EXHIBIT B

SCOPE OF SERVICES

Project TITLE IN CAPS

**Month Year**

*<<THIS IS A PLANT PROJECT SCOPE TEMPLATE.*

*DISTRICT Project Manager (PM) will delete and/or modify the draft scope template to meet the specific needs of the Project. Delete notes for final version.>>*

*<<CONSULTANT. Review and revise the draft scope prepared by the PM by including additional detail and clarification as appropriate. Prior DISTRICT approval is required before deleting any task or activity. All changes must be made in revision mode to facilitate DISTRICT review. Delete notes for final version.>>*

The Scope of Services set forth herein defines the work to be performed by the CONSULTANT in completing the Project. Both the DISTRICT and CONSULTANT have attempted to clearly define the work to be performed and address the needs of the Project.

SERVICES TO BE PERFORMED

<<Depending on the needs of the Project, leave any of Tasks 1-5 intentionally blank and note as such. However, do not delete any of the tasks so that the standard numerical sequence can be retained.>>

Task 1. Pre-design

Task 2. Design

Task 3. Bid and Award

Task 4. Construction Administration/Resident Project Representation (CA/RPR)

Task 5. Closeout

Task 6. Allowances

Specific Allowance 1. <<<insert service name. If none then delete>>>

Specific Allowance 2. <<<insert service name. If none then delete>>>

Specific Allowance 3. <<<insert service name. If none then delete>>>

Specific Allowance 4. <<<insert service name. If none then delete>>>

Specific Allowance 5. <<<insert service name. If none then delete>>>

General Allowance

The Scope of Services for the Project shall consist of the tasks as outlined above. For design projects, the CONSULTANT shall provide services necessary to develop and produce a complete detailed design package culminating in a bid package for the Project that will be advertised for construction as per Ohio Revised Code (ORC) requirements.

The Consultant shall communicate with the DISTRICT’s personnel to refine Project needs and deliver the Scope of Services. The CONSULTANT shall carefully consider the input by the DISTRICT’s staff, however, based on the CONSULTANT’s own experience and ability, shall be solely responsible for providing complete, quality deliverables in accordance with the requirements of the Scope of Services. Documents referenced within the Scope of Services are available on the on the DISTRICT’s internet site ([www.meanderwater.org](http://www.meanderwater.org)).

The CONSULTANT shall incorporate the use of the DISTRICT’s Project Management site electronic submissions and workflow processes for all Tasks of Work as directed by the DISTRICT.  The CONSULTANT shall use the Project Management site for, but not limited to, the following: electronic upload of documents for reference and/or file, invoicing, design schedules, budget transfers, construction submittals, Request for Information (RFIs), Contractor pay requests, construction changes, schedule reviews, etc.  During the duration of the Contract the DISTRICT may modify and/or add workflow processes and Project Management site usage, and the CONSULTANT shall incorporate the modifications and additions into their work.  Access to the Project Management site and workflow processes will be provided by the DISTRICT.

CONSULTANT is required to have access to computer hardware and software that is compatible with the DISTRICT’s Project Management system, capable of running automated process workflows, and supporting electronic signatures in Adobe Acrobat. Minimum system requirements include:

* Windows XP or Window 7
* Microsoft Internet Explorer 32-bit version 7 or 8
* Microsoft Office 2007 or 2010
* Latest version of Adobe Acrobat (at a minimum Reader, Standard or Professional for editing)
* Broadband internet connection
* Open access to https://xxxxxx.xxx

CONSULTANT shall verify current system requirements at start of contract and may need to adjust requirements during the contract period to accommodate upgrades or changes to the DISTRICT’s system. The DISTRICT’s system is configured to work with any open internet connection however specific firewall or security settings limiting internet content on the CONSULTANT’s system could impact performance. Often, adjustments to these settings or work around processes can be implemented to mitigate the issues.

Deliverable Standards

All deliverables shall be submitted in both PDF and native file format. Submitted PDFs shall be created from the native file using the appropriate software. Scanned copies to create PDFs are not acceptable. In general, each deliverable shall be provided as one optimized PDF document less than 10 MB. The PDF document shall be indexed to match the table of contents or main sections of the document and provided as an unprotected or unsecured document. If the PDF document cannot be reduced to less than 10 MB, CONSULTANT shall develop an alternative submittal plan with the DISTRICT PM. Additional requirements are as follows:

* Reports, technical memoranda, or other narrative deliverables shall include all the native files to create tables, renderings, images and other exhibits. In general document formats shall be in MS Office format or as approved by the DISTRICT PM.
* PDFs for specifications shall be organized by volume and indexed where applicable; native files shall be provided in MS Word format.
* Drawing submittals shall be provided in both PDF and native file formats; PDF submittal shall include entire project set where possible; if Adobe compressed file size exceeds 10 MB, submittal shall be divided into 10 MB files by discipline or as directed by the DISTRICT Project Manager; final set shall also be provided in tif file format at 400 DPI for each drawing. Where individual drawings are required, drawings shall be indexed and named per the DISTRICT CAD standards, as applicable.
* All documents shall be indexed and/or bookmarked to allow optimized usage with tablet devices. All figures and maps shall be provided in landscape view to allow for proper viewing using tablet devices.

All submittals shall be provided to the DISTRICT PM electronically on flash/thumb drives. Media shall be labeled with MVSD, project name, and project number.

Any deviations from the above standard will be rejected and the deliverable will be considered incomplete.

Project Objectives

The design tasks and construction scope of services for the Project shall include the following components:

*<<PM: Insert concise description of key components of design that characterize the Project. For guidance, refer to the highlighted example below.>>*

* Sludge Thickening Improvements
  + Provide four new thickening centrifuges each with a maximum hydraulic capacity of 1,500 gpm
  + Provide a series of individual wells of sufficient volume which shall include sludge blending, blended sludge feed, excess waste….
  + Provide a polymer system to include an unloading station, storage tanks, recirculation/transfer pumps, blending units…
* Provide an odor control system
* Provide PLC Programming, OIT Programming, HMI Programming, Training and Loop Check assistance as part of the Construction Administration services.
* Sludge Dewatering Improvements
  + Replace existing polymer blending units with similar units, feed and recirculation pumps and all ancillary equipment shall also be replaced
  + Repair windows and doors
* Etc.
* Design process controls by PLCs to automatically optimize flow, chemical and pump control, by use of instruments and meters to monitor the process with electric actuators on valves, use VFD’s, etc. Ethernet connections shall be commonly used as needed on all control devices. New PLCs shall communicate with existing plant PLCs during the wet weather event. **Process instrumentation and control work will be quality checked by the District’s Automation Program Manager. Provide PLC programming, OIT Programming, HMI Programming, Training and Loop Check assistance as part of the Construction Administration services.**
* Specific Allowance: <<Describe Specific Allowance if necessary>>

Project Schedule

*<<PM: Adjust below schedule to fit Project>>*

The CONSULTANT shall adhere to the following schedule:

* Task 1 - Pre-Design – 8 months from Notice to Proceed (NTP)
* Task 2 - Detailed Design – 28 months from NTP
* Task 3 - Advertisement for Bids – 29 months from NTP
* Task 4 - Construction NTP – 33 months from CONSULTANT’s NTP
* Task 4 - Construction Services – 71 months from CONSULTANT’s NTP
* Task 5 - Close-out – 83 months from CONSULTANT’s NTP

# Pre-Design

*<<PM: Modify text below based on existing project information and project requirements.>>*

Changes to the existing recommendations for Project that emerge during Pre-Design will be described in the Basis of Design report, along with the rationale for their recommendations. The Pre-Design Task will be carried out to cost-effectively develop and evaluate the preferred alignments for the Project. A Basis of Design Report (BOD) will be prepared that summarizes the Pre-Design work activities and critical design decisions to support advancement of the project into detailed design. The BOD will present design criteria for the major design elements and will provide pertinent design parameters, assumptions, and decisions made in preparing drawings and specifications for the project. Changes to the project scope, schedule, and level of effort to support subsequent project tasks will be identified.

All Task 1 deliverables shall be submitted as described above and in the following formats and quantities unless otherwise noted:

*<<PM: Modify number of hard copies required based on project requirements. >>*

* <<5>> hard copies (half size plans) bound and indexed appropriately
* 3 CDs containing the native electronic format and indexed PDF electronic copies generated from the native document (not scanned) of all submittal documents

## Project Management Plan

Within <<30>> days of the Notice-to-Proceed the CONSULTANT shall provide a detailed Project Management Plan that includes critical processes and management activities that ensure compliance with the Project design, schedule, and risk and budget requirements. The Project Management Plan will include the following items:

* *Team integration* – discuss the project management team responsibilities, assigning of activities, and integration of the design team to meet project objectives and program standards.
* *Budget and schedule management/progress reporting* – Budget/schedule management and progress reporting shall be managed per the cost loaded project schedule. Schedule shall be developed and managed per the DISTRICT’s Schedule Guidance Document available on the DISTRICT’s web site.
* *QA/QC –* description of the Project Quality Management (Quality Assurance and Quality Control) Program and how this program will be implemented on the Project to comply with the DISTRICT’s technical review process. The CONSULTANT will utilize the DISTRICT’S QA/QC template to capture and track comments from the QA/QC Program as well as responses and the changes to the design that come as a result of the QA/QC process.

*<<Delete TRB statement below for smaller projects upon DISTRICT Design Manager (DM) approval>>*

* Technical review board (TRB) – CONSULTANT shall provide up to <<\_\_\_ (#)>> nominations of Senior Engineers/Technical Discipline Leads from firms that are not affiliated with the Project to serve on the TRB. Once selected, the Senior Engineers/Technical Discipline Leads are to participate on the TRB and be paid under a Specific Allowance. It shall be understood that all TRB members are precluded from participating in the preparation or evaluation of project related construction bids and may not represent a contractor on a Dispute Resolution Board on an associated project.
* *Cost estimates –* include the understanding of design milestone cost estimating guidelines and identification of software systems and process to develop the estimates.
* *Risk management* - include the CONSULTANT’s Risk Management Plan considering significant Project related risks and mitigation measures to alleviate those risks. This should include the DISTRICT’s risk register requirements and method for developing and maintaining this register as a primary design support tool. The risk register template is available on the DISTRICT’s web site.

