

The following comments have been received either in writing or by e-mail during the public comment period. Although DEQ is not required to post these comments on its website, it has done so to aid the public discourse.

Commenter	Comment
<p>Terry Marasco</p>	<p>RE: ADDITIONAL CONCERNS WITH KENNECOTT'S DOCUMENTATION AND UNWILLINGNESS TO THOROUGHLY ADDRESS AIR QUALITY CONCERNS</p> <p>The June, 1999 letter from the EPA to the UT DAQ (Ursula Trueman) stated concerns with the pit retention student thesis. Kennecott's discussion of this thesis is as follows (NOI to Increase Annual KUC...mine Production of Ore and Waste Rock, 2/23/1999, p. 18):</p> <ol style="list-style-type: none"> 1. Kennecott refers to the thesis as "Airflow Patterns and Pit-Retention of Fugitive Dust for the Bingham Canyon Mine" Bhaskar and Tandon, 1996, and further states: "This model has not been validated because extensive data collection would be necessary for that task..." There are two problems here: <ol style="list-style-type: none"> a. The DAQ is again considering a thesis that has been twice questioned by the EPA (June 30, 1999 to Trueman, and Feb 25, 2011 to Heying), had NOT been investigated/validated by the UT DAQ then as it has not been investigated/validated now. I may remind you that there is no such report ("Airflow Patterns and Pit-Retention of Fugitive Dust for the Bingham Canyon Mine") but a student thesis that was/is used word for word with, in my opinion, is a fictitious cover, and paid for by Kennecott. It appears that the only page Kennecott did not provide with the thesis was the copyright page noting only Tandon as the sole author. Bhaskar did not appear in the copyright. b. By its own admission Kennecott sees it as unreasonable to validate its own model. The UT DAQ as far as one can tell has not validated this model, nor asked Kennecott to conduct the appropriate validation and peer review of this thesis. The UT DAQ needs to require Kennecott to collect the real-time field data to validate the model before any permits are considered for this project. The UT DAQ's mission is the public's health and for the massive amount of emissions that the thesis is used to eliminate, it MUST require validation and review. This submission calls into question the entire documentation by Kennecott historically and currently. c. Critical omission by Kennecott in its discussion of percentages of pit-retention (they state 10-20%). In fact in a worst case scenario noted as Appendix A in the student thesis about a 33% escape factor resulted with a wind at 30mph. The UT DAQ needs to consider the worst case. Even this worst case is much too conservative as it is not uncommon for winds of 60-80 mph in the Oquirrhs. Again, everything about this thesis is to be ignored and a thorough real-time field data test be conducted. 2. In a letter from the EPA to Ursula Trueman (8/26/1999, Re: Review of State response to EPA Comments...) the EPA renders untenable Kennecott's claim that "screening models available today cannot account for complex terrain." The EPA knew there are such models that "can account for high percentages of the emissions remaining in the working pit", and Kennecott, with its many engineers makes such an incorrect claim. This is one more example of Kennecott's refusal to address the emissions issues. The DAQ should require full investigation into these issues before any permits are considered. 3. Again, with its crew of "competent" engineers Kennecott makes a hugely incorrect statement regarding HAPS. On p 2 of Kennecott's Bingham Canyon Engineering Review 4/13/1999, Kennecott answers YES to "Toxic Air Pollutants other than HAPS" and states these others as Cadmium and Manganese. In fact, these are HAPs and if Kennecott engineers are ignorant of HAPs, the DAQ needs to be concerned of the entire documentation that such engineers provide historically and currently. <p>Given this history of Kennecott's reliance on weak documentation and gross ignorance of pollution inputs, the DAQ needs to cease all processing of permits until Kennecott provides accurate peer reviewed and validated documents to support its position.</p>

**Howie Garber
MD**

Regarding Cornerstone Project:

I've been an Emergency Physician for 27 years and a resident of Salt Lake City and County for 39 years. In November of 2009 EPA declared SL County a non compliant area for PM2.5. In 2010 we exceeded the EPA's standards for PM 2.5 on 51 days. On some of these days there are twenty five percent more strokes and heart attacks because of bad air. This is in addition to exacerbations of asthma and COPD. Within a month of EPA designation, the DAQ approved a coke fired power plant within 5 miles of Salt Lake City. It was apparent to me that our Division of Air Quality is an industry permitting agency completely oblivious to public health.

This event 15 months ago also made me think that our DAQ operates in complete disregard for the EPA. I wonder what type of environmental quality we would have in Utah without the federal Clean Air Act and Clean Water Act.

The current situation with Rio Tinto is completely analogous to the Coke fired power plant. SL County is already in violation of the EPA's national air quality standards for PM10, Ozone, and PM2.5. The EPA has put the Utah DAQ on notice that they are proposing to disallow the state implementation plan (SIP) for PM10 in Salt Lake and Utah Counties.

My understanding is that RT is trying to increase mine activity 32%. How much of this pollution will stay in their pit is based on a student thesis which has never been validated. Further pollution increases will result from their proposed natural gas plants. Rio Tinto already contributes over 30% to particulate air pollution in the SL valley. This affects one and a half million people.

While much has been said by Chamber of Commerce type folks and some elected officials regarding Kennecott's contribution to the community, these comments should be stricken from the record unless added health care costs of Kennecott's air pollution be estimated. When operating in a densely populated area, Kennecott should be willing to do everything possible to decrease their air pollution. What does the price of copper and Kennecott's bottom line have to do with the health and well being of one million people? Allowing Rio Tinto/Kennecott expansion is analogous to giving subsidies to tobacco farmers.

DAQ now has a choice: Protect public health and say no to Kennecott expansion or continue to bow down to industry. We should welcome EPA intervention because without their help many environmental problems in Utah will never be solved. I completely oppose the Cornerstone expansion and wish that my comment be entered into both the SIP modification and the ITA regarding the Cornerstone expansion.

**Kenneth C
Evans**

My name is Kenneth Evans and I am writing to voice my opposition to the proposed Cornerstone Project. The reason for my protest is simple. Good air quality is more valuable than any economic gains realized by Kennecott Corporation via increased mining operations.

The air quality along the Wasatch Front is already unhealthy during a significant portion of the year. If the project is allowed to proceed, air quality will be further compromised in proportion to increased mining activities.

Kennecott claims the Cornerstone Project will actually reduce air pollution along the Wasatch Front. However the company has produced no credible documentation to support this assertion.

Kennecott is responsible for most of the contaminants plaguing citizens during air alert periods. Citizens living along the Wasatch Front are burdened with the increased health costs and associated lifestyle degradations as a result of increased toxins in the air. Therefore Kennecott is acting irresponsibly by making false statements regarding a reduction of particulates if the Cornerstone Project is realized.

During public hearings several speakers referenced the altruistic contributions Kennecott has made to various communities in Salt Lake County. Although commendable, these offerings are nothing more than token gestures and distract from the companies deeper responsibility to all citizens living along the Wasatch Front. It is the dual responsibility of Kennecott and the Division of Air Quality to ensure harmful levels

of particulate matter are not emitted into the air during mining operations

Kennecott has already demonstrated a lack of integrity in promoting the Cornerstone Project to the citizens living along the Wasatch Front. Hopefully the Division of Air Quality will consummate a mission to safeguard health and quality of life by not allowing the Cornerstone Project to proceed.

**Utah Valley
Earth Forum
Board of
Directors:
Don Jarvis,
Carol Walters,
Charles
Nuckolls,
David & Donna
Dalton,
David E
Paulsen,
Ernie Rogers,
Rick Mathews,
Jim Westwater**

The Utah Valley Earth Forum would like to submit the following comments to the Department of Environmental Quality, and ask that they be entered into the public record concerning Rio Tinto's application to change the State SIP to increase the size of their mining operation.

The open-pit Bingham Copper Mine is a disgrace to the state of Utah. Rio Tinto is the major industrial polluter on the Wasatch Front, responsible for about 30% of the pollution in the Salt Lake Valley. The expansion of their operation will only make that worse. Their claim that the added pollution will be offset by replacing some of their coal fired plants with natural gas plants is not backed up by data. Before that claim can be accepted, it must be evaluated and validated by a thorough, independent, scientific investigation, paid for by Rio Tinto, but managed by the Utah State DEQ to assure its impartiality.

Since Utah is already in violation of Federal limits on PM10, PM2.5, Ozone and multiple other air and water pollutants, and since the lives and health of the people of Utah are at risk as a result of that pollution, we ask that the DEQ deny Rio Tinto's application. In order for Utah to have a SIP that might be approved by the EPA, Rio Tinto must significantly decrease their emissions of PM10, PM2.5, PM1, NOx /Ozone, and CO2 (especially during our winter bad-air season). It is also time for them to decrease their contamination of Wasatch Front air, water and soil with heavy metals and radioactive elements, which are persistent in the environment and which are a threat to the health of everyone on the Wasatch Front. We ask the DEQ to act to protect the people of Utah.

The American Lung Association states that coal fired power plants, such as those that Rio Tinto uses in their operation, produce at least 84 toxic substances, including arsenic, lead, formaldehyde, hydrogen chloride, mercury, and dioxins. A company as environmentally responsible as Rio Tinto claims to be should be replacing all their coal-fired plants, and Rio Tinto has the profits to do that without any expansion in their mining. That they have only offered to replace some of them, and only on the condition that their expansion is approved, must call their willingness to act responsibly into question.

Again, we urge the Utah DEQ to deny Rio Tinto's application for expansion.

I am writing to you in the context of your call for comments on Kennecott's proposal to increase its operations and your intention to grant permission to do so. Several DAQ employees, including Bill Reiss and Martin Gray, have confirmed to me that the plan in question will increase air pollution in Salt Lake Valley. I totally disagree with any plan that would increase air pollution in the valley therefore I am strongly opposed to the SIP modification and the DAQ allowing Rio Tinto Kennecott to increase its operations.

Rio Tinto Kennecott has submitted a plan that the DAQ is standing behind. The use of a model from an unpublished thesis to come to the conclusion that the new plan will have minimal impact on the air quality is highly doubtful and I feel that it calls into doubt the character of the DAQ as an agency who is supposed to be working for the interest of the public. Even if this model turned out to be applicable to the situation, you, the DAQ, has confirmed that air pollution will increase under the new plan and that is unacceptable.

Salt Lake Valley often experiences very bad air days and this is adversely affecting people's health. Poor air is also causing them to need to make lifestyle decisions that amount to big restrictions on their freedom. One of which is when they can and can't go outside.

