

Attachment IV. Photos 1 through 59, MERA RAFIP 2021/2022. Union County Commissioners and Others 5/9/22

All photos were taken during non-peak stormwater runoff/time of concentration periods, between 3/29/22 and 5/7/22.

Photos 1 to 24: Impacts to the Overall Watershed, Soil Productivity, Hydrology and Water Quality.



Photo 1. Log skidding impacts to soil productivity, watershed hydrology and stormwater quality and quantity. No erosion controls? Without implementation of reclamation practices, impacts to watershed will continue for decades.



Photo 2. Deep ruts impact soil productivity, dewater groundwater and route contaminated stormwater to the creek during transient runoff periods. Reclamation must be completed to reduce impacts to watershed, hydrology, and soil productivity. No erosion controls?



Photo 3. See captions Photos 1 and 2.



Photo 4. See captions Photos 1 and 2. Tree spacing?

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Photo 5. See captions Photos 1 and 2.



Photo 6. See captions Photos 1 and 2.



Photo 7. See captions Photos 1 and 2.



Photo 8. See captions Photos 1 and 2.

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Photo 9. See captions Photos 1 and 2.



Photo 10. See captions Photos 1 and 2.



Photo 11. Log landing. See captions Photos 1 and 2.



Photo 12. See captions Photos 1 and 2. And Tree Spacing?

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Photo 13. Soil productivity impacts and impacts to quantity and quality of stormwater runoff to creek. Area below log landing/slash pile.



Photo 14. See caption Photo 13. Stormwater discharge to creek.



Photo 15. See caption Photos 1 and 2. Erosion controls?



Photo 16. Soil displacement, disturbance, compaction and linear ruts (conveyances) causing transient discharges of contaminated stormwater to creek. Impacts to the soils and watershed will continue for more than a decade unless reclamation is completed.

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Photo 17. Transient discharge of stormwater to creek, in a conveyance, impacted from upslope tree length log skidding, mastication areas, and slash piles. Vegetation buffer zone along creek prevented debris, only, from being discharged to the creek.



Photo 18. See caption Photo 17.



Photo 19. See caption Photo 17.



Photo 20. See caption Photo 18.

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Photo 21. Groundwater drainage and stormwater runoff to creek impacted from upslope tree length log skidding, mastication and slash piles.

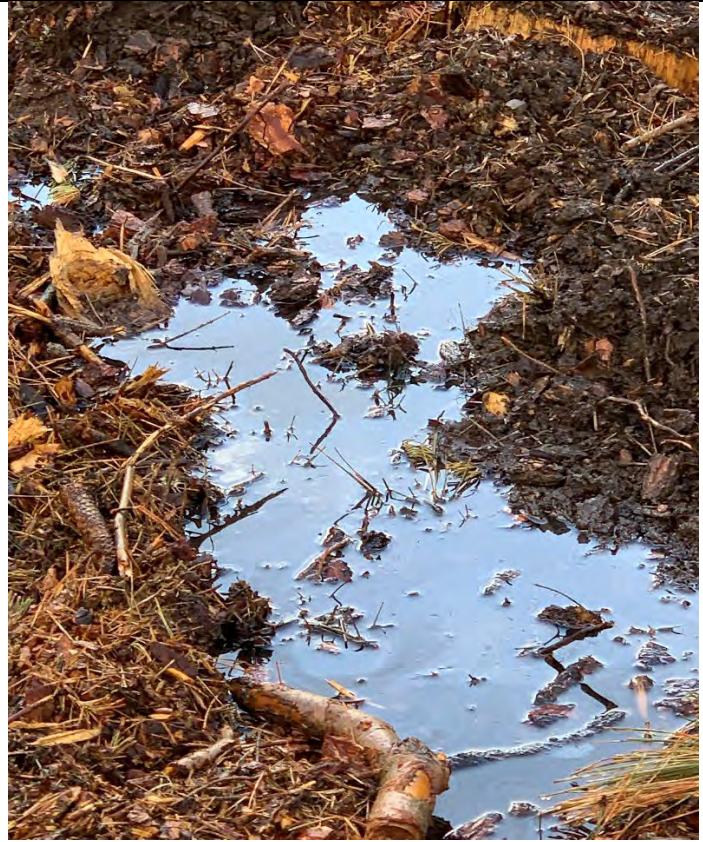


Photo 22. Groundwater drainage and stormwater runoff contaminated from upslope tree length log skidding and slash pile.