## Basis of Design Report

The CONSULTANT shall prepare a Basis of Design Report for the Project that concisely summarizes the activities and critical design decisions necessary to support advancement of the Project into detailed design. The primary objective for the Basis of Design Report is to ensure common understanding between the CONSULTANT and DISTRICT regarding the design for the Project. Reference documents of DISTRICT standards are included on the DISTRICT’s SharePoint Contractor and Consultant Resource Page website. The report should include information on all Task 1 pre-design subtasks as well as the following:

* Project site map, shall include entire treatment facility with all areas to be included in project indicated. Site Map scale shall not be smaller than 1”=200’ unless approved by DISTRICT PM.
* Proposed design criteria and associated parameters for all disciplines,
* High-level process flow diagram showing significant changes, improvements, equipment, pumps, valves, meters, etc. CONSULTANT shall modify existing process flow diagram.,
* Process modeling approach,
* Conceptual design approach and alternatives requested by the DISTRICT.
* Failure Modes and Effects Analysis Report- *<<if pertinent to design>>*
* Site and civil issues,
* Architectural and structural issues,
* HVAC, plumbing, and electrical issues,
* Instrumentation and control Philosophy
* Fire Protection and Life Safety issues,
* Permitting issues,
* Operational costs,
* Updated planning level construction cost estimate,
* Life Cycle Analysis, and
* Community/stakeholder issues, if applicable.

## Evaluation of Existing Information

The CONSULTANT shall evaluate and consider the following existing information related to the Scope of Services for this Project. This information is provided through a designated ftp ShareFile site. The internet address must be obtained from the DISTRICT Resident Engineer.

* <<\_\_\_\_\_ Facility Plan dated \_\_\_\_\_\_\_>>
* <<\_\_\_report, particular sections \_\_ and \_\_>>

*<<PM: Develop and include list of specific items that are pertinent to this Project>>*

* Historical geotechnical borings’ analyses, studies, and reports in or near the Project Flow Schematics and Summary of Flows
* <<Existing plant flow, quality, and process performance data>>
* <<Other known pertinent data, reports, cost estimates, etc.>>

The CONSULTANT’s findings and recommendations shall be presented to the DISTRICT as part of the Basis of Design Report.

*<<PM: Choose either Construction Methods or Construction Technologies as applicable to the project. If both are applicable, Paragraph shall be combined.>>*

## Construction Methods (Construction Technologies)

CONSULTANT will identify the appropriate construction method(s), for the Project that will support the DISTRICT’s construction period of 12- months and the long-term effectiveness, operation and maintenance, and resiliency of each recommended improvement to meet the DISTRICT’s total project budget and schedule needs. If tunneling, microtunneling, and other trenchless methods, and/or open cut in anticipated for the Project, CONSULTANT should address accordingly. If more than one construction method is suitable, the methods will be presented as alternatives.

*<<*CONSULTANT will identify unique construction technologies that may reduce risk, improve constructability or shorten the schedule.*>>*

## Surveying

*<<PM: Include all survey elements needed for the entire project here. The DISTRICT’s goal is to perform the conclusive survey one time unless the Project requires otherwise. Revise the following as necessary to meet the specific needs and characteristics of the Project.>>*

CONSULTANT shall perform survey and gather data necessary to properly map the existing contours and existing conditions of the site. Baseline survey information shall be tied to the state plane coordinate system with benchmark information provided by the DISTRICT (if available) upon authorization of the Project. Locate pertinent structures within the survey area. Structures to be surveyed shall include but are not limited to buildings, curbs, edge of pavement, fences, trees six inches and larger, inlets, water valves, fire hydrants, manholes, power poles, bridges and water bodies that will impact or be impacted by the construction or required data for design of the Project.

CONSULTANT shall survey to the extent described below:

* Locate critical elevations and establish a reference benchmark circuit for all construction. Establish at least two (2) control points at the Project site. Control points shall be of durable, ferrous material such as rebar, railroad spikes, PK nails or magnetic nails. Control points shall be in locations that will be undisturbed during construction of the Project. Coordinates and elevations shall be called out on the plans for each control point.
* Baseline of Survey - Establish horizontal control points with permanent markers as necessary to provide control for use in the design surveys and future construction layout. Includes preparation of Baseline of Survey Control drawings.
* Bench Marks – Establish bench marks at approximately 800 to 1,000-foot intervals along the Baseline of Survey.
* Collect topographic information at a sufficient density to generate 1-foot contours. CONSULTANT shall provide traverses that close to within 1:5000. CONSULTANT shall provide measurements and computations that are verifiable.
* Perform all record research and procure all information necessary to establish existing right-of-way, property, and existing easement lines, as appropriate. Perform surveys of property lines that will be affected by proposed improvement and/or easements. Establish property lines for up to X permanent easements and up to X temporary easements. Other parcels adjoining the project area will be mapped from County records (tax maps, GIS mapping, etc.) Parcels will be researched to provide owner, address and parcel ID numbers.
* Utilities – For work outside of DISTRICT property, CONSULTANT shall contact the Ohio Utilities Protection Service and other agencies for existing plans and field markings of subsurface utilities. Subsurface utilities will be shown from an ASCE Quality Level C subsurface utility investigation. Under a Level C investigation, CONSULTANT should survey the location of visible utility facilities (manholes, valves, etc.), field markings provided by the OUPS and others. The locations will be correlated with existing plans provided by OUPS, DISTRICT and others. Known unresolved or missing utility, water and sewer information will be summarized and provided on the survey or in a separate document. All utility contact information will be maintained in a utility contact document that will provide utility contact information, contact log, and status. Existing utility plans will be scanned in a PDF file format and provided on CDROM. In the event of a potential conflict with an existing utility for proposed subsurface construction, ASCE Quality Level A subsurface utility investigations may be implemented.
* Perform spot survey checks to verify the accuracy of the topographic mapping.
* CONSULTANT shall use City of xxxxxxx and Mahoning/Trumbull County GIS, hard copy USGS maps and other property data provided by the DISTRICT to support alternative GI screening activities under this subtask. CONSULTANT shall identify properties for acquisition to support the GI improvements and provide this to the Project Team Surveyor who will then research property deeds and plats for any property proposed for acquisition to implement the recommended alternative, including property limits, current property owners, existing easement information, and property deeds. Properties to be investigated as part of the GI improvements design include those properties at the locations of the proposed biorentention basins and other sites where GI will be recommended for implementation.

## Permits and Easements Coordination

*<<PM: Verify all cities and entities involved, many projects are in suburban areas including the Southerly and Easterly Plants>>*

Identify permits required by public and private entities, including but not limited to the City X. Army Corps of Engineers, Ohio EPA (Permit to Install, SWPPP, NOI, etc.), ODOT, railroads and Mahoning/Trumbull County Soil and Water Conservation Service permit applications.

If elements of work require temporary or permanent easements, the CONSULTANT will identify and coordinate these easements with the DISTRICT. If required, the CONSULTANT shall prepare legal descriptions, sketches, calculations and plats for all necessary permanent and temporary easements, which may be needed during construction. Preparation of these easement documents is included in the total negotiated price. This includes surveying services in the event that it becomes necessary to field locate the proposed infrastructure, appurtenances, easement limits, etc., and the time spent in meetings with property owners.

CONSULTANT makes the following data collection and environmental survey assumptions:

* The proposed project is exempt from the State Environmental Policy Act (SEPA).
* No offsite wetland or stream mitigation is required.
* No Environmental Assessment or Environmental Impact Statement preparation services, or other National Environmental Policy Act (NEPA) documentation will be required.
* The DISTRICT shall be responsible for all permitting fees

Should any of these assumptions prove false, CONSULTANT shall develop an approach to address these additional project needs and requirements under the project allowance

## Geotechnical Investigation

*<<PM: Because, geotechnical investigation can vary project by project or is not always necessary, modify this section to fits the needs of the specific project or delete if not needed for this Project.>>*

CONSULTANT shall provide geotechnical consulting to prepare preliminary and final geotechnical data report (GDR), which will be issued with the construction bid documents along with the accompanying geotechnical baseline report (GBR) described below. The CONSULTANT and geotechnical professionals shall mutually determine the parameters of a soil boring program for the project areas, including prescribing the necessary tests and evaluating the resulting data. The geotechnical professionals on the team shall designate the location for each boring, be present when it is being drilled and classify all samples. The geotechnical team members shall prepare interpretive GBR as necessary to address the criteria for the alternatives analysis and as necessary to support the design. Such reports may include, but are not necessarily limited to, evaluation of the subsurface materials discovered and the conditions which a construction contractor could expect to encounter; appropriate construction techniques; support requirements; slope stability analysis; and impact of surface and subsurface conditions on cost and risk. It will be the geotechnical professional’s responsibility to assure the accuracy of the reports. All reports shall be signed by a professional engineer registered in the State of Ohio.

Under the supervision of the CONSULTANT, the geotechnical professionals shall coordinate the services to perform all soil borings, rock corings, and pavement corings; take all soil and rock samples; install any necessary instrumentation; and provide all testing services required for the development of geotechnical reports as described below. It will be the responsibility of the CONSULTANT to ensure all affected parties are properly notified and to secure any needed permits prior to commencing work, fill all bore holes with grout upon completion of boring work, and restore each site to a condition equal to or better than that which was originally encountered.

All boring locations must be photographed prior to commencing boring activities. Each photograph must be properly named; and at a minimum, shall include the boring date and boring identification number. Photographs shall be electronically submitted to the DISTRICT. Filled or final core boxes shall be photographed prior to removal from the boring site. Soil samples taken from the borings shall be properly stored and preserved to prevent or minimize moisture change until completion of all analysis. It will be the responsibility of the CONSULTANT to manage the physical storage at a non-DISTRICT facility and to retain all soil and rock samples collected until completion of all analysis or as needed by CONSULTANT, at which time the CONSULTANT shall manage the proper disposal of all samples.

