

MOREHOUSE FARM PARK
DRINKING WATER QUALITY MANAGEMENT PLAN
FINAL DRAFT: SEPTEMBER 2006

MMI #1811-05



Prepared for:

Town of Weston
Weston, Connecticut

Prepared by:

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Section 1

1.0 INTRODUCTION

1.1 Purpose of Drinking Water Quality Management Plan

Morehouse Farm Park (MFP) is a seasonally-used recreational facility owned and operated by the Town of Weston, Connecticut. MFP is comprised of athletic fields, parking areas, and an access road. Refer to Appended Figure 1 for a site plan.

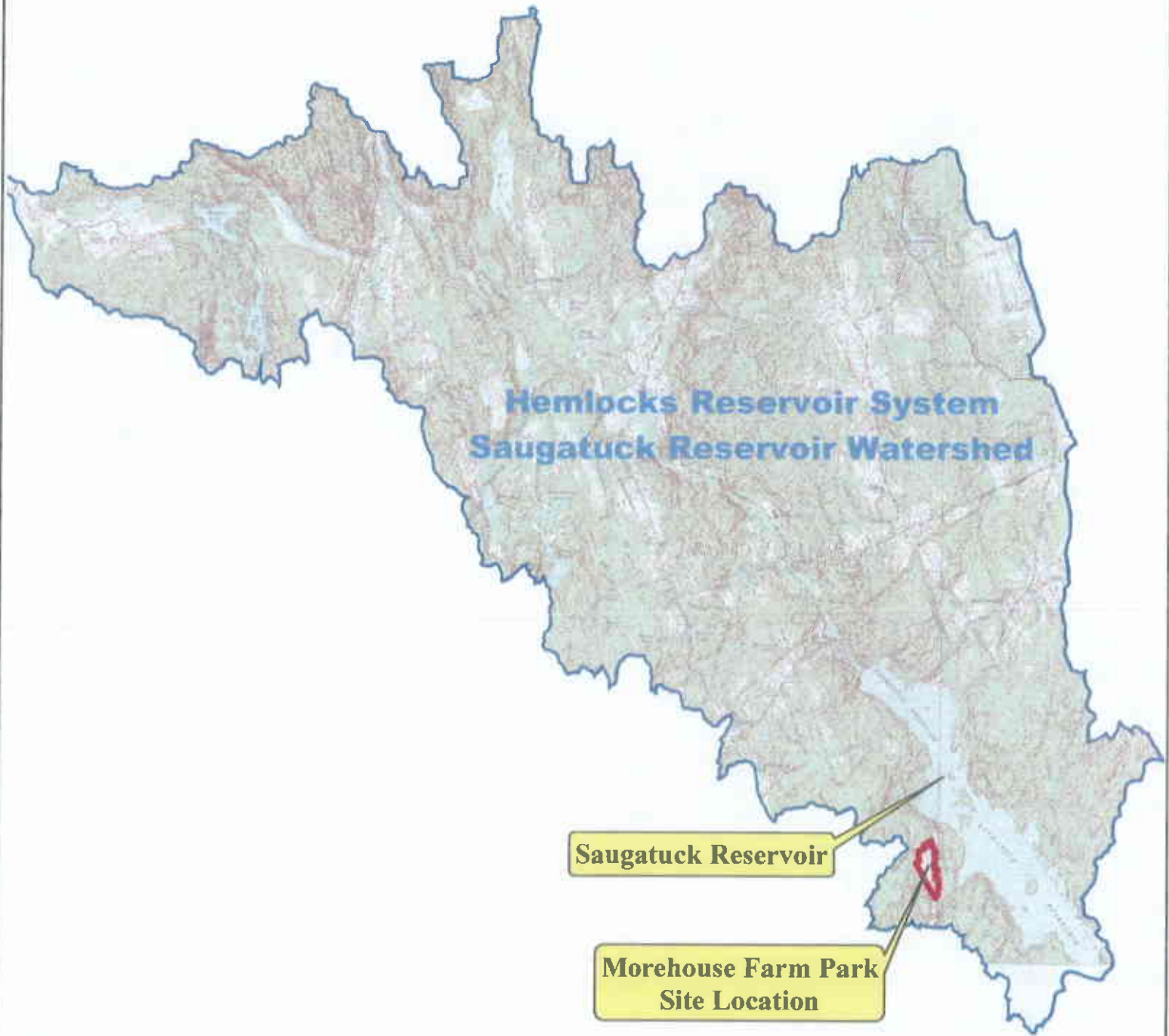
MFP is located west of the Saugatuck Reservoir, an active public water supply source for Aquarion Water Company. Because the site is located in the watershed of the reservoir, and the Town of Weston is a regulated water utility due to its operation of a water system at the Town Hall / school complex, MFP lies on regulated public water supply watershed land. Figure 1-1 depicts the site in relation to the reservoir and its watershed.



The subject Drinking Water Quality Management Plan (DWQMP) was developed in accordance with the requirements of part 11 (c) of Consent Order DWD 04-157-274. As specified in the Order, *"a draft water quality management plan is a plan that maximizes efficient and effective management practices at the Morehouse Farm Park site to protect the Saugatuck Reservoir and promote the public health, safety and welfare."* The goal of the DWQMP is to ensure that activities associated with daily operations and existing conditions of MFP will not adversely impact water quality within the Saugatuck Reservoir and its watershed.

1.2 Drinking Water Quality Management Plan Background

Drinking water consumption can directly affect public health if source water quality is compromised. Drinking water that is contaminated at the source can endanger and increase risks to public health. Meanwhile, reliance on treatment technology alone to remove contaminants of concern has increasing technical and financial limitations.





 MILONE & MACBROOM <i>Engineering, Landscape Architecture and Environmental Science</i>	Morehouse Farm Park Drinking Water Quality Management Plan		LOCATION: Weston, Connecticut	
	MMI#: 1811-05 MXD: H:fig1_1.mxd SOURCE: DEP Bulletin No.40		Site Location & Saugatuck Reservoir Watershed	DATE: 09/07/06 SCALE: NTS

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Therefore, source protection is a vital component of the EPA Source Water Collaborative strategy. Source protection serves as the initial barrier to contaminants entering drinking water supplies, increasing the efficiency and cost effectiveness of available treatment, while maintaining the relatively low cost of public water to the consumer.

DPH believes that a locally based comprehensive planning mechanism is necessary to provide adequate drinking water source protection to public source water areas. In concept, the DWQMP is a tool for long-term public health protection and sustainability of the State's public drinking water supplies that provides a public voice for each watershed community. To date, few locally based, comprehensive, stakeholder-involved, implementation planning tools exist with the intent of protecting the State's drinking water quality. The MFP DWQMP will be one of the first.

1.3 Development of Plan

As the manager of the MFP site, the Town of Weston Parks & Recreation Department is responsible for overseeing the development of the DWQMP, and subsequent implementation of the plan. A technical advisory committee was convened by the Parks & Recreation Department to develop the plan. The advisory committee includes stakeholders with keen interest in the project site and the Saugatuck Reservoir, ranging from a local resident, to local and state governmental agencies:

- Mr. David Ungar, Director, Town of Weston Parks & Recreation Department;
- Mr. Woody Bliss, First Selectman, Town of Weston;
- Mr. Cory Attra, PE, Chair, Town of Weston Conservation Commission;
- Ms. Paula Pendleton, Connecticut Department of Public Health (DPH) Drinking Water Division;
- Mr. Ernie Albin, Resident and Neighbor of MFP, Town of Weston;
- Ms. Sally Harold, The Nature Conservancy;

- Mr. Brian Roach, Aquarion Water Company; and
- Ms. Sue Jacozzi, Westport-Weston Health District.

Meetings with the technical advisory committee were held on January 18, March 1, and April 24, 2006. Copies of meeting minutes are included in Appendix A.

This DWQMP was developed in accordance with guidelines and recommendations in the U.S. Environmental Protection Agency (EPA) document entitled *"Draft Handbook for Developing Watershed Protection Plans to Restore and Protect Our Waters,"* dated October 2005; and guidelines of the DPH as included in the presentation *"Drinking Water Quality Management Planning,"* presented in May 2006. According to the DPH presentation, the following elements of a DWQMP are possible and/or recommended:

1. Community based, allowing for community empowerment
2. Development of planning and implementation team
3. Stakeholder identification and involvement
4. Local municipal and public water system partnerships
5. Water quality tracking and protection measures
6. Proactive local land use planning and strategies
7. Best management practices
8. Preservation and protection of critical land areas
9. Public water and sewer identified growth areas
10. Low impact development techniques
11. Stormwater management and controls
12. Recreational opportunities
13. Water quality controls for existing development
14. Nonpoint source management
15. Water quality education
16. Integration of other water quality programs

17. Implementation components
18. Ongoing implementation team meetings

Because these elements are possible for plans of many scales (with some watersheds encompassing many communities), some would not apply to the MFP DWQMP. In particular, elements 8, 9, and 10 are not applicable to MFP, as they pertain to developable land and numerous separately-owned parcels in entire watersheds.

1.4 Plan Objectives

Early in the development of the DWQMP, it was determined that the plan must include a list and description of any and all present and future on-site activities and processes at MFP site, an analysis and evaluation of the potential hazards any of these activities and/or processes may pose to drinking water supply of the Saugatuck Reservoir, and a description of control measures, emergency plans and corrective actions needed to address each identified activity and/or process at the site. Identified activities and processes to address in the plan included the following:

- Storm water design, measures, maintenance, control and treatment;
- Chemical application, use, handling, and storage;
- Fuel use, handling, and storage;
- All other processes involved in field maintenance;
- Impervious surface design and maintenance,
- Ball field design;
- Roles, responsibilities, and enforcement of plan and processes;
- Periodic water quality testing, monitoring, and reporting program;
- Potential future change of use of the parcel from its current recreational use;
- Future adjustments to address water quality degradation;
- Emergency spill control and containment;
- Parking and vehicle restrictions;



- Activities allowed including restrictions and controls;
- Signage and visitor notification concerning site restrictions and sensitivity; and
- Waste collection, control, and disposal.

