

CPA Application Health



INTERDEPARTMENTAL COMMUNICATION

Acton Board of Health - Telephone 978-929-6632 - Fax 978-929-6340

October 28, 2015

TO: Steve Ledoux, Town Manager

FROM: Doug Halley, Health Director

SUBJECT: Trail Through Time

On September 10th Linda McElroy and I met with the Community Preservation Committee (CPC) to give them an update of the Trail Through Time (TTT) project (see attached presentation). During that presentation we noted that a portion of the work was being delayed due to current status of the Robbins Mill Dam (Bellows Farm Mill Dam). In 2009 an inspection/evaluation report of the dam was completed by Tighe and Bond (see attached report). This report found that the Overall Safety Rating for the dam was poor.

The work delayed for the TTT Project is adjacent to the sluiceway which receives water from the dam. The masons working on the restoration of the stone workings inspected this area and recommended delaying work in that area until the issues at the dam are addressed. It was their opinion that a breach of the dam during local flooding would undermine the area where the TTT viewing platform would be placed.

As we talked this through with the CPC it became clear that in order for this component of the TTT to be completed the Town needs to come to a decision on whether to breach the dam or restore the dam. Based on that the CPC encouraged Linda and I to look into a feasibility study for the historical restoration of the dam, which we have done.

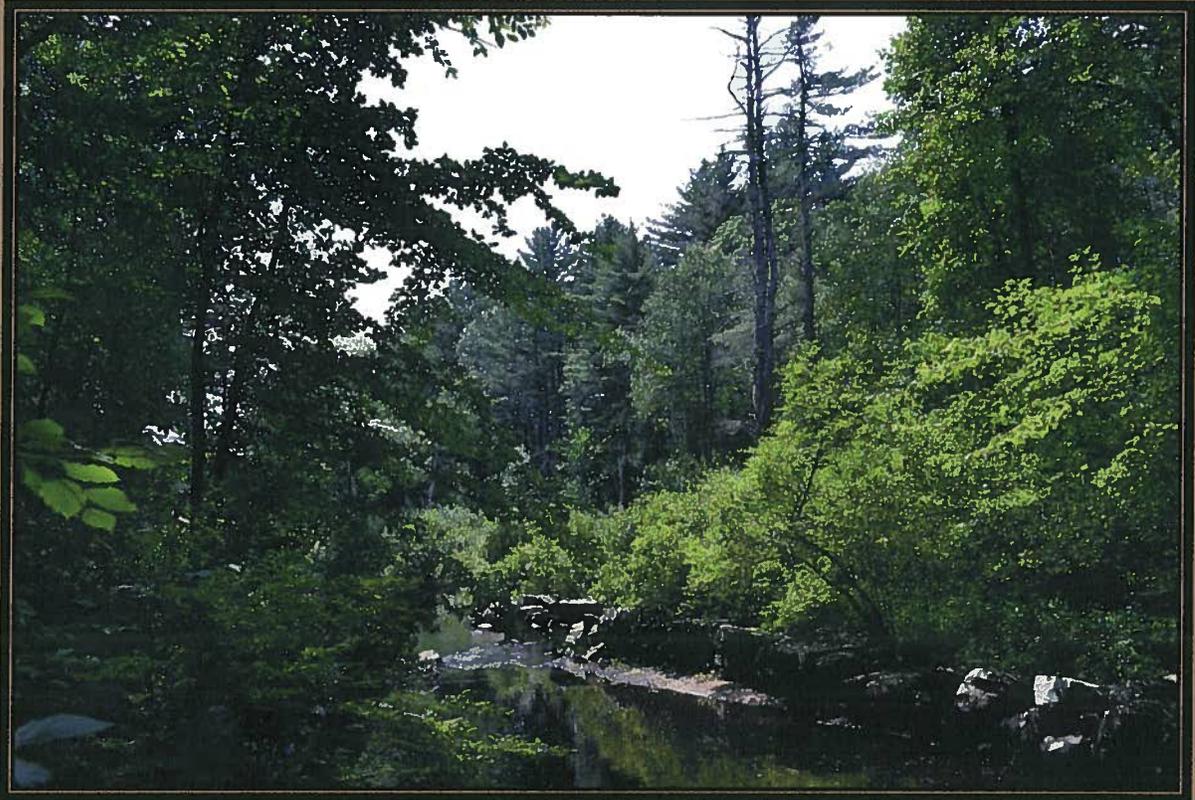
We have reached out to Matt Belise of Pare Corporation and Chad Cox of GZA and they have given verbal quotes in the range of \$30,000. We anticipate written quotes no later than the middle of November.

Recognizing the success of TTT and the continued interest of residents for this project we request that the Board of Selectmen consider submitting a feasibility study for the Robbins Mill Dam for consideration by the CPC.



Introduction

Trail Through Time



- Colonial/Native heritage trail
- North Acton Conservation
- 2 Mile loop



Nashoba Brook Stone Chamber

Trail Through Time



Nashoba Brook Stone Chamber

Trail Through Time

Prehistoric to Industrial era American heritage sites



This stone chamber with the adjacent stone enclosure comprise one of a group of sites that may be visited along the Trail Through Time, a heritage trail through North Acton conservation lands. Here can be seen remains of early Anglo-European buildings side-by-side with stone structures lying along an ancient swath of landscape sacred to Native Americans. For thousands of years, early people used this ritual landscape to sustain their reliance on Mother Earth and the spirit energies of balance and harmony.

This chamber is similar to many structures that once stood throughout the Northeastern woodlands. Of unusual L-shaped design, with a 17-ft passage leading to a 6-ft square room, this structure is of modified post and lintel construction. The pillar at the junction of the passage and room is a unique feature. Eight large, overlapping rock slabs form the roof, which is mounded over with earth.



Nashoba Brook stone chamber prior to reconstruction

A single stone tool excavated at the site—characteristic of the Neville culture extant in the region 8,000 years ago—is inconclusive for prehistoric use because of the disturbed soil in which it was found.

Detailed information on this site and others on the Trail Through Time can be found at: <http://trailthroughtime.info/>



Masonry evidence hints that the chamber room, built in a large cavity dug into the natural drumlín formation, may have been constructed in pre-Colonial times. However, historic documents record that Moses Wood, a Revolutionary War veteran and blacksmith, established a farmstead at this site in 1774. The archaeological evidence indicates that the chamber and adjacent foundation were used concurrently and for a related purpose. The many hand-wrought nails found in the soils of the enclosure strengthen the case for a foundry at the site.



Stone chamber during reconstruction

An inventory of assets compiled at the death of Samuel Tuttle, a later owner of the site, lists income from 'iron of ice-house,' implying that the chamber was used to store ice cut from Nashoba Brook. Other uses include storage of farm products such as meat, root crops, apples, and cider.

The evidence, gathered by different research specialties, makes clear that the chamber was built and rebuilt to accommodate the changing needs of current owners.

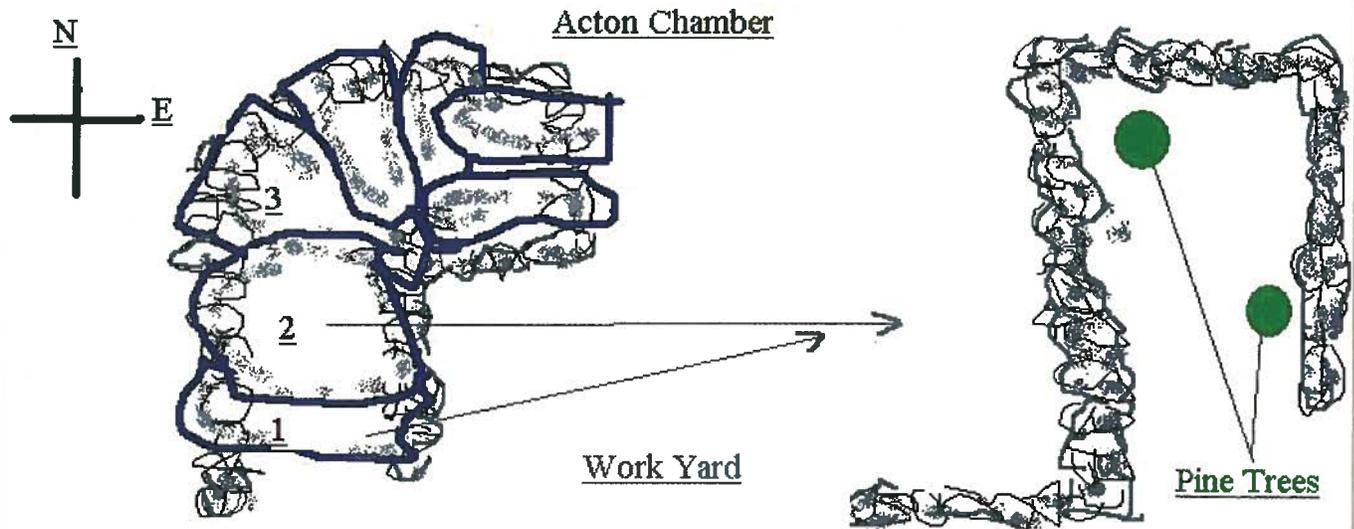
Restoration of the chamber's collapsing walls was made possible by collaborative funding from the Acton Community Preservation Committee and the New England Antiquities Research Association. This restoration was the first in the state to adhere to Massachusetts Historical Commission regulations and U.S. Secretary of Interior standards. The Acton Land Stewards and friends provided volunteer labor.

- Moses Wood Farmstead (1774)
- Chamber Dimensions
- Archaeological Survey



Blacksmith Shop

Trail Through Time



04/14/2006 not to scale
David Stewart-Smith, master mason

- Smithy known in area
- Moses Wood was a smith
- Same builder for both structures
- Animal Pen?



Wheeler Homestead

Trail Through Time

TT Trail Through Time

Wheeler Homestead




Before you is the foundation of an early 1730s dwelling house built by Thomas Wheeler, Jr. of Concord Town to the southeast. The purpose of the settlement that developed here was the operation of two mills—one a grist and the other a sawmill—on this upper portion of the Nashoba Brook, just below a pre-existing dam. The dam, shown on an early map as the 'Blood Dam' and located just above the mill complex, was earlier owned by the Blood family of Thomas Wheeler's maternal grandmother.

Thomas Wheeler, Jr. had the mill complex fully operational by 1732. The location is most suitable for mills. Here, the natural topography of the streambed, with its gently up-sloping wooded banks, favored the construction of a canal along the northerly stream bank, configured to supply water to the downstream sluices and gates, with a height of fall sufficient to power two mills.

The large flat stone in front of this foundation marks the entrance to the dwelling house which rested on this original cellar. This masonry was restored in 2000. During that process, under nearly a foot of debris, a floor, composed of large, flat stone slabs neatly fitted together, was discovered. Such a paved cellar was extremely unusual for the period, and may have been used for storage of farm products.

Archaeological evidence from the TTT 2008 Field School suggests that the foundation was renovated c. 1830, at which time stone from local quarries was introduced, the paving stones were set, and granite cills were added. The frame house was moved in the 19th century and demolished in the 20th, leaving the stone foundation largely intact. The staircase replicates one that likely fitted the recess built into the west wall.

Extending from the west wall is a low-walled surface enclosure. No records have been found to show whether a wooden structure, or of what type, was supported by this foundation. However, as close proximity to the well at the foot of the large sugar maple suggests that a kitchen shed/crossway was located here. The well, deep and still containing water, provided potable water to the settlement. The well cover was cut from one piece of granite from the North Acton Quarry.

Attached to this first enclosure is a second, with three sides, which may have supplied culinary and medicinal herbs, as was common during this era.

The double-walled stone driving corridor to the west was used to move cattle between pens and pasture. An opening toward its end on its northerly side was likely fitted with a gate into the pasture area. The corridor's southerly wall continues along the edge of the Brook for some distance.

According to early Town Records of Acton, after the homestead's establishment, the track within the driving corridor became the 'Main Street' connecting it with a settlement further downstream. It overlies a trail used from even earlier times by Native Americans who harvested fish and other resources from the Brook and its rich marshlands. Later, when additional homesteads and barns were built in the area, 'Main Street' was moved north to where it is located today.

The farmstead, with its associated driving corridor and cattle pens, would have supported the construction, and later the operation, of the mills. All of the extensive stone-work you see around you was built by the labor of men with oxen. Later, the oxen were used to move raw materials and products to and from the mills.

As you wander along the driving corridor, you will see to your left—towards the Brook—two stone walls, each perpendicular to the corridor, that lead towards the flood plain. They form a three-sided enclosure now equipped with a handicapped accessible picnic table and a bench which looks out on a wide vista across wetlands towards the Brook.



At one corner of this enclosure look for a carefully laid-up, flat-sided stone wall that joins the driving corridor at a wide angle. This wall is the butt end of a loading ramp, a structure often seen throughout the rural areas of New England. Such ramps were used to haul wagons loaded with hay or other supplies to the upper stories, or lofts, of barns. The presence of this ramp suggests that a two-story barn rested adjacent to the end of the ramp. The area within the enclosure was likely the place where various activities associated with the loading, storage, and offloading of fodder for animals and other supplies was carried out.

Historical documents indicate that there were eventually built several barns and outbuildings associated with this farmstead. However, the only extant remains of possible barns have been incorporated into a retaining wall along the driveway of the nearest house on the west side of Wheeler Lane.

Retracing the pathway back towards the front of the homestead, you will find a stone-dust path leading east towards the mill complex, where the remains of raceways, sluices, gates, and other building foundations are located.

Photo: David Sheehan. Gravelly, muddy season.

Detailed information about this site and others in the Trail Through Time may be found at <http://ttt.com/acton/acton.htm>. Funding for this panel and the museum it promotes was provided by a grant of State Meeting authorizing use of Community Preservation Act funds.



- 1728 Foundation
- Oxen for Labor
- Droving corridor, well, stone floor, animal pens



Old Road to Concord

Trail Through Time



Old Road to Concord
Trail Through Time





Before you are the remains of the northerly terminus of the Old Road to and from Concord. These remains, on the southern bank of Nashoba Brook, provide evidence of a formerly busy way in steady use during the 1730s between Thomas Wheeler, Jr.'s grist and sawmills, and Concord Town. This road ran directly to the present Pope Road, and today can be followed from above this slope as far as Triangle Farm, where evidence of the old road ends.

The following entry appears in the Concord Town Records, Old Volume B—Folio 107, on 20 February 1733.

At the desire of Thomas Wheeler, the Selectmen did then lay out a way from said Wheeler's mill to let him in to the Country Road... to run over the Brook a few rods below his mill to the upland on the easterly [sic] side of the Brook till it comes to a white oak on the side of the hill.

In return for the allowance of this road, Thomas Wheeler

promised to make the causeway on the westerly [sic] side of the above said Brook, and also a good and sufficient Bridge over it at his own Cost and Charge.

This public way was accepted on the 11th of March 1733 at a "General Town Meeting of the Notable Inhabitants of Concord." On February 20, 1734, the Concord Selectmen laid out a road to Thomas Wheeler's grist mill and his nearby dwelling house, according to Concord Town Reports. This recorded road is misinterpreted in Phalen's History of Acton to be the present Strawberry Hill Road. However, archaeological evidence established by the TTT 2008 Field School, supports that these road-remains are, in fact, those of the road, referenced above, which led to the TTT's Wheeler Farm and Mill site.

Roads were the lifeblood of commerce and society in Colonial America. They were designed by first conducting a land survey and then partitioning the Town to grant a Right of Way. These engineered roads were intended to open isolated areas to commerce and provide links to markets. Typically, they were constructed by clearing a road bed using corn, then laying a sub-structure, followed by a dirt surface, and finally bounded with stone walls.

All plans for such town roads showed dimensions for crews to use in the field. The surveyors would set out the marks for the Right of Way. In this case,

...four rods wide from the low land by the Brook till it come to the fourth mark, and from then on two rods wide.

In the 18th century, to set a measurement, a chain with 100 links was used to measure a 4-rod distance (equal roughly to 66 feet, or 20 meters) between two posts.

Just beyond the bridge, the old track narrows to a constant 10-rod width as it ascends the southerly bank of the Brook. The track close to the Brook shows major erosion damage, although, as the land levels out at the top of the ridge, the stone walls are readily discernible, and the road bed is still in good condition. The walls are of local rubble in 2 or 3 courses, depending on their size and shape.



Remains of large rubble post on south bank to support heavy loads.

The remains of the piers which supported the bridge are visible under the modern footbridge. They are of rubble construction also and were ample to support the heavy load of oar, cart, and corn—or other materials—which would have traveled to the mill daily during the harvest season.

Please do not attempt to climb this portion of the ancient roadbed, as that would cause further erosion.

Photo: Kimberley Connor-Hughes, archaeologist

Detailed information about this site and all the other Trail Through Time sites may be found at <http://ttt.concordmystory.com>. Funding for this project and the research presented here was provided by a vote of Town Meeting authorizing use of Community Preservation Act funds.



- Original abutments at Footbridge Terminus
- Leads to Pope Road
- Wheeler requested
- Wheeler built extensive causeway



Blueberry Stone Pile Cluster

Trail Through Time

Trail Through Time Blueberry Stone Pile Cluster



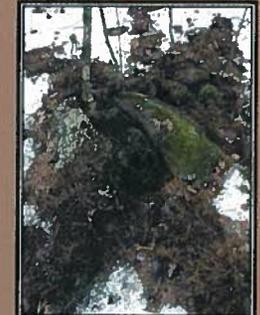
The small cluster of stone piles around you is representative of the usual density of such features scattered along this southerly flank of the Nashoba Brook. Look for two clusters a short distance southwest of this site where the density of stone piles is unusually large. Each is marked with a panel.

Stone pile groupings such as those known in Algonquian as *Káhtóquwuk*, were often created by Native Americans to memorialize an important event, death, or person. In other circumstances, stone piles, earthen mounds, or stone rows were constructed as part of an astronomical/ceremonial complex to establish sight-lines to mark significant astronomical events such as the solstice sunrise or set.

To designate an area as ceremonially important, another type of stone feature, called *Sun cōcōpinumut* in Algonquian, is occasionally seen, often far from modern trails. Such a feature, originally, was a single boulder with a fault line, deposited by the receding glacier. Over time of freezing and thawing, this boulder might be broken apart at the fault line. Such split boulders are recognizable by the matching faces at the resulting cleft.

Evidence that such a pair was selected by Native Americans to designate an important ceremonial site lies in the presence of one or more small rocks placed into the cleft. Such rocks may be of different material and color from the host boulder/pair. The smaller rocks may be angular or rounded. See photograph to right. Look for such an enhanced stone pair within the Princess Pine enclosure a quarter mile to the southwest.

Blueberry *Vaccinium Corymbosum*
Blueberries, along with other berries, were a significant food resource for Native Americans in New England. Large areas where the bushes grew well were cleared of trees, and the bushes were burned annually to promote a good crop. In allocating lands to families of his band, the sachem allotted berry patches as well as crop fields, and hunting and fishing areas.



Sun cōcōpinumut

The presence of stone piles and other stone features throughout these woodlands demonstrates the Native Americans' belief that the natural world is imbued with a spiritual quality. Such structures exemplify the Indian practice, here in the Northeast and elsewhere in North America, of subtly enhancing naturally occurring features of the landscape rather than building large, prominent structures that intrude upon that natural landscape.

Text and photos: Linda McElroy, Director, Trail Through Time, Design Process
Detailed information about this site and others on the Trail Through Time may be found at <http://ttc.conncoll.edu>. Funding for this panel was supplied by a vote of Town Meeting authorizing use of Community Preservation Act funds.



- Half dozen stone piles
- Created by Native Americans to commemorate special events
- Natural World-Spiritual Quality
- Blueberries



The Plantain Stone Pile Cluster

Trail Through Time

The Plantain Stone Pile Cluster
Trail Through Time



Before you is one of several stone pile clusters located throughout this portion of the Nashoba Brook Conservation Land and its adjacent neighbor parcel, Spring Hill Conservation Land. The Massachusetts Historical Commission states, on the State website, that all stone piles are the product of past agricultural or field-clearing activities undertaken by early European-descended farmers to provide pasturage for domestic animals or agricultural fields for food crops.

Modern Native Americans from Federally recognized regional tribes, however, tell us that stone piles such as these are ancestral tribal stone groupings with ceremonial significance for their people even to this day. Native American beliefs give spiritual significance to all natural objects. Constructed originally to commemorate significant tribal or personal events, such clusters are considered sacred places. Please do not touch or move any of these stones. To do so would destroy their sacred value to Native Americans.

Downy Rattlesnake Plantain



Look carefully between waves of the piles, and you will find the low growing evergreen plant, a member of the orchid family known as Downy Rattlesnake Plantain. Eastern subspecies. Native Americans used this same plant as an antidote for snake bites and as a tea for the relief of toothache, cold, fever, diarrhea, and eye problems.

Some who are now studying stone piles in this region have found that field-clearing piles:

- are irregularly shaped and consist of stones of many sizes;
- or consist of similarly-sized stones with large stones and small stones piled separately;
- have over time assumed the natural angle of repose;
- have the appearance of a dumped group of stones; and
- are set next to a field, against a stone wall, or spill over an embankment.

In contrast to these characteristics, observe that the piles in this cluster do not conform to these specifications. Additionally, notice that the area around this cluster and throughout these woodlands generally has not been cleared of stones.



Plan showing arrangement of piles in the Plantain Cluster, drawn by Steve.



An archeological feature at this site is a stone foundation set partially into the slope below the ridge a short distance uphill from the stone pile cluster. Bricks have been found in close proximity, and the masonry technique is European. A tiny flowage of seasonal water in close by. To reach the site, follow the short path, signed with green arrows, starting at the back of the cluster near the stone wall.

This foundation is not shown or mentioned in any deeds and maps of the town; however, this portion of the Nashoba Brook Conservation Land was owned by Dr. Jonathan Davies of Barnbury from 1750 to 1801. He was the brother of Capt. Davies of nearby Bellows Farm. Town records indicate that Dr. Davies was paid for medical services by the town:

April ye 2, 1755: ...at the same time an order to Capt. Davies for fourteen Shilling for time spent in the towns Service the year past and Likewise the Sum of Six Shilling which was Due to Dr. Davies for taking Care of Abigail Russel when She was Sick the whole of his Demands.

One interesting fact is the isolation of this foundation on the Davies parcel. As the land was owned for over 50 years by Dr. Davies, it is possible that a building on this foundation served as a sick house, or what was commonly called a pest house for the Davies family or other community members. There were no hospitals in the 18th century, and doctors, or communities, often set up pest houses to keep infectious diseases under control.



Chimney hole within the (possible) Davies' Pest House.

The plan of this structure, with a huge chimney in the middle separating two 'rooms,' would have provided for two hearths for warmth and separate spaces for the patient and caretaker with less danger of contagion.

Photo and grid map of estate: Deborah Curran Hughes, archaeologist.
Detailed information about this site and others on the Trail Through Time may be found at <http://www.conservancy.com>, finding the grid and the account provided here was supplied by a visit of some visiting authorizing use of Easterning Preservation Art funds.



- A baker's dozen stone piles
- Indian piles vs field clearing piles
 - Same size vs many sizes
 - Shape constructed vs angle of repose
 - Groupings in open area vs next to wall or embankment
- Downy Rattlesnake Plantain



Pest House

Trail Through Time



- 100 Yards Upslope
- Unusual Shaped Foundation
- Two Rooms/Huge Chimney



Native American Historical/Astronomical

Trail Through Time



- The Nashoba
- King Philip's War
- Manitou stones
- Narragansett Tribal Preservation Office



Regional Native American Lifeways

Trail Through Time



Regional Native American Lifeways

Trail Through Time



The Native Americans living in the Northeast at the time of European settlement were said to be tall, robustly built, well formed, well muscled, and quite intelligent. They were light in skin tone, and their facial features were European. Algonquian was spoken in several dialects along the Atlantic seaboard from the Carolina's northward into Canada.

Indian corn (maize) at settlement was 1-1/2' tall, based on height, each ear weighed by a sheaf of 10 sheaves, and occasionally only a woman. Individual grains might be lost by a squirrel. The landscape was usually heavily wooded through the mountain side. A basket's weight of European silver among the Indian, the most sought goods were such items from their account of silver, and spears were sought from southeastern chiefs. There was little of the Indian's hard, custom-made baskets seen the day. The silver was valued for their various goods through exchange.

Each tribe's territory — for hunting, hunting, berry picking, and gathering, corn fields, etc. — were defined by a river drainage system or other geographical feature. These lands were held in common, although the chief could allow to each family to own one for trees, fishing, hunting, etc. No concept of private property in land existed, and the selling of land was rare. A fee had led to many disputes between the two cultures. Personal items, such as food, and dogs were a family's own, excepting for the ownership of household customs.



Wooden stone pipe getting better

Southern New England Indians did a well-developed diet, according to white settlers, who found them better nourished than the Indians of the same area. The Native food in small settlements was their crop fields, where they grew the bit of corn, beans, and squash, as well as melons and pumpkins. By clearing trees, they maintained berry patches, where they harvested blueberries, strawberries, blackberries, raspberries, along with grapes, plums, and many other fruit-bearing trees were abundant. Maple trees, hazel nuts, and hickories were eaten raw, roasted, boiled, and some of which were ground into food. Some medicines were of the pine stored for winter consumption.

Large areas of brush lands were cleared and mowed with grass to attract deer, who dwelled in the woods. When the summer crop harvests were finished, the men turned to hunting deer and other game. Turkey abundance (all birds) were considered as property, as the Indians had, where every spring nest of hen and quail in the woods were taken. The men sometimes killed deer to be brought to the land and processed in the region of each year. Deer were also the source of venison.

Though the climate was not as hot as in the large southern area, there is little doubt that Native Americans would have exploited the abundant resources of the eastern seaboard. The region of the Atlantic coast was a rich source of food and shelter. The Native diet and meals (such as venison) was made and eaten. Certain meats were made to last.

The Indians of the region could in winter, make, or perhaps even, make use of the woods or their water and land with the region. Beads were combined in numerous ways to provide traps, nets, mats, berry drying, and vegetable dyes. Beads were prepared in a land that were 150 miles from the sea, and more a few Indian vessels had been to the coast through New England factories for generations. For example, Boston had boats, supplies, and a break, and Indian trading.



Small round objects, possibly seeds or small stones

Most New England Indians did not live in long-term. The Indians did live in villages near to crop fields, both permanent and mobile. Mobile villages were set up on the ground in a rough circle or oval shape with logs into a frame for the walls and the middle, where they grew corn with other crops. One piece of the wall, being made of long branches were supported, either by the ground to create a secure frame. A small hole was left open in the wall under the roof of the structure for smoke and air to escape. A doorway or two, to provide ventilation, could be covered with a simple thatched roof.

Living platforms were furnished at a low height against the interior walls and covered with furs. A rug of animal skins or mats for animal covering. Various animal skins were used as well as furs, feathers, and dried bird skins were attached to the low platform.

Further north, long houses were built for non-Indian people. Each with its own hearth, but the wigwags were easily transported. They were used primarily for temporary living accommodations during the growing season of various crops for the gathering of different foods.

Tools and implements were crafted into objects, and often were from a wide variety of natural materials. Bones and cooking pots were made from native soil using

and about 1500 AD, when some, around the year 1500, were made by using long wooden poles in a circular pattern on top of each other. These poles were often tapered at the top. Other containers were made by weaving grasses, reeds, and strips of birch bark into baskets of all sizes and shapes for specialized purposes. Thin baskets and birch bark containers were made especially for the storage of dried corn and vegetable oils and meats.

A variety of knives, axes, chisels, axes, fish hooks, and many other implements were made by shaping or grinding stone, bone, and antlers. A woman's knife, or grinding stone, was often carved with her, and known for the grinding of meal and flour from grain. Some often created out of stone or shell. Shells were used for various purposes, including as decorative items.

Clay was harvested from a variety of local sites, made into a variety of types of vessels, and from wood, bark, or animal, were used for cups and bowls, and other items. Children had dolls. Both genders often wore a skin cap that covered the shoulders to the neck. In winter, particularly in more northerly territory, animal clothing was favored. Americans were made from soft leather. Leggings, were worn by men when going into the field. Feathers were used for decoration, and sometimes were woven into coats. Bead decoration, after Contact, was very popular.



Corn Ear Mays

Small text at the bottom right of the page, likely a reference or source note.

- Tribal
- Territories
- Diet



Princess Pine Stone Pile Cluster

Trail Through Time

Princess Pine Stone Pile Cluster Trail Through Time



Most of the stone piles at this site are arranged linearly across the wooded slope before you. Some piles have been constructed on the ground, but many have been arranged on top of glacial erratic boulders. The construction style is unusual for the piles scattered throughout the conservation lands, but so also is the location, on sloping terrain which levels out into a boggy area. In addition to the two main piles on the lower cluster a few piles are scattered within the upper portion of the stone wall enclosure that surrounds the site.

This stone enclosure (Quasapanoyudé in Algonquian) is also unusual. It is comprised of one straight stone row, perpendicular to the gradient of the slope, and a second, curving stone row which connects with the first at its highest elevation. The curving row wraps around the east side of the slope, separating it from an extensive glacial boulder fan beyond. The lower end of the curved row meets the flowage at the bottom of the slope. This large stone structure is open along the flowage. See the figure for an outline.

The straight stone row, on the south side of the slope, aligns with the sun's summer solstice rise and winter solstice set. An 'ambrière' (Chewahshlweel), a purposely constructed bulge in the axis of this row, would have served as an observation post for an astronomical event or other distant feature. See the photo. At the lower end of this row, notice the marker stone (Sunah nipidnial). Also look for the enhanced split boulder pair (Sun) contemporaneous within the enclosure, that marks this site as important.

The seep, or spring, at the slope's bottom also suggests that this site was of ceremonial significance to tribal people. Fresh water, either as a seep, a small natural pool, or a small flowage, was almost always present at Native American ritual sites. To them, all nature was sacred, and the Earth was regarded as their mother. Springs and other natural sources of water were the places where the spirit of the Earth emerged. The presence of several distinctive natural elements within a

Princess Pine *Lycopodium obscurum*

Princess Pine, also known as Ground Pine, is native to northeastern North America. Related to the club mosses, it is a low growing evergreen ground cover used by Native Americans to relieve stiffness in the joints.



localized area would have enhanced its suitability as a sacred center.