*<<PM: Project Specific Boring Program should be created as needed>>*

### Project Specific Boring Program

A geotechnical program has been developed for the Project project and will focus on obtaining data and information at the proposed structure locations. In general, borings will be taken approximately every X feet.

*<<PM: Adjust below text as necessary to address any deep tunnel installation for Project>>*

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#### Contingency Borings

In general, the geological conditions for the project area include very shallow bedrock on the south side of the site, which then slopes downward moving to the north. Fill soils are expected to be encountered in most borings due to the significant number of utilities the borings will be drilled near. Natural soils will be cohesive towards the north and granular towards the south. However, due to the large project area, it is possible that isolated channels or valleys may be encountered in the bedrock. These locations typically are filled with saturated granular soils that could create isolated, but significant dewatering issues.

The geotechnical program includes X 50-foot and X 25-foot contingency borings to be drilled if these conditions or other irregular conditions are encountered. Costs related to the contingency footage will not be used without approval from the DISTRICT.

#### Groundwater Monitoring

Groundwater information is extremely limited. Based on the extents of the potential project site area, it is recommended that monitoring wells be installed in X borings. A total of X monitoring wells are planned for the geotechnical program. Once installed, the wells will be developed prior to being monitored. The wells are to be monitored once every two weeks for up to four months.

#### Project Geotechnical Program

The geotechnical program will obtain additional information to ascertain the geotechnical conditions for the project. This will include characterizing and profiling of the soil conditions (for tunnel work this includes bedrock conditions at the proposed inverts).

Where specified, soil samples will be preserved in air-tight 2-inch diameter, 5-inch tall jars. Rock core will be stored in 2.5-foot long wooden rock core boxes that hold up to 10 feet of rock core. The drilling estimate assumes that no specialty rock core boxes will be required for the storage of rock core. The rock core will be photographed once placed in the box. At least one foot of each 5 feet of rock core will be protected with plastic wrap and foil to minimize moisture loss of the core for future lab testing.

The following table lists the proposed borings for the Project project.

| **Boring** | **Improvement** | **Depth (ft)** | **Well** |
| --- | --- | --- | --- |
| G135-001 |  | 50 | X |
| G135-036 |  | 30 | X |

Anticipated geotechnical laboratory testing includes as minimum:

* Moisture Content
* Atterberg Limits
* Sieve and hydrometer analysis of soil
* Unconfined Compression for soil and rock
* Slake Durability
* Unit weight (3 cycles)
* CU Triaxial w/ pore pressures.

### Geotechnical Deliverables – Preliminary

There will be one deliverable associated with the initial drilling program, a Geotechnical Data Report (GDR). The GDR will be submitted at the completion of the drilling phase and will include all data obtained from the borings, wells, and testing from the drilling phase. Information from the GDR will be used to determine the final locations for any additional borings if deemed necessary.

### Geotechnical Deliverables – Final Design Phase

There will be two deliverables associated with the geotechnical program, a GDR and a Geotechnical Baseline Report (GBR). A final version of the GDR will be submitted after the completion of well monitoring and any additional drilling that may have been required after the preliminary GDR was submitted and will include all information regarding the borings, well installations, well monitoring, and testing information from both the preliminary and final design phase. In its final form, the GDR will become a Contract Document. An interpretive GBR will be developed after all the geotechnical information has been acquired.

## Task 1I: Condition Assessment

The CONSULTANT shall assess the condition of the existing Youngstown Reservoir Gatehouse Structure and facilities. The CONSULTANT shall meet with DISTRICT operations staff to define the current issues with existing facilities, operational needs and necessary upgrades. The CONSULTANT shall take into consideration the building history and potential impacts of any building modifications with applicable historical reviews and recent building improvements. The CONSULTANT shall also prepare a building code review to determine if any violations exist and provide recommendations for improvements to eliminate code violations. The recommendations made within this condition assessment shall also contain costs for improvements and recommendations for inclusion of improvements within the proposed valve replacement design.

## Construction Schedule Issues

To the extent possible, outline the critical path for major construction tasks.

The CONSULTANT shall identify project related issues that could potentially cause schedule delay, such as: equipment with long lead times, lengthy construction requirements, construction methods, equipment installation coordination issues, plant/utility required outages, etc.

## Engineer’s Estimate of Probable Construction Cost

In the Basis of Design include a Class 4 estimate in accordance with the Association for the Advancement of Cost Engineering (AACE) International Recommended Practice 18R-97. Cost Estimate shall also be submitted in accordance with the District’s design milestone cost estimating included in Task 2 - Design.

## Coordination with Other Entities

CONSULTANT is responsible for taking into consideration past, present and future work of other public and private entities potentially affecting the Project, and coordinating as necessary to complete the work. <<If necessary, under an allowance, the CONSULTANT may be requested by the DISTRICT to design specific utility relocations prior to bidding. In cases where the utility relocation must be designed by the utility owner, payment to the utility owner will be made through a Specific Allowance, and the relocation design will be incorporated into the plans as part of CONSULTANT’s base scope.>>

## Constructability and Coordination Evaluations

The CONSULTANT shall evaluate approaches for construction of the Project while keeping existing necessary processes and equipment operating during construction. After completing the constructability/ coordination evaluation, CONSULTANT shall meet with the DISTRICT to discuss various delivery options and considerations including but not limited to a critical path project schedule, present value life cycle costs for proposed improvements, proposed temporary facilities (if any) and their cost and impacts, and operation and maintenance needs during construction.

The CONSULTANT shall conduct two (2) Workshops:

1. Workshop 1 shall discuss and review the options with DISTRICT personnel. The workshop shall be held within 60-days following the Notice to Proceed. The Consultant shall provide a summary of the workshop and meeting minutes to the District and all other participants.
2. Workshop 2 shall discuss the advantages and disadvantages, sequencing of construction issues, and estimated costs, along with the CONSULTANT’s recommendations. The workshop shall be held within <<\_\_\_120?>> days following the Notice to Proceed. The CONSULTANT shall provide a summary of the workshop and meeting minutes to the DISTRICT and all other participants.

## Risk Analysis

CONSULTANT will perform continuous risk analysis for the Project, including alternatives identified by the DISTRICT. The risks and associated likelihood of occurrence as well as impact of occurrence will be summarized in a risk register template provided by the DISTRICT. The register will be reviewed at regular Project progress meetings.

## Project Data Collection and Management

*<<PM: Modify section according to expectation of data deliverables.>>*

A Data Collection and Management Plan shall be included as a section of the Basis of Design Report. The Data Collection and Management Plan shall include appropriate QA/QC processes and procedures, reference the DISTRICT’s Data and Deliverables Standards document, and be revised as necessary throughout the Project. The plan should include the following sections:

* *Data Needs Assessment & Collection –* This section shall document the Project data needs and collection processes and procedures.
* *Data Management Plan –* This section shall document the processes and procedures for managing, accessing, displaying and delivering project data gathered and created during this project, with consideration to and in conjunction with other DISTRICT-wide information management system requirements.
* *Hardware/Software Information* – This section shall document **all** applicable computer hardware, software and related equipment to be purchased, developed and/or utilized on this project. Procurement shall be coordinated with the DISTRICT IT and GIS.
* *Project Metadata* – Metadata shall be developed for **all**applicable data collected or created during the Project. The CONSULTANT shall coordinate with the DISTRICT’s GIS Group regarding the development and creation of Project Metadata and adherence/applicability of the current DISTRICT GIS Metadata Standards.

*Additional Sections -* Additional sections may be required as a result of the CONSULTANT’s project approach or at the request of the DISTRICT.

## Community Impact Assessment

The Consultant shall prepare a Community Impact Assessment (Assessment), with the intent of identifying potential short-term impacts to the community during construction, and long-term impacts that arise as a result of the installed asset. Impacts are considered to be both positive and negative in nature. The magnitude and complexity of the Project will dictate the level of assessment required.

The Assessment should focus on impacts such as noise, dust, odors, loss of parking, access, inconvenience, etc.to local residents, businesses, places of worship, and public agencies; disruption of services (i.e. fire, police, schools, Rapid Transit Authority, refuse collection) services; impacts on historic buildings and other features; damage to vegetation; changes to pedestrian and vehicular traffic patterns; etc. during construction.

The Assessment should also include aesthetic impacts from aboveground structures, potential economic impacts to local businesses, long-term changes to traffic patterns, road degradation, changes in land use, effects on emergency response, and impacts due to long-term construction, and changes or additions to permanent aboveground structures.

A separate Assessment report will be prepared for each significant site and surrounding community. The following activities shall be planned:

* Field visit(s) to the project area to visually inspect sites and neighborhood settings;
* Review of project maps, topographic maps, land use maps, and aerial photos;
* Research to identify demographic characteristics of the surrounding community;
* Interviews and research with public officials, community leaders and other stakeholders, as well as residents and business owners;
* Tracking traditional and social media; and
* Preparation of written CIA report (draft and final) summarizing findings.

### Deliverables:

The CONSULTANT will provide a summary report which will include a general description of the impacted areas. For each impact identified, list the type of impact, specific names of businesses impacted, type of impact, term of impact, residential addresses, agencies, community profiles and other community entities impacted. Community demographics will also be researched by the Consultant and described in the Assessment. , so that the Assessment can be developed into an actionable Community Relations and Communication Plan by the Owner in support of the project. The Assessment will also include maps, drawings, study information, other supporting documentation, and references in support of the Public Community Impact Assessment. The Assessment will be developed into an actionable Community Relations and Communication Plan by the Owner in support of the project.

The Consultant’s Assessment will be provided to the DISTRICT as a section within the Basis of Design, 30%, 60%, 90% and Final design phase submittals, as the Assessment evolves with additional site and public impact information. Elements of the Assessment may be included in the bid documents, at the DISTRICT’s discretion.

### Meetings:

The CONSULTANT will be expected to attend both internal and external meetings in support of the Project. These meetings may include; internal design reviews, contract reviews, Board meetings, internal informational meetings and public meetings.

