

Citizens for a Clean Columbia

Our mission: to advocate for a clean Columbia River ecosystem

NEWSLETTER JANUARY 2012

Who are we?

Citizens for a Clean Columbia (CCC) is a volunteer organization focused on advocating for the health of the Upper Columbia River and Lake Roosevelt. Visit us at www.cleancolumbia.org.

With this newsletter, we are providing a new section entitled “**News in Brief**” for quick referencing by our readers. Details for each report will follow.

News in Brief

Young America Mine Contamination

- In 2006: the Washington State Department of Ecology found high levels of arsenic, cadmium, lead, and zinc exceeded state and/or federal standards in a sample from a mine trench.
- In 2011: the Environmental Protection Agency (EPA) did a site visit and found heavy metal contamination over about 7 acres at the mill site, impoundment area, and on the hill between them.
- EPA recommends a removal action be conducted at the mill site and considered for the mine site.

Bossburg Flat and Adjacent Beach Closed

- Bossburg flat and beach area were also checked by the EPA for contamination. High lead and arsenic levels were found.
- The National Park Service closed this area on January 10, 2012 and they are working with the

EPA to find out how big an area is contaminated and how best to clean it up.

Early Results from Two Sturgeon Studies

- Native white sturgeon are on the endangered list. In the Columbia River, although eggs may hatch, the young do not live long.
- Two study groups looked at the possible effect of sediment contamination on young sturgeon as part of the remedial investigation. University of Saskatchewan investigators found no increased death in young fish in flow-through chambers from samples of sediment from the Upper Columbia River. The United States Geological Survey (USGS) group used longer periods of contact with sediment and found that one third to one half of the young fish died. They think copper in the sediment may be the cause.
- In addition, the USGS group found changes in the way the young fish hide and swim when placed with copper that may put them at higher risk of being eaten.

Technical Advisor Update

- CCC members are happy about getting 3 more years of funding from Teck for our technical advisor’s work as part of the Technical Assistance Program.
- Dr. Joe Wichmann’s work the past 6 months reviewing several draft reports helped CCC provide input to the EPA about our concerns.

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Teck Spill News

- November 9, 2011 discharge of cadmium (5.67 kg) and copper (13.14 kg) into the Columbia River.

Waneta Border Crossing Expansion

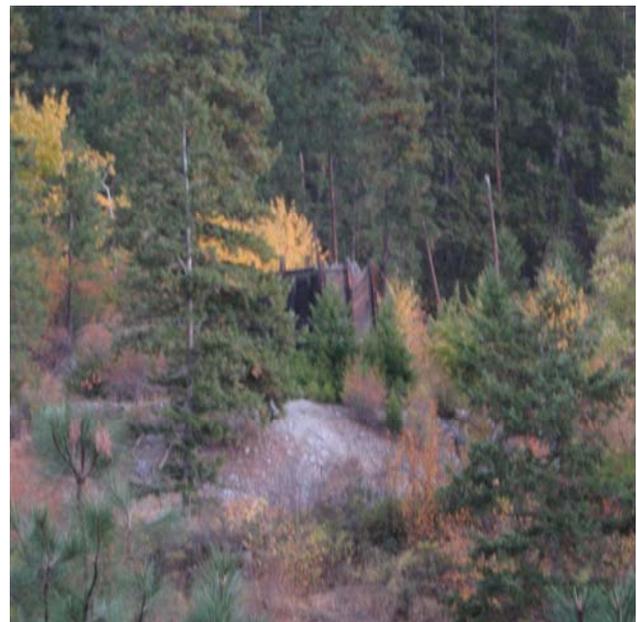
- Work on the Boundary United States Customs and Border Patrol (CBP) facilities planned in 2009 was stopped in April 2011 to allow for soil analysis for contaminants after public concerns were raised.
- Soil was found to be contaminated with cadmium, arsenic and lead which lead to further study and a plan to remove the contaminated soil.
- The 4780 tons of contaminated soil was taken to the Stevens County land fill; other material was dumped into the old gravel quarry at Cedar Creek and used as fill at local properties.

