



# Design Review Committee Briefing #3

**Subject:** Design Objectives and Product Quality Requirements

**Date:** October 12, 2018

## The Issue

The City of Nampa’s (City’s) wastewater utility is facing stringent water quality regulations, population growth, and aging infrastructure. These are the drivers for the Phase II/III Upgrades at the Nampa Wastewater Treatment Plant (WWTP). The intent of this briefing is to document the design objectives and product quality requirements for the Phase II/III Upgrades. These set the level of service expectations for the project and will serve as the basis against which future decisions are compared.

## Background and Analysis

The design objectives and product quality requirements were initially developed in the facility planning process and documented in the *City of Nampa Wastewater Program Facility Plan* (Facility Plan) (Brown and Caldwell, 2018). The following sections describe the design objectives and product quality requirements for the Phase II/III Upgrades.

## Liquid Stream Design Objectives & Product Quality

The Preferred Alternative from the Facility Plan includes discharge to Indian Creek during the winter and discharge to Phyllis Canal in the summer. The discharge to Indian Creek will be controlled by the City’s National Pollution Discharge Elimination System (NPDES) permit, which was issued in 2016 by the Environmental Protection Agency. During the summer, Class A recycled water (as defined by Idaho Administrative Procedures Act (IDAPA) 58.01.17 Recycled Water Rules), will be governed by a Reuse Permit. Class A reuse water is the highest quality non-potable classification in Idaho. This level of treatment was selected by the City to enable the widest range of potential uses, such as industrial reuse and agricultural irrigation. Table 1 summarizes the liquid stream design objectives and product quality for the Phase II/III Upgrades.

**Table 1. Nampa WWTP NPDES and Reuse Permit Discharge Requirements**

Parameter	Design Criteria	
	Winter (October 1–April 30)	Summer (May 1–September 30)
Discharge location	Indian Creek Industrial Users	Phyllis Canal Industrial Users
Permit type	NPDES Reuse (Class A) Industrial Discharge	Reuse (Class A)
Maximum month flow	20.1 mgd (1–2 mgd to Industrial Users)	20.1 mgd (1–2 mgd to Industrial Users)
Effluent temperature	N/A	N/A
Effluent 5-day BOD	Monthly average: 30 mg/L	Monthly average: 10 mg/L
Total suspended solids (TSS)	Monthly average: 30 mg/L Weekly average: 45 mg/L 4-month rolling average: 17.5 mg/L (2,629 lbs/day)	-
Total phosphorus (TP)	Monthly average: 52.6 lbs/day	Monthly average: 15 lbs/day
Total nitrogen (TN)	30 mg/L	10 mg/L
Ammonia	Monthly average: 1.41 mg/L Daily maximum: 5.31 mg/L	N/A

## Solid Stream Design Objectives & Product Quality

The design objective for the solid stream during Phase II/III Upgrades preliminary design is production of Class B biosolids followed by disposal to landfill. Biosolids production will increase at the Nampa WWTP with the increased level of treatment required for the liquid stream and expected population growth. Solids product quality was reviewed during Facility Plan development, which considered potential biosolids management approaches and end uses for biosolids. The future approach to solids handling was recommended to be consistent with the current approach, which is Class B biosolids production. Currently, these biosolids are disposed of in a landfill. The disposal of biosolids is governed by 40 CFR 503, Standards for the Use of Disposal of Sewage Sludge, which contains requirements for heavy metals, pathogen reduction, and vector attraction reduction (VAR). The product quality requirements for the solid stream are provided in Table 2, below.

Parameter	Description
Sludge stabilization process	Mesophilic anaerobic digestion; this process qualifies as Processes to Significantly Reduce Pathogens listed in Appendix B of 40 CFR 503.
Minimum anaerobic digestion solids retention time <sup>a</sup>	15 days
Digested sludge temperature <sup>a</sup>	95 to 102 degrees Fahrenheit
Dewatered biosolids minimum solids concentration	20 percent total solids

## Potential Consequences

Many of the design objectives and product quality expectations are established by external agencies through permitting processes. For example, the City's NPDES permit establishes the required performance for discharge to Indian Creek. Most of these permits are set and, therefore, the design requirements are known. The one exception to this is the Reuse Permit that will allow for discharge to the Phyllis Canal. This permit is still being negotiated with the Idaho Department of Environmental Quality (IDEQ).

The Facility Plan made some conservative assumptions regarding the expected requirements of this permit. For example, it assumed that the total phosphorus limits from the NPDES permit would carry over to the Reuse Permit. In discussions with IDEQ, there may be flexibility in this requirement as phosphorus would be limited by crop uptake rather than instream water quality. If the permit negotiations are successful in obtaining a higher limit, it could reduce tertiary filtration capital cost if the reuse portion of the project were accelerated. However, the permit requirements will not be known until the permit is finalized in 2019.

## Recommendation

The Preliminary Design Technical Team recommends moving forward with the liquid and solid design objectives and product quality requirements noted in Tables 1 and 2. Recognizing the uncertainty related to the final requirements of the Reuse Permit, a preliminary technology selection will be made for the tertiary filters as part of the basis of design step. This selection will then be confirmed before moving into preliminary design. This approach will allow other portions of the project that are not impacted by the Reuse Permit requirements to advance and maintain the overall project schedule.