

VILLAGE OF JOHNSTOWN REQUEST FOR PROPOSALS

RFP Issue Date: June 2, 2021

Title: Water Treatment Plant Expansion

RFP No.: 2021 RFP WTP

Proposals Due: June 28, 2021 at 12:00pm

CONTACT INFORMATION/RESPONSE ADDRESS

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Village of Johnstown
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JLiggett@johnstownohio.org

The Village of Johnstown herein after referred to as "Village," is seeking proposals for the purpose of selecting a professional design consultant for planning, design, permitting, bidding, and construction administration services for the Water Treatment Plant Expansion project. The design services will be performed in the phases described in the scope of work. A lump sum fee is only being requested for Phase I (planning). The fees for Phases II and III will be negotiated prior to the initiation of each phase. The estimated schedule is as follows:

Pre-RFP tour of WTP	June 8, 2021 at 9:00 to 2:00
Proposals due to the Village	June 28, 2021 at 12:00pm
Engineer Interviews	July 7,2021
Consultant Selection and Negotiations	July 20, 2021
Notice-to-proceed	August 9, 2021
Estimated completion of Phase I (Planning)	December 8,2021
Estimated completion of Phase II (Engineering Design)	August 23, 2022
Estimated completion of Phase II (Bidding & Construction)	January 24, 2024

Submittal Instructions

- 1. Provide the information requested in this RFP in the same order as listed.
- 2. The proposal shall be limited to a maximum of thirty (30) 8 ½" x 11" single sided pages (may be printed double sided). Cover and divider pages are excluded from the page count.
- 3. Two (2) paper copies and one (1) electronic copy of the Proposals should be addressed and delivered to Jack Liggett at the above location no later than the time listed previously.
- 4. Questions regarding this RFP should be directed via e-mail to jliggett@johnstown.ohio.org by 12:00 PM, June 15, 2021. No questions will be addressed after this time/date. All properly received questions will be answered via email and distributed to all known potential respondents.
- 5. Proposals not received by the scheduled time will not be considered.

In its sole discretion, the Village of Johnstown may withdraw the RFP either before or after receiving submissions, may



accept or reject proposals, and/or may accept proposals which deviate from the RFP as it deems appropriate and, in the Village's, best interest. In its sole discretion, the Village may determine the qualifications and acceptability of any party or parties submitting a response to this RFP.

Proposal Content

- 1. Cover letter.
 - a. State the consultant's legal structure, federal tax identification number, and principal place of business.
 - b. Affirm that the person signing the proposal has the authority to make decisions as to matters relating to this RFP and to bind the consultant.
 - c. Affirm that the proposal meets the minimum qualifications set forth in the RFP.
 - d. Affirm that the consultant does not discriminate in its employment with regard to race, color, religion, sex, veteran status, sexual preference, national origin, or disability.
 - e. Affirm receipt of all addendums, if any.
- 2. Name of firm, address and telephone number, including a primary contact with phone number and email.
- 3. Firm background and experience with similar projects.
- 4. Number and composition of staff that is readily available for this project, including a table of organization of the project team.
- 5. Names, qualifications, and experience of project team. Each resume included shall not exceed one page.
- 6. Project approach describing proposed steps to completion and discussing any topics of special concern.
- 7. Fee for Phase I Detailed Design Memorandum.
 - a. Submit a lump sum fee for Phase I services only.
 - b. The fee shall remain valid for ninety (90) days after the date received.

Evaluation and Selection Process

1. Proposals will be evaluated and scored by a Selection Committee utilizing the following criteria and the respective weightings. Firms can be awarded points ranging from zero to the maximum score per category.

Category	Maximum Points
Firm Proposals	10
Past Record of Performance	15
Staff Qualifications	20
Project Approach	30
Clarity and Organization	5
Fee for Phase I	20
TOTAL	100

- 2. The Village may, at its discretion, invite a select number of firms into an interview process to supplement the evaluation process.
- 3. Upon completion of the evaluation process, the Village will select the top-ranked firm and will enter negotiations.
- 4. Upon reaching agreement, the Village will make an award to the selected Consultant.



Background

The Village of Johnstown has a lime softening water treatment plant (WTP) with a groundwater supply rated for 1.0 MGD and wishes to expand it to 2.0 MGD located at 395 W. Jersey Street, Johnstown, OH 43031. Originally built in 1993, there have been no major upgrades to the WTP since. The expansion of the wellfield and the construction of an additional water tower are currently being performed by the Village with another consultant. The raw water data for the wells is attached. PDFs of the WTP drawings will be provided upon request.