Young America Mine Contamination

The Young America Mine (located on Hutson Jones Way in Evans, Washington) operated from 1897 through 1953 for mining zinc, lead, silver, and gold. A mill and tailings impoundment area associated with the mine are located across Highway 25 about half a mile west of the mine on the east bank of Lake Roosevelt and the Columbia River. There is a berm surrounding the south, west, and north sides of the impoundment while the east side is bordered by a hill leading to the remnants of the mill. The mine itself is mostly on land currently managed by the Bureau of Land Management while the mill and

impoundment area are located on private land subdivided into four plats (parcels of about 2 acres each). In 2006, the Washington State Department of Ecology (WDOE) obtained a single sample from a utility trench near plat 4 as part of another study. The sample results for arsenic, cadmium, lead, and zinc exceeded state and/or federal standards.

In June 2011, WDOE and the Environmental Protection Agency (EPA) conducted a site visit of this area and identified the tailings impoundment and a recently installed drinking water well within the impoundment on private property being sold for residential and recreational purposes. WDOE referred the site to EPA to assess potential risks to human and ecological health from contaminated soil, sediment, and water originating from mining operations at the former mill site. This assessment is outside of the ongoing CERCLA investigation.



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In July and August 2011, a field analysis was conducted by an EPA contractor. The team used a field portable X-ray fluorescence (XRF) analyzer (a handheld instrument used to measure the concentration of certain metals) to screen for hazardous metals at the mill and mine site and the adjacent roads to delineate the extent of potential contamination and select sampling locations. Soil sampling was completed for five locations with the highest screened lead results. In addition, two groundwater samples were collected from drinking water wells and one sediment sample and one surface water sample from the mine entrance.

Based on draft findings discussed with the region 10 EPA team, screening lead levels were elevated above the Washington Model Toxics Control Act Method A Level for Unrestricted Soil Use (250 mg/kg) for a number of soil locations in the mill and mine areas and some of the road samples. Levels decreased with increasing distance from the impoundment. Elevated lead concentrations were also found outside the berm area and in the surface soil on the hill between the mill and impoundment.

Laboratory results confirmed elevated lead levels along with levels of antimony, arsenic, cadmium, and manganese above EPA Regional Screening Levels (RSL) for residential soil in samples collected from the mill and mine areas. These samples exceeded Toxicity Characteristic Leaching Procedure disposal criteria for cadmium and lead. The Synthetic Precipitation Leaching Procedure results indicated that water run-off from the mill area may contain

antimony, arsenic, cadmium, and lead exceeding applicable human health risk screening criteria. The arsenic concentration in the groundwater sample collected from the well located in the tailings impoundment exceeded the EPA RSL for tap water.

In summary, this assessment found that berm material, some surface soils outside the berm, and surface soil on the hill between the mill and the impoundment exceeded human health screening criteria for some metals. The contaminated material volume in the berm and surface soils outside the berm is approximately 700 cubic yards and the area of exposed contaminated soil on the hill is about 0.3 acres; the area just south of the mine also of potential concern is about 7 acres. The soil sample Synthetic Precipitation Leaching Procedure results indicate that water run-off from the mill area may contain antimony, arsenic, cadmium, and lead exceeding human health risk screening criteria. The residential access road passing through the investigation area exceeded the action level for lead.

Following discussion with the EPA, one of the land owners has already had ten cubic yards of crushed rock placed on top of the most contaminated part of the access road on his property and clean sand placed on the access road from the edge of the crushed rock cover to the northern edge of his property. EPA recommends a removal action be conducted at the mill site and considered for the mine site. EPA is currently discussing next steps with the landowners and the WDOE. The assessment report will be available this spring.

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Mindy Smith, MD, MS

Bossburg Flat and Adjacent Beach Removal Assessment and Closure

Bossburg, originally named Young America, was a mining town with a population of 600-800 people in the late 1890s and early 1900s. It is currently listed as a ghost town with only a few inhabitants. The abandoned town, in fact, was flooded when the Grand Coulee dam gates closed in 1942, damming the Columbia River and creating Lake Roosevelt.

Bossburg Flat is located on the east bank of Lake Roosevelt and the Columbia River (picture below), approximately three miles NW of Evans, Stevens County Washington. The site is west of Highway 25 and is accessed by Bossburg Road and an unpaved road for approximately a half mile, followed by a quarter mile walk southward along the beach. The property is managed by the National Park Service.



