



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 10

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OFFICE OF  
ENVIRONMENTAL CLEANUP

September 4, 2013

**MEMORANDUM**

**SUBJECT:** Evaluation of Historical Mercury Data Reported for the Salt Chuck Mine Superfund Site, Prince of Wales Island, Alaska

**FROM:** Karen Keeley, EPA RPM

**TO:** Salt Chuck Mine Superfund Site, Site File Folders 1.7 and 2.8.2

The purpose of this memorandum is to document the rejection of suspect mercury data that were collected in July 2002 and reported in the Draft Engineering Evaluation and Cost Analysis (EE/CA; URS 2007) for the Salt Chuck Mine Superfund Site. Based on a data assessment, the EPA Region 10 Office of Environmental Assessment determined that the mercury sediment data are rejected because the data reporting limits did not meet the Data Quality Objectives for risk analysis, and data are not comparable to previous and subsequent mercury sediment data for the site (Matheny, D., personal communication, August 29, 2013). This determination is applicable to twelve sediment samples: SCSD-1, 2, 3, 6, 7, 8, 12, 14, 15, 16, 17, and 19, as well as other media samples.<sup>1</sup>

For these twelve sediment samples, mercury concentrations were reported as undetected with reporting limits generally between 4 and 5 ppm, with one exception. Sediment sample SCSD-2 reported 5.53 ppm mercury with a Practical Quantification Limit (PQL) of 4.91 ppm (Table 2-13, Figure 2-12, and Section 2.5.2.3.5; URS 2007; Attachment A). This single data point has been previously identified as a maximum mercury concentration in sediments at the site, and has been used in presentations<sup>2</sup> and reports for Salt Chuck Mine. In part, the purpose of this memorandum is to clarify for the record that the reported mercury concentration of 5.53 ppm for location SCSD-2 is rejected, and any assessments or statements based on these data are not appropriate (e.g., statements that “sediment samples indicate elevated levels of mercury” are inaccurate). The rejection of these data does not impact the ongoing risk assessments for the site,

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<sup>1</sup> This determination also applies to mercury data reported for five soil background samples (SCSS-BG 1, 2, 3, 4, and 5; Table 2-5), unsaturated tailings samples (SCUT-1, 3, 4/5, and 6; Table 2-6), one stream tailings sample (SCST-1; Table 2-10), and intertidal tailings samples (SCIT-3, 4 and SCSD-9, 10, 18, and 20; Table 2-11) in URS 2007. Note: For these samples, all mercury concentrations were reported as undetected with high reporting limits.

<sup>2</sup> On January 26, 2010, an EPA presentation to the “SedHeads” group (sediment cleanup project managers) included two slides that described mercury, including a table showing 5.53 ppm mercury in sediments (Attachment B); with this memorandum, the concentration of 5.53 ppm mercury in sediments has been rejected and statements that sediment samples had elevated levels of mercury are inaccurate.

as the Risk Assessment Work Plan is being implemented utilizing data obtained from the 2011, 2012, and 2013 field efforts.

### Background

The EPA National Priorities List (NPL) Site Narrative for Salt Chuck Mine Superfund Site includes the following text:

*Contaminants in the sources, surface water and sediments include copper, mercury, polychlorinated biphenyls (PCBs), and benzo-a-anthracene. Concentrations of all of these contaminants in upland sources exceed EPA cleanup guidelines for soil and mercury. Copper concentrations in the Bay exceed EPA risk assessment guidelines. Copper and mercury detected in clam tissues in the Bay exceed the consumption guidelines for mercury in fish tissue issued by the Alaska Department of Health and Social Services.*

<http://www.epa.gov/superfund/sites/npl/nar1812.htm>

The site narrative indicates that mercury is a contaminant at the site, and that mercury concentrations in clam tissues in the Bay exceed consumption guidelines.

On January 26, 2010, an EPA presentation to the “SedHeads” group (comprised of sediment cleanup project managers) included information on mercury in sediments (Attachment B). A maximum concentration of 5.53 ppm mercury was reported for sediments collected in July 2002 from sample location SCSD-2 in Salt Chuck (see Figure 2-12; URS 2007). Sample SCSD-2 was located distant from the mill, west of Unnamed Island in an area that is believed to be unimpacted by the mine, as evidenced by the low copper concentration (48 mg/kg) in sediments at this location.

