|  |  |
| --- | --- |
|  | State of Oregon Department of Environmental Quality |
| Mercury Minimization Plan Template |
| Contact: Erich BrandstetterWater Quality Division700 NE Multnomah St., Suite 600Portland, OR 97232 |

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# 1. Facility Information

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | Date (mm/dd/yyyy): |  |
| Facility name: |  | Permit No.: |  |
| Facility address: |  |
| City: |  | State: |  | ZIP code: |  |
| Preparer name: |  | Preparer’s telephone: |  |
| Preparer organization: |  | Preparer’s email: |  |
| Technical contact name: |  | Technical contact telephone: |  |
| Legal contact name: |  | Legal contact telephone: |  |

# 2. Mercury Sources

## Overview

**Table 1. Source Summary**

|  |  |  |
| --- | --- | --- |
| **Source Categories** | **Mercury** | **Notes/Comments** |
|  | **Current** | **Potential** | **N/A** |  |
|  |[ ] [ ] [ ]   |
|  |[ ] [ ] [ ]   |
|  |[ ] [ ] [ ]   |
|  |[ ] [ ] [ ]   |
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|  |[ ] [ ] [ ]   |
|  |[ ] [ ] [ ]   |

# 3. Implementation Plan for Mercury Management and Reduction Measures for (at least) the Next Five Years

**Overview**

**Medical facilities**

**Dental facilities**

**Schools**

**Industrial facilities**

**Heating, ventilation and air conditioning (HVAC)**

**Residential, collection systems, and septage sources**

# 4. Facility Changes

**Facility**

**Collection System**

**Changes in Industrial Users (added or removed)**

**Changes in Source Water Supply**

**Other**

# 5. Mercury Monitoring (total mercury)

Table 2. Wastewater treatment plant calendar month average influent, effluent and biosolids data

|  |  |  |  |
| --- | --- | --- | --- |
| Date | Location | Result (ug/L) | Quantitation Limit (ug/L) |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

(add rows as needed)

Table 3. Flow/Load Information

|  |  |  |  |
| --- | --- | --- | --- |
| **Year** | **Influent** | **Effluent** | **Bio-Solid** |
| **Flow** | **Conc.** | **Mass** | **Flow** | **Conc.** | **Mass** | **Flow** | **Conc.** | **Mass** |
| Year 1 |  |  |  |  |  |  |  |  |  |
| Year 2 |  |  |  |  |  |  |  |  |  |
| Year 3 |  |  |  |  |  |  |  |  |  |
| Year 4 |  |  |  |  |  |  |  |  |  |
| Year 5 |  |  |  |  |  |  |  |  |  |

Table 4. Other Monitoring for Mercury (if applicable)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Location** | **Sample Type** | **Form of Mercury**  | **Method / Analytical Limit** | **Analytical Results / Units** |
|       |       |       |       /       |       /       |
|       |       |       |       /       |       /       |
|       |       |       |       /       |       /       |
|       |       |       |       /       |       /       |

# 6. Summarize Mercury Reduction Activities Implemented during (at least) the Previous Five Years (from the date this plan was prepared):

**Overview**

**Medical facilities**

**Dental facilities**

**Schools**

**Industrial facilities**

**Heating, ventilation and air conditioning (HVAC)**

**Residential, collection systems, and septage sources**

**MMP Evaluation**

# 7. Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Preparer(please print):  |       |  | Authorized agent(if different):  |       |
| Title:  |       | Date |       |  | Title:  |       | Date: |       |
| Signature: |  |  | Signature: |  |
| Phone: |       | Fax: |       |  | Phone: |       | Fax: |       |

# Mercury Minimization Plan Template Instructions

## Purpose of the Mercury Minimization Plan Template

This document was created to assist municipalities, companies, consultants, operators and permittees, to identify and reduce sources of mercury in collection and treatment systems. This document will also assist in creating a Mercury Minimization Plan (MMP) to comply with permit requirements. This template will help ensure that all required components are included, may speed up the process of organizing and understanding your mercury data, and allow DEQ to review your plan more quickly. However, with DEQ approval, you may use an alternate format.

If you have a DEQ permit (NPDES) please review it carefully to ensure that your submission is complete and on time. If your MMP is required under a variance or TMDL, there may be additional requirements not addressed in this template.

