

East Side Villages Wastewater Collection System Project: Package 5, Phase II

Scope of Work and General Requirements

Package 5 of the East Side Villages Wastewater Collection System Project (Packages 1-5), will benefit the villages of Leloaloa, Aua, and Onesosopo, located on the Island of Tutuila in the Territory of American Samoa, by expanding the sewer collection system and providing treatment at the Utulei wastewater treatment plant. This project will enhance the conservation of both groundwater aquifers and the local marine environment by removing existing cesspools and failing septic systems through connections to a new wastewater collection system.

Submitted by the

American Samoa Power Authority

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Background

A study conducted in 2007 reported that “water quality monitoring in the streams and near shore areas of Leloaloe, Aua, and Onesosopo on the east side of the Pago Pago Harbor has clearly indicated chronic, ongoing, and long-term bacterial contamination” (GDC. Small Community Wastewater Facilities Plan for the Villages of Aua, Leloaloe, and Onesosopo in American Samoa, 2007). As a result American Samoa Power Authority (ASPA) initiated a project to reduce the amount of untreated wastewater released in the identified areas.

The East Side Villages Wastewater Collection System Project (Packages 1-5) is a comprehensive plan to extend the centralized sewer collection system feeding the Utulei wastewater treatment plant (WWTP). The collection system expansion will include the Villages of Leloaloe, Aua and Onesosopo which are collectively referred to as the “east side villages” or ESV. Packages 1, 2, 3 and 4 involved works to improve and upgrade the existing wastewater infrastructure in preparation for additional wastewater flow resulting from the collection system expansion, these four Packages are complete.

Project Description

The ASPA is moving forward with the fifth and final package of the East Side Villages Wastewater Collection Project. This Project encompasses the extension of the sewer collection system including, but not limited to; the construction of new sewage lift stations, force mains, sewer mains, sewer laterals and service connections to existing facilities within the project boundary, decommissioning of existing septic tanks and cesspools, new sewer manholes, concrete works, metal works, demolition, relocation, replacement, restoration work, and electrical work.

The work shall begin at the end of the existing system in Aua (Phase I) and extend to Onesosopo, Pago Pago. It is the intent of this project to provide service connections to each existing home within the construction area and interconnect to the tie-in location for Package #5 Phase I. The plans reflect each house in place at the time of the design survey in 2009.

All improvements will be planned and performed as per signed contract, approved construction plans, specifications, and all applicable documents pertaining to the East Side Villages Wastewater Collection System, Sewer Extension Project (Package 5, Phase II). The Contractor will take good measures to implement Best Management Practices (BMP) during and at all times of the construction.

As part of this Project the contractor shall prepare and implement, as needed, a Total Petroleum Contingency (TPH) Plan. A partnering relationship is strongly encouraged

amongst all applicable parties. Fuel oil contamination has been identified within the boundaries of this Project. The identified contamination is a result of a fuel tank farm and associate pipeline utilized by the U.S. Navy during their presence in American Samoa. Several remedial investigations and activities have been conducted in these areas, it is anticipated that contaminated materials will be encountered.

Requirements:

This section provides statement of requirements needed to make this project successful complying with state and local regulations. It includes but not limited to bid requirement, payment method, permits, safety, quality and productivity.

Section 1: Inspection of Work Site

1. The Contractor is expected to visit and thoroughly inspect the Project Site and become familiar with field conditions including accessibility and physical obstructions.
2. Familiarize itself with the survey, including the location of all existing buildings, utilities, conditions, street, equipment, components and other attributes having or likely to have an impact on the Project;
3. Should there be omissions or discrepancies in the plans and specifications, or discrepancies from actual site conditions, bring them to the attention of the ASPA Procurement Manager ten (10) working days in advance of the date of bid opening so that corrections or clarifications can be made.
4. Bid submission indicates familiarity with, and acceptance of, field conditions. No claim for additional compensation will be allowed which is based upon a misunderstanding or lack of knowledge, examination, inspection and/or testing of any of the above items by the Offeror.

Section 2: Mobilization and Demobilization .

The work consists of the mobilization and demobilization of the contractor's forces and equipment necessary for performing the work required under the contract. It does not include mobilization and demobilization for specific items of work for which payment is provided elsewhere in the contract.

Mobilization shall include all activities and associated costs for transportation of contractor's personnel, equipment, and operating supplies to the site; establishment of offices, buildings, and other necessary general facilities for the contractor's operations at the site; permits, premiums paid for performance and payment bonds including coinsurance and reinsurance agreements as applicable; and other items specified in the contract documents.

Demobilization shall include all activities and costs for transportation of personnel, equipment, and supplies not required or included in the contract from the site;

including the disassembly, removal, and site cleanup of offices, buildings, and other facilities assembled on the site specifically for this contract.

Measurement for payment shall be made as a lump sum (LS). Payment will be made as the work proceeds, after presentation of paid invoices or documentation of direct costs by the contractor showing specific mobilization and demobilization costs and supporting evidence of the charges of suppliers, subcontractors, and others. When the total of such payments is less than the lump sum contract price, the balance remaining will be included in the final contract payment. Payment of the lump sum contract price for mobilization and demobilization will constitute full compensation for completion of the work. Payment will not be made under this item for the purchase costs of materials having a residual value, the purchase costs of materials to be incorporated in the project, or the purchase costs of operating supplies.

