

City of Stevenson
General Sewer Plan and Wastewater Facilities Plan Update
Public Hearing
8/24/17

Introduction

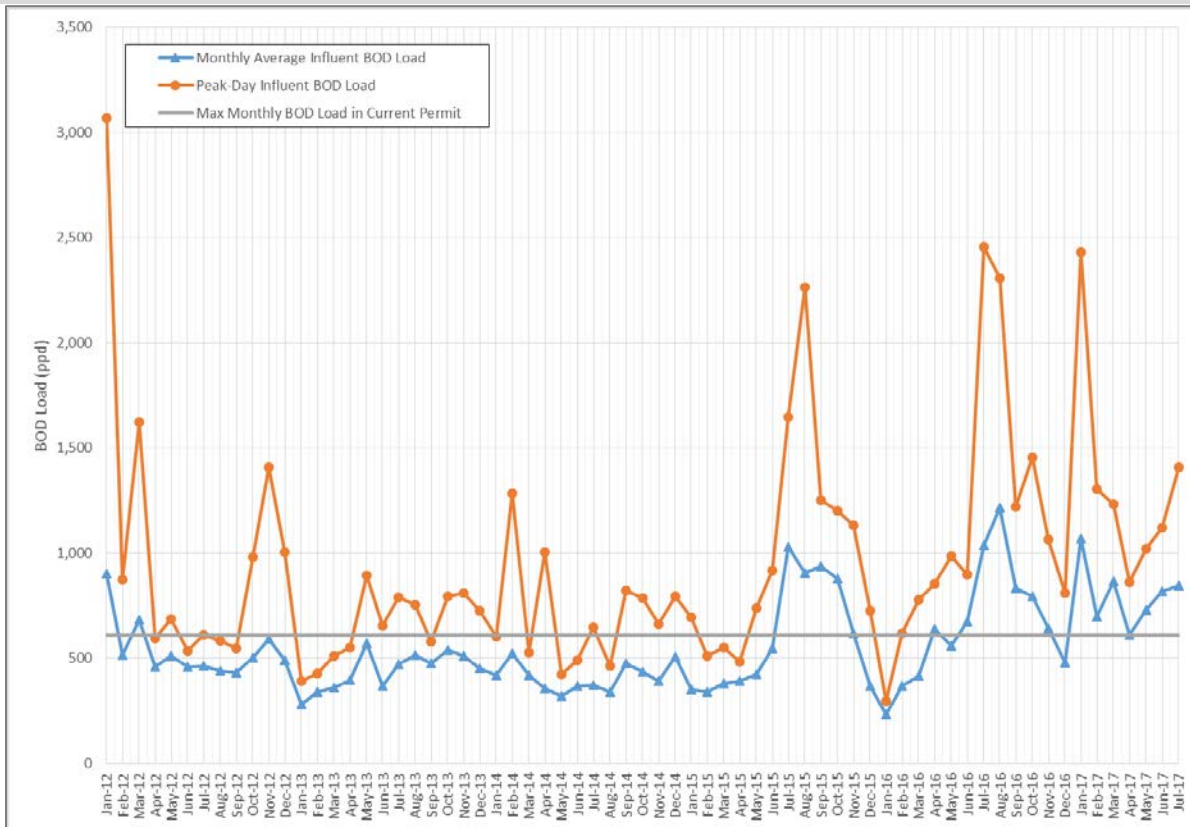
The purpose of this public hearing is to adopt the Facility Plan. The information about rates is preliminary. We are not adopting rates at this public hearing.

The Draft General Sewer Plan and Wastewater Facilities Plan Update was developed based on the City's goals, which are:

