



City of Nampa Wastewater Treatment Plant Digestion Complex Heating and Alternatives Evaluation – Scope of Services

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CITY OF NAMPA WASTEWATER TREATMENT PLANT DIGESTER COMPLEX HEATING AND ALTERNATIVES EVALUATION

SCOPE OF SERVICES

Introduction

The City of Nampa (City) Wastewater Treatment Plant (WWTP) staff are experiencing impacts to operations and maintenance of the digestion complex. Specially, the systems affected include the digester heating system and controls system due to aging infrastructure, increasing maintenance challenges and increasing demands on the system. In addition, two of the five digesters are over 45 years old with reduced remaining life and potentially in need of upgrades. The City has requested that Stantec Consulting Services Inc. (Stantec) assist the City in evaluating two conceptual alternatives for the future of the digestion complex that directly impact the level of upgrades needed for the digestion heating system. The first alternative (Status Quo) is to continue to digest all sludge as currently planned. The likely impacts of this would include:

- All five anaerobic mesophilic digesters are to be maintained with possible major rehabilitation of Primary Digester No. 2 and considerations for Primary Digester No. 1 remaining lifespan.
- The existing heating system capacity would need to be maintained or upgraded including new boilers, hot water pumps, heat exchangers and piping.
- Waste activated sludge (WAS) and primary sludge would continue to be co-digested in the digestion complex.

The second alternative is for a Clean B [™] (Clean B) system to be installed. Clean B is a sludge treatment system as provided by BCR Environmental that treats WAS to Class B biosolid standard without digestion. If this system were to be installed and operate as advertised, potential impacts could include:

- Elimination of approximately 50% of the sludge stream to the digestion complex, effectively reducing the digestion tankage volume needed. Primary Digester No. 2 would not need to be replaced.
- Reducing the heating capacity needed by a corresponding amount of reduction in sludge digested sludge volume (~50%).
- Installation of the Clean B unit and associated housing and pumping for treated sludge.
- Changes in operation and maintenance costs: reduction in digestion mixing costs (maintenance and pump energy costs); and new operation and maintenance costs for the Clean B system.
- Impacts to sludge dewatering (expected to improve with Clean B).
- Impacts to odors (expected to improve with Clean B).

Stantec will further evaluate this information and perform an alternatives evaluation that incorporates the capital costs for each alternative and compares them through a life cycle cost analysis including operations and maintenance costs along with a qualitative pros/cons comparison for the items not easily quantified.

The scope of work to perform the for the above noted items will be executed through the following tasks:

1. Project Management and Meetings

The following subtasks identify the services performed to manage the administration, tracking and meeting coordination for the project.

1.1 Project Management and Administration

Stantec will prepare and maintain tracking tools for monthly reporting and invoicing to the City. The invoicing will include monthly status updates on a task-by-task basis, physical percent complete status, schedule updates and any changes or new risks identified in the billing period.

Stantec will also track any changes requested outside of the scope of work or any decisions identified within the work for documentation and future coordination or reference by Stantec or the City. It is assumed that the project management will be independent of any other Stantec project running concurrently with the City of Nampa.

1.2 Meetings and Workshops

Stantec will lead the following meetings and workshops:

- Kickoff Meeting – This meeting will include communicating the scope of the project, identify information needed including an initial request for information (RFI), confirm dates for expected deliverables and solicit input on anything additional needed in the alternatives evaluation.
- Evaluation Criteria Meeting – Stantec will lead a discussion to review any comments and input on the draft technical memorandum for the digester complex design criteria pertinent to the evaluation as defined in Task 2.1 below.
- Alternatives Workshop – Prior to drafting the Digestion Complex Evaluation Report, Stantec will lead a workshop to review the findings from the evaluation, identify any gaps and make tentative decisions on the recommendations and future of the digestion complex (if the evaluation allows).
- Draft Digestion Complex Evaluation Report Review – Stantec will lead a meeting to review the draft report and City comments. The meeting will address evaluation gaps or additional review items that are needed. It will also progress the discussion and recommendations for future improvements or changes to the digestion complex and its operation. Provided there are no significant information or evaluation gaps identified, this draft Report is expected to be the basis for the City's decision to proceed further in the direction of Alternative 2 (Clean B) or stay with Alternative 1 (Status Quo).
- Water Renewal Committee Presentation – Stantec will assist the City with presenting the findings from the Project and will prepare slides and be able to present on the background, findings and recommendations for the project including justifications for

making the recommendations. It is assumed three Stantec staff will attend in-person for the 90-minute presentation.

