Citizens for a Clean Columbia

Our mission: to advocate for a clean Columbia River ecosystem

NEWSLETTER JANUARY 2022

Who are we?

Citizens for a Clean Columbia (CCC) is a volunteer organization focused on advocating for the health of the Upper Columbia River (UCR) and Lake Roosevelt. Visit us on our website https://citizensforacleancolumbia.org or on Facebook https://www.facebook.com/groups/315230442457913/ or contact us at citizensforacleancolumbia@gmail.com.

News in Brief

Interim Partial Remedial Investigation (RI) Report for the Upland Study Area

- The objective of this report is to summarize activities conducted to characterize the study area, sources of contamination, nature and extent of contamination, and the transport and fate of focus metals within the Upland Study Area.
- EPA along with CCC have major concerns with this Report; formal comments will be transmitted to Teck America Inc. (TAI) to address.

Soil Amendment Technology Evaluation Study (SATES): Data Summary Report of Phase II Bench Scale Treatability Testing

- In this study, soil samples were collected from one of 4 experimental test plots in the fall 2019 and evaluated in the laboratory over 6-months.
- Twelve soil amendments, alone or in combination, were tested. Samples showing the greatest change in lead level and lead bioaccessibility (time 1 to 3) were biosolids, compost, soluble phosphate and biosolids, and biosolids and wood ash.

Northport Waterfront Cleanup Update

- The WA Department of Ecology completed a draft Cleanup Action Plan and will make this plan available soon for public review and comment.

Tribes Awarded Environmental Justice Grant

- The Confederated Tribes of the Colville Reservation along with Spokane Tribe of Indians, CCC and U of WA were awarded an Environmental Justice Grant to establish local air monitoring.

Technical Advisor Update

- Joe focused over the past six months on the SATES, the Interim Partial Upland (IPU) Baseline Ecological Risk Assessment (BERA), the Phase 3 Sediment Study and the IPU RI.

CCC Honors the Life of John Roland

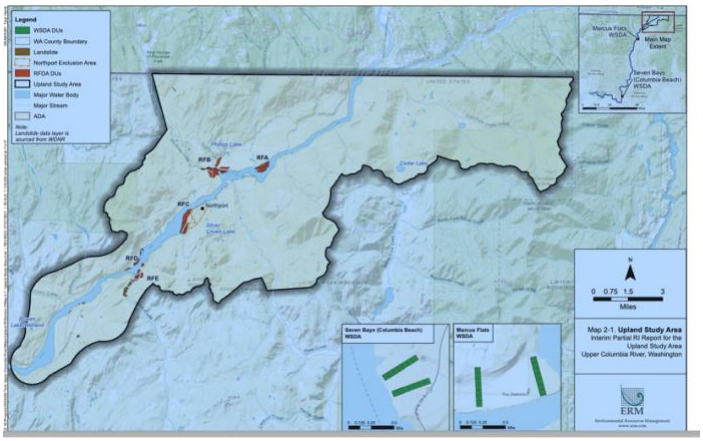
- John Roland, friend, river advocate, and senior hydrologist of the WA Department of Ecology died October 10, 2021. He is warmly remembered.

Draft Interim Partial RI Report

Teck has submitted a draft Interim Partial RI for regulatory and stakeholder review. This draft report attempts to summarize activities conducted to characterize the study area, sources of contamination, nature and extent of contamination, and the transport and fate of focus metals within the Upland Study Area. The report also summarizes results from the Human Health Risk Assessment and the ongoing Baseline Ecological Risk Assessment. These findings will be combined with the upcoming Draft Interim Partial Riverine RI into a Draft Site-wide RI for the Upper Columbia River (UCR).

Three main areas are considered: the aerial deposition area (ADA), the relict floodplain deposition areas (RFDA), and the windblown sediment deposition areas (WSDA). These are shown in the map below. The ADA includes the northernmost 100 square miles of the Upland Study Area, extending from the U.S.-Canada border south. RFDAs (shown in red on the map below) are areas that were subjected to flooding under historical flow

conditions but are not expected to flood under current pool level management controls although some still experience inundation during high-flow events; these were delineated using hydrologic modeling. Five of these are near Northport, WA. WSDAs become exposed as sediments along the shoreline become exposed during the primary reservoir drawdown period. Two windblown sediment deposition areas located downstream of the ADA are Seven Bays and Marcus Flats (see map; left and right boxes, respectively). The Washington Department of Ecology (DOE)-collected data were used to assess effects on lakes and wetlands and include Philips Lake, Cedar Lake, Silver Crown Lake, and Bowen Lake/Wetland.



