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Comments on the draft Human Health Risk Assessment for OU2 and OU3 and for the Baseline Ecological Risk Assessment.

Thank you for the opportunity the comment on the HHRA and BERA for the Smurfit Stone mill site characterization.

I feel it is misleading to continue to justify a weak sampling design by using explanatory terms like, "only 6% of the product was bleached". It would be far more transparent and honest to state exactly how much product was bleached over the 39 years that the process was used. According to the Analytical Results Report for a Confined Site Inspection and Removal Assessment for the Smurfit Stone mill (2012) as well as the Champion International Frenchtown mill discharge permit Addendum (1986), the mill initially bleached 150 tons per day. In one year there would have been 54,750 tons of bleached pulp produced and over 39 years, there was **2,135,250 tons** of bleached pulp produced. In the 2012 URS, they state that the bleached pulp was made on site, with a process that's byproduct is a dangerous carcinogen, dioxin. As a Federal Agency that is charged with protecting human health and the environment, why are you failing to earnestly characterize the issues of contamination caused by the bleaching process at the mill for 39 years. In the 1986 Addendum (pg. 19), it states, "In view of the considerable quantity of chlorine derivatives that are used in the production of bleached pulp at the mill each month and which are ultimately disposed of via the mill's wastewater treatment system, further investigation into this area may be warranted". In kraft pulp mill sites across the country, dioxin is a dangerous byproduct of the bleaching process. The suggestion made by EPA and DEQ that dioxin is all over, produced by forest fires, is like suggesting that an individual diagnosed with lung cancer can blame the effects of forest fires without acknowledging that the individual smoked for 39 years. The mill is responsible for dioxin pollution, among other contaminants of concern. The agencies created to protect human health and the environment are failing in the characterization of the mill site and failing to protect human health and the environment.

In multiple reports, it was documented that the effects of the mill's wastewater were farther downstream than 17 miles. It appears that the Ecological Risk Assessment is not sampling far enough down river to capture all potential ecological receptors. In the Addendum (1986) there are references to studies finding that the effluent affected the intergravel water quality for at least 25.6 miles.

Summary

Fishery studies conducted to date on the middle Clark Fork River suggest Champion effluent affects intergravel water quality for a distance of at least 25.6 miles downstream from the discharge. Findings from a field bioassay indicated brown trout egg survival rates were lower at sites immediately downstream and 25.6 miles downstream from the pulp mill effluent than at an upstream control. Brown trout embryo development was also significantly slower at sites downstream from the pulp mill effluent than at the upstream control.

Intergravel water quality will be monitored by the Department of Fish, Wildlife and Parks (DFWP) at eight study sites on the Clark Fork River during the brown/rainbow trout incubation period in 1985-86. In addition to the Council Grove, Champion and Cyr bioassay sites established in the fall of 1984, intergravel water quality will be monitored at sites near Milltown Dam, in the main channel of the Clark Fork River near Council Grove, near the Erskine Fishing Access (several miles downstream of the Champion effluent discharge and within the mixing zone), near Huson (below the Champion mixing zone) and near Superior (also below the Champion mixing zone). This will provide a total of three monitoring

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Champion International Frenchtown Mill Discharge Permit MT-000035 Addendum 1986

There are references to phosphorus and nitrogen loads impacting Lake Pend d'Oreille. In the comments of the Final EIS (1986) for the mill, a concerned citizen points out the damage that the waste water effluent had on the lake. It is important to note that the effects of the mill's wastewater reached Lake Pend d'Oreille and that sampling for ecological and human health receptors is necessary from the former mill site to at least Lake Pend d'Oreille.

Comment 2:

The principal attraction of the Sandpoint area is Lake Pend Oreille. A large area surrounding the lake derives revenues either directly or indirectly from the water-based recreation provided by the Clark Fork River and Lake Pend Oreille and through the sale of water front properties. It is perceived by many that Lake Pend Oreille is the ultimate settling pond for the Frenchtown mill effluent. That fact, together with the constant publicity about Champion's wastewater discharge into the Clark Fork River, is affecting the value and marketability of properties along the Clark Fork and Pend Oreille Rivers and Lake Pend Oreille. Retail activity and the tourist industry are

liable to suffer comparable setbacks if the Champion discharge isn't eliminated or improved.

Champion International Frenchtown Mill Discharge Permit Final EIS, August 1986

The waste dumps and sludge pond contents need to be removed from the area. There is no justification for leaving the waste and sludge in place, it does not need to be sampled, it simply needs to be removed. The suggestion from EPA that the waste is not in contact with groundwater is not sound. Thus far the test results from high and low water sampling has not been shared with the trustees nor with the public, so how is it that there are statements made by the EPA that groundwater is not in contact with the contents of the unlined waste dumps and sludge ponds? Only one sample was taken from some of the dumps and ponds is not adequately characterizing the extent or contents in the area. There is potential risk of PCB contamination in these areas at depths greater than has been tested for so far. It is commonly heard at meetings about the mill characterization, that if you do not look for it, you will not find it. It is difficult to feel confident that the EPA is conducting environmental due diligence at the former Frenchtown mill site. The number of composite samples weakens the rigor of this Remedial Investigation.

