To whom it may concern;

I understand the importance of stabilizing the water so downstream flooding does not occur.

I have concerns about one of the options because of increased potential for spread of invasive species and affects on research projects.

Invasive species spread so very fast. Invasive species can be introduced by equipment that was not a adequately washed. What may be more long lasting is the change in the soil from equipment. Additional road traffic on the pumice plain would likely disturb the surface layer of soil and expose underlying soils. In a study by S. Tsuyuzaki on Seedling Establishment in the Pumice Plain, many native and invasive seeds are buried in the soil. Exposure and scarification of many seeds induces germination. A truck running over seeds would certainly both expose and induce germination. I think one of the plants was hypocharis radicata. So very common but hard to eradicate.
Secondly Mr. Tsuyuzakii learned that many plants are wind dispersed, so plants from the disturbed area could affect a much larger area ultimately than just the 20 acres predicted by the analysis. Specifically, one plant on the pumice plain, Hypochaeris radicata often is windblown as far as 100 meters from the plant (M. Soons (Determinants of long-distant seed dispersal by wind in grasslands). So direct impacts from potential invasive spread are 300 feet, not 33 to 100 feet. Finally, Mr. Tsuyazaki learned weed plants seem to grow in disturbed eroded soil.
Vehicles would expose the soil and its associated seedbank as well as producing a long term effect of eroded compacted rilled soil, conducive to weed germination.
It also appears the forest service has not conducted weed surveys of the proposed route. So we don't know what would invade.

Secondly, apparently a few research projects occur in the vicinity of the proposed road.
Some of these have far ranging implications. For instance, Carri LeRoys work on riparian succession will highly inform salmonid and wetland restoration projects.

I help others collect and identify willow for salmon restoration projects across the northwest. Even in one species of willow, we see differences in survival and resistance to disease. Then, after planting, some seem to survive better. i attempt to look up information on variation in genetics in willow. But, there's very little understood about willow genetics and how genetics affects willow surival, disease resistance and riparian succession. Willow is used across Western Washington to enhance salmon streams. Specifically, willow rapidly stabilizes eroding banks, improving egg to fry survival. Willow also provides food for beaver, which stabilize water levels and create rearing and feeding areasfor young coho. Learning how different varieties of willow affect riparian succession is critical to the success of salmon restoration projects. I understand that her project is special because the streams are newly created. This is a unique situation that somewhat mimics salmon restoration projects.
Other projects underway that highly inform wetland restoration are the canvas degradation test strips which apparently are in some of the streams in the project area. Canvas is somewhat of a surrogate for cellulose. When cellulose decomposes it may turn into greenhouse gases. We have very limited understanding of how fast cellulose decomposes under differing conditions. Any research on how fast canvas and cellulose decompose will inform our understanding of greenhouse gas release from organic matter decomposition. Moreover, all natural plants are comprised primarily of cellulose. Degradation of cellulose in different streams and wetlands tells us how fast senescent natural plants will decompose. The conversion of natural plants to muck highly influences other factors like dissolved oxygen and

available nutrients. so I hope the forest servcie can support projects like genetic understanding of willow and the canvas test strip decomposition assays.
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Thank you for the opportunity to comment at this late date. I urge you to consider using helicopters to deliver equipment and persons to the project sites.

Soons 2004. Determinants of long distance seed dispersal by wind in grasslands.
Tsuyuzaki. S. 1997. Seedling establishment patterns on the Pumice Plain, Mount St. Helens, Washington.