In 1998, Mavor and Dix published *Maratou*, a seminal and comprehensive discussion of their research into Native American ceremonial sites in New England. They concluded



that many of the stone structures which New Englanders refer to as 'stone walls' were not built by English settlers as walls, but by Native Americans as markers of ceremonial/astronomical function. The authors suggested such structures be termed 'stone rows' (also Quasapanoyudé) to indicate their non-European purposes.

New England woodlands are crisscrossed with these structures. Many were, without doubt, built by settlers as property markers or agricultural field enclosures. However, many others of these 'rows' have no obvious purpose at least to a Western mind. They may just begin and end without intersecting other rows. Some cross swampland. Many are dead straight, others are slightly sinuous.



Stone enclosure built into straight line across hill



In addition to the solstices, other astronomical events commonly marked with stones and natural topography at Indian sites throughout the U.S. are the equinoctial sunrises and sets, the rising or setting of significant stars or constellations, such as the Pleiades, and the August 12 set for 13th rise of the sun. The significance of this date to northeastern Native Americans is not known, but it marks the beginning of the August Perseid meteor shower; and, in Maya cosmology, was the date of Creation of the current world cycle. Local Indians hold a week-long festival at this time each year.

Text and photo links and map: <http://www.ttt.org>. Detailed information about this site and others on the Trail Through Time may be found at <http://www.ttt.org>. Funding for this page was supplied by a vote of Town Meeting authorizing use of Community Preservation Act funds.



- Linearly arranged
- Summer and Winter solstice
- Observation Post
- Seep or Spring
- Enclosure



Stone Chamber Roof Slab Quarry

Trail Through Time

Trail Through Time

Stone Chamber Roof Slab Quarry



The outcrop of jagged vertical boulders may be the source of the rock slabs that form the roof of the Nashoba Brook Stone Chamber, located a half mile downstream from this site.

During the restoration of that chamber in 2004, the masons advised us to look for possible sources for the roof slabs. There are seven of these, rectangular slabs of various sizes. They have not been shaped with metal tools, and their size implies a nearby source. Three slabs exposed during the restoration showed signs of weathering. Together, these features suggested an outcrop of layered, or sedimentary, rock as a source.

The chamber's walls are laid up with field stones, generously supplied from the nearby ground and streambed. But there is no obvious source for slabs of rock the size of the roof slabs near the chamber site.

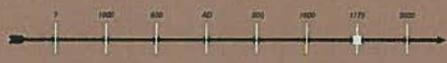
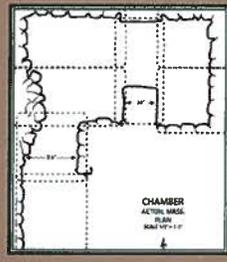
Rounded boulders would not have served for the roof; irregular bulges would have prevented overlapping them so that rain water and snow melt would drain away. Also, wide slabs were needed to span the walls of both the corridor and the interior room. The chamber's roof, in fact, has perfect drainage and opens pre-built walls.

The Colonians quarried stone. So did Native Americans using a passive technique: water poured into naturally occurring cracks in ledges would alternately freeze and thaw, forcing the cracks apart. Wooden wedges placed into the widening cracks eventually broke off smaller pieces. However, this technique is unlikely to have produced large slabs with rectangular shapes and the observed weathering.

During the chamber reconstruction, many volunteers assisted, among these was a physician/amateur geologist who commented, as our masons had already told us, that the stone in the roof slabs did not match the granite in the large quarry located nearby in the Acton Town Forest along Quarry Road in North Acton.

Later, some restoration project participants stumbled upon the rocky outcrop of vertical slabs before you. Some of the original "teeth" are missing; others lie on the ground where they fell, eroded loose by wind and water. Our physician/geologist confirmed that the stone in the outcrop matches that in the roof slabs.

The straight-line distance from the site to the chamber is short, and both sites are close to the Nashoba Brook. It is reasonable to assume this small outcrop could have provided the roof slabs. Even such large stones could have been moved on log rollers to the Brook's marshland, and from there, during the winter, moved the remaining distance over the ice to the chamber site. Builders sophisticated enough to have raised such slabs could set them onto previously constructed stone walls, without knocking those down. Surely would have had the expertise to move the slabs in wintertime.

It can never be known whether this outcrop is the source of the chamber's roof slabs. Ideas presented here are educated guesses; no historical documents have been found that attest who the original chamber builders were, or when they did their building. But the observed facts are consistent with a scenario that could have been carried out by Colonial farmers with oxen, or by Native Americans without. That scenario demonstrates the ingenuity that governed extraordinary building feats carried out just a few centuries ago without the technologies available today.

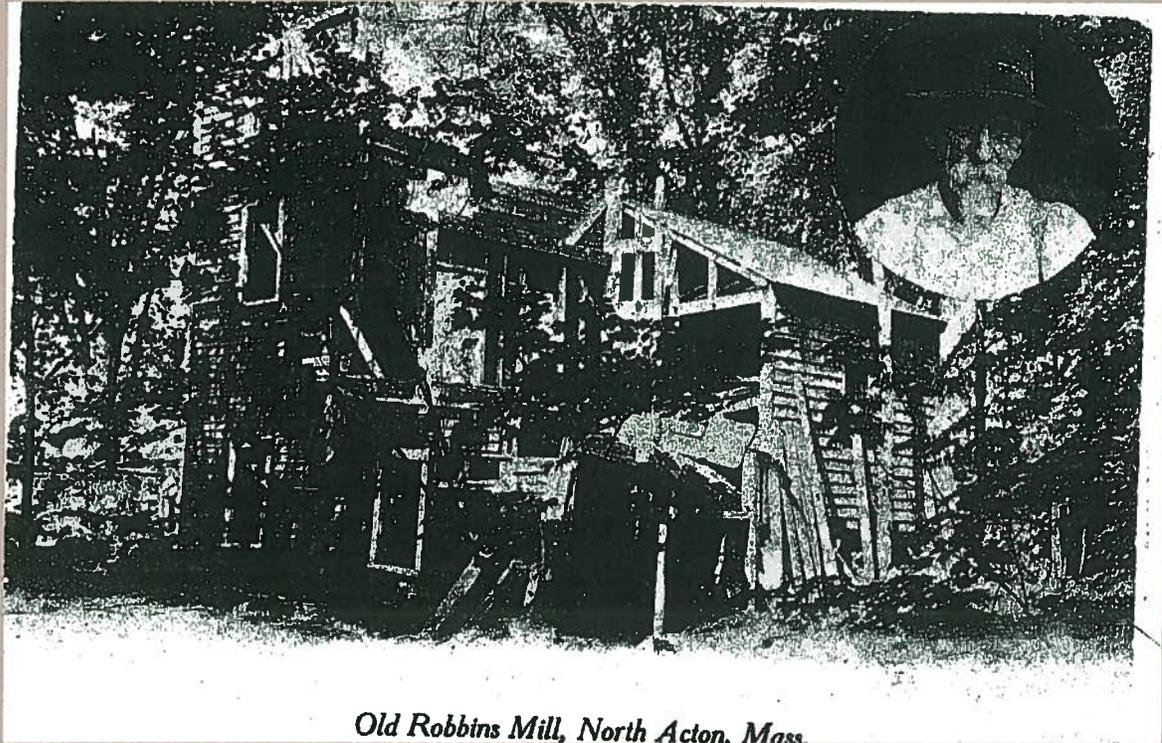
Chamber Plan Drawing: Bob Paterson, MASA, Task: Linda McElroy, TTT Project Director
Graphic: Phyllis
Boulders mentioned about this site and others on the Trail Through Time may be found at <http://www.trailthroughtime.com>. Funding for this panel was supplied by a vote of Trail Naming within the city of Community Preservation Act funds.

- Unusual Outcrop
- Similar Composition
- Transport Down River?



Wheeler Mill Sites

Trail Through Time



Old Robbins Mill, North Acton, Mass.

- Thomas Wheeler early 1730s
- Wheeler dam rebuilt over Blood Family dam
- Two Mills
 - Grist Mill
 - Saw Mill



Mill Masonry

Trail Through Time



- Stone lined ditch and berm canal
- Masonry gate at lower end
- Two sluiceways brought water to wheels
- Tub Wheel enclosure has been located
- Grist mill foundation behind tub wheel
- Vertical housing at 10' drop



Pipsissewa Stone Pile Site

Trail Through Time



20 plus stone piles

Originates in natural embedded
boulder field

Bedrock outcrop/sharp right angles

Evidence of wedge gouges



Pencil Factory Site

Trail Through Time

Early American Pencils



From factory of the 1800s, circa 1800

Early American Pencils

American pencil-making began in the early years of the 1800s when, it is believed, a New York woman contributed the first American pencils by combining the soft of animal tallow with a binding of wool and being mixed with a mixture of graphite and graphite. The first to manufacture pencils for New England were not a young Connecticut woman David Thompson, but according to American Pencil Makers, the pencils were of low value, and had less of than were manufactured.

In 1813, another Connecticut, David Murray, created a better product by mixing the tallow or paraffin with an adhesive substance, and covering the soft ends with grooves cut into a cedar shank, leaving room for air. The shank was then coated with a thin outer covering, and the finished pencils were cut from the shank, each with grooves for the hand. Murray's pencil factory was located about Concord's Mill Dam.

Murray hired the German-born and colored man, Ebenezer Wood, to help him operate the two-man operation to cut and separate the cedar logs. Wood obtained a patent for his machine, and was able to mechanize the production of pencils in Murray's factory and to develop the techniques which allowed Murray to produce and thereby increase production for the factory.

When David Thompson, Wood's contemporary and a fellow pencil maker, was called into the field by his father, John Thompson, John Thompson's factory in East Concord, New Hampshire, and he set up the business in Concord, New Hampshire, and was able to expand the business, which John Thompson had run since 1813. The partnership eventually dissolved, and the firm was run by John Thompson & Company, Thoreau & Co. purchased pencils of sufficient quality to be sold in the Boston market.

Thoreau and Murray became close associates, and since both firms had their plants on ground at Ebenezer Wood's mill, Murray attempted to convince Wood not to continue grinding Thoreau's pencils. However, because Thoreau's business was larger and more lucrative for Wood, it was Murray's plant which was eventually sold.

All of the early pencil makers attempted to replicate the refined techniques of the Europeans, especially that of the Frenchman, Nicolas-Joseph Couche, who invented a process for producing high quality pencils in 1795. However, progress among the American pencil makers in such experimentation with different techniques and materials.

Ebenezer Wood (1792-1880)

Ebenezer Wood was a colored man, known as a carpenter, settler of the year of 1813, and a politician. In 1813 he was known to have produced the first American pencil. The 1800s advocated a national system to provide for the development of all new construction techniques that were developed in Concord and other, and Ebenezer Wood played a key role in this technological development. Pencil making was the high-tech business of the day.



Ebenezer Wood

Ebenezer Wood's Improvements in Pencil Production

Murray's early methods were slow and painstaking, so he tried Wood to develop mechanized ways of advancing pencil production. According to Wood's contemporary, John's Horace Hovey, Ebenezer Wood "was in the very front rank of American pencil makers." Wood set up the first circular saw used in the production of pencil shanks. Hovey writes: "was a great cycloids for a long time." Using the principle of the circular saw, Wood was able to cut six grooves of a firm in a rapid fashion, and he also invented a mauling and leveling machine and a yedge press that could give 12 grooves of pencils of a firm, significantly boosting production. According to Hovey, Ebenezer Wood had an "inventor of high order, and his hand and brain largely helped to make Murray's fortune."

Ebenezer Wood constructed the first machine and octagon shaped cases for pencils, and thus is the inventor of the modern style of pencil that we have today. Rather than glue it into a wooden case, Wood glued two horizontal strips together to make his pencils.

However, rather than patent his inventions and techniques, Wood shared them freely with all who sought his help, and created one such machine was built by the New York company, Eberhard Faber, which would soon become a leader in pencil production.

Wood became known for his high quality graphite (or lead), which he ground with a millstone, increasing his production as he grew older. Such was the quality of the graphite that Mrs. John Thompson would purchase all her graphite from him for her own pencil factory in Concord. The Thompson process of creating pencil lead was highly secretive, and the mixture of graphite mineral and clay was burnt to harder instead of being air dried, as was Europe's technique.

While little is known of Ebenezer Wood's life, Hovey characterized Wood as a gentleman who appreciated letters, writing that even when Wood was 80 years old he would commit to memory "long practical articles which he found in magazines and newspapers." At one point in his career, Hovey even rented Wood's factory.

- Pencil Factory Site
Ebenezer Woods
Existing 4 sided kiosk



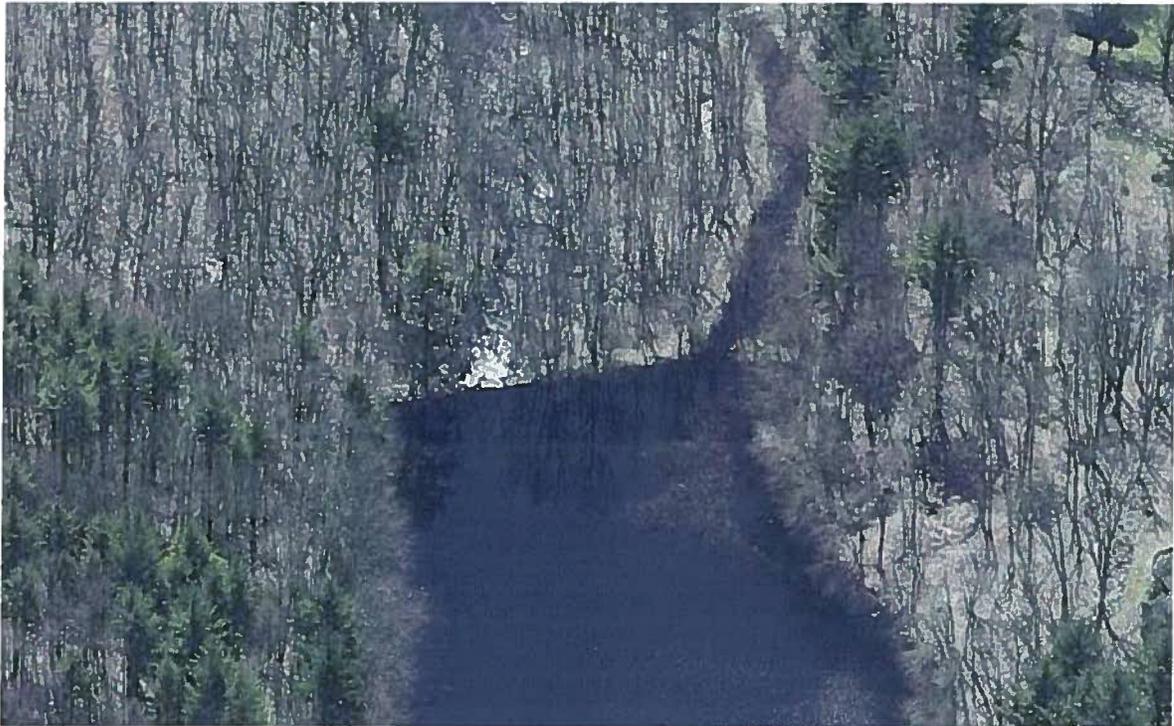
Work Going Forward

Trail Through Time



- Trail routes
- Panel Infill
- Robbin's Mill Dam
- Observation Platform

-- BELLOWS FARM MILL DAM --
PHASE I
INSPECTION / EVALUATION REPORT



Dam Name: Bellows Farm Mill Dam
State Dam ID#: 4-9-2-3
NID#: MA01147
Owner: Town of Acton
Owner Type: Municipality
Town: Acton
Consultant: Tighe & Bond, Inc.
Date of Inspection: November 21, 2009

Executive Summary

This Phase I Inspection / Evaluation Report details the inspection and evaluation of Bellows Farm Mill Dam located in Acton, Massachusetts. The inspection was conducted on November 21, 2009 by Tighe & Bond. Bellows Farm Mill Dam is a **Small sized, Low (Class III)** hazard potential dam.

Bellows Farm Mill Dam is approximately 155 feet long consisting of earth embankment, an 8 foot wide concrete over stone masonry spillway section, a 4 foot wide stoplog spillway section, and a 9 foot wide auxiliary canal section.

The current dam owner, the Town of Acton, Massachusetts was issued an Order dated August 31, 2009 to Conduct a Dam Safety Phase I Inspection by the Department of Conservation and Recreation (DCR).

Based on our review, the Overall Safety Rating of Bellows Farm Mill Dam is **Poor**. The following deficiencies were noted during the inspection and evaluation.

1. Significant tree and brush growth exists on the embankments and within 20 feet of the dam and abutments. If left alone, the woody vegetation and associated root systems will further deteriorate the condition of the embankments, particularly if large trees fall over due to high winds, or damage due to insects or disease. The Massachusetts Department of Conservation and Recreation (DCR) Policy on Trees on Dams states that all woody vegetation should be removed within 20 feet of embankments and dam structures.
2. The broad crested primary spillway and canal auxiliary spillway are poorly defined and uneven and lack proper training walls to confine the flow. A well defined spillway crest is needed to allow uniform flow over the spillway and prevent the build up of debris. Proper training walls are needed to prevent the embankment transitions from eroding and compromising the integrity of the embankments and spillway sections.
3. The right embankment is relatively narrow and lower than the middle and left embankment and may be more easily overtopped and eroded than the other embankment sections.
4. The embankments overall show poor alignment and should be flattened and defined for better stability and maintenance access.
5. The upstream embankments are steep and uneven above the waterline. Grading and slope protection is needed to prevent further deterioration of the upstream slopes.
6. The downstream masonry walls have loose and missing stones. The upper portion of the downstream embankment face is un-retained earth fill. Repair or buttressing of the downstream walls with a drainage fill system is needed to maintain the integrity of the embankment.
7. Seepage was observed below the downstream stone masonry walls of the middle embankment. If not addressed, the seepage could cause internal erosion of the embankment and potentially lead to dam failure.

8. The concrete training walls of the primary spillway show some deterioration and areas of detachment with the underlying stone masonry. These conditions are likely to worsen and may compromise the stability of the spillway section.
9. There is no low level outlet associated with the dam. Massachusetts dam safety regulations state that a conduit to drain the impoundment shall be provided for dams. It should be determined whether or not the stoplogs in the primary spillway extends vertically deep enough to drain the impoundment for emergency purposes.

Tighe & Bond recommends the following actions be taken to address the deficiencies identified for the dam:

- Perform a hydraulic and hydrologic analysis as part of a spillway repair design.
- Perform a topographic survey of the dam and surrounding area in order to establish elevations for repair design. In particular, the embankments and connections with the abutments should be constructed to the same elevation or at least an adequate minimum elevation.
- Perform an inspection of the spillway upstream and downstream face under controlled flow conditions in order to better observe conditions of the spillway and to investigate the suitability of the stoplog spillway as a low level outlet.
- As per the DCR Policy on Trees on Dams, remove brush and woody vegetation within 20 feet of the dam including the embankment and abutment areas.
- Design, permit, and repair the existing spillway and training walls, embankments, and downstream stone masonry walls. Improving the spillway capacity, if necessary, should be incorporated into any spillway modifications.
- Prepare a formal Operations & Maintenance Plan for the dam.
- Regularly control vegetation within 20 feet of the earth embankments, the spillway, and the dam abutments.
- Inspect the condition of the stone masonry and concrete and make repairs as needed.
- Regularly remove debris and clear brush from the spillway, discharge area of low level outlet and downstream channel.

Repair items should be performed under the direction of a registered professional engineer familiar with the methods and materials used in the design, construction, and repair of dams.

Dam Evaluation Summary Detail Sheet

1. NID ID: MA01147		4. Inspection Date: November 21, 2009	
2. Dam Name: Bellows Farm Mill Dam		5. Last Insp. Date: unknown	
3. Dam Location: Acton, MA		6. Next Inspection: November 21, 2019	
7. Inspector: Christopher D. Haker, P.E.			
8. Consultant: Tighe & Bond			
9. Hazard Code: Low		9a. Is Hazard Code Change Requested?: No	
10. Insp. Frequency: 10 Years		11. Overall Physical Condition of Dam: POOR	
12. Spillway Capacity (% SDF) 0-50% of the SDF or Unknown			
E1. Design Methodology:	2	E7. Low-Level Discharge Capacity:	1
E2. Level of Maintenance:	2	E8. Low-Level Outlet Physical Condition:	1
E3. Emergency Action Plan:	1	E9. Spillway Design Flood Capacity:	1
E4. Embankment Seepage:	3	E10. Overall Physical Condition of the Dam:	2
E5. Embankment Condition:	2	E11. Estimated Repair Cost:	\$620,000
E6. Concrete Condition:	2		

Evaluation Description

E1: DESIGN METHODOLOGY

1. Unknown Design – no design records available
2. No design or post-design analyses
3. No analyses, but dam features appear suitable
4. Design or post design analysis show dam meets most criteria
5. State of the art design – design records available & dam meets all criteria

E2: LEVEL OF MAINTENANCE

1. Dam in disrepair, no evidence of maintenance, no O&M manual
2. Dam in poor level of upkeep, very little maintenance, no O&M manual
3. Dam in fair level of upkeep, some maintenance and standard procedures
4. Adequate level of maintenance and standard procedures
5. Dam well maintained, detailed maintenance plan that is executed

E3: EMERGENCY ACTION PLAN

1. No plan or idea of what to do in the event of an emergency
2. Some idea but no written plan
3. No formal plan but well thought out
4. Available written plan that needs updating
5. Detailed, updated written plan available and filed with MADCR, annual training

E4: SEEPAGE (Embankments, Foundations, & Abutments)

1. Severe piping and/or seepage with no monitoring
2. Evidence of monitored piping and seepage
3. No piping but uncontrolled seepage
4. Minor seepage or high volumes of seepage with filtered collection
5. No seepage or minor seepage with filtered collection

E5: EMBANKMENT CONDITION (See Note 1)

1. Severe erosion and/or large trees
2. Significant erosion or significant woody vegetation
3. Brush and exposed embankment soils, or moderate erosion
4. Unmaintained grass, rodent activity and maintainable erosion
5. Well maintained healthy uniform grass cover

E6: CONCRETE CONDITION (See Note 2)

1. Major cracks, misalignment, discontinuities causing leaks, seepage or stability concerns
2. Cracks with misalignment inclusive of transverse cracks with no misalignment but with potential for significant structural degradation
3. Significant longitudinal cracking and minor transverse cracking
4. Spalling and minor surface cracking
5. No apparent deficiencies

E7: LOW-LEVEL OUTLET DISCHARGE CAPACITY

1. No low level outlet, no provisions (e.g. pumps, siphons) for emptying pond
2. No operable outlet, plans for emptying pond, but no equipment
3. Outlet with insufficient drawdown capacity, pumping equipment available
4. Operable gate with sufficient drawdown capacity
5. Operable gate with capacity greater than necessary

E8: LOW-LEVEL OUTLET PHYSICAL CONDITION

1. Outlet inoperative needs replacement, non-existent or inaccessible
2. Outlet inoperative needs repair
3. Outlet operable but needs repair
4. Outlet operable but needs maintenance
5. Outlet and operator operable and well maintained

E9: SPILLWAY DESIGN FLOOD CAPACITY

1. 0 - 50% of the SDF or unknown
2. 50-90% of the SDF
3. 90 - 100% of the SDF
4. >100% of the SDF with actions required by caretaker (e.g. open outlet)
5. >100% of the SDF with no actions required by caretaker

E10: OVERALL PHYSICAL CONDITION OF DAM

1. UNSAFE – Major structural, operational, and maintenance deficiencies exist under normal operating conditions
2. POOR - Significant structural, operation and maintenance deficiencies are clearly recognized under normal loading conditions
3. FAIR - Significant operational and maintenance deficiencies, no structural deficiencies. Potential deficiencies exist under unusual loading conditions that may realistically occur. Can be used when uncertainties exist as to critical parameters
4. SATISFACTORY - Minor operational and maintenance deficiencies. Infrequent hydrologic events would probably result in deficiencies.
5. GOOD - No existing or potential deficiencies recognized. Safe performance is expected under all loading including SDF

E11: ESTIMATED REPAIR COST

Estimation of the total cost to address all identified structural, operational, maintenance deficiencies. Cost shall be developed utilizing standard estimating guides and procedures

Changes/Deviations to Database Information since Last Inspection

Guidelines and Notes for Evaluations

Each of the evaluation categories has 5 rating levels. In general, the rating levels in each category are intended to reflect the following conditions:

1. Unsafe
2. Poor
3. Fair
4. Satisfactory
5. Good

E10-Overall Safety Rating Guideline

Unless the inspecting engineer presents compelling data, analyses, and observations that justify a higher rating, E10-Overall Safety Rating of the Dam shall not be higher than the lowest ranking in these high importance categories:

- E4-Seepage,
- E5-Embankment Condition (for embankment dams),
- E6-Concrete Condition (for dams where concrete structures retain water).

Note 1 - Embankment Condition Factor of Safety Criteria

In addition to the inspection conditions listed, the embankment condition rating should consider the slope stability Factor of Safety (FS) according to the following guidelines for downstream (D/S) and upstream slopes (U/S).

Rating	Normal Pool	SDF	Seismic	Rapid Drawdown
	D/S & U/S FS	D/S FS	D/S & U/S FS	U/S FS
1	<1.3	<1.1	<1.0	<1.0
2	<1.5	<1.4	<1.0	<1.1
3	>1.5	<1.5	<1.1	<1.2
4	>1.5	>1.5	>1.1	>1.2
5	>1.5	>1.5	>1.1	>1.2

In the absence of stability analyses, use the following factors to evaluate the stability component of the embankment rating. The inspecting engineer will need to consider all factors in combination as the exact combination of conditions listed will rarely occur. For slopes, > indicates steeper than.

Rating	Slopes	Seepage	Material	Compaction
1	>2H:1V	>5' above toe	SP, ML*, SM*	Loose or unknown
2	>2.5H:1V	>2' above toe	ML**, MH	Loose or unknown
3	>3H:1V	at toe	SM**, SW, CH	Likely compacted
4	<3H:1V	DS of toe	SC, CL	Compacted
5	<3H:1V	None	Suitably Zoned	Compacted

ML* - Non-plastic silt or any silt or clay susceptible to dispersion

ML** - Silt with some plasticity (non-dispersive)

SM* - Uniform silty fine sand

SM** - Widely graded silty sand

Note 2 - Concrete Condition Factor of Safety Criteria

In addition to the inspection conditions listed, ratings should consider the sliding stability Factors of Safety (FS) for any concrete structures that retain water according to the following guidelines.

FS Criteria for Dams with Limited Structure and Foundation Information and Testing

Rating	Nor. Pool FS	SDF FS	Ice Loading FS	Seismic FS
1	<2.0	<1.3	<1.3	<1.0
2	<3.0	<2.0	<2.0	<1.3
3	>3.0	>2.0	>2.0	<1.5
4	>3.0	>2.0	>2.0	>1.5
5	>3.0	>2.0	>2.0	>1.5

FS Criteria for Dams with Well Defined Structure and Foundation Information and Testing

Rating	Nor. Pool FS	SDF FS	Ice Loading FS	Seismic FS
1	<1.5	<1.3	<1.3	<1.0
2	<2.0	<1.7	<1.7	<1.0
3	<3.0	<2.0	<2.0	<1.1
4	>3.0	>2.0	>2.0	<1.3
5	>3.0	>2.0	>2.0	>1.3

Preface

The following three paragraphs were excerpted from the sample dam inspection format provided by the Massachusetts Department of Conservation and Recreation. The paragraphs are valid for the dam inspection and assessment provided in this report.

The assessment of the general condition of the dam reported herein was based upon available data and visual inspections. Detailed investigations and analyses involving topographic mapping, subsurface investigations, testing and detailed computational evaluations were beyond the scope of this report unless reported otherwise.

In reviewing this report, it should be realized that the reported condition of the dam was based on observations of conditions at the time of inspection, along with data available to the inspection team.

It is critical to note that the condition of the dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the reported condition of the dam will continue to represent the condition of the dam at some point in the future. Only through continued care and inspection can there be any chance that unsafe conditions be detected.

Christopher D. Haker, P.E.
Massachusetts License No.: 47184
License Type: Civil
Senior Engineer
Tighe & Bond, Inc.

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Executive Summary

Dam Evaluation Summary Detail Sheet

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J:\A\A0903\REPORT\Text 2009 Bellows Farm Dam Phase I Report.doc

Section 1

Description of Project

1.1 General

1.1.1 Authority

The Town of Acton has retained Tighe & Bond to perform a visual inspection and develop a report of the conditions for Bellows Farm Mill Dam in Acton, Massachusetts. This inspection and report were performed in general accordance with MGL Chapter 253, Sections 44-50 of the Massachusetts General Laws as amended by Chapter 330 of the Acts of 2002.

1.1.2 Purpose of Work

The purpose of this investigation is to inspect and evaluate the present condition of the dam and appurtenant structures in general accordance with 302 CMR10.07 to provide information that will assist in both prioritizing dam repair needs and planning/conducting maintenance and operation of the dam.

The investigation is divided into four parts: 1) obtain and review available reports, investigations, and data previously submitted to the owner pertaining to the dam and appurtenant structures; 2) perform a visual inspection of the site; 3) evaluate the status of an emergency action plan for the site and; 4) prepare and submit a final report presenting the evaluation of the structure, including recommendations and remedial actions, and opinion of probable costs.

1.1.3 Definitions

To provide the reader with a better understanding of the report, definitions of commonly used terms associated with dams are provided in Appendix D. Many of these terms may be included in this report. The terms are presented under common categories associated with dams which include: 1) orientation; 2) dam components; 3) size classification; 4) hazard classification; and 5) miscellaneous.

1.1.4 Figures

Figures were created for this report to aid the reader in understanding the dam, its features, and the surrounding area. Figure 1 presents a topographic image showing the site locus and downstream area. Figure 2 presents an aerial overview of the dam and surrounding area. Figure 3 presents a topographic image showing the watershed area associated with the dam. Figure 4 presents a site sketch of the dam and its appurtenant features. This figure also serves as a photo location plan showing location and orientation of photos referenced and included in this report.

