I-80; Parleys Summit to Jeremy Ranch

Westbound Truck Climbing Lane

Noise Analysis Summary

October 6, 2017

Background

In May 2017, UDOT published a study addressing traffic-generated noise impacts from the I-80; Parleys Summit to Jeremy Ranch Westbound Truck Climbing Lane in Summit County. The study was conducted based on preliminary roadway design and was carried out in accordance with the Code of Federal Regulations (CFR), which mandates that any project predicted to result in a traffic noise impact be analyzed and that noise abatement be considered and evaluated before completion of the National Environmental Protection Act (NEPA) document.

As part of the study, 135 noise receptors were placed at various locations along I-80 between Jeremy Ranch and Summit Park. The 135 noise receptors measured the existing noise in these areas representing 170 residential properties, two schools and eight recreational areas.

Acoustic Feasibility

These noise measurements were modeled using the Federal Highway Administration's (FHWA) accepted model and calibrated for accuracy. Future noise levels were calculated based on the additional traffic and added climbing lane. Noise mitigation barriers were compared to the feasibility criteria in the UDOT Noise Abatement Policy. All areas but one were found to be not acoustically feasible given the topography.

> *Acoustically Feasible: achieving at least a 5 dB(A) highway traffic noise reduction for at least 50 percent of front-row receptors. Noise abatement must be considered acoustically feasible.*

Cost Reasonability

The one section of wall that did meet the feasible criteria was along the westbound side of I-80, near Jeremy Ranch. In this section, an 18-foot high wall, approximately 3200 feet long, was analyzed for cost reasonability.

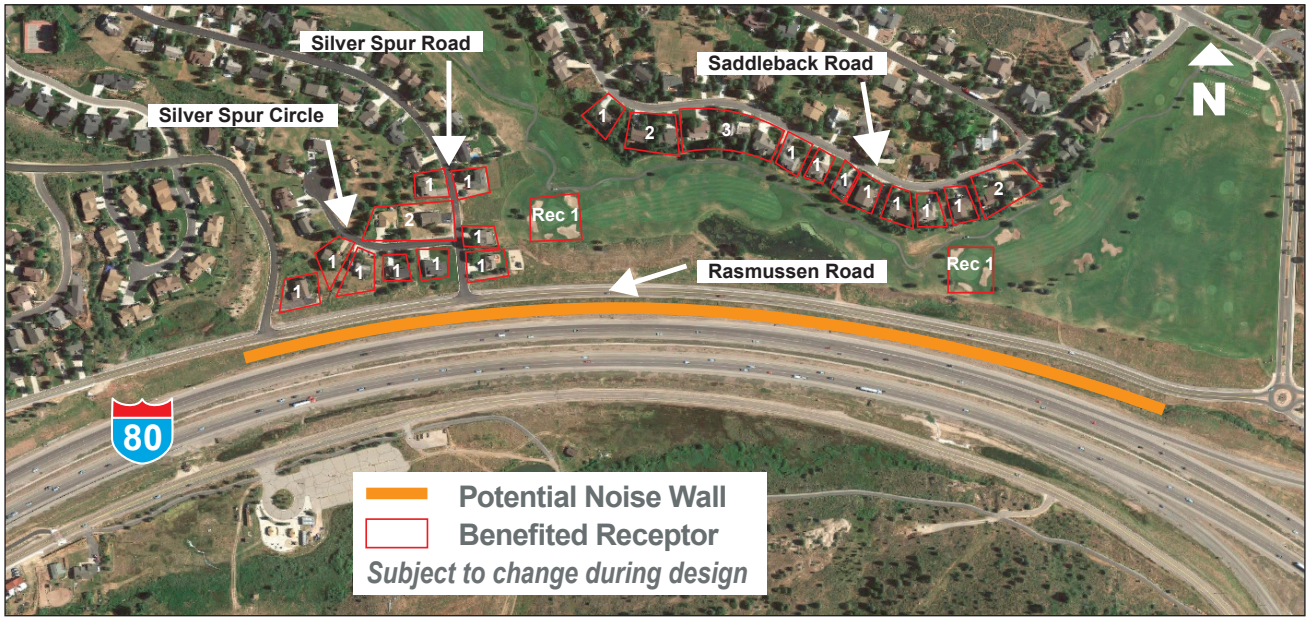
> *Cost reasonable for recreational property: cost of abatement must not exceed $360/Linear Feet.*
>
> *Cost reasonable for residential property: cost of abatement must not exceed $30,000 per benefited receptor.*

The original analysis of this section considered 1600 feet of noise barrier to protect residential property and 1600 feet to protect recreational property. There were a total of 24 benefited receptors.