Section 3: EPA's 2017 Construction General Permit (CGP).

1. Fifteen (15) days after receipt of the Notice to Proceed, Contractor is required to secure and comply with the requirements as outlined but not limited to the following;
 - a. Develop a Stormwater Pollution Prevention Plan (SWPPP). Refer to template in Attachment - 1 of this SOW.
 - b. Complete and submit a Notice of Intent (NOI) to EPA via the NPDES eReporting Tool (NeT).
 - c. Install and maintain erosion and sediment controls throughout the entire construction project so they operate effectively to control stormwater discharges.
 - d. Implement pollution prevention controls to minimize the discharge of pollutants from stormwater and spilled or leaked materials.
 - e. Conduct inspections on the site a) once every 7 calendar days, or b) once every 14 calendar days and within 24 hours of a 0.25-inch storm event.
 - f. Take corrective action to address any issues with stormwater controls or discharges.
 - g. Keep SWPPP up-to-date to reflect current conditions on site.
 - h. Comply with any state, tribal, or territory-specific requirements in Part 9 of the permit.
 - i. Keep a copy of the permit and all associated records on site during the entire construction project.
 - j. Submit a Notice of Termination (NOT) once your site is permanently stabilized or when control of the site has been transferred to another operator.
 - k. Retain all records for at least 3 years from.
2. No measurement is to be made for this section. All cost for everything necessary for the prosecution and completion of the requirements of the 2017CGP including but not limited to; a.) preparation & submission of USEPA approved NOI to ASPA; b.) compliance with federal requirements such as Endangered Species Protection, Historic Preservation or Section 106 and Safe Drinking Water Act; c.) design, preparation, training, installation, inspection and maintenance of Erosion

and Sediment Controls and Pollution Controls (refer to SOW Attachment - 1: SWPPP TEMPLATE) shall be considered incidental to the construction and shall be included in the costs of other items of the work involved in the project.

Section 4: Potholing

The work shall consist of potholing existing underground utilities prior to construction. The Contractor shall perform exploratory excavations as required to collect as-built information. The Contractor shall verify the depth, location, alignment, size, and material of existing underground utilities or structures either specifically called for or not on the plans. All data should be recorded and included in the as-built drawings.

The Contractor shall use the information obtained by potholing to confirm construction/installation can be carried out as per design and specifications, otherwise contractor is expected to utilize its utmost efforts and expertise to make changes at no additional cost and for ASPA approval. Contractor's proposal to alter/revise the design should minimize the overall cost.

Measurement for payment shall be made as a lump sum (LS). Full compensation include a lump sum cost for all equipment, labor, and materials to locate the existing utility, verify the required information, backfill the excavation, and restore the surfacing to a temporary condition, suitable for traffic as required. Permanent restoration of the disturbed surface will be paid under applicable other bid items.

Section 5: TOTAL PETROLEUM HYDROCARBONS IMPLEMENTATION

The work consists of excavation, documentation, sampling, temporary storage, treatment, survey and disposal of contaminated material (soil and water) as specified in Section 01 35 45.00 10 - CHEMICAL DATA QUALITY CONTROL and Section 02 61 13 TOTAL PETROLEUM HYDROCARBON (TPH) CONTINGENCY PLAN of the Technical Specifications. Payment must include a lump sum cost of the following but not limited to;

1. Onsite storage of contaminated material, contaminated soil/fill matrix must be placed on polyurethane sheeting and completely covered with the same material at the end of work.
2. Biocell for heavily contaminated soil remediation. This should be a large lined and covered area for storing contaminated soils after co mingling with organic matter to facilitate bacteriological breakdown of the petroleum components.
3. Hauling of material to biocell. Truck must not leak or release any contaminated material in route. In extreme cases, the tires of the trucks leaving contaminated areas must be washed.
4. Sampling according to the TPH Plan and approved by the ASPA and the AS-EPA.
5. Osite screening of material with visual and/or olfactory evidence of contamination with a photo ionization detector (PID).
6. Safety compliance. Staff in contact with contaminated materials must adhere to the proper precautions as outlined in the TPH Plan. Contaminated materials must be fenced off to impede access to the general public.

7. Contaminated water in trenches must be containerized and treated prior to an approved discharge. These methods must be outlined in the TPH Plan with a sampling plan to ensure that discharged water is free of contaminants. Contaminated materials must be fenced off to impede access to the general public.
8. Sampling. Plans must be approved by ASPA and the AS-EPA. A higher frequency of sampling will be required at the start of the discharge and a reduced sampling schedule can be implemented upon acceptable sample results.
9. Closure Reports. Report shall be prepared and submitted within 60 calendar days of completing work at each site (refer to Section 02 61 13 -7, 3.8)

No measurement is to be made for this section. All cost for everything necessary for the prosecution and completion of the requirements of this section shall be considered incidental to the construction and shall be included in the costs of other items of the work involved in the project.