The DWQMP must identify the roles and responsibilities of the individuals or groups that would assure implementation and compliance with the plan.

1.5 Schedule for Plan Development and Implementation

The Consent Order specifies the following timetable for plan development and implementation:

- *10/31/2006 – Draft Drinking Water Quality Management Plan due*
- *1/30/2007 – Deadline for public meeting and public comments*
- *6/2/2007 – Final Drinking Water Quality Management Plan due*
- *10/20/2007 – Deadline for Implementation of Management Plan*

As required by the Consent Order, this Draft DWQMP has been prepared before the deadline of October 31, 2006.

1.6 Exclusions and Limitations

Early in the process of developing the DWQMP, it was realized that the plan does not, and can not, address land use and activities located beyond the boundaries of MFP. This is an important distinction because the watershed of the Saugatuck Reservoir is 22,212 acres in size, compared to the 33 acres in the MFP site. However, even with its small contribution to the entire watershed, activities on MFP have the potential to affect water quality.



As a separate effort, the Town of Weston has implemented a program to monitor ground water levels at private water supply wells located west of MFP, and at a bedrock observation well located on the MFP site. This monitoring program was designed to evaluate potential impacts of irrigation water withdrawals on the bedrock aquifer. While this remains a topic of interest to the Town and the neighbors, it does not have any bearing on the development and implementation of this DWQMP. The Parks & Recreation Department should be contacted for additional information about the ground water level monitoring program.

1.7 Plan Updates

The Consent Order specifies that the DWQMP must be updated a minimum of ten years after the initial development. Thus, the Parks & Recreation Department will be charged with reconvening a technical advisory committee before the year 2017. However, the option remains to update and amend the DWQMP as needed before then. Provisions for more frequent updating are discussed in the applicable sections of this DWQMP.



Section 2

2.0 WATERSHED INVENTORY

2.1 Historical Land Use

MFP is located at 478 Newtown Turnpike in Weston, Connecticut. The site is approximately 33 acres in size, and was owned and operated by the Morehouse family prior to its sale to the Town of Weston in 2002. Historically, the site was occupied by two buildings, a dirt access road, and several open grass fields as explained below. Appended Figure 2 illustrates these pre-existing conditions.

The open fields were historically used for tree farming. The tree farm was characterized by natural growth of native grasses between the rows of low grade hardwoods. No record of chemical controls for the fields is available. The property was minimally maintained to categorize the land use as agricultural, thus minimizing taxation of the property.

The majority of the site was wooded with an intermittent stream and wetland corridor along the western boundary, an exposed bedrock ridge on the eastern boundary, and steep grades towards the south southeast of the site. The eastern boundary is bordered by State Highway Route 53, also known as Newtown Turnpike.

A single family residence was located in the southwest section of the property off of Newtown Turnpike. A one-story barn was located approximately 300 feet northeast of the residence. The improved driveway leading to the residence and barn was approximately 10 feet wide and consisted of wheel compacted soil. The access road continued north through the open fields along the western boundary, then continued northeast through the property.

2.2 Hydrology

The entire MFP site lies within the Saugatuck River drainage basin. The Saugatuck River drainage basin is identified as basin #7200 and is 22,200 acres. The sub-watershed that MFP lies within is much smaller. Figure 2-1 illustrates the sub-watershed and delineates the drainage basins for the northern and southern watercourses associated with the site.

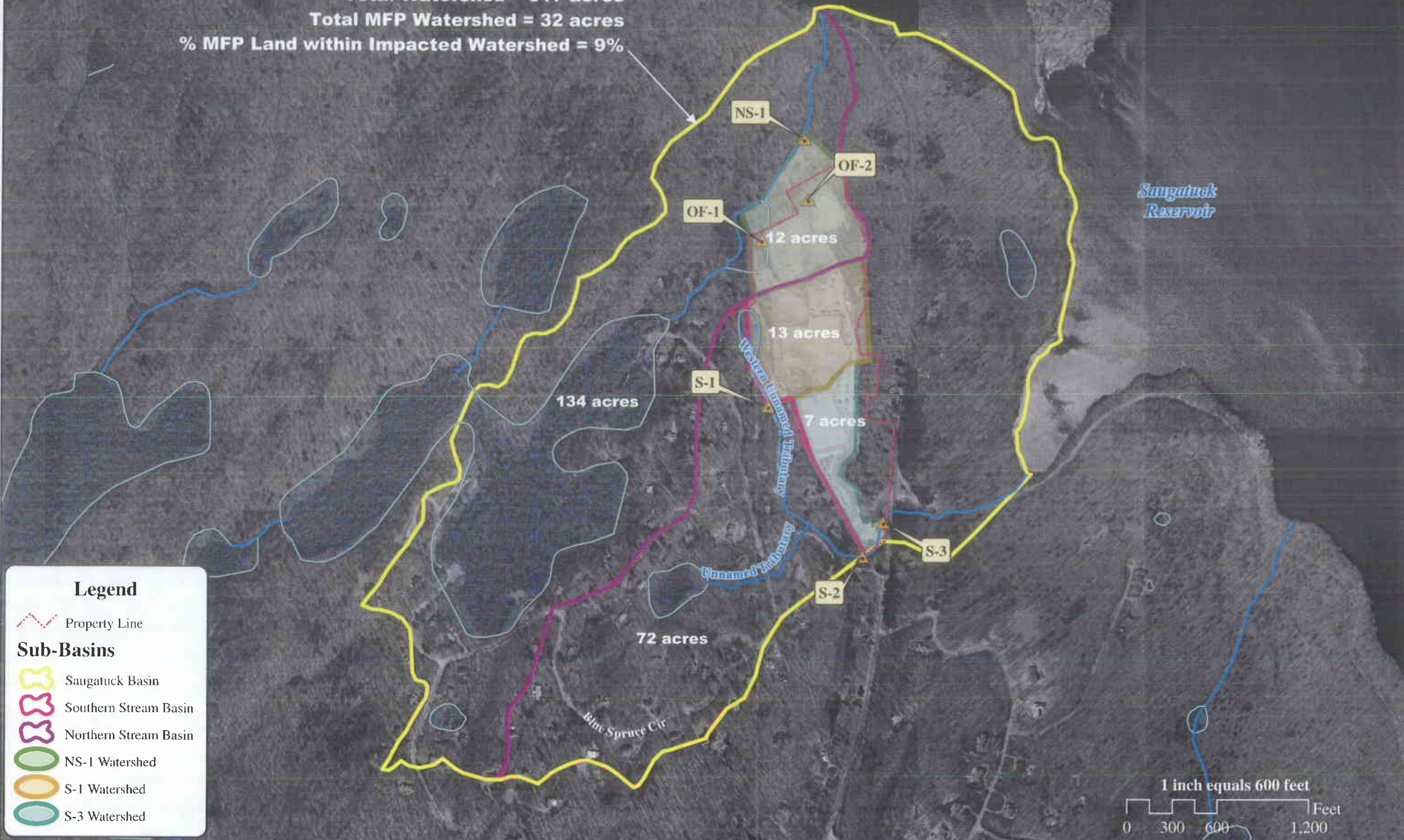
The delineated sub-watershed of MFP and the surrounding residential area has an area of 317 acres, which is approximately 1.5% of the total Saugatuck River drainage basin. The focus of the DWQMP is directly related to this sub-watershed and will focus on this area, as opposed to planning for the entire Saugatuck River drainage basin.

The MFP watershed includes two watercourses to the northeast and southeast of the site that eventually empty into the Saugatuck Reservoir. The first watercourse flows through the southern portion of the site and the second is located approximately 120 feet north of the site. The watersheds of each stream have been delineated and are depicted on Figure 2-1. The watersheds were delineated from the exit point from MFP, upstream to their respective headwaters. The northern stream's watershed is approximately 134 acres, and the southern stream's watershed is approximately 72 acres in size.

The stream flowing through the southern portion of the site is formed by two unnamed tributaries located to the west of the site. The first unnamed tributary has a southerly flow parallel to MFP. Its headwater wetland system is located along the western boundary of MFP west of the central sediment basin. The second unnamed tributary flows from the northwest across Blue Spruce Circle. The headwater to the tributary is located within an isolated wetland system approximately 1,000 feet west of MFP.

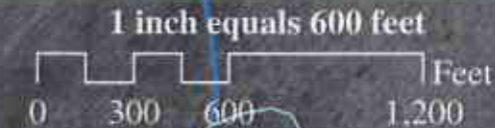


Total Watershed = 317 acres
Total MFP Watershed = 32 acres
% MFP Land within Impacted Watershed = 9%



Legend

- Property Line
- Sub-Basins**
- Saugatuck Basin
- Southern Stream Basin
- Northern Stream Basin
- NS-1 Watershed
- S-1 Watershed
- S-3 Watershed



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REVISIONS

Watersheds in Vicinity of Site with Sub-Watersheds
Morehouse Farm Park
Drinking Water Quality Management Plan
Weston, Connecticut

PAB	PAS	DM
SCALE: 1:7,200		
DATE: Sept 2006		
PROJECT NO: 1811-05		
DRAWN BY: HJ		
FILE NAME: H:\Fig2_1.mxd		
FIGURE 2-1		
SHEET NO.		

The two tributaries converge approximately 400 feet upstream from the southwest corner of MFP. The stream continues to the east across southern portion of the site into a three-foot by two-foot culvert that transitions to a 24-inch reinforced concrete pipe. The pipe crosses under Newtown Turnpike and discharges to a watercourse that eventually flows to the Saugatuck Reservoir.

The northern watercourse does not enter MFP, but does receive water from the northern two fields through the stormwater system. The watercourse flows from southwest to northeast approximately 200 feet north of the MFP property line. The headwaters to the watercourse are located within a wetland located approximately 700 feet west of MFP.

2.3 Review of the Saugatuck Reservoir Source Water Assessment

The Connecticut DPH, in conjunction with the Department of Environmental Protection (DEP), completed a *Source Water Assessment Report – An Evaluation of the Susceptibility of Public Drinking Water Sources to Potential Contamination*, for the Saugatuck Reservoir in May 2003. Appendix B contains a copy of the report.