1.2 Description of Project

1.2.1 Location

Bellows Farm Mill Dam is located in the Town of Acton in Middlesex County, Massachusetts. The dam is located at latitude 42.514189 and longitude -71.404261. The site is accessed from the end of Wheeler Lane.

The dam is located along Nashoba Brook which is part of the Sudbury-Assabet-Concord (SuAsCo) Watershed which ultimately flows into the Merrimack River. The dam impounds Robbins Mill Pond and is within the USGS Westford, MA quadrangle as shown on Figure 1. Figure 2 presents an aerial view of the dam and surrounding area.

1.2.2 Owner/Operator

	Dam Owner	Dam Caretaker
Name	Town of Acton	Town of Acton Tom Tidman
Mailing Address	472 Main Street	Natural Resources Director 472 Main Street
Town	Acton, MA	Acton, MA 01720
Daytime Phone	978-264-9631	978-264-9631
Emergency Phone	978-264-9638 Police Department	978-264-9638 Police Department
Email Address	ttidman@acton-ma.gov cyork@acton-ma.gov	ttidman@acton-ma.gov cyork@acton-ma.gov

1.2.2 Purpose of the Dam

Bellows Farm Mill Pond Dam impounds Robbins Mill Pond which is currently used for recreational purposes. The original function of the dam provided hydropower to a former mill located along a canal and downstream of the primary spillway. The dam is part of the Nashoba Brook Conservation Area which is maintained by the Town of Acton.

1.2.3 Description of the Dam and Appurtenances

Bellows Farm Mill Dam is approximately 155 feet long and consists of earth embankment divided into three parts by a primary spillway section and a canal auxiliary spillway section (Photo 1). The lower end of the canal contains a stoplog weir located about 300 feet downstream of the main dam.

The left embankment spans approximately 30 feet between the left abutment and a concrete over stone masonry, primary spillway (Photo 2). This portion of embankment is about 10 feet wide and partially supported by a downstream stone masonry wall. The middle embankment spans approximately 95 feet between a canal at the right side of the dam and the primary spillway toward the left of the dam (Photo 3). This portion of embankment is about 10 feet wide and supported on the downstream side by a stone masonry wall (Photo 4). Large stones were visible along the waterline of the above embankments and may indicate the presence of upstream stone masonry embankment walls (Photo 5). The right embankment is approximately 30 feet long and spans between the right abutment and the canal spillway (Photo 6). This portion of embankment is less than 10 feet wide and appears to consist of earth fill only.

The primary spillway consists of an 8 foot wide concrete and earth fill broad-crested section that abuts with the earthen left embankment, and consists of a 4 foot wide stoplog sluiceway section that abuts with the middle embankment (Photos 7 and 8). An 8 foot by 8 foot section of concrete over stone masonry serves as a middle training wall and separates the two sections. A 10 foot wide concrete over stone masonry wall serves as the

sluiceway right training wall. The crest elevation of the stoplog weir was estimated to be 0.4 feet lower than the broad crested weir. Water was flowing over both sections during the inspection. It is possible that the stop logs in the sluiceway provide impoundment water level control.

The canal spillway is approximately 9 feet wide and consists of uneven stone masonry (Photo 9). The canal width is 10 to 15 feet wide and is bordered by an earth embankment on the left and a natural valley slope on the right (Photo 10). The sides of the canal are lined with stone. The canal extends downstream for approximately 300 feet to a another spillway that consists of a 14 foot wide spillway structure with a 17 inch wide stoplog weir sluiceway (Photos 11 and 12). A small building is located left of this spillway. The canal at this point is about 10 feet higher in elevation than the main downstream channel that flows from the main dam's primary spillway.

The main river channel and the canal converge approximately 390 feet downstream of the dam. The downstream area between the two channels is heavily wooded. Based upon mapping and aerial imagery, the area surrounding Nashoba Brook as it travels downstream to the south appears to be undeveloped and heavily wooded. The brook passes beneath a railroad two miles downstream and then beneath Route 119 three miles downstream.

1.2.4 Operations and Maintenance

Bellows Farm Mill Dam is owned and operated by the Town of Acton. The dam is open to foot traffic via a small park area at the end of Wheeler Lane. The dam does not appear to be maintained regularly.

1.2.5 DCR Size Classification

For the purposes of size classification, Bellows Farm Mill Dam has a height of 6 feet. This is based on the top of dam elevation since the spillway design pool elevation is not known. Based upon the top of dam elevation, the maximum storage capacity is approximately 38 acre-feet. In accordance with Department of Conservation and Recreation classification, under Commonwealth of Massachusetts Regulations 302 CMR Dam Safety revised November 4, 2005, Bellows Farm Mill Dam is a Small size structure.

1.2.6 DCR Hazard Classification

In accordance with Department of Conservation and Recreation classification procedures, under the Commonwealth of Massachusetts Regulations 302 CMR Dam Safety as revised November 4, 2005, the dam is classified as a **Low (Class III)** hazard dam. Failure of the dam is not likely to cause serious damage to property or loss of life.

Based on the **Low (Class III)** hazard classification, the required inspection frequency for Bellows Farm Mill Dam is every 10 years under 302 CMR 10.00 Dam Safety regulations.

1.3 Engineering Data

The following sections are based on available report, design, and construction information listed in Appendix C, and are intended to provide an overview of the dam and impoundment. The USGS Westford, MA Quadrangle Map was used to approximate a top of dam elevation of 164 feet. All other elevations given in this report were estimated from the assumed top of dam elevation. Elevations refer to National Geodetic Vertical Datum of 1929 (NGVD).

1.3.1 Drainage Area

The watershed area for Bellows Farm Mill Dam is approximately 12 square miles and extends north into Chelmsford and west into Littleton Common. The drainage area contains numerous brooks and a few small ponds. The estimated perimeter of the drainage area is superimposed on a USGS topographic image provided as Figure 3. This approximation was made using the information available at the USGS StreamStats website.

1.3.2 Reservoir

The dam impoundment is Robbins Mill Pond and occupies an estimated 7 acres at normal pool. See table below for data about normal, maximum, and spillway design flood (SDF) pools. These data were calculated based on USGS and GIS imagery. An estimated maximum impoundment depth of 6 feet was assumed during normal storage conditions.

	Impoundment Elevation (feet)	Surface Area (acres)	Storage Volume (acre-feet)
Normal Pool (0.8 feet over stoplog weir)	162.8	7	24
Maximum Pool (top of dam embankment)	164	16	38
Spillway Design Flood Pool (50 - Year)	Unknown	Unknown	Unknown

1.3.3 Discharges at the Dam Site and Spillway Capacity

Discharges past the dam are through the concrete and stone masonry spillway section and the canal auxiliary spillway section. Flow through the canal is restricted by a stoplog spillway located downstream. Estimated discharge capacities past the dam are summarized below. Based upon the size and hazard classification, the spillway design flood is the 50-year return flood.

Discharge in cubic feet per second (cfs):

A.	Maximum Known Flood	not known
B.	Predicted 50-year SDF Flow Through Spillway Based on Top of Dam Elevation at 340 Feet	not known
C.	4 Foot Stoplog Spillway Capacity With Water at the Top of the Dam (El. 164 feet)	34
D.	8 Foot Broad Crested Weir Capacity With Water at the Top of the Dam (El. 164 feet)	68
E.	9 Foot Canal Spillway Capacity With Water at the Top of the Dam (El. 164 feet)	30
F.	Low level outlet capacity with Water Level	N/A

1.3.4 General Elevations

The elevation datum in feet is has been approximated to NGVD 1929.

A.	Top of Dam Embankment	164
B.	Spillway Design Flood Pool	unknown
C.	Normal Pool	162.8
D.	Spillway Crest – Stoplog Weir	162
E.	Spillway Crest – Broad Crested Weir	162.4
F.	Upstream Water at Time of Inspection	162.8
G.	Downstream Water at Time of Inspection	159±
H.	Low Level Outlet Invert (Conduit Invert	N/A
I.	Streambed at Toe of the Dam	158

1.3.5 Main Spillway - Stoplog Sluiceway

A.	Spillway Type	4 foot wide stoplog sluiceway
B.	Length (ft)	4
C.	Spillway Elevation (ft)	162
D.	Upstream Channel Elevation	162±
E.	Downstream Channel Elevation	158±

1.3.6 Main Spillway – Broad Crested Weir

F.	Spillway Type	earth and concrete fill over stone masonry
G.	Length (ft)	8
H.	Spillway Elevation (ft)	162.4±
I.	Upstream Channel Elevation	161±
J.	Downstream Channel Elevation	158±

1.3.7 Canal Auxiliary Spillway

K.	Spillway Type	uneven stone masonry
L.	Length (ft)	9
M.	Spillway Elevation (ft)	162.8+
N.	Upstream Channel Elevation	161.5±
O.	Downstream Channel Elevation	161±

1.3.8 Additional Information

Existing information for this dam includes a July 2006 Tighe & Bond Verification In Field (VIF) Inspection Report. The information obtained has been incorporated into this report and a full reference is cited in Appendix C.

1.3.9 Design and Construction Records

Original design and construction records were not available for Bellows Farm Mill Dam.

1.3.10 Operating Records

There were no operating records available for review during the inspection.

1.4 Summary Data Table

Table 1.1, summarizing the required Phase I Report data collected as part of this inspection, is presented on the following page.

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1.1 Summary Data Table

Required Phase I Report Data	Data Provided by the Inspecting Engineer
National ID #	MA01147
Dam Name	Bellows Farm Mill Dam
Dam Name (Alternate)	N/A
River Name	Nashoba Brook
Impoundment Name	Robbins Mill Pond
Hazard Class	Low
Size Class	Small
Dam Type	Earth embankment with primary and canal spillway
Dam Purpose	recreational
Structural Height of Dam (feet)	6 feet at primary spillway
Hydraulic Height of Dam (feet)	4
Drainage Area (sq. mi.)	12
Reservoir Surface Area (sq. mi.)	0.011
Normal Impoundment Volume (acre-feet)	24
Max Impoundment Volume ((top of dam) acre-feet)	38
SDF Impoundment Volume* (acre-feet)	Unknown
Spillway Type	8 foot wide broad-crested weir and 4 foot stoplog weir
Spillway Length (feet)	8 feet broad-crest and 4 feet stoplog
Freeboard at Normal Pool (feet)	±1.2 feet
Principal Spillway Capacity* (cfs)	68 - broad-crest; 34 - Stoplog
Auxiliary Spillway Capacity* (cfs)	30
Low-Level Outlet Capacity* (cfs)	N/A
Spillway Design Flood* (flow rate - cfs)	Unknown
Winter Drawdown (feet below normal pool)	N/A
Drawdown Impoundment Vol. (acre-feet)	N/A
Latitude	42.514189
Longitude	-71.404261
City/Town	Acton
County Name	Middlesex
Public Road on Crest	No
Public Bridge over Spillway	No
EAP Date (if applicable)	N/A
Owner Name	Town of Acton
Owner Address	472 Main Street
Owner Town	Acton, MA 01720
Owner Phone	978-264-9631
Owner Emergency Phone	978-264-9638
Owner Type	Municipality or Political subdivision
Caretaker Name	Tom Tidman/Natural Resource Director
Caretaker Address	472 Main Street
Caretaker Town	Acton, MA 01720
Caretaker Phone	978-264-9631
Caretaker Emergency Phone	978-264-9638
Date of Field Inspection	11/21/2009
Consultant Firm Name	Tighe & Bond
Inspecting Engineer	Christopher D. Haker, P.E.
Engineer Phone Number	508-471-9645

*In the event a hydraulic and hydrologic analysis has not been completed for the dam, indicate "No H&H" in this table, recommendation section shall include specific recommendation to hire a qualified dam engineering consultant to conduct analysis to determine spillway adequacy in conformance with 302 CMR 10.00.

Section 2 Inspection

2.1 Visual Inspection

Bellows Farm Mill Dam was inspected on November 21, 2009 by Christopher D. Haker, PE and Robert M. Ryan of Tighe & Bond. At the time of the inspection, the weather was cloudy with a temperature of approximately 40°F. Photographs to document the current conditions of the accessible portions of the dam were taken during the inspection and are included in Appendix A. Water from the impoundment was flowing moderately over the spillway. A copy of the inspection checklist is included in Appendix B.

2.1.1 General Findings

In general, Bellows Farm Mill Dam was found to be in **Poor** condition mostly due to the presence of large trees on the embankments, deteriorated concrete and stone masonry at the primary spillway, and observed seepage immediately downstream of the middle embankment. General observations as well as overall specific concerns are identified in more detail in the sections below.

2.1.2 Embankments

- Abutments
 - Contact between the left embankment and the left abutment is stable and no deficiencies were observed.
 - The right embankment is relatively narrow at the right abutment.
 - Trees and brush are within 20 feet of the dam abutment area. The Massachusetts Department of Conservation and Recreation (DCR) Policy on Trees on Dams states that all woody vegetation should be removed and controlled within 20 feet of embankments and dam structures.
- Embankment Crest
 - The embankment crests are uneven horizontally and contain areas of depressions (Photo 13).
 - Large trees and heavy brush growth is present along the edges of the embankment.
 - There is little grass cover or other slope protection.
 - The right embankment crest is relatively narrow and appears to be lower in elevation than the other embankments.
- Embankment Upstream Slope
 - The upstream embankment slopes are steep and uneven above the waterline.
 - There is no slope protection other than large stones placed unevenly along the waterline (Photo 5).

- The upstream slopes contain significant tree and brush growth with exposed root systems.
- **Embankment Downstream Slope**
 - The right embankment downstream slope contains significant tree and brush growth with exposed root systems (Photo 6).
 - The downstream stone masonry walls of the middle and left embankments contain some areas of loose and missing stones.
 - A section of the middle embankment about 20 feet from the spillway is partially covered over by earth fill (Photo 14).
- **Drains**
 - We observed no drainage systems during the inspection.
- **Instrumentation**
 - We observed no measuring devices or instrumentation during the inspection.
- **Access Roads and Gates**
 - Access to the dam is from the Nashoba Brook Conservation Area at end of Wheeler Lane in Acton, MA.

2.1.3 Appurtenant Structures

- **Primary Spillway**
 - The weir of the broad crested section of the primary spillway is vertically uneven.
 - The transition of the broad crested section with the left embankment is poorly defined and lacks proper training walls to confine the flow protect the embankment from erosion (Photo 15).
 - This section was apparently patched with concrete during repairs in 1995. The overall condition of the section could not be determined due to the flow of water over the spillway.
 - The stoplog weir was largely unobservable due to flow over the spillway. The depth of the stoplogs could not be determined and may have once served as a means to drain the impoundment for maintenance or emergency purposes.
 - The upstream side of the stoplogs is filled with sediment.
 - The concrete training walls show some deterioration and the concrete is detaching from the underlying stone masonry near the waterline on the downstream side (Photo 16).

- Low Level Outlet
 - There was no low level outlet identified during the inspection.
- Auxiliary/Emergency Spillway
 - The canal auxiliary spillway has a poorly defined crest with uneven and missing stone masonry (Photo 9).
 - The embankment transitions of the spillway are poorly defined, contain tree and brush growth, and lack proper training walls to confine the flow.
 - Leaf and wood debris is caught on the upstream side of the spillway
- Dike
 - There is a dike that contains the left side of the canal and stretches approximately 300 feet from the main dam to the former mill building.

2.1.4 Downstream Area

- Uncontrolled seepage flow was identified in the downstream area below the middle embankment section (Photo 17 and 18).
- The downstream channel flows freely and is relatively even in width (Photo 19)
- The downstream area is wooded within 20 feet of the dam. The Massachusetts Department of Conservation and Recreation (DCR) Policy on Trees on Dams states that all woody vegetation should be removed and controlled within 20 feet of embankments and dam structures.
- A spillway with a 17 inch wide stoplog weir exists approximately 300 feet downstream of the canal spillway (Photo 12). The total height of the weir section is 3 feet, including 1 foot of stoplogs in place during the inspection. The height of flow over the boards was approximately 5 inches.

2.1.5 Reservoir Area

- The banks of the impoundment are relatively flat and wooded (Photo 20).

2.2 Caretaker Interview

Mr. Tom Tidman was present during the beginning of the inspection and provided information that has been incorporated into this report.

2.3 Operation and Maintenance Procedures

2.3.1 Operational Procedures

There are no formal operational procedures for Bellows Farm Mill Dam.

2.3.2 Maintenance of Dam and Operating Facilities

Minor repairs were made to the dam in 1995 consisting of concrete repairs to the primary spillway section. There is no regular maintenance to the dam and a maintenance plan has not been developed. Mr. Tidman indicated that debris is removed from the spillway areas on an as needed basis.

2.3.3 Emergency Warning System

An Emergency Action Plan has not been developed for Bellows Farm Mill Dam. According to Massachusetts General Law 253, Section 44, Chapter 302 CMR 10.00, low hazard dams are not required to have an Emergency Action Plan on file with DCR.

2.4 Hydrologic/Hydraulic Data

Bellows Farm Mill Dam is a Small size, Low (Class III) hazard structure, and, in accordance with Massachusetts dam safety regulations, the spillway design flood (SDF) for the dam is the 50-year return flood. No previous Hydrologic/Hydraulic (H&H) Analysis was available for review.

The estimated capacity of the combined primary and canal auxiliary spillway is 132 cfs. An H&H analysis is required to estimate the inflow to the pond resulting from the 50-year storm and determine whether or not the spillway is considered hydraulically adequate to safely pass the SDF without overtopping the earth embankments.

2.5 Structural Stability/Overtopping Potential

2.5.1 Structural Stability

There were no records of a stability analysis of the structure available for review. The observations made at the time of the visual inspection did not indicate that there were any stability issues at the dam.

2.5.2 Overtopping Potential

An H&H analysis would determine the potential for overtopping in the event of the design storm as defined by 302 CMR 10. It is not believed that a previous H&H analysis was prepared for this dam. There was no visual or recorded evidence that the embankments have been overtopped.

2.5.3 Seepage/Leakage

Uncontrolled seepage flow was observed through the downstream area below the wall in the middle embankment section. Three distinct flow routes were identified between 60 to 75 feet from the primary spillway. If uncontrolled leakage through the embankments is not monitored or worsens, it could cause internal erosion and could potentially lead to dam failure.

Section 3

Assessments and Recommendations

3.1 Assessments

On the basis of the visual inspection and a review of available information, Bellows Farm Mill Dam is found to be in **Poor** condition. The dam was found to have the following deficiencies:

1. Significant tree and brush growth exists on the embankments and within 20 feet of the dam and abutments. If left alone, the woody vegetation and associated root systems will further deteriorate the condition of the embankments, particularly if large trees fall over due to high winds, or damage due to insects or disease. The Massachusetts Department of Conservation and Recreation (DCR) Policy on Trees on Dams states that all woody vegetation should be removed within 20 feet of embankments and dam structures.
2. The broad crested primary spillway and canal auxiliary spillway are poorly defined and uneven and lack proper training walls to confine the flow. A well defined spillway crest is needed to allow uniform flow over the spillway and prevent the build up of debris. Proper training walls are needed to prevent the embankment transitions from eroding and compromising the integrity of the embankments and spillway sections.
3. The right embankment is relatively narrow and lower than the middle and left embankment and may be more easily overtopped and eroded than the other embankment sections.
4. The embankments overall show poor alignment and should be flattened and defined for better stability and maintenance access.
5. The upstream embankments are steep and uneven above the waterline. Grading and slope protection is needed to prevent further deterioration of the upstream slopes.
6. The downstream masonry walls have loose and missing stones. The upper portions of the downstream embankment face are un-retained earth fill. Repair or buttressing of the downstream walls with a drainage fill system is needed to maintain the integrity of the embankment.
7. Seepage was observed below the downstream stone masonry walls of the middle embankment. If not addressed, the seepage could cause internal erosion of the embankment and potentially lead to dam failure.
8. The concrete training walls of the primary spillway show some deterioration and areas of detachment with the underlying stone masonry. These conditions are likely to worsen and may compromise the stability of the spillway section.
9. There is no low level outlet associated with the dam. Massachusetts dam safety regulations state that a conduit to drain the impoundment shall be provided for dams. It should be determined whether or not the stoplogs in the primary

spillway extends vertically deep enough to drain the impoundment for emergency purposes.

The following recommendations and remedial measures generally describe the recommended approach to address current deficiencies at the dam. Prior to undertaking recommended maintenance, repairs and remedial measures, the applicability of environmental permits needs to be determined to assess those activities that may occur within resource areas under the jurisdiction of local conservation commissions, MADEP, or other regulatory agencies.

3.2 Studies, Analyses, and Plans

The following analyses should be initiated by the Owner:

1. Perform a hydraulic and hydrologic analysis as part of a spillway repair design.
2. Perform a topographic survey of the dam and surrounding area in order to establish elevations and a base plan for repair design. In particular, the embankments and connections with the abutments should be constructed to the same elevation or at least an adequate minimum elevation.
3. Perform an inspection of the primary spillway downstream face under low flow in order to better observe conditions of the spillway and to determine whether the stoplogs are deep enough to drain the impoundment for emergency purposes.
4. Although not a regulatory requirement, prepare a formal Operations & Maintenance Plan for the dam. This plan should include all on-going operations and maintenance procedures as well as procedures for maintaining the level of the impoundment, including adjusting the level of the impoundment seasonally to provide additional freeboard during the wetter months. The plan should also include periodic inspection schedules and operational procedures required to ensure satisfactory operation and to minimize deterioration of the facility.

3.3 Recurrent Maintenance Recommendations

The following recommendations are intended to be routine maintenance:

1. As per the DCR Policy on Trees on Dams, control vegetation within 20 feet of the earth embankments, the spillway, and the dam abutments.
2. Regularly remove debris and vegetation from the spillway approach and downstream channel.
3. Inspect the condition of the stone masonry and concrete and make repairs as needed.

3.4 Major Repair Recommendations

The following repairs and maintenance items are recommended to improve the overall condition of the dam:

1. At a minimum, remove brush and woody vegetation within 20 feet of the dam including the embankment and abutment areas. Stumps and roots should be removed depending on location on the embankment in accordance with FEMA's Technical Design Manual 534 – Impacts of Plants on Earthen Dams. Treat remaining stumps on the embankment with polyurethane to slow down the root decaying process and limit root shrinkage which could promote preferential seepage paths.
2. Design, permit, and repair or replace the existing spillways and training walls. Improving the spillway capacity, if necessary, should be incorporated into any spillway modifications.
3. Design, permit, and repair the embankments and provide upstream slope protection. This item should include a plan to reduce or control seepage and repairs to the downstream stone masonry walls.

3.5 Remedial Measures

There are no recommended remedial measures that would alter the current design of the dam. This may change based on the results of the above recommended analyses, particularly a new hydrologic and hydraulic analysis.

3.6 Alternatives

The alternatives for this dam are to 1) take no action, 2) maintain the dam and repair the identified deficiencies, or 3) properly plan, design, and permit removal of the dam to make it non-jurisdictional under DCR regulations. Taking no action is not recommended as the identified deficiencies will likely worsen with time and further compromise the integrity of the dam. Since the Town wishes to retain the recreational value of Bellows Farm Mill Dam, no recommendations have been made to remove or lower the dam and make it non-jurisdictional under DCR regulations. Therefore, the only viable alternative appears to be to repair the dam.

3.7 Opinion of Probable Construction Costs

The following opinion of probable construction costs has been developed for the studies, analyses, recommendations and remedial measures noted above. The probable construction costs are based on limited investigations and analyses. Once further detailed investigations are performed, the scope of work may change, affecting the actual construction costs. The estimates include engineering, permits and contingencies where applicable. Tasks that can be carried out by owner are noted as Force Account.

TABLE 1

Estimate of Probable Costs

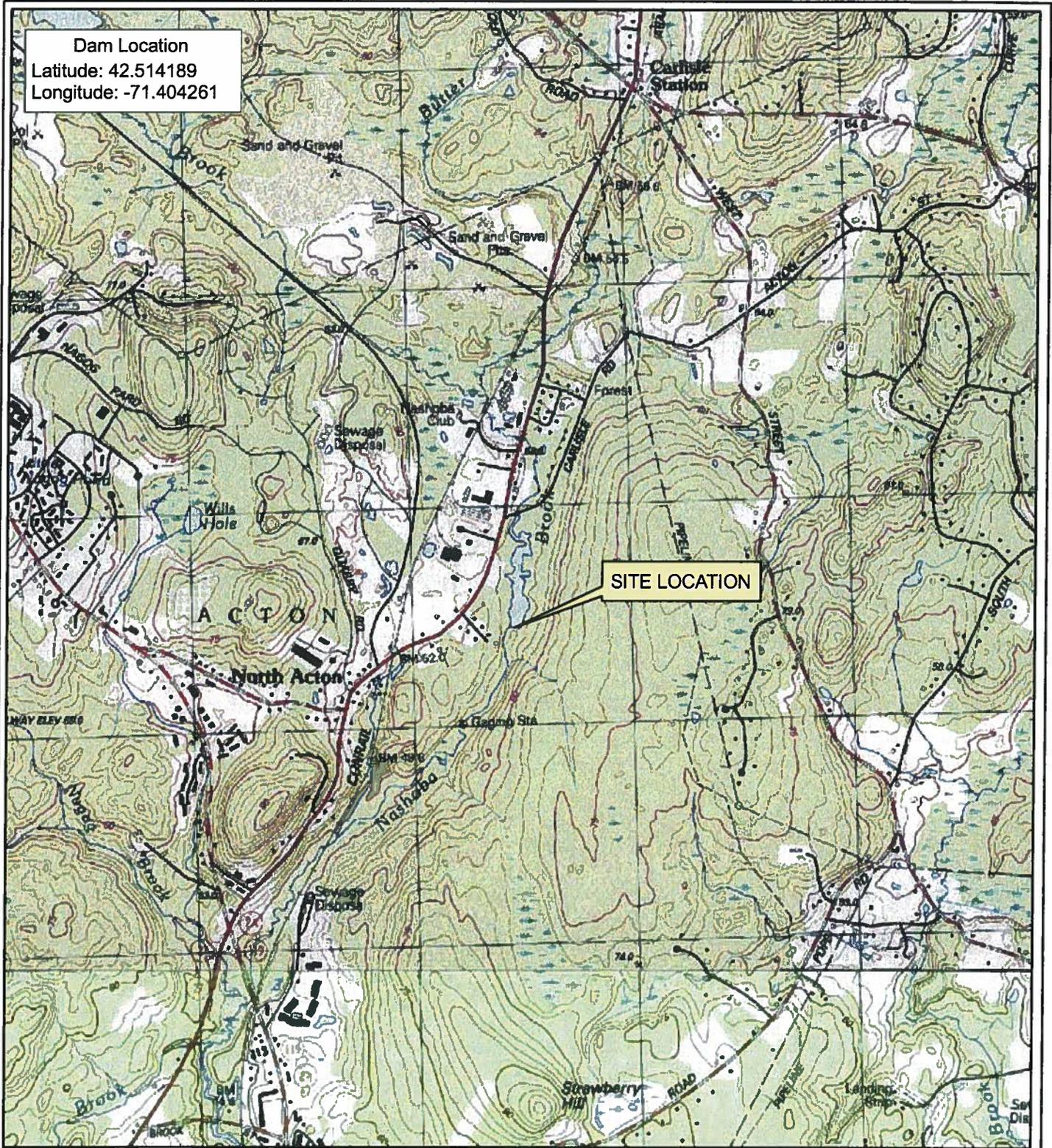
Item	Cost	
Studies and Analyses		
1. Perform studies and analyses suggested in Section 3.2	\$	35,000
2. Prepare an Operations and Maintenance Manual	\$	5,000
Subtotal	\$	40,000
Yearly Activities		
1. Annual Inspection	\$	Force account
2. Vegetation removal and control plus minor repairs	\$	Force account
3. Debris removal	\$	Force account
Subtotal	\$	0.00
Major Repair Recommendations		
1. Mobilization / Demobilization	\$	30,000
2. Remove Trees and brush	\$	75,000
3. Repair/Replace Spillways	\$	200,000
4. Repairs to embankments and seepage controls	\$	125,000
Repair Items Total		\$430,000
5. Design, Permitting, Construction Monitoring, and Contingencies (35%)		\$150,000
Subtotal	\$	580,000
ESTIMATED TOTAL	\$	620,000

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Figures

Dam Location
Latitude: 42.514189
Longitude: -71.404261



1:24,000



Based on USGS Topographic Map for Westford, MA Quadrangle. Revised 1987 Meters Elevation Contours



**FIGURE 1
SITE LOCUS AND MAP
OF DOWNSTREAM AREA**

Bellows Farm Mill Dam
Acton, Massachusetts
MA 01147

Tighe & Bond
November 2009

Dam Location
Latitude: 42.514189
Longitude: -71.404261



Bellows Farm Mill Dam



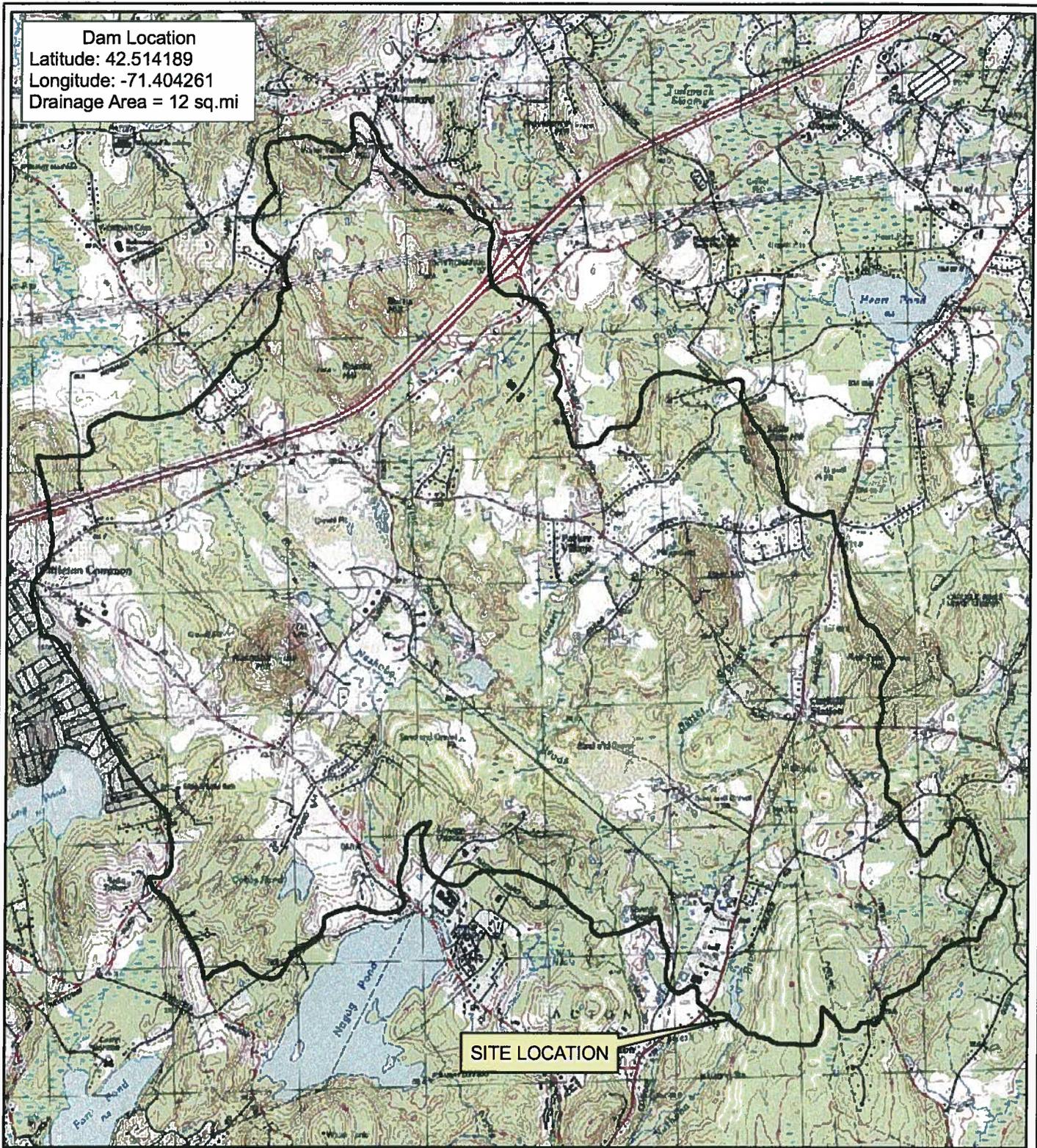
**FIGURE 2
AERIAL PHOTO**

Bellows Farm Mill Dam
Acton, Massachusetts
MA 01147

Tighe & Bond
November 2009

Based on MassGIS Color Orthophotography (April 2005)
Orthophoto Sheet ID # 20729185 & 20879185

Dam Location
 Latitude: 42.514189
 Longitude: -71.404261
 Drainage Area = 12 sq.mi



 Watershed Delineation



Based on USGS Topographic Map for Westford, MA Quadrangle. Revised 1987



**FIGURE 3
 MAP OF DRAINAGE AREA**

Bellows Farm Mill Dam
 Acton, Massachusetts
 MA 01147

Tighe & Bond
 November 2009

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APPENDIX A
Photographs

Bellows Farm Mill Dam Acton, MA

Tighe&Bond



Photo 1 – Aerial view of Bellows Farm Mill Dam



Photo 2 - Left embankment toward left abutment (note large tree and brush)



Photo 3 - Middle embankment between canal auxiliary spillway and primary spillway in background



Photo 4 – Downstream stone masonry wall near primary spillway



Photo 5 – Upstream face of embankment (note stones along waterline)



Photo 6 - Right embankment. Note trees and brush on embankment.



