APPENDIX G ENVIRONMENTAL RESOURCE ANALYSIS

STATE HIGHWAY 9 AND U.S HIGHWAY 6 IMPROVEMENT PROJECT
AT THE INTERSTATE 70 SILVERTHORNE/DILLON INTERCHANGE

ENVIRONMENTAL RESOURCE ANALYSIS: EFFECTS ANALYSIS

July 9, 2012

I. INTRODUCTION

This document describes the potential environmental consequences of the recommended improvements advanced for further consideration in the Detailed-Level Screening Analysis performed as part of the State Highway 9 (SH 9) and U.S. Highway 6 (US 6) Improvement Project at the Interstate-70 (I-70) Silverthorne/Dillon Interchange. The improvements addressed include the Diverging Diamond interchange, the Westbound On Ramp improvement (Grade Fix and Two Lane Ramp), the SH 9/Wildernest Road ultimate improvement design and the continuous eastbound Auxiliary Lane from I-70/Frisco interchange to the I-70 Silverthorne Dillon interchange (See Appendix A of the Detailed-Level Screening Analysis for design drawings. The following topics are addressed in Section II:

1. Air Quality
2. Geologic Resources and Soil
3. Water Quality
4. Floodplains
5. Wetlands
6. Vegetation
7. Noxious Weeds
8. Fish and Wildlife
9. Threatened/Endangered (T&E) Species
10. Tribal Resources
11. Archaeological Resources
12. Historic Properties
13. Paleontological Resources
14. Land Use
15. Social Resources
16. Environmental Justice
17. Bicycle and Pedestrian Facilities
18. Residential/Business/Right-of-Way (ROW) Relocation
19. Transportation Resources
20. Section 4(f)
21. Section 6(f)
22. Farmlands
23. Noise
24. Visual Resources/Aesthetics
25. Energy
26. Hazardous Materials
27. Cumulative Impacts
28. Public Controversy
29. Anticipated Permits
30. Conclusion: Are Significant Impacts Expected?

Design information for the proposed improvements is presented in the PEL Study and in the Detailed-Level Screening Analysis. Some baseline information is provided in the following analysis to provide context for the findings. The Environmental Technical Report, Appendix 11 of the Launch Phase Technical Report, provides the baseline information for the project. Comparisons between the effects of the proposed improvements and the previously considered alternatives and options are provided in the two previously prepared project screening analysis reports. Section III provides a NEPA process recommendation based on the findings presented in Section II. Mitigation measures, as needed, will be addressed in the NEPA documentation.

II. ENVIRONMENTAL CONSEQUENCES

1. Air Quality

The Clean Air Act requires the Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants, referred to as criteria pollutants, considered harmful to public health and the environment. Most of the I-70 corridor meets NAAQS, with the exception of the east end of the I-70 corridor in Jefferson County, which, along with the rest of the Denver metropolitan area, exceeds air quality standards for ozone. The I-70 corridor, except the east end in Jefferson County in the Denver metropolitan area, meets NAAQS for all criteria pollutants. No violations of air quality standards have been recorded outside Jefferson County. Visibility is an issue in the White River National Forest's Class I Eagles Nest Wilderness Area near Vail.

The I-70 Mountain Corridor Project and the planned improvements are regionally significant projects for air quality purposes. However, the project is located in an attainment area for the criteria pollutants. The improvements would provide for continued vehicular emissions of pollutants of concern globally and locally, and would generate emissions during construction. The air quality impacts of the improvements would be minor and inconsequential in terms of air pollution standards, pollutant concentrations in the project vicinity, and the existing attainment status of the area. The improvements would not require hot spot analysis for carbon monoxide.

2. Geologic Resources and Soil

The geological hazards map in the Final PEIS clarifies that there are no geologic hazards within the study area other than the risks associated with the steep slope just east of the I-70 westbound off ramp. No improvements are planned in this area. Consequently, the proposed improvements would not present the potential to cause geologic or soil hazards such as slope instability.

3. Water Quality

The Silverthorne area is not included in the Municipal Separate Storm Sewer Systems (MS4) permit areas for CDOT. However, the Blue River, a designated as an "Aquatic Life Cold Water Class 1" resource and Gold Medal Fishery. The Blue River and its tributary, Straight Creek, cross both I-70, SH 9 / US 6 and local roads within the proposed improvement areas. Best Management Practices (BMP) must be in place to protect these sensitive waters. Therefore, the preliminarily design for the proposed action includes features to treat all runoff from roadways and other impervious areas within the project limits. This project will also require a Storm Water Management Plan (SWMP) in CDOT format and a Colorado Discharge Permit System (CDPS) construction stormwater permit for the Water Quality Control Division (WQCD).

Drainage basins for each project were delineated to ensure proper treatment of all impervious areas tributary to the design point of the project. BMP's were selected, based on site constraints, from the approved list of BMP's by Urban Drainage Flood Control District (UDFCD). Grass swales and Extended Detention Basins (EDB) are proposed where there is adequate area and grade. Underground filtration systems are proposed for areas where there is not room to incorporate above ground BMPs. Refer to Appendix X of the Detailed-Level Screening Analysis for additional details.

Based on these project components, construction period and post-construction discharges of stormwater into Straight Creek and the Blue River would not be expected to have significant water quality effects.

4. Floodplains

The Study Area is located just below the Dillon Reservoir dam. The Blue River begins at the dam outlet located south of the interchange. Straight Creek and its watershed are located along the south side of I-70. Straight Creek is a tributary to the Blue River. The confluence of Straight Creek and the Blue River is located in the Study Area.

The proposed improvements would not be expected to occur within the regulatory floodway or within the base floodplain (100-year flood) elevations of the Blue River. The foundation for the two lane Westbound On Ramp bridge would be located beyond the floodplain boundaries. Minor fill within the channel of Straight Creek floodplain would be required to construct the Diverging Diamond interchange. However, no residual floodplain or adverse stormwater flow effects would be expected because the existing culvert under US 6 is already large enough to handle anticipated Straight Creek flood flows (Refer to impacts on wetlands). Detention ponds and drainage improvements, based on final design phase hydraulic analyses, would be part of the project design to address floodwater flows.

5. Wetlands

Waters of the United States, as designated by the Army Corps of Engineers (USACE), occur within the study area along the Blue River and Straight Creek. In addition, adjacent to Straight Creek, on the south side of I-70, there is a small complex of seasonally flooded shrub-scrub wetlands that can be designated as waters of the United States. The proposed improvements will require fill of 0.175 acres of wetlands as follows:

Diverging Diamond	0.145
SH 9/Wildernest Road Intersection: Ultimate	0
Two Lane Westbound On-Ramp and Grade Fix	0.03
Auxiliary Lane	TBD

See Appendix D of the Detailed-Level Screening Analysis for details.

The overall effect would require a Clean Water Act Section 404 Nationwide Permit and corresponding mitigation measures.

6. Vegetation

The majority of the project area is comprised of previously developed or disturbed areas. Areas of existing natural vegetation communities are located along the edges of the Blue River and Straight Creek. Along the Blue River, vegetation consists of narrow corridors ranging from 10 to 25 meters wide of forested riparian habitat on each side of the river. Along Straight Creek, vegetation is dominated by willow and other shrubby riparian species.

The improvements will not impact existing vegetation other than fill slope grasses along the Westbound On Ramp, vegetation associated with minor fills near the Straight Creek Crossing of US 6, vegetation on the south side of I-70 beside the proposed auxiliary lane.

Areas infected by the recent mountain pine beetle epidemic are located adjacent to the study area. Project activities will not adversely impact lodgepole pine forests associated with the pine beetle.

7. Noxious Weeds

Pursuant to § 35-5.5-101, et seq., C.R.S., The Colorado Noxious Weed Act, the State of Colorado has mandated that "a countywide plan must be implemented by every county to prevent further damage by these noxious weed species (Summit County 2009). Within the Study Area, multiple noxious weed species occur in disturbed areas. Table 2 of the Environmental Technical Report, Appendix 11 of the Launch Phase Report, provides a list of noxious weed species known to occur in Summit County and identifies species that were observed within the Study Area. Earthwork for the project presents the potential to encourage the spread of noxious weeds.

8. Fish and Wildlife

Fish

A 35-mile section of the Blue River, from Dillon Reservoir to the Town of Kremmling, is designated as a "Gold Medal Fishery." Gold Medal streams provide outstanding opportunities for angling large trout, high quantity/quality of fish populations, and recreational value.

The Westbound On Ramp with two lanes would include a new bridge over the Blue River creating construction period disruption to habitat conditions, and increased shading in this upper stretch of the river corridor. Due to the urban nature of this stream corridor and its proximity to the dam and other bridges, the net impact from the bridge would not be expected to negatively impact species diversity, populations or the health of individual fish or wildlife. Construction and shading effects would be incremental and cumulative in terms of habitat conditions for fish and wildlife, and would replace sunny fishing site opportunities with shady sites.

Wildlife: Big Game

Habitat for big game species is present adjacent to the study area and is of particular management concern to by the Colorado Division of Parks & Wildlife (CPW). The proposed action will have no impacts on big game habitat.

Wildlife Linkage Zones

No wildlife linkage zones are located within the project study area from Frisco to Silverthorne. Laskey Gulch, located two miles east of the interchange between I-70 mileposts 207 and 210, was identified as a "Wildlife Linkage Interference Zone" in the I-70 Mountain Corridor Revised Draft Programmatic Environmental Impact Statement of 2010. Linkage zones are key connections for wildlife habitat impacted by the barrier effects of I-70. No wildlife linkage zone would be impacted by the proposed

action. The auxiliary lane would widen I-70 between Frisco and Silverthorne incrementally increasing risks for wildlife crossings in this area.

Migratory Birds

Migratory birds, raptors, and their nest sites are protected under the Migratory Bird Treaty Act (MBTA) of 1918, which legislates that no one may take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter; any migratory bird, or their parts, nests, or eggs of such a bird except under the terms of valid permit issued pursuant to Federal regulations. Numerous species of migratory birds protected under this act to use habitat within the study area for nesting and foraging. The improvements present the potential to impact Migratory Birds.

Bald Eagles and Golden Eagles

The Bald and Golden Eagle Protection Act of 1940 provides for the protection of the Bald Eagle and the Golden Eagle (*Aquila chrysaetos*). Bald Eagles and Golden Eagles may occur within the study area due to the fact that foraging and nesting habitat is present along Blue River and adjacent to Dillon Reservoir. Due to the high level of disturbance from adjacent urban development along the Blue River, it is unlikely that Bald or Golden Eagles would frequently utilize the study area as nesting habitat. A known Bald Eagle roost is located approximately 0.5 mile to the southwest of the I-70 interchange in NW NE Section 13 T5S R78W (NDIS 2010). Construction of the auxiliary lane could incrementally add to other existing disruptive influences on this roost site.

Colorado Division of Wildlife (CDOW) Senate Bill 40 (SB 40)

Colorado Senate Bill 73-40 (§*33-5-101-107*, *Colorado Revised Statute 1973* as amended) requires any agency of the state to obtain wildlife certification from the Colorado Division of Wildlife (CDOW) when the agency plans construction in any stream or on any stream bank. A stream is considered to come under the jurisdiction of SB40 if it meets any one or more of the following four criteria:

- All perennial streams represented by solid blue lines on U.S. Geological Survey 7.5' Quad maps.
- Segments of ephemeral and intermittent streams providing live water beneficial to fish and wildlife.
- Segments of streams at which 25 percent or more of the vegetation is comprised of riparian vegetation, such as cottonwood, willow, alder, sedges, or other plants dependent on groundwater. Such segments shall be within 300 feet upstream or downstream of the project. The 300-foot distance shall be measured along the length of the stream.
- Segments of streams having wetlands present within 600 feet upstream or downstream of the project. The 600-foot distance shall be measured along the length of the stream.

Both the Blue River and Straight Creek fall under the jurisdiction of SB40. Minor effects on Straight Creek would require application for SB40 Wildlife Certification

9. Threatened/Endangered (T&E) Species

CDOW's Natural Diversity Information Source (NDIS) database (NDIS 2010) and the USFWS Threatened and Endangered Species List (USFWS 2010a) were consulted to determine the species of federal concern that may occur within or downstream of the study area. Based on preliminary review of existing databases, the following federally listed species were determined to potentially occur in Summit County (Table 4.0). On September 28, 2010, letters requesting concurrence with this list were sent to Susan Linner, the USFWS Region 6 Field Supervisor, and Lyle Sidener, CDOW Area 9 Wildlife Manager.

