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Appendix E:

Approach for Developing

Municipal Stormwater Mitigation Plans

Abstract

This document provides guidance for the development of municipal Stormwater Mitigation Plans. The review and update of existing mitigation plans is one component of the overall Highlands Stormwater Management Program. This document intended to be used by Stormwater Coordinators, stormwater professionals and public works members who will be actively engaged in stormwater management planning within the municipality.

The Highlands Stormwater Management Program supports and supplements the requirements of the New Jersey Stormwater Management Rules (N.J.A.C. 7:8) as well as the New Jersey Department of Environmental Protection Bureau of Nonpoint Pollution Control Municipal Stormwater Regulation Program (N.J.A.C. 7:14A; MS4 Permits).

This document is included as Appendix E of the overall Highlands Region Stormwater Management Program Guidance document. For complete documentation, contact your Highlands Council Liaison (www.state.nj.us/njhighlands/planconformance/liaisons/).

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Statutory Platform, Purpose and Funding

Through the passage of the New Jersey Highlands Water Protection and Planning Act in 2004, the New Jersey Highlands Water Protection and Planning Council (the Highlands Council) was created and charged with developing a Regional Master Plan (RMP)¹. Adopted in 2008, the RMP serves as the guiding document for the long-term protection and restoration of the region's critical resources. Stormwater management activities include but are not limited to the following RMP Goals: 1D, 1K, 2B, 2D, 2E, 2G, 6N and 7G.

The Highlands Council Stormwater Management Program has four main components, listed below. This document supports the third Program component.

1. GIS Mapping of Stormwater Structure Locations and Conditions Assessment
2. Adoption of Highlands Area Stormwater Control Ordinance Amendments
- 3. Review and Update of Municipal Stormwater Mitigation Plan**
4. Stormwater Management Training

Funding to support this work within a municipality is provided through the Highlands Plan Conformance process. Municipalities with approved Plan Conformance Petitions are eligible for grant funding to cover the reasonable expenses of planning activities associated with the Conformance process and should contact their Highlands Council Municipal Liaison² for additional information.

¹ Copies of the Highlands Regional Master Plan are available in most municipal offices and can be obtained by contacting the Highlands Council office and at <https://www.state.nj.us/njhighlands/master/>.

² www.state.nj.us/njhighlands/planconformance/liaisons/

Using this Document

Chapter 1 of this document provides an overview of stormwater management planning and an introduction to the unique requirements of stormwater planning in the Highlands Region.

Chapter 2 provides guidance for the development of stormwater mitigation plans for Highlands Region municipalities including funding information.

Appendix E-1: Outline for the Development of a Highlands Municipal Stormwater Management/Mitigation Plan – Document to assist Highlands Region municipalities with the development of municipal plans. Also included is supporting documentation from the Highlands RMP. See section 2.2.

Appendix E-2: Model Scope of Work - Prior to commencing activities related to the review and update of a municipal stormwater mitigation plan, municipalities must have an approved scope of work, developed in collaboration with their Highlands Council staff liaison. See section 2.3.

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1. Introduction

1.1 Municipal Stormwater Regulation Program

The Municipal Stormwater Regulation Program was developed in response to the U. S. Environmental Protection Agency's (USEPA) Phase II rules published in December 1999³. The New Jersey Department of Environmental Protection (NJDEP) issued final stormwater rules on February 2, 2004 (N.J.A.C. 7:8)⁴ and four (4) New Jersey Pollutant Discharge Elimination System (NJPDDES) general permits authorizing stormwater discharges from Tier A and Tier B municipalities, as well as public complexes, and highway agencies that discharge stormwater from municipal separate storm sewers (N.J.A.C. 7:14A; MS4s).

1.2 Important Definitions

Stormwater

According to the NJDEP definition, stormwater is water resulting from precipitation (including rain and snow) that runs off the land's surface, is transmitted to the subsurface, is captured by separate storm sewers or other sewage or drainage facilities, or conveyed by snow removal equipment.

Stormwater Runoff

Stormwater runoff means water flow on the surface of the ground or in storm sewers, resulting from precipitation.

Stormwater Management

Stormwater Management is the process of minimizing stormwater runoff and directing stormwater to nonstructural and structural devices so as to control flooding, prevent soil erosion, recharge ground water and avoid pollution of water resources.

1.3 Stormwater Management Plans

As outlined in the stormwater rules at N.J.A.C. 7:8-2.2, there are nine overarching goals of stormwater management planning:

1. Reduce flood damage, including damage to life and property;
2. Minimize, to the extent practical, any increase in stormwater runoff from any new development;
3. Reduce soil erosion from any development or construction project;
4. Assure the adequacy of existing and proposed culverts and bridges, and other in-stream structures;
5. Maintain groundwater recharge;

³ <http://water.epa.gov/polwaste/npdes/upload/phase2.pdf>

⁴ http://www.nj.gov/dep/rules/rules/njac7_8.pdf

6. Prevent, to the greatest extent feasible, any increase in nonpoint pollution;
7. Maintain the integrity of stream channels for their biological functions, as well as for drainage;
8. Minimize pollutants in stormwater runoff from new and existing development in order to restore, enhance and maintain the chemical, physical, and biological integrity of the waters of the State, to protect public health, to safeguard fish and aquatic life and scenic and ecological values, and to enhance the domestic, municipal, recreational, industrial and other uses of water; and;
9. Protect public safety through the proper design and operation of stormwater management basins.