I am very troubled by the fact that the only document available to explain the proposed changes is a 350 page technical document written by Rio Tinto. The UDAQ is doing nothing to provide information on what the changes are and what their effects will be on the air pollution. In fact the UDAQ is actively misinforming the public on the effect on the air. One example is when I called Donna Kemp Spangler to ask about the increases in the levels of pollution that would come with the changes and she referred me to an article in the Salt Lake Tribune that said that the plan would decrease air pollution.

Your process is illegitimate and if you give this permit the your agency, the politicians that control you, and maybe Rio Tinto will experience negative consequences.

Rob Tautges

I am also submitting this article that I wrote as part of my comments. This is only a taste of what you are going to see from me if you grant this permit. The article follows.

Increased Air Pollution is Coming to Salt Lake Valley Unless we Act Now.

February 23, 2011.

Salt Lake City.

Rob Tautges

If you live in the Salt Lake Valley and value your right to clean air, now is the time to be alarmed. The Utah Division of Air Quality (DAQ) is about to deal yet another blow to public health by allowing the massive copper mine in the Valley to increase the amount of harmful pollutants it regularly adds to the air, as it is explained in more detail below. If you do not want even worse air in Salt Lake Valley, then you need to tell the DAQ that you absolutely do not accept the proposed increase of Kennecott mining activity. Kimberly Kreykes is the DAQ "official" accepting comments until March 3: kkreykes@utah.gov. The websites of some of the groups working for clean air in Utah are listed below.

Unfortunately the DAQ is presenting its decision to allow increased air pollution as already decided upon and is now waiting to see if the public will get enraged. On Tuesday, February 22, 2011, it opened its doors for a tightly controlled and rather strange hearing of comments on their plan to allow Rio Tinto Kennecott (RTK) to increase its speed of operations to extract copper from the mine. This was followed immediately by a second hearing on the DAQ's intent to approve the increase in activity. The two hearings were closely related however they were announced in very different corners of the DEQDAQ (Department of Environmental Quality Division of Air Quality) website and the process was clearly designed to confuse the public and make participation difficult.

The main issue at hand is that RTK wants to increase its pace of operations by 32% (from moving 197 million tons/year to 260 million tons/year). They misleadingly call it an expansion but it is important to understand that it is an increase in the volume and speed of their mining activities. It would mean a corresponding increase in air pollution in the Valley, whereas RTK is already the source of about 1/3 of the air pollution here. It is very clear that RTK is seeking to secure its profits at a price of further polluted air for the 1.5 million people in the Valley. The plan would increase the air pollution in Salt Lake Valley for at least several decades.

At the hearing anyone present was allowed 5 minutes at a microphone before two DAQ representatives. The courageous people including activists, doctors, mothers, fathers, and teachers who spoke against the plan expressed strong opposition to any added air pollution because

science, national standards, common sense, and tragic experiences have all shown that the current levels are already very harmful. The activists for clean air cast a shadow of serious doubt on the science (or lack thereof) behind RTK's outrageous claim that the increased activity would actually decrease the mine's emission of air pollutants. There was a clear feeling in the room that the defenders of clean air were fighting against a stacked deck.

Today I spoke to Bill Reiss, a DAQ engineer, about whether or not the plan would increase air pollution in the valley, and although he was highly elusive of giving answers, he was clear that the plan would indeed increase air pollution. In an hour long conversation I could not get concrete answers on how much the pollution would increase; the best he could do was to refer me to technical documents written by RTK. It is very surprising that the DAQ can't provide any more precise of an explanation than this. I suspect that this true because in fact the changes will have a big impact on air quality in the Valley.

The DAQ has already declared that it intends to approve the permit. Within the "Intent to Approve" of February 2, 2011 it says, "DAQ has reviewed these requested changes and determined they will have minimal impact on air quality..." As a breather of the air, I would like a more scientific judgment than "minimal impact" and if the best the DAQ can do is to refer me to 10 pages of technical documents written by RTK then there is serious problem here.

While this discussion was like pulling teeth, it finally led to some useful information. Reiss said that the DAQ knew that the Particulate Matter (PM) 2.5, which is the most dangerous for human health and the main cause of red air days during inversion, would increase under the proposed plan. I asked him several times to give me the baseline statistics of how much the increase would be; he remained elusive, until he finally admitted he could not say how much the PM 2.5 would increase because although a standard exists, the DAQ will not be applying it until 2012, meaning that RTK's new plan is not required to meet the coming standard for the most dangerous particles (PM2.5). This is scandalous and after seeing the hearing and speaking to several people at the DAQ, I strongly suspect that this government agency is corrupted by business influences and does not have public interest at heart. Mr. Reiss was clear though: both PM 10 and PM 2.5 will increase under RTK's proposed changes and this will affect the health of people living in Salt Lake Valley. I also spoke with DAQ employee Martin Gray who confirmed that both categories of air pollution would increase with the plan. He was also unwilling to give me any kind of estimate as to how much the increase would be.

In the same "Intent to Approve" it says, that "...these requested changes will ... continue to meet the permitted levels that are set to protect public health." The DAQ has admitted that both PM 10 and 2.5 will increase even though we already have very harmful air and that PM 2.5 is not even being taken into consideration for the purpose of the permit. Clearly the "Intent to Improve" is at a minimum highly misleading! I am struck by the fact that in theory the DAQ exists by the will of the public yet it uses its resources to mislead it.

It is too bad that our local media are doing so little to inform the public on the situation and so much to misinform it. One example of highly misleading reporting is an article in the Salt Lake Tribune written by Judy Fahys on 2/22 (seen online 2/24). It has a picture a Kennecott CEO with a hard hat making an announcement and the caption says that he "recently announced the company's plans to significantly reduce emissions and improve the air quality in the Salt Lake Valley as part of the mine's proposed expansion." The bottom line is that this expansion will increase air pollution as admitted by DAQ engineers and anyone who reads that caption will think that the expansion is decreasing pollution. Not surprisingly when I called the Public Information Officer at the DAQ to ask questions about the permitting process she tried to get rid of me by referring me to that very article because "it has a good explanation."

Our world is growing more and more unjust and we need to start pushing back starting with an immediate public outcry against the DAQ allowing RTK to increase the amount of air pollutants it releases.

About 30 government officials, business interest representatives, and Kennecott affiliated people spoke for an increase of mining activity at Kennecott. They spoke mostly of jobs and how Kennecott is a good "corporate citizen" who follows safety standards and gives to charity. Those who stood up for the plan showed their cards by seldom speaking of the plan's effect on air even though this hearing was taking place

under the auspices the DAQ. It was clear that they themselves do not believe in the science behind the idea that their plan would reduce air pollution. Their constant references to jobs and economic incentives for Utah carried a clear implication that a further deterioration of air quality in the Valley is the price we need to pay for economic well-being.

The defenders of clean air were highly articulate in explaining that the human costs of our current air problem pale in comparison to the economic incentives. Some lucidly pointed out that even if we did not take into account the human costs, the economic costs of polluted air far out-weigh the economic benefits that would come with an increased pace of mining activity. One teacher who spoke, Ryan Pleune, asked for a moment of silence so that everyone in the room could reflect on what they would be willing to do to save what is most precious to them. He then made a plea for more creativity in how we provide for ourselves and the people we love and vowed to do everything in his power to stop this expansion.

One local activist, Ashley Sanders, spoke of the DAQ's intentional confusion and refusal to see the obvious that is right in front of our eyes. She said that she does not need all the long acronyms to know that blowing up a mountain is bad for the environment and that our air is already too polluted.

We need to follow Ashley's lead and let the DAQ know that any decision on their part to allow increased pollution in the Valley would be an insult to its 1.5 million inhabitants.

It is unfortunate that we need to spend time and energy to put this fire out when we could be concentrating on the causes of the many fires that are destroying the human landscape. It is disheartening to think that we need to fight against an increase in air pollution when we should be fighting for a decrease. For now we need to raise awareness that the DAQ is not watching out for public interest, and let our government officials know that this is unacceptable. They are allied with powerful business interests and this situation is yet another example of the people's need to assert their sovereignty.

As for the people representing business interests who spoke at the hearing, their position is understandable. What could be more human than doing everything you can to provide for your family? They deserve to be treated as people but what they need to hear from us is that the people in Salt Lake Valley will not trade breathable air for economic gains.

BreatheUTAH

Advancing solutions to Utah's air quality problem

Kimberly Kreykes
Division of Air Quality
195 N 1950 W
Salt Lake City, UT 84116-3085

Re: Comments on Proposed Changes to Utah SIP, Section IX.H,
Raising the Allowable Limit on Material Moved at Bingham Canyon Mine
and
Comments on Intent to Approve: Modify Approval Order DAQE-
AN0105710023-08 Raising the Allowable Limit on Material Moved at the Bingham Canyon Mine
and Adding a Crusher

Thank you for the opportunity to provide comments on the proposed revisions to the State Implementation Plan, and the proposed modification of Approval Order DAQE-AN0105710023-08.

Breathe Utah is a group of citizens and professionals who aim to advance solutions to Utah's air quality problem. We strive to address root causes of pollution through legal, medical, and environmental research that leads to science-based solutions and effective public policy. Breathe Utah emphasizes the need for individuals, businesses, and industry to accept responsibility, both for their role in causing air pollution and for taking positive steps to effect solutions.

We share many of the concerns expressed by Salt Lake City in the comments of Mayor Ralph Becker dated March 3, 2011. More research is necessary before a well-informed decision may be made about the true air quality impacts of the proposed expansion of mining operations by Kennecott.

As noted by Mayor Becker, Salt Lake City and the greater Salt Lake Valley are substantially out of compliance with the existing national ambient air quality standard (NAAQS) for PM_{2.5} pollution during the winter months. The health impacts and resulting economic costs of PM_{2.5} pollution to Salt Lake Valley residents are unacceptably high.¹

¹ PM_{2.5} pollution is of significant concern because it can be inhaled deeply into the lungs and be trapped and cause damage. PM_{2.5} can aggravate heart diseases such as congestive heart failure and coronary artery disease, and has been associated with cardiac arrhythmias and heart attacks. Particles can aggravate lung diseases such as asthma and bronchitis, causing increased medication use and physician and emergency room visits. It is estimated that lifetime exposure to poor air quality in the Salt Lake Valley reduces life expectancy.

