4 ENVIRONMENTAL CONSEQUENCES

The primary resource effects from the four alternatives are summarized in Table 41. Summary of Resource Effects. Details are discussed in the respective sections below and in the applicable technical reports.

Table 41. Summary of Resource Effects

Resources	Alternatives			
	No Action	Modified W-4	C-3	E-2
Length (miles)	6.34	6.65	5.94	5.85
Predicted Crashes (total crashes 2017 through 2036)	642.5	244.9	260.2	213.9
Access Points	66	36	47	22
Residential Impacts	0	3	2	7
Additional Potential Residential Impacts	0	2	5	6
Business Impacts	0	0	0	0
Additional Potential Business Impacts	0	0	8	0
Environmental Justice	No disproportionate impact	No disproportionate impact	No disproportionate impact	No disproportionate impact
Right-of-Way new/existing/total (acres)	0	206/45/251	154 / 55 / 209	207 / 22 / 229
Prime Farmland (acres)	0	49.7	25	50.8
Cultural/Section 4(f) resource Use	0/0	0/0	0/0	0/0
Air Quality	Attainment Area	Attainment Area	Attainment Area	Attainment Area
Wetlands (acres)	0	1.85	0.99	3.61
Tributaries Number of Crossings/(Linear Feet)	0	10/3,592	5/7,808	5/2,592
Impervious Surface (acres) New alignment/New alignment plus remaining Old US-95 Loop	0/21	58/68	49/58	55/72
Floodplains (acres)	0	1.6	1.8	0
Pine Stand (acres)	0	0	0	3.9
Ungulate - (Deer, Elk & Moose) Population effects/ Effects to identified Ungulate Impact Area* (acres)	No Population Effect / none	No Population Effect / none	No Population Effect / none	No Population Effect / 4.4

Resources	Alternatives			
	No Action	Modified W-4	C-3	E-2
Palouse remnants within 1 km (3280 ft.)	0	12	14	24 including Paradise Ridge
Threatened and Endangered Species Effects	No Effect	Not Likely to Adversely Affect	Not Likely to Adversely Affect	Not Likely to Adversely Affect
Hazardous Material Sites	(1 Potential Cleanup)	(1 Potential Cleanup)	(1 Potential Cleanup)	(1 Potential Cleanup)
Noise Impacted Receptors**	9	No noise impacted receptors would remain after construction	No noise impacted receptors would remain after construction	1 noise impacted receptor would remain after construction
Visual Quality	No Impact	Low = 11% Mod = 58% Mod high = 23% High = 8% Mh + H = 31%	Low = 9% Mod = 68% Mod high = 15% High = 8% Mh + H = 23%	Low = 3% Mod = 47% Mod high = 25% High = 25% Mh + H = 50%
Construction/Total Cost-(million dollars) ***	Minimal	52/62	43/58	46/55

* Identified Ungulate Impact Area, which contains agricultural fields with nearby draws, small drainages, ponds, and cover as described in Melquist 2005a.

** Noise impacted receptors that would be removed due to right-of-way acquisition are not included in these numbers.

***The estimated construction costs includes excavation, rock ballast, plant mix, structures, traffic control and illumination. It excludes engineering, construction engineering, mitigation and right-of-way.

4.1 Socio-economic and Environmental Justice Effects

4.1.1 Social Effects

Each of the alternative's effects including property impacts, right-of-way needs, community cohesion, visual and noise effects were evaluated. Visual quality and noise effects are evaluated in Section 4.11 Visual Quality Effects and 4.12, Noise Effects. Community opinions regarding the effects of each alternative on the community, including noise and visual effects are detailed in the Community Impact Technical Reports. There were strong differing opinions regarding the effects of the W-4 and E-2 alternatives presented during the July 2006 interview period. The Citizens for a Safe Highway 95, claiming to represent people collectively owning 80 percent of the land along E-2, were in favor of E-2 due to the "spectacular view" of the Palouse and of the City of Moscow from US-95 as the route traverses the west base of Paradise Ridge. They believed that the beauty of Paradise Ridge could transform the highway into a gateway for Moscow, and that E-2 could promote and preserve the Palouse landscape to a scenic highway status.

The Paradise Ridge Defense Coalition, which opposed the E-2 Alternative, stated that the majority of the community would like to see the expansion of the roadway follow the existing route as much as possible to minimize the ecological footprint of new roadwork and the view towards US-95 from Paradise Ridge. The argument against E-2 centered on Paradise Ridge as a unique and valued feature in the community. To those opposed to E-2, the ridge should remain untouched because it provides aesthetic value. Paradise Ridge serves as a reason both for and against the E-2 Alternative (HDR 2005a).

Potential Property Impacts

Table 42. Residential and Right-of-Way Impacts shows the numbers of residences impacted and right-of-way needs by alternative.

Table 42. Residential and Right-of-Way Impacts

Alternative	Residential Impacts	Additional Potential Residential Impacts	New Right-of-Way (acres)	Existing Right-of-Way (acres)	Total Right-of-Way (acres)
No Action	0	0	0	0	0
Modified W-4	3	2	206	45	251
C-3	2	5	154	55	209
E-2	7	6	207	22	229

Residential impacts may be due to direct impacts to structures and homes, removal of access, or right-of-way acquisition that would substantially impair the property. If during right-of-way acquisition, displacement is required then displacements would be compensated under the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Relocation Act). The Uniform Relocation Act established minimum standards for federally funded projects that require the acquisition of real property or displace persons from their homes, businesses, or farms. See Appendix 5. Uniform Relocation Act Summary.

The DEIS was based on a conceptual level of detail without the design, topographic, survey and geotechnical data, needed to accurately determine specific displacements. The displacements listed in the DEIS were based on a worst-case scenario where access impacts and close proximity to the alignments were assumed to result in displacement. After the DEIS hearing, displacement numbers were reviewed, specific assumptions were defined, and impacts were recalculated based on the assumptions.

It was assumed that "impacted" residences (and businesses) would be directly impacted by the cut and fill lines resulting in relocation, whereas "potentially impacted" residents (and businesses) would be near the cut and fill lines and right-of-way or outbuildings could possibly

be impacted but relocation of primary buildings or residences was not assumed. However, more detailed design or topographic information is needed to make that determination. If an action alternative is selected and the project is forwarded for design, then additional topographic, survey and design detail will allow ITD to accurately determine the right-of-way needs and the specific residential and business impacts. Impacts to those properties may be further minimized at that time. Table 42. Residential and Right-of-Way Impacts shows residential impacts and potential residential impacts by alternative. Proximity impacts including visual and noise impacts are discussed in Section 4.11 Visual Quality Effects, 4.12 Noise Effect and Section 6.1 Indirect Effects.

No Action Alternative

The No Action Alternative would not impact or potentially impact residences or require right-of-way acquisition.

Modified W-4

Modified W-4 would impact three residences. Two additional residences may be potentially impacted due to proximity. If the Modified W-4 Alternative is selected then during the design period when topographic, geotechnical and design detail is available, impacts may be further minimized. The potentially impacted residences would require that right-of-way be purchased but residential relocation is not assumed. Access would be consistent with the Expressway Access Control and ITD's Access Control Policy. Modified W-4 would require the greatest amount of right-of-way, but it would have fewer residential impacts and potential impacts than the E-2 Alternative.

C-3

C-3 would impact two residences and potentially impact five additional residences. If the C-3 Alternative is selected then during the design period when topographic, geotechnical and design detail is available, impacts may be further minimized. The C-3 Alternative would have the fewest direct impacts to residences of the Action Alternatives. The six RV stalls that are potentially impacted are not considered residences because use is temporary. They are considered as one business impact.

E-2 (Preferred Alternative)

E-2 would impact seven residences; five of which are located in the Benson Mobile Home Park. Approximately 2.9 acres of the mobile home park would be acquired. The E-2 Alternative would also potentially impact six additional residential stuctures, including a shop and garage which would not likely result in full displacements.

Community Cohesion

Based on an assessment of the important community resources and interviews with community members during the Community Impact Assessment, none of the alternatives would cause a major disruption to community cohesion. See Exhibit 19. Points of Interest.

No community resources would be more difficult to reach or become over utilized. Regardless of the alternative chosen, the origins and destinations of most travelers would remain similar to existing conditions. Residents located on existing US-95 would still be able to use the existing US-95 loop but traffic volumes would be reduced 95 to 97 percent compared to existing conditions. Some backtracking may be necessary at the northern end of the project to reach businesses on existing US-95; however, it would be offset by a reduction in waiting time to enter the highway. All of the Action Alternatives would provide sidewalks and shoulders that would improve community cohesion in the northern end of the project.

4.1.2 Economic Effects

The majority of the businesses located in the study area are in the northern project limits near Moscow. The existing commercial development south of Palouse River Drive is comprised of a mix of construction, transportation, fabrication, and specialty retail establishments (e.g., building supplier, hair salon). These are businesses that do not typically rely heavily on high traffic volumes and drive up customers.

The No Action, Modified W-4 and E-2 alternatives would have no right-of-way impacts or potential impacts to businesses. The C-3 Alternative has businesses located along it and eight would be potentially impacted by the road widening; a cabinet shop, RV park, Singar Inc. and some home based businesses. Visibility and access to some existing businesses could change as a result of the Modified W-4 and E-2 Alternatives in the current US-95 corridor south of Moscow for regional traffic because the Modified W-4 and E-2 Alternatives would be realigned. This could adversely affect businesses, particularly the retail businesses that rely, at least in part, on traffic passing through the area. However, the remaining US-95 loop may be turned over to the NLHD and used for local circulation, therefore businesses could still be visible but to a smaller volume of motorists. See Table 43. Business Effects.

Table 43. Business Effects

Alternative	Business Impacts	Additional Businesses Potentially impacted
No Action	-	-
Modified W-4	0	0
C-3	0	8
E-2	0	0

The indirect effects of the alternatives on businesses are discussed in Chapter 6, Indirect and Cumulative Effects.

The majority of the right-of-way required for each of the alternatives is agricultural land. The effects to farmland production are summarized in Section 4.3, Farmland Effects. The Uniform Relocation Act also provides compensation and equitable treatment for acquisition of agricultural land.

4.1.3 Environmental Justice Effects

Minority Populations

While there are minorities in the study area there are no distinguishable minority populations. Therefore, none of the alternatives would result in a disproportionately high or adverse effect to minority populations.

Low-Income Populations

There are three mobile home parks identified within the study area that may provide a source of low-cost housing: the Hidden Village Mobile Home Park, the Benson Mobile Home Park and the Woodland Heights Mobile Home Court. The residents living in the mobile home parks and court are not considered low-income populations. See Environmental Justice Technical Report (HDR 2005b) for details of the analysis.

All of the alternatives would benefit park residents by improving the safety of US-95 and improving highway access and mobility. Construction of additional travel lanes would improve the roadway's level of service, reducing commute times and facilitating more efficient access to services. Ingress and egress of vehicles, including emergency response units, would be enhanced by the use of a turn bay.

No Action Alternative

The No Action Alternative would not adversely affect the mobile home parks through residential impacts or right-of-way acquisition; however as traffic increases by the 2037 design year, the safety and capacity issues would intensify and community safety and traffic noise would increase. See Section 4.12 Traffic Noise Effects.

Modified W-4

Modified W-4 would avoid all of the mobile home parks. One manufactured home would be impacted but it is not located within a mobile home park. Modified W-4 would benefit all park residents by improving the safety of US-95 and highway access issues. Based on the above

discussion, Modified W-4 would not cause disproportionately high and adverse effects to any low-income populations as per EO 12898.

C-3

C-3 would closely follow existing US-95 near the Hidden Village and Benson Mobile Home parks. It would impact two residences located in the Hidden Village Mobile Home Park. Two acres of right-of-way would be required from the Hidden Village Mobile Home Park. C-3 would not cause disproportionately high and adverse effects to any low-income populations per EO 12898.

E-2 (Preferred Alternative)

E-2 would result in the greatest number of impacts to the mobile home parks. It would affect the eastern edge of Benson Mobile Home Park, impacting five residences and potentially impacting five additional residences. The residences are configured linearly from east to west along Eid Road. The E-2 Alternative was aligned to the far east of the mobile home parks to minimize harm and maintain community cohesion for the remaining residences.

E-2 would require acquisition of 2.9 acres of the Benson Mobile Home Park. It would include constructing a bridge structure over Eid Road, which would result in a substantial increase in noise effects to seven receptors (residences); however six of these residences are assumed to be impacted due to right-of-way acquisition and only one noise impacted receptor would remain after construction. The bridge structure and new, elevated roadway would cause high visual effects. See Section 4.11 Visual Effects and Section 4.12, Traffic Noise Effects for additional detail.

Hidden Village and Benson Park residents would still be able to use existing US-95 with similar access as existing conditions but with about 95 to 97 percent less traffic. Access to the new US-95 would be approximately one mile south of Eid Road.

Shifting the E-2 Alignment further west to minimize impacts in the Benson Mobile Home Park was evaluated in the E-1 Alternative but would result in different impacts and other resource effects. Impacts to this mobile home park could not be totally avoided. It would adversely affect the community cohesion for the remaining residents. The E-1 Alternative that was evaluated early in the screening process was aligned across Eid Road and between Hidden Village and Benson Mobile Home parks formally differentiating the development into the two respective parks. This alignment would more directly affect Hidden Village, requiring the relocation of three residences and was not desirable to the business owner. E-1 was eliminated because it would impact four residences and one business. One of the impacts was a NRHP listed historic

site and a Section 4(f) resource. It would also directly affect two rare plant communities and would have greater wetland effects. See Chapter 2, Alternatives for additional detail.

Based on interviews with the mobile home park owner and some residents in 2004 and 2011, most of the residents of the mobile home parks do not have major concerns should it be necessary to relocate. A property management company representative with several rentals in the area stated that there are other opportunities available for displaced residents to find equitable living accommodations; however, not all of the residents feel they would be able to find equitable replacement housing as expressed during the DEIS comment period. All relocations will be completed in accordance with the Uniform Relocation Act, which will ensure fair and equitable treatment and relocation into safe and secure housing.

The residents in the mobile home park are not considered to be minority or low-income populations and there would be no disproportionately high and adverse effects to low-income or minority populations as defined by EO 12898 (HDR 2005a).

4.2 Land Use and Recreation Effects

The alternatives would have differing effects to existing and proposed land uses. However, all Action Alternatives would be consistent with city and county land use plans and regulations. The proposed action alternatives would intersect the existing US-95 alignment just south of Moscow, near the area where the proposed Ring Road alignments are proposed. The E-2 and W-4 alternatives would pose more challenges associated with connectivity of the proposed Ring Road alignments than the C-3 Alternative but none would conflict with or preclude construction of the Ring Road project. ITD will work closely with the City of Moscow to ensure that the design of any of the action alternatives is consistent with and does not preclude construction of the Ring Road concept regardless of which alternative is selected. The county will enforce the current zoning and land use designations regardless of which alternative is chosen. All Action Alternatives would have Expressway Access Control that would restrict new accesses as described in FEIS Sections 2.4.2, 4.10 and Table 76. General Responses to Issues under Access.

All of the Action Alternatives would involve coordination with the City of Moscow, Latah County and university officials to identify scenic turnout locations and potential signage for the University of Idaho and Paradise Ridge. All of the Action Alternatives would also include lane striping to accommodate bicycles and pedestrians along the roadway.

No Action Alternative

The No Action Alternative would not require property acquisition and there would be no changes to land use. However, the No Action would not address safety and capacity issues in the

corridor. Accesses onto the highway would not be limited and would continue to grow. Therefore, the No Action would be inconsistent with the Latah County and City of Moscow Comprehensive Plans.

Modified W-4

Modified W-4 would convert more highly productive farmland to other uses, which is inconsistent with Latah County's primary land use goal of preserving productive farmland. To promote an efficient and safe transportation system, the Latah County Comprehensive Plan requires that limits be placed on the number of access points to the highway and encourages bicycle, pedestrian, and mass-transit options. All alternatives would maintain access to Paradise Ridge and other recreational resources. However, the accesses to different resources on existing US-95 would differ. Modified W-4 would have Expressway Access Control similar to the other Action Alternatives but would have a shorter center turn lane section than C-3, with more right in and right out turning movements which is less desirable for development. However, due to its location further west closer to planned development, development pressures are expected to be higher than the E-2 Alternative; however the Expressway Access Control will be enforced.

C-3

C-3 is viewed by the City of Moscow as the most consistent with land use goals because the areas along the existing US-95 are already established. However, it would have a longer five-lane section with a center turn lane with more access points. The longer center turn lane could have greater development pressure; however, the Expressway Access Control will be enforced. See the comment letter from the City of Moscow (City of Moscow 2014). The C-3 Alternative could increase property values along its alignment; however, it would be to a lesser degree than W-4. C-3 would present the least challenge for connectivity to the planned Ring Road Project.

E-2 (Preferred Alternative)

E-2 would affect the same types of land use categories as the other alternatives; but would affect more CRP land than other alternatives. It could increase property values and could have growth along its alignment. E-2 would have a shorter center turn lane section than C-3, with more right-in and right-out turning movements, which is less desirable for development.

4.3 Farmland Effects

E-2 is expected to have less development pressure than Modified W-4 because it is located further from planned development to the west and existing development along the center corridor. E-2 would be consistent with the City of Moscow goals for development and planned development west of US 95. However, it would have Expressway Access Control similar to the other action alternatives, which will be enforced.