Bossburg flat beach was targeted for a Removal Assessment following a beach sediment sampling event in April 2011 associated with the UCR Remedial Investigation and Feasibility Study (RI/FS). Elevated concentrations of lead were found that may be related to operations and/or disposal practices at the former Young America Mine. As with the Young America Mine site, the Removal Assessment was conducted to assess potential risks to human and ecological health. Additional objectives were to determine if contamination was associated with the upstream tailings impoundment at the former Young America Mine, and whether contamination could reasonably be attributed to waste slag from the Teck Cominco smelter.

An EPA contractor conducted field analyses in August 2011 to identify potential areas of contaminated soil along the stretch of beach where lead contamination had been found during the RI/FS. As with the Young America Mine Removal Assessment, an XRF (handheld instrument used to measure the concentration of certain metals) was used to analyze beach soil and beach material samples over about 1000 feet of the beach. Elevated lead levels were identified over a 50 foot stretch of beach that extended 150 feet up the embankment onto the open ground of Bossburg Flat. Remnants of a wooden and metal structure were found in the embankment where the highest concentrations of lead were observed on the beach. In addition to some sample locations where lead levels exceeded the State of Washington's Model Toxics Control Act

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Method A soil cleanup level for unrestricted land use, several samples also exceeded this level for arsenic. Manganese may also be of concern.

There was no visual evidence of material similar to the Young America Mine mill waste material on the beach. In addition, the team saw no evidence of slag on the beach and there were no similarities in the proportion of metals to the Teck Cominco slag sample used in the analysis. For these reasons and because the contamination extended up a steep bank and was higher than on any other beach between Bossburg and the US/Canadian Border, the team believed that the smelter was unlikely to be the primary source of contamination.

The Park Service issued a closure notification for an area of Bossburg flat and beach on January 10, 2012 based on the EPA information indicating that lead and arsenic levels in this area may be a risk to human health. The NPS and EPA are working to determine the next steps such as identifying potential sources, better defining the contaminated area, and how best to clean it up. A copy of the notice can be found on our website.

Mindy Smith, MD, MS

Preliminary Results from Two White Sturgeon Toxicity Studies Reported at SETAC Conference

White sturgeon populations in the Pacific Northwest have been declining for decades. The species is

listed as endangered in the Kootenai River system. Although mature sturgeon continue to lay viable eggs in the Kootenai River system, the eggs fail to hatch. No free-swimming larvae or older young have been found in the Kootenai River system in over 14 years. In the Upper Columbia River (UCR) system, mature white sturgeon lay viable eggs that do hatch. Unfortunately, very few UCR white sturgeon larvae survive to become young-of-the-year. Factors leading to the population decline are thought to include increased water temperatures, lack of suitable spawning substrates, reduced nutrients, increased predation because of high water clarity (low silt), an increase in predators including non-native predators, habitat loss from reservoir drawdowns, and water contaminants. More information on sturgeon and efforts to recover sturgeon populations may be found at <http://www.uppercolumbiasturgeon.org/>.



Two studies were performed in 2010 to evaluate the toxicity of metals and UCR sediments to white

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sturgeon using hatchery-obtained eggs. Preliminary results from both studies were presented as posters at the annual meeting of the Society of Environmental Toxicity and Chemistry (SETAC) held in Boston, Massachusetts in November 2011. The study performed at the University of Saskatchewan (UofS) examined the toxicity of UCR sediments to 1 to 60 day post hatch (dph) white sturgeon. The study performed by the United States Geological Survey (USGS) laboratory in Columbia, Missouri evaluated the toxicity and behavioral effects of known levels of metals to white sturgeon ranging in age from 1 to 160 dph.

The UofS study used flow-through chambers to examine survival rates and the general body condition of white sturgeon swimming above UCR sediments collected from two control sites in Canada and five test sites located between the international border and Kettle Falls, WA. Water only and artificial sediment were also tested as controls. Preliminary results showed no differences in white sturgeon survival or body condition between any of the test site or control site samples and any of the controls.

UofS investigators also collected water samples from all test chambers during the study. Water samples were obtained from the middle of the tank, near the bottom of the tank and from within the sediment (porewater) and analyzed for copper, cadmium, lead and zinc. Preliminary water sample results reported at the conference were the average of all weekly sample results. Individual weekly results were not reported. Porewater samples from the Deadman's

Eddy and Little Dalles sediment samples had average copper levels that were near threshold levels of concern. Threshold levels of concern were not reached for any other metals in any of the other averaged water sample results.