Children are more susceptible to the health risks of PM_{2.5} because their immune and respiratory systems are still developing. Children breathe up to 50 percent more air per pound of body weight than do adults. The breathing of fine particles by children is believed to cause both acute and chronic respiratory problems such as asthma. PM_{2.5} pollution is also associated with leukemia, lymphoma, and central nervous system tumors, especially in children, and causes pre-maturity and low birth weight in infants. It also causes stunted lung development even in otherwise healthy children, and decreased lung function into adulthood.

We are concerned that the proposed action will increase PM_{2.5} emissions. First, the potential increase in PM_{2.5} emissions has not been properly modeled or revealed by Kennecott. The airshed in the Salt Lake Valley is of exceedingly poor quality in the winter months, and any significant increase in PM_{2.5} emissions is unacceptable. Proper scientific modeling must be completed in order to adequately understand how the proposed changes could affect PM_{2.5} levels.

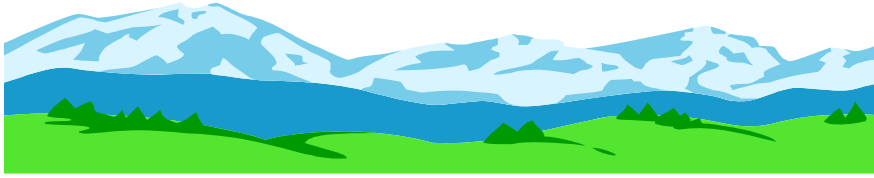
Second, as discussed by Mayor Becker, Kennecott's modeling predicts a substantial increase in PM₁₀ emissions, such that the Salt Lake Valley air quality will be close to exceeding the NAAQS for PM₁₀. Because the majority of PM₁₀ increases come from NO_x, the increases will necessarily increase PM_{2.5} emissions as well.

To adequately protect the public health it is essential, before proceeding with the requested actions, that the Board require an analysis of how the proposed changes will affect the Salt Lake Valley's already unhealthy air quality during the winter months. We join Mayor Becker in his assertion that it is not prudent, protective of health, or allowable for the Board to approve the SIP change or modification of Approval Order that would impede Salt Lake County's attainment of the NAAQS standard for PM_{2.5}.

Thank you for your consideration of our comments.

BREATHE UTAH
Deborah Burney-Sigman, Ph.D.
Vice President

W A S A T C H



Clean Air Coalition

March 16, 2011

Utah Air Quality Board
Utah Division of Air Quality
195 North 1950 West
Salt Lake City, Utah 84114

Re: 307-110-17. Section IX, Control Measures for Area and Point Sources, Part H, Emissions Limits.

The Wasatch Clean Air Coalition welcomes the opportunity to comment on this, and thanks the DAQ, KUC/RT staff, and various colleagues for help in locating documents, answering questions and exploring ideas.

PROBLEMS WITH THE CURRENT PROPOSAL

1. Parallel processing. We are given to understand that the proposed AO is based on this rulemaking. Understanding this SIP proposal has been particularly difficult for this AQB member, as we have been heeding the advice to avoid involvement in permitting in order to preserve ability to participate in adjudication of the permit, in the undesirable event that the permit is challenged. The SIP TSD refers to some elements of the SIP background contained within the permitting documentation, which is effectively off limits to board members.
2. Unavailable emissions projections for the entire Cornerstone project, including winter impacts. This information seems necessary to a considered decision.
3. Problematic validation of pit retention factor.

These reasons, in addition to the strong objections of the constituency I was appointed to represent, cause me to entertain the unwelcome idea of voting no on this proposal.

Thank you for your attention to these comments.

Peace,
Kathy Van Dame, Policy Coordinator
1148 East 6600 South
Salt Lake City, Utah 84121
(801)261-5989 dvd.kvd@juno.com



WESTERN RESOURCE
ADVOCATES

March 19, 2011

Acting Director
Bryce Bird
Planning Branch Manager
Division of Air Quality
PO Box 144820
Salt Lake City, UT 84114-4820
Via email: breiss@utah.gov
kkreykes@utah.gov

Re: Proposed Changes to Utah Admin. Code R307-110-17 (General Requirements: State Implementation Plan. Section IX, Control Measures for Area and Point Sources, Part H. Emissions Limits) and Utah State Implementation Plan Section IX.H.

Dear Acting Director and Mr. Bird,

Thank you for the opportunity to comment on the Division of Air Quality (DAQ) proposal to revise Utah Admin. Code R307-110-17 (General Requirements: State Implementation Plan. Section IX, Control Measures for Area and Point Sources, Part H. Emissions Limits) and Utah State Implementation Plan (SIP) Section IX.H (PM₁₀ SIP). I submit these comments on behalf of Utah Physicians for a Healthy Environment and Western Resource Advocates. Our organizations represent hundreds of Utahns who care deeply about protecting the air quality in Utah, particularly along the Wasatch Front. We, our families and our patients are regularly exposed to unhealthy levels of air pollution by virtue of living, working and recreating in areas along the Wasatch Front.

The proposed PM₁₀ SIP revision would allow Kennecott Utah Corporation (Kennecott) to expand its mining operations in Salt Lake County by 32 percent, increasing the maximum amount of ore and waste material the company is permitted to move from 197 million tons per year to 260 million tons per year. In proposing the SIP amendment, DAQ is endorsing an intensification of mining operations at Kennecott that would substantially increase PM₁₀ and NO_x emissions – emissions that will cause or contribute to violations of national health-based standards – without showing, in any credible manner, how air quality in the valley will be protected or improved. Moreover, this mushrooming activity will occur in an area that is currently not meeting air quality standards for PM₁₀, PM_{2.5} and ozone. The revision does not function to alleviate exposure to these harmful air pollutions or otherwise take steps to improve air quality in the Salt Lake County, but rather is a significant step backwards. As your agency is charged with reducing our exposure to PM₁₀ and NO_x and with keeping concentrations of air pollutions below national health based standards, we ask that you reject the proposed amendment as inconsistent with that duty.

Based on these concerns and the requirements of state and federal law, we strongly encourage DAQ not to revise its PM₁₀ SIP as proposed. Rather, we request that DAQ: 1) enforce the 150.5 tons per year limit on Kennecott's operations as specified in the applicable 1994 PM₁₀ SIP; and 2) turn its full attention to **reducing**, rather than allowing increases in the emission of air pollution and thereby ensuring that air quality in the Salt Lake Valley comes into compliance with national health-based standards as soon as possible. More specifically, we point out the following inadequacies with the proposed PM₁₀ SIP amendment.

The Revision is Unlawful Because it Interferes With Reasonable Further Progress and Attainment.

We are very troubled by DAQ's proposed revision to its PM₁₀ SIP by allowing Kennecott to expand significantly its mining operations in Salt Lake County. What is particularly unsettling about this proposal is that the Kennecott mine is located in a nonattainment area for PM₁₀ as well as PM_{2.5} and in an area that will almost certainly be designated as not attaining the 8-hour standard for ozone. This means that the State proposes to permit an increase in PM₁₀ and NO_x emissions that will further cause or contribute to violations of National Ambient Air Quality Standards (NAAQS), thereby adding to a serious public health crisis in the Salt Lake Valley, rather than taking steps to improve air quality by reducing emissions of PM₁₀ and NO_x.

According to EPA, in Salt Lake County, ammonium nitrate comprises more than 50 percent of the measured PM_{2.5} on days that exceed the 24-hour PM_{2.5} NAAQS. Increased NO_x emissions resulting from the Kennecott expansion will contribute to increased ambient concentrations of ammonium nitrate in the valley. The result will be an increase in PM_{2.5} concentrations in a nonattainment area, thereby frustrating efforts to bring the area into compliance with NAAQS and to secure the health benefits associated with meeting these standards.¹ By the same token, increased NO_x emissions will exacerbate the creation of ozone in Salt Lake County and likewise undermine efforts to reduce ozone concentrations in this densely populated area. Plainly, a government that is motivated to protect the health and welfare of its citizens, as well as the environment in which they live, will **not** take such a significant step in the wrong direction by approving a proposal that will thwart efforts to bring down air pollution levels the Salt Lake area.

Moreover, the U.S. Environmental Protection Agency (EPA) recently proposed to disapprove Utah's request to redesignate the Salt Lake County, Utah County and Ogden City PM₁₀ nonattainment areas as attainment and to disapprove other associated SIP

¹ Because Kennecott will emit PM_{2.5} and no approved SIP is in place for this pollutant, DAQ may not approve the proposed modification. Utah Admin. Code R307-403-3(3)(e) (Approval of a proposed source modification that will contribute to existing NAAQS violations will be denied unless there is an approved implementation plan in effect for the pollutant to be emitted by the proposed source.).

revisions.² This means that these areas are still nonattainment for PM₁₀ and that EPA has determined that air quality in the Salt Lake area is not meeting health-based standards. Moreover, the most recent EPA-approved PM₁₀ SIP – the 1994 PM₁₀ SIP – sets a federally enforceable limit on Kennecott’s operations of 150.5 million tons per year of material moved. From this fact, several conclusions necessarily follow. First, Kennecott’s current operations violate a federally enforceable SIP provision. Second, any expansion of those operations would also violate a federally enforceable SIP provision. Third, Utah’s failure to convince EPA and the public that the 2005 PM₁₀ SIP will achieve NAAQS and failure to meet its legal obligations under the Clean Air Act to improve air quality in, *inter alia*, Salt Lake County, demonstrates that any proposal to allow increased PM₁₀ and NO_x emissions must be rejected.

Additionally, for these and other reasons, the PM₁₀ SIP revision is unlawful. This is because the technical analysis that purports to support the revision fails to establish that a significant increase in air pollution causing activity – particularly activity that will increase emissions of PM₁₀ and NO_x in a nonattainment area for PM₁₀, PM_{2.5} and ozone – will **not** interfere with attainment or reasonable further progress toward attainment of NAAQS in the Salt Lake area. Nor does the record show that the revision will otherwise comply with the Clean Air Act and the Utah Air Conservation Act. *See* 42 U.S.C. § 7401(l); Utah Code Ann. §§ 19-2-101 *et seq.*

First, as stated above, the SIP revision conflicts with the federally enforceable limit on Kennecott’s mining activities that prevents the company from moving more than 150.5 million tons of material each year. Therefore the revision is illegal. In any case, before Kennecott may exceed the yearly production rate of 150.5 million tons, sound evidence must exist that Kennecott has achieved the necessary reductions in actual emissions, those reductions must be reflected in enforceable and federally approved SIP **and** in enforceable permit limits and models of those reductions must show with certainty that reasonable further progress toward and compliance with NAAQS will be achieved.