Photo 7 - Primary spillway section with broad-crested weir (right side of photo) and stoplog weir (left side of photo)



Photo 8 – Primary spillway and downstream channel



Photo 9 – Canal spillway (note uneven stone masonry weir)



Photo 10 – View downstream of canal channel and dike containing the left side of the channel



Photo 11 – Downstream canal weir with former mill building



Photo 12 - View of canal weir looking upstream



Photo 13 - Uneven and overgrown embankment crest from primary spillway (note large trees at upstream edge)



Photo 14 – Downstream stone masonry wall near spillway (note earth fill covering section of wall)



Photo 15 – Broad-crested spillway section (note uneven weir and poor transition to left embankment)

Date of Inspection: November 21, 2009



Photo 16 - Stoplog weir spillway section (note deteriorated concrete)



Photo 17 - Downstream area below middle embankment (note seepage flow channels through downstream area)



Photo 18 - Seepage beneath downstream stone masonry wall



Photo 19 - Downstream channel from primary spillway



Photo 20 - Impoundment area

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**APPENDIX B
Inspection Checklist**

DAM SAFETY INSPECTION CHECKLIST

NAME OF DAM: <u>Bellows Farm Mill Dam</u>		STATE ID #: <u>4-9-2-3</u>
REGISTERED: <input type="checkbox"/> YES <input type="checkbox"/> NO	NID ID #: <u>MA01147</u>	
STATE SIZE CLASSIFICATION: <u>Small</u>	STATE HAZARD CLASSIFICATION: <u>Low</u>	CHANGE IN HAZARD CLASSIFICATION REQUESTED?: <u>No</u>
<u>DAM LOCATION INFORMATION</u>		
CITY/TOWN: <u>Acton</u>	COUNTY: <u>Middlesex</u>	
DAM LOCATION: <u>End of Wheeler Lane in Acton, MA</u> (street address if known)	ALTERNATE DAM NAME: <u>N/A</u>	
USGS QUAD.: <u>Westford, MA Quadrangle</u>	LAT.: <u>42.514189</u>	LONG.: <u>-71.404261</u>
DRAINAGE BASIN: <u>Merrimack</u>	RIVER: <u>Nashoba Brook</u>	
IMPOUNDMENT NAME(S): <u>Robbins Mill Pond</u>		
<u>GENERAL DAM INFORMATION</u>		
TYPE OF DAM: <u>Earth embankment with primary and canal spillway</u>	OVERALL LENGTH (FT): <u>155</u>	
PURPOSE OF DAM: <u>recreational</u>	NORMAL POOL STORAGE (ACRE-FT): <u>24</u>	
YEAR BUILT: <u>pre-1900</u>	MAXIMUM POOL STORAGE (ACRE-FT): <u>38</u>	
STRUCTURAL HEIGHT (FT): <u>6 feet at primary spillway</u>	EL. NORMAL POOL (FT): <u>162.8</u>	
HYDRAULIC HEIGHT (FT): <u>4</u>	EL. MAXIMUM POOL (FT): <u>164.0</u>	
<u>FOR INTERNAL MADCR USE ONLY</u>		
FOLLOW-UP INSPECTION REQUIRED: <input type="checkbox"/> YES <input type="checkbox"/> NO	CONDITIONAL LETTER: <input type="checkbox"/> YES <input type="checkbox"/> NO	

NAME OF DAM: Bellows Farm Mill Dam STATE ID #: 4-9-2-3
 INSPECTION DATE: November 21, 2009 NID ID #: MA01147
INSPECTION SUMMARY
 DATE OF INSPECTION: November 21, 2009 DATE OF PREVIOUS INSPECTION: unknown
 TEMPERATURE/WEATHER: 40's/Cloudy ARMY CORPS PHASE I: YES NO If YES, date _____
 CONSULTANT: Tighe & Bond PREVIOUS DCR PHASE I: YES NO If YES, date _____
 BENCHMARK/DATUM: Top of dam approximated at 164 feet (NGVD 1929)
 OVERALL PHYSICAL CONDITION OF DAM: POOR DATE OF LAST REHABILITATION: minor repairs 1995
 SPILLWAY CAPACITY: 0-50% of the SDF or Unknown
 EL. POOL DURING INSP.: 14 inches below top of spillway wall EL. TAIL WATER DURING INSP.: 5 feet below top of spillway wall
PERSONS PRESENT AT INSPECTION

NAME	TITLE/POSITION	REPRESENTING
Christopher D. Haker, P.E.	Senior Engineer	Tighe & Bond
Robert M. Ryan		Tighe & Bond

EVALUATION INFORMATION

	Click on box to select E-code
E1) TYPE OF DESIGN	2
E2) LEVEL OF MAINTENANCE	2
E3) EMERGENCY ACTION PLAN	1
E4) EMBANKMENT SEEPAGE	3
E5) EMBANKMENT CONDITION	2
E6) CONCRETE CONDITION	2
E7) LOW-LEVEL OUTLET CAPACITY	1
E8) LOW-LEVEL OUTLET CONDITION	1
E9) SPILLWAY DESIGN FLOOD CAPACITY	2
E10) OVERALL PHYSICAL CONDITION	\$620,000
E11) ESTIMATED REPAIR COST	NO
ROADWAY OVER CREST	NO
BRIDGE NEAR DAM	NO

 NAME OF INSPECTING ENGINEER: Christopher D. Haker, P.E. SIGNATURE: _____

NAME OF DAM: <u>Bellows Farm Mill Dam</u>		STATE ID #: <u>4-9-2-3</u>
INSPECTION DATE: <u>November 21, 2009</u>		NID ID #: <u>MA01147</u>
OWNER:	ORGANIZATION	CARETAKER:
NAME/TITLE	<u>Town of Acton</u>	NAME/TITLE
STREET	<u>472 Main Street</u>	STREET
TOWN, STATE, ZIP	<u>Acton, MA 01720</u>	TOWN, STATE, ZIP
PHONE	<u>978-264-9631</u>	PHONE
EMERGENCY PH. #	<u>978-264-9638</u>	EMERGENCY PH. #
FAX		FAX
EMAIL	<u>ttidman@acton-ma.gov</u>	EMAIL
OWNER TYPE	<u>Municipality or Political subdivision</u>	
PRIMARY SPILLWAY TYPE	<u>8 foot wide broad-crested weir and 4 foot stoplog weir</u>	
SPILLWAY LENGTH (FT)	<u>8 feet broad-crest and 4 feet stoplog</u>	SPILLWAY CAPACITY (CFS) <u>68 - broad-crest; 34 - Stoplog</u>
AUXILIARY SPILLWAY TYPE	<u>Broad-crested Canal Auxiliary</u>	AUX. SPILLWAY CAPACITY (CFS) <u>30</u>
NUMBER OF OUTLETS	<u>0</u>	OUTLET(S) CAPACITY (CFS) <u>N/A</u>
TYPE OF OUTLETS	<u>N/A</u>	TOTAL DISCHARGE CAPACITY (CFS) <u>132</u>
DRAINAGE AREA (SQ MI)	<u>12</u>	SPILLWAY DESIGN FLOOD (PERIOD/CFS) <u>Unknown</u>
HAS DAM BEEN BREACHED OR OVERTOPPED	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	IF YES, PROVIDE DATE(S) <u>Unknown</u>
FISH LADDER (LIST TYPE IF PRESENT)	<u>NO</u>	
DOES CREST SUPPORT PUBLIC ROAD?	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	IF YES, ROAD NAME: _____
PUBLIC BRIDGE WITHIN 50' OF DAM?	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	IF YES, ROAD/BRIDGE NAME: _____
		MHD BRIDGE NO. (IF APPLICABLE) _____

NAME OF DAM: Bellows Farm Mill Dam STATE ID #: 4-9-2-3
 INSPECTION DATE: November 21, 2009 NID ID #: MA01147

DOWNSTREAM MASONRY WALLS

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
D/S WALLS	1. WALL TYPE	Stone masonry	X		
	2. WALL ALIGNMENT	Some areas of displacement			X
	3. WALL CONDITION	Loose and missing stones, partially buried by fill 20 feet right of spillway			X
	4. HEIGHT: TOP OF WALL TO MUDLINE	min: _____ max: _____ avg: 4 feet	X		
	5. SEEPAGE OR LEAKAGE	Seepage from toe of wall in 3 areas around 70 feet right of primary spillway			X
	6. ABUTMENT CONTACT	Poor contact with canal auxiliary spillway			X
	7. EROSION/SINKHOLES BEHIND WALL	Uneven earth slope above wall, some erosion			X
	8. ANIMAL BURROWS	None observed			X
	9. UNUSUAL MOVEMENT	None observed			X
	10. WET AREAS AT TOE OF WALL	Wet areas between 60 to 75 feet right of spillway			X

ADDITIONAL COMMENTS:

NAME OF DAM: Bellows Farm Mill Dam STATE ID #: 4-9-2-3
 INSPECTION DATE: November 21, 2009 NID ID #: MA01147

UPSTREAM MASONRY WALLS

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR		
U/S WALLS	1. WALL TYPE	Possible submerged upstream stone masonry wall on middle and left embankment		x			
	2. WALL ALIGNMENT						
	3. WALL CONDITION						
	4. HEIGHT: TOP OF WALL TO MUDDLINE		min:	max:	avg:		
	5. ABUTMENT CONTACT						
	6. EROSION/SINKHOLES BEHIND WALL						
	7. ANIMAL BURROWS						
	8. UNUSUAL MOVEMENT						

ADDITIONAL COMMENTS:

NAME OF DAM: Bellows Farm Mill Dam STATE ID #: 4-9-2-3
 INSPECTION DATE: November 21, 2009 NID ID #: MA01147

DOWNSTREAM AREA

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
D/S AREA	1. ABUTMENT LEAKAGE	Wet area downstream of right embankment/abutment		X	X
	2. FOUNDATION SEEPAGE	Uncontrolled seepage (flowing) observed below downstream masonry wall		X	X
	3. SLIDE, SLOUGH, SCARP	None observed		X	
	4. WEIRS	17" wide weir across canal about 300 feet downstream		X	
	5. DRAINAGE SYSTEM	None observed		X	
	6. INSTRUMENTATION	None observed		X	
	7. VEGETATION	Trees and brush throughout			X
	8. ACCESSIBILITY	By foot only		X	
	9. DOWNSTREAM HAZARD DESCRIPTION				
	10. DATE OF LAST EAP UPDATE	N/A			

ADDITIONAL COMMENTS:

NAME OF DAM: Bel lows Farm Mill Dam STATE ID #: 4-9-2-3
 INSPECTION DATE: November 21, 2009 NID ID #: MA01147

MISCELLANEOUS		
AREA INSPECTED	CONDITION	OBSERVATIONS
	1. RESERVOIR DEPTH (AVG)	Approximated to be 5 feet maximum
	2. RESERVOIR SHORELINE	Wooded
	3. RESERVOIR SLOPES	Flat
MISC.	4. ACCESS ROADS	Accessed from Nashoba Brook Conservation Area at end of Wheeler Lane in Acton, MA
	5. SECURITY DEVICES	None
	6. VANDALISM OR TRESPASS	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO WHAT: _____
	7. AVAILABILITY OF PLANS	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO DATE: _____
	8. AVAILABILITY OF DESIGN CALCS	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO DATE: _____
	9. AVAILABILITY OF EAP/LAST UPDATE	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO DATE: N/A
	10. AVAILABILITY OF O&M MANUAL	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO DATE: _____
	11. CARETAKER/OWNER AVAILABLE	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO DATE: November 23, 2009 at beginning of inspection
	12. CONFINED SPACE ENTRY REQUIRED	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO PURPOSE: _____

ADDITIONAL COMMENTS: _____

NAME OF DAM: Bellows Farm Mill Dam STATE ID #: 4-9-2-3
 INSPECTION DATE: November 21, 2009 NID ID #: MA01147

PRIMARY SPILLWAY - Stoplog Weir		NO ACTION	MONITOR	REPAIR
AREA INSPECTED	CONDITION	OBSERVATIONS		
SPILLWAY	1. SPILLWAY TYPE	Concrete over stone masonry channel with slots for stop logs	X	
	2. WEIR TYPE	Metal or metal reinforced stop logs, not observable due to water flow over weir		X
	3. SPILLWAY CONDITION	Some deterioration of concrete		X
	4. TRAINING WALLS	Concrete is detaching from stone masonry near water line on downstream side		X
	5. SPILLWAY CONTROLS AND CONDITION	Condition of controls not observable due to flow of water over weir	X	
	6. UNUSUAL MOVEMENT	None observed		X
	7. APPROACH AREA	1 foot deep, likely silted over full depth of stoplogs		X
	8. DISCHARGE AREA	Clear		X
	9. DEBRIS	Some debris against upstream side of stop logs		X
	10. WATER LEVEL AT TIME OF INSPECTION	14 inches below top of spillway training wall, 10 inches above stop log weir	X	

ADDITIONAL COMMENTS:

NAME OF DAM: Bellows Farm Mill Dam STATE ID #: 4-9-2-3
 INSPECTION DATE: November 21, 2009 NID ID #: MA01147

PRIMARY SPILLWAY - Broadcrested Section					
AREA INSPECTED	CONDITION	OBSERVATIONS	ACTION NO	MONITOR	REPAIR
SPILLWAY	1. SPILLWAY TYPE	Concrete over stone and earth fill, section was patched with concrete in 1995 after .			X
	2. WEIR TYPE	Broad-crested, about 8 feet wide			X
	3. SPILLWAY CONDITION	Not observable due to flow over spillway			
	4. TRAINING WALLS	Transition from crest to training wall not well defined, especially on left where the -		X	
	5. SPILLWAY CONTROLS AND CONDITION	Slots on middle training wall may have been for spillway control		X	
	6. UNUSUAL MOVEMENT	None observed			X
	7. APPROACH AREA	Shallow, likely silted in			X
	8. DISCHARGE AREA	Onto unevenly placed boulders, flow on left forced right into main channel			X
	9. DEBRIS	None observed			X
	10. WATER LEVEL AT TIME OF INSPECTION	About 5 inches above crest		X	

ADDITIONAL COMMENTS: 1. - being washed out. There are slots in the middle concrete training wall.
4. - transition is onto unevenly placed boulders

NAME OF DAM: Bellows Farm Mill Dam STATE ID #: 4-9-2-3
 INSPECTION DATE: November 21, 2009 NID ID #: MA01147

AUXILIARY SPILLWAY - Canal

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
SPILLWAY	1. SPILLWAY TYPE	Uneven stone masonry			X
	2. WEIR TYPE	Broad-crested			X
	3. SPILLWAY CONDITION	Shallow poorly defined spillway consists of unevenly placed stone masonry			X
	4. TRAINING WALLS	Sparse stones and uneven eroded earth with exposed root systems			X
	5. SPILLWAY CONTROLS AND CONDITION	N/A	X		
	6. UNUSUAL MOVEMENT	Original configuration of spillway unclear	X		
	7. APPROACH AREA	Leaf and wood debris		X	X
	8. DISCHARGE AREA	Clear		X	
	9. DEBRIS	Some debris caught on upstream side of spillway crest			X
	10. WATER LEVEL AT TIME OF INSPECTION	2-3 inches over uneven stone masonry crest		X	

ADDITIONAL COMMENTS:

NAME OF DAM: Bellows Farm Mill Dam STATE ID #: 4-9-2-3
 INSPECTION DATE: November 21, 2009 NID ID #: MA01147

OUTLET WORKS			
AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION
OUTLET WORKS	1. TYPE	The stoplog weir may have served as a low level outlet control. Due to water flow -	x
	2. INTAKE STRUCTURE		
	3. TRASHRACK		
	4. PRIMARY CLOSURE		
	5. SECONDARY CLOSURE		
	6. CONDUIT		
	7. OUTLET STRUCTURE/HEADWALL		
	8. EROSION ALONG TOE OF DAM		
	9. SEEPAGE/LEAKAGE		
	10. DEBRIS/BLOCKAGE		
	11. UNUSUAL MOVEMENT		
	12. DOWNSTREAM AREA		
	13. MISCELLANEOUS		

ADDITIONAL COMMENTS: 1. - over the weir and debris and sediment, closer observations could not be made

NAME OF DAM: Bellows Farm Mill Dam STATE ID #: 4-9-2-3

INSPECTION DATE: November 21, 2009 NID ID #: MA01147

CONCRETE/MASONRY DAMS (DOWNSTREAM FACE)

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR	
D/S FACE	1. TYPE	<div style="border: 2px solid black; padding: 10px; text-align: center;">Not Applicable</div>				
	2. SURFACE CONDITIONS					
	3. CONDITIONS OF JOINTS					
	4. UNUSUAL MOVEMENT					
	5. ABUTMENT CONTACT					
	6. LEAKAGE					

ADDITIONAL COMMENTS:

NAME OF DAM: Bellows Farm Mill Dam STATE ID #: 4-9-2-3

INSPECTION DATE: November 21, 2009 NID ID #: MA01147

CONCRETE/MASONRY DAMS (UPSTREAM FACE)

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
U/S FACE	1. TYPE	Not Applicable			
	2. SURFACE CONDITIONS				
	3. CONDITIONS OF JOINTS				
	4. UNUSUAL MOVEMENT				
	5. ABUTMENT CONTACTS				

ADDITIONAL COMMENTS:

DRAFT

APPENDIX C
References

PREVIOUS REPORTS AND REFERENCES

1. Verification In Field (VIF) Inspection Report (2006) by Tighe & Bond.

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APPENDIX D
Definitions

COMMON DAM SAFETY DEFINITIONS

To provide a better understanding of this report, definitions of commonly used terms associated with dams are provided below. The terms are presented under the following common categories:

- 1) Orientation;
- 2) Dam components;
- 3) Size classification;
- 4) Hazard classification; and
- 5) General.

Orientation

Upstream – Shall mean the side of the dam that borders the impoundment.

Downstream – Shall mean the high side of the dam, the side opposite the upstream side.

Right – Shall mean the area to the right when looking in the downstream direction.

Left – Shall mean the area to the left when looking in the downstream direction.

Dam Components

Dam – Shall mean any artificial barrier, including appurtenant works, which impounds or diverts water.

Embankment – Shall mean the fill material, usually earth or rock, placed with sloping sides, such that it forms a barrier that impounds water.

Crest – Shall mean the top of the dam, usually provides a road or path across the dam.

Abutment – Shall mean the top of the dam, usually provides a road or path across the dam.

Appurtenant Works – Shall mean any ancillary feature of a dam and shall include but not be limited to, such structures as training walls, spillways, either in the dam or separate there from and low level outlet works; also water conduits such as tunnels, channels, pipelines, or penstocks, either through the dam or its abutments.

Riprap – Shall mean a loose assemblage of broken stones erected in water or soft ground as erosion protection.

Toe – Shall mean the protruding base of the dam on the downstream side either natural or man-made.

Weir – Shall mean the top of the spillway where the water flows to the downstream side

Size Classification

(as listed in Commonwealth of Massachusetts, 302 CMR Dam Safety Rules and Regulations, revised 11/04/05)

Large – Structure with a height greater than 40 feet and/or a storage capacity greater than 1,000 acre-feet.

Intermediate – Structure with a height between 15 and 40 feet and/or a storage capacity of 50 to 1,000 acre-feet.

Small – Structure with a height between 6 and 15 feet and/or a storage capacity of 15 to 50 acre-feet.

Non-Jurisdictional – Structure less than 6 feet in height and having a storage capacity of less than 15 acre-feet.

Hazard Classification

(as listed in Commonwealth of Massachusetts, 302 CMR *Dam Safety Rules and Regulations*, revised 11/04/05)

High Hazard (Class I) – Shall mean dams located where failure or misoperation will likely cause loss of life and/or serious damage to homes, industrial or commercial facilities, important public utilities, or major transportation arteries.

Significant Hazard (Class II) – Shall mean dams located where failure or misoperation may cause loss of life and/or damage to homes, industrial or commercial facilities, secondary highways or railroads, or cause the interruption of the use or service of important facilities.

Low Hazard (Class III) – Dams located where failure or misoperation may cause minimal property damage to others and loss of life is not expected.

General

DCR – Department of Conservation and Recreation, formerly the Department of Environmental Management (DEM).

EAP – Emergency Action Plan; shall mean a predetermined plan of action to be taken to reduce the potential for property damage and/or loss of life in an area affected by an impending dam break.

O&M Manual – Operations and Maintenance Manual; document identifying routine maintenance and operational procedures under normal and storm conditions.

Normal Pool – shall mean the elevation of the impoundment during normal operating conditions.

Acre-foot – shall mean a volume equal to one foot of water over a one-acre area.

Height of Dam – shall mean the vertical distance from the lowest portion of the natural ground, including any stream channel, along the downstream toe of the dam to the crest of the dam.

Spillway Design Flood (SDF) – shall mean the flood used in the design of a dam and its appurtenant works particularly for sizing the spillway and outlet works.

**CPA Application
Historic District
Commission**



**TOWN OF ACTON
HISTORIC DISTRICT COMMISSION
472 MAIN STREET
ACTON, MASSACHUSETTS, 01720
hdc@acton-ma.gov**

27 October 2015

Mr. Peter Ashton
Chairman
Community Preservation Committee

Re: Acton Historic District Commission Project Application

Dear Committee Members,

Please find attached an application submitted on behalf of the Historic District Commission (HDC) requesting funding for the services of an Historic District Consultant. The consulting services proposed are for a limited time period with a defined scope of work as described in the application narrative.

As you may be aware, each of Acton's three historic districts encompass multiple zoning districts such as R-2, WAV, SAV, etc. Since the districts were created in 1990, this situation has led to confusion, delays and sometimes acrimony among district residents as well as entities proposing alterations or new construction within the districts. The HDC requests your assistance to permit our committee to clarify the procedures, rules and regulations and bylaws within the districts. This information will allow the HDC the tools to make more rigorous, logical and informed decisions. We expect the outcome of this consultant's efforts will be proposed zoning warrant articles for the town's consideration; perhaps in the form of an historic district zoning overlay.

As a starting point for the proposed consultant's efforts, former HDC member Scott Kutil has invested considerable personal time in inventorying all of the 190 properties within the districts using the town's GIS system. The HDC now has sophisticated spreadsheets describing each property including lot size, house square footage, setbacks, frontages, open space, FAR, etc. These statistics have allowed the HDC to parse the information to say, compute the average FAR of R-2 properties within the South Acton Historic District. The HDC now would like to leverage, enhance and codify this information, which will require more time, effort and expertise than the volunteers on the HDC can provide.

We look forward to your approval of this application.
Please contact the HDC if you need additional information.

Sincerely,

David Honn
HDC Vice Chair

PROJECT APPLICATION FORM – 2015

Applicant: Historic District Commission **Submission Date:** October 17, 2015

Applicant's Address:

Historic District Commission

PO BOX 681, Acton, MA 01720

Phone Number: 978-264-9632

E-mail: hdc@acton-ma.gov

Purpose: (Please select all that apply)

- Open Space
- Community Housing
- Historic Preservation
- Recreation

Town Committee (if applicable): Historic District Commission

Project Name: Historic District Consultant

Project Location/Address: Acton Historic Districts

Amount Requested: \$ 35,000

Project Summary: In the space below, provide a brief summary of the project.

The Historic District Commission is requesting a \$35,000 grant from the Town of Acton's Community Preservation fund for a detailed inventory of the characteristics and features of each of Acton's Historic Districts. This inventory will catalogue the unique architectural characteristics of the buildings in each Historic District and also undertake to describe the settings of the buildings in the Districts. This inventory will be used to create a foundation for decisions of the Commission regarding Certificates of Appropriateness, to clearly articulate guidelines for new construction, and to advance a proposal for new zoning in the Historic Districts that further protects the sense of place and the settings in Acton's Historic Districts.

Narrative:

The Acton CPC has established the following goals in order to address the preservation of Historic Resources:

- Protect, preserve, and/or restore historic properties and sites throughout Acton, which are of historical, architectural, archeological, and cultural significance.

- Protect threatened properties of historical significance by fully documenting and updating the architectural and/or historical significance on survey forms for Acton's Cultural Resource List.

- Preserve the existing rural/historic character of the Town,

Development pressures in the Town's three Historic Districts have led us to conclude that the protections in the Town's Historic District Bylaw are insufficient to protect the historic character of the Town's Historic Districts. Development practices such as hammerhead lots, subdevelopments, and condominiums work in concert with the Town's zoning codes to erode the historic character of the Districts by allowing new development that is out of scale and inconsistent with the character of antique homes in the Districts: new construction can be built to a larger scale, with less open space, and with a different streetscape.

A key goal of this project will be to characterize the settings of Acton's three Historic Districts with analytical tools that describe accurately the size of the homes in the Districts, the amount of open space in the Districts, the size of the lots, and the setbacks from the street. The results of this goal will be used to develop proposals for a new zoning overlays in each of the Districts that will further support Historic preservation and protection in the Districts.

The project will also characterize the different types of architecture as well as the predominant architecture that is found in each District, for example, Queen Anne style. And within a specific architectural style there will be an inventory of common architectural elements that are found in the homes of that style. The purpose of this inventory is twofold, the first is to provide a foundation for the decisions of the Historic District Commission when ruling on Certificates of Appropriateness. The second is to provide detailed guidelines for design, massing, placement, and spacing that will minimize the guess work for land owners and developers.

This project will meet many of the criteria listed by the Community Preservation Committee for reviewing applications.

- The project is consistent with the goals of the Town of Acton Community Preservation Plan for Historic Preservation, because the Historic District Commission has determined that this is an important project.
- The project is consistent with the Acton 2020 Comprehensive Community Plan and other Town planning documents that have received wide scrutiny and input. Goal number one for Acton 2020 is to preserve and enhance Town character and preserve and protect historic buildings and landscapes (see Acton 2020 1.4).
- The Acton Community Preservation Plan says that the Town's historic character is threatened by the rise in land values. This project will address that issue directly by taking a critical look at some of the contributing factors such as hammerhead lots, subdevelopments, large condominium developments, minimum lot sizes and frontage requirements.
- The Acton Community Preservation Plan says that the Town is frequently put in a position of defending itself from large developments and subdivisions that diminish its rural and historic character. The new zoning overlays that will be proposed by this project will protect the historic character of the Districts by prohibiting new construction that is inconsistent with the antique structures and the established settings in the Districts.
- The members of the Historic District Commission and the consultant will work closely with other board and committees, especially the Planning Commission in order to implement the new zoning.

