| Permittee: | Oregon Department of Corrections  
1793 13th Street SE  
Salem, OR 97302 |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
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<tbody>
<tr>
<td>Source Common Name</td>
<td>ODC - Oregon State Penitentiary</td>
</tr>
</tbody>
</table>
| Current Permit: | File Number: 109727  
Permit Number: 101619  
Expiration Date: June 30, 2003  
EPA Reference Number: OR004377-0 |
| Source Contact: | Steve Mitchell, Oregon Department of Corrections 503-378-2030 |
| Source Location: | 2605 State Street  
Salem, OR |
| LLID | 1230393449519 |
| River Mile | 2.9 |
| Receiving Stream | Mill Creek |
| Proposed Action: | Renew Permit  
Application Number: 984905  
Date Received: December 27, 2002 |
| Source Category | NPDES Minor – Industrial |
| Permit Writer: | Ben Maynard (503) 378-8240 ext. 282  
Natural Resource Specialist |
INTRODUCTION
The referenced permit is for the Oregon Department of Corrections - Oregon State Penitentiary’s (ODC’s) discharge of treated groundwater to Mill Creek, in southeast Salem. Past dry-cleaning operations at the prison contaminated the groundwater with chlorinated volatile organic compounds (VOCs). There is currently an air stripper used on site for treatment of the contaminated groundwater. After treatment, the water is piped to Mill Creek. The on-going groundwater cleanup is being performed with oversight from the Department of Environmental Quality’s (the Department’s) Environmental Cleanup Program, and the resulting discharge from the Cleanup is regulated by the Department’s Water Quality Program.

The existing permit expired on June 30, 2003. DEQ received renewal application number 984905 from ODC on December 27, 2002. Because this renewal application was submitted to the Department in a timely manner, the permit shall not be deemed to expire until final action has been taken on this renewal application per OAR 340-045-0040.

This permit evaluation report describes the basis and methodology used in developing the permit. The permit is divided into several sections:

Schedule A – Waste discharge limitations
Schedule B – Minimum monitoring and reporting requirements
Schedule D – Special conditions
Schedule F – General conditions

These sections are discussed in detail in this document.

This permit is a joint federal and state permit, and subject to federal and state regulations. The Clean Water Act, the Code of Federal Regulations, and numerous guidelines of the Environmental Protection Agency (EPA) provide the federal permit requirements. The Oregon Revised Statutes, Oregon Administrative Rules, and policies and guidelines of DEQ provide the state permitting requirements.

FACILITY DESCRIPTION
The prison is located in southeast Salem, slightly west of I-5 and north of Highway 22 (Figure 1). The treatment system is located near the northwest corner of the prison. From there, the treated effluent is piped approximately 0.25 miles south to Mill Creek. The treatment system is comprised of a set of four air stripping towers with various sampling ports throughout the system. ODC plans to modify the system to divert half of the post-treatment flow away from the outfall for laundry use. A limited license (#667) has been obtained from Oregon Water Resources Department for this use of the groundwater.

Compliance Issues
In May 2003, ODC failed to sample and analyze for VOCs regulated by the NDPES permit. In April 2001, deficient pH monitoring and reporting data were included on the Discharge Monitoring Report (DMR). ODC was issued a Class II Notice of Noncompliance (NON) for the May 2003 violation.

A review of the last three years of DMRs indicates no presence of VOCs in the discharge. The lab data sheets list the permit parameters as not detected at detection limits of 1.0 ug/l or less.
Stormwater
There is no storm water runoff associate with this ground water cleanup facility.

Antidegradation
An Antidegradation Review was performed for this discharge (Attachment A). The Department has determined the proposed discharge complies with the Antidegradation Policy for Surface Waters found in OAR 340-041-0004.

RECEIVING WATER

Receiving Stream Water Quality
ODC discharges treated groundwater to Mill Creek at river mile 2.9, approximately 0.25 miles south of the treatments system (Figure 1). The discharge is located within the Willamette Basin. Designated beneficial uses for Willamette River tributaries include public and private domestic water supply, industrial water supply, irrigation, livestock watering, fish and aquatic life, wildlife & hunting, fishing, boating, water contact recreation, aesthetic quality, and hydro power. Water quality standards were developed for the Willamette Basin to protect these beneficial uses (OAR 340-041-0345).

The Department is required to evaluate the quality of the state’s waterbodies every two years. Those water bodies that are found to be violating water quality standards are placed on the State’s list of impaired water bodies known as the 303(d) list. The segment of Mill Creek to which ODC discharges is listed because it is water quality-limited for fecal coliform year-round. However, this is not a pollutant expected to be associated with ODC’s discharge.