# Design

The Consultant shall develop drawings and specifications and integrate the District’s standard specifications and Bid Booklet (including Instructions to Bidders, General Terms and Conditions, Special Conditions, Agreement) for the project to produce construction bid documents suitable for competitive bidding purposes to produce a quality, cost-effective project. The drawings will indicate the layout, plans, sections, and details of the Project.

All specifications shall be prepared with the CSI 49 Division MasterFormat 2010 or more current version. All drawings shall be prepared using AutoCAD. Files shall be submitted in AutoCAD version 2012, unless approved otherwise by the DISTRICT’s Project Manager. All Engineer’s Opinion of Probable Construction Costs shall be prepared for each design submittal milestone as specified in this Task.

For relatively shallow structures the design of the excavation support system will be at the discretion of the Contractor; however, the CONSULTANT will provide all design parameters, including but not limited to loading diagrams, anticipated subsurface conditions, and groundwater levels, and shall specify any necessary limitations such as maximum trench widths, minimum support requirements, and if applicable, restrictions for acceptable support systems or installation methods. The bedding and backfill requirements will also be specified by the CONSULTANT.

For tunneling and other trenchless methods, the consultant is expected to design the temporary excavation support, where applicable, and the final liner.

All Task 2 deliverables shall be submitted as described above and in the following quantities unless otherwise noted.

*<<PM: Modify number of hard copies required based on project requirements.>>*

* <<10>> half size hard copies of drawings, bound and indexed appropriately
* <<1>> full size hard copy of drawings, bound and indexed appropriately
* <<2>> hard copies of technical specifications, including Bid Booklet and Division 1, bound and indexed appropriately.
* <<3>> indexed PDF electronic copies
* <<3>> DVDs of videos or photo files
* 1 original electronic application format copy

## 30% Design

The 30% design submittal, based on the Basis of Design Report and resulting review comments, will serve as the initial layout and orientation of recommended improvements for review. At the 30% design stage, the design will incorporate major design concepts, reflect decisions made to date, and facilitate advancement of the design through the remaining design stages.

The 30% submittal shall include, at a minimum, the following:

1. Drawings
   1. Title Sheet
   2. Sheet Index, which should be near completion.
   3. Structural, civil/site, and overall site plans sufficiently complete to show proposed locations of major items. Drawings shall also include dimensions, clearances, and working space necessary for operation and maintenance
   4. Preliminary alignment plan view and profile sheets, without construction notes, developed using the DISTRICT’s sheet format and numbering system.
   5. General and specific notes as appropriate.
2. Specifications
   1. List of bid items
   2. Table of Contents of technical specifications. List shall indicate any deviations from the District’s standard specifications.
   3. Preliminary specifications for major equipment components
3. Listing of easements and permits required
4. Updated preliminary construction schedule
5. Revised Basis of Design Report with calculations as appendices, including hydraulic modeling summary of changes and fire protection and life safety requirements.
6. Revised Risk Register

*<<PM: Include the below list for projects that include pump stations, buildings or equipment requiring power supply.>>*

1. Review and include the District standard specification *02 82 07 Recycling of Universal and Hazardous Waste* if appropriate for demolition of equipment containing mercury.
2. Process and Instrumentation Diagrams (P&IDs), including mechanical equipment, major piping, and instrumentation should be near completion.
3. Instrumentation Philosophy.
4. Process Flow Diagrams.
5. Hydraulic profiles.
6. Pipe sizing and loading conditions.
7. Pumping system curves.
8. Architectural, structural, HVAC/Plumbing, civil/site, and overall site plans sufficiently developed to show the proposed general layout of the entire project and conceptually how to address any fire protection or life safety issues.
9. General arrangement of equipment and piping layout drawings sufficiently complete to show proposed locations of all major items. Drawings shall also include equipment dimensions, clearances and working space around equipment and demolition plans.
10. Electrical oneline power drawings near completion.
11. A complete list of major equipment proposed with catalog cut sheet data.
12. Quality Assurance/Quality Control Report: *<<PM: Modify number of hard copies required based on project requirements.>>* The Consultant shall issue a QA/QC Report, <<three (3)>> hardbound copies and one (1) electronic copy, to the DISTRICT PM including the following:
    1. List of the CONSULTANT review staff who contributed to the QA/QC Report.
    2. Summary of Consultant’s internal review staff, design review comments, and proposed responses documented on a review template provided by the District.
    3. Summary and explanation of significant differences between the Basis of Design Report prepared during pre-design and the 30% design efforts.
13. Engineer’s Opinion of Probable Construction Cost (EOPCC): Prepare a Class 3 Construction Cost Estimate in accordance with the Association for the Advancement of Cost Engineering (AACE) International Recommended Practice 18R-97. <<Three (3)>> copies and one (1) PDF electronic copy shall be submitted to the DISTRICT’s Project Manager.
14. Value Engineering Services:

*<<PM: If desired by the DISTRICT, VE Services should be included below as part of Task 2, or moved to the Specific Allowances section, per how the Project was originally envisioned>>*

* 1. The VE Study will be conducted when the design of the Project is approximately 30% complete but prior to the 30% Design Review Meeting. The VE Study recommendations, and CONSULTANT’s responses including recommendation for acceptance or rejection, shall be presented and discussed in the 30% Design Review Meeting. The VE recommendations incorporated into the design shall be summarized and submitted to the DISTRICT with the 60% design documents.
  2. Firms and individuals that specialize in VE studies will selected to conduct the VE Study. It is the responsibility of the Consultant to submit appropriate VE team members to the District for consideration and to schedule the VE meeting. The VE firm and team members will then be jointly selected by the Consultant and the District.

1. Design Review Meeting: <<modify/add for project specific requirements>><<Depending on the number and type of comments, it may be possible to conduct the design review meeting within the regular monthly progress meeting rather than conducting a separate design review meeting.>>

The CONSULTANT will organize and lead a 30% Design Review Meeting to present the design and to receive and discuss comments regarding the design. DISTRICT staff, the Consultant’s Project Manager, and key design team staff representing the various disciplines shall attend the review. The Consultant’s QA/QC review staff shall be available by phone to answer questions regarding the QA/QC Report.

The CONSULTANT will include design review meetings with the Security and/or IT departments associated with their design deliverable reviews.>>

The DISTRICT will provide comments to CONSULTANT on the DISTRICT’s technical comments form within two weeks of CONSULTANT’s delivery of the design submittal documents. Approximately one week after the DISTRICT’s written review comments are provided to the CONSULTANT, a review meeting will be held to discuss critical design issues. DISTRICT staff, CONSULTANT’s Project Manager, and key design staff representing the various disciplines shall be in attendance at the meeting. The DISTRICT review team and CONSULTANT will mutually develop a list of critical issues for discussion at the review meeting. This list will serve as the review meeting agenda. Discussion items will be captured in meeting minutes prepared by CONSULTANT. CONSULTANT will incorporate the conclusions reached at the meeting into the Consultant responses to the related comments. CONSULTANT will capture on the technical review form any additional comments generated at the meeting. Within ten (10) working days of the meeting, the CONSULTANT will submit to the DISTRICT the technical review comment form, including responses to all comments.

## 60% Design

The 60% design submittal is a detailed presentation of the design configurations and parameters established in the Pre-Design and 30% Design Tasks as modified to reflect advancement of the design and incorporation of comments.

The 60% submittal shall include, at a minimum, the requirements of all previous design submittals as well as the following:

1. Drawings
   1. Plan and section drawings; drawings shall illustrate the complete complement of facilities included in the Project (both rehabilitated and new), including all dimensions, abbreviations, nomenclature, legends, general notes, and discipline related notes.
   2. Equipment to be incorporated in the design shall be identified and data entered in the Asset Management Equipment and Spare Parts Tables provided by the DISTRICT, and referenced to the DISTRICT’s standard specifications and Equipment Tag Naming Standard.
   3. Structural, site/civil, and overall site plans sufficiently developed to show the proposed detailed layout of the entire project.

*<<PM – List any specific layouts or drawings required; some example text is provided below>>*

* 1. Structural, mechanical, electrical, and I & C design of the X processes.
  2. Trench width limitations and backfill requirements for any sewers to be constructed by open-cut methods
  3. Plan and section views of X process, improvements, etc. and other flow structures, including at a minimum the configuration of all components, all exterior and interior dimensions, flow channels, orifices, access openings, etc.
  4. Existing utilities and preliminary concepts for any necessary utility support and/or relocation
  5. Site plans and preliminary restoration plans

1. Specifications
   1. Draft list of Bid Items
   2. Draft technical specifications tailored to Project. Indicate any deviations from the District’s standard specifications.
   3. Draft measurement and payment section.
   4. Draft constraints section.
   5. Any draft special specifications.
   6. Review DISTRICT’s *Mercury Free Purchasing Policy* and its applicability to specified equipment and materials; include any pertinent considerations for conformance to this policy in Specifications as applicable, including demolition of equipment containing mercury in accordance with District standard specification *02 82 07 Recycling of Universal and Hazardous Waste*.
2. Easements, Permit Applications, and necessary plans including but not limited to the following: *<<PM: Add or edit requirements as appropriate to the Project>>*
   1. Prepare final legal descriptions and plat drawings for all temporary and permanent easements
   2. Prepare draft maintenance of traffic plans to provide a safe work space for the contractor to perform the construction of the proposed Project and coordinate this plan with the local municipality. The design shall meet the requirements of the local municipality and the “Ohio Manual of Traffic Control Devices for Streets and Highways.”
   3. Prepare a draft Storm Water Pollution Prevention Plan (SWPPP) using the DISTRICT standard template outline if more than one (1) acre is planned to be disturbed. The CONSULTANT shall prepare the SWPPP and supporting documents as may be required to obtain a Notice of Intent permit from the Ohio EPA and local stormwater permitting regulations including but not limited to the City of Cleveland, the City of East Cleveland, and Mahoning/Trumbull Country Soil and Water Conservation District. The consultant shall provide all documentation pursuant to the standards as provided in the latest Ohio Department of Natural Resources –“Rainwater and Land Development Code”.
   4. Prepare draft Army Corps of Engineers 404/401 Permit applications for any areas in which wetlands have been identified.
3. Updated Construction Schedule, including preliminary sequence of construction for maintaining operations during construction. <<*if pertinent to design*>>
4. Updated utility tracking sheet.
5. Revised Basis of Design Report with design calculations reflecting the most current design
6. Hydraulic Analysis/Process Modeling Results <<*if pertinent to design*>>: Completed analysis/modeling reflecting the most current design, including flow operation schematic for design storms. CONSULTANT will progress the hydraulic analysis, and in particular the hydrologic and hydraulic model, to reflect the development of the design, resulting in an updated analysis/modeling which reflects the most current design, including a flow operation schematic for design conditions.
7. Geotechnical Data Report: The geotechnical program begun during the pre-design task shall be advanced during the design task, including all necessary borings, rock cores, testing, and analysis. The final boring logs shall be the result of the data gathered in the field and analyzed in the lab during the pre-design and design tasks. The logs shall be incorporated into a geotechnical data report. The geotechnical baseline report shall be updated as necessary.
8. Revised Risk Register.