The stormwater rules also set forth the required components of regional and municipal stormwater management plans (MSWMP), and establish the stormwater management design and performance standards for new (proposed) development. The design and performance standards for new development include groundwater recharge, runoff quantity controls, runoff quality controls, and buffers around Category One (C1) waters.

The New Jersey Stormwater Best Management Practices Manual (BMP Manual)⁵ has been developed to provide guidance to address the standards in the stormwater rules and provides generalized examples of ways to meet the standards. Chapter 3 of the BMP Manual provides a discussion of regional and municipal stormwater management plans. In addition, the Highlands Council has developed a companion document that provides constructed examples of stormwater BMP projects throughout New Jersey to assist Highlands municipalities in the development of stormwater control measures that may be required in order to comply with the stormwater rules and associated regulations. This document is available along with the complete Stormwater Management Program documents on the [Highlands Council website](http://www.state.nj.us/njhighlands/planconformance/guidelines/resource.html#2) at www.state.nj.us/njhighlands/planconformance/guidelines/resource.html#2.

1.3.1 Stormwater Mitigation Plans

Some development projects have unique, site-specific conditions that prevent them from strict compliance with the stormwater design and performance standards. In order for the municipality to grant a waiver or exemption from strict compliance with the groundwater recharge and stormwater runoff quality and quantity requirements, the MSWMP must include a mitigation process documented in a mitigation plan contained within the larger MSWMP (N.J.A.C. 7:8-4.2(c)11).

The mitigation plan must identify measures required to offset any potential impact created by granting the variance or exemption to the performance standards. Several strategies can be used to mitigate a development project and its impacts. Applicants can: identify, design and implement a compensating measure to mitigate impacts; complete a project identified by the municipality as equivalent to the

⁵ http://www.nj.gov/dep/stormwater/bmp_manual2.htm

environmental impact created by the exemption or variance; or, provide funding for municipal projects that would address existing stormwater impacts.

To assist municipalities, the NJDEP has developed Guidance for the Development of Municipal Mitigation Plans (February 2006)⁶.

1.4 Stormwater Management in the Highlands Region

Effective stormwater management is an important element of natural resource protection, and therefore, vital to the success of the Highlands Water Protection and Planning Act (Highlands Act) and Regional Master Plan (RMP). Applicable RMP policies include but are not limited to the following: 1D4, 1D5, 2D3, 2D4, 2E1, 2G5, 2H4, and 6N2.

Because the Highlands Region provides drinking water for approximately half the state's residents⁷, the Highlands Stormwater Management Program provides additional guidance, beyond the stormwater rules, to ensure the enhanced natural resource protections dictated by the Highlands Act are in place.

The Highlands Stormwater Management Program has four main components:

1. GIS Mapping of Stormwater Structure Locations and Conditions Assessment
2. Adoption of Highlands Area Stormwater Control Ordinance Amendments
- 3. Review and Update of Municipal Stormwater Mitigation Plan**
4. Stormwater Management Training

This document is meant to provide guidance to Highlands Region municipalities on the development of municipal stormwater mitigation plans to ensure that the enhanced protections of the Highlands Act and RMP are met.

⁶ <http://www.state.nj.us/dep/stormwater/pdf/munimitipplan030706.pdf>

⁷ *Highlands Regional Master Plan*, 2008

2. Highlands Region Municipal Stormwater Mitigation Plan Development

2.1 Regulatory Framework

In accordance with N.J.A.C. 7:8-4.6, a municipality may grant a variance or exemption from the design and performance standards for stormwater management measures set forth in its approved MSWMP and Stormwater Control Ordinance(s), provided the MSWMP includes a Stormwater Mitigation Plan in accordance with N.J.A.C. 7:8-4.2(c)11. A written report must also be submitted to the county review agency and the NJDEP describing the variance or exemption and the required mitigation as required by N.J.A.C. 7:8-4.6.

2.2 Highlands Region Requirements

The Highlands Stormwater Management Program (Program) requires municipalities to review and update existing adopted Stormwater Mitigation Plans to bring them in conformance with the Highlands RMP resource protection standards. Specifically, conforming municipalities are required to develop a Stormwater Mitigation Plan to support the enhanced RMP stormwater recharge requirement of 125% versus the DEP rule requirement of 100% recharge and this 125% requirement is also specified for development within Prime Groundwater Recharge Areas (PGWRA). Applicable RMP policies include but are not limited to 2B8, 2D3, 2D4, 7G1 and 7G3 as well as the PGWRA and Smart Growth project review standards. If a municipality does not currently have an adopted Stormwater Mitigation Plan, one shall be developed if a variance or exemption from design and performance standards are permitted. The municipality, in the development of its Plan, will need to identify the potential for off-site recharge mitigation projects when it is not able and/or practicable to be addressed on-site. These mitigation sites should be within the same HUC14 subwatershed or an inter-connected subwatershed. Therefore, in developing its Plan consistent with best practices, a municipality should select a minimum of two sites for mitigation priority projects and develop concept mitigation plans for the sites. *(Note: A developer may provide funding or partial funding to the municipality for the cost to implement the mitigation project in accordance with N.J.A.C. 7:8)*

The Highlands Council has developed an outline to assist municipalities with the development of stormwater management/mitigation plans. Also included are associated RMP goals, policies and objective that provide supporting basis for this work. This can be found in Appendix E-1.

