



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

Northwest Regional Office • 3190 160th Ave SE • Bellevue, WA 98008-5452 • 425-649-7000
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

January 17, 2020

Gary Zimmerman
Golder Associates Inc.
18300 NE Union Hill Road, Suite 200
Redmond, WA 98052-3333

Dear Gary Zimmerman,

The Department of Ecology (Ecology) appreciates the progress the Landsburg Mine Site PLP Group has made in the cleanup of this site. Ecology also appreciates the additional actions taken by the PLP Group to address the 1,4-Dioxane detected at a few of the monitoring wells located at the former north portal of the site. To date, the 1,4-Dioxane concentrations range from 1.5 µg/L to 2.3 µg/L, at two compliance monitoring wells (LMW-2 and LMW-4) and one sentinel well (LMW-12).

These sample results showing relatively low concentrations of 1,4-Dioxane are limited in extent. This contaminant has not been detected at other parts of the site, including its southern half where the Rock Creek Watershed and Clark Springs Water Supply are located. Furthermore, additional monitoring wells installed downgradient and between site wells and the Cedar River indicate that 1,4-Dioxane has not reached the Cedar River or nearby private wells. This is reassuring news that the rest of the site and surrounding areas have not been impacted by this contaminant of concern (COC).

Nonetheless, these results exceed the standard MTCA Method B cleanup level (CUL) for 1,4-Dioxane, which is 0.44 micrograms per liter (µg/L).

Furthermore, the PLP Group's 1,4-Dioxane Alternative Source Evaluation Report, dated May 13, 2019, concluded that this contaminant is likely originating from wastes placed in the former mine, although it is sporadically located and at relatively low levels with a flat trend in concentration over time. And although it appears that the exceedances are only persistent at these three monitoring wells (LMW-2, LMW-4, and LMW-12), it also appears very likely that they will persist into the long-term confirmational monitoring phase of the cleanup.

According to Exhibit D of the Cleanup Action Plan (Compliance Monitoring Plan), an exceedance of a COC above the MTCA cleanup level and/or fractions thereof (0.25 times and 0.5 times) triggers various requirements for implementing contingency actions (see attached figures). Based on the sampling data provided to date, Ecology has determined that the



following concentration thresholds (triggers for remedial action) have been exceeded at the north portal wells as seen in this annotated Table A-4 from the Compliance Monitoring Plan:

TABLE A-4: Contingent Groundwater Extraction and Treatment System Plan Triggers

Contingency Plan Phase of Work	Trigger Event		DETECTION
	Sentinel well ^[1]	Compliance well	
<i>Increased frequency of groundwater monitoring (see Table A-3) and conduct alternative source evaluation</i>	0.25 MTCA CUL = 0.11 µg/L		LMW-12: 1.1 µg/L to 1.6 µg/L (6 rounds of sampling)
<ul style="list-style-type: none"> • Submit to Ecology contingent groundwater extraction and treatment system Engineering and Design Report (EDR), including schedule for all subsequent activities and permitting requirements • Design submittal: Within 30 days • Ecology Review, approvals and permitting: (estimated 2 to 4 weeks) 	0.5 MTCA CUL = 0.22 µg/L		
<i>System Installation</i>	Reaches cleanup levels = 0.44 µg/L		
<i>System startup, optimization, and operation (including pumping)</i>		0.5 MTCA CUL = 0.22 µg/L	<ul style="list-style-type: none"> • LMW-2: 1.5 µg/L to 2.1 µg/L (8 rounds of sampling) • LMW-4: 1.5 µg/L to 2.3 (8 rounds of sampling)
<i>System shutdown</i>		Compliance well and pumped effluent below 0.5 MTCA CUL for 4 monitoring events (minimum 1 year)	

^[1] Sentinel wells are closer to the wastes disposal area than compliance wells, to provide early detection of a contaminant release.

Modeling of contaminant travel times indicate it will take from months to years before a cleanup level is reached at the compliance wells.

In addition, Table A-4 highlights the associated contingency plan actions for these trigger events.

Because the above exceedances have been verified and no alternative source of the contamination has been identified, the Consent Decree requires the PLPs to begin implementing contingency actions pursuant to the Contingent Groundwater Extraction and Treatment System Plan (Exhibit D, Part C). See Consent Decree Section VI.A.4 and Exhibit D, Part A, at A-6 (step

Gary Zimmerman

January 17, 2020

Page 3

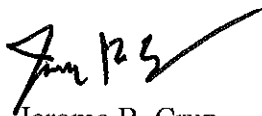
#6). The first step involves designing an extraction and treatment system that is tailored to the 1,4-Dioxane contamination detected in monitoring wells LMW-2, LMW-4, and LMW-12.

Pursuant to the Contingent Groundwater Extraction and Treatment System Plan (Exhibit D, Part C), the PLP Group must submit a draft Engineering Design Report (EDR) and contingent system-specific Operation and Maintenance (O&M) Plan for Ecology's review and approval within 30 days.

During this 30-day period, Ecology would like to give the PLP Group and consultant for the PLP Group an opportunity to respond to this determination and collaboratively discuss potential system designs that will adequately remediate the 1,4-Dioxane contamination at the site.

With this in mind, Ecology would like to schedule a planning meeting with TCP, the AGO, the PLP Group, and consultant for the PLP Group in the near future. Please contact me by February 3, 2020 to help coordinate this meeting.

