SCOPE OF WORK

Wastewater Treatment Plant Conversion

Monmouth Battlefield State Park
Manalapan, Monmouth County, NJ

Project No. P1384-00

STATE OF NEW JERSEY

Honorable Mikie Sherrill, Governor
Honorable Dr. Dale G. Caldwell, Lt. Governor

DEPARTMENT OF THE TREASURY

Aaron Binder, Acting State Treasurer

DIVISION OF PROPERTY MANAGEMENT AND CONSTRUCTION

Thomas A. Edenbaum, Director

Date: February 3, 2026

Document Format Revision 8-1-2022

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I. OBJECTIVE

The objective of this project is to remove the existing wastewater treatment plant equipment and convert the existing primary settling tank into a septic tank for a new wastewater treatment system. In addition, the indoor tank will be filled in to make the space useable for a maintenance storage building.

II. CONSULTANT QUALIFICATIONS

A. CONSULTANT & SUB-CONSULTANT PRE-QUALIFICATIONS

The Consultant shall be a firm pre-qualified with the Division of Property Management & Construction (DPMC) in the following discipline(s):

- **P006 Sanitary Engineering**

The Consultant shall also have in-house capabilities or Sub-Consultants pre-qualified with DPMC in:

- **P011 Environmental Engineering**
- **P037 Asbestos Design**
- **P038 Asbestos Safety Control Monitoring**
- **P065 Lead Paint Evaluation**

As well as, **any and all** other Architectural, Engineering and Specialty Disciplines necessary to complete the project as described in this Scope of Work (SOW).

III. PROJECT BUDGET

A. CONSTRUCTION COST ESTIMATE (CCE)

The initial Construction Cost Estimate (CCE) for this project is $380,000.

The Consultant shall review this Scope of Work and provide a narrative evaluation and analysis of the accuracy of the proposed project CCE in its technical proposal based on its professional experience and opinion.

B. CURRENT WORKING ESTIMATE (CWE)

The Current Working Estimate (CWE) for this project is $545,100.

The CWE includes the construction cost estimate and all consulting, permitting and administrative fees.

The CWE is the client agency's financial budget based on this project Scope of Work and shall not be exceeded during the design and construction phases of the project unless DPMC approves the change after notification from the consultant during the design process and in a revised CWE deliverable.

C. CONSULTANT'S FEES

The construction cost estimate for this project ***shall not*** be used as a basis for the Consultant's design and construction administration fees. The Consultant's fees shall be based on the information contained in this Scope of Work document and the observations made and/or the additional information received during the pre-proposal meeting.

IV. PROJECT SCHEDULE

A. SCOPE OF WORK DESIGN & CONSTRUCTION SCHEDULE

The following schedule identifies the estimated design and construction phases for this project and the estimated durations. The Consultant's proposed design and construction schedule shall be in Gantt chart format and calendar day durations with start and finish dates for each task.

PROJECT PHASE	**ESTIMATED DURATION (Calendar Days)**
1. Site Access Approvals & Schedule Design Kick-off Meeting	**14**
2. Design Development Phase	**42**
• *Project Team & DPMC Plan/Code Unit Review & Comment*	14
3. Final Design Phase	**42**
• *Project Team & DPMC Plan/Code Unit Review & Approval*	14
4. Final Design Re-Submission to Address Comments	**7 (See Note)**
• *Project Team & DPMC Plan/Code Unit Review & Approval*	14
5. DCA Submission Plan Review	**30**

6. Permit Application Phase	**7**
• *Issue Plan Release*	
7. Bid Phase	**42**
8. Award Phase	**28**
9. Construction Phase	**120**
10. Project Close Out Phase	**30**

Note: The Final Design Phase is considered complete upon the release of Construction Documents by the DPMC Code Group and/or the Department of Community Affairs (DCA).

B. CONSULTANT'S PROPOSED DESIGN & CONSTRUCTION SCHEDULE

The Consultant shall submit a project design and construction schedule with its technical proposal that is similar in format and detail to the schedule depicted in **Exhibit 'A**.' The schedule developed by the Consultant shall reflect its recommended project phases, phase activities, and activity durations.

A written narrative shall also be included with the technical proposal explaining the schedule submitted and the reasons why and how it can be completed in the time frame proposed by the Consultant.

This schedule and narrative will be reviewed by the Consultant Selection Committee as part of the evaluation process and will be assigned a score commensurate with clarity and comprehensiveness of the submission.

V. PROJECT SITE LOCATION & TEAM MEMBERS

A. PROJECT SITE ADDRESS

The location of the project site is:

Monmouth Battlefield State Park
20 NJ-33 Business.
Manalapan Twp.
NJ 07726

See **Exhibit 'B'** for the project site location map.

B. PROJECT TEAM MEMBER DIRECTORY

The following are the names, addresses, and phone numbers of the Project Team members.

1. Department of Environmental Protection Representative

Name:	Bob Baudo, Project Manager
Address:	Department of Environmental Protection 275 Freehold-Englishtown Road Englishtown, New Jersey 07726
Phone No:	609-775-7662
E-Mail:	Robert.Baudo@dep.nj.gov

VI. PROJECT DEFINITION

A. BACKGROUND

Monmouth Battlefield State Park is an 1,818-acre New Jersey State Park located in Manalapan Township, Monmouth County, New Jersey. The facility is located at Lot 60 Block 40 in Manalapan, New Jersey. The Park preserves the battlefield where the Battle of Monmouth was fought and is listed on the US National Register of Historic Places, the US National Historic Landmark District, and the New Jersey Register of Historic Places. The Park currently includes trails for biking, cross-country skiing, hiking, horseback riding and mountain biking. To educate guests about the historical relevance of the site, a Visitor Center is open five (5) days per week.

B. FUNCTIONAL DESCRIPTION OF THE SITE

The Park collects, treats, and discharges sanitary wastewater generated by public restrooms and the Visitor Center. Sanitary wastewater is collected and undergoes flow equalization, primary settling, biological treatment utilizing rotating biological contactors (RBC's), and denitrification. Wastewater disposal methods consist of subsurface disposal. All residuals generated at the facility are managed off-site at an approved residuals management operation.

Operations are considered inefficient. The treatment plant was originally designed for larger flows than experienced over the last five years. In 2022, the State procured the services of Gannett Fleming Inc. to evaluate the wastewater treatment plant and provide options and alternatives to wastewater treatment for a more efficient operation. The Gannett Fleming evaluation report is shown in **Exhibit 'C'**.

Gannett Fleming identified three alternatives. Alternative 1, converting the existing treatment system to a septic tank, is the recommended alternative and has been selected by the State. Further details can be found in the report.

The intent of this project is to remove all the wastewater treatment equipment from inside the wastewater plant and convert the existing primary settling tank into a septic tank. Effluent lines will be rerouted to the septic tank. The indoor tank will be filled in to make the space useable for maintenance storage.

VII. CONSULTANT DESIGN RESPONSIBILITIES

A. DESIGN REQUIREMENTS

1. General

The Consultant shall review the Wastewater Treatment Plant Evaluation report by Gannett Fleming, as shown in **Exhibit 'C'** and provide design, specifications, permitting, bid/award and construction administration services to implement Alternative 1 to convert the plant over to a septic system using the existing primary settling tank as a septic tank. Equipment shall be removed from the plant and the indoor tank shall be filled in to create space for maintenance storage. Existing effluent lines shall be rerouted to the septic tank.

2. Environmental

The replacement design shall be environmentally safe and approved by the DPMC project team and facility staff prior to installation as well as by all other official authorities concerned as per all applicable codes.

3. Staging Area

Construction documents shall include a staging area approved by the Project Team indicating the location where the contractor can store debris, materials, tools, and equipment.

B. HAZARDOUS BUILDING MATERIALS

Consultant shall survey the building and related components and, if deemed necessary, collect samples of materials that will be impacted by the construction/demolition activities and analyze them for the presence of hazardous materials including:

1. Asbestos in accordance with N.J.A.C. 5:23-8, Asbestos Hazard Abatement Sub-code.

2. Lead in accordance with N.J.A.C. 5:17, Lead Hazard Evaluation and Abatement Code.

3. PCB's in accordance with 40 CFR 761, Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions. Consultant shall engage a firm certified in the testing and analysis of materials containing PCB's.

4. Mold.

Consultant shall document the procedure, process and findings and prepare a "Hazardous Materials Survey Report" identifying building components impacted by construction activities requiring hazardous materials abatement. Consultant shall provide three copies of the "Hazardous Materials Survey Report" to the Project Manager.

Consultant shall estimate the cost of hazardous materials sample collection, testing, analysis and preparation of the Hazardous Materials Survey Report and include that amount in the fee proposal line item entitled **"Hazardous Materials Testing and Report Allowance,"** refer to paragraph **X.B**.

Based on the Hazardous Materials Survey Report, Consultant shall provide construction documents for abatement of the hazardous materials impacted by the work in accordance with the applicable code, sub-code and Federal regulations.

Consultant shall estimate the cost to prepare construction documents for hazardous materials abatement and include that amount in the fee proposal line item entitled **"Hazardous**

Materials Abatement Design Allowance," refer to paragraph **X.C**.

Consultant shall estimate the cost to provide "Construction Monitoring and Administration Services" for hazardous materials abatement activities and include that amount in the fee proposal line item entitled **"Hazardous Materials Construction Administration Allowance,"** refer to paragraph **X.D**.