Five federally listed wildlife species are identified as potentially occurring within the study area. Five federally listed aquatic species are identified as potentially occurring in downstream waters. These species are managed under the ESA by USFWS.

Birds

- Mexican Spotted Owl (*Strix occidentalis lucida*) – Federal and State Threatened. The Mexican Spotted Owl occurs in a variety of habitats consisting of mature montane forests, shady canyons, and steep canyons. Their range includes the central and southern Rocky Mountains of Colorado. According to NDIS, the Mexican spotted owl is known to occur in Summit County. Suitable habitat for the species does not occur within the I-70 interchange study area or in other immediately adjacent areas.

- Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*) – Federal Candidate Species and State Species of Concern. The Yellow-billed Cuckoo prefers open woodlands with clearings and a dense shrub layer. It is often found in woodlands near streams, rivers, or lakes. This species is an uncommon local summer resident in western valleys, mountain parks, and foothills (NDIS 2010). This species is not known to occur in Summit County according to NDIS; however, is included because of its federal listing in Summit County.

  Suitable habitat for the Yellow-billed Cuckoo may occur within the study area along the Blue River, south of the I-70 interchange and east of State Route 9. This habitat consists of 6.39 acres of forested riparian vegetation that is located adjacent to the Blue River Recreation Trail and existing urban retail developments. Due to the small size of this habitat and its proximity to urban development, it is unlikely that the Yellow-billed Cuckoo occurs in this area.

- Greater Sage Grouse (*Centrocercus urophasianus*) – Federal Candidate Species and State Species of Concern. Sage grouse are found only in areas where sagebrush is abundant. Sagebrush is a critical component for sage grouse, providing both food and cover. This species is known to occur in Summit County (NDIS 2010).

  Suitable habitat for the Greater Sage Grouse does not occur within the study area. Suitable habitat for the species does occur adjacent to the study area on the west side of the town of Silverthorne. This habitat is comprised of approximately 150 acres of mountain sagebrush (*Artemisia tridentata vaseyana*) intermixed with stands of quaking aspen (*Populus tremloides*).

The suitability of this habitat for the Greater Sage Grouse is decreased by the high densities of rubber rabbitbrush (*Ericameria nauseosus*) present in the area. The nearest known occurrence of the species in Summit County is located approximately 20 miles to the northwest, near Green Mountain Reservoir (NDIS 2010). Due to the small size and decreased suitability of sagebrush habitat adjacent to the study area, it is unlikely that the Greater Sage Grouse will be impacted by construction activities associated with the I-70 interchange.

Mammals

- Canada Lynx (*Lynx canadensis*) – Federal Threatened and State Endangered. The Canada lynx prefers northern coniferous forests with uneven-aged stands with relatively open canopies, and well developed vegetative understories. This species is rare, although known to occur in Summit County (NDIS 2010).

  Suitable habitat for the Canada lynx does not occur within the study area, but may occur in areas adjacent to the western end of the study area. Forested habitats suitable to lynx exist on both sides of I-70, immediately west of the town of Silverthorne. Lynx may utilize these areas as foraging and denning habitat. Due to the increased human presence from residential developments in this area and disturbance from I-70, it is unlikely that Canada lynx would occur in high densities.

Invertebrates

- Uncompahgre Fritillary Butterfly (*Boloria acrocnema*) – Federal Endangered. All known populations are associated with large patches of snow willow above 12,400 feet, which provide food and cover (USFWS 2010b). The species has been found only on northeast-facing slopes, which are the coolest and wettest microhabitats available. This species is known to occur in Summit County (USFWS 2010b).

  Suitable habitat for this species is not present within or adjacent to the study area. It is unlikely that this species occurs within the study area.

Fish

Five species of federally listed fish species may occur in downstream waters, which could be affected by depletions of Summit County waters.

- Greenback cutthroat trout (*Oncorhynchus clarki stomias*) – Federal Threatened. The study area does not contain suitable habitat for this species and is not located within its historic range (NDIS 2010). Current greenback cutthroat populations are located in watersheds east of the Continental Divide or above the waters influenced by the Blue River, and therefore would not be impacted by depletions of Summit County waters or construction activities.

- The federally endangered bonytail chub (*Gila elegans*), Colorado pikeminnow (*Ptychocheilus lucius*), humpback chub (*Gila cypha*), and razorback sucker (*Xyrauchen texanus*) occur in habitats

downstream from the study area and may be impacted by Summit County water depletions on the Blue River. Section 7 consultations with the USFWS are required for all federal actions resulting in water depletions in the Colorado River watershed or impacts to water quality resulting from construction activities (USFWS 1999).

Table 4.0. Special Status Species and their Potential to Occur within the Project Area

Common Name	Scientific Name	Status*	Habitat	Potential to Occur in Project Area
Birds				
Mexican Spotted Owl	*Strix occidentalis lucida*	FT, ST	Mature montane forest	No habitat present
Yellow-billed Cuckoo	*Coccyzus americanus occidentalis*	FC, SC	Open woodlands near streams and lakes	Habitat present, no documented occurrences
Greater Sage Grouse	*Centrocercus urophasianus*	FC, SC	Sagebrush shrublands	Habitat present adjacent to project area, no documented occurrences
Mammals				
Canada Lynx	*Lynx canadensis*	FT, SE	Coniferous forest	Habitat present adjacent to project area, no documented occurrences
Invertebrates				
Uncompahgre Fritillary Butterfly	*Boloria acrocnema*	FE	Snow willow above 12,000 feet	No habitat present
Fish				
Greenback Cutthroat Trout	*Oncorhynchus clarki stomias*	FT	Arkansas and Platte Rivers, Dry Creek, Bard Creek, Clear Creek	No habitat present, occurs downstream of project area
Bonytail Chub	*Gila elegans*	FE	Lower Colorado River watershed	No habitat present, occurs downstream of project area
Colorado Pikeminnow	*Ptychocheilus lucius*	FE	Green River, Lower Colorado River watershed	No habitat present, occurs downstream of project area
Humpback Chub	*Gila cypha*	FE	Lower Colorado River watershed	No habitat present, occurs downstream of project area
Razorback Sucker	*Xyrauchen texanus*	FE	Lower Colorado River watershed	No habitat present, occurs downstream of project area

(* FE = Federally Endangered, FT = Federally Threatened, SE = State Endangered, ST = State Threatened, SC = State Species of Concern)

The State of Colorado also designates Species of Concern under the management of CDOW. Species of Concern include species that have been removed from state listing within the last five years, species proposed for federal listing under ESA, and those that have experienced a downward population trend statewide and warrant evaluation.

Birds

- Bald Eagle (*Haliaeetus leucocephalus*) – State Species of Concern. Bald Eagles may occur within the study area due to the fact that foraging and nesting habitat is present along Blue River. Due to the high level of disturbance from adjacent urban development along the Blue River, it is unlikely that Bald Eagles would frequently utilize this area as nesting habitat. A known Bald Eagle roost is located approximately 0.5 mile to the southwest of the I-70 interchange in NW NE Section 13 T5S R78W (NDIS 2010).

- American Peregrine Falcon (*Falco peregrines anatum*) – State Species of Concern. In Colorado, peregrine falcons can be found from the Front Range to the state's western border. Peregrine falcons inhabit open spaces usually associated with high cliffs and bluffs overlooking rivers and surface waters (NDIS 2010). The species is known to occur in Summit County.

  Suitable habitat for the species exists in the areas of higher elevation adjacent to the study area, above the town of Silverthorne. Due to the increased human presence and disturbance resulting from urban development, it is unlikely for Peregrine Falcon to occur within the study area.

- Greater Sandhill Crane (*Grus Canadensis*) – State Species of Concern. Migrating cranes occur on mudflats around reservoirs, in moist meadows, and in agricultural areas. Breeding birds are found in parks with grassy hummocks and watercourses, beaver ponds, and natural ponds lined with willows or aspens (NDIS 2010). The Greater Sandhill Crane is known to occur in Summit County.

  Potential habitat for the species occurs within the study area along the Blue River and Straight Creek. Cranes may potentially utilize these areas for foraging and stopover habitats during migration. Due to the increased human presence and disturbance resulting from urban development, it is unlikely for the Greater Sandhill Crane to occur within the study area in high densities or to utilize the area as breeding habitat.

Mammals

- Northern Pocket Gopher (*Thomomys talpoides*) – State Species of Concern. Northern pocket gophers occur across central and western Colorado in areas above 5,000 feet in elevation. They are found in many different habitat types, including agricultural and pasture lands, shrublands, and grasslands at lower elevations, and in alpine tundra at higher elevations (NDIS 2010). The northern pocket gopher is known to occur in Summit County.

  Due to the wide array of habitat types suitable for the northern pocket gopher, it is likely that the species occurs in the study area along drier upland areas along the Blue River and Straight Creek. It is also possible that the northern pocket gopher occurs in small patches of grassland, shrubland, and bare or disturbed habitats within the study area.

- Northern River Otter (*Lutra Canadensis*) – State Species of Concern. River otters inhabit riparian habitats that traverse a variety of other ecosystems, ranging from semidesert shrublands to montane and subalpine forests. The species requires permanent water of relatively high quality and with an abundant food base of fish or crustaceans (NDIS 2010). Northern river otters are known to occur in Summit County.

  Potential habitat occurs within the study area along the Blue River. Due to its small size, Straight Creek may provide habitat for northern river otters during periods of increased flows.

Based on habitat conditions in the study area, the project footprint, and environmental requirements, no threatened or endangered species, or critical habitat, would be adversely impacted.

10. Tribal Resources

CDOT has a Programmatic Agreement involving Tribal consultation and coordination.

There are no known Native American resources of concern in the study area or vicinity (i.e., no archaeological sites eligible for the National Register of Historic Places and no resources or issues that Tribes identified during the I-70 corridor EIS process).

11. Archaeological Resources

There are no known archaeological resources within the Study Area (See Section 12 Historic Properties). However, the potential exists to encounter previously undiscovered archaeological resources during excavation. If a project requires any type of excavation (six inches or greater in ground that is not fill), an Archaeological Survey and coordination with the SHPO in accordance with Section 106 of the National Historic Preservation Act must be conducted. This survey has not been conducted as part of the PEL Study, but would be performed in association with the anticipated NEPA process. Based on existing disturbance in all of the construction areas, the likelihood of finding an archaeological site of significance is low.

12. Historic Properties

On September 29, 2010, the OAHP responded to a request for archaeological and historical records in the Colorado Inventory of Cultural Resources database for the I-70 interchange project area. The OAHP report (Appendix B) identifies 10 sites of significance and 14 previously conducted surveys. None of these sites involved archaeological resources. The historic sites did not have the potential for inclusion in the National Historic Register. No effects on historic properties are anticipated.

13. Paleontological Resources

The 6.6 mile corridor along I-70 between Frisco and Silverthorne/Dillon contains sensitive paleontological resources. Excavation associated with the auxiliary lane and bridge foundations for the Westbound Two Lane On Ramp present the potential to encounter paleontological resources. The potential for adverse effects on these resources is low.

14. Land Use

The improvements do not require land use changes, would not generate impacts on community cohesion, and do not require displacement of existing land uses or otherwise disrupt existing or planned land use patterns. The improvements would facilitate planned community growth, including future redevelopment. No easements on federal, state or local land are required. Right of way requirements and related issues are discussed separately under the heading “Residential/Business/Right-of-Way (ROW) Relocation.”

15. Residential/Business/Right-of-Way (ROW) Relocation

The improvements would require acquisition of 0.88 acres of private property for new CDOT ROW. The ROW acquisition would not require business displacement, but would hinder six access points and eliminate two access points.

The Diverging Diamond would require a total of 0.45 acres of ROW is required in three locations along US 6 and SH 9 (0.10 + 0.11 + 0.24 acres). This ROW is needed because the median is widened to provide double left turns and storage for left turns onto I-70. These impacts are at the current roadway grades, and mainly impact landscaping. At the old Remax building located adjacent to SH 9 and the I-70 westbound on ramp, minor changes may need to be made to parking and access. At the Conoco gas station located along SH 9, minor changes may be needed where the outer gas bay may be affected.

