EPA Comments- SPLNT Model Proposed Action Report
July 23, 2018

GENERAL COMMENTS

Overall, we request clarification regarding the level of current and proposed disturbance on shade inputs and predicted outcomes. The report would benefit by further discussing the shade parameters used and how tributaries respond to changes in vegetation conditions. For example, it would be helpful to understand how individual streams respond to activities since there is a wide variation (i.e., Fiddle Creek vs West End).

The EPA recommends providing additional detail regarding the input parameters in order to better evaluate the current and predicted shade values for streams in the project area. There appears to be inconsistencies with the level of impact from similar activities and the predicted/varying result on specific stream reaches (varying degrees of shade predicted). From the follow-up discussions between Midas and agencies, we understand that topography may be a significant driver of shade on streams in the project area. Our detailed comments below include our questions raised during discussions. In addition, we have also independently evaluated the predictions and we continue to have questions regarding the predicted outcomes. We have included summary comments about our shade evaluation in the last section. Also, attached is EPA's model results (Attachment 1), and an example of Total Maximum Daily Load topography inputs/shade outputs (Attachment 2).

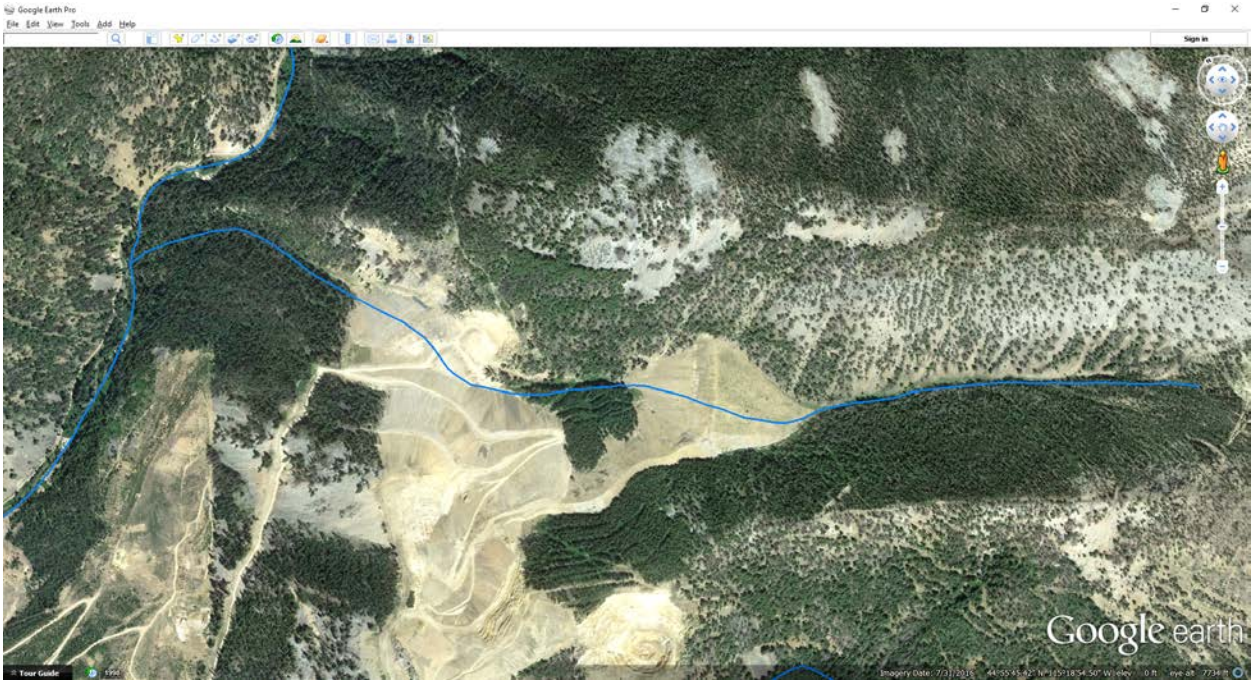
We recommend that the report compare predicted outcomes to state water quality standards (WQS). It would be useful to include a summary table up front that clearly demonstrates outcomes compared to WQS- ideally color coded based on values that are below standards, exceeding, and within a range of uncertainty right below the standard. This will help facilitate the evaluation and what measures are needed to avoid or mitigation potential WQS violations. We also suggest providing longitudinal plots of data (see comment re Section 5.2 below). In addition, the cumulative impacts of temperature on streams should be discussed and analyzed for potential effects to downstream temperature (also raised by agencies during call about hydro model showing flow decrease below sugar creek and potential impacts of temperature below the confluence).