Second, the proposed amendment fails to show reasonable further progress toward reducing emissions of PM₁₀, as well PM_{2.5}, and concentrations of ozone in Salt Lake County necessary to bring the area into compliance with national health-based air quality standards.

Third, the record fails to show how the increase in mining activity and the corresponding escalation in PM₁₀ and NO_x emissions will comply with the NAAQS. While Kennecott undertook modeling for PM₁₀, it did not do so for the other NAAQS. Moreover, the company’s PM₁₀ modeling is insufficient to meet the requirements of the law. That modeling is inadequate for the same reasons identified by EPA in its proposed

² In recognition of the strong arguments EPA advances to support its proposed disapproval of the request to redesignate the PM₁₀ nonattainment areas, we hereby reference and incorporate the findings and conclusions found in the Federal Register, Vol. 74, No. 229, December 1, 2009. These arguments further underscore the impropriety of the SIP revision.

disapproval of the 2005 PM₁₀ SIP and we incorporate that analysis herein. Specifically: 1) the combination of CALPUFF simulations with UAM-AERO is insufficient; 2) the reliance on relative response factors (RRFs) based on total PM₁₀ mass alone, rather than including RRFs for components of PM₁₀ is legally unsupportable; and, 3) the modeling of banked emissions as though they would be emitted from a 1,200 foot stack rather than at near-ground level fails to support the proposed revision.

Fourth, the offset proposal is not supported by the record and does not comply with the relevant statutory or regulatory provisions. It appears that Kennecott proposes to use banked SO₂ credits to offset its increase in emissions. However, these SO₂ credits are from operations located 25 miles away from the mine and are derived from emissions released from a 1200 stack. Because the proper concern is whether air quality in the nonattainment area is improved, the record does not support the claim that these offsets will “provide a positive net air quality benefit in the affected area of nonattainment.” Utah Admin. Code R307-403-3(3)(d). Moreover, record must show continued further progress toward attainment. In a situation such as this, where millions of Utahns are exposed to unhealthy levels of air pollution each year and the SIP revision on its face seems to exacerbate rather than address air quality conditions in the Salt Lake area, the record must establish that improvements in conditions will result from the offsets and must provide for meaningful public comment on any such assertions.

Fifth, the heavy reliance on the pit escape factor is not supported by the record. Kennecott claims that most of the PM emissions in its mine do not escape the pit and therefore do not contaminate the Salt Lake airshed. This claim is central to justifying the SIP revision. However, the record does not support DAQ’s reliance on the pit escape factor. For example: 1) the study is not ground-truthed, as the study’s author recommends, and does not compare model-simulated concentrations to monitoring data; 2) DAQ did not independently verify or review the study; 3) the model sensitivity simulations were performed at the bottom of the pit and therefore underestimated PM releases from sources located elsewhere in the pit; 4) the record fails to include source location information sufficient to verify that the pit escape factor has been appropriately applied; 5) the pit escape factor fails to account for the fact that PM_{2.5} and ultrafines are most likely to be dispersed into the community airshed, which is of particular concern given that these small particles represent the greatest health hazard of the PM subsets; and 6) the record fails to indicate the pit escape factor was applied to modeling that already accounted for pit topography, thereby overestimating the effect of the pit.

The Proposed SIP and Technical Support Document Suffer from Several Significant Deficiencies.

We have attached detailed comments on the several significant deficiencies that are evident in the technical support document (TSD) submitted by Kennecott purportedly to support the SIP revision proposal. As we make clear, this document does not do what it is required to do to adequately support the proposed PM₁₀ SIP revision. The TSD fails to establish that a significant increase in air pollution causing activity – particularly activity that will increase emissions of PM₁₀ and NO_x in a nonattainment area for PM₁₀, PM_{2.5}

and ozone – will not interfere with securing attainment or reasonable further progress toward securing attainment of NAAQS in the Salt Lake area and will otherwise comply with the Clean Air Act and the Utah Air Conservation Act. *See* 42 U.S.C. § 7401(l); Utah Code Ann. §§ 19-2-101 *et seq.*

These comments reinforce what has been stated above, but provide more thorough analysis of the inadequacies of the TSD. Moreover, we have made additional points that deserve close consideration.

Utah's Current 2005 PM₁₀ SIP Fails to Protect Utahns from Unhealthy Levels of Air Pollution.

As you are well aware, Salt Lake County, Utah County, Ogden City, along with other significant areas in Utah, experience some of the highest – if not the highest – concentrations of air pollution in the nation. Moreover, Utah has the youngest population of any state in our country. This means that the vast segment of Utah's population particularly vulnerable to the significant adverse effects of air pollution – Utah's children – is routinely subjected to unhealthy levels of air pollution. Exposure to these concentrations of pollution can harm these children for the rest of their lives. Finally, as you are also aware, many significant areas in Utah, including Salt Lake County, Utah County and Ogden City, are not meeting current NAAQS for PM_{2.5} and ozone and that air quality in these areas can often exceed these standards by alarming rates.

Despite this reality, Utah asked that Salt Lake County, Utah County and Ogden City be re-designated as attainment for PM₁₀. This request is based on, *inter alia*, monitoring data and maintenance plans that are intended to show current and future compliance with NAAQS. However, as EPA has correctly pointed out, these efforts fail to establish that PM₁₀ concentrations in the affected areas have reached safe levels or that Utahns will be protected from unhealthy concentrations of PM₁₀ in the future. As a result, EPA has proposed to disapprove Utah's request to redesignate Salt Lake County, Utah County and Ogden City PM₁₀ nonattainment areas as attainment and to disapprove other associated SIP revisions.

We back EPA's decision to require Utah to prove rigorously any claims it makes that apparent PM₁₀ NAAQS violations meet the strict requirements of the Exceptional Events Rule or Natural Events Policy. We also applaud EPA's demand that the modeling that accompanies Utah's submission be accurate and conform to relevant regulations. We appreciate EPA's refusal to allow Utah to weaken its PM₁₀ SIP and to rely on provisions or omissions that may lead to violations of the PM₁₀ NAAQS. We also appreciate EPA's proposed decision to reject various amendments to Utah's air quality rules that do not adequately protect the health of Utahns or ensure compliance with health-based air quality standards. We also commend EPA's refusal to allow Utah to rely on an inadequate PM₁₀ maintenance plan. We believe that each of EPA's proposed decisions is soundly supported and required by the Clean Air Act and its implementing regulations.

In addition to lending our support to EPA's proposed action, we make the following specific comments:

- Utah's most populated counties are failing PM_{2.5} NAAQS. Rather than muddying its SIP, seeking a relaxation of controls on air pollution in these areas and asking for an attainment designation, Utah should be dedicating its time, effort and resources to immediately adopting and implementing significant measures to reduce air pollution, particularly PM_{2.5}, along the Wasatch Front. Utah's current request is a step backwards in its efforts to come into compliance with the NAAQS.
- The severe adverse health impacts from an "exceptional event" are identical to those from an "unexceptional event." Therefore, EPA is right to demand rigorous documentation of any claim to an exceptional event, including by requiring strict compliance with the relevant regulations. To do otherwise would be to undermine the goal of the Clean Air Act to force States to comply with the NAAQS. In other words, an exceptional event must truly be exceptional and beyond any efforts to correct it.
- We believe that all permit terms and conditions on which Utah relies in its SIPs should appear in both the relevant permits, even where no Title V permit is required, as well as in the SIP. Only in this way can the purpose of the Clean Air Act be met and the public be informed of the scope of controls on any given stationary source.
- Utah's refineries, Kennecott, and Utah's gravel pits require more rigorous pollution control. These sources appear to contribute significant particulate pollution to the Wasatch Front and appear to be insufficiently controlled and monitored.
- Consistent and accurate monitoring is critical to the success of permit terms and conditions, as well as SIP conditions. Monitoring every five years is unacceptable. Moreover, monitoring should be required that is sufficiently rigorous and regular to ensure compliance with applicable permits and SIP conditions.
- Emissions during maintenance, start up and shut down are significant. As a result, EPA is correct to refuse to allow Utah to exempt these events from control and enforcement. Permit terms and conditions should control these events and excess emissions must be treated as violations. To do otherwise would undermine the goal of the Clean Air Act to control and reduce air pollution and to require sources to operate within the confines of their permits and SIP conditions.³

³ Because of Utah Admin. Code R307-107 – Utah's Unavoidable Breakdown Rule – Utah is not in a position to attain or maintain the NAAQS or to otherwise comply with the requirements of the Clean Air Act. There is no reason to believe that facilities will maintain their pollution control equipment or operate with permit compliance in mind. Moreover, for the purposes of modeling, there is no evidence that regulated industries have kept or will keep within the confines of their permits. Rather, sources are free to attribute any excess emissions to an "unavoidable" event and indeed, are free to prolong this event indefinitely and are free from recourse.

- Emission limits must be clear, enforceable and monitored. To allow otherwise would violate the letter and purpose of the Clean Air Act.

Thus, because Utah's proposed 2005 PM₁₀ SIP is faulty on several scores and fails to establish that the Salt Lake area is meeting NAAQS for PM₁₀, we find it particularly inappropriate for DAQ to allow a significant increase in mining activity and PM₁₀ emissions by Kennecott. Before allowing new emissions in the valley, DAQ should first demonstrate attainment of the NAAQS. Moreover, if the SIP revision is to be considered by the agency, DAQ must demand rigorous and transparent modeling and clear, convincing and consistent data and analysis. DAQ must not pin its PM₁₀ SIP revision on a master thesis that it has not independently confirmed, that is incomplete, that has not been peer-reviewed and that has not been verified with monitoring data. Moreover, the agency must inform and involve the public in this critical decision making in a way that allows individuals to make meaningful comments and have their concerns adequately addressed.

Thank you for this opportunity to comment and for your agency's actions on behalf of the people of Utah. We hope that the State of Utah will reject the proposed SIP revision. At a minimum, we ask that DAQ demand and undertake significantly more analysis before changing measures designed to protect our health and the health of our families and patients. Please keep us informed of any actions DAQ takes relative to the PM₁₀ SIP revision or the Kennecott expansion proposal, including of any requests the agency makes of EPA.



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WESTERN RESOURCE ADVOCATES

Comments submitted by the Utah Physicians for a Healthy Environment and Western Resource Advocates (collectively UPHE)

RE: Technical Support Document (TSD) submitted (revised) in January 2011 by Kennecott Utah Copper (Kennecott), in support of increasing the PM₁₀ State Implementation Plan operational limitation on the company from 197 MM tons of mined material per year to 260 MM tons of mined material per year.