The draft or revised draft of the municipal Stormwater Mitigation Plan shall be submitted to the Highlands Council for review and approval prior to local adoption. The municipality must provide an electronic copy of the adopted document to the Highlands Council.

2.3 Funding

Grant funding to support the tasks associated with the review and update of municipal stormwater mitigation plans is available to conforming Highlands municipalities with approved petitions for Plan Conformance. Prior to commencing project activities, municipalities must have an approved scope of work (SOW), developed in collaboration with their Highlands Council staff liaison. A model SOW is included in Appendix E-2. (*Note: This SOW includes all four Program components.*)

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**Appendix E-1:
Outline for the Development of a Highlands
Municipal Stormwater Management/Mitigation Plan**

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Highlands Municipal Stormwater Management/Mitigation Plan Preparation

1. Information Sources
 - a. NJ Stormwater Best Management Practices (BMP) Manual Section 3 - *Regional and Municipal Stormwater Management Plans* (April 2004)
 - b. NJDEP Guidance for the Development of Municipal Mitigation Plans (February 2006)
 - c. Highlands Regional Master Plan (RMP) (2008). See following section in Appendix E-1 for specific RMP programmatic goals, policies and objectives.
 - d. Highlands Council Stormwater BMP Project Implementation Manual (November 2015)
2. Map and Assess Existing Stormwater System
 - a. Map Inlets
 - b. Map Outfalls
 - c. Map Detention Basins
 - d. Map Additional Stormwater Management Facilities (i.e. green infrastructure, manufactured treatment devices (MTDs), etc.)
 - e. Identify Problem Areas
 - f. Identify Maintenance Concerns
 - g. Identify Illicit Connections
3. Additional Mapping
 - a. Carbonate Rock Areas
 - b. Drainage Areas
 - c. Sensitive Receptors
 - i. Quantity
 - ii. Quality
 - iii. Recharge
4. List and Prioritize Known Problems
 - a. Create Team to Identify Problems
 - b. Inadequate Bridges or Culverts
 - c. Flooding
 - d. Erosion
 - e. Contaminated Sites
 - f. Maintenance Issues
 - g. Failing Systems
 - h. Illicit Connections
 - i. Existing Stream Data
 - j. Existing Impairments
 - k. Existing Detention Basins Requiring Improvements/Maintenance
 - l. Identify Gaps in Data
 - i. Design Program to Gather Data on Unknown Problems
5. Gather List of Properties with Potential for Mitigation Project Use
 - a. Municipal Property
 - i. Roadways

- ii. Parks
 - iii. Municipal Facilities
 - iv. Open Space
 1. Determine if there are any restrictions
 - b. School Property
 - c. Stormwater Systems in Common Ownership
 - d. Drainage Easements
6. Mitigation Project Requirements (see 1.b.)
- a. Located within the Same Area that Would Contribute to the Receptor Impacted by the Project that was Granted a Variance/Exemption
 - b. Obtain Legal Authorization to Construct Project
 - i. Determine if project is sited a regulated area and subject to applicable regulations (i.e. Flood Hazard Area Control Act Rules and Freshwater Wetland Act Rules)
 - c. Site Project Close to the Location of the Original Project
 - d. Identify One Location that Addresses Any and All of the Performance Standards Waived
 - e. Demonstrate that the Implementation of the Mitigation Project will Result in no Adverse Impacts to other Properties
 - f. Mitigation Projects that Address Stormwater Runoff Quantity can Provide Storage for Proposed Increases in Runoff Volume, as Opposed to a Direct Peak Flow Reduction
7. Prepare List of Potential Mitigation Projects*
- a. Recharge
 - i. Improvement/Restoration/Development of Roadside Swales into Infiltration Swales
 - ii. Retrofitting of Existing Basins into Infiltration Basins
 - iii. Reforestation
 - iv. Property Preservation

RMP Note: Minimum 125% recharge requirement in a Current Deficit Area (RMP Objective 2B8b) and 125% recharge requirement in a Prime Groundwater Recharge Area (RMP Objective 2D4b).
 - b. Water Quality
 - i. Fix Known Erosion Problems
 - ii. Direct Water into a Natural Area
 - iii. Constructing a New BMP
 - iv. Improvement/Maintenance of Roadside Swales
 - v. River Cleanup Programs
 - vi. Reforestation
 - vii. Inlet Retrofitting
 - viii. Illicit Connection Elimination Program
 - c. Water Quantity
 - i. Installation of Roadside Swales/Stormwater Management Systems
 - ii. Detention Basin Retrofitting

- * *Wherever possible, quantification of the mitigation provided by each project relative to the applicable standard should also be included.*

