



**MEETING SUMMARY
TECHNICAL REVIEW TEAM
GRASSY MOUNTAIN GOLD MINE PROJECT**

**September 26, 2018
9:00 am (Pacific) Time
Teleconference/Public Access at DOGAMI Albany Office**

Attendance:

Committee Members

- Randy Jones, Oregon Department of Geology and Mineral Industries (DOGAMI)
- Larry Knudsen, Oregon Department of Environmental Quality (DEQ)
- Jim Billings, DEQ
- Rick Hill, DEQ
- Heidi Williams, DEQ
- Andrea Bowen, Bureau of Land Management (BLM)
- Jonathan Westfall, BLM
- Trevor Watson, Oregon Department of Fish and Wildlife (ODFW)
- Joy Vaughan, ODFW
- Tom Segal, ODFW
- Bob Brinkmann, DOGAMI
- Jackie Cupples, US Fish and Wildlife Service

Others in Attendance

- Joe Sawyer, Nevada Division of Environmental Protection (NDEP)
- Rob Kucznski, NDEP
- Connor Newman, NDEP
- Todd Process, NDEP
- Nancy Wolverson, Calico Resources
- Adam Bonin, Cardno
- Adele Pozzuto, Cardno
- Janet Gillaspie, Environmental Strategies

Randy Jones chaired the meeting. He stated that the meeting was being tape recorded to maintain a record under the Oregon Public Meetings Law.

He asked if there were additional items to add to the agenda; there were no additional agenda items to be added. Jones said that the level of detail necessary in each permit application would be discussed at the conclusion of the meeting.

The group introduced themselves.

Regulation of Chemical Process Mines in Nevada

Jones said that Nevada has the largest number of chemical process mines in the US. Joe Sawyer with the Nevada Division of Environmental Protection (NDEP) and his staff joined the meeting by phone to discuss Nevada's program for regulating chemical process mines.

The overall mission of the NDEP is to:

- Protect public health
- Protect the environment
- Promote a vibrant economy

A number of other NDEP programs also regulate other mining activities, such as the air program and hazardous waste management program.

There are three specialized branches focused on mining:

1. Regulation Branch focused on water protection
2. Reclamation Branch focused on long term post-mining land use and bonding
3. Closure Branch focused on ensuring all mine components are chemically stable in the long term

Sawyer shared the organizational chart and highlighted that the organization has a formal liaison relationship with BLM. The majority of Nevada mines are on BLM land, scattered across the state.

Nevada issues Water Pollution Control Permits for mining projects; other federal, state, and local permits may also be required.

There are about 260 reclamation projects in the state. In addition, there are:

- 92 operating mines
- 38 mines permitted, but not yet built
- 23 mines in temporary closure
- 34 mines in closure

The Nevada program is a 'cradle-to-grave' regulatory program, he said.

Regulation Branch

Sawyer said Water Pollution Control Permits are issued to prevent the degradation of waters of the state.

Mining regulated activities include any mining or processing activity that has the potential to degrade waters of the state and includes all mining activities except industrial minerals such as sand and gravel, clay, slate, and gypsum.

The most important aspect of a new mining activity is a complete site characterization, with a focus on the rock potential to create acid and mobilize contaminants due to mining. The rock characterization drives the types of environmental protection controls that are necessary to protect the environment and waters of the state. Site characterization up front is very important, said Sawyer. Complete geological and hydrologic studies are necessary to predict future groundwater impacts, he said.

Nevada has a number of facility design features set in its regulations, such as:

- Zero discharge

- Process fluid containment
- Must contain 25-year, 24-hour storm event
- Designed by professional engineers
- Approval prior to construction
- All stormwater must be contained and managed as process fluid
- Secondary containment for liquid storage
- Leak detection between double-lined storage ponds

Sawyer said that quality control and quality assurance provisions during construction are included in all mining project requirements. There are sumps between the primary and secondary liner systems to determine if the primary liner is leaking.

