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**Addendum to Idaho Pole Company 4th Five Year Review Report, dated September 15, 2015**

A Five-Year Review addendum is generally completed for remedies where the protectiveness determination is deferred until further information is obtained. When deferring protectiveness in the Five-Year Review report, EPA typically provides a timeframe for when the information will be obtained and a protectiveness statement can be made. This document provides progress since the Five-Year Review and protectiveness determinations for the remedies where the statement was deferred in the September 30, 2015 Five-Year Review.

The 4th Five-Year Review Report (Report) for the Idaho Pole Company Site in Bozeman, Montana was signed by Martin Hestmark, Assistant Regional Administrator Office of Ecosystem Protection and Remediation on September 30, 2015. The protectiveness statement outlined in the Report was as follows:

*"A protectiveness determination of the Operable Unit 01 (OU01) remedy cannot be made until further information is obtained. While dioxin was identified as a contaminant of concern for groundwater, no dioxin groundwater samples have been taken since the Record of Decision was issued, and sampling is necessary. Recently discovered residual non-aqueous phase liquid (NAPL) groundwater sources need to be addressed. Although institutional controls are in place, including a deed restriction on the property and a controlled groundwater area (CGWA) that restricts potable use of the groundwater, residual source material continues to impact groundwater. It is expected that the groundwater dioxin sampling and residual source area remediation actions will take approximately three years to complete, at which time a protectiveness determination will be made."*

This addendum addresses the Protectiveness Statement for OU01 for the 4th Five-Year Review.

**Progress Since the Five-Year Review Completion Date**

The 4th FYR included two issues and recommendations that were the basis for deferring protectiveness for OU1. In addition, since 2015, two additional issues were identified and promptly addressed. The resolution of all issues is discussed below.

Resolution of Five-Year Review Issues
*Issue #1: Dioxin Analysis of Groundwater*
*Recommendation #1: Sample shallow aquifer for dioxin analysis*

Activities Completed: Dioxins were identified as a contaminant of concern in the Record of Decision (ROD) in soils and groundwater because these compounds form from incomplete combustion during the manufacturing of pentachlorophenol (PCP), a contaminant of concern (COC) at the Idaho Pole Company Site (Site). However, no groundwater samples were analyzed for dioxins since the ROD was issued in 1992 because prior samples

collected during the investigation never exceeded the ROD cleanup standard of 30 picograms/Liter (pg./L). Therefore, a protectiveness determination could not be made for groundwater.

Groundwater samples were collected for dioxin analysis in January and March 2016 from 4 wells. These wells included a background well (19-A), two source area wells (P-4 and 5-A) and a downgradient well (GM-4). Sample results for the two sampling events were below the ROD cleanup standards for dioxin calculated as Toxicity Equivalents (TEQs). While elevated dioxin levels were found in the barkfill source area at 5-A and P-4 in January, concentrations were below the ROD cleanup level of 30 pg/L (21 pg/L @ 5-A and 20.1 pg/L @ P-4). Toxicity Equivalents calculated for dioxin from the downgradient and upgradient well (GM-4 @ 6.1 pg/L and 19-A @ 5.23 pg/L respectively) were lower than the source area wells in January. The analytical results were below laboratory detection limits for all wells in March.

The results discussed above provide analytical evidence that the residual dioxins in the subsurface saturated soils are not contributing significantly to groundwater contamination.

*Issue 2: Potential residual source material in the area of the Bark Filled Extraction Gallery (BFEG)*
*Recommendation: Perform pilot testing to remediate residual source material*

Activities Completed: A pilot study was conducted with the purpose of addressing residual source material and PCP concentrations in groundwater upgradient of the BFEG to levels low enough that pump and treat could be discontinued. The Groundwater Recovery System (GRS) was extracting and treating approximately 100 gallons per minute of groundwater from the source area but only a few pounds of contaminant mass was being recovered for the past several years. Therefore, bioamendments and a biosurfactant were injected into the vadose zone of the barkfill source area in 2015 and 2016 to enhance biological degradation of the more hydrophilic wood treating constituents - PCP, polycyclic aromatic hydrocarbons (PAHs), dioxins and diesel range organics (DROs) - that remain in isolated pockets in the BFEG source area subsurface soils.