*<<PM: Modify number of hard copies required based on project requirements.>>*

1. Revised Quality Assurance Report, <<three (3)>> hard bound copies and one (1) electronic copy, transmitted to the DISTRICT PM including:
   1. Summary of Consultant’s internal design review comments, proposed responses and review staff documented on a review template provided by the District.
   2. Summary of the Consultant’s constructability review including inter and intra discipline coordination review
   3. Explanation of significant differences that may exist between the 30%Basis of Design Report and the 60% Basis of Design Report.
2. Engineer’s Opinion of Probable Construction Cost (EOPCC): Prepare a Class 2 construction cost estimate in accordance with the Association for the Advancement of Cost Engineering (AACE) International Recommended Practice 18R-97. An example of an EOPCC is provided on the DISTRICT’s Consultant and Contractor Resource page. <<Three (3)>> copies and one (1) PDF electronic copy shall be submitted to the DISTRICT’s Project Manager.*<<PM: Modify number of hard copies required based on project requirements.>>*

<<For Projects that include Pump Stations, Buildings or Equipment requiring power Supply or control work>>

1. Completed P&IDs showing all mechanical equipment, process piping and instrumentation.
2. Drawings illustrating the complete complement of facilities included in the Project (both rehabilitated and new), including all dimensions, abbreviations, nomencl*ature, legends, general notes, and discipline related notes.*
3. *Draft equipment* schedules
4. Proposed panel layout and wiring drawings.
5. Preliminary description of control for any equipment to be used for PLC programming by Consultant.
6. Operational Readiness

## The purpose of the Operational Readiness is to prepare Operations and Maintenance staff for the handoff of the project from the Contractor so operation can continue without interruption. The Design Consultant will conduct 1-3 workshop(s)/meetings with the appropriate Operations, E&C and Consultant staff to address the items necessary to incorporate into the project for startup and training so that Operations staff is equipped to assume control of the improvements at the conclusion of Commissioning. The scope of these efforts will include consideration of all of the elements of the <<process(es) affected>> operation to ensure that there is an integrated operating plan for all elements of the plant affected by this project.

This task would occur with workshop(s)/meetings between 60% and 90% Design completion. The purpose of the workshop(s)/meetings is to determine the Operational Readiness requirements to be addressed in the Contract Documents, and to assess the staffing and training required for the project. An operational plan is required for the usage of the <<XXXXXX facilities>>, for staffing, maintaining and operating the <<XXXXXX >>. Standard Operating Procedures (SOPs), Standard Maintenance Procedures (SMPs) and Lockout/Tagout (LOTO) requirements will be included with the project.

The deliverables include:

* Schedule - A proposed schedule during construction that includes milestones for all necessary documentation, including SMPs, SOPs, and O&M Manuals and training and testing during commissioning before the handoff to Operations staff. Refer to the Standard Maintenance Procedures Guidelines document when creating SMPs.
* Bid Specifications - modification to the technical specifications requiring any necessary documents or training to be produced by vendors in accordance with the milestone schedule. Incorporate into the bidding documents an operational demonstration performance plan to be followed by the Contractor during startup of equipment and processes.
* Develop a technical memorandum outlining an operational and maintenance startup and staffing plan that also recommends the facility control and operational strategy.
* Provide draft outlines of the Standard Operating Procedure (SOP) Guides; Standard Maintenance Procedure (SMP) Guidelines and Lockout/Tagout (LOTO) for all major pieces of equipment and processes. Utilize District provided templates for SOPs, SMPs and LOTOs.
* Provide outlines of the computer based training modules with customized online courseware for the process and equipment.

Responsibilities are to be clearly outlined in the Construction Contract Documents. Responsible parties from the Consultant, Operations, E&C and the Contractor will be assigned for each aspect of the Operational Readiness implementation.

The following is a list that provides a general guide for topics to be addressed in the Operational Readiness workshop(s)/meeting(s).

|  |  |
| --- | --- |
| **Topic** | **Responsible Party** |
|  |  |
| Identify what equipment and/ or processes are being modified and how they will change | Consultant |
|  |  |
| Identify Staffing Required and any job description changes required | OPS / Consultant |
|  |  |
| Identify any licensing or regulatory reporting requirements | Consultant / OPS |
|  |  |
| Determine if other departments within the District are impacted, such as PC&A, IT, Analytical Services, WQIS, SSMO, Finance, Security, etc. |  |
|  |  |
| Contingency Plans for Failure Modes | OPS /E&C/ Consultant |
|  |  |
| Contracts – what supplemental or long term contracts will be required? | OPS |
|  |  |
| Operations Budget Required | OPS |
|  |  |
| Complete Asset Management Equipment and Spare Parts Tables | E&C/Consultant |
|  |  |
| Warranty Process – identify the warranty requirements and responsibilities for enforcement | OPS/ E&C |
|  |  |
| SOPs | Consultant |
|  |  |
| SMPs | Consultant |
|  |  |
| LOTO | Safety |
|  |  |
| Confirm Automation Strategies | OPS /E&C/ Contractor |
|  |  |
| Spare Parts Required | Contractor |
|  |  |
| Nuisance Alarms | Contractor / Consultant |
| Start-up Plan / Schedule | Contractor / Consultant |
|  |  |
| Manufacturer O&M Manuals submitted and approved | Contractor / Consultant / E&C |
|  |  |
| O&M Manual – Facility Troubleshooting Guide and overview | E&C/ Consultant |
|  |  |
| Identify Training required and who will perform it. Assist with implementation of online training module to be provided to Third Party Training Provider | Consultant / Contractor |

1. Asset Management Equipment and Spare Parts Tables. The CONSULTANT shall complete as appropriate, the columns of the Asset Inventory Table and the columns of the Spare Parts to Inventory Table noted as “completed during design”, as further described on the “instructions” sheet of the Asset Management Equipment and Spare Parts Excel file provided by the DISTRICT. The remaining columns will be completed during the Construction Administration Task by the CONSULTANT as described on the “instructions” sheet.
2. Design Review Meeting: <<modify/add for project specific requirements>><<Depending on the number and type of comments, it may be possible to conduct the design review meeting within the regular monthly progress meeting rather than conducting a separate design review meeting.>>

The Consultant will organize and lead a 60% Design Review Meeting to present the design and to receive and discuss comments regarding the design. DISTRICT staff, the Consultant’s Project Manager, and key design team staff representing the various disciplines shall be in attendance for the review. The Consultant’s QA/QC review staff shall be available by phone to answer questions regarding the QA/QC report.

The CONSULTANT will include design review meetings with the Security and/or IT departments associated with their design deliverable reviews.>>

The DISTRICT will provide comments to CONSULTANT on the DISTRICT’s technical comments form within two weeks of CONSULTANT’s delivery of the design submittal documents. Approximately one week after the DISTRICT’s written review comments are provided to the CONSULTANT, a review meeting will be held to discuss critical design issues. DISTRICT staff, CONSULTANT’s Project Manager, and key design staff representing the various disciplines shall be in attendance at the meeting. The DISTRICT review team and CONSULTANT will mutually develop a list of critical issues for discussion at the review meeting. This list will serve as the review meeting agenda. Discussion items will be captured in meeting minutes prepared by CONSULTANT. CONSULTANT will incorporate the conclusions reached at the meeting into the Consultant responses to the related comments. CONSULTANT will capture on the technical review form any additional comments generated at the meeting. Within ten (10) working days of the meeting, the CONSULTANT will submit to the DISTRICT the technical review comment form, including responses to all comments.

## 90% Design

The 90% percent design submittal serves as the pre-final design submittal including all design disciplines and facility components and considering all comments and decisions made during the previous submittal reviews and meetings.