Project Management and Meeting Assumptions:

- Stantec will provide agenda, take notes and distribute notes within two days after the meetings.
- Formal meetings and workshops are assumed to include two Stantec staff in-person with two staff attending remotely. Durations of the meetings are expected to be two hours unless specifically noted otherwise herein.
- Meetings are assumed to be independent of the biosolids evaluation potential work but efficiencies would be realized should the meetings be combined to address both the digester complex and biosolids planning. Efficiencies in level of effort are not included herein but would be identified in any biosolids evaluation proposal.
- Monthly status update meetings are not anticipated, but each meeting and agenda will include a brief update of the project status.

2. Digestion Complex Alternatives Evaluation

2.1 Establish Evaluation Criteria

This task will include identifying what information is needed, gathering recent information and evaluating system capacity and demand. The information will be documented in a draft technical memorandum for distribution to the City for review and finalization. As part of this task, Stantec will gather and evaluate information from the existing system. It is assumed that the City can provide the latest existing information and support, which is expected to include the following:

- Primary sludge and WAS production
- Digestion tankage volume
- Heating demand
- Biogas characteristics
- Dewatering polymer usage
- Dewatered sludge hauling data
- Biogas production and demand
- Remaining equipment/facility life
- Hydraulics of sludge dewatering system including recent changes from Project Group F.
- Input regarding the sludge process flow for existing system
- Air quality permit considerations
- Clean B piloting support

Task Assumptions:

- Clean B Piloting

- Stantec's Clean B piloting support will include approximately 30 hours of coordination, planning of piloting, review of data, site visits and review of piloting report by BCR including comparisons to previous piloting efforts.
- The City will be leading the piloting effort, planning and contracting of BCR with Stantec providing recommendations for sampling, review of piloting plan and piloting results.
- Stantec will visit site up to three times during the pilot to review potential siting and connections locations, review initial piloting startup results and review final results and sampling information.
- The City will provide data as available through requests for information (RFI). It is expected that three RFI requests will be needed, including the initial request at the Kickoff Meeting along with additional RFIs as additional gaps are identified. The City will provide RFI information within two weeks of request.

2.2 Alternative 1 - Status Quo (Continued Digestion) Digestion Evaluation

Stantec will perform the following activities to evaluate Alternative 1:

- Provide evaluation and conceptual layouts for continued digestion of combined WAS and primary sludge with a conceptual layout of either a new or rehabilitated sludge heating system.
- Life cycle costing, including capital cost for future improvement and ongoing O&M costs.

2.3 Alternative 2 – Clean B Evaluation

Stantec will perform the following activities to evaluate Alternative 2:

- Provide evaluation and conceptual layouts of a revised system that includes Clean B treated WAS and the pumping, future digestion, heating and system revised needs.
- Life cycle costing, including capital cost for future improvement and ongoing O&M costs
- Qualitatively evaluate and compare pros and cons of Alternative 1 versus Alternative 2 concepts.

2.4 Report and Recommendations

Stantec will develop a draft Digestion Complex Evaluation Report (Report). This Report will include system design criteria, summary of Alternative 1 and Alternative 2 tasks, summary of the life cycle cost analysis, document the qualitative comparisons of the alternatives, and provide staging options and recommendations for the future planning of the digestion complex.

The draft report will be forwarded to the City (Word or pdf) for review and discussed in the Draft Digestion Complex Evaluation Report Review workshop prior to finalization. The draft report will be finalized after incorporating City comments from the workshop.

