



November 21, 2013

Sent Via E-mail and Hand Delivered

Brenda Halter, Forest Supervisor
Attn: TMM Hydrogeologic Study Comments
Superior National Forest
8901 Grand Ave. Place
Duluth, MN 55808
comments-eastern-superior@fs.fed.us

Re: Twin Metals MN Hydrogeologic Study

Dear Supervisor Halter,

Please accept these scoping comments on behalf of the Center for Biological Diversity and Northeastern Minnesotans for Wilderness, concerning the Twin Metals Hydrogeologic study, Twin Metals application for a special use permit, and the associated “Environmental Assessment” (“EA”) being prepared by the Forest Service.

The Center for Biological Diversity (“the Center”) is a non-profit conservation organization with more than 625,000 online activists and members, including members and supporters who reside in and recreate in northern Minnesota. The Center has offices in a number of states, including an office in Duluth, Minnesota. The Center works through science, law and creative media to secure a future for all species, great or small, hovering on the brink of extinction.

Northeastern Minnesotans for Wilderness (“NMW”) is a region-based wilderness advocacy group created by area residents to protect the Boundary Waters Canoe Area Wilderness and other wild places. NMW works to protect and preserve wilderness and wild places, to advocate for the protection of the Boundary Waters Canoe Area Wilderness and the enhancement of its wilderness aspect, and to foster education about the value of wilderness and wild places.

Our primary concern going into the environmental assessment process has to do with the bifurcation of environmental review, and the failure of the federal agencies (the Forest Service and the Bureau of Land management) to consider the full scope of the impacts of their decisions before those decisions are made, as required by the National Environmental Policy Act. The same basic issue arises in several contexts, which are further explained below.

The Forest Service should consider whether *any* mine would be acceptable in this watershed before permitting any additional mining activities.

In considering the appropriate scope of environmental review for this project, we encourage the Forest Service to step back and consider the purpose behind the National Environmental Policy Act (“NEPA”) and the Council for Environmental Quality (“CEQ”) regulations that implement it. Too often it seems that agencies focus narrowly on the letter of the law, and the purpose that NEPA was intended to serve gets lost.

Congress enacted NEPA to ensure that federal agencies consider the environmental impacts of their decisions as early as possible in any project or process, to provide them with the opportunity to avoid engaging in, permitting, or encouraging activities that will significantly impact the environment. The CEQ regulations emphasize consideration of *all* impacts – direct, indirect, and cumulative – from *all* related actions, before decisions are made.

In this case, the only rationale behind the activities the Forest Service is considering permitting is development of a copper/nickel mine. The company is beyond the exploration stage; the activities that would be permitted here are directly applicable to developing a mine. Any future approvals needed from the Forest Service are “connected actions,” as they are independent parts of a larger action and depend on the larger action for their justification. 40 C.F.R. § 1508.25(a)(1). We thus submit that to the extent possible, the impacts of a sulfide mine in the South Kawishiwi area must be considered now, before any additional mining-related activity is permitted.

It is the unfortunate reality that every decision made to allow a new round of mining-related activity to proceed makes it less likely that the Forest Service will be able to say “no” to an actual mine. While the agency will retain the legal authority to disallow a mine with unacceptable impacts, the political pressure to permit a mine increases with each newly permitted mining-related activity. Consider the mining company’s point of view: permitting this drilling project encourages the company to believe that in the eyes of the Forest Service, a mine on the South Kawishiwi may be permissible. This decision will encourage the company to spend millions of additional dollars to study and further develop its mine plan, and it will be that much more invested at the next Forest Service decision point.

It may very well be that at this point, the Forest Service does believe that a mine on the South Kawishiwi *may* be permissible. Our point here is that the Forest Service should consider the evidence that already exists before forming or acting on that belief, and it should do so in a public process.

