Review of FLP 2019 Soils Report (SR)

Soils information is also provided in the FLP Aquatic Report (AR). I am also offering comments to these documents, and incorporates them herein without reiteration. Also, many issues are repeated in the SR. My comments in the first 25 pages also apply to later iterations of the same issues later in the SR.

I request that the SR be revised to include the minimum and maximum for numerical estimates, and that if actual project values fall outside the range, the public will be given a subsequent comment period.

“…as this project is condition based and specific activity areas have not been identified the FLP area will be used to ensure activities will not exceed the 15% threshold. Fifteen percent of the 157,625-acre FLP area would be 23,644 acres.” SR pg 2 This is too broad and general, as under it an excessive amount of disturbance could occur in a concentrated area and greatly affect a watershed. I request that the SR be revised to specify that the 15% threshold for activities be set on a per watershed basis.

“To some degree, compaction would decrease with time as roots penetrate and break up the compacted area.” SR pg 5

For this statement to be meaningful I request that SR be revised to quantify the amount of compaction that naturally decreases over time as to time to occur, amount of decrease, which locations would experience natural release, and whether the soil returns to pre-activity compaction.

“…these same activities are fully described in the Environmental Assessment (EA).” SR pg 3 “The affected environment utilizes the best available information that covers the entire landscape. There may be other data available that provides information for portions of the landscape but not the entire landscape. In order to provide a consistent and uniform assessment of the affected environment, we used the best data that covered the entire landscape.” SR pg 9 The location, timing, activities, and potential impacts are only vaguely and generally described in this SR , the EA and other USFS documents relating to the FLP. I request that the SR be revised to provide specifics concerning the location, timing, and activities of all FLP activities.

“…‘moderate’ indicates that some erosion is likely and that erosion control measures may be needed; ‘severe’ indicates that erosion is very likely and that erosion control measures are advised…” SR pg 11 I request that the SR be revised to require erosion control measures for moderate and severe erosion factor soils, as they comprise 78% of the FLP.

 “The NRCS soil surveys include the T-Factor, which is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting soil quality and productivity over a sustained period.” SR Pg 12 “Vegetation typically recovers within 1-5 years re-establishing ground cover and begins to reduce erosion rates towards normal levels.” SR pg 13 Using the acres per T-Factor class shown in Table 5 and assuming worst case that all disturbances occur in the same year, I calculates that the maximum soil erosion from the FLP would be 562, 454 tons/yr for possibly more than 5 years, not a trivial amount. I request that the SR be revised to include calculations of the maximum soil mass that would be eroded per year, the percentage that would be delivered to aquatic resources, and the amount of time the erosion would take to return to a Good rating.

The SR states that heavy equipment will not be used on slopes >35%, so their tables only include soils with <35% slope to evaluate heavy equipment. 27,117 acres are shown as poor suitability on Table 7 Harvest Equipment Operability Rating. 14,700 acres are shown as severe on Table 8 Rutting Hazard. pg 14 I request that the SR be revised to indicate that heavy equipment will not be used on soils with poor suitability for harvest equipment or soil with a severe rutting hazard.

“Effects occurring within 10 years following each treatment are considered short term. These impacts are considered recoverable by natural processes and will return to acceptable potential soil productivity. Long-term impacts are considered to be effects occurring longer than 10 years following a treatment and are not recoverable by natural processes nor will they return to acceptable potential soil productivity. These impacts would be considered in the Region 8 soil quality standard of 15% of an activity area that would not be left in a condition of acceptable soil productivity following land management activities.” SR pg 18 I request that the SR be revised to include effects occurring within 10 years following each treatment in the computation of the percent of an activity area that does not meet acceptable soil productivity.

“A review of recently completed and current harvest activities resulted in an average soil disturbance level of 11.5% of the activity area… Given the evaluated cumulative effects, soil stability is likely to recover quickly while soil strength and structure are likely to recover more slowly resulting in an estimated long-term soil disturbance level of 0.2% of the FLP.” SR pg 19 I request that the SR be revised to quantify how the long term soil disturbance level was calculated and the cumulative disturbance of recent and current harvest activities with the FLP, and presented for each FLP watershed.

“The average level of soil disturbance was calculated from sales occurring mostly on the Conasauga District from 2015 to present.” I request that the SR be revised to indicate why the chosen sales are representative of the FLP.

I request that the FLP be constrained to not have a worse condition than shown in the assumptions on pages 22 and 23.

“Over time, nutrient loss from stem removal is believed to be replaced by soil weathering and natural inputs”… “Maintaining the O and A horizons intact as much as possible would help to alleviate nutrient loss from timber harvesting (Hallett and Hornbeck, 1997)… “Indirect effects of soil nutrient loss include possible reduced growth and yield and increased susceptibility to pathogens, such as root disease and insect infestation.” SR Pg 24 However, the reference cited was performed in the northeast to explore the effects of acid rain, and states “The nutrient status of our sites indicates that they are susceptible to nutrient depletion and that mineral soils are not a major supply of plant-available nutrients. Most available nutrients are found in the O horizon and make up a high percentage of the total nutrient capital of the O horizon. Consequently, if O horizons were subjected to disturbance by logging or fire, it is likely that the available nutrients would be leached into mineral horizons or lost to volatilization or erosion.”[[1]](#footnote-1) The cited Hallett and Hornbeck study did not evaluate phosphorus, which is often the limiting nutrient. I request that the soil report be revised to define the time period needed for soil weathering and the efficacy of natural inputs to provide pre-disturbance plant available phosphorus, to address the risk of reduced growth and susceptibility to pathogens, and to define the average and maximum short term and long term amount of O horizon soil that will be lost as a result of the FLP.

The SR references a USFS study (Luckow and Guldin 2007) and only discusses operations occurring during the dry season, which understandably yields best case conditions However, this study states “The compaction standard states bulk density cannot increase more than 15% from its natural (undisturbed) level and not more than 15% of an activity area can be adversely affected. Eight of the study units exceeded this standard. These eight units generally contained less than 15% rock fragments in the top 8 inches (20 cm) of soil, and seven of the eight had been harvested during the moist season (December-June) using rubber tire skidders…Compaction due to timber harvest activities that had occurred at least 15-20 years earlier averaged about 9% bulk density increase for the nonrocky soils and 7% for the rocky soils, and indicated that partial recovery had occurred.”[[2]](#footnote-2) I request that the SR be revised to also discuss the problems, and conditions from harvesting during wet conditions, found in this Luckow and Guldin 2007 study.

“Nitrogen is the most limiting nutrient to forest growth…” SR pg 28 I agrees that this is true for undisturbed forests. However, as phosphorus is removed by repeated logging, phosphorus becomes limiting. The SR does not address phosphorus. I request that the SR be revised to address phosphorus.

“Rough Ridge Fire in 2016 occurred primarily outside of the project area, but 2,670 acres overlapped within the Headwaters Conasauga River watershed and 606 acres within the Jacks River watershed within the Foothills boundary.” SR App 7 I request that the SR be revised to provide the location by watershed and acreage that had greater burn severity, then include which of these are also designated as poor Harvest Equipment Operability Rating and/or severe rutting hazard, with an evaluation of the ecological risk/benefit of logging there.

1. Hallett, R.A. and Hornbeck, J.W. 1997. Foliar and soil nutrient relationships in red oak and white pine forests. Canadian Journal of Forest Research, 27(8):1233-1244. [↑](#footnote-ref-1)
2. Luckow, K.R., Guldin, J.M. USFS2007. Soil compaction study of 20 timber-harvest units on the Ouachita National Forest [↑](#footnote-ref-2)