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Memorandum

To	George Meservey, Director of Planning & Community Development Michael Domenica, PE, Program Manager
CC	Betsy Shreve, AICP, AECOM Project Director Sia Karplus, Science Wares, Inc.
Subject	**Town of Orleans, MA** **Water Quality and Wastewater Planning** **Task Number 4.a.4 – Adaptive Management Plan** **Technical Memorandum Outline for MEP Study Update Monitoring**
Project Number	60476644
From	Thomas Parece, P.E., AECOM Project Manager
Date	02/08/16

1. Background

a. Purpose of Technical Memorandum (TM) (1 paragraph)

Orleans is developing an overall plan for water quality and wastewater planning that include both structural and non-structural components. Traditional collection and treatment is complemented by non-traditional solutions such as shellfish cultivation, floating constructed wetlands and permeable reactive barriers. To evaluate this mixed planning approach to meet water quality goals, it is expected that the Massachusetts Estuaries Project (MEP) "Linked Watershed-Embayment Model" will be used. This model provides an analysis of the impacts of decentralized solutions on overall nutrient concentrations at specific locations within waterbodies.

The original MEP model was set up, calibrated and verified using field data from 2001 through 2004. To accurately represent the impacts of nitrogen removal from different sub-embayments of the large estuarine systems in Orleans, the model must be updated for current conditions. The purpose of this Technical Memorandum (TM) is to confirm that the data that was consolidated and documented in TM 4.a.1 (Baseline Monitoring) is appropriate for updating the existing MEP model. Additional data that is needed for the model to be parameterized, calibrated and verified are also identified within this TM.

2. Introduction

a. Overview of The MEP "Linked Watershed-Embayment Model"

b. Definitions (if needed)

3. Evaluation: Data Requirements of MEP Model

a. Detailed description of the model setup and requirements for RMA-2 (hydrodynamics).

b. Detailed description of the model setup and requirements for RMA-4 (water quality).

4. Analysis: Data Needs for Model Update

a. Monitoring and other assessments such as bethic infauna, macroalgae, tide range and bathymetry that should be added to the current program to enable recalibrating the MEP model.

b. Monitoring and other assessments that should be added to the current program to enable MEP model runs for Comprehensive Wastewater Management Plan (CWMP) validation.

5. Recommended Action Plan

a. Coordinate with UMASS School for Marine Science and Technology (SMAST) to plan an update to the MEP model for Nauset Harbor and Pleasant Bay.

b. Prepare TM 4.b: MEP Study and Report Updates and Implementation Analysis Plan.