

**Scope of Work for the
South Truckee Meadows Water
Reclamation Facility
2020 Expansion Project
Design Phase**

Prepared for
Washoe County
Community Services Department

July 2020

JACOBS®

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Exhibit A: Scope of Work for the South Truckee Meadows Water Reclamation Facility 2020 Expansion Project Design Phase

This exhibit is to the Agreement, between Jacobs (Consultant), and Washoe County Community Services Department (County), for engineering and consulting services related to the proposed expansion of the South Truckee Meadows Water Reclamation Facility (STMWRF).

Introduction

General

Washoe County Community Services Department is responsible for sanitary sewer collection, wastewater treatment, biosolids management, and reclaimed water treatment and distribution services within the South Truckee Meadows region of Reno, Nevada. The South Truckee Meadows Water Reclamation Facility (STMWRF) serves as a central and critical regional water resource recovery facility. STMWRF is permitted by the Nevada Division of Environmental Protection (NDEP) to treat a Max Month Flow of up to 4.1 million gallons of wastewater per day (MGD).

Current average daily influent flow is approximately 3.3 MGD. Liquid stream unit processes include the following: influent pumping; screening; flow splitting, metering; secondary treatment utilizing oxidation ditches and clarifiers; sand media filtration; sodium hypochlorite disinfection; effluent pumping; and, reservoir storage. Waste solids are treated aerobically prior to dewatering and then hauled to the regional Lockwood Landfill. STMWRF effluent is presently managed through a Category A reclaimed water distribution system.

Reclaimed water is stored seasonally in the Huffaker Hills Reservoir and delivered to over 300 customers through a distribution system network of transmission mains, pump stations, storage tanks, and distribution piping. Annual reclaimed water delivery is presently 3,000 acre-feet, and peak day demands can exceed 8 MGD.

A facility plan update (Facility Plan) for STMWRF was completed in 2016 and validated in recent months. The updated Facility Plan utilized a 20-year (2040) planning interval. The Facility Plan envisions STMWRF being expanded from an Annual Average Daily Flow of 4.1 MGD to approximately 6.1 MGD and an Average Daily Max Month Flow of 4.6 MGD to approximately 6.86 MGD to meet the region's 2040 population projection. The Facility Plan describes the selected treatment technologies and process facilities required to meet the projected 2040 demands. The scope of the 2020 Expansion Project is described in the Project Definition/Basis of Design Report.

Project construction delivery will be Construction Manager at Risk (CMAR). An owner's representative (Construction Manager, CM) will assist Washoe County to manage the project, and provide related functions, such as independent cost estimating, value engineering, and project support during preconstruction and construction phases.

Final Design is already underway for the following STMWRF Expansion early work packages:

- EW-1 – Huffaker Reservoir Liner Phase 3 and Process Pump Work
- EW-2 – Expansion of the STMWRF Influent Pump Station and Headworks Screening

Remaining facilities to be designed as part of the 2020 Expansion Project as defined in the Project Definition/Basis of Design Report and include the following:

- New grit removal process
- Two (2) new secondary treatment 5-Stage Bardenpho process bioreactors
- Conversion of the existing oxidation ditches to a 5-Stage Bardenpho treatment process
- Biosolids facility expansion
- Filter facility expansion
- Export pumping station upgrades
- Odor control facility addition
- Additional laboratory and administrative office facilities
- Collaboration building
- Expanded electrical service
- Ancillary process facilities
- Site improvements to accommodate drainage needs and the plant expansion

Assumptions

The following general assumptions apply to this Project:

1. The schedule for the design work described in Tasks 1 through 7 will proceed as described in the schedule presented at the end of this scope of work.
2. The overall facility will be taken to a schematic design level prior to breaking out design packages described herein.
3. The design approach will be based on milestone review workshops in addition to interactive workshops centered around specific topics. Milestone reviews will occur at the completion of the 30% schematic design, 60% design development, and 90% completion of the contract document preparation phases. Interactive review workshops with the County, CMAR, and CM will provide opportunity to discuss and resolve issues as the design progresses utilizing interim design deliverables, as opposed to formal, comprehensive documentation such as TMs and extensive drawings.
4. Workshops will be held in the County offices, the Reno office of the Consultant, virtually, or a combination of in person and virtual delivery as agreed by the County and Consultant. The County may elect to schedule one or more of the workshops at the Consultant's Redding, California or Corvallis, Oregon design offices. Travel and expense costs for the County's team will be at the County's expense.

5. Unless stated otherwise herein, consolidated County review comments will be submitted to the Consultant within 14 calendar days from County's receipt of the review submittal. At the completion of this period, the milestone review workshops, described above, will be held. With the exception of the final review (90%), the Project team will not stop during County/CMAR reviews of submittals. The comments will be adjudicated in the milestone review workshops.
6. The design will be based on the federal, state, and local codes and standards in effect on the effective date of the agreement. Meetings will be held with the building department or other pertinent agencies and will be documented to capture code and standard requirements applicable code effective dates.
7. It is understood that the County and CMAR desire to proceed with multiple work packages to the extent feasible. Early work packages EW-1 and EW-2 are under design under separate agreements. The level of effort assumed for this scope includes development of not more than three construction packages, conceptually as follows or another arrangement agreed upon between Washoe County, Jacobs and CMAR:

Work Package No. 3 – Biosolids Facility Expansion, Filter Effluent Flow Meter, pH Chemical System, Vector Dump Area, and Huffaker Return Flow Control Upgrades

Work Package No. 4 – Filter Expansion, NVE Service Upgrade, and Starter Upgrades for Export and Effluent Pump Stations

Work Package No. 5 – STMWRF 2020 Plant Improvements

Adjacent to the project kickoff meeting for design, Consultant will meet with County, CM, and the CMAR team to further discuss early work package needs.

8. Jacobs master specifications will be used as the basis for all technical specifications, including Jacobs standard Division 01 General Requirements documents. County has developed the required Division 00 General Conditions documents tailored to the CMAR delivery model.
9. Engineering services during construction are not part of this scope of work. A budget amount has been included in the additional services to allow for the scope and fee development of these services in the future.
10. The Drawing List at the end of this scope of work lists the anticipated final design drawings. Consultant may make changes to this preliminary drawing list as design progresses.
11. The drawings will follow Jacobs CAE/CAD standards. Drawings will be developed using the Bentley suite of 3D CAD applications. The final record drawings will be provided to the County in AutoCAD format.
12. Deliverables for review will be prepared as 11" x 17" drawings and 8.5" x 11" specifications and reports. Full size drawings (22" x 34") will be provided for the building department submittal and final construction submittal as stated herein.
13. The site is free of any hazardous wastes, asbestos, lead paint or other types of contamination that might require remediation.

14. Work performed by Dr. Diego Rosso will be sufficiently completed to permit STMWRF-specific alpha value for aeration calculations by November 2020.

Specific Assumptions

Structural/Architectural/Geotechnical

1. Building architecture (materials, construction) of all new facilities will be similar to existing and will comply with building code requirements.
2. Building sprinkler systems may be required for the Operations Facility. Any required sprinkler systems will be provided by performance specifications.
3. Only the Administration or Operations Building will be designed to be ADA compliant.

Electrical and Instrumentation & Controls Systems

1. New instrumentation and control system at the STMWRF will be designed consistent with SCADA Master Plan recommendations.
2. It is assumed that a new electrical utility services to the facility will be required. Additional on-site standby electrical power source will also be required.
3. SCADA programming for packages 3, 4, and 5 will be performed as part of the additional services budget with the services during construction. Included in this scope is the programming for the EW-2 work.

Scope of Work

Consultant's services will consist of performing tasks necessary to prepare contract documents suitable for construction by the County's selected CMAR and capable of achieving the design criteria described in the Basis of Design/Project Definition Technical Memorandum.

The project will include project management and quality control (QC) activities to help ensure that project objectives, deliverables, and schedule are met. Existing Site Survey and Geotechnical data shall be used for the design. Should additional investigations or survey be required, they will be covered as described in Task 2.

This exhibit presents Consultant's scope of work, preliminary schedule, and budget for Design Services. Additional work packages, Engineering Services During Construction, Programming, and Startup support services for the Project will be contracted utilizing additional services budgets provided within this Agreement.

Task 1 – Project Management and Meetings

Consultant will initiate and manage all project activities, schedule, and plan work to assure that activities are completed in a properly integrated and timely manner. Consultant will utilize ProjectMates for transfer of key management documentation as requested by the County. Project management will include the following:

- Progress Monitoring – Monitor budget, work progress, and schedule. Monitor work efforts and evaluate actual versus planned progress. Supervise the project team and

identify actions needed to maintain the project schedule. Manage scope changes and act to resolve impacts on budgets as soon as scope changes have been identified.

- **Coordination and Staff Management**— Coordinate and schedule appropriate staffing to meet project requirements. Supervise and control activities of assigned staff and ensure that the authorized work is completed on schedule and within budget.
- **Administration**— Maintain project records, manage and process project communications, subcontracts, and coordinate project administrative matters.
- **Meeting Preparation**— Arrange for site visits and monthly project update meetings with County's project team. Prepare and distribute agenda and meeting minutes.
- **Design Kickoff Workshop** to discuss the project objectives and goals, the roles and responsibilities of project team members, the required deliverables for each work task, and the project schedule. Workshop will include staff from County, Consultant, Subconsultant, and others as desired by the County.
- **Monthly progress meetings** to keep County apprised of progress, direction, and findings. Meetings will be held at the County's office. To the extent feasible, meetings will be scheduled to take place concurrent with other planned workshops. At a minimum, monthly meetings will be attended by three members of Consultant's project team. Each meeting is expected to include the following:
 - Action items of the previous monthly meeting for discussion and completion status.
 - Monthly Progress Report. The monthly progress report will include at a minimum, the following:
 - ✓ Progress within the last month
 - ✓ Problems encountered or anticipated
 - ✓ Items scheduled for work in the next month.
 - Decision Log Update, including outstanding and upcoming project issues. Items requiring decisions will be discussed, and any decisions entered into the decision log.
 - Project Schedule Update, including tasks completed to date and projected completion of tasks.

Task 1 - Deliverables and Meetings

- Monthly project meeting agenda and meeting notes
- Monthly project schedule updates
- Monthly project progress reports and Decision Log updates
- Monthly project billings showing labor hours and earned value by task

Task 2 – Site Investigations

Geotechnical Investigations

Consultant will select a geotechnical firm from the Washoe County pre-qualified list of Professional Services Consultants for the development of a Geotechnical Data Report (GDR), which includes drilling and logging of up to four soil borings in new structure areas and laboratory testing of soil samples. Subcontractor will coordinate with County to locate borings in areas to avoid underground utilities. Consultant has included an allowance for preparation of the GDR in the Project budget.

Field Survey and Potholing

Consultant has not included any budget to perform survey or potholing. Consultant assumes the survey data provided by the County is sufficient for all phases of design. Consultant assumes any potholing will be performed by the County. Any survey needed beyond what County has provided will be handled using Additional Services.

Task 2 Deliverables

- Geotechnical Data Report – 2 copies of draft to County for review and 3 copies of final

Task 3 – Basis of Design

The Consultant will develop Basis of Design memoranda for the Export Pump Station, Odor Control system, and proposed Ferric Chloride dosing system.

Consultant will review flow projections and the potential expansion of the Export Pump Station facility along with a complete hydraulic analysis. The work will further develop the planning performed by SB Engineering and will develop alternatives along with a workshop to determine the selected alternative for the pump station. The final deliverable will be a technical memorandum developed to a point where the detailed design can be started.

Consultant will model planned facilities and summarize available treatment technologies to meet odor control compliance at the property line. Final selected alternative will be incorporated into the final design. Consultant assumes odor control will be required at the Screenings and Biosolids facilities only.