Mixing Zone Analysis for Human Health Parameters
EPA allows for the use of mixing zones, also known as “allocated impact zones”. When using mixing zones, acute toxicity to drifting organisms must be prevented and the integrity of the waterbody as a whole may not be impaired. Mixing zones allow the initial mixing of waste and receiving water, but are not designed to allow for treatment. EPA does not have specific regulations pertaining to mixing zones. Each state must adopt its own mixing zone regulations that are subject to review and approval by EPA. In States that lack approved mixing zone regulations, ambient water quality standards must be met at the end of the pipe. The Department has mixing zone regulations that have been approved by EPA. The existing permit does not contain a mixing zone.

For drafting the proposed permit, effluent VOCs were analyzed to determine if the concentrations were below water quality standards prior to mixing. VOCs have not been detected in the effluent in the last few years. The detection limits are below the Department’s aquatic life criteria, however some of the detection limits are above the criteria for human health making it difficult to determine compliance with the criteria.

Based on the above findings the Department proposes to provide a mixing zone for human health criteria pursuant to OAR 340-041-0053. The allowable mixing zone for the human health criteria will be 25% of the harmonic mean flow of the receiving stream. The harmonic mean flow is a long term average flow that EPA recommends applying to human health criteria. The harmonic mean flow for Mill Creek was calculated to be 70 cfs. The proposed mixing zone allows for mixing with 25% of the stream flow (17.5 cfs). The available dilution was calculated to be about 17.
The Department is required to determine whether the discharge has the reasonable potential to cause or contribute to an exceedence of a water quality criterion. EPA has developed a reasonable potential analysis (RPA) to make this determination for toxic pollutants. An RPA relies on statistical probability to determine the likelihood that a discharge will violate an instream criterion based on available effluent data, its variability, available dilution, and the receiving water background concentration.

The Department has developed an RPA spreadsheet that employs EPA's methodology (results of the RPA are in Attachment B). This spreadsheet was used to evaluate the reasonable potential to violate human health criteria for VOCs present in the discharge. No VOCs have been detected in the effluent. The detection limits for cis-1,2-dichloroethylene and trans-1,2-dichloroethene are above the human health criteria making it difficult to perform a reasonable potential analysis. Using half the detection limit is common practice when the detection limit is greater than the criteria. Half the detection limits was used in the RPA resulting in no reasonable potential to violate the human health criteria.

**Evaluation of Temperature Issues**

Calculations were completed for a temperature reasonable potential analysis. Temperature standards allow for a 0.5-degrees C increase with complete mix (OAR 340-041-0028(11)(b)(A)). The 7Q10 for Mill Creek in October was calculated to be 31 cfs based on USGS gage #14192000. Based on an effluent flow rate of 0.72 million gallons per day (gpd) and 100% of the 7Q10 flow rate (complete mix), the allowable dilution is 29. The following calculations were used to derive the dilution available:

\[ S = \text{dilution} = \frac{Q_e + Q_r}{Q_e} = \frac{1.11 \text{ cfs} + (100\%) (31 \text{ cfs})}{1.11 \text{ cfs}} = 29 \]

Where:

- \(Q_e\) = the effluent flow in cubic feet per second (cfs); and
- \(Q_r\) = the 7Q10 flow of Mill Creek in October

Using a dilution of 29, the calculated temperature at complete mix is 11.1 degrees C, meeting the 0.5-degrees C allowable increase per applicable water quality criteria. The calculation below was used.

\[ C_m = \text{temperature at complete mix} = \frac{C_e + (S-1)C_r}{S} = \frac{13.8 ^\circ \text{C} + (29-1)(11 ^\circ \text{C})}{29} = 11.1 ^\circ \text{C} \]

Where:

- \(C_e\) = the effluent temperature;
- \(C_r\) = receiving stream temperature; and
- \(S\) = dilution (calculated previously)

Based on the calculation, temperature criteria are met at complete mix. Therefore, there is no reasonable potential for impact and a temperature limit is not required in this permit.
PERMIT LIMITATIONS

The current permit includes limits for VOCs, total flow, and pH, and are tabulated below.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Maximum Allowable Effluent Concentrations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Monthly Ave. µg/l</td>
</tr>
<tr>
<td>Dichloroethene</td>
<td>5</td>
</tr>
<tr>
<td>Trichloroethene</td>
<td>5</td>
</tr>
<tr>
<td>Trichloroethane</td>
<td>5</td>
</tr>
<tr>
<td>Tetrachloroethene</td>
<td>5</td>
</tr>
</tbody>
</table>

To address VOCs for the proposed permit, the groundwater data generated during the permit cycle was evaluated to identify which VOCs are currently detected in the water prior to treatment and discharge. VOCs detected have changed since the October 1998 issuance of the current permit, due to the chemical breakdown of the VOCs in the groundwater. A reasonable potential analysis, described earlier in this report, was then completed on the identified VOCs to evaluate potential for impact to Mill Creek. Because no VOCs have been detected in discharge water in the past few years, half the value of the analytical detection limit was used in the reasonable potential analysis for each of the identified VOCs. No reasonable potential for impact to Mill Creek was identified in the analysis, which is included in this report as Attachment B. Because no reasonable potential for impact to the creek was identified, the discharge limits for VOCs are removed and not included in the proposed permit. However, monitoring and reporting requirements for VOCs are retained.