At a minimum, the Mercury Minimization Plan must include the following:

* Name and signature of party responsible for developing or reviewing the plan
* Plan submittal date
* Identification and evaluation of current and potential mercury sources (for domestic facilities this includes industrial, commercial, and residential sources)
* An implementation plan that includes specific methods for reducing mercury

### Facility Information

Enter your facility information

### Mercury Sources

In this section, identify and evaluate current and potential mercury sources. For domestic facilities, this includes industrial, commercial, and residential sources. Include facilities from the following sectors: dental, medical, schools, laboratories, HVAC, industrial facilities, and other facilities that may contribute mercury. The industrial categories of timber products; paper products; chemical products; glass, clay, cement, concrete, gypsum products; primary metal industries; fabricated metal products; and electronic instruments were determined by DEQ to have potential for mercury in discharge. These categories correspond to SICs 24xx, 26xx, 28xx, 32xx, 33xx, 34xx, and 36xx. Include any facilities in these categories in your potential source list. Appendix A lists NPDES-permitted facilities in the Willamette Basin in these categories. Also include any current or historic mining activities that may be potential sources of mercury. Appendix B contains a list of mining activities in the Willamette Basin that are potential sources of mercury.

### Implementation Plan for (at least) the Next Five Years

Discuss Mercury reduction strategies for your wastewater treatment plant and relevant sectors within your collection system area. Use the space provided to include information on relevant sectors. Actions may include public awareness, sector-specific awareness, inspections, or outreach visits.

Include a timeline for implementing the strategies. Include milestones to review the reduction goals and strategies to determine if changes are needed. If businesses will be closely involved in helping you achieve an influent goal, meet with them to confirm the implementation plan.

Explain your choice of reduction strategies, timelines or milestones. When applicable, explain why you chose one option over another.

In some cases, including additional information in your implementation plan may be helpful. When applicable, provide answers to the following questions:

* Will all the strategies combined reduce total mercury to achieve your goal?
* If a phased implementation is planned, explain why.
* Will you need to collect additional information before finalizing the Mercury Minimization Plan?
* How will you reassess goals and strategies at the milestones?
* What is the potential for new mercury contributions from domestic or business sources?
* What is the potential for increases from existing sources?

### Facility Changes

Briefly describe any changes in your facility, collection system or operation process during the previous permit cycle, including changes in industrial, commercial or institutional users or their discharges. This is not required if this is your first Mercury Minimization Plan (enter NA).

### Monitoring

This section is required for MMP updates. If data have been collected prior to writing a new MMP, the data should be included. Include data for at least the past five years.

Most monitoring results are reported in terms of total mercury.

### Wastewater treatment plant influent, effluent and biosolids data

Some facilities may not have data at this time. If data has been collected, provide an annual summary of total mercury influent and effluent concentrations and biosolids monitoring data, using the most recent five years of monitoring data.

To calculate mass load in the table, multiply the concentration and the flow (million gallons per day or MGD) by a conversion factor of 3.785.

**Mass load (mg/day) = Flow (MGD) x Concentration (ng/L) x 3.785**

Below are example calculations.

**Influent example**

4.0 MGD x 365 days/year x 120 ng/L influent mercury concentration x 3.785 = 663,132 mg/yr or 663.1 grams/year (divide by 1000 to convert to grams)

**Effluent example**

3.9 MGD x 365 days/year x effluent mercury concentration 4 ng/L x 3.785 = 22,552 mg/yr or 22.6 grams/year (divide by 1000 to convert to grams)

Discuss variations or patterns in your wastewater treatment plant data and wastewater data from your businesses. When applicable, include secondary sources of information (hazardous waste, biosolids or Toxic Release Inventory records).

The time at which samples are collected can impact your data. Spikes or trends in mercury concentration can result from business patterns or collection system cleanouts.

### Mercury measurements at other locations

Permits generally do not require mercury sampling beyond what is described above. However, if your permit does require additional mercury sampling, or if your MMP includes additional sampling, describe and summarize that data here. Examples may include locations within the municipal water supply, source collection area or within the wastewater treatment plant (other than influent and effluent) where you monitor for mercury. Data may be available from pretreatment monitoring, source investigation results or other sources.

### Summarize Mercury Reduction Activities Implemented during (at least) the Previous Five Years

Highlight mercury reduction activities during the past five years for the sectors indicated.

