

Citizens for a Clean Columbia

Our mission: to advocate for a clean Columbia River ecosystem
NEWSLETTER JANUARY 2018

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 at www.cleancolumbia.org.

News in Brief

Lake Roosevelt Forum Bus Tour

- The tour, on Sept. 27, 2017, included stops at Long Lake Dam Overlook, Dawn Mill Site, Spokane Tribal Fish Hatchery, Wellprint Longhouse, and A-Frame.

Macroinvertebrate Tissue Study 2016

- The study was designed to understand human and animal exposure to mussels and crayfish from the Upper Columbia River (UCR)
- Mussels were collected using grabbers along the shoreline or by scuba divers and crayfish were collected in baited traps. Final results are pending.

White Sturgeon Sampling

- Following targeted removal of hatchery white sturgeon to avoid diluting the genetic diversity of wild sturgeon, fish were tested for contaminants.
- Composites of 72 sturgeon were sampled and found to be safe to eat.

Columbia River Treaty update

- This editorial supports continued negotiations, with tribal presence at the negotiation table.

Technical Advisor Update

- Joe focused on the 2016 residential soil study, the macroinvertebrate study, the soil treatability study and the data management plan.

CCC Mourns the Loss of Two Special Men

- Russell Larsen and Joseph Bradley

Lake Roosevelt Forum Bus Tour

The bus tour on Sept. 27, 2017 was another success. I had the opportunity to attend and was particularly impressed with the Long Lake Dam Project (Avista corporation). The dam, located on the lower arm of the Spokane River, has a very steep spillway which resulted in reduced levels of oxygen due to trapping of nitrogen below the water surface. The \$15 million project created spillway deflectors and fill in the area directly below the spillway, reducing its depth from 60-80 feet to 20 feet (photograph below). The project took a great deal of research and one year to complete. The result is raised oxygen levels to better support fish habitat.



The Dawn Mill Site, about 800 acres, contains tailings from the mill that processed uranium ore from Midnight mine. Ore processing ended in 1982 and a plan for decommissioning was approved in 1995. The clean-up and decommissioning are under the jurisdiction of the WA. Department of Health.

We walked past some of the evaporation ponds that still contained processed water. The mill building was decommissioned and buried in a lined tailings impoundment in 2003. Most contaminated-soil clean up has been completed. All tailing areas are now covered and last one is to be reseeded. Borrow areas are being reclaimed and a diversion channel was created for run off to prevent excess water from reaching the site.

Two separate ground water contaminant plumes have been identified at the site. One plume is associated with the old unlined tailings and the other plume with the ore stockpile area. The ground water plumes are hydraulically connected to Chamokane Creek, owned by the Spokane Tribe of Indians. The Tribe has set a uranium standard for surface water at .3 pCi/l above natural conditions, which is below standard drinking water.

Monitoring wells were created at 60 feet for the first aquifer and 250 feet for the lower aquifer. The area will be permanently closed. There is fencing around the entire area except for the back end. Animals are currently being tested for contaminants.

Our next stop was Spokane Tribal Fishery which was established in 1991 with missions of conservation, enhancement and restoration of native species and providing and maintaining Kokanee salmon for subsistence fishing opportunities for Native Americans and sport fisheries. The annual target releases are 250,000 sterile yearling Salmon and 750,000 sterile yearling Rainbow Trout intended for harvesting. They are also working to restore juvenile white sturgeon, with target release of 2,000 yearling sturgeon from wild larvae origin.



Spokane Tribal Fish Hatchery

We had additional discussion on Midnight mine and a wonderful lunch of Indian Taco's at Wellprint Longhouse. From there we drove to A-Frame, at the site of the porcupine slide and campground. Prior to our departure on a boat tour, we had a talk about aquatic invasive species – zebra/quagga mussels – which are not yet in our area but as close as Montana. The National Park Service is stressing the importance of “CLEAN, DRAIN, AND DRY” all watercraft and equipment before using them in another body of water to prevent spread.

Also discussed were efforts to control Northern Pike and encourage all anglers to catch and remove them. These fish can be eaten and are likely similar to Walleye with respect to fish advisory – 1 serving per week. We had an update on the RI/FS and a description of Lake Roosevelt water levels that vary to assist with flood control – yearly drawdown in April-May reached about 1232-1242 feet then back to about 1290 feet in July.

Finally, we were treated to a boat tour of the recent slide and fire areas. The landslide destroyed some of the road leading to Porcupine Bay on April 2, 2017

and resulted in closure of the Porcupine Bay camp ground. Repair is planned with assistance from the federal government and park service for funding. A 20-foot Tasmanian wave, created by the slide, temporarily damaged the boat launch and docks. We also toured the fire-damaged area from a fire on July 2017 that burned many acres of forest.