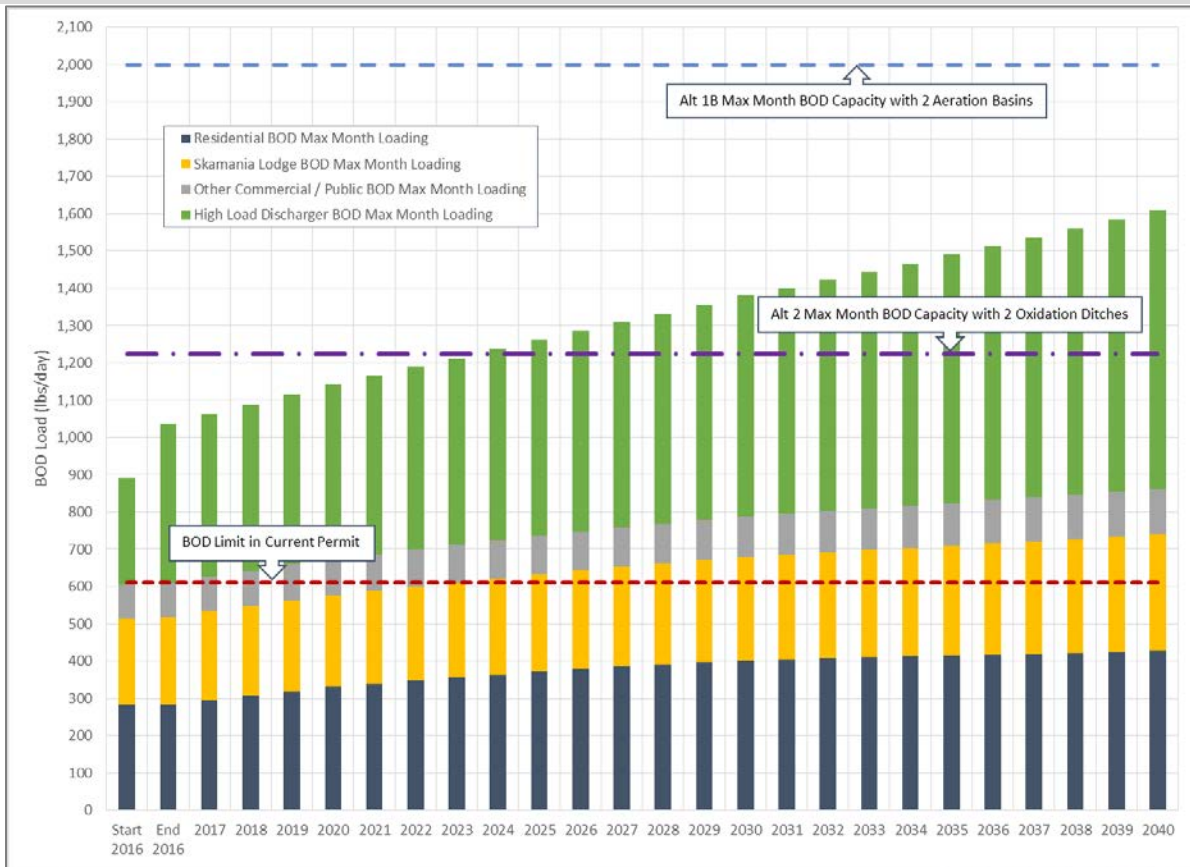
- We want to keep our rivers clean (it's also a legal requirement that we agree with)
- We welcome growth – new residents, new businesses, tourism
- We want to treat everyone fairly
- We want the most cost-effective, reliable, long-term solution

We have looked at the alternatives and based on our goals, Alternative 1B (conventional activated sludge) is the recommended alternative.

Influent BOD Loading History



Influent BOD Loading Projections



Summary Permit Requirements

S1. Effluent Limitations

- Lists the final effluent limitations, which are reported monthly to Ecology on the Discharge Monitoring Report

S4. Prevention of Facility Overloading

A. Design Criteria

- **Flows or waste loadings** of the following design criteria for the permitted treatment facility **shall not be exceeded**
- **Includes influent flow, BOD load and TSS load limits**
 1. Average flow for the maximum month: 0.45 mgd
 2. Influent BOD₅ loading for the maximum month: 612 lbs/day
 3. Influent TSS loading for the maximum month: 612 lbs/day
 4. Design population equivalent: 1,455

C. Notification of New or Altered Sources

Requires that the Permittee (City) submit written notice to Ecology whenever any new discharge, increase in volume (flow) or change in character (BOD, TSS, etc) of an existing discharge into the sewer is proposed which: (1) would interfere with the operation of, or exceed the design capacity of, any portion of the collection or treatment system; (2) would increase the total system flow or influent waste loading by more than ten percent; (3) is not part of an approved general sewer plan or approved plans and specifications; or would be subject to pretreatment standards under 40 CFR Part 403 and Section 307(b) of the Clean Water Act. This notice shall include an evaluation of the system's ability to adequately transport and treat the added flow and/or wasteload.