We recognize that a detailed mine plan has not yet been prepared, and that the activities for which permits are necessary are for the preparation of such a plan. We are not asking the Forest Service to speculate on the details of the plan. Rather, we are asking the Forest Service to review currently available information to consider whether *any* mining of sulfide ores would result in unacceptable impacts. We believe that enough is already known about the mining of sulfide ores, the hydrology and geology of

the South Kawishiwi River and downstream waters, Twin Metals' plans for mining, and the national and regional importance of the Boundary Waters Canoe Area Wilderness to allow such a determination.

At a similar stage of mine planning in the Bristol Bay watershed of Alaska, the Environmental Protection Agency prepared an "Assessment of Potential Mining Impacts" to inform any further governmental decision making. The report is available at <http://cfpub.epa.gov/ncea/bristolbay/recordisplay.cfm?deid=242810> and is included on the CD accompanying these comments. The EPA did not do field work or engage in on-the-ground studies to prepare this report, but simply looked at information that was already available. We believe that a similar analysis for the South Kawishiwi River, Rainy River watershed and the BWCAW is needed before additional mining activities are permitted.

We are submitting a number of documents in support of our position that enough is known about the potential mine, the impacts of mining, and the characteristics of the region to determine that sulfide mining cannot be done here without unacceptable impacts. These documents are intended only to illustrate the types of material that we believe should be solicited and considered in the environmental review process before a decision is made regarding the hydrogeological drilling project. Documents on the enclosed CD include Twin Metals technical reports with information about the company's mining plans, and reports on the current inability of the mining industry to protect surface and groundwater from acid mine drainage. In addition, we will submit two reports by the end of the year that address the particular characteristics of the area that make it especially sensitive to the impacts of mining.

The federal agencies should consider all of the impacts of the hydrogeological study in one Environmental Impact Statement.

The Forest Service's scoping report acknowledges that the hydrogeologic study activities that are being considered are actually only a portion of Twin Metals full hydrogeologic study. As stated in the scoping report, in addition to the hydrogeologic activities for which Twin Metals seeks a special use permit from the Forest Service, Twin Metals will be conducting activities on (1) surface lands owned by the state or private parties with non-federal minerals; (2) lands currently subject to existing federal mineral leases or federal prospecting permits, and (3) national forest system lands with private outstanding or reserved minerals. All of these activities are parts of one project.

We appreciate the Forest Service's commitment to consider the impacts of the entire project in a cumulative impacts analysis. However, we submit that the impacts of the project across all jurisdictions should be considered "direct" impacts, as they all stem from one integrated project. Although the term the Forest Service uses to describe the impacts (e.g., "cumulative" versus "direct") might not seem important, the agency has in the past been less than thorough when it designates impacts as "cumulative." Using the Hardrock Prospecting EIS as an example, the Forest Service used only the most general of statements to describe cumulative impacts. The direct impacts analysis left out many, if not most, of the prospecting activities in the area, based on jurisdiction.

For example, for noise (the impact that was treated most extensively), the extent of the cumulative impacts analysis relating to drilling across various jurisdictions was as follows:

It is likely that sounds from drilling on reserved and private minerals on federal land, and drilling on state and private land, may occasionally overlap with sounds from drilling on federal minerals on federal land. When drilling sites are very close together, up to 3 to 4 dBA may be added to the total level of sound. Since changes in sound level of 5 dBA or more are clearly noticeable (MPCA 2008), drilling from other projects would not result in a substantial change in cumulative sound level.

However, drilling from this and other projects may increase the total duration of drilling sound that may be heard over a period of time. For example, drilling for three weeks on federal land, followed by an additional three weeks of drilling on adjacent state land, could result in a longer cumulative duration that drilling sound may be heard. Known future drilling may occur on leases and prospecting permits shown in Map 6. This shows that cumulative additions in duration may occur for some receptors on or adjacent to Birch Lake.