It is unclear why the agencies have disregarded comments from the Missoula Water Quality District, the Missoula County Board of Health, and the Water Quality Advisory Council, on the issue of the waste dumps and sludge ponds. Peter Nielsen has found 27 letters since 2011, that explicitly ask for a more complete characterization of the dumps, yet so far this concern has fallen on deaf ears.

In the EPA's response letter to the BTAG, Joe Vranka states that there are alleged barrels on site, but they have not been found. It is clear that because of the lack of adequate sampling in these areas, that no barrels have been located. The site conceptual models in the HHRA for OU3 state that dumps and sludge ponds are primary sources of contamination, yet there is no description of the exposure pathway of erosion and discharge of contaminated material into the Clark Fork River during high water events. Joe Vranka responded to concerns about dike stability by stating that there is little risk that floodwaters would over top the dikes. Scientists that are capable and knowledgeable about the relationship between that dike and the river have long stated that overtopping is not the only potential failure of the non-engineered levy. In the 2016 River Design Group study of dike stability, they found multiple failure modes, which include, under seepage, avulsion, erosion, and liquefaction.

Table 1. Summary of SB-310 Permits issued at the Smurfit Stone Mill Site

Permit #	Year	Maintenance Action
MS-19-76	1976	Place 500 feet of riprap
MS-25-76	1976	Dredge three side channels to increase flow and reduce stagnation
MS-41-76	1976	Additional dredging in one side channel
MS-90-78	1978	Placement of 3,250 feet of riprap over 10 years
MS-31-87	1987	Re-channel O'Keefe Creek
MS-32-87	1987	Dig weeds out of LaValle Creek
MS-09-90	1990	Repair 150 feet of riprap
MS-48-91	1991	Install two rock barbs and 175 feet of riprap
MS-58-91	1991	Remove woody debris and repair outfall pipes
MS-101-96	1996	Install a culvert in LaValle Creek
MS-20-98	1998	Repair 470 feet of riprap
MS-01-01	2001	Emergency repair of dike breach
MS-36-07	2007	Repair outfall pipe

River Design Group 2016

Table 2. Summary of Levee Failure Modes1

Failure Mode	Description		Applicability to Smurfit Stone Mill Dikes
Structural Forces			
Impact	Collision with an object	Low	No barge traffic or large boats
Tree root damage	Development of internal voids	Moderate	Few existing trees currently
Slope failure	Foundation destabilizes	Moderate	Unknown foundation, but most likely an alluvial sand/gravel foundation
Sliding	Pressure force from high water on one side pushes the dike	High	CFR flood or holding pond volume could create high stage
Hydraulic Forces			
Underseepage	Seepage through porous foundation causes piping	High	Unknown foundation, but most likely a permeable alluvial sand/gravel foundation
Internal erosion	Seepage through an internal void causes piping	High	Potential for animal burrowing and documented in maintenance history and photographs
Liquefaction	Failure of saturated loose soils by vibration such as an earthquake	Moderate	Unknown percentage of sand in dikes and low frequency of earthquakes
Bottom heave	Rapid underseepage caused by a surge of water pressure	Low	Surge of water pressure unlikely
Surface Forces			
Overtopping	Water flows over the crest and causes scour	Low	Some uncertainty, but dike height generally exceeds flood elevations in most locations
Surface erosion	Flowing water along the dike face	High	Numerous documented occurrences in maintenance history and photos
Wave impacts	Wave forces from boats or wind	Moderate	Potential exists when combined with other modes

River Design Group 2016

The 1986 Addendum reported that 40 percent of the effluent leaving the plant was directly discharged into the Clark Fork River. Infiltration and evaporation were the other pathways for the wastewater. It is likely that if the National Weather Service prediction for 2018, the likelihood for flooding in the lower Clark Fork River is high, which increases the risk of groundwater infiltrating the dikes and increasing the potential of mobilizing contaminants in the sludge ponds and waste dump. Champion International

Under ARM 16.20.701(6) the meaning of "discharge" must first be considered.

In 1982 approximately 40 percent of the effluent leaving the plant was directly discharged to the Clark Fork River, the remainder evaporated, seeped from the holding ponds or was deliberately infiltrated into the ground in the rapid infiltration basins. This seepage and infiltration amounted to about 58 percent of the total effluent leaving the plant. The previous permits had no limitations on the timing of these discharges. Knowledge of the actual time of year that these discharges reached the river is very limited, however, it is reasonable to believe that such seepage occurred year-round. In fact, because the flow of groundwater is controlled in part by the differences in head (or elevation) between the river and the ponds, it is probable that seepage "flows" into the river were greatest during periods of the year when the water levels in the river were lowest. The proposed permit allows direct discharge during this same time period with one exception: when the flow is less than 1900 cfs, the seepage uses up all of the "allowable color increase" in the river and direct discharges are not allowed. Thus, nondegradation is not a factor when river flows are greater than 4000 cfs and when discharge will not change from previous levels, nor does it apply when river flows are less than 1900 cfs and when there cannot be any new discharge.