The 90% submittal shall include, at a minimum, the requirements of all previous design submittals and the following:

1. Complete set of Contract Drawings including title sheet. The design shall be substantially complete for this submittal. Interdisciplinary reviews shall be substantially completed before the submittal is made. The drawings and specifications are essentially ready for bidding without a final in-house QA/QC check if no changes are required as a result of the pre-final review meeting.
   1. The Bid Booklet, the Front End (Instructions to Bidders, General Terms and Conditions, Special Conditions, Forms of Agreement) and Division 1 – General Requirements shall be included with the bid package. These documents have standard templates that will be provided by the DISTRICT to the CONSULTANT.
2. Final versions of all technical specifications.
3. Final Basis of Design report. Provide complete design calculations as appendices to the final Basis of Design report. These appendices can be submitted as an electronic file with all final calculations in PDF on a CD. This submittal will replace any previous calculation submittals.
4. Updated Construction Schedule, including preliminary sequence of construction for maintaining operations during construction, as well as constructability. <<*if pertinent to design*>>
5. Final permit applications, and plans, including but not limited to the following:
   1. Prepare final maintenance of traffic plans to provide a safe work space for the contractor to perform the construction of the proposed Project and coordinate this plan with the local municipality. The design shall meet the requirements of the local municipality and the “Ohio Manual of Traffic Control Devices for Streets and Highways.”
   2. Prepare a final Storm Water Pollution Prevention Plan (SWPPP) using the DISTRICT standard template outline if more than one (1) acre is planned to be disturbed. The CONSULTANT shall prepare the SWPPP and supporting documents as may be required to obtain a Notice of Intent permit from the Ohio EPA and local stormwater permitting regulations. The consultant shall provide all documentation pursuant to the standards as provided in the latest Ohio Department of Natural Resources –“Rainwater and Land Development Code”.
6. Hydraulic Analysis/Process Modeling Results <<*if pertinent to design*>>: Completed analysis/modeling reflecting the most current design, and including a summary of model changes. CONSULTANT will submit both the model results and the model itself at the 90% level.
7. Revised risk register.
8. Final description of control for any equipment to be used for PLC programming by Contractor

*<<PM: Modify number of hard copies required based on project requirements.>>*

1. Revised Quality Assurance Report, <<three (3)>> hard bound copies and one (1) electronic copy, transmitted to the DISTRICT PM including:
   1. Summary of CONSULTANT’s internal design review comments, proposed responses and review staff documented on a review template provided by the DISTRICT.
   2. Summary of the Consultant’s final constructability review including inter and intra discipline coordination review.
   3. Summary of Front end, Bid Booklet, Division 1 and technical specification coordination review with the contract drawings.
   4. Explanation of significant differences that may exist between the 60% Basis of Design and the 90% Basis of Design.
2. Engineer’s Opinion of Probable Construction Cost (EOPCC): Prepare a Class 1 Construction Cost Estimate in accordance with the Association for the Advancement of Cost Engineering (AACE) International Recommended Practice 18R-97. <<Three (3)>> copies and one (1) PDF electronic copy shall be submitted to the District’s PM. *<<PM: Modify number of hard copies required based on project requirements.>>*

<<For Projects that include Pump Stations, Buildings or Equipment requiring power Supply>>

1. Final equipment schedules
2. Final panel layout and wiring drawings.
3. Final description of control for any equipment to be used for PLC programming by Consultant
4. Geotechnical Baseline Report:
   1. A draft geotechnical baseline report shall be prepared and included in the 90% design submittal. The draft report shall be a near final version of the report. Revisions to the report after the 90% submittal should consist only of changes necessary to correlate with revisions to the final design or changes due to reassessment of risk assignment.
   2. The final geotechnical baseline report shall contain the evaluation of the subsurface materials discovered and the conditions which the construction contractor can expect to encounter. In addition, the geotechnical baseline report shall include discussion of dewatering, appropriate construction techniques and support requirements necessary to properly construct this project. The primary purpose of the GBR is to set baselines for geotechnical conditions anticipated to encountered during underground construction in order to provide clear indications in the Contract for resolution of disputes concerning underground conditions. Certain risks will be clearly allocated between the Contractor and the DISTRICT. The GBR will also provide a generalized subsurface profile and describe key geotechnical considerations and constraints. It will be the geotechnical professional’s responsibility to assure the accuracy of the reports.
   3. The GBR is a Contract Document and will supersede the GDR in the event of underground disputes. If the GBR is silent on a particular geotechnical issue, the raw data in the GDR can be used during dispute resolution.
5. 90% Design review meeting: <<modify/add for project specific requirements>><<Depending on the number and type of comments, it may be possible to conduct the design review meeting within the regular monthly progress meeting rather than conducting a separate design review meeting.>>

The Consultant will organize and lead a 90% Design Review Meeting to present the design and to receive and discuss comments regarding the design. DISTRICT staff, the Consultant’s Project Manager, and key design team staff representing the various disciplines shall be in attendance for the review. The Consultant’s QA/QC review staff shall be available by phone to answer questions regarding the QA/QC report.

<<The CONSULTANT will include design review meetings with the Security and/or IT departments associated with their design deliverable reviews.>>

The DISTRICT will provide comments to CONSULTANT on the DISTRICT’s technical comments form within two weeks of CONSULTANT’s delivery of the design submittal documents. Approximately one week after the DISTRICT’s written review comments are provided to the CONSULTANT, a review meeting will be held to discuss critical design issues. DISTRICT staff, CONSULTANT’s Project Manager, and key design staff representing the various disciplines shall be in attendance at the meeting. The DISTRICT review team and CONSULTANT will mutually develop a list of critical issues for discussion at the review meeting. This list will serve as the review meeting agenda. Discussion items will be captured in meeting minutes prepared by CONSULTANT. CONSULTANT will incorporate the conclusions reached at the meeting into the Consultant responses to the related comments. CONSULTANT will capture on the technical review form any additional comments generated at the meeting. Within ten (10) working days of the meeting, the CONSULTANT will submit to the DISTRICT the technical review comment form, including responses to all comments.

## Final Design

The final design will be represented in the documents to be used for bidding purposes. This includes final drawings, specifications, cost estimates, and project schedules. The following provides more details relative to the final design submission requirements.

The Final design submittal will incorporate all corrections and shall be complete and suitable for bid purposes. A final design review meeting may be held, at the DISTRICT’s discretion, if significant 90% detailed design delivery issues are discovered during the 90% review. If the final design review meeting is held, the Consultant shall prepare agenda, meeting minutes and attend the meeting and revise the drawings and specifications as necessary based on the outcome of the final review meeting as part of the base scope of services.

Prior to submitting the Final Design Submittal, the CONSULTANT shall meet with the Director of Engineering to review the final design contract documents. Consultant shall provide detailed meeting notes of DISTRICT comments within 2 days of review meeting.

It is the Consultant’s responsibility to document that all previous comments have been addressed and that the Consultant provided and documented that suitable inter and intra discipline reviews were completed.

The Final design submittal shall include, at a minimum, the following:

* All drawings.
* All technical specifications
* Final hydraulic analysis/process model
* Final basis of design with all final calculations
* Revised risk register
* Final design quality assurance report
* Final Engineer’s Opinion of Probably Construction Cost
* Final geotechnical data report and geotechnical baseline report
* Final Operational Readiness deliverables
* Summary of all permits and approvals for the Project
* Bidding documents

# Bidding

*<<PM: Modify number of hard copies required based on project requirements.>>*

The Consultant shall provide Contract Documents for bidding purposes and for distribution by the District to interested parties including the District’s staff. The Consultant shall provide up to <<50>> hard copy bid sets and one (1) electronic PDF copy (front end documents, specifications, bid booklet, full size drawings, half size drawings, and any other supplemental documents). The PDF copy shall be created as described and required in Task 2 and shall be posted on the DISTRICT’s SharePoint Project Site.

## Pre-Bid Meeting

The Consultant shall assist the District’s PM with the following items:

* Developing an agenda and presentation for the Pre-Bid Meeting,
* Attending and participating in the Pre-Bid Meeting, and
* Assisting in preparation of minutes of the Pre-Bid Meeting, which will be included in the first addendum.

## Addenda

The Consultant shall assist the District’s PM in the preparation and issuance of addenda during the bid phase. Addenda shall be prepared as approved by the District PM.

In general, the following procedures should be followed when portions of the Specifications or Drawings are being altered by addenda:

* Changes to pages or sections of Specifications or the Bid Booklet – Each page affected by the addenda shall use a red-line and strike-out method to indicate where changes are made and should be footnoted to indicate Addenda number and date; or, as approved by the DISTRICT’s PM.
* Drawings – Each drawing affected by addenda shall be updated to show the changes and a revision cloud shall be placed around the changes. A triangle, with corresponding addendum number inside, shall be placed next to the change. CONSULTANT shall utilize the standard drawing border area for comments or remarks box to designate the addenda change. Refer to the DISTRICT’s CAD Guidance Manual for specific procedures for drawing revisions and confirm with the DISTRICT’S PM.

## Bid Evaluation & Recommendation

The Consultant shall assist the District’s PM in analyzing bids and provide a letter of recommendation for award of the construction contract. At a minimum, the following should be provided:

* Review of the Purchasing Bid tabulation and recommendation
* Review of any minimum qualifications or requirements specified in the Contract Documents to be provided at the time of bid
* For more complex or higher risk projects, the Design PM should consult with the Design Manager on the level of evaluation such as reference and/or financial (Dunn&Bradstreet) checks – note that these items are not so much as whether to award to this firm or not but would supplement a risk evaluation at the beginning of the project that would help the CS/Law be prepared for changes, risk mitigation planning, etc. There is some benefits to doing these sort of checks on unfamiliar contractors and/or critical subcontractors or on projects with specialty contract requirements, construction methodology or materials.

# Construction

## Contract Administration Services

The Consultant shall provide Contract Administration Services supporting the District’s PM and Construction Supervisor for the duration of Project construction. The scope of services shall include but is not limited to the following:

*<<PM: Modify number of hard copies required based on project requirements.>>*

1. Prepare Conformed-to-Contract documents. - The Conformed-to-Contract documents shall be defined as the unofficial set of documents whereby the original signed and executed Contract Documents are amended as described below to incorporate addenda issued during the bid process, between the time of advertisement and contract execution. It is intended for MVSD’s internal use only.
   1. Provide <<\_\_\_>> Conformed-to-Contract sets to the District (<<\_\_\_>> full size and <<\_\_\_>> half size sets) and <<\_\_\_>> to the Contractor (<<\_\_\_>> full size and <<\_\_\_>> half size sets).
      1. 1 indexed PDF electronic copy
      2. 1 original electronic copy in the native MS Word Format (or other native format approved by the District)
   2. The Conformed-to-Contract set shall include all changes to the specifications and drawings after the bidding process has ended. In general, the following procedures should be followed:
      1. Each page of the Specification Volume affected by the addenda shall use a red-line and strike-out method to indicate where changes are made and should be footnoted to include Addenda number and date; the Bid Booklet should include the accepted bidding forms filled in by the Contractor at the time of submittal.
      2. Drawings – Each drawing affected by addenda shall be updated to show the changes and a revision cloud shall be placed around the changes. A triangle with corresponding addendum number inside shall be placed next to the change. CONSULTANT shall utilize the standard drawing border area for comments or remarks box to designate the addenda change. Refer to the DISTRICT’s CAD Guidance Manual for specific procedures for drawing revisions and confirm with the DISTRICT’S PM.
      3. The Specification book and Drawing cover sheets shall include a stamp reading as follows:

**Conformed-to-Contract Documents**

Note: These documents are the Conformed-to-Contract documents. They have been amended to incorporate addenda issued during the bid process. They are an unofficial set of documents and are intended for MVSD’s internal use only.