The USGS white sturgeon study was multifaceted. One study element examined the toxicity of water extracts (leachates) of UCR sediment samples to 30 dph white sturgeon. Five of the UCR sediment samples used in the UofS study were also used for this study. In this study, 75 grams of sediment were held in 2 liters of water and the water tested immediately or after aging seven days with the sediment. The white sturgeon were then exposed to the leachates for a period of 96 hours. Preliminary results showed 50 percent mortality (death) of the 30 dph white sturgeon to the aged and 30 percent mortality to the fresh Deadman's Eddy leachate sample. The authors suggested that copper may be primarily responsible for the sediment leachate toxicity.

The study also used dual flow chambers to evaluate the ability of 30 dph white sturgeon to avoid various copper concentrations ranging from 1.25 to 20 µg/mL. The dual flow chambers allowed fish to freely swim from the test side to the control side. The preliminary results reported that white sturgeon had no ability to avoid any concentration of copper in water, including lethal concentrations.

A second USGS study element compared the behavioral sensitivity of white sturgeon and rainbow trout to copper, cadmium, and zinc over exposure

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periods of 72 or 96 hours. The metal concentration at which 50 percent of the fish show a noticeable behavioral effect on equilibrium or mobility (EC50) was determined for white sturgeon and rainbow trout ranging in age from 1 to 95 dph. Preliminary results showed rainbow trout to be more sensitive to cadmium than white sturgeon at all ages tested. White sturgeon were far more sensitive to copper than rainbow trout at 30 dph and younger. White sturgeon 61 to 89 dph were much less sensitive to copper concentrations. Rainbow trout were found to be more sensitive to zinc than white sturgeon at all ages tested except the very young, 1 and 2 dph. Based on the EC50 values, the preliminary data indicated that EPA water quality standards for copper may not protect white sturgeon 30 dph and younger or rainbow trout 96 dph. The preliminary EC50 values indicated that EPA water quality standards for zinc may not protect 2 dph white sturgeon or 18 to 96 dph rainbow trout. The authors found that most behavioral effects occurred within 24 hours of exposure to the metals. The authors also found that young (1 to 8 dph) white sturgeon did not show typical hiding behavior when exposed to copper levels well below the EPA water quality standard.

Final reports on these studies are expected from both groups later in 2012. Also available in 2012 will be an EPA Office of Research and Development peer review of both studies. The peer review will help EPA determine how the results from these unique studies will be considered in the RI/FS.

Joe Wichmann, PhD; CCC Technical Advisor

Technical Advisor Report: Update on the Remedial Investigation/Feasibility Study (RI/FS)

Ongoing work on the draft report "Surface Water Data Summary and Data Gap Report" dated November 2010, continued to be the focus of a major portion of my document review efforts since July 2011. CCC's formal comments on the draft report were provided to the EPA in July 2011. EPA incorporated many of CCC's comments in their comments to Teck America, Incorporated (TIA) concerning the draft document. Several conference calls with EPA and their subcontractors resolved most of the additional concerns CCC had with the draft report. An important outcome of these discussions was the clarification that analytical results from all replicate samples collected at a sampling site were averaged prior to data analysis. These average analytical values and the individual analytical values from single sample collection sites were used to calculate the results presented in the report. This clarification resolved many of the apparent database inconsistencies.

Replicate sample result averaging raised some new concerns. CCC believes averaging should not be used when the standard deviation is greater than the mean of the sample values. In addition, CCC would like to see an explicitly defined procedure for averaging replicate sample analyses. CCC is also concerned with how individual sample results that are above levels of concern will be treated for risk assessment when the average analytical results of all

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the replicate samples collected at that site fall below the level of concern. Additional unresolved concerns include clear sample identification in the database, and the possible lack of data validation for isotope results.

Most of CCC's concerns with the draft "Fish Tissue Data Summary and Data Gap Report" were addressed in EPA's comments to TIA on the document. Clear sample identification in the database and the reporting and use of replicate sample analyses are ongoing concerns with the report.