All of the Action Alternatives would affect both prime farmlands and farmlands of statewide importance. See Exhibit 25. Farmland Effects and
Table 44. Farmland Effects for the acreage effects to farmland classifications as a result of each alternative.

Exhibit 25. Farmland Effects

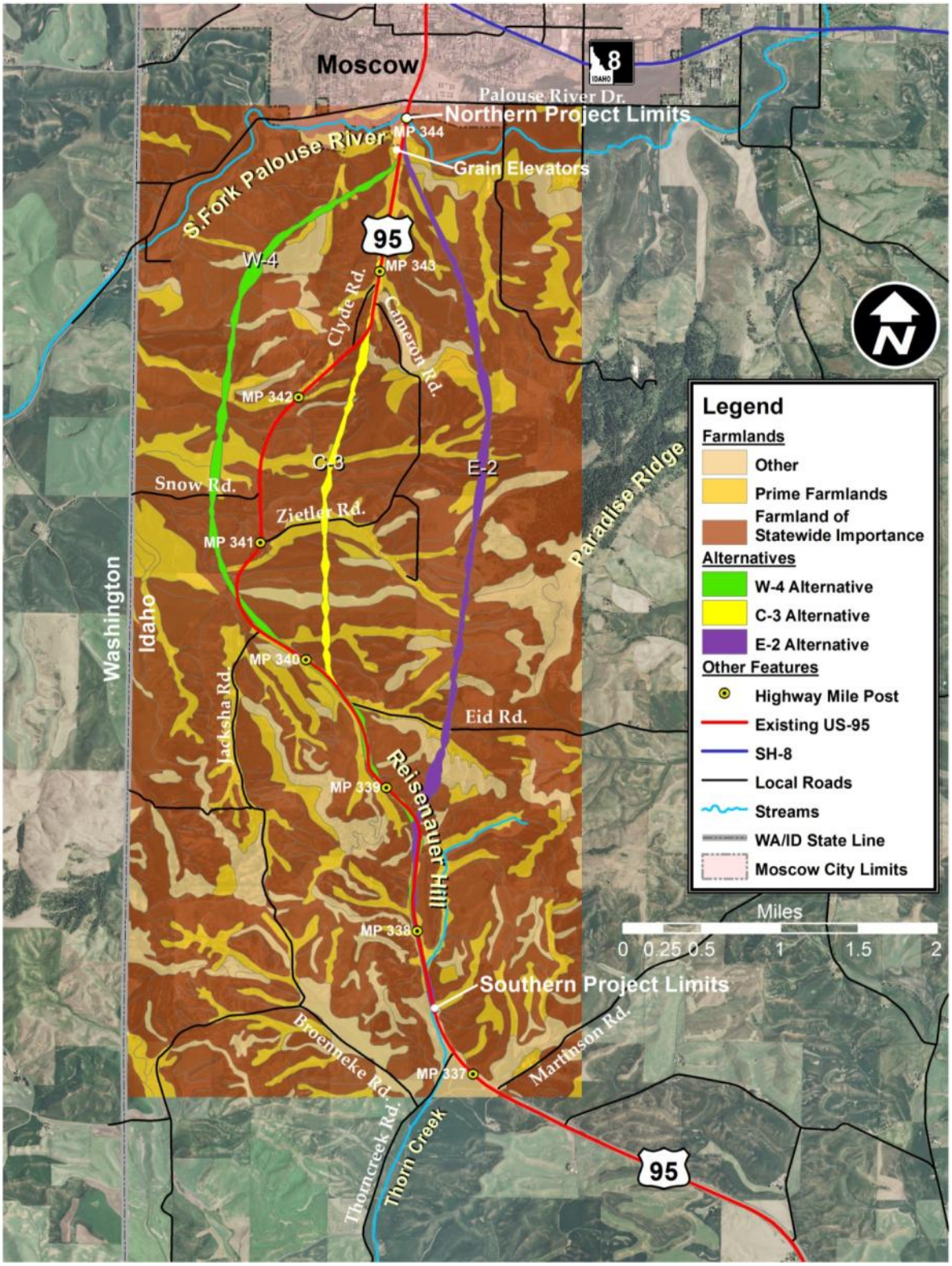


Table 44. Farmland Effects

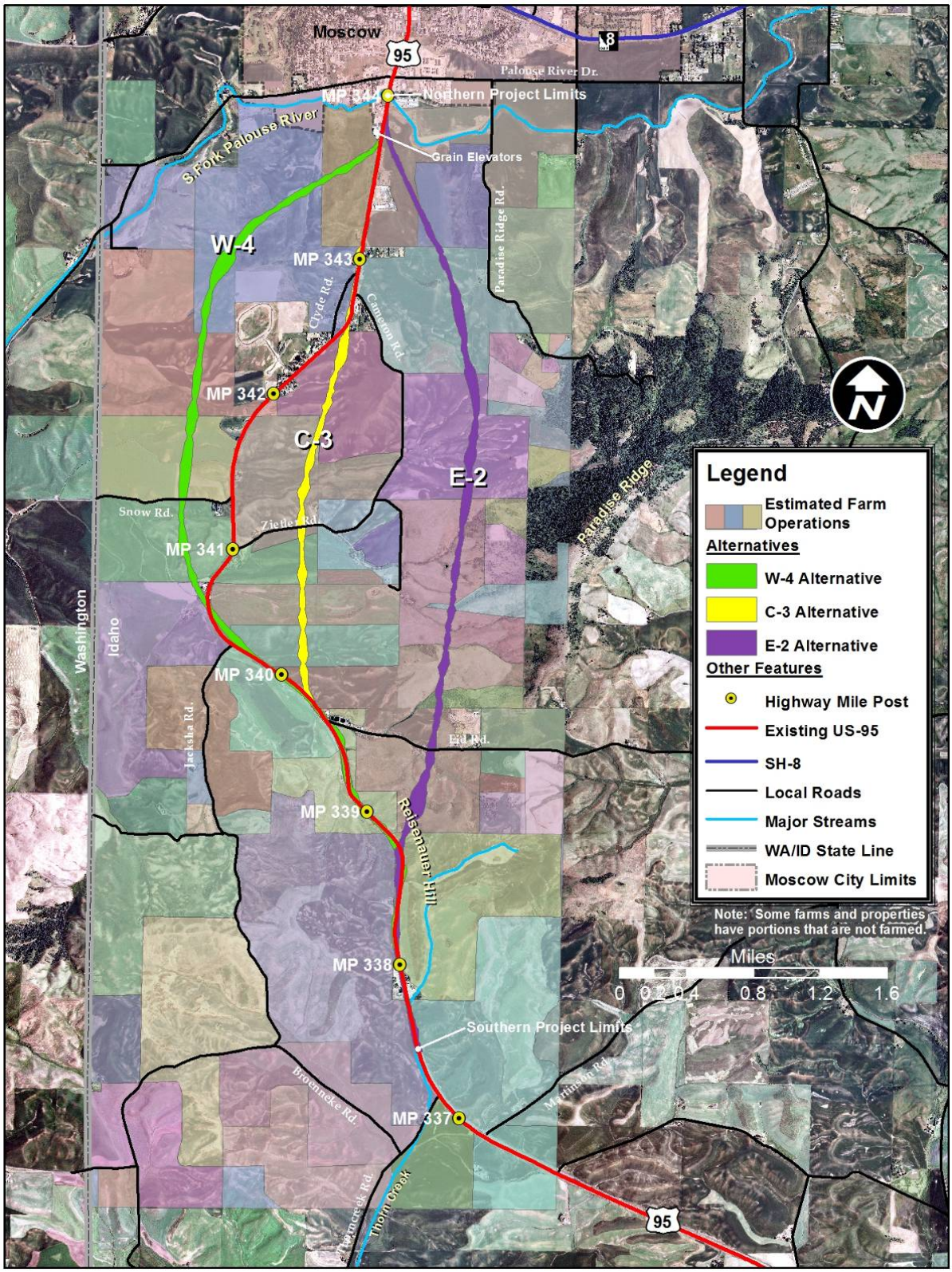
Alternatives	Farmland Conversion acres) *	Prime Farmland (acres)	Farmland of Statewide Importance (acres)	CRP Land (acres)	Other** (acres)	Segmented Farms (number of farms)	Farmland Conversion Impact Rating (points)
No Action	0	0	0	0	0	0	N/A-
Modified W-4	171.3	49.7	117.3	9	7.0	4	190
C-3	101.7	25.1	69.7	9	6.9	4	188
E-2	158.2	50.8	94.8	43.5	12.6	4	190

* This acreage excludes the existing road right-of-ways
**Other=unclassified farmland

NRCS staff completed USDA Farmland Conversion Impact Rating Forms for the three Action Alternative corridors. The form for the W-4 Alternative was updated for the Modified W-4 Alternative. All of the Action Alternatives were determined to have a Farmland Conversion Impact Rating of greater than 160 points, which is the threshold for requiring additional measures for protection from conversion of farmland to other uses. See Section 3.3.2 and the Farmland Technical Report for details regarding how the score was determined.

The most direct effects to farms would be the loss of farm production to transportation use for the area within each alternative's right-of-way. See Table 44. Farmland Effects. Direct effects would also include erosion and sedimentation from cut and fills. Construction of a highway alignment through farmland could result in farm segmentation. It could change access to fields and require farm equipment to cross the highway in order to access the segmented farms. It could also split farming operation into smaller, less economically feasible operations. Effects to farm operations are shown in Exhibit 26. Farm Operation Effects. The effects of alternatives on the ecological functions of CRP land are discussed in Section 4.8 Vegetation, Fish and Wildlife Effects.

Exhibit 26. Farm Operation Effects



Measures that would minimize the conversion of farmland to other uses include controlling access points along US-95 and working with farmers to identify necessary field accesses and to construct farmable slopes. See Chapter 9, Environmental Commitments under Farmland. See Chapter 6, Indirect and Cumulative Effects for the descriptions of effects from farm segmentation and effects to farm service operations.

No Action

This alternative would involve only minor safety and maintenance of the existing roadway and would not result in farmland conversion, segmentation or right-of-way acquisition. As congestion increases on the roadway, access to fields and farm related transport may become more difficult.

Modified W-4

The Modified W-4 Alternative would affect the greatest number of acres of statewide important farmland and the greatest number of acres of farmed land. The average farming operation in the Modified W-4 corridor is 882 acres. Approximately 5.6 percent of this assessment unit is CRP land. Modified W-4 would cross 11 farms, splitting four farming operations; however, this would not result in any farming operations less than 20 acres.

C-3

The C-3 Corridor has the fewest acres of prime and statewide important farmland. Approximately 8.8 percent of the land in this assessment unit is in CRP and planted with grasses. The C-3 Alternative would convert the least acres of prime farmland and farmland of statewide importance to other uses. The average farming operation in the C-3 corridor is 699 acres. C-3 would cross 13 farming operations and would split four farms. This would create two farming operations under 20 acres. The C-3 Alternative would utilize more existing right-of-way and would convert the least amount of farmland to other uses.

E-2 (Preferred Alternative)

E-2 would affect slightly more prime farmland than the other Action Alternatives. Approximately 27.7 percent of the land in the assessment unit is CRP land, primarily in the southern end of the corridor. However, the E-2 Alternative would affect the greatest acres of actively farmed land even after the CRP land is subtracted. E-2 would affect approximately twice as much CRP land compared to the other alternatives.

The average farm size along the E-2 Alternative is 636 acres. E-2 would cross nine farming operations and would split four farms. This would result in four farming operations less than 20 acres.

4.4 Cultural Resource Effects

There are three sites that are eligible for the National Register of Historic Places (NRHP) within the APE. The No Action, C-3 and E-2 alternatives would have no effect to cultural resources. The W-4 Alternative evaluated in the DEIS would adversely affect the Deesten/Davis farmstead. Following the DEIS publication, the W-4 Alternative centerline was shifted approximately 120 ft east to avoid the historic farmstead. This shifted alignment, the Modified W-4 Alternative, would have no effect to cultural resources. See Chapter 5, Section 4(f) Evaluation for additional detail. See Appendix 1, Key Agency Correspondence and Forms.

4.5 Floodplain Effects

Exhibit 27. Floodplain Effects displays the location of each alternative in relation to the 100-year floodplain. None of the alternatives would be located in the regulatory floodway, which is associated with the South Fork Palouse River. All Action Alternatives would be constructed with the roadbed greater than three feet above the level of a 100-year flood event. This will allow for a one-foot rise to the 100-year floodplain. Table 45. Floodplain Effects lists the type and amount of effects to floodplains for each alternative. See the Floodplain Technical Report for more information.

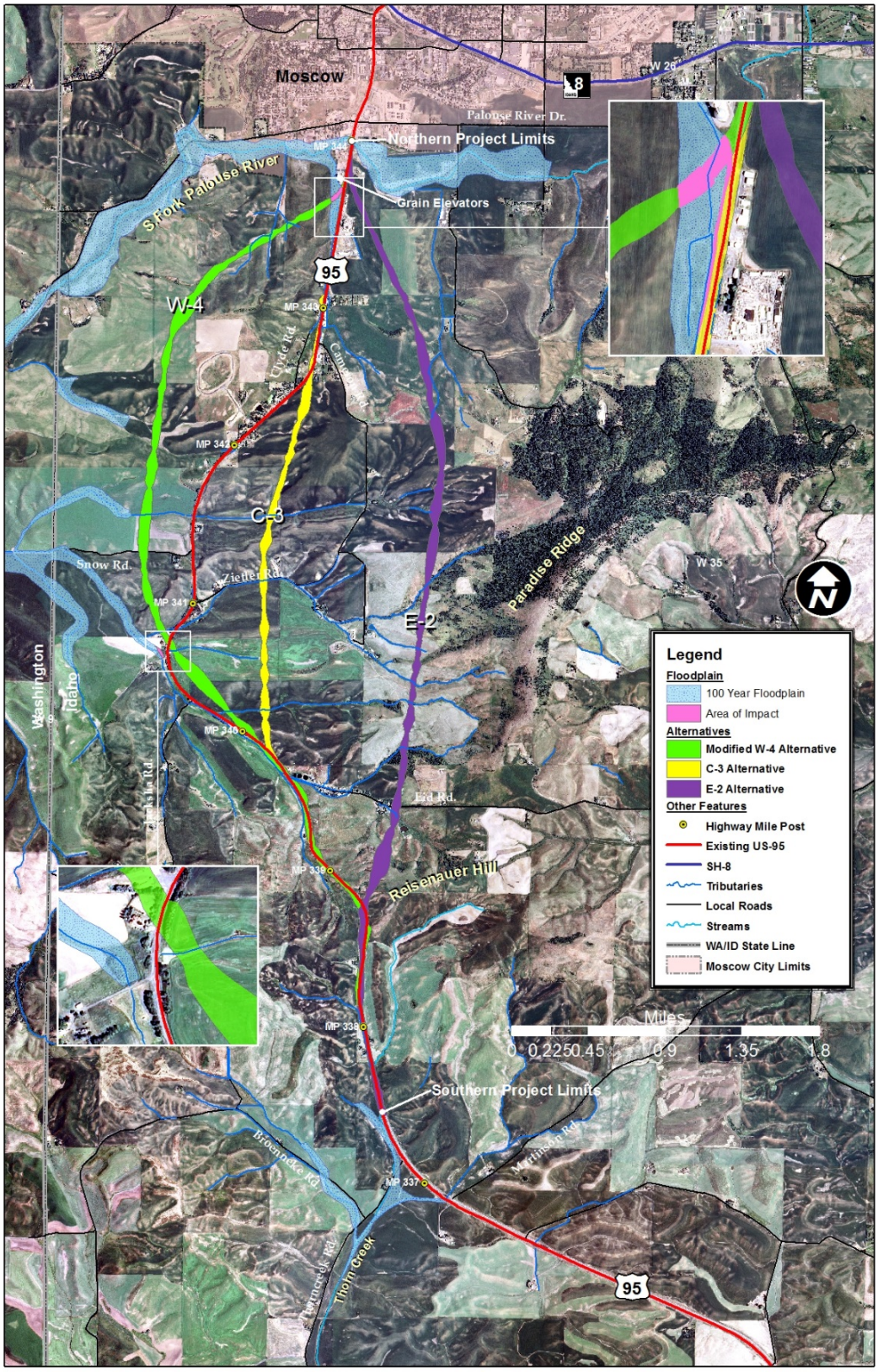
Table 45. Floodplain Effects

Alternative	100-year Floodplain Effects (acres)	Description of Effects (traverse or longitudinal)
No Action	0	None
Modified W-4	1.6	Transverse
C-3	1.8	Longitudinal
E-2	0	None

No Action

The No Action Alternative would not affect floodways or 100-year floodplains as no new roadway would be constructed.

Exhibit 27. Floodplain Effects



Modified W-4

Modified W-4 would have a transverse encroachment upon 1.6 acres of a 100-year floodplain near the South Fork Palouse River. This is a highly modified floodplain on agricultural land with degraded floodplain functions. It is associated with the headwaters of the South Fork Palouse River.

The roadway would cross the floodplain but would be designed to hydraulically pass the 25-year storm event. This could potentially impair the hydraulic flow and floodplain functions on the east side of the roadway fill, potentially resulting in an increase of flood elevations. These risks could be minimized through the use of an oversized pipe, or pipes to accommodate flood backwater. Effects to the natural and beneficial values of the floodplain would be minimal since the area is currently used as farmland. The affected beneficial values of the floodplain are further described in Section 4.6, Wetland and Tributary Effects and in the Wetland Delineation Technical Report.