The source water assessment plan (SWAP) was completed in accordance with the requirements of the 1996 amendment to the Safe Drinking Water Act. The SWAP assessment was intended to provide Aquarion Water Company consumers information about their drinking water sources, potential contamination to those sources, and steps to prevent contamination.

The report identifies properties with underground storage tanks (USTs), failing septic systems, improper waste disposal, and/or commercial/ industrial sites that store or use chemical or generate hazardous waste. As stated in the report, the assessment can be used to target and implement enhanced source water protection measures such as inspections, land use regulations, land acquisitions, septic system maintenance, and education.

The Hemlock Reservoir System was reviewed by the DPH during 2002. The reservoir system includes the Saugatuck Reservoir. The complete Hemlocks Reservoir System has a watershed of approximately 36,946 acres of land in Bethel, Danbury, Easton, Fairfield, Newtown, Redding, Ridgefield, and Weston. In general, these lands were found to have a low risk of contamination from any identified potential sources of contamination.

Using the guidelines set within the SWAP report, MFP is a low risk potential for contamination to the Hemlock Reservoir System. The park does not contain a UST, septic system, chemical waste, or generate hazardous waste. The park does have small quantities of waste storage in trash barrels, as discussed in Section __. These barrels are emptied daily by park personnel and disposed at an off-site facility. MFP does not contain a dumpster.

The SWAP report lists recommendations and opportunities to lower the risk level of the Hemlock Reservoir System. Table 2-1 is a summary of the recommendations from the SWAP report.

**Table 2-1
SWAP Summary and Recommendations**

Assessment Category	Conditions as of June 2002	Recommendations
Environmental Sensitivity Factors	Predominate watershed with moderate slopes	Monitor runoff during heavier precipitation events
	Moderate or unknown capacity for algae/plankton growth	Monitor nutrient levels and identify trophic status of unknown waterbodies
Potential Contaminants in Untreated Source Water	None identified	Public outreach for residential best management practices for use of hazardous materials or generation of waste

**Table 2-1 (Continued)
SWAP Summary and Recommendations**

Assessment Category	Conditions as of June 2002	Recommendations
Potential Risk Factors	Potential contaminant sources in watershed	Inspection of sites periodically and maintain water quality monitoring program for such sites
	More then 50% undeveloped land	Proactively work to insure low-risk development occurs on these parcels
	Major state or interstate roadways through watershed	Monitor road salt and herbicide usage along roadways, and potential spills from vehicles
	Known contaminant release points	Maintain surveillance around release point to insure surface water contamination is not occurring
		Encourage residential inspection and regular cleanout of onsite septic systems and replace USTs with ASTs
Source Protection Needs Factors	20 to 30 percent of watershed owned by public water system	
	Local regulations and zoning initiatives for the protection of drinking water sources do not exist	Establish local watershed protection regulations to protection the drinking water sources
	Comprehensive plans and policies for protection of public drinking water sources does not exist	Develop or enhance local government plans that favor the protection of drinking water sources
	Point source pollution discharge points not present in the watershed area	Support environmental awareness and education with the community

The DWQMP will be used to assist with the protection of the Saugatuck Reservoir as it pertains to land use and daily operations of MFP. The environmental sensitivity factors that most likely relate to MFP include steep slope conditions to the south of the fields which will generate runoff that may potentially impact the trophic status of the reservoir.

Overall, this DWQMP fulfills the proactive recommendations presented in the SWAP report to protect the public from potential pollution sources located on the MFP site that would impair a portion of the Hemlock Reservoir System. The Town of Weston will implement the recommendations set forth in this document, strengthening its dedication to protecting the public from potential drinking water contamination.

2.4 Construction Activities

Local permitting and design of the MFP site was completed in 2003. Construction on the site began in early April 2003 and ended October 2004. The multi-use facility includes four rectangular sports fields overlapping in areas with four baseball/softball playing fields. Access to the fields is from a paved driveway off of Newtown Turnpike, transitioning to a processed stone surface drive and parking area.

The original construction specification was to complete MFP in three construction phases in order to minimize the need for extensive stormwater controls to handle excessive runoff during storm events. Two sedimentation basins were engineered to control storm runoff that would be generated during the three stages.

Ultimately, the subcontractor for the MFP project cleared the entire site in one phase, exposing approximately 28 acres of soil before the sedimentation controls were operational. Following the clearing, heavy precipitation occurred at the site and generated runoff that carried silt to the streams and surrounding wetlands, increasing the sediment load and turbidity into the Saugatuck Reservoir. By clearing the site in one phase, the engineered controls for stormwater runoff were undersized and were not designed for the initial runoff generated during storm events that occurred in the fall of 2003.

An additional sedimentation basin was designed to counteract the clearing of the site in one phase, and is currently located in the center of MFP. Additional silt fencing was also installed surrounding the watercourses and wetlands to prevent runoff from entering until the grading and seeding was completed.

The fields were designed and constructed to minimize ponding and maximize drainage. The playing fields were constructed with a gravel underdrain system that consists of six inches of topsoil over an eight inch gravel blanket on top of a four inch compacted

substrate. Water is collected in four-inch corrugated plastic pipes within the compact substrate, and flows to the outlet structures or basins.

2.5 Existing Conditions



The completed MFP has four baseball/softball diamonds, two with clay infields and two within multi-use fields with grass infields, and the five soccer fields. The fields were designed for multi-use in such a way that two of the baseball fields overlap with three of the soccer fields. At one time the park may hold a combination of sporting activities to maximize the use of MFP by the residents of Weston.

MFP is currently used on a seasonal basis by the residents of the Town of Weston under the program direction of the Town of Weston Parks & Recreation Department. The site is used for day outings and special events for soccer, baseball, little league and softball games. The park is open from sunrise to sunset, and is gated when not in use. Existing conditions of the MFP site are depicted on Figure 2-2.

2.6 Communications

During the technical advisory committee meetings, it was determined that the relationship and lines of communication between Aquarion Water Company and the Town of Weston could be improved. Aquarion Water Company staff formerly inspected sites in the Town of Weston, but no longer do with as much frequency. Likewise, adequate notification to Aquarion Water Company apparently did not occur during construction of MFP, although Aquarion Water Company did review concept plans in the early stages of the project.



 <p>Engineering, Landscape Architecture and Environmental Science</p> <p>MILONE & MACBROOM</p>	<p align="center">Morehouse Farm Park Drinking Water Quality Management Plan</p>	<p>LOCATION: Weston, Connecticut</p>	
<p>99 Realty Drive Cheshire, Connecticut 06410 (203) 271-1773 Fax: (203) 272-9733 www.miloneandmacbroom.com</p>		<p>MMH#: 1811-05 MXD: 1:Fig2_2.mxd SOURCE: DEP GIS Division</p>	<p align="center">  Existing Conditions </p>

As a result, this DWQMP addresses methods of improving communications pertaining to MFP in applicable sections. Proposed methods of communication include reconvening the technical advisory committee and distributing information to stakeholders.



Section 3

3.0 STORMWATER SYSTEM

3.1 System Design and Construction

Prior to the construction of MFP, stormwater runoff generally flowed in several directions due to the varying topography. Although the stormwater runoff moved off the site in different directions, all stormwater from the site eventually discharged to the Saugatuck Reservoir via the two watercourses described in Section 2.2.

The initial design for the stormwater control system, including two sediment basins, was based on four existing sub-watersheds encompassing the entire property. The four watersheds were modified and subdivided further to analyze the hydrology under proposed conditions. The total combined watershed area delineated was ± 73 acres including approximately 41 acres of off-site watershed under both existing and proposed conditions. The watersheds were used to determine the peak flow under existing conditions as well as under proposed conditions with and without detention.

The system was designed based on a TR-20 model to predict stormwater flows. The stormwater basins were designed to attenuate the peak rates of runoff to the existing wetlands and watercourses. The initial design was for two sediment basins based on a three-phase construction of MFP. The rational method was used for designing the required pipe sizes of the proposed storm drainage system with adequate capacity to convey the 25-year storm event. The overall watershed was subdivided into sub-basins to determine the drainage area and stormwater runoff to each catch basin inlet.

The stormwater control system was constructed in 2003. During construction the site was cleared in one phase, causing exposure of soil beyond that which was initially anticipated. Due to field changes to the original planned grading, phasing, and limits of disturbance, the southern sediment basin design calculations were revised to reflect these changes. The results showed that the southern sediment basin was slightly undersized due to the changes



in the construction phasing. In order to mitigate the volume deficit, an additional (third) sediment basin was constructed. The additional basin was designed using the Department of Environmental Protection methodologies set forth in the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control*.

