COLBERT LANDFILL

BACKGROUND

The Colbert Landfill is located approximately 2.5 miles north of Colbert, Washington, and approximately 15 miles north of Spokane, Washington. The closed landfill is surrounded primarily by rural residential development and open lands. The area south of the site contains forested lands, open fields, and a few residential homes. The Spokane County Recycling Center and Transfer Station is located immediately west of the site's groundwater treatment facility. There are residences located within the footprint of the groundwater plume in all directions around the landfill.

The landfill operated from 1968 to 1986. During a 5-year period between 1975 and 1980, the landfill accepted spent solvent and other chemical waste that were subsequently poured into open tranches to mix with the soil or ordinary municipal refuse already in the trench. The solvents typically included 1,1,1-trichloroethane (TCA); methyl ethyl ketone (MEK); poly thinner; enamel thinner; toluene; paint remover; and primer wastes.

In 1980, EPA, Washington State Department of Ecology (Ecology), and the Spokane County Utilities Department conducted an investigation into public complaints about disposal practices by initiating a groundwater sampling study of nearby domestic water wells. Groundwater samples collected from 20 domestic wells contained contaminants at concentrations above drinking water standards that were, in part, traced to the spent solvents disposed of at the landfill.

Following domestic well sampling, a Remedial Investigation/Feasibility Study (RI/FS) was completed and EPA issued a Record of Decision (ROD) in 1987, which selected a remedy based on the results of the RI/FS. The selected remedy included a pump and treat (P&T) system for groundwater, landfill closure and post-closure components for source control, plus institutional controls and an alternate water supply to impacted residents. Additional site characterization and investigation was completed in 1990 as part of the Phase I engineering assessment (Landau Associates 1991) to collect additional information needed to initiate final design of the P&T system.

Construction of the P&T system was completed in 1994 The P&T system operated successfully for 20 years. In 2014, an EPA recommended shut-down test was initiated to determine if the facility was continuing to add any significant benefit to the cleanup.

The programs currently in place include a Shut-Down Test (lower aquifer) for the pump and treat system; and upper aquifer compliance groundwater monitoring (includes 1,4-dioxane monitoring and MFS monitoring of the upper aquifer); residential well monitoring (includes both upper and lower aquifers); supplemental sampling (includes both upper and lower aquifers); and landfill cover maintenance and monitoring.

- *1968: Colbert Landfill begins accepting commercial and residential refuse.*
- *1975-1980: Keytronic, Fairchild Air Force Base, and other PRPs dispose of organic solvents at the Colbert Landfill.*
- *1980: EPA, Ecology, and the County conduct groundwater sampling in domestic wells due to public complaints about disposal practices.*
- *1986: Colbert Landfill closes.*
- *1987: RI/FS and RODs issued*
- *1994: P&T system completed*
- *2014: Shut-down test initiated*

GEOLOGY/HYDROLOGY

The geology beneath the site consists of vertically stratified and laterally discontinuous geologic units derived from glacial and fluvial material modified by erosional (and possibly landslide) processes; overlaid on granitic bedrock.

TWO PRIMARY AQUIFERS:

1. The Upper Sand and Gravel Unit (Upper Aquifer) is unconfined with a water table that lies approximately 90 feet below the ground surface (BGS). Groundwater flow in this aquifer is generally north to south, changing to the southeast approximately one mile south of the site. The direction of flow appears to be influenced by the topography of the upper surface of the Lacustrine Aquitard.
2. The Lower Sand and Gravel Unit aquifer (Lower Aquifer) is confined to the west of the landfill and unconfined to the east of the landfill. To the west, the Upper and Lower aquifers are separated by the Lacustrine Unit, which causes confined conditions in that area. Groundwater flow in the Lower Aquifer is predominantly towards the west with discharge to the Little Spokane River. However, there is a lobe of the Latah Aquitard extending into the aquifer from the east side of the landfill and appears to separate the aquifer flow so that north of the landfill flow is west to southwest and south of the landfill flow is northwest. There is no leachate collection system on site.

SHUTDOWN EVALUTION AND REPORTING

The following shutdown test criteria and facility restart triggers will be used when evaluating groundwater monitoring results from the Lower Aquifer compliance wells to determine whether

groundwater quality monitoring during the shutdown test needs to be modified or whether the P&T system needs to be restarted.

ACTION LEVEL CRITERIA

- Action Level Criteria equal to 65% of the Evaluation Criteria for each COC will be used for purposes of the putdown test and are presented below. This is the same criteria as used for domestic well sampling and adjustment control criteria and will be used to modify sampling frequencies.

COC	ACTION LEVEL CRITERIA (UG/L)
TCA	130
DCA	2632
DCE	4.55
MC	1.6
PCE	0.5
TCE	3.25

Table 1. Action Level Criteria from the Colbert Landfill Shutdown Plan.

CONSENT DECREE EVALUATION CRITERIA

- In the event there is an exceedance of the Evaluation Criteria, in a compliance monitoring well, confirmation sampling will be conducted by collecting three consecutive samples taken at one month intervals. If all confirmation samples are above the criteria the system will be restarted.

COC	EVALUATION CRITERIA (UG/L)
TCA	200
DCA	4050
DCE	7
MC	2.5
PCE	0.7
TCE	5

Table 2. Evaluation Criteria from the Colbert Landfill Shutdown Plan.

CURRENT SAMPLING

PROGRAM	AQUIFER	PARAMETERS	SCHEDULE
Shut-down Test	Lower	VOCs	Quarterly
Upper Aquifer Compliance	Upper	VOCs	Annual (extraction wells quarterly)
1,4-Dioxane Sampling	Upper	1,4-Dioxane	Annual
MFS Monitoring	Upper	Inorganics	Annual
Residential Monitoring	Lower/Upper	VOCs	Monthly/Quarterly/ Semi annual/Annual/Bi annual
Supplemental Sampling	Lower/Upper	VOCs	Every 5 years

Table 3: Current Monitoring Programs at the Colbert Landfill Site.

LANDFILL GAS

Due to the old age of the landfill, there are no large quantities of landfill gas being generated at this time. In fact, the emissions are so low that they meet *de minimis* standards that allows for open venting. The Site, however, does use a carbon filter for the collected landfill gas.

SURROUNDING AREAS

As stated above, multiple residences fall within the footprint of the Colbert Landfill contamination plume. The area however is predominantly rural. The Little Spokane River is approximately 3,000 feet to the west of the Site and immediately north of the sought-out Mead School District. The County owns parcels immediately north and west of the Site, and the North Transfer Station is situated adjacent to the Site to the west.