Sawyer added that the permittees must also provide an 'as built' report, and that report must be approved by NDEP staff prior to introducing liquids into the mine.

There is an operations, compliance, and enforcement staff focused on facility monitoring and reporting; NDEP inspects each mine quarterly. Nevada has enforcement powers for non-compliance. Sawyer said that, generally, Nevada mines are operating in compliance with the environmental laws and requirements.

Reclamation Branch

The Reclamation Branch issues reclamation permits and oversees financial assurance. There are 261 active reclamation permits with a focus on acceptable post-mining land use. Acceptable post-mine land uses might include wildlife habitat, cattle grazing, recreation, industrial site/business park, future mineral exploration and development, and renewable energy creation and storage.

Sawyer highlighted that the Division maintains a robust website with lots of good information.

For financial assurance, Nevada and BLM developed a standardized approach to estimating reclamation costs – the **Nevada Standardized Reclamation Cost Estimator (SRCE)**. This includes third party costs to take over proper closure of a mine. The cost data file is updated annually. This cost estimator is available on the web site – see <https://nvbond.org/>. Sawyer stressed that process fluid stabilization costs are very important to include in the necessary financial assurance. Final closure costs for all process components are also included.

A variety of financial assurance instruments are currently accepted. Corporate financial assurance is currently being phased out. Nevada has \$2.8 billion in mine-related financial assurance, said Sawyer. He highlighted that staff is improving their estimate of actual closure costs.

BLM and NDEP cooperate on bonding requirements.

Sawyer said that there is a Memorandum of Understanding (MOU) between NDEP, BLM, and US Forest Service, and all agencies work cooperatively to review proposed projects. The federal Environmental Impact Statement (EIS) process and the state permitting time lines can be difficult to coordinate. Sawyer stressed that it is important that mine operators provide the same information to both the State and Federal agencies.

Closure Branch

The Closure Branch focuses on protecting the waters of the state. Some of the challenges for final closure are the long-term active and/or passive treatment options. Sawyer added that the state is focused on passive treatment programs, but ‘forever’ active systems are allowable.

Process solution drain down and disposal is a challenge, said Sawyer. He added that the weather in Nevada allows most of the process water to be evaporated. Other issues include:

- Pit lake water quality
- Acid rock drainage
- Groundwater contamination

A long-term funding mechanism may be required for active systems.

Sawyer discussed the preferred closure practices and stressed that the goal is to inhibit the migration of precipitation through closed facility components by:

- Installing engineered soil and/or synthetic covers
- Maintaining zero discharge
- Using ponds and evaporation cells to capture drain down for the long term

The Nevada regulations allow up to 30 years of post-closure monitoring; generally, the post-closure monitoring is about 5 years. Nevada has updated its regulations to allow an additional 30 years of post-closure monitoring, if needed. Bonding is required over this period of time.

Sawyer discussed overall program trends including:

- Increasing focus on mine closure early on
- Robust monitoring for pit lakes and groundwater
- Heap leach facility drain down and cover performance
- Rock characterization and waste rock management plans
- Process fluid stabilization
- Improving access to information for permittees and the public available on the Internet and automated data reporting
- New technologies including drone sampling, especially for closed sites where access is an issue, and for data gathering

Jones said the Calico Grassy Mountain project is proposed to be an underground mining operation and a surface processing facility of carbon-in-leach cyanide circuit, cyanide detoxification, and slurry discharge to a lined tailings facility. There would be no water discharge.

The TRT members discussed the presentation and asked questions.

Larry Knudsen, DEQ, asked Nevada staff of their experiences with tailings storage facility failure. Sawyer responded that Nevada has not had a large tailings failure to date. There was a facility that had a leak and a capture trench had to be installed, he said. That failure was caught due to leak detection, he said. No tailings storage facilities are located in a drainage area that would collect additional stormwater, he added.