This was the only assessment of a very large portion of the noise affecting the area due to exploratory drilling. If the “cumulative impacts assessment” contemplated by the Forest Service for the impacts of the portions of hydrogeological study that are not covered by the Forest Service SUP is this cursory in nature, we would object. Rather, we expect to see an analysis that truly includes all of the impacts of Twin Metals activity within the South Kawishiwi area.

In particular, we submit that all impacts of activities involving either federal surface or federal minerals must be considered together in one document. We note that the Bureau of Land Management is currently preparing an EA concerning the proposed renewal of leases held by Twin Metals. Hydrogeological study activity on BLM-administered land would be conducted pursuant to these leases. Clearly the Forest Service and BLM projects are connected. The activities subject to Forest Service and BLM jurisdiction are all part of one overall “prefeasibility” strategy by Twin Metals, and cannot be broken into smaller component parts and analyzed in separate EAs. Rather, NEPA requires one single, comprehensive EIS that considers, analyzes, and discloses all of the impacts of the project. *Blue Mountains Biodiversity Project v. Blackwood*, 161 F.3d 1208, 1215 (9th Cir. 1998) (holding that because a number of proposed projects were reasonably foreseeable and developed as part of a comprehensive strategy, they needed to be analyzed together in a single EIS); 40 C.F.R. § 1508.27(b)(7) (a NEPA significance determination cannot be avoided by breaking an action down into smaller component parts).

The Forest Service claims that Twin Metals hydrogeologic activities that are proposed on other state, federal, and private lands “will be implemented regardless of the responsible official’s decision on this proposed action.” This is uncertain, however, both because the BLM and State also may deny approval under their own authorities,

and because the project itself may not be viable without the necessary Forest Service approvals. Additionally, it is a waste of agency resources and directly contrary to NEPA to have multiple environmental analyses moving forward at the same time, by different agencies, each analyzing a piece of what is in fact one proposal. See 40 C.F.R. § 1508.27(b)(7). Instead, all of Twin Metals' proposed hydrogeologic field activities must be considered together in a single EIS. 40 C.F.R. § 1508.25(a)(1)(ii).

The Forest Service and Bureau of Land Management must assess the impacts of all current and foreseeable mining-related activity in the South Kawishiwi area together in one Environmental Impact Statement.

Agencies must consider three types of impacts in a NEPA analysis: direct, indirect, and cumulative. 40 C.F.R. § 1508.25(c). Cumulative impact is defined as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. 40 C.F.R. § 1508.7. "Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." *Id.* The requirement to consider cumulative impacts applies not only to EISs, but also to EAs. 40 C.F.R. § 1508.27(b)(7) (in considering the significance of a proposed action, agencies must consider whether the proposed action is related to other actions with individually insignificant but cumulatively significant impacts, and a significance determination cannot be avoided by breaking an action down into small component parts).

In order to properly consider cumulative effects, "some quantified or detailed information is required." *Neighbors of Cuddy Mountain v. U.S. Forest Service*, 137 F.3d 1372, 1379 (9th Cir. 1998). "Without such information, neither the courts nor the public, in reviewing the Forest Service's decisions, can be assured that the Forest Service provided the hard look that is required to provide." *Id.* "General statements about 'possible' effects and 'some risk' do not constitute a 'hard look' absent a justification regarding why more definitive information could not be provided." *Id.* at 1380. Moreover, it is also inappropriate to defer consideration of the cumulative impacts to a future date, as NEPA requires the consideration of the potential impacts of a proposed action before the action takes place. *Id.*

Thus in addition to considering the impacts of the entire hydrogeological study, the Forest Service must prepare a cumulative impacts assessment that includes all other mining-related activity that is already permitted, along with any additional foreseeable activity. This must include meaningful consideration of all past, present, and reasonably foreseeable actions in the area, including activities located on federal, state, and private lands. 40 C.F.R. §§ 1508.25(c), 1508.7, 1508.27(b)(7). Once again, the Forest Service (in conjunction with the BLM if possible) should pay special attention to activities that have been or will be subject to federal agency action. For example, in addition to the pending BLM lease renewal EA, we note that the BLM will soon be conducting environmental review of bulk sampling. All proposed, ongoing, and reasonably foreseeable actions must all be considered together in a single EIS. 40 C.F.R. § 1508.25(a)(2).