The SH 9/Wildernest intersection would require ROW acquisition at three of the four quadrants of the intersection involving a total of 0.43 acres. At Wendy's located in the southeast quadrant of the SH 9/Wildernest intersection, 0.16 acres would be required. This requirement would displace landscaped areas and about seven parking spaces on the north side of Wendy's. At the 7-Eleven located in the northwest quadrant of the SH 9/Wildernest intersection, 0.14 acres of ROW would be needed. This would require removal of one set of gas pumps and would eliminate one access point to this property. At the building providing space for five businesses located in the southwest quadrant of the SH 9/Wildernest intersection, 0.13 acres of new ROW would be required. This requirement would change site circulation patterns and would eliminate as many as nine parking spaces. The driveway access along Wildernest would need to be removed or relocated closer to the building (further west). The loss of this parking would adversely impact the existing businesses and would impact their viability. Factory outlet parking behind the building may provide an option to compensate for the loss of parking.

The Westbound on Ramp does not require right of way. The toe of the slope on the north side of I-70 would remain inside the existing ROW, but a short fill retaining wall is needed between I-70 and Wildernest Road west of the Blue River.

The eastbound auxiliary lane could be constructed within existing ROW.

The two access points to be eliminated would be as follows:

- The Diverging Diamond interchange requires closure of the SH 9 access point serving the ReMax property that is closest to the westbound on ramp.
- The SH 9/Wildernest improvement requires closure of the Wildernest Road access point to the 7-Eleven property that is closest to SH 9.

These access closures are not expected to require displacement of the existing businesses, but they would have impact on their business viability of these properties.

16. Social Resources

Social and economic values reflect the economic setting of the counties and communities in the I-70 corridor. The social setting relates to housing, income, employment, and commuting patterns. CDOT evaluates these values to determine the effects of a transportation action on a community and its quality of life. I-70 and the Silverthorne/Dillon Interchange play important roles in the economic activity and quality of life in Summit County. These resources are the primary access to communities and the abundant recreation resources in the I-70 corridor, both for local residents and for the Denver metropolitan area and out-of-state visitors.

Tourism, the primary industry in the I-70 corridor, generates 41 percent of jobs and 38 percent of income. These numbers are even higher in the resort counties of Eagle and Summit. Visitor access to I-70 corridor counties strongly influences the economy.

No impacts on social resources are anticipated from the improvements.

17. Environmental Justice

Environmental justice promotes the fair treatment and meaningful involvement of all people in the decision-making process for transportation projects. Environmental justice seeks to avoid disproportionately high and adverse impacts on low-income and minority populations. Environmental justice requirements stem from the Civil Rights Act of 1964; Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations issued in 1994; and U.S. Department of Transportation and FHWA procedures for compliance with EO 12898.

In summary:

> *"Each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations."*

The Tier 1 EIS addressed environmental justice issues, but required additional analysis during Tier 2 NEPA processes.

“In summary, if Tier 2 processes conclude that disproportionately high or adverse impacts will occur on low-income or minority populations, CDOT will work to avoid, minimize, or mitigate such impacts.”

More specifically, “Tier 2 processes that occur in populated areas will consider pockets of minority and/or low income populations that may require additional attention and/or mitigation for issues such as:

- Localized air quality impacts
- Noise impacts
- Shading from elevated structures or walls
- Residential and business relocations
- Changes in access or travel patterns
- Loss of community cohesion”

Additional issues of concern at the I-70 Silverthorne/Dillon interchange may include:

- Displacement of low-income and minority residents
- Separation of neighborhoods
- Affordable housing
- Access to public transportation
- Commute times for I-70 corridor residents
- Adverse effects for residents living close to new transportation facilities and construction

Based on the Tier 1 EIS, technical issues of concern for potential disproportionate impacts may include:

- Any increase in localized air pollutants
- Increases in Mobile Source Air Toxics (MSAT) concentrations
- Construction emissions that affect air quality.
- Increased runoff from impervious surface/roadbed expansion, stream channelization, further impedance or blockage of cross-slope streams
- Geologic hazards are distributed throughout the Corridor. Impacts to minority and/or low-income populations are not likely to exceed those of the general population. Mitigation included in the project would improve safety and reduce the risks posed by geologic hazards, benefiting local populations, including minority and low-income residents.
- Construction would disturb hazardous or potentially hazardous waste sites.
- Induce growth that increases development pressures and corresponding land values, placing increased pressure on communities to provide housing for lower income residents.
- Encroach on adjacent properties
- Economic hardship caused by construction disruption.
- High noise levels at sensitive receptor sites
- Visual impacts result from the additional pavement
- Impact recreation resources adjacent to I-70.
- Impacts on historic properties and sensitive geologic units containing paleontological resources

The EIS notes that many of these resources and others are distributed throughout the Corridor and are not uniquely important to minority and/or low-income populations.

Existing minority and low-income populations are scattered throughout the I-70 corridor communities, however, no concentrations of minority or low-income populations were identified through U.S. Census data or local research within the interchange study area. However, the presence of some low income and minority persons were identified in the vicinity. These areas are associated with long-term rental housing units. One example involves the set of apartment building located east of the interchange and south of I-70. Tier 2 processes are expected to evaluate impacts to the neighborhoods and other subgroups of communities along the I-70 corridor to determine effects of specific designs on minority or low-income populations.

The improvements do not displace any residents, separate any neighborhood, impact housing, reduce access to public transportation, negatively impact commute times or create adverse effect on residents living in close proximity to existing or proposed transportation facilities. There are no disproportionate effects associated with the improvements. The effects of the improvements are minor and equitable in relation to minority or low-income populations.

The NEPA documentation should reevaluate the 2010 Census data to verify demographic conditions and the potential for disproportionate effects within and adjacent to the Study Area. The evaluation should determine if the project will cause disproportionately high and adverse effects on any minority or low-income populations in accordance with the provisions of Executive Order 12898 and FHWA Order 6640.23.

If the evaluation makes the finding that the project will not cause these effects, no further environmental justice analysis would be required. If these effects would occur, further analysis, project evaluation and mitigation would be required.

18. Bicycle and Pedestrian Facilities

The following discussion addresses bicycle and pedestrian travel along SH 9 and US 6. The discussion under the heading "Section 4(f) addresses potential impacts on the Blue River Trail.

The improvements change bicycle and pedestrian travel along SH 9 and US 6 with the primary changes resulting from the Diverging Diamond design for the interchange. The reversal of motor vehicle travel directions may appear confusing to pedestrians and cyclists, but adequate opportunities for safe travel are provided. Southbound pedestrians and cyclists would stay on the west side of interchange while northbound pedestrians would stay on the east side using a new dedicated multiuse path. Signalized crossings at the main intersections would be provided much like they are now. Pedestrians and cyclists would continue to have the option of using the Blue River Trail.

19. Transportation Resources

SH 9, US 6 and I-70 are key transportation resources for Summit County, Silverthorne and Dillon. The improvements are regionally significant and would substantially improve the capacity and operations of I-70 and the interchange without substantial construction on a new alignment, significantly changing traffic patterns or adding through lanes. The auxiliary lane would provide a substantial safety improvement by removing weaving between the Frisco and Silverthorne/Dillon Interchange. The Diverging Diamond would add capacity and improve safety by rerouting traffic to reduce weaving and provide safer turning movements. The Westbound On Ramp improvements (interim and ultimate) would reduce merging difficulties. The SH 9/Wildernest intersection improvements (interim and ultimate) would address operational inefficiencies by improving the alignment of through movements and providing additional turn lane capacity.

Construction period disruption would occur with the Diverging Diamond interchange improvement alternatives. Detours and delays can be minimized with construction phasing strategies and seasonal and timing measures. No temporary roads are needed. Detours and ramp closure would be temporary and would satisfy the following conditions:

1. Provisions are made for access by local traffic and appropriate signage would be posted
2. Through-traffic dependent business would not be adversely affected
3. The detour or ramp closure, to the extent possible, would occur at a time that would interfere with any local special event or festival
4. The temporary road, detour or ramp closure would not substantially change the environmental consequences of the action
5. There is no substantial controversy associated with the temporary road, detour, or ramp closure

Standard measures to address construction period traffic flow requirements and business access needs would be implemented to address the transportation effects of project construction.

Long term traffic impacts are beneficial and include adequately handling 2035 traffic conditions. *Appendix F of the Detailed-Level Screening Analysis* clarifies the traffic impact assessment methodology and the results for the proposed improvements.

Property access impacts are described in Section 15. No changes to access control on I-70 are needed.

20. Section 4(f)

Section 4(f) of the Department of Transportation Act of 1966, codified in Federal law at 49 U.S.C. '303, declares that it is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites (USDOT 2010).

Further, Section 4(f) specifies that the Secretary of Transportation may approve a transportation program or project . . . requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance, or land of an historic site of national, State, or local significance (as determined by the Federal, State, or local officials having jurisdiction over the park, area, refuge, or site) only if

(1) there is no prudent and feasible alternative to using that land; and

(2) the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.

Section 4(f) further requires consultation with the Department of the Interior and, as appropriate, the involved offices of the Departments of Agriculture and Housing and Urban Development in developing transportation projects and programs which use lands protected by section 4(f).

Lands that maybe considered as potential 4(f) lands are those that exhibit any of the following criteria:

- Historic properties in the State Register of Historic Places (State Register)
- Historic properties with unknown eligibility
- All archaeological properties
- Historic properties already included in the National Register of Historic Places (NRHP)
- Nationally significant interstate highway features
- Officially NRHP eligible properties
- Existing parks with assumed boundaries taken from Geographic Information System mapping
- Future parks with assumed boundaries taken from local jurisdiction planning materials
- Existing and future trails
- Existing open space areas that are used as parks or recreation areas or wildlife refuges
- Wildlife and waterfowl refuge properties with assumed boundaries

Under these criteria, the lands that have a potential for a 4(f) designation within the project area are those along the Blue River, known as the Blue River Recreation Trail. This recreation area incorporates a paved trail intended for non-motorized uses and as access to fishing and wildlife viewing opportunities

along the Blue River. An additional 1.4 acres of the Town of Silverthorne designated open space is located at the junction of U.S. Highway 6 and Straight Creek.

Blue River Trail

The Westbound On Ramp would have impacts on the Blue River Trail. The construction of the bridge foundations adjacent to the trail and overhead construction would present the potential to temporarily block the trail, temporarily disrupt the aesthetic qualities of the trail during construction, and incrementally increase shading and decrease aesthetic qualities associated with the trail after bridge construction.

The proposed impacts would not be considered constructive use and, given the commitment to assure continuous access, the "de minimis" approach would be appropriate. The Section 4(f) de minimis documentation would be prepared as part of the NEPA process.

Town of Silverthorne Designated Open Space

The Town of Silverthorne zoning map designates an area along Straight Creek just east of US 6 as Open Space. This area is owned by the Town of Silverthorne and is effectively managed for open space, habitat protection and stormwater management purposes. This resource may qualify for protection under Section 4(f) (wildlife refuge). Much of this area is also considered a wetland by the US Army Corps of Engineers.

The Diverging Diamond interchange requires 0.024 acres of ROW from this Town of Silverthorne open space (approximately 3 acres). This unavoidable impact involves less than one percent of the open space area and would not have a substantive impact on its roles or functions. If this area is protected under Section 4(f), this impact could also be addressed with de minimis approach and associated documentation.

The de minimis approach should be applied to the project as whole. However, added together, these Section 4(f) effects would still be consistent within the intent and requirements of the de minimis approach.

21. Section 6(f)

Section 6(f) resources are lands that were planned, acquired, or developed with Land and Water Conservation Act funding that offer recreational opportunities. Section 6(f) provides protection to these lands from unmitigated development impacts. CDOT must mitigate impacts to Section 6(f) resources with replacement lands of equal value, location and usefulness as the impacted lands.

According to the I-70 Mountain Corridor PEIS, two resources in the project vicinity have taken advantage of Section 6(f) funding:

1. Rainbow Park (Expanded Rainbow Community Park)
2. Blue River Trail

No effects on Rainbow Park would be expected from the improvements. The Blue River Trail could be subject to temporary impacts from possible closures during construction.

22. Farmlands

There are no prime, unique or other farmlands in the project study area.

