

**Nampa WWTP Phase II/III Upgrades
Design Review Committee
Thursday, February 21, 2019
Nampa Wastewater Treatment Plant | 340 W Railroad St
7:00 AM – 9:00 AM
MEETING SUMMARY**



Meeting Overview

On Thursday, February 21, 2019, the Nampa Wastewater Treatment Plant Design Review Committee (DRC) convened its sixth meeting. The objectives of this meeting were to review and discuss specific design features, as well as continue discussing project packaging and delivery options. The following is a summary of topics discussed and feedback provided at the meeting. Please see meeting materials for more information.

Meeting Summary

Welcome and Recycled Water Program Updates

Elizabeth Spaulding, facilitator, welcomed DRC members and reviewed the agenda. Nate Runyan, City of Nampa, provided an update on the Recycled Water Program.

- The City of Nampa has been meeting regularly with DEQ to discuss the details of the reuse permit, which has been going well. The reuse application will be presented to City Council in March and then submitted to DEQ.
- The City is considering applying for a Bureau of Reclamation grant available for projects that increase water quantity. This grant, which provides up to \$20M in grant funding, requires a funding match, which the SRF loan would qualify as. Nampa has applied for this grant in the past but has been unsuccessful. The partnership with the Pioneer Irrigation District will be a critical factor to the success of the new application.
- The first \$37 million of the State Revolving Fund Loan agreement was signed by City Council.

Questions included:

- 1) Does the City propose the limits included in the Reuse Application?

Disinfection BCE Recommendation

Matt Gregg, Brown and Caldwell, provided an overview of the alternatives for the disinfection process. Several of the alternatives involve the use and storage of chemicals for treatment, which was identified as a public and employee safety concern. Due to this concern, UV disinfection, combined chlorine, and ozone treatment were the preferred treatment alternatives for analysis. The project team ultimately recommended UV disinfection due to it being the most cost effective approach based on the results of the business case evaluation. DRC members approved this recommendation. Please see DRC Briefing #19 for more information.

Questions included:

- 1) Is this process critical for Class A water?
- 2) Does clarity of water impact the efficacy of the UV disinfection process?
- 3) Is contact time important?
- 4) During the facility design, which process did the project team build into its assumptions?

- 5) Does industry pay for the increase in disinfection costs they cause?
- 6) Is there room at the wastewater treatment plant for potential solar harvesting to meet the energy needs of the UV process?
- 7) Can the city switch directly over to the UV process or is it a phased transition?
- 8) How does the disinfection process fit with the tertiary filtration? Are they connected?
- 9) With the UV process, what happens when there is a spike in flow? Do you call the customer and ask them to reduce use, or instead just increase the UVs?
- 10) How do you measure the success of a UV system?

Primary Sludge Thickening Recommendation

Matt Gregg provided an overview of the primary sludge thickening alternatives. The current primary sludge thickening approach is done in the primary clarifiers, which can lead to capacity constraints in the clarifiers. The Technical Team evaluated three separate primary sludge thickening facilities, each with different mechanical thickening technologies, and a co-thickening approach where primary sludge and waste activated sludge streams are thickened together. The Technical Team recommended co-thickening with rotary drum thickeners as it was the lowest cost option. The DRC members approved of the recommendation. Please see DRC Briefing #20 for more information.

Questions included:

- 1) If the seventh unit is not initially built, will there be space reserved for later expansion?

Project Packaging and Delivery Discussion

Matt Gregg reviewed the project packaging and delivery recommendations provided at the previous DRC meeting. This was first presented in Design Review Committee #5 and summarized in DRC Briefing #18. DRC members still had several questions pertaining to both the risk and benefit of this approach, particularly as it will be a new process for the City of Nampa, and would like more information regarding how and when liability is transferred in the process. Matt stated that he can provide the risk profile of Design-Bid-Build versus Progressive Design-Build at the April meeting.

Questions included:

- 1) Please explain the process of Progressive Design-Build again.
- 2) What liability does the city carry with this process?
- 3) Do we have local capacity/contractors to complete the final design?

Basis of Design Report Summary

Matt Gregg reviewed the key decisions the DRC has approved to date for the Basis of Design report. One DRC member requested that the project team continue to bring any potential return on investment opportunities to the DRC for review.

Questions included:

- 1) Has there been interest expressed in industrial recycled water?
- 2) How do we estimate and build for peak flows?
- 3) Is there potential for industry to take on some of the risk of a peak flow day?
- 4) Is the current Superintendent of the wastewater treatment plant involved in design review?

Project Costs Update

Matt Gregg provided an update on the project cost estimate to date, and the impacts of each decision point on the refined estimate. There are still several factors that will impact final cost as the City moves toward final design.

Questions included:

- 1) Does the lower interest rate on the SRF loan get captured in the cost estimate?
- 2) Should the City consider working with the Office of Economic Development to determine types of industries to pursue?

Next Steps

- The next DRC Meeting will be Thursday, April 18, 2019, from 7-9 a.m. at the Nampa Public Library.
- Please send questions or concerns to the City as they arise and the project team will work to address these at the upcoming meeting.

DRC Meeting #6 – February 21, 2019

Responses to Questions

Recycled Water Program Updates

1) *Does the City propose limits in the Reuse Application?*

The City has been coordinating with IDEQ on the appropriate limits for the recycled water discharged to Phyllis Canal. These limits are protective of public health and appropriate for the intended use of the water.

Disinfection BCE Recommendation

1) *Is this process critical for Class A water?*

Yes, disinfection is a required step for meeting Idaho's Recycled Water Rules (IDAPA 58.01.17).