1. Participate in a Pre-Construction Meeting and document meeting minutes in appropriate DISTRICT template.
2. Provide the DISTRICT listing of all required submittals specified in the Contract Specifications in an EXCEL workbook. Consultant should clearly or provide separate list of required Operations and Maintenance Manuals submittals and required spare parts. Maintain list, as requested, of approved submittals in DISTRICT Project Mangement site and remaining submittals to be provided during the course of construction.
3. Review detailed construction submittals, contractor/vendor’s operations and maintenance (O&M) manuals, contractor/vendor’s O&M training outlines and other information submitted by the Contractor for compliance with the design concept and the requirements of the Contract Documents. Such data shall be recommended for approval, returned for revision, rejected, or distributed for information.

Each submittal shall be divided into separate Pieces for the purpose of review. Each piece shall be stamped using Adobe Professional pursuant to the disposition requirements of Standard Specification DIV 01 3300. Each Piece shall be annotated using Adobe Professional with any significant remarks or notes. Assume <<\_\_\_>> submittals. *<<PM: Assume a number/quantity based on previous projects of similar size and complexity. You can review historical data on SharePoint to obtain a report listing number per job for previous and current projects.>>*

1. Complete the Asset Management Equipment Inventory Table as described on the “instructions” sheet of the Asset Management Equipment and Spare Parts Excel file on at least a monthly basis as shop drawings or equipment are received.
2. Provide the necessary coordination and services to transition the project from the Contractor to the District. This Operational Readiness task includes the following services.
   1. Training Materials - Provide complete computer based training modules with customized online courseware for the process and equipment. Module development will include graphic overlays of the process components, links to reference material/supporting documents, audio and video objects, and quizzes/tests to demonstrate proficiency.
   2. Startup Plan - Provide a system startup plan for the District that assigns responsibilities for District staff and integrates with the Contractor’s commissioning and startup activities that are submitted as part of the construction contract requirements. This shall include the operational demonstration performance plan to be followed during this time period.
   3. Provide final Standard Operating Procedure (SOP) Guides; Standard Maintenance Procedure (SMP) Guidelines and Lockout/Tagout (LOTO) for all major pieces of equipment and processes. Utilize District provided templates for SOPs and SMPs.
   4. For LOTO, the Consultant shall perform selective coordination and arc flash analysis.
   5. Operations and Training Assistance - Provide services necessary for operations assistance and training during construction phase system startup/operational demonstration performed by the Contractor. Two (2) people for a total of XXX hours (##- days at 8-hours per day) of startup operations assistance are anticipated for this effort under the base scope of services.
   6. Provide System Operations & Maintenance (O&M) Manual to provide system and process overviews and troubleshooting guides. The System O&M Manual shall address the overall operations of systems as opposed to SOPs/SMPs which address smaller units of the overall system. The O&M Manual shall address such items as safety aspects during operation, maintenance, and cleaning; suggested sequence of operation; operational strategies; loading operations; odor control provisions; and solids management.
   7. Provide the warranty requirements and responsibilities for enforcement.
3. Prior to commissioning of equipment, the Consultant shall perform short circuit, flash hazard and protective devices coordination analyses. The Contractor shall be provided the labels for equipment settings to be placed before transfer of the equipment to the District. These analyses shall be performed as follows.
   1. A power system short circuit analysis shall be provided by the Consultant to analyze the electrical system and verify the correct application of the power system devices and other power system components provided under this Contract. Perform the study down to the 120/208 volt panel level. This and the following flash hazard and coordination analyses shall be carried from the District’s Plants Substation primary fuses through the branch circuit protective devices. The analyses shall include all existing electrical distribution system components to remain in service.
   2. A flash hazard analysis shall be provided by the Consultant to determine the flash protection boundary and the level of personal protective equipment(PPE) required for each switch enclosure, panel, device, and equipment containing electrical circuits per NFPA 70E. The results of this analysis shall be used to prepare arc-flash and shock hazard warning labels for electrical equipment enclosures, where required by the National Electrical Code.
   3. A protective devices coordination analysis shall be provided by the Consultant to analyze and verify the selection and settings of the protective devices in the electrical system. Devices shall be selected to provide a maximum of circuit protection and selectivity consistent with a maximum in service continuity. Composite coordination curves shall be provided by the Consultant to verify that selectivity will be provided by the devices used.
   4. In the short circuit analysis, provide calculation methods and assumptions, the base quantities selected, one-line diagram, source impedance data (including power company system characteristics), impedance diagrams or data tables, typical calculations, tabulations of calculated quantities and results, conclusions, and recommendations. Provide calculated short circuit interrupting and momentary duties for an assumed three phase bolted fault at the primary switches, secondary unit substation, automatic transfer switches, motor control centers, distribution panelboards, branch panelboards, and other significant locations throughout the distribution system. Include in the tabulations: fault impedance, X/R ratios, asymmetry factors, motor contribution, short circuit kVA, and symmetrical and asymmetrical fault currents.
   5. Calculations shall be of the per unit impedance method on a 100 MVA or 1,000 kVA base.
   6. The flash hazard analysis shall include calculations of the flash protection boundary and incident energy for each piece of electrical equipment utilizing the formulas in NFPA 70E-2000 and IEEE Standard 1584. The analysis results shall include the following for each piece of electrical equipment:
      * 1. Flash hazard boundary in inches.
        2. Incident energy of 18 inches from arc in calories per square centimeter

(cal/cm2).

* + - 1. PPE level.
      2. Limited approach distance (when door or cover is open) in inches.
      3. Restricted approach distance (when door or cover is open) in inches.
      4. Prohibited approach distance (when door or cover is open) in inches.
  1. In the protective devices coordination analysis, provide time-current curves graphically indicating the coordination proposed for the system, including ground fault protection, centered on conventional full size log-log paper. Include with each curve sheet a complete title and one-line diagram with legend identifying the specific portions of the system covered by that particular curve sheet. Each curve sheet shall display curves for a maximum of four (4) protective devices. Include a detailed description of each protective device identifying type, function, and degree of coordination achieved. Tabulate recommended device pick-up, instantaneous and time delay settings.
  2. Include on the curve sheets medium voltage equipment relay and fuse characteristics, low voltage equipment circuit breaker trip device and fuse characteristics, pertinent transformer characteristics, pertinent motor and generator characteristics, and characteristics of other system load protective devices. Include all devices down to the low voltage feeder breakers. Include transformer destruct curves (ANSI method; including thermal and mechanical stress limits) and significant symmetrical and asymmetrical fault currents. Terminate device characteristic curves at a point reflecting the maximum symmetrical or asymmetrical fault current to which the device is exposed.
  3. The short circuit, flash hazard, and protective devices coordination analyses shall be prepared with a digital computer running ETAP software and must include complete fault tabulations from the sources shown on the Drawings.
  4. The short circuit, flash hazard, and protective devices coordination analyses shall be provided by an electrical power distribution equipment manufacturer or an electrical distribution systems analyst. Analyses shall be prepared by persons experienced in the work.
  5. Provide five (5) bound documents, each of which shall include complete short circuit, flash hazard, and protective devices coordination analyses, including device coordination and time-current curves for the distribution system protective devices. Provide the updated Arc Flash / Short Circuit Study in five copies of revised electronic format (E-TAP files) at completion.
  6. Consultant shall provide the appropriate labels to the Contractor for placing on the equipment in coordination with the District. Labels shall be pressure sensitive vinyl conforming to OSHA, shall be minimum 5 inches by 3-1/2 inches and shall be applied by adhesive backing. Labels:
     1. Shall have black lettering on yellow background
     2. Shall not contain abbreviations in legend
     3. Shall be thermally printed on continuous tape with permanent adhesive.

1. As requested by the District, assist in liaison with Contractor when construction work affects plant operations or other on-site work.
2. As requested by the District, attend monthly formal progress meetings, weekly project status meetings, and other on-site coordination conferences.
3. As requested by the District, assist with monthly reports, if any, as to Project status or progress.
4. Provide interpretation of Contract Documents when requested by the District.
5. As requested by the District, prepare responses to Requests for Information (RFIs). Assume <<\_\_>> RFIs. *<<PM: Assume a number/quantity based on previous projects of similar size and complexity. You can review historical data on SharePoint to obtain a report listing number per job for previous and current projects.>>*
6. As requested by the District, consider and evaluate the Contractor’s suggestions for modifications to the Contract Documents and report recommendations to the Construction Supervisor. Assume <<\_\_>> suggestions for modifications. *<<PM: Assume a number/quantity based on previous projects of similar size and complexity. You can review historical data on SharePoint to obtain a report listing number per job for previous and current projects.>>*
7. As requested by the District, review Contractor’s as-built red line drawings for accuracy and completeness throughout the Construction phase. Compile record drawings from reviewed set in hard copy/electronic format.
8. As requested by the District, assist in the preparation of and administration of change orders and claims. Assume <<\_\_>> change orders and <<\_\_>> claims. *<<PM: Assume a number/quantity based on previous projects of similar size and complexity. You can review historical data on SharePoint to obtain a report listing number per job for previous and current projects.>>*
9. Perform PLC/HMI/OIT Programming and perform PLC/HMI/OIT Startup and Training based on DISTRICT current I&C standard specifications. Object blocks from the MVSD Standard Object Startup and Training based on DISTRICT current I&C standard specifications. Object blocks from the MVSD Standard Object will be used for this work. CONSULTANT will conduct two (2) Programming Workshops with the DISTRICT. Workshop 1 will be held at the 60% development phase to review graphics development, and Workshop 2 will be held prior to the Factory Acceptance Test to demonstrate readiness. It is assumed two (2) of the CONSULTANT’S staff will attend the Factory Acceptance Test. Perform programming loop checks, with estimated hours based on DISTRICT programming template. Assume <<\_\_\_>>discrete signals and <<\_\_\_>> analog signals.