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A. General Comments

1. Section 1.0 of the TSD states that a Notice of Intent (NOI) has been submitted as a “companion document” to the TSD and that revision of the PM₁₀ SIP and consideration of the Intent to Approve (ITA) Kennecott’s proposed increase will proceed on a parallel track. It is apparent that the TSD is intended to support both the SIP amendment as well as claims made in the NOI. However, the proposed SIP limitation change from 197 MM tons to 260 MM tons must first be evaluated, reviewed, commented upon, and then, either approved or denied, based on extensive technical analysis. Only after this process is complete can an NOI suggesting a proposed permit increase, which presumably then complies with the SIP, be submitted for review.

When both documents are submitted concurrently and freely refer to each other as references to support one another, the “chicken and the egg” conundrum arises: how can the first document (the TSD) rely upon data submitted in the second document (the NOI), when the foundational approach of the second document is contingent upon approval of the first document? The situation is circular, confusing and unclear. For DAQ to proceed on this parallel track undermines the integrity of the permitting and rule making process and conveys to the public the suggestion that DAQ has made up its mind with regard to both. UPHE requests that DAQ clearly define and follow an appropriate procedure that provides that a SIP modification will precede consideration of an NOI and carefully explain this procedure to the public.

2. Apparently missing from DAQ’s website and otherwise unavailable to the public are DAQ’s analysis of the TSD and various documents submitted by Kennecott in support of its expansion proposal. DAQ has already indicated that it plans to issue a permit to Kennecott allowing the company to expand its mining operations.¹ This indicates that DAQ has already completed a technical analysis of the proposal and therefore that there are documents created by DAQ, along with documents submitted by Kennecott to support its proposal, that are not readily available. By failing to provide these documents

¹ Kennecott Utah Copper LLC, Mine & Copperton Concentrator, [Intent to Approve: Modify Approval Order DAQE-AN0105710023-08 to Allow for Material Movement Increase and Add a Crusher](#), Project Number: N010571-0028, Posted by DAQ on February 2, 2011.

to the public for the purposes of the present rulemaking undermines the ability of UPHE to participate in this process in a meaningful way and to direct its comments to issues raised by those technical documents. UPHE therefore requests that DAQ provide to the public the agency's full technical analysis of information presented in the TSD, including any technical analysis of the Bhaskar & Tandon thesis (discussed below in Section G).

Further comments made in this section refer to the TSD as it relates to the proposed change of the PM₁₀ SIP, and not the NOI, except where relevant.

3. The TSD has been revised twice since it was first submitted in August of 2010. The NOI, however, was submitted in August of 2010 and has not been correspondingly revised. The TSD has been altered to reflect changes in emissions, but these changes have not been documented by DAQ in a formal way that allows for evaluation by the public. UPHE requests that DAQ provide a list of tracked changes between revisions to the TSD so that UPHE can appropriately evaluate these in comparison to the NOI, which has remained static.

4. There are two documents that officially report the air emissions currently being emitted by Kennecott's mining operations. The first is the existing DAQ Approval Order (AO) (DAQ-AN0105710023-08), which declares that current mining operations have the potential to emit (PTE) 2,559 tons of PM₁₀ per year. The second is the 2008 emissions inventory data compiled by DAQ, in which Kennecott reports its annual emissions. In 2008, at an operational limitation of 197MM tons/year, Kennecott self-reported greater annual emissions: 2,915 tons of PM₁₀ from mine/concentrator operations.²

Despite annual PM₁₀ emissions from the mine currently hovering around 2,915 tons of PM₁₀ per year, the TSD states that with the proposed operational limitation *increased by 32%* to the requested 260MM tons/year, the total PM₁₀ emissions PTE will only be 1,513 tons/year, a *decrease* of 1,402 tons, or 48%. ***The obvious question, then, is: how can a mine increase operational capacity by 32% while simultaneously reducing its PM₁₀ emissions by over 48%.*** Plainly, the record does not support such a claim. The current emissions information for Kennecott is illustrated in the following table:

Pollutant	<u>Potential to Emit as stated in current AO (2008)</u> <i>(Operating at 197 MM tons/yr)</i>	<u>Kennecott mine emissions in 2008 (DAQ Inventory)</u>	<u>Future Emissions Stated in TSD</u> (tons/yr) <i>(Operating at 260 MM tons/yr)</i>
PM ₁₀	2,559	2,915	1,513
NOx	5,061	4,846	5,830

* Note: emissions listed are tons per year.

Based upon the above, we make the following comments:

² Utah DAQ, 2008 Annual Emissions from Point Sources by County.

- a). We understand that tailpipe emissions from offroad sources must be included in the emissions inventory, but are not required to be calculated as part of the PTE. While Kennecott has a large fleet consisting of various types of offroad equipment (graders, dozers, loaders, etc.), by far the largest volume of offroad tailpipe emissions comes from the mine haul trucks, and these tailpipe emissions **are** included in the PTE and estimated at 191 tons of PM₁₀/year. Even if that figure were doubled, then, to liberally account for all offroad sources that are not included in the PTE, a total of 1,020 tons of actual, reported emissions still remains unexplained by the TSD.
- b). Other than a new baghouse with increased control efficiencies that accounts for only a few tons of PM₁₀ reduction, there are no **new** methods of pollution control or a more stringent BACT analysis performed that would account for this “missing” 1,020 tons of actual emissions.
- c). The fugitive dust control plan on which Kennecott relies to maintain existing reduction efficiencies, already allows Kennecott to claim higher control efficiencies on numerous dust-producing operations than allowed by other sources conducting similar operations in Salt Lake County. However, these efficiencies are already included in the PTE calculations for fugitive emissions. UPHE is concerned that, despite heavy reliance on the control plan to claim large reductions in PM₁₀ emissions by utilizing various types of watering controls, the plan itself was not provided for review along with the TSD. The result is that the public has not been given a chance to review all pertinent data related to the proposed PM₁₀ SIP revision. UPHE requests that the fugitive dust control plan be posted by DAQ so that the public can review the document as part of this rulemaking process and that a new period be established so that the public can submit comments on the plan, together with comments on the SIP.
- d). UPHE has limited its evaluation of the apparently inexplicable difference between actual 2008 emissions and newly-proposed future PTE emissions to a discussion of available, published numbers. However, with no significant, observable proposed changes in pollution reduction efforts at the mine (i.e. enclosing areas of operations, replacing haul trucks with conveyors, or other similar measures), it is reasonable to assume that an operational mining increase of 32% will lead to a commensurate increase in actual emissions. It is logical, then, to project that if Kennecott emits 2,915 tons of PM₁₀ operating at 197 MM tons of mined materials per year, the company’s PM₁₀ emissions will increase by 32% to 3,847 tons/year were production to increase to 260 MM tons of mined material per year.
- e). Kennecott recognizes that its operational emissions will increase significantly and has offered emission reduction credits to potentially offset these increases (see also comment C-2 below). However, as offsets do not appear to be required by state or federal law for a SIP modification process, we view the offering of such offsets as a measure calculated to make these actual emission increases more palatable to DAQ and the general public rather than a binding obligation. Moreover, DAQ must remember that a SIP revision is appropriate only if the amendment does not interfere with any applicable requirement concerning attainment and

reasonable further progress or any other applicable requirement of the Clean Air Act. With these considerations in mind, UPHE requests that DAQ provide the regulatory basis for the application of these credits to the SIP modification process.

f). Kennecott relies solely upon the Bhaskar-Tendon paper to justify a wholesale 80% discount to new as well as previously reported emissions that occur within the mine pit, which, as the TSD describes, make up 78% of all mine emissions.

5. The TSD relies on the Bhaskar-Tandon Master's degree thesis, *Airflow Patterns and Pit-Retention of Fugitive Dust for the Bingham Canyon Mine*, to assert that only 20% of in-pit PM₁₀ emissions escape the pit. This Master's thesis does not present an adequate or complete technical justification of the use of such a large emissions reduction factor. Because of the importance of this issue, this thesis is discussed separately in Section G below.

B. Section 1.0: Introduction and Purpose

1. Table 1-1 purports to provide the "most representative" PTE calculations for 260 MM tons per year. As a basis for this claim, the table refers to AERMOD modeling performed as part of the NOI document. However, the TSD does not otherwise reference AERMOD modeling, and in fact, the bulk of the TSD is comprised of CMB, UAM-AERO, and CALPUFF modeling results. As the AERMOD information is unsupported in the TSD, mention of AERMOD tends to obfuscate other modeled emissions demonstrated by the TSD.

When cross-referenced, the PTE figures from the TSD and the total PTE summary presented in the "companion" NOI document (NOI Table 3-16) do not agree. This discrepancy is summarized in the following table:

Pollutant	<u>TSD</u> (tons/yr)	<u>NOI</u> (tons/yr)
PM ₁₀	1,513	1,472
PM _{2.5}	Not given	363
SO ₂	6.56	6.56
NO _x	5,830	5,830
CO	1,682	1,461
VOC	314	320

This discrepancy casts doubt as to the accuracy of both set of numbers, calls into question Kennecott's quality assurance procedures and underscores the problem with considering two documents concurrently when one document purports to rely on the other. (See General Comments #1 & #2 above).

C. Section 2.0: 1994 PM10 SIP Demonstration

1. Section 2.1 states that "[s]econdary sulfate and nitrate impacts were assumed to be in direct proportion to a source's relative sulfur dioxide (SO₂) and nitrogen oxides (NO_x) emissions." In light of

the 1994 SIP determination that Kennecott is a “large source of secondary PM₁₀,”³ it is unclear whether this indicates that an equivalent amount of emissions for secondary impacts were added as PM₁₀ to the original emissions amount or whether the emissions were measured as additional SO₂ and NO_x emissions only. UPHE requests that DAQ describe the meaning of this statement and show where the results of the demonstration account for secondary pollutants.

2. Section 2.2, Offset Proposal. Section 2 presents use of emission reduction credits that will be applied as offsets to mitigate proposed increases of PM₁₀ and NO_x related to the proposed production increase. While the use of credits is questionable (Section A-4, paragraph e.), the credits currently represent emissions that are banked and are **not** being emitted into the airshed. However, the Salt Lake area is currently nonattainment and has experienced exceedences of PM₁₀ ambient standards even while these emission reduction credits resided in the bank. Now, these credits will be exchanged for 5,485 tons of actual ‘new’ air pollution (i.e. pollution that is not currently being emitted into the airshed). Plainly, based on the record, DAQ should not allow these new, actual pollutions to be emitted into the already troubled airshed. Alternately, if emission reduction credits were allowed to be applied, the offset ratio should be increased to a minimum of 1 ton actual emissions requiring 1.5 tons of credits (1: 1.5), or even two tons of credits (1: 2). In any case, there must be a demonstrated non-interference with attainment or reasonable further progress and improvement in air quality.

