



# GREAT COVE WATERSHED MANAGEMENT PLAN REVIEW DRAFT



## EXECUTIVE SUMMARY

The Great Cove Watershed Management Plan (WMP) focuses on the drainage contributing area to Great Cove, which extends from just east of the Robert Moses Causeway to just west of Heckscher State Park and north above the Southern State Parkway. There are nine main creeks which contribute to Great Cove – (from west to east) Trues Creek, Thompsons Creek, Lawrence Creek, Watchogue Creek, Penataquit Creek, Awixa Creek, Orowoc Creek, Champlin Creek and Quintuck Creek (see **Figure 1-1**). The purpose of the WMP is to provide a characterization of the existing natural, cultural and human resources within the watershed, identify key factors impacting the Great Cove watershed, provide watershed-wide and site specific recommendations for watershed and water quality improvements, and provide implementation strategies for each of the watershed recommendations.

**Section 2.0** of the WMP provides the characterization of the watershed. Resources detailed include geology, topography, soils, wetlands, rare, threatened and endangered species, cultural and historic sites, land use and water quality. Great Cove was historically an area which provided abundant commercial and recreational shellfishing opportunities, commercial and recreational finfishing opportunities, and significant habitats for various wildlife. Development of lands within the drainage contributing area to Great Cove has increased stormwater runoff and the pollutants carried in runoff. Review of land uses within the watershed indicate that well over fifty percent of the watershed is occupied by high intensity land uses, which are generally associated with an increase in stormwater runoff and therefore an increase in pollutants entering the creeks. In particular, review of water quality data revealed that pollutants in both surface and groundwater exceeded standards in at least some of data samples collected, indicating issues in pollutant inputs to each of the creeks.

Available water quality data was collected and summarized in **Section 2.2**. Review of the available data shows that all of the creeks have high levels of nutrients, such as phosphorus and nitrogen, which exceed the recommended guidelines for freshwater streams. As a result, there are regular algal blooms and low oxygen conditions in some of the creeks (e.g., Trues, Thompsons, Watchogue, Orowoc, and Champlin Creeks). High levels of bacteria (i.e., from pet waste, illicit boat discharges, leaky sewer pipes or large flocks of birds) exceeding established NYS Department of Health bathing beach standards are also common in some of the creeks (e.g., Trues, Penataquit and Orowoc Creeks). Elevated ammonia levels, an indicator of sewage, are also still a problem in many parts of the watershed. Chloride levels from road salting have steadily increased throughout the freshwater creeks and are especially high in the vicinity of the salt storage facilities near Penataquit Creek. Orowoc and Champlin Creeks were both former trout streams that in addition to nutrient impacts, have also suffered from elevated temperatures that become too warm for trout during summer months. Though temperatures have begun to decline in these streams, they still sometimes exceed critical temperatures known to limit trout growth. The available data indicates that all of the creeks within the study area have impairments, though some have shown signs of improvement since sewerage in the early 1980's (see **Table 2-4 and Table 2-6**). There are several sources of pollution from which these high levels of nutrients are derived, with fertilizers and pet wastes in stormwater runoff, as well as the



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legacy effects of septic systems throughout the watershed, being the largest likely causes.

The overall goal of the WMP is to improve the water quality, natural resources, uses and educational programs within the watershed. The specific goals identified in achieving the overall goal for the watershed are identified as follows:

### Water Quality Goals

- Improve water quality through the identification, control and reduction of non-point source pollution.
- Evaluate the existing inventory of stormwater infrastructure within the watershed and investigate pollution sources and major non-point source causes of water quality impairments. Establish a prioritization of recommended improvements/remediation.
- Prepare conceptual drainage improvement plans for fifteen priority stormwater impairment areas.

### Natural Resource Goals

- Ensure protection of tidal and coastal freshwater wetlands for the benefits of water quality improvement, wildlife and anadromous fish habitat, marine food production, flood and storm control, open space and educational opportunities.
- Identify and protect important natural resources within the watershed.
- Restore wetland areas and wetland productivity where possible and appropriate.

### Use Management Goals

- Maintain and promote appropriate water-dependent land use.
- Evaluate municipal operations and establish/promote best management practices to alleviate nonpoint source pollution.
- Improve and promote passive recreational and educational opportunities.

### Educational Goals

- Promote environmental stewardship to increase awareness of watershed resources by partnering with existing organizations to sponsor programs and outreach efforts.
- Encourage and promote an understanding and appreciation of natural environmental resources and habitats of the Great Cove watershed.
- Improve water quality education by informing watershed residents and businesses of common activities that cause water quality issues and simple solutions to reduce impacts.

Thorough review of the characteristics of the watershed facilitated recommendations for watershed improvements, with a focus particularly on stormwater improvements to lessen nonpoint source pollution impacts on Great South Bay (see **Section 3.0**). Key recommendations are summarized below:

- Update Town regulations to incentivize the use of low impact development and green infrastructure for new development and redevelopment projects. Examples include: bioretention areas within parking lot areas, pavement reduction (reduced roadway widths,



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use of land banking for parking when appropriate, etc.), re-establishment of stream buffers, provisions to permit use of pervious pavement, etc.