Consultant will review County pilot testing and sampling of ferric chloride dosing and will develop an approach to implement facilities for the reduction of phosphorus and control of pH with ferric chloride.

Consultant will assist the County with the on-site aeration testing services performed by Dr. Diego Rosso and will be present on-site to observe the testing activities conducted by Dr. Rosso. Consultant services will include:

- Coordinating testing activities, dates, materials to be tested, and tank locations with Dr. Rosso and the County prior to the tests being conducted.
- Providing two staff members on-site during the duration of the tests. Test are assumed to be conducted in two phases. The first phase with clean water and new diffusers is assumed to be conducted over a 4 day period. The second test period on fouled diffusers is assumed to be conducted over a 2 day period 3 – 4 months after the first testing period.
- Assist Dr. Rosso prepare the results report.
- Collaborate with Dr. Rosso subsequent to the testing period to confirm the aeration design parameters carried forward into the design. Dr. Rosso will also be consulted as Consultant makes final decisions on blower and diffuser manufacturers, models, configurations and control strategies to ensure that all parties are in agreement on the final aeration system design for the facility.

Task 3 Deliverables

- Export Pump Station Technical Memorandum – 2 copies of draft to County for review and 3 copies of final along with an electronic pdf file
- Odor Control Technical Memorandum – 2 copies of draft to County for review and 3 copies of final along with an electronic pdf file
- Ferric Chloride dosing system Technical Memorandum – 2 copies of draft to County for review and 3 copies of final along with an electronic pdf file

Task 4 – Detailed Design

Consultant will follow a multiphase process for the development of CMAR GMP Bid Documents. The final design process includes deliverables for each subtask for review that will allow for resolution of key issues before proceeding to the next phase. Therefore, this task will consist of four subtasks: Quality Control Reviews, 30 Percent Design for the entire facility expansion, 60 Percent Design, and Contract Documents Preparation (90 Percent and Final). The information collected and the concepts defined in each subtask will form the basis for subsequent work.

Each subtask will include specific deliverables as listed therein. QA/QC reviews will be conducted to monitor the quality of the Project at critical design milestones as described in Subtask 4.1.

The Consultant will coordinate with the County for meetings with Nevada Division of Environmental Protection (NDEP). These will include a preliminary presentation on the Project history and current Project status. In addition, three reviews and presentations will be coordinated by the County with the NDEP, at each subtask stage of the Project, and will be attended by the Consultant. Following the meetings, the input received from the County and NDEP will be incorporated into the Final Design Plans and Specifications. Task 4 consists of the following subtasks for each package:

Task 4.2 – Schematic Design (30% Complete for entire Project)

Task 4.3 – Design Development (60% Complete for GMP #5 only)

Task 4.4 – Construction Documents (90% and Final Complete for GMPs #3, #4, #5)

Construction Cost Estimates

Consultant will furnish construction cost estimating services as indicated below under Deliverables for the 30 Percent, 60 Percent, 90 Percent, and Final Submittals. Estimates will be prepared to a level of accuracy based on the information available, within normal industry standards. Estimates will be formatted in accordance with the Project design Construction Specifications Institute (CSI) specification format and segregated by facility. Where sufficiently detailed information is lacking to obtain reasonably accurate quantities of materials, allowances will be used to provide an opinion of the estimated construction costs at the midpoint of construction. Cost estimates and levels of accuracy (Class level) will conform to American Association of Cost Engineering International, AACE Recommended Practice No. 18R-97.

Subtask 4.1 - Quality Control Review, Coordination, and Response

Consultant will implement and carry out a quality control (QC) program. The review process includes coordinating the participation of senior reviewers at appropriate points in the Project as noted above. Consultant will perform multidisciplinary internal QC review activities using a senior review team during the progress of the final design. QC review activities will be governed by the requirements of an overall Project Specific Quality Plan. All design documents will be reviewed by assigned QC reviewers, comments addressed, and changes incorporated, prior to submission to the County for review. The detailed project schedule will include milestones to identify the QC review activities.

Subtask 4.2 – Schematic Design (30% Design)

Consultant will progress the conceptual design included in the Project Definition/Basis of Design Report including updated design criteria for all pertinent disciplines, process flow diagrams, equipment selections and layouts, finalized process flow diagrams, preferred site plan, facility renderings, building floor plan, electrical one-lines, preliminary electrical plans, and draft specifications for major equipment.

Consultant will summarize the detailed design criteria, sizing, and regulatory requirements into a Schematic Design Report. Disciplines incorporated in the Schematic Design Report will include the following:

- Site Civil
- Architectural
- Structural
- Geotechnical
- Corrosion Control
- Process (treatment and odor control)
- Process Mechanical
- Building Mechanical
- Instrumentation and Control
- Electrical

Specific work activities and deliverables from this task are as identified below.

Subtask 4.2.1: Design Management

- Develop workplan.
- Update construction cost estimate.
- Compile Schematic Design Report
- Perform day-to-day design coordination

Subtask 4.2.2: Civil and Site Development

Schematic design work will include the following activities.

- Develop preliminary site plan
- Determine road width and truck turning radius required.

- Set preliminary finished floor levels for new structures. Establish preliminary finished grades; overall major surfaces, road profiles, etc. Iterate preliminary surfaces and structures to optimize earthwork if necessary.
- Summarize discipline design criteria in a Schematic Design technical memorandum.
- Develop facility drainage report
- Review concepts and draft work products with and seek approval from quality control reviewer.

Subtask 4.2.3: Architectural

Schematic design work for architectural will include the following activities:

- Establish preliminary room sizes. Identify the adjacencies and functional requirements of each space. Establish architectural theme for exterior of building. Select interior and exterior construction materials for each building. Select roof type, slope, and roof support system for each building.
- Assign code classification to each building. Meet with local code official to review code classifications. Document meetings with code officials, including requirements.
- Compile list of chemicals and amounts to be used. Coordinate with other disciplines (process, mechanical, and electrical) to resolve code compliance issues specific to these disciplines (e.g., National Electrical Code and National Fire Protection Association 820 issues). Meet with the Washoe County Building Department and the Truckee Meadows Fire Department and document the meetings and requirements. Determine fire hydrant and sprinkler requirements.
- Begin the development of the schematic level 3-D electronic models or building floor plans and elevations for all buildings.
- Summarize discipline design criteria in a Schematic Design technical memorandum.
- Review concepts and draft work products with and seek approval from quality control reviewer.

Subtask 4.2.4: Structural

Schematic design for structural will include the following activities.

- Coordinate with architectural discipline on the selection of building concepts. Consult with lead process engineer on building/structure layouts.
- Develop building foundation and structure concepts based on geotechnical input and schematic building layouts.
- Coordinate with process and geotechnical disciplines to develop structure concepts for new process facilities and confirm suitability of existing facilities or any needed modifications to existing facilities.
- Summarize discipline design criteria in a Schematic Design technical memorandum.

- Review concepts and draft work products with and seek approval from quality control reviewer.

Subtask 4.2.5: Geotechnical and Corrosion Control

Schematic design for geotechnical will include the following:

- Consultant will develop geotechnical design recommendations based on use of existing available data and supplemental field investigations and Geotechnical Data Report described under Task 2 herein.
- Prepare design and construction recommendations to accommodate activities such as foundation design, dewatering, support of excavation and structures, reuse of existing site material.
- Obtain and analyze data on soil corrosivity. Develop recommendations for corrosion control.
- Review concepts and draft work products with and seek approval from quality control reviewer.

Subtask 4.2.6: Process (including Odor Control)

Schematic design for process will include the following:

- Determine size/capacity of all unit treatment processes and ancillary systems.
- Prepare process flow diagrams (PFDs).
- Prepare preliminary solids balance.
- Develop process narratives.
- Summarize discipline design criteria in a Schematic Design technical memorandum.
- Review concepts and draft work products with and seek approval from quality control reviewer.

Subtask 4.2.7: Process Mechanical

Schematic design for mechanical will include the following:

- Select and size all major process equipment including pumps. Prepare sizing calculations and obtain review. Establish level of redundancy required for all process equipment.
- Prepare equipment list with sizing for major equipment. Coordinate with the County on preferences of equipment manufacturer and processes.
- Prepare preliminary drawings for equipment arrangements.
- Prepare preliminary hydraulic profile.
- Summarize discipline design criteria in a Schematic Design technical memorandum.

- Review concepts and draft work products with and seek approval from quality control reviewer.

Subtask 4.2.8: Building Mechanical (HVAC/Plumbing)

Schematic design for HVAC and plumbing will include the following.

- Select type of ventilation system to be used in process buildings (inlet air tempered with both inlet and outlet fans, simple exhaust fan system).
- Select type of heating system to be used (hot water boiler, hot air furnace, space heaters). Identify fuel (gas, oil, or other fuel) for heating buildings and identify local fuel storage requirements.
- Select type of air conditioning system to be used in personnel or other process critical spaces (variable air volume system, zoned constant air volume system).
- Coordinate with the architectural discipline to establish design R-values for all exterior walls.
- Coordinate with local fire marshal and architect to determine requirements for sprinklers and fire protection. Provide documentation on all meetings.
- Determine overall potable water requirements for the Project. Confirm adequate quantity and pressure can be obtained from facility potable water supply utility.
- Summarize discipline design criteria in a Schematic Design technical memorandum.
- Review concepts and draft work products with and seek approval from quality control reviewer.

Subtask 4.2.9: Instrumentation and Control Systems (I&CS)

Schematic design work for the instrumentation and control will include the following activities:

- Complete preparation of process flow drawing (PFD) for each treatment process. Information to be included on each PFD includes at a minimum: process configuration, flow streams, valve and gate locations (manual and powered), chemical additions points/types, process equipment location/type including packaged control panels and adjustable-speed drives, flow meters and other process control devices.
- Include recommended modifications from SCADA Master Plan not implemented by others.
- Develop equipment/instrument tag numbering, naming, and abbreviation conventions.
- Prepare written operational description of each major process.
- Develop overall control philosophy including local control approach, control system, level of automation, supervisory control.
- Develop conceptual layout for plant Supervisory Control workstation and a preliminary control system block diagram.

- Summarize discipline design criteria in a Schematic Design technical memorandum.
- Review concepts and draft work products with and seek approval from quality control reviewer.

Subtask 4.2.10: Electrical

Schematic design work for electrical will include the following:

- Prepare preliminary overall one-line diagram for proposed facilities.
- Prepare preliminary load calculations.
- Size electrical rooms.
- Determine number of electrical feeds to be provided to facility. Coordinate with local power utility to determine locations of additional power feeds, voltage, billing details (peak usage rates), requirements for reduced voltage starters, substation requirements.
- Determine redundancy requirements for power supplies and power distribution.
- Coordinate with other disciplines (architectural, mechanical) to resolve code compliance issues specific to these disciplines. Develop preliminary schedule of hazardous and corrosive locations.
- Development of County requirements for communications and paging systems, security systems, and closed-circuit television systems.
- Summarize discipline design criteria in a Schematic Design technical memorandum.
- Review concepts and draft work products with and seek approval from quality control reviewer.

Subtask 4.2.11: Schematic Design Workshop

Consultant will conduct a review meeting with County and CMAR to summarize the design concepts and progress and discuss any findings. Major action items and decisions will be documented in minutes that will be distributed to County and Consultant's design teams. County will provide consolidated review comments within 5 working days from completion of the Workshop.

Schematic Design Deliverables

- Drainage Report – 2 copies
- Schematic Design Report – 10 copies of a compiled report containing all discipline TM's, including the report plus half-size construction drawings
- Schematic Design Construction Cost Estimate – Consultant will furnish County with a Class 3 estimate of construction costs at the Schematic Design completion level
- Workshop Meeting Minutes and Decision Log Updates

County will submit portions of the Schematic Design Deliverables for the Special Use Permit application. Consultant will provide softcopy files via e-mail to assist as required.