There shall be no "mark-up" of sub-consultant or subcontractor fees if sub-consultants or subcontractors are engaged to perform any of the work defined in paragraph **VII.B** "**Hazardous Building Materials."** All costs associated with managing, coordinating, observing and administrating sub-consultants and subcontractors performing hazardous materials sampling, testing, analysis, report preparation, hazardous materials construction administration services shall be included in the consultant's lump sum fee proposal.

C. DESIGN MEETINGS & PRESENTATIONS

1. Design Meetings

Conduct the appropriate number of review meetings with the Project Team members during each design phase of the project so they may determine if the project meets their requirements, question any aspect of the contract deliverables, and make changes where appropriate. The Consultant shall describe the philosophy and process used in the development of the design criteria and the various alternatives considered to meet the project objectives. Selected studies, sketches, cost estimates, schedules, and other relevant information shall be presented to support the design solutions proposed. Special considerations shall also be addressed such as: contractor site access limitations, utility shutdowns and switchover coordination, phased construction and schedule requirements, security restrictions, available swing space, material and equipment delivery dates, etc.

It shall also be the responsibility of the Consultant to arrange and require all critical Sub-Consultants to be in attendance at the design review meetings.

Record the minutes of each design meeting and distribute within three (3) calendar days to all attendees and those persons specified to be on the distribution list by the Project Manager.

2. Design Presentations

The minimum number of design presentations required for each phase of this project is identified below for reference:

Design Development Phase: One (1) oral presentation at phase completion.

Final Design Phase: One (1) oral presentation at phase completion.

D. EXISTING DOCUMENTATION

Copies of the following documents will be provided to each Consulting firm at the pre-proposal meeting to assist in the bidding process.

- DPMC Project P0699-00: Wastewater Treatment Plant Improvements, As-Built 8/14/95, Applied Wastewater Technology, Inc

Review these documents and any additional information that may be provided at a later date such as reports, studies, surveys, equipment manuals, as-built drawings, etc. The State does not attest to the accuracy of the information provided and accepts no responsibility for the consequences of errors by the use of any information and material contained in the documentation provided. It shall be the responsibility of the Consultant to verify the contents and assume full responsibility for any determination or conclusion drawn from the material used. If the information provided is insufficient, the Consultant shall take the appropriate actions necessary to obtain the additional information required.

All original documentation shall be returned to the provider at the completion of the project.

VIII. PERMITS & APPROVALS

A. NJ UNIFORM CONSTRUCTION CODE PLAN REVIEW AND PERMIT

The project construction documents must comply with the latest adopted edition of the NJ Uniform Construction Code (NJUCC).

The latest NJUCC Adopted Codes and Standards can be found at:

https://www.nj.gov/dca/codes/codreg/ucc.shtml

1. NJUCC Plan Review

Consultant shall estimate the cost of the NJUCC Plan Review by DCA and include that amount in their fee proposal line item entitled **"Plan Review and Permit Fee Allowance,"** refer to paragraph XIII.A.

Upon approval of the Final Design Phase Submission by DPMC, the Consultant shall submit the construction documents to the DCA, Bureau of Construction Project Review to secure a complete plan release.

As of July 25, 2022, the DCA is only accepting digital signatures and seals issued from a third party certificate authority.

Procedures for submission to the DCA Plan Review Unit can be found at:

https://www.nj.gov/dca/codes/forms/pdf_bcpr/pr_app_guide.pdf

Consultant shall complete the "Project Review Application" and include the following on Block 5 as the "Owner's Designated Agent Name":

Trevor M. Dittmar, DPMC
PO Box 235
Trenton, NJ 08625-0235
Trevor.Dittmar@treas.nj.gov 609-984-5529

The Consultant shall complete the NJUCC "Plan Review Fee Schedule", determine the fee due and pay the NJUCC Plan Review fees, refer to Paragraph XIII.A.

The NJUCC "Plan Review Fee Schedule" can be found at:

https://www.nj.gov/dca/codes/forms/pdf_bcpr/pr_fees.pdf

2. NJUCC Permit

Upon receipt of a complete plan release from the DCA Bureau of Construction Project Review, the Consultant shall complete the NJUCC permit application and all applicable technical sub-code sections. The "Agent Section" of the application and certification section of the building sub-code section shall be signed. These documents, with **six (6) sets of DCA or DPMC released drawings and specifications, with raised seals and wet signatures** shall be forwarded to the DPMC Project Manager.

The Consultant may obtain copies of all NJUCC permit applications at the following website:

https://www.nj.gov/dca/codes/resources/constructionpermitforms.shtml

All other required project permits shall be obtained and paid for by the Consultant in accordance with the procedures described in Paragraph VIII.B.

3. Prior Approval Certification Letters

The issuance of a construction permit for this project may be contingent upon acquiring various "prior approvals" as defined by N.J.A.C. 5:23-1.4. It is the Consultant's responsibility to determine which prior approvals, if any, are required. The Consultant shall submit a general

certification letter to the DPMC Plan & Code Review Unit Manager during the Permit Phase of this project that certifies all required prior approvals have been obtained.

In addition to the general certification letter discussed above, the following specific prior approval certification letters, where applicable, shall be submitted by the Consultant to the DPMC Plan & Code Review Unit Manager: Soil Erosion & Sediment Control; Water & Sewer Treatment Works Approval; Coastal Areas Facilities Review; Compliance of Underground Storage Tank Systems with N.J.A.C. 7:14B; Pinelands Commission; Highlands Council; Well Construction and Maintenance; Sealing of Abandoned Wells with N.J.A.C. 7:9D; Certification that all utilities have been disconnected from structures to be demolished; Board of Health Approval for Potable Water Wells; Health Department Approval for Septic Systems; and Notification to Adjoining Property Owners with N.J.A.C. 5:23-2.17(c). It shall be noted that in accordance with N.J.A.C. 5:23-2.15(a)5, a permit cannot be issued until the letter(s) of certification is received.

4. Multi-building or Multi-site Permits

A project that involves many buildings and/or sites requires that a separate permit shall be issued for each building or site. The Consultant must determine the construction cost estimate for *each* building and/or site location and submit that amount where indicated on the permit application.

5. Special Inspections

In accordance with the requirements of the NJUCC N.J.A.C. 5:23-2.20(b), Bulletin 03-5 and Chapter 17 of the International Building Code, the Consultant shall be responsible for the coordination of all special inspections during the construction phase of the project.

Bulletin 03-5 can be found at:

https://www.nj.gov/dca/codes/publications/pdf_bulletins/b_03_5.pdf

a. Definition

Special inspections are defined as an independent verification by a certified special inspector for **Class I buildings and smoke control systems in any class building**. The special inspector is to be independent from the contractor and responsible to the Consultant so that there is no possible conflict of interest.

Special inspectors shall be certified in accordance with the requirements in the NJUCC.

b. Responsibilities

The Consultant shall submit with the permit application, a list of special inspections and the agencies or special inspectors that will be responsible to carry out the inspections required for the project. The list shall be a separate document, on letter head, signed and sealed.

B. OTHER REGULATORY AGENCY PERMITS, CERTIFICATES AND APPROVALS

The Consultant shall identify and obtain all other State Regulatory Agency permits, certificates, and approvals that will govern and affect the work described in this Scope of Work. An itemized list of these permits, certificates, and approvals shall be included with the Consultant's Technical Proposal and the total amount of the application fees should be entered in the Fee Proposal line item entitled, **"Plan Review and Permit Fee Allowance."**

The Consultant may refer to the DPMC "Procedures for Architects and Engineers Manual," Paragraph "**9. REGULATORY AGENCY APPROVALS"** which presents a compendium of State permits, certificates, and approvals that may be required for this project.

The Consultant shall determine the appropriate phase of the project to submit the permit application(s) in order to meet the approved project milestone dates.

Where reference to an established industry standard is made, it shall be understood to mean the most recent edition of the standard unless otherwise noted. If an industry standard is found to be revoked, or should the standard have undergone substantial change or revision from the time that the Scope of Work was developed, the Consultant shall comply with the most recent edition of the standard.

IX. BIDDING AND CONTRACT AWARD RESPONSIBILITIES

The Bidding and Contract Award Phase commences with receipt of the required permits, UCC plan release and verification that funding is in place for construction. The Consultant shall refer to the DPMC "Procedures for Architects and Engineers Manual", Paragraph "17. BIDDING AND CONTRACT AWARD" for all requirements for this phase available at https://www.nj.gov/treasury/dpmc/Assets/Files/ProceduresforArchitectsandEngineers.pdf.

X. CONSTRUCTION ADMINISTRATION RESPONSIBILITIES

The A/E and their sub-consultants shall, unless otherwise specified in the project specific Scope of Work, provide site administration during the construction of the project. The services required of such site administration shall include, but shall not be limited to, attend and chair the pre-construction meeting, conduct weekly field observations, attend and chair regularly scheduled bi-weekly job meetings, review/approve shop drawings, submittals, and respond to RFI's.

The Consultant shall refer to the DPMC "Procedures for Architects and Engineers Manual", Paragraph "18. CONSTRUCTION PHASE" for all construction administration requirements available at https://www.nj.gov/treasury/dpmc/Assets/Files/ProceduresforArchitectsandEngineers.pdf.

XI. PROJECT CLOSE-OUT PHASE

The DPMC Project Manager has the full responsibility for the planning, scheduling, and execution of project close-out activities. The A/E is responsible to cooperate with the DPMC Project Manager in the planning, scheduling, and execution of project close-out activities. The Consultant shall refer to the DPMC "Procedures for Architects and Engineers Manual", Paragraph "19. PROJECT CLOSE-OUT PHASE" for all requirements available at https://www.nj.gov/treasury/dpmc/Assets/Files/ProceduresforArchitectsandEngineers.pdf.