I reviewed the draft "Tribal Consumption and Resource Use Survey" report. CCC's major concern with the report was the apparent early termination of the study prior to survey completion. Only about half of the planned interviews were conducted. CCC was also concerned with the limited analysis of the data collected. A conference call with CCC, EPA, the Confederated Tribes of the Colville Reservation, and Westat, the primary survey contractor was held on November 30, 2011 to discuss CCC's concerns. The discussion clarified that the three-year contract with Westat expired before all the survey interviews could be completed. Westat has since been awarded a new contract. There are no plans to resume survey interviews, however, CCC's data analysis concerns are being addressed along with several other concerns that were not covered in the conference call.

I also provided CCC with a review of the "Draft Quality Assurance Project Plan for the Phase 2

Sediment Study." CCC has not yet issued its formal comments to EPA.

I attended the September 30, 2011 special meeting of the Eastern Washington Council of Governments held in Davenport, Washington. Mr. Dave McBride from the Washington State Department of Health (WDOH) summarized results from the 2009 fish study and presented a draft WDOH fish advisory based on those results. Mr. McBride compared the draft WDOH fish advisory to the 2008 WDOH fish advisory that was developed from the 2005 fish tissue study. The draft fish advisory presented at the meeting had less stringent consumption guidelines for smallmouth bass and walleye than the 2008 fish advisory (four meals per month (mpm) compared to two mpm in 2008). The draft fish advisory had more stringent consumption guidelines for largescale sucker (two mpm verses four mpm in the 2008 advisory). Draft fish advisory consumption guidelines were presented for five species not mentioned in the 2008 advisory; kokanee (unlimited mpm); lake whitefish (eight mpm); longnose sucker (four mpm); mountain whitefish (four mpm) and rainbow trout (8 mpm). The final fish advisory from the 2009 study will be issued by WDOH soon.

Joe Wichmann, PhD; CCC Technical Advisor

More Teck Spill News

The most recent Teck spill occurred on November 9, 2011 when there was a discharge of cadmium (5.67 kg) and copper (13.14 kg) into the Columbia River. The Washington State Emergency Measures

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Offices was briefed on the situation by Emergency Management BC. No one seems concerned about the risk to human health from this incident to date.

Mindy Smith, MD, MS

Waneta Border Crossing Expansion

The replacement, expansion and modernization of the Boundary (Waneta) United States Customs and Border Patrol (CBP) facilities began in 2009. In September 2009, CBP sent copies of the draft environmental assessment for the project to the local libraries (Stevens County, Spokane, Republic and Kettle Falls) and legal notices to local papers (Indian Country Today, the Statesman Examiner and The Pacific Northwest Inlander). This started the clock on the 30-day review period (September 15 to October 14, 2009) for environmental assessment.

The final environmental assessment for the project with a finding of no significant impact (FONSI) was issued by U.S. Department of Homeland Security in March 2010 with a supplemental environmental assessment and FONSI issued in August 2010.

Neither assessment identified the possible contamination of the surface soil as a potential hazardous material.

On March 8, 2011, the Stevens County Commissioners scheduled a hearing for April 5, 2011 to consider CBP's request for Stevens County to convey the right-of-way for the road leading to the Boundary port of entry. The CBP plans specified regrading the road to a shallower grade. The right-

of-way hearing was rescheduled for April 11, 2011 when it became apparent that public interest in this hearing was very high and the original hearing room would be too small to hold the anticipated crowd.

The construction phase of the CBP replacement and modernization project started in early April 2011 at approximately the same time that the rescheduled hearing was to take place. The April 11, 2011 hearing was well attended and overflowed the sheriff's ambulance training room. A number of issues were raised by concerned citizens at the hearing, including whether the soil planned for removal along the right-of-way had been tested for toxic metals, given the site proximity to the Trail smelter. The hearing was continued to April 19, 2011. At that hearing, the commissioners agreed to deed the right-of-way to the U.S. Government, contingent on analysis of the overburden soil for toxic contamination prior to removal of the soil from the construction site. The original construction plan had all the overburden soil being trucked to an abandoned quarry in Cedar Creek and other private properties near the construction site.