The current treatment system includes a single 36.5-ft diameter by 25-ft tall, welded steel upflow clarifier designed by CB&I that incorporates rapid mix, flocculation, and clarification in a single tank without mechanical mixing equipment. Instead, the raw water inlet enters the bottom portion of the tank from two tangential locations which provides vortex mixing. Slaked lime is stored in a 45-ton silo manufactured by Chemco. The lime is mixed with water at the base of the silo and a Penn Valley piston pump transports the lime slurry into a drop pipe at the top surface of the clarifier. A polymer is also adding to the raw water to aid in the settling process. The next process is recarbonation which was also provided by CB&I in a 12-ft diameter by 25-ft tall steel tank. A 20-ton TOMCO2 carbon dioxide tank is located outside. The recarbonated water flows to three 12-ft diameter by 25-ft tall steel dual media filters rated at 2.0 gpm/SF, also provided by CB&I. Sodium hypochlorite is injected into a static mixer before the filtered water enters the two clearwells under the process floor that have a total volume of 252,400 gallons. The overall dimensions of the clearwells are 29'-6" x 35'-9" x 16' SWD. Three 40 HP, 600 gpm vertical turbine high service pumps rated at 231 ft of head draw out of the clearwell. A single 20 HP, 2300 gpm vertical turbine pump rated at 26 ft of head is provided to backwash the filters.

The WTP site is relatively small and there was no room for lime sludge lagoons. The Village has two 129,000 gallon (26' \times 26' \times 17.66' SWD) concrete storage tanks with rotating decant pipes and vertical non-clog Vaughn chopper pumps, and mixing systems to aid in the removal of the sludge. A 60,000-gallon (28' dia. \times 12.9' SWD) filter backwash tank is also provided and is sized to hold to backwashes before decanting and recycling to the raw water.

Besides expanding the project from 1.0 MGD to 2.0 MGD, objectives of this project also include:

- 1. A preliminary evaluation/discussion of other softening methods to replace or blend with the existing lime softening plant.
- 2. Provisions to expand the plant beyond 2.0 MGD in the future. Determine maximum plant capacity on current site.
- 3. Evaluate options to decrease finished water hardness to 110 mg/L. The existing lime softening process is only able to decrease the hardness to 145 mg/L.
- 4. Evaluate options to improve existing operations:
 - Lime sludge recycle to decrease chemical usage and to reduce scaling of piping, pumps, and other equipment.
 - Automatic flushing system for lime and polymer feed systems upon plant shutdown. The plant does not operate 24/7 and is only allowed to operate for two hours after the operators leave.
 - Evaluate liquid lime.
 - Provide a dehumidification system to reduce sweating and corrosion.
- 5. Installation of a SCADA system (current operations are manual):
 - Automate the dosing controls for sodium hypochlorite, carbon dioxide and polymer.
 - Replace existing pH sensors located at the top of the filters and provide controls or alarms to adjust the lime dose.
 - Automate filter controls including backwash.
- 6. Evaluating whether the existing filters be re-rated such that fewer filters are needed with the expansion.
- 7. Evaluate expansion layouts to include space for a fluoride chemical storage and feed system. The Village will soon be a City and may be required to provide Fluoridation.
- 8. Evaluate filter backwash holding tank expansion.
- 9. Evaluate lime sludge holding tank expansion alternatives:
 - Include evaluation of dewatering and dry sludge storage options.
 - The Village is currently testing a volute dewatering press.



Scope of Work

The Consultant shall furnish planning, design, permitting, bidding, and construction administration services for the Water Treatment Plant Expansion. The Consultant may propose modifications to this scope of services if desired.

The consultant shall assign a project manager who will be the Village's primary contact and be responsible for the consultant's work (including sub consultant work if applicable).

PHASE I: PLANNING - DETAILED DESIGN MEMORANDUM (DDM)

Task 1.1 Project Management and Administration

- The consultant shall assign a project manager who will be the Village's primary contact and be responsible for the consultant's work (including sub consultant work if applicable).
- Perform project management and administration throughout Phase I of the WTP Expansion Project.
- Schedule and participate in a project kickoff meeting with the Village.
- Prepare meeting agenda and minutes for the kickoff meeting.
- Schedule and participate in monthly update and coordination meetings or conference calls with the Village.
- Prepare meeting agendas and minutes for monthly meetings or conference calls.
- Prepare monthly invoices for services rendered.
- Develop and update the project schedule and communicate any changes to the Village.

