Groundwater Extraction and Treatment System Construction Completion Report, Former Baron-Blakeslee, Inc. Solvent Recycling Facility

Prepared for
Honeywell International Inc.

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Groundwater Extraction and Treatment System Construction Completion Report, Former Baron-Blakeslee, Inc. Solvent Recycling Facility

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Groundwater Extraction and Treatment System Construction Completion Report

This construction completion report has been prepared by CH2M HILL on behalf of Honeywell International Inc. (Honeywell) to document the completion of the Groundwater Extraction and Treatment System (GWETS) construction activities for the former Baron-Blakeslee, Inc. (BBI), Solvent Recycling Facility (the site) located at 5920 NE 87th Avenue in Portland, Oregon. Site work for the GWETS occurred at the property located offsite at 6440 NE 82nd Avenue.

Site Description

The site is a roughly 0.7-acre, triangular-shaped property located in an industrial park consisting of light industrial facilities. Constituents of concern (COCs) at the site are volatile organic compounds (VOCs) of chlorinated solvents (1,1,1-trichloroethane [1,1,1-TCA], tetrachloroethene [PCE], and trichloroethene [TCE]) in soil and groundwater. Part of the selected remedy for groundwater is a pump-and-treat system to remediate groundwater within the remedial action area as defined by the maximum contaminant level (Figure 1).

As outlined in the work plan (CH2M HILL, 2009), the groundwater remedy proceeded in two separate phases. The initial phase of the work included designing and constructing the offsite extraction wells, aquifer-testing those wells, and installing the groundwater conveyance pipelines and outfall. That work was completed in 2012. The second phase of the remedy included constructing the groundwater treatment plant and installing groundwater treatment components and controls.

Construction Activities

Overview

Construction activities commenced October 16, 2012, and process system installation was completed on June 10, 2013. Construction activities were completed in accordance with the design basis report (CH2M HILL, 2012) and included demolishing the existing building, constructing new treatment building, and installing extraction well pumps, controls, and water treatment equipment, including an air stripper and rapid mix/flocculation tank, and filter banks. The rapid mix/flocculation process may be needed to reduce naturally occurring lead and phosphorous concentrations in extracted groundwater to below permit discharge limits. Activities are described in more detail in the following sections. Final as-built drawings are provided in Appendix A.

Groundwater Extraction and Treatment System Construction

Activities for the second phase of GWETS construction began on October 16, 2012, and process system installation was completed on June 10, 2013. Construction activities included the following:

- Demolishing and recycling the building on the BBI site
- Performing site work associated with the groundwater treatment building
- Installing a prefabricated metal treatment building and associated earthwork and electrical and HVAC systems
- Installing extraction well pumps, piping within the vaults and associated controls, electrical and mechanical systems
- Installing treatment system, including inlet filters, air stripper, rapid mix/flocculation tank, final filters, and associated blower, pumps, piping, and ducting

- Installing portable eye wash and safety shower
- Installing flash mixer and flocculator and internal piping
- Installing air stripper and blower
- Installing treatment building electrical and control systems
- Installing yard piping and site electrical
- Connecting the system existing subsurface piping
- Setting up, calibrating, and starting up and commissioning equipment

The building foundation is curbed to provide secondary containment in the event of a release inside the treatment building. A 3-foot by 3-foot by 3-foot floor sump with sump pump is located in the middle of the building. All process areas in the building slope to the sump. The sump pump discharges to a 900-gallon recycle tank. A float switch with alarm is installed in the floor sump and triggers GWETS shutdown in the event of a high level detection within the sump.

Honeywell received concurrence during permitting from the City of Portland that a stormwater swale was not required to manage stormwater runoff from the building.

Prior to construction activities, erosion control measures were placed around the centrally located wetlands. Both City of Portland and third-party inspections were conducted to verify that construction activities complied with the drawings as approved by the City of Portland Bureau of Developmental Services. The third-party inspection report is presented in Appendix B. Final City construction permit closure is pending final inspections.

Startup Data

The GWETS was run for 10 days following system construction to evaluate system operations and evaluate compliance with the Cleanup Authorization Discharge Permit issued by Oregon Department of Environmental Quality (DEQ) on June 10, 2010, which defines the acceptable discharge limits to the Columbia Slough for the treated groundwater. The May-June 2013 discharge report submitted to DEQ on July 3, 2013, is provided in Appendix C. Analytical laboratory reports are provided in Appendix D.