Jim Billings, DEQ, asked the number of mines that are open pit vs. underground. NDEP said about one-fifth of the mines are underground and the remainder are open pit. Billings also asked about

specifications for backfilling. Connor Newman, NDEP, responded that the backfilling is determined by the rock geochemistry and potential for metal leaching and acid rock drainage. For closure covers, Billings asked about specific design covers to prevent burrowing animals in post closure. Not sure, answered Sawyer. If that was an issue, Nevada might consider additional cover thickness, and require additional soil atop the engineered cover to grow plants. There is an international guidance document for review of closure covers.

Knudsen asked about predicting weather and how climate change is factored into weather predictions and wildlife exclusion in the supernatant pool. Newman indicated he reviews the predictive modeling submitted in permit applications. For the majority, long-term water balances use site specific data with an on-site weather station, using a full met station with wind speed, wind direction, and other information. The predictive model using information from a full met station at the site could be used in a climate prediction model or an uncertainty analysis – type model could be conducted.

Rob Kucznski, NDEP, indicated that preventing animal access is not in the Bureau responsibilities, but the wildlife section does require netting, minimizing open water, and use of cyanide destruction processes to lower than hazardous levels for wildlife.

Bob Brinkmann, DOGAMI, asked Nevada to compare the Grassy Mountain project risks from contamination from the tailings facility vs. the underground mine workings. Sawyer responded that it is dependent on the characterization of the site specific conditions.

Brinkmann asked about the tailings disposal facility and the leak discovery; NDEP responded that this was discovered with groundwater monitoring, with a spike in nitrates showing a possible facility liner leak.

Double-lined tailings impoundments are now a preferred route, said Nevada regulators. Nevada staff added that the tailings impoundments are designed with drainage systems to allow the tailings to settle and ‘seal off’. Dewatering of the tailings impoundment is very important, they added.

Tom Segal, ODFW, asked about reclamation programs and issues related to bankruptcies and other big issues. Todd Process, NDEP, said the largest learning, through the late 1990’s, showed that the process fluid stabilization bonding was inadequate, and that was addressed through the Nevada Legislature. The bonding is now adequate to have the financial resources to allow regulators to stabilize the site. These programs use predictive models to estimate the necessary costs to clean up the site as a third party. The private sector can reclaim a site cheaper than the public agencies can, added Sawyer.

Segal asked about the Oregon requirements for financial assurance. Jones responded that BLM and DOGAMI are interested in a joint bonding agreement, but there is not yet agreement on the type of financial assurance necessary.

Jonathan Westfall, BLM, agreed that there is a MOU underway on financial assurance. In general, BLM requires financial assurance for all clean up costs to be completed as a third-party action. It is still unknown how the financial assurance for long term monitoring would be handled; how long might this be, and what financial assurance is appropriate for that length of time.

Jones added that additional details about the overall project and its planned reclamation will be needed to start the process of estimating of the amount of financial assurance necessary or the appropriate financial instruments.

Knudsen added that Oregon has broad financial security authority, including the ‘credible accident analysis’ and its use in estimating financial security. Sawyer answered there is no risk analysis or

catastrophic accident analysis; in Nevada, a ‘normal’ closure is planned for. A separate section of the Water Resources Division oversees the tailings facility dam construction and evaluates for earthquakes and other risks.

Nevada has an ‘interim fluid management fund’ that requires operators to fund an emergency response fund to immediately access funds for emergency site stabilization. There is \$1.4 million to expedite contracting in a short-term emergency response. Once bond funds are accessed, the bond funds would repay the management fund, added Sawyer.

Brinkmann added that fluid management is not likely an issue at the Grassy Mountain site, in his opinion.

NDEP staff stressed that the drain down time for the tailings facility is an important aspect of mine design. Some mine operators use mechanical evaporators, sometimes even during mine operations.

Jones asked about the Nevada requirements for a double-lined system. Nevada requires a primary liner, drainage area, and secondary liner. If the primary liner leaks, the leachate would be able to be collected into a sump for additional evaluation. Nevada has a quarterly and annual leakage limit in the permit requirements. All process ponds are double lined with a leak detection system with a network of groundwater monitoring wells. Nevada does not encourage clay-lined ponds; it strongly encourages the use of synthetic liner materials.