8. List Planned and Potential Municipal Stormwater Projects

- a. Drainage Systems
 - i. Outfall Maintenance
 - ii. Culvert Maintenance
 - iii. Swale Maintenance and Restoration Program
 - iv. Catch Basin Maintenance and Retrofitting
- b. Maintenance
- c. Illicit Connections
- d. Estimate Costs
- e. Locate in Drainage Areas

9. Identify Other Stormwater Programs

- a. Stormwater Mitigation Bank/Fund
 - i. Local Grant Programs
- b. Education
- c. Private Maintenance of Stormwater Systems
- d. Enforcement of Maintenance Requirements and Easement Restrictions
- e. Ordinance Amendments
 - i. Parking Requirements
 - ii. Site Plan and Subdivision Design Standards
 - iii. Construction Standards

Supporting Documentation from the RMP

GOAL 1D: PROTECTION, RESTORATION, AND ENHANCEMENT OF HIGHLANDS OPEN WATERS AND RIPARIAN AREAS

Policy 1D4: Highlands Open Waters shall include a protection buffer of 300 feet from the edge of the discernable bank of Highlands Open Waters feature, or from the centerline where no discernable bank exists. With respect to wetlands and other Highlands Open Waters features (e.g., seeps, springs, etc.), the feature shall include a protection buffer of 300 feet from the delineated Letter of Interpretation (LOI) line issued by the NJDEP for wetlands, or from a field-delineated boundary for other features. In areas where existing development or land uses within the protection buffers have reduced or impaired the functional values of the buffers, the Council will seek opportunities to restore the buffer and its functions. Any proposed disturbance shall, through local development review and Highlands Project Review, comply with Highlands Open Waters buffer standards. The protection buffer width for Category 2 streams in the Planning Area may be modified through a Stream Corridor Protection/Restoration Plan, as specified in Objective 1D4i. In approved Redevelopment Areas, the Council may, at its discretion, modify the required buffer, upon a showing of no alternatives, no impact to the functional value of the buffer, and provision of alternative approaches to enhancing or protecting Highlands Open Waters and resources of the buffer area.

Objective 1D4c: Require that proposed development within all Highlands Open Waters buffers (Preservation and Planning Areas) conforms through local development review and Highlands Project Review with the buffer requirements of N.J.A.C. 7:8 (Stormwater Management Rules), N.J.A.C. 7:13 (Flood Hazard Area Rules), and N.J.A.C. 7:7 (Freshwater Wetland Rules), and with any applicable requirements of a Regional Stormwater Plan adopted pursuant to N.J.A.C. 7:8 (Stormwater Management Rules).

Objective 1D4g: Encourage opportunities to restore and enhance Highlands Open Waters buffers of all zones in both the Preservation and Planning Areas. Restoration activities shall be targeted to ensure improvements to one or more of the functional values that the buffers provide while ensuring that there is no net loss of any of the functional elements, in compliance with Objective 1D4h. Specifically during site redevelopment, techniques may include, but are not limited to: disconnecting the direct drainage of impervious surfaces to Highlands Open Waters; retrofitting of stormwater management facilities to achieve the water quality, quantity, and recharge standards of the Stormwater Management Rules as specified in N.J.A.C. 7:8; reducing the temperature of stormwater discharges; and minimizing concentrated stormwater discharges through or into protection buffers.

Objective 1D4h: Key functional values that Highlands Open Waters buffers provide or contribute to include but are not limited to habitat, stormwater and flood water retention and filtration, water quality protection, temperature moderation, aquatic ecosystem integrity and channel integrity. The mitigation requirement of no net loss of functional value shall ensure improvements to one or more function and that there shall be no net loss of any function in the mitigation design. For the Highlands Open Waters buffer functional value assessment, require that the applicant demonstrate improvement or no net loss of functions as follows:

1. Habitat – No net loss of instream food sources and no net loss of terrestrial and aquatic habitat functional value due to a shift to a less valuable overall vegetative condition in the protection buffer based on the following continuum from highest to lowest: forest or wetland, scrub/shrub, pasture or meadow, agriculture, maintained lawn, unpaved impervious surface, and other structures;
2. Water Quality – A degradation of this functional value will occur if, as a result of the proposed land conversions, pollutant loads increase to the Highlands Open Waters;

3. **Temperature Moderation** – A loss in temperature moderation functional value will occur if changes to the existing vegetation result in reduced shading of the Highlands Open Waters or stormwater that discharges to Highlands Open Waters. Further, a loss in temperature moderation functional value may occur with the heating of stormwater by new structures and other impervious surface. Mitigation approaches include removing or relocating impervious surfaces away from the Highlands Open Water or ensuring that stormwater temperature is reduced through shading or other techniques; and
4. **Channel Integrity** – A loss of channel integrity functional value will occur if the project will result in: the loss of bank stabilizing vegetation; the placement of infrastructure that can be feasibly located outside the stream corridor; an increase in the peak rate of stream flow generated, or in localized scour potential, that will increase stream bank and stream bed erosion; or the removal or burial of aquatic habitat in any substantial part of a stream bed or for threatened or endangered species.