23. Noise

The I-70 Mountain Corridor EIS process did not include a comprehensive noise analysis for individual locations along the corridor and deferred the noise analysis for the portion of I-70 containing the I-70 Silverthorne/Dillon Interchange to the Tier 2 NEPA process. The State Highway 9 and U.S. Highway 6 Improvement Project at the Interstate-70 Silverthorne/Dillon Interchange project is not considered a Tier 2 action under the PEIS because the improvements are not a primary component of the preferred alternative, are independent of future I-70 corridor improvements, and would not preclude future I-70 corridor improvements. The fact that the proposed action is not a Tier 2 action does not eliminate the need for a noise analysis. CDOT guidance requires a noise analysis to be performed for the proposed improvements as part of the ongoing Planning and Environmental Linkages (PEL) Study. The noise analysis prepared for the PEL Study is presented as an attachment to this document.

The Noise Analysis performed for the PEL Study included mapping sensitive noise receptors and noise contours to clarify noise effects. The Noise Analysis assesses the noise impacts associated with the implementation of the proposed action in accordance with Federal Highway Administration (FHWA) and CDOT requirements. Noise modeling was conducted with FHWA Traffic Noise Model Version 2.5 (TNM). TNM was used to predict existing, 2035 No Action Alternative, and 2035 Action Alternative noise levels at sensitive receivers located within 500 feet of the project limits. FHWA/CDOT Noise Abatement Criteria (NAC) were used to assess whether noise levels at modeled receivers were within acceptable limits. Existing conditions, future (2035) conditions with the proposed improvements (Build), and future (2035) conditions without the improvements (No Build) are compared.

The primary findings of the PEL Noise Analysis are as follows:

- No sensitive receptors would be subject to more than a 2.5 dBA increase in noise as an impact of the proposed improvements.
- Six (6) sensitive receptors are already exposed to noise levels that exceed the NAC. Five (5) additional sensitive receptors would be subject to noise levels that exceed the NAC under 2035 No Build and Build conditions. Noise abatement in these areas, particularly in association with Receptor 120 (Blue River, the Blue River Trail, Straight Creek and the Town of Silverthorne open space associated with Straight Creek), should be analyzed.
- The difference between the noise levels under Build and No Build conditions is minimal with a maximum difference of only 0.9 dBA.

A complete noise analysis will be performed as part of future NEPA documentation to verify or revise these findings and to determine what, if any, mitigation is needed due to I-70 traffic from milepost 202.7 (Frisco Interchange) to milepost 207.5 (Upper end of residential area along Straight Creek). The noise study would comply with CDOT's recently adopted noise guidance.

24. Visual Resources/Aesthetics

The improvements would involve temporary aesthetic impacts associated with construction disruption and the removal of existing landscape features. These effects would be offset by long-term landscape improvements that would comply with CSS requirements and local policies. Long term adverse visual and aesthetic impacts would not be expected.

25. Energy

The improvements require the use of energy for construction and operation of the proposed facilities and would increase energy efficiency associated with motor vehicle travels by increasing capacity and improving traffic operations. These energy effects would not be considered significant adverse effects**.**

26. Hazardous Materials

A review of federal and state databases containing information regarding hazardous material sources within the I-70 Interchange Project Area and a 0.25 mile buffer was conducted by Environmental Data Resources (EDR) on October 12, 2010. A summary memorandum and a copy of the full EDR can be found in the appendix of the Launch Phase Technical Report. The EDR report compiles data from 47 federal, 19 state, and 5 Native American Tribal databases. The EDR report satisfies the American Society for Testing and Materials (ASTM), Government Environmental Database Search Standard (ASTM E1527-05, section 7.2.1.1). Numerous sites were identified in the study area. A Phase I Initial Site Assessment (Form 881), a MESA, or a Phase I Environmental Site Assessment should be prepared prior to right of way acquisition.

These studies will determine the need for Phase II analysis and the need for project specific mitigation measures. Standard practices associated with worker safety during earthwork and dewatering will be required.

27. Cumulative Impacts

The Council on Environmental Quality's (CEQ) regulations implementing the procedural provisions of the National Environmental Policy Act (NEPA) of 1969, as amended define cumulative effects as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non- Federal) or person undertakes such other actions. Cumulative effects can result from individually minor, but collectively significant actions taking place over a period of time.

For the proposed improvements, the effects described in the previous discussions would be considered individually and together in relation to cumulative effects. The project's effects would be added to similar effects from past, present and reasonably foreseeable projects within defined spatial and temporary boundaries.

Cumulative effects, generally encompassing the potential effects of the proposed improvements, were recently addressed in the I-70 Mountain Corridor Programmatic EIS. The scope of the First Tier cumulative impact assessment *"does not provide a comprehensive analysis of the Corridor ecosystems or socioeconomic environments. Rather, the focus of this First Tier assessment was to evaluate the interrelationships between the transportation network and community values and environmental resources within the Corridor and surrounding counties, National Forests, and watersheds; and to identify possible cumulative impacts that may result from reasonably foreseeable future actions, from project alternatives, and from both of those combined."*

Regardless of this limitation, the Tier 1 analysis is far broader and encompassing than what is necessary for the cumulative effects analysis of the anticipated interchange improvements. Key aspects of the Tier 1 cumulative effects analysis are summarized as follows:

The spatial boundaries of the Tier 1 cumulative effects analysis included the Eagle River, Blue River, and Clear Creek watersheds and nine counties associated with the I-70 corridor. The timeframe for the cumulative impact analyses extended from before I-70 was constructed to 2050.

The primary cumulative effects of concern from the I-70 Mountain Corridor EIS included:

Air Quality

- Increased emissions due to increased congestion and/or vehicles in the Corridor
- Increase in dust and particulates from winter maintenance and sanding in the Corridor
- Increased emissions due to possible induced growth
- Impacts of global climate change

Biological Resources

- Fragmentation of habitat resulting from induced growth
- Hindrance of wildlife movement due to barriers
- Habitat loss due to planned development
- Disturbance of habitat and wildlife from collisions and winter maintenance
- Negative effects on "high-value" fisheries as defined by the Colorado Division of Wildlife

Wetlands

- Direct and/or indirect loss of wetlands due to the construction of additional travel lanes, winter maintenance, and induced growth.
- Decrease in the functional value of wetlands in the Corridor due to the construction of additional travel lanes, winter maintenance, and induced growth. Wetland functions in the Corridor include, but are not limited to, groundwater recharge, wildlife habitat, flood control, bank stabilization, and water quality protection.

Water Resources

- Decrease in water quality due to winter roadway maintenance, stormwater runoff from development and highways, and historic mining activities
- Demands on water supply from growth
- Physical impacts on streams (for example, changes to stream form and structure, encroachment, channelization)
- Impacts on stream hydrology and habitat

Social and Economic Values and Land Use

- Effects on the regional economy from induced growth or development
- Growth-related impacts on local communities
- Impact of decreased water quantity and quality on future growth

Recreation

- Increased access to recreational areas and associated effects to natural resources
- Increased pressure for visitations to National Forests

Visual Resources

- Changes in views and the "rural character" of the landscape for travelers, recreational users, and residents

Historic Communities

- Increased access to and pressure on historic areas and communities (National Historic Landmark District, Historic Districts, and potential historic areas)

The proposed improvements incrementally contribute to each of these cumulative effects. However, the incremental contributions from the proposed improvements would be considered minor and would be addressed by ongoing programs and mitigation measures cited in the Tier 1 EIS, project specific measures presented in the PEL Study and refinements that may result from the NEPA process and project related permits.

28. Public Controversy

Based on public input to date, there is little to no public controversy regarding the nature of the proposed improvements or their effects. Construction disruption, right of way requirements and changes to business access generate concern from business owners.

29. Anticipated Permits

The following permits, and possibly others, will be needed when the project moves forward after project funding is identified:

- Colorado Discharge Permit System (CDPS) Construction Storm-Water Permit
- Clean Water Act Section 404 Nationwide Permit

30. Conclusion: Are Significant Impacts Expected?

No unusual action circumstances, as described in 23 CFR 771.117(b), are anticipated:

Any action which normally would be classified as a CE, but could involve unusual circumstances will require the Administration (FHWA), in cooperation with the applicant, to conduct appropriate environmental studies to determine if the CE classification is proper. Such unusual circumstances include:

1. *Significant environmental impacts;*
2. *Substantial controversy on environmental grounds;*
3. *Significant impact on properties protected by Section 4(f) of the DOT Act or Section 106 of the National Historic Preservation Act; or*
4. *Inconsistencies with any Federal, State, or local law, requirement or administrative determination relating to the environmental aspects of the action.*

No significant impacts are expected.

Based on public input at public meetings, there is no controversy over the recommended improvements involving environmental or other issues and there is virtually no public opposition to the project

No significant impacts on Section 4(f) or Section 106 properties are anticipated.

There are no inconsistencies with any Federal, State, or local law, requirement or administrative determination relating to the environmental aspects of the action.

III. NEPA PROCESS RECOMMENDATION

Overview

Based on the characteristics of the improvements and their potential environmental consequences and the procedural requirements, the proposed action could be handled under NEPA with a Categorical Exclusion (CatEx). The following discussion clarifies and supports this recommendation.

The NEPA CatEx process and corresponding CDOT documentation are anticipated because the early action project meets CDOT's CatEx requirements. Those requirements are identified in 23 CFR § 771.117 Part A and in the CDOT NEPA Manual. The specific CatEx steps are described in Appendix J.

In summary, CatExs are appropriate for actions that:

- Do not induce significant impacts to planned growth or land use for the area
- Do not require the relocation of significant numbers of people
- Do not have a significant impact on any natural, cultural, recreational, historic or other resource
- Do not have significant impacts on travel patterns
- Do not involve substantial controversy on environmental grounds

CatEx projects require no major federal action and have impacts that are generally well-understood.

Details about the CatEx process are presented in Chapter 5 of the CDOT NEPA Manual. Based on the characteristics of the proposed action, a Non-Programmatic CatEx process would be followed.

Non Programmatic Categorical Exclusion: Applicability and Requirements

A Non-Programmatic CatEx is for actions that meet the criteria for a CatEx in the CEQ regulations (CEQ, 40 CFR § 1508.4) if they are appropriately analyzed, documented, and approved by FHWA. The documentation must demonstrate that the specific conditions or criteria for the CatEx are satisfied and that significant environmental effects will not result. The proposed improvements have characteristics consistent with non-programmatic actions D1 and/or D2:

> D1. Modernization of a highway by reconstruction, adding shoulders, or adding auxiliary lanes (e.g., parking, weaving, turning, climbing)
> D2. Highway safety or traffic operations improvement projects

However, the improvements also fall into the newly defined "P" list of non programmatic CatExs as follows:

> P1. Adding or lengthening turning lanes (including continuous turning lanes), intersection improvements, channelization of traffic, dualizing lanes at intersections and interchanges, or adding or lengthening bus queue-jumps.
> P2. Flattening slopes; improving vertical or horizontal alignments.

The “P” list was created by the “Programmatic Agreement for the Review and Approval of Certain NEPA Categorically Excluded Transportation Projects Between the Federal Highway Administration, Colorado Division and the Colorado Department of Transportation” dated August 4, 2011.

P list projects will qualify as Programmatic CatEx’s only if each of the following criteria are met:

1) The action does not have any significant environmental impacts as described in 23 CFR 771.117(a).

2) The action does not involve unusual circumstances as described in 23 CFR 771.117(b).

3) The action does not involve the following:

a) The addition of through lanes;
b) Adverse impacts (other than construction impacts) to local traffic patterns or property access;
c) Adverse impacts to community cohesion, planned community growth, or land use patterns;
d) The acquisition of more than minor amounts of permanent right-of-way; as defined by not more than 5 acres per linear mile or more than 20% of the project land area for transportation related facilities (e.g. rest areas, intersections, maintenance yards) (note, this requirement does not apply to “perfection of title for ROW” projects under scopes of action C5 or P20);
e) Any commercial or residential displacement;
f) A determination of adverse effect by the State Historic Preservation Officer;
g) A disproportionately high and adverse impact on minority or low-income populations;
h) A noise impact as defined by meeting or exceeding the Noise Abatement Criteria, or an increase of 10 or more decibels (A-weighted);
i) An Individual Evaluation for Section 4(f) of the Department of Transportation Act of 1966;
j) The use of properties protected by Section 6(f) of the Land and Water Conservation Act;
k) A U.S. Army Corps of Engineers Individual Section 404 permit;
l) Discharge to a protected water, or adversely affecting a waterway that is impaired by criteria related to roadways or road construction;
m) An adverse effect on a federally-listed threatened or endangered species or critical habitat;
n) An adverse impact on a regulatory floodway or the base floodplain (100-year flood) elevations of a water course or water body;
o) Work within or adjacent to a known Superfund site listed on EPA’s website;
p) Changes in access control on the Interstate;
q) A regionally significant project for air quality purposes as defined in 40 CFR 93.101;
r) Tribal lands or impacts to tribal traditional cultural properties;
s) The use of a temporary road, detour or ramp closure unless the use of such facilities satisfy the following conditions:
    1) Provisions are made for access by local traffic and so posted;
    2) Through-traffic dependent business will not be adversely affected;
    3) The detour or ramp closure, to the extent possible, will not interfere with any local special event or festival;
    4) The temporary road, detour or ramp closure does not substantially change the environmental consequences of the action;
    5) There is no substantial controversy associated with the temporary road, detour, or ramp closure;
t) Substantial public opposition.