Section 6: Sanitary Sewer - GRAVITY LATERALS

This section applies to gravity sewer lateral construction and shall consist of furnishing all labor, materials and equipment for the complete installation of sewer pipe and appurtenances as specified in the construction drawings and in SECTION 31 23 00.00 20 - EXCAVATION AND FILL, SECTION 32 11 23 - AGGREGATE BASE COURSE, SECTION 33 05 23.19 - TRENCHLESS EXCAVATION USING MICROTUNNELING, SECTION 33 30 00 - SANITARY SEWERS.

This includes but not limited to survey, notification of and coordination with the public/Landowners, safety & traffic controls, site clearing/demolition/relocation/saw cutting of existing asphalt/concrete pavement, sidewalk, curb & gutter, gravel driveway, fences, rockwall, plants/grass, trees, power/communication line/pole, other utilities and structures, haul/disposal of waste materials, crop damaged payment, excavation/trenching, Directional Drilling or Microtunneling, dewatering, Jacking and Bore Pipe under existing wall/structure, shoring/sheet piling, pipe bedding & compaction, slope/alignment checking and testing, pipe laying including all necessary fittings, chimneys, clean out with collar or cover , pipe casing/anchoring and RC Jacketing, backfilling, filter fabric envelope, tracer wire, warning tape, pipe cleaning & flushing, leak & pressure testing, cctv inspection, connecting to new/existing sewer system, site & pavement/driveways restoration to the same or better than the original condition.

Measurement shall be in linear feet (LF). Contractor shall be paid with the applicable unit price tendered not to exceed amount for the actual quantity incorporated in or removed from the work and such quantities must be supported by field measurement statements verified and signed by ASPA representative. Signed statement shall be included as an attachment to pay application request.

Section 7: Sanitary Sewer - GRAVITY MAIN

This Section includes the furnishing and installation of sewer gravity mains to the lines and grades indicated on the drawings and as specified in SECTION 31 23 00.00 20 - EXCAVATION AND FILL, SECTION 32 11 23 - AGGREGATE BASE COURSE, SECTION 33 05 23.19 - TRENCHLESS EXCAVATION USING MICROTUNNELING, SECTION 33 30 00 - SANITARY SEWERS.

This includes but not limited to survey, notification of and coordination with the public/Landowners, safety & traffic controls, site clearing/demolition/relocation/saw cutting of existing asphalt/concrete pavement, sidewalk, curb & gutter, gravel driveway, fences, rockwall, plants/grass, trees, power/communication line and pole other utilities and structures, haul/disposal of waste materials, crop damage payment, excavation/trenching, dewatering, Jacking and Bore Pipe under existing wall/structure, Directional Drilling or Microtunneling, shoring/sheet piling, pipe bedding & compaction, slope/alignment checking and testing, pipe laying including all necessary fittings, chimneys, pipe casing/anchoring and RC Jacketing, backfilling, filter fabric envelope, tracer wire, warning tape, pipe cleaning & flushing, leak & pressure testing, cctv inspection, connecting to new/existing sewer system and restore surfacing to a temporary condition, suitable for traffic as required. Permanent restoration for DPW asphalt & concrete roads and all features will be paid under applicable other bid items.

Measurement shall be in linear feet (LF). Contractor shall be paid with the applicable unit price tendered not to exceed amount for the actual quantity incorporated in or removed from the work and such quantities must be supported by field measurement statements verified and signed by ASPA representative. Signed statement shall be included as an attachment to pay application request.

Section 8: Sanitary Sewer - FORCE MAIN

This Section includes the furnishing and installation of sewer force mains to the lines and grades indicated on the drawings and as specified in SECTION 31 23 00.00 20 - EXCAVATION AND FILL, SECTION 32 11 23 - AGGREGATE BASE COURSE, SECTION 33 05 23.19 - TRENCHLESS EXCAVATION USING MICROTUNNELING, SECTION 33 34 00 SEWER FORCE MAINS.

This includes but not limited to survey, notification of and coordination with the public/Landowners, safety & traffic controls, site clearing/demolition/relocation/saw cutting of existing asphalt/concrete pavement, sidewalk, curb & gutter, gravel driveway, fences, rockwall, plants/grass, trees, power/communication line and pole other utilities and structures, haul/disposal of waste materials, crop damage payment, excavation/trenching, dewatering, Jacking and Bore Pipe under existing wall/structure, Directional Drilling or Microtunneling, shoring/sheet piling, pipe bedding & compaction, slope/alignment checking and testing, pipe laying including all necessary fittings, thrust block, pipe casing/anchoring and RC Jacketing, air relief valve assembly, bridge crossing, backfilling, filter fabric envelope, tracer wire, warning tape, leak & pressure testing, connecting to new/existing sewer system and restore surfacing to a temporary condition, suitable for traffic as required. Permanent restoration for DPW asphalt & concrete roads and all features will be paid under applicable other bid items.

Measurement shall be in linear feet (LF). Contractor shall be paid with the applicable unit price tendered not to exceed amount for the actual quantity incorporated in or removed from the work and such quantities must be supported by field measurement statements verified and signed by ASPA representative. Signed statement shall be included as an attachment to pay application request.

Section 9: Sanitary Sewer - MANHOLES

This Section includes the furnishing and installation of sewer manholes to the lines and grades indicated on the drawings and as specified in SECTION 03.05.15 - PORTLAND CEMENT CONCRETE, SECTION 03 40 00 - PRECAST CONCRETE, SECTION 33 30 00 - SANITARY SEWERS.