Estimated Date for Commencement of Project: May 1, 2015

Estimated Date for Completion of Project: October 1, 2015

CPA Application

Natural Resources

PROJECT APPLICATION FORM – 2016

Due Date: November 16, 2015

Applicant: Natural Resources Department

Submission Date: 10/28/2015

Applicant's Address:

2 Main Street, Acton, MA 01720

Phone Number: 978-929-6634

E-mail: NR@ACTON-MA.GOV

Purpose: (Please select all that apply)

Open Space

Community Housing

Historic Preservation

Recreation

Town Committee (if applicable):

Project Name: Assabet River Green and Blue Trail

Project Location/Address: 279 High Street, Acton MA

Amount Requested: \$45,000

Project Summary: In the space below, provide a brief summary of the project.

Acton Natural Resources Department worked with OARS (the Organization for the Assabet, Concord, and Sudbury Rivers) to write a grant in 2015 to the Massachusetts Recreational Trails Program.

A \$25,000 grant was awarded this summer to OARS to build a "GREEN-BLUE TRAIL." The GREEN trail is on land; the BLUE trail is in the water. OARS would create new Assabet River canoe/kayak maps and build an ADA kayak launch ramp in Maynard, in cooperation with the Town of Maynard Conservation Commission. (Please see attached press release.) **Acton Natural Resources'** contribution to the grant would be to build the Acton portion of the riverside trail with several boardwalks and two parking areas.

This CPA application is to fund the building of:

- a 4-car parking area on Old High Street ~ \$15,000
- a 180' boardwalk through a wetland, along the Assabet River near that parking area ~ \$30,000

Total grant request: \$45,000

We originally thought Acton could match "in house" labor and materials to build the parking areas. But have recently learned (through execution of a previous CPA grant) that we cannot rely on the Acton Highway Department to build small, trail parking areas, due to their heavy workload and demand for sidewalk construction around town. Therefore, we will need to contract out to build the components Acton is responsible for.

Estimated Date for Commencement of Project: Summer 2016

Estimated Date for Completion of Project: Summer 2018

FOR IMMEDIATE RELEASE

OARS Receives Grant for Assabet River Trails in Maynard and Acton

30 Community Projects to Receive Over \$800,000 in Grants

Concord, Mass.— OARS, the watershed organization for the Assabet, Sudbury and Concord Rivers, announced that it has been awarded a \$25,920 grant to improve access to the Assabet River in Maynard and Acton. The “Blue and Green Trails” project will improve connections between boating and walking trails along the Assabet River, improve boating access and signage, and add an accessible kayak/canoe dock to Ice House Landing in Maynard.

This is one of 30 projects in Massachusetts to be funded in 2015 under the Recreational Trail Grants program, totaling \$820,982. Recipients have matched these grants with over \$500,000 in local contributions of cash, in-kind labor, and donations.

OARS’ project, in partnership with the towns of Acton and Maynard, grew out of the work of volunteers surveying the river for the new Assabet River Recreational Guide launched by OARS this summer. “This is an important link in our long-term effort to create a Blue and Green Trail along the full length of the river, and to increase accessibility for all,” said Alison Field-Juma, OARS Executive Director. The maps are available on-line at www.oars3rivers.org and paper versions are available at local libraries and town halls and from OARS.

“Through our partnership with local communities and non-profit organizations, these grants will provide the public greater access to safe, clean and fun recreational opportunities throughout the state,” said **Governor Charlie Baker**

The Recreational Trails Grants are a vital funding source for local hiking, biking, boating and recreational vehicle trails in need of improvements or repairs. They are funded directly from the motor fuel excise tax on off-road vehicles including ATVs and snowmobiles. The grant program allocates 30% of its funds for motorized use, 30% for non-motorized use, and 40% for diverse use projects.

The grant program is made possible by the US Dept. of Transportation and the Federal Surface Transportation Act, in partnership with MassDOT. The Mass. Recreational Trails Advisory Board (MARTAB), an independent volunteer board appointed by the DCR Commissioner, reviews and recommends RTP grant proposals.

“These projects will promote healthy, active lifestyles and provide opportunities for citizens in urban, suburban and rural areas to enjoy the natural beauty of the Commonwealth,” said **Lieutenant Governor Karyn Polito**.

###

**Recreational Trails Program – Trail Grants
2015 Grant Round Application Directions
Four copies of all materials *DUE* (Postmarked by) *February 1, 2015***

Application Checklist

Non-Financial Documents to include:

- Part I Cover Sheet
- Part II Narrative (2-3 pages max.)
- Part III Standard Budget Form
- Part IV Specifications
- Part V Supporting Materials
- Pictures, Drawings, or specifications of any structures to be built, if necessary
- USGS topographic map(s) with **CLEARLY IDENTIFIED EXACT PROJECT LOCATION**
- Optional:* GIS data in the form of shapefile or geodatabase of proposed/existing trail location
- Assurance of “continuing public access” from landowner, or proof of easement, if necessary
- Copies of ANY permitting already obtained for project (NHESP, Wetlands, Construction, etc.)
- Appraisal of land to be acquired, if necessary
- Letter(s) of commitment

** Note: A clear summary of the specific tasks to be accomplished, as well as a USGS Topo locus map with the exact location of the project area **MUST** be included in the grant application package in order for the project to be considered for funding!*

Mail four (4) UNBOUND copies of the grant proposal to:

**Amanda Lewis
Department of Conservation and Recreation
136 Damon Road
Northampton, MA 01060**

Please Note This Change in Procedure: **NO FINANCIAL DOCUMENTS ARE REQUIRED AT THIS TIME. If you are awarded a grant, financial documents will then be requested.*

IMPORTANT!!!

If parts of your application are in color, please send color copies for all four copies of the proposal. Use of the smallest possible BINDING CLIPS (not paper clips or staples) are the preferred method of separating proposal copies. Please do not include this application checklist sheet as a part of the package, Part I (next page) is the preferred cover sheet. No faxed applications please.

Please call or e-mail with questions: (413) 586-8706 ext 19, amanda.lewis@state.ma.us

Recreational Trails Program
2015 Application

Project No. _____

Part I: Cover Sheet Please complete this sheet using only the space provided.

Project Name: Assabet River Blue & Green Trail

Organization: OARS, Inc.

Brief organizational overview (municipalities, state agencies N/A):

OARS, a non-profit watershed group protecting the Assabet, Sudbury, and Concord Rivers, proposes to partner with the Town of Acton's Natural Resources Department and the Town of Maynard's Conservation Commission.

Contact Person and title: Suzanne Flint, Staff Scientist, OARS

Address: 23 Bradford Street, Concord, MA

Telephone: 978-369-3956

Fax: 978-318-0094

E-Mail: sflint@oars3rivers.org

Project Location (town): Acton and Maynard, MA

Amount Requested: \$ 25,920 **Match:** \$ 20,537 **Total Project Value:** \$ 46,457

Will the proposed trail project actively facilitate use by:

Motorized users ____ Non-Motorized users X Combination of Users ____

Please specify which user groups are permitted on and will directly benefit from this trail project:

Local hikers, anglers, and birders will benefit from the opening of the trail along the river, providing views of the Assabet River's Powdermill Impoundment and its wetland wildlife. Kayak and canoe users will benefit by having parking and public access to put boats in to a section of the Assabet River which does not currently have public access. All boaters, and particularly handicapped, elderly and family kayak and canoe users, will benefit from a floating dock at the Ice House Landing Conservation Area in Maynard on the Assabet River.

Have you previously applied for Recreational Trails funding? No

If so when?

Years Funded:

Topographic Quadrangle Name/Number (used on locus map for project): Maynard (k42071d3) 1:25,000

Please list the following government districts where the project will take place (if trail runs through multiple districts, please list ALL district names)

US House Voting District(s): Districts 3 and 5

State Senate District(s): Districts 23 and 36

State Representative District(s): Worcester 9th, 11th, and 12th; Middlesex 3rd, 4th, 8th, and 37th

Please provide a three-sentence description of your proposed project: OARS, in collaboration with the Acton Natural Resources Department and Maynard Conservation Division, is pleased to submit this application to improve boating access, connections, and walking trails along the Acton and Maynard sections of the Assabet River and improve signage for existing boat access points all along the Assabet River. The work proposed here is part of OARS' long-term effort to create an Assabet River Blue & Green Trail along the full length of the river, with safe, legal boating access points, passage around the dams, improved handicapped access, and connected walking trails along the river's edge. With other funding, OARS is updating electronic and print versions of its 2003 "Assabet River Pocket Guide" to encourage boating and hiking along the Assabet River to help increase public awareness of recreational opportunities on the river.

PART II: Narrative Please limit to 3 typed pages. Address the selection criteria but send only material that is necessary to support your proposal. Concise is best.

This project takes advantage of the major public investment in improved wastewater treatment that is resulting in a cleaner and healthier Assabet River. It will provide important connections, accessibility and visibility to the developing Blue & Green Trail along the Assabet River, a local and state priority. Although used by many families and retired people, the river lacks handicap-friendly access for boaters and clear signage, and there is great enthusiasm to correct this. Safe and easy river access and convenient parking will encourage passive recreational use in this fairly urbanized area. The project brings together two towns and OARS into a collaboration to connect the towns along an underutilized scenic river section, visually and physically connecting riverine walking trails with the boating trail. The extensive experience available for trail-building in the towns makes the project very realistic and low-cost.

Tasks:

1. Install a deck and kayak/canoe dock to for handicap-friendly access at Ice House Landing Conservation area in Maynard (http://24.39.57.66/Pages/MaynardMA_ConservComm/trail_ice_house). Ice House Landing already has educational kiosks, picnic tables, and easy access to the Assabet River Rail Trail corridor (a 12.5-mile pedestrian and bikeway) and is very close to the Assabet River National Wildlife Refuge. The landing at this site is currently a rough access with rocks and mud, suitable only for able-bodied boaters. Installing a floating kayak/canoe dock would improve the landing for use by handicapped and more elderly boaters and those with young children, providing access to approximately five very scenic river-miles of the Assabet from Maynard into Stow. Town of Maynard will be responsible for installation and maintenance of the dock (matching funding); grant funds requested here will pay for materials and equipment. OARS will add information about the dock to the informational kiosk at Ice House Landing, OARS webpage, and Assabet River Pocket Guide.
2. Build 2,875 feet of trail in three sections along the Powdermill Impoundment: 1,500' section from Parker/Adams Street connecting to the river-side trail; 125' section from Old High Street parking to the canoe access (with land-owner's permission); and a 1,250' section along the river. (Maps in Appendix B). The trail along the river would connect to existing trails along the Assabet in Maynard on the south end and to a non-motorized boat access on the north end at Old High Street. The trail will include two sections of boardwalk (one 180' section and one 125' section) and one 30' bridge across wetland sections. Acton Natural Resources Department, working with their Conservation Commission, will be responsible for trail construction (matching contribution) in Acton; grant funds requested here would pay for materials for trail construction.
3. Build two 18' x 40' gravel-surface public parking lots; one at Old High Street for both boating and trail access and one at Adams Street for access to the trails. Each parking spot will be 10' wide by 18' long. Each lot will have ~50-ft wood guardrail. The Town of Acton will supply the fill. The area will be excavated by a backhoe and soil will be removed by dump truck. Dump trucks will bring in reconstituted roadway fill to make a 6" deep compacted, gravel surface. The parking lots combined will require 160 cubic yards of fill. Acton Natural Resources will be responsible for parking lot design and construction (matching funding) on town-owned land; grant funds requested here would pay for materials.
4. Design and install an educational panel near each of the two trail heads to inform trail users about the Pine Hawk Native American site at Adams Street, Acton, the history of the Powder Mill site at Old High Street, Acton, and/or native flora and fauna. (More information about Pine Hawk site below under Question 2: historic or archaeological resources.) Acton Natural Resources and OARS will collaborate to design the panels. OARS will be responsible for purchasing the panel. Acton staff will contribute matching resources for the installation. Panels will include an acknowledgement of the Recreational Trails Program funding and the collaboration between Acton Natural Resources, OARS, and the RTP.
5. Build one trailhead kiosk for each parking area for posting information such as tick warnings, fishing rules, rules/regulations for trail use. Acton Natural Resources will be responsible for recruiting and overseeing Eagle Scouts to build the kiosks, and for keeping information up to date. Information is typically renewed every two years at other Acton conservation land sites.

6. OARS will work with the Maynard Conservation Division to formalize public access to the informal trail that already runs across a short section of private land and the Town of Maynard's wastewater treatment plant property. The property already has a sewer easement in place. This trail would connect the end of the Assabet River Walk with the proposed new trail at the border with Acton.
7. Formalize public access across private land (owner: Acton Hydro Co., Inc.) from the proposed parking area at Old High Street on Town of Acton land to an informal boat access to the Powdermill Impoundment of the Assabet River. This would be the only public boating access to the two-mile section of the Assabet between the Ben Smith dam (at Route 117, Maynard) and the Powdermill dam (at Old High Street, Acton). OARS has started discussions with Acton Hydro Co. and will work with them to ensure continuing public access.
8. Add "canoe access" signs to 16 existing sites (pending final agreement) along the river in collaboration with various town departments interested in improving river access in Westborough, Northborough, Marlborough, Hudson, Stow, Maynard, Acton, and Concord. OARS has conducted initial assessments of the access points and meetings with the relevant town departments. OARS would be responsible for designing and ordering the signs; towns would be responsible for installing (matching funding) the signs at agreed-upon locations. Funding requested here will pay for materials (signs, posts, and hardware). Potential sign sites include: Arch Street, Westborough; Nipmuck Drive, Westborough; Ellsworth-McAfee Park off South Street, Northborough; Yellick Conservation Area off Hudson St., Northborough; by the Tyler dam off Robin Hill Road, Marlborough; the Grove Conservation Area off Bolton Street, Marlborough (access to Fort Meadow Reservoir); Hudson Library parking lot off Washington Street, Hudson; Houghton Street, Hudson; Cox Street, Hudson; School House Lot off Gleasondale Road, Stow; Gleasondale Road, Stow; White Pond Road, Stow; Town Hall parking lot off Main Street, Maynard; Old High Street, Acton; Pine Street, Concord; and Main Street, West Concord.

Project Responsibilities:

OARS will be responsible for the overall project management, working with Acton Hydro Co. to ensure ongoing access at Old High Street, Acton, purchasing handicapped-friendly kayak/canoe dock for the Assabet River at Ice House Landing Conservation Area, overseeing installation of the dock, and getting "Canoe Access" signs installed at public boat access points throughout the Assabet River watershed including: Westborough, Northborough, Marlborough, Hudson, Stow, and Concord. Acton NRD will contribute matching effort to oversee permitting and building the Acton portion of the trail, build the parking areas for boat and trail access, and install the educational panels and information kiosks at two trailheads. Maynard will contribute matching effort to work to secure access across a piece of private property to connect the Acton section of the proposed trail to existing public trails in Maynard and permitting of the dock. All printed materials, webpage information, announcements, etc., will identify the financial partnership with DCR's Recreational Trails Project.

Recognized recreational or social need:

The Sudbury, Assabet, and Concord River watershed is identified by DCR's Commonwealth Connections (<http://www.mass.gov/eea/docs/dcr/stewardship/greenway/pdfs/central.pdf>) as a priority area for development of river greenways: "Create river greenways throughout the region to protect natural resources, water quality and to provide recreation and educational opportunities. Priority rivers corridors include ...the Sudbury, Assabet and Concord rivers (SuAsCo), portions of which were recently designated federal Wild and Scenic Rivers, and the Nashua River, where a successful protection effort began more than 30 years ago emphasizing the role of greenways in river restoration." The sections of the Assabet River in Acton and Maynard that are the focus of this project are immediately upstream of the designated Wild and Scenic portion of the Assabet. Recreational use of the Assabet River is significant and growing as water quality has improved over the last decade. It is particularly popular with families with young children and the retired population. Handicap boaters have been observed at the relatively few access points accessible to vehicles.

Goals of OARS' "Upper Assabet Riverway Plan" (<http://www.oars3rivers.org/river/technical-info/riverway-plan>) includes enhancing recreational opportunities: "Improve existing and create new canoe access to the Assabet River. This includes improving portages (by getting easements or improving trails), improving canoe landings, or creating new canoe landings."

Acton's Open Space Plan (2014-2021) Community Need 7.B.1 "Ensure accessibility for persons with disabilities is available for recreational activities (e.g., trails, picnicking, water-based recreation and camping) at both recreational and conservation areas." And Community Vision 6.B.3. Improve and Expand Recreational Opportunities. "Develop

and extend trail networks both within the town and with abutting towns; Enhance possibilities for hiking, cross-country skiing, horseback riding, boating and fishing on conservation lands.”

[http://doc.acton-ma.gov/dsweb/Get/Document-48939/040%20\(7\)%20%20Open%20Space%20and%20Recreation%20Plan%20Part%201.pdf](http://doc.acton-ma.gov/dsweb/Get/Document-48939/040%20(7)%20%20Open%20Space%20and%20Recreation%20Plan%20Part%201.pdf)

Maynard's Open Space Plan (2004) <http://www.townofmaynard-ma.gov/wp-content/uploads/2010/07/osrp.pdf> includes Objective 4-B: “the formation of a “Riverfront Visioning Comm. to research and plan for the highlighting of the Assabet River, especially downtown, enhancing pedestrian and watercraft access, identifying potential riverfront parks, and improving bank aesthetics, such that the river will be an asset to quality of life downtown and elsewhere.”

Range of Users/Greater Trail System:

The work proposed here is part of OARS' larger effort to improve access, connection, and visibility for boaters and hikers all along the Assabet River from its headwaters in Westborough to its confluence with the Sudbury River in Concord. OARS' long-term goal is to create a Blue & Green Trail along the full length of the Assabet River, with safe, legal access points, passage around the dams, improved handicapped access, and connection with walking trails along the river's edge. The work proposed here aims to connect the existing walking trails in Maynard with a new trail along the river in Acton and provide parking. It would provide the first handicap-friendly boat dock on the entire SuAsCo river system, providing access to a long and very scenic section of the river adjacent to the Assabet River National Wildlife Refuge. The project will benefit walkers, canoe and kayak paddlers, and wildlife and bird watching near the edges of the river.

Community Support and Partnerships:

OARS (the watershed group for the Assabet, Sudbury, and Concord Rivers), the Acton Natural Resources Department, and the Maynard Conservation Commission will form a new partnership for this project. In addition we anticipate collaborating with the Conservation Commissions of Westborough, Northborough, Marlborough, and Stow, the Hudson Recreation Department, and Concord Natural Resources, to install “boat access” signs at existing points along the Assabet River.

**Recreational Trails Program
2015 Application**

Part III: Standard Budget Form

1. **Total Project Value:** \$ 46,457
2. **Grant Amount Requested:** \$ 25,920
3. **Proposed Match Amount:** \$ 20,537

A. **Cost of Personnel Time:** \$ 22,227

Person	# hours needed	Hourly rate	Total \$ amount applied to grant	Total \$ amount applied to match
OARS Staff Scientist	50 hrs	34/hr	\$ 1,700	
OARS Executive Director	50 hrs	41/hr	\$ 2,050	
OARS Accounting	10 hrs	34/hr	\$ 340	
Acton NR Director	45 hrs	46/hr		\$ 2,070
Acton NR Staff	45 hrs	26/hr		\$ 1,170
Acton Engineer (Survey & Plans)	20 hrs	46/hr		\$ 920
Maynard Conservation Staff	10 hrs	26/hr		\$264
Maynard Council	1hr	200/hr		\$200
Acton work crew	52 hrs	25/hr		\$1,118
Volunteers labor (building trail, bridge, boardwalks)	480 hrs	25/hr		\$ 12,192
PERSONNEL TOTAL	763 hrs	-----	\$ 4,090	\$ 18,137

B. **Cost of Materials:** \$ 24,230

Material	Unit	Number of Units	Price per Unit	Total \$ amount applied to grant	Total \$ amount applied to match
Canoe Access signs (18x24" engineer grade): sign, post, hardware	sign unit	16	\$91	\$1,461	\$
Shipping signs	shipping	1	\$65	\$65	\$
Kayak dock (see quote)	dock	1	\$ 8,883	\$ 8,883	\$
Dock installation (contract)	hours	35	\$ 50	\$ 1,750	\$
Boardwalk & bridge supplies	feet	335	\$7	\$ 2,178	
Parking lot fill	cubic yds	13.33	\$16		\$2,400
Wood parking lot guard rails	linear ft	100	\$33	\$3,300	
Educational panel (panel, footing, concrete)	panel unit	2	\$1,597	\$ 3,194	
Trailhead kiosk materials	material	2	\$500	\$1,000	
MATERIALS TOTAL	-----	---	---	\$21,830	\$2,400
Total Request /Match				\$ 25,920	\$ 20,537
Total Project Costs				\$ 46,457	
Percent Match				44%	

State fiscal years (July 1 to June 30): We anticipate that most of the materials will be acquired between Jan 1 and June 30, 2016; most of the labor for trail and parking lot construction, sign installation, and kayak dock installation will be performed between July 1, 2016 and Dec 30, 2016. Personnel time will be divided approximately evenly between fiscal years for design, oversight, and reporting.

Estimated Spending by Fiscal Year				
FY	Grant spending Jan 1-June 30, 2016	Grant spending July 1 - Dec 30, 2016	Match Jan 1 - June 30, 2016	Match July 1 - Dec 30, 2016
Personnel	\$ 2,045	\$ 2,045	\$ 2,672	\$ 15,465
Materials	\$ 20,080	\$ 1,750	\$ 2,400	\$ -
Total	\$ 22,125	\$ 3,795	\$ 5,072	\$ 15,465

**Recreational Trails Program
2015 Application**

PART IV: Specifications

These questions will be important in the environmental approval process. Answer every question listed on this page and be thorough with your answers. This information will be filed directly with the various regulatory agencies.

- 1. Provide a project summary, including specific tasks to be accomplished (this can be taken directly from question #1 in the narrative, but do not include the entire narrative):**

Tasks:

- 1) Install a kayak dock for handicap-friendly access at Ice House Landing Conservation area in Maynard. OARS will add information about the dock to the informational kiosk at Ice House Landing, OARS webpage and Assabet River Pocket Guide.
 - 2) Build a total of 2,875' of trail from Old High Street, Acton, along the banks of the Assabet River and up to Adams Street, Acton. The trail will include two sections of boardwalk (180' and 125' long) and one 30' bridge across wetland sections.
 - 3) Build 2 four-car, gravel surface public parking areas at Old High Street (for both boating and trail access) and Adams Street (for access to the trail).
 - 4) Design and install one educational panel at each trail head (two total).
 - 5) Build trailhead information kiosk at each trail head (two total).
 - 6) Work with the Maynard Conservation Commission to formalize public access to the informal trail that already runs from the Assabet River Walk in Maynard, along the edge of the river, to the border with Acton.
 - 7) Formalize public access across private land (owner: Michael Coates) from the parking area at Old High Street on Town of Acton land to an informal boat access to the Powdermill Impoundment of the Assabet River.
 - 8) Add "canoe access" signs to 16 existing boat access sites (locations pending final agreement) along the river in collaboration with various town departments interested in improving river access in Westborough, Northborough, Marlborough, Hudson, Stow, Maynard, Acton, and Concord.
2. To the best of your knowledge, is your project near any historic or archaeological resources? **Yes** No
If so, describe the resources and how you will attempt to minimize and/or mitigate any effects that project tasks could have on those resources. Note, please continue to next question, regardless of your answer here.

During the excavation for Acton's new sewer plant in South Acton in 2002, a record of Native American habitation extending back over 7000 years was uncovered. The Pine Hawk site is recognized as a significant Native American site in New England. The archaeological site was excavated by the Public Archaeology Laboratory (PAL), all artifacts removed, and the site is now closed. The Acton sewage treatment plant is built on the old site. There is an exhibit in the Acton Town Hall with a number of artifacts displayed, along with contextual information, in addition to site maps and photographs in the Engineering Department at Act Town Hall. The actual artifacts are owned by the Massachusetts Historical Commission and are kept, by state contract, at the Public Archaeology Laboratory in Rhode Island. A detailed scientific report by PAL intended primarily for professional archaeologists is available in the Acton Public Library. There is a teacher's kit available through the Acton Health Department; the kit includes replicas such as spear points and pottery shards. The educational panels proposed here would be the first outdoor, on-site information available about the Pine Hawk site. (Pine Hawk information was taken from the Friends of Pine Hawk website www.actonmemoriallibrary.org/resources-research/local-history/pine-hawk.)

3. Will your project involve any (even minimal) excavation or soil disturbance? Yes No

Boardwalk soil disturbance: disturbance will be minimal during boardwalk construction. Hand tools will be used for construction. Over soggy ground, sills will be made of corrugated plastic to allow water to flow through. The boardwalk will be made of traditional 8' long pressure-treated lumber stringers and boards. Several of these types of boardwalks are built by Eagle Scouts and the Acton Land Stewards each year on conservation land. Plans and materials can be seen here <http://actontrails.org/BoardwalkDesign.pdf>. Boardwalks will be elevated above wetlands and marshy areas to minimize impacts on wetlands.

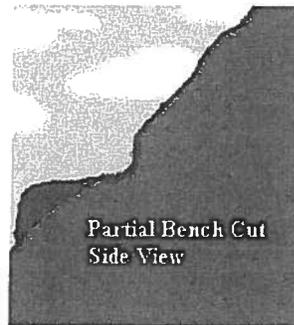
Trail soil disturbance: trails on solid ground will be "brushed out" or raked to 4' width. Small saplings and trees that are in the way of the trail will be removed. Twigs, brush and fallen trees will remain on site. Some trees may be used to line the edges of the trail.

Trails will be cuts as in illustration below:

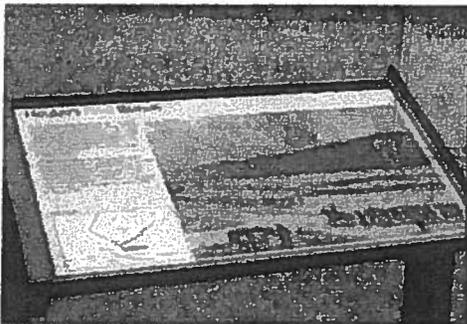
Outslope. Tread
continually sheet drains
downhill while traversing
ideslope—ideal
situation



There will be bench cuts along the slopes:



Educational panels and kiosks soil disturbance: approximately 2 cubic feet of soil would be excavated for the 4"x4" legs. Soil would be reapplied around the legs to fill in the gaps. Kiosks and educational panels will be a standard design used in other Acton conservation lands.



Educational panel (installed)



Trailhead kiosk

4. Will the project occur within 100ft of a wetland or 200ft of a stream? Yes No

The Acton Natural Resources Department is a project partner and will file the needed permit applications with the Acton Conservation Commission for the proposed trail and parking area at Old High Street in Acton. The proposed new trail in Acton will run along the side of the Assabet River (Powdermill Impoundment) for about 2000 feet. It is expected that two (approximately) 200-ft boardwalks will be used to cross wetland areas. Boardwalks will be constructed consistent with the Acton Land Stewardship Committee's Boardwalk Construction Guidelines (<http://www.actontrails.org/BoardwalkDesign.pdf>). The remaining trail will be a Trail Class 1 (as defined by USFS) constructed with minimal soil disturbance, using a standard natural trail surface.

The proposed decking and kayak dock at Ice House Landing in Maynard, will be in the wetland resource area. The Maynard Conservation Division is a project partner and will file the needed permit applications for that work.

Natural Heritage and Endangered Species Program: If the project is located within priority habitat for endangered species, it will need to be reviewed by NHESP and a separate filing may be required before grant work begins.

5. To the best of your knowledge, will the project occur within Estimated Habitats of Rare Wildlife and/or Priority Habitats of Rare Species, according to MA Division of Fisheries and Wildlife's Natural Heritage Atlas? (available at http://maps.massgis.state.ma.us/PRI_EST_HAB/viewer.htm or by hard copy from the Conservation Commission or Planning Board of each town) Yes No

Other:

6. Will your project involve any bridge construction, rehabilitation, or replacement? Yes No
If so, describe the activity and provide construction specifications, including the depth and width of soil excavation, width and length of the bridge, type of tools and equipment to be used, etc.

Bridge construction will be built the same as described above for boardwalks. Two-inch metal pipes will be driven into the soil; pipe brackets will be used to attach the pressure treated lumber to the pipes similarly as the boardwalk construction. Please see plans: <http://www.actontrails.org/BoardwalkDesign.pdf>.

7. Will the project occur within a Massachusetts Area of Critical Environmental Concern (ACEC)? Yes No
If so, please identify which ACEC and any impacts the project will have on the designated area.
8. Will your project occur near or adjacent to an existing Superfund site? Yes No
If so, please identify and describe the site and any impacts (positive or negative) the project will have on it.

**Recreational Trails Program
2015 Application**

PART V: Supporting Materials

1. Provide pictures of the project location: **Appendix A** (pictures) and **B** (maps)
2. Provide a picture of the equipment and three quotes from separate regional vendors: **Appendix C** (pictures and quotes).
3. USGS and Ortho-photos: See **Appendix B** (locus map and other maps)
4. Timeline: 2016

<i>Task</i>	<i>Jan – Mar</i>	<i>Apr – Jun</i>	<i>Jul – Sept</i>	<i>Oct – Dec</i>
Massachusetts Historical Commission (MHC) review	X			
Surveys and design	X	X		
Wetland permitting	X	X		
Work to formalize access to Maynard trail	X	X		
Work to formalize access to boat access at Old High St	X	X		
Design educational panels		X		
Acquire construction materials, “Canoe Access” signs, and educational panels		X		
Construction (trails, parking, kiosk, and kayak dock)			X	
Install educational panels			X	
“Boat Access” signs delivered and installed			X	
Grant reporting				X

5. Signed statement from the appropriate landowner or manager authorizing the project and ensuring “continuing public access.” Appendix D (letter of support and commitment).

