACHUSETTS

SNOW PROPERTY



Map Unit Legend Summary

Middlesex County, Massachusetts

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
253B	Hinckley loamy sand, 3 to 8 percent slopes	0.4	2.7
254A	Merrimac fine sandy loam, 0 to 3 percent slopes	14.0	86.4
254B	Merrimac fine sandy loam, 3 to 8 percent slopes	1.8	10.9



Priority Habitats and Estimated Habitats - Effective October 1, 2006

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Estimated Habitats for use with the MA Wetlands Protection Act Regulations (310 CMR 10)

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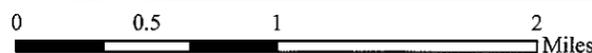
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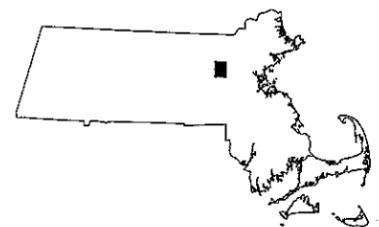
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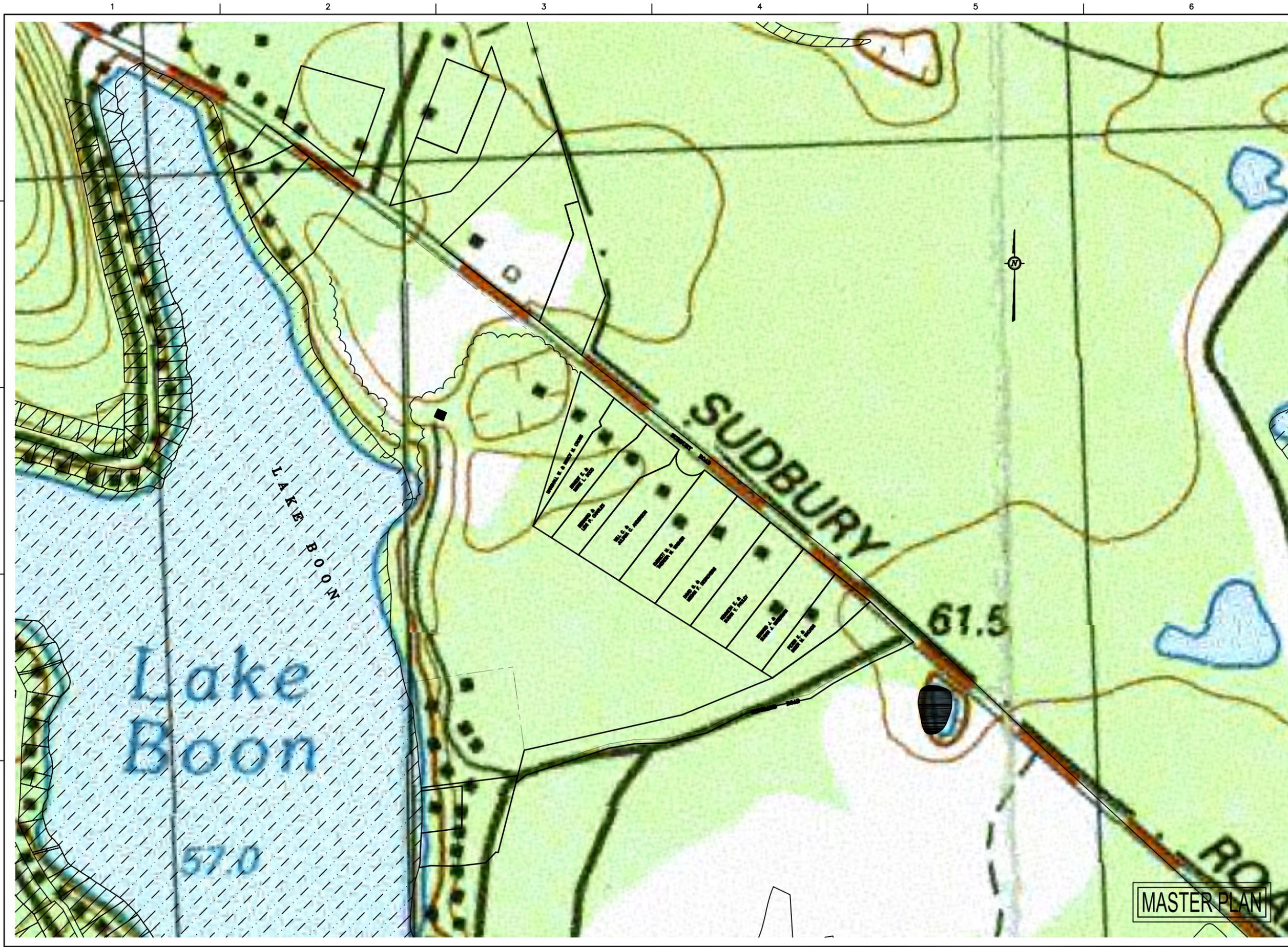
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p.65	p.66		p.68	p.69
p.87	p.88	p.89	p.90	p.91

	Priority Habitat of Rare Species
	Priority Habitat of Rare Species and also Estimated Habitat of Rare Wildlife
*	Certified Vernal Pool (as of July 14, 2006)



Maynard Quad





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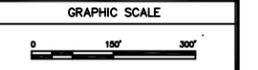
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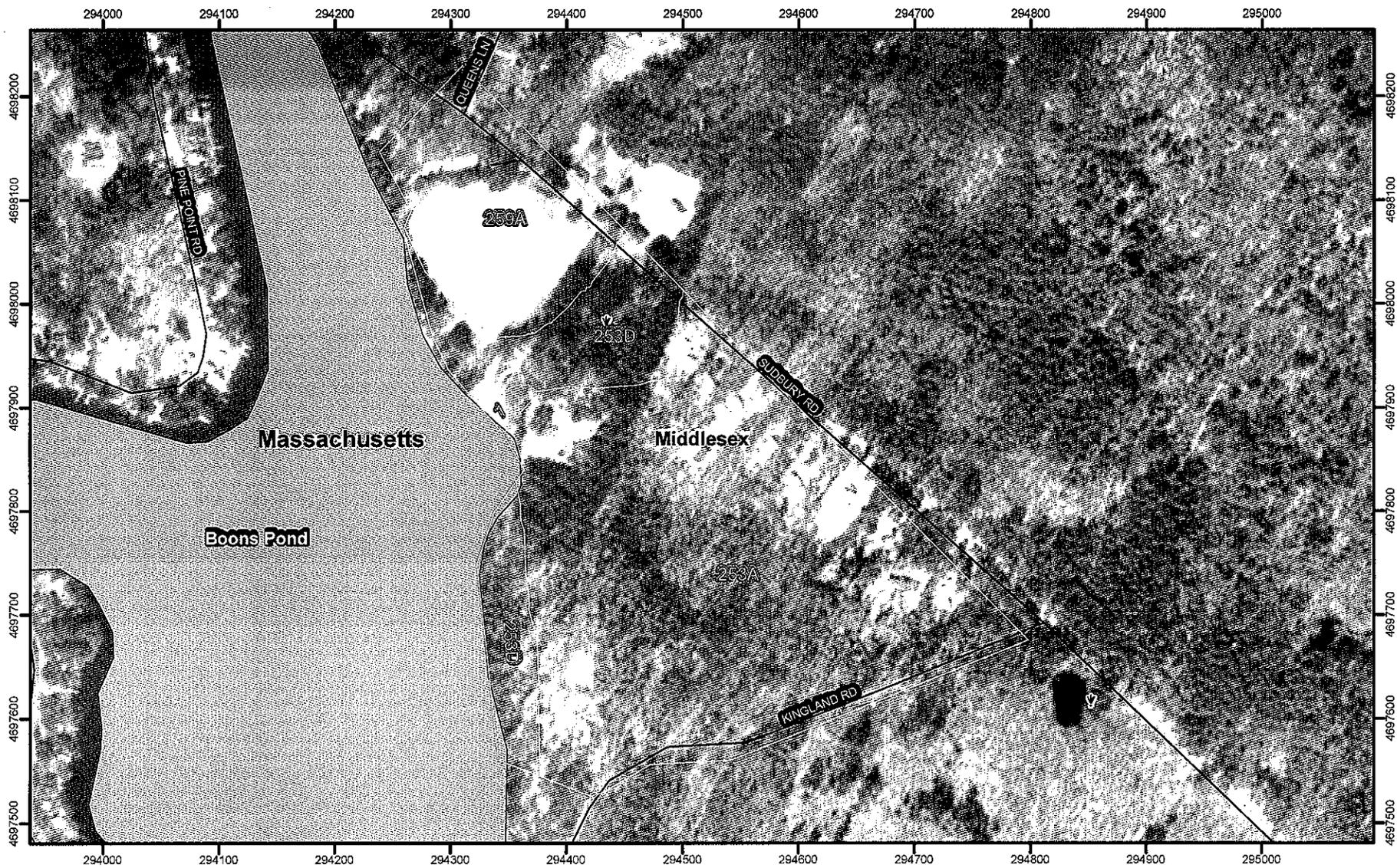


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SOIL SURVEY OF MIDDLESEX COUNTY, MASSACHUSETTS

PINE BLUFF



0 50 100 200 Meters

0 150 300 600 900 1,200 Feet

Map Unit Legend Summary

Middlesex County, Massachusetts

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1	Water	0.3	0.6
253A	Hinckley loamy sand, 0 to 3 percent slopes	33.2	66.0
253D	Hinckley loamy sand, 15 to 25 percent slopes	8.2	16.2
259A	Carver loamy coarse sand, 0 to 3 percent slopes	8.6	17.1

Findings from the Review
of the
Snow Property
Located on Old Bolton Road



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Zoning, Chapter Status, Restrictions/Encumbrances:

Lot Size and Dimensions:

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Soil Review:

Soil Type:

Soil Drainage:

Ground Water:

Soil Based Construction Data:

Topography:

Aesthetics:

Adjacent Property:

Current Use:

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Map with Map and Parcel Information and Dimensions _____ Page-6

Appendix-B,

Surficial Geology –

USGS Hudson/Maynard Quad Surficial Mapping, 1956 _____ Page-7

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Photographs _____ Page-9

Appendix-D,

Chapter-61 Land Map _____ Page-13

Introduction:

Per request of the Stow Board of Selectman the following group was formed to review the Snow Property located on Old Bolton Road, Map/parcel number R3-18:

- Eric Bachtell.....Stow Housing Partnership
- John Sangermano.....Stow Recreation Commission
- Steve Dungan.....Board of Selectman
- James Wheeler, PE.....Stow Resident, Geotechnical Engineer

The group compiled and reviewed maps and soils information. A walk of the land was done on February 7th, 2006. This document was created as a compilation of the data and observations.

Summary:

- The land is cleared and flat, thus making most forms of development an easier task.
- By both map based soils analysis and a site visit the land can be seen to drain easily and should provide excellent percolation rates to support a septic system if needed.
- The proximity to a known aquifer and data regarding surrounding water sources should mean that a good water supply is readily available.
- Access to the site is very good. Old Bolton Rd. in the area of the site is wide with a large, flat, shoulder area and seems to be able to support added traffic. The site is located in very close proximity to Rt. 117 – Great Rd.
- The group did not find anything problematic with the Snow site.
- The property could be easily developed for a multitude of purposes such as municipal uses, recreation, affordable housing, continued farming, etc.

Findings:

Location:

The property is located ¼ of mile from the intersection of Old Bolton Road and RT. 117 Great Road. It is on the south side of the road adjacent to the Bose property. It is represented on the Assessors Map page R-3, parcel-18. The entire parcel is visible from Old Bolton Road. Old Bolton road is paved, sufficiently wide for vehicles to pass, is straight and flat in the area of the Snow Property.