Respectfully,



Jerome B. Cruz

Site Manager

Toxics Cleanup Program, Northwest Regional Office

cc: William Kombol, Palmer Coking Coal
Caroline Cress, AGO-Ecology Division
Robert Warren, TCP-NWRO

Table A-4: Contingent Groundwater Extraction and Treatment System Plan Triggers

Contingency Plan Phase of Work	Trigger Event		Completion Time
	Sentinel well ^[1]	Compliance well	
<i>Increased frequency of groundwater monitoring (see Table A-3) and conduct alternative source evaluation</i>	0.25 MTCA CUL		
<i>Submit to Ecology contingent groundwater extraction and treatment system Engineering and Design Report (EDR), including schedule for all subsequent activities and permitting requirements</i>	0.5 MTCA CUL		Design submittal: Within 30 days
			Ecology Review, approvals and permitting: (estimated 2 to 4 weeks)
<i>System Installation</i>	Reaches cleanup levels		According to schedule in Ecology approved EDR (estimated 2 to 4 weeks)
<i>System startup, optimization, and operation (including pumping)</i>		0.5 MTCA CUL	According to schedule in Ecology approved EDR (estimated 2 weeks)
<i>System shutdown</i>		Compliance well and pumped effluent below 0.5 MTCA CUL for 4 monitoring events (minimum 1 year)	

^[1] Sentinel wells are closer to the wastes disposal area than compliance wells, to provide early detection of a contaminant release. Modeling of contaminant travel times indicate it will take from months to years before a cleanup level is reached at the compliance wells.

Note: Iron, manganese, and arsenic are analytes associated with the coal mine water and monitored concentrations are not associated with Landsburg Mine Waste and will not be used as a trigger, unless a significant increase in concentrations occur and an alternative source is not identified.

See Section 1.7.2 of the Compliance Monitoring Plan for trigger action response details.

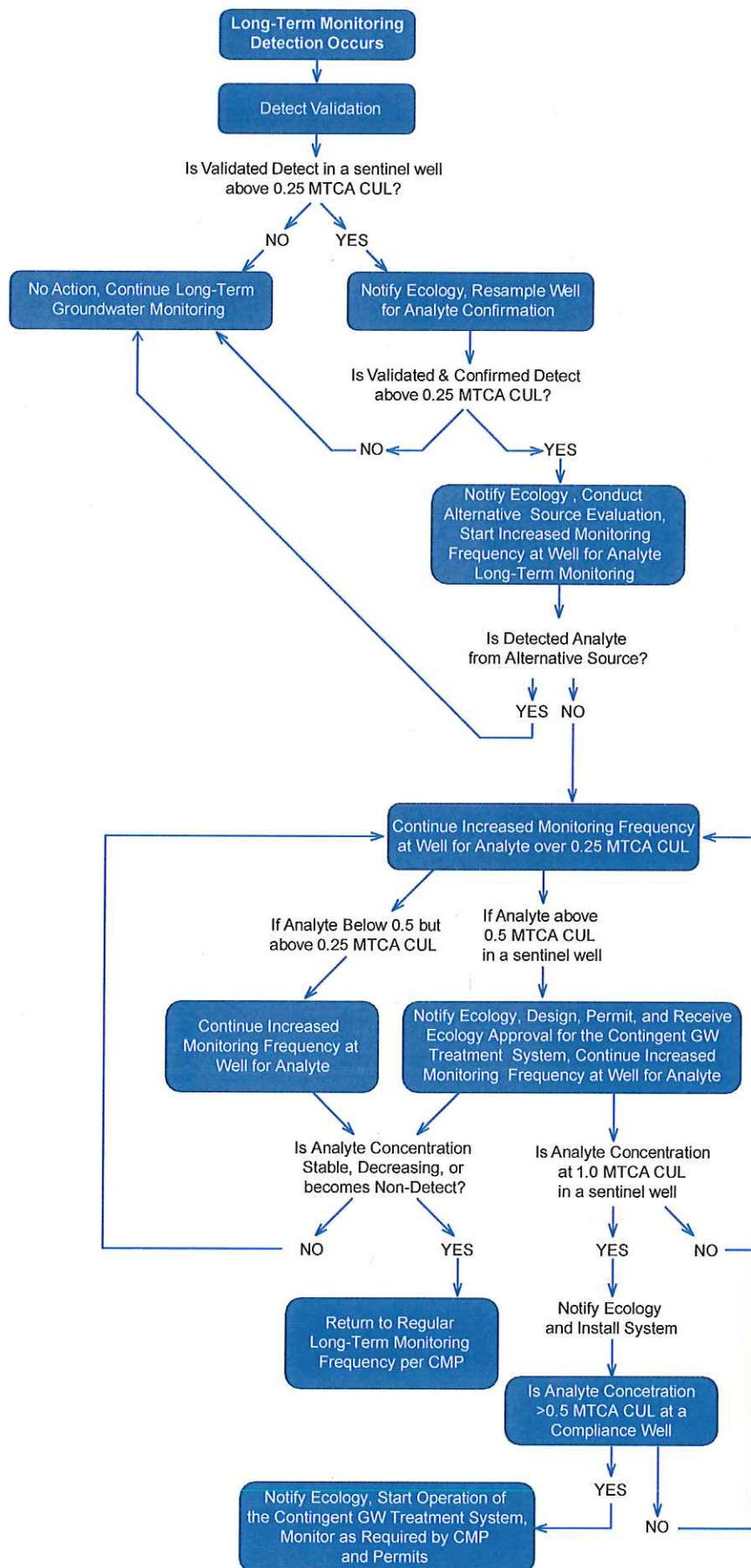


FIGURE A-8
**REMEDIAL ACTION TRIGGERS FOR DETECTIONS
 AT SENTINEL AND COMPLIANCE WELLS**
 PALMER/LANDBURG MINE/WA