3. Section 2.2, Pit Escape Factor.

This section first mentions the Bhaskar-Tandon Masters degree thesis, *Airflow Patterns and Pit-Retention of Fugitive Dust for the Bingham Canyon Mine*, to contend that in-pit PM₁₀ emissions can be reduced by 80% to calculate the emissions that escape the pit. The emissions reduction factor of 80% is not supported by the record and is not justified. See Section G below for specific comments regarding this thesis.

D. Section 3: 2005 Maintenance Plan Demonstration

1. This section of the TSD provides an in-depth discussion of the 2005 PM₁₀ SIP development. However, while approved by the Air Quality Board, a SIP is a federally-enforceable document and, as such, must be approved by EPA. Not only has the EPA *not* approved the 2005 SIP, but on December 1, 2009, the agency published in the Federal Register⁴ its intention to **disapprove** the SIP on numerous grounds, including identified flaws with the UAM-AERO modeling intended to support the plan. Therefore, Section 3 of the TSD is technically moot, as the SIP it discusses has not been federally and has been identified as flawed by the EPA.

2. Section 3.1. Why were the UAM-AERO modeling files from the 2005 SIP not available from the DAQ?

³ SIP Section IX, Part A, Page 28.

⁴ Federal Register / Vol. 74, No. 229 / Tuesday, December 1, 2009 / Proposed Rules

3. Section 3.1. CALPUFF was substituted for modeling originally performed with UAM-AERO. UAM-AERO is a photochemical model that simulates the changes of pollutant concentrations in the ambient air by characterizing chemical and physical processes in the atmosphere. This model is typically used in a policy or regulatory assessment to simulate impacts from **all** sources and evaluates pollutants over large spatial domains. CALPUFF, on the other hand, is a dispersion model that assesses dispersion characteristics of a single source and the impacts of the source at surrounding receptors, and does not focus on addressing the primary chemical transformations that occur, as UAM-AERO does.

UPHE understands that the CALPUFF domain was designed to simulate the UAM-AERO scenario as well as possible. However, given the model category-type differences between these two models, UPHE requests that the DAQ describe how the agency can allow the switching of modeling platforms, considering their different category-types (i.e. photochemical vs. dispersion), and, in a related matter, justify how Section 3.3 of the TSD can compare the results from two disparate models which rely upon different algorithms, especially given the dissimilarity of these models category-type (photochemical vs. dispersion).

4. Table 3-3 provides PTE information without a “pit retention” factor added. These numbers do not match to those presented in Table 1-1, perhaps because Table 3-3 includes the Copperton Concentrator, whereas Table 1-1 does not. Why are emissions shown with the concentrator in one area, but not in the other? The public must be able to determine the emissions from the pit without the retention factor (as this information is not directly provided), and intermittent use of the concentrator data obfuscates this. The mine and concentrator are permitted together as a single source and therefore emissions from each of these areas should be combined in any table demonstrating “total PTEs.” It is assumed that concentrator emissions are included in the 22% of emissions claimed to occur outside of the mine pit, but no statement to this effect is provided in the TSD.

5. Section 3.3.4: Source Emissions. The second paragraph refers to NO_x emissions as **5078 tpy** at the 197 MM tons/year production scenario and **7,450 tons** per year at the 260 MM tons/year production scenario. While neither of these numbers are substantiated, the numbers appear to be the actual, non-reduced NO_x emission numbers for the mine. Note that they are listed as both 7,430 tons as calculated, 7,442 tons in the 260 MM tons/year case, and 5078 in the 197 MM tons/year case. Why are these differing numbers for NO_x emissions not consistent with NO_x emissions stated elsewhere in the document? For example, the summary PTE table (Table 1-1) states that NO_x emissions are 5,830 tons/year.

Much of this apparent confusion stems from the application of the Bhaskar-Tandon 80% reduction factor in some sections of the TSD, but not in others. In addition, it is not clear from any modeling data presented when the adjusted numbers were used, as opposed to when they were not. UPHE requests that the DAQ offer a definitive explanation of the development of each of the numbers used in the report so that the public may understand the basis for the proposed SIP revision. UPHE also requests that DAQ provide a table that indicates full emission increases at all in-pit and out-of-pit sources (inclusive of standard control efficiencies, such as watering) and clearly identifies any additional control factors (i.e. Bhaskar-Tandon) that lead to the adjustment of any of these numerical values.

6. Section 3.4: Results. The first paragraph regarding extraction of CALPUFF runs using CALPOST and then comparing these against the UAM-AERO runs for 2011 and 2015, is confusing. UAM-AERO emissions results are not shown for comparison. Rather, only the increases shown by the CALPUFF runs are provided. UPHE requests that DAQ provide the UAM-AERO modeling run results so that the public may compare them to the CALPUFF runs.

E. Section 4: Emissions Summary

1. Section 4.0. The introductory paragraph states that all PM₁₀ in-pit calculated emissions are reduced by 80% based solely on the Bhaskar-Tandon thesis. However, it is necessary to point out that, relying on the qualified results of one graduate student thesis, Kennecott is claiming thousands of tons of reductions that may or may not be actual reductions. Plainly, the record does not support such reductions. This issue is discussed separately in Section G below.

2. Section 4.2.5: Haulroad emissions. Kennecott states that the company follows DAQ policy⁵ of using a 75% control efficiency on unpaved road fugitive dust emissions. However, the company's spreadsheet calculations (Table A1-18) show that instead of using the 75% control efficiency factor, Kennecott used incorrect 85% and 95% control efficiency factors. UPHE requests that these emissions be recalculated using the correct factor, as was stated in the text of Section 4.2.5.

In addition, Kennecott has used a control efficiency of 85% in summer/spring/fall (275 days) vs. control efficiency of 95% in winter in order to account for wetter conditions in the wintertime. In addition to the previous comment, it should be noted that DAQ policy does not allow for seasonal variation in dust calculations from roadways. UPHE requests that seasonal control efficiencies be removed when conducting recalculations as requested in the preceding paragraph.

Has DAQ flagged these calculation errors as part of a quality assurance effort?

Because it appears that the DAQ's guidance policy for calculating fugitive roadway dust has not been as widely disseminated as believed, UPHE has attached a copy of the DAQ Policy for reference by Kennecott.

3. Table 4.16 is improperly labeled as "Generator Location" emissions.

4. In keeping with our comment in Section D – 5 that requests a table be presented that demonstrates the fugitive PM₁₀ emissions that have had a control factor of 80% applied to them, UPHE requests to evaluate methodology for determining fugitive control factors for vehicles that operate both in and outside of pit, i.e. haul trucks.

⁵ Utah DAQ, Permitting Branch Memo from R. Olsen, March 10, 2008, also included as an attachment to this document.

F. Section 5: Conclusion

1. The first bulleted paragraph in Section 5 discusses that “[a]n analysis based on the 1994 SIP demonstration methodology was used to support the modification of the 1994 SIP from the 150,500,000 tpy originally modeled to a material movement limitation of 260,000,00 tpy.” UPHE can find no evidence of this type of analysis in the TSD document. Was this performed previously? Most of the analysis conducted in the TSD is related to base year and future scenarios as presented in the 2005 SIP.
2. The conclusion suggests that increased emissions are acceptable as they have been offset by reduction credits. However, application of offsets is allowed under the NSR permitting program under State air rules assuming a SIP is already established that allows for such credits to be used. Offsets may not be required for a SIP analysis, as these emissions are already modeled within the existing SIP. Use of offsets to revise a SIP also sets a precedent for other sources, who may choose to raise their SIP limitation ceilings through application of offset credits. UPHE requests that DAQ explain the use of offsets in absence of any clear guidance or rulemaking regarding their applicability to a SIP revision and evaluate the precedence that this approach sets for other sources in the same airshed and other nonattainment areas.
3. As discussed in preceding sections, the modeling demonstration that is being used as a foundation to allow for the proposed increase is based on the 2005 PM₁₀ SIP modeling demonstration. The 2005 SIP has been proposed for disapproval by the EPA. Therefore, all conclusions based on the 2005 SIP must be suspended until the SIP is approved by EPA.

G. Comments on *Airflow Patterns and Pit-Retention of Fugitive Dust for the Bingham Canyon Mine*, Bhaskar-Tandon Masters Degree Thesis, 1996.

DAQ is considering a revision to the Salt Lake County PM₁₀ SIP that that would allow Kennecott to increase its production from 197 million tons to 260 million tons of mined material per year. According to Kennecott’s TSD, this increase in production will actually decrease PM₁₀ emissions by 1,762 tons per year. This seeming impossibility is only feasible if all PM₁₀ emissions that occur within mine pit (“in-pit” emissions) are reduced by 80%, which is indeed what Kennecott has proposed. This 80% reduction is based solely on the results of a “study” submitted to DAQ by Kennecott that estimates only 20% of PM₁₀ particles escape from the mine pit and are released into the ambient airshed. This “study” is actually a master’s degree thesis authored by a University of Utah, Department of Engineering graduate student Navin Tandon in 1996 – 15 years ago.

Mr. Tandon’s thesis evaluates the potential for particles emitted within the mine pit to ‘escape’ into the surrounding airshed of Salt Lake County. It is critical to note that without reliance on Mr. Tandon’s thesis, Kennecott estimated emissions may in fact be more than four times greater than the company currently calculates them to be for the purposes of the SIP revision. This is because Kennecott asserts that escaped emissions represent only 20% of overall calculated emissions.

UPHE makes the following six general comments and four technical comments on this master's degree thesis:

General Comments

1. An original thesis was authored and copyrighted by Navin Tandon in 1996. Mr. Tandon is noted as the sole author. However, as is customary in academia, his supervisor and thesis advisor at the University of Utah, Dr. Ragula Bhaskar, is listed as a co-author. It appears that Kennecott has printed a new cover page for this study that lists Dr. Bhaskar first as primary author (note that this cover page does not exist on the "official" copy of this thesis, which is archived at the Marriot Library at the University of Utah).