XII. ENERGY REBATE AND INCENTIVE PROGRAMS

The Consultant shall review any and all programs on the State and Federal level to determine if any proposed upgrades to the mechanical and/or electrical equipment and systems for this project qualify for approved rebates and incentives.

The Consultant shall review the programs available on the "New Jersey's Clean Energy Program" website at: http://www.njcleanenergy.com as well as federal websites and New Jersey electric and gas utility websites to determine if and how they can be applied to this project.

The Consultant shall identify all applicable rebates and incentives in their technical proposal and throughout the design phase.

The Consultant shall be responsible to complete the appropriate registration forms and applications, provide any applicable worksheets, manufacturer's specification sheets, calculations, attend meetings, and participate in all activities with designated representatives of

the programs and utility companies to obtain the entitled financial incentives and rebates for this project.

All costs associated with this work shall be estimated by the Consultant and the amount included in the base bid of its fee proposal.

XIII. ALLOWANCES

A. PLAN REVIEW AND PERMIT FEE ALLOWANCE

The Consultant shall obtain and pay for all of the project permits in accordance with the guidelines identified below.

1. Permits

The Consultant shall determine the various permits, certificates, and approvals required to complete this project.

2. Permit Costs

The Consultant shall estimate the application fee costs for all of the required project permits, certificates, and approvals (excluding the NJUCC permit) and include that amount in its fee proposal line item entitled **"Plan Review and Permit Fee Allowance."** A breakdown of each permit and application fee shall be attached to the fee proposal for reference.

NOTE: The NJUCC permit is excluded since it will be paid for by the State.

3. Applications

The Consultant shall complete and submit all permit applications to the appropriate permitting authorities and the costs shall be paid from the Consultant's permit fee allowance. A copy of the application(s) and the original permit(s) obtained by the Consultant shall be given to the DPMC Project Manager for distribution during construction.

4. Consultant Fee

The Consultant shall determine what is required to complete and submit the permit applications, obtain supporting documentation, attend meetings, etc., and include the total cost in the base bid of its fee proposal.

Any funds remaining in the permit allowance will be returned to the State at the close of the project.

B. HAZARDOUS MATERIALS TESTING AND REPORT ALLOWANCE

The Consultant shall estimate the costs to complete the hazardous materials survey, sample collection, testing and analysis and preparation of a "Hazardous Materials Survey Report" noted in paragraph **VII.B** and enter that amount on the fee proposal line item entitled **"Hazardous Materials Testing and Report Allowance,"** Consultant shall attach a detailed cost breakdown sheet for use by DPMC during the proposal review and potential fee negotiations. The cost breakdown sheet shall include, but not be limited to, the following information:

- Description of tasks and estimated cost for the following:
    - Sample collection;
    - Sample testing; and,
    - Preparation of a Hazardous Materials Survey Report.

Any funds remaining in the Hazardous Materials Testing and Report Allowance will be returned to the State at the close of the project.

C. HAZARDOUS MATERIALS ABATEMENT DESIGN ALLOWANCE

The Consultant shall estimate the costs to prepare construction documents for hazardous materials abatement noted in paragraph **VII.B** and enter that amount on the fee proposal line item entitled **"Hazardous Materials Abatement Design Allowance."** Consultant shall attach a detailed cost breakdown sheet for use by DPMC during the proposal review and potential fee negotiations. The cost breakdown sheet shall include a description of the tasks to be performed and the estimated cost of each task.

Any funds remaining in the Hazardous Materials Abatement Design Allowance will be returned to the State at the close of the project.

D. HAZARDOUS MATERIALS CONSTRUCTION ADMINISTRATION ALLOWANCE

The Consultant shall estimate the cost to provide Construction Monitoring and Administration Services for hazardous materials abatement as noted in paragraph **VII.B** and enter that amount on the fee proposal line item entitled "**Hazardous Materials Construction Administration Allowance.**" Consultant shall attach a detailed cost breakdown sheet for use by DPMC during the proposal review and potential fee negotiations. The cost breakdown sheet shall include a description of the tasks to be performed and the estimated cost of each task.

Any funds remaining in the Hazardous Materials Construction Administration Allowance will be returned to the State at the close of the project.

XIV. SOW SIGNATURE APPROVAL SHEET

This Scope of Work shall not be considered a valid document unless all signatures appear in each designated area below.

The client agency approval signature on this page indicates that they have reviewed the design criteria and construction schedule described in this project Scope of Work (including the subsequent contract deliverables and exhibits) and verifies that the work will not conflict with the existing or future construction activities of other projects at the site.

SOW APPROVED BY: James Wright 2/3/2026

JAMES WRIGHT, MANAGER DATE
DPMC PROJECT PLANNING & INITIATION

SOW APPROVED BY: Robert Baudo 2/4/2026

ROBERT BAUDO, PROJECT MANAGER DATE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

SOW APPROVED BY: Jeanette M Barnard 4.9.26

JEANETTE M. BARNARD, DEPUTY DIRECTOR DATE
DIV PROPERTY MGT & CONSTRUCTION

XV. CONTRACT DELIVERABLES

The following are checklists listing the Contract Deliverables that are required at the completion of each phase of this project. The Consultant shall refer to the DPMC publication entitled "Procedures for Architects and Engineers," 3.0 Edition, dated September 2022 available at https://www.nj.gov/treasury/dpmc/Assets/Files/ProceduresforArchitectsandEngineers.pdf for a detailed description of the deliverables required for each submission item listed. References to the applicable paragraphs of the "Procedures for Architects and Engineers" are provided.

Note that the Deliverables Checklist may include submission items that are "S.O.W. Specific Requirements." These requirements will be defined in the project specific scope of work and included on the deliverables checklist.

This project includes the following phases with the deliverables noted as "Required by S.O.W" on the Deliverables Checklist:

DESIGN DEVELOPMENT PHASE;

FINAL DESIGN PHASE;

PERMIT APPLICATION PHASE;

BIDDING AND CONTRACT AWARD;

CONSTRUCTION PHASE; and

PROJECT CLOSE-OUT PHASE

XVI. EXHIBITS

A. SAMPLE PROJECT SCHEDULE FORMAT
B. PROJECT SITE LOCATION MAP
C. WASTEWATER TREATMENT PLANT EVALUATION

END OF SCOPE OF WORK

DPMC Project No.: P1384-00

Deliverables Checklist
Design Development Phase

A/E Name: _____

A/E Manual Reference	Submission Item	Required by S.O.W.		Previously Submitted		Enclosed	
		Yes	No	Yes	No	Yes	No
14.4.1.	A/E Statement of Site Visit						
14.4.2.	Narrative Description of Project						
14.4.3.	Building Code Information Questionnaire						
14.4.4.	Space Analysis						
14.4.5.	Special Features						
14.4.6.	Catalog Cuts						
14.4.7.	Site Evaluation						
14.4.8.	Subsurface Investigation						
14.4.9.	Surveys						
14.4.10.	Arts Inclusion						
14.4.11.	Design Rendering						
14.4.12.	Regulatory Approvals						
14.4.13.	Utility Availability						
14.4.14.	Drawings (6 Sets)						
14.4.15.	Specifications (6 Sets)						
14.4.16.	Current Working Estimate/Cost Analysis in CSI Format						
14.4.17.	Project Schedule						
14.4.18.	Formal Presentation						
14.4.19.	Plan Review/Scope of Work Compliance Statement						
14.4.20.	Design development Phase Deliverables Checklist						
S.O.W. Reference	**S.O.W. Specific Requirements**						

This checklist shall be completed by the Design Consultant and included as the cover sheet of this submission to document to the DPMC the status of all the deliverables required by the project specific Scope of Work.

_____ _____

Consultant Signature Date

DPMC Project No.: P1384-00

Deliverables Checklist
Final Design Phase

A/E Name: _____

A/E Manual Reference	Submission Item	Required by S.O.W.		Previously Submitted		Enclosed	
		Yes	No	Yes	No	Yes	No
15.4.1.	A/E Statement of Site Visit						
15.4.2.	Narrative Description of Project						
15.4.3.	Building Code Information Questionnaire						
15.4.4.	Space Analysis						
15.4.5.	Special Features						
15.4.6.	Catalog Cuts						
15.4.7.	Site Evaluation						
15.4.8.	Subsurface Investigation						
15.4.9.	Surveys						
15.4.10.	Arts Inclusion						
15.4.11.	Design Rendering						
15.4.12.	Regulatory Approvals						
15.4.13.	Utility Availability						
15.4.14.	Drawings (6 Sets)						
15.4.15.	Specifications (6 Sets)						
15.4.16.	Current Working Estimate/Cost Analysis in CSI Format						
15.4.17.	Project Schedule						
15.4.18.	Formal Presentation						
15.4.19.	Plan Review/Scope of Work Compliance Statement						
15.4.20.	Final Design Phase Deliverables Checklist						
S.O.W. Reference	**S.O.W. Specific Requirements**						

This checklist shall be completed by the Design Consultant and included as the cover sheet of this submission to document to the DPMC the status of all the deliverables required by the project specific Scope of Work.

_____ _____

Consultant Signature Date

DPMC Project No.: P1384-00

Deliverables Checklist
Permit Application Phase

A/E Name: _____

A/E Manual Reference	Submission Item	Required by S.O.W.		Previously Submitted		Enclosed	
		Yes	No	Yes	No	Yes	No
16.1.	N.J. UCC Permit Application						
16.4.	Drawings, Signed and Sealed (6 Sets)						
16.5.	Specifications, Signed and Sealed (6 Sets)						
16.6.	Current Working Estimate/Cost Analysis in CI Format						
16.7.	Project Schedule						
16.8.	Plan Review/Scope of Work Compliance Statement						
16.9.	Permit Application Phase Deliverables Checklist						
S.O.W. Reference	**S.O.W. Specific Requirements**						

This checklist shall be completed by the Design Consultant and included as the cover sheet of this submission to document to the DPMC Project Manager the status of all the deliverables required by the project specific Scope of Work.