Evaluations Assumptions:

- The evaluation for the heating system will include review of the current air permit, boiler and air emissions strategizing, and general expectations for each alternative. No air permitting or modeling is included as part of this scope.

- Stantec shall be entitled to reasonably rely upon the information and data provided by the Client or obtained from generally acceptable sources within the industry without independent verification except to the extent such verification is expressly included herein.
- Cost evaluations will typically be based on Class 4 or 5. A Class 4 opinion of probable construction cost (OPCCs). These are generally prepared based on limited information, and subsequently have fairly wide accuracy ranges. The typical accuracy ranges are -15% to -30% on the low side, and +20% to +50% on the high side, depending on the technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination. Class 4 costing is typically used for strategic planning, business development, or as preliminary budget approval for the next stage.
- The project evaluations will include life cycle cost analysis including capital and O&M costs. Risks, benefits, and other factors generally included in business case evaluations (BCE) will not be quantitatively factored into the life cycle costs but will be included in qualitative additional information. Should the life cycle costs be insufficient, additional effort to quantify the risks and other BCE factors will be performed as an additional service.

Preliminary Schedule

The proposed schedule and milestones are as assumed below.

WBS Code	Task Name	Start Date	End Date	Duration (days)	October 2024	November 2024	December 2024	January 2025	February 2025	March 2025	April 2025	May 2025
1	Project Management and Meetings	2024-10-01	2025-04-30	212								
1.1	Project Management and Administration	2024-10-01	2025-04-30	212								
1.2	Meetings and Workshops	2024-10-07	2025-04-15	191								
1.2.1	KO Meeting	2024-10-07	2024-10-07	1								
1.2.2	Evaluation Criteria Mtg	2024-12-04	2024-12-04	1								
1.2.3	Alternatives Workshop	2025-01-16	2025-01-16	1								
1.2.4	Draft Report Review	2025-03-18	2025-03-18	1								
1.2.5	WRC Presentation	2025-04-15	2025-04-15	1								
2	Digester Complex Alternative Planning	2024-10-01	2025-04-30	212								
2.1	Establish Evaluation Criteria	2024-10-01	2024-12-01	62								
2.2	Alternative 1 - Status Quo	2024-11-01	2025-01-15	76								
2.3	Alternative 2 - Clean B	2024-11-01	2025-01-15	76								
2.4	Report and Recommendations	2025-01-15	2025-04-30	106								
2.4.1	Sequencing Options	2025-01-15	2025-02-28	45								
2.4.2	Draft	2025-01-15	2025-03-15	60								
2.4.3	Finalize	2025-03-15	2025-04-05	22								

Fee Schedule

The proposed fee for this proposal is shown as \$97,444 for the scope herein and the tasks identified in the table below. Task by task budgets are estimates only and fees from one task can be used to fund a separate task provided the overall not-to-exceed amount is not exceeded. Billing rates are valid through December 31, 2024 and are based on a 3.2 multiplier of Stantec staff salary.

WBS Code	Task Name	Hours	Total
1	Project Management and Meetings	140	\$ 28,147
1.1	Project Management and Administration	50	\$ 9,072
1.2	Meetings and Workshops	90	\$ 19,075
2	Digester Complex Alternative Planning	406	\$ 69,297
2.1	Establish Evaluation Criteria	180	\$ 32,289
2.2	Alternative 1 - Status Quo	42	\$ 6,455
2.3	Alternative 2 - Clean B	86	\$ 14,061
2.4	Report and Recommendations	98	\$ 16,494
Total		546	\$ 97,444

Additional Services

Stantec is able to provide additional services as requested for additional negotiated fee for the following services should the City request including:

- Air quality and air permitting updates or upgrades
- Design of immediate improvements needed such as boiler or pump replacement
- Full Clean B piloting support including solids and liquid sampling, report development and coordination.
- Additional alternatives evaluation in addition to the two alternatives identified in the scope above.
- Full BCE evaluation.
- Additional presentations to the Water Renewal Committee or City Council on findings