Photo 23. See caption Photo 22.



Photo 24. See caption Photo 21.

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Photos 25 through 46. Showing Direct and Indirect Impacts to Trails and the Overall Watershed.



Photo 25. Direct and indirect impacts to Lower Hotshot Trail. Unless reclamation is completed, groundwater drainage and stormwater runoff will impact the trail for decades. Soil productivity and water quality are also concerns. No erosion controls?

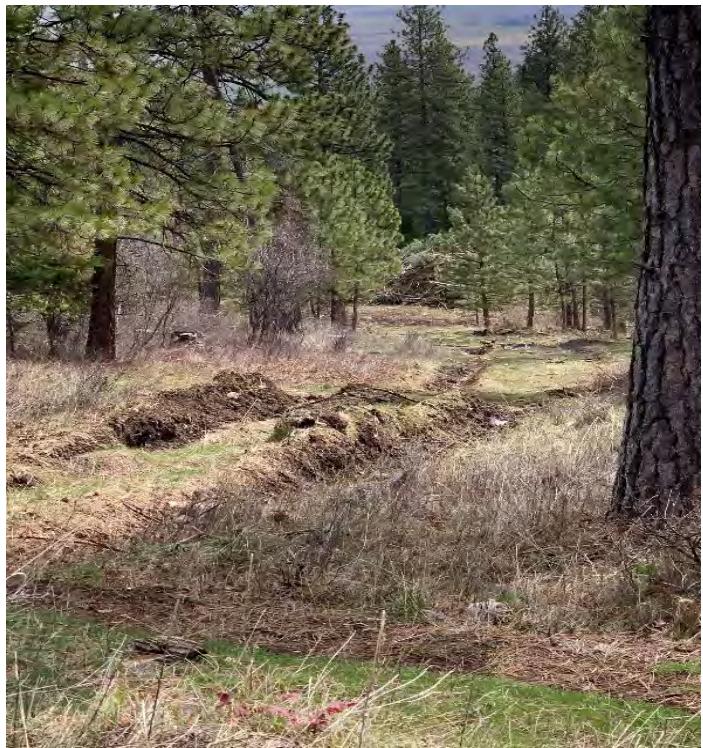


Photo 26. Soil displacement, ruts and compaction impacting Lower Hotshot Trail, long term soil productivity and water quality. No erosion controls.

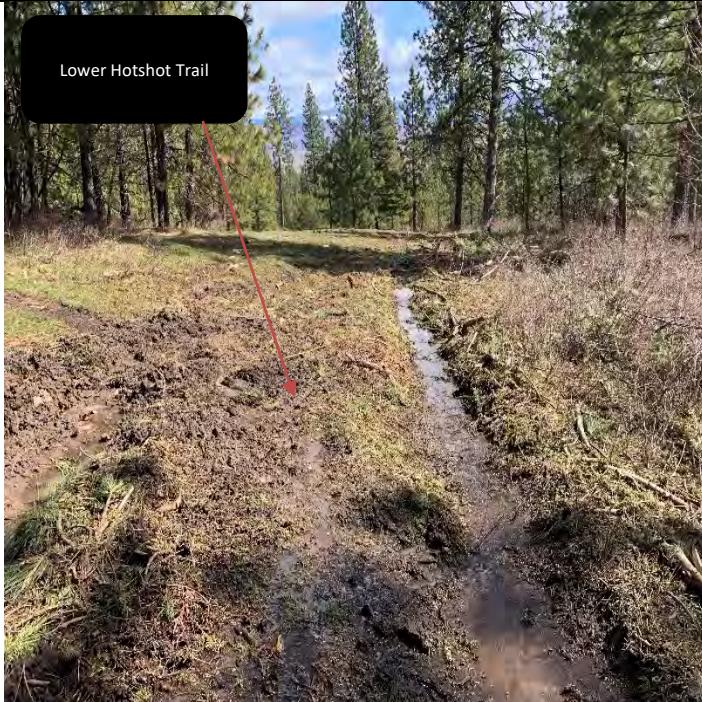


Photo 27. Stormwater flowing in ruts (conveyances) more than 1,000 linear feet, and discharging to creek along IGO Lane. No erosion controls? See also captions Photos 25 and 26.



Photo 28. Long term impacts to soil productivity and stormwater due to compaction, displacement and disturbance. No erosion controls? Bridleway Trail obliterated.