_____ _____

Consultant Signature Date

DPMC Project No.: P1384-00

Deliverables Checklist
Bidding and Contract Award Phase

A/E Name: _____

A/E Manual Reference	Submission Item	Required by S.O.W.		Previously Submitted		Enclosed	
		Yes	No	Yes	No	Yes	No
17.1.1.	Notice of Advertising						
17.1.2.	Bid Proposal Form						
17.1.3.	Bid Clearance Form						
17.1.4.	Drawings (6 Sets)						
17.1.5.	Specifications (6 Sets)						
17.1.6.	Construction Schedule						
17.3	Pre-Bid Conference/Mandatory Site Visit						
17.3.1.	Meeting Minutes						
17.4	Bulletins						
17.5	Post Bid Meeting						
17.6.	Contract Award "Letter of Recommendation"						
17.8.	Bid Protests - Hearings						
17.9.	Bidding and Contract Award Phase Deliverables Checklist						
S.O.W. Reference	**S.O.W. Specific Requirements**						

This checklist shall be completed by the Design Consultant and included as the cover sheet of this submission to document to the DPMC the status of all the deliverables required by the project specific Scope of Work.

_____ _____

Consultant Signature Date

DPMC Project No.: P1384-00

Deliverables Checklist
Construction Phase

A/E Name: _____

A/E Manual Reference	Submission Item	Required by S.O.W.		Previously Submitted		Enclosed	
		Yes	No	Yes	No	Yes	No
18.2.	Pre-Construction Meeting						
18.3.	Submittal Log						
18.4.	Construction Schedule						
18.5.	Project Progress Meetings						
18.7.	Contractor's Invoicing and Payment Process						
18.8.	Contractor Submittals						
18.10.	Testing						
18.11.	Shop Drawings (6 Sets)						
18.12.	As-Built & Record Set Drawings (6 Sets)						
18.13.	Change Orders						
18.14.	Construction Photographs						
18.15.	Field Observations						
18.17.	Construction Phase Deliverables Checklist						
S.O.W. Reference	**S.O.W. Specific Requirements**						

This checklist shall be completed by the Design Consultant and included as the cover sheet of this submission to document to the DPMC the status of all the deliverables required by the project specific Scope of Work.

_____ _____

Consultant Signature Date

DPMC Project No.: P1384-00

Deliverables Checklist
Project Close-Out Phase

A/E Name: _____

A/E Manual Reference	Submission Item	Required by S.O.W.		Previously Submitted		Enclosed	
		Yes	No	Yes	No	Yes	No
19.3.	Development of Punch List and Inspection Reports						
19.5.	Determination of Substantial Completion						
19.6.	Correction/Completion of Punch List						
19.7.	Submission of Close-Out Documentation						
19.7.1.	As-Built and Record Sets of Drawing (6 Sets)						
19.8.	Final Payment						
19.9.1.	Contractors Final Payment						
19.9.2.	A/E's Final Payment						
19.10.	Project Close-Out Phase Deliverables Checklist						
S.O.W. Reference	**S.O.W. Specific Requirements**						

This checklist shall be completed by the Design Consultant and included as the cover sheet of this submission to document to the DPMC the status of all the deliverables required by the project specific Scope of Work.

_____ _____

Consultant Signature Date

Typical DPMC Project - Random Selection of Design Consultant

ID	Task Name	Start	Finish	Duration
0	**Typical Project Model**	**Mon 5/19/...**	**Fri 4/9/27**	**691 days**
1	**Project Initiation Phase**	**Mon 5/19/25**	**Mon 7/14/25**	**57 days**
2	Project Funding Received	Mon 5/19/25	Mon 5/19/25	1 day
3	Schedule Site Visit	Thu 5/22/25	Thu 5/22/25	1 day
4	Site Visit	Fri 5/30/25	Fri 5/30/25	1 day
5	Prepare Draft SOW	Mon 6/2/25	Fri 6/6/25	5 days
6	Distribute Draft SOW for Review	Mon 6/9/25	Mon 6/9/25	1 day
7	Review SOW	Tue 6/10/25	Mon 6/23/25	10 days
8	Review SOW	Tue 6/10/25	Mon 6/23/25	10 days
9	Review SOW	Tue 6/10/25	Mon 6/23/25	10 days
10	Receive Comments Revise SOW	Tue 6/24/25	Mon 6/30/25	5 days
11	Distribute Final SOW for Review & Signature	Tue 7/1/25	Tue 7/1/25	1 day
12	Review & Sign SOW	Wed 7/2/25	Wed 7/2/25	1 day
13	Review & Sign SOW	Mon 7/7/25	Mon 7/7/25	1 day
14	Review & Sign SOW	Thu 7/10/25	Thu 7/10/25	1 day
15	Forward SOW to Procurement	Mon 7/14/25	Mon 7/14/25	1 day
16	**Consultant Selection Phase**	**Tue 7/15/25**	**Mon 9/1/25**	**49 days**
17	Prepare Solicitation, Advertise Proj	Tue 7/15/25	Wed 7/16/25	2 days
18	Select Firms - Random Selection	Thu 7/17/25	Thu 7/17/25	1 day
19	Conduct Preproposal Meeting	Mon 7/28/25	Mon 7/28/25	1 day
20	Consultant Questions Due - Prepare and Issue Addenda	Tue 7/29/25	Tue 7/29/25	1 day
21	Receive Proposals - Distribute for Review	Tue 8/12/25	Tue 8/12/25	1 day
22	Review & Rank Proposals	Wed 8/13/25	Tue 8/19/25	5 days
23	Review & Rank Proposals	Wed 8/13/25	Tue 8/19/25	5 days
24	Review & Rank Proposals	Wed 8/13/25	Tue 8/19/25	5 days
25	Determine Rankings, Open Fee Proposals and Distribute to Committee	Wed 8/20/25	Wed 8/20/25	1 day
26	Negotiate Fee	Thu 8/21/25	Wed 8/27/25	5 days
27	Provide Funding for Consultant Contract	Thu 8/28/25	Thu 8/28/25	1 day
28	Complete Recommendation to Awa	Thu 8/28/25	Fri 8/29/25	2 days
29	Consultant Contract Award	Sat 8/30/25	Mon 9/1/25	2 days
30	**Design Phase**	**Sun 9/7/25**	**Fri 5/8/26**	**244 days**
31	Design Contract "Kick-Off" Meeting	Sun 9/7/25	Mon 9/8/25	2 days
32	Program Design Phase	Tue 9/9/25	Mon 10/6/25	28 days
33	Receive Program Submittal & Distribute for Review	Tue 10/7/25	Thu 10/9/25	3 days

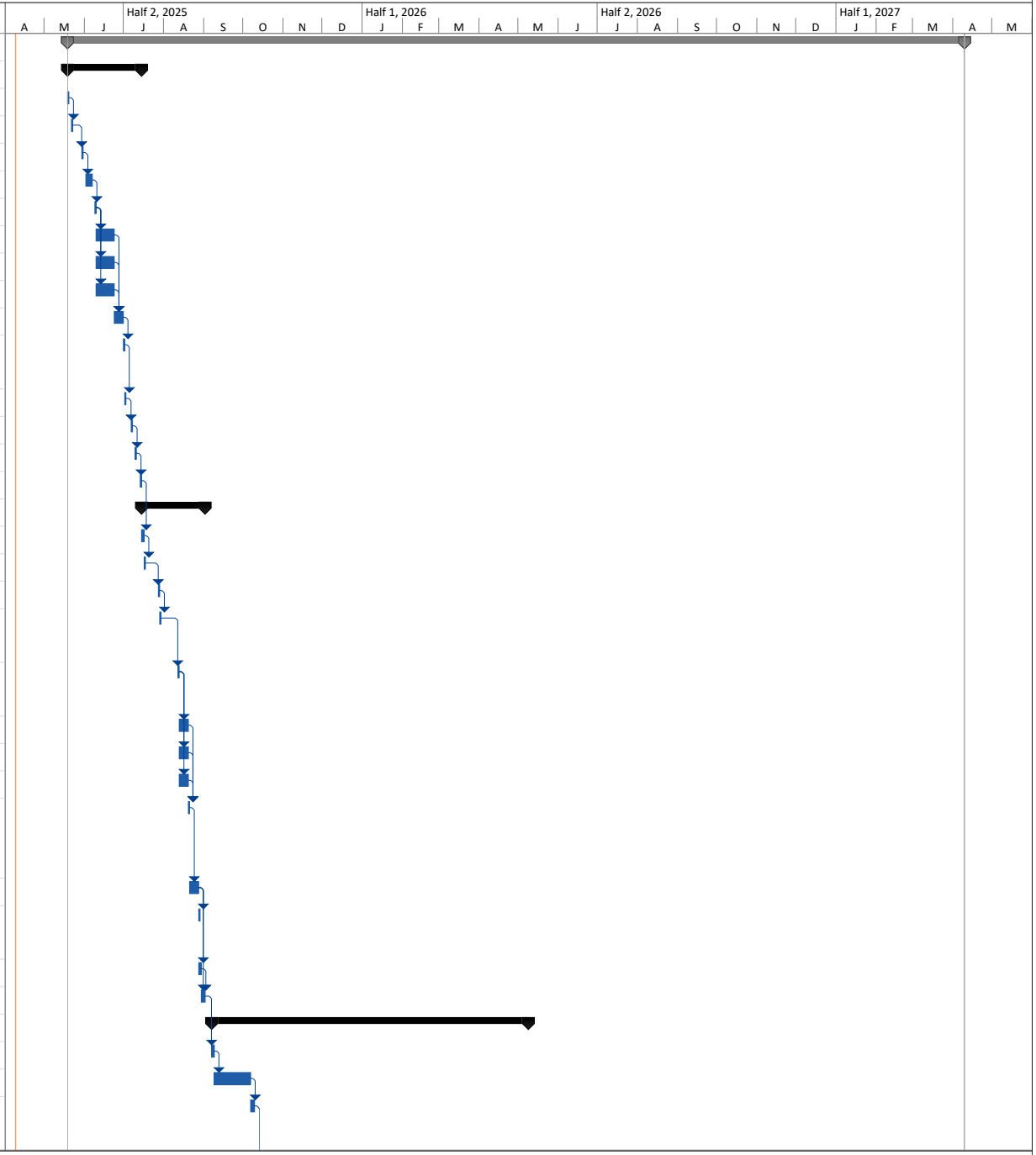


EXHIBIT 'A'