C-3

C-3 would encroach upon one 100-year floodplain on the north end of the project in a headwater associated with the South Fork Palouse River. It would be a longitudinal encroachment of 1.8 acres, on agricultural land resulting from roadway widening. There are a few buildings in the vicinity of the floodplain; however, it would still be considered a low risk to buildings or other structures (ITD 2012b). Effects to the natural and beneficial values of the floodplain would be minimal since the area is currently used as farmland. The beneficial floodplain values that would be affected are discussed in Section 4.6, Wetland and Tributary Effects.

E-2 (Preferred Alternative)

E-2 would not encroach upon any 100-year floodplain and would be a practicable alternative to avoid floodplain effects.

While Modified W-4 and C-3 would encroach upon floodplains, all roadways for any of the alternatives would be designed to pass the 25-year storm event. The roadway would be designed to be three feet higher than the flood elevation to allow for a one-foot rise in elevation. Therefore, the effects would be minimized per the requirements of EO 11988 and 23 CFR 650, Subpart A.

Measures to minimize floodplain effects have been incorporated into the project, as have measures to restore and preserve the natural and beneficial floodplain values. E-2 would be the most practicable alternative under EO 11988 since it would not encroach on floodplains and would pose the least risk to the human and natural environment.

4.6 Wetland and Tributary Effects

4.6.1 Tributary Effects

All of the alternatives, including the No Action Alternative, could contribute transportation related pollutants to tributaries. Accumulated pollutants from operation and maintenance would build up on impervious surfaces such as the new alignments and existing loop road then run off as stormwater during rain events. The runoff may contain; gasoline, oil, hydraulic fluids, litter, dust, salt, sand, de-icing chemicals such as magnesium chloride, and tire and brake particulates such as zinc, copper, lead and other heavy metals. Stormwater could also contribute to increased erosion and sedimentation, increased peak flows, habitat alteration, and increased stream temperature. Stormwater is not commonly a source of bacterial pollutants or nutrients; therefore the alternatives should not contribute to increased bacteria or nutrient levels.

The degradation of water quality, effects to riparian habitat and soil disturbance could adversely affect the fish and other aquatic species that utilize the streams. Vegetation removal can increase stream temperatures and can lower the dissolved oxygen levels. Increased peak flows can increase erosion and sedimentation affecting spawning beds and fish migration. See Exhibit 28. Tributary Effects.

No Action

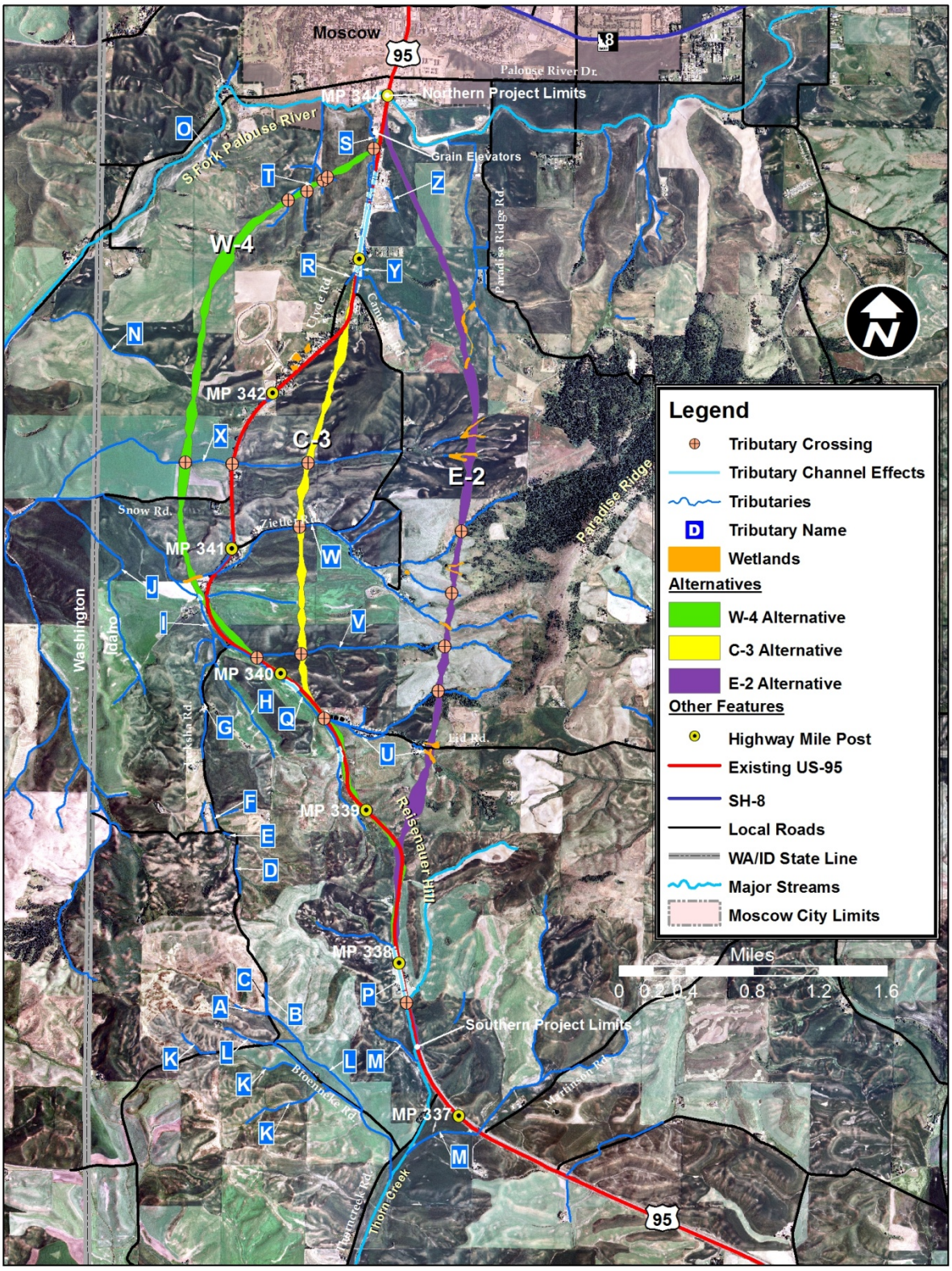
The No Action Alternative would not result in additional tributary crossings, new impervious surfaces, channel alteration, culvert removal, vegetation removal or other associated effects. However, the lack of formal stormwater collection and treatment along existing US-95 would continue to contribute to the degradation of water quality and could adversely affect fish and other aquatic species. There would continue to be temporary water quality effects due to maintenance activities.

Action Alternatives

The potential effects to tributaries common to all Action Alternatives include:

- Increased numbers of tributary crossings and lengthening of culverts
- Increased runoff due to new impervious surfaces such as roadways, parking lots or sidewalks.
- Increased erosion and sedimentation due to general construction activities near tributaries (i.e., road fill or culvert installation)
- Vegetation removal near tributary crossings and encroachments
- Utility relocations near waterways
- Placement of fill near waterways
- Improved hydraulic conveyance through culverts under reconstructed roadways

Exhibit 28. Tributary Effects



All Action Alternatives would involve construction of temporary and permanent BMPs to ensure compliance with the CGP, TMDLs and other regulatory requirements. The TMDLs and 303(d) listings for tributaries in the project area list sediment, stream alteration and temperature as pollutants. BMPs will be installed along the perimeter of the work area during construction and maintained throughout construction to reduce sediment from entering waterways. Turbidity testing will occur daily during in water work. Riparian areas that are disturbed will be reestablished with native vegetation that can provide shade, which could contribute to decreased downstream temperatures. Chemicals used during construction will be stored away from waterways or will have secondary containment measures in place to minimize the potential for contamination and spills. All of the Action Alternatives would be designed to pass a 25-year storm event.

Increasing the area of impervious surface and removing vegetation has the potential to increase water temperatures and lower dissolved oxygen levels, which could affect aquatic species. The numbers of tributary crossings, channel effects, new and total impervious surface area for each alternative is shown in Table 46. Tributary Effects.

Table 46. Tributary Effects

Alternatives	Crossings (number)	Channel Effects (linear feet)	Impervious Surface – Proposed Alignments (acres)	Impervious Surface – Remaining Loop Road (acres)	Total Impervious Surface (acres)
No Action	0	0	0	21	21
Modified W-4	10	3,592	58	10	68
C-3	5	7,808	49	9	58
E-2	5	2,592	55	17	72

Modified W-4

Modified W-4 would have the greatest number of tributary crossings but less than half the linear feet of stream impacts than the C-3 Alternative. Modified W-4 could result in greater water quality degradation compared to C-3 and E-2 due to the greater number of crossings. There may also be a corresponding effect to the aquatic species that occur in the streams. See Section 4.8, Vegetation, Fish and Wildlife Effects.

C-3

C-3 would have the same number of tributary crossings as E-2 but would affect approximately three times more linear feet of tributary channel than E-2 primarily due to the encroachment of the roadway on the sides of stream channels. It would have the fewest acres of new impervious and total impervious surface because it would follow existing US-95 for much of the alignment.

E-2 (Preferred Alternative)

E-2 would have the same number of tributary crossings as C-3 but would affect approximately one-third of the length of tributary channel; therefore, E-2 would result in less removal of riparian vegetation and less erosion and sedimentation due to channel realignments and scour. This would result in fewer effects to aquatic species and water quality in the tributaries. E-2 would affect some wetland areas that are the headwaters to the downhill tributaries or included within wetlands but are not individually classified as tributaries. The E-2 Alternative would have the greatest acres of total impervious surface but would cross the fewest feet of stream channel. The E-2 Alternative would increase the acres of impervious surface near the headwaters and tributaries which would result in increased stormwater discharge. This could result in increased scour, erosion, sedimentation and pollutant discharge into the receiving waters.

Avoidance, Minimization and Mitigation

All of the Action Alternatives would impact tributaries. Culverts would be aligned to follow the natural channel of the stream or creek whenever possible and will be designed to accommodate the hydraulic flows. Stormwater treatment will be implemented, and the SWPPP will address temporary construction measures to minimize harm. Once all practicable measures for avoidance and minimization are in place, remaining impacts will be mitigated through compensatory mitigation, which will be met through use of the Cow Creek Mitigation site, which has already been constructed. See Chapter 9, Environmental Commitments for details.

4.6.2 Wetland Effects

The FHWA requires consideration of all wetlands regardless of whether they are jurisdictional by the USACE. The wetland effects of each alternative are shown in Table 47. Wetland Effects. Only the wetlands affected by any of the alternatives are described in this section. See the Wetland Delineation Technical Report for information regarding all the wetlands.

No Action

The No Action Alternative would not directly affect wetlands.

Action Alternatives

The Action Alternatives would affect from 0.99 acres to 3.61 acres of 17 different wetlands. See Table 47. Wetland Effects and Exhibit 29. Wetland Effects. The majority of the wetlands in the project area are rated as Category III, Palustrine Emergent (PEM) wetlands. These are typically small wetlands that have been disturbed and have low vegetative diversity compared to Category I and II wetlands. Most of the wetlands that are affected drain into either the South Fork of the Palouse River or Thorn Creek, both of which are on the 303(d) list and are waters of the US.

Table 47. Wetland Effects

	Modified W-4 (acres)		C-3 (acres)		E-2 (acres)	
Wetland	PEM*	PSS**	PEM	PSS	PEM	PSS
W9	–	–	–	–	–	–
W10	0.15	–	–	–	–	–
W13	–	–	–	–	–	0.19
W20	0.36	–	–	–	–	–
W23	0.31	–	0.30	–	0.20	–
W24	0.15	–	0.16	–	–	–
W25	–	–	0.02	–	–	–
W26	–	–	0.23	–	–	–
W27	0.78	–	–	–	–	–
W28	0.04	–	0.04	–	0.04	–
W29	–	–	–	–	1.32	–
W31	0.06	–	–	–	–	–
W32	–	–	–	–	–	0.73
W35	–	–	–	–	0.75	–
W39	–	–	0.24	–	–	–
W40	–	–	–	–	0.25	–
W44	–	–	–	–	0.13	–
Subtotals	**1.85**	**0.00**	**0.99**	**0.00**	**2.69**	**0.92**
Totals	**1.85**		**0.99**		**3.61**	

*PEM=Palustrine Emergent

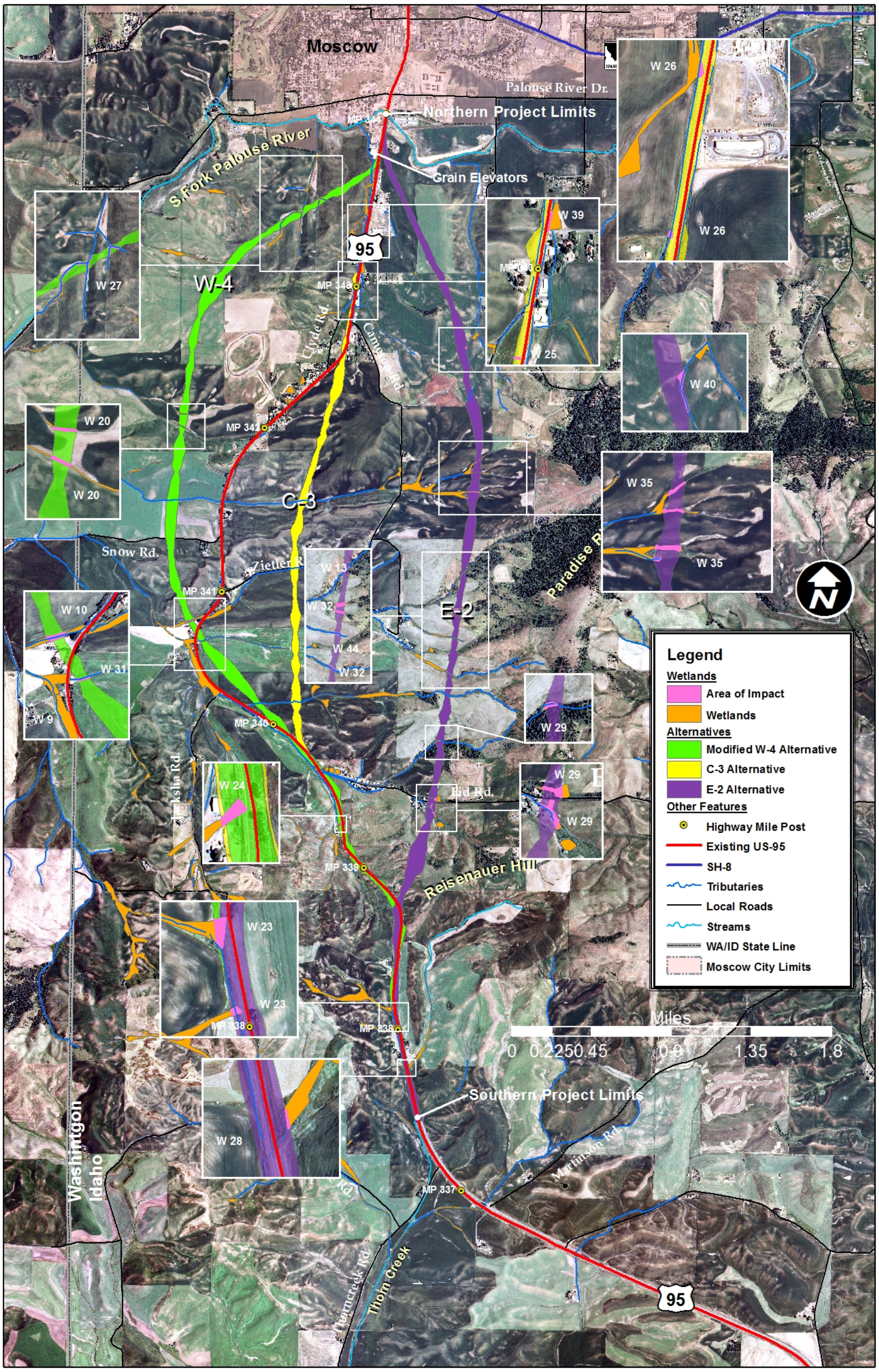
**PSS=Palustrine Scrub-shrub

Modified W-4

The majority of the wetlands affected by the Modified W-4 Alternative drain to the South Fork of the Palouse River. The remainder drains into Thorn Creek. Wetlands help to improve the water quality of these two water bodies, which are both listed on the 303(d) list. Filling wetlands could potentially increase the amount of pollutants and sediments that reach these waters.

The Modified W-4 Alternative would affect PEM wetlands all of which have been modified and are surrounded by active farming. Modified W-4 would affect 1.79 acres of Category III wetlands and 0.06 acres of a Category IV wetland. 1.48 acres of affected wetlands scored 50 percent or higher for improving water quality. Wetland 28, of which 0.04 is affected, scored 50 percent for wildlife habitat. Wetland 23 and Wetland 31 did not score over 50 percent in any of the three categories for wetland functions (Gilmore 2012).

Exhibit 29. Wetland Effects



Most of the wetland effects are the result of the new alignment crossing wetlands. Wetland 23 would have 0.31 acres of fill from widening and straightening the road on its existing alignment. The Modified W-4 would affect more wetland acres than C-3 but less than E-2.

C-3

The C-3 Alternative would have the least effects to wetlands out of the Action Alternatives. All six of the wetlands affected are Category III PEM wetlands and are either farmed or surrounded by farmland. Four of the affected wetlands (0.67 acres) scored a 50 percent or higher rating for improving water quality. There would be 0.04 acres of effects to Wetland 28 that scored 50 percent for wildlife habitat.