Zoning, Chapter Status, Restrictions/Encumbrances:

The entire parcel is Residentially Zoned. It is not under Chapter-61. There was no deed or title search performed as part of this review and therefore there is no information regarding restrictions or encumbrances.

Lot Size and Dimensions:

The parcel is 13 acres in size.
It is rectangular in shape and is approximately 385 feet wide by 1475 feet long.
See Appendix-A, Map with Map and Parcel Information and Dimensions for details

Soil Review:

A Surficial Geologic Map was reviewed and the information presented on the map was confirmed during the site visit.

Soil Type: Based on this information, it is anticipated that the subsurface soils at the site consist primarily of clean, fine to coarse sand, with some cobbles noted particularly in the north half of the site. The coarser grained soils noted at the north end of the parcel corresponds with the fact that historically, a sand and gravel operation was conducted on this portion of the site along Old Bolton Road as shown on the soils map.

Soil Drainage: These granular soils, deposited as part of a glacial lake delta (Kame Terrace), are quite permeable and are well suited for on-site septic disposal.

Ground Water: Based on the surface water elevations at the Hiley Brook wetland area to the north and the wetland area and irrigation pond to the southwest of the parcel, it is anticipated that the groundwater levels at the site may be anticipated to be 10 to 20 ft. below ground surface. In addition, based on the parcel's location, close to these water sources, it is anticipated that the sand and gravel deposits beneath the site and the adjacent wetlands comprise an aquifer layer that should ensure a reliable source of groundwater.

Soil Based Construction Data: From a construction standpoint, it is important to note that the site has already been cleared and is relatively flat and should therefore not require significant grading. In addition, excavation should not be anticipated to encounter near surface bedrock.

See map, Appendix-B, Surficial Geology – USGS Hudson/Maynard Quad Surficial Mapping, 1956 for details.

Topography:

The land is flat. There is a small depression about 2/3 into the depth of the parcel as viewed from Old Bolton Road. The parcel was visited following a week of rain and snow melt. There was no visible standing or flowing water on any area.

Aesthetics:

The parcel is bordered on all sides by nicely stacked, straight, fieldstone walls. It is an open field with recently tilled soil from its' current farming use. There are mature trees and brush along the perimeter of the property. See Appendix-C, Photographs for details.

Adjacent Property:

The east side is entirely adjacent to two separate parcels owned by Bose. The adjacent Bose parcel nearest to Old Bolton Rd. is residentially zoned and therefore not currently useable for Bose's commercial operation. This parcel is about 6-3/4 acres in size. It has 515 feet of frontage on Old Bolton Road (directly adjacent to the Snow property's frontage). It has a gated driveway and no structures. The second parcel is industrially zoned and contains the Bose campus and operating infrastructure.

The west side is adjacent to three residentially zoned lots; a.) Starting from Bolton Road, the first lot shares a 210 foot border, has a home it and is about 1 acre in size; b.) the next lot shares a 797 foot border, has a house, green houses and other small structures, is 7.01 acres in size and is currently under Chapter-61A; c.) the last lot is referred to as

the Moseley farm, it is 21.65 acres in size, shares a 418.04 foot border, this land is currently under Chapter-61A and also has an Agricultural Preservation Restriction in place.

The north side is adjacent to the aforementioned Moseley farm.

The south side is Old Bolton Road.

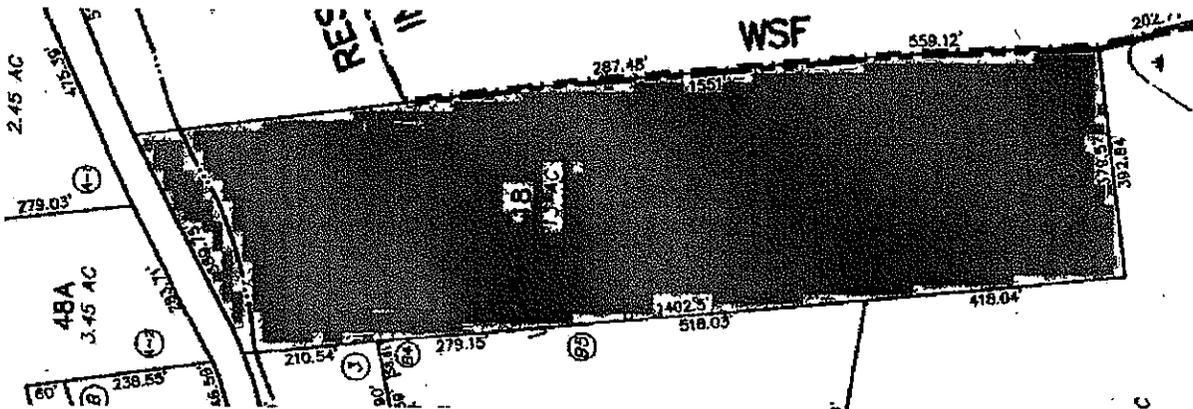
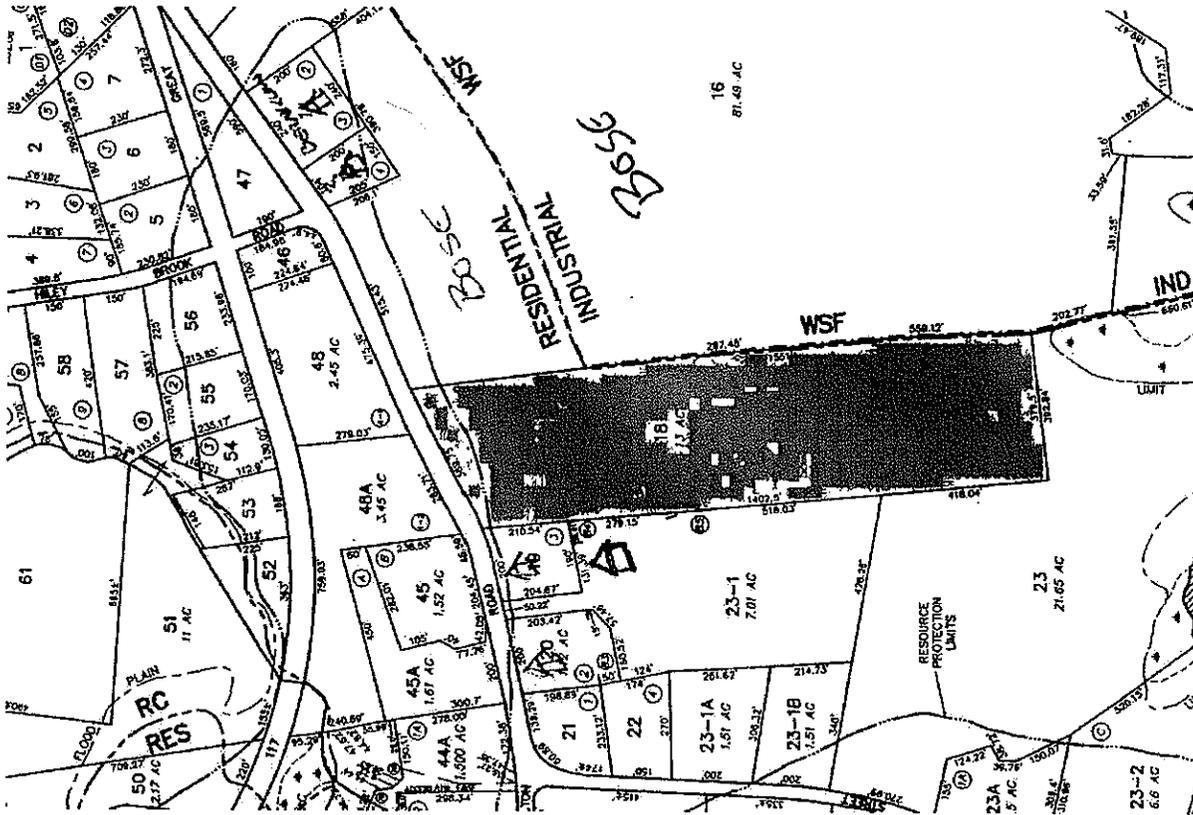
The land opposite this parcel on Bolton Rd. is listed as Chapter-61 land consisting of two parcels 3.45 and 2.45 acres in size. These parcels also have a combined frontage about 1,160 feet on Rt.117 – Great Road.

See Appendix-D, Chapter-61 Land Map for more details

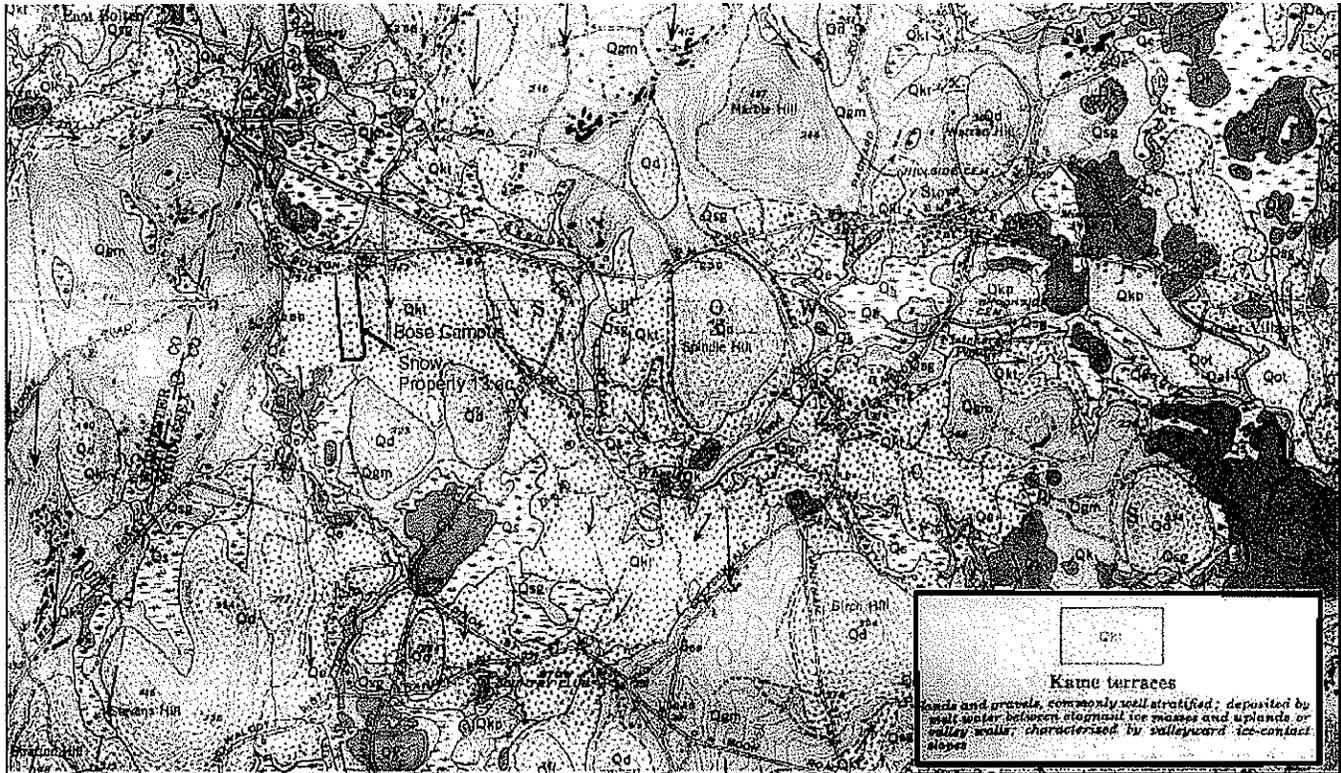
Current Use:

The land has been leased on an annual basis to an abutter for agricultural/farm use (Steve Mong, Applefield Farm). The property is part of a patch work of agricultural fields that comprise the farming operation.