S8. Pretreatment

1. **The Permittee (City) shall work with Ecology to ensure that all industrial users are in compliance with the pretreatment regulations in 40 CFR Part 403 any additional pretreatment regulations...**
2. **The Permittee shall perform an industrial user survey... as specified by Ecology which are necessary for the proper administration of a state pretreatment program.**
3. **Significant commercial and industrial operations shall not be allowed to discharge wastes to the ...sewerage system until they have received prior authorization from Ecology...**
4. General Prohibitions are stated.
5. Specific Prohibitions are stated.

Criteria for Sewage Works Design

- Referred to as the “Orange Book”
- Guide for design of sewage collection, treatment and water reclamation systems.
- Establishes minimum requirements and limiting factors utilized by Ecology and Department of Health for review of sewage treatment works and sewerage system plans and specifications.
- ***Class II Reliability and Redundancy Requirements:***
 - Requires two units for each unit process at the WWTP
 - Requires redundant equipment so that treatment can be maintained with the largest piece of equipment out of service

Enforcement Actions

Notice of Violation, Docket #14032, City of Stevenson Wastewater Treatment Plant, dated April 7, 2017

- States reason for issuing Notice of Violation for violations of the City of Stevenson NPDES Permit:
 1. Between January 2012 and December 2016, the City exceeded its design criteria for BOD₅ or TSS on 21 occasions (violation of NPDES Permit Section S4.A).
 2. Between September 2015 and September 2016, the City exceeded effluent limits for TSS or Fecal Coliform on 5 occasions (violation of NPDES Permit Section S1).
 3. The City has not submitted a plan for Maintaining Adequate Capacity (violation of NPDES Permit Section S4.B).
- Requires that the City file a report with Ecology (the draft General Sewer Plan/Wastewater Facilities Plan Update has been submitted to Ecology)
- Requires that the City submit a plan for Maintaining Adequate Capacity

City's Response

City staff, Tetra Tech staff and Ecology staff had a call to discuss the Notice of Violation. Ecology requested that the City submit a permit compliance schedule.