- Implement Best Management Practices (BMP's) within Town facilities and Town infrastructure to reduce pollutant contribution from these facilities. Priority measures include:
  - Establish regular maintenance of storm drains, particularly inlets with direct overflows to surface water and from stormwater “hotspots” (parking areas, highway yards, hazardous material storage areas, etc.).
  - Educate Town maintenance personnel on the benefits of BMP practices, proper material storage and handling, and tracking of maintenance activities.
  - Complete periodic inventories of Town facilities for proper storage and containment practices, toxic and hazardous material handling and maintenance practices.
  - Reduce use of chloride-containing road deicers.
  - Seek funding for improvements (site specific improvements for Town facilities are described below).
- Establish partnerships and pursue funding for water quality monitoring to fill data gaps and facilitate tracking of the effectiveness of watershed management.
  - Initiate water quality monitoring for parameters of concern (such as temperature in Champlin Creek and sodium levels in Penataquit Creek).
  - Consider establishment of volunteer monitoring efforts.
  - Establish a central tracking system for any newly collected data.
- Integrate BMP practices into site planning review for industrial and other “hot spot” related uses during site plan review.
- Continue education & outreach efforts to effectuate public education as part of the Town’s stormwater management program, Town representative interaction with the public, regulatory procedures, and outreach into the community through the Town’s various departments.
  - enforce and facilitate proper use of marine sanitation devices by providing pumpout facilities at Town and private marinas & “no discharge zone” education and enforcement.
  - encourage “pick-up-after-your-pet” practices.
  - encourage the use of indigenous plants with low fertilization and irrigation requirements.
  - promote interest, increase stewardship of waterways and the “cause and effect” on water quality that daily actions may have..

**Section 4.0 – Corrective Actions**, identifies improvements for Town highway yard facilities and drainage improvement projects that would facilitate the recommendations provided in **Section**



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**3.0.** These projects were conceptually designed utilizing detention, settling, infiltration, and filtration methods in order to decrease the peak stormwater flow rate and remove pollutants (e.g. oil and grease, metals, nutrients, sediment) from stormwater runoff. Drainage improvement projects were selected based on stream and water quality impairments, land use and impervious cover within contributing area, proximity of potential pollutant sources to the streams, and availability of publically owned land in proximity of streams for placement of drainage improvement projects. A summary of each of the 16 projects is provided below (see project locations and conceptual plans and details in **Appendix F**):

- Project 1 – Archie Place, Trues Pond: Create a bioretention area in the triangle parcel and redirecting the existing direct discharges to the bioretention area for filtration and pollutant removal prior to overflow into Trues Pond. Additionally, the northwest side of the Pond has small area of lawn which has adequate area to install an offline water quality treatment structure. The existing stormwater outfall would be directed to this subsurface water quality structure; which could provide for filtering of stormwater runoff through filter media, as well as removal of sediment, debris and floatables. Treated stormwater would then overflow to the existing stormwater outfall.
- Project 2 – Montauk Highway at Lawrence Creek: Consider one of two types of water quality treatment structures: 1) a simple baffle system collects sediment, floatables and hydrocarbons carried in stormwater runoff or 2) a water quality structure that includes filter media designed to additionally remove organics and nutrients.
- Project 3 – Town Housing Project, Penataquit Creek: Implement drainage improvements including the replacement of existing area drains and leaching pools, remove existing lawn fronting Penataquit Creek and replace it with a vegetated swale, and install a water quality treatment structure with high flow bypass at the existing catch basin in the northwest portion of the property (which is currently receiving off-site stormwater runoff).
- Project 4 – Mechanicville Road Parking Area, Watchogue Creek: Implement stormwater improvements including the removal of the existing direct discharge to Watchogue Creek via the grated inlet in the parking area, installation of subsurface leaching chambers or galleys in the central portion of the parking lot, and installation of a bioretention area in the existing lawn area adjacent to the west of the Creek.
- Project 5 – Gibson St. Parking Area, Watchogue Creek: Implement stormwater improvements including the installation of a narrow stormwater bioretention area in an area of existing striping (not currently used for parking), installation of permeable or porous pavement in a portion or throughout the parking lot, and installation of a diversion manhole to redirect stormwater runoff from the roadway conveyance system to a stormwater treatment structure
- Project 6 – South Shore Mall, Penataquit Creek: Improve both the salt storage practices and drainage infrastructure on the property including the establishment of a formalized and covered salt storage area with an elevated impervious floor to prevent runoff from entering the pile, establishment of linear bioretention areas at each existing drainage inlet which directly discharges to the Penataquit Creek culvert, addition of smaller scale tree islands within the existing parking area and rain gardens to existing impervious plaza areas to increase subsurface infiltration of



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stormwater, disconnect rooftop runoff from the existing drainage conveyance system and reduce heat island effects, consider use of porous pavement in overflow parking areas, provide signage discussing the innovative green infrastructure improvements at the site, inspect existing on site recharge basins, remove accumulated sediment and plant supplemental vegetation as necessary to ensure dense vegetation within the basins and provide training for salt application and storage best management practices.

