

TASK ORDER NO. 5040.0200.a

Pursuant to the

MASTER AGREEMENT FOR PROFESSIONAL SERVICES
BETWEEN

CITY OF MERIDIAN (OWNER) AND BROWN & CALDWELL (CONSULTANT)

This Task Order is made this 19th day of April, 2023 and entered into by and between the City of Meridian, a municipal corporation organized under the laws of the State of Idaho, hereinafter referred to as “City”, and accepted by Brown and Caldwell, hereinafter referred to as “Consultant” pursuant to the mutual promises, covenant and conditions contained in the Request for Qualifications (MYR-2305-5040.11370.A) dated November 23, 2022 and the Master Agreement (Category 2A) between the above-mentioned parties dated October 1, 2020. The Project Name for this Task Order is as follows:

WRRF BIOSOLIDS DRYER PROJECT (ALTERNATIVES ANALYSIS & DESIGN)

PROJECT UNDERSTANDING

During this phase, Consultant will conduct an Alternatives Analysis, followed by preliminary engineering and development of the Preliminary Engineering Report (PER) Documents for the new Biosolids Dryer. The Alternatives Analysis will perform a high-level comparison of dryer options, a siting options analysis to determine the preferred location to locate the new biosolids dryer, establish the design criteria for dryer capacity and heating source(s), evaluate odor control and air permitting requirements, and provide a high-level return-on-investment (ROI) evaluation. The preliminary engineering will be advanced through development of PER Documents based on the selected dryer type, location, and design criteria from the Alternatives Analysis. Subsequent contemplated project phase Task Orders following the Alternatives Analysis and PER will include Final Design and Services During Construction.

The project is assumed to involve improvements related to the following WRRF facilities/components:

- Site-civil improvements including relocation of utilities and paving/grading modifications around the new dryer.
- Modifications around the dewatering building to facilitate conveyance of dewatered cake to the new biosolids dryer.
- New biosolids dryer located near dewatering building and/or biosolids storage pad.
- Supporting mechanical equipment and dryer appurtenances including heating system. Specific equipment/components subject to the outcome of the dryer alternatives evaluation.
- Modifications to existing plant equipment or heating systems as required to integrate new biosolids dryer.

SCOPE OF WORK

Task 1 - Alternatives Evaluation

Objective: Prepare an alternatives memo for inclusion in the PER that will establish key basis of design decisions including the dryer type, location, capacity and redundancy needs, and heat source(s). The alternatives evaluation will also include a basic return-on-investment assessment for the biosolids dryer.

Activities/Approach: The scope of this task consists of all work necessary to develop the alternatives evaluation for the biosolids dryer. Task specific activities are as follows:

- Hold a kickoff workshop with the City to initiate the project and provide initial data requests. The initial workshop will include kickoff items such as: identification of project Critical Success Factors, review major planning and design elements, schedule, and development/tracking of issues/decisions log.
- Dryer type alternative evaluation:
 - Discuss and document City's level of service expectations for the dryer including solids dryness, capacity goals (current and future expansion), redundancy/uptime
 - Write narrative descriptions of each dryer alternative.
 - Perform capacity calculations for each dryer alternative.
 - Provide planning-level cost information for each of the dryer options to assess relative cost factors and cost difference between options.
 - Perform qualitative pro/con comparison of each dryer alternative.
 - Provide a recommendation for dryer selection for completing the Preliminary Engineering Report Documents and Final Design.
- Dryer siting options evaluation:
 - Evaluate up to three locations for siting the recommended dryer.
 - Develop figures to indicate each dryer option location and identify impacts to plant traffic/access, utilities, and strategy for cake conveyance from the dewatering building to the dryer.
- Dryer heating preliminary assessment:
 - Establish preliminary heat and thermal storage requirements for the dryer.
 - Evaluate modifications to existing primary hot water loop/boiler system to support the heating needs for the biosolids dryer.
- Dryer odor control and air permitting preliminary assessment:
 - Evaluate options for odor control including a dedicated system vs. connecting into another odor control system.
 - Provide a preliminary assessment of air permitting requirements for the dryer based on the City's existing air quality permit and anticipated emissions from the selected dryer technology.
- Estimate a high-level ROI for the selected dryer option accounting for biosolids disposal cost savings.
- Develop a Technical Memorandum (TM) summarizing the findings of the Alternatives Analysis for the biosolids dryer, including a cost summary of equipment and associated contractor installation factors, and estimated schedule duration to complete design and construction phases.