It is also our understanding that the hydro/flow model inputs/outputs are being used in the SPLNT model. EPA provided comments on the Hydro PA report and we are unclear how or if our and other agencies' comments were addressed and incorporated into the SPLNT modeling. Please discuss how revisions are being incorporated and what changes affect the SPLNT modeling inputs/outputs.

SPECIFIC COMEMNTS

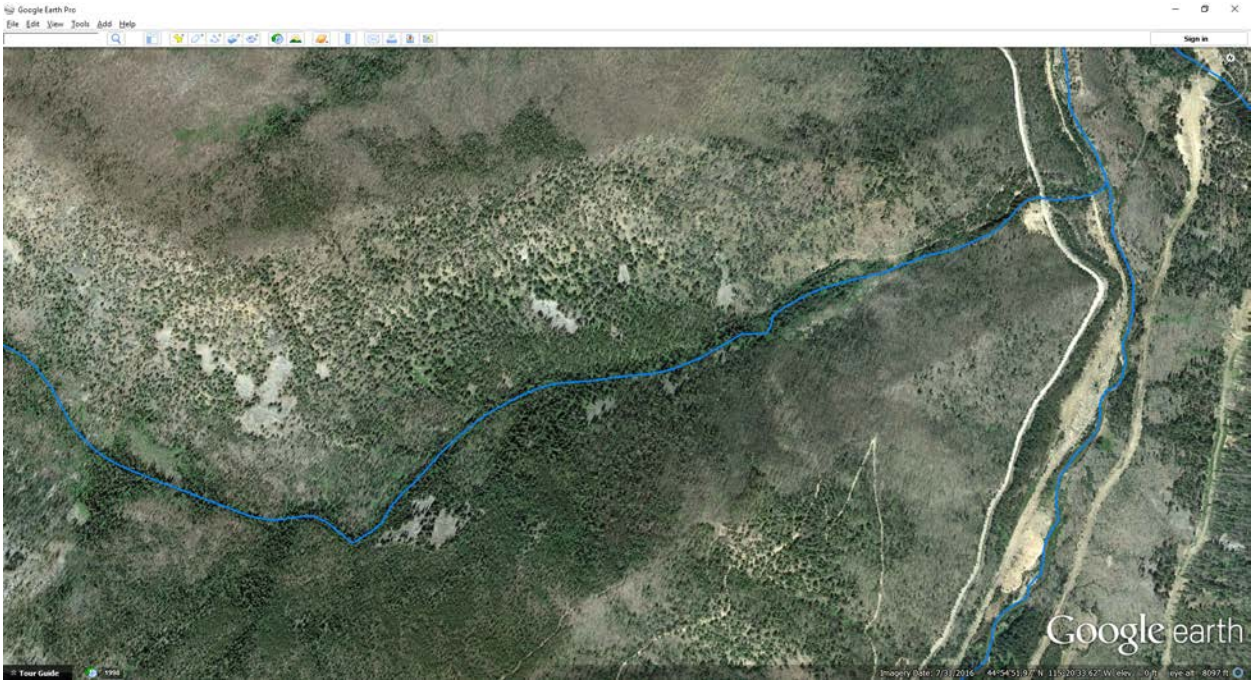
Section 4.2

It appears that reported shade levels in Tables A-1 and A-2 are too high within many areas with historically disturbed conditions (i.e., with little to no riparian vegetation). For example, West End Creek has reported current shade values in the 95 to 98 percent, however a look a ortho-photos indicate that there are large areas along this creek that are dramatically disturbed (unvegetated) areas from historic mining activities, which would result in very low shade values (see image below). Please discuss how the values 95-98% were derived (it is unlikely to observe this high level of shade in this forest type with this current vegetation condition/historic disturbance- were night hours included in the calculation ?).



In addition, it is reported that shade levels will decrease only by a maximum of 11.71% during the action to move the stream channel on West End Creek (see Table A-1), which also seem unlikely for this level of proposed activity (see Figure 2-2, 2-9, and 4-5), resulting in a very slight temperature response (e.g., < 1 degree C): The Proposed Action Report indicated that stream temperatures will increase less than 1*C within this reach following riparian vegetation removal for much of this stream (Figure 5-5).

Alternatively, Table A-1 reports that Fiddle Creek will lose up to 39.19% of the shade following similar channel activities (see Figures 2-2, 2-9, and 4-5). Fiddle Creek currently appears to be well forested, which would be a partial reason for the high shade levels in this creek (see image below). Accordingly, the temperature response is much greater in this tributary following vegetation disturbance (6*C - 7*C) than for West End Creek (see example above), despite that similar riparian disturbance activities will occur on these two streams (i.e., obliterate the existing channel and move it).