This section shall include the excavation and construction of a new standard manhole or drop manhole as shown in the plans and specifications, frame and cover, inflow protector, dewatering, the connection to pipe, the connection to new/existing sewer system, drop connection, concrete encasement, bedding, including imported backfill, aggregate base material, compaction, lining of the interior wall, hydrostatic testing, and all incidentals, in place complete, traffic control, temporary and permanent resurfacing, including asphalt or concrete pavement reconstruction to restore the existing improvements. It shall also include temporary shoring, sheeting, and bracing (which may include sheet piling), site clearing, crop damage payment as necessary for the execution and completion of the work specified in the plans and specifications.

Measurement for payment shall be made as Each (EA) regardless of depth. Contractor shall be paid with the applicable unit price tendered not to exceed amount for the actual quantity incorporated in or removed from the work and such quantities must be supported by field measurement statements verified and signed by ASPA representative. Signed statement shall be included as an attachment to pay application request.

Section 10: Package Sewage Lift Stations

This section includes furnishing and installation of complete electric powered sewage pump stations complete with all elements required for a fully functional lift station with Variable Frequency Drive as indicated on the drawings and as specified in SECTION 33 32 13.13 - PACKAGED SEWAGE LIFT STATIONS, WET WELL TYPE.

Contractor is responsible for survey, notification of and coordination with the public/Landowners, safety & traffic controls, site clearing & restoration, furnishing, installation, testing, and commissioning all pump station components enumerated but not limited to;

- A. Lift Station #4: Excavation, dewatering, steel sheet piles, backfilling, compaction, prefabricated concrete well, 8' Ø, 26.71' overall depth, duplex pump, 2-20 hp submersible pumps, 230 volts, 3 phase, NEMA 6P, stainless steel enclosures, stainless steel disconnect, steel sheet piles, pre- fab concrete valve, flow meter, Pig launch vault, electromagnetic flow meter and all incidentals including finishes, in place complete. Unit shall be similar to as manufactured by Romtec Utilities or approved equal. Include start up, O&M manuals, and full training.
- B. Lift Station #5: Excavation, dewatering, steel sheet piles, backfilling, compaction, prefabricated concrete well, 8' Ø, 20.00' overall depth, duplex pump, 2-5 hp submersible pumps, 230 volts, 3 phase, NEMA 6P, stainless steel enclosures, stainless steel disconnect, steel sheet piles, pre- fab concrete valve, flow meter, Pig launch vault, electromagnetic flow meter and all incidentals including

- finishes, in place complete. Unit shall be similar to as manufactured by Romtec Utilities or approved equal. Include start up, O&M manuals, and full training.
- C. Lift Station #6: Complete system startup, testing and training.
- D. Mechanical & Piping Works: Each Lift Station shall be provided with piping all mechanical works as as specified in the plans & specification which include but not limited to Pump base installation, guide rail installation, SS304 discharge pipe installation, SS TRASH BASKET, valve vault piping, flow meter piping, pig launch piping, pump installation, Electric SS316 davit crane installation and Testing.
- E. SPARE PARTS. In addition to the equipment required as shown in the Drawings and as specified in the Contract Documents, furnish ASPA with spare parts for each lift station station as listed below:
1. 2 ea FLYGT Basic Repair Kits
 2. 2 ea Tilting bal mercury switches
 3. 2 ea Sets of wear rings
 4. 8 ea Sets of zinc anodes
 5. 2 ea – Fluid Leakage Sensor (FLS) Switch
 6. 2 ea – Flygt MiniCAS
 7. 2 ea – Impeller
 8. 2 ea – Impeller Sleeve nut
 9. 2 ea – Stator
 10. 4 ea – Seal Sleeve (grommet)
 11. 1 ea – Danfoss VFD
 12. 1 ea – FLYGT Mix Flush Valve Model 4901
- F. CONTROL BUILDING: Each Lift Station shall be provided with a shed which include works such as but not limited to, Foundation works, Electrical Rough-in, Formworks, Concrete works & testing, Masonry works, Rebar works, Finishing & painting works, Bollards, Site grading & improvement (refer to Electrical Panel Shed Details & Site Plan).
- G. ELECTRICAL WORKS: Each Lift Station shall be provided with complete and functional electrical works as specified in the plans & specification which includes but not limited to, Installation of Meter Socket, Ct Can, Main Control panel, manual transfer Switch, Circuit Breaker in NEMA 4X SS box, VFDs, Flow meters, Floodlights, Transformer Pad, Wirings, Sitework for Primary and Secondary Power, PVC ducting including marking & road cut, trenching, dewatering, concrete encasement, backfilling and compaction, marker tape and bedding, in place complete. It shall be the contractor's responsibility to pay and secure Service Order to ASPA Customer Service for Inspection and installation of Primary line cables/wiring, supply & installation of pad mounted transformer, DPW Inspection, installation of Meter and connecting to the main grid by T&D-ASPA.
- H. Water Utility & Wash basin: Each Lift Station shall be provided with complete and functional water supply and wash basin. ASPA standard design for wastewater lift station will be provided to contractor. It shall be the contractor's

responsibility to pay and secure Service Order to ASPA Customer Service for Inspection and installation of new water meter and connecting to water main. Measurement for payment shall be made as a lump sum (LS). Payment will be made as the work proceeds, after presentation of paid invoices or documentation of direct costs and other supporting evidence of the charges of suppliers, subcontractors, and others. When the total of such payments is less than the lump sum contract price, the balance remaining will be included in the final contract payment.