A copy of this presentation is posted at https://www.oregongeology.org/mlrr/chemicalprocess_Calico-GrassyMtn.htm.

Sawyer stressed there is good information on their agency website (<https://ndep.nv.gov/land/mining>) and they would be glad to answer additional questions. NDEP will share copies of some its permits with the Oregon regulators.

Andrea Bowen, BLM, asked if the State and BLM coordinated their inspections. Sawyer said that the State invites BLM to the inspections, but separate State and Federal inspection reports are generated. There are some different interests between the federal and state responsibilities and focus. The State conducts more frequent inspections than the BLM, they added.

The NDEP staff left the call.

Draft Outline of Possible Permits and Permit Evaluation Report

Jones continued that the draft outline of possible permits and the Permit Evaluation Report are tools to understand the requirements for the Consolidated Application for the possible permits and Permit Evaluation Report, which will document the permit conditions.

The project is unique in Oregon and this is part of forward-looking planning, he said.

Permit Outline

Jones asked for suggestions and revisions from each TRT participating agency.

- **DEQ**

Knudsen said that the outline is okay; the permitting of the industrial solid waste landfill is still a question. He is working on a more detailed analysis of the DEQ permitting requirements.

- **Water Resources Department**

No participant on call.

- **ODFW**

Joy Vaughan, ODFW, requested these revisions:

- Clarify Wildlife Mitigation requirements across all species, including big game
- Add reference to compliance with ODFW Division 420 regulations.

She will provide some suggested revisions in writing.

- **DOGAMI**

Brinkmann had no additions. Jones suggested that a narrative statement regarding all the commenting and permitting agencies' review and approval be added under the 'Operating Plan'.

The State Historic Preservation Office and the Oregon Department of Agriculture were not participating in the call.

Jones added that the Oregon Health Authority may have permitting requirements for the drinking water system. The land use planning approval with Malheur County is likely to start soon, said Jones. The approach seems to be for Calico to seek a conditional use permit from Malheur County.

Permit Evaluation Report Outline

Jones asked for additional suggestions for the Permit Evaluation Report.

- **DEQ**

Heidi Williams, DEQ, asked about a single permit, or multiple permits. Jones responded that these are separate permits issued under the umbrella of the DOGAMI operating permit.

Knudsen added that each agency issues its own permit, but the procedures are controlled by the DOGAMI Division 37 consolidated permitting process. He continued that a single document that provides the background information and findings for each permit is needed, and that is the Permit Evaluation Report.

- **ODFW**

Vaughan indicated ODFW will provide additional written comments.

- **DOGAMI**

No additional comments.

Bowen indicated that BLM had no comments to date. Jones highlighted that the federal EIS and State Environmental Evaluation process should be coordinated.

Jones asked all TRT member agencies to review these documents and provide suggestions and improvements.

The group took a short break.

Development of Proposed 2019 TRT State Agency Calico Budget

Jones said that DOGAMI will be developing a 2019 TRT State Agency budget to provide to Calico. The budget estimate will be provided in two phases:

- Phase #1 – Budget estimate covering anticipated expenses from December 1, 2018 through June 30, 2019
- Phase #2 – Budget estimate covering anticipated expenses from July 1, 2019 through December 31, 2019

The DOGAMI Budget Office is preparing an example *Excel* spreadsheet with key assumptions for State Agencies to use in preparing their budget estimates. Jones indicated that the spreadsheet will be provided to TRT member agencies by the mid-October, and they will be due to the DOGAMI Budget Office by the middle of November.

The Phase #1 budget estimate may cover the time when the Consolidated Application is received, said Jones. The Phase #2 budget estimate will likely cover the time when the permit application is reviewed, and the permits or permit conditions are drafted and reviewed.

Knudsen added that DEQ is working to review its past invoices and prepare an overall budget estimate for DEQ. For DEQ staff, when the Consolidated Application is filed, there are substantial permit fees and those will be netted out of the interagency billings through DOGAMI.

