ATTACHMENT D
Requirements for
Environmental Elements

I. OVERVIEW

The Newark Park Commission (NPC or Owner) seeks specific upgrades to the existing sewage infrastructure and drainage in the project area. The Owner understands that the sewer infrastructure adjacent to this area is beyond capacity and additional sewage handling (pumping and treatment) are needed prior to discharge of excess flow to White Clay Creek. In addition, improvements to mitigate storm water impacts and improve functions are needed in Paul Run which flows through the project area to White Clay Creek.

Specifically, the Owner requests:

- Conceptual Design (Joint Civil-Environmental) of a pumping station including location, loading assessment of current and anticipated (20 year horizon) flows patterns and sewage quality in the drainage area;
- Conceptual Design (Joint Civil-Environmental) for improvements to Paul Run to mitigate drainage impacts due to the project upgrades and improve stream bank function; and
- Conceptual design for treating the excess sewage produced by the pumping stations prior to discharge to White Clay Creek.

II. SCOPE OF SERVICES

The following project elements shall be part of the consulting engineers' services:

A. Wastewater Flow and Loading Assessment – Individual Technical Assignment

Each team member must prepare a technical memo estimating the current loading from the target drainage area for use by the civil function. The memo must include:

- Written description of estimation method(s), including source references
- Estimated 24-hour flow pattern
- Estimated sewage characteristics, i.e. average flow, BOD_5, TSS, ammonia (as -N), and dissolved oxygen.

B. Storm Water Management and Stream Bank Improvement Plan – Joint Civil-Environmental Discipline Assignment

Each design team must evaluate current conditions and prepare a conceptual design for hypothetical mitigation of storm water flow due to potential site project upgrades that includes improvement to the wetland functions of Paul Run. Using the storm water mitigation scope, the design team must perform the following:

- Assessment of existing wetland function in Paul Run using the Evaluation of Planned Wetlands (EPW) methodology, including rough, scaled sketch of area plan, cross-section and profile of existing drainage way with representative dimensions and scoring sheets for desired functions, and

- Conceptual design for doubling the functional capacity of the pool and drainage way using EPW methodology to improve functions for bank erosion control, sediment stabilization, and fish function, including scaled sketch of proposed plan and cross-section with representative dimensions and scoring sheets
- The Conceptual Design (submitted as a technical memo) will include:
  - Assessment of Existing Functions,
  - Conceptual Design for Upgraded Functions and
  - Summary of Proposed Improved Functions.

C. Technology and Impact Assessments

The consultant must identify candidate control technologies that meet the performance criteria and perform a sustainability assessment on the candidates.

1. White Clay Creek Assimilative Capacity
   - Determine assimilative capacity of White Clay Creek in the vicinity of the project area and
   - Establish the effluent quality required for discharge of treated sewage to White Clay Creek.
2. Wastewater Treatment Technologies
   - Scope and size a treatment system which meets the discharge criteria
   - Prepare figure(s) that show material balances of the major pollutants and sizes of major units, including treatment materials and sludge production. Include a proposed layout of the treatment facility.
   - Calculate greenhouse gas generation for the energy consuming components and energy required for materials required for treatment.
   - Append supporting calculations.

C. Preliminary Engineering Report

The consultant must prepare a Preliminary Engineering Report that addresses the overloaded sewer system and mitigation of storm water impacts by the civil, structural and transportation elements, as well as the proposed treatment system.

The design report must include:

- Basis for Design for sewage treatment plant summarizing the sewage pumping assessment, White Clay Creek assimilation assessment and discharge evaluation
- Description of proposed treatment system, including tabulated comparison of area required, operating cost, construction cost, energy requirements and sludge production.
- Conceptual design for mitigating storm water impacts due to proposed civil, structural, transportation and environmental improvements and doubling wetlands function with improvements to the pool and drainage way in Paul Run. The

conceptual design will include representative plan and cross-sectional drawings of the pool and drainage way.

- Draft NPDES discharge permit
- Detailed project schedule