Based on a recent data assessment of the July 2002 mercury data for solids, EPA determined that these data, particularly Sample SCSD-2, should be rejected and should not be used to evaluate site risks to humans or the environment. The rationale for this determination is provided below:

- In the 2002 field effort, only one of the 17 sediment and intertidal tailing samples had detected concentrations of mercury. Sample SCSD-2 reported 5.53 ppm mercury with a PQL of 4.91 ppm. The non-detect concentrations for all other samples are high by at least a factor of 10 (e.g., typical PQL for undetected concentrations were reported at levels between 4 and 5 ppm).
- The EPA Office of Environmental Assessment, Environmental Services Unit (Matheny, D., personal communication, August 29, 2013) reviewed the CT&E Environmental Services Laboratory Data Report (Appendix A to URS 2007<sup>3</sup>) and noted that the data are suspect, and should be rejected:

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<sup>3</sup> This USFS draft EE/CA (URS March 2007) was modified, and the pre-2007 sediment, surface water, saturated tailings, and clam tissue data were not carried forward into the USFS final EE/CA (URS 2010).

- The lab's reporting limits (or PQLs) for the 2002 mercury analysis in sediments are not comparable to any of the other mercury analyses conducted on sediments at this site and do not meet any of the current data quality objectives.
- The laboratory did not appear well equipped to analyze these samples for mercury as the reporting limits for all the samples were greater than that of the method blank by more than a factor of 200 (Method blank was non-detected at 0.02 mg/kg, non-detected values for samples were > 4 mg/kg).
- Given the uncertainty associated with raising the reporting limits (dilution is presumed), for sample SCSD-2 the reporting limit was almost indistinguishable from that of the sample result (5.53 mg/kg with a PQL of 4.91 mg/kg).
- Mercury concentrations in sediments collected in the Salt Chuck area prior to and subsequent to the 2002 sampling effort show much lower mercury concentrations, and the 2002 outlier value of 5.53 ppm mercury was not repeated in other studies<sup>4</sup>:
  - 1995 – Mercury concentrations ranged from 0.02 to 0.07 ppm in 6 sediment samples (URS 2007).
  - 1997 – Mercury concentrations ranged from 0.02 to 0.07 ppm in 12 sediment samples (URS 2007).
  - 2006 – Mercury concentrations ranged from ND to 0.05 ppm in 7 sediment samples (URS 2007).
  - 2011 – Mercury concentrations ranged from ND to 0.08 ppm in 47 sediment samples, and no samples exceeded marine benchmarks. When intertidal tailing samples are combined with the sediment samples, mercury concentrations were detected in 46% of the samples, with only 2 of 63 samples [representing 57 locations] exceeding both marine benchmarks (CH2M HILL 2012).<sup>5</sup>
  - 2012 – Mercury concentrations ranged from ND to 0.21 ppm in 40 surface and 2 subsurface sediment samples, and only 3 of the 42 samples exceeded the lower of the two benchmarks (CH2M HILL 2013).

Given historical and recent mercury concentrations in sediment and tissue in the vicinity of the site, it is not expected that mercury will be a contaminant of interest for sediment or other media in the intertidal area adjacent to the mine.

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<sup>4</sup> Note that the Washington State Sediment Management Standard for mercury in marine sediments is 0.41 ppm (Sediment Quality Standard) and 0.59 ppm (Cleanup Screening Level). The Dredged Material Management Program (DMMP) Bioaccumulation Trigger for mercury is 1.5 ppm.

<sup>5</sup> Marine Benchmarks: sediment and tailings sample results were compared to the NOAA Effects Range Low (ERL) and Effects Range Medium (ERM) marine benchmarks (Long et al., 1995; Buchman, 2008).

## References

CH2M HILL. May 7, 2012. Salt Chuck Mine – Preliminary Findings for Pre-Remedial Investigation 2011 Field Sampling Activities. Prepared for USEPA Region 10, Seattle, WA.

CH2M HILL. February 27, 2013. Salt Chuck Mine – Preliminary Findings for 2012 Remedial Investigation Field Sampling Activities. Prepared for US EPA Region 10, Seattle, WA.

Matheny, Don. August 29, 2013. Personal communication to Karen Keeley, EPA Region 10, Seattle, WA.

URS. 2007. Engineering Evaluation and Cost Analysis (EE/CA) Draft Report for the Salt Chuck Mine, Tongass National Forest, Prince of Wales Island, Alaska. Prepared for the U.S. Department of Agriculture Forest Service – Alaska Region. URS Group, Inc., Anchorage, Alaska. March 2007.