Jones added that Barney & Worth is developing a graphic of the required phases and stages of the application review. The Calico Communications Team is reviewing the graphic, and Jones will provide it to the TRT members.

‘Level of Detail’ Necessary in State Permit Applications

Jones said Calico is interested in the ‘level of detail’ necessary in the Consolidated Applications for drawings and applications.

Jones asked each agency to respond:

- DOGAMI

Jones discussed drawing details. DOGAMI expects all narrative project elements should be reflected in maps; connect the text and special representation, he said.

Drawings should be at a scale of equal to or greater than 1 inch = 200 feet.

A common datum should be used, likely Universal Transverse Mercator (UTM)(1983).

Reproducible digital elevation models should be used, said Jones, likely GIS layers with vertical data and elevation information. These should include a time stamp. There could be separate digital elevation models for each phase of the tailings storage facility, as an example.

All necessary professional stamps must be used, as required; a Professional Engineer (PE) stamp should be included on all drawings, he proposed.

High quality aerial photography will be necessary, with the appropriate scale to marry up with hard copy maps.

- DEQ

Knudsen indicated that he will incorporate the necessary level of detail information into the detailed permit requirements memo he is preparing.

The DEQ Division 43 regulation outlines the specific types of information that is required and DEQ staff will be developing additional details.

Williams added that standard engineering practices generally outline the preliminary information to be provided in draft permit outlines. Billings added that his experience with environmental consulting firms is that they generally provide the necessary information. Working through the preliminary information prior to the Consolidated Application will provide those details, agreed Williams and Billings.

- ODFW

Vaughan agreed with the DOGAMI suggestions. There is additional information needed on wildlife mitigation. ODFW Division 420 and Division 415 regulations provide good background information on the necessary information.

Jones added that some information provided to ODFW is confidential under the Oregon Public Records Law. Finding examples of good previous permitting applications, might be useful to Calico, observed Jones.

Additional Information – Drilling Program

Jones said Calico has provided an additional drilling program proposal for six (6) additional holes to be drilled this fall. He asked that the TRT members review the drilling proposal by October 11, 2018. Calico has proposed the same methodologies as previously proposed. Nancy Wolverson, Calico, said that three (3) holes were planned in the permit area to test for basalt; these will be less than 150 feet deep and will be core drilled.

Three (3) exploration holes are planned outside the deposit. These will be to a maximum depth of 800 feet. The exploration holes will be rotary circulation drilled.

Public Comments

Jones asked if anyone from the public was interested in providing comments. There was no response.

Necessary Follow Up and Next Steps

Janet Gillaspie, Environmental Strategies, provided the ‘to do’ inventory from the meeting, including:

- DOGAMI will follow up with NDEP on the international guidance on closure covers, and to secure example permits, both Water Pollution Control Facility and reclamation permits.
- Vaughan will provide some written suggestions on improving the permit outline

Jones stated that the next TRT meeting would be held 10/24/18 in La Grande (Eastern Oregon University) and by phone. Possible agenda items include the preliminary scopes of work for the Environmental Evaluation, Socio-Economic Analysis approval, and briefings on cyanide issues.

Jones said that the Tailings Facility Subcommittee would meeting following the TRT meeting on 10/24/18 in LaGrande.

*Please note both meetings scheduled for 10/24/18 have since been cancelled.

The next TRT meetings include:

<i>Meeting Date</i>	<i>Meeting Location</i>	<i>Possible Agenda Topics</i>
November 28, 2018	In person in Salem + by phone	<ul style="list-style-type: none">• Revised tailings facility design review (including Cardno review)• Focus on preparing for <u>Consolidated Permit Application</u> to be filed
December 19, 2018	To Be Determined	<ul style="list-style-type: none">• Long term monitoring and site maintenance; best practices & link to financial assurance

Jones asked TRT member agencies to consider questions and issues for long term monitoring and site maintenance, including best management practices and the link to financial assurance necessary.

The meeting was adjourned at 11:35 am.