The proposed new trail, parking, and kayak dock are on town-owned land. As part of this project OARS will be working with the private property owner, Acton Hydro Inc., at the end of Old High Street to ensure continuing public access to the boat put-in already informally granted. OARS will also start discussions with owners of Parcel 86 (11 Ethelyn Circle, Maynard) to formalize public hiking access across their property to connect the new Acton trail section with the existing Assabet River Walk in Maynard; a sewer easement is already in place on this property.

6. Project involving land acquisition: NA
7. Please provide any applicable letters of support or commitments of match. Appendix D (letters of support and commitment).
8. Permitting already received: NA

PROJECT APPLICATION FORM – 2016

Due Date: November 16, 2015

Applicant: Natural Resources Department

Submission Date: 10/28/2015

Applicant's Address:

2 Main Street, Acton, MA 01720

Phone Number: 978-929-6634

E-mail: NR@ACTON-MA.GOV

Purpose: (Please select all that apply)

- Open Space
- Community Housing
- Historic Preservation
- Recreation

Town Committee (if applicable):

Project Name: Assabet River Green and Blue Trail

Project Location/Address: 279 High Street, Acton MA

Amount Requested: \$45,000

Project Summary: In the space below, provide a brief summary of the project.

Acton Natural Resources Department worked with OARS (the Organization for the Assabet, Concord, and Sudbury Rivers) to write a grant in 2015 to the Massachusetts Recreational Trails Program.

A \$25,000 grant was awarded this summer to OARS to build a "GREEN-BLUE TRAIL." The GREEN trail is on land; the BLUE trail is in the water. OARS would create new Assabet River canoe/kayak maps and build an ADA kayak launch ramp in Maynard, in cooperation with the Town of Maynard Conservation Commission. (Please see attached press release.) **Acton Natural Resources'** contribution to the grant would be to build the Acton portion of the riverside trail with several boardwalks and two parking areas.

This CPA application is to fund the building of:

- a 4-car parking area on Old High Street ~ \$15,000
- a 180' boardwalk through a wetland, along the Assabet River near that parking area ~ \$30,000

Total grant request: \$45,000

We originally thought Acton could match "in house" labor and materials to build the parking areas. But have recently learned (through execution of a previous CPA grant) that we cannot rely on the Acton Highway Department to build small, trail parking areas, due to their heavy workload and demand for sidewalk construction around town. Therefore, we will need to contract out to build the components Acton is responsible for.

Estimated Date for Commencement of Project: Summer 2016

Estimated Date for Completion of Project: Summer 2018



Habitat Management Grant Program

Goals

The MassWildlife Habitat Management Grant Program (MHMGP) is designed to provide financial assistance to private and municipal landowners of protected lands to support active habitat management while fostering partnerships to encourage landscape scale habitat management and expand public recreation on conserved lands.

Objectives

1. Improve habitat(s) for game species (those species that can be legally hunted, fished, and trapped in MA).
2. Manage habitat(s) for Species of Greatest Conservation Need as identified in the Massachusetts State Wildlife Action Plan (SWAP) – special emphasis on State-Endangered and State-Threatened Species.
3. Expand public recreational opportunities for hunting, fishing, trapping, and other wildlife associated activities on conserved lands.

Who Should Apply

Owners of private or municipal *conserved lands* in the Commonwealth of Massachusetts.

Conserved land is defined as property protected in fee or by a Conservation Restriction, land enrolled in Chapter 61,61A/B, or has a current Landowner Incentive Program covenant.

Deadlines

Proposals must be submitted no later than November 30, 2015

Projects must be completed by June 30, 2016

Other Details

- Grant awards between \$10,000 and \$50,000
- This is a reimbursement grant program
- Project costs are reimbursed through the Grant
- NO MATCH REQUIREMENT
- There will be NO EXTENSIONS approved for these grants

Technical Alert | October 28, 2015 10:00 AM - Due to a power outage some state systems are experiencing limited functionality... [More](#)



The Official Website of the Executive Office of Energy and Environmental Affairs

Energy and Environmental Affairs

[EEA Home](#) > [Agencies](#) > [Department of Fish & Game](#) > [Fisheries & Wildlife](#) > [Wildlife & Habitat Conservation](#) > [MassWildlife Habitat Management Grant Program](#)

MassWildlife Habitat Management Grant Program

INFORMATIONAL MEETING

November 3, 2015 at 7:00 P.M.

MassWildlife Field Headquarters, 1 Rabbit Hill Road, Westborough, MA 01581



The Massachusetts Division of Fisheries and Wildlife (MassWildlife) is responsible for the conservation - including restoration, protection and management - of the fish and wildlife resources of Massachusetts for the benefit and enjoyment of the public. Conservation of Massachusetts' fauna and flora is the statutory responsibility of MassWildlife. This responsibility is established and articulated in the Constitution and General Laws of Massachusetts and tasks MassWildlife with the stewardship of all wild amphibians, reptiles, birds, mammals, freshwater and diadromous fishes, and the habitats on which they depend.

Although MassWildlife and other conservation organizations across the Commonwealth have made unprecedented investments in land acquisition, we recognize that acquisition alone is not enough to guarantee the persistence of the Commonwealth's biological diversity. Investment in habitat restoration and management is urgently needed on public and private lands across the state. To address this need, MassWildlife is substantially increasing its investment in habitat management activities on its properties and is committed to working with partners to promote these efforts on other conserved lands across the state. MassWildlife understands that significant investments in habitat management will be required to protect the integrity of the Commonwealth's open space - ensuring that what we worked so hard to conserve will be there for future generations.

The MassWildlife Habitat Management Grant Program (MHMGP) was developed to establish partnerships between MassWildlife and private and municipal landowners to enhance habitat and increase recreational opportunities on properties that have been conserved across the state. Recognizing that land protection is only the first step in maintaining the diverse habitats of Massachusetts, the MHMGP program aims to encourage landowners to engage in active habitat management on their properties to maximize the benefit to the various wildlife species of the state.

MHMGP Goals:

The MassWildlife Habitat Management Grant Program (MHMGP) is designed to provide financial assistance to private and municipal landowners of protected lands to support active habitat management while fostering partnerships to encourage landscape scale habitat management and expand public recreation on conserved lands.

MHMGP Objectives:

1. Improve habitat(s) for game species (those species that can be legally hunted, fished, and trapped in MA).
2. Manage habitat(s) for Species of Greatest Conservation Need as identified in the [Massachusetts State Wildlife Action Plan \(SWAP\)](#) - special emphasis on State-Endangered and State-Threatened Species.
3. Expand public recreational opportunities for hunting, fishing, trapping, and other wildlife associated recreation on conserved lands.

Eligible Entities: Owners of private or municipal *conserved lands* in the Commonwealth of Massachusetts. *Conserved land* is defined as property protected in fee or by a Conservation Restriction, land enrolled in Chapter 61, 61A/B, or has a current Landowner Incentive Program covenant.

Grantee Match Commitment: None

Award Information: Applicants are eligible to receive between \$10,000 and \$50,000 per grant towards their approved habitat management project.

Application Deadline: Applications must be postmarked by November 30, 2015

Allowable Activities/Costs:

Direct costs for on the ground habitat improvements specifically designed to benefit wildlife will be eligible for reimbursement. All project costs must be approved in the agreed upon contract budget to be eligible for reimbursement.

- Examples (not limited to) of eligible enhancements and/or practices: Mowing, brush hogging, heavy chipping, clearing of trees, contract grazing, control of invasive plants in the project area (mechanical and chemical), fencing for habitat protection, prescribed burning, woodland improvements (thinning, cutting or girdling of trees), tree planting of species

MORE

[MassWildlife Habitat Management Grant Program](#)

[How to Apply](#)

[Habitat Management Resources](#)

[Other Grant / Assistance Programs](#)

Buy Licenses / Permits
MassFishHunt
Check Your Game

Division of Fisheries & Wildlife
1 Rabbit Hill Road
Westborough, MA 01581
(508) 389-6300
mass.wildlife@state.ma.us
[Contact ALL DFW Offices](#)



Questions?
Email Us



LIKE US ON
facebook

enhance habitat
remove invasives
maximize benefit
for biodiversity

HHM
Jenks
Grassy
wetherbee
Stoney made

Mechanical and Chemical

beneficial to wildlife, nest site creation or installation of nesting structures, seeding/planting of native species, natural community enhancement, core habitat or critical natural landscape enhancements

- Staff time for on-the-ground project implementation (base salary only)
- Contract costs for management services
- Materials and Supplies necessary to achieve project goals.
- Signs for the purpose of communicating the benefit of the MHMGP funded habitat improvement project may be an eligible expense. (ex. a sign posted during active management to inform the public of the benefits of the activity).
- Equipment Rentals: Equipment rentals may be considered eligible if the rental activity ties directly to the implementation of MHMGP funded project. For example, rental of a brush hog to help maintain old field habitat. Rental costs approved by MassWildlife may ONLY be used for the implementation of the MHMGP project and not for any other activity. Grantees may be reimbursed for the use of their own equipment to perform the agreed upon work. Reimbursement rates will be based on staff time for equipment operation plus the standard rental fee of such equipment (quotes required) OR may be based on approved NRCS rates (links to these rates to be found on the MHMGP website). Rental of a vehicle to commute to and from the site will not be approved and is not an allowable cost.
- Costs related to the cleaning of equipment after project completion to prevent the spread of invasive plants.

Ineligible Activities/Costs:

- Activities such as land acquisition, trails, signage (except as noted above), and public access improvements.
- Boundary marking
- Travel to conferences or meetings or other travel expenditures of the grantee (contracted vendor travel expenditures incorporated into the bid or quote are allowable).
- Per diem/meals/drinks/clothing or other personal items whether for the grantee or for volunteer appreciation
- Permitting costs, planning activities, project administration, indirect, fringe or other overhead costs (ex. office/rental space, Utilities, IT costs, and more)
- Costs incurred prior to the effective date of the grant agreement or after the close of the grant agreement period
- Research, inventory, survey, or biological monitoring activities
- Informational or Educational materials, supplies, or services (except as noted above)
- Information and Technology Materials, Equipment, or Services
- Supplemental Feeding Activities/Costs (ex. Food Plots, Bird Feeders)
- Any expense not pre-approved by MassWildlife

Submitting your Proposal: All application materials are posted on [COMMBUYS](#). Proposals must be postmarked on or before Monday, November 30, 2015. Send one hard copy of the completed application package to:

MassWildlife Habitat Management Grant Program
 Attn: James Burnham
 MassWildlife Field Headquarters
 One Rabbit Hill Road
 Westborough, MA 01581

[Learn more about the application process](#)

Applicants should also include a CD or USB flash drive containing a complete electronic copy of the proposal. Responses postmarked after November 30, 2015 will not be considered. Facsimiles and/or electronic submissions through email will not be accepted.

****Note:** If you are not a registered COMMBUYS User but you have obtained this RFP, it is your responsibility to check the COMMBUYS website for updates to this solicitation. Only registered COMMBUYS users that obtained this RFP through their COMMBUYS account will be notified of updates to this solicitation.

Did you find the information you were looking for on this page? *

- Yes
- No

Send Feedback



Bettina Abe

From: Brett [brett@oxbowassociates.com]
Sent: Monday, December 10, 2012 3:35 PM
To: Bettina Abe
Subject: Botrychium oneidense
Attachments: Botrychium_oneidense_5.JPG; Botrychium_oneidense_10.JPG; brett.vcf

Hi Bettina,

The grape-ferns I photographed this morning keyed out to *Botrychium oneidense* (blunt-lobed grape-fern, Watch-listed in MA). I can't remember who you wanted to show photos to, but I've attached a couple for you as requested.

Best,

--

Brett Trowbridge
Field Biologist
Oxbow Associates, Inc.
978-929-9058 ext.2

OXBOW ASSOCIATES, Inc.

**P.O. BOX 971
ACTON, MA 01720**

Invoice

Date	Invoice #
1/31/2013	6846

Bill To
Ms. Bettina Abe Town of Acton Natural Resources Department 472 Main Street Acton, MA 01720

Vendor # 520	
Account # 3063-521900	\$ 1,025.00
P.O. # 20131439	
Invoice # 6846	
TOTAL	\$
Approved By: _____ Date: _____	

P.O. Number	Terms	Reference Project:	Oxbow Job #
	Due on receipt	1801 Meadow Mana...	12-85-1801
		Meadow Management	

WEEK of...	Personnel/Item	Hourly	Description	Rate	Amount
10/15/2012	job		Field Biologist services rendered in Oct., Nov., and Dec. 2012	150.00	150.00
11/5/2012	job		Field, Correspondence, Reporting for Jenks Meadow	125.00	125.00
11/26/2012	job		Field Biologist services.	150.00	150.00
11/26/2012	job		Field, Correspondence, Reporting for Stoney Meadow	150.00	150.00
12/10/2012	job		Field Biologist services.	150.00	150.00
12/10/2012	job		Field, Correspondence, Reporting for NARA	150.00	150.00
12/10/2012	job		Field Biologist services.	150.00	150.00
12/10/2012	job		Field, Correspondence, Reporting for Heath Hen Far Meadow	150.00	150.00
12/10/2012	job		Field Biologist services.	150.00	150.00
12/10/2012	job		Field, Correspondence, Reporting for Heath Hen Near Meadow	150.00	150.00
12/10/2012	job		Field Biologist services.	150.00	150.00
12/10/2012	job		Field, Correspondence, Reporting for Grassy Pond	150.00	150.00

January 2013		Total	\$1,025.00
Payment options: check or credit card. Name on card and address if different from above:	_____ MC _____ Visa _____ Discover	Balance Due	\$1,025.00
	Number: _____ Exp. Date: _____ 3-digit code: _____		

Phone #	Fax #	E-mail	Web Site
(978) 929-9058	(978) 635-1892	Rachel@oxbowassociates.com	www.oxbowassociates.com

**CPA Application
Open Space Committee**

PROJECT APPLICATION FORM – 2016

Due Date: November 16, 2015

Applicant: TOWN OF ACTON **Submission Date: October 27, 2015**

Applicant's Address **Purpose: (Please select all that apply)**

Steven L. Ledoux, Town Manager
472 Main Street, Acton, MA 01720
978-264-9612 manager@acton-ma.gov

- Open Space
- Community Housing
- Historic Preservation
- Recreation

Town Committee (if applicable): Open Space Committee

Project Name: Open Space Acquisition/Protection Set Aside

Project Location/Address: N/A

Amount Requested: \$450,000

Project Summary: In the space below, provide a brief summary of the project.

The Town of Acton Open Space Committee requests that the Community Preservation Committee (CPC) recommend to Town Meeting that \$450,000 of the 2016 Town of Acton Community Preservation Funds be set aside for future open space acquisition and/or land protection projects and for the annual debt service on the Wright Terrace acquisition. This action would be consistent with previous recommendations made by the CPC and approved by Town Meeting for the acquisition and preservation of open space.

Estimated Date for Commencement of Project: N/A

Estimated Date for Completion of Project: N/A

CPA Application Planning

PROJECT APPLICATION FORM – 2016

Applicant: Town of Acton **Submission due date:** **November 16, 2013**

Applicant's Address:

Acton Town Hall

472 Main Street

Acton, MA 01720

Phone Number: 978-929-6631

E-mail: ntavern@comcast.net

Planning@acton-ma.gov

Purpose: (Please select all that apply)

Open Space

Community Housing

Historic Preservation

Recreation

Town Committee (if applicable): Town of Acton - Planning Department/Acton Community Housing Corporation (ACHC)

Project Name: Housing Services

Project Location/Address: N/A

Amount Requested: \$47,000.00

Project Summary: In the space below, provide a brief summary of the project.

The Town of Acton and the Acton Community Housing Corporation request funding to continue participation in the Regional Housing Services Office (RSHO). The Town is currently a member of the RSHO with the Towns of Bedford, Burlington, Concord, Lexington, Sudbury, and Weston. This service is authorized through Inter-Municipal Agreements among the member towns. Acton's current membership in the RSHO was originally funded for two years through a Community Preservation Act (CPA) appropriation in 2012 and renewed again with CPA funds for membership during FY2015 and FY2016. The RSHO has proven to fill a much needed gap in housing services for the Town of Acton by providing approximately 350 hours of service each year. The Town and the ACHC submit this request to continue CPA funding for the following core community housing support services for the Town over the next two years:

Fulfill State and agency reporting and requirements (approximately 53% of hours):

- Monitor database of all deed restricted units;
- Monitor regulatory agreements;
- Send and compile self-declaration reports for ownership units;
- Maintain RSHO public website and provide members only portal
- Prepare and submit certification reports to DHCD;
- Prepare and submit subsidized housing inventory reports to DHCD.

Carry out local responsibilities (approximately 47% of hours):

- Share information with lottery agents;
- Assist with Capital Improvement Grants program;
- Update the Town's assessed value of deed restricted properties;
- Provide educational workshops for affordable owners;
- General local support and housing program administration to the Acton Community Housing Corporation (ACHC) and the Planning Department.
 - Give technical assistance to ACHC when reviewing 40B developments

Prior to the Town receiving CPA funds to join the Regional Housing Services Office, members of the ACHC tried their best to do what they could on their own volunteer time. As the volume of work and statutory responsibility increased and grew more complex over the years, several of the tasks listed above could not be completed due to both a lack of staffing and focused expertise in the field of affordable housing. In the past three + years the RHSO has helped Acton fulfill State and agency requirements as well as become more knowledgeable in determining local needs.

The RHSO has worked diligently to track regulatory agreements and deed restrictions. Homeownership and rental unit monitoring is a very time consuming charge that requires experience and expertise; but, is a requirement of the Regulatory Agreements between the state housing agencies and the Town. Prior to Acton's membership in the RHSO, this requirement along with other services were not being fulfilled on a regular basis. The Town and the ACHC believe it is in the Town's best interest to continue funding these services in order to keep the program strong.

Monitoring affordable units is extremely important in order for the Town to preserve its affordable housing stock on the State's Subsidized Housing Inventory but more meaningfully, to provide diversity of housing options. The monitoring program also helps with identifying owners who have deed restriction violations such as an unapproved refinancing – leading to underwater mortgages which put affordable units at risk. This funding will continue to provide monitoring services to prevent the loss of affordable units.

In May, the Regional Housing Services Office went live with a new website (<http://www.rhsohousing.org/>). The website contains a variety of information designed to help local officials, current and prospective residents. The information on the website includes the affordable housing inventories for each town, a listing of affordable housing opportunities that are currently accepting applications, and a section on resident services with local resources and contact information. The next phase of the website will include a secure access section for RHSO and town staff for easy access to unit level data for ownership units with purchase information and contact history, and key project documents (Permits, Regulatory Agreements, Deeds) for projects and owners. This will give each participating town on-line access to the confidential information the RHSO staff maintains.

The Regional Housing Services Office continues to hold informational workshops. In September 2014 the RHSO held an "Income Certification Training" oriented towards rental property owners of LIP properties. They have recently teamed with the WestMetro HOME Consortium to host another workshop this November entitled, "Fair Housing Training – After Initial Leasing" to assist property managers of restricted affordable housing units.

The Town and the ACHC envision the program to function similarly to the past three+ years; the Board of Selectmen and the Town Manager would renew the established Inter-municipal agreement for FY17 and the subsequent term. The Selectmen would sign the agreement. During the term of the agreement, core housing services would be provided with an allocation of approximately 320 hours under the direct supervision of the ACHC and the Planning Department.

As a participating municipality, Acton will continue to proportionally share the total costs of operating regional housing services. The proportional share is determined based on the percentage of hours planned to support each municipality for core services as represented in the fee schedule. Supplemental services proposed throughout the year will be invoiced outside

of this agreement for payment for additional hours in excess of the allotted hours. If there are unused hours at the end of the second year they will be refunded to the community. The expected funds would be processed in the same manner as the past years, with expected funding to be held in the Community Housing Program Fund and payments made to the regional housing service provider by the Town on an annual basis. This method has proven to work well for the past two years.

Estimated Date for Commencement of Project: FY 2017

Estimated Date for Completion of Project: This request will fund services through FY 2019.

**Regional Housing Services Office
FY17 Budget Proposal**

	FY15		FY16				FY1				
	Budget Hours	Actual Hours	Difference	Amount	Refund for FY15	Net Amount	Hours	% of Total	Amount	Adjustments	Net A
Income											
Starting Balance				\$0					\$0		
Acton	370	319	(51)	\$25,319	(\$3,012)	\$22,307	370	14%	\$23,098	\$357	\$1
Bedford	400	384	(16)	\$28,740	(\$945)	\$27,795	420	16%	\$30,317	\$357	\$1
Burlington	175	175	0	\$17,791	\$0	\$17,791	260	10%	\$11,910	\$357	\$1
Concord	425	410	(15)	\$31,477	(\$886)	\$30,591	460	17%	\$32,482	\$357	\$1
Lexington	400	405	5	\$28,056	\$0	\$28,056	410	15%	\$29,595	\$357	\$1
Sudbury	600	598	(2)	\$41,057	\$0	\$41,057	600	22%	\$43,309	\$357	\$1
Weston	165	169	4	\$11,291	\$0	\$11,291	165	6%	\$11,910	\$357	\$1
Contingency Amounts									\$0		
Adjustments/Refunds											
Total	2,535	2,460	(75)	\$183,731	(\$4,843)	\$178,888	2,685	100%	\$182,621	\$2,499	\$18
Expenses											
Staffing				\$163,731			\$60.98		\$162,621		
Program expenses				\$5,000					\$5,000		
Administrative Cost				\$15,000					\$15,000		
Total Expenses				\$183,731					\$182,621		
Ending Balance				\$0					\$0		
Billing Rate				\$68.43					\$72.18		

	Rate	Annual
Manager (BR)	\$70.00	1
Specialist (DG)	\$65.00	4
Specialist (LP)	\$60.00	1
Assistant	\$23.00	1
	\$64.27	2

CPA Application Recreation



Town of Acton Recreation Department

472 Main Street

Acton, MA 01720

Phone: 978-929-6640

Fax: 978-929-6333

Email: recreation@acton-ma.gov

Website: www.acton-ma.gov

Cathy Fochtman, Recreation Director

To: Steve Ledoux, Town Manager

From: Cathy Fochtman, Recreation Director

CC: Tom Tidman, Natural Resources

Date: Oct. 28, 2015

Re: Natural Resources CPA Applications for BOS Consideration

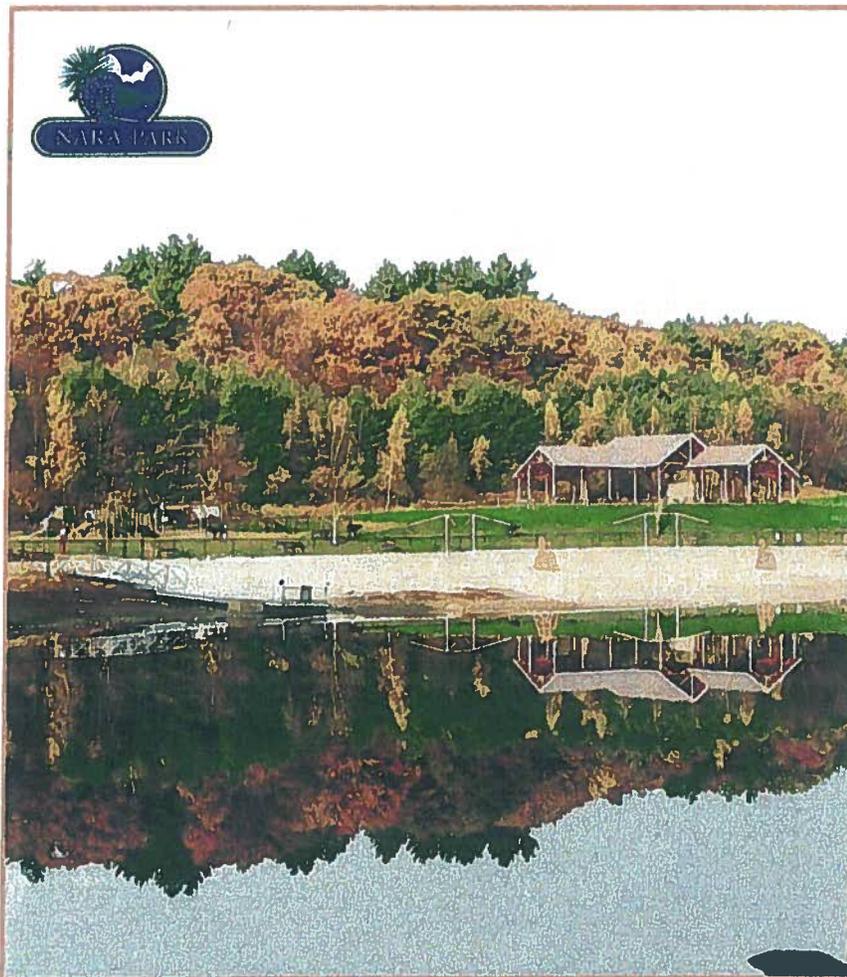
Please find five attached draft CPA applications Natural Resources is submitting for consideration by the Board of Selectmen for Recreation projects.

1. NARA Parking Control	\$150,000
2. Jones Playground Renovation	\$150,000
3. NARA Rail Trail Comfort Station	\$487,500
4. NARA Miracle Field Comfort Station	\$652,327
5. Skate Park Expansion – Phase 2, Skate Plaza	\$175,000
TOTAL	\$1,614,827



2016

NARA Parking Control



DRAFT

CPA Application

Town of Acton

11/16/2015

DRAFT PROJECT APPLICATION FORM – 2016

Applicant: Town of Acton

Submission Date: 11/16/15

Applicant's Address, Phone Number and Email

Purpose: (Please select all that apply)

Stephen L. Ledoux, Acton Town Manager

472 Main Street

Acton, MA 01720

sledoux@acton-ma.gov

Open Space

Community Housing

Historic Preservation

Recreation

Town Committee (if applicable): Recreation Commission

Project Name: NARA Parking Control Design and Installation

Project Location / Address: 25 Ledge Rock Way, Acton, MA

Amount Requested: \$150,000

Project Summary:

Estimated Date for Commencement of Project: May 2016

Estimated Date for Completion of Project: June 2016

The Town of Acton seeks \$150,000.00 to fund this NARA Park improvement project.

- Issues are Park Overuse, Public Safety and the arrival of the Bruce Freeman Rail Trail.
- A Park Ranger position was created this past summer to monitor park grounds – control picnic area use by non-residents by designating grill areas, imposing fees, enforce Park Rules, to watch parking and beach.
- The Natural Resources Department has many meetings strategizing with NARA staff about how to control the park when the visitor count was high. One solution was to assign a parking monitor to turn cars away when the parking lot was full or to inform visitors that the beach was not admitting more patrons on the beach due to overcrowding on the beach, to not exceed the maximum lifeguard:patron ratio.
- Many complaints/concerns voiced in the NARA Master Plan Survey conducted June – September 2015 about non-residents not respecting the park – littering, parking on grass, riding motorcycles on sidewalks, hopping the beach fence to avoid paying to get on the beach, etc.
- Natural Resources interviewed towns that control park access such as Beverly and Manchester-by-the-Sea. They have implemented sticker programs for residents to allow them free access to the park, and they charge non-residents a parking admission fee or “vehicle storage fee”.
- \$150,000 will be allocated to hire a consultant to design and install parking control systems.
- Manual or electronic access gates at all vehicle points of entry.
- Multi-space parking meters.
- Vehicle storage fee for non-residents.
- Essential to consult with other Town Department - Public Safety, Department of Public Works, Collector, etc. to coordinate with proven methods already used by these departments, to avoid unintended consequences and outcomes, such as parking overflowing onto the residential streets, Quarry Rd. and Ledge Rock Way.
- The opening of the Bruce Freeman Rail Trail In 2017 will significantly increase the number of visitors to the park. Parking strategies must take into account dedicated parking spaces that will be built for Rail Trail users.

Narrative:

This application requests funding for the design and installation of Parking Lot Control Systems for the lower and upper parking lots. The design can include manual or electronic gates at access points to parking areas and multi-space parking meters in parking lot. The objective is to have control of park visitor volume at the point of vehicle entrance at high-peak time periods and to institute vehicle storage fee collection for out-of-town residents to support park operations.

This past summer, NARA patrons have called the Recreation Director and NARA Master Plan Survey respondents have written to complain that they are very concerned about park overuse by non-residents. We are experiencing increased difficulty controlling vehicle and visitor volume to the park during operating hours. Without a control system in place, there will be increased resident dissatisfaction. Park visitor volume will grow in 2017 when an expected 1,000 users per day during summer weekends are on the Bruce Freeman Rail Trail and they flow through NARA.

There is also an important need to restrict unauthorized vehicle entrance to the pedestrian walkway that connects the two parking lots, due to speeding vehicles and parking on lawn areas. The motivation for our concern is public safety. Posted signs labeled "No Authorized Vehicles" are routinely ignored by a percentage of NARA visitors. Individuals are regularly seen traveling at unsafe speeds on this paved road that is primarily used by walkers, cyclists and dog walkers. Safety barriers will aid NARA staff and Town Police with controlling use of the park more effectively. When staff is not present after operating hours, it will curtail abuse of park rules.

Parking lot control will aid NARA staff and Police in preventing overuse of the park more effectively. Park admission fee will help control escalating visitor volume from non-residents. In the event this project is delayed, we will experience increased difficulty controlling vehicle access to park sites during operating hours and after hours.



2016

Jones Playground



DRAFT

CPA Application

Town of Acton

10/26/2015

DRAFT PROJECT APPLICATION FORM – 2016

Applicant: Town of Acton

Submission Date: 10/26/2015

Applicant's Address, Phone Number and Email

Purpose: (Please select all that apply)

Steve Ledoux, Town Manager

472 Main Street

Acton, MA 01720

sledoux@acton-ma.gov

- Open Space
- Community Housing
- Historic Preservation
- Recreation

Town Committee (if applicable): Recreation Commission

Project Name: Jones Playground

Project Location/Address: Goward Playground, 54 Martin Street, Acton, MA

Amount Requested: \$150,000

Project Summary:

The Town of Acton seeks \$150,000 toward a fully accessible playground at the current site of the Jones Playground. The funds will be utilized to purchase both preschool and elementary aged equipment, as well as changing the surfacing from pea stone to an ADA approved surface. The play equipment was installed back in 1996 and the Recreation Department has found the equipment to be steadily deteriorating, making it increasingly unsafe for children. This playground has been a neighborhood favorite and a group of citizens who are interested in having Jones Playground replaced, are starting to formulate a fundraising group to help support the renovation of this project.

