

**Millstone Watershed Management Area  
Stormwater Flows and Flooding, PL-566 Subcommittee  
Strategy Worksheet MSW- S2A2 And MSW-S2C2**

<p><b>Strategy Name:</b> Hydraulic Impact Review of New Stormwater Facilities  <b>MSW-S2A2:</b> Create an hydraulic impact review procedure for all new structures to be constructed in, near, and around water bodies  <b>MSW-S2C2:</b> Improve review procedures to catch designs that will cause scour, erosion, and sedimentation</p>	<p>Strategy Priority: H (H/M/L)</p>
<p><b>Objectives Addressed by Strategy:</b>  <b>MSW-O2A:</b> Assessment of scour, erosion and sedimentation problems and identification of solutions  <b>MSW-O2C:</b> Protection of streams from unnatural causes of sedimentation, scour and erosion</p>	<p>Strategy Schedule: (Begin/End)</p>
<p><b>Narrative Description of Strategy:</b> The intent of this strategy is to minimize alterations to stream channel morphology caused by proposed or anticipated stormwater systems and improve the review capabilities of municipal planning review agencies. Identification or development of procedures to complete characterization and assessment of potential increases is the first step. The primary tasks in the strategy entail identification of gaps in ordinances to require characterization and assessment, preparation of an ordinance package and implementation of the ordinances, followed by tracking of implementation and enforcement. The Millstone River has a history of flooding problems that have been well documented since the early twentieth century. These flooding problems range from chronic overtopping of low-lying roadways that traverse the River and its flood plain to severe but less frequent flooding of residential, commercial, and institutional structures. Most of these structures are located in older communities, some of which have historic status. Similar flooding problems occur along the River's major tributaries, including the Stony Brook, Beden Brook, and Six and Ten Mile Run. In studies to date, urbanization has not been identified as a significant reason for the flooding problems described above. Instead, the primary cause of the flooding problems is due to the location of these structures and roadways, which were constructed in the Millstone River's natural flood plain prior to our current understanding of flood plain hydrology and hydraulics. In addition to flooding, many reaches of the Millstone River and its tributaries experience chronic erosion and sedimentation problems. This may be due, in part, to the many soils in the Millstone WMA that are classified as having a moderate risk of erosion (LS p34) as well as increased flow volumes and velocities caused by urbanization and/or possible changes in historic rainfall patterns. Eroded soil is eventually deposited as sediment in lakes and streams. In particular, Carnegie and Peddie Lakes in the Millstone WMA are noted for sedimentation problems.</p>	
<p><b>Areawide WQM Plan Consistency Determination Issues:</b> Potential TMDL implementation strategy for habitat impaired sites</p>	

Action Plan (Steps or Tasks)	Responsible Parties for Planning, Design & Implementation	Responsible Parties for Oversight	Resource Needs	Committed or Recommended Resources	Major Challenges and Opportunities	Evaluation Method & Indicators	Schedule and Milestones for Implementation
1. Develop or identify procedures to characterize and assess the physical impact of potential increases in the rate and volume of stormwater runoff on the receiving water body for the 2 to 5 year storm.	C:  R: Millstone WMAC; RB TAC; Municipalities; Counties; NJDEP	C:  R: Millstone WMAC; NJDEP	L	C:  R: Existing resources	Development of a model for assessment	Peer review	September 2003

C: = Committed; R: = Recommended; NJWSA: New Jersey Water Supply Authority; NJDEP: New Jersey Department of Environmental Protection; SBMWA: Stony Brook – Millstone Watershed Association; NJGS: New Jersey Geological Survey; USGS: United States Geological Survey; NLN: Natural Lands Network;