Policy 1D5: Protect the integrity of the Riparian Areas through the application of RMP standards during local development review and Highlands Project Review.

Objective 1D5f: Require that development within Riparian Areas conforms through local development review and Highlands Project Review to any applicable requirements of a Regional Stormwater Plan adopted pursuant to N.J.A.C. 7:8 (Stormwater Management Rules).

GOAL 1K: PROTECTION OF GROUND WATER QUALITY AND PUBLIC SAFETY REGARDING KARST FEATURES IN THE HIGHLANDS

Policy 1K4: To ensure through Plan Conformance that municipalities in, or within subwatersheds draining directly to, the Carbonate Rock Area protect public health and safety and the quality of ground waters from inappropriate land uses and pollutant discharges.

Objective 1K4a: Identification of critical requirements for development review ordinances to be adopted by municipalities, and for county development review procedures regarding roads and stormwater systems at a minimum, with technical guidance

Objective 1K4d: Public works projects, including but not limited to water supply, sewerage, stormwater, and transportation facilities, shall be constructed and maintained such that the potential for damage from karst features and the contamination of ground water are avoided.

GOAL2B: PROTECTION, RESTORATION AND ENHANCEMENT OF WATER QUALITY AND QUANTITY OF SURFACE AND GROUND WATERS (SECTIONS 10.B(1) AND 10.C(1)), AND TO DETERMINE “THE AMOUNT AND TYPE OF HUMAN DEVELOPMENT AND ACTIVITY WHICH THE ECOSYSTEM OF THE HIGHLANDS REGION CAN SUSTAIN WHILE STILL MAINTAINING THE OVERALL ECOLOGICAL VALUES THEREOF, WITH SPECIAL REFERENCE TO SURFACE AND GROUND WATER QUALITY AND SUPPLY...” (SECTION 11.A.(1)(A)).

Policy 2B8: To require through Plan Conformance, local development review, and Highlands Project Review the efficient and effective use of water availability, the planning for future water needs, the reduction and elimination of water deficits, and the mitigation of new consumptive or depletive use in any Current Deficit Areas or subwatersheds that could become deficit areas based on projected development and water uses, to ensure sustainable water supply, water resource, and ecological values in conformance with RMP policies and objectives.

Objective 2B8a: Prevent net increases in consumptive or depletive water uses in Current Water Deficit Areas to prevent exacerbation of and help reduce or eliminate the deficit to ensure sustainable water supply, water resource and ecological values, emphasizing techniques including, but not limited to water reuse, recycling, and conservation.

Objective 2B8b: Proposed new consumptive or depletive water uses within a Current Deficit Area shall only occur under the auspices of a Water Use and Conservation Management Plan approved under Objective 2B8c or through mitigation of the proposed consumptive or depletive use within the same HUC14 subwatershed through: a permanent reduction of existing consumptive and depletive water uses; ground water recharge in excess of the requirements of N.J.A.C. 7:8 (Stormwater Management Rules); or other permanent means. Where a Water Use and Conservation Management Plan has not been approved:

1. Each project shall achieve mitigation ranging from 125% to 200%, based on the severity of the Current Deficit and the amount of consumptive or depletive water use proposed;
2. Total consumptive and depletive water uses from any single project and all projects combined are not to exceed the Conditional Water Availability of Objectives 2B3a or 2B3b for any HUC14 subwatershed;
3. Mitigation shall be successfully completed prior to initiation of the water use, except as required by #4, below. Mitigation may be phased in keeping with project development;
4. For water uses where the combination of proposed consumptive and depletive water uses and current subwatershed deficit is high, according to a schedule established by the Highlands Council, off-site mitigation shall be successfully completed prior to any on-site construction. On-site mitigation shall be successfully completed prior to initiation of the water use but may be implemented concurrent with on-site construction. Mitigation may be phased in keeping with the level of consumptive or depletive water uses; and
5. Mitigation plans for a project shall include: specific objectives for each mitigation component; monitoring and reporting requirements; methods by which shortfalls in meeting the mitigation objectives shall be addressed through additional action; and be guaranteed through performance bonds.

Objective 2B8c: Water Use and Conservation Management Plans shall be required through municipal Plan Conformance for all subwatersheds to meet the policies and objectives of Goal 2B, to ensure efficient use of water through water conservation and Low Impact Development Best Management Practices, and to avoid the creation of new deficits in Net Water Availability. Where developed for Current Deficit Areas, the plans shall include provisions to reduce or manage consumptive and depletive uses of ground and surface waters as necessary to reduce or eliminate deficits in Net Water Availability, or to ensure continued stream flows to downstream Current Deficit Areas from Existing Constrained Areas, to the maximum extent practicable within each HUC14 subwatershed. Water Use and Conservation Management Plans shall demonstrate through a detailed implementation plan and schedule how and when the current deficit will be resolved in a subwatershed prior to approval for new water uses in the subwatersheds with the most severe deficits (e.g., in excess of 0.25 million gallons per day or mgd), and the plan shall be implemented prior to initiation of new water uses.

Objective 2B8d: All water users within a Current Deficit Area shall seek funding and opportunities to meet the intent of Objective 2B4b.