Section 11: Chain Link fence and Gate

This section includes furnishing and installation of complete fencing as indicated on the drawings and as specified in SECTION 32 31 13 - CHAIN LINK FENCES AND GATES. Contractor is responsible for site clearing & restoration, furnishing & installation of fence and gate assembly, hardware and accessories, concrete footing and tie beam and all other features necessary to complete the requirement of this section.

Measurement shall be in linear feet (LF). Contractor shall be paid with the applicable unit price tendered not to exceed amount for the actual quantity incorporated in or removed from the work and such quantities must be supported by field measurement statements verified and signed by ASPA representative. Signed statement shall be included as an attachment to pay application request.

Section 12: House Lateral Connections

This section shall cover the complete costs of providing all labor, equipment and materials required to complete the work specified in the contract documents and shall include, but not be limited to the following: information dissemination to stakeholders, excavation, dewatering, install 2-way cleanout and T-fittings(provision for owners VTR), haul/disposal of waste materials, installation, laying and joining of pipe and fittings, bedding, placement and compaction of bedding and backfill materials, connection to existing and new structure/houses or appurtenances including all outlet waste pipe (sink, drain, etc), abandonment of existing piping including terminating and plugging or removal of existing piping, protection of existing utilities, cleaning, testing, cctv inspection, and any other items necessary to accomplish the work.

This also includes decommissioning/removal of existing cesspool/septic tanks, including siphoning of solid and liquid contents of the tanks, excavation, backfilling, compacting, and disposal, in place complete. Deliver ASPA installed Septic Tanks to ASPA Tafuna compound thoroughly cleaned and suitable for storage and reuse as mark out in the construction drawings or as instructed by the APE. The contractor shall provide restoration in all areas which are impacted by construction activities. Restoration work shall meet or exceed the original condition to the satisfaction of the property owner involved at the Contractor's own expense

Measurement shall be per each (EA). Each building shall be counted as one regardless of number of outlet pipes and/or account number. All cost for the provision of properly cap pipe & fittings as required on-site for future use or as per instructed by APE shall be considered incidental to the construction and shall be included with the costs of section 6 of this SOW and not to be counted as a house connection. Contractor shall be paid with the applicable unit price tendered not to exceed amount for the actual quantity

incorporated in or removed from the work and such quantities must be supported by field measurement statements verified and signed by ASPA representative. Signed statement shall be included as an attachment to pay application request.

Section 13: Restoration

This section shall cover the complete costs of providing all labor, equipment and materials required to complete the work specified in the contract documents. The Contractor shall take necessary precautions to prevent damage to existing structures whether on the surface, aboveground, or underground. An attempt has been made to show major structures on the Drawings. The completeness and accuracy of the information shown cannot be guaranteed, and it is presented simply as a guide to avoid known possible difficulties.

- A. Roadside Restoration: The contractor shall provide restoration in all areas outside the roadway which are impacted by construction activities. Restoration work shall meet or exceed the original condition to the satisfaction of the property owner involved at the Contractor's own expense. Roadside Work Plan shall be submitted to the Engineer for review prior to the start of construction. The plan shall include photographs of areas to be disturbed in their original state and an itemized list of materials to be provided including the location of installation. Property owners adjacent to areas of roadside restoration shall be notified of the type and timing of work no less than ten working days prior to any disturbance. No measurement is to be made for roadside restoration. All cost for roadside restoration shall be considered incidental to the construction and shall be included in the costs of other items of the work involved in the project.
- B. Asphalt and Concrete Pavement Restoration: The contractor shall provide restoration in all roadways which are impacted by construction activities. Restoration for AC Pavement shall be full lane, trench width repair is not allowed. Contractor shall maximize the use of one full lane if sewer pipe alignment is design in both lanes of the road. Restoration work shall meet or exceed the original condition to the satisfaction of the Department of Public Works. This includes but not limited to furnishing and placing of aggregate base course, prime and asphaltic tack coats, concrete, markings and all other features for roads, sidewalks, curbs and gutters and all necessary testing. Measurement shall be at the unit price bid per square yard (SY) in place. Contractor shall be paid with the applicable unit price tendered not to exceed amount for the actual quantity incorporated in or removed from the work and such quantities must be supported by field measurement statements verified and signed by ASPA representative. Signed statement shall be included as an attachment to pay application request.

Section 14: Shore line Protection

This section shall cover the complete costs of providing all labor, equipment and materials required to complete the work and shall include but not be limited to, clearing, demolition, installation of CRM Tie backs/transition, installation of new Tribar revetment, embankment, retaining wall, installation of catch basins and drain pipe outlets or as required by DPW. Standard DPW design is included in the project drawings and it shall be the contractor's responsibility to coordinate with DPW for all necessary design details or specifications, allowable site specific location/boundary, survey and proposed location of tie-in point (for future expansion) and all other requirements. Top elevation of the retaining wall shall properly protects the lift station from wave surge equal to 6 feet high from finished grade all through the length of the seawall

Measurement shall be in linear feet (LF). Contractor shall be paid with the applicable unit price tendered not to exceed amount for the actual quantity incorporated in or removed from the work and such quantities must be supported by field measurement statements verified and signed by ASPA representative. Signed statement shall be included as an attachment to pay application request.