## Resident Project Representative Support Services

*<<PM: Assume a number/quantity of hours and timeframe based on previous projects of similar size and complexity.>>*

The Consultant shall provide Resident Project Representative Assistance to the District’s Construction Supervisor during the duration of the construction of Project. The level of service will be <<\_\_\_>> hours per month for a duration of <<\_\_\_>> months, and <<\_\_\_>> hours per month for the remainder of construction. The Scope of Services shall include, but is not limited to, the following:

* Advise the Construction Supervisor immediately if it is determined that any work requiring shop drawing or sample submission is commenced and the shop drawing has not been approved.
* Review the progress and the quality of the construction work for general conformance to the Contract Documents, and consult with the Construction Supervision regarding such observations.
* Prepare written reports for each field visit and provide a copy to the Construction Supervisor.
* Report to the Construction Supervisor whenever the CONSULTANT believes that any work may be unsatisfactory, faulty, defective, does not conform to the Contract Documents, has been damaged, or does not meet the requirements of any inspections, tests or approvals required to be made.
* Advise the Construction Supervisor when the CONSULTANT believes work should be corrected or rejected or uncovered for special testing, inspection or approval.
* Advise the Construction Supervisor in determining that tests, equipment and startups are conducted as required.
* Assist the Construction Supervisor in determining field obstructions and expedite modifications to Contract Documents to reflect field conditions.
* Assist with the final inspection by design staff and Construction supervisor.
* Maintain a redline set of drawings to be used for preparation of the record drawings.
* Interface Protocols:
  + One point of contact from the Consultant should be designated for the Resident Project Representative Support Services. A secondary point of contact can be designated in the event that the first point of contact cannot be reached with a critical field question. All communications should be routed to the designated Consultant contact.
  + No more than two members of the Consultant design team are typically needed for progress meetings unless there is a specific need as determined by the District.
  + Generally, Consultant’s communication with the Contractor shall be through the District. The construction contract does not recognize the Consultant as having any authority to approve, reject or direct any of the Work.
  + The Consultant’s representatives shall not answer any questions or provide direction to the Contractor while on site. The Contractor should be directed to forward those questions to the DISTRICT’s Construction Supervisor.
  + The Consultant is not authorized to direct the Contractor or District’s Construction Inspection Staff, unless in the event of an emergency and the District’s Construction Supervisor cannot be reached.
  + If a decision must be made on a less critical issue, the order of contact is the District’s Construction Supervisor and then the District’s PM.
  + It is imperative that the District’s Construction Supervisor be kept informed of all observations made on site, and be the first one that is informed.

# Closeout

The Consultant shall:

* Compile Record Drawings from all addenda, Contractor’s and DISTRICT’s as-built red line set, pertinent shops drawings and instrumentation and control point-to-point drawings to reflect as constructed condition of project facilities and materials. Drawings shall be prepared using a triangle, with corresponding revision number inside, placed next to the change, including the addition notes in standard drawing border area for comments or remarks box to designate the change; each drawing shall include a Record Drawing stamp containing the issue date of the Record Drawings, company name and the engineer’s initials that completed the Record Drawing.
* Submit Record Drawings in hard copy and native electronic format. Consultant shall submit record drawings as follows:
* *<<PM: Modify number of hard copies required based on project requirements.>>*
  + <<2>> full size hard copies of drawings, bound and indexed appropriately
  + <<3>> CDs containing the native electronic format and indexed PDF electronic copies generated from the native document (not scanned) of all submittal documents
  + <<3>> DVDs of videos and/or photo files
* Complete Record Drawings within <<60>> days of substantial completion.
* Complete the System Operations & Maintenance Manual provided during construction commissioning and startup to include the index of record drawings and schedules of equipment. *<<PM include as applicable>>* In addition, instrument lists, ISA data sheets, and identification of the configuration software (PLC, OIT, HMI) utilized shall be part of the O&M Manual. The ISA data sheets shall include calibration data.

All drawings, schedules, instrument lists and I/O lists shall be included in electronic format in the appendix to the O&M Manual. Drawings shall be in native format and PDF; and all schedules and lists shall be in Excel and PDF format.

* Provide completed final Asset Management Equipment Inventory Table and Spare Parts to Inventory Table.
* Provide updated ETAP model for the plant Arc Flash / Short Circuit Study in both hardcopy and electronic format in accordance with the DISTRICT standard.
* Assist with the final inspection by design staff and Construction Supervisor.
* Conduct a final performance certification including preparing a video inspection of the tunnel, sewers, appurtenant structures and buildings one year after project completion.
* Verify final hydraulic model
* Inspection punchlist preparation and final inspection.

*<<PM: Adjust statement below as necessary for project. If CSO related project, verify with District’s CSO Design Manager any additional requirements for post-construction monitoring.>>*

* For CSO project, certify that all consent decree items for the Project have been addressed.>>

Additional Services (Allowances)

The District may require additional services from the Consultant for items not specifically included in the aforementioned Tasks. These services may consist of, but not be limited to, additional investigative and/or design services. It is the District’s intent to determine the appropriate price for Additional Services during negotiations with the selected consultant.

The funds associated with special allowances may only be used following written authorization of the Director of Engineering and Construction or other DISTRICT designee.

The following Additional Services may be authorized as part of this project:

*<<PM: Describe Specific Allowances below. Note that if desired by the DISTRICT, VE Services should either be included as part of Task 2 or as a Specific Allowance, but not both.>>*

1. Specific Allowance: <<EXAMPLE: Value Engineering Services:>>

The VE Study will be conducted when the design of the Project is approximately 30% complete but prior to the 30% Design Review Meeting. The VE Study recommendations, and CONSULTANT’s responses including recommendation for acceptance or rejection, shall be presented and discussed in the 30% Design Review Meeting. The VE recommendations incorporated into the design shall be summarized and submitted to the DISTRICT with the 60% design documents.

Firms and individuals that specialize in VE studies will be selected to conduct the VE Study. It is the responsibility of the Consultant to submit appropriate VE team members to the District for consideration and to schedule the VE meeting. The VE firm and team members will then be jointly selected by the Consultant and the District.

1. Specific Allowance: <<EXAMPLE: Clarifier CFD Modeling>>

The Consultant shall perform clarifier modeling using a Computational Fluid Dynamic (CFD) model on the settling tanks. This model, which incorporates solids flux theory, will provide a basis for identifying improvements required to increase secondary treatment system capacity. CONSULTANT will employ staff experienced with the model to perform the modeling; document the model inputs, assumptions, and results; and incorporate the results to refine the design.

1. Specific Allowance: <<EXAMPLE:Utility Relocation Design and Construction>>

In order to facilitate the relocation of utilities during the Construction phase of the Project, the CONSULTANT will need to coordinate advanced design for relocation of utilities as needed for any near surface work anticipated. This allowance will be used for the advanced payment of fees for engineering design efforts by the utility owner. This design coordination shall also be used to give the utility Owner advanced notice of schedule and the determination of construction costs associated with the relocation of the associated utilities.

1. Specific Allowance: <<EXAMPLE: Phase II Environmental Site Assessments>>

If a needed for Phase II ESAs is identified via the Phase I ESAs, these services will be paid through this allowance.

1. Specific Allowance: <<insert specific allowance here if desired>>

<<Define specific allowance here if desired>>

1. Specific Allowance: <<insert specific allowance here if desired>>

<<Define specific allowance here if desired>>

*<<PM: Provide a General Allowance line item for unknown work items; amount shall be discussed and set with Design Manager approval.>>*

1. General Allowance

In the event work items are identified beyond the scope of this agreement, this allowance shall be used at the sole discretion and approval of the Director of Engineering and Construction.

Project Management

Project management is a critical activity to be integrated with the execution of all tasks identified above. CONSULTANT shall utilize procedures related to cost estimating, scheduling, project documentation, risk management, QA/QC, and others as necessary to enhance budget, scope and time management for the Project.

In order to ensure that this project is successfully completed in a timely manner and to the satisfaction of the District, project management items including but not limited to the following are included in the Scope of Services:

* Monthly Project Progress Summary: Consultant shall comply with the District’s most current Schedule Guidance Document. Invoices for the period covered in the report will not be paid until the monthly progress update is delivered to and approved by the District.
* Monthly Invoicing: Consultant shall comply with the District’s most current invoice policies and invoice format.
* Project Meetings: <<modify/add for project specific requirements. As applicable, include interdepartmental design review meetings with the Security and/or IT departments associated with the design deliverable reviews mentioned herein. >>
  + The Consultant’s Project Manager shall meet, in person, with select District personnel monthly to review the progress of this project and to discuss any outstanding issues and potential problems. These meetings should include identification of work performed last period, work to be completed next period, critical action item status, and responsible parties to complete actions. Budget or schedule problems shall be identified and corrective actions noted.
  + The Consultant shall prepare and deliver an agenda, updated schedule, revised action items log, and revised risk register three (3) working days in advance of the meeting and shall prepare and deliver meeting minutes for review within three (3) working days of the meeting. CONSULTANT should anticipate a one half day meeting with one of the initial progress meetings to present and review the Risk Register during the Pre-design task and an additional similar half day meeting for the Risk Register at approximately the 30% Design after all alternatives have been designed. After that time, Risk Register reviews should be anticipated as updates during the monthly progress meetings. All draft submittals for monthly progress meetings shall be in Word or Excel format, and all final submittals shall be in PDF and delivered to the DISTRICT PM.
  + It is also expected that the Consultant’s and the District’s PM will hold telephone discussions as frequently as needed.
  + The Consultant shall also make personnel available for meetings with other agencies and utilities to answer questions pertaining to design elements of the project. The District will take the lead in organizing, planning and conducting any meetings with other agencies and utilities.

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| **Revision HistoryRevision Date** | **Page** | **Paragraph/Section** | **Revised By** | **Description of Revision** |
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