The wetlands affected by the C-3 Alternative are located near the existing highway and currently receive pollutants from road runoff. Four of the affected wetlands drain to the South Fork of the Palouse River. The remainder drains to Thorn Creek. The wetland effects would result from widening US-95 along its current alignment.

E-2 (Preferred Alternative)

Most of the wetlands affected by this alternative are Category III PEM wetlands. The remainder of the effect is to palustrine scrub-shrub (PSS) wetlands surrounded by farming activities. Approximately half of the wetlands affected by E-2 are associated with man-made ponds. Five of the affected wetlands (3.03 acres of impact) scored 50 percent or higher for improving water quality functions. Only one of the affected wetlands (0.04 acres of impact) scored a 50 percent or higher for improving habitat functions.

Two of the affected wetlands are PSS (13 and 32) with more diverse structure and wildlife habitat function compared to the PEM wetlands. These would be more difficult to replace compared to the PEM wetlands because woody vegetation takes longer to establish than emergent vegetation. However, because the proposed wetland mitigation involves applying mitigation credit from the Cow Creek Mitigation Area, which is already established and fully functioning, there would be no temporal loss.

Two of the wetlands affected drain to Thorn Creek and five drain to the South Fork of the Palouse River. One does not appear to have surface connection to other wetlands or tributaries. Most of the effects would be due to new sections of alignment. These wetlands are already disturbed and many of them have been altered or artificially created through the addition of ponds.

The E-2 Alternative would affect more wetlands that are functioning higher for habitat. The C-3 Alternative would have the least effect to wetlands in terms of acreage, function and value.

Executive Order 11990

Section 404(b)(1) Guidelines require all appropriate and practicable steps be taken to minimize adverse effects to the aquatic ecosystem. EO 11990, Protection of Wetlands states that wetlands may not be impacted unless there is no feasible or practical alternative to the proposed construction. All practical measures to minimize harm must be considered. The E-2 Alternative, FHWA's and ITD's Preferred Alternative, would have 3.61 acres of unavoidable wetland impacts. This evaluation of compliance with EO 11990 is for the Preferred Alternative (E-2).

During the initial screening of alternatives process, the E-1 and E-3 alternatives which had greater wetland impacts compared to the E-2 Alternative, were eliminated from further consideration. Compared to the action alternatives evaluated in the DEIS, the C-3 alternative would have the least impact and the E-2 Alternative would have the greatest impact. While the E-2 Alternative would have 2.62 acres more impact on wetlands compared to the C-3 Alternative, it would result in 43 fewer projected total crashes and nine fewer fatal and injury crashes between 2017 and 2036. This would have a significant benefit to the community and the travelling public and would best meet the project purpose and need.

Before final design, ITD will evaluate the use of crossings and other engineering solutions at the PSS wetlands to minimize harm to the more diverse wetlands and to help facilitate wildlife movement through the riparian area. This may also include evaluating slope angles to minimize wetland fill in a manner that still meets safety standards. Providing adequate temporary and permanent stormwater BMPs to comply with the CGP, TMDLs and the NPDES requirements will further minimize effects to wetlands and tributaries. Culverts in drainages will be oversized as possible to allow continued hydrological connectivity under the roadway and small mammal movement. Where practicable, trees and shrubs will be salvaged for reuse. BMPs, minimization measures and compensatory wetland mitigation measures are further discussed in Chapter 9, Environmental Commitments.

FHWA requires replacement of lost functions and values for all impacted wetlands, including wetlands non-jurisdictional by the USACE. Wetland impacts that cannot be avoided or minimized further will be mitigated through a compensatory mitigation process. Permitting will be completed in accordance with Section 404 of the CWA.

Mitigation will be implemented in accordance with 33 CFR 332 Compensatory Mitigation for Losses of Aquatic Resources and will replace any lost functions and values. A watershed approach will be used to identify compensatory mitigation for affected wetlands and tributaries.

Within the project vicinity the Cow Creek Mitigation Area has already been constructed and will compensate for effects from this and other ITD projects. The Cow Creek Wetland Mitigation Area was constructed with extra mitigation capacity in 2005 as part of the US-95, Top of Lewiston Hill to Genesee and Genesee to Thorn Creek Highway projects and is in the same watershed as the impacts. Because the site is already constructed and successfully functioning, there would be no temporal loss. The remaining credit has been approved by the USACE to compensate for the wetland impacts for the action alternatives for this project. See Appendix 1, Key Agency Correspondence.

The Cow Creek Wetland Mitigation Area included excavation, grading, irrigation, well drilling, placing brush piles, large woody debris, nest boxes, plantings for the mitigation area and other habitat features. Plantings consisted of 1,400 trees, 20,500 shrubs, 4,400 willow stakes, and 34,500 wetland species plugs. Unsuccessful plants were replaced and emergent vegetation was over-seeded with wetland mix as necessary. The site was monitored and the mitigation was considered by the USACE to be successfully completed with 80 percent plant survival and site stabilization after three years.

If an action alternative is selected, and if during the design process, more wetland is impacted than is stated in the FEIS, then additional wetland mitigation will be required. This requirement could be met by purchasing credits from the Valencia Wetland Mitigation Bank, which services the project area. The bank was assessed and was given credits based on functional units. With the USACE approval, Valencia can provide mitigation in a cost effective manner and will ensure that all of the affected functions and values are successfully mitigated because the functions and values have already been successfully established. This method would also have no temporal loss of wetland functions and values. The Valencia Wetland Mitigation Bank is approved to provide the following mitigation:

- Listed/Proposed Threatened and Endangered Species
- Idaho Natural Heritage Species Habitat
- Wildlife Habitat
- General Fish/Aquatic Habitat
- Flood Attenuation
- Short and Long Term Surface Water Storage
- Sediment/Nutrient/Toxicant Removal
- Sediment/Shoreline Stabilization
- Production Export/Food Chain Support
- Groundwater Discharge/Recharge
- Uniqueness
- Recreational/Education Potential

Other wetland mitigation measures are included in Chapter 9, Environmental Commitments. Based upon the above considerations, and in consideration of the proposed mitigation, it is determined that there is no practicable alternative that avoids all construction in wetlands and tributaries and that the proposed action includes all practicable measures to minimize harm to wetlands and tributaries which may result from such use.

4.7 Groundwater Effects

Potential transportation related effects to groundwater could include:

- Slower recharge rates due to increased impervious surface areas (such as roadways, parking lots or sidewalks)
- Hazardous material spills from the travelling public or construction equipment
- Accidental spills during utility relocation
- Discharge of untreated stormwater into underground injection wells
- Contamination during well decommissioning
- Altering groundwater discharge and recharge areas

The project is located over the Wanapam and Grand Ronde aquifers, which are overlain by rich loess soils with high water holding capacity. The potential effects of the alternatives to groundwater due to hazardous material sites and hazardous material handling are discussed in Section 4.14 Hazardous Materials Effects. A Hydrogeologic Analysis was prepared after the DEIS hearing to address concerns regarding possible groundwater impacts from construction of the alternatives (Ralston 2014).

The No Action Alternative would continue to use existing US-95, which has no formal stormwater treatment areas. It would not increase impervious surface but untreated stormwater would continue to flow to tributaries and groundwater.

The potential alternatives' impacts to groundwater are very low. All Action Alternatives would increase impervious surfaces that could contain highway related pollutants that could drain to groundwater; however, the amount of new impervious surface is a small percentage of the total recharge area. Snow accumulated along the roadway and road runoff could recharge to groundwater. The amount of this increase will be very small and is balanced by a decrease in recharge from the paved areas. In addition, the aquifers used for water supplies are generally more than 100 ft below the surface with a very limited hydraulic connection to the surface waters. The surface water crossings will be through culverts and bridges (Ralston 2014).

Most of the road alignments are underlain by granitic or metamorphic rock and any discharge to groundwater in these areas would occur in topographically low areas such as streams. The

highway in these areas would be elevated on fill or bridges and surface water would flow through culverts or under the bridges. Stormwater would be discharged to the road fill, which would treat the stormwater and minimize potential water quality impacts. The emergence of seeps could shift from under the fill to the toe of the roadway fill (Ralston 2014).

See Section 4.6.1, Tributary Effects for a description of transportation related effects. All Action Alternatives would be designed and constructed to comply with the CGP and TMDLs. A SWPPP that will identify temporary and permanent BMPs such as grassy swales or check-dams will be prepared and implemented. With the implementation of these BMPs, there would be a low risk of aquifer contamination from stormwater.

4.7.1 Affected Wells

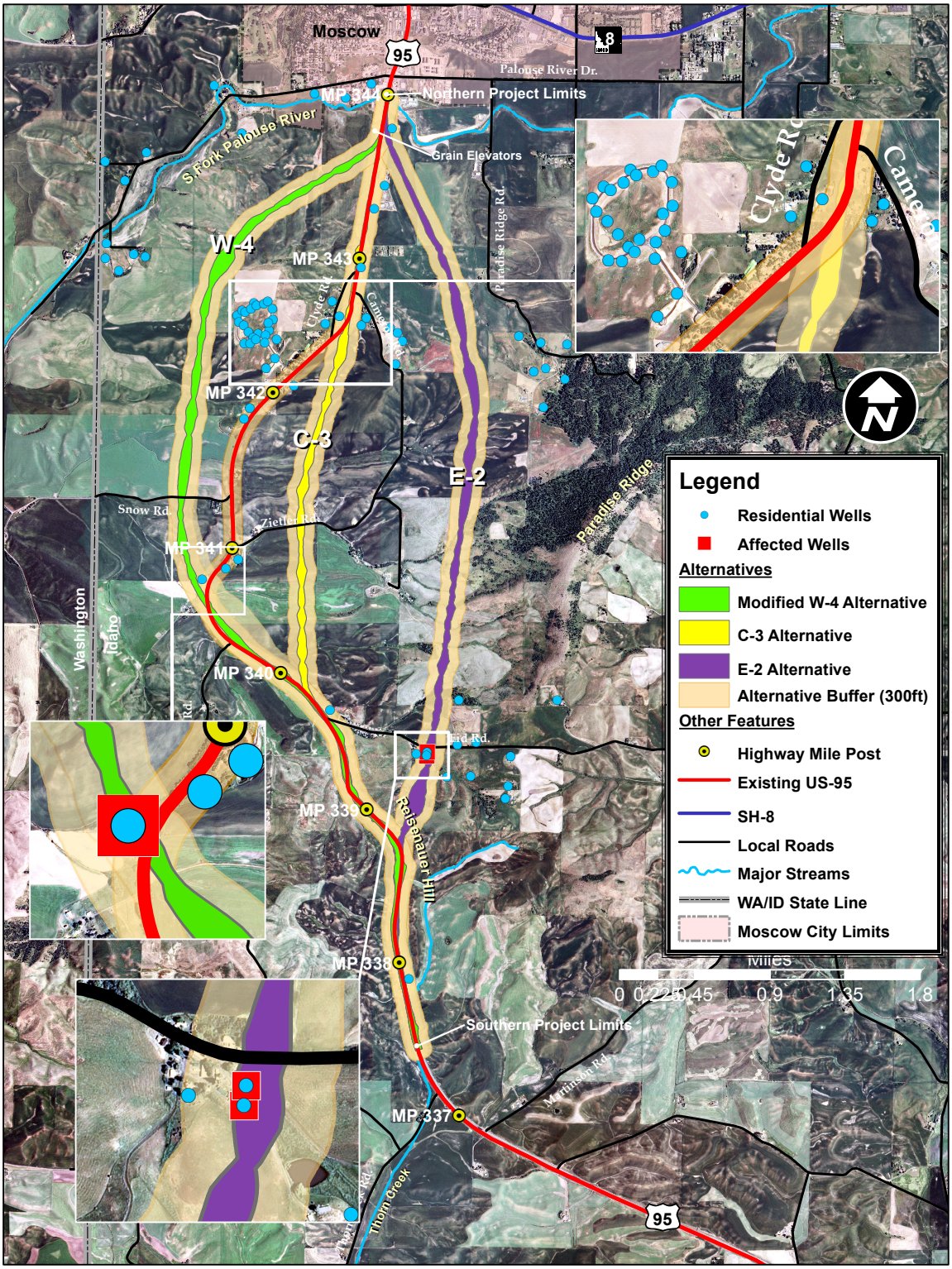
There are numerous domestic and irrigation wells within the project area. Most of these wells exceed 100 feet in depth and obtain water from a producing zone at the bottom of the well. Wells that are completed in basalt are located mostly at the north end of the project. These wells obtain water from the Wanapum Formation, which hosts the upper aquifer in the Moscow area.

The No Action Alternative would not require right-of-way acquisition or construction; therefore, it would not affect wells within the project area. The Modified W-4 and E-2 alternatives would affect wells, all of which are domestic. Both wells impacted by the E-2 Alternative are located along Eid Road but neither would be replaced because the residences would be impacted and the well would not be replaced. The well impacted by the Modified W-4 Alternative would be replaced. Well relocations may cause a short-term interruption of water service during construction. Drinking water may be temporarily affected by suspended sediments caused by well drilling. Exhibit 30. Affected Wells and Table 48. Affected Wells show the known or registered wells that would be affected by each alternative. See Chapter 9, Environmental Commitments.

Table 48. Affected Wells

Alternatives	Affected Domestic Wells	Domestic Wells within 300 ft
No Action	0	10
Modified W-4	1	3
C-3	0	6
E-2	2	5

Exhibit 30. Affected Wells



4.8 Vegetation, Fish and Wildlife Effects

4.8.1 Vegetation and Habitat Effects

All of the Action Alternatives would pass through similar agricultural or rural residential lands, which constitute low to marginal quality wildlife habitat. See Table 49. Habitat Type Effects for acres of agricultural land. The Action Alternatives also transect habitat types that support a greater diversity of vegetation, fish and wildlife species including wetlands, riparian areas, pine stands, Palouse remnants and areas with water sources. A pine stand that provides potential habitat for long-eared myotis and habitat for pygmy nuthatch would be affected by the E-2 Alternative. The ungulate impact area includes the impacts to this pine stand. See Table 49. Habitat Type Effects.

Table 49. Habitat Type Effects

Alternative	Agricultural/ Grassland (acres)*	Pine Stands (acres)	Ungulate Impact Area (acres)**	New Right-of-Way (acres)
No Action	0	0	0	0
Modified W-4	162	0	0	206
C-3	101	0	0	154
E-2	158	3.9	4.4	207

*Source: (Haagen 2006)

**Source: (Melquist 2005a)

Pine Stand Effects

The No Action, Modified W-4 and C-3 alternatives would not affect pine stands that could provide potential nesting habitat for pygmy nuthatch, long-eared myotis, northern alligator lizard or other species. The E-2 Alternative would affect a pine stand.

Melquist in his report stated that suitable habitat for pygmy nuthatch is limited along the edge of the eastern corridor. He identified pine stands along the project corridor that could offer suitable pygmy nuthatch habitat. One stand is located at the lower end of a forested draw with up to 60 mature ponderos pine trees and would not be affected by the action alternatives.

A pine stand and woodlot owned by the Dumroese family has approximately ten snags and an estimated four mature pine trees with dead tops. This pine stand is small and isolated from the larger pine stand that occurs on Paradise Ridge. It offers potential habitat for long-eared myotis, northern alligator lizard and other species. Pygmy nuthatches are reported to utilize this pine stand (Melquist 2005b).

The E-2 Alternative would affect 3.9 acres of this pine stand leaving approximately six acres of pine stand on the west side of the highway and approximately 20 acres of pine stand on the east

side of the highway. The remainders of the pine stand could still be utilized by pygmy nuthatch but use could be reduced due to fragmentation and other factors. See Section 6.1 Indirect Effects under Fragmentation. Pygmy nuthatch territory size may range from approximately one to 20 acres (0.54 to 8.15 ha) (Norris 1958, Balda 1967, Storer 1977). Territory size varies with the number of nuthatches present, pine tree density, and availability of snags or nest boxes (Ghalambor 2006). Territory size on heavily logged plots versus thinned plots (Braun and Balda 1988a) and on plots with nest boxes in snag-poor habitats is significantly larger (Brawn and Balda 1988a, Bock and Fleck 1995).

While Melquist stated there would be no direct impact to long-eared myotis or pygmy nuthatch due to construction of any of the alternatives, the loss of habitat is expected to result in indirect impacts to resident populations. (Melquist 2005b). See Section 6.1 Indirect Effects.

Melquist identified other suitable habitat nearby at Paradise Ridge and throughout Northern Idaho (Melquist 2005b). In his report Melquist states that other pygmy nuthatch suitable habitat is located near the Dumroese property, near the Robinson Lake Park in Moscow, Idler's Rest and most of the areas of the Palouse that still have ponderosa pine (Melquist 2005b; figure 3). The WCS (IDFG 2005) generally describes the Palouse Prairie Ecosystem and provides mapping of dry conifer forest, listing it as habitat for many species including pygmy nuthatch and northern alligator lizard. Dry conifer forest is shown to cover approximately 42 percent of the Palouse Prairie Ecosystem (IDFG 2005).

The pygmy nuthatch is protected under the Migratory Bird Treaty Act and no active nest sites can be destroyed or removed. Tree removal would occur outside of the nesting season (April 1 to August 1) to avoid impacts to nesting birds. Measures that would mitigate for the loss of the pine stand include adding nest boxes (Melquist 2005b) as described in Chapter 9, Environmental Commitments.