The playground site is located in South Acton, and it is the only municipal playground in that area of Acton. It is also adjacent to Jones Field which has been in the past the home field to many Acton-based baseball teams. The location makes it geographically accessible to many South Acton neighborhoods in our community. The creation of a new playground is essential because the existing structure, besides being run down and in dire need of replacement, lacks full physical accessibility. In keeping with the town's recreation goals and expressed desires of many town residents, fully accessible playground is greatly needed and desired.

Estimated Date for Commencement of Project: July 2016

Estimated Date for Completion of Project: August 2016

Narrative:

The current Jones Playground equipment is outdated and in need of replacement. Moreover, the equipment and terrain are hazardous and/or inaccessible to physically disabled children. Replacing the equipment and surfacing will create a safe and accessible playground in South Acton.

The Town of Acton has a strong history of community involvement and we have drawn on our existing network extensively as we work to complete this playground. The condition of the playground is of great concern to families in the Acton community. As a result, a group of private individuals have been forming a support group to help with the fundraising of this project. This group will enable communication with a large number of Acton families for input as well as for fundraising efforts. The Recreation Department developed a survey to see what the citizens of Acton would like to see in it's future renovated playground. The survey was available to residents since the spring of 2015 and 26 individuals completed it.

Survey result highlights

- Target age level: Most respondents would like the playground to cater to children age 6 to 8 (88%).
- Play equipment wanted: Most respondents would like to see both climbers and slides.
- Non-play equipment wanted: Most respondents would like to see shade structures, benches, & tables.
- Usage: Most respondents (46.1%) would be likely to use the playground at least once per week after renovation.
- Any Special Needs: 93%-No special needs; 8%-Moderate-Severe Physical Disability; 4%-On the Autism Spectrum.

Current Photos of Jones Playground:



Cost of Playground Equipment:

The Recreation Department has received equipment quotes from J.P. LaRue from Big Toys and Meg O'Brien from O'Brien and Sons.

Big Toys And O'Brien and Sons Quotations:

The 2015 cost estimate for the equipment to be funded by this grant includes the following:



4 P L L C O R P

John P. LaRue, Inc
35 Oak Forest Dr
Little Compton, RI, 02837
Phone: 401-592-0445
Fax: 866-222-2561
Email: info@jplarue.com
Contact: John LaRue

Town of Acton Parks & Recreation

Jones Playground

Attn: ...
472 Main St
Acton, MA 01720
Phone: 978-929-6640
Fax: 978-929-6340

Quote Number: 773-85468
Quote Date: 12/18/2014

Table with 6 columns: Stock ID, Description, Quantity, Weight, Unit Price, Amount. Lists various playground equipment items like Single Playshell Climber, Arch, Swing Seats, etc.

Total Weight: 2512
SubTotal: \$21,157.00
Freight: \$1,869.85
Total Amount: \$23,026.85

THIS QUOTATION IS SUBJECT TO POLICES IN THE CURRENT BIG TOYS CATALOG AND THE FOLLOWING TERMS AND CONDITIONS. OUR QUOTATION IS BASED ON SHIPMENT OF ALL ITEMS AT ONE TIME TO A SINGLE DESTINATION, UNLESS NOTED, AND CHANGES ARE SUBJECT TO PRICE ADJUSTMENT. PURCHASES IN EXCESS OF \$1,000.00 TO BE SUPPORTED BY YOUR WRITTEN PURCHASE ORDER MADE OUT TO BIG TOYS.

Pricing: f.o.b. factory, firm for 30 days from date of quotation.

Shipment: order shall ship within 30-45 days after Big Toys receipt and acceptance of your purchase order, color selections, approved submittals, and receipt of deposit, if required.

Freight charges: Prepaid & added

Submittals: our design proposal reflects the spirit and intent of the project plans and specifications. While some variations may exist between our quotation and the project design, the differences do not materially affect the intended use. Big Toys designs and specifications are unique and not intended to be identical in all respects to other manufacturers. We shall submit for review and approval

Jones Playground
 Corner Main Street & Slow Street
 Acton, MA 01720

J.P. Latus Inc.

BigToys

This play equipment is recommended for children ages 2 - 5
 Minimum Area Required: 6' x 5' 6"

Scale: 1/8" = 1'-0"
 This drawing can be scaled only when in an 11" x 17" format

Drawn By:
 Jason Roberts
 Date:
 12/18/14
 Drawing Name:
 773-854688

BigToys
 401 Church Road, Ste. 410
 Chesham, TN 37628
 603.727.1807 | www.bigtoys.com

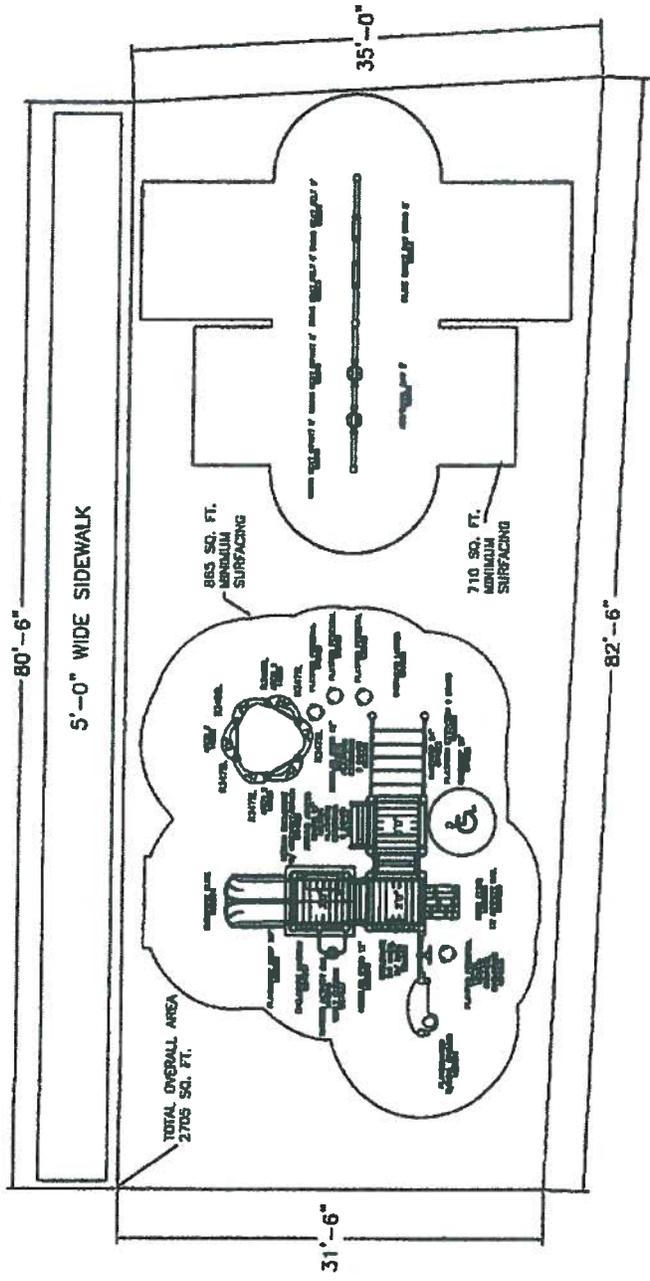


Total Play Components
 Elevated Play Components: 14
 Elevated Play Components Accessible by Ramp: 0
 Elevated Components Accessible by Transfer: 0
 Accessible Ground Level Components Shown: 0
 Different Types of Ground Level Components: 0

Use Capacity
 50 - 55
 Critical Fall Height: 8'-0"



**JONES PLAYGROUND
 AGES 2 YEARS TO 5 YEARS**



It is the manufacturer's opinion that the structure shown herein complies with current code standards concerning accessibility. If used with proper accessible surfacing and together with other necessary ground level play equipment, it is the manufacturer's responsibility to ensure the "playground area required" contains an appropriate amount of resilient material to cushion accidental falls.

Jones Playground
 Corner Martin Street & Slow Street
 Acton, MA 01720

J.P. Larus Inc.

BigToys

This play equipment is recommended for children ages 5 - 12
 Minimum Area Required:
 64' x 81'

Scale: 1/8" = 1'-0"
 This drawing can be scaled only when in an 11" x 17" format.

Drawn By:
 Jason Roberts
 Date:
 01/18/15
 Drawing Name:
 773-65509

BigToys
 401 Colonial Street, Ste. 410
 Channahon, IL 61515
 815.727.1107 / www.bigtoys.com



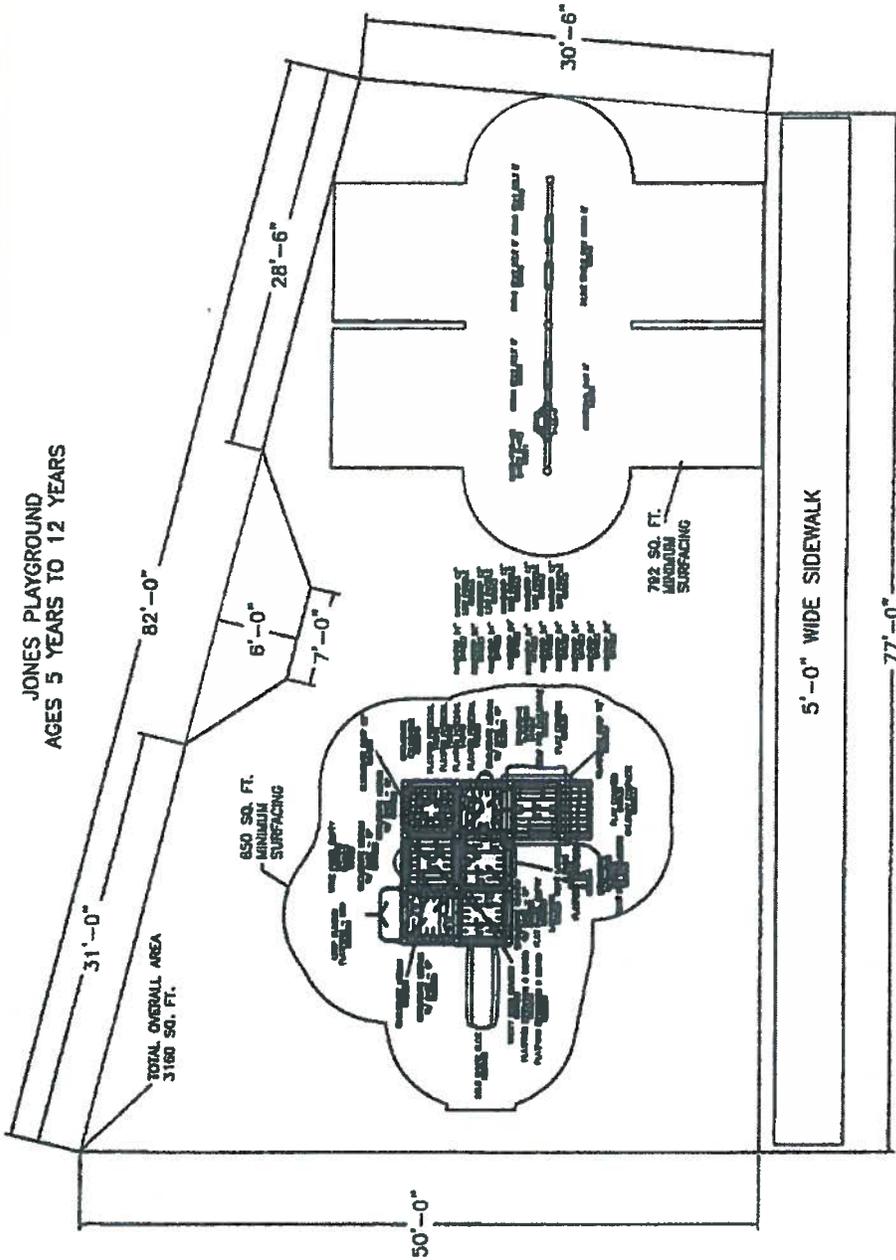
Total Play Components
 Elevated Play Components
 Elevated Play Components Accessible by Ramp
 Elevated Components Accessible by Transfer
 Accessible Ground Level Components Shown
 Different Types of Ground Level Components

10	10	10	10	10
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

User Capacity:
 65 - 68
 Critical Fall Height:
 6'-0"



**JONES PLAYGROUND
 AGES 5 YEARS TO 12 YEARS**



It is the manufacturer's opinion that the structure shown herein complies with current code standards concerning accessibility. If used with proper accessible surfacing and together with other necessary ground level play equipment, **IMPORTANT!** Never install play equipment over hard, uneven surfaces such as asphalt, concrete, or compacted earth. It is the owner's responsibility to ensure the installation area requires an appropriate amount of finished material to cushion and reduce falls.

es Playground
cton, MA 01720



773-554-68



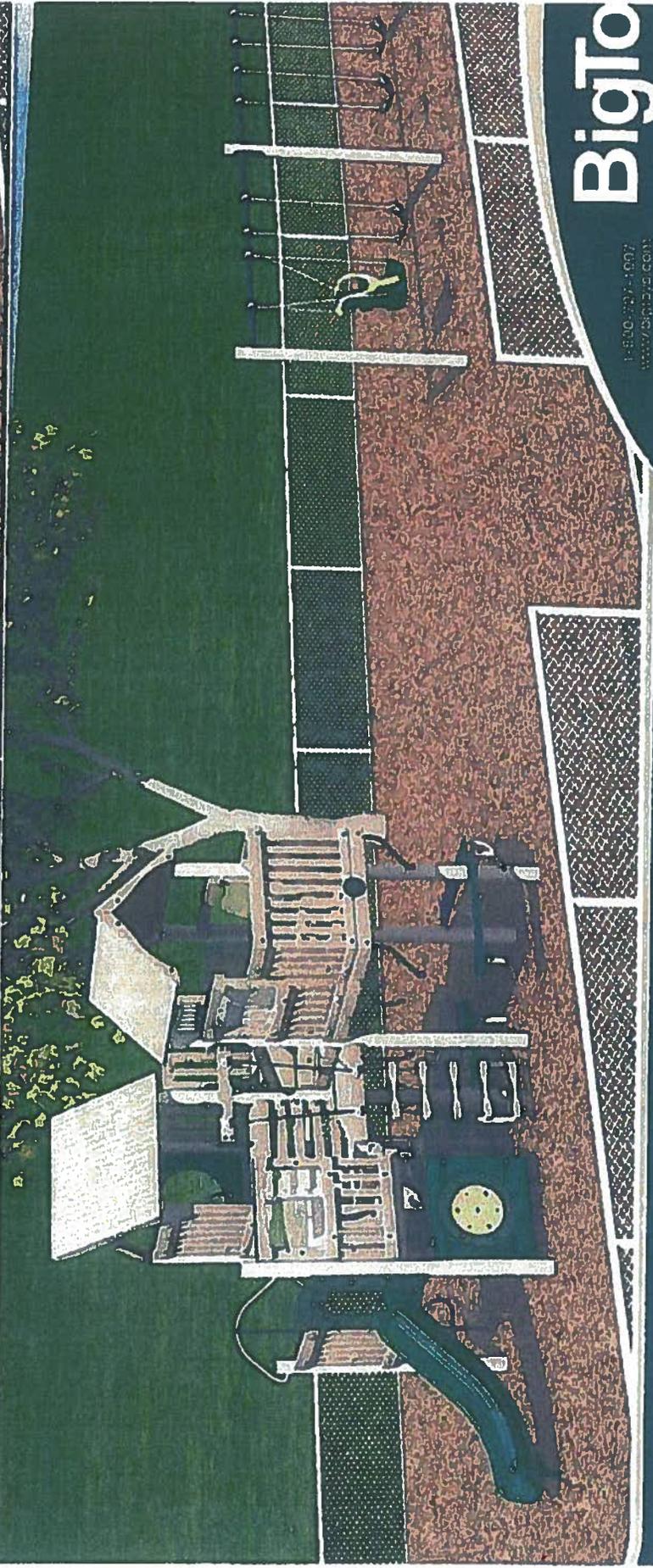
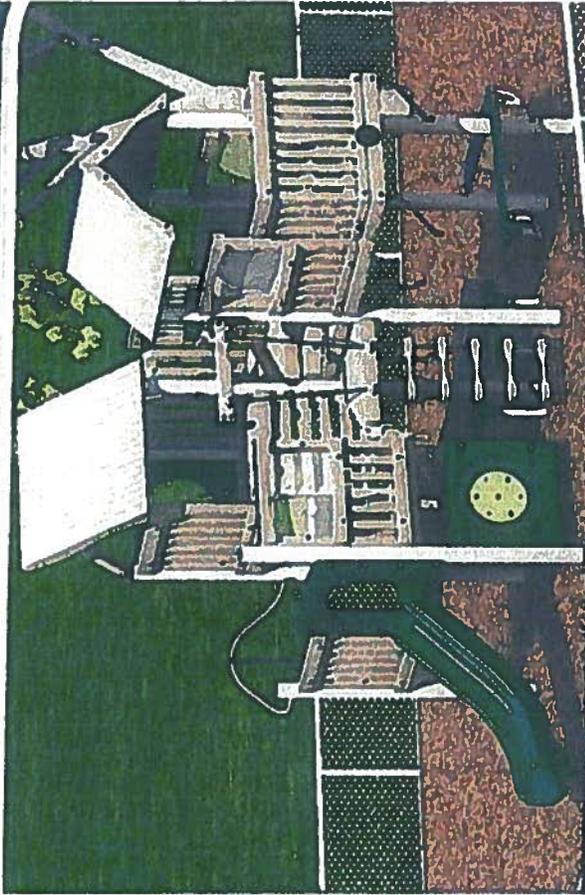
BigTo

1-800-727-1807
www.bigto.com

es Playground
cton, MA 01720



773-855-309



BigTo

1-800-937-1097
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M.E. O'Brien & Sons, Inc.

93 West Street – P.O. Box 650 / Medfield, MA 02052

Phone: 508-359-4200 / Fax: 508-359-2817

SDO CERTIFIED WBE

PAGE 1 OF

QUOTATION

Date: October 7, 2015

Job: Jones Field

Location: Acton, MA

Salesman: Meghan A. O'Brien Taylor, President/gmc (Meghan@obrienandsons.com)

Attention: Melissa Rier/Cathy Fochtman

Tel.: 978-929-6640 **Fax:** 978-929-6333

E-mail: mrrier@acton-ma.gov/cfochtman@acton-ma.gov

We are pleased to offer our quotation on the following for the above subject job:

<u>QTY.</u>	<u>MODEL #</u>	<u>DESCRIPTION</u>	<u>TOTAL</u>
<u>Age 2-5 Playground Area</u>			
<u>Play Equipment</u>			
1	197057A	Smart Play Motion Playstructure with Stepping Pods, Cozy Dome and Wee Planet Climber	\$21,540.00
1		Clubhouse Station with Storefront Panel and Table with Seats	\$ 2,070.00
1	173591A	OmniSpin Spinner	\$ 6,460.00
1	148636A	2-Seat Seesaw	\$ 2,225.00
1	177336A	Toddler Swing Set with 2 Full Bucket Seats	\$ 1,445.00
❖ I can make one of one swing seat a half bucket seat with chain strap, if desired.			
<u>TuffTimber Edging</u>			
58	119214A	4' Long TuffTimber Edgers with Galvanized Stakes	\$ 3,027.00

Surfacing

Age 5-12 Playground Area

Play Equipment

1		MEO15508 Playstructure	\$38,805.00
1	205800A	TopsyTurny Spinner	\$ 3,900.00
1	155077A	Stand-up Spinner	\$ 1,385.00

TuffTimber Edging

59	119214A	4' Long TuffTimber Edgers with Galvanized Stakes	\$ 3,090.00
		MHEC B14 Discount for all playground equipment and edging (please delete)	\$- 4,197.35
		Freight	\$ 3,600.00

Surfacing for Both Playground Areas

254 cu/yd of Engineered Wood Fiber Surfacing at 12" depth after compaction \$8,191.00
(includes MHEC B14 discount)

Installation Option #1 for Both Playground Areas

Excavate and Installation of Play Equipment

1. Receive, inventory and deliver equipment to the site.
2. Excavate existing play areas 1' deep and legally dispose of material.
3. Lay out and install 117 TuffTimbers.
4. Lay out and install play equipment.
5. Install 254 cubic yards of wood fiber – 124 yards in 5-12 year area and 130 in the 2-5 year area.

**TOTAL FOR INSTALLATION
(USING PREVAILING WAGE RATE): \$40,700.00**

Installation Option #2 for Both Playground Areas
Installation of Play Equipment through Pea Stone

1. Receive, inventory and deliver equipment to the site.
2. Lay out and install 117 TuffTimbers – top of timber to be 1' above the existing grade. No excavation of existing site.
3. Lay out and install a handicap accessible walk from the existing walk to the play structures using Poured-in-Place Rubber.
 - a. Lay out walk.
 - b. Supply and install dense grade c-run, fine graded and compacted.
 - c. Supply and Install 125 square feet (including beveled edges) of 2 ½" of Poured-in-Place Rubber.
4. Install 254 cubic yards of wood fiber – 124 yards in the 5-12 year area and 130 yards in the 2-5 year area.

**TOTAL FOR INSTALLATION
(USING PREVAILING WAGE RATE): \$37,430.00**

Add On Option #1:

1. Remove and dispose of the existing play equipment including concrete footings.
- This does not include railroad ties.

**TOTAL COST OF OPTION #1
(USING PREVAILING WAGE RATE): \$ 1,800.00**

Add On Option #2:

1. Remove the existing railroad ties and stockpile adjacent to the site for the town to load, haul and dispose.
- Stockpiled railroad ties are the responsibility and liability of the owner.

**TOTAL COST OF OPTION #2
(USING PREVAILING WAGE RATE): \$ 2,100.00**

Notes:

- All play equipment (including concrete footings) and railroad ties to be removed and disposed of by others prior to installer's arrival.
- This proposal does not include re-setting any of the existing brick walkway. That would be an additional charge.
- Owner to provide security during the cure time of Poured-in-Place Rubber.

****PLEASE READ – IMPORTANT NOTES – PLEASE READ****

- Contractor/Customer is responsible for quantity, color, and product confirmation.
- Prices based on quantities listed. Any change to quantities may impact prices quoted.

- M.E. O'Brien & Sons is NOT responsible for plan take-offs. All quantities, square footages, thicknesses, etc. are the responsibility of the purchaser. Confirm and double check quantities quoted. It is the responsibility of the purchaser to approve/purchase items "per plan".
- Prices quoted are firm for 30 days only and are subject to review thereafter.
- Prices are for materials only unless otherwise noted.
- If installation is included, M.E. O'Brien & Sons is NOT responsible for buried underground hazards including, but not limited to: ledge, unsuitable bearing soils, unmarked utilities, boulders, construction debris and any other conditions beyond our control. Additional cost will be required to rectify these situations.
- Prices do NOT include cost for electrical cut outs or staining of tongue and groove roof decking unless otherwise noted.
- Standard manufacturer's design, colors, specifications, and construction apply.
- If ordered, inspect entire delivery carefully, making note on delivery receipt of ANY damage so a freight claim can be filed if damage is discovered after opening package(s).
- Retainage does not apply.
- Returns must be made within 30 calendar days of receipt of order. Customer is responsible for re-stocking fee plus shipping charges (to and from) for all returned items.
- Our terms are: to be arranged – 1st order requires 50% deposit and execution of credit application.
- Allow 4 to 6 weeks for delivery of materials after receipt of order and architectural approval, if required.

POURED-IN-PLACE NOTES:

- If 100% color or 50% color/50% black is quoted, red will be an additional charge.
- Does not include aliphatic binder (yellow inhibitor) necessary with the following colors: dark & light gray, blue, teal and pearl.
- If installation is included please note the following:
Prevailing wages are included if Surface America is performing the installation. Installation is to take place over a prepared sub-base by others. Installation lead-time is to be determined and is weather dependent. Site security is the responsibility of the owner/contractor until product is cured.
- Owner/Contractor is responsible for quantity confirmation. Any changes to quantity may impact price quoted.

If we can be of further assistance please do not hesitate to contact us. Thank you!



2016

NARA Miracle Field Comfort Station

Preliminary Sketches



Miracle Field Comfort Station

September 16, 2015

NARA Miracle Field Comfort Station Preliminary Sketches

omr architects

DRAFT CPA Application

Town of Acton

11/16/2015

DRAFT PROJECT APPLICATION FORM – 2016

Applicant: Town of Acton

Submission Date: 11/16/15

Applicant's Address, Phone Number and Email

Purpose: (Please select all that apply)

Stephen L. Ledoux, Acton Town Manager

Open Space

472 Main Street

Community Housing

Acton, MA 01720

Historic Preservation

sledoux@acton-ma.gov

Recreation

Town Committee (if applicable): Recreation Commission

Project Name: Miracle Field Comfort Station

Project Location/Address: 25 Ledge Rock Way, Acton, MA

Amount Requested: \$652,327.00

Project Summary:

Construction of the Upper Fields Comfort Building

NARA Park is home to the Joseph Lalli Miracle Field, the first handicap accessible ball field specially designed for children with disabilities in New England. As NARA Park continues to grow, so does the demand to supply the amenities park users require. With overwhelming support from the citizens of Acton and the many dedicated businesses who have helped develop NARA to the stellar park that it is, we would like to address a strong need for restroom facilities. On a regular basis, park patrons complain about the lack of permanent restroom facilities. There are no bathroom facilities available in the upper park. The NARA Master Plan survey results indicate that more bathroom facilities are required.

Our request is for CPA funding to construct a multi-use building. This building will serve users of the sports fields by providing refreshments and bathroom facilities, plus office and storage space for Recreation and NARA staff. A family bathroom will be designed to accommodate an adult changing table. Construction of the Bathroom/Concession building designed by Office of Michael Rosenfeld (OMR) will utilize TWO donated modular houses from neighboring excavation company Redmond Corp. The building will be located opposite the playing fields and next to the Miracle Field, on the northwest corner of the upper parking lot.

Estimated Date for Commencement of Project: May 2016

Estimated Date for Completion of Project: October 2016

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Narrative:

The Town of Acton seeks \$652,327.00 to fund this NARA Park Improvement project.

NARA Park continues to grow and progress, and so do the demands to meet the needs of patrons. The request for permanent amenities is increasing daily by both park patrons and field users. The construction of a multi-use comfort station to be located in the upper field area near the new Joseph Lalli Miracle Field will begin the process to meet this demand and enhance the experience for all park patrons.

The conceptual design was produced by OMR Architects with the input of the Natural Resources Department, field user groups including the Miracle League of Massachusetts, and the Acton Adult Softball League. The conceptual design includes a sketch for the proposed comfort station that includes accessible restrooms, four-season concession stand, storage space, porch area and deck, and a possible meeting space. The conceptual design was produced at a cost of \$12,000, with the first \$5,000 provided at no-cost and is offered as a donation of services. Funding for the conceptual design is to be determined and will serve as leverage for the CPA funding request.

The proposed area for the comfort station is in close proximity of the Miracle Field, field area and gravel parking lot—which also will serve as an ice rink in the winter.

The benefits of a comfort station include:

- a. Restroom facility to meet the need for handicapped users who require a changing table
- b. Restroom facility for park patrons including field users
- c. Storage of valuable equipment for field maintenance
- d. Parking lot level field viewing area to meet the need for those with limited mobility
- e. Covered porch to protect from elements
- f. Four-season concession stand to assist leagues and Recreation Department in fundraising
- g. Picnic seating area
- h. Possible meeting space
- i. Water and electric

The design process will foster partnerships with users, whom we anticipate will contribute to construction of the building.