Subtask 4.3 – Design Development (60% Design)

The purpose of this task is to expand on the decisions and concepts developed in the previous phase and achieve a design basis that can be used for the design production without major changes at the conclusion of this phase. This will also include completing and finalizing the preliminary calculations of the previous phase. Structures, equipment, major plant piping, process, site plan will all be finalized during this phase to allow final detailing of the same in the next phase of design. Drawings and other materials that may be required to be used as exhibits for environmental permit applications will be prepared during this phase.

The submittal will include a specifications table of contents, preliminary specifications, and refined specifications for major equipment. Documents to be submitted will be reviewed by Consultant's QC team and revised accordingly prior to submitting to the County for review.

Specific activities, and work products from this phase are described in the following subtasks:

Subtask 4.3.1: Design Management

- Update workplan.
- Develop Specifications List
- Update construction cost estimate.
- Perform day-to-day design coordination

Subtask 4.3.2: Civil and Site Development

- Finalize civil design concept. Structures, road, and major site element horizontal locations are finalized. Structure floor/control levels, and finished grades are finalized.
- Define demolition requirements and limits. Define contractor staging, storage, access, and off-site access corridors.
- Prepare preliminary site grading drawings.
- Download survey data to create site-drawing files for final design.
- Set final building and structure elevations.
- Develop preliminary yard piping (18-inches and larger) and plant drain layouts. Identify corridors for smaller piping and other utilities. Pipes 4-inches and smaller in diameter will be field routed.
- Develop 3-D yard piping model of new and existing piping.
- Develop storm water control concepts (swales, curb, and gutter) on the design development drawings.
- Finalize traffic flow, parking, and lay out road access to all buildings and structures. Coordinate handicap requirements with architectural discipline and local site plan regulations.

- Prepare first draft of technical specifications.
- Review design development and draft work products with and seek approval from quality control reviewer.

Subtask 4.3.3: Architectural

- Continue to develop 3-D electronic models or building floor plans and elevations for all buildings.
- Coordinate with I&C and electrical disciplines to size and locate electrical and control rooms.
- Coordinate with the mechanical discipline to select the type of HVAC equipment, locate HVAC equipment rooms and determine space requirements and routing for ductwork, if required.
- Coordinate with structural engineer to define the structural design concepts for the facilities.
- Finalize applicable codes for all buildings/structures with local code officials and fire marshal. Complete building and fire code analysis. Meet with local code officials to review floor plans. Provide documentation for all meetings and requirements.
- Coordinate and review with the County for any modifications to the architectural design.
- Prepare first draft of technical specifications.
- Review design development and draft work products with and seek approval from quality control reviewer.

Subtask 4.3.4: Structural

- Coordinate with geotechnical engineer to establish foundation design criteria for proposed facilities. Review geotechnical report and discuss foundation design approach with geotechnical engineer and senior structural reviewer.
- Document structural design concept for each building (room by room) and structure. Finalize materials of construction (cast-in-place versus precast concrete, roof structures, etc.).
- Prepare preliminary framing plan for buildings and other structures.
- Prepare 3-D electronic models or preliminary floor plan for all major structures.
- Prepare first draft of technical specifications.
- Review design development and draft work products with and seek approval from quality control reviewer.

Subtask 4.3.5: Process (including Odor Control)

- Finalize major equipment sizing calculations.

- Coordinate with Instrumentation and Control System (I&CS) on completion of P&IDs.
- Coordinate with I&CS on development of process control narratives.
- Prepare first draft of technical specifications.
- Review design development and draft work products with and seek approval from quality control reviewer.

Subtask 4.3.6: Process Mechanical

- Calculate the hydraulic profile for all-major gravity process pipelines and hydraulic structures. Establish maximum and minimum water surface elevations for all process tanks.
- Prepare 3-D electronic models or building and structure layouts (plans and major section(s)).
- Assemble catalog cuts for all major process equipment. Complete equipment data sheets or equipment list on all major equipment items.
- Coordinate with I&CS in the finalization of P&IDs
- Prepare final ancillary equipment sizing and line sizing calculations.
- Prepare final equipment selection (type, size, weight, arrangement).
- Select piping materials.
- Prepare first draft of technical specifications.
- Review design development and draft work products with and seek approval from quality control reviewer.

Subtask 4.3.7: Building Mechanical

- Prepare sizing calculations for HVAC equipment based on energy code requirements and selected building construction materials. Prepare HVAC equipment data sheets and cut sheets.
- Create ventilation concept drawing (louver locations, fan locations, type of equipment, air flows).
- Identify routing or right-of-way for major duct runs. Locate major air handling equipment. Confirm size of mechanical equipment rooms.
- Prepare HVAC system block diagrams. Define HVAC system control philosophy.
- Coordinate with civil engineer for potable water and fire water supply and distribution, as well as plant drain system.
- Prepare first draft of technical specifications including performance specifications for sprinkler system and plumbing design by the CMAR.

- Review design development and draft work products with and seek approval from quality control reviewer.

Subtask 4.3.8: Instrumentation and Control Systems

- Finalize hand annotated internal reference P&IDs for internal coordination use.
- Prepare preliminary I/O count. Size and locate I/O locations for distributed control systems (DCS). Coordinate I/O rack room sizing with electrical and architectural disciplines.
- Summarize I&C system design philosophy for each major process in a process control narrative. Include a description of the field elements to be used for each application and preliminary set points for major I&C elements. Update/finalize control system block diagram. Finalize typical control diagrams for each type of control scheme to be used.
- Coordinate with HVAC engineer regarding control system requirements.
- Define control interfaces for all package systems with local controls, including adjustable frequency drives.
- Prepare first draft of technical specifications.
- Review design development and draft work products with and seek approval from quality control reviewer.

Subtask 4.3.9: Electrical

- Determine number of motor control centers (MCCs) to be provided and location of MCCs, and equipment to be powered out of each MCC. Prepare preliminary one-line diagrams for proposed facilities. Coordinate with lead process engineers to size equipment motors.
- Prepare detailed electrical load calculations.
- Size electrical rooms and prepare a preliminary layout of the major electrical equipment located in each electrical room. Determine equipment requiring uninterruptable power supplies (UPS) and locations of UPS equipment. Coordinate with I&C discipline to determine space requirements and locations for control equipment. Locate major input/output termination panels, terminal junction boxes, and control panels.
- Define/document requirements and concepts for special systems:
 - Telephone and paging systems (including incoming service location, scope of supply, etc.),
 - Data highway (control system),
 - Data highway (Local Area Network (LAN), office automation),
 - Security systems,
 - Closed circuit television systems,
 - Fire alarm system.
- Identify routing methods for electrical conduit. Lay out duct bank system (major runs/manholes). Coordinate with civil yard piping. Locate manholes and hand holes.

- Prepare preliminary site lighting layout.
- Define hazardous locations (NFPA 820) and document. Define corrosive locations and document.
- Prepare first draft of technical specifications including performance specifications for interior lighting design by the contractor.
- Review design development and draft work products with and seek approval from quality control reviewer.

Subtask 4.3.10: Design Development Workshops

Consultant will conduct a one-day interactive workshop to review the 60 percent work products with the County, CMAR, and other key stakeholders. Final workshop minutes, documenting the key decisions and the work products (Drawings and Specifications) produced through subtasks above will be submitted to the County.

60 Percent Design Deliverables

- 60 Percent Submittal – 10 copies, including half-size construction drawings and unbound specifications table of contents with preliminary specifications developed
- 60 Percent construction cost estimate
- Workshop Meeting Minutes and Decision Log Updates

Subtask 4.4 – Construction Documents (90% and Final Design)

Consultant will prepare 90 percent complete design documents, which will be the basis for the final review submittal, based on the review, feedback, and coordination conducted during the Design Development (60% Design) phase. Significant changes to the design after the Design Development (60% Design) phase will be addressed by an amendment. This submittal will include the Project's General Requirements (Division 01), Technical Specifications, Standard Details, and Drawings necessary for permitting and construction.

The 90 percent submittal is intended to be a near final version of all construction drawings, standard details, and technical specifications. It will be reviewed by Consultant's QC team and revised accordingly prior to submitting to the County for review. Key activities during this phase will include:

Subtask 4.4.1: Design Management

- Update workplan.
- Conduct final constructability review.
- Conduct final operability review.
- Perform day-to-day design coordination
- Purge Project files of irrelevant and extraneous material. File all relevant information.

Subtask 4.4.2: Contract Document Completion

- Finalize specification General Requirements.

- Prepare the 90% general, demolition, civil site, architectural, structural, structural/mechanical, mechanical, instrumentation and control, and electrical drawings, standard details, and technical specifications necessary for permitting and construction.
- Prepare final calculations.
- Complete final checking and coordination review.

Subtask 4.4.3: Final Review Workshops

Consultant will conduct a one-day interactive workshop to review the 90 percent design work products with the County, CM, CMAR, and other key stakeholders. Final workshop minutes, documenting the key decisions and the work products (Drawings and Specifications) produced through subtasks above will be submitted to the County.

Subtask 4.4.4.: Incorporation of Final Review Comments

Consultant will prepare responses to each of the 90 percent review comments submitted by the County, CMAR, and external stakeholders. Consultant will provide the completed QC comment review form to County. County will review the responses and indicate within 5 working days if any of the comment responses are not acceptable. Consultant will update the contract documents to reflect all agreed upon final review comments.

Consultant will prepare a PE stamped and signed Permit Submittal for delivery to the Building Department, Fire Department, and NDEP by the County.

Consultant will respond to comments and inquiries as warranted during Building and Fire Department and NDEP review. Once final comments are received and plans for incorporation of comments are accepted, consultant will finalize the Construction Submittal (100%).

Deliverables

- 90 Percent Submittal – 10 copies, including half-size construction drawings (11-inch by 17-inch), standard details (11-inch by 17-inch), and specifications (8-1/2-inch by 11-inch) will be delivered to the County for review and comment.
- Workshop Meeting Minutes and Decision Log Updates
- Permit Submittal - Two hard copy sets to County for submission to County Building Department, including full-size construction drawings (22-inch by 34-inch), standard details (8-1/2-inch by 11-inch), and technical specifications (8-1/2-inch by 11-inch).
- Permit Submittal - Two hard copy sets to County (one to retain and one to deliver to the CMAR), including half-size construction drawings (11-inch by 17-inch), standard details (8-1/2-inch by 11-inch), and technical specifications (8-1/2-inch by 11-inch) for initial GMP determination.
- Construction Submittal - Three hard copy sets to County (two to retain plus one for submission to NDEP), including half-size construction drawings (11-inch by 17-inch), standard details (8-1/2-inch by 11-inch), and technical specifications (8-1/2-inch by 11-inch).
- Construction Submittal – Two hard copy sets to CMAR, including half-size construction drawings (11-inch by 17-inch), standard details (8-1/2-inch by 11-inch), and

specifications (8-1/2-inch by 11-inch), plus two hard copies of full-size construction drawings (22-inch x 34-inch), plus one CD containing technical specifications, standard details, and full-size and half-size drawings in Adobe Acrobat .pdf file format.

- **Engineer's Cost Estimate** – Consultant will prepare a Class 1 "Engineer's Cost Estimate" of construction costs for the Project and will submit a summary of the cost estimate to the County within 3 weeks after the Permit Submittal is completed. If warranted, the cost estimate will be updated to incorporate any significant modifications post permit review.