Frenchtown Mill Discharge Permit MT-000035 Addendum 1986

Sara Sparks has said many times at public meetings that the community has said that they want the site cleaned up quickly and for business to return to the site. I have been to every Frenchtown Community Advisory Group meeting, and there has never been a declarative statement that suggests that we want anything but a thoroughly cleaned up site that leaves future generations with the environment that their great-grandparents enjoyed on the Clark Fork River. The value of the place is far more than economic to the diverse group of stakeholders in our group. I want to see the site completely restored, the sludge ponds and waste dumps removed, the dikes removed, and the contaminants of concern, like arsenic, dioxin, PCB's, methyl mercury, and manganese removed from the area.

University of Montana Professor Tom Power touched on this consideration in a 1983 article in Western Wildlands. He said:

Money income alone is not an accurate measure of economic well-being, and economics is more than the study of dollar flows and relationships. Some of the real goods and services available to individuals cannot be bought and sold on the market, and it is difficult, if not impossible, to define their monetary value...The natural environment or the larger society still furnishes many important goods and services. These include clean air and water, unspoiled recreational opportunities, security from violence and crime, beautiful landscapes, a rich and varied culture and stable, attractive communities.

Champion International Frenchtown Mill Discharge Permit MT-000035 Addendum 1986

I agree with the Frenchtown CAG comments pertaining to the sampling being inadequate:

> Biological and ecological sampling is too narrowly focused. Biological and ecological sampling has been inadequate to assess pollution, spatially and in intensity. There is concern some background data may be from areas too close to the Site to provide adequate differentiation, or as in the case of fish studies, is inappropriately coming from lake rather than riverine models. The effects of the mill's wastewater effluent are known to have affected intergravel water quality for at least 25.6 miles downstream. The Baseline Ecological Risk Assessment should increase the area of study for biological receptors to at least 30 miles below the former mill.
> There is concern particularly related to calculating human health risks of fish consumption, which needs to be more adequately addressed. The tiered approach of testing sediments, then benthic macroinvertebrates, is likely to result in nondetects or low-level detections of contaminants, precluding testing of fish. Contaminants have already been found in fish. By designing a fish study with appropriate geographic scope and careful controls (such as the Clearwater and Bitterroot Rivers) not influenced by fish movements or air borne contaminants from the Site, human health risk can be more correctly assessed. It needs to be determined if the past results found by Montana Fish Wildlife and Parks researchers are from the Site or not.
> Subsistence fishing is very important to the downstream Confederated Salish and Kootenai Tribes and the Kalispel Tribe. There is research evidence of subsistence fisher consumption exceeding 300 grams/day,1 which is far higher than the EPA's threshold. 1 February 21, 2018 letter CSKT to EPA, Evaluation of Tribal Subsistence Fisher Exposure Levels to Contaminants within the Clark Fork River at the Smurfit-Stone Site, page 4.

A fully-funded, comprehensive fish study is necessary. The fish consumption warnings cannot be removed from the 105-mile stretch of the Clark Fork River without further investigation, and the

likelihood that the waste water effluent and the air pollution effluent has impacted the fishery. Joe Vranka stated that the EPA looked at weather patterns and found that there are no impacts of air pollution. In the 2012 URS report, it was noted that O'Keefe creek had concentrations of numerous dioxin, furan congeners that were significantly elevated above the concentrations found in the Clark Fork River background sediment samples. They concluded that it is possible that O'Keefe Creek had been affected by dust blowing from the surface of sources at the mill site. Dr. Barry Commoner had studied the effects of industrial, airborne pollutants in North America, and in his report, Long-range Air Transport of Dioxin from North American Sources to Ecologically Vulnerable Receptors in Nunavut, Arctic Canada, 2000, he found that industry like pulp and paper mills contributed to dioxin pollution as far away as the Arctic. According to NOAA weather station data, the winds around Frenchtown have considerable variation during the 53 years that the mill was in operation. There has not been consistency in direction nor velocity of wind events, which makes the possibility of wind-transported dioxin high.

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Prevailing wind direction measured at Missoula County Airport 1992-2002 (NOAA, 2018)

There needs to be studies conducted on the Frenchtown, Huson, Evaro, and Arlee communities to make sure that there are no health or ecological risks associated with the air pollution from the former mill.

Finally, it has been stated by multiple trustees, that the risk assessments are premature without a completed Remedial Investigation. To avoid a lengthy, costly characterization and clean up, please complete the RI before moving forward with the Human Health and Ecological Risk Assessments.

Thank you for the opportunity to comment on this very important process.

Sincerely,

Personal Matters / Ex. 6 x. 6