7 STRATEGY FOR PLAN IMPLEMENTATION

The WPB RSWMP requires implementation to be successful. The implementation process will be ongoing, with the local stakeholders, including the municipal governments, the County, residents and recreational users, moving the process forward. The implementation process will involve completion of identified projects, adoption of further management ordinances and programs, and identification of future projects. Plan updates will be ongoing.

Chapters 5 and 6 of this document identified numerous measures to control and improve stormwater within the watershed. However, the studies to date on this watershed, as in many other watersheds, have not identified one specific cause for watershed problems that can be easily mitigated. The causes of ongoing flooding, sedimentation and water quality concerns are varied and typically nonpoint in nature. Therefore, alleviating the problems will require coordination among Federal, State, County and municipal agencies, residents and businesses within the watershed, and other interested parties. Implementation will be impacted by cost and by the ability of local and regional governments to enact and enforce ordinances, programs and plans.

Certain potential measures identified herein require further study and large expenditures of money, such as dredging of Wreck Pond and the smaller ponds in the watershed. Currently, the prospects for accomplishing expensive projects in the near future are limited. Thus, the implementation process identified herein focuses on measures that can be undertaken in the near future to immediately assist in the improvement to water quality and flooding concerns within the watershed. However, the future management team will continue to identify and obtain future funding options.

7.1 Wreck Pond Watershed Commission

A Wreck Pond Watershed Commission is proposed to be become the lead agency for implementation of this plan. This agency is envisioned to include members from the municipalities within the Watershed, Monmouth County and other interested parties.

The Committee would take responsibility for implementing the Plan and would be charged with:

- Development of detailed implementation strategy for the items discussed further below
- Coordination with municipalities for changes to ordinances as discussed below
- Public Education items and projects
- Development of Grant Applications for priority projects
- Administration of Grants and oversight of consultant projects.
- Other as needed

Implementation Strategy

Monmouth County Planning Board, in conjunction with the TAC has developed a Request for Proposal to provide a grant to develop a strategy for creating a Wreck Pond Watershed Commission. The strategy will include recommendations for Commission Members, funding, regulatory control and other issues. The selected grant recipient will work with the municipalities, the County and other agencies to ensure the Commission will be a workable entity. This will be completed by the spring-summer of 2009. It is anticipated that the Commission will then convene and, with the assistance of the County and the TAC, become the lead agency for implementation of the Plan.

7.2 Wreck Pond Management

As discussed in Section 6, above, the Borough of Spring Lake with a grant from the USEPA has developed a Wreck Pond management plan that proposed certain measures designed to improve the quality of the Pond and others that require further study. Many of the measures to control sediment, stormwater and bacteria loading are those that will be implemented throughout the watershed. Others are specifically to control the quality or timing of the outflow from the pond. The proposed measures for further investigation include:

- Structural changes to the outlet structure to control small, nuisance storms.
- Revisions to the Beach Closing model from the MC Health Department
- Dredging of the entire Pond or portions of the Pond
- Use of a Pump for flood control or improved circulation

Implementation Strategy

Initially, the TAC and County and then the Commission will work with the Borough and other agencies and interested parties to continue to investigate and implement modifications to Wreck Pond to reduce beach closings in both the short-term and long-term. Priorities include analysis of the changes in tidal regime due to the extended outfall and the potential for full or partial dredging of the Pond.

7.3 Wreck Pond Watershed Website

A Wreck Pond Watershed website will become the depository of the stormwater plan as well as other information regarding the watershed. This will allow access by the public to detailed information on the plan and implementation steps.

Implementation Strategy

The Monmouth County Office of GIS is working to develop a website for the watershed. Responsibility for website enhancements and updates will pass to the Wreck Pond Watershed Commission once established.

7.4 Stormwater Management

The use of the Southern Monmouth Unit Hydrograph will be required for all stormwater analyses in the watershed. This will include applications for new developments that will be reviewed by NJDEP and the local governments. The use of this hydrograph is expected to decrease allowed stormwater flows by better defining the undeveloped stormwater flows at sites. Typically, this will result in lower pre-development flows which will mean that the allowed post-development flows will be smaller.