- Hold a review workshop with the City to discuss draft TM findings of the Alternatives Analysis.

Deliverables:

- Draft and Final TM, in electronic format. A single PDF signed copy of the final TM will be transmitted to the City for their records. The Final TM will also be used in the Preliminary Engineering Report for documentation.
- Bluebeam (PDF) sketches and figures showing major equipment/key components.

Task 2 - PER Design

- Focus on advancing the selected dryer alternative from the Alternatives Analysis Task. Leading up to the PER Design milestone, elements of the work will be discussed and submitted separately for review by the City to confirm design direction (e.g., Coordination Meetings).
- Document the basis for final design for the Project scope of work to achieve the following objectives:
 - Form the basis for detailed design and preparation of contract documents and obtain City approval on general arrangement and direction of the proposed design.
 - Document compliance with regulatory requirements that pertain to the design of sewage treatment facilities.
 - Serve as a vehicle for City input to the preliminary design effort.
 - Use information provided by the survey and geotechnical subconsultants.
 - Review code compliance.
 - Develop construction cost estimate and construction schedule.

2.1 Topographic Survey, Base Mapping, and Geotechnical Support

- Review the existing base maps and as-built drawings that have been prepared for previous upgrade projects at the site. Combine existing and new base map information to create a complete file of the mapping covering the areas affected by the proposed Project improvements.
- Surveying services will be contracted directly by the City and will consist of reviewing the base map and as-built documentation for the site, obtaining new field survey data, and combining existing/new information on the City's WRRF coordinate system and datum. The Consultant will prepare a figure after completion of the Alternatives Analysis to request specific points from the City's surveyor, including both surface and subsurface (rim to invert type measurements) requiring additional accuracy for Final Design phase tasks. It is assumed that potholing existing buried utilities will not be required for this task.
- Review existing geotechnical reports that have been prepared for previous upgrade projects at the site. Develop a figure and narrative identifying required geotechnical investigations. Geotechnical services will be contracted directly by the City.

Deliverables:

- PDF map and point list of identified additional topographic survey locations for the City's use in contracting the topographic survey work from its surveyor roster.

- PDF map and narrative description showing geotechnical boring location and service to include in the geotechnical engineering report for the City's use in contracting the geotechnical engineering work from its geotechnical roster.

City-Contracted Services:

- Reduced field data and base map information on the City's control network coordinate system and datum.
- Updated existing topographic survey map with revised line work and a legend of symbols and abbreviations for new topographic information, with new information clearly delineated.
- AutoCAD file of the base map (including surfaces, points, styles, etc. necessary for full reproduction), a sealed hard copy, a text file of the surveyed points, a field code list, field notes, and site photos.
- Geotechnical report (draft and final).

2.2 Civil Preliminary Design

- Develop and coordinate general and civil site work information to the PER Design level and coordinate completion of survey/geotechnical subconsultant work products with other design disciplines.
- Develop updated site plan and preliminary civil design.

Deliverables:

- Site Plan including existing site features and boundaries, horizontal and vertical survey control, relocations and/or extensions of existing utilities, preliminary proposed yard piping locations, approximate new structure footprints and locations, preliminary layout of both vehicular and pedestrian pathways, and preliminary site stormwater treatment design concepts, if found to be substantial and required after performing the stormwater analysis for the site.
- Prepare preliminary site drainage calculations that will incorporate proposed site improvements. Findings, conclusions, and recommendations will be summarized within the basis of design report.
- Layout major utility corridors for the Project that accommodate future facilities proposed within the existing process footprint for biosolids dryer including future dryer expansion.