Cadmium, copper, lead, and zinc are characteristic of current and past smelter emissions; metals associated with slag are primarily copper and zinc.

Metals for which additional analysis was needed to characterize the potential for unacceptable risk and which were the focus in this report are:

- Lead, cadmium, manganese, and zinc for the ADA
- Copper, lead, manganese, mercury, molybdenum, selenium, and zinc for the RFDA.

Deposition of metals occurred through one of three major transport processes: 1) aerial deposition from atmospheric point source emissions (e.g., smelter stacks) onto soil in the ADA, 2) hydrologic transport and deposition of contaminated sediments onto RFDAs, and 3) aerial deposition from windblown nearshore contaminated sediments (fugitive sources) onto WSDAs.

Within **ADAs**, concentrations of lead, cadmium, and zinc are greater than their respective background threshold values (BTVs) and decrease with increasing elevations. This is consistent with the tendency for particulate smelter emissions to preferentially deposit at lower elevations.

The <2 mm ADA data set for lead, cadmium, manganese, and zinc had 279 soil samples (105 samples from Ecology [2013] and 174 samples from TAI [2015]), including triplicates.

Lead: concentrations ranged from 31 mg/kg to 1,920 mg/kg (median 248 mg/kg) (Ecology) and from 44.5 mg/kg to 714 mg/kg (median 173 mg/kg) (TAI). Lead was detected in all samples from both studies and exceeded the BTV of 27.2 mg/kg.

Cadmium: concentrations ranged from 0.6 mg/kg to 37.3 mg/kg (median 5.44 mg/kg) (Ecology) and from 0.7 mg/kg to 14.3 mg/kg (median 5.03 mg/kg (TAI). Cadmium was detected in all samples from both studies and 99% of samples from both studies exceeded the BTV of 0.74 mg/kg.

Manganese: concentrations ranged from 43.6 mg/kg to 5,490 mg/kg (median 1040 mg/kg) (Ecology) and from 220 mg/kg to 2350 mg/kg (median 860 mg/kg) (TAI). Manganese was detected in all samples from both studies and exceeded the BTV of 1,240 mg/kg in 22% and 35% of the samples, respectively.

Zinc: concentrations ranged from 70 mg/kg to 1330 mg/kg (median 297 mg/kg) (Ecology) and from 72.4 mg/kg to 2180 mg/kg (median 268 mg/kg) (TAI). Zinc was detected in all samples from both studies and exceeded the BTV of 111 mg/kg in 97% and 96% of the samples, respectively.

With respect to the RFDAs, estimation of slag content (based on soil zinc concentrations) shows that RFA and the decision units in RFD that border the Columbia River contain slag historically deposited in the relict floodplains or under current, high-flow conditions.

RFA (Deadman's Eddy gravel bar): had the highest concentrations of copper, manganese, mercury, molybdenum, selenium, and zinc, with intermediate concentrations of lead. Reported values were:

- **Copper**: range 13.4 mg/kg to 758 mg/kg (median 133 mg/kg). Copper was detected in all samples, and 66% exceeded the BTV of 41.5 mg/kg.
- **Manganese**: range 263 mg/kg to 1,820 mg/kg (median 370 mg/kg). Manganese was detected in all samples, and 17% exceeded the BTV of 1,240 mg/kg.
- **Mercury**: range 0.02 mg/kg to 0.48 mg/kg (median 0.17 mg/kg). Mercury was detected in all samples, and 66% exceeded the BTV of 0.12 mg/kg.
- **Molybdenum**: range 0.55 mg/kg to 10 mg/kg (median 1.2 mg/kg). Molybdenum was detected in all samples, and 38% exceeded BTV of 1.4 mg/kg.
- **Selenium**: range from 0.12 mg/kg to 1.61 mg/kg (median con 0.59 mg/kg). Selenium was detected in all samples and all exceeded the BTV of 0.098 mg/kg.
- **Zinc:** range 144 mg/kg to 8,640 mg/kg (median concentration 499 mg/kg). Zinc was detected in all samples and all exceeded the BTV of 111 mg/kg.
- **Lead**: range 80.7 mg/kg to 730 mg/kg (median concentration 368 mg/kg). Lead was detected in all samples and all samples exceeded the BTV of 27.2 mg/kg.