The existing total flow limit of 1.6 million gallons per day (MGD) and the pH limit of 6.5 – 8.5 are retained for the proposed permit.

PERMIT DRAFT SUMMARY

Face Page

The face page of the permit describes the legal name of the facility, the type of wastewater generated at the facility, and the facility’s outfall location.

Schedule A, Waste Discharge Limitations

The existing flow and pH limits are retained for the proposed permit (see above), and a mixing zone was added to Schedule A of the proposed permit. VOC limits were not retained for the proposed permit.
Schedule B - Minimum Monitoring and Reporting Requirements

Schedule B describes the minimum monitoring and reporting required to demonstrate compliance with the conditions of the permit. The authority for the Department to require periodic reporting by permittees is included in ORS 468.065(5). The proposed monitoring frequencies for all parameters are similar to those facilities of similar size and complexity in Oregon.

The existing permit has a weekly monitoring frequency for VOCs and pH, with a reduction permitted after six months of monitoring, upon Department approval. Approval was granted to reduce the frequency to monthly based on analytical results. The table below lists the existing monitoring frequencies.

<table>
<thead>
<tr>
<th>Outfall 001: Existing Minimum Monitoring and Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item or Parameter</td>
</tr>
<tr>
<td>Total Flow</td>
</tr>
<tr>
<td>Dichloroethene</td>
</tr>
<tr>
<td>Trichloroethene</td>
</tr>
<tr>
<td>Trichloroethane</td>
</tr>
<tr>
<td>Tetrachloroethene</td>
</tr>
<tr>
<td>pH</td>
</tr>
<tr>
<td>Temperature</td>
</tr>
</tbody>
</table>

VOC parameters will be analyzed using EPA method 8260.

The proposed minimum monitoring frequencies are reduced from monthly to quarterly for VOCs based on the reasonable potential analysis discussed above. Flow and pH monitoring requirements are unchanged. The proposed monitoring requirements also reflect the change in the specific VOCs currently detected versus those detected when the existing monitoring requirements were set.

<table>
<thead>
<tr>
<th>Outfall 001: Proposed Minimum Monitoring and Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item or Parameter</td>
</tr>
<tr>
<td>Total Flow</td>
</tr>
<tr>
<td>pH</td>
</tr>
<tr>
<td>cis-1,2-Dichloroethene</td>
</tr>
<tr>
<td>trans-1,2-Dichloroethene</td>
</tr>
<tr>
<td>Trichloroethene</td>
</tr>
<tr>
<td>1,1,1-Trichloroethane</td>
</tr>
<tr>
<td>Tetrachloroethene</td>
</tr>
<tr>
<td>Vinyl Chloride</td>
</tr>
</tbody>
</table>

VOC parameters will be analyzed using EPA method 8260.

Schedule D - Special Conditions

The permit contains the following special conditions:

1. The permit requires sanitary wastes be disposed of to the City of Salem municipal sewage system.
2. The treatment system is required to be fully operated unless otherwise approved in writing by the Department.

3. The permit requires detailed plans and specifications be approved in writing by the Department prior to constructing or modifying any wastewater treatment or disposal facilities. After approval of the plans, all construction shall be in strict conformance with the plans unless otherwise approved in writing by the Department.

4. The permittee must have an environmental supervisor designated to coordinate and carry out all necessary functions related to maintenance and operation of waste collection, treatment, and disposal facilities. This person must have access to all information pertaining to the generation of wastes.

5. The permittee shall notify the DEQ Regional office [(503) 378-8240], in accordance with the response times noted in the General Conditions of this permit, of any malfunction so corrective action can be coordinated between the permittee and the Department.

6. A permit re-opener clause is included in the proposed permit to allow adding temperature limits if required by the completion of the Willamette Total Maximum Daily Load (TMDL).

Schedule F, NPDES General Conditions

All NPDES permits issued in the State of Oregon contain certain conditions that remain the same regardless of the type of discharge and the activity causing the discharge. These conditions are called General Conditions. These conditions can be changed or modified only on a statewide basis. The latest edition of the NPDES General Conditions is December 1, 1995 and this edition is included as Schedule F of the draft permit.