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Photo 29. Impacts of tree length log skidding on Lower Hotshot Trail. Unless reclamation is completed, groundwater drainage and stormwater runoff will be routed to and impact the trail for decades.



Photo 30. Impacts of tree length log skidding on Bridleway Trail. No grade reversals or erosion controls? Trail reconstruction is required. See also caption Photo 29.



Photo 31. See caption Photo 30



Photo 32. See caption Photo 30.

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Photo 33. See captions Photos 27, 28, 29.



Photo 34. See captions Photos 27, 28, 29.



Photo 35. Bridleway Trail and watershed, damage from whole log skidding on unfrozen soils with a high clay percentage. Complete trail reconstruction and watershed reclamation required.



Photo 36. See caption Photo 35.

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Photo 37. Impacts to Lower Hotshot Trail, soil productivity and water quality.



Photo 38. Lower Hotshot Trail corner, same corner as in Photo 37, reconstructed in 2020 with drain pipe.



Photo 39. See captions Photo 37 and 38.



Photo 40. Lower Hotshot Trail. See captions Photo 33, 34, 37.

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Photo 41. Lower Hotshot Trail. Complete reconstruction and upslope drainage controls and overall watershed reclamation must be completed.



Photo 42. See caption Photo 42.



Photo 43. Skills Crossover Trail. Complete reconstruction required and upslope drainage controls and overall watershed reclamation must be completed. Deep ruts will route groundwater drainage and stormwater runoff onto trails for decades unless reclamation is completed.



Photo 44. See caption Photo 44.

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Photo 45. Lower Hotshot Trail, log skidding damage and routing of stormwater and groundwater to trail system.



Photo 46. See captions Photos 43 and 45.

Photos 47 through 59. Mastication, Overstory Tree Harvest/Tree Spacing, Slash Piles, Protection of Trails: Impacts on Wildland Fire Risk, Hiking (cross country), Wildlife Movements, Aesthetics, Hydrology.



Photo 47. MERA Loop Trail protected from logging impacts. Were fuel reduction goals achieved?



Photo 48. Intermittent stream and riparian area protected from direct impacts of logging and mastication. Nice work and thank you!

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Photo 49. Bridleway Trail covered in debris, but impacts to soil productivity and the trail was minimal. Nice work and thank you!



Photo 50. Section of Lower Hotshot Trail where soil productivity and stormwater quality were not impacted and the trail was preserved. Were fuels reduction and tree spacing goals achieved?



Photo 51. Area logged and masticated (partially) and minimal impacts to watershed. Were fuels reduction and tree spacing goals achieved?



Photo 52. Bridleway trail impassable due to slash and mastication debris, but impacts to soils, trail (tread) and watershed minimized.

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Photo 53. Skills Crossover Trail protected. Thank you! Were tree spacing and fuels reduction goals achieved?



Photo 54. Intensive removal of overstory trees and mastication. Were tree spacing and fuels reduction goals achieved? Without any overstory canopy, this site will be arid and hot during the summer months and stormwater runoff will be higher in the spring. Vegetation will be dominated by annuals/weeds.



Photo 55. Critical nutrients for forest health and sequestered carbon for atmospheric health, are contained within these slash piles. The public was told at the MERA RAFIP Tour on 11/10/21 (5a.) that chip prices were improving and chipping rather than burning of slash piles was the goal. On 5/3/22 the public was told slash piles will be burned (5b.). Important nutrients contained in the slash and the sequestered carbon will be burned/oxidized and emitted to the atmosphere—which is detrimental to the forest and air quality. If a logging processor had been used, rather than tree length mechanical logging with skidding of whole trees to landings, most of this slash would have been scattered across the harvest area and to provide nutrients for future forest health and used for ballast to minimize soil impacts from equipment.

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Photo 56 and 57. Because of the type of masticator used, note the splintered stubs sticking up and long, uncut lengths of trees and limbs, hikers will not be able to travel cross country and wildlife will avoid these areas for decades. The good news is that nutrients from the slow decomposition of the slash will be released to the soil to enhance future site productivity and most of the sequestered carbon will be assimilated into the soil. Research shows that the fire danger associated with mastication like this will be higher than pre-logging conditions for many years (see references 10, 17).



Photo 58. Deep ruts in watershed that require reclamation. Were tree spacing goals achieved?



Photo 59. Damage to soil productivity and hydrology—were tree spacing and fuels reduction goals achieved?