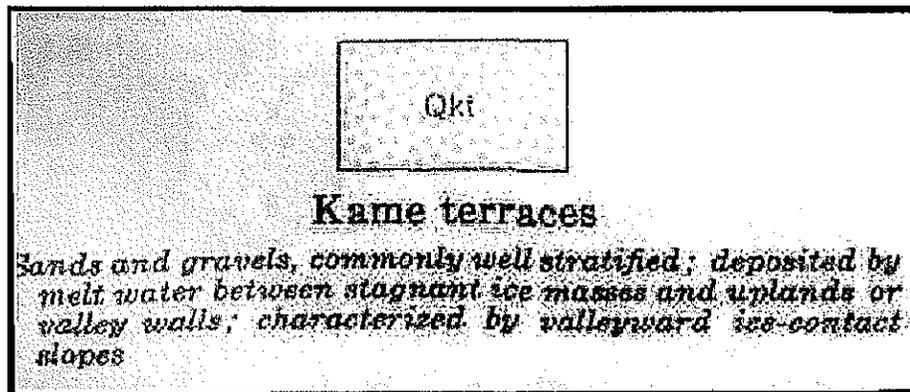
Appendix-A, Map with Map and Parcel Information and Dimensions



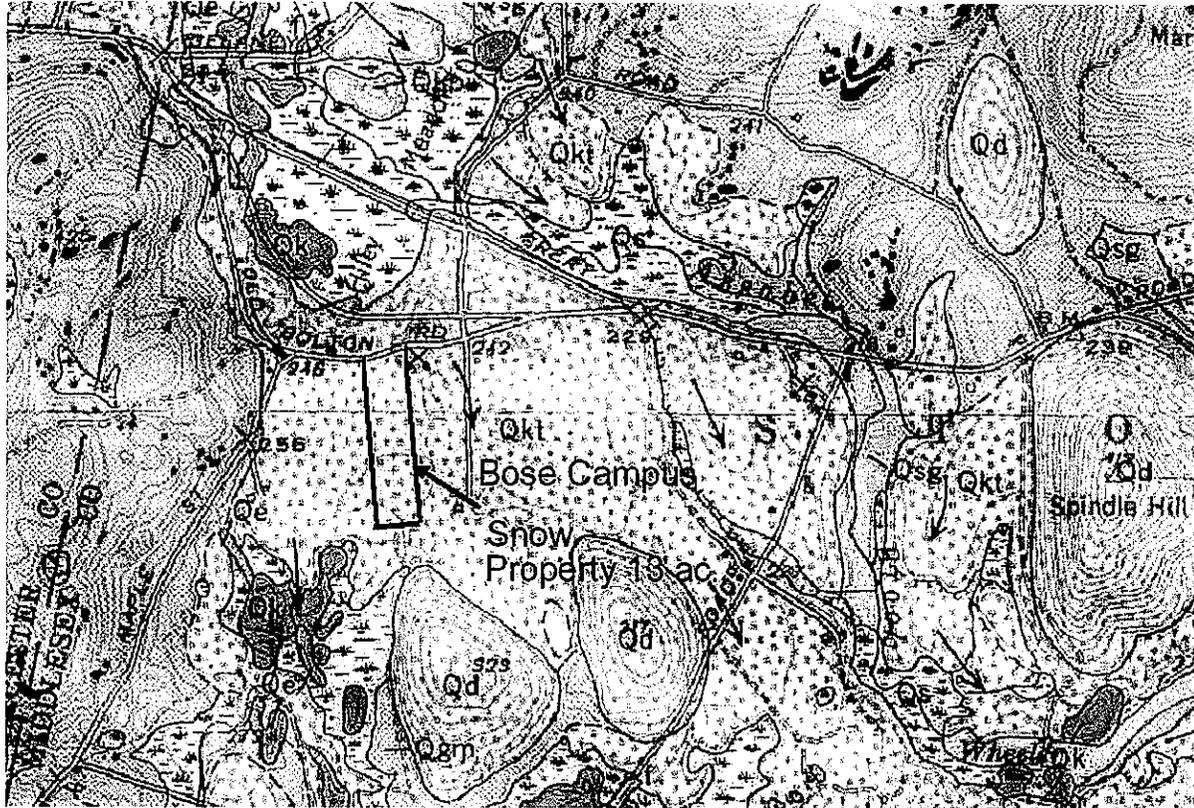
Appendix-B, Surficial Geology – USGS Hudson/Maynard Quad Surficial Mapping, 1956



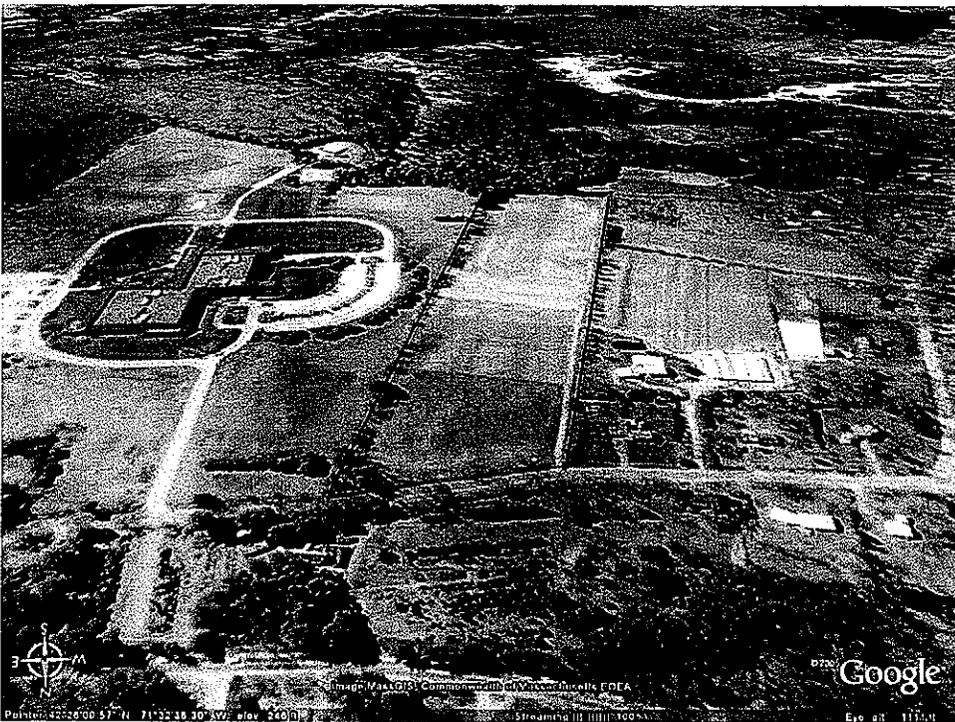
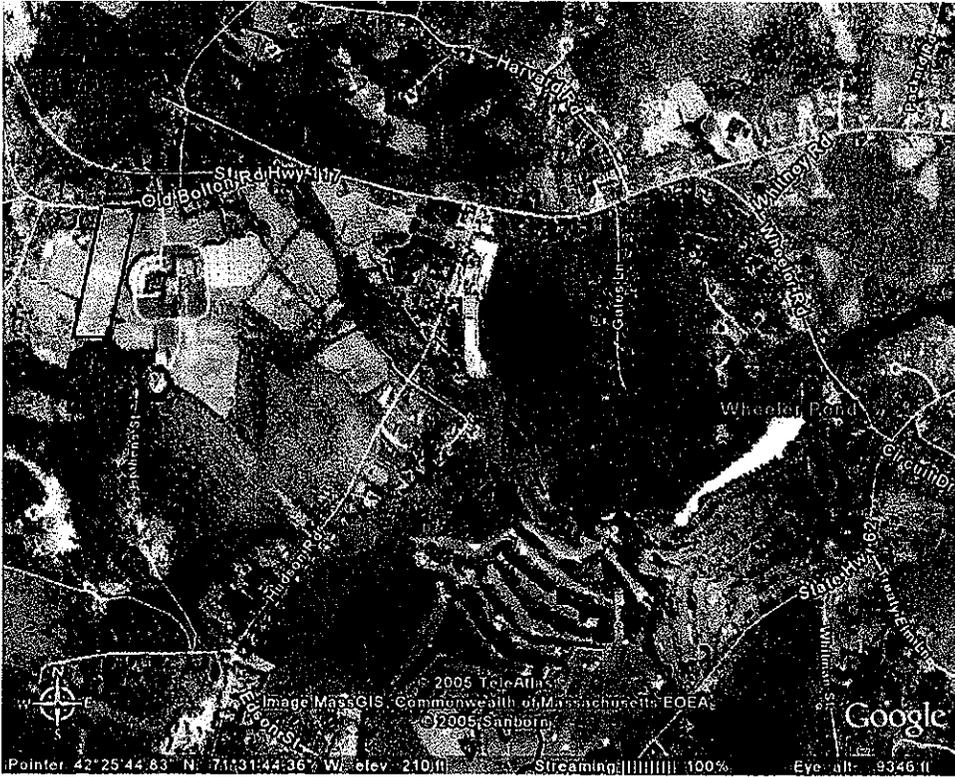
MAP SHOWING SURFICIAL GEOLOGY OF THE HUDSON AND MAYNARD



**Appendix-B, Surficial Geology – USGS Hudson/Maynard Quad Surficial Mapping, 1956
(continued)**



Appendix-C, Photographs



Photographs Appendix-C. (continued)



Panoramic View from far south-west corner facing Old Bolton Rd. - Bose is to the right.



Partial view of the east side property line.

Photographs Appendix-C, (continued)



Partial view of the west side property line



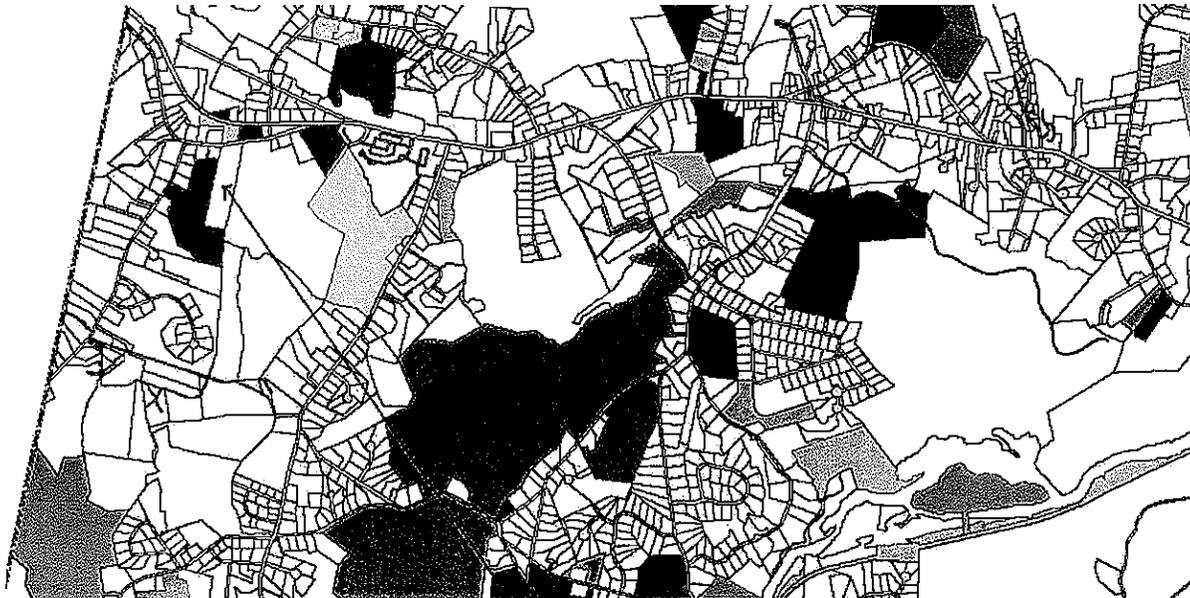
View from east facing to the west about ¼ way into parcel from Old Bolton Road