- Project 7 – 2<sup>nd</sup> Avenue Highway Yard: Implementation of the following good housekeeping procedures:
  - Retain and establish a regular monitoring and maintenance schedule for existing catch basin inserts to ensure proper functioning.
  - Install leaching pools to intercept stormwater from the existing positive overflow to provide for infiltration of stormwater and reduce runoff directed to Penataquit Creek.
  - Provide canopy for the existing fuel pump at the salt storage yard and install water treatment structure or catch basin insert at the existing inlet adjacent to the fueling pump.
  - Provide a truck washing area with independent collection and recycling of waste water (do not allow for overflow to existing drainage system in parking area).
  - Establish perimeter barriers for stockpile areas to avoid “creep” of stockpiles and spread of sediment within parking areas.
  - Establish regular maintenance schedule for collection and proper disposal of sediment within parking lot areas.
  
- Project 8 – Maple Avenue Parking Area, Watchogue Creek: The top of the bulkhead elevation should be raised and the parking lot re-graded to direct stormwater to newly established low points and drainage inlets within the parking area. Stormwater once collected should be directed to a water quality treatment structure designed with a high flow bypass to prevent flooding during large storm events.
  
- Project 9 – Oakwood Boulevard, Awixa Creek: Implement drainage improvements including redirection of stormwater from the direct outfalls at the road’s crossing with Awixa Creek to a newly installed bioretention area proposed within a small, Town-owned parcel on the south side of Oakwood Blvd.
  
- Project 10 – Saxon Cul-de-sac: It is recommended the paved center portion of cul-de-sacs with radii of 60 feet or more be evaluated for conversion to vegetated depressions for use in the storage/treatment of stormwater runoff. Breaks in the curb around the central island should be provided to allow for overland flow of stormwater into the central vegetated depression, or stormwater could be piped to the central island area from existing catch basins inlets.
  
- Project 11 – Orowoc Road Ends, Orowoc Creek: Implement drainage improvements including installation of catch basins at upland locations, installation of bio retention areas where feasible, and conversion of unused pavement for landscaped depression for stormwater treatment.
  
- Project 12 – Commack Road at Orowoc Creek: Implement drainage improvements including removal of the existing outfall on the north side of Commack Road and redirecting stormwater to a drainage manhole that would overflow to a newly installed bioretention area proposed within the Town-owned parcel west of Orowoc Creek. Install a new drainage inlet on the south side of



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Commack Road.

- Project 13 – Moffit Boulevard at Orowoc Creek: Implement drainage improvements including installation of low profile leaching systems to intercept stormwater from Moffit Blvd. east and west of the Creek and installation of bioretention areas if feasible.
- Project 14 – Fischer Park, Champlin Creek: Improve drainage within the park by intercepting stormwater from adjacent roadways which drain toward the Creek and providing either leaching pools or low profile leaching systems (in areas where there is minimal depth to groundwater) to recharge stormwater.
- Project 15 – Town DPW Yard at Champlin Creek: Implementation of the following good housekeeping procedures:
  - Relocate and provide covered storage of the salt pile as far as possible from Champlin Creek. The salt storage dome should be placed on an impervious pad with a rolled curb or similar method of containment.
  - Install leaching pools to intercept stormwater from the western access road and from within the paved portion of the yard (used for vehicle storage). Inlet filters or stormwater treatment structures should be considered in these areas to provide removal of oils and potential pollutants.
  - Establish perimeter barriers for stockpile areas to avoid “creep” of stockpiles and spread of sediment within parking areas.
  - Establish regular maintenance schedule for collection and proper disposal of sediment within parking lot areas.
- Project 16 – Brookwood Hall Park, Champlin Creek: Implement drainage improvements including installation of low profile leaching systems to intercept stormwater from Montauk Highway and provide drainage inlets to intercept stormwater along Montauk Highway east of the culvert over Champlin Creek and direct this runoff to a drainage depression with a vegetated settling basin in the southeast corner of Brookwood Hall Park.

An implementation strategy for the recommended actions is provided in **Section 5.0**, including identification of responsible entities for each action. Corrective actions recommended in **Section 4.0** are prioritized and potential funding sources for each recommended action are provided. Additionally, order of magnitude cost estimates and a detailed description of actions eligible for various grant opportunities are identified.

The WMP is intended to provide guidance for future decisions regarding land use, management of Town facilities and environmental resource protection within the watershed. The development of this watershed management plan is a critical step in long-term protection of the Town’s water resources, which provide critical wildlife habitat, recreational opportunities, and strengthen the local economy. Key to the success of this plan is cooperative implementation at both a local and regional level to increase awareness, encourage and prioritize change in long standing institutional practices and work towards obtaining funding and implementing specific plans for the protection and improvement of water quality within Great Cove and the Great South Bay.