Task 1.2 Develop DDM

- Prepare a report to identify the current condition and capacity of the WTP and future needs to accommodate
 growth and increased water strength. The DDM for the WTP improvements is anticipated to include:
 Introduction and Project Description, Basis of Planning, Existing Facilities and Performance, Capacity Analysis,
 Alternatives Analysis, Cost Analysis, and Description of Recommended Improvements.
- Review population projections and potential development projects provided by the Village.
- Use the water population projections to determine if any intermediate operational measures are required before the WTP reaches its planned 2.0 MGD capacity.
- Meet with the WTP operators to review Operations and Maintenance (O&M) issues.
- Review existing As-Built drawings of the WTP.
- Evaluate up to three (3) alternatives to expand each process of the plant. An alternative shall be up to three (3) different equipment manufacturers, different process technologies, or a combination of the two. Develop a summary table or matrix for analyzing the processes and equipment of the WTP.
- Evaluate WTP expansion alternatives including objectives mentioned above.
- Perform a field review of the existing mechanical, electrical, and HVAC equipment ancillary to the process
 equipment and buildings, and recommend upgrades to lighting, heating, ventilation, and plumbing systems in
 the existing buildings at the WTP. Lighting will be evaluated in the screen building and recommendations will
 be made to improve lighting efficiency and reduce power consumption.
- Provide capital costs for equipment in each alternative and a Present Worth Analysis (PWA) of operational, maintenance, and replacement costs over a 20-year life cycle.
- Provide a process flow diagram, preliminary site plan, and figures showing the process equipment based on the preferred equipment and alternatives. Up to three (3) process flow diagrams and preliminary site plans shall be provided.
- Provide quality control reviews of internal work and provide quality assurance reviews of deliverables prior to submitting to the Village and reviewing agencies.
- Submit one (1) electronic (PDF format) copy and two (2) paper copies of the DDM to the Village for review and comment. The Village shall provide written review comments to ENGINEER within 30 calendar days from submittal of the DDM.



• Incorporate all comments received into a Final DDM for submission to the Village and Ohio EPA for approval. One (1) electronic (PDF format) and two (2) paper copies of the Final DDM will be provided.

Task 1.3 Funding Assistance

- Assist the Village with funding strategy, applications, and procurement. This task includes assisting with identification of applicable State/Federal funding programs, preparation of funding applications, coordinating with funding agencies, and other work associated with securing low-interest loans or grant funds for the project.
- Identify applicable funding sources for the implementation of the recommended WTP expansion improvements. Potential funding sources include Ohio EPA Water Supply Revolving Loan Account (WSRLA), Ohio Water Development Authority (OWDA), Ohio Development Services Agency (ODSA), Ohio Public Works Commission (OPWC), and General Obligation (GO) or Revenue Bonds (RB).
- Perform a general evaluation of the Village's current revenue system and sewer rates as well as the impact of the proposed improvements on those rates.
- If the Village would like to pursue United Stated Department of Agriculture Rural Development (USDA RD) funding, the DDM will need to be modified in the USDA Preliminary Engineering Report (PER) format with additional environmental and other requirements. If known prior to commencing work on the DDM, there shall be no additional compensation.

PHASE II: ENGINEERING DESIGN SERVICES

Task 2.1 Project Management and Administration

- Perform project management and administration throughout Phase II of the WTP Expansion Project.
- Schedule and participate in monthly update and coordination meetings or conference calls with the Village.
- Prepare meeting agendas and minutes for monthly meetings or conference calls.
- Prepare monthly invoices for services rendered.
- Maintain and update the project schedule and communicate any changes to the Village.

Task 2.2 Field Surveying and Base Mapping

ENGINEER shall:

- Perform all field surveys, site investigations, and base mapping necessary to facilitate and prepare the preliminary design, final construction drawings, specifications, and bid documents for the WTP Expansion project. All survey work shall be performed under the direction of a Professional Surveyor licensed in the State of Ohio and data shall be collected in the State Plane Coordinate System South and NAVD datum 1988. The anticipated survey area at the Johnstown WTP site is approximately five and one half (5.5) acres.
- The Village shall clearly mark utilities, to the best of their ability, inside the WTP fencing.