Photographs Appendix-C, (continued)



View to the southwest across frontage on Old Bolton Road

Appendix-D, Chapter-61 Land Map, February, 7th 2006 Data



SNOW PROPERTY R-3 / 18

State Class Code

 61 (16) Part Residential/Part Forestry	 61A (713) Field Crops
 61A (17) Part Residential/Part Agriculture	 61A (714) Orchards
 61B (18) Part Residential/Part Recreation	 61A (717) Productive Woodland
 61A (37) Part Commercial/Part Agriculture	 61A (718) Pasture
 61B (38) Part Commercial/Part Recreation	 61A (719) Nurseries
 61A (47) Part Industrial/Part Agriculture	 61A (720) Non-Productive Land - Necessary Related Land
 61A/61B (78) Part Recreation/Part Agriculture	 61A (722) Non-Productive Land - Wetland
 61 (601) Forestry	 61B (801) Hiking
 61A (712) Truck Crops	 61B (805) Golfing



Gale Associates, Inc.
 Engineers Architects Planners
 163 LIBBEY PARKWAY | WEYMOUTH, MA 02189
 P 781.335.6465 F 781.335.6467 www.gahc.com
 Boston Baltimore Orlando San Francisco

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PROJECT	OWNER
STOW ATHLETIC COMPLEX STOW, MA	RECREATION FOR STOW COMMITTEE 375 GREAT ROAD STOW, MA 01775

REVISIONS		
NO.	DATE	DESCRIPTION

CADD FILE	DES4COLOR
DESIGNED BY	
DRAWN BY	WAH
CHECKED BY	
DATE	4/17/07
DRAWING SCALE	1"=50'-0"

GRAPHIC SCALE

SHEET TITLE
**SNOW
 MASTER
 PLAN**

MASTER PLAN

DRAWING NO.	PROJECT NO. 712290
SK-1	



MASTER PLAN



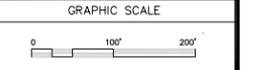
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PROJECT	OWNER
STOW ATHLETIC COMPLEX STOW, MA	RECREATION FOR STOW COMMITTEE 375 GREAT ROAD STOW, MA 01775

REVISIONS		
NO.	DATE	DESCRIPTION

CADD FILE	
DESIGNED BY	
DRAWN BY	WAH
CHECKED BY	
DATE	4/17/07
DRAWING SCALE	1"=100'-0"



SHEET TITLE
SCHEME 4

DRAWING NO.	PROJECT NO. 712290
SK-4	



MASTER PLAN



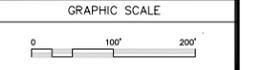
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PROJECT	OWNER
STOW ATHLETIC COMPLEX STOW, MA	RECREATION FOR STOW COMMITTEE 375 GREAT ROAD STOW, MA 01775

REVISIONS		
NO.	DATE	DESCRIPTION

CADD FILE	
DESIGNED BY	
DRAWN BY	WAH
CHECKED BY	
DATE	4/17/07
DRAWING SCALE	1"=100'-0"



SHEET TITLE
**PINE BLUFF
 MASTER PLAN**

DRAWING NO.	SK-3
PROJECT NO.	712290

Results of Course of Action 1 - Intensive Development of Snow, Limited Development of
 (1,650 new team uses)

Program	Tm Use Deficit	Solution	Projected Tm Uses	Projected Deficit	Result
Lacrosse	-315	1 Natural Field at Pine Bluffs	250	115	OK
		1/5 Synthetic field at Snow	180		
AVLL	-441	1 natural field at Pine Bluffs	250	-10.7	OK
		1/5 Synthetic field at Snow	180		
Soccer	-1018	3/5 Synthetic field at Snow	540	-315.4	1 field short
		Balance of time from Lacrosse	115		
		Balance of Time from Babe Ruth	47.6		
Babe Ruth	-302.4	1 natural turf field at Pine Bluffs	350	47.6	OK
Adult Softball	none				

**Results of Course of Action 2 - No Development of Snow,
Moderate Development of Pine Bluff**

(1,400 new team uses available)

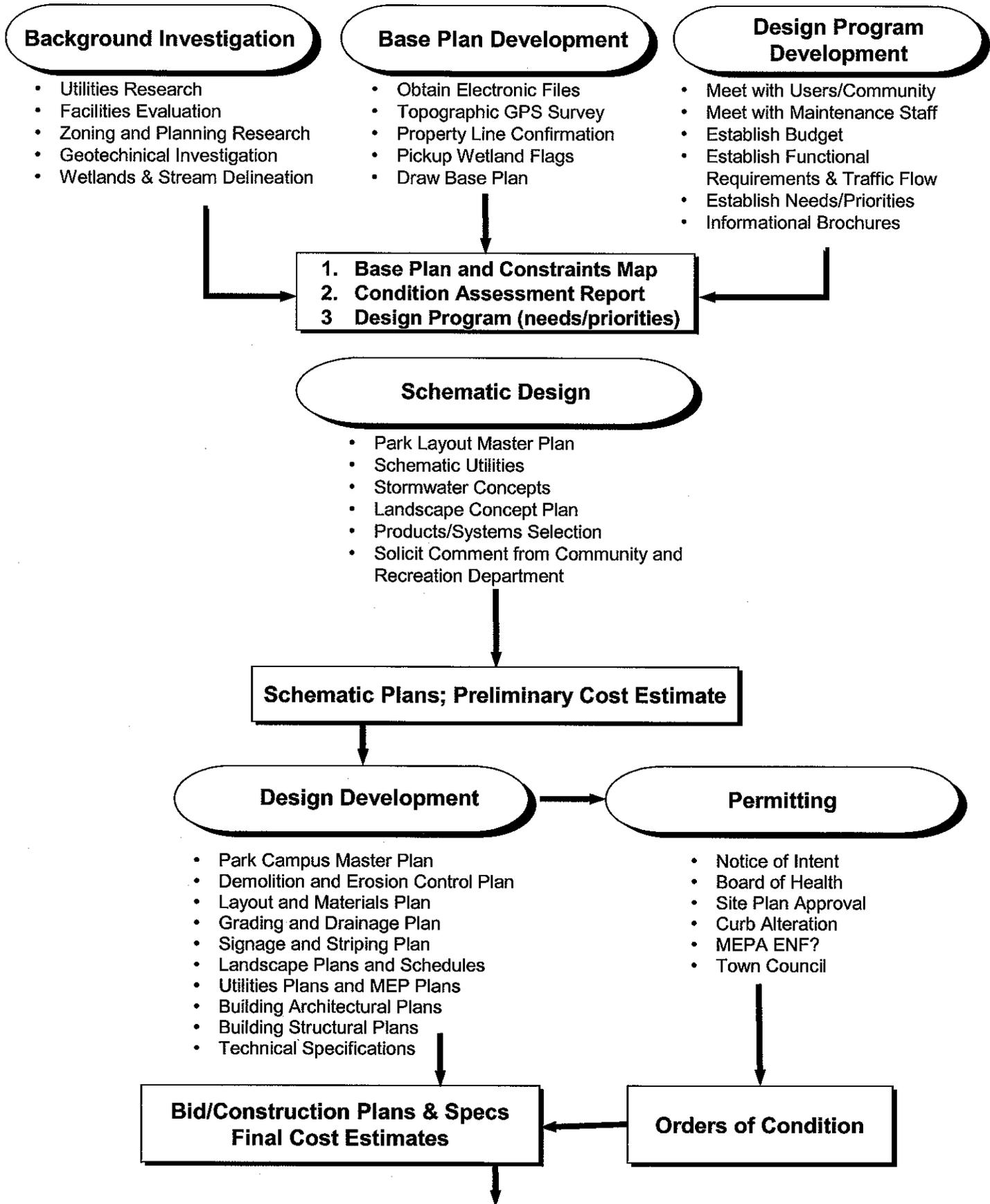
Program	Tm Use Deficit	Solution	Projected Tm Uses	Projected Deficit	Result
Lacrosse	-315	1 Natural Field at Pine Bluffs	250	-65	< 1 fld short
					OK
AVLL	-441	1 natural field at Pine Bluffs	250	-40.7	< 1 fld short
		1/6 Synthetic field at Snow	150		OK
Soccer	-1018	5/6 Synthetic field at Pine Bluff	750	-268	1 field short
Babe Ruth	-302.4	none	0	-302.4	1 field short
Adult Softball	none				

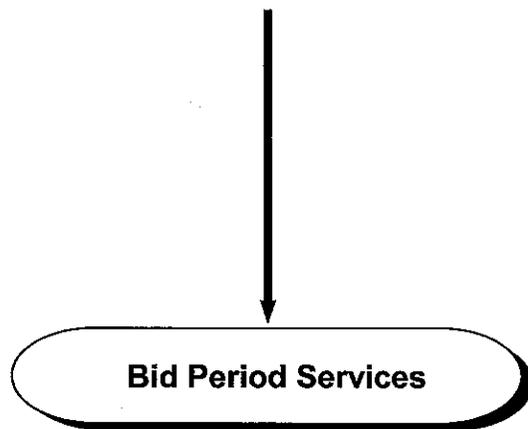
Proposed Program and Alternatives at
Pine Bluffs and Snow Property



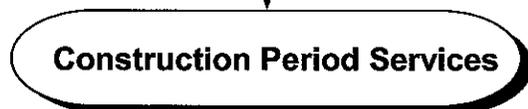
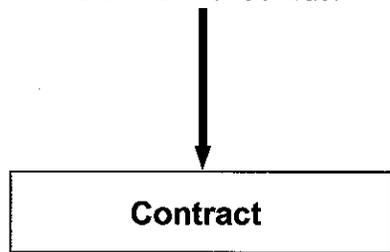
Program Element	Alternative 1		Alternative 2	
	Snow	Pine Bluff	Snow	Pine Bluff
Synthetic Turf Multi Purpose Rectangular	X			X
Synthetic Turf 60-Foot Diamond	X			X
Natural Turf Multi Purpose Rectangular	X	X		X
Natural Turf 60-Foot Diamond		X		X
Natural Turf 90-Foot Diamond	X			None
Band Stand	X			X
Tennis Courts	X			None
Basketball	X			None
Walking Path		X		X
Playgrounds		X		X
Outdoor Skating Rink	X			None
Off Street Parking	X	X		X
Public Restrooms	X	X		X

STOW RECREATION PARCEL PROJECT APPROACH

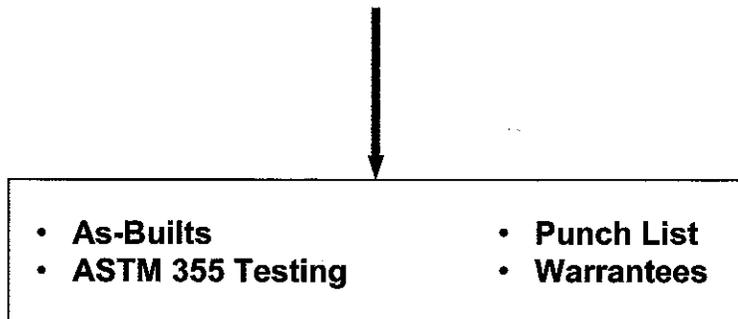




- Bid Set
- Obtain Prevailing Wage Rates
- Advertise in Central Register/Local Paper
- Host Site Visit
- Clarifications and RFI's
- Conduct Bid Opening
- Bid/Contractor (Bonding) Review
- Recommendation for Award
- Draft Form of Contract



- Preconstruction Conference
- Shop Drawing/Submittal Review
- Payment Request Review
- Prepare Change Orders
- Weekly Site Meetings/Progress Meetings
- Closeout Documents