Implementation Strategy

The adoption of this plan will require use of the Southern Monmouth Hydrograph for all projects reviewed by NJDEP. Within 18 months of adoption of this Plan as feasible, municipalities will adopt use of the Southern Monmouth Hydrograph for projects requiring stormwater review.

7.5 Riparian Buffers

NJDEP recently adopted required riparian buffer policies. In the Wreck Pond Watershed, those buffers are expected to be 50 feet in most cases as the watershed does not contain habitat for endangered or threatened species or C1 waters at the time this Plan was developed. Given the flooding control and water quality concerns in the watershed, a larger buffer may be appropriate in some portions of the watershed. In other areas, however, this may not be necessary or beneficial. Further, there may be regulatory or institutional concerns for some of the watershed municipalities. Some of the municipalities are investigating riparian buffer policies.

Implementation Strategy

Within 18 months of plan implementation, the municipalities will report to the Wreck Pond Commission or the County regarding their plans for revised riparian buffers, if any, including implementation of revised buffer ordinances.

7.6 Development Ordinances

7.6.1 Soil Erosion and Sediment Control

Sedimentation within Wreck Pond and other ponds are a concern throughout the watershed. NJDEP currently reviews most large developments and sets requirements for stormwater quantity and quality control as described in Section 6. The Soil Conservation District reviews soil erosion and sediment control plans for development that disturbs over 5,000 sq. ft. However, smaller development and redevelopment projects are not subject to this review. Requiring implementation of soil erosion and sediment control plans for smaller projects would reduce sediment generation. This requirement could be implemented by the municipalities through stricter ordinances.

Implementation Strategy

Within 18 months of adoption of the draft Plan, the Wreck Pond Watershed Commission along with Monmouth County and the municipalities will review existing ordinances, including local stormwater control ordinances, regarding soil erosion control for smaller development projects and propose revisions to improve control, as needed. The proposed revisions should identify the review agencies, enforcement strategy and maintenance requirements.

7.6.2 Zoning and Stormwater

As discussed in Section 6, local ordinances control the location and nature of development in the watershed. NJDEP regulations control stormwater quantity and quality for larger developments. Local ordinances control smaller projects. Additional controls on stormwater quality and quantity may be appropriate for some projects, depending on existing ordinance requirements, site location, current condition and proposed development.

The Wreck Pond TAC recently met with local municipalities to discuss potential changes to zoning and development ordinances to encourage smart development and reduce impacts from changing uses. The municipalities are interested in making changes to improve water quality yet preserve their ability to allow appropriate development.

In addition to changing zoning or requiring additional stormwater controls, the ordinances may include ways to encourage the use of smart development techniques including more stringent stormwater controls, green development such as rain gardens, and other measures. Such measures may be adopted by new development or by existing homeowners, commercial properties, schools and other entities within the watershed.

Implementation Strategy

The County and TAC, and ultimately the Wreck Pond Watershed Commission will continue to work with the municipalities to amend development ordinances as appropriate and necessary. Ordinance review will consider the stormwater benefits, development costs, and municipal concerns for implementing and controlling these measures. The Wreck Pond Watershed Commission, and the municipalities, will then adopt appropriate control measures.

7.7 Municipal Management and Shared Services

In addition to controlling new development and redevelopment, municipalities can adopt means to improve current stormwater controls. Chapters 5 and 6 identify numerous measures, many of which have been implemented by the four municipalities to meet NJDEP Municipal Stormwater Plan requirements. However, implementation of certain measures is limited by local concerns including cost, consistency of requirements throughout the municipality, and local resident requirements.

Implementation Strategy

Implementation of the management measures identified in Sections 5 and 6, above, requires efforts and possible expenditures by local municipalities. To reduce costs and increase the possibility of implementing these measures, shared services should be investigated. The Wreck Pond TAC, Monmouth County and the Wreck Pond Watershed Commission will work with the municipalities to develop shared service agreements to the extent possible. Examples of possible shared services include:

Facility Maintenance: Maintenance is required by the municipalities for existing stormwater facilities such as catch basins and for the stormceptors currently being designed. Shared use of a shared vac truck for these purposes would reduce costs for individual towns.

Waterfowl Management: Several southern Monmouth County municipalities are working together to manage water fowl in the region. This effort should be continued.