2.3 Structural Preliminary Design

- Establish the basis of design criteria which determines the boundary conditions for subsequent project design decisions. Establish the structural requirements in support of the overall process configuration from a schematic and spatial configuration. This includes establishing preliminary structural sizing and identification of major equipment and piping layouts, and site constraints that will affect the structural configuration and design. Develop structural design to the PER Design level and coordinate drawings with other disciplines.
- Develop the following elements for the biosolids dryer:
 - Structural design criteria
 - Major structural components depicted on drawings including:

- Coordinate process mechanical/structural requirements for major equipment
- Coordinate electrical and process-mechanical requirements:
 - Major equipment
 - Major penetrations (i.e. conduits and conveyors)
- Develop structural 3D model in support of process mechanical requirements.
- Create preliminary plans and overall sections with dimensions and floor elevations.
- Establish column grid and provide column lines and letters/numbers on plans.
- Show major interfaces with existing structures.

Deliverables:

- Structural plans and sections showing preliminary building layout, dimensions, and coordinated with major process mechanical equipment. Demolition drawings and sections for demolished areas.

2.4 Process Mechanical Preliminary Design

- Develop the overall process configuration from a schematic and spatial configuration. Finalize dryer process calculations and parameters for sizing and locating facilities. Develop plans and sections to the preliminary design level. Coordinate with other disciplines to show key discipline components on the drawings. Develop major discipline process mechanical models.
- Develop the following elements for the biosolids dryer and heating/thermal storage facilities:
 - Review available historical plant data related to biosolids dewatering and cake production
 - Review historical climate data in support of dryer sizing/performance criteria
 - Develop design criteria (for dryer, heating system, and odor control)
 - Refine major process calculations
 - Preliminary calculations and equipment sizing/selection for odor control.
 - Preliminary odor control air flow schematics.
 - Update process flow diagram to include new process units
 - Develop equipment list with documented equipment information
 - Select major equipment types and preliminary models for use in laying out equipment
 - Develop P&IDs to indicate the major process lines and mechanical equipment
 - Coordinate major utilities with the civil discipline
 - Coordinate model development
 - Coordinate area classifications per NFPA 820
 - Develop draft control narratives and coordinate instrumentation requirements
 - Coordinate preliminary air permitting requirements

Deliverables:

- P&IDs
- Process flow diagrams
- Plans and select sections showing major process mechanical equipment and piping (including odor control)

- Demolition drawings and sections for demolished areas
- Basis of Design TM for dryer and related processes (heating, odor control)

2.5 Electrical Preliminary Design

- Develop electrical design to the PER Design level and coordinate discipline-specific requirements with other disciplines.
- Develop the following elements:
 - Preliminary service loads for all new equipment and evaluate the capacity of the existing electrical system.
 - Determine available power and major routing
 - Preliminary concepts for mounting of conduits, panels and PLC's at dryer facility
 - Single-line diagrams.
 - Preliminary layout of electrical room and area space.
 - Coordinate with process mechanical on thermal collector design

Deliverables:

- Preliminary power one-line diagrams (power distribution)
- Preliminary site electrical power plans drawings
- Preliminary electrical room layouts
- Demolition drawings and sections for demolished areas
- Basis of Design TM for electrical system expansion

2.6 Instrumentation Preliminary Design

- Develop instrumentation design to the PER Design level and coordinate discipline-specific requirements with other disciplines.
- Determine the scope of new instrumentation requirements and evaluate the capacity of the existing control system to accommodate the new devices.

Deliverables:

- Control system block diagram
- Draft P&ID development to PER level
- Basis of Design TM for instrumentation and control system expansion

Task 3 - Project Management and Design Support Services

3.1 Document Preparation

- Prepare the final PER Design package.
- Draft version of the PER Design will be prepared and submitted to the City in PDF format. The PER will be prepared in Microsoft Word and drawings will be prepared using Revit 2021 and Civil 3D (for civil drawings). Consultant will prepare electronic copies (pdf half-sized drawings) and four bound paper copies, of the PER for internal distribution to the City.

Deliverables:

- Prepare a draft PER Design package (products from Task 2 activities) for City review. One electronic (PDF) and four hard copies will be provided.

- After incorporating City comments, prepare a final PER Design package for the City. One electronic (PDF) and four hard copies will be provided.

3.2 Project and Design Management

- Provide management, direction, coordination, and control of all work associated with Project schedule, budget, subconsultants, technical quality, and monthly progress reports and invoices for the Project.
- This task includes the following activities:
 - Develop a Project Management Plan and Quality Plan for internal use.
 - Develop a Health and Safety plan for internal use.
 - Maintain critical-path schedules.
 - Prepare monthly project status reports. Progress reports will identify budget status, progress status, activities of the previous month, and up-coming activities.
 - Supervise project staff.
 - Manage in-house budget and schedule.
 - Procure, supervise, and coordinate the activities of subconsultants providing specialized or supplemental engineering services.
 - Coordinate design disciplines.
 - Maintain documentation as required for the City's ARPA funding.