COA 1 - Snow Plus Pine Bluffs

Preliminary Cost Estimate - Pre-design

Date: 15-May-07



Phase I - Snow Development

ITEM #	DESCRIPTION	QTY	UNIT	COST	SUBTOTAL	TOTAL
Section 00001 General Conditions						
	Bonds and Insurance	1	LS	\$ 50,000.00	\$ 50,000.00	
	Site Trailer and Temp Utilities	1	LS	\$ 15,000.00	\$ 15,000.00	
	Mobilization	1	LS	\$ 50,000.00	\$ 50,000.00	
						\$115,000
Section 01571 Erosion and Sedimentation Control						
	Temporary erosion control at detention basins	1	LS	\$ 10,000.00	\$ 10,000.00	
	Haybale and silt fence protection (Includes removal and maintenance)	800	LF	\$ 10.00	\$ 8,000.00	
						\$18,000
Section 02200 Demolition and Site Preparation						
		1	LS	\$ 15,000.00	\$ 15,000.00	\$15,000
Section 02300 Earthwork, Base Prep, Drainage, Curb						
	Earthwork - natural field	135,000	SF	\$ 1.50	\$ 202,500.00	
	Earthwork - synthetic field	108,000	SF	\$ 3.00	\$ 324,000.00	
						\$526,500
Section 02750 Site Utilities						
	Potable water, power, commo, data	1	LS	\$ 15,000.00	\$ 15,000.00	
						\$15,000
Section 02513 Bituminous Concrete Pavement						
	Bituminous pavement, misc walkways/aprons (3" thick with 8' base)	840	SY	\$ 20.00	\$ 16,800.00	
	Parkinglot	5,700	SY	\$ 20.00	\$ 114,000.00	
	Tennis and Basketball Paving	3,110	SY	\$ 20.00	\$ 62,200.00	
	Striping	1	LS	\$ 10,000.00	\$ 10,000.00	
						\$203,000
Section 02600 Nat. Turf Ball Field Construction						
	Rootzone placement	3,350	CY	\$ 7.00	\$ 23,450.00	
	Seeding	135	MSF	\$ 50.00	\$ 6,750.00	
	Clay Infield	1,500	SY	\$ 35.00	\$ 52,500.00	
	Irrigation and controller	3	ACRES	\$ 10,000.00	\$ 30,000.00	
	Irrigation Well	1	LS	\$ 15,000.00	\$ 15,000.00	
						\$127,700

Section 11480 Ball Field Equipment dugouts, foul poles, backstops, etc.	2	field	\$ 10,000.00	\$ 20,000.00	\$20,000
Section 02790 Synthetic Turf Surfacing Synthetic Turf - Field Turf Proseries	95,500	SF	\$ 4.90	\$ 467,950.00	
Striping for three sports	3	ea	\$ 10,000.00	\$ 30,000.00	\$497,950
Section 02795 Basketball and Tennis Surfacing PlexiPave Colored Acrylic	3,110	SY	\$ 6.00	\$ 18,660.00	
Tennis and Basketball hardawre (net posts, goals, etc.)	1	LS	\$ 10,000.00	\$ 10,000.00	\$28,660
Section 02800 Site Improvements and Amenities flagpoles	1	EA	\$ 5,000.00	\$ 5,000.00	
goal posts and anchors	1	PR	\$ 15,000.00	\$ 15,000.00	
bollards	10	EA	\$ 1,000.00	\$ 10,000.00	
Miscellaneous Site Lighting	1	LS	\$ 10,000.00	\$ 10,000.00	\$40,000
Section 02830 Fencing Chain link fence	1,975	LF	\$ 40.00	\$ 79,000.00	
swing gate at emergency drive	1	EA	\$ 1,250.00	\$ 1,250.00	
double swing gates, 4' CL	2	EA	\$ 1,771.00	\$ 3,542.00	
pedestrian gates, 4' CL	5	EA	\$ 630.00	\$ 3,150.00	
pedestrian gates, 6' CL	2	EA	\$ 650.00	\$ 1,300.00	\$88,242
Section 02945 Planting and Seeding Misc Landscape Plantings	1	LS	\$ 10,000.00	\$ 10,000.00	\$10,000
Section 0900 Sepctator Seating Portable Bleacher , 50 person	1	LS	\$ 10,000.00	\$ 10,000.00	\$10,000
TOTALS					
Subtotal					\$1,715,100
Contingency at 10%					\$171,510
Soft Costs (Design and Permitting) at 10%					\$171,510
Total Project Budget					\$2,058,120

Add Alternate 1**Site and Athletic Lighting and other electrical**

Field Lighting – Stadium and All-Purpose Field	1	LS	\$ 220,000.00	\$ 250,000.00
Electrical installation by licensed State of Mass. Electrical Eng.	1	LS	\$ 50,000.00	\$ 50,000.00

\$300,000**Add Alternate 2****Concessions and Rest Room Buidling**

Woodframe Concessions and Bathroom Building	1000	SF	\$ 175.00	\$ 175,000.00
---	------	----	-----------	---------------

\$175,000

COA 1 - Snow Plus Pine Bluffs

Preliminary Cost Estimate - Pre-design

Date: 15-May-07



Phase II - Pine Bluff Development

ITEM #	DESCRIPTION	QTY	UNIT	COST	SUBTOTAL	TOTAL
Section 00001 General Conditions						
	Bonds and Insurance	1	LS	\$ 50,000.00	\$ 50,000.00	
	Site Trailer and Temp Utilities	1	LS	\$ 15,000.00	\$ 15,000.00	
	Mobilization	1	LS	\$ 50,000.00	\$ 50,000.00	
						\$115,000
Section 01571 Erosion and Sedimentation Control						
	Temporary erosion control at detention basins	1	LS	\$ 10,000.00	\$ 10,000.00	
	Haybale and silt fence protection (Includes removal and maintenance)	1,500	LF	\$ 10.00	\$ 15,000.00	
						\$25,000
Section 02200 Demolition and Site Preparation						
	Demolition	1	LS	\$ 15,000.00	\$ 15,000.00	\$15,000
Section 02300 Earthwork, Base Prep, Drainage, Curb						
	Clearing and grubbing	5	acre	\$ 20,000.00	\$ 100,000.00	
	Earthwork - natural fields (Both fields)	157,000	SF	\$ 1.75	\$ 274,750.00	
	Striping	1	LS	\$ 2,500.00	\$ 2,500.00	
						\$377,250
Section 02750 Site Utilities						
	Potable water, power, comm, data	1	LS	\$ 15,000.00	\$ 15,000.00	\$15,000
Section 02513 Bituminous Concrete Pavement						
	Bituminous pavement, misc walkways/aprons (3" thick with 8" base)	1,760	SY	\$ 20.00	\$ 35,200.00	
	Parking Lot (3" thick with 8" base)	2,440	SY	\$ 20.00	\$ 48,800.00	
						\$84,000
Section 02600 Nat. Turf Ball Field Construction						
	Rootzone placement	4,000	CY	\$ 7.00	\$ 28,000.00	
	Seeding	157	MSF	\$ 50.00	\$ 7,850.00	
	Clay Infield	820	SY	\$ 35.00	\$ 28,700.00	
	Irrigation and controller	3.5	ACRE	\$ 10,000.00	\$ 35,000.00	
	Irrigation Well	1	LS	\$ 15,000.00	\$ 15,000.00	
						\$114,550

Section 11480 Ball Field Equipment dugouts, foul poles, backstops, etc.	1	LS	\$ 10,000.00	\$ 10,000.00	\$10,000
Section 02800 Site Improvements and Amenities flagpoles	1	EA	\$ 5,000.00	\$ 5,000.00	
goal posts and anchors	1	PR	\$ 15,000.00	\$ 15,000.00	
bollards	10	EA	\$ 1,000.00	\$ 10,000.00	
Miscellaneous Site Lighting	1	LS	\$ 10,000.00	\$ 10,000.00	\$40,000
Section 02830 Fencing Chain link fence	1,000	LF	\$ 40.00	\$ 40,000.00	
6' swing gate at emergency drive	1	EA	\$ 1,250.00	\$ 1,250.00	
pedestrian gates, 4' CL	3	EA	\$ 630.00	\$ 1,890.00	\$43,140
Section 02945 Planting and Seeding Misc Landscape Plantings	1	LS	\$ 10,000.00	\$ 10,000.00	\$10,000
Section 0500 New Septic System LeachField and Tank	1	LS	\$ 15,000.00	\$ 15,000.00	
Building renovations	1	LS	\$ 10,000.00	\$ 10,000.00	\$25,000
Section 0900 Spectator Seating Portable Bleacher , 50 person	1	LS	\$ 10,000.00	\$ 10,000.00	\$10,000
TOTALS					
					Subtotal
					\$883,900
					Contingency at 15%
					\$132,585
					Soft Costs (Design and Permitting) at 10%
					\$88,390
					Total Project Budget
					\$1,104,875