Task 2.3 Preliminary (30%) Water Treatment Plant Expansion Design

Preliminary Design will include civil, structural, architectural, process, mechanical, and electrical disciplines. ENGINEER shall:

- Prepare engineering construction documents to a 30% Design Plans level including civil, structural, architectural, process, mechanical, and electrical disciplines.
 - o Design plans shall be prepared in AutoCAD 2018 (or newer) software.
 - All design plans (preliminary and detailed) shall be developed in accordance with the Village of Johnstown Design Criteria.
 - Civil design will include yard piping, and other site improvements. Provide structural design for new tanks, buildings, and other process design support. Architectural services will include any modifications to existing buildings and new buildings to match the existing WTP structures.
- Develop an opinion of probable construction costs to accompany the 30% design submittal. Costs will be based on manufacturer's quotes, cost estimating manuals, and the ENGINEER's experience.
- Develop an estimated construction schedule.



- Submit one (1) electronic (PDF format) copy, two (2) full-sized (22-inch x 34-inch) paper copies, and two (2) half-sized (11-inch x 17-inch) copies of the plans and specifications to the Village for review and comment. The Village shall provide written review comments to ENGINEER within 30 calendar days from submittal of the Preliminary Design documents.
- Develop a hydraulic profile to analyze the hydraulic grade line of the WTP.
 - o Analyze the existing WTP conditions at 1.0 MGD and at the proposed 2.0 MGD.
- Provide quality control reviews of internal work and provide quality assurance reviews of deliverables prior to submitting to the Village and reviewing agencies.

Task 2.4 Detailed (60% and 90%) Water Treatment Plant Expansion Design

60% WTP Expansion Design

- Advance the Preliminary (30%) Design and provide the detailed design configurations and parameters
 established for a singular (1) alternative for public bid. The 60% design submittal shall consist of the following
 items:
 - o Draft set of Engineering Design Plans illustrating the proposed WTP expansion improvements.
 - o Draft Specifications, including draft Bid Lump Sum Forms
 - Draft Permit Applications, including:
 - Notice of Intent (NOI) for Ohio EPA stormwater permitting requirements.
 - Ohio EPA Water Plan Approval application.
 - Ohio EPA NPDES permit modification application for increases in discharge from the lime sludge holding tanks.
 - Ohio EPA Antidegradation Addendum (if needed).
 - Draft Engineer's Estimate of Probable Construction Cost.
- The Design Specifications will set forth the kind and quality of various materials to be used in construction, the
 type, capabilities, operating requirements, pertinent tests, guarantees to be met, and similar information
 needed to solicit competitive bids for construction of the Project. Specifications shall be prepared with the
 Construction Specifications Institute (CSI) Master Format 2008, Johnstown Design Criteria, ODOT Construction
 and Material Specifications, and requirements per the funding/reviewing agencies.
- Prepare for review and approval, the standard Front-End Documents including Contract Bond, Bid Guaranty and Contract Bond, Owner-Contractor Agreement forms, General Conditions, Bid Forms, Notice to Bidders, and Instructions to Bidders, and other related documents.
- Submit one (1) electronic (PDF format) copy, two (2) full-sized (22-inch x 34-inch) paper copies, and two (2) half-sized (11-inch x 17-inch) paper copies of the plans and specifications to the Village for review and comment
- Provide quality control reviews of internal work and provide quality assurance reviews of deliverables prior to submitting to the Village and reviewing agencies.

90% WTP Expansion Design

- Advance the 60% Design and provide the detailed design configurations and parameters established for a singular (1) alternative for public bid. The 90% design submittal shall consist of the following items:
 - Draft Final set of Contract Drawings illustrating the proposed water treatment facilities, including:
 - Title sheet, sheet index, general notes, abbreviations, nomenclature, legends, etc.
 - Process drawings
 - Architectural drawings
 - Structural drawings
 - Mechanical drawings
 - Electrical drawings
 - Instrumentation drawings
 - Draft Final Specifications, including draft Bid Forms (lump sum)
 - Draft Final Permit Applications, including:
 - Draft Notice of Intent (NOI) for Ohio EPA stormwater permitting requirements.
 - Draft Ohio EPA Water Plan Approval application.