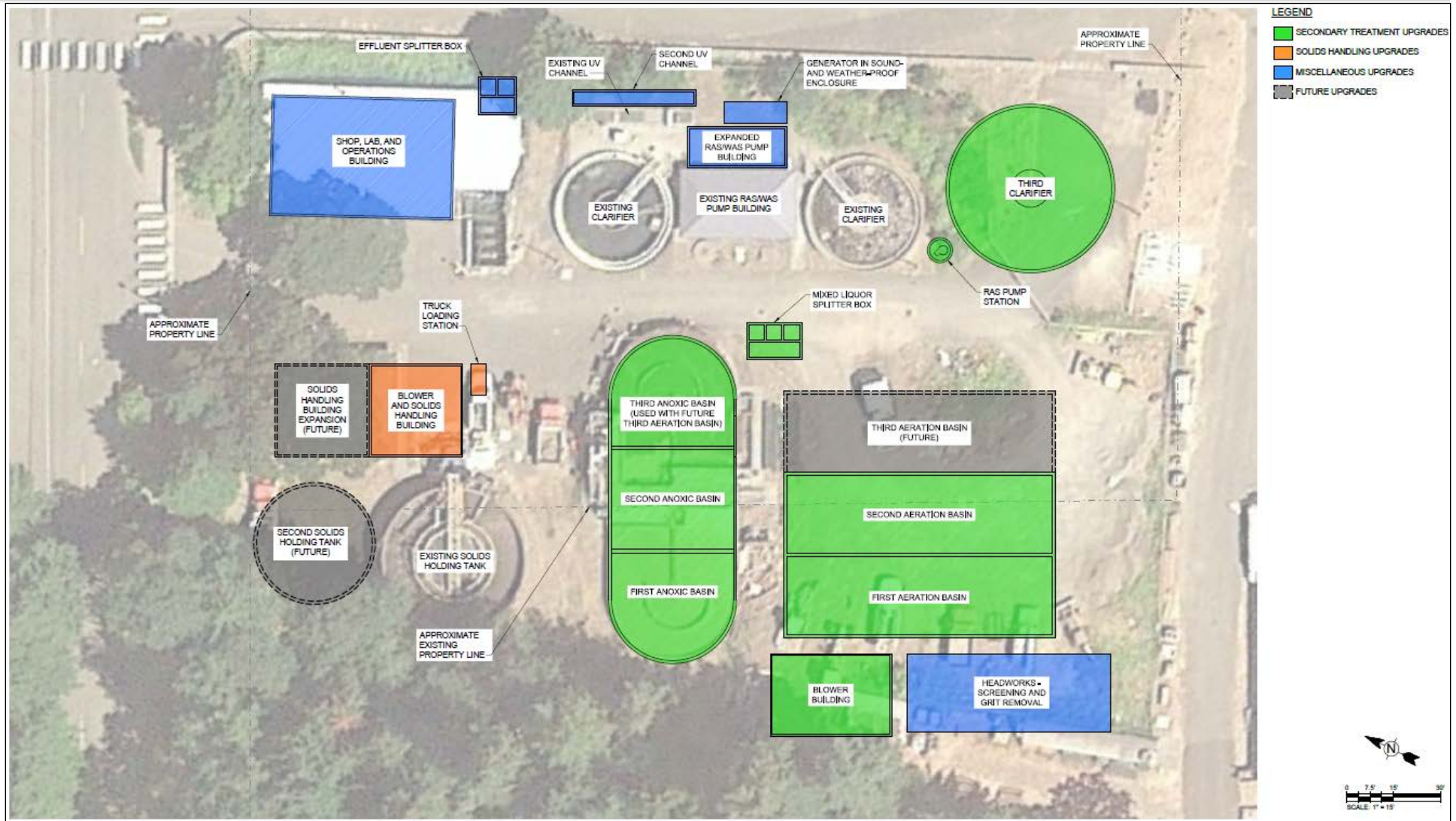
- The City of Stevenson – NPDES Permit Compliance Schedule was submitted to Ecology on April 25, 2017

Administrative Order against City of Stevenson, Docket #14221, received July 6, 2017

- Includes Order To Comply
 - Immediately upon receipt of this Order the City of Stevenson must:
 1. Implement the actions described in the City's response (NPDES Permit Compliance Schedule)
 2. Develop a Plan for Maintaining Wastewater Treatment Capacity
 - [We understand that the Draft General Sewer Plan and Wastewater Facilities Plan Update is the long-term Plan, and we still need a short-term Plan to maintain capacity until the new facilities are built and begin operation at the WWTP]
 3. Update the City's Municipal Code as needed to implement Source Control
 4. Continue to operate the plant based upon the existing O&M Manual, or submit changes to Ecology.
 5. Monitor final effluent for Ammonia weekly and submit results to Ecology.
 6. Submit quarterly progress reports to Ecology.

Failure to comply with this Order may result in the issuance of civil penalties or other actions, whether administrative or judicial, to enforce the terms of this Order.