Task 5 – CMAR Coordination

The Consultant will continue to participate in coordination calls and meeting with the CMAR as the project progresses. Expected CMAR coordination activities include the following:

- **Weekly coordination calls.** Consultant's project manager and/or design manager will participate in weekly overall project coordination calls facilitated by the County.
- **Quarterly face-to-face meetings.** Consultant's project manager and design manager will participate in quarterly overall project coordination meetings facilitated by the County.
- **VE/Constructability Reviews.** A single value engineering (VE)/constructability review workshop will be completed by the CMAR at the 60 percent design completion stages for each construction work package. Consultant's design manager plus 2-3 discipline leads will participate in the VE/constructability reviews.
- **Cost Models.** For designs develop under Task 4, the Consultant, the independent estimator, and the CMAR will develop independent cost models for each of the milestone submittals. If the cost models are different by more than 2.5%, the team shall meet and reconcile the cost models and submit a single cost model to the County.

Task 6 – SCADA System Modifications

Consultant will develop SCADA screens and application software programming for the central control and monitoring of the modified facilities included in early work package EW-2. Services provided will include the following:

Subtask 6.1 - Application Software Development

Consultant will develop the application software for the new or modified unit processes in accordance with the Loop Descriptions developed during design and using previously developed Jacobs software standards. Consultant will provide the software configurations necessary to display the new/modified unit processes in the existing Wonderware SCADA Software Platform. Consultant will update existing HMI screens using previously developed Jacobs software standards.

Subtask 6.2 - Hardware and Software Installation and Testing

Once programming modifications are complete, Consultant will begin planning for installation and testing phase. Consultant will follow an installation and testing process as outlined in the subtasks below.

Subtask 6.2.1 – Post-configuration Review Meeting

Consultant will facilitate a conference call to discuss the completed PLC and HMI program modifications and review the new HMI screen graphics. During the call, Consultant will review the schedule for testing and training. Consultant will also present the Software Testing checklists to be adhered to for Bench Testing, Installation Testing, and Functional and Performance Testing. It is expected that the conference call will be 2-4 hours in length and will include project team members from the County and STMWRF operations.

Subtask 6.2.2 – Software Bench Testing

Once program modifications are complete, Consultant will perform Bench Testing of the HMI and PLC programs in a simultaneous fashion to demonstrate communications and basic functionality of the HMI screens. Bench Testing will take place in Consultant's Redding, CA office. Bench testing will consist of downloading the new PLC programs into test hardware that will be physically connected to an HMI development workstation. Using test PLC, Consultant will drive inputs to check for continuity to the HMI screens. Consultant will also send commands from the HMI Screens to drive outputs on the test PLC. Representatives from the County are invited to attend the Bench Testing in person.

Subtask 6.2.3 – Installation Testing

Consultant will coordinate with the County and CMAR to perform control system installation testing. Consultant will perform on-site testing to verify the physical connections, communications between control system hardware, and basic programming logic are functional. Consultant's on-site activities will take place once the CMAR has completed all field loop checks. Installation Testing will include verification of signal at the PLC I/O terminals, in the PLC program, and on the HMI screens. SCADA commands will be issued from the SCADA workstation to confirm receipt in the PLC. Installation will follow the written testing procedure and checklist.

Subtask 6.2.4 – Functional and Performance Testing

Upon completion of Installation Testing, Consultant will coordinate with the CMAR and STMWRF Operations personnel to perform control system functional testing of the new improvements. The first phase of Functional Testing will be to test the control and monitoring of equipment in Local control mode. Once this step is completed, the new unit processes/equipment will be placed into Remote Auto mode for Performance Testing. Performance Testing will consist of Consultant working with Plant Operations personnel to demonstrate that unit process monitoring and control is consistent with the Loop Descriptions before it is deemed fully functional. Fine tuning of loops and adjustments of unit process displays and controls should be expected during this period. Consultant has budgeted for 4 days on-site to complete the functional testing and performance testing of Consultant-developed programming logic.

Subtask 6.3 - Applications Software Operations Manual Updates

Consultant will update the existing STMWRF SCADA Software Operations Manual to reflect the modifications associated with the EW-2 improvements. Changes will include updating the master STMWRF Control Strategies document and the STMWRF Software Design Manual.

Subtask 6.4 - Operator Training

Immediately following the Performance Testing, Consultant will provide training to County and STMWRF operations personnel on the operation of the new PLC and HMI software applications for monitoring and control of the new improvements. The training will cover PLC and HMI application software operation and control, configuration, HMI displays, screen navigation, pop-ups, scripts, data management, reports, trending, and document printouts. A single training session, of approximately 2 hours in length, will cover the topics described below.

- Standard operational features of PLC and HMI equipment provided.
- Operation of Each Loop: For example, control set point settings, control mode selection, alarm acknowledgment.
- Operation of each HMI display, dynamic objects, and controls.
- Alarm Summary: Describe each HMI alarm, including HMI tag name, detailed description of the alarm, probable cause, and suggested operator action(s).
- Trend and Report Summary: Describe each HMI Trend and Report developed

Subtask 6.5 – System Performance Demonstration

Once facilities have been cutover and tested, a five-day performance demonstration period will commence. Consultant will be available to make programming and/or display adjustments as needed during this period. The performance demonstration period will be considered complete when the demonstration period has been without significant interruption for three consecutive days. Acceptance of the performance demonstration period, including implementation of the desired changes by the Consultant signifies acceptance of the new PLC and HMI modifications by the County.

Task 7 – Permits and Public Involvement Support

It is anticipated that the Consultant will prepare design-related materials required to submit for a Special Use Permit and the County will submit the documents for the permit. The County will be responsible for the payment of all permit fees.

Once the Schematic Design Report has been reviewed and accepted by the County, Consultant will assist County in preparing presentation materials for one public meeting to present the general plan for the expansion. The budget for this scope is limited to one day trip to coordinate presentation materials and provide support during the presentation.

The Consultant will support any special meeting with the Neighborhood Advisory Board. The budget for this scope is limited to one day trip to coordinate presentation materials and provide support during the presentation.

The Consultant will support the County's submittal to Washoe County Air Quality (WCAQ) including the following tasks:

- Assist the County prepare the WCAQ air emissions permit update
- Participation in one (1) meeting with WCAQ to review the permit update
- Coordination of the evaluation of the most available removal technology
- Assist the County prepare the WCAQ authority to construct submittal
- Assist the County prepare the WCAQ authority to operate submittal

The Consultant will support the County's submittal to NDEP including the following tasks:

- Attend submittal package review meetings with NDEP
- Prepare NDEP deliverable review packages
- Prepare responses to NDEP review comments
- Assist the County prepare the NDEP authority to construct submittals

Task 8 – Additional Engineering Services

County may request that Consultant provide additional services not included in this scope of work. Consultant has included an allowance for the following items in the Project budget.

This will include the use of the budget for the engineering services during construction and application software development for the three work packages. This scope may include, but is not limited to, the following activities:

Subtask 8.1 – Additional Work Packages

Consultant will prepare additional work packages beyond the three (3) described herein at the direction of the County

Subtask 8.2 – Engineering Services During Construction

Consultant will provide engineering support of construction activities for packages 3, 4, and 5. Anticipated engineering services provided are noted in the subtasks below.

Office Services During Construction

County will establish and maintain ProjectMates (a computer-based document management system) and procedures for managing, tracking, and storing relevant documents that are produced during the construction and closeout phases of the Project. Consultant will support each of the subtasks below in coordination with the establish system and procedures.

Shop Drawings, Samples, and Submittals

Consultant's design team will review the submitted Contractor's shop drawings, samples, and other submittals, and will track all shop drawings, samples, and submittals. Consultant and design team's review of shop drawings, samples, and submittals shall be for general conformance with the design concept and general compliance with the requirements of the contract documents.

Requests for Information

Consultant will review the Contractor's Requests for Information (RFI's), coordinate review with the design team and the County as appropriate and coordinate and issue responses to the requests. Consultant will log and track the Contractor's requests.

Proposed Substitutions and Work Change Requests

Consultant will review Contractor requests for substitution of materials/equipment and other Contractor requested changes and advise the County and County's Construction Manager as to the technical acceptability of such proposals

Work Change Directives and Contract Change Order Preparation

Consultant will develop technical documentation in support of Work Change Directives and Contract Change Orders. Upon approval by the County, Consultant will prepare WCD and final CCO documents for execution by the County, Construction Manager, and Contractor.

Engineer Site Visits

Consultant will perform visits to the site by design team technical specialists to review progress and quality of the work. The visits will observe the general quality of the work at the time of the visit and review any specific items of work that are brought to the attention of the design team members by the County.

Engineer Startup Support

Consultant will assist in the planning and executing of facility startup including the following tasks:

- Participate in startup planning meetings
- Review performance and functional test plans
- Witness manufacturer equipment testing onsite or at factory
- Witness onsite performance and functional testing
- Collaborate with County, CM, and CMAR to develop facility commissioning plans
- Update Arc Flash study and provide labels.

Facility O&M Update

Consultant will prepare an update to the existing STMWRF Facility O&M. Consultant assumes this effort will include preparation of a draft and final version with review by county and NDEP at the draft stage. Comments will be integrated into the final document. Consultant will submit ten (10) hard copies and one electronic (PDF) version of the draft and final documents.

Process Training

Consultant will prepare and deliver process training to the County and Plant personnel at or near the conclusion of facility startup/commissioning. Training will be conducted during a single contiguous week consisting of 40 hours where Consultant will train staff in shifts or all together, but total training duration will not exceed 40 hours. Consultant assumes the County will provide facilities suitable for training.

Record Drawings

Consultant will prepare record drawings based on construction phase changes recorded by the CMAR in their as-built documentation. Consultant assumes receipt of a single set of CMAR as-built documents that comply with the standards set forth in the Contract Documents for Consultant to prepare a single set of Record Drawings for all GMP packages. Record Drawings will be submitted to the County electronically in PDF format.

Subtask 8.3 – SCADA System Modifications

Consultant will develop SCADA screens and application software programming for the central control and monitoring of the modified facilities included in Packages 3, 4, 5, and Steamboat LS. Services provided will include the following:

Application Software Development

Consultant will develop the application software for the new or modified unit processes in accordance with the Loop Descriptions developed during design and using previously developed Jacobs software standards. Consultant will provide the software configurations necessary to display the new/modified unit processes in the existing Wonderware SCADA Software Platform. Consultant will update existing HMI screens using previously developed Jacobs software standards.

Hardware and Software Installation and Testing

Once programming modifications are complete, Consultant will begin planning for installation and testing phase. Consultant will follow an installation and testing process as outlined in the subtasks below.

Post-configuration Review Meeting

Consultant will facilitate a conference call to discuss the completed PLC and HMI program modifications and review the new HMI screen graphics. During the call, Consultant will review the schedule for testing and training. Consultant will also present the Software Testing checklists to be adhered to for Bench Testing, Installation Testing, and Functional and Performance Testing. It is expected that the conference call will be 2-4 hours in length and will include project team members from the County and STMWRF operations.

Software Bench Testing

Once program modifications are complete, Consultant will perform Bench Testing of the HMI and PLC programs in a simultaneous fashion to demonstrate communications and basic functionality of the HMI screens. Bench Testing will take place in Consultant's Redding, CA office. Bench testing will consist of downloading the new PLC programs into test hardware that will be physically connected to an HMI development workstation. Using test PLC, Consultant will drive inputs to check for continuity to the HMI screens. Consultant will also send commands from the HMI Screens to drive outputs on the test PLC. Representatives from the County are invited to attend the Bench Testing in person.

Installation Testing

Consultant will coordinate with the County and CMAR to perform control system installation testing. Consultant will perform on-site testing to verify the physical connections, communications between control system hardware, and basic programming logic are functional. Consultant's on-site activities will take place once the CMAR has completed all field loop checks. Installation Testing will include verification of signal at the PLC I/O terminals, in the PLC program, and on the HMI screens. SCADA commands will be issued from the SCADA workstation to confirm receipt in the PLC. Installation will follow the written testing procedure and checklist.