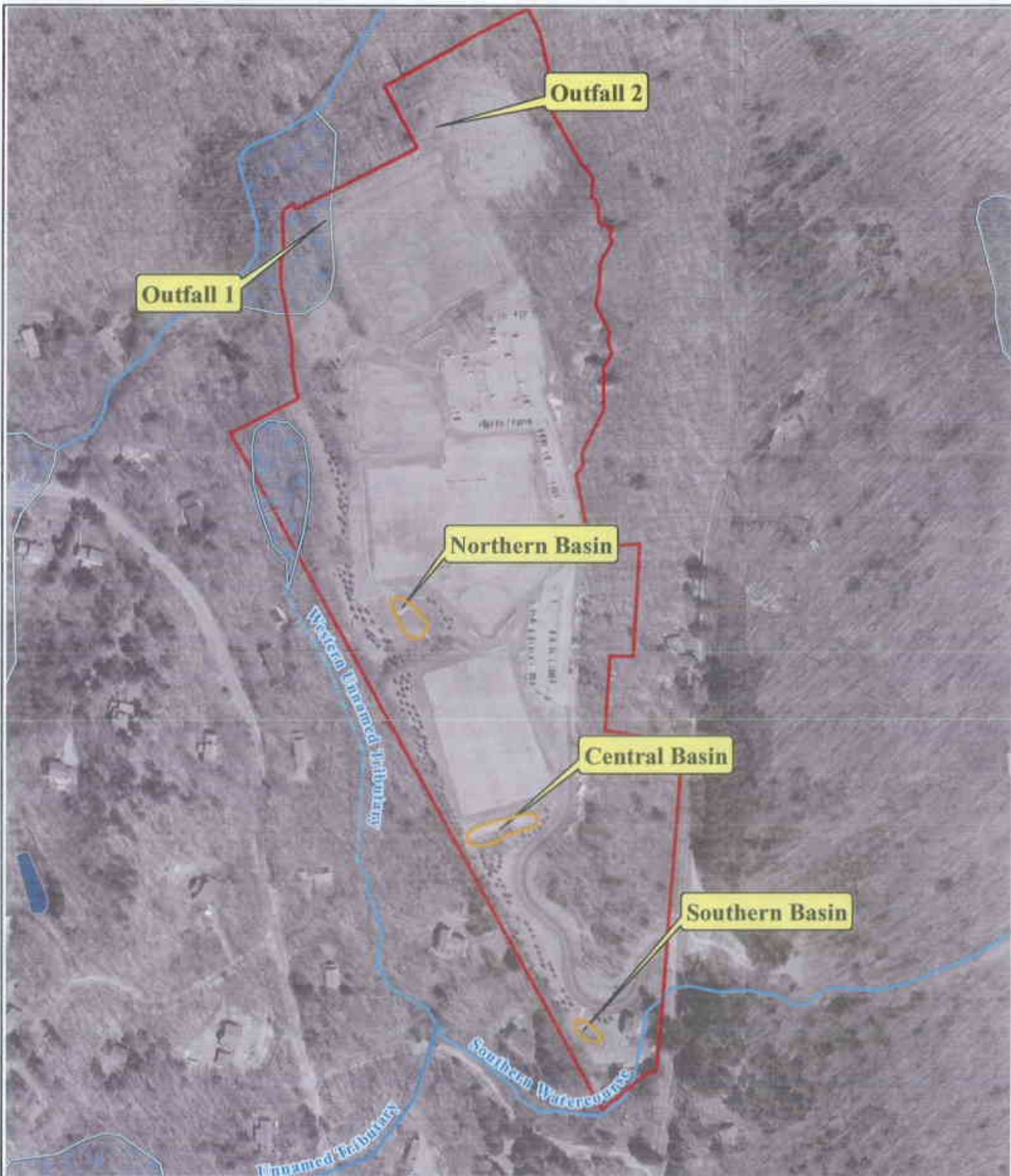
Appended Figure 1 and Figure 3-1 depict the locations of the sediment basins and the outlet structures. For the purpose of this plan, the basins will be known as the "northern basin," "central basin," and "southern basin."


The northern and southern sediment basins were constructed with sediment forebays using riprap filter berm to help remove suspended solids and debris in the stormwater. Stormwater flow rates are detained by use of an outlet control structure containing a V-notch weir with a low flow orifice. Water collected in the basins exits slowly through infiltration to ground water, or through a level spreader device during high flows. There is no direct discharge of water within the basin to the surrounding wetlands or watercourses.

The central basin was constructed originally as a temporary sediment trap and converted to a permanent sediment basin. The basin has a sediment forebay using a riprap filter berm to help remove suspended solids and debris in the stormwater. Stormwater flows out through an overflow device to the drain pipe that runs south under the access road and discharges to the southern sediment basin.

3.2 System Layout

The drainage system for MFP is based on the gravel underdrain blanket that was constructed for maximum drainage of the multi-use fields. The gravel drain system of each fields discharges to its respective sediment basin or outlet structure to minimize



<p>Engineering, Landscape Architecture and Environmental Science</p> <p>MILONE & MACBROOM</p>	<p align="center">Morehouse Farm Park Drinking Water Quality Management Plan</p>		<p>LOCATION: Weston, Connecticut</p>	
<p>99 Realty Drive Cheshire, Connecticut 06410 (203) 271-1773 Fax: (203) 272-9733 www.miloneandmacbroom.com</p>	<p>MMI#: 1811-05 MXD: H:fig3_L.mxd SOURCE: DEP GIS Division</p>	<p align="center">  Stormwater Control System </p>	<p>DATE: 09/07/06 SCALE: 1:3,600</p>	<p>SHEET: Figure 3-1</p>

erosion, reduce suspended sediments, and improve the overall water quality prior to flowing off-site.

The northern basin watershed includes drainage from the three central multi-use fields and a portion of the gravel parking area. The fields drain to the west entering a lateral pipe that runs north south and discharges to the north end of the sediment basin. During high flows, the level spreader discharges to the west.

The central basin watershed includes drainage from the southern multi-use field. An inlet pipe is located on the northwest corner of the sediment basin. The overflow from the basin flows east into the drainage pipe that runs along the access road south discharging to the southern sediment basin.

The southern sediment basin watershed includes the overflow from the central basin, runoff from the central basin to the southern basin and the access road up to the gravel parking area. During high flows the level spreader discharges to the south, eventually entering the southern stream.

The paved section of the access road contains 15 catch basins that are connected to one drain pipe. The catch basins vary in depth, but have a minimum of two feet of space below the invert of the incoming pipe or outlet pipe. The space below the inverts allows the settling of coarse sediment within the catch basin.

The northern two multi-use fields discharge to two outlet pipes. The four-inch PVC pipes are connected to the gravel underdrain system for each field and discharge onto a riprap splash pad and filter berm structure to control erosion of the slope. The flow eventually pools at the northern boundary along the stonewall and slowly infiltrates into the ground water.

3.3 System Inspections

The maintenance of the catch basins and the stormwater basins is important to the long-term quality of the water leaving the site and flowing into the Saugatuck Reservoir system. The removal of accumulated sediment and debris, and the maintenance of the vegetated buffer, are important to the productivity of the system.

Regular, scheduled inspections of the stormwater control system have not occurred subsequent to construction and site stabilization. Instead, inspections have been carried out on an "as-needed" basis. Going forward, system inspections shall be completed by Town of Weston personnel on a regular basis.

The inspection of the stormwater system will be conducted following each storm event having more than one inch of rainfall, and not less than twice per year. An inspection form shall be completed by the personnel and kept on record with the Town of Weston Parks & Recreation Department. A sample of the form is included in Appendix C. The following is a summary of the inspection form contents:

Summary of Inspection Reporting Form

- Name of the person doing the inspection
- Date of the inspection
- Weather conditions at the time of the inspection
- Recent rainfall amounts prior to the inspection
- Catch Basin Number
 - 1. Approximate depth of accumulated sediment
 - 2. Condition of the grate and overall structure
 - 3. Debris inside catch basin
 - 4. Flow or no flow at time of inspection
 - 5. Note if basin needs removal of sediment or not
- Sediment Basins
 - 1. Sediment basin name or number
 - 2. Outlet structure
 - *A. Structural Condition*
 - *B. Flow or no flow*
 - *C. If flow visual color of flow*

- 3. Embankment
 - A. *Condition of vegetation*
 - B. *Debris or invasive vegetation*
 - C. *Erosion or cutting*
- 4. Forebay
 - A. *Water present yes or no*
 - B. *Approximate depth*
 - C. *Clarity of water*
 - D. *Accumulation of sediment or debris*
 - E. *Removal of debris and type of debris*
- Northern Outfalls
 - 1. Flow or no flow
 - 2. Condition of riprap splash pad
 - 3. Embankment erosion or sedimentation
 - 4. Visual color of water
 - 5. Ponding or no ponding
- Stream and Wetlands
 - 1. Flow within stream or wetland
 - 2. Ponding in wetland
 - 3. Visual water quality

If any deficiencies are noted with the stormwater system during the inspections, the person completing the report shall immediately notify the Town of Weston Parks & Recreation Director. The Parks & Recreation Director will determine the necessary actions to correct the deficiency, unless the deficiency entails the dredging of sediment from the forebay of a sediment basin. When the sediment has accumulated to the point where it is approaching the height of the check dam, a report will be made to the Town of Weston First Selectman, who will then arrange for the appropriate sediment removal or repair.

When necessary, the sediment removed from the forebay will be removed with a front-end loader, backhoe or "vac" truck as appropriate. Any areas that maybe disturbed during the operation should be stabilized immediately following the operation. Any woody plant material should also be removed mechanically form the dam of the sediment basins to maintain the structural integrity of the slopes.

The inspection reports will be filed at the Town of Weston Parks & Recreation Department, and an annual summary of the inspection shall be completed and provided to the DWQMP technical advisory committee. Results of the inspection reports may be used by the technical advisory committee to recommend maintenance changes to the stormwater system.

Section 4

4.0 OPERATION AND MAINTENANCE

MFP is devoted primarily to athletic fields and recreation. The infrastructure to support these uses includes a paved access drive, gravel parking area, an irrigation system, and a stormwater collection and treatment system. The operation and maintenance of the park is under the control of the office of The Town of Weston Parks & Recreation Department.

4.1 Schedule, Maintenance, and Signage

MFP is open to the public from dawn to dusk. The access drive is gated and locked during non-operational hours overnight and during the winter season. Boulders have been placed next to the gate to deter the use of ATVs and dirt bikes during the off season and evenings.

When the park is open, local police and park personnel undertake routine patrol of the park. In the winter months, the access road is not plowed, sanded, or salted and the gate remains locked. Town personnel inspect the park periodically during this time to ensure that it is not being used.

Park rules and regulations are posted in two locations, at the entrance to the park and in the parking area. In addition to the rules, a sign has been posted at the gate to the park indicating that the park is located within a public water supply watershed and special care should be taken while on-site to avoid pollution of water resources.

4.2 Potential Areas of Concern

The primary method of mitigating for potential hazards is to avoid the location of these hazards on-site. In general, there is minimal potential for an environmental hazard as caused by the daily use of the park. All employees who are involved in the maintenance and operation of the park, including maintenance contractors, are trained regarding the

safe and appropriate handling of site materials. The Park & Recreation Department maintains a log to verify that training has occurred.