RFC has the highest concentrations of lead and intermediate concentrations of copper, manganese, mercury, molybdenum, selenium, and zinc. Values can be found in Appendix C of this report.

RFB and RFC do not appear to be influenced by slag and have lower concentrations of other RFDA focus metals. RFB is located within the mouth of Quartz Creek where it converges with the UCR. This location may shelter it and make it less likely for sediment from the UCR to be deposited in RFB. The authors concluded that as lead risks for recreational visitors are below human health risk thresholds, there are no health concerns associated with RFDAs. CCC requested that residents be considered as the more appropriate target/receptor.

Deposition of metals in windblown sediments occurred in the Marcus Flats WSDA based on a decreasing trend observed with distance from the Columbia River shoreline for all metals that exceed BTVs. However, the authors of this report concluded that these metal concentrations do not pose unacceptable risk to any ecological receptor groups exposed to soils.

Throughout the report, the authors downplay the contributions of the Teck smelter to UCR pollution. There is no mention of dramatic changes in smelting practices including smoke stack heights over the 100-plus years of operation (which would likely have resulted in non-uniform deposition of metals with distance from the smelter); the groundwater plume found beneath the plant in 2001; the accidental spills including lead, mercury, acid and thallium (the latter had been left off the list of metals of concern); or how the final outcome of the current Columbia River Treaty negotiations, as well as climate change, may impact future flooding of the RFDA areas. The authors also argue that concentrations of all focus metals show no consistent pattern relative to distance from Trail, British Columbia, a statement that is in conflict with the maps provided.

The report does contain interesting information on local glaciation, meteorology and geology, however, the claim that geogenic processes were major

contributors to the high levels of lead and other metals found in the top 3 inches of soil is unfounded. In addition, as only two "unpermitted/historical" mines are located in the zones with highest lead concentrations (the Clara gold mine and the Roosevelt silver mine), the claim that historical mining and milling activities may have significantly contributed to soil lead levels in these areas also seems unlikely.

In addition to soil chemistry data, the draft interim partial RI recommends the use of remote-sensing (satellite imagery) ecosystem data to evaluate vegetative health. The use of the Landsat imagery-derived enhanced vegetation index (EVI) may not be appropriate as this tool assesses large areas for total vegetation abundance and does not look at smaller areas or types of vegetation. If the purpose of the report is to provide the basis for future remediation, optimal vegetation to support the current ecosystem and cultural practices (given current constraints with respect to soil health) should be the goal and not simply the presence of vegetation.

Similarly, population modeling was suggested for assessing risk to wildlife. However, population-level risk assessment can overshadow individual and localized risk and limit acknowledgement of risk in an entire area. Further, this is different from the risk assessment approach used for the human health risk assessment.

One additional claim in this report is that air quality data confirms low amounts of dust in the air, with the Stevens County five-year average air quality index for combined ozone and PM2.5 being "good to moderate," indicating there are not a lot of fine particles moving in the AD
A atmosphere. However, there are no air monitors listed in the IQAir data site (IQAir.com) that are within the UCR Site, so this claim that fine particles are not moving in the ADA atmosphere is not supported. The closest monitors to date are located in Onion Creek and Marcus.

Finally, the lead level to be considered for remediation remains undetermined and potential influences on flood levels for the RFDAs require discussion in light of the Columbia River treaty negotiations and climate change. CCC continues to request both a sediment transport study and an aerial deposition study to fully meet the overall study objectives.

In coordination with stakeholders, EPA has provided formal comments to Teck and a revised document will be expected.

Mindy Smith, CCC secretary

SATES: Phase II Analysis (technical memo) and Data Summary Report Results of Bench Scale Treatability Testing

The SATES study is designed to identify and field test soil amendment technologies that could cost-effectively reduce the long-term potential for human exposure to lead in UCR shallow upland soils. Phase 2 (Bench-scale treatability testing in the laboratory) was completed in March 2020, but the full data summary report was not available for review until Spring 2021.