Typical DPMC Project - Random Selection of Design Consultant

ID	Task Name	Start	Finish	Duration
34	Program Phase Presentation/Submittal	Fri 10/10/25	Fri 10/10/25	1 day
35	Review Program Phase	Mon 10/13/25	Fri 10/24/25	10 days
36	Review Program Phase	Mon 10/13/25	Fri 10/24/25	10 days
37	Review Program Phase	Mon 10/13/25	Fri 10/24/25	10 days
38	Receive Program Phase Comments, Review & Consolidate and Forward to Consultant	Mon 10/27/25	Wed 10/29/25	3 days
39	Schematic Design Phase	Thu 10/30/25	Wed 11/26/25	28 days
40	Receive Schematic Submittal & Distribute for Review	Thu 11/27/25	Mon 12/1/25	3 days
41	Schematic Phase Presentation/Submittal	Tue 12/2/25	Tue 12/2/25	1 day
42	Review Schematic Phase	Wed 12/3/25	Tue 12/16/25	10 days
43	Review Schematic Phase	Wed 12/3/25	Tue 12/16/25	10 days
44	Review Schematic Phase	Wed 12/3/25	Tue 12/16/25	10 days
45	Receive Schematic Phase Comments, Review & Consolidate and Forward to Consultant	Wed 12/17/25	Fri 12/19/25	3 days
46	Design Development (DD) Design Phase	Sat 12/20/25	Fri 1/16/26	28 days
47	Receive DD Submittal & Distribute for Review	Mon 1/19/26	Wed 1/21/26	3 days
48	DD Phase Presentation/Submittal	Thu 1/22/26	Thu 1/22/26	1 day
49	Review DD Phase	Fri 1/23/26	Thu 2/5/26	10 days
50	Review DD Phase	Fri 1/23/26	Thu 2/5/26	10 days
51	Review DD Phase	Fri 1/23/26	Thu 2/5/26	10 days
52	Receive DD Phase Comments, Review & Consolidate and Forward to Consultant	Fri 2/6/26	Tue 2/10/26	3 days
53	Final Design Phase	Wed 2/11/26	Tue 3/10/26	28 days
54	Final Submittal & Distribute for Rev	Wed 3/11/26	Fri 3/13/26	3 days
55	Final Phase Presentation/Submittal	Sat 3/14/26	Mon 3/16/26	2 days
56	Review Final Phase	Tue 3/17/26	Mon 3/30/26	10 days
57	Review Final Phase	Tue 3/17/26	Mon 3/30/26	10 days
58	Review Final Phase	Tue 3/17/26	Mon 3/30/26	10 days
59	Review Final Phase	Tue 3/17/26	Mon 3/30/26	10 days
60	Receive Final Phase Comments, Review & Consolidate and Forward to Consultant	Tue 3/31/26	Thu 4/2/26	3 days
61	Final/Permit Design Phase	Fri 4/3/26	Thu 4/16/26	14 days

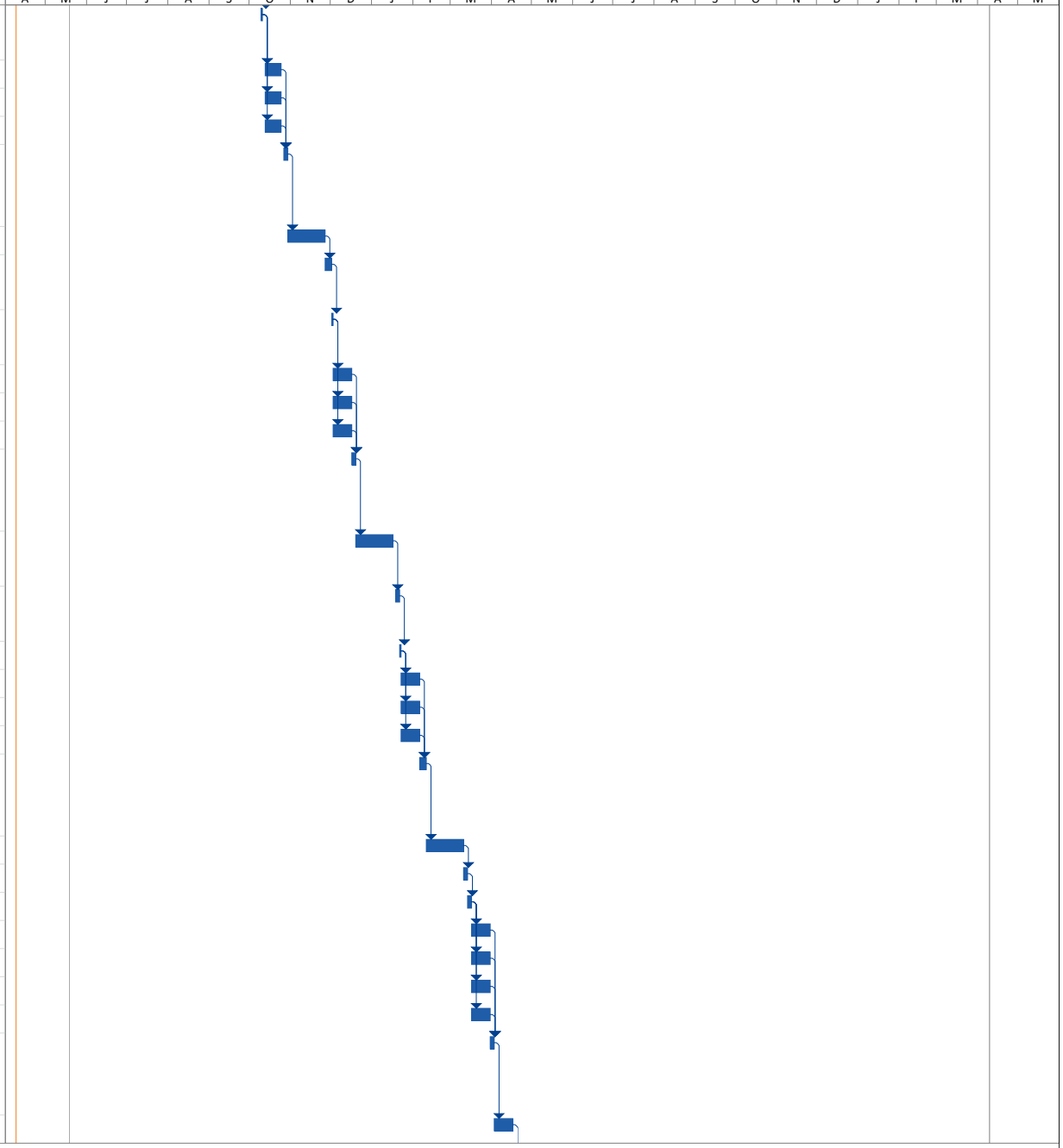
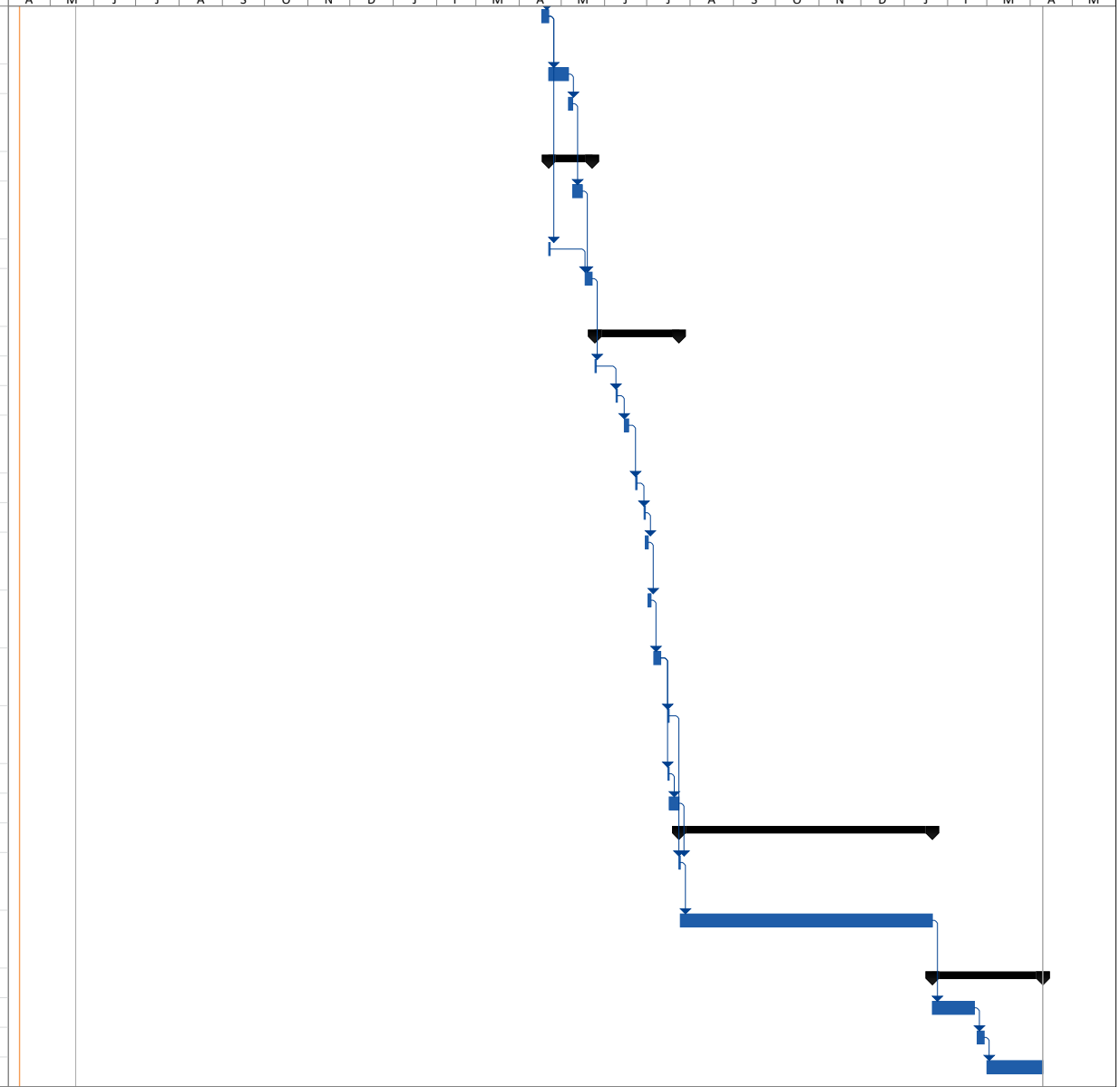