Failure of any project to meet the conditions listed above will require FHWA approval of a Form 128 before the project may be designated as a categorically excluded project. If any of the above criteria are not met FHWA approval of Form 128 is required; provide the relevant criteria number in the comment box of Form 128.

Based on this P list criteria, Form 128 may not be required. However, because of the D list match, it is anticipated that completing Form 128 should be anticipated.

Prior to initiating a Non-Programmatic CatEx project, the *FHWA Non-Programmatic CatEx Environmental Review Summary* form must be reviewed. If any of the following questions, which are included on page one of the form, can be answered in the positive, further investigation will be required in order to determine if a Non-Programmatic CatEx is appropriate for the project:

- If an Individual Clean Water Act Section 404 permit is required, does the USACE object to a CatEx class of environmental document?

- If the project adversely affects endangered or threatened species and/or their critical habitat, does the US Department of Interior Fish and Wildlife Service (USFWS) object to the CatEx class of environmental document?

- If a DOT letter of consent is required for easement, does the federal land management agency have unresolved issues with the environmental analysis?

- Is there any substantial controversy on environmental grounds?

- In addition, if any of the following questions, which are also included on page one of the *FHWA Non-Programmatic CatEx Environmental Review Summary* form, can be answered in the positive and cannot be other resolved by amending the planned action, the project should not be
- approved as a Non-Programmatic CatEx:

- Are significant environmental impacts expected?

- Are there any inconsistencies with the federal, state, or local law, requirement or administration determination relating to the environmental aspects of the action expected?

- Does this project add additional capacity, as defined by DRCOG as regionally significant?

- Is there substantial construction on a new alignment?

- Will the project significantly change traffic patterns?

- Are there significant impacts expected to properties protected by Section 4(f) of the US DOT Act or Section 106 of the National Historic Preservation Act?

- Is the ROW required significant because of its: size, location, use, or relationship to remaining property and abutting properties?

- Is there a substantial noise increase (greater than 10 A-weighted decibels [dBA]) or noise levels greater than allowable by CDOT guidelines and mitigation is not reasonable and feasible?

The answer to each one of these questions is "No" based on the analysis presented in this document.

Non Programmatic Categorical Exclusion: Tasks to Complete the Process

CDOT staff, typically the CDOT Regional Planning and Environmental Manager (RPEM), decides the appropriate class of NEPA documentation needed for a project in consultation with FHWA. However, FHWA makes the final determination on class of action.

If a CatEx is prepared, CDOT Form 128 will be completed and supporting documentation will be prepared, as needed. CDOT Form 128 is available here:

http://www.coloradodot.info/library/forms/cdot0128.pdf

The CatEx would be prepared once funding for one or more of the improvements is secured. If the process moves forward, CDOT and AECOM will discuss and resolve final details associated with the Final CatEx process. The responsibilities for individual tasks will be determined by CDOT.

An overall summary of the Non Programmatic CatEx steps is provided as follows:

Internal Scoping
Project Planning and Programming
Environmental Clearances/Documentation
Field Inspection Review (FIR)
Form 128
FHWA Non-Programmatic Categorical Exclusion Environmental Review Summary
Final Office Review (FOR)
Final Check
Environmental Project Certification
Construction

STATE HIGHWAY 9 AND U.S. HIGHWAY 6 IMPROVEMENTS AT THE INTERSTATE 70 SILVERTHORNE/DILLON INTERCHANGE

NOISE ANALYSIS

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July 9, 2012

EXECUTIVE SUMMARY

The I-70 Mountain Corridor EIS process did not include a comprehensive noise analysis for individual locations along the corridor and deferred the noise analysis for the portion of I-70 containing the I-70 Silverthorne/Dillon Interchange to the Tier 2 NEPA process. The State Highway 9 and U.S. Highway 6 Improvement Project at the Interstate-70 Silverthorne/Dillon Interchange project is not considered a Tier 2 action under the PEIS because the improvements are not a primary component of the preferred alternative, are independent of future I-70 corridor improvements, and would not preclude future I-70 corridor improvements. The fact that the proposed action is not a Tier 2 action does not eliminate the need for a noise analysis. CDOT guidance requires a noise analysis to be performed for the proposed improvements as part of the ongoing Planning and Environmental Linkages (PEL) Study.

The noise analysis for the project included mapping sensitive noise receptors and noise contours to clarify noise effects. A complete noise analysis will be performed as part of future NEPA documentation to verify or revise these findings and to determine what, if any, mitigation is needed due to I-70 traffic from milepost 202.7 (Frisco Interchange) to milepost 207.5 (Upper end of residential area along Straight Creek). The noise study would comply with CDOT's recently adopted noise guidance.

The proposed improvements addressed in this noise analysis include a diverging diamond design for the interchange, a two lane westbound on-ramp design featuring a grade fix near the ramp terminus and a continuous eastbound auxiliary lane along I-70 between the Frisco interchange and the Silverthorne/Dillon Interchange. Existing conditions, future (2035) conditions with the proposed improvements (Build), and future (2035) conditions without the improvements (No Build) are compared.

The primary findings of this noise analysis are as follows:

- No sensitive receptors would be subject to more than a 2.5 dBA increase in noise as an impact of the proposed improvements.
- Six (6) sensitive receptors are already exposed to noise levels that exceed the NAC. Six (6) additional sensitive receptors would be subject to noise levels that exceed the NAC under 2035 No Build and Build conditions. Noise abatement in these areas, particularly in association with Receptor 120 (Blue River, the Blue River Trail, Straight Creek and the Town of Silverthorne open space associated with Straight Creek), should be analyzed.
- The difference between the noise levels under Build and No Build conditions is minimal with a maximum difference of only 1.3 dBA.

INTRODUCTION

Colorado Department of Transportation (CDOT) is evaluating the potential effects of possible improvements at the State Highway 9 (SH 9) and U.S. Highway 6 (US 6) interchange with Interstate 70 in Dillon and Silverthorne, Colorado as part of an ongoing Planning and Environmental Linkages (PEL) Study.

The proposed improvements addressed in this noise analysis include a diverging diamond design for the interchange, a two lane westbound on-ramp design featuring a grade fix near the ramp terminus and a continuous eastbound auxiliary lane along I-70 between the Frisco interchange and the Silverthorne/Dillon Interchange.

This noise memorandum (memo) assesses the noise impacts associated with the implementation of these projects in accordance with Federal Highway Administration (FHWA) and CDOT requirements. Noise modeling was conducted with FHWA Traffic Noise Model Version 2.5 (TNM). TNM was used to predict existing, 2035 No Action Alternative, and 2035 Action Alternative noise levels at sensitive receivers located within 500 feet of the project limits. FHWA/CDOT Noise Abatement Criteria (NAC) were used to assess whether noise levels at modeled receivers were within acceptable limits. This memo has five sections: environmental noise basics, regulatory background, existing conditions, impact assessment, and abatement recommendations.

ENVIRONMENTAL NOISE BASICS

Sound is a vibratory disturbance created by a moving or vibrating source that is capable of being detected by hearing organs. Noise is defined as sound that is loud, unpleasant, unexpected, or undesired, and may, therefore, be classified as a more specific group of sounds. The effects of noise on people can include general annoyance, interference with speech communication, sleep disturbance, and, in the extreme, hearing impairment (Caltrans 2009).

Decibels and Frequency

In its most basic form, a continuous sound can be described by its frequency or wavelength (pitch) and its amplitude (loudness). Frequency is expressed in cycles per second, or hertz. Frequencies are heard as the pitch or tone of sound. High-pitched sounds produce high frequencies; low-pitched sounds produce low frequencies. Sound-pressure levels are described in units called decibels (dB).

Decibels are measured on a logarithmic scale that quantifies sound intensity in a manner similar to the Richter scale used for earthquake magnitudes. Thus, a doubling of the energy of a noise source, such as doubling of traffic volume, would increase the noise level by 3 dB; a halving of the energy would result in a 3-dB decrease.

Perception of Noise at the Receptor and A-Weighting

The human ear is not equally sensitive to all frequencies within the sound spectrum. To accommodate this phenomenon, the A-scale was devised, which approximates the frequency response of the average young ear when listening to most ordinary sounds. Relative judgments of the loudness or annoyance of a sound correlate well with the A-scale sound levels of those sounds. Therefore, the "A-weighted" noise scale is used for measurements and standards involving the human perception of noise. Noise levels using A-weighted measurements are written dB(A) or dBA. Table 1 shows the relationship of various noise levels to commonly experienced noise events.

Table 1 Typical Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	--110--	Rock Band
Jet Fly-over at 300 meters (1,000 feet)	--100--	
Gas Lawn Mower at 1 meter (3 feet)	--90--	
Diesel Truck at 15 meters (50 feet), at 80 km/hr (50 mph)	--80--	Food Blender at 1 meter (3 feet) Garbage Disposal at 1 meter (3 feet)
Noisy Urban Area, Daytime Gas Lawn Mower at 30 meters (100 feet)	--70--	Vacuum Cleaner at 3 meters (10 feet)
Commercial Area Heavy Traffic at 90 meters (300 feet)	--60--	Normal Speech at 1 meter (3 feet)
Quiet Urban Daytime	--50--	Large Business Office, Dishwasher in Next Room
Quiet Urban Nighttime	--40--	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime	--30--	Library
Quiet Rural Nighttime	--20--	Bedroom at Night, Concert Hall (Background)
	--10--	Broadcast/Recording Studio
Lowest Threshold of Human Hearing	--0--	Lowest Threshold of Human Hearing

Source: Caltrans 2009

Human perception of noise has no simple correlation with acoustical energy. The perception of noise is not linear in terms of dBA or in terms of acoustical energy. Two noise sources do not "sound twice as loud" as one source. It is widely accepted that the average healthy ear can barely perceive changes of 3 dBA, increase or decrease; that a change of 5 dBA is readily perceptible; and that an increase (decrease) of 10 dBA sounds twice (half) as loud (Caltrans 2009).

Noise Propagation

When sound propagates over a distance, it changes in level and frequency content. The manner in which noise reduces with distance depends on the following factors.

Geometric Spreading

Sound from a localized source (i.e., a point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dBA for each doubling of distance from a point source. Highways consist of several localized noise sources on a defined path and hence can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as

cylindrical spreading. Sound levels attenuate at a rate of 3 dBA for each doubling of distance from a line source.

Ground Absorption

The propagation path of noise from a highway to a receiver is usually very close to the ground. Noise attenuation from ground absorption and reflective-wave canceling adds to the attenuation associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually sufficiently accurate for distances of less than 200 feet. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receiver, such as soft dirt, grass, or scattered bushes and trees), an excess ground-attenuation value of 1.5 dBA per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dBA per doubling of distance.

Atmospheric Effects

Receivers located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can be increased at large distances (e.g., more than 500 feet) from the highway due to atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also have significant effects.

Shielding by Natural or Human-Made Features

A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Natural terrain features (e.g., hills and dense woods) and human-made features (e.g., buildings and walls) can substantially reduce noise levels. Walls are often constructed between a source and a receiver specifically to reduce noise. A barrier that breaks the line of sight between a source and a receiver will typically result in at least 5 dB of noise reduction. Taller barriers provide increased noise reduction. Vegetation between the highway and receiver is rarely effective in reducing noise because it does not create a solid barrier.