Riparian Habitat Effects

The No Action Alternative would not directly affect any riparian habitat. All of the action alternatives would cross tributaries; however, crossings would be designed to allow for hydraulic flow to continue under the roadway. Crossings may include, bottomless box culverts, culverts placed at-grade or use of stream simulation designs. Where practicable, provisions for terrestrial species movement would be incorporated into the crossing design. See Chapter 9, Environmental Commitments. C-3 would affect the greatest length of tributaries, whereas the E-2 alternative would affect the least. See Section 4.6, Wetland and Tributary Effects for additional detail. See the Wildlife Technical Reports for additional detail.

Palouse Remnant Effects

The No Action Alternative would not involve road realignment, major soil disturbing activities or removal of existing vegetation, and therefore would not directly affect the Palouse remnants.

The Modified W-4, C-3 and E-2 alternatives would not directly affect Palouse remnants. See Chapter 9, Environmental Commitments for mitigation measures. Indirect effects are discussed in Chapter 6, Indirect and Cumulative Effects.

Matrix Habitat Effects

The action alternatives would all bisect agricultural land and CRP land that can be considered as matrix habitat. These, while non-native, may still provide some level of function for wildlife and pollinators. The greater impacts to CRP lands by the E-2 alternative could affect bees, grassland birds, and other wildlife more than the Modified W-4 and C-3 alternatives; however, bees and other species would also utilize roadside weeds, Palouse remnants and the surrounding agricultural matrices. The greater proximity of the E-2 Alternative to Palouse remnants could adversely affect the native plants utilized by bumblebees but would be minimized through the implementation of mitigation measures including weed control as described in Chapter 9, Environmental Commitments.

Exhibit 31. Habitat Feature Effects

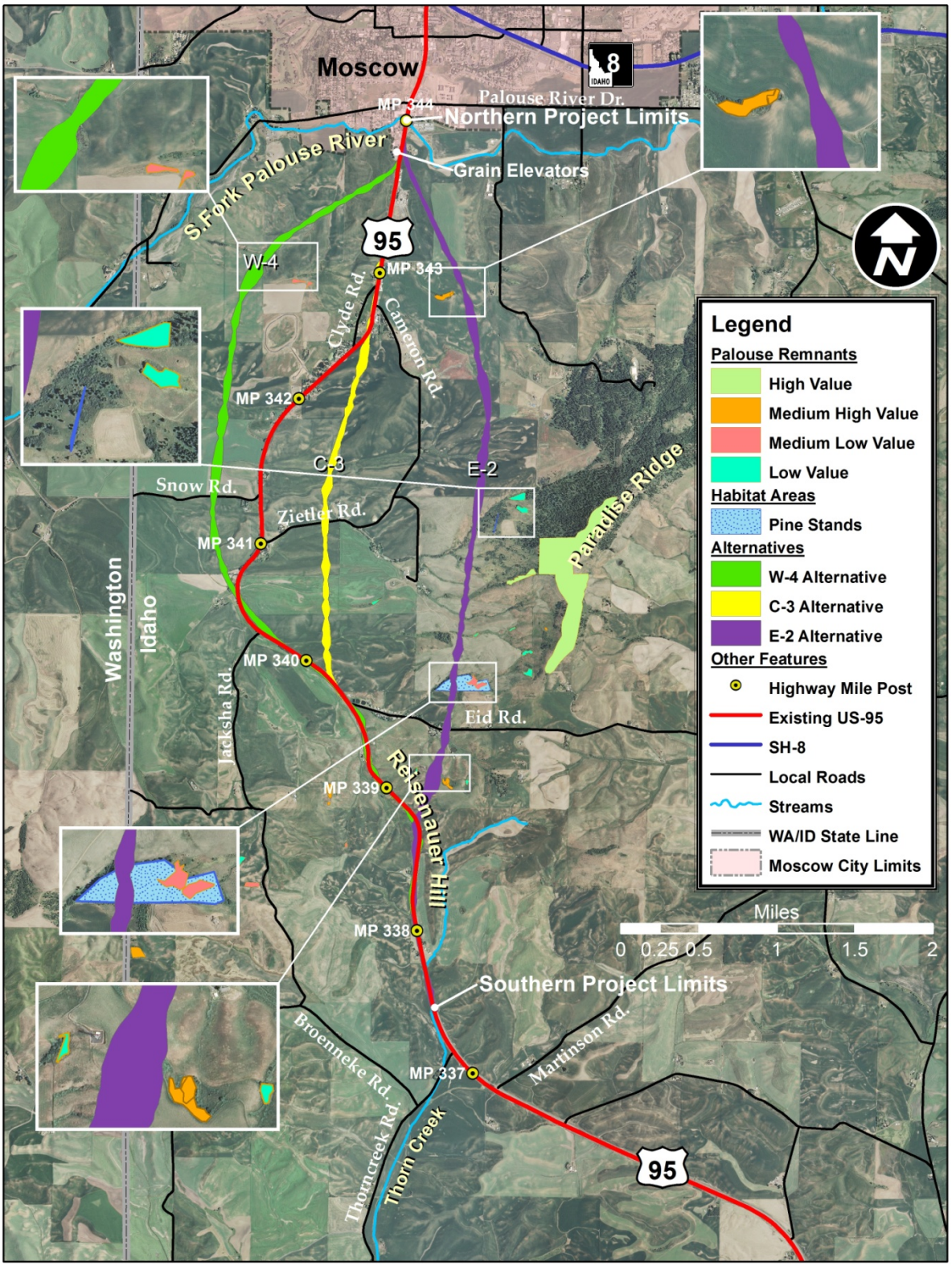
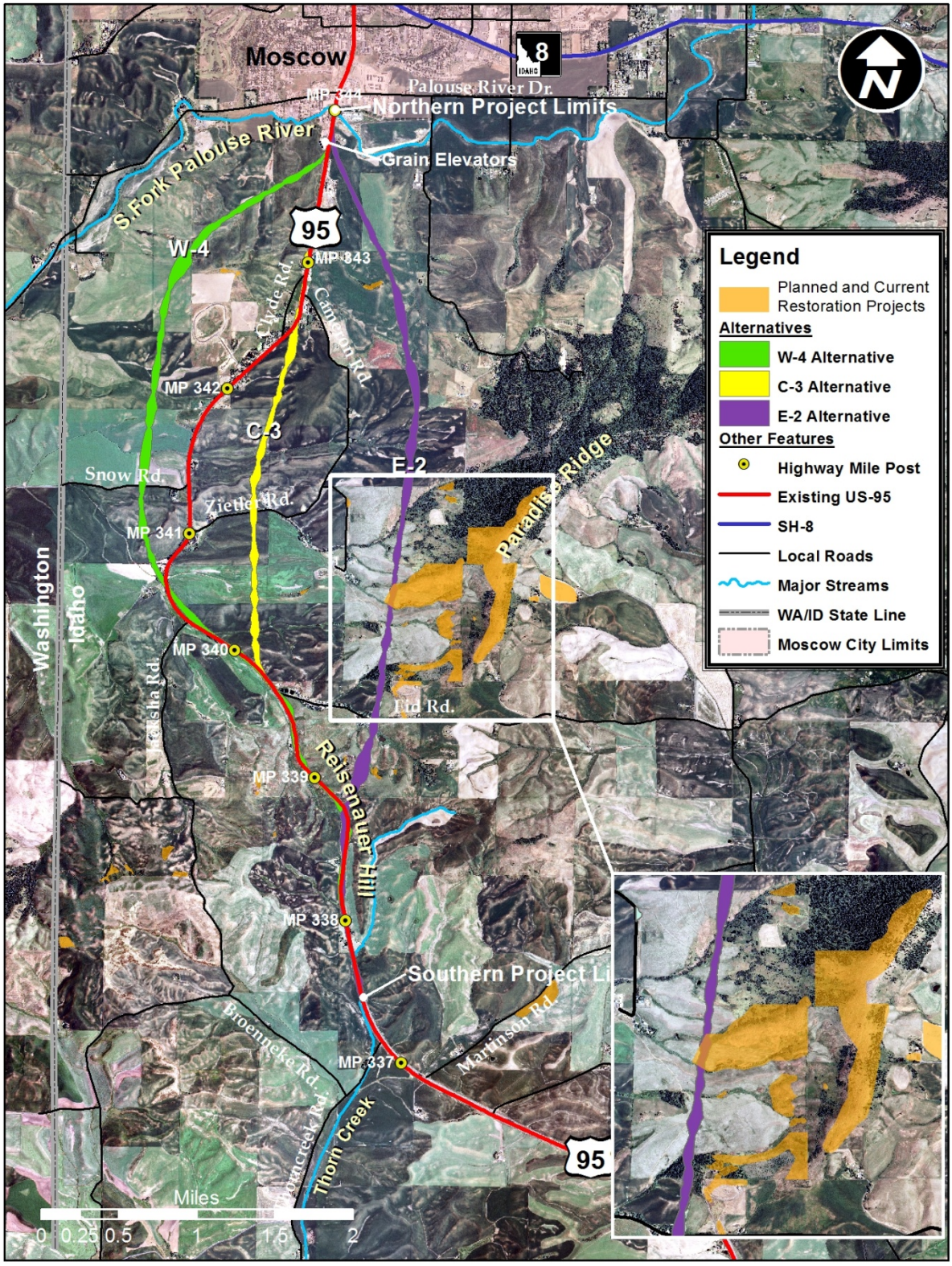


Exhibit 32. Farmed Land on the E-2 Alignment

Palouse Restoration Projects Effects

The No Action, Modified W-4 and C-3 alternatives would not directly affect planned or current restoration projects. The E-2 Alternative would directly affect a property with an easement for restoration activities under the USFWS Partners Program. However, the section of the property that would be affected is an actively producing wheat field and any on-going or planned restoration activities are approximately 200 feet from the alignment. Those restoration activities include ecological weed control (hand-pulling weeds) and planting Spalding's catchfly. While the E-2 Alternative would not directly affect the areas where restoration activities are occurring or are planned; it would bring the roadway closer to the projects compared to the other alternatives. See Exhibit 33. Planned and Current Restoration Projects.

Exhibit 33. Planned and Current Restoration Projects



ITD and FHWA recognize that there has been substantial agency and community involvement in restoration activities in the area (See Exhibit 33. Planned and Current Restoration Projects) and while none of the alternatives directly affect the projects, all could increase weed dispersal to these areas. FHWA and ITD have worked with the resource agencies involved in the restoration activities to prioritize projects on land furthest from the alignments. Indirect and cumulative effects to Palouse Restoration Projects are described in Chapter 6, Indirect and Cumulative Effects.

Rare Plant Effects

None of the alternatives would directly affect any known occurrences or populations of rare plants. Indirect and cumulative effects are discussed in Chapter 6, Indirect and Cumulative Effects.

Invasive Plant Effects

Additional information regarding weed species, weed dispersal and potential effects have been incorporated from the DEIS Technical Report titled A Scientific Evaluation for Noxious and Invasive Weeds of the Highway 95 Construction Project between Uniontown Cutoff and Moscow (Lass & Prather 2007) and the Biological Evaluation of Plant Species and Communities of Conservation Concern in the US Highway 95 Thorncreek Road to Moscow Project Area (Litchardt 2005).

Non-native invasive species, or weeds, may establish in the road right-of-way resulting in direct effects and may potentially continue to spread outside of the right-of-way in later years resulting in indirect effects. These effects could occur for any of the alternatives. Weeds could diminish habitat quality and adversely affect biodiversity (Parker et al. 1993) by altering the native plant communities. Weeds are already present in the project area and are predicted to spread as a result of soil disturbance and vehicular travel through the corridor.

The potential for weeds to move from the roadside into a remnant will be dependent on their dispersal methods, distance to the remnant, and the surrounding land use. Common weed sources include stockpiled material, staging areas, imported soils, construction equipment, and workers. Alignments with steep road cuts and fills with south and west aspects will be drier sites and it will be difficult to establish native vegetation resulting in more open spaces for infestation. Section 6.1 Indirect and Cumulative Effects provides more information regarding indirect and cumulative effects due to weed dispersal.

In May 2014, ITD and IDFG met to further discuss impacts and agreed on suitable mitigation measures for vegetation, fish and wildlife effects, which have been added to Chapter 9,

Environmental Commitments. ITD will continue to work with IDFG before final design to further refine the mitigation measures and help ensure their successful implementation.

4.8.2 Wildlife Species Effects

To assess the relative effects of the alternatives to all vegetation, fish and wildlife species would be difficult. IDFG prepared an assessment of project effects to Species of Greatest Conservation Need (SCGN) that were likely to be found in the project area which were identified through a filtering process and determined to be representative of wildlife species in the area. The rationale for identifying these species for evaluation is described in Section 3.8.2 Methodology and the rationale for making the effect determinations are explained in the General Wildlife Assessment (IDFG 2006).

For each of the representative species, project effects were based on occurrence of the species in the project area and the presence of suitable habitat in the area. If the species were not known to occur in the project area and no suitable habitat was present for the species, then it was determined the alternatives would not affect the species. However, if suitable habitat for the species was present, regardless of whether there were known or recorded occurrences, the project was assumed to affect the species (IDFG 2006). IDFG also assumed that all new right-of-way required by each alternative was suitable habitat for those species affected; therefore, the relative difference in right-of-way required for each alternative relates to the relative effects to the species. Based on this method, the E-2 Alternative would have the greatest effects to wildlife and would impact Northern alligator lizard, Pygmy nuthatch and Long-eared myotis because it would affect a pine stands that is considered suitable habitat for these species, whereas the other alternatives would avoid the pine stand. The C-3 Alternative would have the least effect to the wildlife because it would require the least amount of new right-of-way.

Table 50. Representative Wildlife Species Effects

Species	Potential Species Effects			
	No Action	Modified W-4	C-3	E-2
Woodhouse's toad	No Impact	No Impact	No Impact	No Impact
Mountain quail	No Impact	No Impact	No Impact	No Impact
Peregrine falcon	No Impact	No Impact	No Impact	No Impact
Yellow-billed cuckoo	No Impact	No Impact	No Impact	No Impact
Townsend's big-eared bat	No Impact	No Impact	No Impact	No Impact
Nimapuna tigersnail	No Impact	No Impact	No Impact	No Impact
Pale jumping-slug	No Impact	No Impact	No Impact	No Impact
Fir pinwheel	No Impact	No Impact	No Impact	No Impact
Salmon coil	No Impact	No Impact	No Impact	No Impact

Species	Potential Species Effects			
Lyre mantleslug	No Impact	No Impact	No Impact	No Impact
Dry land forest snail	No Impact	No Impact	No Impact	No Impact
Oregonian (2 species)	No Impact	No Impact	No Impact	No Impact
Humped coin	No Impact	No Impact	No Impact	No Impact
Giant Palouse earthworm	No Impact	No Impact	No Impact	No Impact
Northern alligator lizard	No Impact	No Impact	No Impact	Potential Impact
Ring-necked snake	No Impact	Potential Impact	Potential Impact	Potential Impact
Swainson's hawk	No Impact	Potential Impact	Potential Impact	Potential Impact
Long-billed curlew	No Impact	Potential Impact	Potential Impact	Potential Impact
Short-eared owl	No Impact	Potential Impact	Potential Impact	Potential Impact
Grasshopper sparrow	No Impact	Potential Impact	Potential Impact	Potential Impact
Pygmy nuthatch	No Impact	No Impact	No Impact	Potential Impact
Long eared myotis	No Impact	No Impact	No Impact	Potential Impact
California myotis	No Impact	Potential Impact	Potential Impact	Potential Impact
Stonefly (5 species)	No Impact	Potential Impact	Potential Impact	Potential Impact
Mayfly (2 species)	No Impact	Potential Impact	Potential Impact	Potential Impact
Spur-throated grasshopper (2 species)	No Impact	Potential Impact	Potential Impact	Potential Impact

Other Species Considered and Habitat Effects

No Action

The No Action Alternative would have no direct effect to vegetation and wildlife habitat. Wildlife collisions would continue to climb with increased traffic volumes.

Modified W-4

Modified W-4 would run primarily through agricultural land that functions as foraging and breeding habitat for many wildlife species including the Giant Palouse earthworm. The Modified W-4 Alternative would convert the greatest amount of farmland that functions as foraging and breeding habitat for many wildlife species. It would avoid the pine stands. Modified W-4 would cross 10 tributaries that provide habitat for resident wildlife species.

C-3

The C-3 Alternative would pass through some agricultural areas including potential habitat for the giant Palouse earthworm but would utilize much of the existing US-95 roadway. C-3 would result in the fewest acres of conversion of farmland that currently functions as foraging and breeding habitat for many wildlife species. It would avoid the pine stands. The C-3 Alternative would cross five tributaries that possess habitat for resident wildlife species.

E-2 (Preferred Alternative)

The E-2 Alternative would pass through cultivated agricultural lands and CRP lands located west of Paradise Ridge. The farmland along E-2 is considered more suitable for ungulates because of nearby cover and water sources. See Exhibit 32. Farmed Land on the E-2 Alignment. It would not disturb the large stands of forested habitat on Paradise Ridge but is closer to Paradise Ridge than the other alternatives. It would, however affect a planted pine stand near Eid Road that could provide suitable habitat for representative wildlife species including the northern alligator lizard and long-eared myotis and provides habitat for pygmy nuthatch. See Section 4.8 under Pine Stand Effects. It may also provide habitat for the giant Palouse earthworm. The E-2 alternative would cross fewer tributaries compared to the Modified W-4 Alternative, however; the tributaries that are affected by E-2 have greater habitat value for resident wildlife species than tributaries that are affected by either the Modified W-4 or C-3 alternatives.