Functional and Performance Testing

Upon completion of Installation Testing, Consultant will coordinate with the CMAR and STMWRF Operations personnel to perform control system functional testing of the new improvements. The first phase of Functional Testing will be to test the control and monitoring of equipment in Local control mode. Once this step is completed, the new unit processes/equipment will be placed into Remote Auto mode for Performance Testing. Performance Testing will consist of Consultant working with Plant Operations personnel to demonstrate that unit process monitoring and control is consistent with the Loop Descriptions before it is deemed fully functional. Fine tuning of loops and adjustments of unit process displays and controls should be expected during this period. Consultant has budgeted for 4 days on-site to complete the functional testing and performance testing of Consultant-developed programming logic.

Applications Software Operations Manual Updates

Consultant will update the existing STMWRF SCADA Software Operations Manual to reflect the modifications associated with the WP2 improvements. Changes will include updating the master STMWRF Control Strategies document and the STMWRF Software Design Manual.

Operator Training

Immediately following the Performance Testing, Consultant will provide training to County and STMWRF operations personnel on the operation of the new PLC and HMI software applications for monitoring and control of the new improvements. The training will cover PLC and HMI application software operation and control, configuration, HMI displays, screen navigation, pop-ups, scripts, data management, reports, trending, and document printouts. A single training session, of approximately 2 hours in length, will cover the topics described below.

- Standard operational features of PLC and HMI equipment provided.
- Operation of Each Loop: For example, control set point settings, control mode selection, alarm acknowledgment.
- Operation of each HMI display, dynamic objects, and controls.
- Alarm Summary: Describe each HMI alarm, including HMI tag name, detailed description of the alarm, probable cause, and suggested operator action(s).
- Trend and Report Summary: Describe each HMI Trend and Report developed

System Performance Demonstration

Once facilities have been cutover and tested, a five-day performance demonstration period will commence. Consultant will be available to make programming and/or display adjustments as needed during this period. The performance demonstration period will be considered complete when the demonstration period has been without significant interruption for three consecutive days. Acceptance of the performance demonstration period, including implementation of the desired changes by the Consultant signifies acceptance of the new PLC and HMI modifications by the County.

Future Services

An amendment or separate Agreement will be required for any work exceeding the budget allocated to this scope of services. Services not included in this scope of work and fee estimate, will be negotiated under a separate contract.

Examples of future services are as follows:

- Other services mutually agreeable to the County and Consultant

County Responsibilities

County responsibilities include, but are not limited to the following:

- Engagement of the NWII, including the TAC and IEP as deemed necessary.
- Prepare/file applications and pay fees for permits and licenses required by local, state, and federal authorities.
- Performing cultural resource investigations as required for the Project.
- Participate in project workshops and provide input & review comments Project deliverables/recommendations.
- Coordinate input from the Washoe County Building Department and the Truckee Meadows Fire Department, including review of deliverables.
- Coordinate input/review from any other stakeholders beyond the County's core project team.
- Provide survey data suitable for detailed design.
- Provide pothole data as required to perform detailed design.

Schedule

A preliminary milestone schedule for each Task is as follows:

Milestone	Target Start	Target Finish
Task 1 – Project Management	8/15/20	12/21/24
Task 2 – Site Investigations	8/15/20	1/15/21
Task 3 – Basis of Design	8/15/20	1/15/21
Task 4 – Detailed Design	8/15/20	1/15/22
Task 5 – CMAR Coordination	8/15/20	1/15/22
Task 6 – SCADA System Modifications	9/15/20	8/31/21
Task 7 – Permits and Public Involvement Support	8/15/20	8/31/21

All work under this Agreement is expected to be completed by December 31, 2024. If the work is delayed beyond the reasonable control of Consultant, Consultant reserves the right to request a scope and fee modification for additional administrative and support time.

Compensation

Compensation for the services described herein will be on a time and expense basis using the billing rates specified in Exhibit B. The amount invoiced each month will be based on actual hours of labor and expenses expended. For services enumerated in Tasks 1 through 7, the total estimated fee is \$8,130,804. This total fee will not be exceeded without prior authorization from the County. A breakdown of the estimated fee is summarized in Table 1. County understands and agrees that individual tasks may be completed either under or over budget and that Consultant can reallocate budgets within and across tasks provided the total authorized estimated fee is not exceeded.

TABLE 1
Fee Estimate Summary

Task	Description	Estimated Fee (\$)
1	Project Management and Meetings	\$810,004
2	Site Investigations	\$101,794
3	Basis of Design	\$227,758
4	Detailed Design	\$6,491,000
5	CMAR Coordination	\$216,833
6	SCADA System Modifications	\$61,075
7	Permits and Public Involvement Support	\$222,340
8	Additional Engineering Services ⁽¹⁾	\$3,873,716
Total		\$12,004,520

NOTE:

1. ESDC portion of Additional Engineering Services is based on projected 2022 Rates

Drawing List

Sht #	Sheet Type	Drawing Title
1	GENERAL	VICINITY MAP AND LOCATION MAP
2	GENERAL	INDEX TO DRAWINGS 1 OF 3
3	GENERAL	INDEX TO DRAWINGS 2 OF 3
4	GENERAL	INDEX TO DRAWINGS 3 OF 3
5	GENERAL	GENERAL ABBREVIATIONS
6	GENERAL	CIVIL LEGEND AND NOTES
7	GENERAL	ARCHITECTURAL LEGEND AND WALL TYPES
8	GENERAL	ARCHITECTURAL BUILDING CODE DATA AND LIFE SAFETY PLANS
9	GENERAL	FACILITY CODE PLAN
10	GENERAL	ARCHITECTURAL SCHEDULES
11	GENERAL	STRUCTURAL NOTES 1 OF 2
12	GENERAL	STRUCTURAL NOTES 2 OF 2
13	GENERAL	STATEMENT OF SPECIAL INSPECTIONS
14	GENERAL	MECHANICAL LEGEND AND NOTES
15	GENERAL	PLUMBING LEGEND
16	GENERAL	ELECTRICAL LEGEND
17	GENERAL	INSTRUMENTATION AND CONTROL LEGEND 1 OF 2
18	GENERAL	INSTRUMENTATION AND CONTROL LEGEND 2 OF 2
19	GENERAL	PIPE SCHEDULE
20	GENERAL	HYDRAULIC PROFILE 1 OF 2
21	GENERAL	HYDRAULIC PROFILE 2 OF 2
22	GENERAL	PROCESS FLOW DIAGRAM LIQUIDS
23	GENERAL	PROCESS FLOW DIAGRAM SOLIDS
24	DEMOLITION	OVERALL SITE PLAN - DEMOLITION
25	CIVIL	SURVEY CONTROL
26	CIVIL	OVERALL CIVIL SITE PLAN AND KEY PLAN
27	CIVIL	CIVIL SITE PLAN AREA 1
28	CIVIL	CIVIL SITE PLAN AREA 2
29	CIVIL	CIVIL SITE PLAN AREA 3
30	CIVIL	CIVIL SITE PLAN AREA 4
31	CIVIL	GRADING PLAN AREA 1
32	CIVIL	GRADING PLAN AREA 2
33	CIVIL	GRADING PLAN AREA 3
34	CIVIL	GRADING PLAN AREA 4
35	CIVIL	GRADING PLAN AREA 5
36	CIVIL	GRADING PLAN AREA 6
37	CIVIL	GRADING ENLARGED PLAN (BIOREACTOR)
38	CIVIL	GRADING ENLARGED PLAN (DIGESTER)
39	CIVIL	GRADING ENLARGED PLAN (FILTERS)
40	CIVIL	GRADING ENLARGED PLANS

Sht #	Sheet Type	Drawing Title
41	CIVIL	EROSION CONTROL
42	CIVIL	CIVIL SECTIONS
43	CIVIL	CIVIL CONTROL POINTS 1 OF 2
44	CIVIL	CIVIL CONTROL POINTS 2 OF 2
45	YARD PIPING	OVERALL YARD PIPING PLAN AND KEY PLAN
46	YARD PIPING	YARD PIPING PLAN AREA 1
47	YARD PIPING	YARD PIPING PLAN AREA 2
48	YARD PIPING	YARD PIPING PLAN AREA 3
49	YARD PIPING	YARD PIPING PLAN AREA 4
50	YARD PIPING	YARD PIPING PLAN AREA 5
51	YARD PIPING	YARD PIPING PLAN AREA 6
52	YARD PIPING	YARD PIPING ENLARGED PLANS
53	YARD PIPING	YARD PIPING ENLARGED PLANS
54	YARD PIPING	YARD PIPING ENLARGED PLANS
55	YARD PIPING	YARD PIPING ENLARGED PLANS
56	YARD PIPING	YARD PIPING ENLARGED PLANS
57	YARD PIPING	YARD PIPING ENLARGED PLANS
58	YARD PIPING	YARD PIPING ENLARGED PLANS
59	YARD PIPING	YARD PIPING ENLARGED PLANS
60	YARD PIPING	YARD PIPING ENLARGED PLANS
61	YARD PIPING	YARD PIPING ENLARGED PLANS
62	YARD PIPING	YARD PIPING PROFILES AND SECTIONS
63	YARD PIPING	YARD PIPING PROFILES AND SECTIONS
64	YARD PIPING	YARD PIPING PROFILES AND SECTIONS
65	YARD PIPING	YARD PIPING PROFILES AND SECTIONS
66	YARD PIPING	YARD PIPING PROFILES AND SECTIONS
67	YARD PIPING	YARD PIPING PROFILES AND SECTIONS
68	SITE ELECTRICAL	OVERALL SITE PLAN - ELECTRICAL
69	SITE ELECTRICAL	SITE PLAN AREA 1 - ELECTRICAL
70	SITE ELECTRICAL	SITE PLAN AREA 2 - ELECTRICAL
71	SITE ELECTRICAL	SITE PLAN AREA 3- ELECTRICAL
72	SITE ELECTRICAL	SITE PLAN AREA 4 - ELECTRICAL
73	SITE ELECTRICAL	SITE PLAN AREA 5 - ELECTRICAL
74	SITE ELECTRICAL	SITE PLAN AREA 6 - ELECTRICAL
75	SITE ELECTRICAL	ONE-LINE DIAGRAM, OVERALL POWER DISTRIBUTION
76	I&C	SECURITY SYSTEM BLOCK DIAGRAM
77	SECURITY SYSTEM	SECURITY SYSTEM
78	SECURITY SYSTEM	SECURITY SYSTEM
79	SECURITY SYSTEM	SECURITY SYSTEM
80	P&ID	P&ID AERATION BLOWERS 4 & 5
81	P&ID	P&ID BLOWER BUILDING HVAC SYSTEM
82	P&ID	P&ID STANDBY POWER & LOAD SHED