No chemicals, fuels or oils are stored or located on the MFP site. Small quantities are brought on site during maintenance of the landscape and mowing of the fields. The small quantities are contained within approved fuel containers and remain on the vehicles that they arrived in, until they have been removed from the site at the end of the day. Other good housekeeping practices include the following:

- ❑ Drip pans are used when refueling lawn mowers trimmers or other equipment, if such operation is necessary;
- ❑ Funnels are used when transferring fluids in order to minimize the potential for leaks and spills;
- ❑ Empty containers from turf management chemicals or fuel are removed from the site and disposed off-site at appropriate locations;
- ❑ Equipment cleaning, wash-down, and repairs occur off-site; and
- ❑ Any other rags or other material used during maintenance are removed from the site after use.

Pesticides, herbicides and fertilizers are also kept off-site and are only brought to the park when needed or when they will be applied that day. Any remaining unused chemicals are removed from the site by the end of the day. There is minimal potential for an accidental release that would cause an environmental concern pertaining to the reservoir.

In the event that an accidental discharge of any fuel or chemicals occurs on-site, the Weston Fire Department, the Department of Environmental Protection, Department of Public Health, and Aquarion Water Company will be notified immediately. Containment of the spill will begin immediately using available manpower and materials. The vehicles that store the materials will carry absorbent pads and will contain the spill as close as possible to its source and will be removed as soon as possible. The absorbent materials will be disposed in a proper manner at an approved facility. A list of spill containment and response contractors is provided below.

**Table 4-1
Spill Clean-Up Contractors**

Company Name	Location	Phone Number
AET	Bethel, CT	203-744-3477
Clean Harbors Environmental	Milford, CT	203-878-1740
D-TOX Environmental Contractors	Windsor, CT	800-336-3869
Earth Technology	North Haven, CT	203-230-2040
East Coast Environmental Service	New Haven, CT	203-469-2376
ECM / Hudson Maritime Services LLC	Wilton, CT	203-761-6030
Environmental Services Inc.	South Windsor, CT	860-528-9500
Enviroshield Inc.	Stratford, CT	800-394-2268
Hydro-Environmental Technologies Inc.	Prospect, CT	800-347-4384
Tyree Organization Ltd	Brookfield, CT	203-740-8200

Other minor potential pollution sources that are located on the site are the port-o-lets near the center of the site, and 50-gallon trash cans located throughout the site. The portable bathrooms are necessary for sanitary purposes and only pose a minor threat of release. If the bathrooms are tipped over or damaged, the park personnel will notify the contractor immediately and will have them replaced.

The trash cans are used for trash brought to the site by the public during sporting events. Trash can range from food wrappers to cans and bottles. The trash cans are emptied each day at the closing of the park and will have no potential to impact water quality at the site, as leachate will not have adequate time to be generated.

Using these good housekeeping policies and following best management practices minimizes the potential for a spill or release of pollutants onto the ground and into the stormwater system that eventually discharges to the Saugatuck Reservoir.

Section 5

5.0 TURF MANAGEMENT

An Integrated Turf Management Plan was prepared by William M. Dest, Ph.D as part of the approval process in order to avoid potential impacts on surface and ground water quality from the inappropriate use of fertilizer and pesticides. A copy is included as Appendix D. Elements of the plan are summarized in the following sections.

5.1 Turf Maintenance

The fields were seeded in 2004 following construction of the fields. The turf overlies six inches of topsoil that are underlain by an eight-inch gravel bed. The relatively thin layer of topsoil and thick layer of gravel maximize the drainage of the soil to prevent ponding and keeps the roots and grass fertile.

The mowing schedule is controlled by the Town of Weston Parks & Recreation Department. The personnel used for turf maintenance are trained on the procedures that are specific to the attached Turf Management Plan.

Mowing of the fields occurs no more than once every five days. The frequency is reduced as the growth season declines. The initial mowing at the start of the park season is completed as close as possible without causing scuffing or gouging of the turf.

Subsequent mowing maintains a height of 2.0 to 2.5 inches. The height is reduced gradually to 1.25 to 2.0 inches from September until the last mowing in mid-November. Grass outside the playing areas is mowed to a height of 3.0 inches.

The turf is not mowed following heavy rainfall or if the grass is wet, to avoid clumping. If clumping occurs, the clumps are removed and spread evenly over the turf. The fields are also mowed in alternate perpendicular directions.

Aeration will be completed twice per year: once in early spring prior to fertilization, and once in the fall when the turf is actively growing. A hollow tine or split spoon will be used to complete aeration of the fields. The corings, taken to a depth of three inches to four inches, will be removed or broken when dry and left on the surface. Areas of heavy use may require topdressing with clean topsoil and reseeded periodically.

The irrigation system consists of three bedrock irrigation wells that pump to an underground storage tank. All utilities for the system are located underground. The irrigation system is fully automated with below-grade PVC transmission lines connected to low flow sprinkler heads. The sprinkler heads are checked by park personnel for leaks and damage. If the heads show signs of damage they are replaced as soon as possible to prevent ponding around the irrigation head that could cause damage to the nearby turf. Irrigation of the turf takes place during early morning hours or at dusk to decrease the amount of water lost to evaporation. Pumping rates and total withdrawals are recorded and filed at the Parks & Recreation Department office.

Irrigating the fields and carefully maintaining the turf height promote growth and increase the density of the grass. A healthy turf decreases the need for pesticides and herbicides. Furthermore, dense grass absorbs more water during rain events and decreases runoff volumes to the storm drainage system.

5.2 Fertilization

Best management practices for nitrogen fertilization include applying nitrogen fertilizer only when the grass is actively growing, returning grass clippings to the turf to recycle plant nutrients, and applying most of the nitrogen required each year from a slow release nitrogen source such as a coated area or a natural organic form.

The amount of fertilizer nitrogen applied to the playing surface will not exceed 132 pounds per acre per year and will be divided into several applications, with no single



application to exceed 44 pounds of nitrogen per acre. The personnel applying the fertilizer will be trained in fertilizer application rules for MFP, and all fertilizer use is recorded and kept on file with the Town of Weston Parks & Recreation Department. The judicious use of nitrogen by trained personnel reduces the risk of nitrogen runoff and leaching to ground water.

5.3 Pesticides and Herbicides

The use of pesticides or herbicides will only occur when mechanical or natural controls of pest infestation fail. Chemical controls have not been used on MFP fields up to the date of this DWQMP, and are not planned for the near future. When or if required, the Town will use the same chemicals for pesticide and herbicides that are used on other municipal properties. Application of chemical controls will follow the label directions and will be applied only to the area infested. The application will be completed by trained personnel. The location of use and the quantity used and will be recorded and kept on file at the Town of Weston Parks & Recreation office.

The following housekeeping and best management practices will minimize the potential for pollution:

- No chemicals will be stored on-site;
- No mixing of the chemicals will be completed within 100 feet of a wetland edge, sediment basin, watercourse, or drainage structure;
- No application when winds exceed 10 mph;
- Containers will be removed immediately following the application from the site and disposed properly;
- Signs will be posted on the main gate and at the location of the application identifying the type of chemical and date of application; and

- A field inspection will be completed by park personnel including the name, date, chemical, weather conditions, type of application, and description of the location of the application.

If it becomes necessary to use them, the pesticides and herbicides will be based on the risk assessment model provided in the Turf Management Plan. The risk assessment was used to select chemicals that have a low potential to runoff or leach to ground water. The following list is from the Turf Management Plan. Only chemicals selected from this list will be used at MFP.

**Table 5-1
Selected Pesticides**

Herbicides (trade name)	Insecticides (trade name)
2,4-D amine	Acephate (Orthene)
Bensulide (Betasan)	Bendicaocarb (Turcam)
Benefin (Balan)	Bifenthrin (Talstar)
Dicamba (Banvel)	Carbaryl (Sevin)
2,4-DP	Cyfluthrin (Tempo)
Dithiopyr (Dimension)	Fluvalinate (Mavrik)
Fenoxaprop-ethyl (Acclaim)	Lambda-cyhalothrin (Scimitar)
Glyphosate (Roundup)	
MCPP (mecoprop)	
Oxadiazon (Ronstar)	
Pendimethalin (Pendulum)	
Siduron (Tupersan)	
Triclopyr (Turflon)	
Trifluralin (Treflan)	

Section 6

6.0 WATER QUALITY MANAGEMENT

As proposed in this DWQMP, runoff water quality has been mitigated through two types of practices: engineered and best management. Engineered controls have been discussed in Section 3.0 and include the construction of under drainage and a stormwater system that will control flow from the playing fields to three sedimentation basins to prevent runoff from directly entering watercourses. Best management practices were discussed in Sections 4.0 and 5.0 and include the daily operations of the Parks & Recreation Department such as turf management and chemical controls. Section 6.0 describes the performance measures that are proposed to monitor the success of these controls.

