



Our chemist and two analysts perform over 700 tests per month for permit compliance and process control. In addition they sample the river weekly and record weather observations. The chemist also conducts the industrial pretreatment program that regulates the discharge of commercial and industrial customers into the city's collection system.

## Wastewater Utility Facts

**Collection System:** 250 miles of pipe, 4400 manholes and 10 "lift stations".

**Treatment Plant:** Primary → Tricking Filter/Solids Contact → Secondary Clarification → Disinfection/De-chlorination.

Performance:

- Average BOD Removal = 97%
- Average Total Suspended Solids Removal = 96%
- Average Summer Phosphorus Removal = 86%
- Minimum Required Removals = 85%
- Average Summer Ammonia Removal = 79.4%

Population Served = 45,000+

Number of Customers (Accounts) = 17,900

Average Daily Sewage Per Person = **74 gallons per day**

Chemical Cost Per Day for Phosphorus Removal = **\$570.00**

Chorine Used Per Day = **140 Pounds**

Sulfur Dioxide Used Per Day = **45 Pounds**

Annual Plant Gas & Electric Bill = \$400,000

Average Daily Dry-Weather Flow = **3.4 million gallons per day**

Maximum Peak Daily Flow Capacity = **20 mgd**

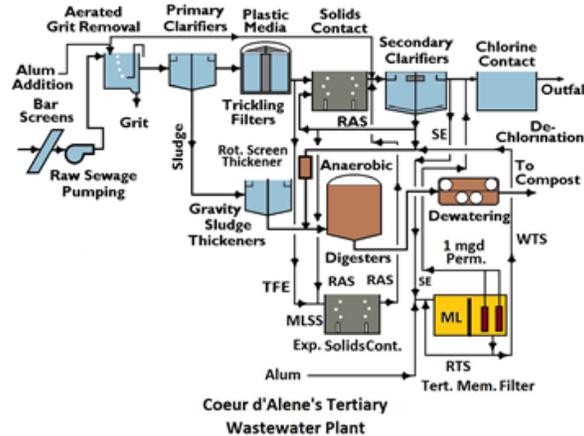
Nominal Design Flow Without Nitrification = **6 mgd**

Staffed 7 days a week; 8 hours a day; 365 days a year.

**Compost:** Aerated Static Piles with Aerated Curing. 21 Days in Piles Followed By 30 Days of Curing.

**Total Utility Staff** = 7 plant operators; 2 plant mechanics; 6 collection operators; 3 lab analysts; 2 compost operators; 1 field inspector; 5 administrative & project managers = 26 or 8% of total city staff of 325.

## Plant Profile:



For guided group tours of either the treatment plant or the compost facility, contact the Office of the Superintendent at the address below.