- Draft Ohio EPA NPDES permit modification application.
- Draft Ohio EPA Antidegradation Addendum (if needed).
- Draft Final Engineer's Estimate of Probable Construction Cost
- Update for review and approval, the standard Front-End Documents including Contract Bond, Bid Guaranty and Contract Bond, Owner-Contractor Agreement forms, General Conditions, Bid Forms, Notice to Bidders, and Instructions to Bidders, and other related documents.
- Submit one (1) electronic (PDF format) copy, two (2) full-sized (22-inch x 34-inch) paper copies, and two (2) half-sized (11-inch x 17-inch) paper copies of the plans and specifications to the Village for review and comment.
- Submit appropriate electronic (PDF format) and paper copies of the plans and specifications to the funding agencies and permitting agencies as required. The Village shall provide written review comments to ENGINEER within 30 calendar days from submittal of the 90% Design documents.
- Provide quality control reviews of internal work and provide quality assurance reviews of deliverables prior to submitting to the Village and reviewing agencies.

Task 2.5 Final (100%) Water Treatment Plant Expansion Design

- Finalize all Engineering Design Documents in preparation for project bidding. The Final Design will be represented in the documents to be used for bidding purposes and building permits. This includes final drawings, specifications, and cost estimates. The Final Design submittal will incorporate the Village's, Ohio EPA's, and funding agencies' comments and will be complete and suitable for bid purposes.
- The Final Design submittal shall include the following:
 - Advertisement for Bid and Information to Bidders.
 - Lump Sum proposal forms.
 - o Technical Specifications.
 - Special instructions to the Contractor regarding the sequence of construction to maintain WTP operations.
 - Final Engineering Design Plans and Specifications.
 - o Final Engineer's Estimate of Probable Construction Cost.
 - Completion of permits and approvals.
- Submit one (1) electronic (PDF format) copy, two (2) full-sized (22-inch x 34-inch) paper copies, and two (2) half-sized (11-inch x 17-inch) paper copies of the plans and specifications to the Village.
- Shall submit one (1) electronic (PDF format) and one (1) paper copy of the Advertisement for Bid, Information to Bidders, Lump Sum Proposal Form, Bond Forms, Contract Documents, and detailed technical specifications to the Village.
- Submit appropriate electronic (PDF format) and paper copies of the plans and specifications to the funding agencies and permitting agencies as required.
- Provide quality control reviews of internal work and provide quality assurance reviews of deliverables prior to submitting to the Village and reviewing agencies.

Task 2.6 Permitting

- Assist the Village with permitting applications and procurement. This task includes assisting with permit
 applications, coordinating with regulatory agencies, and other work associated with securing required permits
 for the project. Permit fees shall be paid by the Village.
- Schedule and participate in up to two (2) government agency coordination meetings or conference calls to seek input on permit applications and incorporate agency input into the project.
- Coordinate with the permitting agency to identify any potential future regulations that may impact the operation of the WTP.
- Prepare meeting agendas and minutes for government agency meetings or conference calls.

PHASE III: BIDDING AND CONSTRUCTION SERVICES

Task 3.1 Project Management and Administration



- Perform project management and administration throughout Phase III of the WTP Expansion Project.
- Schedule and participate in monthly update and construction progress meetings with the Village.
- Prepare meeting agendas and minutes for monthly progress meetings.
- Prepare monthly invoices for services rendered.
- Maintain and update the project schedule and communicate any changes to the Village.

Task 3.2 Bidding Assistance

- Prepare bidding documents for advertisement. The Bidding Phase will commence upon notice to proceed from
 the Village that the Project is ready to bid and terminate upon ENGINEER furnishing the Village with an
 engineering recommendation concerning the award of the construction contract.
- The following services are included in Bidding Assistance:
 - o Provide the Final Engineering Design Documents, Technical Specifications, and Contract Documents to a hosting agency (such as Builders Exchange and/or Key Blueprints) to advertise the project to potential bidders, obtain construction bids, distribute addenda, and maintain a list of plan holders.
 - Conduct a pre-bid meeting to review the Project requirements and address questions that may arise.
 Prepare meeting minutes and distribute as an addendum.
 - Prepare written addenda to address questions, and to clarify, correct or revise the Contract Documents prior to the bid opening.
 - Attend the bid opening and tabulate the construction bids received. Bids are to be tabulated on a spreadsheet and submitted to the Village.
 - Assist the Village in evaluating the bids received and the bidders. Recommend award of the Contract based upon the evaluation of bids for the "Lowest and Best Bidder."
 - ENGINEER shall provide a written notice of award for execution by the Village and Contractor.