Macroinvertebrate Tissue Data Summary - 2016

The 2016 macroinvertebrate tissue study was designed to understand exposure for humans and wildlife receptors consuming primarily two types of benthic macroinvertebrates, mussels and crayfish, from the Upper Columbia River. Macroinvertebrates were collected from six sampling areas in the UCR to provide spatial coverage and include a variety of river habitats, and two reference areas - the Sanpoil River and Buffalo Lake. A few clams were also collected in one UCR area. The areas are: Area 1 near Northport, Area 2 near China Bend, Area 3 near Marcus Flats, Area 4 near Gifford, Area 5 near Spokane Indian Reservation, and Area 6 near Keller Ferry.

Collection occurred two separate times - once in April-May 2016 and again in September-October 2016. Tissue was evaluated for metals, methyl mercury, inorganic arsenic, polychlorinated biphenyl (PCB) congeners and dioxins/furans to inform both the human health risk assessment and for the baseline ecological risk assessment (BERA; exposure of fish, birds and mammals) about unacceptable risk from consumption of mussels and crayfish.

Mussels were collected, using grabbers, while wading along the shoreline or by scuba divers. Crayfish were collected in baited traps. Organisms were transferred on ice to the appropriate laboratories for tissue analysis. There was some debate about the approach to compositing the organisms based on spatial groupings with organisms of different weights distributed evenly among the composite samples (proposed by Teck)

vs. composites of organisms of the same species, from the same or nearby areas, and of comparable size classes, where possible (proposed by EPA and supported by CCC). Ultimately, the compositing plan agreed to was the former.

There were 36 composite mussel samples analyzed from the site (6 from each of the 6 areas and most containing 4-7 individual mussels and a few areas with more), 18 crayfish composite samples (separated into carapace and stomach, and whole body minus carapace and stomach; most containing 2 to 5 individuals with a few containing more) from three areas, 12 crayfish whole body composite samples for use in the BERA only from 2 areas, and one composite of clams obtained from a single area. No crayfish were found in Area 1. Eighteen composites were obtained from the reference areas.

Data completeness was greater than the 90 percent goal specified in the initial study plan for all analyte groups and all data were considered usable with qualifiers. Data qualifiers were present on more than half of the analyzed samples for aluminum, chromium, iron, lead, mercury and zinc either because the value was estimated or not detected at or above the method reporting limit.

We will be able to report study results hopefully in the next newsletter.

Mindy Smith, CCC secretary

White Sturgeon Sampling

White sturgeon is a traditional tribal food source and common sport fish in the Columbia River. Because of higher than expected survival rates and abundance of hatchery white sturgeon, the Upper Columbia White Sturgeon Recovery Initiative and the Lake Roosevelt Fishery Co-Managers conducted targeted removal of hatchery white sturgeon to avoid diluting the genetic diversity of wild sturgeon. Prior to distribution of these fish to Tribal

membership and local food banks, hatchery white sturgeon needed to be evaluated to determine whether their consumption would result in human health risks. The primary objective of the 2016 sturgeon tissue sampling effort was to collect information on the concentrations of chemicals (metals and organic compounds) in hatchery white sturgeon fillets from three size classes collected in the upper portion of the UCR Site.

Seventy-two hatchery white sturgeon were sampled and grouped by size: 50-97 cm, 98-137 cm, and 138-160 cm. The 24 fish for each size group were divided into 3 composite samples, each with 8 individual fish per composite for testing. Fish were photographed and examined for external abnormalities, filleted with skin removed.



Common contaminants in fish include mercury, polychlorinated biphenyls (PCBs) and dichlorodiphenyltrichloroethane (DDT). Mercury levels detected in the fish composites ranged from 242 to 378 ng/kg which is well below the standard cut-off of 0.3 mg/kg) recommended by the US. Total PCBs ranged from 19.9 to 12800 pg/L (2 mg/L is the standard for fish based on Agency for Toxic Substances and Disease Registry [www.atsdr.cdc.gov]). The fish were released for consumption by the tribes. You can read more about

contaminants in fish in Washington State on the Department of Health website (<https://www.doh.wa.gov/CommunityandEnvironment/Food/Fish/ContaminantsinFish>).

