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REVIEW COMMENTS ON PROJECT DESCRIPTION, TENOVA PYROMET DESIGN, PLANT FLOWCHART, AND GENERAL COMMENTS

COMMENTS PROJECT DESCRIPTION (dated 9-18-18)
It is useful that dating of the project descriptions has begun. What is not good is that this scoping has very substantial changes from earlier versions, which are not noted. Transportation routing has changed significantly, but is incomplete. There is no way that environmental area impacts can be determined with the absence of critical offsite information and data. Ecology needs to minimize future litigation and project delays by ensuring the initial adequacy of the EIS process.

Corrective Action- Ecology should pause the EIS scoping activity until basic designs are more advanced. Of most concern, should be projected offsite areas to be disturbed. These areas potentially could be associated more people directly impacted than the planned plant area and. Transportation routing and areas of environmental disruption are unidentified and unplanned.
Corrective Action- Ecology needs to conduct an adequacy tracking of data and design needs before reinitiating the EIS scoping process.

COMMENTS ON TENOVA PYROMET PRELIMINARY PLAN LAYOUT (6-8-18)
1. Cooling of the product is not addressed. It appears that energy will be wasted and released into the immediate environment.
Corrective Action- Identify how the product will be cooled. It needs to be identified if water will be used to cool product and what quantity of water is needed for this purpose.
2. It is not apparent that heat energy is used efficiently, which directly relates to energy needed to run the plant and the concomitant net environmental impact from generating the energy and the energy costs.
Corrective Action- Revise the plant design to include for energy efficiency and energy conservation. Product and stack-flow heat energy should be recaptured, rather than wasted. Captured heat energy can be put to useful purposes, such as preheating raw input materials. Recapture and secondary uses of heat energy can make production cheaper in the long term, although initial capital costs will be increased.
3. The rail design is incomplete with respect to connections to the rail line and impacted areas. The current design is inadequate to determine environmental impacts.
Corrective action- The existing TENOVA PYROMET rail design (6-8-18) looks hypothetical rather than a site-specific design. Future designs need to include connection to the rail road, switching, and curves to come off at 90 degrees from the existing tracks, as well incorporation of the existing topography. A preliminary design is needed for the rail connection to the exiting tracks.
Corrective Action- It is unclear how this hypothetical rail design will accommodate incoming shipments, outgoing shipments, and switching. A well considered design by a rail engineer is needed
Corrective Action- A grading plan is needed to determine how much earth material needs to be moved, the diesel fuel required, and the resultant air emissions from diesel exhaust.
Corrective Action- A plan for property acquisition for transportation routes and areas is needed.
4. Because the plant design (6-8-18) has selected the plant elevation and slope on the drawing, it now possible to estimate the volume of earth moving necessary to create the plant area. The updated project description has identified more transportation links. It is assumed that Idaho Highway 41 and related connections will need to be upgraded. The scope also identifies a road link to the north that

runs through a residential area going into Newport.
Currently, the project scope does not address the project or transportation impacts. However, a lack of information should be noted to establish necessary impacts and excavations for the transportation areas offsite and how these areas will be connected to the plant area.
Corrective Action- Create a plant, civil-engineering grading plan to help identify the volume of the excavation for the plant area.
Corrective Action- Establish the offsite transportation areas to be procured and excavated. Estimate the volume of materials to be excavated to establish transportation links.
Corrective Action- Using tables supplied by excavation-machine manufactures, estimate the diesel fuel consumption gallons necessary to excavate the plant area and transportation routes.
Corrective Action- Using the volumes of material to be excavated and associated quantities of fuel, calculate the total diesel air emissions related to excavations in the project construction phase.
5. This design (6-8-18) has moved access for trucks and autos to the east side of the plant to connect with Idaho Highway 41.
Corrective Action- Identify exact routing, earth to be removed, and properties to be acquired so that environmental impacts can be determined.
6. The latest project description (9-18-18) indicates that a road to Newport will be upgraded to the north. This road goes through a residential area.
Corrective Action- Identify the purpose of the project utilizing this road and specify how residents will be impacted.
Corrective Action- Identify environmental impacts from the road upgrades.
7. The latest project description and design do not identify how road access to the west from US highway 2 will be routed and graded.
Corrective Action- Specify routing, earth grading, land acquisition, and impacts to farm land and wet lands to the west.
8. The plant design includes grading sheds for the silica product. This implies that some materials may not meet unspecified product specifications. It may be uneconomic to size reduce rejected silica product for alternative use.
Corrective Action- Specify how below-specification material will be disposed of as waste or recycled.
Corrective Action- Specify testing methods to be employed for the silica product, parameters to be measured, and critical grading criteria. Specify components of the product, emissions and waste that potentially may be significant health and environmental risks.
9. The plant elevation will be below the tops of some hills and below the elevations of some surrounding residences. The effectiveness of the stack height may be diminished by the lower topographic location of the plant. It should be noted that one smelter stack in Sudbury Canada is 1,250 feet high to minimize local environmental damage. Historically, some smelter stacks were not high enough to protect local biota and humans. The stack height specified in the project description may not be high enough to protect regional higher elevations.
Corrective Action- Specify what modelling will be conducted to design a stack height that will be protective of residences and the environment at higher elevations. Determine what inputs will be for the modeling and stack height design.