**MMP Evaluation**

Summarize the effectiveness of MMP actions: Did they accomplish the intended goal(s)? What outcomes were achieved? How did the evaluation inform the MMP update? The following table contains some examples:

|  |  |  |
| --- | --- | --- |
| **MMP Action** | **Evaluation** | **Conclusions** |
| Public education web page. | 500 hits per year. | Web page was ineffective. MMP updated to develop and distribute a mailer. |
| Inspected 20 dentist offices. | Five dentist offices were not properly handling mercury. | Inspections were effective. The city will inspect an additional 20 offices, and re-inspect the five offices that had problems. |
| Mercury-containing devices collection event. | 100 people contributed. | Event was moderately successful. MMP includes another collection event. The city will evaluate better ways to publicize the event. |

### Certification

The plan must be signed by the preparer or authorized agent (if different), to certify the following:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

### Submission of Mercury Minimization Plan

Review your NPDES permit to ensure that your submission is complete and on time. Your permit will also specify how and where the Mercury Minimization Plan must be submitted.

# Appendix A. Summary of Individual NPDES-Permitted Industrial Facilities in the Willamette Basin with Activities that Could Contribute Mercury to Their Discharge

**(Revised Willamette Basin Mercury TMDL, Table 9-4)**

| **Facility Name** | **SIC Major Group** | **Facility Activity** | **EPA Class** | **Receiving Water** | **EPA Permit Number** | **DEQ Permit Number** |
| --- | --- | --- | --- | --- | --- | --- |
| Cascade Pacific Pulp, Llc | 26 | Bleached Kraft Pulp Mill | Major | Willamette River | OR0001074 | 101114 |
| Georgia-Pacific - Halsey Mill | 26 | Secondary Fiber Pulp & Paper Mill | Major | Willamette River | OR0033405 | 101488 |
| International Paper Co - Springfield Mill | 26 | Unbleached Kraft Pulp & Paper Mill | Major | McKenzie River | OR0000515 | 101081 |
| Oregon Metallurgical, Llc - Ati Albany | 33 | Titanium Manufacturing & Forming | Major | Oak Creek | OR0001716 | 102223 |
| Tdy Industries, Llc - Teledyne Wah Chang | 33 | Zirconium Production | Major | Truax Creek | OR0001112 | 100522 |
| West Linn Paper Company (Not Operating) | 26 | Paper Manufacturing | Major | Willamette River | OR0000787 | 100976 |
| Westrock, Newberg Mill (Not Operating) | 26 | Fiber Deink Pulp & Paper Mill | Major | Willamette River | OR0000558 | 101299 |
| Ash Grove Cement - Rivergate Lime Plant | 32 | Lime | Minor | Willamette River | OR0001601 | 102465 |
| Cascade Steel | 33 | Blast Furnaces & Steel Mills | Minor | South Yamhill River | OR0027260 | 101487 |
| Evraz Oregon Steel | 33 | Blast Furnaces & Steel Mills | Minor | Willamette River | OR0000451 | 101007 |
| Frank Lumber Co. Inc. | 24 | Sawmills And Planing Mills | Minor | North Santiam River | OR0000124 | 101583 |
| Fujimi Corporation | 32 | Abrasive Products | Minor | Coffee Lake Creek | OR0040339 | 103033 |
| Georgia-Pacific Millersburg Resin Plant | 28 | Plastics Materials, Synthetics | Minor | Murder Creek | OR0032107 | 102603 |
| Hollingsworth & Vose Fiber Company | 24 | Other Wood Products | Minor | Willamette River | OR0000299 | 101331 |
| Hull-Oakes Lumber Co. | 24 | Sawmills And Planing Mills | Minor | Oliver Creek | OR0038032 | 101466 |
| Kingsford Manufacturing Company - Springfield Plant | 24 | Other Wood Products | Minor | Patterson Slough | OR0031330 | 102153 |
| Murphy Veneer, Foster Division | 24 | Softwood Veneer And Plywood | Minor | Wiley Creek | OR0021741 | 101777 |
| Sanders Wood Products - Rsg Forest Products – Liberal | 24 | Sawmills And Planing Mills | Minor | Molalla River | OR0021300 | 100929 |
| Seneca Sawmill Company | 24 | Sawmills And Planing Mills | Minor | Unknown | OR0022985 | 101893 |
| Stimson Lumber Company - Forest Grove | 24 | Sawmills And Planing Mills | Minor | Scoggins Creek | OR0001295 | 101480 |
| Sunstone Circuits | 36 | Printed Circuit Boards | Minor | Milk Creek | OR0031127 | 101015 |
| Weyerhaeuser Cottage Grove Lumber | 24 | Softwood Veneer And Plywood | Minor | Coast Fork Willamette River | OR0000698 | 101449 |

