

Technical Working Group - Geochemistry

Pebble Project

November 18, 2008

Atwood Building Room 1270

Minutes recorded by Charlotte MacCay / Pebble Partnership (PLP) and approved by TWG Lead

I. PRESENT:

Andrea Meyer (ADNR),

Charlotte MacCay (PLP)

Scott Maclean (ADF&G)

Bob Seal (USGS)

Frances Mann (USFWS)

Mari Reeves (USFWS)

Bronwen Wang (USGS)

Leroy Phillips (USACE)

Steve McGroarty (ADNR); TWG Lead

Valanne Glooschenko (USACE)

Pete McGee (ADEC)

Jim Vohden (ADNR)

Dave Szumigala (DNR/DGGS)

Stephen Day (SRK)

Public

Philip Verplanck (USGS/Keystone)

Andrew DeValpine (Bristol Bay CSRI – By phone)

Kendra Zamzow (CSP2)

II. PROPOSED AGENDA

- Introductions
- Review draft agenda and agree on final agenda and the format of future meeting minutes
- Discussion of suggested edits to the minutes from the last TWG meeting and finalize the edits. Also discuss the TWG minute approval process
- General discussion of the purpose and goal of the Geochemistry TWG
- General discussion of potential need for agency geochemistry consultant
- Presentation by SRK???
- General discussion of information requirements for the evaluation of ML/ARD:
 - A. Potential information requirements in metal leaching/Acid Rock Drainage Assessment (MEND Report 5.10)
 - B. Draft guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Mine Sites in British Columbia – Price
 - C. Other guidance documents?
- Discuss the need for a Report of the Geochemistry of the Pebble Project that would consolidate the geochemical characterization that has been generated to date, discuss on-going work, and plans for future characterization work
 - A. Develop a draft “table of contents” for a report
 - B. Discuss data requirements to support report
- Close-out discussion – i.e. “Where do we go from here?”

MINUTES

(Agency) The Steering Committee sent out a memo that Charlotte MacCay will take the notes for the meetings. She will indicate the source of the comment as agency, consultant, or PLP. The draft minutes will be sent to the TWG lead for distribution within two weeks of the meeting. Steve McGroarty (the lead) will distribute them immediately (he will not wait to review them first) and will consolidate comments and questions into a draft final with a deadline for members to review and submit comments. Send a “no comment” email to Steve if you have no comments.

(PLP) It is important you review the minutes to make sure I have not inadvertently left out any important comments.

(Agency/PLP) Last meetings minutes were reviewed, changes were incorporated and there was no objection stated regarding their approval.

COMPLETION REPORT – GEOCHEMICAL CHARACTERIZATION OF THE PEBBLE PROJECT

(Agency) The agencies will want a status report at some point including QA/QC associated with the Geochemistry and interpretation of the results. We would like this report to include the geology, lithology, alteration patterns and whether or not they are important, the distribution of sulfides and carbonates, geospatial distribution differences in sulfides and carbonates between the east and west deposit, explanation of what tests have been done.

III. CHARACTERIZATION/MONITORING

(PLP) PLP would like to clarify the types of data it is collecting to better facilitate future discussions. The data collected to date have been collected for site characterization. It is meant to be used to write the Affected Environment Section of the NEPA (EIS) document. Because NEPA calls this “baseline information” PLP has also been referring to these data as baseline data. This has led to some confusion. To scientists, baseline means something quantifiable that can be used for comparison with data collected during operations to see if there have been any impacts. That was not the intent of the data we have collected to date. Although PLP hopes that some of these data will be useful for monitoring purposes as well. PLP is finishing up the characterization data and moving into monitoring data, data to be used for comparison purposes with data collected after operations begin, but this term is causing confusion as well. Some people interpret monitoring data to be the data collected during operations.

(PLP) PLP would also like to clarify that we are asking for speculative input at this time. We are aware that you do not have the data from the studies done to date to learn from them how the studies are working. We fully expect that as data becomes available, and the agencies review them, that the agencies may have new input or want to change their mind about previous recommendations. There is nothing binding about any of the recommendations you make, you can always refine your input based on data as they becomes available. PLP is trying to establish open dialogue and set studies up as best as possible.

(Agency) If you don't have a project description it is difficult to determine how much data are needed or if we have the right data.

(Agency) Natural conditions without any human impact need to be determined prior to construction. Once the project is under construction it is no longer possible to collect more data to determine natural background.

(PLP) PLP is starting to address pre-term monitoring in future studies. Also it is likely to take at least a couple years after the permit applications are submitted to finalize all the permits, allowing for additional time to collect pre-construction data.

INTRODUCTIONS AND AGENCY STATEMENT OF PURPOSE AND GOAL OF PARTICIPATION IN GEOCHEMISTRY TWG

(Agency) It seems odd not to make decisions within this TWG process.

(PLP) PLP is still developing the project, we are just asking for speculative input. We understand decisions cannot be made on incomplete data. We are trying to increase the likelihood that when we hit the pre-application process we will have methods and scopes that satisfy the agencies. We are looking for an open casual dialogue that will help us shape a good program.

