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January 10, 2012

Mr. David Johnson  
Jefferson County  
Department of Community Development  
623 Sheridan Street  
Port Townsend, WA 98368

Re: SR 104, MP 9.85 Left  
Iron Mountain Quarry  
Jefferson County SEPA Review MLA 10-00072

Dear Mr. Johnson:

The Washington State Department of Transportation (WSDOT) has completed our review of the pending SEPA determination dated December 14, 2011 for the proposed Iron Mountain Quarry (IMQ). Iron Mountain Quarry is a 142 acre site of which about 69 acres are being proposed for quarry mining and operations over an approximately 40 year time span, with peak production reaching as much as 400,000 tons per year. Access to and from the site will be primarily via SR 104 at milepost 9.85, also called Shine Quarry Road, but access may also be available on SR 19 at about milepost 1.08.

WSDOT has reviewed the July 2011 IMQ Traffic Impact Analysis (TIA) as well as a supplemental October 3, 2011 gap study that was provided by the authors of the TIA. The result of that review is that WSDOT has determined that the proposed Iron Mountain Quarry will have a significant adverse traffic impact of SR 104.

SR 104 is the primary highway link connecting the Olympic and Kitsap Peninsulas and averages around 13,000 vehicles per day in the general vicinity of the access at Shine Quarry Road. SR 104 at this location is a limited access highway that has a speed limit of 60 miles per hour. The limited access control was established to preserve the safety and efficiency of the state highway and to preserve the public's investment in the highway, primarily by acquiring access rights from abutting property owners and by selectively limiting approaches to the highway. Please be aware WSDOT is currently negotiating with Pope Resources to allow the continued use of Shine Quarry Road for mining activities. While the agreement has not been signed as of this date, we anticipate both parties will come to an agreement in the near future.

The July 2011 TIA documents that the Shine Quarry Road approach to SR 104 will reach level of service failure because of the vehicles generated by IMQ, namely the heavy, slower moving trucks entering SR 104 that then head east toward the Hood Canal Bridge and Kitsap County. The TIA notes the peak hour Level of Service (LOS) of this approach will drop to LOS E at the initial 160,000 tons per year production rate, and that level of service will degrade to LOS F at the projected 290,000 tons per year production rate. The TIA did not analyze the impacts of a production rate of 400,000 tons per year, which is the production rate identified in the pending SEPA determination, which is 38% greater than the highest production rate used in the TIA and supplemental gap study. The 400,000 tons a year production rate would result in an even greater

LOS F failure at the Shine Quarry Road access. WSDOT considers the initial LOS E failure to be a significant adverse traffic impact to SR 104 that must be mitigated by IMQ.

The pending SEPA determination condition number 26 reads "*The applicant shall comply with WSDOT's access permit and conditions for the intersection of Shine Quarry Road/Rocktogo Road and SR 104.*" WSDOT requests this condition be modified and updated such that it will specifically list the highway improvements that will be needed by IMQ to adequately mitigate for their significant adverse traffic impacts to SR 104. Those specific highway improvements are:

- 100' eastbound SR 104 left turn lane, plus taper.
- 684' eastbound SR 104 acceleration lane, plus taper.
- 60' westbound SR 104 right turn pocket with 100' entry taper.
- Clear and grade a portion of the hillside both sides of the Shine Quarry Road access to improve sight visibility so that this intersection becomes more open and visible to vehicles on both SR 104 and Shine Quarry Road.
- A turnaround or cul-de-sac shall be built on Shine Quarry Road to accommodate any vehicles that inadvertently turn onto Shine Quarry Road and encounter a close gate, since Shine Quarry Road is a private road that is subject to be closed and gated when not in use.

These improvements shall be designed and constructed to all applicable WSDOT standards, including illumination and stormwater facilities, via the Developer Agreement process with WSDOT. No Access Connection Permit is needed since this is limited access highway. WSDOT also requests these improvements be conditioned to be designed, constructed, and operational within one year after mining production first starts at IMQ. The one year time frame allows for such factors as the highway construction could then occur during the drier summer months.