Ungulate Effects

A study titled Assessment of Potential Big Game Impacts and Mitigation Associated with Highway Alternatives from Thorncreek Road to Moscow (Sawyer 2010) evaluated the ungulate studies prepared for the project by Melquist and Ruediger. The study summarized the conclusions regarding quality of ungulate habitat in the project area, the potential effects of the alternatives to those habitats, and provided an independent assessment of potential impacts. The report found that the Melquist and Ruediger reports were consistent regarding general habitat quality and the relative alternatives' effects to habitat. It also made an independent recommendation for ungulate mitigation. See Table 51. Ungulate Habitat Effects. The studies concluded that none of the Action Alternatives would bisect important ungulate habitat or known migration corridors and that population-level effects from highway construction were unlikely.

Table 51. Ungulate Habitat Effects

	Habitat Quality*		
Alternative	Moose	Elk	White-tail deer
No Action	None	None	None
Modified W-4	Poor	Poor	Marginal
C-3	Poor	Poor	Marginal
E-2	Marginal	Marginal	Moderate

Source: (Sawyer 2010)

*Ungulate habitat on scale of increasing value is: none, poor, marginal, moderate and high.

Ungulates utilize and move to all types of habitat but frequently utilize areas with shelter and cover, riparian areas, and areas with water sources. Ungulates have been sighted and utilize habitat in the project area; however, only poor to moderate quality ungulate habitat is present. The primary ungulate habitat affected by all alternatives is cultivated agricultural land, much of which is presently enrolled in the CRP; however, CRP enrollment is voluntary and landowners may withdraw at any time. It offers no special or long-term protection from development. See

Section 4.10 Transportation and the Safety Technical Report for information regarding wildlife collision data factors. Future effects to agricultural lands and wildlife habitat due to development are further discussed in Chapter 6, Indirect and Cumulative Effects.

No Action

The No Action Alternative would not directly affect ungulate habitat. It could however, result in more wildlife collisions due to an increase in projected traffic volumes on US-95 by the 2037 design year. The substandard curves, steep grades and narrow typical section would not be improved making it difficult to spot and avoid wildlife. The projected increase in traffic and the density of traffic flow could result in greater numbers of wildlife collisions on this segment of US-95. The No Action Alternative would not meet the project purpose and need.

For the Action Alternatives, realigning a highway to an area where no road currently exists and clearing vegetation near the roadway would result in direct habitat loss, a visual change to the area and may displace wildlife less adaptable to human modification, fragmentation and high levels of human use such as elk and moose (Ruediger 2007). For all of the alternatives, clearing vegetation will be limited to the project right-of-way. Noise and increased human presence could displace ungulates in the area during construction and roadway operation. The Action Alternatives could result in effects to poor to moderate quality ungulate habitat. See the Wildlife Technical Reports for additional detail regarding the degrees of effects and the differing quality of the affected habitat.

A straighter roadway alignment, additional lanes and a wider roadway would improve the visibility of wildlife crossing the roadway, and would improve the ability of the driver to avoid and recover from potential wildlife collisions. Safety related to wildlife was evaluated as part of the Safety Analysis Technical Report (ITD 2013, ITD 2015b) and is discussed further in Section 4.10.1 under Wildlife-Related Safety.

Modified W-4

Modified W-4 would pass through primarily agricultural land without suitable cover near foraging areas. Therefore, it is considered poor habitat for elk and moose. This alternative would also pass through marginal white-tail deer habitat.

C-3

C-3 would pass through poor habitat for elk and moose. It would pass through marginal white-tail deer habitat. The C-3 would bring the curves and grade to AASHTO standards and would improve sight distance over existing conditions. (ITD 2013 pg 12).

E-2 (Preferred Alternative)

E-2 would pass through marginal habitat for elk and moose located in the southern half of the study area, primarily on CRP land and farmed fields. Moderate white-tail deer habitat would also be affected. E-2 would be aligned between an existing man-made farm pond that may be used by wildlife, and Paradise Ridge. E-2 could affect the movement of moose and elk that currently travel between the pond and Paradise Ridge.

Elk tend to stay closer to security and escape cover than deer. A pine stand located in the southern half of the project may be used for cover by ungulates as they forage in the nearby agricultural fields. The E-2 Alternative would affect 3.9 acres of the pine stand as well as surrounding agricultural land that is used for foraging which would affect elk. A total of 4.4 acres of suitable ungulate habitat that was identified as the Ungulate Impact Area by Melquist in 2005 would be affected by the E-2 Alternative (Melquist 2005a).

The E-2 Alternative posed the largest concern for ungulates due to its proximity to small patches of native habitats not yet converted to agriculture (i.e., pine stands and Palouse remnants) (Sawyer 2010). More suitable habitat for ungulates is available in the surrounding areas east of Paradise Ridge and in the gullies further west in Washington State (Ruediger 2007). Regionally and statewide, the area is considered to have low ungulate populations (Ruediger 2007) and low to moderate quality ungulate habitat (Sawyer 2010). While the E-2 Alternative would pass through approximately 1.98 miles of ungulate impact area; the sight distance will be greater on the E-2 Alternative because the length and radius of horizontal curvature is greater than the other action alternatives. Greater sight distance may reduce the crash potential of the wild animal crashes of the E-2 Alternative and offset the additional wild animal crash potential caused from the E-2 Alternative being in an ungulate impact area. (ITD 2015 pg. 12). See Table 51. Ungulate Habitat Effects for a summary of the alternatives' effects to ungulates. See the Wildlife Technical Reports for additional detail.

4.9 Threatened and Endangered Species Effects

This section summarizes the effects of the alternatives on federally listed threatened and endangered species and critical habitat. A discussion of federal candidate and proposed species is included in 3.8, Vegetation, Fish and Wildlife and 4.8, Vegetation, Fish and Wildlife Effects.

No Action. The No Action Alternative would not involve right-of-way acquisitions, major construction or a large amount of soil disturbance; therefore, it would have no effect to threatened or endangered species and designated critical habitat. The higher projected traffic volumes and the density of traffic flow could result in greater numbers of wildlife collisions on this segment of US-95.

Modified W-4, C-3 and E-2 (Preferred Alternative). The Action Alternatives would result in no effect to Canada lynx, water howellia, steelhead trout and its designated critical habitat. Modified W-4, C-3 and E-2 may affect but are not likely to adversely affect Spalding's catchfly due to indirect effects. The W-4 and Modified W-4 Alternative represent only a slight shift and would not differ in effects to the evaluated species or their habitats; therefore the effect determination for the W-4 Alternative is determined to be valid for the Modified W-4 Alternative. See Table 52. Threatened and Endangered Species Effects and Section 6.1 Indirect Effects. See the Biological Assessment Technical Report (ITD 2007a) for details.

Table 52. Threatened and Endangered Species Effects

Common Name	Scientific Name	Federal Status	Action Alternatives' Effects Determination
Canada lynx	*Lynx Canadensis*	Listed Threatened	No Effect
Spalding's catchfly	*Silene spaldingii*	Listed Threatened	Not Likely to Adversely Affect (NLAA)
Water howellia	*Howellia aquatilis*	Listed Threatened	No Effect
Steelhead trout	*Oncorhynchus mykiss*	Listed Threatened	No Effect
Steelhead trout Critical Habitat	*Oncorhynchus mykiss*	Designated Critical Habitat	No Effect

Canada Lynx

The Action Area is located on agricultural land less than 3,000 feet in elevation and is located greater than 20 miles from the nearest potential Lynx Analysis Unit (LAU) (i.e., the Umatilla or Saint Joseph National Forests). Haul roads, staging areas, waste sites, material sources and stockpile sites would not be located within an LAU. The project would have no effect on Canada lynx.

Spalding's catchfly

A population of Spalding's Catchfly was discovered within the project area between Alternatives Modified W-4 and C-3 near Clyde Hill; however, no plants are in the footprint of the alternatives. All of the alternatives have Palouse remnants that occur within a mile of the proposed alignment, which could be indirectly affected. This resulted in a determination that all of the Action Alternatives may affect but are not likely to adversely affect Spalding's Catchfly as a result of indirect effects.

The alternatives could increase weed dispersal to private lands that have been identified as high priority areas for Palouse prairie restoration and a key conservation area for Spalding's Catchfly establishment; however, the alignments would not go through any portion of the properties for which restoration activities are ongoing or planned. In addition, FHWA, ITD, USFWS, NRCS and the Latah County Conservation District have collaborated and future restoration activities

closer to Paradise Ridge and further from the proposed alternatives will be prioritized to minimize the possibility for weed infestation. See Chapter 6, Indirect and Cumulative Effects regarding potential weed dispersal. See the Biological Assessment Technical Report for additional details.

Water howellia

Water howellia occurs in seasonal ponds, often associated with potholes. The only potentially suitable habitat for water howellia in the action area would be the floodplain of the South Fork Palouse River. However, a field survey revealed that the floodplain is under cultivation, channelized and dominated by reed canarygrass, a non-native invasive weed; therefore, the site is not suitable for water howellia. The project would have no effect to water howellia.

Steelhead Trout and Designated Critical Habitat

No steelhead trout or designated or proposed critical habitat for steelhead trout is within the action area. Therefore, this project would have no effect to steelhead trout or its designated critical habitat.

4.10 Transportation Effects

4.10.1 Public Safety

A safety analysis was completed using the First Edition of the AASHTO Highway Safety Manual (ITD 2012a). The results show that all three Action Alternatives will be safer than the existing alignment and the No Action Alternative. The results also show that the E-2 Alternative would be the safest proposed alignment for total crashes, as well as total injury related crashes and fatalities. The Safety Analysis was revised in 2013 to include predicted crashes on the remaining US-95 loop that may be turned over to the NLHD and used for local circulation. An addendum to the Safety Analysis (2013) was prepared to evaluate the Modified W-4 (2015b). Table 53. Projected Crashes for Proposed Alternatives and Remaining US-95 Loop shows the fatal and injury and total crashes in 2017 for each alternative and for 2017 through 2036. The predicted crashes are based on the assumption that the number of approaches does not increase or decrease on any alignment. This will be ensured through ITD's enforcement of the Expressway Access Control for the proposed alternatives. See Sections 2.4.2 for additional information regarding access. The 20-year forecast for crashes was modeled using predicted traffic volumes. See the Revised Safety Technical Report (ITD 2013) and the Addendum to the Safety Technical Report (ITD 2015b) for additional information. Societal costs can be calculated for the predicted accidents using costs of crashes published by the FHWA for different crash types. Due to the shift in the W-4 Alternative, the Safety Analysis was updated to incorporate the Modified W-4 Alternative and the information is provided below. See Table 53. Projected

Crashes for Proposed Alternatives and Remaining US-95 Loop and Table 54. Economic Costs of Crashes 2017 through 2036.

Table 53. Projected Crashes for Proposed Alternatives and Remaining US-95 Loop

Alternative	Total Fatal and Injury Crashes for 2017	Total Crashes for 2017	Total Fatal and Injury Crashes from 2017 thru 2036	Total Crashes from 2017 thru 2036
No Action	11	27.4	256.5	642.5
Modified W-4	5.0	10.5	116.2	244.9
C-3	4.7	11.1	110.0	260.2
E-2	4.4	9.2	100.7	213.9

Table 54. Economic Costs of Crashes 2017 through 2036

Alternative	Cost (million $)
No Action	140
Modified W-4	35
C-3	33
E-2	29.5

All of the Action Alternatives would be designed to meet AASHTO standards. The No Action Alternative would still not meet AASHTO standards.

The two typical sections presented in Exhibit 2. Typical Section: Four-Lane Divided Highway and Exhibit 3. Typical Section: Four-lane Highway with Center Turn Lane and Curb, Gutter and Sidewalk are common to all Action Alternatives. See Section 2.4.2. Design Elements and Typical Section for All Action Alternatives.

The four-lane divided highway sections would have lower predicted crash rates than the four-lane highway with center turn lane, curb, gutter and sidewalk. The center turn lane would allow for two-way left turns, which have a higher predicted numbers of crashes than the highway section with the 34-foot median. The posted speed limit in the urban four-lane section with center turn lane, curb, gutter and sidewalk would be reduced to 35 mph or 45 mph, depending on the alternative. This would mitigate some of the safety factors associated with turning movements.

Table 55. Length of Typical Sections compares the lengths of the two different typical sections by alternative. The four-lane with center turn lane would have approximately three times more predicted crashes than the four-lane divided highway typical section and while it would still operate at a LOS A it would have higher volumes compared to the four-lane divided highway

section. The higher crash rate for the four-lane with center turn lane is primarily due to turning movements from the center turn lane.

Table 55. Length of Typical Sections

Alternative	Length of Four-lane Divided (miles)	Length of Four-lane with center turn lane, curb, gutter and sidewalk (miles)	Total Length of Alignment (miles)
No Action	0	0	6.34
Modified W-4	6.35	0.30	6.65
C-3	4.52	1.42	5.94
E-2	5.61	0.24	5.85

All of the action alternatives would improve the vertical grades through the project area. The approximate grade of the ascent near Reisenauer Hill, (the steepest hill in the project project limits), would range from 3.4 to 4.3 percent and the approximate grade of descent would range from 4.4 to 4.9 percent north of Reisenauer Hill. The Modified W-4 and C-3 alternatives would transition to a rolling hill condition as they approach Moscow. The E-2 Alternative would descend from Reisenauer Hill at a flatter grade and would not pass through the same rolling hill conditions approaching Moscow compared to the other action alternatives. See Table 56. Vertical Grades at Reisenauer Hill. See Table 56. Vertical Grades at Reisenauer Hill.

Table 56. Vertical Grades at Reisenauer Hill

Alternative	Approximate Ascending Grade (percent)	Approximate Descending Grade (percent)
No Action	4.3	6
Modified W-4	3.5	4.9
C-3	3.4	4.8
E-2	4.1	4.4

Weather Conditions

As a result of public concern expressed during the early public involvement process, a report titled Final Report for Weather Analysis of Proposed Realignments of US Highway 95 Thorncreek Road to Moscow (Qualls 2005) was prepared. The study concluded that while there may be minor variations in climatic conditions in the three corridors evaluated, they were unpredictable and not considered substantial. Unpredicted weather occurrences are included in the historical base crash rate data obtained from the safety evaluation manual and are also included as safety factors in the safety analyses.

Since the DEIS was published, clarification and supplemental data was provided in a report titled Weather Analysis and Climate Study for US Highway 95, Thorncreek Road to Moscow, Four

Proposed Alternatives, No-Build, W-4, C-3 And E-2 (Qualls 2014). Information from the revised report was used to update this section to address public comments on specific weather related conditions, elevation and conditions at Reisenauer Hill. Since the report was prepared, the W-4 Alternative was shifted and named the Modified W-4 Alternative; however, since there is no exact boundaries relating weather to the alternatives, the findings related to the W-4 Alternative are valid for the Modified W-4 Alternative.

As stated in Section 3.10 the weather stations were placed in three weather regimes and are referred to the Western, Eastern and Reisenauer Hill corridors. A Central Corridor, which runs in a north-south direction, generally encompasses the existing US-95 and the central alternatives. The West Corridor encompasses the western alternatives, and the East Corridor encompasses the east alternatives. The Reisenauer Hill corridor represents the southern sections of all the alternatives. These corridors are used to describe variations of weather and climate within the study area, but do not have precise boundaries. Except in cases referring to data from satellites and historical accident records on the existing US-95, no attempt is made to specify exact weather or climate conditions for a particular alternative, but instead general corridors are discussed. The Central Corridor does not have a specific weather station; instead the corridor was described based on interpolation of weather data from the eastern and western corridors.

Elevation, Temperature, and Ice. Weather stations were placed at different elevations within the study area to capture the elevation effects. There is an approximately 400-foot difference in elevation between the western corridor and the eastern corridor weather stations with the central corridor being slightly lower in elevation.

Elevations within the study area range from approximately 2540 feet above mean sea level (amsl) to a high of approximately 3000 feet amsl. The elevations within and near the project area are offered for reference:

- Palouse River Drive 2050 amsl
- Western Corridor weather station 2550 amsl
- Eastern Corridor weather station 2950 amsl
- Paradise Ridge 3702 amsl
- Moscow Mountain 4983 amsl

To capture the climate effects at the elevation extremes the weather stations were installed below 2600 feet and at or above 2900 feet. The topography of the region is shown in the Revised Weather Analysis Figure 1.2, Study Area Map (Qualls 2014). Horizontal and vertical grade calculations based on the conceptual level alternatives are included in Appendix 6.

The western corridor weather station was often colder than the higher eastern weather station, by 15 to 20 °F. This is due to cold air drainage, when cold air, which is denser, flows downhill and pools in low elevation areas during unmixed conditions. When the western corridor was colder than the eastern corridor, the average temperature difference is 5.4 °F and the western corridor was colder than the eastern corridor by 12 °F about five percent of the time. This creates greater potential for frost formation, freezing roads, and black ice on low areas of the western corridor compared to most of the length of the eastern corridor.

Temperatures were below freezing at the low elevation western corridor weather station when the higher elevation eastern corridor weather station was above freezing approximately three times longer compared to when the eastern corridor station was below freezing and the western corridor station was above freezing. The observations agreed well with principles of physics and thermodynamics, as well as published scientific studies (Qualls 2014).