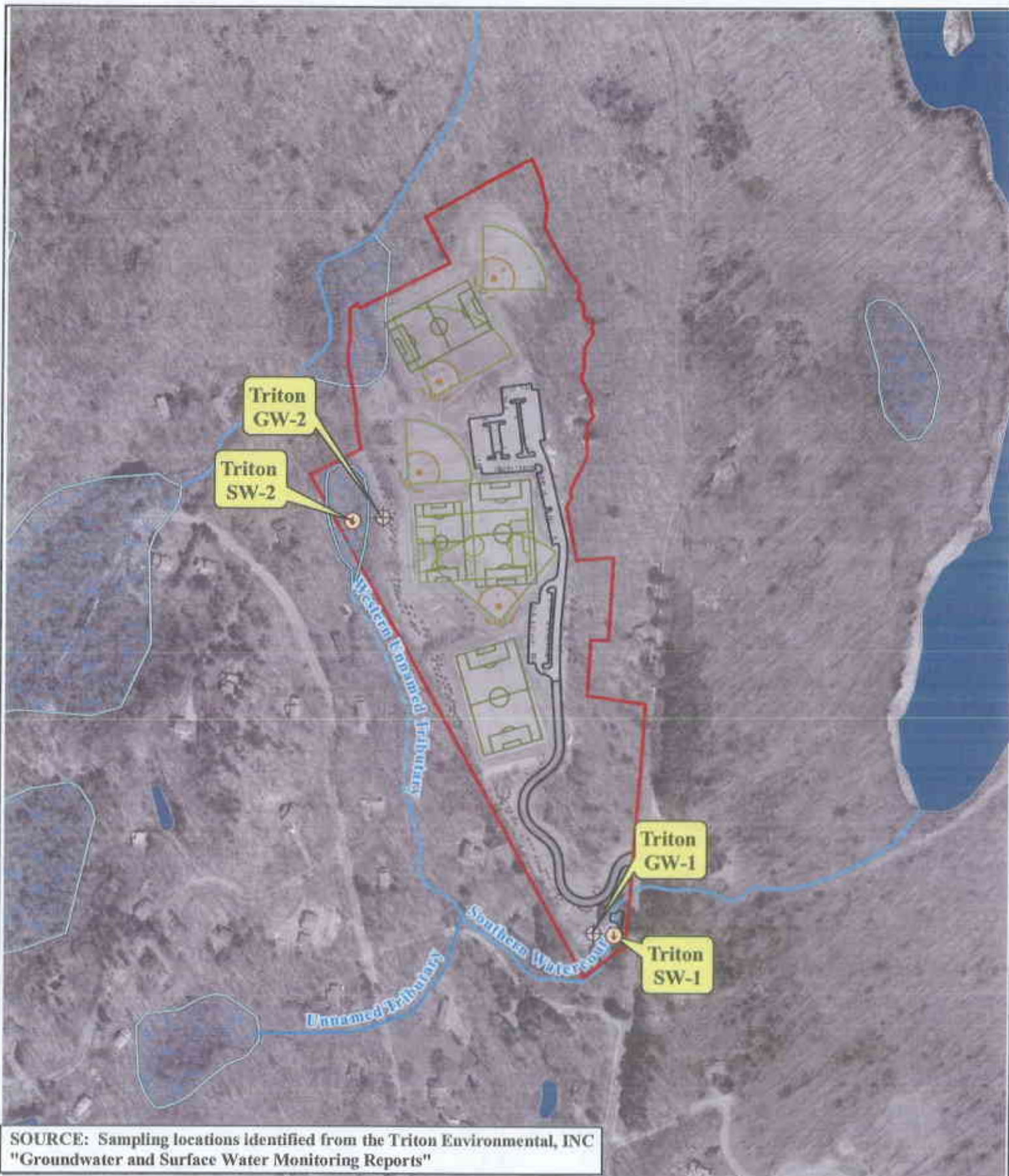
6.1 Previous Studies

Triton Environmental, Inc. (Triton) was hired by the Town of Weston in 2003, prior to the start of the construction of MFP, to monitor water quality throughout the construction phase of the project. Triton sampled the site quarterly from 2003 through 2005 and submitted reports to the Town of Weston on January 2004, April 2004, July 2004, November 2004, February 2005, June 2005, and October 2005. Each report is a summary of water quality results from samples collected at two surface water locations (SW-1 and SW-2), and two shallow monitoring wells (GW-1 and GW-2).


Triton installed staff gauges at the surface water locations and grouped the wells in close proximity to the staff gauges. Sampling locations are depicted on Figure 6-1, and were as follows:

- SW-1 – Located within the stream at the south end of the property approximately 60 feet south of sediment basin and west of the existing house. The stream flows southeast from the adjacent residential area through the southern property boundary to the southeast across Newtown Road, eventually discharging into the Saugatuck Reservoir.





SOURCE: Sampling locations identified from the Triton Environmental, INC "Groundwater and Surface Water Monitoring Reports"

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- GW -1 – Located approximately 20 feet northeast of the SW-1 and southeast of sediment basin.
- SW-2 – Located in wetland along western portion of the site. When ponded water is present, the area drains to the south to an unnamed tributary.
- GW-2 – Located approximately 100 feet east of SW-2 in the upland soils.

The sampling locations were selected to provide a baseline for water quality in the unnamed stream along the western property line and the unnamed stream along the southern property line. The sampling locations did not account for flow to the unnamed watercourse to the north of the site.

The sampling events included analyses for Ammonia, Nitrite, Nitrate, Total Phosphorous, Total Kjeldahl Nitrogen (TKN), Biological Oxygen Demand (BOD), Total Suspended Solids (TSS), Chlorinated Pesticides, and Chlorinated Herbicides. Triton also completed a relative survey of the wells and staff gauges to determine ground water and surface water flow directions. Water levels were recorded during the sample events.

The Groundwater and Surface Water Monitoring Reports provide a brief summary of sample results for each quarter with a brief description of trends observed for each sampling parameter. The reports do not include weather conditions at the time of sampling, including rainfall, snow cover, or if the surface water locations were frozen during the winter sampling events.

Triton concluded that there was a slight increase in parameters during the post-construction sampling event, but the concentrations remained relatively low. There was no direct comparison of the quarterly data in the reports or a conclusion on whether development activities had affected the quality of groundwater or surface water at the site.

The results from the quarterly monitoring reports are summarized in the attached Table 1 and graphed to identify any trends in concentrations by MMI. The data was compared to

State of Connecticut Department of Public Health Drinking Water Standards (DWS) and to typical concentrations identified in the Handbook of Hydrology for comparative reasons.

The resulting concentrations from the pre-construction, construction, and post-construction sampling events were below DWS and within the concentrations for a typical stream. Overall, the sampled parameters had similar concentrations throughout the monitoring period with the exception of TSS, TKN and Total Phosphorous. Pesticides and herbicides were not detected in the samples collected before, during or after construction where applicable. Triton did not analyze for pesticides or herbicides in the two monitoring wells, during or after construction, because the pre-construction results were below detectable limits and the Town of Weston had not applied any pesticides or herbicides during or after construction of the fields.

Nitrate and Nitrite results were well below the DWS of 10 mg/L in all of the samples collected. Total Nitrogen levels were relatively consistent throughout the monitoring period with an average concentration of 1.69 mg/L, a peak concentration of 3.9 mg/L, and a low of 0.71 mg/L. The 3.9 mg/L of Total Nitrogen was completely comprised of TKN, with below detection results for Nitrate and Nitrite.

The peak concentration of Total Nitrogen and/or TKN was observed in the sample collected at SW-1 on April 5, 2004, during the construction period. The sample was collected during a high flow period with a peak observed stage of 2.89 feet, which was 2.6 feet above the next highest stage for SW-1 (0.25). The sample was also collected following a week of rainfall that produced approximately 2.5 inches of rain throughout the State of Connecticut. The second sample during construction was not completed because the stream was dry at the time of sampling.

Two high concentrations of TSS were observed during the monitoring program. Samples collected from SW-2 on December 18, 2003 and January 18, 2005 had a concentration of

360 mg/L and 350 mg/L, respectively. In the remaining three samples for SW-2, TSS had concentrations of below detectable limit, 14 mg/L and 2 mg/L. Samples were not collected during three of the eight sampling events on June 25, 2004, October 18, 2004, and May 25, 2005 because the sampling location was dry at the time of sampling.

Both of the high concentrations of TSS were observed during the winter sampling months, with the first during the pre-construction period and the second during the post-construction period. The organic material located within the wetland may have been disturbed during the sampling event and would cause an increased concentration of TSS. Field notes were not included in the reports indicating if the surface water was frozen at the time of sampling.

In summary, the sampling results provide a baseline water quality analysis of the stream flowing through the site to the southeast, and the wetland to the northwest of the site. The water quality results were below DWS and were within typical water quality concentrations for watercourses. Two high concentrations of TSS were observed at SW-2 on December 18, 2003, prior to construction, and on January 18, 2005, post construction. The high concentrations were not observed at the corresponding downstream sampling location, SW-1, and is likely due to a localized disturbance of debris at the time of sampling at SW-2.

The reports did not include field data noting the weather conditions at the time of sampling. Furthermore, the sampling locations did not account for runoff to the north of the site, or within the southern stream prior to its entrance to the site.

6.2 Recommended Monitoring Program

Water quality monitoring at MFP will be a performance measure. The monitoring program will be an evolving process starting with background baseline data to characterize the existing water quality associated with the site, and continuing through monitoring for the success of best practices. Specifically, the DWQMP monitoring program is designed to evolve as monitoring results are received, rather than requiring a rigid comparison of monitoring results to State water quality criteria. The objective is to avoid making decisions based on comparison of a sample result to a set of absolute numbers. Instead, monitoring will provide trends that can be reviewed, and will call for revisions and maintenance of the DWQMP as needed.

Instead of regulatory control, the DWQMP technical advisory committee will determine if the Best Management Practices and Engineered Controls are operating as designed and are protecting the quality of water entering the Saugatuck Reservoir. It will be the committee's determination if the program is working as designed, and whether the program will need to be expanded, reduced or remain unchanged to determine the water quality impacts of MFP. The Parks & Recreation Department will keep records of the monitoring program progress and provide information to the stakeholders.

Any changes to the monitoring program as proposed through this process will be posted and reviewed by the public. After 30 days of review, the public comments will be taken into consideration by the stakeholders at a technical advisory committee meeting, and an addendum to the monitoring program will be executed. Final approval of any changes will be approved by the Town of Weston prior to implementation.



6.3 Sample Locations

Although they may have served the purpose as outlined by the Conservation Commission approval for site activity, the Triton water quality monitoring program will not provide sufficient data to support this DWQMP. The existing sampling locations, SW-1 and SW-2, do not reflect the hydrology of the surrounding area or runoff from the MFP fields. Furthermore, the sample results from the program did not reflect the stream water quality prior to entering the site or leaving the site, and did not account for discharge to the north of the park.

To support this DWQMP, samples must be collected to identify water quality prior to entering the site, and quality of water leaving the site, to determine if the stormwater controls are operating successfully. In total, six sampling locations are proposed to monitor stormwater flows.