COA 2 - Pine Bluffs

Preliminary Cost Estimate - Pre-design

Date: 15-May-07

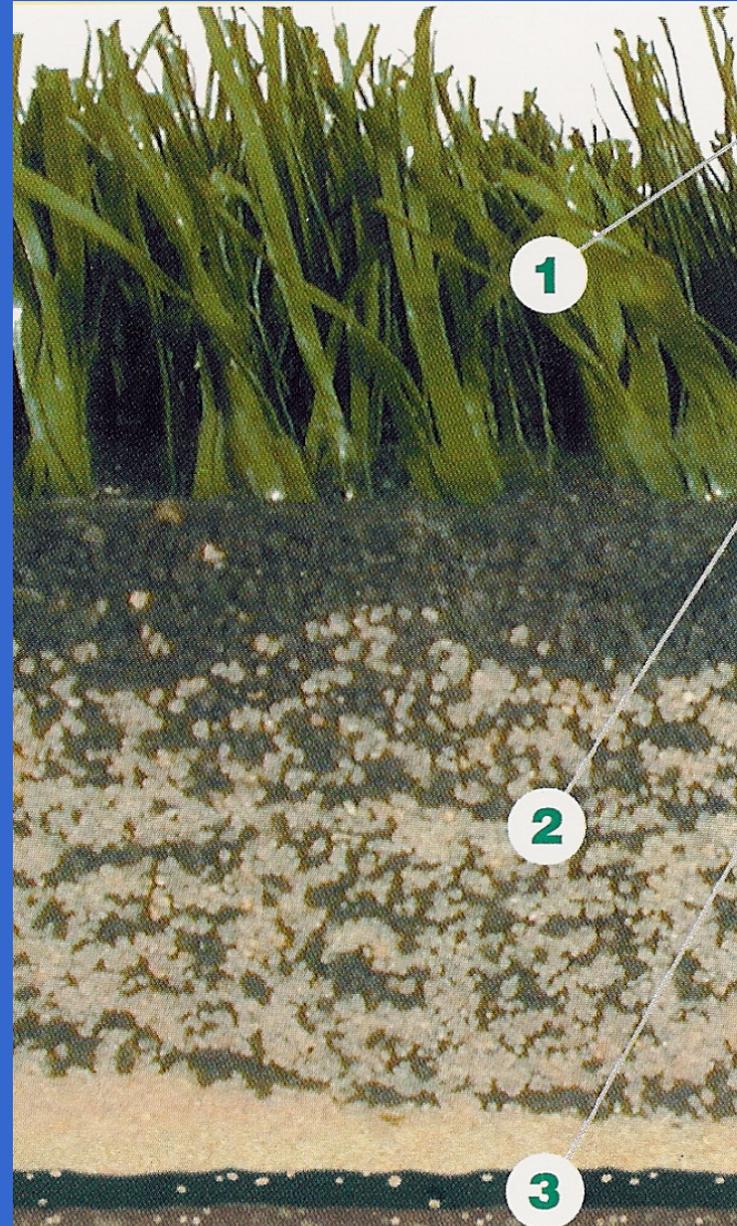


Phase I

ITEM #	DESCRIPTION	QTY	UNIT	COST	SUBTOTAL	TOTAL
Section 00001 General Conditions						
	Bonds and Insurance	1	LS	50,000.00	\$ 50,000	
	Site Trailer and Temp Utilities	1	LS	15,000.00	\$ 15,000	
	Mobilization	1	LS	50,000.00	\$ 50,000	
						\$115,000
Section 01571 Erosion and Sedimentation Control						
	Temporary erosion control at detention basins	1	LS	\$ 10,000	\$ 10,000	
	Haybale and silt fence protection (Includes removal and maintenance)	1,500	LF	\$ 10	\$ 15,000	
						\$25,000
Section 02200 Demolition and Site Preparation						
		1	LS	\$ 15,000	\$ 15,000	\$15,000
Section 02300 Earthwork, Base Prep, Drainage, Curb						
	Earthwork - natural field	135,190	SF	\$ 1.75	\$ 236,583	
	Earthwork - synthetic field	96,400	SF	\$ 3.35	\$ 322,940	
	Clearing and Grubbing	9.3	Acre	\$ 20,000.00	\$ 186,000	
						\$745,523
Section 02750 Site Utilities - Water Distribution Systems						
	Potable water, power, commo, data	1	LS	\$ 15,000	\$ 15,000	\$15,000
Section 02513 Bituminous Concrete Pavement						
	Bituminous pavement, misc walkways/aprons (3" thick) with 8" base)	1,700	SY	\$ 20	\$ 34,000	
	Parking Lot	3,690	SY	\$ 20	\$ 73,800	
	Striping	1	LS	\$ 2,500	\$ 2,500	
						\$110,300
Section 02600 Nat. Turf Ball Field Construction						
	Rootzone placement	3,350	CY	\$ 7	\$ 23,450	
	Seeding	140	MSF	\$ 50	\$ 7,000	
	Clay Infield	840	SY	\$ 35	\$ 29,400	
	Irrigation and controller	3	ACRES	\$ 10,000	\$ 30,000	
	Irrigation Well	1	LS	\$ 15,000	\$ 15,000	
						\$104,850

Section 11480 Ball Field Equipment dugouts, foul poles, backstops, etc.	2	field	\$	10,000	\$	20,000	\$20,000
Section 02790 Synthetic Turf Surfacing Synthetic Turf - Field Turf Proseries	96,400	SF	\$	4.90	\$	472,360	
Striping for three sports	3	ea	\$	10,000	\$	30,000	
							\$502,360
Section 02800 Site Improvements and Amenities flagpoles	1	EA	\$	5,000	\$	5,000	
goal posts and anchors	1	PR	\$	15,000	\$	15,000	
bollards	10	EA	\$	1,000	\$	10,000	
Miscellaneous Site Lighting	1	LS	\$	10,000.00	\$	10,000	
							\$40,000
Section 02830 Fencing Chain link fence, 4-6'	2,200	LF	\$	40	\$	88,000	
6' swing gate at emergency drive	1	EA	\$	1,250	\$	1,250	
double swing gates, 4' CL	2	EA	\$	1,770	\$	3,540	
pedestrian gates, 4' CL	6	EA	\$	630	\$	3,780	
pedestrian gates, 6' CL	2	EA	\$	650	\$	1,300	
							\$97,870
Section 02945 Planting and Seeding Misc Landscape Plantings	1	LS		10,000	\$	10,000	
							\$10,000
Section 0900 Sepctator Seating Portable Bleacher , 50 person	2	LS	\$	10,000.00	\$	20,000.00	
							\$20,000
TOTALS						Subtotal	\$1,820,900
						Contingency at 15%	\$273,135
						Soft Costs (Design and Permitting) at 10%	\$182,090
						Total Project Budget	\$2,276,125

FieldTurf

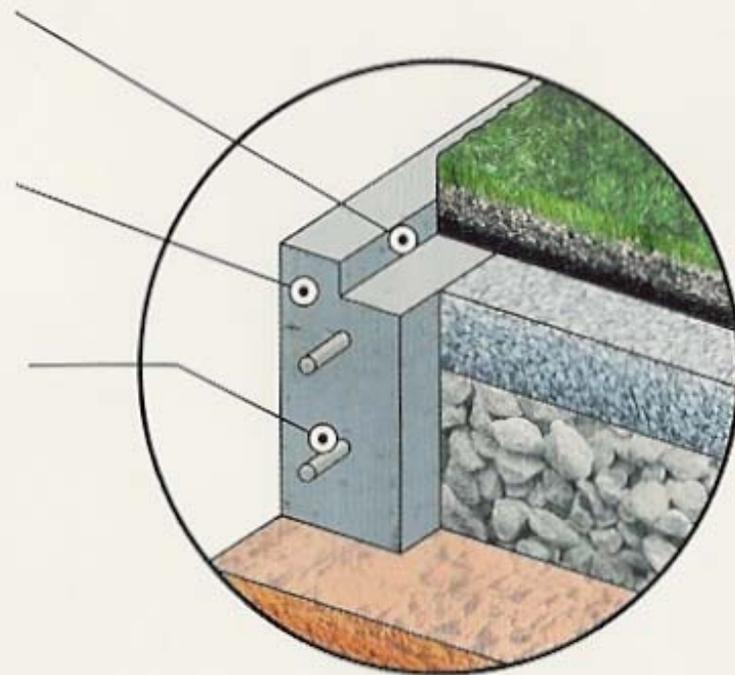


Edging Detail - Concrete Curb

2" wide recess same depth as infill

Concrete curb (supplied by others)

Rebars



Typical Edging Detail - Standard Curb

surface (3/4" pile exposed above infill)

Concrete curb (supplied by others)

nailed to 2"x4" treated lumber or
recycled plastic nailer board

2" of finishing top stone (laser graded)

Steel rebars

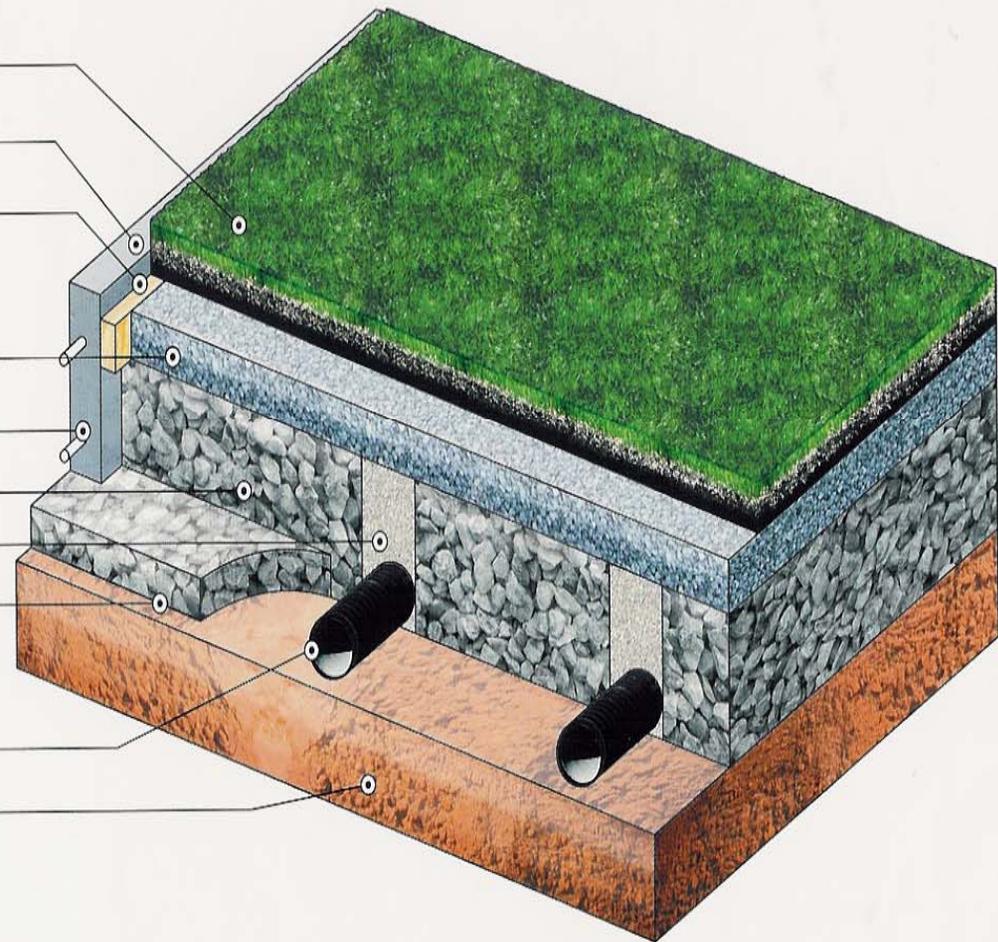
Permeable crushed stone

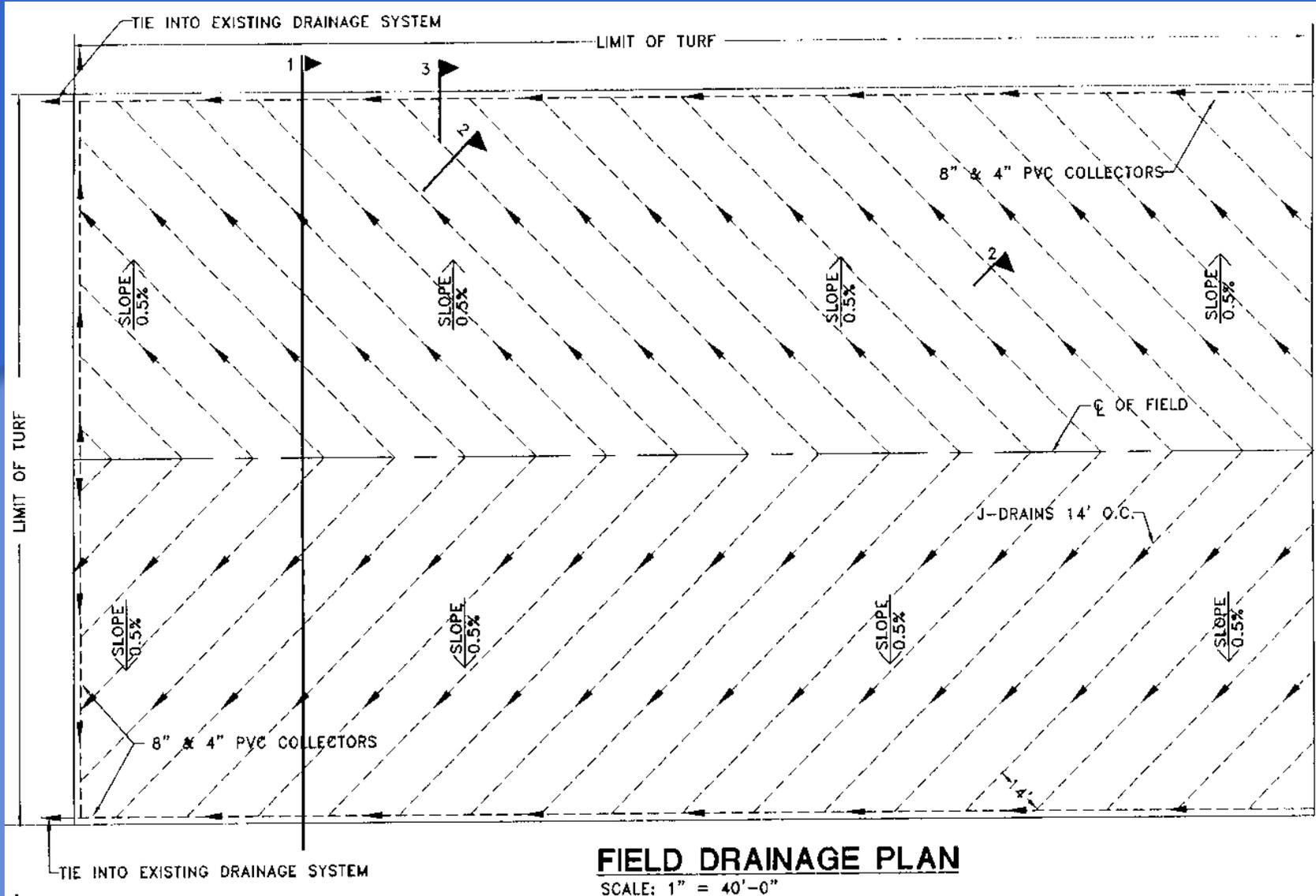
3" trench filled with pea gravel

Geotextile if required

2" NMP drain at 5ft to 10ft o/c

Natural soil bed





Synthetic Turf Maintenance



"The GreensGroomer and Spring Tine Rake do a terrific job on our turf. Our field is used 10-12 hours each day by different U of M teams and rental groups, which leads to our fill becoming compacted. This equipment relieves the compaction and leaves the turf plush and upright, which makes our turf safer and better for our athletes. I would highly recommend this piece of equipment"

