ARD ENGINEERING
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Technical Memorandum

To: Hearings Officer, Multnomah County

From: Michael Ard, PE

Date: September 6, 2023

Re: Bull Run Water Facility – Mitigation Plan Review

This memorandum is written to provide a rebuttal of the material provided by Global Transportation Engineering on August 1, 2023 (I.86) and August 3, 2023 (I.84).

As will be detailed in this memorandum, the record demonstrates that the applicant has mis-represented their analysis as conservative when it is not. As a result, the impacts of the project remain under-represented. Substantive problems remain in the analysis, and even after being notified of these problems the applicant has not provided an analysis which is sufficient to demonstrate that the transportation system can accommodate project traffic. But even if you decide that the analysis was done appropriately, their own documents show that mitigation is not feasible without a robust mitigation plan that has not been developed. And even with implementation of such a mitigation plan the project will still have unacceptable impacts on farm traffic and cannot meet the requirements of the development code.

Technical Analysis Rebuttal

The applicant provided a rebuttal document dated August 3, 2023, which responded to comments Ard Engineering made during the open record period. The rebuttal responses were largely a non-substantive response to substantive concerns raised. Since the record already contains detailed descriptions of the issues at hand, we will respond to a few of the rebuttal comments to illustrate how Global Transportation has mis-represented the analysis in their rebuttal.

1) The traffic count data in the record demonstrates the year 2019 count volumes were generally higher than those collected in 2022. The applicant states that using unfactored old counts may be appropriate given the long-term impacts of the COVID pandemic, and that traffic volumes generally will return to pre-COVID levels. But there are several glaring problems with these assertions.

   First, the Global analysis did not use the measured year 2019 traffic volumes, so the fact that traffic is expected to return to pre-COVID levels is not accounted for in the applicant's analysis.

   Second, while it is true that traffic volumes will return to pre-COVID levels, traffic volumes grow over time. As a result, traffic volumes will not stop growing once they reach pre-COVID levels,

but will continue to grow. As such, the applicant cannot reasonably say that traffic volumes will not exceed those historical count volumes in the near future.

Third, the applicant has consistently stated that their analysis is "conservative". They have also claimed that operation of area intersections is similar under either data set and it therefore makes no difference which data set is used. They have also claimed that traffic volumes vary by at least 10 percent over time. But if those statements are true and their goal was to provide a conservative analysis, utilization of the lower counts is wholly inexplicable. Either it makes no difference and there was no reason not to use the higher counts, or it does make a difference and the analysis fails to show it since the higher volumes were not used. In either case, the record is not conservative with respect to this point and is inadequate to demonstrate what the impact of the higher counts would have been with the addition of construction traffic since that analysis was never performed.

2) Site trip generation continues to omit any contra-flow trips, even after notification of the problem. Here, the applicant states that references to ITE Trip Generation Manual data are not applicable since land use in question is not one of the land uses described therein. But again this is a gross misrepresentation of the argument. Our assertion was not that the applicant should use ITE data. Rather, it was that **there are no land uses of any kind which do not generate contra-flow trips**. As such, any analysis that does not include some level of assumed contra-flow trips (and indeed some level of commuter traffic during non-peak hours) is omitting trips that will actually occur and cannot be considered conservative.

   As an example, the attached appendix includes an excerpt from a report Ard Engineering prepared for a wedding event venue in Clackamas County in 2020. Similar to the proposed development, that land use required analysis of "average" and "maximum" (i.e. peak) traffic demand conditions. Also similar to the proposed development, there is no ITE data for a wedding event venue and nearly all people arrive at the beginning of the event and depart at the end. And again similar to the proposed development the applicant provided me with information about expected attendance which failed to include the possibility of contra-flow trips. However, my analysis explicitly accounted for contra-flow trips because I knew that such trips would occur. In that instance, 10 percent of site traffic was assumed to exit the site prior to events, and 10 percent was assumed to enter following completion of events.

   There is no world in which contra-flow trips will not occur at this (or any) site of reasonable size, and in no way can a transportation analysis which fails to account for these trips be considered "conservative".

You may rightfully ask yourself, "**Why does this matter?**" The answer is contained in the prior analysis. A ten percent increase in site trips can easily result in a 10 percent increase in delay at study area intersections. And as reported in our prior analysis (and dismissed in the applicant's rebuttal), a ten percent increase in delay at the intersections of SE Dodge Park Boulevard at SE Cottrell Road and SE Bluff Road at Orient Drive would cause these intersections to fail to meet the performance standards established by Multnomah County. As such, the record is inadequate to demonstrate that these intersections will operate acceptably.