This portion of the SATES was primarily designed to evaluate whether soil amendments showed potential to reduce the bioaccessibility (% IVBA) of lead in Site soils and evaluate the impact of amendments on key soil chemical and physical properties. Additional study objectives were to improve vegetative cover to reduce exposure potential and erosion, improve soil structure, and minimize impacts from amendments on arsenic bioaccessibility and mobility.

The results of testing completed through 4 months into the bench-scale testing were used to identify the soil amendment options to carry forward for further evaluation in Phases III and IV. As a reminder, the amendments chosen for field testing (Phase III, see newsletter from July 2020) based on this analysis, cost, availability, and acceptability and prioritization by stakeholders, were **soluble phosphate liquid, soluble phosphate and biochar, and compost**. The SATES study is now in phase IV (monitoring phase; see newsletter from July 2021). Lab shut down and staffing limitations delayed testing/reporting these results.

Soil samples were collected from one of 4

experimental test plots located on 3 allotments owned by members of the Confederated Tribes of the Colville Reservation (CCT). These allotments were found during the 2014 residential soil sampling study to have high levels of lead (>800 mg/kg), but did not undergo soil remediation. Soil samples were collected, homogenized and tested to ensure lead concentrations that met the above criteria before testing. A total of 430 pounds of soil with grain sizes <2 mm was stored and used for testing.

The baseline soil sample from time 1 had a total lead level of 1,513 mg/kg and % IVBA lead of 32.7 at pH 2.5. The remaining soil properties used as baseline were from the control soil at time 3 (6 months) that showed: Total arsenic level of 97.7 mg/kg, % IVBA arsenic of 7.7 at pH 2.5; phosphorus (using the synthetic precipitation leaching procedure) of 0.2 mg/kg and mineralizable nitrogen of 36 mg/kg.

Twelve soil amendments (5 single and 7 combination) were tested; single agents were soluble phosphate, biosolids, wood ash, biochar, and compost. Testing used both low and high application rates and two application methods – surface application and mixing. *Amendment materials* were analyzed for total target analyte list metals and mercury, volatile and semi-volatile organic compounds, total carbon and nitrogen and polychlorinated biphenyls. Baseline *soil measures* included total target analyte list metals and mercury; bioaccessible lead and arsenic; extractable lead and phosphorus; pH; carbon and nitrogen; and soil moisture, water holding capacity and conductivity. Details of the study methods were described in our January 2020 newsletter. Of the 437 test pots, 312 were used for surface application of amendments, 120 for incorporated application, and 5 for controls. Pots from which soil samples were collected at each time point were eliminated from further use and discarded after sampling.

Soil results were analyzed using a three-way factorial analysis of variance model, using the independent factors: i) amendment type (individual and combined); ii) application method (incorporated, meaning mixed in vs. surface); and iii) application rate (low vs high) for each of the timepoints measured, as well as the difference at different timepoints during incubation. These analyses showed significant interactions between application rate, application amount, application method and the geochemical changes to the soil resulting from the amendment applications.

The 6-month total lead and total arsenic results were used to calculate the %IVBA values presented for the 6-month control. Data validation was performed by Environmental Standards, Inc. No issues were found that would impact overall data quality for the study, although EPA is working with Teck to provide further data validation for phosphate-based amendments due to limitations of existing IVBA lab methodologies.

The samples showing what appeared to be the greatest change in lead level and lead bioaccessibility from time 1 to time 3 (range

presented for 4 test pots each) while meeting most study objectives were:

- **Soluble phosphate and biosolids, incorporated, high application** (50.4% reduction IVBA lead at pH 2.5). Total lead 0.0717-0.919 (time 1) to 0.0156-0.0265 (time 3). Bioaccessible lead pH 1.5: 65.7-75.5 (time 1) to 50.4-60.8 (time 3) AND pH 2.5: 21.6-26.1 (time 1) to 13.2-16.1 (time 3).
- **Biosolids and wood ash, incorporated, high application** (34.2 % reduction)**.** Total lead 0.0572-0.0876 (time 1) to 0.0236-0.0238 (time 3). Bioaccessible lead pH 1.5: 72.7-81.3 (time 1) to 49.5-53.1 (time 3) AND pH 2.5: 31.9-36.3 (time 1) to 18.9-20.9 (time 3).
- **Biosolids, incorporated, high application** (25.6% reduction). Total lead 0.0729-0.0825 (time 1) to 0.0184-0.0236 (time 3). Bioaccessible lead at pH 1.5: 53.9-65.6 (time 1) to 45.9-51.8 (time 3) AND pH 2.5: 24.0-28.9 (time 1) to 20.5-23.8 (time 3).
- **Compost, surface, low application**. Total lead 0.0704-0.0784 (time 1) to 0.355-0.556 (time 3). Bioaccessible lead pH 1.5: 64.2-65.4 (time 1) to 59.4-66.8 (time 3) AND pH 2.5: 34.0-34.8 (time 1) to 25.9-27.4 (time 3).