*Larry Martin
Facilities Supervisor
University of Michigan Athletic Department*

GALE

All-Weather Availability



Snow Removal Operations



Same Field, Next Day



Title	Author/Company	Conclusions
Toxicological Evaluation of the Hazard Assessment of Tire Crumb for Use in Public Playgrounds - July 2003	Detlef A. Birkhoiz (Enviro-Test Laboratories, Alberta, Canada); Kathy L. Belton (Alberta Centre for Injury Control and Research, Edmonton, Alberta, Canada); Tee L. Guidotti, Department of Public Health Sciences, University of Alberta, Edmonton, Alberta, Canada)	"An exposure assessment performed to address the potential health risks to children playing in facilities where tire crumb is used as ground cover concluded that there was little potential for an exposure sufficient to cause adverse health effects in children."
Environmental and Health Evaluation of the use of Elastomer Granulates (Virgin and from Used Tyres) as Filling in Third-Generation Artificial Turf - 2006	Dr. Robert Moretto (Groupement d'Interet Scientifique EEDEM)	"The results of the evaluation of the environmental impact on the water and of the health risk evaluation (gaseous emissions) on the population group shows: comparable behaviour irrespective of the type of filling granulate (virgin TPE and EPDM, used granulates), an absence of impact of this type of work on water resources, no effect worthy of concern of the health associated with the inhalation of VOC and aldehydes emitted by artificial surfaces."
Use of end-of-life tyre rubber crumb in sports floors: environmental consequences. 2006 update	Catherine Rigaud (Laboratoire de Recherches et de Contrôle du Caoutchouc et des Plastiques)	"In the event of ingestion of crumb particles, although it is highly improbable, the particles do not present any toxicity, the digestive system is not powerful enough to extract chemical components from the rubber. Inhaling is practically negligible because crumb rubber does not give off volatile products. direct contact with the skin does not present any real danger, even from the point of view of allergy. from the genetic point of view, biological tests have shown the absence of genotoxicity."

An Open Letter concerning the potential cancer risk from certain granulate infills from artificial turf	Prof. Dr. Jiri Dvorak (Federation Internationale de Football Association (FIFA))	"The World Health Organisation and other investigators do not implicate tire wear particles in ambient air as contributing to human health effects (respiratory and cardiovascular diseases).....The majority of the studies have been on higher surface area particles and have concluded they are currently acceptable. Therefore the larger granules used in artificial turf will have even less potential for emissions. A study undertaken by the Danish Ministry of the Environment concluded that the health risk on children's playgrounds that contained both worn tyres and granulates rubber was insignificant."
Toxicity Evaluation of Sample 755 MSF2S and 755 MSF2N	AMEC Earth & Environmental, Inc.; William E. Shiels (Talasaea Consultants, LLC)	"We have completed water quality testing for two <i>Field Turf</i> projects....No Toxicity was detected in water samples colleted at either the Grass Lawn Park ball field or the Microsoft Campus ball field #3."
The Use of Recycled Rubber in Sports Surfaces	Sports and Play Construction Associates (SAPCA)	"SAPCA's opinion is that, because tire rubber is designed to be strong, durable and substantially impermeable, it is unlikely that any losses could occur to air or warer in concentrations that would pose serious human or environmental risk. The opinion is supported by the reports and academic studies reviewed, which have shown insignificant envrnmntal effects of such chemicals or release of violates and particulates into the atmosphere."
Architectural Bid Specifications PSI Report No. 486-40013-001	Maryland Environmental Services (MES)	"In 1994 the Maryland Environmental Services (MES) sent 3 inch pieces of tire chips to a testing laboratory to be tested with hydrochloric acid (stomach acid). '... The tire rubber did not appear to be affected in any way...' Therefore, if a piece of rubber is swallowed, it should not cause an acute or chronic problems. Short-term issues, such as upset stomach will be a function of the amount of rubber swallowed."
Park and Recreation Products Procurement Guidelines May 2004	Environmental Protection Agency USEPA	Playground surfaces can contain 100% recycled rubber...rubber crumb is more desirable than sand, wood fiber or asphalt because it can provide more cushioning and thereby may be safer for children.

Equi-Tread Quality Crumb Rubber Arena Footing	Equi-Tred with test from EPA	"The environmental Protection Agency (EPA) tests performed in 1986 on crumb rubber reported that this product is non-toxic and will not leach into ground water. It passed all EPA toxicity tests."
Environmental & Safety Testing Results Summary	Precision EQ	"Crumb rubber was immersed into a strong hydrochloric acid. There was basically no reaction to the crumb. Therefore, the chance of digestion is very slim based on the data collected." The EPA Compliance Monitoring Section has stated that rubber added to soil is not hazardous. It is inert.
STAPH/MRSA: Wiping the Rumor Mill Clean	FieldTurf	Investigatory research shows that no synthetic turf infill system including sand and rubber infill has special propenisty for Staph."
Material safety Data Sheet (MSDS) for black SBR Rubber	Required by US Department of Transportation	Hazardous Ingredients: N/A Stability: Stable Protective Equipment: None required for routine handling Effects of Overexposure: None Permissable Exposure Limit: None
Golfing Toward a Greener Environment	Dr. Jim Park University of Wisconsin - Madison	"We have proved that this (release of potentially toxic contaminants from crumb rummer) is not an issue"
Synthetic Precipitation Leaching Procedure (SPLP) Tests to Characterize Special Wastes Jun 2001 USEPA Method 1311	Dr. Chib-Shin Shich Institute of Technology Florida	"Trace metal elements were determined to be signigificantly lower than threshold limits"
Top Dressing With Crumb Rubber on Athletic fields	Dr. J. N. Rogers III Dept. of Crop and Soil Sciences University of Michigan	"The amount (trace metals) detected were below levels of concern and posed no hazards to water quality. Additionally not toxicity to turf grass was observed."
Toxicological Evaluation of the Hazard Assensment of Tire Crumb for Use in Public Playgrounds - July 2003	Journal of Air and Waste management Association	"..It is doubtful that the tire crumb would present a significant risk of contamination in receiving surface water or groundwater."
Danish Ministry of Environment Report 2004	Department fo Environment Investigation	Health risks on children's playgrounds that contained both worn tires and granulate rubber were insignificant.
Wayland High School Study 2006	Gale Associates	The results of the EPA approved leaching potential test on the raw materials (carpet and rubber) showed all measured contaminant levels at least 10 times below the 310CMR drinking water standards.



Gale Associates, Inc.

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October 31, 2006

Mr. Brian Monahan
Conservation Administrator
Town of Wayland
Town Building
41 Cochituate Road
Wayland, MA 01778

Re: Leachate Analysis Report
Wayland High School Athletic Facility
Gale JN 712050

Dear Mr. Monahan:

Gale Associates, Inc. (Gale) was hired by the Wayland Boosters Association to assist them with the planning, design, and permitting of a synthetic turf athletic field at the Wayland High School. This report has been developed for the Wayland Conservation Commission to address questions and/or concerns related to the potential risk that a synthetic turf athletic field will have on the Town's drinking water supply and wetland resource areas.

Project Summary/Background

The proposed synthetic turf field, as designed, will be located within the limits of an existing bituminous concrete running track that currently sits behind the Wayland High School building. The existing field is natural turf and is in chronically poor conditions due to overuse and the inability to apply proper fertilization due to its proximity to a wetland resource area and a Town drinking well. The use of a synthetic turf field will alleviate the current conditions of the natural turf field and provide a safe playing surface for the Wayland High School athletic teams as well as Wayland Recreation Department programs.

During the Notice of Intent application process, the Conservation Commission (the Commission), in an effort to protect the Town's public drinking supply, questioned the make-up of the proposed synthetic turf product as it relates to the effects on the environment. The proposed in-filled synthetic turf system consists of a carpet of slit-film polyethylene fibers that are punched through a fiberglass and urethane backing. The carpet is loose laid over a gravel stone base and filled on top with a clean, silica sand and crumb rubber to a depth of approximately two (2) inches. The crumb rubber is composed of recycled tires, to a gradation established by the Engineer and/or manufacturer of the synthetic turf product.

The turf industry maintains that the materials used in the "in-filled" systems are chemically inert and that there is no hazardous leachate. Gale previously provided the Commission testing results provided by various turf manufacturers which reflect that leachate from the fields is free from hazardous contamination.

Boston
Baltimore
Orlando



Given the potential lack of objectivity of such testing, questions regarding water quality remained.

Testing Procedures

To answer the questions posed by the Commission, Gale has completed independent laboratory testing to provide the Town with data relating to the quality of the leachate that is created after stormwater percolates through the in-filled system. Gale incorporated two testing procedures into the research to get a combination of in-situ conditions and also product conditions.

The first procedure performed to test the leachate of in-filled synthetic turf field included field sampling direct drainage outflows of several turf fields that have been installed in Massachusetts. Gale collected runoff, during and after a rain event, from one FieldTurf® ProSeries field, one Sportexe® Momentum 41 field and a Sprinturf® Field. The reason for choosing these three fields was to gather a sample for sand and rubber infill composed of Cryogenic rubber (FieldTurf®), a sample for sand and rubber infill composed of ambient rubber (Sportexe®) and a sample of an all rubber infill (Sprinturf®). Samples were collected using prescribed collection methods directly from the outlets of formal field under-drain systems. After collection, the samples were given to Groundwater Analytical, an independent testing agency located in Hyannis, Massachusetts, and tested for volatile organic compounds (VOCs).

The second testing procedure was the Synthetic Precipitation Leaching Procedure (SPLP) which is a test established by the Environmental Protection Agency (EPA Method 1312) to test the long term leaching of metals into the ground and groundwater. This method provides a more realistic assessment of metal mobility under actual field conditions, i.e. what happens when it rains (or snows). The extraction fluid is intended to simulate precipitation. East of the Mississippi River the fluid is slightly more acidic at pH 4.20 reflecting the air pollution impacts of heavy industrialization and coal utilization. The SPLP test procedure consists of placing a 100 gram sample into a plastic cylinder, which contains water with a PH level of 4.20 as required in the testing procedure. The sample and water is then agitated for a period of eighteen (18) hours. Following the agitation period, the water was extracted from the sample and tested for total solids (metals), volatile organic compounds (VOCs), Polynuclear Aromatic Hydrocarbons (PAHs), nitrogen, phosphorous and sulfate. The tests were performed by Groundwater Analytical.