We request that the Forest Service include a map in the EA that discloses all Twin Metals related proposals, projects, actions, and leases within the area, as well as all other exploratory drilling projects and mineral leases in the vicinity, whether on federal, state, or private lands. We have seen many maps that show portions of the mining activity, but one map that reveals all of the activity would be particularly helpful in assessing cumulative impacts.

It is unclear to us at this point how much activity the Forest Service has already “approved” through agreement to prospecting permits and leases in the past, with little or no environmental review. Some of the leases predate NEPA, and we suspect that some leases and permits were approved before the public became fully aware of the situation. While we understand that the Forest Service does not have those decisions before it at this time, we expect the agency to consider the impact of those decisions in conjunction with the decisions that it does have before it.

Many of the impacts from the hydrogeological study will be similar to those of the exploration projects discussed in the Hardrock Prospecting EIS. Impacts of drilling and traffic will be additive, in regards to noise, wildlife, wilderness values, invasive plants, and other impacts. However, tiering to the Hardrock Prospecting EIS for a cumulative impacts analysis will not be sufficient. The Hardrock Prospecting EIS did not adequately assess the cumulative impacts of mining activity.

The Forest Service and BLM should have a good understanding of the amount of exploration and development occurring on federal leases and pursuant to existing prospecting permits, including the amount of traffic in the area that is attributable to mining activity and the amount of drilling being conducted. Additional information should be available from the State for state lands. If the agencies do not have this information, they should develop it. It is past time for the agencies to provide the public with clear information in one document about the amount of mining activity already occurring in the area, and the degree to which it will increase in the foreseeable future.

The failure of the Forest Service and the BLM to consider all of the impacts of exploration and mine plan development activities in the South Kawishiwi area together in one assessment is exactly what NEPA and the CEQ regulations are designed to prevent. All of these activities are being conducted by one consortium in what will be one mining project. The federal agencies are bifurcating environmental review in a way that allows them to escape the import of their actions. A popular recreation area and haven for wildlife is incrementally turning into an industrial mining zone. Anyone who spends time in the area has already felt the impacts of the increase in truck traffic and drilling. And yet to date, no agency has taken a “hard look” at the totality of mining activity occurring within the National Forest boundaries in the South Kawishiwi area.

Specific impacts that should be included in the assessment

All of the types of impacts that were assessed in the Hardrock Prospecting EIS should be included in this assessment. It would be helpful to include a comparison between the likely disturbances within a defined area that were assessed in the

Hardrock EIS, and the amount of disturbance within the same area that would occur pursuant to the hydrogeological study. The assessment should also include information about the effectiveness of the mitigation measures that have been in place for exploratory drilling, including mitigation measures related to noise impacts.

Of particular note in this regard is the U.S. Fish and Wildlife Service consultation requirement pursuant to Section 7 of the Endangered Species Act (“ESA”), to consider potential adverse impacts on lynx and its designated critical habitat. 16 U.S.C. § 1536(a)(2). As with the NEPA analysis, the ESA Section 7 consultation must comprehensively consider the potential impacts of the entire hydrogeologic study and related actions and activities. *See Conner v. Burford*, 836 F.2d 1521 (9th Cir. 1988) (stating that “the scope of the agency action is crucial” under Section 7 consultation “because the ESA requires the biological opinion to analyze the effects of the *entire* agency action,” and also that the term “agency action” is interpreted broadly under the ESA) (emphasis in original)).