7.8 Public Education

Public education and support is essential for some management elements including pet waste management, yard waste disposal, and water fowl management options.

Implementation Strategy

The County is planning public meetings regarding the Plan. Once the Wreck Pond Watershed Commission is in place, regular public input is anticipated. As discussed in Section 6.2 a Wreck Pond Watershed website is planned. Public education efforts are also being provided by agencies including the Rutgers Cooperative Extension who educates and trains landscape contractors on clean lawns initiatives, provides assistance to the agricultural community regarding reducing erosion and runoff of nutrients or pesticides. The Extension is also promoting rain gardens through education and development of a pilot project within the watershed through an NJDEP Grant.

7.9 Implementation of Specific BMP Projects

NJDEP has provided funding for several specific BMP projects as discussed in Section 5, above. The Monmouth County Planning Board and Engineering Department have taken on implementation of projects through awarding of contracts to engineering firms for studies and design of various projects. Other contracts have been awarded for construction activity for certain of the projects. The County will continue to provide oversight and management of these projects to ensure implementation is timely and within budget. However, grant application and administration and project oversight for

future projects is expected to be conducted by the WPWC. The implementation time frame for these specific projects is discussed for each item in Section 5 when known.

Currently, funding has not been secured for several priority projects. The County Planning Board has been working with NJDEP to identify available funds for additional control and remediation projects. Once the WPWC is established, it will take over responsibility for prioritizing and obtaining funding for these priority projects. Other funding sources may include federal EPA grants or foundation grants.

Following implementation of many of the above measures, regular maintenance activities are required to ensure proper functioning. Responsibility for maintenance activities will fall to the local municipality in most cases. Therefore, prior to final design of any BMP measures, a maintenance agreement must be developed with the entity responsible for ongoing maintenance.

Implementation Strategy

The County and, once established, the WPWC will continue to implement funded projects along with other appropriate agencies. Future funding will be sought for other priority projects.

7.10 Funding Sources

As discussed above, funding has been secured for certain projects. However, implementation of others will depend on future funding. The Wreck Pond Watershed Commission, along with the municipalities, will be responsible for identifying and securing funding for future projects. Funding may be available from the State, from the USEPA and from the local municipalities and watershed residents and visitors.

8 FUTURE MONITORING AND PLAN UPDATES

8.1 Future Monitoring Studies

The RWSMP is a comprehensive document with various technical studies. The watershed monitoring done to date provides background data against which future changes can be evaluated. However, additional studies have been identified to clarify watershed conditions or evaluate proposed mitigation measures.

8.1.1 Black Creek

The modeling studies include one flow station and limited water quality data for Black Creek. The NA analyses for the Borough Study sampled at the outlet from Black Creek, but only limited sampling was done within the Creek. The Creek is known to develop algal blooms and sedimentation has been identified as a major problem. The water quality model was not calibrated for this sub-basin due to lack of data and lack of loading factors for golf courses. A short-term water quality monitoring program, including storm event sampling, of the ponded portion of Black Creek, the inflow and outflow would allow development of a pollutant budget model. This would also help evaluate impacts of the golf course. This may be part of the proposed Black Creek sub-committee that is one of the recommendations of this study.

8.1.2 Wreck Pond Hydrodynamics and Sediment Release

The watershed has been studied extensively, but the dynamics of the tidal and freshwater interchange through the discharge pipe has had only limited study by NJDEP during the studies for the outfall extension. If not done as part of the Wreck Pond Environmental Studies, the TAC could look to further investigations of the tidal exchange and its impact on water quality of the Pond.

8.1.3 Hannabrand Brook Flow Studies

The lower reaches of Hannabrand Brook currently appear to have localized conditions impacting expected flow peak rates and volumes. According to NJDA this may be due to debris in the stream, low bank elevations, or other in-field features. Flow transfer to Wreck Pond Brook above the confluence is another possible cause. However, data are not available to reliably quantify these effects under a range of flow conditions. Thus, a short-term flow study on two stations along this stream (W5 and W2) with concurrent measurements at a control station within the Wreck Pond Brook watershed and at W3 would further understanding of the flow dynamics on this stream.