# Appendix B: Mining Activities in the WRB that are Potential Sources of Mercury

**(Table 5-7 of the “Mercury TMDL Development for the Willamette River Basin (Oregon) – Technical Support Document.”)**

| **Name** | **County** | **Subbasin** | **Comments** |
| --- | --- | --- | --- |
| Aimes-Bancroft Group  | Clackamas  | Clackamas River  | Old structures are present. Adit is caved.  |
| Kiggins Mine (ECSI Site 3812)  | Clackamas  | Clackamas River  | Discharge (1 gpm, pH 8.3) to Oak Grove fork of Clackamas River; flow. Mercuric oxides present in waste rock. Mill structure and other buildings present. Open adits. History of the mine is provided in O’Leary (2004). This is a CERCLA site and a removal action of contaminated sediment was completed in 2008.  |
| Nisbet Mine (ECSI Site 3811)  | Clackamas  | Clackamas River  | Oak Grove fork of Clackamas River is eroding tailings. Old structures are still present on site. Adit is still open. History of the mine is provided in O’Leary (2004).  |
| North Fork Claims  | Clackamas  | Clackamas River  |  |
| Cheeney Creek  | Clackamas  | Clackamas River  | Clear discharge (5 gpm, pH 8.1) to Cheeney Creek and Salmon River. Has eroded rock waste pile. Adit is open. Shaft appears caved.  |
| Graham Property  | Lane  | Coast Fork, Willamette River  |  |
| Knott Claim  | Lane  | Coast Fork, Willamette River  |  |
| Treasure  | Lane  | Coast Fork, Willamette River  | 4000’ of workings. Mill on-site.  |
| Union  | Lane  | Coast Fork, Willamette River  | 1200’ of workings. Mill on-site.  |
| Bald Butte Prospect  | Lane  | Coast Fork, Willamette River  |  |
| Black Butte Mine (ECSI Site 1657)  | Lane  | Coast Fork, Willamette River  | Was a mercury mine with three mills during its operating years from 1890-1909, 1916, 1943, and 1956. Mine had two main tailing piles. The lower tailing pile was 30 feet away from Dennis Creek, which flows westerly to Garoutte Creek, which flows northerly to the Coast Fork of the Willamette River. Elevated mercury levels have been found in the sediment and in downstream Cottage Grove Reservoir. Remedial actions have been pursued and are described in the text for this section.  |
| Champion & Evening Star Mine (ECSI Sites 2657 and 3659)  | Lane  | Coast Fork, Willamette River  | Discovered in 1892 near the Champion Saddle on the divide of Champion and City Creeks. Mine had gold, silver, copper, lead, and zinc. Ore was processed in 3 mills. Mine has more than 15,000 feet of drifts and crosscuts, and about 3,000 feet of raises on 9 levels. Major years of production were from 1932 through 1939. Discolored discharge to Champion Creek (10 gpm, pH 5.5). Champion Creek flows to Brice Creek, which dumps into the Row River. No structures. ECSI says that remedial action is recommended for tailings on USFS property, while site investigation is recommended for the portion on private land..  |
| Columbia Vein (ECSI Site 3169)  | Lane  | Coast Fork, Willamette River  | Champion Creek watershed. Drainage (5 gpm, pH 7.2) not to surface water. According to ECSI, “the Site Assessment Program recommends no further action, for the following reasons: 1) there is no historical or visual evidence that ore was milled at the site, 2) there was no evidence of acid mine drainage or other impacts to surface water related to the site; and 3) there was no evidence of mill tailings on the site.”  |
| Excelsior Vein  | Lane  | Coast Fork, Willamette River  | Champion Creek watershed. Part of Champion Mine.  |
| Leroy Mine (ECSI Site 3167)  | Lane  | Coast Fork, Willamette River  | Champion Creek watershed. Most of the development work was done between 1900 and 1910. There are numerous cuts and tunnels having a total length of 1,100 feet. A large volume of material was developed which contained a low percentage of base metals. According to ECSI, “the Site Assessment Program recommends a preliminary assessment.”  |
| Mayflower Mine  | Lane  | Coast Fork, Willamette River  |  |
| Lower Musick  | Lane  | Coast Fork, Willamette River  | Adit and dump. No structures. Discharge (10 gpm, pH~7.5) directly to Sharps Creek (tributary to Brice Creek).  |