The following table summarizes the 3 selected amendments - soluble phosphate (P) liquid, soluble phosphate and biochar, and compost -with respect to meeting study objectives.

Bioaccessible lead (measured at pH 2.5) was stable between time 2 and 3 for 31 of the 48 treatments, indicating that the chemical reactions between the soil amendment and the soil lead were complete for most, but could be decreasing beyond time 3 for several treatments. Most of the decreases in % IVBA lead were associated with organic treatments (biosolids, compost, biochar) and wood ash. None of the 12 soil amendments at the application rates tested increased leachability of lead. In addition, except for soluble phosphate which can pass through surface soil more easily, incorporation of soil amendment produced a greater reduction in % IVBA lead compared with surface application; this may be problematic for real world applications.

Other potential positive effects: Amendments with high organic carbon content (i.e., compost, biosolids, biochar) showed an absolute increase in organic carbon content of treated soil of about 5% from the original control sample result (7.5% up to a total of 12.7%). As optimal soil carbon is >1-2% by weight, it is not known if there is further benefit to increasing carbon when already considered high. A possible benefit of added carbon is greater water holding capacity to support plant growth. In addition, baseline soil pH of these plots is acidic (pH 4.3) which is typical of forest soil and low plant nutrient soil; optimum soil acidity for plant growth is between pH 5-8. Wood ash and biosolids and their combination treatments increased soil pH to slightly above 5; other treatments had little to no effect on soil pH.

Negative effects: The most consistent increases in plant-available arsenic (arsenic % IVBA) were seen for phosphate fertilizer and biosolid amendments; however, the increases were <10% and associated leachability increases ranged from 0.02-0.13 mg/dL; these are considered acceptable and well below the % IVBA arsenic of 60%, the USEPA default value. The most consistent increases in plant-available phosphate were also seen with soluble phosphate fertilizer and biosolid amendments. The range of increase compared to 166 mg/kg P for controls was 919 mg/kg for soluble phosphate + compost to 1064 mg/kg for soluble phosphate + biosolids. Soil pH increased for some samples but was within the range necessary for maintaining healthy plant populations. Biosolids and biosolid combinations resulted in excessive amounts of mineralizable nitrogen ranging from 63.5 to 1575 mg/kg (control

baseline 36.9 mg/kg), a microbial-mediated process, which could negatively affect native plants in favor of non-native plants. Amendments containing biosolids were not selected for use in Phase III.

Based on these results, as shown in the table below, the two soil amendments that met each of the criteria under the SATES objectives were soluble P fertilizer and soluble P fertilizer + biochar. Compost, however, delivered adequate to exceptional performance against other SATES objective criteria, and is considered a potentially viable treatment alternative, so was included in Phase III.

Amend-ment	Reduce lead % IVBA	Reduce lead leaching	Increase veg. cover	Improve soil structure	Minimize arsenic % IVBA
Sol P	yes	yes	yes	yes	yes (<30% increase)
Sol P + Biochar	yes	yes	yes	yes	yes (<30% increase)
Compost	yes	no	yes	yes	Yes (11% decrease)

Following the results from the Phase II bench scale study, field pilot application was completed in 2021 (Phase III), and post treatment monitoring is ongoing (Phase IV). Preliminary monitoring results from the field study are expected in February, 2022.

Mindy Smith, CCC secretary

Northport Waterfront Cleanup Update

The Washington Department of Ecology (DOE) is directing and funding a remedial investigation and cleanup of smelter-related metals contamination on Northport's Town Park and boat launch waterfront area. Metals most frequently found throughout the site at levels posing a risk to human health and the environment are copper, lead and zinc. Funding for this project comes from the Eastern Washington Clean Sites Initiative.