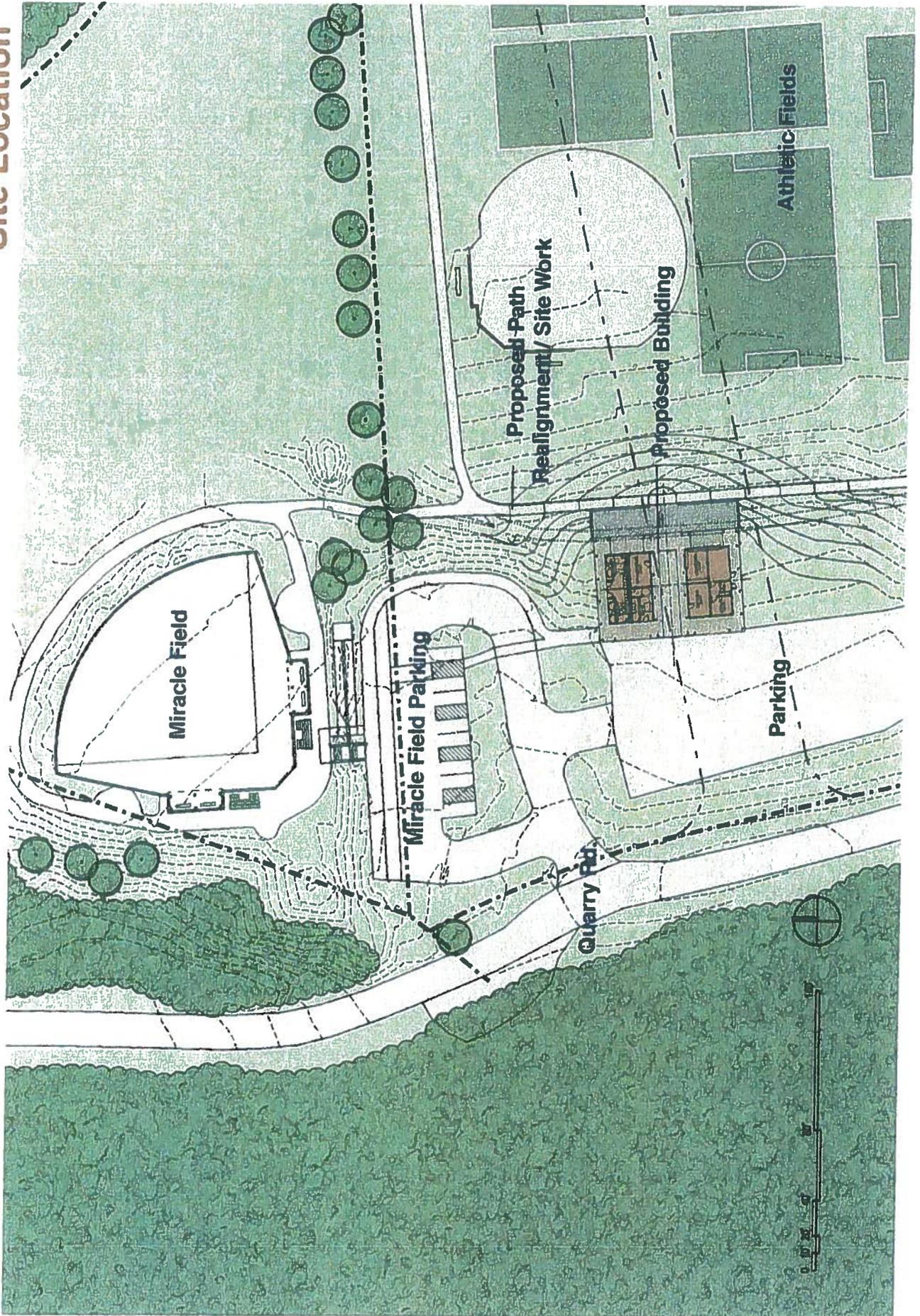
NARA Park
Miracle Field Concession Stand
Modular Study (Progress)



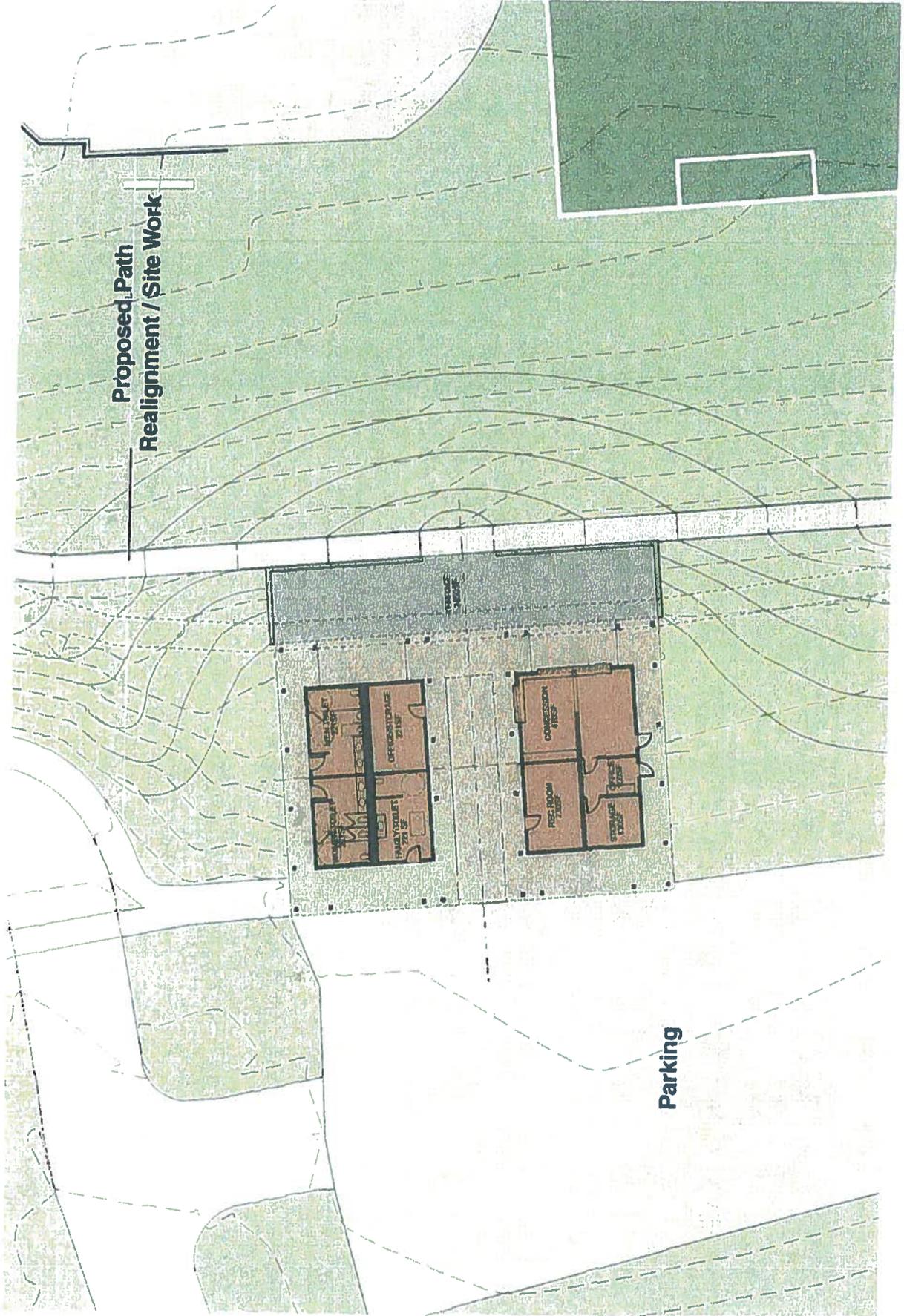
September 10, 2015

omr architects

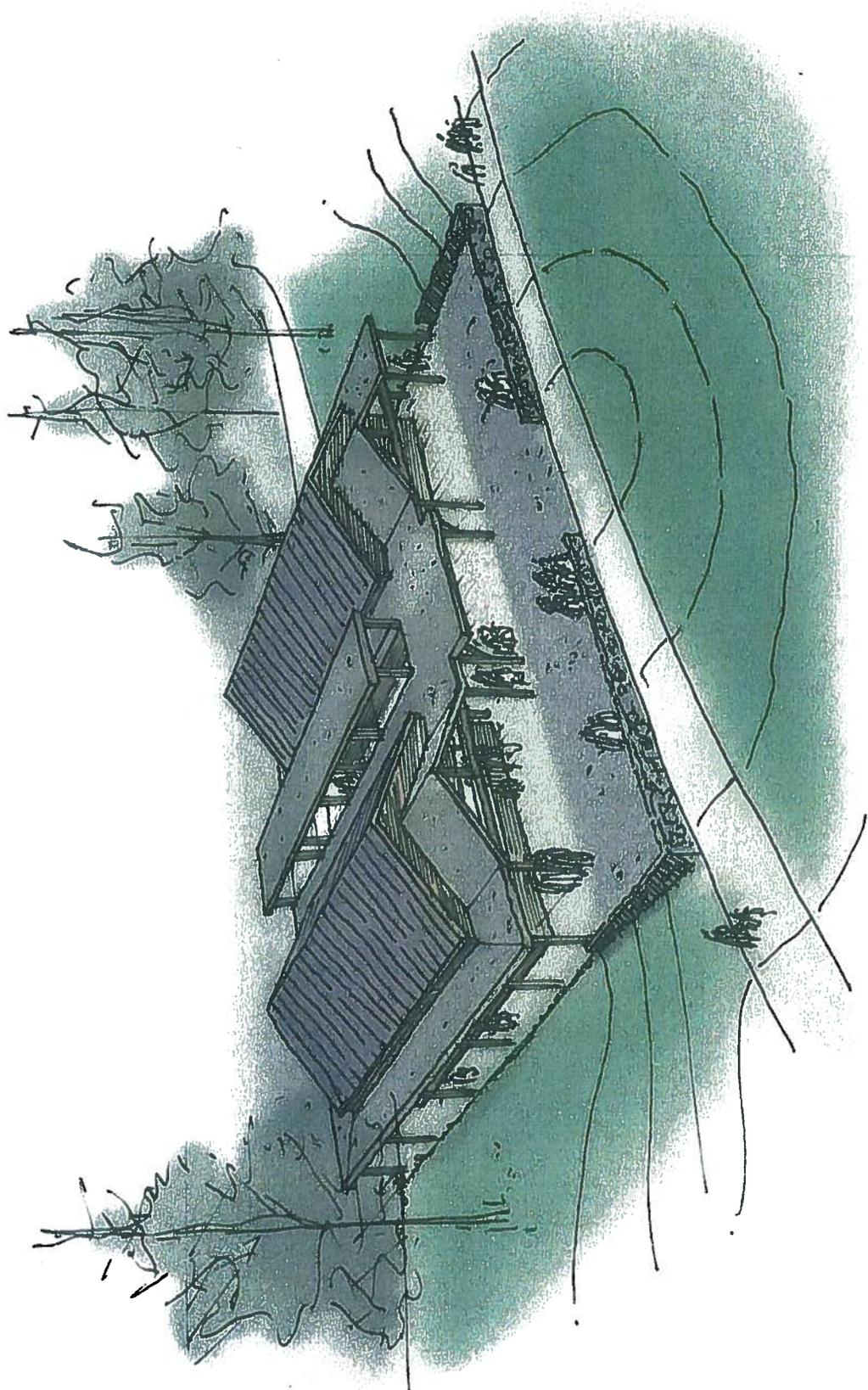
Site Location



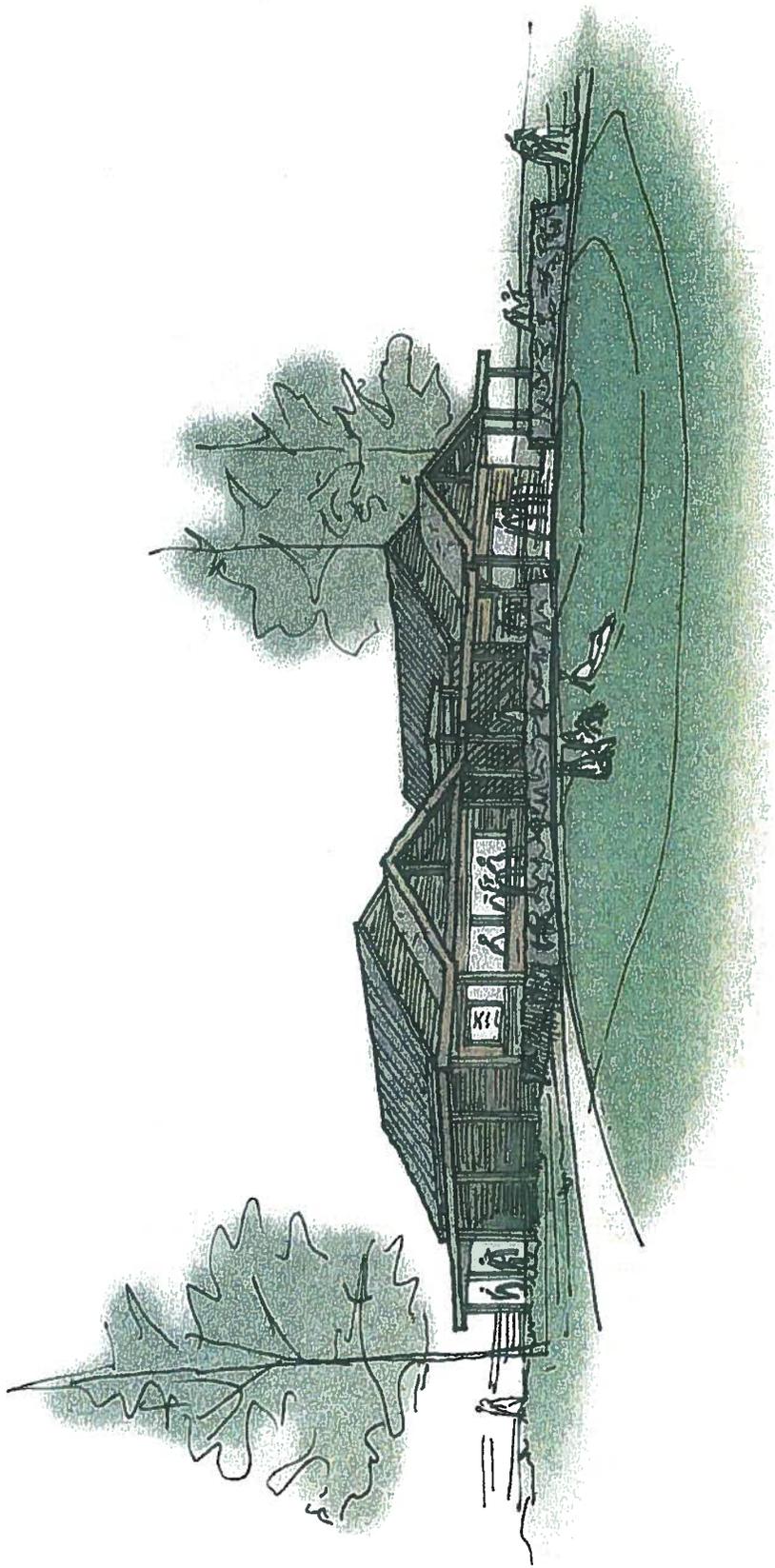
Conceptual Plan



Preliminary Sketches



Preliminary Sketches





**NARA Park Miracle Field
Concession Stand
Acton, MA**

Conceptual Cost Estimate

**Prepared for:
omr architects
Acton, MA**

**Prepared by:
D G Jones International, Inc.
3 Baldwin Green Common, #202
Woburn, MA 01801
email : boston@dgjonesboston.com
Tel: 781-932-3131
Fax: 781-932-3199**

September 18, 2015

SUMMARY

	Gross Floor Area (sf) =	2,052	
			Element (\$)
			\$/sf
A Substructure		71,032	34.62
A10 Foundations		71,032	34.62
A20 Basement Construction		0	0.00
B Shell		151,446	73.80
B10 Superstructure		62,309	30.37
B20 Exterior Enclosure		46,911	22.86
B30 Roofing		42,226	20.58
C Interiors		49,341	24.05
C10 Interior Construction		30,870	15.04
C20 Stairs		0	0.00
C30 Interior Finishes		18,471	9.00
D Services		85,525	41.68
D10 Conveying Systems		0	0.00
D20 Plumbing		57,122	27.84
D30 HVAC		5,006	2.44
D40 Fire Protection Systems		0	0.00
D 50 Electrical Systems		23,397	11.40
E Equipment and Furnishings		10,430	5.08
E10 Equipment		0	0.00
E 20 Furnishings		10,430	5.08
F Special Construction and Demolition		30,108	14.67
F10 Special Construction		12,180	5.94
F20 Selective/Building Demolition		17,926	8.74
F20 Asbestos Abatement		0	0.00
Sub Total Building Cost		397,880	193.90
G Building Sitework		109,234	53.23
G10 Site Preparation		52,494	25.58
G20 Site Improvements		51,515	25.10
G30 Site Civil/Mechanical Utilities		Excluded	0.00
G40 Site Electrical Utilities (Site lighting only)		3,225	1.57
G90 Other Site Construction		2,000	0.97
Sub Total Construction		607,114	247.13
General Conditions/Requirements	10.00%	50,711	24.71
Escalation to mid point of construction 4Q2016	6.31%	35,199	17.15
Estimating Contingency	10.00%	59,302	28.90
Building Permit Fee		Excluded	
Construction Contingency		Excluded	
Total Cost		652,327	317.90
Add Alternate #1 - Patio and Stone Wall		174,336	84.96
Add Alternate #2 - Lawn, Trees and Shrubbery		38,542	18.78
Total Cost w/Add Alternates		865,206	421.84

Notes

1. Brief project description:-
 - New concessions stand with associated site work and site utilities.
2. The estimate is based on the following:-
 - Prevailing wage.
 - General Contractor type project.
 - Receipt of 4# bona fide bids.
 - Bid date - 3Q2016.
 - Construction period - 8 months
3. The gross floor areas are based on the following:-
 - Measurement is taken to the outside face of the exterior wall, measured through all stair wells, elevator shafts and ducts.
4. Story heights:-
 - Varies.
5. General Conditions/Requirements are priced as a percentage on the Summary page.
6. Special Conditions for this project are included with General Conditions/Requirements.
7. Escalation to mid point of construction (4Q2016) is compounded per annum at the following:-
 - All years at 5%
 - Note: Escalation is taken on the sum of Sub Total Construction cost, General Requirements/Special Conditions.
8. Estimating Contingency is an allowance for future design modifications/additions, which alter the cost of the building as the design progresses, this percentage reduces as the design develops. It is based on a percentage of the sum of Sub-Total Construction, General Requirements/Special Conditions and Escalation. For this level of estimate the following has been included:-
 - 10.00%
9. Construction Contingency is an allowance for scope/design modifications made by the owner during construction and also for any unforeseen circumstances. It is based on a percentage of the sum of Sub-Total Construction, General Requirements/Special Conditions, Escalation and Design Contingency. For this level of estimate the following has been included:-
 - 0.00%

Notes (Cont'd)

10. This estimate has been prepared from the following design information:-
 - Drawings received 09/11/2015.
 - Emails from omr architects
 - Telecons with omr architects

11. The estimate includes the following:-
 - See estimate

12. The estimate excludes the following:-
 - Civil/Mechanical Utilities.
 - Electrical Utilities.
 - Excavation in rock.
 - Removal of water during excavation work.
 - Owner's appliances.
 - Utility company backcharges.
 - Sales tax.
 - Building permit fees.
 - Design consultants fees.
 - Loose furniture, fittings and equipment.
 - Fixed furniture, fittings and equipment except work normally included in GC work.
 - Third-party building Commissioning.

13. Allowances:-
 - Estimate is based on allowances at this stage of the design.

14. Assumptions:-
 - To arrive at a \$/sf cost reasonable assumptions have been made.

15. Estimates by other firms:-
 - None.

**NARA Park Miracle Field Concession Stand, Acton, MA
Conceptual Cost Estimate - Cost Estimate**

September 18, 2015

A Substructure

	<u>Qty</u>	<u>Rate</u>	<u>\$</u>
<u>A10 Foundations</u>			
Excavation (sog/found footing/column footing)	374	25.00	9,350
RC rat slab	2,052	7.00	14,364
RC perimeter footing	19	700.00	13,300
RC perimeter found wall	24	775.00	18,600
RC column footing	6	825.00	4,950
RC stub column	1	885.00	885
Base plate to ditto	6	195.00	1,170
Insulation/damproofing	1,048	3.30	3,458
Connect modular units to found wall	262	6.00	1,572
Misc.		5.00%	3,382
<u>A10 Foundations</u>		<u>Total</u>	<u>71,032</u>

B Shell

	<u>Qty</u>	<u>Rate</u>	<u>\$</u>
<u>B10 Superstructure</u>			
Wood column w/base plate	38	325.00	12,350
Wood porches complete	3,052	14.00	42,728
EO for raised open clerestory	533	8.00	4,264
Misc.		5.00%	2,967
<u>B10 Superstructure</u>		<u>Total</u>	<u>62,309</u>

	<u>Qty</u>	<u>Rate</u>	<u>\$</u>
<u>B20 Exterior Enclosure</u>			
Replace siding to modular units w/wood siding	2,634	10.95	28,842
Roller shutter at concessions	97	55.00	5,335
SL door w/frame, hardware, paint, etc	7	1,500.00	10,500
Misc.		5.00%	2,234
<u>B20 Exterior Enclosure</u>		<u>Total</u>	<u>46,911</u>

	<u>Qty</u>	<u>Rate</u>	<u>\$</u>
<u>B30 Roofing</u>			
Replace roofing to modular units w/metal roofing - pitched	2,360	13.75	32,447
Gutters/downspouts	279	15.00	4,185
Detail (ridge, eaves, gable)	351	5.00	1,755
Misc.		10.00%	3,839
<u>B30 Roofing</u>		<u>Total</u>	<u>42,226</u>

**NARA Park Miracle Field Concession Stand, Acton, MA
Conceptual Cost Estimate - Cost Estimate**

September 18, 2015

C Interiors

<u>C10 Interior Construction</u>	<u>Qty</u>	<u>Rate</u>	<u>\$</u>
SL door w/frame, hardware, paint, etc	2	1,280.00	2,560
Partitions	554	8.50	4,709
Fire rated, wet partitions, etc	617	12.50	7,713
Access doors, allow	1	500.00	500
Marker boards, etc	1	500.00	500
Signage	1	1,625.00	1,625
Toilet & Bath Accessories	3	1,660.00	4,980
Toilet partitions	2	1,025.00	2,050
Toilet partitions, handicap	2	1,355.00	2,710
Urinal screen	2	415.00	830
Coat hanging rail & shelf	12	45.00	540
Misc.		7.50%	2,154
<u>C10 Interior Construction</u>		<u>Total</u>	<u>30,870</u>

<u>C30 Interior Finishes</u>	<u>Qty</u>	<u>Rate</u>	<u>\$</u>
Floors, patch	2,052	2.50	5,130
Base	522	5.00	2,610
Walls	4,699	1.25	5,874
Ceilings, patch	2,052	2.25	4,617
Bulkheads, etc	20	12.00	240
<u>C30 Interior Finishes</u>		<u>Total</u>	<u>18,471</u>

D Services

<u>D20 Plumbing</u>	<u>Qty</u>	<u>Rate</u>	<u>\$</u>
WC	5	3,450.00	17,250
Lavatory, counter mounted	5	3,350.00	16,750
Urinal	2	3,175.00	6,350
Drinking fountain	1	3,150.00	3,150
Janitor's sink	1	3,650.00	3,650
Floor drains, hydrants, clean outs, etc	1	1,200.00	1,200
Water heater	1	3,000.00	3,000
General		3.00%	1,541
BWIC & GC's O&P		8.00%	4,231
<u>D20 Plumbing</u>		<u>Total</u>	<u>57,122</u>

<u>D30 HVAC</u>	<u>Qty</u>	<u>Rate</u>	<u>\$</u>
Heating only, assumed electric baseboard	36	125.00	4,500
General		3.00%	135
BWIC & GC's O&P		8.00%	371
<u>D30 HVAC</u>		<u>Total</u>	<u>5,006</u>

**NARA Park Miracle Field Concession Stand, Acton, MA
Conceptual Cost Estimate - Cost Estimate**

September 18, 2015

<u>D 50 Electrical Systems</u>			<u>\$</u>
Equipment			2,052
Feeders			1,026
Small Power			3,078
Lighting			13,338
Fire Alarm			1,539
General incl lightning			631
BWIC & GC's O&P			1,733
<u>D 50 Electrical Systems</u>		<u>Total</u>	<u>23,397</u>

E Equipment and Furnishings

<u>E10 Equipment</u>			<u>\$</u>
Appliances - By Owner			0
<u>E10 Equipment</u>		<u>Total</u>	<u>0</u>

<u>E 20 Furnishings</u>	<u>Qty</u>	<u>Rate</u>	<u>\$</u>
Casework:-			
Counter at concessions	30	200.00	6,000
Lavatory counter	23	160.00	3,680
Miscellaneous	1	750.00	750
<u>E 20 Furnishings</u>		<u>Total</u>	<u>10,430</u>

F Special Construction and Demolition

<u>F10 Special Construction</u>	<u>Qty</u>	<u>Rate</u>	<u>\$</u>
Transport modular unit to site & secure to foundations	2	6,090.00	12,180
<u>F10 Special Construction</u>		<u>Total</u>	<u>12,180</u>

<u>F20 Selective/Building Demolition</u>	<u>Qty</u>	<u>Rate</u>	<u>\$</u>
Demolish interior construction to modular units	2,052	2.25	4,617
Demolish plumbing fixture	6	160.00	960
Infill interior sl door opening	8	126.00	1,008
Form opening in exterior wall of modular unit & make good sl door	7	431.00	3,017
Concession roller shutter, 8' x 4'	3	658.00	1,974
Remove exterior window & infill	18	204.00	3,672
Remove exterior sl door & infill	4	357.00	1,428
Remove rubbish off site	1	1,250.00	1,250
<u>F20 Selective/Building Demolition</u>		<u>Total</u>	<u>17,926</u>

F20 Asbestos Abatement

Not required		<u>Total</u>	<u>0</u>
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**NARA Park Miracle Field Concession Stand, Acton, MA
Conceptual Cost Estimate - Cost Estimate**

September 18, 2015

G Building Sitework

	<u>Qty</u>	<u>Rate</u>	<u>\$</u>
<u>G10 Site Preparation</u>			
Site clearing (grubbing)	1	10,500.00	10,500
Earthwork	1	22,222.22	22,222
Grading	30,000	0.50	15,000
Misc.		10.00%	4,772
<u>G10 Site Preparation</u>		<u>Total</u>	<u>52,494</u>

G20 Site Improvements

	<u>Qty</u>	<u>Rate</u>	<u>\$</u>
Colored concrete paving	2,816	7.00	19,712
Paths (asphalt)	4,200	5.00	21,000
Curbs, signage, line markings, etc	1	500.00	500
Misc.		25.00%	10,303
<u>G20 Site Improvements</u>		<u>Total</u>	<u>51,515</u>

G30 Site Civil/Mechanical Utilities

	<u>Qty</u>	<u>Rate</u>	<u>\$</u>
Water			Excluded
Fire			Excluded
Sanitary			Excluded
Storm			Excluded
Gas			Excluded
Misc.		7.50%	0
<u>G30 Site Civil/Mechanical Utilities</u>		<u>Total</u>	<u>Excluded</u>

G40 Site Electrical Utilities (Site lighting only)

	<u>Qty</u>	<u>Rate</u>	<u>\$</u>
Electrical			Excluded
Lighting	1	3,000.00	3,000
Misc.		7.50%	225
<u>G40 Site Electrical Utilities (Site lighting only)</u>		<u>Total</u>	<u>3,225</u>

G90 Other Site Construction

	<u>Qty</u>	<u>Rate</u>	<u>\$</u>
Allow	1.00	2,000.00	2,000
<u>G90 Other Site Construction</u>		<u>Total</u>	<u>2,000</u>



2016

Skatepark Expansion – Phase 2, Skate Plaza



DRAFT

CPA Application

Town of Acton

11/16/2015

DRAFT PROJECT APPLICATION FORM – 2016

Applicant: Town of Acton

Submission Date: 11/16/15

Applicant's Address, Phone Number and Email

Purpose: (Please select all that apply)

Stephen L. Ledoux, Acton Town Manager

Open Space

472 Main Street

Community Housing

Acton, MA 01720

Historic Preservation

sledoux@acton-ma.gov

Recreation

Town Committee (if applicable): Recreation Commission

Project Name: Skatepark Expansion – Phase 2, Skate Plaza

Project Location/Address: 66 Hayward Rd., Acton, MA

Amount Requested: \$175,000

Project Summary:

Estimated Date for Commencement of Project: August 2016

Estimated Date for Completion of Project: October 2016

The T.J. O'Grady Memorial Skate Park is located at 66 Hayward Road in Acton, MA. It officially opened for public use on Monday, November 21, 2005 to celebrate the life of T.J. O'Grady. T.J. was a 14-year-old Acton-Boxborough R.J. Grey Jr. High student who passed away tragically on this date in 1998 while skateboarding on a street in Boxborough. T.J. had a passion for history, friends and skateboarding. He co-founded the Grey JHS Skateboard Club. This skate park was a dream of T.J.'s and was built to provide a great place for people to safely practice their sport. Its location is key - it abuts the Acton Boxborough Regional High School grounds, enabling students to walk Hayward Rd or cross the lower fields to access it. After six years of sustained determination, the park was originally funded with an appropriation of Acton tax dollars, Community Preservation Act funds, generous donations from the corporations and citizens of Acton and the Friends of the T.J. O'Grady Committee, along with endless volunteer hours who helped bring this facility to its inception.

Ten years later, the Skate Park continues to grow. The Town of Acton donated their Skate Park parking lot and admitted an active driveway through their skate facility to benefit the Acton-Boxborough Regional High School's Lower Fields project in 2012. The skating community is excited that they too will now benefit by having Action Sports Design/Stantec, the designers of the Charles River Skate Park, add exciting new features to T.J. O'Grady Skate Park. During the process of the Lower Fields upgrade, the boundaries of the Skate Park were reconfigured, enabling the Town to expand the skating features into the site of the original parking lot.

The Natural Resources Department completed the T.J. O'Grady Skate Park Expansion Design by Action Sports Design/Stantec, and a two-phased construction plan has emerged. Phase 1, the construction of a skate bowl, is being prepared to go out to bid. It was funded by a 2012 Town of Acton CPA Skate Bowl grant for \$210,000. This Phase 1 project included the construction of 11 parking

spaces and infrastructure improvements for \$110,000 in the Lower Fields parking area, in tandem with the opening of the Lower Fields facility. The remaining funds will construct the skate bowl.

Phase 2, construction of the skate plaza, converts the barren 100' x 100' area remaining after the removal of the original Skate Park parking lot due to the construction of the Lower Fields driveway from Hayward Rd. onto the school grounds. It provides an attractive formal entrance to the skate complex, a viewing area for onlookers and handicap accessible park amenities for Skate Park and Lower Fields patrons. It features a world-class triangular skating course around a bio-retention area.

With the completion of Phase 1, the Phase 2 skate bowl installation will complete the full expansion of the Skate Park, as designed by ASD/Stantec, a \$15,000 engineered design paid for with Recreation funds.

If the project is not funded, an incomplete town skateboarding facility next to Acton Boxborough Regional High School & Friends of the Lower Fields (FOLF's) cutting edge Lower Fields facility will remain. This upgrade will bring our skate park in keeping with the appearance of the Lower Fields, which shares the parking area with the Skate Park.

Cost Estimate for Skate Park Expansion Design from ASD/Stantec:

- 1,730 S.F Bowl Section - \$ 75,000 PHASE 1 - currently going out to bid
- 4,000 S.F. Plaza Section - \$175,000 PHASE 2 - applying for 2016 CPA funding
\$160,000 for the plaza construction, \$15,000 for the landscaping

Leveraged funds: The Recreation Department paid for the \$15,000 overall design engineered by ASD/Stantec. Mitzi Garcia-Weil of the Boxborough Recreation Commission has applied for a \$40,000 Boxborough CPA grant; the submittal date was October 29, 2015.

