5.0 Best Available Control Technology

This section describes the best available control technology (BACT) analysis for haulroads and ore and waste rock transfer and handling sources.

According to UAC R307-401-8, "The Executive Secretary will issue an approval order if the following conditions have been met: The degree of pollution control for emissions, to include fugitive emissions and fugitive dust, is at least best available control technology."

KUC is proposing the addition of a new in-pit crusher and a three transfer point conveyor system. The proposed modification will also result in an increase in material moved through existing equipment and emission sources. Specifically, the proposed modification will also result in an increase in fugitive emissions from haulroads and ore and waste rock handling operations. KUC will maintain current or better levels of controls on all emission sources at the BCM as previously specified by UDAQ and as detailed in this NOI. The Utah Division of Air Quality has previously specified the current levels of controls on emission sources as BACT.

5.1 BACT Analysis for New In-pit Crusher and Conveyor System

5.1.1 New In-pit Crusher

Step 1 – Identify All Control Technologies

Potential PM_{10}/$PM_{2.5}$ emission control technologies for the new in-pit crusher include fabric filters, enclosures and water sprays to control dust.

Step 2 – Eliminate Technically Infeasible Options

All three control technologies are technically feasible.

Step 3 – Rank Remaining Control Technologies by Control Effectiveness

Fabric filters are most effective in controlling particulate emissions.

Step 4 – Evaluate Most Effective Controls and Document Results

KUC is proposing to use fabric filters to control emissions from the in-pit crusher. Since the top control technology has been selected, an economic and energy analyses are not required.

Step 5 – Select BACT

Fabric filters with grain loading of 0.007 gr/dscf are identified as BACT for the new in-pit crusher.

5.1.2 New Conveyor System Transfer System

Step 1 – Identify All Control Technologies

Potential PM_{10}/$PM_{2.5}$ emission control technologies for transfer points include enclosures vented to fabric filters, water sprays to control dust and minimizing drop point heights.

Step 2 – Eliminate Technically Infeasible Options

These transfer points cannot be enclosed completely and therefore fabric filters are not technically feasible for such fugitive emission sources. Because of the design of the transfer points and their vulnerability to wind interference, water sprays with fine droplets will not be very effective in minimizing emissions and water sprays with coarse droplets will over-wet the material.

Step 3 and 4 – Rank Remaining Control Technologies by Control Effectiveness

The transfer points will be enclosed and the drop point heights will be minimized to reduce fugitive emissions. This matches current practice at the BCM which has been observed to be effective and has been inspected by the UDAQ on numerous occasions.

Step 5 – Select BACT

Enclosures are therefore identified as BACT. UDAQ has previously specified enclosures as BACT for the transfer points with a control efficiency of 90 percent.

5.2 BACT Analysis for Haulroads

Potential technologies for control of fugitive emissions on unpaved haulroads are paving the unpaved roads, the use of water sprays and the use of dust suppression chemicals. Paving the haulroads is not technically feasible at the BCM because of the weight of the haultrucks and the rapid deterioration that would occur, and the frequently changing road locations.

Watering the unpaved haulroad and applying dust suppressants where appropriate reduces fugitive PM and PM_{10} emissions by binding the soil particles together, reducing free particles available to be picked up by wind or vehicles. Additional watering of an unpaved haulroad also occurs when heavy traffic is expected along the road. Water is applied on a scheduled basis and supplemented as needed based on driver observation of dust conditions. For example, in 2009, 158,485,000 gallons of dust suppression water were applied on haulroads the BCM.

Commercial dust suppressants are not applied on haulroads within the pit influence boundary at the BCM because of the adverse effect the suppressant has on the coefficient of friction of the road surface. Given that the grade of the haulroads exceeds 10 percent in some locations within the pit influence boundary, creating a slippery skin on the road inhibits mobile equipment to brake and steer safely while traveling on the grade. Where dump roads do not have the steep grades of the haulage routes (mainly haulroads outside the pit influence boundary), it is possible to apply commercial dust suppressants in those access areas for dust suppression without significantly increasing the risk of driving on the surface.

KUC also reduces dust through performing regular and routine maintenance of the haulroads and limiting unnecessary traffic on roads. Additionally, newer, larger haultrucks purchased by KUC have increased capacity, which decreases round-trips made and vehicle miles traveled, thereby reducing fugitive emissions.

The BACT is therefore identified as watering and application of crushed road base material within the pit influence boundary and applying commercial dust suppressants outside the pit influence boundary on the unpaved haulroads to reduce fugitive emissions.

5.3 BACT Analysis for Ore and Waste Rock Handling and Transfer

Particulate matter will be emitted from the in-pit crusher, and transfer and handling of ore and waste rock. Emissions from the in-pit crusher will be controlled with a baghouse. Because the material transfer sources are not enclosed in a building, fabric filters are not an effective control option. Potential control technologies for transfer and handling operations are therefore limited to enclosures and water sprays. Application of water is not technically feasible for all the material handling sources. Excessive watering of the material can cause problems with downstream operations. The material characteristics, including size, density, and moisture of the ore and waste rock, also minimize emissions. The design of the transfer points and location of infrastructure also minimize dust generation from these operations.

TABLE 5-1
BACT for Material Handling Sources

Emission Source	Proposed BACT
In-pit Crusher	Baghouse
Haultruck Dumping Ore into Crusher	Inherent material characteristics and physical enclosures
Existing In-pit Enclosed Transfer Points 1, 2, 3	Emissions controlled by enclosures
Conveyor-stacker Transfer Point	Inherent material characteristics and physical enclosures
Coarse Ore Stacker (Drop to Coarse Ore Storage Pile)	Inherent material characteristics and physical enclosures
Reclaim Tunnels (Coarse Ore Reclaim Tunnel Vent)	Inherent material characteristics and physical enclosures
Haultruck Loading	Inherent material characteristics and minimal drop distance
Haultruck Dumping Waste Rock	Inherent material characteristics and mechanical compaction to minimize emissions; water application from passing water trucks is used to further reduce emissions
Drilling with Water Injection	Water injection at 90 percent control efficiency

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