Montana Resources
Yankee Doodle Tailings Impoundment

Independent Review Panel
Panel Members: Leslie Smith, Jim Swaisgood, Dirk van Zyl

Considerations following EOR's Responses to ARCO DEIS Comments

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July 23, 2019

Mr. Mark Thompson
Vice President Environmental Affairs
Montana Resources
600 Shields Ave
Butte, MT 59701

Dear Mark:

As requested by Montana Department of Environmental Quality (DEQ), Montana Resources (MR) has asked the Independent Review Panel (IRP) to review the responses of Ken Brouwer, P.E., the Engineer of Record (EOR), to comments made by Atlantic Richfield Company (ARCO) on the Draft Environmental Impact Statement (EIS) for the amendment to expand the Yankee Doodle Tailings Impoundment (YDTI). Each of ARCO's comments, the EOR's response, and IRP's remarks are provided in the following paragraphs.

ARCO Comment 1

"*DEQ should require, as a stipulation in MR's amended operating permits for the YDTI, the design and implementation of a data collection, monitoring, and early warning program employing best practicable technologies to: (i) assure that the long-term stability and integrity of the YDTI is maintained…(ii)…, and (iii) ensure that the public health and the environment are adequately protected in the unlikely event of an embankment failure and uncontrolled release of impounded water and tailings.*"

EOR's Response: The EOR detailed the past, present, and planned future site investigations, laboratory testing, monitoring, and early warning programs affirming that these met state-of-practice criteria. The EOR also listed the documents that have been prepared with instructions to monitor the structure's conditions and, if necessary, prepare for emergencies. These include: the Tailings Operations Monitoring and Surveillance Manual (TOMS Manual), the EOR Annual Inspection Report (AIR), the Data Analysis Report (DAR), the Corrective Action Plan (CAP), the Emergency Preparedness and Response Plan (EPRP), and the Emergency Action Plan (EAP). The EOR stated that these documents were updated as required to reflect any significant changes.

IRP's Remarks: The IRP is supportive of ongoing site investigations and monitoring programs at the YDTI as outlined by MR and the KP EOR. The TOMS document provides clear guidance for maintaining a stable structure, including improved tailings deposition operations using multiple spigot discharge points moving the pool further away from the embankment. The Panel is of the view that the various particulars mentioned in Comment 1 are being satisfactorily addressed by the EOR and MR.

ARCO Comment 2

"*DEQ should require diversion structures below the YDTI embankment that are designed to minimize off-site inundation and other potential adverse consequences of an embankment failure scenario by directing potential outflows toward and into the Berkeley Pit and the Continental Pit to the maximum extent practicable."*

EOR's Response: The EOR stated that he will continue to consider appropriate risk mitigation measures for the YDTI. Dam breach modelling, and assessment of practicable measures for routing outflows from hypothetical breach scenarios are options that have been and continue to be considered, but the EOR says that he is not yet clear if these will represent the most practicable and best technologies for on-going risk mitigation at the site.

Furthermore, the EOR has previously provided recommendations for managing the location and volume of the supernatant pond as being the most practicable and the best currently available option for risk mitigation. These pond management measures are in progress and will be further accelerated once impounded water in the YDTI is reduced as the Berkeley Pit Pilot Project is fully implemented.

IRP's Remarks: The IRP was briefed on the progress of the breach inundation modelling studies and the analyses of the various diversion and inundation management options that are being evaluated by MR and the EOR. The Panel anticipates that an option will be specified that contains modelled outflows within the property limits to the maximum extent practicable.

ARCO Comment 3

"Both MR's proposed action and DEQ's preferred alternative will require management and treatment of water released from the YDTI under the BMFOU Consent Decree and CERCLA remedial action. Atlantic Richfield agrees with statements in the DEIS that DEQ lacks authority under the MMRA to impose such requirements."

EOR's Response: The EOR stated that he was not familiar with the details of the Consent Decree and CERCLA remedial action, and thus could not respond to this aspect of the ARCO letter.

IRP's Remarks: This comment deals with CERCLA related issues which are beyond the scope of the IRP.

ARCO Comment 4

"*The DEIS fails to analyze and disclose the significance of impacts associated with the geotechnical stability of the YDTI embankment. The DEIS does not analyze or disclose the impacts of an embankment breach and the resulting release of the contents of the YDTI pond. The DEIS also underestimates the risk of geotechnical instability by assuming that current conditions in the YDTI meet risk management design criteria for overtopping and internal piping and erosion."*

EOR's Response:The EOR maintains that analysis of impacts from the sudden catastrophic failure of a structure is not typically required or included in an EIS analysis. Additionally, hypothetical dam breach assessments are used to inform emergency response planning and are typically not included in the impact assessment for a proposed dam project.

The EOR states that there is some confusion caused because the EIS did not correctly reflect some of the design criteria in the Design Report. The design criteria regarding overtopping included in the approved Design Document is that freeboard is to be sufficient to provide storm storage for the Probable Maximum Flood (PMF) with an additional 5 ft of minimum freeboard for wave run-up. The EOR says that this criteria has been met with the 22 ft minimum freeboard.

The EOR states that internal erosion and piping of the embankment under normal operating conditions is not a credible failure mode. This is because the tailings beaches limit the potential for internal erosion and piping by controlling the source of water and seepage flow path.

IRP's Remarks: The IRP agrees with the EOR responses to the ARCO Comment 4. Much effort has gone into better water management on the YDTI, including the new spigot discharge system that has increased the freeboard of the facility. Moving the pool back from the embankment has reduced the potential for overtopping, piping and erosion. It is the IRP's opinion that the level of risk is acceptable within present-day dam safety standards.

IRP Conclusions

The IRP has observed ongoing commitment from the EOR and MR to develop an improved understanding of the YDTI embankment conditions: state-of-practice monitoring of the embankment directly related to the site investigation program has been implemented; and water management related to improved tailings deposition practices is an ongoing evolution.

The IRP agrees with the EOR that more consistent collaboration with technical personnel retained by ARCO and more regular communication would be of benefit to the project.

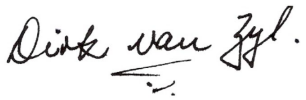
It is the IRP's opinion that the comments and responses from the EOR do not warrant any changes in the Design Document.

Respectively Submitted,

YDTI Independent Review Panel,

Dr. Leslie Smith, P.Geo.

Mr. James R. Swaisgood, P.E., C.P.G.



Dr. Dirk van Zyl, P.E.