EXHIBIT 'A'

Typical DPMC Project - Random Selection of Design Consultant

ID	Task Name	Start	Finish	Duration
62	Final/Permit Submittal & Distribute for Review	Fri 4/17/26	Tue 4/21/26	3 days
63	Review Final/Permit Phase	Wed 4/22/26	Tue 5/5/26	10 days
64	Receive Final/Permit Phase Approval and Forward to	Wed 5/6/26	Fri 5/8/26	3 days
65	**Permit Acquisition Phase**	**Wed 4/22/26**	**Fri 5/22/26**	**31 days**
66	Prepare UCC Application, Bid Clearance & Submit Bid Package	Sat 5/9/26	Fri 5/15/26	7 days
67	Provide Funding for Construction	Wed 4/22/26	Wed 4/22/26	1 day
68	Secure Bid Clearance Including Funding Verification	Mon 5/18/26	Fri 5/22/26	5 days
69	**Advertise-Bid-Award Phase**	**Mon 5/25/26**	**Thu 7/23/26**	**60 days**
70	Advertise Project for Construction	Mon 5/25/26	Mon 5/25/26	1 day
71	Conduct Pre-Bid Meeting	Tue 6/9/26	Tue 6/9/26	1 day
72	Contractor Questions Due - Prepare and Issue Bulletin	Mon 6/15/26	Wed 6/17/26	3 days
73	Construction Bids Due - Open Bids	Tue 6/23/26	Tue 6/23/26	1 day
74	Conduct Post Bid Review Meeting	Mon 6/29/26	Mon 6/29/26	1 day
75	Prepare and Submit Recommendation for Award	Tue 6/30/26	Wed 7/1/26	2 days
76	Prepare and Submit Recommendation for Award	Thu 7/2/26	Fri 7/3/26	2 days
77	Prepare Contract and Schedule Award Meeting	Mon 7/6/26	Fri 7/10/26	5 days
78	Conduct Contract Award Meeting/Issue NTP	Thu 7/16/26	Thu 7/16/26	1 day
79	Sign/Seal UCC Permit Applications	Thu 7/16/26	Thu 7/16/26	1 day
80	Secure UCC Permit from DCA	Fri 7/17/26	Thu 7/23/26	5 days
81	**Construction Phase**	**Fri 7/24/26**	**Wed 1/20/27**	**181 days**
82	Conduct Construction "Kick-Off Meeting"	Fri 7/24/26	Fri 7/24/26	1 day
83	Complete Construction - Achieve Substantial Completion	Sat 7/25/26	Wed 1/20/27	180 days
84	**Project Close-Out Phase**	**Thu 1/21/27**	**Fri 4/9/27**	**79 days**
85	Complete Punch List	Thu 1/21/27	Fri 2/19/27	30 days
86	Close Out Construction Contract	Mon 2/22/27	Fri 2/26/27	5 days
87	Close Out Consultant Contract	Mon 3/1/27	Fri 4/9/27	30 days



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Typical DPMC Project - Random Selection of Design Consultant

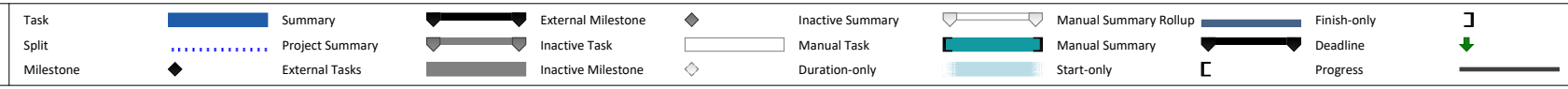

EXHIBIT 'A'

Project Site Location Map

Wastewater Treatment Plant

Monmouth Battlefield State Park

EXHIBIT 'B'

STATE OF NEW JERSEY
HONORABLE PHILIP D. MURPHY, GOVERNOR
HONORABLE SHEILA Y. OLIVER, LIEUTENANT GOVERNOR
ELIZABETH MAHER MUOIO, STATE TREASURER

Wastewater Treatment Plant Evaluation

Monmouth Battlefield State Park – Manalapan Township, New Jersey

Job No. 072302

October 2022

Draft

Office Location:
1 Centennial Avenue, Building C, Suite 201
Piscataway, New Jersey 08854

Office Contact:
Christopher Olson, P.E.
(856) 745 9234

COA #24GA28032500

GANNETT FLEMING

EXHIBIT 'C'

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EXHIBIT 'C'

1.0 EXECUTIVE SUMMARY

Monmouth Battlefield State Park is an 1,818-acre New Jersey State Park located in Manalapan Township, Monmouth County, New Jersey. The facility is located at Lot 60 Block 40 in Manalapan, New Jersey. The Park preserves the battlefield where the Battle of Monmouth took place and is listed on the US National Register of Historic Places, the US National Historic Landmark District, and the New Jersey Register of Historic Places.

Monmouth Battlefield State Park discharges sanitary wastewater generated by public restrooms associated with the operation of the State Park. Also, the Park discharges backwash from the potable water treatment plant which serves the State Park. Sanitary wastewater is collected and undergoes flow equalization, primary settling, biological treatment utilizing RBCs, and denitrification. Refer to the diagram in figure 1 for a plan of the waste treatment process. Wastewater disposal methods consists of subsurface disposal. All residuals generated at the facility currently managed off-site at an approved residuals management operation.

Operations are considered inefficient due to the original design capacity of the treatment plant being much larger than what the flow has been over the last five years. Gannett Fleming Inc. has been tasked to evaluate the treatment plant and come up with more efficient alternatives to treat the wastewater received from the bathroom and Visitor Center in the park.

During the initial “kick-off” meeting on May 18, 2022, with the NJDPMC staff, a number of facility and operational concerns with the WWTP were discussed. Options to address these concerns were included in the evaluation.

Gannett Fleming identified three alternatives that were evaluated to improve or retire portions of the facility. The alternatives are converting the treatment system to a septic tank, installing a grinder pump and lift station to connect to a nearby sewer system, and improving the treatment process. Each of these alternatives are discussed in detail herein.

With the evaluation, Gannett Fleming recommends Alternative 1. This will be the most efficient process for the flow that is present in the park. It is also the most cost-efficient alternative with

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construction costs at approximately $180,000. This alternative also has the lowest yearly maintenance if the facilities are to be well maintained and foreign materials are not introduced to the system. The existing treatment plant would need to be retired and the equipment can be removed. The building can then be used as storage for the park.

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2.0 FACILITY EVALUATION AND OPERATIONS REVIEW

2.1 Introduction

Monmouth Battlefield State Park is an 1,818-acre New Jersey State Park located in Manalapan Township, Monmouth County, New Jersey. The facility is located at Lot 60 Block 40 in Manalapan, New Jersey. The Park preserves the battlefield where the Battle of Monmouth was fought and is listed on the US National Register of Historic Places, the US National Historic Landmark District, and the New Jersey Register of Historic Places. The Park currently includes trails for biking, cross-country skiing, hiking, horseback riding and mountain biking. To educate guests about the historical relevance of the site, a Visitor Center is open five (5) days per week.