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Action Plan (Steps or Tasks)	Responsible Parties for Planning, Design & Implementation	Responsible Parties for Oversight	Resource Needs	Committed or Recommended Resources	Major Challenges and Opportunities	Evaluation Method & Indicators	Schedule and Milestones for Implementation
2. Develop a manual for regulators on how to evaluate stormwater management facilities from proposed developments. Develop a campaign to distribute manual.	C: R: SBMWA; Millstone WMAC; Professional associations; RB TAC; ANJEC; NJDEP; League of Municipalities	C: R: Millstone WMAC; NJDEP; RB TAC	L-M	C: R: Existing resources; Foundation grants; CBT; 319 grants	O: Consistency among municipal reviews	Manual; Feedback on manual; use of manual	
3. Identify gaps in municipal requirements for characterization and assessment of stormwater runoff from proposed development or redevelopment sites, require modification of designs to avoid impacts and enhance mitigation of the impacts of runoff.	C: R: SBMWA; Millstone WMAC; Bloustein School of Planning & Public Policy, Rutgers Environmental Law Clinic, Seton Hall Environmental Law Clinic; ANJEC; RB TAC	C: R: Millstone WMAC	M	C: R: University research grant, Foundation grants, CBT, existing resources	Funding  Underlying reasons for existing ordinance practices or lack thereof.	Gap analysis report	September 2003
4. Identify model ordinances appropriate to fill gaps identified in Step 3.	C: R: SBMWA; Millstone WMAC ANJEC, CWP, Center for Environmental Communication, Bloustein School for Planning & Public Policy, Watershed Institute; RB TAC	C: R: Millstone WMAC;	L-M	C: SBMWA stream corridor ordinance  R: Foundation grants, CBT, existing resources	Ordinances (and ordinance changes) must be tailored to local needs	Model ordinances with improved stream impact review procedures  Recommended changes to ordinances	December 2003

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5. Test feasibility and viability of identified ordinances. Ensure enforceability of ordinances.	C:  R: SBMWA; Millstone WMAC; ANJEC, Association of Counties, League of Municipalities, NJDEP, Center for Environmental Communication, Bloustein School for Planning & Public Policy, Watershed Institute; RB TAC	C:  R: Millstone WMAC; Raritan Project Stakeholders	L	C: R: Foundation grants, existing resources	The method must focus on key issues, not local variability that reflects geographic differences; Technical issues must be considered	Testing method  Completed analysis	March 2004
6. Prepare municipal package detailing model ordinances, case studies and feasibility of implementation. (See: RBEO-S4A2: Ordinance Tools for Municipalities & Counties)	C:  R: Millstone WMAC; SBMWA; MEO; RBEO, ANJEC, Center for Environmental Communication, Association of Counties, League of Municipalities, Watershed Institute	C:  R: Millstone WMAC; SBMWA	L-M	C:  R: Foundation grants; existing resources	Selling the package	Completion of package	December 2004
7. Strengthen and, where necessary, implement new municipal ordinances to fill the gaps identified in Action Step 3.	C:  R: Millstone WMAC; SBMWA; MEO, ANJEC, Association of Counties, League of Municipalities, municipalities, counties; RB TAC	C:  R: Millstone WMAC; SBMWA	M	C: R: Local resources	Recommending changes implementable for potentially 26 existing municipal ordinances	Percentage municipalities & counties adopting and enforcing ordinances	

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8. Based on the proposed development of a site, forecast the potential increase in rate and volume of stormwater into the receiving water body for the 2 to 5 year storm. Estimate alterations to stream morphology and downstream hydrology.	C:  R: Developer, consultants, municipalities or their agents, counties	C:  R: Municipalities, Counties, Millstone WMAC	L	C:  R: Development application fees	Knowledge of planning board to make decisions	Completion of analysis for each proposed project	
9. Where stormwater runoff from proposed development or redevelopment sites will cause alterations to the receiving water body, require modification of the site design to avoid such impacts. Alternatively, require mitigation of stormwater runoff to prevent such impacts.	C:  R: Modification/mitigation: Developer Enforcement: Municipalities, counties	C:  R: Municipalities, counties, Millstone WMAC	L-M	C:  R: Developer cost		Implementation as per approved plans	
10. Track implementation and enforcement of ordinances.	C:  R: Millstone WMAC; SBMWA; municipalities	C:  R: Millstone WMAC	L	C:  R: Student research grant; existing resources; permit fees		Percentage municipalities & counties adopting ordinances Percentage municipalities & counties enforcing ordinances	

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