In addition, the following issues should be covered:

Noise from traffic

Visitors to the BWCAW and to campgrounds in the project area report noticing an increase in noise from truck traffic. The Hardrock Prospecting EIS did a poor job of disclosing how much of the current traffic in the area is from exploration activities. We would like to see that information along with estimates of the likely increase in traffic due to the current proposal, and the impacts of traffic noise on both the BWCAW and recreation areas outside of the Wilderness.

Impacts to character of wilderness and non-wilderness recreation, and to the local recreation-dependent economy

First, it is important to recognize that not everyone who comes to the Superior National Forest to immerse themselves in nature is able to travel and camp in the wilderness area. Whether due to physical limitations or to personality, the majority of people who visit the Superior National Forest choose not to take overnight trips within the BWCAW. The South Kawishiwi is an area where people can camp, hike, and boat in a “near-wilderness” setting even if they are unable to carry a canoe or paddle long distances. Thus the analysis of impacts on wilderness and on “Recreation Use Patterns” should be expanded to include a broader range of impacts on the character of this area.

We disagree with the statement in the Hardrock Prospecting EIS that the untrammled and undeveloped aspects of wilderness are not impacted by drilling and traffic noise. As a consideration of wildlife noises or noise from a thunderstorm makes clear, it is not the loudness of noise that impacts the character of wilderness. Rather, it is the type of noise. The Forest Service needs to consider what the presence of any noise from machinery means in regard to the character of wilderness.

According to the Hardrock Prospecting Response to Public Comment, recreational usage of the South Kawishiwi area had not yet dropped off due to exploration activities at the time that EIS was prepared. Nevertheless, we believe that mining activities in the area will eventually reach a tipping point after which we will see a significant decline in visitors to the area. It is possible that this will affect overall numbers of visitors to the Forest, even in areas unaffected by mining, do to public perception. We have seen this happen in recent years with the Ham Lake and Pagami Creek fires.

We ask the Forest Service to review any available research or documentation of impacts of mining activity on recreation within mining areas and on use of adjacent wilderness areas, and to include that information in the current environmental review. We also ask the Forest Service to monitor BWCAW entry permits and day use in the area, as well as use of area campgrounds. Finally, we ask the Forest Service to communicate with resort owners and outfitters in the area about impacts they see to their businesses and the experience of their guests.

We are submitting two reports on the local economy and the potential impacts of mining activity on the enclosed CD. The first, "The Boundary Waters Canoe Area -- Wealth Generator," was prepared by economist Spencer Phillips, whose CV is also included. The second, "Ely By the Numbers," was prepared by NMW, and provides factual information regarding the importance of tourism and recreation to the local economy. Dr. Phillips is in the process of preparing another report on this subject, which we will submit by the end of the year. In addition, we are including a map showing resorts, camps, and campgrounds in the project area.

Many people who choose to visit wilderness areas for their vacations are looking for a respite from industrial or urban noise and activity. People travel very long distances to reach the BWCAW, and have many options for wilderness travel. Accessing the wilderness through a mining zone is not going to draw visitors to the area. The reality is that mining activity is not compatible with the kind of quiet recreation that attracts people to the region, and we believe this fact will eventually impact Northeastern Minnesota's economy as mining activity increases.

Impacts to moose

While moose is not on the federal endangered species list and apparently has not in the past been a species of particular concern to the Forest Service, it is currently the mammalian species most in need of consideration in any activities taking place in the Superior National Forest. The precipitous decline in Minnesota's moose population cannot have escaped the Forest Service's notice, particularly since the Minnesota DNR's moose study is being conducted wholly within the Superior National Forest; this is the only area left in the state that supports a significant moose population.

The Forest Service generally limits its consideration of wildlife impacts to impacts on specific species that it has identified as of particular concern or that are listed as threatened or endangered. We understand that this practice is usually sufficient

to cover potentially significant impacts to wildlife. In this case, however, we believe that the hydrogeological study could have significant impacts on moose, and the Forest Service thus has a duty to consider these impacts even though the species does not appear on any of its lists.