Columbia River Treaty (CRT) editorial



The 1964 the CRT set forth rules and obligations around hydropower and flood control in the Columbia River Basin. The treaty protects downstream communities from flooding, and the generated hydropower provides over 40% of total hydroelectric generation in the US and 44% of all electricity produced in British Columbia.^{1,2} The major treaty drawback was that many communities, including indigenous villages, were submerged as 4 new dams were built. This flooding displaced more than 2000 people, destroying hundreds of farms and local agriculture. The water fluctuation also causes serious bank erosion resulting in ongoing ecosystem damage and collapse of many fish stocks.² Fish passage was not enacted, effectively removing salmon and steelhead from upstream reaches and destroying the way of life of Native American and First Nations people.

Since that time, indigenous peoples along with other members of river communities have looked forward to the time when a modernized treaty could be negotiated – a treaty that would consider environmental or ecosystem function of the river.

On both sides of the border, the 15 tribes and 9 First Nations with homelands in the Columbia River Basin have taken the lead, investing vast amounts of time, energy, and resources into creating ways for this to happen. They have planned for fish return through creating fisheries, studying fish best suited to current river conditions, testing alternative strategies for fish passage, and educating the public about fish return. They have shared sacred ceremonies with the public and inspired river communities through river journeys in newly-built traditional canoes. They have produced documentary films (*Treaty Talks, United by Water*), participated in conferences, and conducted public meetings to bring a united voice in speaking for a healthy river ecosystem.

As the US and Canada begin negotiations for a modernized treaty, I urge all involved and the public to demand that the tribes and First Nation peoples, be given a seat at the table. Their united voice is the best hope for bringing an ecosystem arm to the treaty and to ensure stewardship of the river.

Mindy Smith, MD, MS

1. Today in Energy. <https://www.eia.gov/todayinenergy/detail.php?id=16891>. Accessed November 1, 2017.
2. Columbia River Treaty Frequently Asked Questions (2012). <http://engage.gov.bc.ca/app/uploads/sites/6/2017/01/crt-faq.pdf>. Accessed November 2017.
3. The Northwest Power and Conservation Council. *Columbia River Treaty*. <https://www.nwcouncil.org/history/ColumbiaRiverTreaty>. Accessed November 1, 2017.

Technical Advisor Report

My efforts over the past six months focused on the 2016 residential soil study, the macroinvertebrate study, the soil treatability study and the data management plan. CCC used my reviews as the basis for their comments to EPA. I also attended the Lake Roosevelt Forum bus tour in late September 2017.

The method for determining the relative bioavailability (RBA) of lead and arsenic for the 2016 residential soil study was finalized in late August 2017. Letters to property owners providing lead and arsenic RBA information for their properties are undergoing the second draft review. These letters will likely be sent to property owners soon.

EPA issued the 2016 Residential Soil Study Inter-Laboratory Split Sample Chemistry Comparison/Evaluation in mid-November. This study compared analytical results for a subset of study samples analyzed at the ALS, the primary analytical laboratory for the study, and results obtained at the EPA laboratory. Results were in good agreement. There was no significant bias at either laboratory. CCC reviewed the draft but had no significant comments.

I observed the initial day of residential soil remediation on October 11, 2017. The process was very similar to that used in 2015. Initial problems with dust suppression were rapidly solved by replacing a garden hose with a water truck and fire hose to wet the digging areas. Two properties were remediated in fall 2017. Additional remediation at two properties will take place in spring 2018.

The first draft of the macroinvertebrate study (mussels and crayfish) was reviewed in October 2017. The study analyzed whole crayfish for ecological risk evaluation; these crayfish were collected from areas without any known crayfish collection by humans. In regions where people collect crayfish for consumption, the crayfish were dissected to remove the stomach and the head, yielding the tail for analysis for human risk assessment. The ecological risk assessment for these dissected crayfish was performed on the combined results for the tail, stomach and head. The main concern with the data summary report was that

most determined metal values for whole body samples were much less than the sum of the values for the dissected parts. To date, no explanation for this has been provided.

I observed phase I test plot screening sampling for the soil amendment treatability evaluation study (SATES) on August 16, 2017. When I arrived, there were 100 sample collection flags in a 100-foot by 100-foot square area for collection of the discrete screening samples for the study plots. The soil was very dry. I suggested that a small amount of distilled water be added to the sampling areas to allow a stable pH measurement. This was done and appeared to help with pH measurements.

Analytical lead and arsenic results were available for these samples in mid-September when a conference call was held to determine which test plots to use for continuation of the study. Lead levels in the test plots were lower than expected based on results of the 2014 residential soil study. Lead levels for the 2014 residential soil study decision units that contain the test plots ranged from 580 to 1,120 mg/kg. Only two of the six test plots had lead levels high enough to fall in the 500 to 2,000 mg/kg range planned for the project. Two other test plots were included in the study, one based on lead levels close to 500 mg/kg and the other for vegetative cover.