To analyze the effectiveness of the pilot study and determine if groundwater extraction and treatment could be terminated, a robust groundwater sampling for dioxins, PCP, PAHs, and DROs was conducted after injections and sentinel wells with established concentration criteria were established to support an analysis of pilot study success and termination of the pump and treat system. In summary, analytical results throughout the plume did not indicate an increase in groundwater concentrations in the source area. In addition, downgradient sentinel wells did the exceed the established concentration criteria. Based on the analytical results, EPA, in consultation with Montana Department of Environmental Quality (DEQ), allowed for the temporary shutdown of the GRS for one year.

Groundwater results collected during the temporary shutdown indicated that COC concentrations continued to decrease or had stabilized and there was no significant migration of dissolved COCs beyond the source area wells. Therefore, EPA submitted an email to Idaho Pole Company allowing for permanent shutdown and decommissioning of the GRS on October 30, 2017 pending no public opposition. A fact sheet was sent out to area residents and stakeholders, and several public meetings were held on December 11 and 12, 2017 to discuss permanent shutdown of the GRS. There was no public concern expressed for shutdown and decommissioning of the GRS. Therefore, EPA directed Idaho Pole to develop a workplan that lays out the monitoring requirements post GRS. This workplan was approved in August 2018.

*Other Activities conducted since the last Five-Year Review*

Two additional issues were identified since the 4th Five-Year Review was issued and have since been resolved. The issues and their resolution are discussed below.

1) **Residential Wells Downgradient of Source Area Have Not Been Sampled for Polycyclic Aromatic Hydrocarbons**

During a meeting with the Gallatin City-County Board of Health (Board) on March 1, 2018, the Board expressed concerns that while residential wells located downgradient of the source area are sampled annually for PCP, these wells have not been sampled for PAHs. Groundwater samples from five residential wells located within the controlled groundwater area were collected in April 2018 and analyzed for PAHs. All PAH compounds were below laboratory detection limits in the five samples. These residential wells will continue to be sampled annually for PCP.

2) **Soil Used As Backfill Was Not Sampled for Dioxins**

As part of a thorough document review to support partial deletion of the soils from the National Priorities List, it was determined that no dioxin samples were collected of the soils that were used as backfill. Therefore, five-point composite soil samples were collected from four locations in June 2018 and analyzed for dioxin. Dioxin TEQs calculated for the four composite surface soil samples ranged from 12 nanograms/kilogram (ng/Kg) to 570 ng/Kg, all of which are below the ROD clean up level of 1,000 ng/Kg. Therefore, the backfill does not contain dioxin at levels that would question the protectiveness of those implemented actions. Partial deletion of the surface and unsaturated subsurface soils is anticipated in 2019.

**Issues and Recommendations**

All issues identified in and following the 4th Five Year Review have been resolved. There are no new issues and recommendations.

**Protectiveness Statement**

Based on new information and actions taken since the Five-Year Review completion date, issues identified in the 4th Five-Year Review pertaining to remedy protectiveness and other issues identified since 2015 have been addressed. The protectiveness statement for OU01 is being revised as follows:

*"The remedy at OU1 is protective of human health and the environment."*

**Next Five-Year Review**

The next Five-Year Review will be completed on September 30, 2020, five years after the signature of the last Five-Year Review report.

Betsy Smidinger Date 3/11/19

Betsy Smidinger
Assistant Regional Administrator
Office of Ecosystem Protection and Remediation

Supporting Documentation:
*Proposed In-Situ Enhanced Biodegradation Phase II Pilot Study Workplan,* June 2016
*Results of Dioxin Testing in Groundwater at Select Wells – Revised*, June 14, 2016
*Agency Approval to Allow for Temporary Shutdown of the Groundwater Recovery System, Idaho Pole Company Site, Bozeman*, December 5, 2016
*Shutdown and Decommissioning of the Groundwater Recovery System at the Idaho Pole NPL Site*, October 30, 2017
*Idaho Pole Fact Sheet*, November 2017
*Public Meeting Presentation Regarding Idaho Pole December 12, 2017*
*Idaho Pole Site Report of PAH sampling at Select Wells- April 2018,* July 2, 2018
*Idaho Pole Company Site Specific Monitored Natural Attenuation Work Plan,* August 2018
*Idaho Pole Company Site Bozeman, Montana – Report of Surface Soil Sampling June 2018,* July 2018
*2017 Groundwater Assessment Report Idaho Pole Company Site Bozeman, Montana*, July *2018*