Deliverables:

- Monthly progress reports and invoices

3.3 Coordination Meetings

- Provide a regular forum for receipt, exchange, response, and documentation of Project planning, design, and management related issues and decisions during the Project.
- This task includes the following coordination meetings:
 - Five (5) workshops up to 3-hours in duration on-site at the City's WRRF or via MS Teams with PM, DM, and up to three additional design engineers (discipline leads) to present and review findings, discuss design issues/decision log progress, and obtain site access for information gathering. Intended workshops are (1) kickoff, (2) alternatives analysis findings (3, 4) preliminary engineering/discipline-specific, and (5) PER review.
 - Bi-weekly internal Project team meetings during the PER Design phase (1-hour duration teleconference between Consultant disciplines) for a duration of up to three (3) months to discuss design issues, review schedule, review and coordinate amongst discipline team members.

Deliverables:

- Agenda and workshop presentation content to be distributed at all coordination meetings with City staff
- Issues/decision log updated following each coordination meeting with City staff
- Meeting notes for all coordination meetings with City staff

3.4 Construction Cost Estimate and Construction Schedule

- Provide the probable construction cost and possible construction schedule estimates based on the PER Design submittals. A Class 3 estimate will be submitted in

accordance with the Association for the Advancement of Cost Engineering Estimate Classification System for the recommended alternative.

Deliverables:

- Cost Estimate for the PER Design will subdivide the cost estimate by process areas and by major engineering disciplines.
- Construction Schedule will include a basic work breakdown structure schedule estimate based on the PER Design submittal.

3.5 Quality Assurance/Quality Control (QA/QC)

- Implement a QA/QC program as defined in the Quality Plan to review products from this scope. City and regulatory agency review comments will also be incorporated to prepare and complete the final PER Design documents. Additionally, the City is assumed to participate in this process and provide independent review of products.
- Consultant will provide appropriate calculation and deliverable QA/QC reviews by in-house, senior staff members. No external value engineering reviews are included in this scope.

Deliverables:

- Issues/decision log

ASSUMPTIONS

While preparing our scope of services and fee schedule, Consultant has made the following assumptions:

Civil/Geotechnical

- Existing topographical survey information and base mapping will be utilized for the design of new facilities and modifications of existing facilities.
- Additional topographical survey information to augment the existing base mapping will be identified by the Consultant to be obtained by the City for the design of new facilities and modifications of existing facilities.
- Legal, easement, and plat surveys for the WRRF site will not be required.
- Civil site work plans will only be provided for areas of the site that involve disturbance to existing grading and where site restoration is needed after demolition.
- Site drawings will only be prepared for areas in the WRRF where new facilities or major retrofits are to be constructed.
- It is assumed the site layout for new facilities associated with the Project will not require relocation of major utilities or structures required for continued or interim service of the WRRF.
- Landscaping plans will not be prepared.
- New access roadway work will be limited to the areas around the new biosolids dryer and existing biosolids pad/dewatering facilities. No traffic analysis or traffic control design is required.

- The capacity of the existing fire protection system is adequate to handle the new construction.
- The foundation design of new or modified facilities will be based on geotechnical information obtained by the City for this Project.
- In soils, foundation, groundwater, and other subsurface investigations, the actual characteristics may vary significantly between successive test points and sample intervals and at locations other than where observations, exploration, and investigations have been made. Because of the inherent uncertainties in subsurface evaluations, changed or unanticipated underground conditions may occur that could affect the Project cost and/or execution. The conditions and cost/execution effects are not the responsibility of Consultant.
- New groundwater pumping facilities are not required.