Section 15: Permits

Contractor shall be responsible for obtaining all necessary permits and other governmental approvals necessary for the development of the Project and shall obtain the same at the times necessary to meet the Project schedule.

Section 16: Archaeological Monitoring

The Contractor shall immediately notify the APE if any artifacts, skeletal remains or other archaeological resources are unearthed during excavation or otherwise discovered on the site of the work. If directed by the APE, the Contractor shall immediately suspend any construction activity as needed. The suspension of Work shall remain in effect until permission to proceed has been obtained by the APE from the ASPA Archaeologist, ASPHO or private landowner, as applicable. If further site investigation, testing and/or approval is needed, requirement under "Testing" of this SOW shall apply.

Section 17: ASPA Inspection & Monitoring

The APE or its representative inspection and tests are for the sole benefit of ASPA and do not: Constitute or imply acceptance; Relieve Contractor of responsibility for providing adequate quality control measures; Relieve Contractor of responsibility for risk of loss or damage to the Work, materials, or equipment; Relieve Contractor of its responsibility to comply with the requirements of the Contract; or, Impair ASPA's right to reject defective or nonconforming items, or to avail itself of any other remedy to which it may be entitled.

Section 18: Request For Information ("RFI")

If the Contractor determines that some portion of the drawings, specifications or other Contract Documents require clarification or interpretation because of an apparent error, inconsistency, omission, or lack of clarity in the Contract, the Contractor shall promptly submit a Request For Information ("RFI") and, unless otherwise directed, shall

not proceed with the affected Work until ASPA has responded to the RFI. The Contractor shall plan its work in an efficient manner so as to allow for timely responses to RFIs.

RFIs shall only be submitted by the Contractor on an RFI Form acceptable to ASPA. The Contractor shall clearly and concisely set forth the issue for which clarification or interpretation is sought and why a response from ASPA is needed. In the RFI, the Contractor shall set forth its own interpretation or understanding of the requirements along with reasons why it reached such an understanding and must include proposed solution. RFI's submitted without proposed solutions will be returned without review.

Section 19: Submittals & Review

The ASPA Project Engineer(APE) approval or acceptance of submittals is not to be construed as a complete check and do not relieve the contractor from compliance with the requirements of the contract documents. Approval or acceptance will not relieve the Contractor of the responsibility for any errors which may exist and shall be corrected at no cost to ASPA.

The Contractor is responsible for: confirming and correlating all quantities and dimensions; furnishing equipment materials as specified; selecting fabrication processes and techniques of construction; coordinating his work with that of all other trades; and performing his work in a safe and satisfactory manner.

Include Contractor's stamp and signature indicating that the submittal has been reviewed and conforms to Contract Documents. Submittals without Contractor's stamp will be returned without review.

Section 20: As-built requirements

Work required under this section consists of surveying and preparing as-built drawings in AutoCAD to be approved by ASPA. Prior to completion of the final inspection, the Contractor shall provide to ASPA an electronic file and certified copies of as-built surveys with all required revisions included as the final as-built survey. All changes requested by ASPA must be made to the electronic file, as well as the printed, signed and sealed copies. Neglecting to provide the required information will delay the final inspection. All measurements are to be made by the Surveyor or Engineer who will be certifying the project as constructed. The Contractor is responsible for coordinating with the Surveyor or Engineer during construction and shall provide access to all utilities prior to being buried; allowing accurate horizontal and vertical measurements to be acquired by the Surveyor or Engineer. In the event of any discrepancies identified by ASPA and at no cost to ASPA, the Contractor shall verify the location and measurements of any buried utilities. Any and all utility information must be collected, regardless of "typical" alignments (including existing obstructing, conflicting, or crossing utility infrastructure). Refer to the information provided in the contract documents (construction plans, specifications, etc.). The Surveyor or Engineer must provide ASPA with a certificate of its professional liability coverage.

All electronic as-built utility information in the as-built survey must reference the State Plane Coordinate System 1962, D_1983_HARN_UTM_Zone_2SNAD (horizontal) and NAVD88 or ASVD02 (vertical); the units must be in feet, and be properly projected

into its correct spatial location prior to submitting to ASPA. ASPA will not re-project or manipulate as-built surveys in an attempt to correct improperly spatially referenced as-built surveys. It's the certifying Surveyor or Engineer's responsibility to ensure all submitted information adheres to the specifications. All new and existing utilities (water, sewer, reclaimed, electrical, communications, etc...) and drainage located within project site impacted by construction shall be located relative to property lines and/or right-of-way lines, using the specifications identified in this document. Blocks inserted into a drawing shall be on the correct layer, identifying those features. All text (DTEXT and MTEXT) must be masked; cut/broken lines behind text will not be accepted. Detail(s) also must be masked. The dimensions will be created with masked text using a standard dimension style(s). Exploded dimensions will not be accepted. Text identifying information about features shall be properly aligned.