In particular, the Forest Service should consider potential moose mortality due to increased vehicle collisions, and the increased stress to moose from an increase in human activity, including noise. A specific cause of the moose decline has not been identified; most researchers have tentatively concluded that it is due to a number of different parasites and other stressors. However, researchers also believe that situations that require moose to expend more energy, particularly in winter, exacerbate the impacts. Increased truck traffic and human activity are likely to lead moose to expend energy to move away from these sounds and activities.

We are including a number of papers and other materials regarding the status of moose in Minnesota, moose-vehicle collisions, and moose reactions to human disturbance on the enclosed CD. We would like to see consultation with moose biologists as part of the environmental review.

Wetland impacts

According to the special use permit application, wetlands have been identified in the survey area for the proposed action and hydrogeologic activities. The environmental analysis must include a detailed description of the potentially impacted wetlands, and an analysis of all adverse impacts on wetlands, and must also demonstrate the project's compliance with the Clean Water Act Section 404(b) Guidelines. *See* 40 C.F.R. Part 230.

Alternatives

In determining the proper scope of an environmental analysis, agencies must consider alternatives to the proposed action, including the "no action" alternative, and other reasonable courses of action. 40 C.F.R. § 1508.25(b). We assume the EA (or EIS) will provide the legally required range of reasonable alternatives, including the mandatory "no action" alternative. *Id.*; *see also* 40 C.F.R. § 1502.14 (describing the alternatives section as "the heart" of the environmental analysis); 42 U.S.C. § 4332(2)(E) (requiring agencies to study, develop, and describe appropriate alternatives to recommended courses of action). In considering reasonable alternatives, please include consideration of (1) an alternative that avoids high recreational use areas, including campgrounds; (2) an alternative that avoids drilling at night; and (3) an alternative that limits drilling to the winter months.

The Forest Service should prepare an Environmental Impact Statement for this project

We believe that an Environmental Impact Statement should be prepared for this project in order to address the many concerns that we have identified above. Perhaps the most compelling of these is the need to disclose all of the impacts of exploration, the

hydrogeological study, and (to the extent possible) the prospective mine, together in one document. After assessing the potential direct, indirect, and cumulative impacts of the proposed study on all resources, and considering the NEPA “significance factors” discussed below, the Forest Service must prepare an EIS if any substantial questions are raised as to whether the project may cause a significant impact of some environmental factor. *Idaho Sporting Congress v. Thomas*, 137 F.3d 1146, 1149 (9th Cir. 1998).

The CEQ regulations set out “significance factors” that indicate when the heightened review of an EIS may be appropriate. 40 C.F.R. § 1508.27(b). The Forest Service must consider, for instance, the unique characteristics of the geographic area including the proximity to wetlands and ecological critical areas. 40 C.F.R. § 1508.27(b)(3). The Forest Service must also consider the degree to which the potential environmental impacts are likely to be highly controversial, are highly uncertain, or involve unknown risks. 40 C.F.R. § 1508.27(b)(4), (5). The Forest Service must further consider whether the action may establish a precedent for future actions with significant effects. 40 C.F.R. § 1508.27(b)(6). And the Forest Service must consider the degree to which the action may adversely affect a threatened or endangered species or its critical habitat. 40 C.F.R. § 1508.27(b)(9), (10). All of these factors may be relevant here.

The Forest Service should review the rationale behind the design of the hydrogeological study, and should make that review available to the public.

Without a technical review of the drilling plan and the rationale for the placement of the wells, it is impossible to determine whether the impacts of the study are actually necessary to achieve the purpose of this agency action. Our past experience with mine plans is that testing is often designed to provide data that will support a position that the mine will not impact water quality and quantity, rather than to provide an unbiased picture of the hydrology of the area. Even if this is not the case here, we are unable to judge from the information given whether the company has done all it can to place the wells in a way that will provide the data needed. To the extent that this testing is taking place on public land, we believe that public scrutiny of the drilling plan is warranted. Agency and public review could both avoid unnecessary impacts and ensure that the testing provides a complete understanding of the area, even if that data proves detrimental to the company’s plans.