Structural/Architectural/Geotechnical

- Conventional spread foundations will be required for all new facilities. Over excavation, preload, or piles will not be required.
- No architectural services will be required for this Project.
- No landscape architect services will be required for this Project.
- No retaining walls will be required

Process/Mechanical

- Design concerning “plant-wide” utility systems such as basin drainage, water and in-plant waste collection/disposal will be limited to extension of and/or changes to existing piping. No new structures or equipment will be needed.
- Corrosion control provisions will not be required for buried piping.
- Active cathodic protection will not be required for buried piping.
- Piping 2 inches in diameter and smaller will be field-routed 5-feet from entry point and 5-feet from end point.
- Consultant will design pipe supports for the hot water/heating system piping during final design phase. Other pipe supports will be Contractor-designed based upon a performance specification which will be developed during the final design phase.
- Consultant will design pipe expansion/contraction control measures for the hot/heating system piping during final design phase. Other piping control systems to be Contractor-designed based upon a performance specification which will be developed during the final design phase.
- Seismic bracing/control measures for piping will be specified for Contractor design during final design phase.
- Odor control system will be required for the biosolids dryer.
- Heating source will come from the plant’s boilers/hot water system. Thermal storage tank will be required. Additional heat sources/heat recovery options are not included in the evaluation. If other heat sources are to be evaluated, i.e. solar collectors or CHP or blower/aeration piping heat recovery, an adjustment to the work scope subject to renegotiation with the City will be required.

- Manual valves 3 inches in diameter and below will not be tagged.

Electrical

- An evaluation of the existing primary feed and standby power generation systems will be provided during the PER phase, with a recommendation of whether modification will be required during the Final Design phase to incorporate the additional loads identified during the PER phase. If modifications to the primary feed and standby generation systems are required, renegotiation of the fee will be required to accommodate the new system design and specification.
- Utility coordination will be provided during the Final Design phase for any modifications required to accommodate new loads.
- Fire alarm panel design is not included.
- An Arc Flash study will be provided during the Construction phase. Code review will be limited to the City-adopted version at the time of initiation of contract of NFPA Sections 70, 820 and 497.
- Public address system design or modification will not be included.
- Coordination with Idaho Power regarding electrical generation options is not included in this phase.

Instrumentation and Controls (I&C)

- I&C will match the existing system and components available during the Project.
- I&C will be similar in type and sophistication to what currently exists. Analog elements and components will be used, and no significant modifications to existing I&C equipment or systems will be needed.
- A design for modifying the existing programmable logic controller (PLC)-based supervisory control and data acquisition system will be provided for the process areas being modified. Significant modifications to existing I&C equipment or systems are not anticipated.
- The City will provide “as-built” documentation of the existing process instrumentation and control system. City-provided information will include, but not be limited to, existing motor and control circuit diagrams, panel shop drawings, process instrument information, and process control system software documentation.
- The new instrumentation and control system will be based on the use of PLCs. Plant status monitoring will be by the existing commercially available PC-based software package: Wonderware, by Schneider Electric Software. Remote access to plant components will not be provided.
- PER Design will include process & instrumentation diagrams (P&IDs), completed to a level enough to identify the primary processes and process equipment and extent of major modification of treatment process. P&IDs will be completed during the Final Design phase.
- PER Design will include a Control System Block Diagram drawing depicting the site’s major network modifications. Final Design will update the drawing to include all network modifications, in the Project-modified process areas only.

- Programming is excluded from this scope of work. This effort will be deferred to the construction phase of this Project and will assume that a subcontractor will be hired by the City to perform this work during the construction Project.
- Security system and video system design are excluded as part of this scope of work.
- Vendor-supplied control system packages will be interfaced through hardwired signals or networked signals, when available.