Sht #	Sheet Type	Drawing Title
83	P&ID	P&ID MISCELLANEOUS SYSTEMS 1 OF 2
84	P&ID	P&ID MISCELLANEOUS SYSTEMS 2 OF 2
85	I&C	TYPICAL I/O WIRING
86	I&C	CONTROL SYSTEM BLOCK DIAGRAM 1 OF 2
87	I&C	CONTROL SYSTEM BLOCK DIAGRAM 2 OF 2
88	I&C	NETWORK BLOCK DIAGRAM
89	I&C	DETAILS
90	CONTROL SYSTEM IMPROVEMENTS	CONTROL SYSTEM IMPROVEMENTS
91	CONTROL SYSTEM IMPROVEMENTS	CONTROL SYSTEM IMPROVEMENTS
92	CONTROL SYSTEM IMPROVEMENTS	CONTROL SYSTEM IMPROVEMENTS
93	P&ID	P&ID GRIT REMOVAL
94	HEADWORKS GRIT REMOVAL	DEMOLITION PLAN
95	HEADWORKS GRIT REMOVAL	STRUCTURAL FOUNDATION PLAN
96	HEADWORKS GRIT REMOVAL	STRUCTURAL INTERMEDIATE PLAN
97	HEADWORKS GRIT REMOVAL	STRUCTURAL TOP PLAN
98	HEADWORKS GRIT REMOVAL	STRUCTURAL SECTIONS
99	HEADWORKS GRIT REMOVAL	STRUCTURAL SECTIONS
100	HEADWORKS GRIT REMOVAL	STRUCTURAL DETAILS
101	HEADWORKS GRIT REMOVAL	PROCESS MECHANICAL LOWER PLAN
102	HEADWORKS GRIT REMOVAL	PROCESS MECHANICAL UPPER PLAN
103	HEADWORKS GRIT REMOVAL	PROCESS MECHANICAL BYPASS PLAN
104	HEADWORKS GRIT REMOVAL	PROCESS MECHANICAL SECTIONS
105	HEADWORKS GRIT REMOVAL	PROCESS MECHANICAL SECTIONS
106	HEADWORKS GRIT REMOVAL	PROCESS MECHANICAL SECTIONS (BYPASS)
107	HEADWORKS GRIT REMOVAL	DETAILS
108	HEADWORKS GRIT REMOVAL	Odor Control Plan
109	HEADWORKS GRIT REMOVAL	Odor Control Sections
110	HEADWORKS GRIT REMOVAL	Odor Control Details
111	HEADWORKS GRIT REMOVAL	PLUMBING FLOOR PLAN
112	HEADWORKS GRIT REMOVAL	HVAC PLAN
113	HEADWORKS GRIT REMOVAL	HVAC AND PLUMBING ENLARGED PLAN
114	HEADWORKS GRIT REMOVAL	SECTIONS
115	HEADWORKS GRIT REMOVAL	HVAC SCHEMATIC AND SEQUENCE OF OPERATION
116	HEADWORKS GRIT REMOVAL	PLUMBING SCHEDULES
117	HEADWORKS GRIT REMOVAL	FIRE SPRINKLER PLAN
118	HEADWORKS GRIT REMOVAL	FIRE ALARM PLAN
119	HEADWORKS GRIT REMOVAL	FIRE ALARM MATRIX AND RISER
120	HEADWORKS GRIT REMOVAL	ELECTRICAL SITE PLAN
121	HEADWORKS GRIT REMOVAL	ONE-LINE DIAGRAM
122	HEADWORKS GRIT REMOVAL	CONTROL DIAGRAMS
123	HEADWORKS GRIT REMOVAL	LIGHTING AND RECEPTICAL PLAN
124	HEADWORKS GRIT REMOVAL	LIGHTING AND RECEPTICAL ENLARGED PLAN

Sht #	Sheet Type	Drawing Title
125	HEADWORKS GRIT REMOVAL	Odor Control Site Plan
126	HEADWORKS GRIT REMOVAL	Odor Control Structural Sections
127	HEADWORKS GRIT REMOVAL	Odor Control Electrical Plan
128	HEADWORKS GRIT REMOVAL	Odor Control Electrical Sections
129	HEADWORKS GRIT REMOVAL	Odor Control Electrical Details
130	HEADWORKS GRIT REMOVAL	Odor Control P&ID
131	HEADWORKS GRIT REMOVAL	Odor Control Structural Plan
132	P&ID	P&ID FLOW DISTRIBUTION STRUCTURE
133	FLOW DISTRIBUTION STRUCTURE	DEMOLITION PLAN
134	FLOW DISTRIBUTION STRUCTURE	STRUCTURAL FOUNDATION PLAN
135	FLOW DISTRIBUTION STRUCTURE	STRUCTURAL TOP PLAN
136	FLOW DISTRIBUTION STRUCTURE	STRUCTURAL SECTIONS
137	FLOW DISTRIBUTION STRUCTURE	STRUCTURAL DETAILS
138	FLOW DISTRIBUTION STRUCTURE	PROCESS MECHANICAL LOWER PLAN
139	FLOW DISTRIBUTION STRUCTURE	PROCESS MECHANICAL UPPER PLAN
140	FLOW DISTRIBUTION STRUCTURE	PROCESS MECHANICAL SECTIONS
141	FLOW DISTRIBUTION STRUCTURE	DETAILS
142	FLOW DISTRIBUTION STRUCTURE	ELECTRICAL PLAN
143	P&ID	P&ID BIOREACTOR NO. 1
144	P&ID	P&ID BIOREACTOR NO. 2
145	P&ID	P&ID BIOREACTOR NO. 3
146	P&ID	P&ID BIOREACTOR NO. 4
147	BIOREACTOR NO. 1 AND 2 CONVERSION	OVERALL PLAN
148	BIOREACTOR NO. 1 AND 2 CONVERSION	DETAILS
149	BIOREACTOR NO. 1 AND 2 CONVERSION	DEMOLITION PLAN
150	BIOREACTOR NO. 1 AND 2 CONVERSION	DEMOLITION PHOTOS
151	BIOREACTOR NO. 1 CONVERSION	STRUCTURAL FOUNDATION PLAN
152	BIOREACTOR NO. 1 CONVERSION	STRUCTURAL INTERMEDIATE PLAN
153	BIOREACTOR NO. 1 CONVERSION	STRUCTURAL TOP PLAN
154	BIOREACTOR NO. 1 CONVERSION	STRUCTURAL SECTIONS
155	BIOREACTOR NO. 1 CONVERSION	STRUCTURAL SECTIONS
156	BIOREACTOR NO. 1 CONVERSION	STRUCTURAL DETAILS
157	BIOREACTOR NO. 1 CONVERSION	STRUCTURAL DETAILS
158	BIOREACTOR NO. 1 CONVERSION	PROCESS MECHANICAL LOWER PLAN
159	BIOREACTOR NO. 1 CONVERSION	PROCESS MECHANICAL UPPER PLAN
160	BIOREACTOR NO. 1 CONVERSION	PROCESS MECHANICAL ENLARGED PLAN
161	BIOREACTOR NO. 1 CONVERSION	PROCESS MECHANICAL SECTIONS
162	BIOREACTOR NO. 1 CONVERSION	PROCESS MECHANICAL SECTIONS
163	BIOREACTOR NO. 1 CONVERSION	DETAILS
164	BIOREACTOR NO. 1 CONVERSION	ELECTRICAL SITE PLAN
165	BIOREACTOR NO. 1 CONVERSION	ELECTRICAL ENLARGED PLAN
166	BIOREACTOR NO. 1 CONVERSION	LIGHTING AND RECEPTICAL SITE PLAN

Sht #	Sheet Type	Drawing Title
167	BIOREACTOR NO. 1 CONVERSION	LIGHTING AND RECEPTICAL ENLARGED PLAN
168	BIOREACTOR NO. 1 CONVERSION	ELECTRICAL DETAILS
169	BIOREACTOR NO. 2 CONVERSION	STRUCTURAL FOUNDATION PLAN
170	BIOREACTOR NO. 2 CONVERSION	STRUCTURAL SECTIONS
171	BIOREACTOR NO. 2 CONVERSION	STRUCTURAL DETAILS
172	BIOREACTOR NO. 2 CONVERSION	PROCESS MECHANICAL LOWER PLAN
173	BIOREACTOR NO. 2 CONVERSION	PROCESS MECHANICAL SECTIONS
174	BIOREACTOR NO. 2 CONVERSION	DETAILS
175	BIOREACTOR NO. 2 CONVERSION	ELECTRICAL SITE PLAN
176	BIOREACTOR NO. 2 CONVERSION	LIGHTING AND RECEPTICAL SITE PLAN
177	BIOREACTOR NO. 2 CONVERSION	ELECTRICAL DETAILS
178	BIOREACTOR NO. 3 AND 4	OVERALL PLAN
179	BIOREACTOR NO. 3 AND 4	DETAILS
180	BIOREACTOR NO. 3	STRUCTURAL FOUNDATION PLAN
181	BIOREACTOR NO. 3	STRUCTURAL INTERMEDIATE PLAN
182	BIOREACTOR NO. 3	STRUCTURAL TOP PLAN
183	BIOREACTOR NO. 3	STRUCTURAL SECTIONS
184	BIOREACTOR NO. 3	STRUCTURAL SECTIONS
185	BIOREACTOR NO. 3	STRUCTURAL DETAILS
186	BIOREACTOR NO. 3	STRUCTURAL DETAILS
187	BIOREACTOR NO. 3	PROCESS MECHANICAL LOWER PLAN
188	BIOREACTOR NO. 3	PROCESS MECHANICAL UPPER PLAN
189	BIOREACTOR NO. 3	PROCESS MECHANICAL ENLARGED PLAN
190	BIOREACTOR NO. 3	PROCESS MECHANICAL SECTIONS
191	BIOREACTOR NO. 3	PROCESS MECHANICAL SECTIONS
192	BIOREACTOR NO. 3	DETAILS
193	BIOREACTOR NO. 3	ELECTRICAL SITE PLAN
194	BIOREACTOR NO. 3	ELECTRICAL ENLARGED PLAN
195	BIOREACTOR NO. 3	LIGHTING AND RECEPTICAL SITE PLAN
196	BIOREACTOR NO. 3	LIGHTING AND RECEPTICAL ENLARGED PLAN
197	BIOREACTOR NO. 3	ELECTRICAL DETAILS
198	BIOREACTOR NO. 4	STRUCTURAL FOUNDATION PLAN
199	BIOREACTOR NO. 4	STRUCTURAL SECTIONS
200	BIOREACTOR NO. 4	STRUCTURAL DETAILS
201	BIOREACTOR NO. 4	PROCESS MECHANICAL LOWER PLAN
202	BIOREACTOR NO. 4	PROCESS MECHANICAL SECTIONS
203	BIOREACTOR NO. 4	DETAILS
204	BIOREACTOR NO. 4	ELECTRICAL SITE PLAN
205	BIOREACTOR NO. 4	LIGHTING AND RECEPTICAL SITE PLAN
206	BIOREACTOR NO. 4	ELECTRICAL DETAILS
207	BIOREACTORS (RAS PUMPING PIPE MODIFICATIONS)	PROCESS MECHANICAL ENLARGED PLAN
208	BIOREACTORS (RAS PUMPING PIPE MODIFICATIONS)	PROCESS MECHANICAL SECTIONS

Sht #	Sheet Type	Drawing Title
209	BIOREACTORS	ONE-LINE DIAGRAM
210	BIOREACTORS	CONTROL DIAGRAMS
211	BIOREACTORS	CONTROL DIAGRAMS
212	BIOSOLIDS HANDLING	Odor Control Plan
213	BIOSOLIDS HANDLING	Odor Control Sections
214	BIOSOLIDS HANDLING	Odor Control Details
215	BIOSOLIDS HANDLING	Odor Control Site Plan
216	BIOSOLIDS HANDLING	Odor Control Structural Sections
217	BIOSOLIDS HANDLING	Odor Control Electrical Plan
218	BIOSOLIDS HANDLING	Odor Control Electrical Sections
219	BIOSOLIDS HANDLING	Odor Control Electrical Details
220	BIOSOLIDS HANDLING	Odor Control P&ID
221	BIOSOLIDS HANDLING	Odor Control Structural Plan
222	P&ID	P&ID TERTIARY FILTERS 9-12
223	P&ID	P&ID FILTER REJECT PUMPS & FILTER EFFLUENT TURBIDITY ANALYZERS
224	P&ID	P&ID AIR COMPRESSORS
225	FILTER INFLUENT DIVERSION STRUCTURE	DEMOLITION PLAN
226	FILTER INFLUENT DIVERSION STRUCTURE	STRUCTURAL FOUNDATION PLAN
227	FILTER INFLUENT DIVERSION STRUCTURE	STRUCTURAL TOP PLAN
228	FILTER INFLUENT DIVERSION STRUCTURE	STRUCTURAL SECTIONS
229	FILTER INFLUENT DIVERSION STRUCTURE	STRUCTURAL DETAILS
230	FILTER INFLUENT DIVERSION STRUCTURE	PROCESS MECHANICAL LOWER PLAN
231	FILTER INFLUENT DIVERSION STRUCTURE	PROCESS MECHANICAL UPPER PLAN
232	FILTER INFLUENT DIVERSION STRUCTURE	PROCESS MECHANICAL SECTIONS
233	FILTER INFLUENT DIVERSION STRUCTURE	DETAILS
234	FILTERS	DEMOLITION PLAN
235	FILTERS	DEMOLITION PHOTOS
236	FILTERS	STRUCTURAL FOUNDATION PLAN
237	FILTERS	STRUCTURAL INTERMEDIATE PLAN
238	FILTERS	STRUCTURAL TOP PLAN
239	FILTERS	STRUCTURAL ENLARGED PLAN
240	FILTERS	STRUCTURAL SECTIONS
241	FILTERS	STRUCTURAL SECTIONS
242	FILTERS	STRUCTURAL DETAILS
243	FILTERS	STRUCTURAL DETAILS
244	FILTERS	PROCESS MECHANICAL LOWER PLAN
245	FILTERS	PROCESS MECHANICAL UPPER PLAN
246	FILTERS	PROCESS MECHANICAL ENLARGED PLAN
247	FILTERS	PROCESS MECHANICAL SECTIONS
248	FILTERS	PROCESS MECHANICAL SECTIONS
249	FILTERS	DETAILS
250	FILTERS	DETAILS