Task 3.3 Engineering Services during Construction

- Perform the following tasks for the estimated 18-month construction duration of the improvements:
 - Coordinate and direct the pre-construction meeting, including distributing agenda prior to and minutes subsequent to the meeting.
 - Attend monthly construction progress meetings to maintain the project schedule and address issues that may arise.
 - Answer contractor's questions and requests for information (RFIs) during construction.
 - Review and approve contractor shop drawing submittals and provide feedback on submittals as appropriate.
 - Review contractor's pay applications, review contractor's quantities, and provide technical assistance during construction activities.
 - Review any potential contractor's claims for additional costs, assist the Village in negotiations, and prepare change orders as may be necessary.
 - ENGINEER shall perform all field surveys to facilitate and prepare the as-built construction documents for the WTP Expansion project. All survey work shall be performed under the direction of a Professional Surveyor licensed in the State of Ohio and data shall be collected in the State Plane Coordinate System South and NAVD datum 1988. This survey work is limited to the location of installed improvements designed and constructed as part of this WTP Expansion project. ENGINEER shall provide a final set of record drawings in electronic and paper formats to the Village incorporating information from the as-built survey.
 - Assist the Village in preparing and submitting funding reimbursement requests from the applicable funding agencies.

Task 3.4 Construction Inspection Services

Provide a full-time Resident Project Representative (RPR) for 16 months during construction of the Project. The
RPR shall be on-site for observation of the construction work. The RPR shall attend construction meetings that
are required, provide field checks of the materials being used and quality of workmanship, calculate the
quantities of materials installed, review contractor payment applications, and review any deviations from the
contract documents or existing conditions.



- Only be responsible for determining the provisions of the Contract: materials, quantities, equipment
 placement, quality of work, etc., to meet compliance with the Contract. Such review and approval shall not
 extend to means, methods, sequences, procedures of construction or to safety precautions and programs
 incident thereto, as such are the responsibility of the contractor(s). It is the contractor(s) responsibility to
 adhere to the General Conditions and Special Provisions, as well as all other specifications outlined in the
 Contract.
- Maintain daily project Inspection Reports, which record the work in progress, pay quantities, labor and equipment employed, site conditions, weather, visitors, accidents, plan revisions, complaints, conversations, and other information affecting the work being performed. This will be performed using ENGINEER's in-house, web-based, construction management program, APPIA. All reports will be entered directly into the program by the RPR in the field using a tablet and shall be approved by ENGINEER's Construction Manager. Project pay estimates will also be generated using this software and provided to the contractor for review.

Task 3.5 Startup Services

 Assist the Village during the startup and testing of the new equipment and processes at the WTP to demonstrate that the equipment meets the functional, technical, and process design criteria in the contract documents.

IF-AUTHORIZED SERVICES

The following services will be included in the scope of work for Phase II and III services. None of the services will be performed without written authorization from the Village. No services shall be invoiced unless prior authorization from the Village to perform the services is granted.

- 1. Subsurface Utility Engineering: ENGINEER (or subcontractor) shall perform up to 12 SUE Level A investigations to identify the location and depth of buried utilities within the WTP site.
- 2. Geotechnical Investigations: ENGINEER (or subcontractor) shall perform up to four (4) soil borings at the WTP site and laboratory testing to determine soil bearing capacity, depth to groundwater, depth to bedrock, and other standard geotechnical parameters for the site.
- 3. Operation and Maintenance Manual: ENGINEER shall prepare an Operation and Maintenance (O&M) Manual for the WTP equipment to supplement O&M instructions furnished by the equipment manufacturers during construction. The objective will be to prepare guidance documents in language which will be understood by the plant operators. The anticipated scope of work for the O&M Manual shall include:
 - Summarize the equipment and facilities applicable to operation and maintenance.
 - Prepare schematic flow diagrams, figures, and necessary drawings of the facilities to explain relationships of the various facilities and treatment processes.
 - Summarize the design criteria and describe the intended methods of operation of the facilities.
 - Outline reasonably foreseeable emergency operation procedures where applicable.
 - Prepare an index of equipment manufacturer's operation and maintenance data furnished by Contractor.