Objective 2B8e: Allow water resource transfers between or from Highlands subwatersheds only when there is no other viable alternative and where such transfers would demonstrably not result in impairment of resources in any subwatershed. Potential effects on upstream and downstream subwatersheds should be included in any such evaluation.

GOAL 2D: MAINTENANCE OF HYDROLOGIC INTEGRITY THROUGH THE PROTECTION OF GROUND WATER RECHARGE

Policy 2D3: To protect, enhance, and restore the quantity and quality of Prime Ground Water Recharge Areas

Objective 2D3a: Establish Low Impact Development and other Best Management Practices, technical guidelines and procedures to protect, restore and enhance Prime Ground Water Recharge Areas, to maximize the protection of natural ground water recharge and to minimize the need for engineered recharge methods for the purpose of complying with N.J.A.C. 7:8 (Stormwater Management Rules).

Objective 2D3b: Establish model municipal development regulations and master plan elements for the protection of Prime Ground Water Recharge Areas, through mechanisms that both complement and supplement the provisions of N.J.A.C. 7:8 (Stormwater Management Rules)

Objective 2D3c: Identify and implement opportunities for the restoration or enhancement of recharge in Prime Ground Water Recharge Areas and other lands through the retrofit or rehabilitation of stormwater recharge facilities, land management improvements, reforestation, etc.

Policy 2D4: To apply standards through Plan Conformance, local development review and Highlands Project Review to protect, restore and enhance the functionality and the water resource value of Prime Ground Water Recharge Areas by restricting development and uses of land within a Prime Ground Water Recharge Area that reduce natural ground water recharge volumes or may directly or indirectly contribute to or result in water quality degradation

Objective 2D4b: Any development activity approved to occur in a Prime Ground Water Recharge Area shall provide an equivalent of 125% of pre-construction recharge volumes for the affected Prime Ground Water Recharge Area of the site within the following areas, in order of priority: (1) the same development site where feasible; (2) the same HUC14 subwatershed, or (3) an interrelated HUC14 subwatershed as approved by the Highlands Council where no feasible option exists in the same HUC14 subwatershed. This requirement shall apply to all portions of the Prime Ground Water Recharge Area where the recharge is disrupted through impervious surfaces, routing of stormwater runoff and recharge from natural flow paths, and other similar changes

Objective 2D4g: Require conformance with applicable components of regional stormwater management plans, where applicable, as a mandatory requirement for any site plan application.

Objective 2D4h: Achieve a net improvement in ground water recharge volume and maintenance of water quality as required through compliance with and implementation of any related provisions of an adopted regional stormwater plan.

Objective 2D4i: Achieve a net improvement in ground water volume and maintenance of water quality through redevelopment, enhanced infiltration, pretreatment or other means where feasible.

GOAL2E: IMPROVEMENT OF GROUND WATER RECHARGE THROUGH REGIONAL MANAGEMENT EFFORTS

Policy 2E1: To develop regional stormwater plans to promote regional protection, restoration and enhancement of ground water recharge volume and quality where specific watersheds are at risk in the absence of regional analysis and enhanced standards (see N.J.A.C. 7:8, Stormwater Management Rules).

Policy 2E2: To coordinate programs, funding and activities among public and private entities to encourage regional ground water recharge protection, restoration and enhancement activities consistent with the Plan.

GOAL2G: PROTECTION, RESTORATION AND ENHANCEMENT OF THE WATER QUALITY OF THE HIGHLANDS REGION

Policy 2G2: To reduce or avoid water quality impacts using requirements for water quality protection measures for new land uses through local development review and Highlands Project Review.

Policy 2G3: To adopt and implement water quality protections through Plan Conformance, local development review, and Highlands Project Review.

Policy 2G4: To determine where water quality improvements are necessary or beneficial for the improvement of water availability, develop watershed-based plans to achieve such improvements such as restoration techniques including disconnection and reduction of existing impervious surfaces, develop implementation mechanisms, and implement these plans.

Policy 2G5: To adopt and implement stormwater management controls through Plan Conformance, local development review and Highlands Project Review.

Objective 2G5a: Require recharge of clean stormwater rather than contaminated stormwater wherever feasible to meet stormwater management requirements, and to pretreat contaminated stormwater wherever its recharge is required.

Objective 2G5b: Require Low Impact Development and other Best Management Practices standards for stormwater management to minimize the discharge of stormwater-entrained pollutants to ground and surface waters.

Objective 2G5c: Implement agricultural best management practices for water conservation, water reuse, nutrient and pesticide application, animal waste management, environmental restoration, pollution assessment and prevention, and irrigation efficiency in farm operations for the protection of ground and surface water quality.

Policy 2G6: To establish minimum criteria for municipal water quality management programs.

Objective 2G6a: Develop technical guidelines and procedures for Low Impact Development Best Management Practices to protect ground and surface water quality.

Objective 2G6b: Develop model municipal development regulations for the protection of ground and surface water quality.

Policy 2G7: To promote the implementation of Low Impact Development Best Management Practices to protect the quality of ground and surface water quality.

Policy 2G8: To develop an educational program to further the understanding of the importance of water quality and methods of protecting water resources in the Highlands.