Sht #	Sheet Type	Drawing Title
251	FILTERS	ELECTRICAL SITE PLAN
252	FILTERS	LIGHTING AND RECEPTICAL PLAN
253	FILTERS	ONE-LINE DIAGRAM
254	FILTERS	CONTROL DIAGRAMS
255	FILTERS	DETAILS
256	P&ID	P&ID AEROBIC DIGESTER NO. 3
257	P&ID	P&ID DIGESTER BLOWERS 1-3
258	P&ID	P&ID DEWATERING (ADDITION OF SCREW PRESS NO. 2)
259	P&ID	P&ID POLYMER SYSTEMS
260	P&ID	P&ID BUILDING VENTILATION
261	DIGESTER MECH ROOM	BIOSOLIDS FACILITY CODE PLAN
262	DIGESTER MECH ROOM	ELEVATIONS
263	DIGESTER MECH ROOM	ELEVATIONS
264	DIGESTER MECH ROOM	FLOOR PLAN
265	DIGESTER MECH ROOM	ROOF PLAN
266	DIGESTER MECH ROOM	SCHEDULES
267	DIGESTER MECH ROOM	BUILDING SECTIONS
268	DIGESTER MECH ROOM	WALL SECTIONS
269	DIGESTER MECH ROOM	DOOR DETAILS
270	DIGESTER MECH ROOM	DOOR AND WINDOW DETAILS
271	DIGESTER MECH ROOM	DETAILS
272	DIGESTER MECH ROOM	DETAILS
273	DIGESTER MECH ROOM	PLUMBING FLOOR PLAN
274	DIGESTER MECH ROOM	PLUMBING INTERMEDIATE PLAN
275	DIGESTER MECH ROOM	HVAC PLAN
276	DIGESTER MECH ROOM	HVAC AND PLUMBING ROOF PLAN
277	DIGESTER MECH ROOM	SECTIONS
278	DIGESTER MECH ROOM	SECTIONS
279	DIGESTER MECH ROOM	SECTIONS
280	DIGESTER MECH ROOM	HVAC SCHEMATIC AND SEQUENCE OF OPERATION
281	DIGESTER MECH ROOM	PLUMBING SCHEDULES
282	DIGESTER MECH ROOM	FIRE SPRINKLER PLAN
283	DIGESTER MECH ROOM	FIRE ALARM PLAN
284	DIGESTER MECH ROOM	FIRE ALARM MATRIX AND RISER
285	DIGESTER MECH ROOM	DETAILS
286	DIGESTER MECH ROOM	DETAILS
287	DIGESTER	DIGESTER FOUNDATION PLAN
288	DIGESTER	INTERMEDIATE FLOOR PLAN
289	DIGESTER	ROOF PLAN
290	DIGESTER	PLATFORM PLANS
291	DIGESTER	PARTIAL PLANS
292	DIGESTER	SECTION

Sht #	Sheet Type	Drawing Title
293	DIGESTER	SECTION
294	DIGESTER	SECTION
295	DIGESTER	SECTION
296	DIGESTER	DETAILS
297	DIGESTER	DETAILS
298	DIGESTER	DETAILS
299	DIGESTER	DETAILS
300	DIGESTER	FLOOR PLAN
301	DIGESTER	INTERMEDIATE FLOOR PLAN
302	DIGESTER	SECTION
303	DIGESTER	SECTION
304	DIGESTER	SECTION
305	DIGESTER	SECTION
306	DIGESTER	DETAILS
307	DIGESTER	DETAILS
308	DEWATERING	INTERMEDIATE FLOOR PLAN
309	DEWATERING	PLATFORM PLANS
310	DEWATERING	PARTIAL PLANS
311	DEWATERING	SECTION
312	DEWATERING	SECTION
313	DEWATERING	DETAILS
314	DEWATERING	DETAILS
315	DEWATERING	FLOOR PLAN
316	DEWATERING	INTERMEDIATE FLOOR PLAN
317	DEWATERING	SECTION
318	DEWATERING	SECTION
319	DEWATERING	DETAILS
320	DEWATERING	DETAILS
321	BIOSOLIDS HANDLING	FLOOR PLAN
322	BIOSOLIDS HANDLING	INTERMEDIATE FLOOR PLAN
323	BIOSOLIDS HANDLING	LIGHTING AND RECEPTICAL PLAN
324	BIOSOLIDS HANDLING	CIRCUIT AND REACEWAY SCHEDULE
325	BIOSOLIDS HANDLING	CIRCUIT AND REACEWAY SCHEDULE
326	BIOSOLIDS HANDLING	CONTROL DIAGRAMS
327	BIOSOLIDS HANDLING	CONTROL DIAGRAMS
328	BIOSOLIDS HANDLING	CONTROL DIAGRAMS
329	P&ID	P&ID AERATION BLOWERS 1,2, & 3
330	AERATION BLOWERS	DEMOLITION PLAN
331	AERATION BLOWERS	DEMOLITION SECTIONS
332	AERATION BLOWERS	DEMOLITION PHOTOS
333	AERATION BLOWERS	FLOOR PLAN
334	AERATION BLOWERS	ELEVATIONS

Sht #	Sheet Type	Drawing Title
335	AERATION BLOWERS	DETAILS AND SCHEDULES
336	AERATION BLOWERS	STRUCTURAL FOUNDATION PLAN
337	AERATION BLOWERS	STRUCTURAL TOP PLAN
338	AERATION BLOWERS	STRUCTURAL ENLARGED PLAN
339	AERATION BLOWERS	STRUCTURAL SECTIONS
340	AERATION BLOWERS	STRUCTURAL SECTIONS
341	AERATION BLOWERS	STRUCTURAL DETAILS
342	AERATION BLOWERS	STRUCTURAL DETAILS
343	AERATION BLOWERS	PROCESS MECHANICAL PLAN
344	AERATION BLOWERS	PROCESS MECHANICAL ENLARGED PLAN
345	AERATION BLOWERS	PROCESS MECHANICAL SECTIONS
346	AERATION BLOWERS	PROCESS MECHANICAL SECTIONS
347	AERATION BLOWERS	DETAILS
348	AERATION BLOWERS	PLUMBING FLOOR PLAN
349	AERATION BLOWERS	HVAC PLAN
350	AERATION BLOWERS	HVAC AND PLUMBING ENLARGED PLAN
351	AERATION BLOWERS	SECTIONS
352	AERATION BLOWERS	HVAC SCHEMATIC AND SEQUENCE OF OPERATION
353	AERATION BLOWERS	PLUMBING SCHEDULES
354	AERATION BLOWERS	FIRE SPRINKLER PLAN
355	AERATION BLOWERS	FIRE ALARM PLAN
356	AERATION BLOWERS	FIRE ALARM MATRIX AND RISER
357	AERATION BLOWERS	PROCESS FLOOR PLAN
358	AERATION BLOWERS	FACILITY PLAN
359	AERATION BLOWERS	CIRCUIT AND RACEWAY SCHEDULE
360	AERATION BLOWERS	CIRCUIT AND RACEWAY SCHEDULE
361	AERATION BLOWERS	ONE-LINE DIAGRAM
362	AERATION BLOWERS	DETAILS
363	AERATION BLOWERS	DETAILS
364	AERATION BLOWERS	CONTROL DIAGRAMS
365	P&ID	P&ID FERRIC CHLORIDE FEED SYSTEM
366	FERRIC CHLORIDE FEED SYSTEM	DEMOLITION PLAN
367	FERRIC CHLORIDE FEED SYSTEM	ELEVATIONS
368	FERRIC CHLORIDE FEED SYSTEM	FLOOR PLAN
369	FERRIC CHLORIDE FEED SYSTEM	ROOF PLAN
370	FERRIC CHLORIDE FEED SYSTEM	DETAILS
371	FERRIC CHLORIDE FEED SYSTEM	STRUCTURAL FOUNDATION PLAN
372	FERRIC CHLORIDE FEED SYSTEM	PARTIAL PLANS
373	FERRIC CHLORIDE FEED SYSTEM	SECTION
374	FERRIC CHLORIDE FEED SYSTEM	DETAILS
375	FERRIC CHLORIDE FEED SYSTEM	PROCESS MECHANICAL PLAN
376	FERRIC CHLORIDE FEED SYSTEM	PROCESS MECHANICAL SECTIONS

Sht #	Sheet Type	Drawing Title
377	FERRIC CHLORIDE FEED SYSTEM	DETAILS
378	FERRIC CHLORIDE FEED SYSTEM	PLUMBING FLOOR PLAN
379	FERRIC CHLORIDE FEED SYSTEM	HVAC PLAN
380	FERRIC CHLORIDE FEED SYSTEM	PLUMBING SCHEDULES
381	FERRIC CHLORIDE FEED SYSTEM	FIRE SPRINKLER PLAN
382	FERRIC CHLORIDE FEED SYSTEM	FIRE ALARM PLAN
383	FERRIC CHLORIDE FEED SYSTEM	FLOOR PLAN
384	FERRIC CHLORIDE FEED SYSTEM	LIGHTING AND RECEPTICAL PLAN
385	FERRIC CHLORIDE FEED SYSTEM	CIRCUIT AND REACEWAY SCHEDULE
386	FERRIC CHLORIDE FEED SYSTEM	ONE-LINE DIAGRAM
387	FERRIC CHLORIDE FEED SYSTEM	CONTROL DIAGRAMS
388	FERRIC CHLORIDE FEED SYSTEM	CORROSION CONTROL
389	P&ID	P&ID CO2 SYSTEM
390	CO2 STORAGE AND FEED SYSTEM	DEMOLITION PLAN
391	CO2 STORAGE AND FEED SYSTEM	STRUCTURAL FOUNDATION PLAN
392	CO2 STORAGE AND FEED SYSTEM	STRUCTURAL SECTIONS
393	CO2 STORAGE AND FEED SYSTEM	STRUCTURAL DETAILS
394	CO2 STORAGE AND FEED SYSTEM	PROCESS MECHANICAL PLAN
395	CO2 STORAGE AND FEED SYSTEM	PROCESS MECHANICAL SECTIONS
396	CO2 STORAGE AND FEED SYSTEM	DETAILS
397	CO2 STORAGE AND FEED SYSTEM	ELECTRICAL SITE PLAN
398	CO2 STORAGE AND FEED SYSTEM	ONE-LINE DIAGRAM
399	CO2 STORAGE AND FEED SYSTEM	CONTROL DIAGRAMS
400	FILTER EFFLUENT FLOW METER VAULT	DEMOLITION PLAN
401	FILTER EFFLUENT FLOW METER VAULT	STRUCTURAL PLAN AND SECTIONS
402	FILTER EFFLUENT FLOW METER VAULT	STRUCTURAL DETAILS
403	FILTER EFFLUENT FLOW METER VAULT	PROCESS MECHANICAL PLAN
404	FILTER EFFLUENT FLOW METER VAULT	PROCESS MECHANICAL SECTIONS
405	FILTER EFFLUENT FLOW METER VAULT	DETAILS
406	FILTER EFFLUENT FLOW METER VAULT	ELECTRICAL PLAN
407	HUFFAKER RETURN FLOW VALVE	DEMOLITION PLAN
408	HUFFAKER RETURN FLOW VALVE	STRUCTURAL FOUNDATION PLAN
409	HUFFAKER RETURN FLOW VALVE	STRUCTURAL TOP PLAN
410	HUFFAKER RETURN FLOW VALVE	STRUCTURAL SECTIONS
411	HUFFAKER RETURN FLOW VALVE	STRUCTURAL DETAILS
412	HUFFAKER RETURN FLOW VALVE	PROCESS MECHANICAL LOWER PLAN
413	HUFFAKER RETURN FLOW VALVE	PROCESS MECHANICAL UPPER PLAN
414	HUFFAKER RETURN FLOW VALVE	PROCESS MECHANICAL SECTIONS
415	HUFFAKER RETURN FLOW VALVE	DETAILS
416	P&ID	P&ID EFFLUENT PUMPING TO HUFFAKER RESEVOIR
417	EFFLUENT PUMPING TO HUFFAKER RESEVOIR	FLOOR PLAN
418	EFFLUENT PUMPING TO HUFFAKER RESEVOIR	SCHEMATICS AND DETAILS