Photo from ecology.wa.gov as noted above

A draft remedial investigation and feasibility study was conducted and results were presented in a public meeting and posted for public comment in May 2021 (see July 2021 newsletter). Based on input from the community and others, Ecology's Toxics Cleanup Program, under the leadership of Justin Rice (juri461@ecy.wa.gov), has completed a draft Cleanup Action Plan that will released soon. A public comment period will follow release of this document. Information on this project can be accessed at: https://apps.ecology.wa.gov/gsp/Sitepage.aspx?csid=14874.

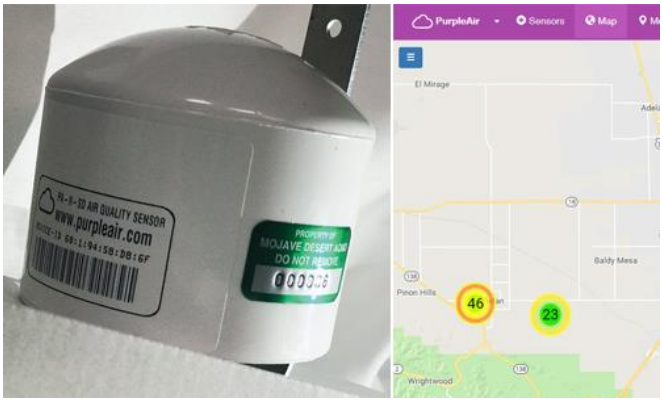
Mindy Smith, CCC secretary

Tribes Awarded Environmental Grant

The CCT in partnership with the Spokane Tribe of Indians (STI), University of Washington (UW), and CCC were awarded an Environmental Justice Grant this fall to establish air monitoring within a 100-mile corridor in the Upper Columbia River and Lake Roosevelt. The project combines CCT and STI

environmental and air-quality expertise, CCC's human health and environmental expertise, and the air-monitoring expertise of Dr. Dan Jaffe, a Professor in the UW Department of Atmospheric Sciences.

Project leaders will work with local community members, both tribal and non-tribal, starting this spring to recruit air monitor hosts. The project team would install a network of 52 consumer-grade PurpleAir $PM_{2.5}$ monitors with application of a dust analysis to provide real-time data during smoke season and use of correction equations to provide data regarding the frequency, intensity, and location of high-$PM_{2.5}$ events due to dust storms or industrial emissions. These data will be merged with data throughout the country, available on the AirNow website (https://www.airnow.gov).



Purple air monitor and map portion
Image from https://www.mdaqmd.ca.gov

Through the communication channels of all partners, CCT, STI, and CCC will disseminate relevant data interpretations and provide education to allow regional residents to make informed choices about their activities during times of high air pollution. This project will address current disparities and empower local residents to take control of decisions that directly influence their health.

Mindy Smith, CCC secretary

Technical Advisor Report

My efforts over the past six months focused on the SATES, the Interim Partial Upland (IPU) Baseline Ecological Risk Assessment (BERA), the Phase 3 Sediment Study and the IPU Remedial Investigation (RI).

I reviewed "Draft SATES Phase II: Bench-Scale Statistical Analysis Technical Memo, July 2021" and provided comments to CCC on July 30, 2021. My primary concerns were how test soil lead levels were obtained and reported and how bioavailability baseline levels were obtained and reported. I found the reporting in the document to be somewhat unclear on these two determinations. I also suggested that the validation status of the various results be specifically detailed.

I reviewed "Draft Interim Partial Baseline Ecological Risk Assessment Upland Habitat, June 2021" and provided comments to CCC on August 25, 2021. I had some concerns with the report, several of which follow. I suggest that use of Landsat imagery-derived enhanced vegetation index (EVI) to evaluate vegetative health at the site may not be appropriate. This tool images large areas for total vegetation abundance; it does not look at smaller areas. The report gives a very low piece of evidence rating to all the analytical work done on soils, due to the Teck America Incorporated (TAI) position that the background soil data set is inappropriate. TAI and EPA agreed to the data set, making this position difficult to defend. The report emphasizes population-based risk assessment at the expense of individual risk assessment. Risk assessment is presented for the entire upland study area. I suggested risk assessment be performed for five regions of the upland study site. Finally, the report presents the Le Roi smelter as an equal contributor to emissions and discharges relative to the Trail smelter. I suggested this be corrected.