We have retained Dr. Tom Myers to advise us on this point; his report and CV are attached. We incorporate the entirety of the report into these comments. As the report points out,

There is no justification given for the location of wells or specifics of the well design provided in the SUP application. A list of reasons for the wells is provided on p 14 and 15. These reasons correctly list why the wells are needed and describe the type of data or reasoning that the wells would provide. However, the SUP application does not describe how these goals would be met. For example, there is no description how the data proposed to be collected would be used to determine the interactions between groundwater and surface water or between various bedrock fracture layers.

Twin Metals would perform various tests on the wells constructed under this SUP (section 3.5) and the wells proposed overall for the hydrogeologic assessment plan. The SUP lists five desirable tests which may be run at each well, but does not commit to running them anywhere. Without the tests (p 53 and 54), Twin Metals will glean little value from the drilling program. Packer testing would measure the flow entering the well bore at various levels. The proposed geophysical tests would allow an assessment of the fractures and flow directions within the fractures (Neilson et al. 2006). Short-term aquifer tests are necessary for each fracture zone to characterize the conductivity properties of that zone. Finally, each well should be developed with openings at each fracture zone or flow-producing zone which can be fit with pressure transducers to measure the potentiometric surface for each level (see the conceptual flow model section below for a discussion of multiport monitoring).

Twin Metals should commit to these tests at all wells and not say “may” complete or install these things.

Dr. Myers goes on to suggest that Twin Metals should prepare a preliminary Conceptual Flow Model (“CFM”) to ensure that the wells are placed appropriately, and that the appropriate tests are conducted:

Prior to siting the wells and determining their depth, Twin Metals should describe the expected flow pathways so that the wells can be placed in the correct location. The SUP application should include this description so the FS can evaluate whether sufficient data will be collected. As the data is collected, the CFM would be refined. This could inform decisions to change proposed well locations or depths.

...

The summary is that it is important for Twin Metals to develop a preliminary CFM so that its well locations can be appropriately evaluated. Why are the wells located where they are? Why are they as deep as they are proposed to be or should they be deeper? Are the appropriate tests, pump and geophysical, being performed? A CFM could improve the plan and avoid unnecessary environmental impacts from the exploration. A poorly written CFM could result in inefficient well locations or depths which could lead to a need to construct more wells (and roads and other supporting documentation). Not evaluating the CFM could lead the FS and other agencies to accept data which could have been much better had a CFM been written.

In addition, the EA should provide more information about the pump tests to better reveal their potential impacts:

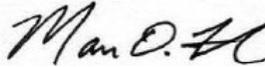
More detail should be provided on the pump tests simply to analyze their environmental impacts. Specifically, this includes specifying the length of the

tests, the expected pumping rates, and the point of discharge of the water. Without this information, it is not possible to determine the specific impacts on the environment or the value of the tests. The brief discussion on p 65 is insufficient because it essentially provides no guidance regarding the disposal of water from a pump test beyond the level of purging the well. Additionally, Twin Metals should justify the pump test design, including the length of the tests. Typically, longer tests are better because they increase the scale of the aquifer volume for which the estimated properties apply. From the SUP description, it appears that Twin Metals only plans to monitor the well being pumped. In bedrock aquifers, this is insufficient because it is not possible to determine direction dependent aquifer properties prevalent in the bedrock-fracture systems.

Finally, because these are public lands, and due to the high level of public concern about an eventual mine pursuant to these activities, please consider a requirement that Twin Metals disclose all data and information resulting from its hydrogeologic study to the public.

Thank you for consideration of these scoping comments, and please keep us informed and on the Forest Service's mailing list if this proposal moves forward.

Sincerely,



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