The Park collects, treats, and discharges sanitary wastewater generated by public restrooms and the Visitor Center. Sanitary wastewater is collected and undergoes flow equalization, primary settling, biological treatment utilizing RBCs, and denitrification. Refer to the diagram in figure 1 for a plan of the waste treatment process. Wastewater disposal methods consists of subsurface disposal. All residuals generated at the facility are managed off-site at an approved residuals management operation.

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Flow

Primary Settling Tank

Equalization

Clarification/
Biological Treatment

Denitrification

Discharge to Disposal Fields

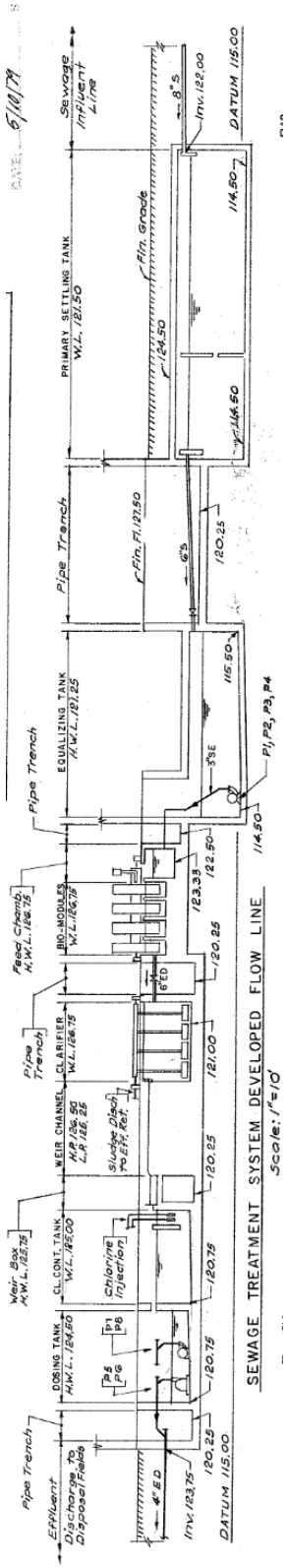

Figure 1: Wastewater Treatment Process.

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Operations are considered inefficient due to the original design capacity of the treatment plant being much larger than what the flow has been over the last five years. Gannett Fleming Inc. has been tasked to evaluate the treatment plant and come up with more efficient alternatives to treat the wastewater received from the bathroom and Visitor Center in the park.

During the evaluation of the alternatives to improve or retire sections of the plant effluent, several steps were conducted to complete the study. A review of the plant's design and current flow was undertaken. Table 1 shows the average flow from the past 5 years. In 2019 there was an issue with the flow meters causing a flow almost doubled compared to the other years. Table 2 below shows the fixtures that contribute to the wastewater flow. A plant that falls short of the design flow will be difficult to effectively operate. The purpose of this evaluation is to determine what the average flow for the treatment plant is and help recommend which of the 3 alternatives would be the best selection for this application.

Table 1: Wastewater Flow from the past 5 years.

Monmouth Battlefield Wastewater Flows		
Year	**Flow (gal)**	**GPD**
2017	56,007	153
2018	56,006	153
2019*	178,647	489
2020	51,813	141
2021	83,430	228

Table 2: Fixture Count for the Park.

Fixture Count	
Fixture	**No.**
Urinal	5
Toilet	20
Sink	24
Shower	1

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Another way to get the average flow per day is doing a calculation based on the average visitors per day and multiplying it by an average gpd number found in a sewage flow rate estimating guide. The calculation for the visitor center at Monmouth Battlefield is X*5=Y.

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3.0 PLANT IMPROVEMENT OR RETIREMENT STRATEGIES

3.1 Introduction

This evaluation considered three alternatives to improve or retire portions the plant effluent to reduce the plant capacity accordingly. The alternatives are:

- Alternative 1 – Septic Tank – which is the process of collecting influent waste using a septic storage tank and a leaching bed as a treatment procedure.
- Alternative 2 – Grinder Pump and Lift Station – which is the use of a grinder pump near the plant site to pump the influent wastewater to a new connection made in the city's wastewater system.
- Alternative 3 – Improve Treatment Process - which is using the existing plant that is in the park and resizing the equipment in it to handle the current lower flows in the system.

Each of these techniques, including the positive and negative aspects of each, will be discussed below.

3.2 Alternative 1 – Septic System

This alternative consists of converting the already existing treatment system to a septic tank. This will include removing the existing equipment in the treatment plant, changing the primary settling tank into a septic tank, and rerouting the effluent lines from the treatment plant to the septic tank.

The large portion of this work would be in the removal of the existing treatment plant equipment and converting the existing primary settling tank into the septic tank needed for this system. The existing tank is 40-ft long, 16.5-ft wide and 9-ft tall. The volume for this tank would be 5,940 cubic feet. Figure 2 shows the size of the existing primary settling tank. There are a few requirements that need to be followed for compliance to the NJ DEP and Health Department.

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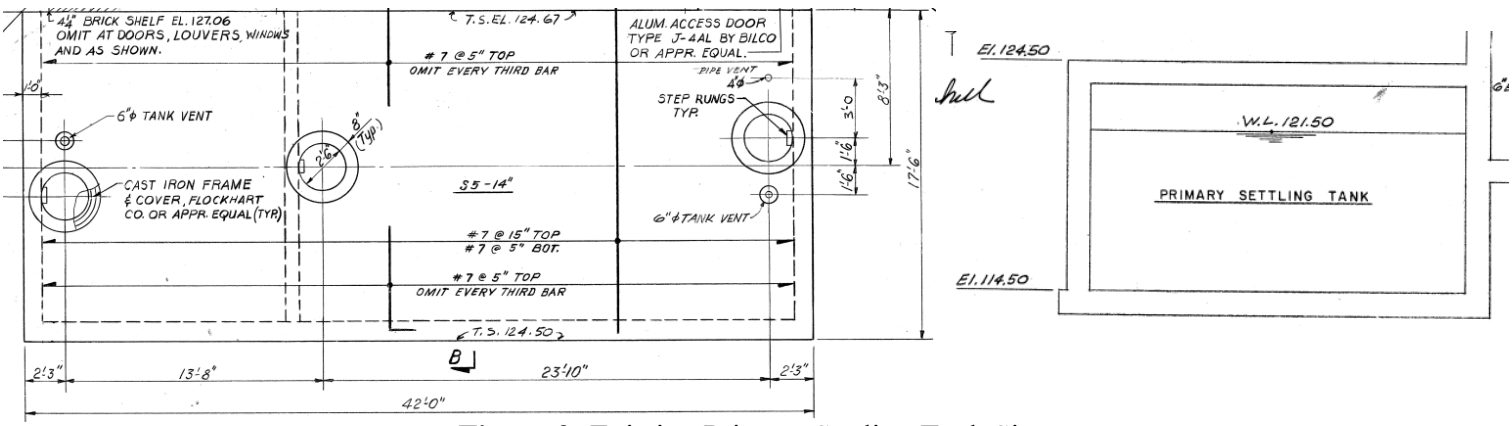

Figure 2: Existing Primary Settling Tank Size.

This alternative will have little to no maintenance involved with the septic tank. Septic tanks can run for years without any maintenance if no clogs form from unknown debris that should not be introduced into the waste system. A filter should be installed in the effluent pipe so that if any solids do get mixed in with the liquid effluent, it does not clog the rest of the system running to the discharge fields. The filter can be easily removed from the top of the effluent pipe and cleaned with a hose. Figure 3 shows an example of an effluent filter.

Figure 3: Effluent Septic Tank Filter.

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The solids are handled at the bottom of the tank by microorganisms that decompose the solids. If to many solids are introduced to the system, every couple of years, the septic tank might need to be pumped by a local contractor that pumps and hauls the contents of the septic tank. Septic tanks should be inspected every 3 to 5 years. Figure 3 shows a model of a septic tank.

Figure 3: Typical Septic Tank Diagram.

The county Health Department requires any septic system that has a daily flow under 2,000 gallons is handled by the local health department. Anything over 2,000 gallons per day (gpd) is handled by the NJDEP. Also, a New Jersey Pollution Discharge Elimination System (NJPDES) Permit will need filled out if the park has that high of a flow. Based on historical flow records for the treatment plant, the max over the last 5 years was under 500 gpd which can be seen in table 1. This means the local health department will handle the septic tank system proposed in this alternative.

3.3 Alternative 2 – Grinder Pump and Lift Station

A new lift station will be installed and shall be in accordance with N.J.A.C. 7:14A-23.10, a grinder pump would be installed, and like the first alternative the equipment would be remove from the treatment plant. A lift station would be needed since the wastewater in the park flows downhill to the existing sewage plant. The existing systems to connect to are both at higher elevations than the treatment plant.

With the new lift station, a typical Grinder Pump would have to be used to connect to the existing system. This is so no large solids would get through to clog the system.

The anticipated flows will need to be calculated to ask the existing wastewater service system if they have the willingness to serve the additional flow from the park.

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A new force main would have to be installed to running from the lift station to the existing sewer system. This would include trenching and placing a new force line of approximately 3,500 LF from the lift station to the existing sewer system that would be located east of the park at the end of Hedgerow Lane. Another option that can be considered is a little shorter at approximately 3,000 LF and the connection would be located on Yates Road. Sewer service has not yet been confirmed in this area but could be investigated as an option during the design. This option would need to include an easement to run through a customer's property. Both options include roadwork due to crossings and the connections to the existing system and will be operated by Western Monmouth Utilities Authority (WMUA). The connection will require permitting and a grinder pump station system to connect to the wastewater system. Figure 4 shows approximately where the locations of the wastewater lines could be located.