Features shall be placed on their appropriate layers and assigned colors by layer for consistency. Features shown in the AutoCAD files shall be in model space and be contained in the AutoCAD files as opposed to being linked through externally referenced files (binned layers MUST reflect the correct layers). Layer naming conventions shall follow the NCS (National CAD Standards) guidelines. For more information on NCS, visit their website at nationalcadstandard.org. Each feature (e.g., Bent, joint, valves, mains, etc.) shall have IDs assigned by the Surveyor or Engineer completing the as-builts, which reference a worksheet table. The worksheet table will contain an inventory of items installed. The entire table must be complete and refer to a corresponding feature on the as-builts. Asset table / Attribute table worksheet shall be collected and turned in as an electronic Microsoft Excel file on CD/DVD, or sent by email. The Surveyor or Engineer completing the as-builts, shall include all information needed in the attribute table for ASPA's approval (eg: Id, Description, X, Y, Z, size, location, type of materials, etc...)

In addition, the contractor shall provide the as-builts as required below and must comply with the attached checklist and instructions in attachment #2.

1. GIS File Format (At the minimum contractor shall provide data for use with ArcGIS/GIS software)
 - a. Completion of aerial surveys to prepare a GIS package for the entire project extents (Package 5 – Phase 2). Project extents are as shown in the construction drawings.
 - b. All data to be augmented by survey grade GPS, giving spot heights with a positional and height accuracy in the order of 30mm/0.1', where possible.
 - c. Aerial photos of the site. Individual JPEGs.
 - d. Orthophoto TIFF. Ortho-rectified to be 2D measurable in plan and in the form of geo-referenced TIFFs (Highest quality, large files > 1GB).
 - e. Raster DSM (Digital Surface Model). Geo-referenced TIFF format, containing all surveyed height data, including roof tops, vegetation etc.
 - f. Provide shapefile for all new and existing features installed and discovered under this project. Shapefile must conform to ESRI Shapefile Technical Description. Contractor shall propose attribute tables and database for ASPA approval.
2. Google Earth File Format (At the minimum contractor shall provide data for use with Google Earth Pro)

- a. As an alternative to GIS software contractor shall submit the asbuilts in google earth ready file containing attribute data overlaid onto the high resolution orthophoto.
 - b. Google Earth tiles. Ortho-rectified photos to be 2D measurable in plan and in the form of geo-referenced Google Earth KMZ tile formats.
 - c. ASPA shall approved needed data to be included in the attributes table.
3. CAD File Format (At the minimum contractor shall provide data for use with Autocad civil 3d),
- a. Orthophoto JPEG/DWG. Ortho-rectified to be 2D measurable in plan and compressed to the form of geo-referenced best quality JPEGs.
 - b. As Built drawing overlaid onto the high resolution orthophoto DWG file.
 - c. TIN surface -accurate 3d CAD file complete with a DTM (Digital Terrain Model) surface and other details that include contours, spot heights and basic breaklines in DWG/ DXF.
 - d. Complete Topographic Survey.

No measurement is to be made for the preparation of asbuilts required in this section. All cost shall be considered incidental to the construction and shall be included in the costs of other items of the work involved in the project.

Section 21: Order of Precedence

In general, treat anything mentioned in this Scope of Work but not shown on the Specifications or shown on the Specifications as if shown or mentioned in both. In the case of discrepancies between the Scope of Work and Specifications, the Scope of Works takes precedence.

Section 22: Safety Control

The Contractor shall have sole responsibility for the safety, efficiency, and adequacy of the Contractor's plant, appliances, and methods, and for any damage or injury resulting from their failure, or improper maintenance, use, or operation. The Contractor shall be solely and completely responsible for the conditions of the project site, including safety for all persons and property in the performance of the work. This requirement shall apply continuously, and not be limited to normal working hours. The required or implied duty of the APE to conduct construction review of the Contractor's performance does not, and shall not, be intended to include review and adequacy of the Contractor's safety measures in, on, or near the project site.

If personnel are required to enter confined spaces, any and all applicable OSHA requirements as well as those detailed by the manufacturer's material safety sheets will be complied with fully. It shall be the sole responsibility of contractor for all safety and environment related incident at no cost to ASPA.

Section 23: Traffic Control

Contractor will provide, erect and maintain necessary and adequate devices for the protection of the work, the workmen and the travelling public whenever deemed necessary. Temporary traffic control devices such as traffic cones to channelize traffic, portable barricades for warning, shall be used to guide traffic through construction areas.

Advance warning devices shall be used to alert the motorist of an obstruction in the roadway.