> *Cost-reasonable for recreational property: $360/LF x 1600 LF = $576,000*
>
> *Cost-reasonable for residential property $30,000 property x 22 properties = $660,000*

Totaling the sums allowable for each of the categories: $576,000 + $660,000 = $1,236,000.

Using standard cost variables prescribed in UDOT's Noise Abatement Policy, a barrier 18 feet high x 3,200 feet long x 20.00/sq. ft. would cost $1,152,000. That is less than the allowable $1,236,000, therefore the barrier was found to be cost reasonable and acoustically feasible.



Initial Noise Analysis and Proposed Abatement Wall Map (May 2017)

Public Outreach

The public was informed of the potential noise abatement wall and balloting process at a public open house held April 12, 2017 at Jeremy Ranch Elementary School. Several attendees raised concerns and questions about the issue, prompting a second noise-specific information meeting that was held June 13 at the same location. More than 150 residents attended the information meeting, voicing varying opinions about a potential noise abatement wall. Concerns included a perceived negative aesthetic and potential for additional noise in adjacent neighborhoods. Those residents that would receive a reduction in noise were in favor of a noise abatement wall.

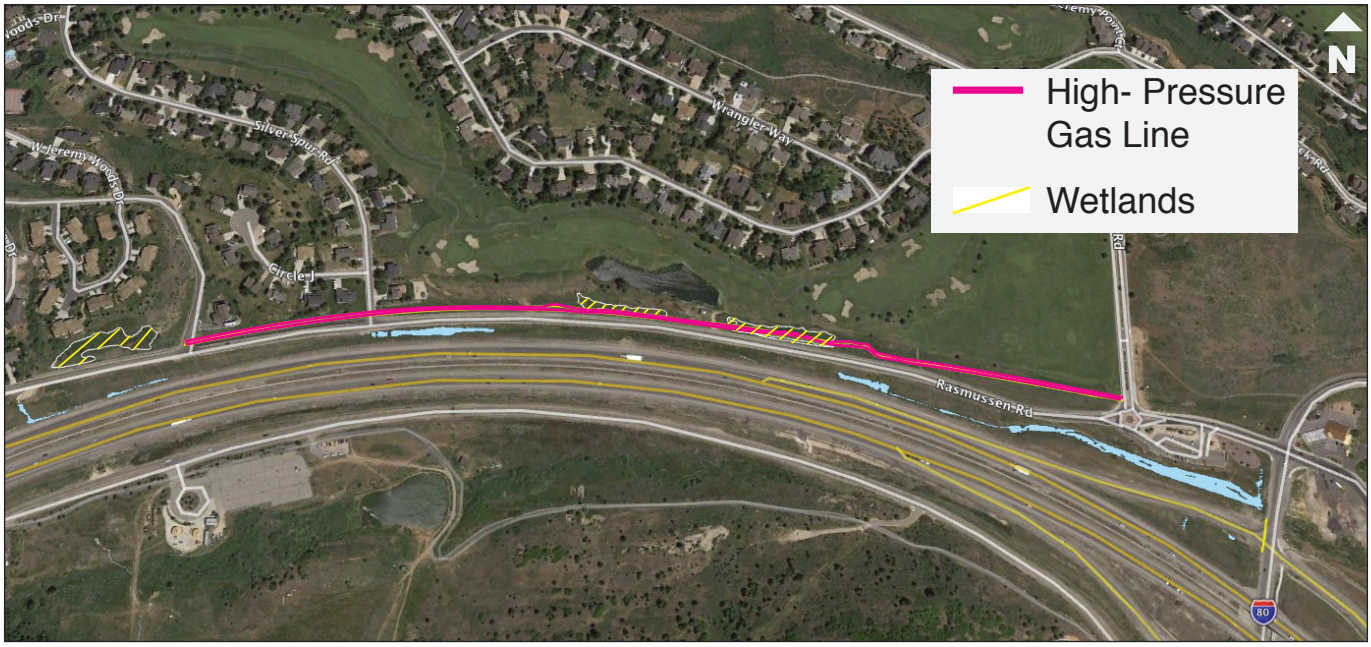
Community members and Summit County staff and elected officials reached out to UDOT to discuss these concerns further. The following meetings were held:

- Save People Save Wildlife, June 28, 2017
- Summit County staff, July 10, 2017
- Save People Save Wildlife, July 11, 2017
- Summit County staff and elected officials, July 18, 2017
- Summit County staff and elected officials, September 28, 2017

Review of Other Solutions

Summit County staff and elected officials suggested UDOT evaluate other potential solutions in order to address the noise issue within federal and state guidelines, and to balance the community's input and vision. Suggestions included a natural berm north of Rasmussen Road as well as a combination of natural berms and built walls south of Rasmussen Road, closer to I-80. UDOT agreed to analyze the suggestions in terms of constructability, cost and ability to mitigate noise impacts.

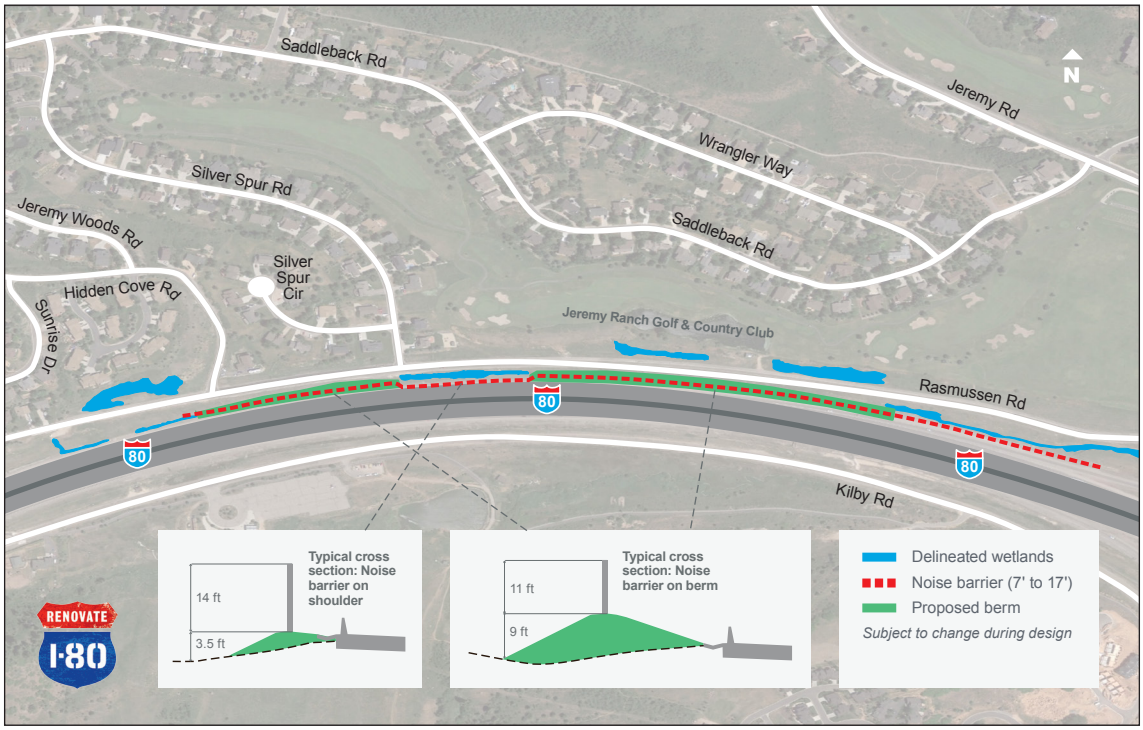
The natural berm option was determined to be unconstructable north of Rasmussen Road due to two underground high pressure gas lines and significant impacts to wetlands. Moving the berm further south would eliminate its ability to mitigate noise for impacted residents.