8.1.4 Storm outfall Studies

In conjunction with NJDEP, additional sampling of direct stormwater outfalls, particularly those with base flows, could be undertaken to identify any area of particular concern for bacteria or other loadings.

8.2 Long-term Monitoring

As part of the implementation of each specific stormwater BMP project, review and monitoring as appropriate should be developed to determine the efficacy of each project.

If possible, watershed monitoring for general water quality parameters, nutrients, bacteria, sediment and pH should be undertaken on a regular basis. These studies could involve agencies or voluntary monitoring programs under the guidance of County or NJDEP staff. Use of water quality meters may be acceptable to reduce costs provided some laboratory analyses are conducted to ensure the accuracy of the meters. The WPWC will evaluate the need and cost of such programs. Sampling could be limited to the spring through fall season and should be conducted on a bi- or tri-annual basis to provide an ongoing review of watershed conditions.

Land use updates are undertaken on a regular basis by Monmouth County Office of GIS.

8.3 Procedure for RSWMP Evaluation and Updates

The Wreck Pond Watershed Committee (WPWC) is expected to be established during 2009. The WPWC will be the primary agency responsible for evaluation and update of the RSWMP. The WPWC will develop an appropriate process to evaluate and update the Plan.

The process will include evaluation of the specified measures implemented within the watershed and the effectiveness of those measures. In addition, progress by the municipalities toward adopting new ordinances and enforcing existing ordinances as well as implementation of any new programs will be reviewed. The results of any further studies will be reviewed.

The WPWC is expected to conduct regular meetings to accept input from area residents, municipalities, County and State agencies with regard to progress and additional concerns about the watershed. It is anticipated that local concern will continue to provide valuable input into the process.

As required by regulation, the Plan will be officially updated at least once every five years.

9 CONCLUSIONS

The Wreck Pond Brook Watershed Regional Stormwater Management Plan (WPB RSWMP) has been developed to address stormwater quantity and quality concerns within the Wreck Pond Brook watershed. The Plan has been developed in accordance with Subchapter 3 (Regional Stormwater Management Planning) of the New Jersey Department of Environmental Protection (NJDEP) Stormwater Management regulations (NJAC 7:8). The regional stormwater planning process is designed to address stormwater issues that are best managed on a regional, not a state or local basis.

The Plan provides a detailed description of existing watershed conditions including the results of several monitoring efforts and field investigations, modeling studies, identification of problems and proposed solutions. Book 1 of the RSWMP provides data on the characterization of the watershed and environmental concerns. Book 2 provides the Management Plan, including analysis of future development in the watershed.

Wreck Pond Brook extends from its headwaters in Wall Township near Allaire Airport and flows east-southeast to discharge into Wreck Pond. Wreck Pond is located on the boundary between the boroughs of Spring Lake and Sea Girt in Monmouth County, New Jersey. Wreck Pond is approximately 73 acres in size and a portion of it is tidally influenced. The eastern end of the Pond contains an outfall structure that exchanges water with the Atlantic Ocean. The watershed to the Pond extends to the northwest as shown on Figure 1.

The Wreck Pond watershed was identified as a watershed of concern by the NJDEP. Outflow from Wreck Pond to the Ocean during storm events has been identified as the cause of swimming beach closings in Spring Lake and Sea Girt. Dredging was identified by NJDEP as a possible solution to the bacteria issues and other water quality concerns in the Pond. However, a stormwater management plan was required for the watershed to control future sedimentation prior to further analysis of the feasibility of dredging. Thus, the original RSWMP scope primarily was concerned with sediment control. Over time, the scope was expanded to consider control of many stormwater-related issues.

Watershed characterization was conducted using existing studies and available data from both the NJDEP GIS data and the Monmouth County Office of GIS. Field studies were conducted including assessments of stream condition, analysis of water level and flow, and review of agricultural and recreational lands. These data were used to provide an overview of watershed conditions including hydrology, topography, soils, land use, and other features.

The WPB watershed is a mix of open woodlands, agricultural lands and developed areas. Most of the developed areas are in residential use, with some commercial and industrial uses. The eastern portion of the watershed is almost fully developed. The

stream corridors include wetlands and wooded areas. Undeveloped areas are zoned primarily for residential use.