I observed phase I test plot evaluation sampling on October 11, 2017. Even more sample location flags were evident than before – 90 in a 50-foot by 50-foot subplot. Triplicate incremental composite samples were obtained. Thirty subsamples were combined for each incremental composite sample. Lead and arsenic data have not been issued for the incremental composite samples.

The next step of the program is to evaluate various soil treatments in the laboratory to determine how

well they lower the bioavailability of lead in soil samples from the four test plots. Soil amendments under consideration include ammonium phosphate, biochar, municipal biosolids, woody debris and compost (see July newsletter).

I attended a CLU-IN biochar webinar hosted by the EPA Office of Superfund Remediation and Technology Innovation on November 7, 2017. The presenter was Dr. Mark Johnson, a soil scientist with the EPA Region 10 Office of Research and Development. Biochar is prepared by heating wood wastes, grain chaff, manures or other carbon-rich waste in the absence of oxygen. The resulting product is similar to activated carbon, but the chemical properties of biochar are a function of the starting material, the temperature and the duration of heating. Different biochars bind aluminum, cadmium, copper, lead, manganese, nickel and zinc. Biochars can be designed to function for specific soil conditions and metal-binding requirements.

Dr. Johnson proposed the use of a water slurry of biochar dust as part of a remediation plan for the SATES. The hope was the fine biochar particles would enter the soil through cracks and voids and bind lead.

I reviewed the data management plan from June 2010 for a second time. CCC resubmitted their comments from September 2010 and submitted updated comments. The updated comments included considering using USB thumb drives or discs to replace tape drives for data backup, including flame retardants in the list of compound classes of concern, and including a statement that all study samples be retained at laboratories until written permission to dispose of them is received from EPA. CCC also suggested that all lists be checked to ensure they are up-to-date.

I also reviewed the proposed screening process for human health contaminants of interest. The proposed process should be protective of human health. I had no formal comments.

The Lake Roosevelt Forum (LRF) bus tour of the middle portion of the Upper Columbia River remedial investigation and feasibility study (RI/FS) site occurred on September 27, 2017. As always, the LRF program brought together the site stakeholders, agencies and community members to share information on ongoing UCR RI/FS studies and related activities.

Joe Wichmann, PhD; CCC Technical Advisor

Death of two prominent CCC Members

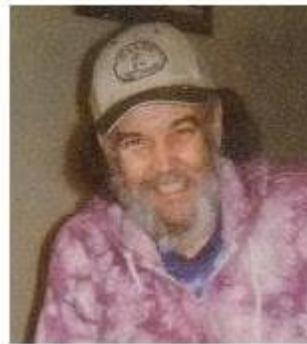
This past year CCC lost two of our members. **Russell Loren Larsen**, was CCC's president for many years and a lifetime Colville resident. Russ was known to most of us as THE local historian, an independent thinker, and someone who was incredibly knowledgeable about anything political or otherwise that happened in our area.



Russ was a graduate of Washington State University and served in the US Army. He worked in many positions including with the Forest Service, as water

master for Stevens County, and as a reserve Sheriff's Deputy. Russ was also a trombone player and an accomplished horseman and member of the 4-H Saddle Cincher's Club. He died on October 22, 2017 at age 70 years. He will be greatly missed.

Joseph Bradley, a resident of Onion Creek, was a long-time member of CCC and a staunch advocate of both people's and environmental rights. He worked as an attorney in Southern California in the 1970's where he used his activism and knowledge of the law to fight for better housing conditions.



Joe could always be found at the Okanogan Barter Faire under the alias "Burrito Joe" with his cook shack and his sign "Never trust a Skinny Cook." He will also be greatly missed.

Want to be More Involved?

CCC welcomes new members; you can join on our website (www.cleancolumbia.org). You can also find meeting minutes and links to other organizations involved in protecting the environment.

Our next General Member Meeting will be in the spring. We will post updated information on the website. Please join us.

We are still looking for a new webmaster. This would involve maintaining our website and posting new information to it about once a month. If anyone

out there is interesting in helping us with this, please contact Mindy Smith (smithm69@msu.edu).

With questions for the EPA project managers, contact Monica Tonel for information on human health studies at Tonel.Monica@epamail.epa.gov and Kathryn Cerise for information on ecological studies at Cerise.Kathryn@epa.gov. Kira Lynch is responsible for the Soil Amendment Technology Evaluation Study and can be reached at Kira.Lynch@epa.gov. Concerns may also be directed to the acting EPA region 10 administrator Michelle Pirzadeh (Pirzadeh.Michelle@epa.gov).

Mindy Smith, CCC secretary