3) The applicant has repeatedly claimed that their analysis demonstrates that regardless of route choice they can assure the transportation system will operate acceptably. They undertake this claim based on separate analysis of multiple trip distribution scenarios (1-4), each of which was separately analyzed. If it were true that this analysis approach identifies all potential problems, there is no new scenario which could arise under which performance is significantly degraded. However, the applicant's own submittals show that their assumption was incorrect.

   Specifically, the construction analysis initially provided showed that the intersection of Carpenter Lane at Cottrell Road would operate acceptably provided that peak-hour traffic was limited to 387 or fewer vehicles. But an updated analysis dated August 1, 2023 (I.86) was needed to address the lack of a site access on SE Bluff Road. The updated analysis found that it is necessary to limit site traffic to no more than 296 trips during peak truck traffic conditions (and 305 trips during "average" truck conditions). This is a substantial decrease in the reported capacity of the intersection which directly results from the applicant's failure to provide a conservative analysis in the prior report.

   Notably, the difference in operation resulted from site trips traveling along Cottrell Road south of Carpenter Lane. Our prior review pointed out that the construction analysis improperly omitted any site traffic on this road segment. That minor change made a huge difference. Similarly, the applicant's assurances that other issues would not make a substantial difference cannot be relied upon since seemingly minor differences can substantially impact the results of the analysis.

As is demonstrated by these responses, the rebuttal provided by Global Transportation downplays serious issues with the technical analysis and amounts to a non-substantive response to substantive issues raised in the record. As such, the analysis provided cannot be relied upon to demonstrate compliance with the transportation-related approval criteria for the proposed use.

Mitigation Feasibility

Even if we assume that the analysis provided by Global Engineering was correct, the material in the record demonstrates that the mitigation plan provided is not feasible.

The first mitigation measure proposed in the applicant's plan was to "Direct enough commuter traffic to Access B (Bluff Access Road) to keep the peak hour vehicle trips below the threshold level at the Carpenter Lane access. Since Clackamas County has determined that the south access cannot be used for construction traffic, this mitigation option is entirely unavailable, and the applicant must wholly rely on access via Carpenter Lane. This leaves only the options of "offset commuter arrival/departure times to the Filtration Facility", "provide a commuter shuttle", and "develop a rideshare or carpooling incentive program."

The updated analysis provided in I.86 concludes that "TDM strategies identified in the Construction TIA and subsequently proposed in the TDM Plan… will be implemented to limit the number of Commuter trips accessing the site via Access A to 296 total peak hour vehicles, rather than the 387 previously included in the TDM Plan."

Per the analysis, the site is projected to generate up to 174 truck trips during the peak hour. Since movement of trucks is critical to the project construction timeline and truck trips cannot be reduced through any of the mitigation measures proposed, this leaves just 122 "commuter" site trips which can be accommodated during the peak hour.

Looking at the projected commuter travel demand, there are 575 peak-hour commuter trips projected under peak conditions. (Table 4 in the report actually reports 535 total peak-hour trips, but this is clearly a math error on the part of Global Engineering since 445 + 130 = 575 as was correctly calculated in the "Enter" and Exit" subtotals, but incorrectly reported in the "Total" subtotals.) Again, since this omits contra-flow commuter demand, the actual traffic level is likely to be higher than the reported 575, but here we are assuming that their analysis was correct, so we will stick with their number for calculation purposes. It would take 4.7 hours at 122 commuter vehicles per hour to accommodate entry of all the commuter demand in the morning peak hour. Similarly, at the end of the day, it takes another 4.7 hours to accommodate commuter vehicle egress. That is 9.4 hours of the day at which the site access needs to operate at capacity just to accommodate entry and exit of site vehicles. If we included consideration of contra-flow trips it would require more than 10 hours of the day to accommodate the commuter volumes. Rather than talking about peak hours for entry and exit, site operation would require all-day traffic on Carpenter Lane at the site access.

Further, the applicant has stated that "To avoid impacting schools and reduce construction traffic related delays, construction traffic will avoid SE Lusted Road and SE 302nd Avenue in the vicinity of Sam Barlow High School for 20 minutes before and after the start and end times of school; and construction traffic will avoid SE Orient Drive in the vicinity of West Orient Middle School for 20 minutes before and after the start and end times of school." Given that the site will need to continuously accommodate ingress and egress of vehicles essentially at capacity all day long, these impacts to schools cannot reasonably be avoided.