Gale tested two samples of the synthetic turf in-filled product using the SPLP test procedure. Sample #1 is ProSeries as manufactured by FieldTurf®, and Sample #2 is Momentum 41 as manufactured by Sportexe®. These two products are similar in many ways but differ significantly in the crumb rubber used in their system. Fieldturf® has patented the use of Cryogenic rubber. Cryogenic rubber is processed by freezing the rubber prior to pulverization. Sportexe® and all other in-filled synthetic turf companies on the market use ambient rubber,



which is not frozen prior to pulverization. Gale has specified and installed both systems in projects analogous to the proposed field at Wayland High School.

Test Results

The results from the first testing procedure are included in Enclosure #1. Based on results from the field tests, the samples had no detectable amounts of VOCs.

Below is a summary of the results of the SPLP testing procedure: (see Enclosure #2 for full report from Groundwater Analytical)

Testing	FieldTurf® ProSeries	Sportexe® Momentum 41	Maximum Contaminant Level (MCL) 310 CMR
Volatile Organic Compounds (VOC)	BRL	BRL	13 ug/L
Synthetic Precipitation Leaching Procedure (SPLP) Trace Metals	BRL	0.01 mg/L Chromium	0.1 mg/L
Extractable Petroleum Hydrocarbons by GC/FID	BRL	BRL	(Varies depending on target analyte)
Extractable Petroleum Hydrocarbons by GC/MS-SIM	BRL	0.01 ug/L Benzo[b]fluoranthene	**1 ug/L (Varies depending on target analyte)
Inorganic Chemistry	1.0 mg/l Total Nitrogen	1.3 mg/L Total Nitrogen	10 mg/L

TGLP -
 TOXICITY CHARACTERISTICS
 LEACHING PROCEDURE

* BRL - Indicates concentration, if any, is below reporting limit of testing apparatus.

** All other Analyte detections for Sportexe® Momentum 41 were below the reporting limit of the apparatus. MCL shown is for Benzo[b]fluoranthene.

Conclusion

Based on the results of the two testing procedures performed by our office, we have determined through EPA approved testing procedures and in accordance with 310 CMR 22.00 Drinking Water & 310 CMR 40 Massachusetts Contingency Plan, the above results indicate that the leachate from the proposed in-filled synthetic turf athletic fields will have no adverse effect on the bordering wetland resource areas or the Town of Wayland drinking water supply. The levels of metals and inorganics detected were 10 x below the Maximum Contaminant

Mr. Brian Monahan
Town of Wayland
October 31, 2006
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Level and the PAHs were 100 x below the Maximum Contaminant Level as defined in 310 CMR 22.06.

Argumentatively, the proposed system will provide an environmentally sensitive alternative to natural turf grass, due to eliminating the required applications of potentially hazardous chemicals (i.e., fertilizers, pesticides, herbicides, etc.), irrigation (water consumption) and other typical maintenance standards (i.e., mowing, overseeding, striping, etc.) related to the upkeep of a quality natural turf field.

We hope this information addresses any concerns that the Commission may have towards the proposed in-fill synthetic turf field project at the Wayland High School. Should you have any questions, please do not hesitate to contact our office at (781) 335-6465.

Very truly yours,

GALE ASSOCIATES, INC.

A handwritten signature in cursive script that reads "Nathan A. Collins".

Nathan A. Collins
Project Manager

NAC/gmc

Enclosure(s):

1. Groundwater Analytical report dated October 18, 2006
2. Groundwater Analytical report dated October 27, 2006

cc: Wayland Board of Health
Craig Foreman – Wayland Boosters Association
Nancy McShea – Wayland Recreation Department
Wayland Water Commission

GROUNDWATER ANALYTICAL

Groundwater Analytical, Inc.
P.O. Box 1200
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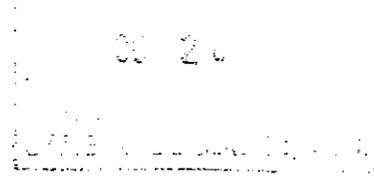
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www.groundwateranalytical.com

October 18, 2006

Mr. Christopher Morris
Gale Associates, Inc.
163 Libbey Parkway
Weymouth, MA 02189

LABORATORY REPORT

Project: **Wayland/712050**
Lab ID: **99920**
Received: **10-12-06**



Dear Christopher:

Enclosed are the analytical results for the above referenced project. The project was processed for Rush 4 Business Day turnaround.

This letter authorizes the release of the analytical results, and should be considered a part of this report. This report contains a sample receipt report detailing the samples received, a project narrative indicating project changes and non-conformances, a quality control report, and a statement of our state certifications.

The analytical results contained in this report meet all applicable NELAC standards, except as may be specifically noted, or described in the project narrative. This report may only be used or reproduced in its entirety.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Should you have any questions concerning this report, please do not hesitate to contact me.

Sincerely,

Jonathan R. Sanford
President

JRS/jmp
Enclosures

Intensive Archeological Study Scope of Services from PAL

In response to a request from the Stow Historical Commission, PAL is pleased to submit the following scope of services for archaeological investigations at the Pine Bluffs Recreational Facility project area in Stow, Massachusetts. This property is administered by the Stow Recreation Commission which is currently planning the construction of additional recreational facilities within an approximately 15 acre project area. The Historical and Recreation Commissions are interested in identifying any cultural resources that may exist within this project area. The project area is bounded on the west by Lake Boon, on the northeast by Hudson Road, to the northwest by undeveloped land and on the southeast by a residential neighborhood.

Based on available information, the project area is archaeologically sensitive and likely to contain archaeological sites associated with pre-contact (ancient) Native American and historic period Euro American occupation. Through study of private artifact collections, the Stow Historical Commission has documented Native American stone tools found in the vicinity of Pine Bluffs when the area was in agricultural land use. A number of known pre-contact period Native American archaeological sites are located in proximity to the Pine Bluffs project area along the Assabet River and within the Assabet River National Wildlife Refuge (former Fort Devens Sudbury Annex) both north and south of Hudson Road. As a result of previous archaeological surveys within the refuge, 27 pre-contact Native American sites were identified, mostly in the vicinity of Puffer Pond and Taylor Brook.

Following consultation with the Massachusetts Historical Commission (MHC), the Stow Historical Commission recommended that the town have an archaeological survey conducted at the proposed Pine Bluffs recreational facility expansion. MHC concurred with this assessment and recommended that an intensive (locational) archaeological survey (950 CMR 70) be conducted within the Pine Bluffs parcel.

The goal of the intensive (locational) archaeological survey will be to locate and identify any significant archaeological deposits that may be present within the project area, and to make recommendations regarding the need for additional archaeological testing if necessary.

This scope of services outlines the tasks that will be undertaken as part of the cultural resource investigations within the Pine Bluffs Recreational Facility project area. The intensive survey will need to be conducted under a State Archaeologist's permit issued by the MHC.

Task 1: Coordination and Consultation

Lead project personnel will prepare the archaeological permit application for review by the proponent and the MHC. The permit application will include a technical proposal that describes the proposed project impact area and survey methodology, lists expected archaeological and cultural resources, and provides a schedule for completion of all project activities.

Task 2: Archival Research

Prior to the start of fieldwork, archaeological site files maintained at the MHC will be reviewed for updated information on known cultural resources within and/or near the project area. The review of information provided by MHC and in PAL's research files indicates that no previously recorded prehistoric or historic archaeological sites are located within the project area; however recorded archaeological sites are located in the vicinity in similar environmental settings. Data from previous archaeological projects completed in the project vicinity will be reviewed for relevant information relating to known and expected archaeological resources within the project area. The research will also include a review all available environmental data for the project area to assist with the development of a preliminary archaeological sensitivity assessment. Information on previous belowground disturbance within the project area will be used to guide the subsurface testing strategy.

Other expected sources of historic and archival information that will be reviewed include cultural resource management reports, historic maps and plans, local and regional histories and archives, and informant interviews.

Task 3: Walkover Survey

Archaeological field investigations will begin with a walkover survey of the project parcel. The walkover survey will assess existing conditions within the project area and document any surface indications of archaeological sites. The information collected during the walkover survey will be used to refine the preliminary archaeological sensitivity assessment.

While pre-Contact sites in New England are most often found belowground, artifact scatters are sometimes exposed on the surface through cultural agents such as pedestrian and vehicular traffic, and natural processes such as erosion. Post-Contact archaeological site types that might be visible include stone foundations, stone walls, and trash deposits. If the remains of a built resource such as a farmstead are present within a project area, it is likely that a cellar hole and associated landscape features such as stone walls, overgrown orchards and fields, and ornamental plantings may be visible on or above the ground surface.

Task 4: Sensitivity Assessment

Information collected during the archival research and walkover survey will be used to develop a predictive model of potential site types and their cultural and temporal affiliation. The development of predictive models for locating archaeological resources has become an increasingly important aspect of CRM planning. The predictive model considers various criteria to rank the potential for the project area to contain archaeological sites. The criteria are proximity of recorded and documented sites, local land use history,

environmental data, and existing conditions. The project area will be stratified into zones of expected archaeological sensitivity to determine where subsurface testing will be located.

Task 5: Subsurface Testing

Subsurface testing will be completed in zones of moderate and high archaeological sensitivity within the approximately 15-acre Pine Bluffs Recreational Facility project area. **Based on available project data, it is estimated that approximately 30 to 40, 50-x-50-centimeter test pits will be necessary to adequately test the Pine Bluffs Recreational Facility project impact area.** The research and walkover survey will be used to refine the preliminary archaeological sensitivity assessment and determine the exact locations of subsurface testing units.

The subsurface testing will be used to locate and identify potentially significant below ground archaeological deposits. It will also provide additional information relating to the belowground soil stratigraphy to assist in the identification of intact/natural versus previously disturbed soils. The archaeological fieldwork will also include recording and documentation of any aboveground features such as stone walls, foundations, and/or cartpaths within the project area.

Task 6: Laboratory Processing and Analyses

All artifacts recovered from the project area during the field investigations will be returned to the PAL facility for laboratory processing and analyses. These activities will include cleaning, identification, and cataloging of recovered cultural materials, as well as preliminary analyses of spatial distributions of artifacts and map and graphics production.

Task 7: Report Preparation

Within five days of the completion of the archaeological fieldwork, PAL will prepare a letter memorandum that summarizes the results of the cultural resource investigations, describes all historic and archaeological resources that were identified, and includes recommendations regarding the significance of any identified historic and archaeological resources and the need for additional work and consultation, if any. PAL will prepare a technical report that will follow the guidelines established by the National Park Service in the *Recovery of Scientific, Prehistoric, Historic, and Archaeological Data* (36 CFR Part 66) and the MHC. Draft copies of the report will be submitted to the proponent and the MHC for review. If necessary, archaeological site forms will be completed and submitted to MHC.

Task 8: Public Presentation

A public presentation based on the results of the intensive survey for the Pine Bluffs Recreational Facility project area for the Stow Historical Commission is planned and will take place after completion of the technical report for review.

Project Schedule

PAL is prepared to submit the technical proposal and archaeological permit application on receipt of a notice-to-proceed from the client. The MHC has 20 business days to review the application and issue the permit. The archival research can be completed during this period. The field investigations at the Pine Bluffs Recreation Facility project area will take one week to complete, depending on weather conditions. The fieldwork can begin within one week of receipt of the archaeological permit, weather permitting.

The client will be notified of the survey results upon completion of fieldwork. The technical report can be submitted within 45 days following the completion of fieldwork.

Project Personnel

Archaeological investigations will be carried out under the direction of a Principal Investigator with the assistance of a Project Archaeologist. All supervisory personnel meet the qualifications set by the National Park Service (36 CFR Part 61) for direction of archaeological projects.