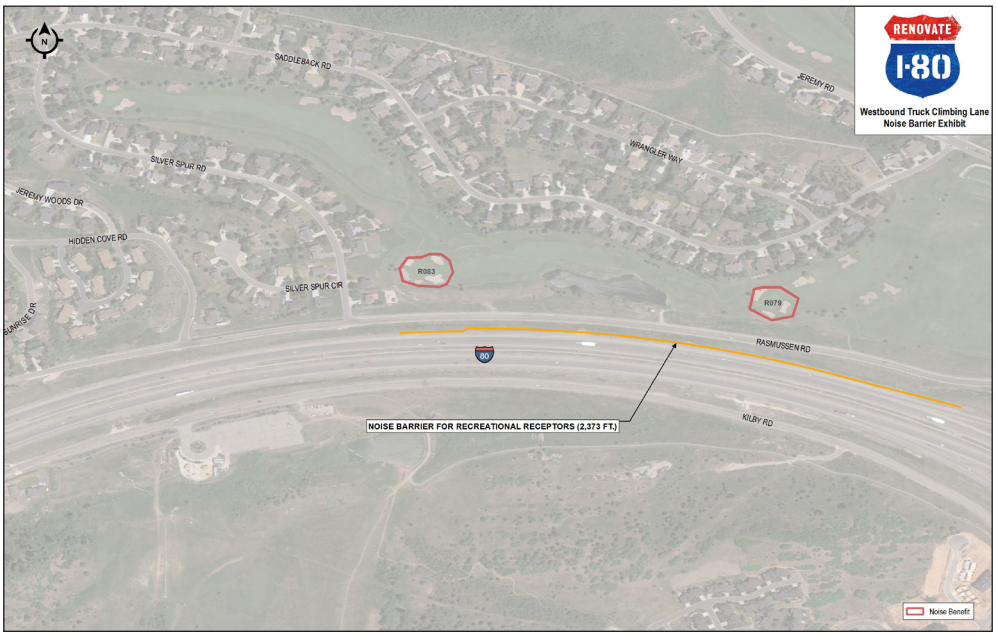
High-Pressure Gas Line and Wetland Interference

Proposed Noise Abatement Wall/Berm Solution (September 2017)

After refining roadway design and modeling varying berm and wall combination scenarios, it has been determined that an 7 to 17 foot wall on top of a variable height berm would meet federal guidelines and adhere to UDOT's Noise Abatement Policy. This design would provide a five dB(A) or greater reduction in noise to 25 residential properties and two recreational areas. This barrier would provide a seven dB(A) or greater reduction in noise to five out of seven front-row properties and has been determined cost and acoustic-reasonable and feasible under UDOT's policy.



The project team conservatively estimated that the recreational area would experience a benefit from the noise wall for the portion of the wall from the property line between the golf course property and the residences along the east side of Silver Spur Road. The wall from that point to its east end is 2,373 feet in length. Only that part of the wall contributes towards the cost analysis at $360 per foot, or $854,280.



The barrier provides a 5 dB(A) reduction to 10 residences east of the golf course, and at $30,000 each that total is $300,000. The allowance for the wall would then be the sum of these two amounts, or $1,154,280.

The optimized wall is 37,198 square feet, and the UDOT Noise Abatement Policy directs that the cost be estimated at $20 per square foot, or $743,960. The cost of the necessary safety measures are estimated to be $397,994 and include the safety barrier and associated construction items. The combined cost of the wall, including safety measures, is $1,141,954. Since the total noise barrier cost is less than the allowance ($1,154,280), the noise barrier can be considered cost-reasonable.

It should be noted that federal regulations require the consideration of all receptors that would benefit from a barrier. In addition to the 10 residences located east of the golf course, 15 additional residences north of the golf course will benefit from the barrier. If the barrier was not found to be cost-reasonable using the methodology described above, those additional 15 benefited receptors would also need to be considered before the wall could be found to not be cost-reasonable. However, since the barrier was found to be cost-reasonable without the contribution of those additional receptors, we do not need to consider them in the analysis.

As also outlined in UDOT Noise Abatement Policy, the next step in the process is balloting those property owners that would receive a five dB(A) or greater reduction in noise. Of those properties, 75 percent must return a ballot, and of those, 75 percent of ballots must be in favor in order to construct the noise barrier. The balloting process is scheduled to begin in late- October and last approximately one month.