It is not reasonable to believe that a construction site can be adequately coordinated to operate efficiently when only 20 percent of the work force is permitted to arrive or depart in any one hour. As such, simply shifting the schedules of on-site workers will be impractical and wholly inadequate to mitigate the massive impacts of the proposed project.

These facts mean that the only remaining mitigation options will consist of measures to reduce the actual traffic demands at the site, rather than means to accommodate the projected commuter trip volumes.

The two remaining mitigation options consisted of "provide a commuter shuttle" and "Develop a rideshare or carpooling incentive program." Both of these state that additional information regarding these programs "will be provided to the County in the event these strategies are needed." But it is 100 percent clear that they are needed, and no such information has been provided to the county or into the record about how these alternative strategies will function including identifying park and ride locations, shuttle routes, and timing.

In general, rideshare/carpooling programs can be effective in reducing travel demands. But successful programs typically report reductions of about 7 percent in traffic demands. As such, a carpooling program is likely to only make a small dent in the traffic demand and would be insufficient mitigation to alleviate failing intersections. Interestingly, the impact of a good carpooling program might be sufficient to offset a portion of the contra-flow traffic that wasn't considered in the analysis. But this doesn't get the applicant any closer to compliance with the peak-hour traffic restriction.

This leaves us with the commuter shuttle option. As described by the applicant, "Shift start times, shift end times, and location of off-site parking for a commuter shuttle will be provided to the County in the event this strategy is needed." Again, it is clear that the strategy is needed and no details about shuttle operations have been provided.

Notably, the description of "a commuter shuttle" significantly underestimates the scale of the necessary mitigation. To accommodate the surplus demand of (575 commuter vehicles – 122 accommodate vehicles) 453 commuter vehicles, a very substantial available parking facility is required. Since the buses will need to accommodate workers on a dirty construction site, it is likely that buses similar to a school bus would be used. The biggest school buses accommodate up to 90 students, assuming 3 students per seat. For adult workers who need to bring lunches and misc. equipment along, an optimistic estimate would be about 50 passengers per bus. This means that at least 9 bus trips would be required at the start of the day, and 9 more would be needed to return workers to their vehicles at the end of the day, even if every bus were operating at capacity. It is extremely unlikely that a single "commuter shuttle" would be sufficient to accommodate this travel demand. Instead, a bussing program consisting of multiple buses/drivers is likely to be necessary.

In addition to the limitations imposed by bus size, there remains a problem with off-site parking accommodation. If 450 vehicles need to be accommodated with off-site parking, a very large parking facility (or multiple parking facilities) will need to be identified. If a suitable parking facility is found near the project site (thereby minimizing the travel times required and therefore the number of buses needed), the local area streets would again be massively impacted by the addition of 450 commuter trips to an un-studied off-site location. The record does not support any conclusion that the local transportation system can accommodate these trips, and in fact demonstrates that at least one local street impacted by construction traffic can accommodate no more than 296 peak-hour trips.

Alternatively, if an off-site parking facility is located outside the impact area of the proposed project, bus trips will be longer, more buses (and drivers) may be needed, and the transportation system in the vicinity of the off-site parking facility may also be substantially impacted by construction traffic.

Regardless of where off-site parking is provided, no analysis has been provided for the construction impacts of large-scale off-site parking facilities, and nothing in the record demonstrates a workable mitigation plan which relies on buses and off-site parking. We therefore cannot conclude that operation of a commuter shuttle is sufficient to mitigate the impacts of construction traffic.

Unacceptable Impacts

Even if we assume that the analysis provided is adequate **and** that a sufficient mitigation plan can be prepared to address the capacity issues at the single point of site entry, the proposed project would still result in unacceptable impacts and would not meet the requirements of MCC 39.7515 (C), (D), and (F).

With approval of the proposed project and implementation of a successful mitigation plan limiting traffic to no more than 296 vehicles per hour, traffic volumes on Carpenter Lane (a local street), would still increase from one vehicle every 4 minutes to one vehicle every 12 seconds. This massive increase in traffic will make walking and biking on Carpenter Lane uncomfortable and may be unsafe for local residents absent the addition of dedicated sidewalk facilities.