Noise Descriptors

Noise in our daily environment fluctuates over time. Some fluctuations are minor, but some are substantial. Some noise levels occur in regular patterns, but others are random. Some noise levels fluctuate rapidly, but others slowly. Some noise levels vary widely, but others are relatively constant. Therefore, noise descriptors have been developed to describe time-varying noise levels. The equivalent Sound Level (L_{eq}), which is used for impact evaluation in this analysis, represents an average of the sound energy occurring over a specified period. In effect, L_{eq} is the steady-state sound level containing the same acoustical energy as the time-varying sound that actually occurs during the same period (Caltrans 2009). The 1-hour A-weighted L_{eq} is the energy average of sound levels occurring during a 1-hour period and is the basis for noise abatement criteria (NAC) used by CDOT and FHWA.

Noise-Sensitive Receptors

Noise-sensitive receptors are generally considered where humans are engaged in activities, or are using land areas, that may be subject to the stress of significant interference from noise. Activities usually associated with sensitive receptors include, but are not limited to, talking, reading, and sleeping. Land uses often associated with sensitive receptors include residential dwellings, hotels, motels, hospitals, nursing homes, education facilities, and libraries.

REGULATORY BACKGROUND

FEDERAL HIGHWAY ADMINISTRATION

23 CFR 772

23 CFR 772 provides procedures for preparing operational and construction noise studies and evaluating noise abatement considered for federal and federal-aid highway projects. Under 23 CFR 772.7, projects are categorized as Type I, Type II or Type III projects. FHWA defines a Type I project include but are not limited to:

- Construction of a roadway on a new location.
- Addition of through-travel lane(s) by new construction or restriping an existing highway. This includes the addition of a through-traffic lane that functions as a high-occupancy vehicle lane, high-occupancy toll lane, bus lane, or truck climbing lane.
- Addition to a highway of an auxiliary lane by new construction or restriping, including lanes that function as passing lanes, continuous access lanes, acceleration and deceleration lanes, except for when the auxiliary lane is a turn lane. See Appendix A for lane-specific determinations and definitions.
- Addition of new interchanges or alterations of existing interchanges. This includes the addition or relocation of ramps, or ramps added to a quadrant to complete an existing partial interchange.
- A project which consists of a substantial change in vertical profile of 5 feet or more.
- A project which removes or alters shielding (either natural or man-made) thereby exposing the line-of-sight between the receptor and the traffic noise source. An example of this would be a case where, to improve sight distance on a highway, an existing earth berm or hillside is flattened, resulting in a direct line-of-sight between the highway and an existing residence. Vegetation does not have sufficient noise abatement properties, and thus cannot be considered for these shielding effects.
- Alteration of highways such that the horizontal distance between the nearest edge of travel lane and existing sensitive receptors is approximately halved.
- Addition of a new or substantial alteration of a weigh station, rest stop, ride-share lot, or toll plaza.

Actions such as those listed are considered to be Type I projects due to capacity increases, alignment changes, or addition of weigh stations, rest stops, ride-share lots, and toll plazas (CDOT 2011). Type II projects are defined in 23CFR772 as projects that provide noise abatement

on an existing highway (retrofit noise barrier) in a location where there will not be any new highway construction. Colorado currently has no active Type II program or projects (CDOT 2011).

All projects that do not meet the Type I or Type II criteria are Type III projects and do not require noise analyses. Such projects include roadway maintenance operations, bridge rehabilitations, resurfacing, adding shoulders, and ride-sharing programs that pair riders with carpools, commuting assistance, etc. Minor operational projects, such as the changing of a speed limit, would not require a noise analysis (CDOT 2011).

Under 23 CFR 772.11, noise abatement must be considered for Type I projects if noise sensitive receptors are present within the project study zone. This study zone is defined as the area contained within the environmental study or a 500-foot distance in all directions from the proposed edge of traveled lane(s) throughout the extents of the project, whichever is larger (CDOT 2011).

The extents the noise analysis and shall include receptors on all sides of the highway. The 500-foot study zone represents the minimal noise study zone. If there is a reasonable expectation that noise impacts would extend beyond that boundary, the study zone must be expanded to include those receptors (CDOT 2011). This includes addressing upstream or downstream traffic changes where a doubling of volume would occur as a result of the project even for areas located outside the study zone.

Under Type I projects, 23 CFR 772 requires that the project sponsor "consider" noise abatement before adoption of the final NEPA document. This process involves identification of noise abatement measures that are reasonable, feasible, and likely to be incorporated into the project, and of noise impacts for which no apparent solution is available.

Traffic noise impacts, as defined in 23 CFR 772.5, occur when the predicted noise level in the design year approaches or exceeds the NAC specified in 23 CFR 772, or a predicted noise level substantially exceeds the existing noise level (a "substantial" noise increase). 23 CFR 772 does not specifically define the terms "substantial increase" or "approach"; these criteria are defined by various state DOTs.

COLORADO DEPARTMENT OF TRANSPORTATION

CDOT has adopted the *Noise Analysis and Abatement Guidelines* pursuant to FHWA requirements (CDOT 2011). Table 2 summarizes CDOT's implementation of the NAC defined in 23 CFR Part 772. Activity categories and related traffic noise impacts are determined based on the actual land use in a given area. CDOT defines a substantial increase as +10 dBA over existing conditions.

Table 2. Activity Categories and Noise Abatement Criteria

Activity Category	NAC, Hourly A-Weighted Noise Level (dBA-L_{eq}[h])	Evaluation Location	Description of Activities
A[1]	56	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B[1]	66	Exterior	Residential
C[1]	66	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreational areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	51	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E[1]	71	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F.
F	NA	NA	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, ship yards, utilities (water resources, water treatment, electrical), and warehousing.
G	NA	NA	Undeveloped lands that are not permitted for development.

[1] Includes undeveloped lands permitted for this activity category.
* Hourly A-weighted sound level in dBA, reflecting a 1-dBA approach value below 23CFR772 values

EXISTING CONDITIONS

SITE VICINITY

The project site is the interchange between CO-9/US 6 and I-70 at Silverthorne, CO (the interchange) and the I-70 corridor between Silverthorne, CO and Frisco, CO. The Silverthorne interchange is primarily commercial/retail development on both the north and south sides of the interchange. East of the interchange along both the north and south sides of I-70 have sensitive receivers located within 500 feet of I-70. Receivers 1 through 30 of this study represent the single-family residential receivers east and north of the interchange along I-70. Receivers 44 through 85 of this study represent the single- and multi-family receivers east and south of the interchange along I-70. On the south side of I-70 east of the interchange, two existing 10 foot noise barriers are located between I-70 and receivers 54 and 67 through 85. Receiver 120 represents the Blue River, the Blue River Trail, Straight Creek and the Town of Silverthorne open space associated with Straight Creek adjacent to the US 6 eastbound I-70 on ramp.

West of the interchange and north of I-70, the receivers within 500 feet of the project in the Wildernest neighborhood are represented by receivers 31 through 43.

At the I-70/Frisco interchange (Frisco), sensitive receivers are located on both the north and south sides of I-70. Single-family residential receivers are located on the north side of I-70, represented by receivers 100 through 103, 105, and 115. A 4-foot jersey barrier is located between I-70 and the southern receivers. Receivers 86 through 99, 104, 106 through 114, and 116 through 119 represent the receivers on the south side of I-70 at Frisco and are a mix of multi-family residential and transient lodging.

Under the existing conditions, noise levels predicted by TNM modeling would range from 41 to 68 dBA L_{eq}. Existing traffic noise levels would approach or exceed the NAC at five existing receivers, see Table 3 and Figure 1 (4 pages, presented at the end of this report).

IMPACT ANALYSIS

METHODOLOGY

Traffic noise levels were predicted for existing and two future (2035) conditions: the No Action Alternative, and the Action Alternative. Existing and future (2035) traffic volumes on all study area roadways were taken from the project traffic report being prepared by AECOM (AECOM 2012). Speeds were developed from posted speed limits and driving the existing roadway alignment.

Future traffic speeds and vehicle mixes on I-70, CO-9, and US 6 were assumed to be the same as those used in the existing conditions. The traffic parameters used for the modeling are discussed in detail in Table 3 and peak hour traffic volumes developed from the project traffic report are included in Appendix C.

Receiver and building locations and elevations were taken from topographic survey data provided by the project engineer (Jacobs 2012). Existing and future roadway geometric data were also developed from project design drawings provided by the project engineer (Jacobs 2012). Model input and output data are included in Appendix E. Appendix E includes the model input and output sheets for both the No Action and Action Alternatives.

Per CDOT requirements, all sensitive receivers within the 500 feet study area of the project footprint were assessed for the applicable NAC. Sensitive receptor locations along with the 66 and 71 dBA L_{eq} noise contours are shown in Figure 1.

OPERATIONAL TRAFFIC NOISE IMPACT ASSESSMENT

Predicted noise levels for the existing and two future conditions are shown in Table 7. Noise contours and sensitive receiver locations are shown in Figure 1. Increases in noise levels under the Action Alternative would be caused by the addition of the auxiliary lane between the Frisco and Silverthorne Interchanges on I-70 and the realignment of the interchange into the diverging diamond design at US 6/I-70 Silverthorne.

Under the No Action Alternative, future (2035) noise levels would range from 43 to 70 dBA L_{eq}. Between the existing and 2035 No Action Alternative noise increases ranged between 0.9 and 2.5 dBA due to an increased level of traffic volumes. No predicted noise levels would result in a substantial noise increase at any receivers. Traffic noise levels would approach or exceed the NAC at ten receivers. Five of the ten receivers would increase from below 66 dBA L_{eq} to 66 dBA L_{eq} and above. Five of the ten receivers are already exposed to existing noise levels in excess of 66 dBA L_{eq} and would have noise levels increased from 68 to 70 dBA L_{eq}. See Table 3 and Figure 1.

Under the Action Alternative, noise levels would range from 43 to 70 dBA L_{eq}, with changes ranging from 0.8 to +2.5 dBA. No predicted noise levels would result in a substantial noise increase at any receivers. Traffic noise levels would approach or exceed the NAC at nine receivers. Four of the ten receivers would increase from below 66 dBA L_{eq} to 66 dBA L_{eq} and above. Five of the ten receivers are already exposed to existing noise levels in excess of 66 dBA L_{eq} and would have noise levels increased from 69 to 70 dBA L_{eq}. See Table 3 and Figure 1.

Table 3. TNM Noise Modeling Results

Receiver ID	Type	Existing (dBA $L_{eq[h]}$)	2035 No Action Alternative (dBA $L_{eq[h]}$)	No Action Alternative Vs. Existing (dBA $L_{eq[h]}$)	2035 Action Alternative (dBA $L_{eq[h]}$)	Action Alternative Vs. Existing (dBA $L_{eq[h]}$)	Impact
Receiver1	B	51.0	52.6	1.6	52.5	1.5	No
Receiver2	B	46.2	48.0	1.8	47.7	1.5	No
Receiver3	B	43.6	45.3	1.7	45.1	1.5	No
Receiver4	B	43.3	45.1	1.8	44.8	1.5	No
Receiver5	B	45.9	47.6	1.7	47.2	1.3	No
Receiver6	B	43.0	44.6	1.6	44.6	1.6	No
Receiver7	B	44.4	46.2	1.8	45.6	1.2	No
Receiver8	B	51.2	53.0	1.8	52.8	1.6	No
Receiver9	B	53.3	55.0	1.7	54.9	1.6	No
Receiver10	B	53.8	55.6	1.8	55.5	1.7	No
Receiver11	B	54.6	56.4	1.8	56.3	1.7	No
Receiver12	B	54.0	55.8	1.8	55.7	1.7	No
Receiver13	B	54.1	55.9	1.8	55.8	1.7	No
Receiver14	B	55.7	57.5	1.8	57.4	1.7	No
Receiver15	B	57.0	58.8	1.8	58.7	1.7	No
Receiver16	B	62.5	64.2	1.7	64.2	1.7	No