This type of change is misleading, appears to deliberately play upon the strength of Dr. Bhaskars' Ph.D. credentials, and leads the reader to believe that Dr. Bhaskar is the primary author of this paper. As a thesis advisor, Dr. Bhaskar may have been the driving force behind the work, but he is not an author of this thesis. In actuality, when a proper literature search was performed for this paper at the University of Utah, Dr. Bhaskar's name never appears as author. Rather only his student, Navin Tandon, is listed as author of the document.

2. It appears that this paper was written at the request of Kennecott, based on the fact that the study was submitted to the company. This further suggests that the analysis was funded by Kennecott, raising a potential conflict of interest. UPHE requests that Kennecott fully disclose its involvement in this research.

3. The thesis has never been a) externally peer-reviewed, b) presented at a conference or published in a conference proceedings, or c) published in a peer-reviewed scientific journal. If a scientific paper is referenced or relied upon for its results, or is referred to as a "study," it must have been subjected to at least one or more of these types of reviews, performed outside the institution from which the paper was produced. That the paper has never been externally peer-reviewed (i.e. beyond the thesis-advisor level) discredits its use as a "study," while to claim it is a definitive study of particulate emissions from the Kennecott mine is misrepresentative. In any case, DAQ is obligated to undertake independent analysis of the paper, a duty compounded by the fact the rigor of the study is suspect.

We are also concerned that this paper is now 15 years old and Kennecott presents no additional corroborating studies or other types of assessments that may support the findings of this graduate student's work that have been conducted in the last 15 years. We are also troubled by the fact that, although this thesis was completed in 1996, Kennecott has not presented it during the previous Approval Order modifications (at least three) that have occurred since thesis completion.

4. Perhaps our most important comment is that the thesis paper lacks proper validation. The thesis author, Mr. Tandon, states clearly in his summary and conclusions that observational data must be made in order to compare predicted modeling results with actual events that occur at the mine site. Specifically, he states that meteorological and source parameter assumptions should be verified through monitoring on-site within the pit to verify his results. He also implies that the sensitivity analyses

conducted as part of his modeling effort are computationally-limited based on financial resources required for additional computational support, and suggests improved methods of completing modeling evaluation which may not limit the modeling study.

5. The author also states clearly that he has made various **assumptions** in completing this paper that must be clarified with actual data. The author bases his assumptive values on literature searches and has incorporated them as fixed constants into his modeling calculations. However, the author himself cautions that these constants are actually variables that need to be accurately measured on-site in order to validate his modeling findings. It does not appear that Kennecott has in anyway attempted to follow the author's recommendations that on-site data be collected to verify the claims of the thesis.

6. DAQ should understand well the author's concern that efforts be made to verify the precision and accuracy of the results presented in his thesis. DAQ often performs airshed modeling, while at the same time conducting extensive and on-going monitoring of ambient air. DAQ frequently states that monitoring data do not agree with modeling predictions, and in fact, admits that the two values are very different from each other. This has most recently been evident in the development of the current PM_{2.5} SIP, during which DAQ has stated on record, that the agency was not able to get the selected model to simulate or predict past, well-documented days of non-compliance that have occurred in the past, even when all meteorological variables and air monitoring data were well-known. Why, then, is DAQ prepared to accept this thesis based on a fluid flow model, without ever requiring validation through monitoring, especially when the author himself recommends it? UPHE requests that DAQ share its technical review and analysis of this thesis document for public review together with the proposed SIP revision. This is particularly important because the justification for the SIP revision and the validity of the TSD hinges upon the validity of the thesis.

7. The concept of pit retention of particulate matter must also be informed by the fact that Kennecott is located in a PM_{2.5} nonattainment area, as well as the increasingly robust medical research showing that not only is PM_{2.5} more toxic than PM₁₀, but that ultrafine PM (<.1microns) is also more toxic than PM_{2.5}. In other words, medical research increasingly concludes that the smaller the particles, the greater the capability of those particles to penetrate cell membranes and cause a broad array of adverse intracellular responses and physiologic consequences. Pit retention of PM_{2.5} and ultrafine PM will be much less than PM₁₀, reducing significantly the legitimacy of any claim that public health impacts are profoundly reduced by pit retention. In any case, as the record does not support the pit escape factor of 20% for PM, it does not support a pit escape factor of 21% for PM_{2.5}. Plainly, an adequate analysis of any pit retention must, at a minimum, thoroughly address the buoyancy of PM_{2.5} and the impact of the Kennecott operations on Utah's PM_{2.5} nonattainment areas. Moreover, given DAQ's mandate to protect the public health, the agency would be well advised to consider separately the rate at which ultrafines escape the pit.

Technical Comments

8. A three-dimensional finite element model was developed. This computational model included the mine and surrounding regions. The flow field over and inside the mine cavity were modeled with

the Reynolds-Averaged Navier-Stokes (RANS) equations with a k-epsilon turbulence closure model. A near-wall modeling approach was used next to the boundaries (in the viscous layers). Given boundary conditions and initial conditions, a flow field approximation was calculated. The author discusses that the k-epsilon model is not appropriate in low-turbulence regions and the boundary layer (in these flows) is assumed to be low turbulence. However, there must be a height in the flow field where the smooth flow (RANS) and turbulent flow (k-epsilon) models are interfaced. The corresponding mesh element height must match properly with the mixing height in order for model predictions to be accurate. This is not adequately demonstrated in the thesis.

9. The spatial dimensions used by this model are not valid. The finite element model utilized an area of approximately 23,000 ft by 20,000 feet. This is meant to capture the mine and "surrounding regions." However, a justification for the size of the modeling domain is not given. The simple site map submitted by Kennecott as part of the companion NOI does not have a scale included. As a result, neither the pubic nor DAQ can adequately compare current or projected conditions to those that existed 15 years ago when this modeling exercise was completed. This calls into question the impacts of the inflow and outflow locations with respect to the topographic features of the pit. In addition, Kennecott has stated publicly that the pit footprint size will increase at least 1,000 feet south of the existing pit. This is not reflected in the thesis. In addition, in figure 5-10 the author indicates that the area modeled was rectangular in nature, while figure 5-8 shows a trapezoidal configuration to the spatial domain. Nevertheless, because the modeling domain has changed greatly, the results of the thesis cannot be generally apply to the pit, no matter what dimensions it has attained since the thesis was completed.

10. Numerous assumptions are used in the model. The author himself states that these should be verified or contradicted by use of field studies to validate the results of the modeling.

a. The analysis relied on a RANS model rather than on a direct numerical simulation (DNS). DNS would attempt to capture all scales of motion of the fluid. RANS requires a closure model. The closure model used in this study was the classic k-epsilon model. As stated in the thesis, this model has several limitations: it is appropriate for only high-turbulence regimes and it requires a collection of constants (parameters) which are assumptions not verified through field study.

b. The thesis states the constants used (for reproducibility), but does not justify the particular constants other than by stating that they are from the literature. Appropriateness of the constants for the particular situation/study is not discussed.

c. The thesis does not explicitly address if the isotropic turbulence assumption is a good assumption for this study.

d. The mesh node information is made available in the thesis (both in terms of number of nodes and images of slides of the domain). However, resolution of the mesh elements in feet is not given, so the spatial scale of the mesh study is not clearly defined. Due to computational costs, a mesh resolution study did not appear to have been performed (i.e. a hierarchical mesh refinement to understand the impact of spatial resolution on the flow field characteristics). The

thesis provides images of mesh nodes, but no statement or elaboration of what each mesh element represents.

e. A mixing layer assumption is made by the thesis. This assumption, along with other atmospheric condition assumptions, affects further parameters such as the height of the near-wall modeling layer. This is one of the reasons why the author states that onsite meteorology must be conducted to provide verification or contradiction of the thesis claim.

11. The model does not handle anisotropy and therefore cannot predict directional dependence of particles outside of meteorological influence. Relevant data measurements have never been submitted by Kennecott.

12. The author describes reasonable “next steps” for the refinement of his thesis conclusions. This confirms that while the thesis may be a good starting point for the justification of pit retention, the analysis primarily demonstrates that the modeling may be an appropriate tool for this type of application. However, the thesis in no way can justify the pit retention results (80% of PM10), if for no other reason than what the author concludes – that the findings need to be validated in order to verify the results.

Given these conditions as listed and described, UPHE requests the following:

a) Site verification of thesis claims in accordance with author’s recommendations that involves collection of meteorological data (at a minimum) from various levels of the mine pit.

b) Additional, peer-reviewed and DAQ-authorized studies using monitoring data yet to be collected so that assumption constants are known from site-specific data. These studies will lead to better understanding of pit dynamics and either confirm or contradict the 20% PM10 emission factor developed by the Bhaskar-Tandon thesis.

The following statement was sent by the listed individuals with no further comment. Individuals that made addition comments have been scanned and attached.

I SUPPORT KENNECOTT

I am in favor of the Utah Division of Air Quality issuing a timely permit and the Utah Air Quality Board approving a rule making (R307-110-17) to authorize a production increase at the Bingham Canyon Mine. I understand this project is out for public comment because Kennecott has fulfilled all regulatory requirements. The Cornerstone Project will make an important contribution to the community and I support timely regulatory approval.

Kimball Merrill
Broden York
Bob Gathers

I SUPPORT KENNECOTT

I am in favor of the Utah Division of Air Quality issuing a timely permit and the Utah Air Quality Board approving a rule making (R307-110-17) to authorize a production increase at the Bingham Canyon Mine. I understand this project is out for public comment because Kennecott has fulfilled all regulatory requirements. The Cornerstone Project will make an important contribution to the community and I support timely regulatory approval.

I support the Cornerstone Project because:

I believe in saving our world & Kennecott along w/ the help of Rio Tinto helps do that.

NAME:

Andrea Park

SIGNATURE:

Andrea Park

I SUPPORT KENNECOTT

I am in favor of the Utah Division of Air Quality issuing a timely permit and the Utah Air Quality Board approving a rule making (R307-110-17) to authorize a production increase at the Bingham Canyon Mine. I understand this project is out for public comment because Kennecott has fulfilled all regulatory requirements. The Cornerstone Project will make an important contribution to the community and I support timely regulatory approval.

I support the Cornerstone Project because:

*This Great Country of ours
needs work the people need jobs*

NAME: *Frank R. Quintana*

SIGNATURE: *Frank R. Quintana*

I SUPPORT KENNECOTT

I am in favor of the Utah Division of Air Quality issuing a timely permit and the Utah Air Quality Board approving a rule making (R307-110-17) to authorize a production increase at the Bingham Canyon Mine. I understand this project is out for public comment because Kennecott has fulfilled all regulatory requirements. The Cornerstone Project will make an important contribution to the community and I support timely regulatory approval.