2) *Does clarity of water impact the efficacy of the UV disinfection process?*

Yes, the clarity of the water is critical to disinfection effectiveness. UV transmittance is the specific parameter that describes the amount of light that passes through a water sample. The higher the UV transmittance, the better the clarity of the water and disinfection efficiency.

3) *Is contact time important?*

Contact time is a critical design parameter for chlorinated disinfection applications. Contact time requirements are specified by regulatory agencies. The goal for contact time is to ensure a defined percentage of the effluent is retained in the chlorine contact chambers long enough to satisfy disinfection requirements. For UV radiation, the key design parameter is not contact time but radiation dose, which is specified as the amount of energy imparted to a square area (milli-Joules per square centimeter).

4) *During the facility design, which process did you build into your assumptions?*

The Facility Plan assumed UV disinfection. This assumption helped set the overall capital improvements plan.

5) *Does industry pay for their increased use?*

Industrial customer bills are structured so that they are charged based on flow, biochemical oxygen demand, total suspended solids, total Kjeldahl Nitrogen, and total phosphorus. The billing structure correlates the impacts on the system with costs to the extent possible.

6) *Is there room at the wastewater treatment plant for potential solar harvesting to meet the energy needs of the UV process?*

The Technical Team has not investigated the potential for solar harvesting at the Nampa WWTP. The Technical Team will look into this opportunity further.

7) *Can the city switch directly over to the UV process or is it a phased transition?*

The Nampa WWTP currently implements a chlorination facility for disinfection. The switch to UV disinfection would be a full conversion to a new process.

8) *How does the disinfection process fit with the tertiary filtration? Are they connected?*

The tertiary treatment process and disinfection process are related. The effectiveness of the filtration impacts the sizing of the disinfection process. The Technical Team has considered these impacts and accommodated for them in the design process.

9) *With the UV process, what happens when there is a spike in flow? Do you call the customer and ask them to reduce use, or instead just increase the UV dose?*

There are a couple ways to handle spikes in loadings to the Nampa WWTP. The first method can be to increase performance of the disinfection system. For example, the UV dose can be increased during industrial loading spikes. The second approach is to communicate with the industrial customer. The Nampa WWTP does have a working relationship with industrial customers that provides a communication channel for these situations.

10) How do you measure the success of a UV system?

The UV disinfection process is successful if it achieves Class A requirements in IDAPA 58.01.17.

Primary Sludge Thickening Recommendation

1) If the seventh piece of equipment is not initially built, will there be space reserved for later expansion?

The Alternative 4 layout does include space for a future piece of equipment.

Project Packaging and Delivery

1) Please explain the process of Progressive Design Build again.

Progressive design-build (PDB) is a collaborative delivery approach for large, complex projects. A distinguishing feature of the PDB delivery model is the contracting mechanism between the Owner, design engineer, and construction contractor. In a traditional design-bid-build model, there are two different contracts, one for the designer and one for the contractor. . In the PDB delivery model, the Owner contracts with one entity: the design-builder, which is a partnership between the design engineer and construction contractor.

2) What liability does the city carry with this process?

Risk transfer is a key component to alternative delivery models. In general, progress design-build seeks to transfer more risk to the design-build team as compared with a traditional design-bid-build approach. A more detailed discussion of the risk transfer will be included in a future DRC meeting..

3) Do we have local capacity/contractors to do the final design?

The City will be conducting market testing to determine the local contracting market's ability to take this project. The Technical Team has actively worked to find the right balance between project size, complexity, market acceptance, organizational and financial constraints. There are several projects groups (Project Group D and Project Group E) that will likely fit into the typical project size for some local contractors. The objective for the larger project, Project Group F, is to find the team who can deliver a complex, schedule-driven project.

Basis of Design Report Summary

1) Has there been interest expressed in industrial recycled water?

The industrial customers in Nampa have expressed interest in recycled water. During the Facility Plan development, the City met with the Industrial Working Group (IWG) to discuss the planning process. During these meetings the IWG indicated support for industrial reuse opportunities. Additionally, the Wastewater Program Management Team has met with the City's Economic Development Director to estimate the type and size of a potential new industry relocating to Nampa to utilize the Class A recycled water.

2) How do we estimate and build for peak flows?

Peak flows are based upon forecasted population growth for domestic customers and the peak permitted capacity allotted to industrial customers. Irrigation- and infiltration-related inflows are also

accounted for in peak flows. The peak flow value is used in the design process to ensure the Nampa WWTP systems are adequately sized to provide adequate hydraulic conveyance and treatment during these flow periods.

- 3) Is there potential for industry to take on some of the risk of a peak flow day?

This would need to be negotiated specifically with each industry. If an industry were willing to reduce the peak flows to the Nampa WWTP this would reduce the influent flow and loadings.

- 4) Is the current Superintendent of the wastewater treatment plant involved in design review?

Yes, the Technical Team includes four members that are Nampa WWTP staff. The WWTP staff are critical to ensuring that the interests of the City are being incorporated into the preliminary design process.

Project Costs Update

- 3) Does the lower interest rate on the SRF loan get captured in the cost estimate?

No, the cost estimates do not take into account the SRF loan interest rate. The cost estimate is based on programmatic costs including construction costs, markups for contractor labor and overhead, soft costs, and contingency.

- 4) Should the City consider working with the Office of Economic Development to determine types of industries to pursue?

The Wastewater Program Management Team has been collaborating with the City's Economic Development Director to identify potential industries that may be interested in recycled water.