Air temperature may decrease with increasing elevation under well-mixed atmospheric conditions (e.g., windy weather or a sunny day with strong solar heating of the ground). Across the 400 feet of elevation difference between the western corridor and the eastern corridor, this averaged about 1.8 °F if only the data when the western corridor was warmer than the eastern corridor are included. This difference exceeds 2.9 °F less than 5 percent of the time. Under these well-mixed circumstances, the eastern corridor at its highest point could average 1.8 °F cooler than the lowest point of the western alternative.

Combining all the data when either the western corridor or the eastern corridor is colder than the other, yields an overall average temperature difference of about 1 °F with the western corridor being colder on average, because of the significantly colder temperatures which occur at the western corridor due to cold air drainage compared to the mildly colder temperatures at the eastern corridor associated with well-mixed atmospheric conditions.

Precipitation and snow accumulation. Most often when snow accumulates, it occurs across the entire study area; however, snow persists longer near Reisenauer Hill than along the middle and northern portion of the study area. All alternatives would be impacted by the persistence of snow in the southern portion of the study area, since all of the action alternatives pass Reisenauer Hill and at least partially descend the north face of Reisenauer Hill with grades ranging from 4.4 percent to 4.9 percent.

The study results show that there will be slightly greater precipitation in the eastern corridor than on the western corridor. . There would be approximately five to seven inches more snowfall per year in the eastern corridor and Reisenauer Hill compared to the western corridor, or a melted snow liquid depth (also called Snow Water Equivalent, SWE) difference of 0.5 to 0.7 inches.

Landsat satellite images of the study area and the surrounding region provide an excellent picture of the spatial distribution of snow. Examples of these images spanning 2002 through 2012 are provided in the Revised Weather Analysis (Qualls 2014). The key findings based on the satellite images are:

1. When there is six to eight inches depth or more at the PSF, the satellite images show coverage over the entire study area and surrounding region by snow.
2. When the snow depth at PSF drops below about six inches during melting, the middle portion (E-2 and C-3 Alternatives) will have patchy conditions. The emergence of these patches is strongly controlled by hill slope orientation. South-facing slopes, which have much greater exposure to the sun, melt off faster than north-facing slopes. The patch quickly spreads westward, and then begins to melt off north-facing slopes in the central area defined above and including west of US-95.
3. Snow persists substantially longer south and east of the ridgeline of Paradise Ridge, including the ridgeline as it passes Reisenauer Hill, which during the winter months is usually the downwind side of the ridgeline. Snow also persists down the north-facing slope of Reisenauer Hill, particularly from the existing US-95 toward the west. Additionally, snow persists on the north end of the study area on north-facing slopes north of Clyde Hill and the east-west power lines of the eastern alignment, though it does not persist there for as long as on either the north face or the south side of Reisenauer Hill.
4. Regional coverage snowfall of a few inches can provide relatively complete coverage of the study area, and it begins to melt off following the pattern described in 2 and 3 above.

The distinction between alternatives considered road alignment characteristics such as length, slopes, and curvature. The E-2 Alternative would descend Reisenauer Hill at a relatively flatter grade further north where there is less snow accumulation. The C-3 and Modified W-4 Alternatives would descend Reisenauer Hill at slightly steeper grades further south than the E-2 Alternative where snow accumulation is greater; however, all action alternatives are designed to meet AASHTO standards and are therefore safe. Vertical grades of the alternatives are further described in Section 4.10.1 Public Safety.

Fog. The western corridor and Reisenauer Hill showed Reisenauer Hill to have the poorest visibility conditions, followed by the eastern corridor and then the western corridor. The Revised Weather Analysis (Qualls 2014) explains that with the exception of one accident related to a tire defect, none of the accidents during foggy conditions occurred at high elevations such as near the top of Reisenauer Hill, where measurements show the worst visibility conditions in the study area. More accidents occurred in mid to low elevation areas of the study area. The report

concluded that fog should not be a primary factor for selecting an alternative, because there were few accidents reported during foggy conditions and other contributing circumstances were reported, specifically, negotiation of tight radii curves in on icy roads. This indicates that the locations of the fog related accidents were controlled by the location of challenging road characteristics (e.g. curve radii and slopes rather than the spatial distribution of reduced visiblitity conditions). Since all roadway alternatives pass Reisenauer Hill, all alternatives will be subject to the poorest visibility conditions of the area. However, with the improved typical section the safety of the Action Alternatives would be greatly improved over the No Action Alternative.

Wind. Wind speeds were similar between all-weather corridors. Measurements at the eastern corridor showed winds were modestly lower than at the western corridor for high wind speeds. The fastest individual gusts and highest average wind speeds were at Reisenauer Hill. Gust speeds of 30 mph or greater correspond to sustained wind speeds of 25 mph or greater. This would be typical of wind speeds warranting a Wind Advisory from the National Weather Service. Gusts generally come from a westerly direction except Reisenauer Hill, which have some gusts up to 38 mph from the east. However, all the alternatives must pass through the Reisenauer Hill area (Qualls 2014). Consequently, the direct effect of wind on vehicles and large trucks should be no worse than existing US-95 for any of the alternatives. The improved typical sections with wider roadways, increased shoulder widths, and medians will greatly improve the safety over existing conditions. There is no detectable difference in wind effects to fill sections between alternatives and weather is already sufficiently considered in the safety analysis. Additional information regarding weather is provided in the Revised Weather Analysis (Qualls 2014).

Microclimates. The local microclimates have been captured through weather station measurements, evaluation of the satellite remote sensing images, consideration of principles of physics and thermodynamics, and published scientific studies.

The weather study included measurements from a weather station installed west of Paradise Ridge on the bench traversed by the E-2 Alternative which represents the eastern corridor. There were also weather stations that collected data for the Reisenauer Hill and the western corridor.

Summary of Findings. All the action alternatives would be an improvement over the No Action Alternative, which has an approximate six percent grade on descent. The Modified W-4 and C-3 alternatives would both descend at least 300 feet on the north side of Reisenauer Hill and include the 3 (Modified W-4) or 4 (C-3) shortest radii curves of the respective alternatives on this descent. E-2 would descend approximately 100 feet with only two, longer radii curves on Reisenauer Hill and make its primary descent further north where snow is less persistent.

The spatial distribution of weather-related accidents on the existing US-95 from Thorncreek Road to Moscow is predominantly associated with the spatial distribution of road characteristics such as tight radii curves located down slope on hills, and ingress/egress associated with road junctions and driveways, rather than due to spatial distribution of weather. Since all proposed alignments are designed to current AASHTO standards, all will result in a great improvement over existing conditions and will be safe. Because the road characteristics, rather than the spatial distribution of weather dominate the distribution of accidents, the prescribed Safety Analysis (ITD 2013) for each of the proposed alternatives, reflects the relative safety between alternatives. The road alignment characteristics such as length, slopes, and curvature, are already considered in the Safety Analysis (ITD 2013).

The findings in the Safety Analyses as they pertain to weather remain valid for the following reasons:

- The five-month data set used to rank the larger 30+ year data set is an accepted method for correlating the data.
- Satellite-based remote sensing of snow cover was collected to further verify conditions.
- A Revised Weather Analysis, *Weather Analysis and Climate Study for US Highway 95, Thorncreek Road to Moscow, Four Proposed Alternatives, No-Build, W-4, C-3 and E-2* (Qualls 2014) has been prepared to incorporate additional data.
- Higher elevations are not always colder and the eastern corridor is more often 10-15 degrees F warmer than the western corridor. The western corridor was sub-freezing while the eastern corridor was above freezing twice as often (3.8 percent) as the converse situation (1.9 percent).
- For this area, cold air drainage frequently results in lower temperatures with associated ice in the lower elevations.
- There is little variability in snow accumulation, fog, wind and microclimates between the western corridor and eastern corridor.

Safety in relation to winter road conditions is more significantly a factor of the steepness of the grades, the curvature, the locations of the descent, amount of north facing slopes, and safety elements in the roadway (Qualls 2014). The small variability in weather conditions and microclimate are mitigated through the improvement of the existing roadway to meet AASHTO standards and is already considered in the assumptions in the Safety Analysis and reflected in the predicted crashes (ITD 2013 and 2015b). Additional information is provided in Sections 3.10 and in the Revised Weather Analysis (Qualls 2014).

Wildlife-related Safety

The frequency of wild animal crashes in the project area is much less than many other sections of US-95 and many other highways in Idaho (Ruediger 2007). In addition, wildlife crashes are not typically severe. Based on the low frequency, randomness and low severity for drivers due to wildlife crashes, they are not considered to be a major contributor to the crash rates (ITD 2013). The improvements to the roadway curvature and grade as well as the wider typical section, would improve the ability for drivers to spot wildlife and maneuver if wildlife enter the roadway (Couch 2010). All of the action alternatives would be designed to AASHTO standards and would be safe.

Wild animal crash potential is expected to be greater on the E-2 Alternative based on opinions of wildlife experts because it would pass through 1.98 miles of low to moderate quality ungulate habitat. Design features such as improved typical sections (i.e. wider roadways with additional lanes, shoulders, clear zones, and wide medians) as well as the straighter alignment and improved sight distance may also mitigate crashes by allowing drivers more time to spot wildlife and react to wildlife (ITD 2013). The use of oversized culverts and wildlife crossings may provide wild animals the opportunity to cross under the roadway and further mitigate the wild animal crash potential.

Sight distance on E-2 is greater than Modified W-4 and C-3 due to its straighter roadway geometry and may offset the higher wild animal crash potential in that corridor caused from E-2 being in an ungulate impact area. Roadside clearing is predicted to greatly reduce wild animal crash potential on all action alternatives, because brush and vegetation where wild animals can hide would be removed close to the highway. This would also improve driver reaction time. The roadside clearing technique was found to reduce wild animal crashes up to 90 percent as described in the Revised Safety Analysis (ITD 2013).

4.10.2 Highway Capacity

This segment of US-95 currently has an ADT of 5,364 and operates at a Level of Service (LOS) C. It would reach an average of 8,524 ADTs by 2037 and would operate at a LOS D, which has restricted movements and delays during peak volume.

The No Action Alternative would have a LOS D. All of the Action Alternatives would add a travel lane in each direction, widen shoulders, clear zones and upgrade the roadway to meet the ITD Design Manual and AASHTO standards. All the Action Alternatives are projected to have a LOS A in both the rural area and urban areas just south of Moscow by the 2037 design year.

4.10.3 Access Effects

Access control on the State Highway System is based on the type of facility, its functional classification, highway safety, vehicle operations, and preservation of highway utilities, zoning, and route consistency. The functional classification would determine the type of access control applied to the highway. With the Action Alternatives, US-95 would be a multi-lane principal arterial with a rural functional class.

This segment of existing US-95 is designated as Statewide Access Control. The proposed Action Alternatives were re-designated as Expressway Access Control within the project limits through an Idaho Transportation Board action on January 15 & 16, 2014. (See the Safety Analysis Technical Report for the agenda and board minutes). Expressway Access Control is a segment of a highway designated by the Idaho Transportation Board for use as a through highway, with partially controlled access, accessible only at locations specified by ITD, and characterized by medians, limited at-grade intersections, and high speeds. An existing segment of state highway may only be designated as an expressway if payment is made to adjacent property owners for the restriction of existing access rights [IDAPA 39.03.42].

The FHWA and ITD would purchase access rights in accordance to Idaho Board Policy-4005, which incorporated the recently revised IDAPA rule 39.03.42 *Rules Governing Right-of-Way Encroachments on State Rights-of-Way* and *Management of Department-Owned Property*. The appraiser will perform a before and after appraisal that will specifically address the access. The deed for the properties will specify the access points at specific locations discussed with the property owner stating width, location, and the type of use of the access.

While the District Engineer has the authority to approve a decrease in the spacing requirements for other access types, the Expressway Access Control does not have spacing requirements; therefore, access is allowed only at locations designated by ITD in collaboration with the landowner during the right-of-way process. Existing approaches[18] would be allowed to remain at locations where construction of joint access is not economically justified.

In the event that the Ring Road concept proceeds to design, ITD will coordinate and negotiate with the City of Moscow regarding access. The access to the proposed Ring Road is expected to be through an interchange located at the north end of the project where growth is expected to

[18] IDAPA 39.03.42 definition of approach is a connection between the outside edge of the shoulder or curb line and the abutting property at the highway right-of-way line, intended to provide access to and from said highway and the abutting property. An approach may include a driveway, alley, street road or highway".

occur. An interchange would be the safest type of access and would result in similar effects to safety between the Action Alternatives.

See Section 2.4.2 and Table 76. General Responses to Issues under Access for additional detail.

The Action Alternatives would have fewer accesses onto US-95 compared to existing conditions. See Table 57. Access Types for the types and numbers of access points per alternative.

Table 57. Access Types

Alternative	Field	Residential	County Road	Commercial	Total Access Points
No Action	14	28	7	17	66
Modified W-4	17	10	4	5	36
C-3	11	14	5	17	47
E-2	9	6	2	5	22

The alternatives would have differing effects to access due to alignments locations.

The No Action Alternative would maintain the existing accesses and would have the highest number of access points of all the alternatives. It would not meet the ITD Design Manual, AASHTO Standards, or ITD's Spacing Policy.

C-3 would have the greatest number of approaches; five public road intersections, the most residential and commercial approaches. E-2 would have the fewest number of public road intersections, residential and commercial approaches.

4.10.4 Mobility Effects and User Cost

All Action Alternatives would shorten the projected travel times through this section of US-95 compared to the No Action Alternative; however, E-2 would result in the greatest travel time reduction. Shortened travel times could improve the economic vitality of the area and could benefit freight transport, emergency service response, school access, bicyclists/pedestrians, and mail delivery. All Action Alternatives would have an overpass structure and would change access onto US-95 at these locations, which could affect travel times (ITD 2013). See Table 58. Overpass Structures and Total Travel Times, which was updated with new information based on the Mobility and Road User Cost Study (ITD 2014a).

Table 58. Overpass Structures and Total Travel Times

Alignment	Overpass Locations	Total Travel Time by 2037 (minutes: seconds)
No Action	None	6:49
Modified W-4	Snow Road	6:16
C-3	Zeitler Road	6:05
E-2	Eid Road	5:31

Source: ITD 2014

Cost of travel time, cost of time related vehicle depreciation, and vehicle-operating costs are components of road user cost that were calculated in the Mobility and Road User Cost Study (ITD 2014a). Crash costs are also a component of road user cost. Table 59. Total Road User Cost shows the total calculated cost over a 20-year period based on all motorists making the entire trip from Thorncreek Road to Moscow. All action alternatives have less travel time than the No Action Alternative, which may be translated to a monetary cost. The E-2 Alternative has the lowest total road user cost. The C-3 and Modified W-4 alternatives are expected to cost approximately 3.5 and 5.5 million dollars more than the E-2 Alternative between 2017 and 2036, respectively.

See the Mobility and Road User Cost Study (ITD 2014a) and the Community Impact Technical Report.

Table 59. Total Road User Cost

Alternative	2017 ($)	2036 ($)	Total 20 Year ($)
No Action	14,600,000	19,700,000	339,000,000
Modified W-4	14,300,000	19,500,000	336,000,000
C-3	13,300,000	18,000,000	311,000,000
E-2	12,600,000	17,200,000	295,000,000

Source: (ITD 2014a; ITD 2014b)
Includes travel time cost, time related vehicle depreciation and vehicle operating costs.

4.10.5 Bicyclists and Pedestrians

Currently the roadway has substandard shoulders and is not striped for bicycles and pedestrian use. All Action Alternatives would improve safety and access for bicyclists and pedestrians by constructing wider shoulders and improving sight distance. The four-lane highway with center turn lane, curb, gutter and sidewalk sections would provide sidewalks that would be designed to meet the Americans with Disabilities Act (ADA) requirements. The C-3 Alternative would have the greatest length of the four-lane with center turn lane, curb, gutter and sidewalks. The

shoulders on the outside lanes of the highway on the rural and urban sections would be shared use but would not be specifically marked for bicycle use.

4.10.6 Emergency Response Time

No need was identified for additional emergency service facilities as a result of construction of any of the alternatives. The ability for emergency service providers to turn around within the project limits to access the on-coming lanes is critical. All of the alternatives would improve the ability to patrol the highway (HDR 2006).

The C-3 Alternative would provide the most convenient access and best emergency response times to the population on the existing US-95, while the E-2 and Modified W-4 alternatives would provide improved access and quicker response times to some of the more outlying areas and cities. The C-3 Alternative would have a longer four-lane with center turn lane section that would allow for easier access and more frequent opportunities to turn around in the urban areas. The E-2 Alternative would have the greatest improvement on mobility (10 percent) (Arnzen pers. comm. 2012). The segments of existing US-95 that may be turned over to the NLHD would be utilized for local circulation and emergency service access.

4.10.7 Safety of Alternatives

No Action

The No Action Alternative would have the highest crash rates of the alternatives. It would include maintenance and minor safety improvements along existing US-95; however, it would not correct the substandard curves and grades, reduce access points or widen shoulders or clear zones. The roadway would still not meet the current AASHTO standards. As ADT's between Thorncreek and Moscow grow and the two-lane highway approaches its capacity, passing opportunities will decrease and crashes on US-95 are expected to increase. Travel times and access for freight, emergency services, postal delivery, schools, and commuting would be longer than current conditions. The No Action Alternative would worsen safety for all users and would not meet the project purpose and need.