As a result of the April 19 hearing, construction work at the site was halted pending soil analysis results. CBP contracted the Englewood, Colorado company HDR to perform surface soil analysis for silver, arsenic, barium, cadmium, chromium, mercury, lead and selenium. A total of 6 composite soil samples were collected on April 27, 2011 from five places at the site (1 duplicate sample was collected). The samples were analyzed by TestAmerica Seattle and results reported on May 2, 2011. The results were

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compared to WDOE unrestricted land use limits. All five samples exceeded the allowed limit for cadmium and three of the five samples exceeded the allowed limit for arsenic and lead. (Comparison to the DOE industrial property cleanup levels revealed that all 5 samples exceeded the industrial cleanup level for cadmium, 3 samples exceeded the industrial cleanup level for arsenic, and one sample exceeded the industrial clean up level for lead). It was determined after this original sampling that the unrestricted land use limits applied to the construction site.

As a result of this report, a more extensive soil sampling and analysis plan was developed and followed. The expanded sampling plan specified the collection of thirteen additional composite surface samples (the road berm, stockpiles of soil already removed, and undisturbed samples at the construction site) and sub-sampling from twenty core sample boring sites (0-3', 3-5' and then in 5 foot intervals to the maximum depth of 35' bored); this occurred May 9 to 11, 2011.

Of the surface composite samples, only the three collected from the road berm had no metal levels exceeding regulatory limits. All ten of the other surface samples had cadmium levels exceeding regulatory limits. Seven samples had arsenic levels above the limits and five samples had lead levels above the limit. Six of the twenty core samples had cadmium levels above regulatory limits. All six were in the 0-3' sub-samples.

Six of the surface composite samples were further analyzed to determine if the soil could be disposed of at the Stevens County landfill or if the material was considered to be dangerous waste and would have to be disposed of at a dangerous materials disposal site.

The results of the Toxicity Characteristic Leaching Procedure (estimates the amount of material that may dissolve in a landfill and enter groundwater) for all six samples were well below levels of concern. As a result, the contaminated soil could be disposed of at the Stevens County landfill; this plan was accepted in June by the Northeast Tri County Health District.

Shannon & Wilson, Inc. of Richland Washington was contracted by Randolph Construction Services, Inc. of Pasco, Washington (the primary contractor for the construction project) to develop and implement a Cleanup Action Plan (CAP) for the construction site. The August 4, 2011 CAP specified that in phase 1, all soil be removed from the construction site to a depth of 10". After phase 1 soil removal was completed, the entire construction site was sampled at 37 surface sites to determine the success of phase 1 soil removal and at 3 additional surface sites to determine if other undisturbed areas required remediation.

Three areas found to have cadmium levels above regulatory limits had an additional 8-12" of soil removed in phase 2 remediation. An additional 12 surface samples were collected and analyzed to evaluate phase 2 success and all 12 passed (arsenic, cadmium and lead levels below levels of concern).

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Phase 1 and 2 information was released in the October 24, 2011 summary report of the soil remediation at the Boundary Land Port of Entry prepared by Shannon & Wilson, Inc. for Randolph Construction Services, Inc. The report concluded that all contaminated soil had been removed from the site.

Approximately 4780 tons of contaminated soil was disposed of at the Stevens County landfill from August 17 to September 15, 2011 as a result of the soil remediation work done for the project. Had citizens not voiced their concerns at the April 11 and 19 Stevens County Commissioners hearings, all of the hazardous material would have been dumped into the old gravel quarry at Cedar Creek and other private sites nearby.

One can't help but wonder about the usefulness of an environmental assessment process that failed to identify the possibility of soil contamination at this site, especially in light of federal litigation involving Canadian smelter contamination issues in this region. Perhaps environmental assessments should not be performed by the organization proposing to do the work.

Some government agencies and programs, both federal and state, tend to dismiss and minimize the usefulness of public input. This project is a perfect example of why public input should be sought and respected throughout the life of government projects.

Submitted by a concerned citizen

Lake Roosevelt Forum (LRF)

MARK YOUR CALENDARS! The annual meeting of the LRF will be April 16th and 17th, 2012 at the Davenport Hotel in Spokane WA. To sign up, go to <http://www.lrf.org/conf/index.html>. Scholarships are often available to those who can't afford to attend and are not attending as part of their employed organizational responsibilities.

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 at the Museum in Colville. We will post updated information on the website. Please join us.

You can also write to our EPA project manager Helen Bottcher (Bottcher.Helen@epamail.epa.gov), the EPA region 10 administrator Dennis McLerran (McLerran.Dennis@epa.gov)

For contact information with Washington State Department of ecology John Roland (jrol461@ecy.wa.gov) or your legislators, see our January 2011 newsletter