The overall goal of this management plan is to improve the water quality of the ponds and streams within the watershed, to reduce watershed loadings of pollutants associated with current and future land uses, to reduce flooding, and to eliminate or greatly reduce bathing beach closings associated with the discharge from Wreck Pond to the Atlantic Ocean.

Specific water quality objectives for this Watershed Management Plan are to reduce pollutant loading levels and remove accumulated pollutants to allow attainment of all designated uses that are not limited by natural conditions. In particular, the goals are:

- Reduce bacteria levels in Wreck Pond and tributary streams to meet standards and attain the designated uses

- Eliminate or greatly reduce beach closings due to outflow from Wreck Pond or other watershed sources

- Reduce sediment loads to Wreck Pond and other ponds from both existing sources and new development.

- Reduce phosphorus loads and concentrations to meet standards, reduce eutrophication of ponds, reduce algal blooms and attain the designated uses.

- Reduce nitrogen loads to reduce eutrophication and algal blooms

- Improve the water quality, ecological health and aesthetics of Wreck Pond, Black Creek, other Ponds and the overall watershed

The Plan has developed workable solutions that can be implemented by the municipalities and standards that may be employed in review of new projects. The Plan also will be reviewed and updated as needed to ensure it continues to be responsive to changing watershed conditions. The Plan process includes initiation of some BMP projects and the implementation phase will continue those efforts.

The Wreck Pond Brook watershed has been the subject of field investigations, two modeling studies and several water quality monitoring programs including the County weekly sampling and the sampling done for the Borough of Spring Lake's Wreck Pond Environmental Study. In addition, Monmouth University and Rutgers Cooperative Extension collected water quality data as part of their studies. Further, MCHD continues to conduct summer bacteria monitoring at the beaches and NJDEP is conducting bacteria studies. The results of these studies and the watershed characterization were analyzed to evaluate possible pollutant sources.

For the Wreck Pond watershed, the mixed land uses are a major source of all pollutants of interest. In addition, wildlife, particularly waterfowl, are a significant source of bacteria in the ponds. No point sources are present in the watershed. Leaking infrastructure may be of concern in some areas.

The results of the watershed modeling, agricultural survey, stream assessments, and bacteria source tracking did not identify one source of highest importance. For each pollutant group, identified sources are noted below.

Nutrients: Developed land uses, agricultural lands, fertilizer application, wildlife

Bacteria: Developed land use, manure management in farmlands, waterfowl, possible leaking infrastructure, wildlife, pets, release from Pond sediments

Sediment: Developed lands, agricultural land, un-vegetated uplands, construction sites, stream erosion, re-suspension of pond sediments

In addition to NJDEP regulations regarding stormwater management, the four municipalities within the watershed have adopted ordinances and management plans to control stormwater impacts for new and existing development. These have been adopted in accordance with NJDEP regulations. This Plan has identified other methods and programs that the municipalities will consider in the implementation phase.

The TAC used information obtained through field studies, water quality data collection and modeling to develop a list of priority projects and funding was obtained to initiate some of these projects. Currently, a project is underway to place stormwater treatment devices on stormwater structures that flow directly to Wreck Pond. Funds have been allocated to initiate improvements at the former gravel pit on Ridgewood Road in Wall Township and the weir at the pond from the Spring Lake Golf Club. A demonstration project for rain gardens has been funded and will be implemented. Other priority projects have been identified for future funding.

The implementation phase includes development of a Wreck Pond Watershed Commission (WPWC) that will take on responsibility for implementation of this Plan. The Commission will include representative from each municipality, other agencies, and interested members of the public. The WPWC is expected to have the authority to apply for and administer grants for studies or implementation projects. The WPWC also will have the responsibility for ongoing plan implementation and updates.

Overall, the WPB Watershed Regional Stormwater Management Plan provides a detailed study of a watershed along the New Jersey Coast that contains developed and undeveloped area. This watershed is typical of many in which non-point sources, including developed lands, natural conditions and wildlife, are the primary sources of stormwater related concerns. The implementation of the recommendations and directives from this Plan will improve stormwater flows and water quality and will enhance environmental conditions in the watershed.