Section A contains standard conditions which include compliance with the permit, assessment of penalties, mitigation of noncompliance, permit renewal application, enforcement actions, toxic discharges, property rights and referenced rules and statutes. Section B contains requirements for operation and maintenance of the pollution control facilities. This section includes conditions for proper operation and maintenance, duty to halt or reduce activity in order to maintain compliance, bypass of treatment facilities, upset conditions, treatment of single operational events, overflows from wastewater conveyance systems and associated pump stations, public notification of effluent violation or overflow, and disposal of removed substances. Section C contains requirements for monitoring and reporting. This section includes conditions for representative sampling, flow measurement, monitoring procedures, penalties of tampering, reporting of monitoring results, additional monitoring by the permittee, averaging of measurements, retention of records, contents of records, and inspection and entry. Section D contains reporting requirements and includes conditions for reporting planned changes, anticipated noncompliance, permit transfers, progress on compliance schedules, noncompliance which may endanger public health or the environment, other noncompliances, and other information. Section D also contains signatory requirements and the consequences of falsifying reports. Section E contains the definitions of terms used throughout the permit.
PERMIT PROCESSING/PUBLIC COMMENT/APPEAL PROCESS

The beginning and end date of the public comment period to receive written comments regarding this permit, and the contact name and telephone number are included in the public notice. The permittee is the only party having standing to file a permit appeal. If the Permittee is dissatisfied with the conditions of the permit when issued, they may request a hearing before the EQC or its designated hearing officer, within 20 days of the final permit being mailed. The request for hearing must be sent to the Director of the Department. Any hearing held shall be conducted pursuant to regulations of the Department.

Updated 2-23-04 AR der
Figure 1

REFERENCE: USGS 7.5 MINUTE QUADRANGLE, SALEM WEST, OREGON; 1988.

SECOR
International Incorporated

SITE LOCATION MAP
OREGON STATE PENITENTIARY
2606 STATE STREET
SALEM, OREGON

Permit Evaluation Report and Fact Sheet
ODC – Oregon State Penitentiary
draft, 2003
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Attachment A: Antidegradation Review Sheet

FOR A PROPOSED INDIVIDUAL NPDES DISCHARGE
ANTIDEGRADATION REVIEW SHEET

1. What is the name of Surface Water that receives the discharge? Mill Creek

   Briefly describe the proposed activity:

   Is this review for a renewal OR new (circle one) permit application?
   Go to Step 2.

2. Is this surface water an Outstanding Resource Water or upstream from an Outstanding Resource Water?
   
   Yes. Go to Step 5.
   No. Go to Step 3.

3. Is this surface water a High Quality Water?
   
   Yes. Go to Step 8.
   No. Go to Step 4.

4. Is this surface water a Water Quality Limited Water?
   
   Yes. Go to Step 13.
   No. Go to Step 2. Note: The surface water must fall into one of three (3) categories: Outstanding Resource Water (Step 2), High Quality Water (Step 3), or Water Quality Limited Water (Step 4).

13. Will the proposed activity result in a Lowering of Water Quality in the Water Quality Limited Water?
   
   Yes. Go to Step 14.
   No. Proceed with Permit Application.
   Applicant should provide basis for conclusion. Basis: VOCs are the parameters monitored and limited in ODC’s discharge. VOCs are not parameters for which the Willamette River is 303(d)-listed. Also, a review of the last three years of data indicates no detections of VOCs in the discharge.
   Go to Step 24.
24. On the basis of the Antidegradation Review, the following is recommended:

_X_ Proceed with Application to Interagency Coordination and Public Comment Phase.

_____ Deny Application; return to applicant and provide public notice.

Action Approved

Section: Water Quality Permitting

Review Prepared By: Ben Maynard
Phone: (503) 378-8240, ext. 282
Date Prepared: January 27, 2004

Please provide the following information and submit with the completed application form to:
Department of Environmental Quality
Water Quality Division—Surface Water Management
811 SW Sixth Avenue
Portland, Oregon 97204-1390

Name: Steve Mitchell
Name of Company: Oregon Department of Corrections
Address: 1793 13th Street SE
Salem, OR 97302

Phone: (503) 378-2030
Fax: (503) 378-2034
**Attachment B**

**Facility Name:** ODC-Oregon State Pen.

**Date:** January 28, 2004

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<tr>
<th>Use Calculated Dilution?</th>
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<tr>
<td>Facility Effluent Flow (mgd)</td>
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<tr>
<td>Calculated Dilution</td>
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<tr>
<td>Customized Dilution</td>
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</table>

<table>
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<tr>
<th>PARAMETER</th>
<th># of Samples</th>
<th>Highest Conc.</th>
<th>Coef. of Variance</th>
<th>Maximum Effluent Conc.</th>
<th>Background Conc.</th>
<th>Maximum Conc. at complete mix</th>
<th>WQ CRITERIA Water and Fish Ingestion</th>
<th>Fish Consumption</th>
<th>Reasonable Potential?</th>
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<tr>
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