| Noonday Mine (ECSI Site 3974)  | Lane  | Coast Fork, Willamette River  | Major producer of gold, silver, copper, and lead. Mill on-site. This mine was discovered in 1891 and produced gold, silver, copper, lead, and zinc. According to literature, there was approximately 4,000 feet of workings, three mill sites, and 7,000 tons of ore mined. According to ECSI, “ODEQ has completed a non-sampling investigation of the Noonday Mine. Based on information developed during ODEQ's evaluation, the Noonday Mine is considered a medium priority for a Preliminary Assessment.”  |
| Peekaboo Mine  | Lane  | Coast Fork, Willamette River  | Mill on-site. Not found in ECSI.  |
| Pitcher Prospect  | Lane  | Coast Fork, Willamette River  |  |
| Star Mine  | Lane  | Coast Fork, Willamette River  | 1300’ of workings. Brice Creek watershed.  |
| Sultana Mine  | Lane  | Coast Fork, Willamette River  | 2000’ of workings. Mill on-site. Champion Creek watershed.  |
| Sweepstakes  | Lane  | Coast Fork, Willamette River  | 1000’ of workings. Champion Creek watershed.  |
| 3166)  | Lane  | Coast Fork, Willamette River  | 6000’ of workings. Mill on-site. Brice Creek watershed. The Vesuvius vein was discovered in 1895, and the adit driven to explore the vein was known as the German Tunnel. A five-stamp mill was moved in from the old Knott Mill and operated at the German Tunnel until 1902. During the same time period, the Stocks-Harlow vein was being mined and this location also had a five-stamp mill. In 1902, both of these properties were organized into one mining company, and a new camp was built about a mile down the mountain below the German Tunnel. Near the campsite, a new adit called the Wild Hog was driven into the hillside, and a five-stamp mill was moved to this new location. In all, the entire mine’s production was considered. There is acid drainage from the mine and ECSI recommends an expanded preliminary assessment to evaluate metals in soil, sediment, and surface water.  |
| Woodard Prospects  | Lane  | Coast Fork, Willamette River  |  |
| Sullivan (Bald Butte)  | Lane  | Coast Fork, Willamette River  |  |
| Amalgamated Mine  | Marion  | North Santiam River  |  |
| Black Eagle Mine (ECSI site 4455)  | Marion  | North Santiam River  | Per ECSI, the Black Eagle Mining & Milling Co. owned the mine in 1916. A small concentrator mill was used on-site. There were no signs of waste rock or tailings piles, despite the site having a small concentrator mill in 1916.” The adit was blasted shut in 2001 and the site is listed as “No further state action required.”  |
| Morning Star Mine (a.k.a. Blue Jay Mine) and Ruth Mine (ECSI site 4503)  | Marion  | North Santiam River  | Morning Star is 8.5 miles northeast of the town of Elkhorn, Oregon. The Site is situated on steep side slopes. The Site consists of an open adit with water discharge, a collapsed structure, and waste rock piles. Nearby Ruth Mine consists of two adits at the 4th and one adit at the 5th Level. Small waste rock dumps occur at the 4th Level. These mines drain to Battle Axe Creek, Ruth Creek, and Blue Jay Creek and are within the Willamette National Forest and the USFS undertook investigations and cleanup under the Federal CERCLA program. Mercury is present in waste rock but has not been identified as a contaminant of concern in water or sediment..  |
| Bonanza Mine  | Marion  | North Santiam River  |  |
| Crown Mine  | Marion  | North Santiam River  |  |
| Silver King Mine  | Marion  | North Santiam River  |  |
| Silver Star Mine  | Marion  | North Santiam River  |  |
| Breitenbush Mineral Springs  | Marion  | Breitenbush River, North Santiam River  |  |
| Bob & Betty  | Linn  | Quartzville Creek, Middle Santiam River  | 1650’ of workings.  |
| Poorman  | Linn  | Quartzville Creek, Middle Santiam River  | Mill on-site.  |
| Albany Mine  | Linn  | Quartzville Creek, Middle Santiam River  | Gold mine first prospected in 1888. Ore was processed in 3 mills. There were approximately 1,090’ of workings.  |
| Lawler  | Linn  | Quartzville Creek, Middle Santiam River  | Discovered in 1861 on White Bull Mountain and Dry Gulch. Mine had gold, silver, lead, copper, and zinc. There were 2,000’ of workings by 1903, with four principal adit levels and numerous open cuts.  |