COMMENTS ON PLANT FLOWCHART (UNDATED)
The flow chart suggests that there will be two stacks, but that is not consistent with the TENOVA PYROMET plant design. The plant design does not provide for cooling of the silicon product. The plant design does indicate the presence of a tank farm, although it is unclear what the purpose of the tank farm is or whether or not this will be used to accumulate groundwater, hydrocarbon fuels, or

other liquids.
Corrective Action- Specify how the molten product will be cooled from 3000 degrees to ambient temperature in the work place and how long it will take.
Corrective Action- Specify whether or not water will be used as a cooling agent.
Corrective Action- Generate a chart on estimated quantities or rates how ground water will be used for specific operational purposes and for plant construction.
Corrective Action- Ecology should specify a limit on the pump size for the groundwater well to help ensure that the groundwater withdrawal is within the permit estimated amount.
Corrective Action- Ecology should establish limits for groundwater use and specify operational documentation for groundwater use and disposal.
Corrective Action- Ecology should require an auditable operating log to record plant operations, outages, and problems, similar to what is regulatorily required for permitted hazardous material and waste facilities.

GENERAL COMMENTS
1. It is noted that wet wood chips will be feed in the plant. It is unclear why moisture will be introduced into the project melt. It is unclear why volatile hydrocarbons in wood, i.e., methanol, will be introduced into the product melt. The flash combustion of volatile hydrocarbons and moisture will generate steam with an expansion of 170,000 percent. In the steel industry, it has long been known that catastrophic steam explosions have occurred when liquid iron or steel contacted moisture. A steam explosion could potentially impact residents from falling debris.
A steam explosion in a foundry is considered the worst-case scenario with respect to workers, projection of molten metal, and destruction of infrastructure and possible casting materials a long distance from the plant. The ATI steam explosion in Harrison rocked homes in four counties. Essentially, this plant will act as a foundry by pouring molten silica into molds.
Corrective Action- Explain why moisture and hydrocarbons in wood chips are necessary for reduction of silica.
Corrective Action- Identify engineering and operational safeguards to prevent steam explosions.
Corrective Action- The EIS should model potential steam explosion impacts. EIS scoping should address risks from steam explosions.
On-line references related to steam explosion risks-
https://en.wikipedia.org/wiki/Steam_explosion
http://www.notjustanotherfire.net/2015/01/27/water-molten-steel-massive-steam-explosion/
https://link.springer.com/article/10.1007/BF02588540
https://www.reliableplant.com/Read/2219/new-york-foundry-fined-$145k-for-safety,-health-hazards
https://www.astm.org/SNEWS/FEBRUARY_2004/cast_feb04.html
http://articles.latimes.com/1988-04-15/local/me-1497_1_steel-foundry
http://articles.herald-mail.com/1999-03-19/news/25148505_1_slag-steam-explosion-minor-explosion
https://www.thefreelibrary.com/Is your foundry prepared for the worst?-a018677695
2. The generation of slag has not been discussed.
Corrective Action- Identify the expected nature and chemistry of slag that will be generated, as well as the disposition of this material.