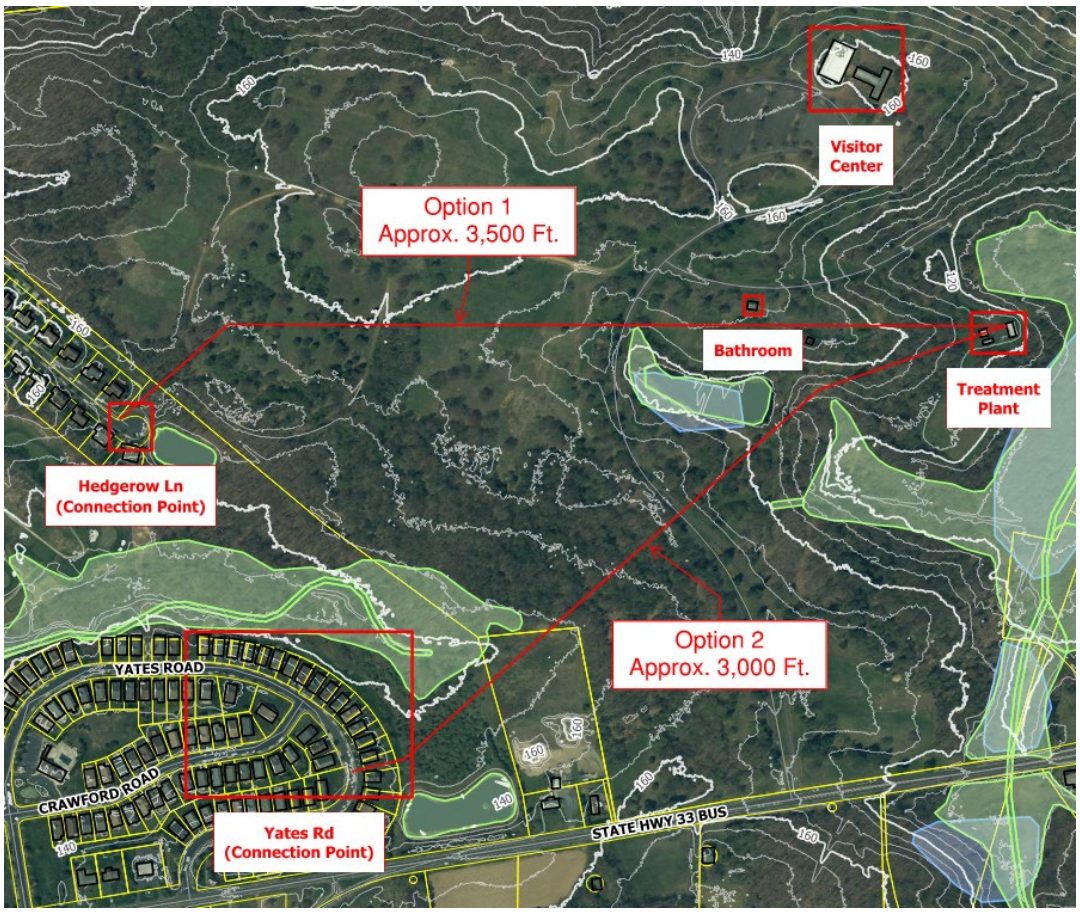

Figure 4: Location of Wastewater Lines for Alt. 2.

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These routes were chosen as to not disturb/run through any of the wetlands within the area or cross any bodies of water or streams. Option 1 has 1 road crossing and then some roadwork at the connection point on Hedgerow Lane to make the connection to the existing system. Option 2 has a double road crossing, 2 easements since it goes through 2 different properties, and possible road work depending on where the connection would be on Yates Road.

If this alternative is chosen, more research can be done to possibly find a better location for the lift station to shorten the distance of the force main. This will also change the sizing of the pumps included in the lift station since the elevation difference will be more minimal with the relocation of the lift station.

Choosing the correct grinder pump will be part of this alternative as well. Due to the distance being traveled, a preliminary calculation was done, based off NJ guidelines for State Parks, and it was found that for the 3,500 ft option would need at a minimum 186 psi of head pressure required. That is not including the elevation change or any of the bends in the piping. That is a large pressure requirement for the extension which would require a larger grinder pump, adding more cost to the project.

Due to the distance being traveled for this alternative, the vendor told us that due to the pressure needed in the wastewater line, a pump would need to be installed at the treatment plant and then run to two lift stations. These are needed to travel the distance suggested in this alternative. Preliminary efforts have concluded that the wastewater line would need to be 2 to 3-inch HDPE.

This alternative would include more annual maintenance. The lift station would need to be checked monthly to make sure that the system is running correctly, and that clogs are not beginning to form. A type of security system would need to be installed with the system to warn the operator if there is a problem so that the system is not out of service for long periods of time.

With the equipment that is involved the additional pump stations, power will need to be run to each station. Additional power would either need to be run above or underground through the state park trails and woods for each station. This adds additional costs for this alternative.

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3.3.1 *NJDEP Requirements for Retiring Treatment Plant*

Upon selection and completion of alternatives 1 and 2, there are NJDEP requirements that need to be followed to retire the existing wastewater treatment plant. This information was found in subchapter 23, Title 7of the New Jersey Administrative code.

On or before 60 calendar days prior of taking the existing plant out of service, the permittee needs to submit the date the plant will stop operating, the date the pipes are sealed, plans of the new application for the wastewater flow, plans of elimination of existing equipment, verification of no lines in the collection system crossing (receiving both sanitary and stormwater), the name and license of the operator, and show proof of a request to the Water Compliance and Enforcement Element for a site inspection.

Proper removal of all residual materials within the retired plant is required within 180 calendar days after the facility is taken out of service. Proof of removal needs to be submitted to the Watershed Permitting Element within 30 calendar days after the residuals are removed.

The permittee must also complete a "Certification of Closure" once the treatment plant is retired. This certification needs to be signed in front of a Notary Public and then sent to the Watershed Permitting Element.

A final site inspection of the treatment plant needs to be scheduled once all the steps are completed above to verify that the pipes are sealed that are required in the treatment plant and that all the residual materials were removed. An "Application for Termination" from the New Jersey Pollutant Discharge Elimination System will need to be completed and submitted to the Division of Water Quality, Bureau of Permit Management with a copy to the appropriate permitting bureau.

3.4 Alternative 3 – Improve Plant Process

Alternative 3 involves two different options. The first is demolishing the current treatment plant and then building a smaller treatment plant that can efficiently handle the low flow that is produced

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by the park facilities. This can have construction costs of a minimum of $6,000,000 for demo and construction of the new facility. This option would improve plant efficiency but does not meet the client's objectives of lowest capital or significantly reduce the maintenance and price of the treatment plant. This option was eliminated for that reason; however, it could be revisited if necessary.

Option 2 is the "Do Nothing Option". The existing plant would be left as is. This is another option that was not wanted from the client but depending on responses from the local county Health Department and the DEP, this may be an option that is needed. The NJDEP was contacted multiple times for this study but never returned an answer for the retirement of the wastewater treatment plant.

Gannett Fleming has decided that since the client's original scope was to retire the treatment plant, estimates and conclusions for alternative 3 will not be included in the rest of the study.

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4.0 CONCLUSIONS AND RECOMENDATIONS

4.1 Estimated Capital Costs Comparison

Table 3 presents the estimated capital costs for Alternative 1. This estimate consists of the construction of the project, removal of the equipment from the treatment building, site preparation, the tank conversion, and the grinder pump for the system.

Table 3 – Septic Tank Cost Estimate.

Description	Cost
Mobilization and Demobilization	$14,000.00
Equipment Removal/Plant Retire	$75,000.00
PVC Piping	$3,200.00
Pumping Equipment	$15,000.00
Septic Tank (Cleaning & Rehab)	$25,000.00
Inflation (6%)	$7,932.00
Overhead and Profit (10%)	$13,220.00
Contingency (20%)	$26,440.00
Total	**$180,000.00**

Table 4 presents the estimated capital costs for Alternative 2. This estimate consists of the construction of the project, removal of the equipment from the treatment building, site preparation/excavation, pipe/accessory installation, and the grinder pump for the system.

EXHIBIT 'C'

Table 4 – Lift Station Cost Estimate.

Description	Cost
Mobilization and Demobilization	$68,000.00
Equipment Removal/Plant Retire	$75,000.00
Site Preparation/Restoration	$50,000.00
3,500 LF of 3" HDPE	$87,500.00
Furnish and Install Stream Crossing	$15,000.00
Permanent Pavement Replacement	$3,000.00
Install Connection to Existing Main	$10,000.00
Lift Stations	$255,000.00
Inflation (6%)	$32,430.00
Overhead and Profit (10%)	$54,050.00
Contingency (20%)	$108,100.00
Total	**$770,000.00**

4.2 Recommendations Summary

Gannett Fleming recommends Alternative 1. Alternative 1 will be the most effective solution for the owner. This alternative has the lowest yearly maintenance if the facilities are well maintained, and foreign materials aren't introduced to the system. The septic tank should be inspected every 3 years and costs approximately $300 to $600 to pump out if it is needed. The existing treatment plant would need to be retired and the equipment can be removed. The building can then be used as storage for the park. Permitting agencies have not conveyed concerns about this approach.

The NJDEP was called and emailed for this study for information on retiring the treatment plant but there were no return calls or emails. A meeting with the NJDEP should be scheduled if this alternative is taken to the design phase.

The estimated total project cost of converting the existing sewage system into a septic system is approximately $180,000. Removal of equipment, rerouting effluent piping, new pumping equipment, and septic tank cleaning and rehab is included in the total pricing involved for this alternative.

EXHIBIT 'C'