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Wildsight comments on proposed VCs for North Coal

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Wildsight is an environmental organisation with a history of more than 30 years in the Elk Valley, working on many environmental issues, particularly those related to industrial landscape disturbance and water. In particular, we have been working on water quality issues related to the Elk Valley coal mines for many years.

The current cumulative water quality impacts of the existing Elk Valley coal mines clearly preclude any additional mines within the watershed. The current water quality situation is already an international water crisis, so it is unreasonable to consider adding additional mines.

Beyond water quality concerns, the Elk Valley is a heavily disturbed landscape, with the impacts of extensive crown-land logging, rapid liquidation logging on extensive private land comprising 1/8th of the Elk Valley owned by Canwel, and the extensive footprint of the existing coal mines. The Elk Valley is a crucial connectivity area for the Yellowstone to Yukon corridor and the Crown of the Continent Ecosystem. Within that context, it is similarly unreasonable to consider any additional large-scale disturbance of the landscape, like that proposed in this project.

The Michel Creek watershed in particular is subject to significant cumulative effects of industrial activity and forestry. The Michel Creek watershed is a human disturbed landscape but remains critical to the health and function of the larger landscape of the Elk Valley and beyond. In recent years, the watershed has experienced large scale forest liquidation on private timberlands and aquatic and terrestrial impacts from the Coal Mountain Mine. In recent years, cumulative impacts such as the expansive road networks throughout the Michel Valley have resulted in cascading cumulative effects on wildlife populations and ecological processes. While large portions of the watershed have been degraded by forestry and mining activities the region remains core habitat for grizzly bears, goats, westslope cutthroat trout, whitebark pine, and other species of management concern.

The Michel Creek watershed is also critical to the health and function of the larger Crown of the Continent Ecosystem. Wide ranging carnivores like grizzly bears, wolverine, and lynx rely on the health and function of the Michel Creek for connectivity.

The Elk Valley Water Quality Plan & Cumulative Effects: References to the EVWQP are found throughout the document, indicating the proponent plans to stay within the limits set out in the EVWQP.

The EVWQP is a plan developed and implemented within the context of a single polluter (while Teck has multiple mines, they are just one company). There is no mechanism in the EVWQP to divide up the pollution limits set out in the plan. It is entirely unclear how the proponent proposes to share these pollution limits with Teck or if Teck is at all willing to share pollution limits with the proponent. Teck's economic interest would be to keep all the allowable pollution under the EVWQP limits for their own use.

Furthermore, Teck has already allowed selenium pollution in Lake Koocanusa to exceed the limit under the EVWQP and has released modelling showing selenium levels in Lake Koocanusa will be above the EVWQP limit for at least a few years and then remain at the limit for decades. There is simply zero space for additional selenium in the watershed, leaving selenium limits for the proponent at zero. Limits for other pollutants, particularly nitrate, may also be very low or zero.

Even with hundreds of millions of dollars spent, Teck has yet to bring selenium or other pollutant levels anywhere near zero. It is highly unlikely that any other company would be able to achieve what Teck hasn't been able to do, at least within the economic realities of the global, competitive coal mining industry.

In particular, the proponent proposes to rely on untested and unproven technologies, particularly waste rock dump construction techniques to avoid the release of selenium and technologies with very little real world testing, particularly saturated rock fills for water treatment. Given the already high levels of pollution, it is entirely inappropriate for the proponent to rely on these unproven technologies. The EA process must consider scenarios where these technologies do not work as the proponent hopes. Higher pollution levels, in line with those from existing mines in the Elk Valley, must be fully considered, including their cumulative impacts on all relevant VCs, particularly fish.

Even active water treatment technologies, like those used by Teck at their one treatment facility in the Elk Valley, have a very weak track record, with less than a year of operation at West Line Creek since the plant was restarted after the speciation issue was discovered to be increasing the bio-availability of selenium downstream. Active water treatment cannot be relied on for this EA.

Additionally, the limit for selenium in Lake Koocanusa may need to be reduced significantly in the near future, in line with recommendations for the bi-national Lake Koocanusa Monitoring and Research Working Group to protect fish, as detailed below under the fish VCs. In this context, Teck's modelling showing selenium levels reaching 2ug/L for decades, much higher than the likely result of the Koocanusa process, makes it clear that there is absolutely no room for additional selenium pollution in the Elk Valley. If a lower limit is set, Teck will struggle

significantly to meet it with their current mines, and may not be able to, making any additional mines unwise.

Long-term considerations: Fundamentally, the EA process must consider the long-term impacts of ongoing water pollution after the proponent has finished mining and reclamation.