Section 24: Materials

- A. All supplies shall be stored and maintained by the Contractor in accordance with the manufacturer's specifications in a secured area and away from the general public access. Supplies should not be subject to adverse weather conditions prior to use.
- B. All materials used during the execution of this Project shall meet or exceed industry standards.
- C. All buried or exposed DI pipes, rods, cables, valves, Stainless Steel fastener/band and all other steel fittings shall be coated with Denso Tape or approved equal.
- D. Excess material purchased solely for this project shall be transferred to ASPA at no additional cost to include but not limited to;
 - a. Sanitary Pipes
 - i. 4"Ø PVC
 - ii. 4"Ø HDPE
 - iii. 6"Ø PVC
 - iv. 6"Ø HDPE
 - v. 6"Ø DI
 - vi. 8"Ø PVC
 - vii. 8"Ø HDPE
 - viii. 10"Ø PVC
 - ix. 12"Ø PVC
 - b. Elbows/Bends
 - i. 4"Ø x 1/8 PVC
 - ii. 6"Ø x 1/8 PVC
 - iii. 6"Ø x 1/16 PVC
 - iv. 4"Ø HDPE 45°
 - v. 6"Ø HDPE 45°
 - c. Clean Out PVC
 - i. 4"Ø
 - ii. 6"Ø
 - d. Wyes
 - i. 4"Ø x 4"Ø PVC
 - ii. 6"Ø x 4"Ø PVC
 - iii. 6"Ø x 6"Ø PVC
 - iv. 8"Ø x 4"Ø PVC
 - v. 8"Ø x 6"Ø PVC
 - vi. 10"Ø x 6"Ø PVC
 - vii. 8"Ø x 6"Ø HDPE
 - e. PVC Double Wyes
 - i. 6"Ø x 6"Ø x 4"Ø x 4"Ø
 - ii. 6"Ø x 6"Ø x 6"Ø x 6"Ø
 - f. Reducer PVC
 - i. 6"Ø x 4"Ø
 - g. PVC Cap
 - i. 4"Ø
 - ii. 6"Ø
 - iii. 8"Ø
 - h. Adapter w/ Plug
 - i. 4"Ø
 - ii. 6"Ø
 - i. Couplers
 - i. 4"Ø HDPE electro-fusion
 - ii. 6"Ø HDPE electro-fusion

- iii. 4"Ø Flexible w/ SS Clamps
- iv. 4"Ø Flexible w/ SS Clamps
- j. Manhole Connector
 - i. 4"Ø pipe size
 - ii. 6"Ø pipe size
 - iii. 8"Ø pipe size
 - iv. 12"Ø pipe size

Section 25: Equipment

- A. The Contractor is responsible for supplying and storing any and all equipment needed for proper installation as per manufacturer's instructions.
- B. The Contractor shall be responsible for ensuring that all the equipment utilized during this Project meet regulatory and safety standards.
- C. Below equipment purchased solely for this project shall be transferred to ASPA at no additional cost and it shall be in good operational condition. Contractor shall provide training as needed.
 - a. Sewer Jetter Machine: 747-FR2000TV ECO ~ Trailer Mounted High Pressure Sewer Cleaner or approved equal.

Section 26: Execution

- A. Personnel are required to meet any and all applicable OSHA requirements as well as those detailed by applicable manufacturer's material safety sheets.
- B. It shall be the Contractor's responsibility to coordinate with ASPA treatment plant personnel for access and if any operation changes are required.
- C. The Contractor will ensure that there is no interruption to existing customers.
- D. The Contractor shall use proper trenching practices and environmental precautions during excavation work.
- E. The Contractor will adhere to all EPA regulations regarding sanitary sewer setbacks.
- F. The Contractor shall provide a hazardous spill prevention plan.
- G. The Contractor will adhere to the specifications provided.

Section 27: Testing

All testing shall be performed according to the specifications. Testing procedures are to be described in the Contractor's QA/QC Plan. The Contractor shall maintain all documentation related to testing and inspection and make such documentation available to the ASPA at its request. Contractor shall be responsible for inspection and quality assurance of all its Work.

If any governmental, regulatory, or permitting authority requires any portion of the Work to be inspected, investigated, tested, or approved, the Contractor shall make all arrangements for and cooperate with such inspections, tests, and approvals so as not to delay completion of the Contract Work. The Contractor shall bear all related costs of tests, inspections, investigations and approvals. Contractor shall promptly furnish, without additional charge, all facilities, labor, material and equipment reasonably needed for performing such safe and convenient inspections and tests as may be required.

Sanitary sewer testing shall include:

1. Leakage test using water or air test.
2. Deflection test/Pull through Test.
3. Vacuum test of manhole. Test manholes in accordance with ASTM C1244-93. Test method for concrete sewer manholes by the negative air pressure (vacuum) test. Vacuum test shall be completed by pulling a vacuum of 10" Hg (4.9 psi) and measuring the time it takes to drop to 9" Hg (4.4 psi). Test shall be completed on concrete surface and not on iron ring. The minimum acceptable time for an 8' or less deep manhole shall be 20 seconds. Five seconds shall be added to the minimum acceptable time for every two feet in depth beyond 8'.
4. Television inspection. Television inspection shall be performed in accordance with NASSCO standard. Contractor shall purchase jetter machine per ASPA's requirements.
5. Full moon or Lamp test.

Section 28: Warranty

- A. ASPA will be provided with Project warranty to be initiated upon project acceptance. Said warranty will include all labor and materials needed for services due to defects and failure in product or workmanship. Should ASPA detect any defects in product or workmanship, the Contractor shall correct the detected defects by re-performing the services immediately after receipt of notice from ASPA. Such corrections shall occur at no additional cost to ASPA.
- B. ASPA will be provided with documentation on all manufacturer warranties on materials purchased and turned over to ASPA during this Project.

SOW ATTACHMENT-1

SWPPP Template

(Attached Separately - .doc file format)

SOW ATTACHMENT-2
As-built Instructions & Checklist
(Attached Separately)