Local streets (particularly those that accommodate drivers backing from residential driveways) are typically intended to comfortably accommodate up to 1,000 vehicles per day. Higher traffic volumes are typically associated with higher street classifications such as designation as a “neighborhood collector”. Although Multnomah County does not specify a traffic range for Local streets, the fact that Multnomah County specifies Rural Collector carry 1,000 to 4,000 average daily trips means that volume range is appropriate for a higher classification roadway, and implies that Local streets should accommodate fewer trips. The proposed project will take an existing local street which accommodates about 150 vehicles per day and

increase the traffic levels to those associated with a Rural Collector designation. That is a substantial impact to the community which will not be avoided even under a successful mitigation plan.

Additionally, the proposed project will still have substantial impacts on the current accepted farm practices in the site vicinity even if a successful mitigation plan is implemented. Farm vehicles will have difficulty navigating area streets due both to construction traffic volumes conflicting with large farm vehicles on what are otherwise very low volume roadways, and due to lane and roadway closures necessitated by roadway and pipeline construction activities. As previously described, these impacts to farm operation will affect the ability to conduct daily operations, raise viable crops, and get them to market. Again, these impacts are not acceptable per the requirements of Multnomah County Code.

Conclusions

Based on our review of the transportation-related materials submitted by the applicant, the analysis provided is not conservative, does not fully capture the impact of the proposed project, and cannot be relied upon to show compliance with the transportation approval criteria established by Multnomah County. But even if they had satisfied their burden of proof, the record shows that the mitigation proposed is inadequate to address project impacts and relies upon mitigation activities which will themselves have transportation impacts which have not been studied. And even if you assume that an appropriate mitigation plan can be developed to address these deficiencies, the impact of the proposed project remains unacceptable per the requirements of MCC 39.7515 (C), (D), and (F). As such, the record does not support approval of the proposed use.

Appendix

TRIP GENERATION

The trip generation estimate for the proposed event venue was prepared based on the traffic volumes anticipated in conjunction with typical and maximum event sizes. For typical events, 40 vehicles carrying event attendees would be expected to visit the site, and for maximum size events up to 67 vehicles would be anticipated to carry the attendees.

Typically, there is a small amount of contra-flow traffic that occurs in association with events. These contra-flow trips may occur when people are dropped off or picked up or may be associated with vendor services and setup/takedown activities before and after the events. For the operational analysis it was assumed that 90 percent of attendees would arrive during a single hour, and 90 percent would later depart during a single hour. Additionally, it was assumed that contra-flow trips would represent 10% of the peak-direction trips.

Based on the above characteristics, the peak event hour volumes are projected as follows:

Average Event

36 vehicles would be projected to arrive during the peak arrival hour, with 4 additional contra-flow trips departing the site. Following the event, 36 vehicles would be projected to exit during the peak departure hour, with 4 additional contra-flow trips entering the site.

Maximum Size Event

60 vehicles would be projected to arrive during the peak arrival hour, with 7 additional contra-flow trips departing the site. Following the event, 60 vehicles would be projected to exit during the peak departure hour, with 7 additional contra-flow trips entering the site.

Based on observations of existing turning movement volumes at the intersection of Highway 213 and S Mueller Road, approximately 85 percent of site trips are projected to travel to and from the north, and 15 percent are projected to travel to and from the south.

Vehicles arriving at the site are typically able to turn from Highway 213 onto S Mueller Road with little or no delay. However, vehicles exiting the site experience more significant delays when trying to turn from Mueller Road onto Highway 213. Accordingly, the exiting event traffic flows were selected as representing the worst-case traffic conditions for purposes of intersection analysis.

The peak-hour event volumes for 120-person and 200-person events are shown in Figure 5 of the attached technical appendix.

Multnomah County

LUP Comments <lup-comments@multco.us>

Portland Water Bureau TS-2022-16220 Rebuttal Comments

1 message

mike ard <mike.ard@gmail.com> Wed, Sep 6, 2023 at 11:38 AM
To: lup-comments@multco.us, lup-hearings@multco.us

External Sender - Be Suspicious of Attachments, Links, and Requests for Payment or Login Information.

Please place the attached materials into the record for the proposed Portland Water Bureau conditional use application.

Thank you,

Michael Ard, PE
(503)537-8511
ARD ENGINEERING

Ard Traffic Rebuttal_090623_Stamped.pdf
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