GOAL 6N: USE OF SMART GROWTH PRINCIPLES, INCLUDING LOW IMPACT DEVELOPMENT, TO GUIDE DEVELOPMENT AND REDEVELOPMENT IN THE HIGHLANDS REGION

Policy 6N2: To require municipalities and counties to adopt stormwater management Low Impact Development standards to preserve or mimic the natural hydrologic features and characteristics of the land

GOAL7G: ENSURE THAT HIGHLANDS ACT PERMITS AND WAIVERS ARE PROPERLY ISSUED, TRACKED, AND MONITORED.

Policy 7G1: For the Preservation Area, coordinate with NJDEP during Highlands permit review for any major Highlands development including the review of waivers on a case-by-case basis: 1) if determined to be necessary in order to protect public health and safety; 2) for redevelopment in certain previously developed areas as identified by the Highlands Council, or 3) in order to avoid the taking of property without just compensation.

Objective 7G1a: Ensure through agency coordination in accordance with N.J.A.C. 7:38-1.1 that any Highlands permit, or permit with a waiver, be issued only with due consideration of the RMP and/or any amendments to a master plan, development regulations, or other regulations adopted by a local government unit specifically to conform them to the RMP.

Policy 7G2: For both the Preservation Area and the Planning Area, a waiver may be issued by the Highlands Council on a case-by-case basis from the requirements of the RMP or any amendments to a master plan, development regulations, or other regulations adopted by a local government unit specifically to conform them with the RMP: 1) if determined to be necessary in order to protect public health and safety; 2) for redevelopment in certain previously developed areas as identified by the Highlands Council, or 3) in order to avoid the taking of property without just compensation. Any waiver issued shall be conditioned upon a determination that the proposed development meets the requirements prescribed for a finding as listed in Section 36.a of the Highlands Act to the maximum extent possible.

Policy 7G3: For both the Preservation Area and the Planning Area during local development review, any variance or exception issued shall be conditioned upon a written determination, specifically included in an approving resolution, that the proposed development meets the requirements prescribed for a finding as listed in Section 36.a of the Highlands Act to the maximum extent possible.

RMP Chapter 5 - Programs

Implementation of Water Quality Restoration Projects: Stormwater Management Plans

Municipalities are already required to implement certain actions, including the adoption of stormwater management plans and ordinances and the implementation of management practices for municipal stormwater systems and facilities. The Highlands Council will:

Coordinate with counties, municipalities and other interests to develop and implement Regional Stormwater Management Plans in high priority HUC14 subwatersheds. These plans, where adopted by the NJDEP, become part of each municipality's stormwater permit;

Review Residential Site Improvement Standards (RSIS) for stormwater and determine whether improvements are necessary to better protect Highlands resources, and then coordinate with the Site Improvement Advisory Board for approval of those changes for municipal use;

Coordinate with appropriate interests to develop and implement Nonpoint Source (NPS) Management Measures and Control Projects including the implementation of retrofitted stormwater structural devices and nonstructural systems to collect and filter NPS pollutants such as: retrofitted stormwater drains, retention/detention/infiltration basins, swales, bioretention systems, the installation of cross-sectional catch basins to reduce NPS pollutants prior to entering a water body, and other stormwater best management

practices as per NJDEP Stormwater BMP Manual and other guidance manuals, inspection, regularly scheduled stormwater basin cleanout and maintenance, storm sewer inlet cleanouts, street sweeping programs, and rehabilitation; and

Identify alternative means of stormwater management that are more appropriate to rural and forested areas of the Highlands, potentially including use of stormwater wetlands, vegetated filters, land spreading and other non-structural techniques as per NJDEP Stormwater BMP Manual and other guidance manuals to reduce fecal coliform and Total Suspended Solids (TSS) input.

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**Appendix E-2:
Model Scope of Work**

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Highlands Plan Conformance Grant Program Highlands Region Stormwater Management Program Overview Model Municipal Scope of Work

This scope of work (SOW) overview document supports the Plan Conformance resource management implementation plan and the required Highlands Regional Master Plan (RMP) updates to the existing New Jersey Stormwater Management Rules at N.J.A.C. 7:8 (Stormwater Rules) for conforming towns in the Highlands Region. The SOW tasks identify the required update components as was indicated in the municipal Plan Conformance Petition and associated Highlands Implementation Plan and Schedule approved by the Highlands Council.

The Highlands Council has authorized grant funding for each conforming municipality for GIS mapping of stormwater structure locations and conditions assessment, amendments to the existing Municipal Stormwater Control Ordinance(s), evaluating and updating municipal Stormwater Management and Mitigation Plans in accordance with the Stormwater Rules to reflect the RMP resource protection standards, and training.

This document discusses each component of the overall program. Highlands Council Municipal Liaisons should be contacted for additional information. The list of municipal liaisons can be accessed at: www.state.nj.us/njhighlands/planconformance/liaisons/.

Component I – GIS mapping of Stormwater Structure Locations and Conditions Assessment

Task 1. Conduct an assessment of existing stormwater structure* locations and submit digital GIS data for each structure in the municipality in accordance with the Stormwater Rules. This is required for all Tier A and Tier B municipalities in the Highlands Region. The SOW must identify the lead person responsible for handling this task, the staffing approach and a description of the naming convention to address the User Guide instructions for structure IDs. Please note that the municipality shall prepare a SOW for completion of this task and submit it to the municipal liaison for approval prior to proceeding with the task activities.