Recall that the stream flowing through the southern portion of the site is formed by two unnamed tributaries located to the west of the site. The first unnamed tributary is located parallel to the western boundary of the site and its headwater wetland system was sampled by Triton, identified as SW-2. The second unnamed tributary flows from the southwest of the site across Blue Spruce Circle. The two tributaries meet approximately 400 feet upstream from the southeast corner of the site. The stream then flows southeast across the site into a culvert and continues under Newtown Turnpike, eventually discharging into the Saugatuck Reservoir.

Samples will be collected at two locations within this stream and one of its tributaries to identify water quality prior to entering the site and water quality leaving the site. The three proposed locations are depicted on Figure 6-2 and summarized below:



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<p>MMI#: 1811-05 MXD: H:Fig6_2.mxd SOURCE: DEP GIS Division</p>		<p align="center">Potential Monitoring Locations</p>	<p>DATE: 9/8/06</p> <p>SCALE: 1:4,800</p>	<p>SHEET: Figure 6-2</p>

- S-1 – Collected from ponded water in the western wetland west of the central sediment basin level spreader.
- S-2 – Collected from the stream at the southwest corner of the property prior to entering the site.
- S-3 – Collected from the stream just prior to entering the culvert that runs under Newtown Turnpike.

The first proposed site (S-1) is similar to SW-2, but moved downgradient from SW-2, the wetland headwaters to the unnamed tributary to the west of the site. The new site will be located west of the northern sediment basin and its gravel level spreader to provide water quality data during storm flows from the basin.

The second proposed site (S-2) will be located at the southwest corner of the site where the stream flows onto the site. The sample results from S-2 will be used to characterize water quality prior to entering the site and the potential impacts to the stream from the residential area to the west, along with impacts near site S-1.

The final proposed sample for the southern stream (S-3) will be located just prior to the stream entering the culvert under Newtown Turnpike. The sample results will be used to determine if there are any effects on water quality of the southern stream by runoff from MFP prior to flowing off-site. The location will bracket runoff into the stream from the site, and the flow from the central and southern sediment basins level spreaders.

Three additional samples will also be included to evaluate runoff generated from the gravel base under the athletic fields that flow north. Two gravel drains located in the northern portion of MFP discharge to the wetland and eventually into an intermittent watercourse north of the site. The watercourse flows from west to east and eventually discharges into the Saugatuck Reservoir northeast of the site. Three samples will be collected at the following locations:

- OF-1 – Outfall located in the northwest corner of MFP at the corner of the multi-use field.
- OF-2 – Outfall located in the northeast corner of MFP at the northwest corner of the softball field.
- NS-1 – Located approximately 125 feet northeast of the MFP northern property boundary.

The sample results from the outfall locations will provide water quality downstream of the gravel drain system and characterize the potential effects to water quality within the northern watercourse.

6.4 Sample Parameters

The recommended monitoring parameters are based on the potential pollutants from the MFP site. The parameters measured in the field will be used as background controls, and a State-certified laboratory will be used to analyze the laboratory parameters.

Field parameters will include the following:

- pH
- Specific Conductivity
- Dissolved Oxygen
- Turbidity
- Temperature
- Weather Conditions
- Date and Time of Sample

Laboratory parameters will include the following:

- Nitrate
- Nitrite
- Total Phosphorous
- Total Suspended Solids
- Fecal Coliform



Initial monitoring of MFP will include fecal coliform and pesticides to define background concentrations, if present. Once a baseline for water quality has been defined, the monitoring program will be reviewed and evaluated by the technical advisory committee to determine whether the coliform results will be required during future sampling events.

Pesticides will not be analyzed again until they are used on the site. The Town of Weston Parks & Recreation Department will notify the First Selectman, the technical advisory committee, and the contractor that is completing the sampling program at least five days before the pesticide or herbicide application.

6.5 Monitoring Schedule

A phased approach will be used for the monitoring schedule at MFP. The monitoring program will be an evolving process based on the results of the monitoring, which will determine the interval of sampling and parameters.

The initial Phase, identified as Phase 1, will be the baseline water quality sampling at MFP. Once the technical advisory committee and Town of Weston determine that a baseline has been set, Phase 2 will be implemented. Phase 2 will be the bulk of sampling over a defined period. Phase 3 will begin if pesticides or herbicides are applied. The initial three phases will be planned out as part of this DWQMP, but will evolve with additional phases or will remain unchanged based on the future review of the water quality results by the technical advisory committee.



Phase 1 – Baseline Water Quality

Phase 1 will begin the first April following the acceptance of the Draft DWQMP by the Town of Weston and the DWQMP technical advisory committee. The Phase will entail the monitoring of all sampling locations for at least one calendar year. One "round" of sampling includes one dry event and one wet event. The first round of sampling will be conducted between April 1 and April 30; the second between May 1 and June 30; the third between July 1 and August 31; and the fourth between September 1 and October 31.

Sample collection from all sites will be attempted, except that sites OF-1 and OF-2 will be excluded during dry events. A dry event will be collected following at least three days of no precipitation. The wet event will be collected within three hours of a storm event that induces runoff if the preceding three days had no precipitation. The weather conditions for the week prior to, and the day of the sampling event, will be recorded.

All of the sampling parameters listed in Section 6.4 will be analyzed in Phase 1, including pesticides and fecal coliform. The eight sets of monitoring results will be compiled and presented in an annual report to the Town of Weston Parks & Recreation Department. In the annual report the results will be compared to State of Connecticut Department of Public Health Drinking Water Standards for comparative reasons only. There will be no enforcement or violations if the concentrations are above State MCLs.

The annual report will be reviewed by the DWQMP technical advisory committee and will be available to the public. The data will be evaluated to determine if a baseline has been established. If it is agreed that a baseline has been established, the monitoring program will move to Phase 2. If more monitoring is required to establish a baseline trend then the program described in Phase 1 will be repeated until a baseline is agreed upon, at which time Phase 2 will begin.

Phase 2 – Standard Water Quality Monitoring Program

Phase 2 of the monitoring program includes a standard practice or monitoring until chemical controls are implemented. The monitoring will be conducted between April 1 and April 30; between May 1 and June 30; between July 1 and August 31; and between September 1 and October 31, for a total of four rounds per year of wet and dry samples. The schedule is based on the use of the park during the summer months and lack of use in the winter.

Monitoring parameters will include the parameters listed in Section 6.4, with the exception of pesticides, herbicides, and potentially fecal coliform. Phase 2 will only proceed if chemical controls have not been used at MFP. Fecal coliform will be monitored if the technical advisory committee deems it necessary following the review of Phase 1.

If at any time chemical controls are used at MFP during Phase 2, then Phase 3 will be implemented as part of the monitoring program.

The results will be summarized in an annual report and provided to the DWQMP technical advisory committee. The annual report will be available to the public.

A Five-Year Status Report will be completed after five years of monitoring under Phase 2. The report will be provided to the Town of Weston and the DWQMP technical advisory committee, and will be available for public review. The technical advisory committee will evaluate the report and determine if the program will continue or if the sampling needs to be increased or decreased based on the results. The recommended monitoring program will be either amended within the DWQMP, or repeated based on the review.

Phase 3 – Chemical Controls Implementation

Phase 3 of the monitoring program will be initiated when chemical controls (pesticides and herbicides) are planned for application. The Town of Weston Parks & Recreation will notify the technical advisory committee when these chemical controls are going to be used at MFP. A memorandum will be completed and sent to the technical advisory committee members prior to application of the chemicals. The memorandum will list the planned date of application, type and name of the pesticide or herbicide, volume of the chemical control to be used, and method of application. The memorandum will be kept on record at the Town of Weston Parks & Recreation Department for future reference.

The contractor that is conducting the sampling at MFP will be notified of the date that the chemical controls will be applied on site, and will be sent the memorandum. At this time, the contractor will plan to conduct two rounds of sampling; the first round will be completed within 24 hours of the chemical application and the second round will be completed following the first runoff-generating rain event after the application.

Sampling requirements for Phase 3 will be limited to the chemical used on the site that is included in the list in Section 5.4. The laboratory analysis will be based on the chemical selected, and a laboratory must be contracted that can analyze the chemical. For this reason, laboratories that are not licensed in Connecticut (such as commercial laboratories in other states, as well as universities) are permissible.

If either of the two rounds of sampling indicates that the chemical has entered the surrounding watercourse or wetlands, then additional sampling will need to be completed and the technical advisory committee will be notified. The parameter will be included in the sampling program according to the schedules discussed above, until laboratory analysis demonstrate concentrations below the detection limit or a return to baseline water quality results observed in Phase 1.



6.6 Recommended Actions

Detection of nutrients is anticipated during all phases of monitoring, and therefore these detections can not reasonably be used to preclude any activity or the application of fertilizers. However, consecutive increases in nitrate nitrogen, nitrite nitrogen, or total phosphorus may indicate where fertilization rates or frequency may have been inappropriate. Likewise, increases in total suspended solids or fecal coliform may indicate when runoff or soil erosion may be occurring. Thus, results of the monitoring program may be used by the DWQMP technical advisory committee to recommend changes in the application rate of fertilizers.

With respect to chemical controls, a detection of a specific pesticide or herbicide shall trigger a reduction in subsequent usage of that pesticide. The technical advisory committee shall be reconvened to recommend an appropriate reduction in the usage of the chemical.



Section 7

7.0 FUTURE LAND USE

There are no immediate future plans to change the layout or design of MFP. In the long term, a hiking trail may be constructed along the perimeter of the site. The trail will be completed as a dirt path with minimal clearing and construction. There is no foreseeable impact to runoff water quality based on the minimal footprint of the trail system. If implemented, the Town of Weston Parks & Recreation Department will notify the DPH and other technical advisory committee members, and will provide an update to the DWQMP.

The long-term future of MFP is closely connected to the long-term recreational and institutional needs of the Town of Weston. Although it is currently implausible, another generation could determine that the MFP site is appropriate for a different municipal land use. Any such change in land use would need to be permitted by State and local officials according to the regulatory programs in place at that time. Coincident with the permit process, the DWQMP would need to be revised and updated to reflect the appropriate controls for the proposal land use.