It is well known that selenium leaching from existing Elk Valley coal mines will continue at similar levels to those found at present for centuries or millennia. In this context, any treatment options that require long-term operation (active water treatment, saturated rock fills) are not appropriate. The proponent cannot reasonably commit to operating these treatment facilities for centuries or millennia. For the EA process, the only reasonable approach is to assume these treatment facilities will no longer be operated at some future point, resulting in the full selenium concentrations expected being released into the Elk Valley watershed.

As the proponent cannot rely on untested waste rock dump construction techniques, nor on treatment that cannot be operated over the appropriately long time-scale, the only reasonable approach is to consider that the proponent's mines may release similar levels of selenium and other pollutants to existing Elk Valley coal mines over the long term—and to consider the cumulative impacts of that pollution.

Furthermore, Teck's plans under the Elk Valley Water Quality Plan rely on expensive active water treatment plants that we cannot reasonably assume they will operate for centuries or millennia. For the purposes of assessing long-term cumulative effects, the EA must assume that all of Teck's current and planned mines will release pollutants without treating them at some future point. In this context, it is even more clear that there is no additional space within the EVWQP or reasonable limits to protect aquatic life to allow any additional water pollution in the long term. Nonetheless, if the proponent continues in the EA process, they must evaluate the full impact of all selenium and other pollution at a point 1000 years in the future, when water treatment is no longer taking place.

Study areas: The aquatic Regional Study Area must extend downstream beyond Lake Koocanusa, to the Kootenai River and the US endangered white sturgeon found there, as detailed below.

Comments on specific VCs:

Air Quality & Emissions: GHG emissions from this project will be significant (nearby competitor Teck's GHG emissions account for roughly 3% of BC's total emissions). We are living in a climate emergency, with a desperate need to reduce emissions immediately. BC and Canada's climate plans acknowledge this fact, but fail to provide a clear pathway to the needed emissions reductions. In any case, GHG emissions are hugely important and should be fully studied in context as a standalone VC, especially given as their impact is global, which is very different from the local air quality scope.

Given Canada and BC's commitments to significantly reduce GHG emissions, but as of yet the lack of clear plans from either jurisdiction on emissions from coal mining or similar extractive industries, it is difficult for the project to be evaluated against any particular standard. It is unclear from the draft VC how the project will be evaluated. We suggest that, given that BC and Canada have committed to reducing GHG emissions (and BC has committed to reducing industrial emissions, including mining emissions, significantly), the only reasonable standard to measure the project against is no net increase in GHG emissions. The proponent needs to address how GHG emissions associated with the project would be in line with BC and Canada's, as well as UN, commitments to reduce emissions. Of note, BC's climate plan accounting does not appear to allow for any emission increases from the mining sector. If the project will increase GHG emissions, as it certainly significantly will, it should not proceed.

Additionally, the project is a coal mine. In the steelmaking process, roughly 99% of the carbon in the coal used ends up in our atmosphere. The EA must consider the total worldwide GHG emissions associated with the mine, not just direct emissions, including the burning of the mined coal to produce steel. Additional transportation in BC (by rail) is an important component of this VC which must be evaluated, along with all lifecycle emissions. Global warming is a global problem and the only appropriate scope for assessing this component is global, with a lifecycle approach, including extraction, transportation and use.

Surface Water: Given the well-known coal mine water pollution problems in the Elk Valley, this is a crucial VC. In addition to the pollutants mentioned, the VCs must also address nickel pollution, known to be a growing problem in the Elk Valley. The VCs must also address calcite, also a well-known issue in the Elk Valley.

Fish and fish habitat: The proponent must demonstrate that they will not deposit any deleterious substances to fish habitat as required under the federal Fisheries Act. We do not believe the proponent is able to demonstrate zero release of deleterious substances. We note that ECCC is currently considering charges against Teck for releasing deleterious substances in the Elk Valley and it is likely the proponent would violate the Fisheries Act in the same way.

Additionally, quality of fish habitat must be considered, including all relevant factors.

The proponent proposes to study metal concentrations in fish. They must also consider the impacts of other non-metals pollutants on fish, either directly or indirectly (selenium, nitrate, sulphate, calcite).

Old Growth Forest: While the proponent indicates that currently there is no old growth forest within the project area, it is important to note that the project area has the potential to support old growth forest in the long term. Reclamation plans are currently unclear, but they are unlikely to support old growth forest on areas disturbed by the project. This loss of future old growth must be considered in an old growth forest VC. This is in line with the old growth component of the CEMF process and its findings showing low levels of old growth in the Elk Valley.

Benthic Invertebrates: These are an important indicator of stream health, as well as an important step in the bioaccumulation of selenium in fish and other aquatic species. It is important to consider not just overall abundance, but the relative species abundance, beyond just EPT and overall measures of diversity, with sufficient detail to detect the impact of water quality changes.