(SRK Consultants) By having discussion amongst colleagues we are looking to create a better program. We don't want any gaps. Please tell us if there are things that absolutely have to be done. We use a lot of British Columbia guidance as it is the best we are aware of. If you have different guidance you would like us to consider – please mention it. It would be nice if we could involve whomever will be the EIS geochemist and get their input.

(Agency) We can't go forward with contracting an EIS geochemist until there is a permit application submitted.

(Agency) The USGS is participating in the TWG to serve as a source of expertise for the group..

(Agency) We see the TWG as a means for pre-program planning and in-depth discussion. We saw lots of studies in the agency presentations and want more details about these studies. I have heard that there has been a theme of the agencies wanting more data and not getting study plans early enough to review. We want greater substantive input into the study plans.

(PLP) PLP understands and is expecting to have study plans distributed in January this year.

(Agency) We understand that the company is concerned that data released to the State become public and that the company wants to thoroughly QA/QC data before providing it to the TWGs. The company does have a scheduled release of data to the public – we would like follow-up on when the company expects to release geochemistry data.

(Agency) We don't just want a data dump we want some analyses of the data. We can't give guidance until we get analyzed data.

(Agency) We want to be able to easily manipulate data at some point. We need file names that are informative, lists of abbreviations, and data dictionaries. We want to be able to sort, graph, and statistically analyze the data. We do not want to simply get the data as PDF documents.

(Agencies) We don't just want data sets, we need geo-spatial components and context.

(PLP) PLP will make data available when it is ready, I will try to get some data as you request it for meetings when possible, but I cannot promise that the data you would like to see are ready for release yet or that they have been analyzed yet. We are still early in the process. In the mean time, while we recognize it limits your ability to comment, we would like your input regardless.

(Agency) The TWG is trying to make certain the geochemistry studies are comprehensive and adequate for a

- Plan of Operations
- Reclamation Plan
- Closure/Post Closure Financial Insurance Determination

(Agency) The literature search paper that USFWS had prepared was an excellent paper on acid mine drainage. I would like to see study plans and analyte procedures for kinetic tests. I would like to have a chance to look through this information and become more up to date on these issues.

(PLP) There are some issues within that paper that are not fully covered, but it does raise issues that we should make sure are addressed for Pebble.

(Agency) It is my agency's role to help Pebble develop a project with the best available technology and with the least impact on trust resources. I would like to have some information on the grain size and mineralogy of the ore body and how that plays into the kinetic tests.

(PLP) There is also the possibility of going over the presentation Stephen Day gave at the agency meetings. We could go over it much more slowly with discussion on every slide in detail if that would help the TWG understand the program better.

(SRK Consultant) I would like feedback on methods for modeling as well as analytical methods. There are a lot of different ways to model that are considered acceptable and it would be good to know which methods the agencies prefer.

(Agency) We see this as open sharing of information so there won't be any surprises. The goal is assurance that the project will meet water quality standards during operations and closure. It begins with knowing what is background water quality at the site, so we can determine what the water quality standards will be. We want to have input regarding the design and enough information to determine a bond amount before going into the public process. We need to review data and let PLP know if we find any of the data suspicious and bring any anomalies in the data to the forefront.

(Agency) There is value in learning from this project for future projects

(PLP) We are looking to have expertise present at the beginning of the process and forward.

(Agency) Each agency has a member on the Steering Committee. If you have issues of concern about how the process is working I encourage you to contact your agency representative or Tom Crafford. Members of the steering committee are posted on the DNR Pebble TWG website. The Steering Committee is trying to do a better job of communicating to the individual TWG members and to ensure the process of posting the minutes goes faster.

(PLP) USGS is not presently on the Steering Committee, this is by choice.

POTENTIAL FOR AGENCY GEOCHEMIST CONSULTANT

(PLP) PLP has requested that DNR hire a geochemical consultant to review the studies. DNR often hires a consultant to review study results, we would prefer they hire the consultant earlier to get their input into the study design in a timely manner.

(Agency) This has been helpful in the past. The consultants have been used to review documents prepared by a company.

(Agency) DEC is supposed to hire the geochemist not DNR.

(Agency) DEC was going to go to bid and get proposals and create a list of people to contract on short notice. Not sure where this is at this point in time.

(Agency) There would need to be communication between the TWG members and the state consultant about how to go through the TWG process with information requests going through the TWG Lead who will forward questions to DEC and distribute responses.

(Agency) The LMPT funding mechanism is not just limited to state agencies. In some instances it is extended to federal agencies able and willing to accept funding, such as NOAA for the Kensington Project. The LMPT is considering a similar mechanism for funding USGS involvement with the Pebble Project.

(Agency) Agency representatives should e-mail suggestions of geochemistry consultants to the TWG Lead and DEC for proposal solicitations.

KEYSTONE

(Agency) Kirk Nordstrom from USGS in Boulder is going to be on the Keystone Advisory Committee.