Sht #	Sheet Type	Drawing Title
419	EFFLUENT PUMPING TO HUFFAKER RESEVOIR	FLOOR PLAN
420	EFFLUENT PUMPING TO HUFFAKER RESEVOIR	SECTIONS AND DETAILS
421	EFFLUENT PUMPING TO HUFFAKER RESEVOIR	FLOOR PLAN
422	EFFLUENT PUMPING TO HUFFAKER RESEVOIR	SECTIONS AND DETAILS
423	P&ID	P&ID EXPORT PUMPING TO REUSE
424	EXPORT PUMPING TO REUSE	FLOOR PLAN
425	EXPORT PUMPING TO REUSE	SCHEMATICS AND DETAILS
426	EXPORT PUMPING TO REUSE	FLOOR PLAN
427	EXPORT PUMPING TO REUSE	SECTIONS AND DETAILS
428	EXPORT PUMPING TO REUSE	FLOOR PLAN
429	EXPORT PUMPING TO REUSE	SECTIONS AND DETAILS
430	P&ID	P&ID FIELD CREEK WATER PUMP STATION
431	FIELD CREEK WATER PUMP STATION	FLOOR PLAN
432	FIELD CREEK WATER PUMP STATION	SCHEMATICS AND DETAILS
433	FIELD CREEK WATER PUMP STATION	FLOOR PLAN
434	FIELD CREEK WATER PUMP STATION	SECTIONS AND DETAILS
435	FIELD CREEK WATER PUMP STATION	FLOOR PLAN
436	FIELD CREEK WATER PUMP STATION	SECTIONS AND DETAILS
437	P&ID	P&ID GROUNDWATER PUMPING
438	GROUNDWATER DEWATERING	FLOOR PLAN
439	GROUNDWATER DEWATERING	SCHEMATICS AND DETAILS
440	GROUNDWATER DEWATERING	FLOOR PLAN
441	GROUNDWATER DEWATERING	SECTIONS AND DETAILS
442	GROUNDWATER DEWATERING	FLOOR PLAN
443	GROUNDWATER DEWATERING	SECTIONS AND DETAILS
444	Operations Building Architectural	Architectural Wall Types
445	Operations Building Architectural	Code Data and Life Safety Plan
446	Operations Building Architectural	Rendering
447	Operations Building Architectural	Rendering
448	Operations Building Architectural	Ground Level Floor Plan - Overall
449	Operations Building Architectural	Ground Level Plan - Area A
450	Operations Building Architectural	Ground Level Plan - Area B
451	Operations Building Architectural	Ground Level Reflected Ceiling Plan - Overall
452	Operations Building Architectural	Ground Level Reflected Ceiling Plan - Area A
453	Operations Building Architectural	Ground Level Reflected Ceiling Plan - Area B
454	Operations Building Architectural	Ground Level Furniture and Finishes Plan - Overall
455	Operations Building Architectural	Roof Plan
456	Operations Building Architectural	Building Elevations
457	Operations Building Architectural	Building Elevations
458	Operations Building Architectural	Sections
459	Operations Building Architectural	Sections
460	Operations Building Architectural	Sections

Sht #	Sheet Type	Drawing Title
461	Operations Building Architectural	Enlarged Plans - Laboratory
462	Operations Building Architectural	Enlarged Plans - Restrooms and Locker/shower room
463	Operations Building Architectural	Enlarged Plans - Control Room and Multipurpose Room
464	Operations Building Architectural	Interior Elevations
465	Operations Building Architectural	Interior Elevations
466	Operations Building Architectural	Schedules for Finishes (Interior Finish, Exterior Finish, Color List)
467	Operations Building Architectural	Schedules for Openings (Door, Window and Louver)
468	Operations Building DEMOLITION	Ground Level Floor Plan
469	Operations Building DEMOLITION	Demolition Sections, Elevations and Photos
470	Operations Building Structural	Foundation Plan - Overall
471	Operations Building Structural	Foundation Plan - Area A
472	Operations Building Structural	Foundation Plan - Area B
473	Operations Building Structural	Roof Framing Plan - Overall
474	Operations Building Structural	Roof Framing Plan - Area A
475	Operations Building Structural	Roof Framing Plan - Area B
476	Operations Building Structural	Sections
477	Operations Building Structural	Sections
478	Operations Building Structural	Sections
479	Operations Building Structural	Details
480	Operations Building Structural	Details
481	Operations Building Fire	Ground Level Floor Plan - Overall
482	Operations Building HVAC	Ground Level Floor Plan - Overall
483	Operations Building HVAC	Ground Level Plan - Area A
484	Operations Building HVAC	Ground Level Plan - Area B
485	Operations Building HVAC	Roof Plan
486	Operations Building HVAC	Sections
487	Operations Building HVAC	Enlarged Plans
488	Operations Building HVAC	Details
489	Operations Building HVAC	Schedules
490	Operations Building HVAC	Schedules
491	Operations Building HVAC	Airflow Diagram
492	Operations Building HVAC	Control Schematic
493	Operations Building HVAC	Control Schematic
494	Operations Building HVAC	Control Schematic
495	Operations Building Plumbing	Under Floor Plan - Overall
496	Operations Building Plumbing	Under Floor Plan - Area A
497	Operations Building Plumbing	Under Floor Plan - Area B
498	Operations Building Plumbing	Ground Level Floor Plan - Overall
499	Operations Building Plumbing	Ground Level Plan - Area A
500	Operations Building Plumbing	Ground Level Plan - Area B
501	Operations Building Plumbing	Roof Plan
502	Operations Building Plumbing	Sections

Sht #	Sheet Type	Drawing Title
503	Operations Building Plumbing	Schedules
504	Operations Building Plumbing	Riser Diagram
505	Operations Building Plumbing	Riser Diagram
506	Operations Building Plumbing	Riser Diagram
507	Operations Building Electrical	Ground Level Power Floor Plan - Overall
508	Operations Building Electrical	Ground Level Power Plan - Area A
509	Operations Building Electrical	Ground Level Power Plan - Area B
510	Operations Building Electrical	Power Roof Plan
511	Operations Building Electrical	Ground Level Lighting Floor Plan - Overall
512	Operations Building Electrical	Ground Level Lighting Plan - Area A
513	Operations Building Electrical	Ground Level Lighting Plan - Area B
514	Operations Building Electrical	Upper Level Lighting Plan - Area A
515	Operations Building Electrical	Ground Level Special Systems Floor Plan - Overall
516	Operations Building Electrical	Ground Level Special Systems Plan - Area A
517	Operations Building Electrical	Ground Level Special Systems Plan - Area B
518	Operations Building Electrical	Upper Level Special Systems Plan - Area A
519	Operations Building Electrical	One-Line Diagram
520	Operations Building Electrical	Panel Schedules
521	Operations Building Electrical	Panel Schedules
522	Operations Building Electrical	Circuit Schedule
523	Operations Building Electrical	Cable Block Diagram
524	Operations Building I&C	SCADA Network Block Diagram
525	Operations Building I&C	Business & Security Network Block Diagram
526	Operations Building I&C	Network Interface Panels
527	Operations Building I&C	Control Room Console
528	Collaboration Building Architecture	Code Data and Life Safety Plan
529	Collaboration Building Architecture	Rendering
530	Collaboration Building Architecture	Ground Level Floor Plan
531	Collaboration Building Architecture	Roof Plan
532	Collaboration Building Architecture	Building Elevations
533	Collaboration Building Architecture	Sections
534	Collaboration Building Architecture	Schedules (Finishes and Openings)
535	Collaboration Building Architecture	Schedules
536	Collaboration Building Architecture	Schedules
537	Collaboration Building Architecture	Airflow Diagram
538	Collaboration Building Architecture	Control Schematic
539	Collaboration Building Architecture	Control Schematic
540	Collaboration Building Architecture	Control Schematic
541	Collaboration Building Plumbing	Under Floor Plan - Overall
542	Collaboration Building Plumbing	Under Floor Plan - Area A
543	Collaboration Building Plumbing	Under Floor Plan - Area B
544	Collaboration Building Plumbing	Ground Level Floor Plan - Overall

Sht #	Sheet Type	Drawing Title
545	Collaboration Building Plumbing	Ground Level Plan - Area A
546	Collaboration Building Plumbing	Ground Level Plan - Area B
547	Collaboration Building Plumbing	Roof Plan
548	Collaboration Building Plumbing	Sections
549	Collaboration Building Plumbing	Schedules
550	Collaboration Building Plumbing	Riser Diagram
551	Collaboration Building Plumbing	Riser Diagram
552	Collaboration Building Plumbing	Riser Diagram
553	Collaboration Building Electrical	Ground Level Power Floor Plan - Overall
554	Collaboration Building Electrical	Ground Level Power Plan - Area A
555	Collaboration Building Electrical	Ground Level Power Plan - Area B
556	Collaboration Building Electrical	Power Roof Plan
557	Collaboration Building Electrical	Ground Level Lighting Floor Plan - Overall
558	Collaboration Building Electrical	Ground Level Lighting Plan - Area A
559	Collaboration Building Electrical	Ground Level Lighting Plan - Area B
560	Collaboration Building Electrical	Upper Level Lighting Plan - Area A
561	Collaboration Building Electrical	Ground Level Special Systems Floor Plan - Overall
562	Collaboration Building Electrical	Ground Level Special Systems Plan - Area A
563	Collaboration Building Electrical	Ground Level Special Systems Plan - Area B
564	Collaboration Building Electrical	Upper Level Special Systems Plan - Area A
565	Collaboration Building Electrical	One-Line Diagram
566	Collaboration Building Electrical	Panel Schedules
567	Collaboration Building Electrical	Panel Schedules
568	Collaboration Building Electrical	Circuit Schedule
569	Collaboration Building Electrical	Cable Block Diagram
570	Collaboration Building I&C	SCADA Network Block Diagram
571	Collaboration Building I&C	Business & Security Network Block Diagram
572	Collaboration Building I&C	Network Interface Panels
573	Collaboration Building I&C	Control Room Console