Receiver ID	Type	Existing (dBA $L_{eq[h]}$)	2035 No Action Alternative (dBA $L_{eq[h]}$)	No Action Alternative Vs. Existing (dBA $L_{eq[h]}$)	2035 Action Alternative (dBA $L_{eq[h]}$)	Action Alternative Vs. Existing (dBA $L_{eq[h]}$)	Impact
Receiver17	B	56.5	58.3	1.8	58.1	1.6	No
Receiver18	B	65.2	**66.9**	1.7	**66.8**	1.6	**Yes**
Receiver19	B	59.1	60.9	1.8	60.8	1.7	No
Receiver20	B	59.1	60.8	1.7	60.8	1.7	No
Receiver21	B	57.3	59.2	1.9	59.1	1.8	No
Receiver22	B	61.0	62.8	1.8	62.9	1.9	No
Receiver23	B	60.1	61.9	1.8	62.1	2.0	No
Receiver24	B	59.8	61.7	1.9	62.0	2.2	No
Receiver25	B	60.3	62.1	1.8	62.4	2.1	No
Receiver26	B	59.9	61.8	1.9	62.2	2.3	No
Receiver27	B	62.6	64.5	1.9	64.9	2.3	No
Receiver28	B	61.6	63.5	1.9	63.9	2.3	No
Receiver29	B	59.8	61.6	1.8	61.8	2.0	No
Receiver30	B	58.2	60.0	1.8	60.3	2.1	No
Receiver31	B	55.2	57.1	1.9	57.1	1.9	No
Receiver32	B	53.5	55.2	1.7	55.4	1.9	No
Receiver33	B	48.5	50.2	1.7	50.5	2.0	No
Receiver34	B	61.0	62.7	1.7	62.5	1.5	No
Receiver35	B	59.2	60.8	1.6	60.6	1.4	No
Receiver36	B	61.9	63.7	1.8	63.5	1.6	No
Receiver37	B	61.5	63.3	1.8	63.1	1.6	No
Receiver38	B	48.9	50.8	1.9	50.7	1.8	No
Receiver39	B	61.2	63.0	1.8	62.8	1.6	No
Receiver40	B	65.0	**67.2**	2.2	**67.1**	2.1	**Yes**
Receiver41	B	61.3	63.0	1.7	63.2	1.9	No
Receiver42	B	58.8	60.6	1.8	60.6	1.8	No
Receiver43	B	56.0	57.8	1.8	58.0	2.0	No
Receiver44	B	64.0	65.7	1.7	65.5	1.5	No
Receiver45	B	**65.9**	**67.6**	1.7	**67.5**	1.6	**Yes**
Receiver46	B	64.2	**65.9**	1.7	**65.9**	1.7	**Yes**
Receiver47	B	**67.5**	**69.4**	1.9	**69.4**	1.9	**Yes**
Receiver48	B	**67.0**	**68.8**	1.8	**68.9**	1.9	**Yes**
Receiver49	B	56.5	58.5	2.0	58.4	1.9	No
Receiver50	B	51.7	53.7	2.0	53.6	1.9	No
Receiver51	B	61.1	63.1	2.0	63.1	2.0	No
Receiver52	B	51.4	53.4	2.0	53.3	1.9	No
Receiver53	B	50.9	52.9	2.0	52.8	1.9	No
Receiver54	B	63.9	**65.7**	1.8	**65.7**	1.8	**Yes**
Receiver55	B	**67.8**	**69.7**	1.9	**69.7**	1.9	**Yes**
Receiver56	B	**68.2**	**70.1**	1.9	**70.1**	1.9	**Yes**

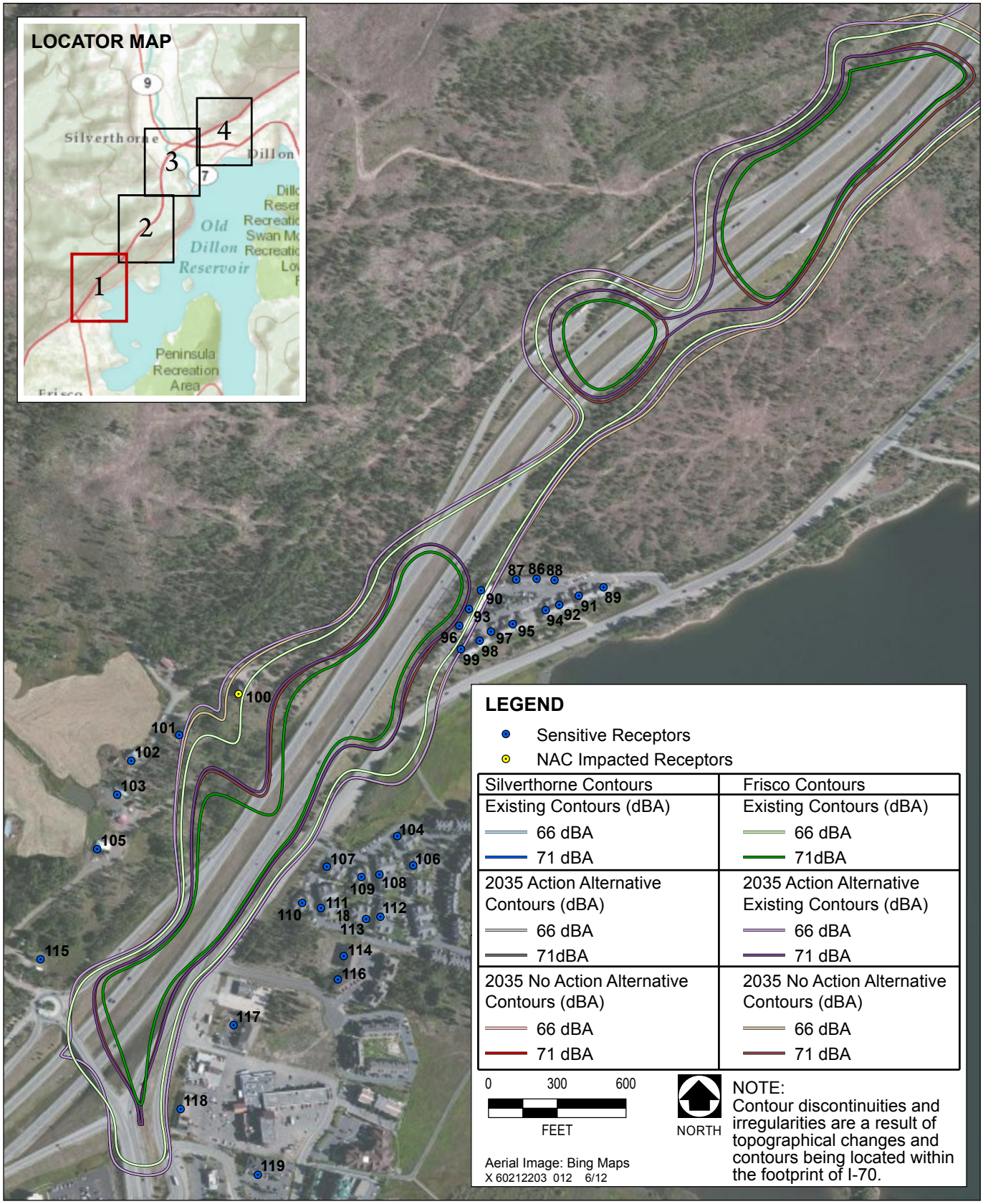
Receiver ID	Type	Existing (dBA $L_{eq[h]}$)	2035 No Action Alternative (dBA $L_{eq[h]}$)	No Action Alternative Vs. Existing (dBA $L_{eq[h]}$)	2035 Action Alternative (dBA $L_{eq[h]}$)	Action Alternative Vs. Existing (dBA $L_{eq[h]}$)	Impact
Receiver57	B	61.7	64.1	2.4	64.1	2.4	No
Receiver58	B	44.1	46.1	2.0	45.8	1.7	No
Receiver59	B	51.6	53.6	2.0	53.6	2.0	No
Receiver60	B	65.9	**67.8**	1.9	**67.8**	1.9	**Yes**
Receiver61	B	56.9	59.1	2.2	59.1	2.2	No
Receiver62	B	52.7	54.9	2.2	54.8	2.1	No
Receiver63	B	41.5	43.4	1.9	43.3	1.8	No
Receiver64	B	55.4	57.6	2.2	57.6	2.2	No
Receiver65	B	57.9	60.4	2.5	60.4	2.5	No
Receiver66	B	56.7	59.0	2.3	59.0	2.3	No
Receiver67	B	58.3	60.1	1.8	60.1	1.8	No
Receiver68	B	57.9	59.7	1.8	59.7	1.8	No
Receiver69	B	56.3	58.2	1.9	58.2	1.9	No
Receiver70	B	53.2	55.2	2.0	55.2	2.0	No
Receiver71	B	55.7	57.6	1.9	57.6	1.9	No
Receiver72	B	57.2	59.0	1.8	59.0	1.8	No
Receiver73	B	60.5	62.1	1.6	62.1	1.6	No
Receiver74	B	56.7	58.4	1.7	58.4	1.7	No
Receiver75	B	57.2	59.0	1.8	59.0	1.8	No
Receiver76	B	57.5	59.3	1.8	59.3	1.8	No
Receiver77	B	58.0	59.8	1.8	59.8	1.8	No
Receiver78	B	59.1	60.8	1.7	60.8	1.7	No
Receiver79	B	58.0	59.8	1.8	59.8	1.8	No
Receiver80	B	57.0	58.7	1.7	58.7	1.7	No
Receiver81	B	55.5	57.4	1.9	57.4	1.9	No
Receiver82	B	54.8	56.8	2.0	56.8	2.0	No
Receiver83	B	53.3	55.2	1.9	55.2	1.9	No
Receiver84	B	53.5	55.5	2.0	55.5	2.0	No
Receiver85	B	54.7	56.7	2.0	56.7	2.0	No
Receiver86	B	56.3	58.0	1.7	58.0	1.7	No
Receiver87	B	57.0	58.6	1.6	58.6	1.6	No
Receiver88	B	54.6	56.2	1.6	56.2	1.6	No
Receiver89	B	49.3	50.7	1.4	50.8	1.5	No
Receiver90	B	60.4	62.3	1.9	62.3	1.9	No
Receiver91	B	51.3	52.8	1.5	52.8	1.5	No
Receiver92	B	50.5	51.9	1.4	51.9	1.4	No
Receiver93	B	62.5	64.2	1.7	64.2	1.7	No
Receiver94	B	50.3	51.7	1.4	51.7	1.4	No
Receiver95	B	51.9	53.2	1.3	53.3	1.4	No

Receiver ID	Type	Existing (dBA $L_{eq[h]}$)	2035 No Action Alternative (dBA $L_{eq[h]}$)	No Action Alternative Vs. Existing (dBA $L_{eq[h]}$)	2035 Action Alternative (dBA $L_{eq[h]}$)	Action Alternative Vs. Existing (dBA $L_{eq[h]}$)	Impact
Receiver96	B	62.3	64.0	1.7	64.0	1.7	No
Receiver97	B	52.5	53.9	1.4	53.9	1.4	No
Receiver98	B	53.4	54.8	1.4	54.8	1.4	No
Receiver99	B	50.7	51.9	1.2	52.1	1.4	No
Receiver100	B	**66.6**	**68.4**	1.8	**68.6**	2.0	**Yes**
Receiver101	B	61.7	62.9	1.2	63.8	2.1	No
Receiver102	B	52.2	53.6	1.4	54.0	1.8	No
Receiver103	B	54.9	56.2	1.3	56.7	1.8	No
Receiver104	B	56.6	58.0	1.4	58.0	1.4	No
Receiver105	B	62.1	63.4	1.3	64.5	2.4	No
Receiver106	B	56.5	58.0	1.5	58.0	1.5	No
Receiver107	B	58.6	59.9	1.3	59.9	1.3	No
Receiver108	B	57.1	58.6	1.5	58.6	1.5	No
Receiver109	B	57.5	58.9	1.4	58.9	1.4	No
Receiver110	B	57.9	59.2	1.3	59.1	1.2	No
Receiver111	B	57.5	58.9	1.4	58.9	1.4	No
Receiver112	B	56.3	57.8	1.5	57.9	1.6	No
Receiver113	B	56.3	57.8	1.5	57.9	1.6	No
Receiver114	B	55.8	57.3	1.5	57.3	1.5	No
Receiver115	B	62.4	63.4	1.0	64.7	2.3	No
Receiver116	B	55.6	57.1	1.5	57.1	1.5	No
Receiver117	B	55.3	56.5	1.2	56.4	1.1	No
Receiver118	B	56.1	57.0	0.9	56.9	0.8	No
Receiver119	B	54.6	55.7	1.1	55.7	1.1	No
Receiver120	B	65.2	**66.6**	1.4	64.3	-0.9	**Yes**