I support the Cornerstone Project because:

*Kennecott Copper has been and is today
a Major Employer, but also Employees
many support jobs, and ^{one of the most profitable} safest operations
in the world.*

NAME: Larry L. Adams

SIGNATURE: Larry L Adams

I SUPPORT KENNECOTT

I am in favor of the Utah Division of Air Quality issuing a timely permit and the Utah Air Quality Board approving a rule making (R307-110-17) to authorize a production increase at the Bingham Canyon Mine. I understand this project is out for public comment because Kennecott has fulfilled all regulatory requirements. The Cornerstone Project will make an important contribution to the community and I support timely regulatory approval.

I support the Cornerstone Project because:

Jobs

INT

NAME: *Jason Remick*

SIGNATURE: 

I SUPPORT KENNECOTT

I am in favor of the Utah Division of Air Quality issuing a timely permit and the Utah Air Quality Board approving a rule making (R307-110-17) to authorize a production increase at the Bingham Canyon Mine. I understand this project is out for public comment because Kennecott has fulfilled all regulatory requirements. The Cornerstone Project will make an important contribution to the community and I support timely regulatory approval.

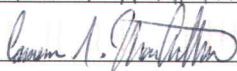
I support the Cornerstone Project because:

IT WILL PROVIDE STABILITY IN THE UTAH JOB MARKET.

WORKING AT KENNECOTT HAS ALLOWED ME TO PURCHASE A HOME AND

2 CARS AMONG OTHER THINGS - ALL VITAL TO THE LOCAL AND NATIONAL Economy.

NAME: CAMERON MACARTHUR

SIGNATURE: 

I SUPPORT KENNECOTT

I am in favor of the Utah Division of Air Quality issuing a timely permit and the Utah Air Quality Board approving a rule making (R307-110-17) to authorize a production increase at the Bingham Canyon Mine. I understand this project is out for public comment because Kennecott has fulfilled all regulatory requirements. The Cornerstone Project will make an important contribution to the community and I support timely regulatory approval.

I support the Cornerstone Project because:

It is jobs, it's good for the economy, and the
product of KUCR is used throughout the world!

NAME: TERRY RUST - SHOP MANAGER - FLANDERS ELECTRIC

SIGNATURE: 

I SUPPORT KENNECOTT

I am in favor of the Utah Division of Air Quality issuing a timely permit and the Utah Air Quality Board approving a rule making (R307-110-17) to authorize a production increase at the Bingham Canyon Mine. I understand this project is out for public comment because Kennecott has fulfilled all regulatory requirements. The Cornerstone Project will make an important contribution to the community and I support timely regulatory approval.

I support the Cornerstone Project because:

*Kennecott Supports the Community,
provides high paying Jobs and they
are environmentally responsible Company*

NAME: *Dewayne Jones*

SIGNATURE: *Dewayne Jones*

I SUPPORT KENNECOTT

I am in favor of the Utah Division of Air Quality issuing a timely permit and the Utah Air Quality Board approving a rule making (R307-110-17) to authorize a production increase at the Bingham Canyon Mine. I understand this project is out for public comment because Kennecott has fulfilled all regulatory requirements. The Cornerstone Project will make an important contribution to the community and I support timely regulatory approval.

I support the Cornerstone Project because:

KUCC is a valued member of the Utah Community. They provide jobs and basic commodities (metals) which are vital.

NAME:

Susan S. Davis

SIGNATURE:

Susan S. Davis

I SUPPORT KENNECOTT

I am in favor of the Utah Division of Air Quality issuing a timely permit and the Utah Air Quality Board approving a rule making (R307-110-17) to authorize a production increase at the Bingham Canyon Mine. I understand this project is out for public comment because Kennecott has fulfilled all regulatory requirements. The Cornerstone Project will make an important contribution to the community and I support timely regulatory approval.

I support the Cornerstone Project because:

The State of Utah needs Kennecott!

NAME:

BRUCE RICKENBACH

SIGNATURE:

Bruce Rickenbach

I SUPPORT KENNECOTT

I am in favor of the Utah Division of Air Quality issuing a timely permit and the Utah Air Quality Board approving a rule making (R307-110-17) to authorize a production increase at the Bingham Canyon Mine. I understand this project is out for public comment because Kennecott has fulfilled all regulatory requirements. The Cornerstone Project will make an important contribution to the community and I support timely regulatory approval.

I support the Cornerstone Project because:

*My lively hood & 14,000 others'
Depend upon this expansion.*

NAME:

Justin O'bray & family

SIGNATURE:

[Handwritten signature]

I SUPPORT KENNECOTT

I am in favor of the Utah Division of Air Quality issuing a timely permit and the Utah Air Quality Board approving a rule making (R307-110-17) to authorize a production increase at the Bingham Canyon Mine. I understand this project is out for public comment because Kennecott has fulfilled all regulatory requirements. The Cornerstone Project will make an important contribution to the community and I support timely regulatory approval.

I support the Cornerstone Project because:

*Kennecott has been a good corporate citizen in
SLC for many years. They provide quality jobs
and are committed to a sustainable future.*

NAME: Jess Britcher

SIGNATURE: Jess Britcher

I SUPPORT KENNECOTT

I am in favor of the Utah Division of Air Quality issuing a timely permit and the Utah Air Quality Board approving a rule making (R307-110-17) to authorize a production increase at the Bingham Canyon Mine. I understand this project is out for public comment because Kennecott has fulfilled all regulatory requirements. The Cornerstone Project will make an important contribution to the community and I support timely regulatory approval.

I support the Cornerstone Project because:

it is a great resource for jobs, expansion and development in the area. We need the elements pulled from the earth.

NAME: _____

SIGNATURE: _____


I SUPPORT KENNECOTT

I am in favor of the Utah Division of Air Quality issuing a timely permit and the Utah Air Quality Board approving a rule making (R307-110-17) to authorize a production increase at the Bingham Canyon Mine. I understand this project is out for public comment because Kennecott has fulfilled all regulatory requirements. The Cornerstone Project will make an important contribution to the community and I support timely regulatory approval.

I support the Cornerstone Project because:

THIS IS ABSOLUTELY THE RIGHT THING TO
 DO. KENNECOTT IS A GREAT NEIGHBOR &
 HAS SPENT MILLIONS TO CLEAN UP THE AREA AND ^{WILL}
 CONTINUE TO MINE RESPONSIBLY.

NAME: ROBERT G. STANFORD

SIGNATURE: 

I SUPPORT KENNECOTT

I am in favor of the Utah Division of Air Quality issuing a timely permit and the Utah Air Quality Board approving a rule making (R307-110-17) to authorize a production increase at the Bingham Canyon Mine. I understand this project is out for public comment because Kennecott has fulfilled all regulatory requirements. The Cornerstone Project will make an important contribution to the community and I support timely regulatory approval.

I support the Cornerstone Project because:

Though Kennecott isn't the backbone of Salt Lake Valley's economy like it once was, it is still a strong driver of economic vitality and a great

NAME: A. Richard Walje

SIGNATURE: ARWalje
corporate citizen

I SUPPORT KENNECOTT

I am in favor of the Utah Division of Air Quality issuing a timely permit and the Utah Air Quality Board approving a rule making (R307-110-17) to authorize a production increase at the Bingham Canyon Mine. I understand this project is out for public comment because Kennecott has fulfilled all regulatory requirements. The Cornerstone Project will make an important contribution to the community and I support timely regulatory approval.

I support the Cornerstone Project because:

Kennecott has, and continues to make a huge difference in Utah. I am in favor of their expansion.

NAME: BRAD MARKUS

SIGNATURE: Brad Markus

I SUPPORT KENNECOTT

I am in favor of the Utah Division of Air Quality issuing a timely permit and the Utah Air Quality Board approving a rule making (R307-110-17) to authorize a production increase at the Bingham Canyon Mine. I understand this project is out for public comment because Kennecott has fulfilled all regulatory requirements. The Cornerstone Project will make an important contribution to the community and I support timely regulatory approval.

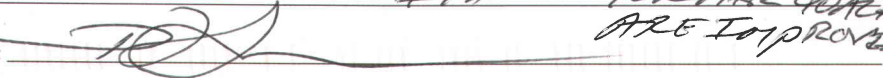
I support the Cornerstone Project because:

I AM AN EMPLOYEE FOR PROTECTO
AND I AM 2,500 OTHERS AND 15000
OTHERS NON-DIRECTLY THROUGH SERVICES AND

NAME:

DESTIN SMITH

SIGNATURE:



KENNECOTT'S PROGRAMS
FOR AIR QUALITY
ARE IMPROVING

I SUPPORT KENNECOTT

I am in favor of the Utah Division of Air Quality issuing a timely permit and the Utah Air Quality Board approving a rule making (R307-110-17) to authorize a production increase at the Bingham Canyon Mine. I understand this project is out for public comment because Kennecott has fulfilled all regulatory requirements. The Cornerstone Project will make an important contribution to the community and I support timely regulatory approval.

I support the Cornerstone Project because:

Our states economey will suffer without the support of Kennecott employing thousands of people.

NAME: *Bill and Kathleen Wassmer*

SIGNATURE: *Kathleen Wassmer*

I SUPPORT KENNECOTT

I am in favor of the Utah Division of Air Quality issuing a timely permit and the Utah Air Quality Board approving a rule making (R307-110-17) to authorize a production increase at the Bingham Canyon Mine. I understand this project is out for public comment because Kennecott has fulfilled all regulatory requirements. The Cornerstone Project will make an important contribution to the community and I support timely regulatory approval.

I support the Cornerstone Project because:

it will greatly increase the revenue coming
into the area as well as providing job

opportunities. Rio Tinto has proven to be an
environmentally responsible
company with its clean-up
of the South Jordan area.

NAME: Katie Masie

SIGNATURE: Kathryn D. Masie

I SUPPORT KENNECOTT

I am in favor of the Utah Division of Air Quality issuing a timely permit and the Utah Air Quality Board approving a rule making (R307-110-17) to authorize a production increase at the Bingham Canyon Mine. I understand this project is out for public comment because Kennecott has fulfilled all regulatory requirements. The Cornerstone Project will make an important contribution to the community and I support timely regulatory approval.

I support the Cornerstone Project because:

*Because KOC Means so
much to our economy.*

NAME:

Dennis Kamauana

SIGNATURE:

[Handwritten signature]