Project Management/General

- Specifications will not be provided as part of the PER Design phase. Specifications to be provided during the Final Design phase.
- Decisions will be reached in the workshop setting and summarized in detailed TMs and/or documented and maintained in an issues/decision log.
- Design deliverable milestone reviews will be streamlined by using presentations and structured review meetings.
- The design will be based on federal, state, and local codes and standards in effect at the beginning of the Project. Any changes in these codes may necessitate a change in scope and will be subject to renegotiation. The existing plant facilities are assumed to be in full compliance with current drainage, electrical, building, mechanical, plumbing, seismic, and other codes that apply to these types of facilities. Revisions and rehabilitation of existing plant facilities to achieve compliance with current codes are specifically excluded from this scope of work.
- Preparation of contract design drawings will be based on the use of standard Consultant document protocols, CAD standards, and formats like those which have been used on previous projects with the City. All drawings will be prepared with Revit 2021, except for civil drawings, which will be prepared with Civil 3D.
- City pre-purchase of equipment is not anticipated for this project.
- In providing opinions of probable cost, financial analyses, economic feasibility projections, and schedules for the Project, Consultant has no control over cost or price of labor and materials; unknown or latent conditions of existing equipment or structures that may affect operation or maintenance costs; competitive bidding procedures and market conditions; time or quality of performance by operating personnel or third parties; and other economic and operational factors that may materially affect the ultimate Project cost or schedule. Therefore, Consultant makes no warranty the City's actual Project costs, financial aspects, economic feasibility, or schedules will not vary from Consultant's opinions, analyses, projections, or estimates.
- The City will provide computer files of all existing plant construction drawings. These drawings are considered record drawings and will be relied upon to be accurate for design purposes. City will provide to Consultant all data in City's possession relating to Consultant's services on the Project. Consultant will reasonably rely upon the accuracy, timeliness, and completeness of the information provided by City. If provided documents are found to be erroneous in content, an adjustment to the work scope subject to renegotiation with the City may be required.
- Any investigation and remediation of possible hazardous waste, asbestos, lead paint, or other types of contamination will be conducted as a separate contract.

CITY RESPONSIBILITIES

- Provide copies of available base maps, as-built data, and horizontal control and vertical datum points for the Project site.
- Contract for survey services directly from the City's consultant roster and assist field survey crew to gain access to WRRF site for safe collection of field data.
- Review and provide comments to the draft survey and base map.
- Confirm site utility features through field locates or other methods where there are reasonable expectations the base map drawings may require additional information or verification.
- Provide copies of available geotechnical data for the Project site.
- Contract for geotechnical engineering services directly from the City's consultant roster and assist geotechnical engineer to gain access to WRRF site for safe collection of field data.
- Confirm design criteria for site improvements through review of the decision/issues log. Criteria for the PER Design will be discussed during a coordination meeting between the City and Consultant design lead and documented in decision/issues log.
- Provide available historical plant data related to the liquid and solids treatment systems.
- Provide all necessary shop drawings, submittals, records, and operation and maintenance information necessary to establish the facilities conditions that the design is based on.
- Provide input on preferred equipment vendors.
- Provide input on vehicle and maintenance access requirements.
- Provide as-built P&IDs for existing plant systems to be upgraded.
- Supply current as-built drawings for all buried and exposed power supply cables, duct banks, raceways, instrument cables, communication cabling, yard piping, process piping, and structures at the plant.
- Review PER Design submittal including summarized comments in a single file returned to Consultant, within 3 weeks of receipt of draft PER Design from Consultant.
- Coordinate interaction with the Idaho Department of Environmental Quality (IDEQ) for review of the PER Design submittal.
- Attend all Project coordination meetings to provide timely input on issues/decision log progress.
- Review and provide comments on meeting notes.
- Review cost estimates and construction schedule.
- Participate in QA/QC reviews and provide written comments and feedback regarding review documents.

TIME OF COMPLETION and COMPENSATION SCHEDULE

COMPENSATION AND COMPLETION SCHEDULE			
Task	Description	Due Date	Compensation
1	Alternatives Analysis	▪ 3 Months After Notice to Proceed	\$33,945.00
2	PER Design	▪ 7 Months After Notice to Proceed	\$164,784.00
3	Project Management and Design Support Services	▪ 7 Months After Notice to Proceed	\$99,318.00
TASK ORDER TOTAL:			\$298,047.00

The Not-To-Exceed amount to complete all services listed above for this Task Order is Two-Hundred Ninety-Eight Thousand Forty-Seven Dollars and 00/100 (\$298,047.00). No compensation will be paid over the Not-to-Exceed amount without prior written approval by the City in the form of a Change Order. No travel or expenses will be reimbursed through this agreement. All costs must be incorporated in the individual tasks within the Compensation and Completion Schedule above.

CITY OF MERIDIAN:

BY: _____
 KEITH WATTS, Purchasing Manager

Dated: _____

City Project Manager:
Clint Dolsby, Assistant City Engineer

BROWN AND CALDWELL:

BY:  _____
 DAVE BERGDOLT, Principal-In-Charge

Dated: 4/20/03