CONCLUSION

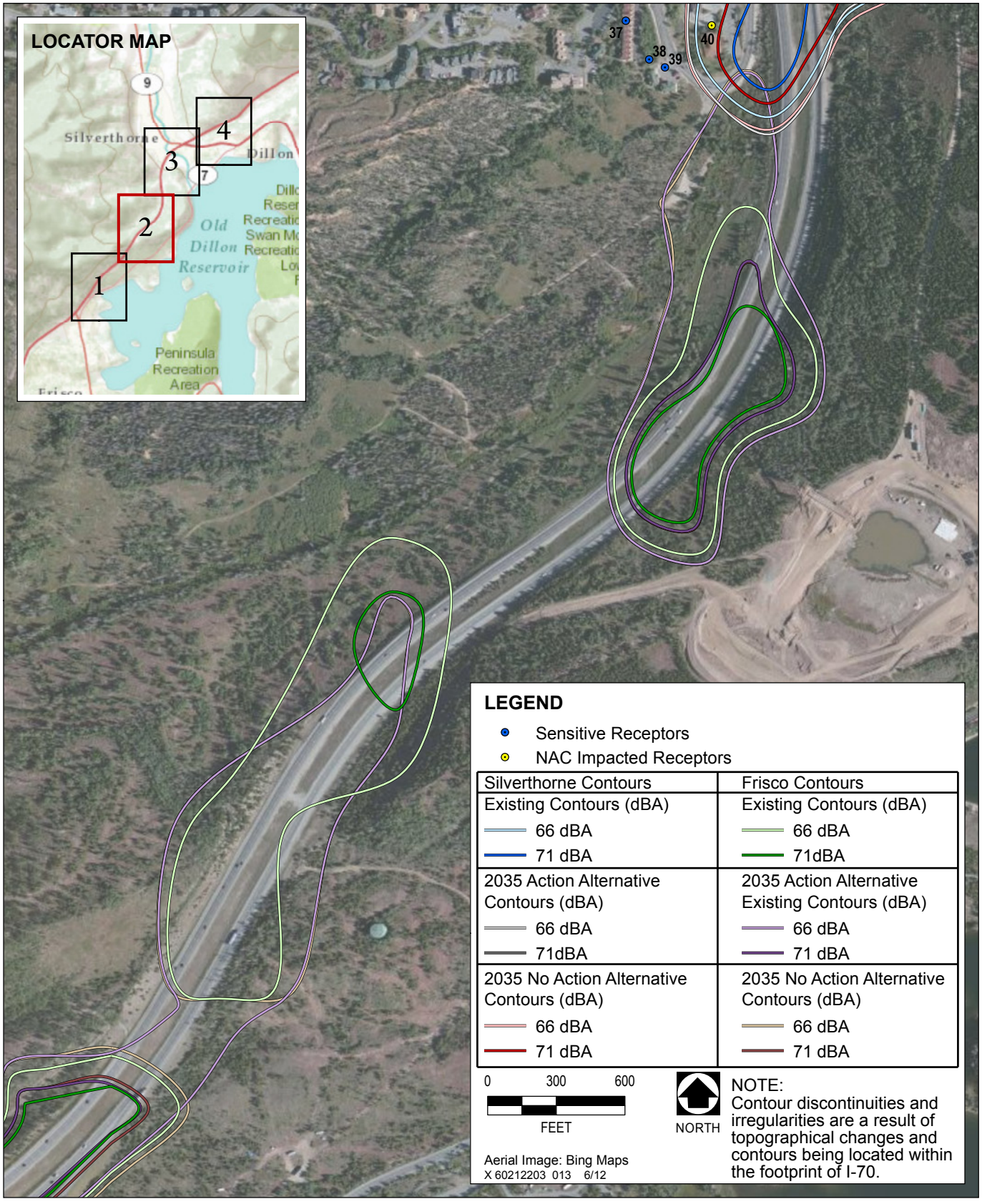
The primary findings of this noise analysis are as follows:

- No sensitive receptors would be subject to more than a 2.5 dBA increase in noise as an impact of the proposed improvements.
- Six (6) sensitive receptors are already exposed to noise levels that exceed the NAC. Six (6) additional sensitive receptors would be subject to noise levels that exceed the NAC under 2035 No Build and Build conditions. Noise abatement in these areas, particularly in association with Receptor 120 (Blue River, the Blue River Trail, Straight Creek and the Town of Silverthorne open space associated with Straight Creek), should be analyzed.
- The difference between the noise levels under Build and No Build conditions is minimal with a maximum difference of only 1.3 dBA.



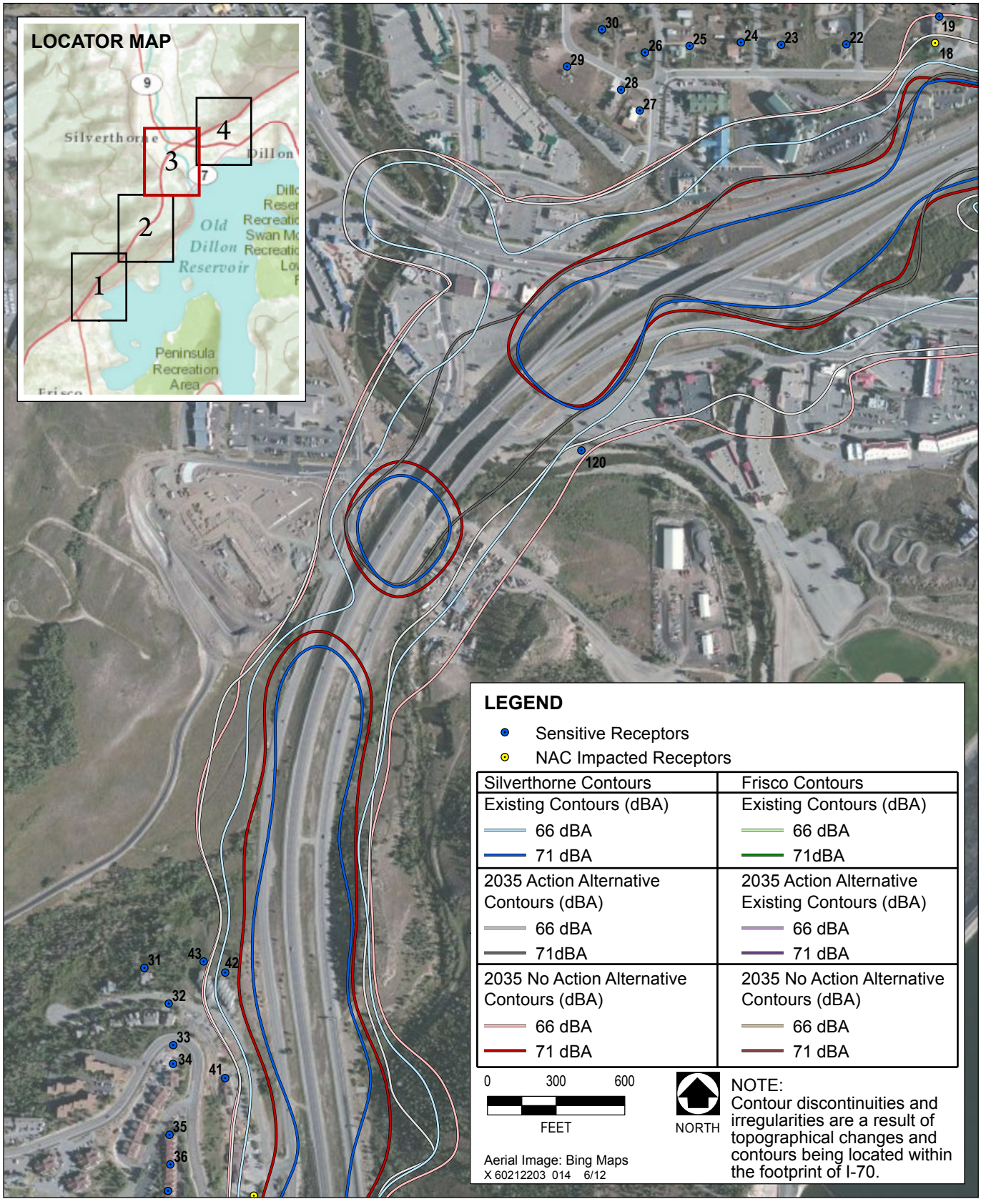
Noise Contours - Map 1

Figure 1



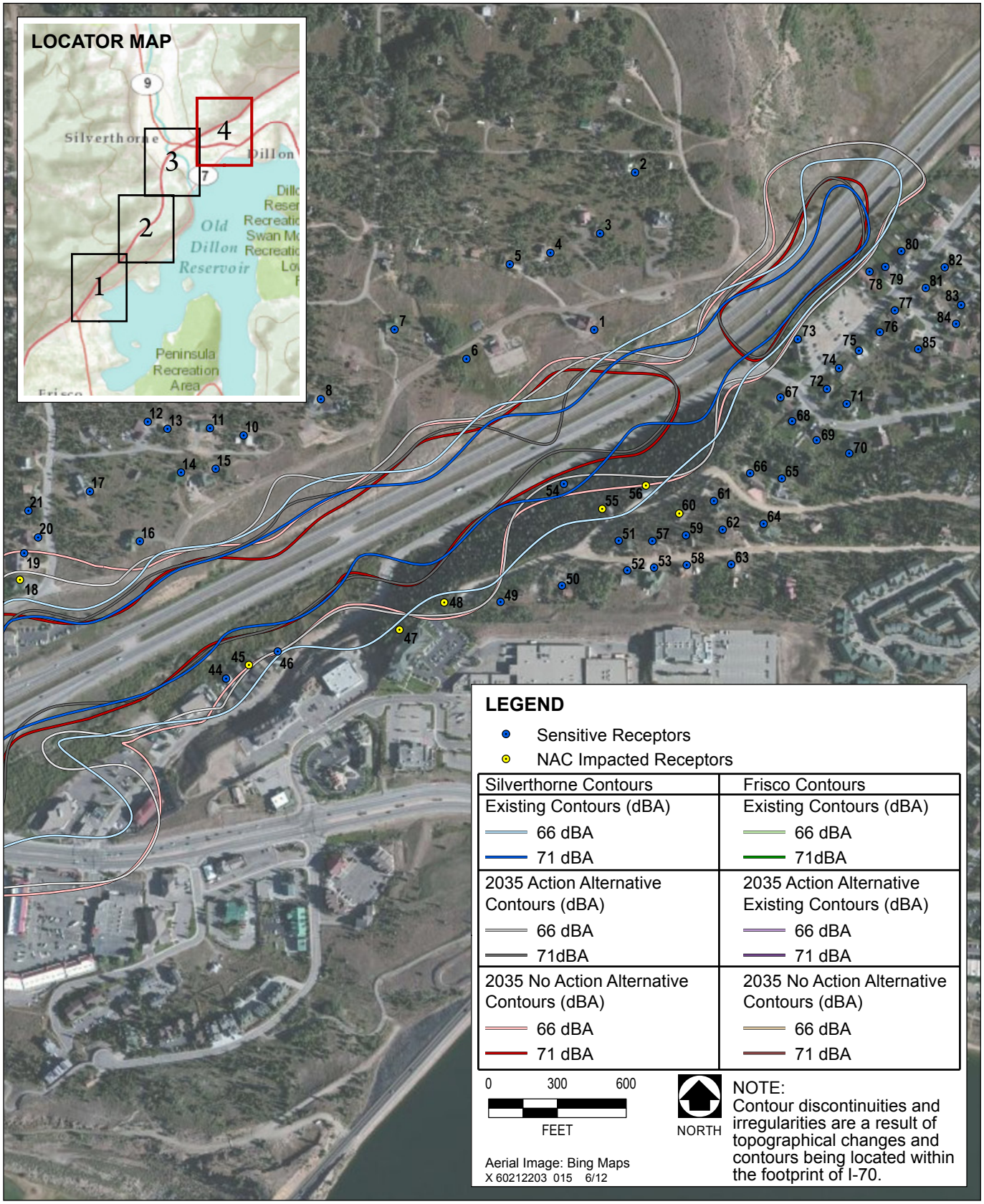
Noise Contours - Map 2

Figure 2



Noise Contours - Map 3

Figure 3



Noise Contours - Map 4

Figure 4

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APPENDIX A
TNM MODELING OUTPUT