The TIA, including the supplemental October 3, 2011 follow-up gap study, states no highway improvements are needed due largely to a study of traffic gaps showing that in any 15 minute time period the number of trucks seeking entry to SR 104 is equal to or less than the number of available gaps. This study is important, since about  $\frac{3}{4}$  of the traffic exiting the quarry, consisting of a mix of fully loaded double and single unit trucks, needs to cross westbound SR 104 traffic and then merge with eastbound SR 104 traffic. However, WSDOT feels that the methodology applied in the gap study is too simplistic to be used to analyze the overall impact that these slow moving, heavy trucks will have on SR 104 mainline traffic. For example, the supplemental gap study listed two 15 minute time periods that had only one available gap, two 15 minute time periods that had only two available gaps, and six 15 minute time periods that had only three available gaps. But the study did not account for the effect of wait time on driver behavior for those who are waiting for large enough gaps, or provide any mitigation for those times when the number of trucks might exceed the number of gaps. In addition, the gap study was also based on the TIA production rates of up to 290,000 tons a year and not the pending SEPA determination production rate of 400,000 tons a year.

Having frequent, adequate gaps available for entering SR 104 from this site is a serious concern to WSDOT. A driver who experiences a long delay waiting to enter the highway may be more apt to accept a smaller gap than that which is required complete the maneuver safely. Fewer gaps means longer waits and these waits could be exacerbated if predictions about truck traffic departure times made in the TIA are inaccurate. In our view, there is potential for traffic to vary from the predicted hourly rate during summer months when quarry production rates could be higher due to construction activity, which would coincide with the season when traffic volumes on SR 104 are at their highest. The TIA noted that the heavy trucks hauling material will be primarily off-site generated trucks, thus the drivers would not be employed by the quarry, and these drivers may not be all that familiar with the area, and SR 104 in general. In addition, since these will be off-site

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generated trucks, IMQ will have no control as to when and how many trucks visit the quarry at any one time.

One other significant concern WSDOT had with the gap study conclusion was the statement that trucks making the left turn movement onto SR 104 need only accelerate up to 70% of the mainline speed limit, or 42 mile per hour (70% x 60 mph). That would result in the mainline SR 104 vehicles having to reduce their speed by 18 mph. The 2011 AASHTO manual A Policy on Geometric Design of Highways and Streets states that "*...the crash involvement rate increases significantly when the truck speed reduction exceeds 10 mph with the involvement rate being 2.4 times greater for a 15 mph reduction.*" While this study was based on mainline trucks slowing down due to the grades of the highway, the crash involvement rate could be expected to be similar for trucks entering the highway. In other words the greater the speed differential the greater the crash rate, and WSDOT finds the 18 mph reduction as unacceptable.

As noted above the TIA and supplemental gap study conclude that the number of gaps is equal to or less than the number of trucks wanting to enter SR 104, thus no highway improvements are needed. In fact, our analysis of the gap study is that it actually justifies the need for a left turn lane and acceleration lane on SR 104. The gap study, using the TIA production rates of 290,000 tons a year, shows that the number of westbound gaps for making a right turn movement in any 15 minute time period is 10 or greater in all but three occurrences. Because a center left turn and acceleration lane provides an opportunity for two stage gap acceptance, we would anticipate a significant reduction in the delay experienced by trucks entering the highway, and a smoother operation of this intersection with respect to mainline traffic on SR 104. Entering drivers could use the space provided by the center left turn lane to better verify their judgment of the eastbound gap, and to more safely merge with SR 104 traffic at or near the operating speed of the highway.

In summary, WSDOT requests that Jefferson County condition the Iron Mountain Quarry to be responsible for the SR 104 highway improvements listed above at the private Shine Quarry Road intersection with SR 104 at milepost 9.85. With these highway improvements the proposed Iron Mountain Quarry will adequately mitigate the significant adverse traffic impacts that would be generated by the proposed quarry. No other SR 104 or SR 19 highway improvements will be necessary provided production rates do not exceed 400,000 tons a year.

Thank you for allowing WSDOT to review and comment on the Iron Mountain Quarry pending SEPA determination. If you have any questions please email me at [dale.severson@wsdot.wa.gov](mailto:dale.severson@wsdot.wa.gov) or call me at (360) 357-2736.

Sincerely,



Dale C. Severson, P.E.  
Development Services Engineer  
WSDOT, Olympic Region

DCS

cc: John Wynands  
Steve Kim  
Annie Salay