Westslope cutthroat trout, Bull trout, Longnose sucker, Mountain whitefish: This project, by increasing water pollution downstream in the Elk River and Lake Koocanusa, will have impacts on these species outside the Michel Creek watershed. This impact must be considered in these VCs. It is not sufficient to rely on the Elk Valley Water Quality Plan, as North Coal has no agreement with Teck to allow them to contribute water pollution against the limits in the plan. Additionally, limits under the EVWQP in Lake Koocanusa have already been significantly exceeded for selenium, suggesting the acceptable levels that this project could contribute to the EVWQP would be zero.

Impacts on fish in Lake Koocanusa are being studied by the Lake Koocanusa Monitoring and Research Working Group, a bi-national body aiming to develop a site-specific selenium limit to protect fish in Lake Koocanusa and downstream (including US endangered white sturgeon). While that process isn't expected to reach a recommendation for governments on that selenium limit until 2020, all current indications are that this limit will be lower than the 2ug/L, in order to protect all fish and meet US and Canadian regulatory requirements (especially the US Endangered Species Act). As 2ug/L, the limit in the EVWQP, has already been significantly exceeded in Lake Koocanusa, it is highly unlikely that this project's water pollution would fit within the lower limit to be set by the LKMRWG. Therefore, VCs must consider the cumulative impact on each species individually and cannot rely on the EVWQP.

Additionally, the EA must consider the ongoing LKMRWG process and the potential that current limits in the EVWQP are not protective of aquatic life. Should Canada fail to limit pollutants crossing the border in Lake Koocanusa to levels safe for aquatic life, Canada risks running afoul of the 1909 Boundary Waters Treaty between Canada and the USA. Consideration of the Boundary Waters Treaty and the LKMRWG process in the EA process must be included.

Burbot, Northern pikeminnow, peamouth chub, Kokanee: By increasing water pollutant levels in the Elk River and Lake Koocanusa, these species will certainly be impacted. As explained above for other fish species, these impacts must be considered. Additionally, other sensitive downstream species that must be included are **redside shiner** (potentially the most sensitive species in Lake Koocanusa, may be a limiting factor for the site-specific selenium standard to be set by the Lake Koocanusa Monitoring and Research Working Group) and **white sturgeon** (a US endangered species, highly sensitive to selenium and present in the Kootenai River downstream).

Mountain goats: Mountain goats should be included as a separate sub-component. While habitat requirements can be similar to bighorn sheep, the distribution and use of the landscape

can vary greatly between mountain goats and bighorn sheep. Goats often choose terrain that is steeper and more precipitous compared with bighorn sheep. Male goats are known to disperse modest distances while bighorn sheep do not typically disperse and have fidelity to their home sites. Dispersing males could provide genetic diversity between goat populations so population connectivity should be evaluated as part of the EA process. Mountain goats can also winter in deeper snow areas while bighorn sheep tend to be on windswept ridges and solar aspects where they can easily access grasses, forbs, and lichens. Goats are highly sensitive to human disturbance, new roads and access can result in excessive mortality. For the above reasons, mountain goats should be included as a separate sub-component.

Birds: As selenium in water can impact reproductive success and growth in aquatic species (e.g. American dippers, spotted sandpipers), reproductive success and growth must be studied, not just general population metrics (reproductive success and growth may be much earlier indicators of problems than overall population). Testing for selenium levels in tissue or eggs, when possible, should be included for these aquatic species.

Spotted sandpiper: American Dippers are not an all-encompassing and reliable ecosystem indicator because there are many other species which are not year-round residents, who have different diets and who may be more sensitive. Dippers should not be a surrogate for other riverine habitat users. Teck has studied the effect of water pollution on spotted sandpipers (e.g. in “Evaluation of Selenium Sensitivity of Spotted Sandpipers Breeding in the Elk River Watershed of Southeastern British Columbia”, 2016). It would be unreasonable to think that this aquatic species, studied in depth by Teck, would be covered by the very general wildlife health VC.
Additionally, spotted sandpipers themselves are good bioindicators and thus important to consider for the following reasons:

- Not year-round residents: this allows a better indication of Se exposure to all of the other birds species that are migratory in the Elk Valley (e.g. red-winged blackbirds, northern waterthrush, varied thrush, perhaps even some of the waterfowl species like harlequin ducks and canada geese). Also, there is some evidence that sandpipers reach an equilibrium of selenium in their blood within two weeks of arriving on their breeding grounds and sandpipers are only exposed to one site-specific level of selenium in each breeding season. In contrast, the majority of dippers move around throughout the year (and thus are exposed to varying levels of selenium).
- Different diet: sandpipers do not eat the same invertebrates as dippers. They cannot dive down to the bottom of streams to get at the benthic invertebrates in the way that dippers can and thus eat different species mostly accessed by probing. They are more likely to eat smaller invertebrates, worms, midges, beetles and scraper species, as well as snapping up flying insects and eating insects that are not aquatic (since they spend their time on the banks and shorelines of bodies of water). They are not known to target fish and fish eggs during the breeding season, as dippers are.
- More sensitive: There is some evidence that sandpipers are more sensitive to selenium toxicity. Hatchability of eggs was lower in sandpipers even though levels of selenium

were lower than in dippers (Harding et al, 2005). Dippers may not be as sensitive to selenium.

- Better studied in general: spotted sandpipers have been studied in more depth in the Elk Valley than dippers have. Teck has previously used sandpipers as their species of choice for biomonitoring (at least in 2013/2014). Furthermore, spotted sandpiper eggs are more frequently collected and analyzed throughout BC, thus there are other reference values to use, whereas there is less data on american dippers.
- Easier to access nests and more common and abundant (in breeding season): if nests are going to be monitored, or eggs are going to be collected, in the future, it is much easier to collect these from sandpipers than from dippers. They nest on the ground on rock bars, rather than on steep rocky cliff faces or under high bridges. This will allow for a larger sample size and more accurate data.

Clark's Nutcracker: The Clark's Nutcracker should be included as a separate sub-component. The species is known to occupy the Michel Creek watershed. Mid to upper elevations in the Michel Creek watershed often have a high density of whitebark pine. While the species is not known to be highly sensitive to human disturbance they are dependent on the success of whitebark pine cone crops (and limber pine cone crops to a lesser extent). A recent study from the Greater Yellowstone Ecosystem documented two years of a population wide Clark's failure to breed. These two years coincided with very low whitebark pine cone crops.

The species is also believed to be threatened by tree mortality and reduced cone production resulting from beetle outbreaks and blister rust. Maintaining and restoring healthy populations of limber and whitebark pine is essential to the health and function of Clark's Nutcracker populations. The Clark's Nutcracker occupies both montane lower elevations and subalpine and alpine habitats. Proposed mining activities would likely severely impact both these habitats at a large spatial scale and could further threaten the viability of both whitebark pine and Clark's Nutcracker populations.

Clark's Nutcrackers also breed early in the year with peak breeding starting as early as February and lasting until late May, making avoiding operations during the breeding season more challenging compared with migratory birds. In addition, very little is known about their sensitivity during the winter nesting period and this factor should be addressed in the EA process going forward. As the Clark's Nutcracker has very different and specific habitat and food needs from other bird species, it should be considered as a separate subcomponent.

Columbia spotted frog: Study of the impact on western toad or wildlife health in general as indicated should not be surrogates for Columbia spotted frog. As noted the Columbia spotted frog is considered sensitive to water pollution. It is studied in Teck's work on selenium and other water pollution in the Elk Valley, alongside the western toad. Given the high likelihood of an increase in water pollution, it is crucial to study the impact on sensitive aquatic species, which must include the Columbia spotted frog specifically. It would be unreasonable to think that this sensitive aquatic species would be covered by the very general wildlife health VC.

Insects (and other terrestrial invertebrates): Insects and terrestrial invertebrates should be included as a valued component or at minimum a subcomponent. They should be evaluated using the best available taxonomy or at the lowest possible taxonomic level. Insects are crucial to the functioning of ecosystems.

Biodiversity: Biodiversity should be considered as a VC. The projects impact on rare grasslands, species at risk, riparian areas, water quality, wildlife habitat and connectivity is substantial and biodiversity should be assessed cumulatively as a separate subcomponent. This is inline with commitments from Teck for a net-zero impact on biodiversity. In the long term, the growing worldwide biodiversity crisis cannot be ignored in this EA and cumulative effects of which this project is part must be addressed directly.

Economic and Social: The potential for cumulative water pollution to negatively impact fish populations in the Elk River, with economically and culturally important fly fishing, must be specifically considered.

Additionally, the cumulative impact of water pollution on Lake Koocanusa, including potential impacts on recreation, must be considered, as well as the impact on the Kootenai River downstream. In particular, the cultural importance and spending to aid the white sturgeon in the Kootenai River, an endangered species in the US, must be considered.

Health: Country foods must specifically address potential impacts of cumulative water pollution on the health of those who consume significant amounts of fish from Lake Koocanusa. Scoping on this problem in the broader context of the Elk Valley Water Quality Plan has still not been completed to determine how people may be affected.

Thank you for considering our comments.

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