Section 5.2

It is not clear if the Qual2k modeling results are cumulating stream temperature change in a downstream direction and at the confluences of the tributaries (see Figure 5-5). If so, it would be very helpful to discuss the reason why the high very temperature increases seen throughout the project (i.e., Fiddle Creek, Meadow Creek above EFSFSR confluence, West End Creek) are not propagated downstream.

In addition, it would be helpful to report the modeling results in longitudinal plots (with river Kilometer on the x-axis, and temperature on the y-axis) with the multiple model run lines presented on the figure so that we can review the effects of the proposed action over time and to qualitatively evaluating model performance. (The current method of presenting the results in a map format only make it difficult to pick out change over time on the same reach and cumulative effects.) That is, present the data for each tributary as a longitudinal plot, including all the important milestones periods (pre-construction, FT06, FY12, Post 0, Post 25%, etc.). In addition, these longitudinal plots should have the relevant temperature criteria (i.e., cold water criteria, spawning criteria, etc.) also plotted on the figure to help us to evaluate the effects of management actions. Finally, if the model is set up to evaluate cumulative effects (see previous comment), it would be helpful to have a "longest flow path" (LFP) longitudinal plot of the project area to show the effects of the different actions, including "points" in this plot that show the temperature location and temperature of tributaries that are draining into the LFP (It appears that Meadow Creek would be the LFP in the project area). This type of longitudinal plot is commonly used in temperature TMDL documents.

The Existing Conditions Report indicated that not all model stream reaches had calibration/validation efforts (see Figures 30 and 33). For example, both West End Creek and Fiddle Creek did not have reported calibration/validation information, but extensive channel disturbance is planned for these two tributaries. This lack of calibration/validation increases the uncertainty with the model predictions for

these tributaries. For example, there might be high levels of cool groundwater entering the relatively undisturbed Fiddle Creek resulting in a temperature "buffered" system, while the currently heavily disturbed reaches of West End Creek could be very sensitive to shade loss due to no current groundwater inputs (It is possible the opposite is true, but we do not know because there was not a calibration/verification effort on these tributaries). Accordingly, it would be important to conduct additional model analysis on any of these "uncalibrated" streams to evaluate any potential "issue" resulting from using an uncalibrated model. It's difficult to determine which data were used in the calibration and it appears that temperature data was collected at both of these tributaries (see Figures 6 and 9 in the Existing Conditions Report). It may be appropriate to either develop a calibrated model for these two tributaries or at a minimum evaluate the model predictions to the measured data in these streams and provide the plotted measured/modeled outcomes.

Page 4-5 – Bottom paragraph

Current riparian conditions are affected by historical mining activities and recent fires and therefore, the following sentence in the Proposed Action Plan is problematic because it seems to set a very unprotective shade/vegetation target to evaluate project success:

> "The 100 percent recovery simulation assumes that all of the removed vegetation has regrown to <u>at least the height represented by existing conditions</u> (Figure 4-4)."

The existing, historically disturbed condition is not the site potential shade and therefore, should not be a target. The post-closure vegetation targets should be associated/coordinated with the ODEQ potential natural vegetation conditions program they apply during the TMDL process (Shumar and Verona 2009).

Section 4.4

It seems that the rapid infiltration basin (RIB) will be ultimately resulting in higher stream flows, but there is not an explicit discussion about the effect of this flow and stream temperatures. It would also be important to point out the consequences of the elimination of this flow once the RIB infiltration activities stop. That is, are the "masking" effects of the RIB flows on stream temperature eliminated, resulting in higher stream temperatures for the same amount of vegetation/channel disturbances associated with the project? We recommend providing additional detail regarding the effects of the RIB on surface water temperature.

Page 5-1

The report should include a comparison of predicted results to water quality standards in addition to the USFS assessment categories (FA/FR/UR).

Figures 5-13 through 5-32

Please explain why most of West End Creek is not included in the temperature predictions within these Figures.

Shade evaluation based on conference call (July 12, 2018).

EPA evaluated the topographical factor on shade (using different elevation dataset (dem vs lidar), which we believe should have result in a significant difference in outcomes. From our evaluation, it appears that despite high topographic angles, the shade produced from topography along West End Creek would be, at most, approximately 30%. Therefore, total removal of vegetation would seem to result in greater shade loss than reported in Table A-1 and A-2. We request clarification about how the activities resulted in reported low shade loss values. See attachment 1 (shade outputs) and example TMDL