Based on the sampling result, treatment for lead is not needed to meet the current permit discharge limits. The phosphorous removal system and air stripper are functioning properly, and treated groundwater is in compliance with the permit.

Off-gas Treatment Evaluation

Preliminary data evaluated during design indicate that off-gas treatment would not be required. During startup, GWETS influent data was used to evaluate the need for offgas treatment. Maximum allowable GWETS influent concentrations were back-calculated from DEQ risk-based allowable air emissions values assuming a GWETS flow rate of 240 gallons per minute (gpm) and 100 percent volatilization of site contaminants to the atmosphere. These calculations are an extension of the evaluation included as Appendix A of the design basis report (CH2M HILL, 2012). The calculated compliance values, along with GWETS influent data from the 10-day startup period are provided in Table 1.

As shown in Table 1, actual system flow rates are well below 240 gpm, and influent concentrations are well below the conservatively calculated values that would trigger off-gas treatment. Data confirm that off-gas treatment is not needed at this time.

The record of decision (DEQ, 2008) indicates that, if needed, solvent vapors recovered from the water could be removed from the air stripper offgas by using vapor-phase granular activated carbon (VGAC) filters. Carbon treatment will only be needed if the discharge exceeds acceptable risk levels (DEQ, 2006). According to DEQ (2006) document, off-gas treatment is required if any of the following conditions is met:

- Sum of the hazard quotients for noncarcinogenic compounds exceeds 1
- Number of carcinogenic compounds emitted exceeds 10
- Impacts from carcinogenic compounds exceed their permissible concentration increase

System influent concentrations will continue to be monitored at least annually to verify that offgas treatment is not needed.

Modifications to the Design Basis Report—Installation of the Groundwater Circulation Well System

The groundwater recirculation well (GCW) system at the BBI property was not installed. This change was made with concurrence from DEQ (2012; Coates, 2012), with whom it was agreed that in place of the GCW system, a focused feasibility may be conducted in the future to select a supplemental treatment technology for onsite groundwater treatment if needed, based on the performance of the GWETS.

System Operational Issues Identified

During the 10-day startup period, Honeywell received a noise complaint through the City of Portland. The GWETS was shut down pending completion of noise evaluation. Honeywell was able to reduce noise significantly by operating the air stripper blower at a higher rate. Additionally, Honeywell plans to install a silencer after the air stripper blower to reduce noise from the GWETS to within allowable sound levels in early fall 2013.

Construction Photographs

Selected photographs taken during construction activities are included in Appendix E.

References

CH2M HILL. 2009. *Remedial Design/Remedial Action Work Plan, Former Baron-Blakeslee, Inc., Solvent Recycling Facility Site, Portland, Oregon*.

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Coates, Anna/DEQ. 2012. Personal communication with Cindy Donnerberg/CH2M HILL. August 1.

DEQ (Oregon Department of Environmental Quality). 2006. *Guidance for Managing Hazardous Substance Air Discharges from Remedial Systems.*

DEQ (Oregon Department of Environmental Quality). 2008. *Record of Decision, Final Remedial Action for Former Blakeslee, Inc. Solvent Recycling Facility Site*. September.

DEQ (Oregon Department of Environmental Quality). 2012. Letter r.e. Onsite Groundwater Recirculation Wells, Former Baron-Blakeslee, Inc., Solvent Recycling Facility Portland, Oregon. July 17.

TABLE 1
Offgas Evaluation
Former Baron-Blakeslee Facility, Portland, Oregon

Sample Name	PCE	TCE	1,1,1-Trichloroethane	1,1-Dichloroethene	Flow Rate[a] (gpm)
Maximum groundwater influent concentrations before gas treatment required (µg/L)[b]	*8,052*	*436*	*6,487,102*	*585,249*	*240*
WTPINF 310513-1440	850	340	13	44	129
WTPINF 010613-1740	830	340	13	45	170
WTPINF 020613-1340	750	310	12	41	171
WTPINF 030613-1250	640	270	11	37	171
WTPINF 040612-1030	580	240	9.5	34	172
WTPINF-100613-1045	460	210	7.9	28	171

[a] Average daily flow rate.
[b] Values back calculated from allowable DEQ air emissions assuming 240 gpm and 100 percent volatilization.