Municipalities have several options for completing this task:

Option 1. Utilize the New Jersey Department of Environmental Protection’s (NJDEP) ArcGIS Online Mapping Tool (Tool). This option is intended for permittees who do not have a handheld GPS unit and who are creating a new inventory. The use of this tool requires an ArcGIS Online license and a mobile device such as a cell phone or tablet. The NJDEP is making a number of ArcGIS Online licenses available, at no cost, to permittees who request it. Environmental groups or volunteers that will assist a municipality with mapping and inventory of stormwater infrastructure may also be eligible to use a free license. Permittees may contact [Tim Ebersberger](#) to begin using this tool or to request a license.

Option 2. Utilize a combination of paper forms, GPS devices for latitude and longitude coordinates and digital photography to carry out the stormwater structure* inventory and assessment. The Highlands Council will provide necessary forms, protocols, and guidance documents for structure inventory and evaluation. All data collected must adhere to the NJDEP Mapping and Digital Data Standards (www.nj.gov/dep/gis/assets/NJDEP_GIS_Spatial_Data_Standards_2013.pdf) and the Highlands Council approved SOW details. The proposed field data collection form must be submitted with the SOW.

Option 3. Utilize a Trimble handheld GPS data dictionary template. This tool is intended for permittees with handheld GPS unit capabilities and software who may or may not have existing inventories, but intend on collecting data via a handheld GPS unit. A number of versioned templates created using Pathfinder software are available at www.nj.gov/dep/dwq/msrp_map_aid.htm. Completed templates should be submitted to the Highlands Council and the NJDEP.

Option 4. ESRI Geodatabase Template Tool. This tool is intended for permittees with ArcGIS software capabilities and experience who have existing electronic inventories. This template should be populated by permittees and submitted to the Highlands Council and the NJDEP. Templates can be found on the NJDEP website at www.nj.gov/dep/dwq/msrp_map_aid.htm.

Option 5. Permittees with limited hardware/software capabilities or permittees with existing inventory databases that exist in environments such as Microsoft Excel or Access may submit their inventories using an Excel template. The template should be populated by permittees and submitted to the Highlands Council and the NJDEP. A copy of the template can be found at www.nj.gov/dep/dwq/msrp_map_aid.htm.

**Note: Under the existing permit, only storm sewer outfall pipes are required to be mapped under the NJPDES Tier A permit. Municipalities, however, are encouraged to include any/all stormwater structure data that is currently available in their inventories (inlets, detention/retention basins, green infrastructure, etc.). Please speak with your Highlands municipal liaison for specific questions.*

Component II – Adoption of Highlands Area Stormwater Control Ordinance Amendments

Task 1. Review existing Stormwater Control Ordinance(s) to incorporate Highlands RMP stormwater control requirements; refer to Appendix D of the Highlands Region Stormwater Management Program Guidance for required revisions to the NJ Model Stormwater Control Ordinance for Municipalities as presented in Appendix D of the NJ Stormwater Best Management Practices Manual dated April 2004.

Task 2. Revise municipal Stormwater Control Ordinance(s) to reflect Highlands RMP updates. Submit draft revised document to Highlands Council for review.

Task 3. Revise document based on comments received from Highlands Council. Finalize document and receive Highlands Council approval prior to local adoption.

Task 4. Provide electronic copy of adopted document to Highlands Council.

Component III – Develop or Review and Update of Stormwater Mitigation Plan

Task 1. Review the existing adopted municipal Stormwater Mitigation Plan if the municipality has permitted, in accordance with 7:8-4.6, a variance or exemption from the design and performance standards for stormwater management measures. If a municipality does not currently have a mitigation plan, one shall be developed.

Task 2. Review the guidance document for the preparation of a Highlands RMP Stormwater Mitigation Plan provided by the Highlands Council in Appendix E of the Highlands Region Stormwater Management Program Guidance for a detailed outline of mitigation components and required sections. The Highlands guidance was prepared based on the requirements of N.J.A.C. 7:8. The municipality is to select a **minimum of two sites** for mitigation priority projects and develop concept mitigation plans for the sites as part of the municipal Stormwater Mitigation Plan update. A developer may provide funding or partial funding to the municipality for the cost to implement the mitigation in accordance with the Stormwater Rules.

Task 3. Revise municipal Stormwater Mitigation Plan to reflect Highlands RMP component details. Submit draft document to Highlands Council for review.

Task 4. Revise document based on comments received from Highlands Council. Finalize document and receive Highlands Council approval prior to local adoption.

Task 5. Provide electronic copy of adopted document to Highlands Council.

Component IV – Stormwater Management Training

Task 1. Funding is available through the Plan Conformance process for municipal officials and/or designees to attend either Highlands-sponsored Stormwater Management training programs or other stormwater training programs. Please note that **prior approval from the Highlands Council is required** for attendance at non-Highlands stormwater training events and all funding is reimbursement-based.