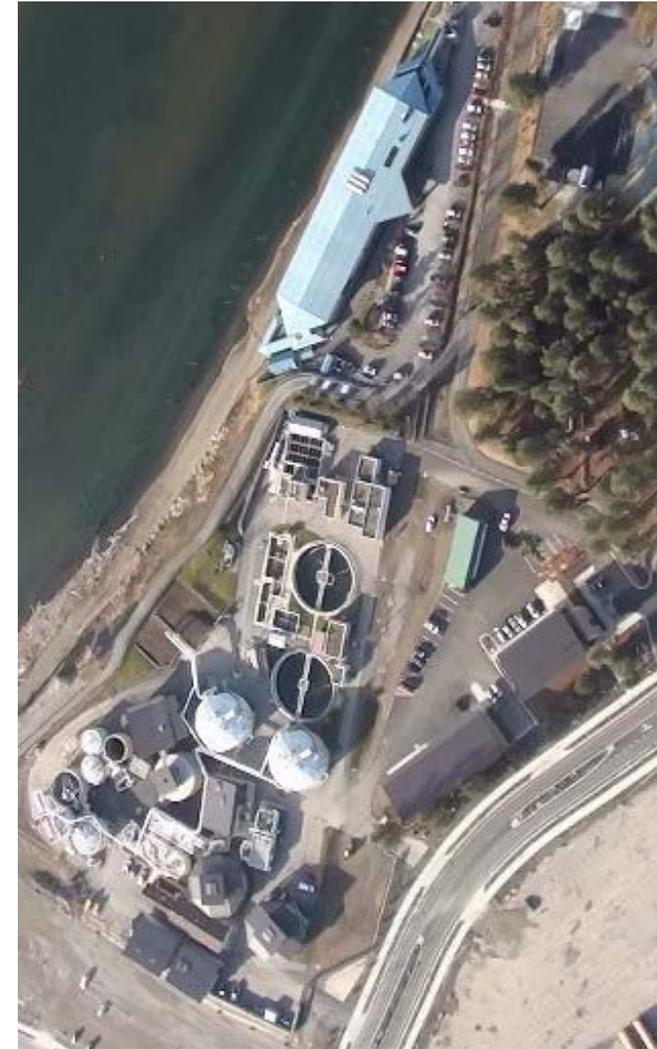
## Wastewater Utility Department

City of Coeur d'Alene  
710 E. Mullan Ave.  
Coeur d'Alene, ID 83814  
Phone: 208-769-2281  
Fax: 208-769-2338  
E-Mail: [tgreen@cdaid.org](mailto:tgreen@cdaid.org)  
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Photos & Text By H. Sid Fredrickson, Supt.



## Advanced Wastewater Treatment Facility



City of Coeur d'Alene

# Plant History & Advanced Secondary Treatment

While secondary-level municipal treatment was mandated by the Clean Water Act of 1972, it was operational in Coeur d'Alene in 1939; making it one of the first such municipal plants in the **world**. The city has always utilized conventional primary clarification and fixed-film "trickling filters" as the secondary treatment process followed by chlorination.

Beginning in 1982, the plant underwent 11 major "phases" of construction, culminating with tertiary membrane filters. These projects added new anaerobic digesters, sludge gravity thickeners, centrifuge for biosolids de-watering, plastic-media trickling filters with solids contact tanks, secondary clarifiers, a chlorine contact tank, de-chlorination with sulfur dioxide, a chemical systems center for phosphorus removal and foul air treatment with compost-bed biofilters. Some of the original 1939 structures are still used today.

While the city has about \$100 million invested in its treatment plant alone, customer rates have stayed competitive with other communities.



1939 primary clarifier in foreground with 1988 primary in the background. Exterior covered 2006. Solids removal = 60% Plus

The nominal capacity of the plant is 6 million gallons per day (mgd) and current flow is 3.4 mgd. Recent modifications to the plant's discharge permit require additional measures to control ammonia discharge. A new tertiary process is being added to reduce phosphorus discharge to less than 50 parts per billion. The replacement of the 1939 raw sewage pumping station and headworks structure was also a high priority.



1995 - Plastic Media Trickling Filters and Foul Air Ducting. Foul air is pretreated in the trickling filters.

One of two Advanced Treatment Processes is the summer removal of phosphorus with liquid aluminum sulfate—required to protect water quality in downstream Long Lake.



Chlorine neutralization

The second advanced process is the neutralization of excess chlorine with sulfur dioxide just prior to discharge to the Spokane River. Chlorine is toxic to aquatic life.

1984—The Chlorine Contact Basin and Chlorination/De-chlorination Building in Left Background



1999—Compost-Bed Biofilters for Foul Air Treatment.

Odor control was added to make the plant a good neighbor. The use of biofilters is very innovative to the Northwest. The city has been using them for odor control at its biosolids composting facility since 1990. The compost is made by the utility.



Phase 5B Plant Conceptual Drawing

The plant produces a daily average of just more than 3000 dry pounds of biosolids, 365 days a year. Cake averages 26% solids or 16,600 wet pounds per day, which is mixed with wood chips and composted at the utility's own facility. This yields about 2700 cubic yards of finished compost per year and is sold.

Secondary Clarifier