Section 8

8.0 CONCLUSION

The goal of the DWQMP is to ensure that activities associated with daily operations and existing conditions of MFP will not adversely impact water quality within the Saugatuck Reservoir and its watershed. As such, the DWQMP provides procedures and recommendations for stormwater control and treatment; chemical use; fuel use; emergency spill control; impervious surface maintenance; ball field design; periodic water quality testing, monitoring, and reporting program; future adjustments to address water quality degradation; parking and vehicle restrictions; activities allowed including restrictions and controls; signage and visitor notification concerning site sensitivity; waste collection and disposal; roles, responsibilities, and enforcement of plan; and potential future change of use of the site.

The change in land use on MFP from private open space to a public facility is believed to support the community's need for recreational facilities without harming the surrounding watershed or impacting drinking water quality. The DWQMP will ensure that this assertion is correct, while recognizing that the plan can not address land use and activities located beyond the boundaries of MFP.

A public meeting will be held in autumn 2006 and public comments will be compiled and assembled for inclusion in this DWQMP. The deadline for the public meeting is January 30, 2007.

LIST OF REFERENCE MATERIAL

- Connecticut Department of Public Health, *Drinking Water Quality Management Planning, Grass Roots, Community-Based Planning for Drinking Water Source Protection*, 2005 (presentation).
- Dest, William, Ph.D, *Integrated Turfgrass Pest Management and Best Management Practice Plan for Athletic Fields, Morehouse Farm Park, Town of Weston*, July 2002.
- Milone & MacBroom, Inc., *Existing Conditions Site Plan*, February 2006
- Milone & MacBroom, Inc., *Operations and Maintenance Plan*, October 2004
- Triton Environmental, Inc., *Groundwater & Surface Water Monitoring Report*, January 2004
- Triton Environmental, Inc., *Groundwater & Surface Water Monitoring Report*, April 2004
- Triton Environmental, Inc., *Groundwater & Surface Water Monitoring Report*, July 2004
- Triton Environmental, Inc., *Groundwater & Surface Water Monitoring Report*, November 2004
- Triton Environmental, Inc., *Groundwater & Surface Water Monitoring Report*, February 2005
- Triton Environmental, Inc., *Groundwater & Surface Water Monitoring Report*, June 2005
- Triton Environmental, Inc., *Groundwater & Surface Water Monitoring Report*, October 2005
- U.S. EPA, *Draft Handbook for Developing Watershed Protection Plans to Restore and Protect Our Waters*, October 2005.

Appendix

APPENDIX A
TECHNICAL ADVISORY COMMITTEE MEETING MINUTES

Meeting Minutes

Morehouse Farm Park Drinking Water Quality Management Plan Project Kick-Off Meeting January 18, 2006

Introductions

A sign-in sheet was passed around the table. The following individuals were in attendance:

- David Ungar, Town of Weston Parks & Recreation Department
- Woody Bliss, First Selectman, Town of Weston
- Cory Attra, Town of Weston Conservation Commission
- David Murphy, Milone & MacBroom, Inc.
- Vincent McDermott, Milone & MacBroom, Inc.
- Paula Pendleton, Connecticut Department of Public Health
- Ernie Albin, Neighbor of Morehouse Farm Park (MFP)
- Sally Harold, The Nature Conservancy
- Brian Thompson, Aquarion Water Company
- Sue Jacozzi, Westport-Weston Health District

The following topics were discussed.

Project Objectives and Committee Charge

The following items were distributed:

- Water Quality Management Committee, Committee Charge Statement (D. Ungar)
- List of items to address and a potential schedule (V. McDermott)
- List of important dates and resources (D. Murphy)

V. McDermott presented a list of items that must be addressed and included in the Drinking Water Quality Management Plan ("Plan"). C. Attra urged the committee that all existing data and resources should be included. D. Murphy introduced the recent EPA handbook and mentioned that it emphasizes the use of existing data.

Review of Site and Project

V. McDermott presented a set of maps and described the layout of MFP. Locations of water quality basins, level spreaders, and underdrain plunge pools were indicated. Hydrology and stream flows were described. Runoff directions were discussed.

Goal of the Plan

The goal is to ensure that activities will not adversely impact Saugatuck Reservoir. P. Pendleton described how this was similar to a hazard analysis; areas of additional control will be highlighted, checklists should be developed, and additional best practices should be proposed. V. McDermott added that there needs to be a way to review Plan performance, and noted that this project will codify many of the Conservation Commission's requirements that came out of the hearing process.

A brief side discussion about the private well evaluation ensued. C. Attra remarked that the Conservation Commission probably spent too much time on the well issue and not enough on water quality.

Review of Construction and Phasing

V. McDermott described how the method of construction (single phase instead of smaller phases) was the main problem, coupled with the high rainfall in 2003. Too much of the MFP site was open at once. Interestingly, the construction duration was compressed due to project opposition. Unfortunately, temporary sediment and erosion controls were exceeded during some rain events. B. Thompson agreed in general but believes that impacts were perhaps more significant than described. He believes that detention was insufficient for the phasing, given that it became a single-phase construction project. C. Attra pointed out that the driveway may have been the access for sediment to reach the reservoir.

As a result of this discussion, it was determined that the relationship and communication between the water utility and the developer or Town needs to be improved. Proper notification to Aquarion apparently did not occur, although Aquarion did review concept plans in the early stages of the project. W. Bliss remarked that Aquarion staff formerly visited sites in the Town of Weston, but no longer do. B. Thompson replied that this will improve, going forward. All agreed that the Plan should outline how communication can improve.

Statutes and Regulations

The public health code prohibits discharges within 100 feet of reservoir tributary streams. The 100-foot separation is rather archaic and arbitrary. This discussion segued back to the discussion about notification and communication.

Other Items

P. Pendleton recommended use of the Source Water Assessment Program (SWAP) report and EPA handbook for guidance.

E. Albin inquired about the Plan being applicable only to MFP. The concern is that the streams pass by or through the site after originating elsewhere, and these areas can not be controlled. B. Thompson mentioned that water quality could be monitored above and below MFP. But it is correct that very little control is available in residential areas.

W. Bliss remarked that one concern should be future development elsewhere in the Town of Weston. Another generation could decide that the MFP site is appropriate for a different land use, such as a school. P. Pendleton replied that the Plan could be a long-term tool for the Town. Also, the Consent Order specifies that a ten-year review will occur.

Project Meetings / Schedule

The next team meeting will be on March 1, 2006. Milone & MacBroom, Inc. will distribute existing information and resources before the meeting.

Meeting Minutes

Morehouse Farm Park Drinking Water Quality Management Plan Second Kick-Off Meeting March 1, 2006

Introduction

A sign-in sheet was passed around the table. The following individuals were in attendance:

- David Ungar, Town of Weston Parks & Recreation Department
- David Murphy, Milone & MacBroom, Inc. (MMI)
- Peter Shea, MMI
- Paula Pendleton, Connecticut Department of Public Health
- Ernie Albin, Neighbor of Morehouse Farm Park (MFP)
- Sally Harold, The Nature Conservancy
- Brian Thompson, Aquarion Water Company (Aquarion)
- Sue Jacozzi, Westport-Weston Health District

The following topics were discussed.

Review of January 18, 2006 Minutes

The previous meeting minutes were reviewed and discussed. The majority of the minutes were approved by the group with only the following changes.

- Paula indicated that under the Goal of the Plan section the first sentence should read:

The goal is to ensure that activities will not adversely impact Saugatuck Reservoir and the watershed.

- Brian Thompson commented on the following verse under section Review of Construction and Phasing:

W. Bliss remarked that Aquarion staff formerly visited sites in the Town of Weston, but no longer do.

Brian indicated that Aquarion still visits the sites, but Woody Bliss used to have a regular contact with Larry Bingham. Larry Bingham has since left Aquarion but staff members visit the site in the watershed.

There were no other comments on the January 18, 2006 Meeting Minutes.

Review of February Information Packet

The group reviewed and discussed the February Information Packet that MMI compiled. The package contained the following reports and maps:

- Triton Environmental Inc., *Groundwater & Surface Water Monitoring Report*, January 2004
- Triton Environmental Inc., *Groundwater & Surface Water Monitoring Report*, April 2004
- Triton Environmental Inc., *Groundwater & Surface Water Monitoring Report*, July 2004
- Triton Environmental Inc., *Groundwater & Surface Water Monitoring Report*, November 2004
- Triton Environmental Inc., *Groundwater & Surface Water Monitoring Report*, February 2005
- Triton Environmental Inc., *Groundwater & Surface Water Monitoring Report*, June 2005
- Triton Environmental Inc., *Groundwater & Surface Water Monitoring Report*, October 2005
- Milone & MacBroom, Inc., *Existing Conditions Plan*, February 2006
- Milone & MacBroom, Inc., *Operations and Maintenance Plan*, October 2004
- Milone & MacBroom, Inc., *Annual Monitoring Report*, November 2005
- William Dest, Ph.D, *Integrated Turfgrass Pest Management & BMP Plan*, July 2002

There were several comments on the Triton Environmental Inc. (Triton) monitoring reports. In each report under section 1.0 Introduction, Triton states *The Town of Weston, the owner of the site, has converted the site (which formerly consisted of agricultural fields) to athletic fields, under appropriate permits.* The term "agricultural fields" was questioned by the group. Ernie Albin explained that the previous owner had planted trees for tax purposes, but the trees were poor quality and were not maintained by the owner. It was decided that the term was adequate for description of the site in the reports.

The Triton monitoring reports referenced an "Ecological Assessment Report" completed by Triton in June 2002. Group members asked if the report was available from the Town of Weston. Dave Unger replied that they were currently looking for a copy, and if a copy was not found that the Town would request a copy from Triton directly.

The group then discussed the water quality results provided in the seven Triton reports.

Paula Pendleton questioned the high phosphorous concentrations found in the ground water. David Murphy indicated that the high phosphorous levels detected in the ground water were likely due to purging of the wells during sampling and the detections represented sediment.

Brian Thompson indicated that there was a lack of wet weather and dry weather distinction in the data. The group also indicated that one of the monitoring locations (GW-3) was damaged and there were no results from that location in the majority of the reports. The sampling location was not replaced or moved.