(Agency) What is Keystone?

(Keystone member) Keystone is a group that is putting together a peer review panel to assure the Corporations (Anglo and Northern Dynasty) that the project is based on good science. It also is a process to gather public input regarding the project and project alternatives. It is a stakeholder/citizen bridge to bring data to the public. It is Anglo's way to build social license.

(Agency) Is it a peer review of all science, not just social science?

(PLP) Yes. Keystone is still in the process of selecting the peer review panel. The panel's input will be relayed to PLP which can bring that information forward during the NEPA process.

(Agency) People could get confused between Keystone and NEPA processes.

(Keystone Member) Keystone is still putting the panels together. Members have to have no conflict of interest. There is no payment to committees and panels. The process is not finalized yet.

(PLP) Keystone is watching the agency presentations this week, but not participating. PLP feels it is important to place Alaskans on the peer review panel.

(Agency) What happens if the peer review panel's preferred alternative is different for the agencies' preferred alternative?

(PLP) The Keystone preferred alternative and rationale would be passed on by PLP to the NEPA process for consideration. It is still an agency decision in the end.

ACID ROCK DRAINAGE PAPER CONTRACTED BY USFWS

(Agency) USFWS did request this literature review on acid mine drainage be written and was aware the paper may be a topic of discussion at today's meeting and wanted to be present for the discussion.

(PLP) PLP has some concerns regarding the paper as was relayed in a letter from John Shively to USFWS. What matters more than any discussion on the merits of the paper, is to be aware that the topics the paper raises are issues of concern related to acid mine drainage. The TWG should make sure that we are looking at all these issues to ensure they are being adequately addressed at Pebble.

NEXT MEETING

(Agency) It may be helpful to read some of the documents ahead of the next meeting.

(Agency) Other papers that may be helpful guidance include the MEND report and INAP. This is a consortium of mining industries that set up a commission on global acid rock drainage guidelines to create a best practices guide. Golder & Associates won this proposal.

(SRK Consultant) Golder sub-consulted SRK to help develop Chapter 5 - Prediction. Chapter 5 and is nearly done. MEND is also working on a volume of the Guide.

(Agency) It is important that we don't try to reinvent the wheel and review the various sources that exist and decide which guidelines make sense for this project.

(Agency) We should look at the geology and then review which methods make sense.

(Agency) In the MEND Report look at 1.10E, stay away from the mitigation chapters, it is pre-mature to start discussing mitigation.

(Agency) It may not be premature to discuss mitigation, there are not a lot of different options.

(Agency) Until there is a final application we don't know what we are mitigating.

(Agency) Need to understand water management plans as well. How will the project safeguard aquatic resources?

(PLP) Water management is covered in other TWG groups, this TWG focuses on how the water quality will be impacted by the rock.

(Agency) This TWG provides inputs to the chemistry of water quality.

(Agency) The required test work will be partly dependent on the project design. It will be an iterative process.

(PLP) It is important to look at a variety of possible designs to be prepared for the alternatives analysis.

(Agency) The rock type is a constant regardless of the design.

(Agency) There are volume considerations with different designs.

(Agency) There are also different metallurgical and economical choices that can affect potential impacts.

(Agency) Questions germane to this TWG include:

- Appropriate samples
- Sample distribution
- Characterization of materials that may be encountered, rock types, alterations, acid producing/neutralizing potential.

(Agency) Proposal for Next Session:

- SRK Presentation – where we are – what's been done to date, how we got there, why.
- Discussion of the USFWS commissioned Literature Review – determine if the list of issues raised in that document are being addressed at Pebble.

(Agency) Rather than risk the trap of ending out in a discussion on the merits of that paper why not use the MEND document as a guide to evaluate the Pebble geochemistry program.

(Agency) Not the goal of the TWG to discuss the merits of the paper.

(PLP) But it is important that the TWG can address all of the concerns listed in that paper and ensure that they are adequately provided for at Pebble.

(SRK Consultant) As we go through a discussion of the program, I think most of the concerns raised in the USFWS literature review will come out in discussion.

(Agency) Need to redistribute previous e-mails to all members of the group to ensure everyone is up to date.

(PLP) PLP has some concern about keeping this working group a reasonable and workable size. The TWG protocols encourage 5 – 6 members in a TWG. Guests are welcome to also attend, but not necessarily participate.

(Agency) It is suggested that we have a two day meeting.

(Agency) It might be helpful to bring a geologist to the first meeting to discuss the geology.

(Agency) Steve McGroarty, Stephen Day and Charlotte will develop a draft agenda for the next meeting.

Mid –January between the 12th and the 23rd may be a good time to schedule the next meeting.

ACTION ITEMS

- Agency representatives should e-mail suggestions of geochemistry consultants to the TWG Lead and DEC for proposal solicitations.
- PLP to inquire when the geochemistry data are scheduled for release.
- Lead to distribute copies of previous e-mails sent to the group to the new members.