Site Plan – Alternative 1B



Site Plan – Alternative 2



Description of Treatment Alternatives

	Recommended Alternative Alt 1B Minimal Pretreatment (20% BOD Removal) Conventional Activated Sludge	Alt 2 Pretreatment to Domestic Strength (85% BOD Removal) Oxidation Ditch
Pretreatment (by Others)	High load dischargers construct aerated equalization tanks	High load dischargers construct aerobic or anaerobic package treatment system at central location
Headworks	Construct new headworks, including: <ul style="list-style-type: none"> • Grit removal • Fine screens • Flow measurement 	Construct new headworks, including: <ul style="list-style-type: none"> • Fine screens • Flow measurement
Secondary Treatment	Convert to conventional activated sludge treatment: <ul style="list-style-type: none"> • Construct 2 new conventional activated sludge aeration basins, with space for 3rd basin • Convert oxidation ditch to 3 anoxic selector basins • Construct new building for aeration blowers Add 3 rd clarifier	Expand oxidation ditch treatment: <ul style="list-style-type: none"> • Construct 1 new oxidation ditch with anoxic selector, with space for 3rd ditch • Add anoxic selector to existing oxidation ditch Add 3 rd clarifier
Disinfection	Expand UV disinfection: <ul style="list-style-type: none"> • Construct 2nd parallel UV channel • Install new UV lamps in both channels 	Expand UV disinfection: <ul style="list-style-type: none"> • Construct 2nd parallel UV channel • Install new UV lamps in both channels
Solids Handling	Upgrade existing solids handling facilities: <ul style="list-style-type: none"> • Refurbish solids holding tank with new partition walls and new aeration system • Construct new solids handling/blower building • Install new mechanical sludge thickener • Install new sludge pumps and truck loading station 	Upgrade existing solids handling facilities: <ul style="list-style-type: none"> • Refurbish solids holding tank with new partition walls and new aeration system • Construct new solids handling/blower building • Install new mechanical sludge thickener • Install new sludge pumps and truck loading station
Support Facilities	Upgrade electrical and control systems, including: <ul style="list-style-type: none"> • New SCADA control system • Replace emergency generator with larger generator Construct new shop, operations, and lab building	Upgrade electrical and control systems, including: <ul style="list-style-type: none"> • New SCADA control system • Replace emergency generator with larger generator Construct new shop, operations, and lab building

Description of Treatment Alternatives

	Recommended Alternative Alt 1B Minimal Pretreatment (20% BOD Removal) Conventional Activated Sludge	Alt 2 Pretreatment to Domestic Strength (85% BOD Removal) Oxidation Ditch
Capital Cost – City Wastewater Treatment Plant	\$12,954,000	\$11,477,000
Capital Cost – Pretreatment Facilities by Others	\$711,000	\$2,444,000
Capital Cost – City and Others	\$13,665,000	\$13,921,000
Plant Operation FTEs (year 2040, CH2M and City effort combined)	3.5	3.0
MAJOR CONSIDERATIONS	Larger treatment capacity at City WWTP, smaller Pretreatment Facilities	Smaller treatment capacity at City WWTP, larger Pretreatment Facilities
	Maximizes treatment capacity on existing site	
		Pretreatment costs could be higher if there are several facilities at different locations
	Accommodates industrial/commercial growth best	
	Complex City operations, simpler Pretreatment operations	Simpler City operations, complex Pretreatment operations
	Preserves waterfront aesthetics	Pretreatment Facilities may be built on the waterfront
	Easier to achieve 20% pretreatment	Administratively complex to enforce 85% pretreatment
	Pretreatment program and BOD monitoring required	Pretreatment program and BOD monitoring required
	High strength surcharge for high-load dischargers	

Discussion of Package Treatment Plants

- Frequently used to treat flows between 0.01 to 0.25 mgd. The Stevenson WWTP existing maximum month flow is 0.46 mgd (year 2016) and will be 0.657 mgd projected for year 2040. Use of package treatment systems may mean multiple smaller treatment units that do not provide the most treatment capacity on the existing site. Package plants are not designed to allow for expansion. You just buy another unit, which may work if you have ample space.
- Package treatment plants are usually prefabricated – not sized specifically for your WWTP. This means that you'd get one chamber that's the right size and another chamber that's not sized properly. Very very slim safety factor and often set up so maintenance is difficult.
- Usually designed by manufacturer using a “standard design” approach.
- Usually made from less expensive materials that may not have a 50-year life for the structure. Many are cheaply made, so they cost less.
- Equipment provided with the package system may not have a 20-year design life.
- Package treatment plants may have a lower capital cost, but they may also have a suboptimal design, may fail early, may be difficult to maintain, and do not maximize treatment capacity on an existing constrained site such as Stevenson has.

We recommending design based on Standard of Practice for the engineering profession

- Standard of Practice for the engineering profession doing municipal wastewater treatment plant design is for design of properly sized concrete structures with a 50-year design life, and for heavy-duty equipment appropriately sized, usually with a 20-year design life. Treatment systems are custom designed for each application and include a reasonable safety factor. Facilities are designed to allow for expansion. Facilities are designed with operation and maintenance in mind.
- KCM, now Tetra Tech, designed the Stevenson WWTP in 1992 based on this Standard of Practice. The WWTP has lasted 25 years without a major upgrade and this has kept rates low for the citizens and businesses of Stevenson.