I reviewed "Updated Phase 3 Sediment Study Inter-Laboratory Split Sample Chemistry Comparison/ Evaluation, August 10, 2021" and provided comments to CCC on August 31, 2021. Different sediment sample preparation procedures were used at ALS Environmental (ALS) and Manchester Environmental Laboratory (MEL). Sediment samples obtained by the freeze grab sampling method analyzed at ALS consistently had significantly lower metals results than those analyzed at MEL. I suggest that these differences have ramifications for the 2019 Phase 3 Sediment Study Data Summary Report and use of that data for the BERA. I suggested two possible solutions: 1) all freeze grab samples could be reanalyzed by ALS with the sieving step added. I believe this is the preferable solution. And 2) if insufficient sample remains, all ALS results could be increased by the average difference factor found between MEL and ALS results for each metal analyzed. Insufficient sample remained for reanalysis. To date, chemistry results obtained by freeze grab sampling have not been adjusted.

I reviewed "DRAFT Interim Partial RI Report for the Upland Study Area, July 2021" and provided comments to CCC on September 24, 2021. I had some concerns with the report, several of which follow. The report repeatedly mentions "geogenic processes" as being responsible for the high levels of lead and other metals in soil. I suggested that the report include a discussion of how these processes could result in the highest levels of these metals being in the top 3 inches of soil. One of the simplest explanations for this phenomenon could be aerial deposition of metals from the Trail smelter stacks over the past 125-plus years. I suggested a map of all time-critical and voluntary removal actions be included and discussed in the report. The aerial deposition model appeared to assume a constant particle size and metals composition of the smelter stack emissions. This assumption may be incorrect, as smelting practices changed dramatically over the 125-plus year period during which the Trail smelter has operated. I suggested that these factors and meteorological events may have resulted in non-uniform deposition of metals with distance from the smelter. The report claims that historical mining and milling activities may have significantly contributed to soil lead levels in the site. The maps presented with the report locate most mines and mills outside the study site. The area with highest lead levels has only two old mines (the Clara gold mine and the Roosevelt silver mine) and no mills.

To date, EPA has not transmitted final formal comments to TAI on "DRAFT Interim Partial Baseline Ecological Risk Assessment Upland Habitat, June 2021" or "DRAFT Interim Partial Remedial Investigation Report for the Upland Study Area, July 2021."

Joe Wichmann, PhD; CCC Technical Advisor

CCC Honors the Life of John Roland

John Roland: October 25, 1957 - October 10, 2021

This fall CCC lost one of its strongest allies and friends. John Roland was a Senior Hydrogeologist with the Washington Department of Ecology's Eastern Regional Office Toxics Cleanup Program. Over his 17 years of service, John led efforts to investigate and remediate areas along the Columbia River through clean-up actions including the Young

America Mill, Black Sand Beach, and rural residential properties in Northport. His most recent efforts resulted in plans for cleanup options along the shoreline of Northport City Park and boat launch areas. John attended community meetings and Lake Roosevelt Forum (LRF) Conferences and Bus tours, providing information and answering questions with candor and compassion. He was a believer in forging relationships, partnerships and friendships in achieving the goal of environmental justice. John was featured in a 2019 LRF article highlighting his views and accomplishments: (https://files.constantcontact.com/0d2e69e6301/ad036038-cfe3-4438-bd8c-f4b89f2d5a64.pdf). He will be remembered as a gentle man and tireless advocate whose legacy is a cleaner and safer environment for us all.

Mindy Smith, CCC secretary

Want to be More Involved?

CCC welcomes new members. Our next General Member Meeting will be in the spring. Please join us. We will post updated information on Facebook (https://www.facebook.com/groups/315230442457913/. We also have new CCC T-shirts available that can be obtained through Hilary Ohm (hilary@highwaterfilters.com).

With questions for the EPA project managers, contact Robert Tan for information on Human Health Risk Assessment or Soil Amendment Technology Evaluation Study (SATES) at Tan.Robert@epa.gov and Bonnie Arthur for information on ecological studies at Arthur.Bonnie@epa.gov. Concerns may also be directed to the EPA Region 10 Deputy Regional Administrator Michelle Pirzadeh (Pirzadeh.Michelle@epa.gov).

Mindy Smith, CCC secretary