Modified W-4

Modified W-4 would be the longest alignment of the alternatives with four proposed public road intersections; Eid Road, Jacksha Road, North Old US-95 and South Old US-95. While the Modified W-4 Alternative is predicted to reduce fatal and injury crashes by more than half of the No Action Alternative, it has the highest fatal and injury crashes of the Action Alternatives from 2017 thru 2036. The Modified W-4 Alternative would have the highest cost to both human life and societal monetary costs associated with crashes of the action alternatives.

C-3

The C-3 Alternative would have the highest predicted total crashes of all the Action Alternatives but fewer fatal and injury crashes than the Modified W-4 Alternative. The greater number of intersections, approaches, and longer suburban section compared to the other action alternatives would create turning traffic across US-95. This would still reduce the predicted crashes by half compared to the No Action Alternative over the 20-year period (2017 through 2036).

It would have the longest suburban five lane section with center turn lanes, which would have higher crash rates than the rural four lane section with a divided median. Crashes for the suburban section are predicted at a rate of 3.4 crashes per mile while the rural four-lane divided section has a predicted rate of 1.1 crashes per mile.

The C-3 Alternative with frontage roads added along the five-lane suburban section was evaluated after the DEIS comment period to determine if safety could be further enhanced. If frontage roads are added to the C-3 Alternative, the five-lane section would be changed to a four-lane section with two-lane frontage roads on each side of US-95 from the top of Clyde Hill to the grain elevators. The C-3 Alternative even considering additional frontage roads would have less safety benefit than the E-2 Alternative. Each frontage road would have two 12-foot lanes with curb, gutter and sidewalk, with a minimum of two-foot shoulders. The width of the C-3 Alternative would increase from 120 feet (for the five-lane section), to 250-300 feet (for the C-3 Alternative with frontage roads). The wider right–of-way footprint would result in approximately $7.2 million additional cost for construction, which does not include the additional right-of-way or relocation costs. Adding the frontage roads would result in greater impacts to 11 businesses, six of which were not originally considered impacted by the C-3 Alternative. There would also be greater impacts to floodplains, prime farmland and more impervious surface compared to the original C-3 Alternative.

Adding frontage roads to the C-3 Alternative would reduce the number of predicted crashes because the length of the five-lane suburban section with a two-way left turning lane would be reduced and the four-lane divided highway would be increased. The five-lane suburban section with a two-way left turning lane generates 3.4 crashes per centerline mile and the four-lane divided highway generates 1.1 crashes per mile. However, the C-3 Alternative would still have a higher crash rate than the E-2 Alternative because it would still have more county road intersections than the E-2 Alternative.

E-2 (Preferred Alternative)

The E-2 Alternative would have the shortest alignment, the fewest public road intersections, the fewest commercial and residential approaches compared to the action alternatives. Furthermore, safety in relation to winter road conditions is more significantly a factor of the steepness of the

grades, the curvature, the locations of the descent, amount of north facing slopes, and safety elements in the roadway (Qualls 2014). The small variability in weather conditions and microclimate are mitigated through the improvement of the existing roadway to meet AASHTO standards and is already considered in the assumptions in the Safety Analysis and reflected in the predicted crashes. Wildlife crashes while predicted to be greater for the E-2 Alternative, may also be mitigated through the improvements of the typical section. However, all action alternatives would meet AASHTO standards and would be safe. E-2 would also have the greatest length of the four-lane divided highway. These factors all contribute to E-2 having the lowest predicted crashes compared to the other alternatives. The E-2 Alternative is predicted to reduce the crash rate of the existing alignment by about 69 percent over the 20-year study period (2017 through 2036).

4.11 Visual Quality Effects

Construction of the US-95 project may have direct effects to visual quality. Effects are likely to occur in locations where construction of the proposed project would affect undisturbed landscapes, in close proximity to sensitive viewers (e.g. residences), and along areas where additional development is proposed. These effects are directly related to new cut and fill slopes, bridges and new linear features created by the road itself (Visual Genesis 2005). Visual quality effects as perceived by the community are discussed in the Community Impact Technical Reports. The W-4 and Modified W-4 Alternatives centerlines are a maximum of 120 feet apart for less than a quarter mile and pass through similar environments; therefore the findings for the W-4 are valid for the Modified W-4 Alternative.

4.11.1 Visual Quality Assessment Findings

Visual effects may vary depending on each person's perception of the view, their values and their perception of the change in the landscape. The degree of visual effects were categorized as low, moderate, moderate high and high as defined below.

Low. These conditions occur where viewers are less sensitive to change or the project follows existing portions of transportation routes or other heavily altered landscapes. Effects may cause no change or minimal change to existing visual resources. These effect levels were established to create a context for evaluating potential effects of alternative alignments to visual resources.

Moderate. These conditions occur where viewers would be sensitive to changes to the landscape, where changes are visible, but the project does not dominate the viewshed. Effects may cause some adverse change to visual resources.

Moderate High. These conditions occur where viewers are sensitive to change to the landscape, changes are moderately visible and they may dominate the viewshed. Effects may be adverse but not substantial.

High. These conditions occur where viewers are sensitive to changes to the landscape, changes may be highly visible, and they may dominate the viewshed. Because these conditions may result in a substantial or substantial change to visual resources, they may warrant mitigation.

Table 60. Visual Quality Effects shows the estimated percentages of visual effects to different visually sensitive areas. See Visual Resources Technical Report for more information.

Table 60. Visual Quality Effects

Alternative	Degree of Visual Effect	Percent of Alignment
No Action	0	0
Modified W-4	Low	11
–	Moderate	58
–	Moderate High	23
–	High	8
C-3	Low	9
–	Moderate	68
–	Moderate High	15
–	High	8
E-2	Low	3
–	Moderate	47
–	Moderate High	25
–	High	25

No Action

The No Action Alternative would only involve minor improvements and would not involve major soil disturbing activities, large structures, and realignments in new areas. Therefore, the No Action Alternative would have no effect to visual quality.

Modified W-4

Modified W-4 would traverse a relatively undisturbed pastoral landscape. Direct effects would occur where residences are within the foreground or middle ground views of other residences and are not screened by terrain. This would occur near the City of Moscow, Snow Road, Jacksha Road, and Thorncreek Road. A new bridge at Snow Road would create a long-term visual effect. During interviews with community representatives during the Delphi Panelist interviews, concern was expressed regarding the W-4 Alternative's light pollution effects on the University

of Idaho Observatory and general visual effects to the University of Idaho Arboretum, surrounding neighborhoods, and planned recreational and residential facilities. This would be similar for the Modified W-4 Alternative.

C-3

C-3 would follow existing US-95 along some of its alignment. It traverses both disturbed and relatively undisturbed pastoral landscapes. Effects are anticipated to occur where US-95 leaves the existing US-95 corridor and is within the foreground and middle ground views of residences and not screened by terrain. This would occur near South Clyde Road, Zeitler Road and near Eid Road. A new bridge at Zietler Road would create a long-term visual effect. This would affect the residential and recreation viewpoints located near the alignment, particularly the residences along Eid Road and the residential developments from near MP 342 to Cameron Road along the northern end of the alignment.

E-2 (Preferred Alternative)

E-2 would traverse both disturbed and relatively undisturbed pastoral landscapes. It would also traverse landscapes along the base of Paradise Ridge and could affect recreational viewpoints from Paradise Ridge and views from the University of Idaho Golf Course. Direct effects are anticipated to occur where US-95 leaves the existing US-95 corridor and is within the foreground and middle ground views of residences and not screened by terrain. This would occur at the residential viewpoints near the City of Moscow, Cameron Road, and Eid Road. A new bridge at Eid Road would create a long-term visual effect to residences. See Exhibit 34. View from E-2 Alignment Near Eid Road (facing north). See the Visual Resources Technical Report for additional detail.

Exhibit 34. View from E-2 Alignment Near Eid Road (facing north)

4.11.2 Community Perceptions

There are strong differing opinions regarding the visual effects of the Modified W-4 and E-2 alternatives. The Citizens for a Safe Highway 95, claiming to represent people collectively owning 80 percent of the land along E-2, were in favor of the E-2 Alternative due to the "spectacular view" of the Palouse and of the City of Moscow for travelers as the route traverses just west of Paradise Ridge. They believe that the beauty of Paradise Ridge could transform the highway into a gateway for Moscow, and that E-2 could promote and preserve the Palouse landscape through scenic highway status. The group opposed the W-4 Alternative stating that it would disrupt westerly views and promote farmland conversion disrupting the agricultural setting (HDR 2005a). This is expected to be similar for the Modified W-4 Alternative.

The Paradise Ridge Defense Coalition, who opposed the E-2 Alternative, felt the expansion of the roadway should follow the existing route as much as possible in order to minimize the ecological footprint of the road. The argument against the E-2 Alternative centered on Paradise Ridge as a unique and valued feature in the community. In the view of those opposed to an E-2 alignment, the ridge should remain untouched because it provides both aesthetic and environmental value as the last remaining natural prairie in the area. As a focal point for community pride, Paradise Ridge serves as a reason both for and against the E-2 Alternative (HDR 2006).

The views of some individual property owners will be impacted differently compared to existing conditions. The visual impacts of the roadway on the community was assessed from various perspectives and illustrated using simulated photographs which replicated the view of each of the three action alternatives from seven locations. The locations were assessed at 30-ft above the ground to provide a "worst case scenario," since none of the locations are expected to have views from that height. See the Community Impact Assessment (HDR 2006) for additional detail (HDR 2006). See Exhibit 35. Community Visual Impacts, Exhibit 36. Community Visual Impacts (Location 1), Exhibit 37. Community Visual Impacts (Location 2), Exhibit 38. Community Visual Impacts (Location 3), Exhibit 39. Community Visual Impacts (Location 4), Exhibit 40. Community Visual Impacts (Location 5), Exhibit 41. Community Visual Impacts (Location 6), and Exhibit 42. Community Visual Impacts (Location 7).

Exhibit 35. Community Visual Impacts

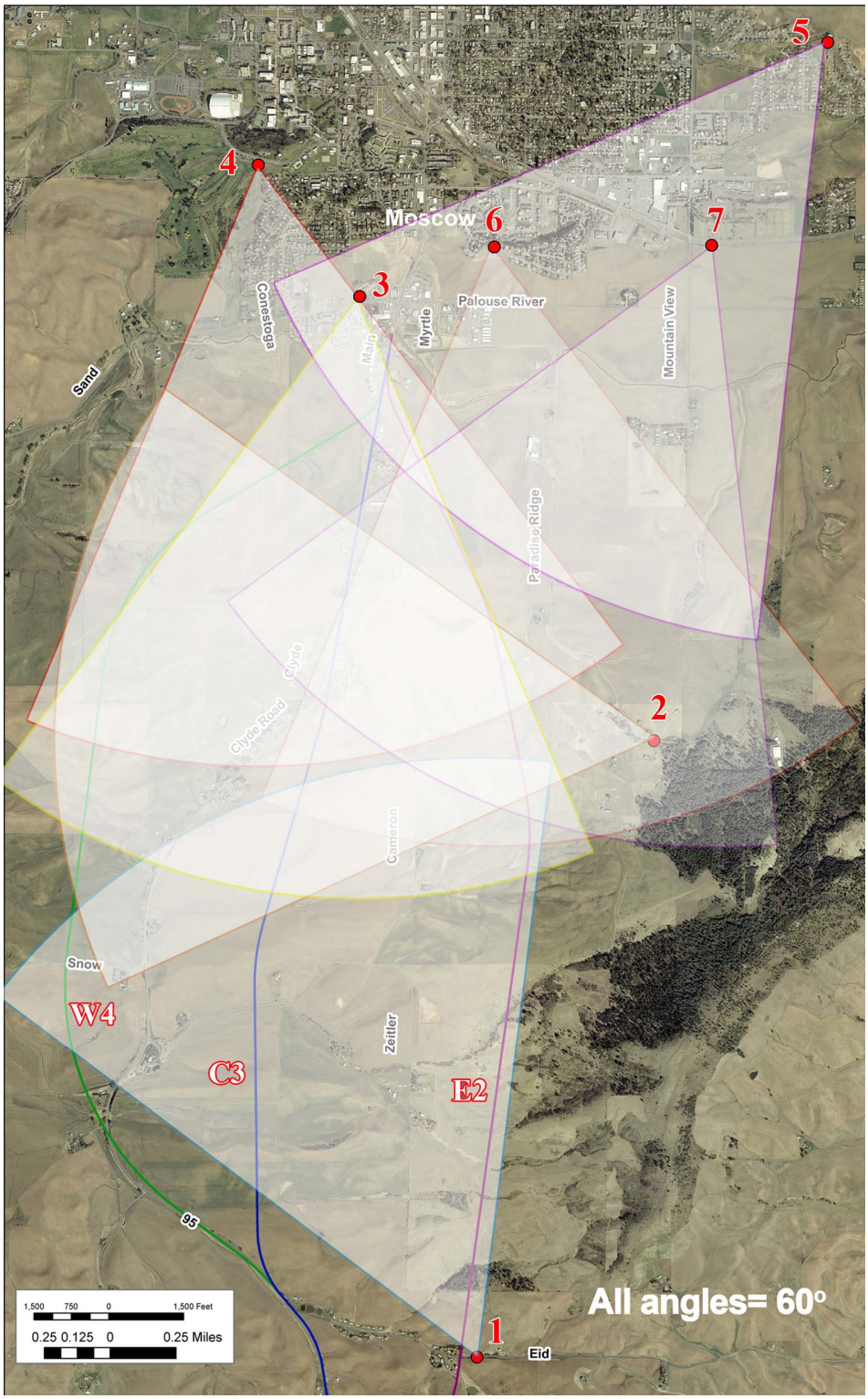


Exhibit 36. Community Visual Impacts (Location 1)

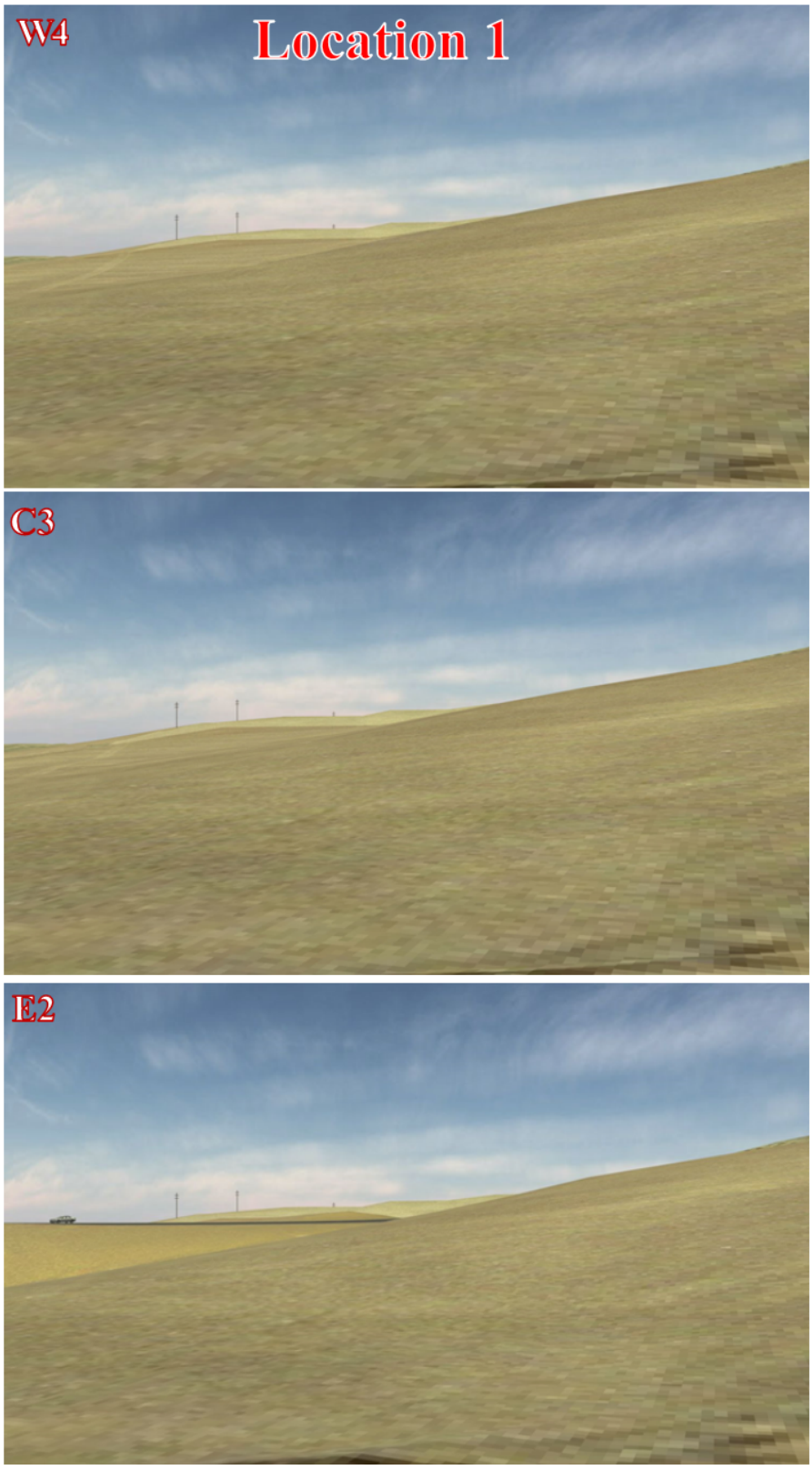


Exhibit 37. Community Visual Impacts (Location 2)

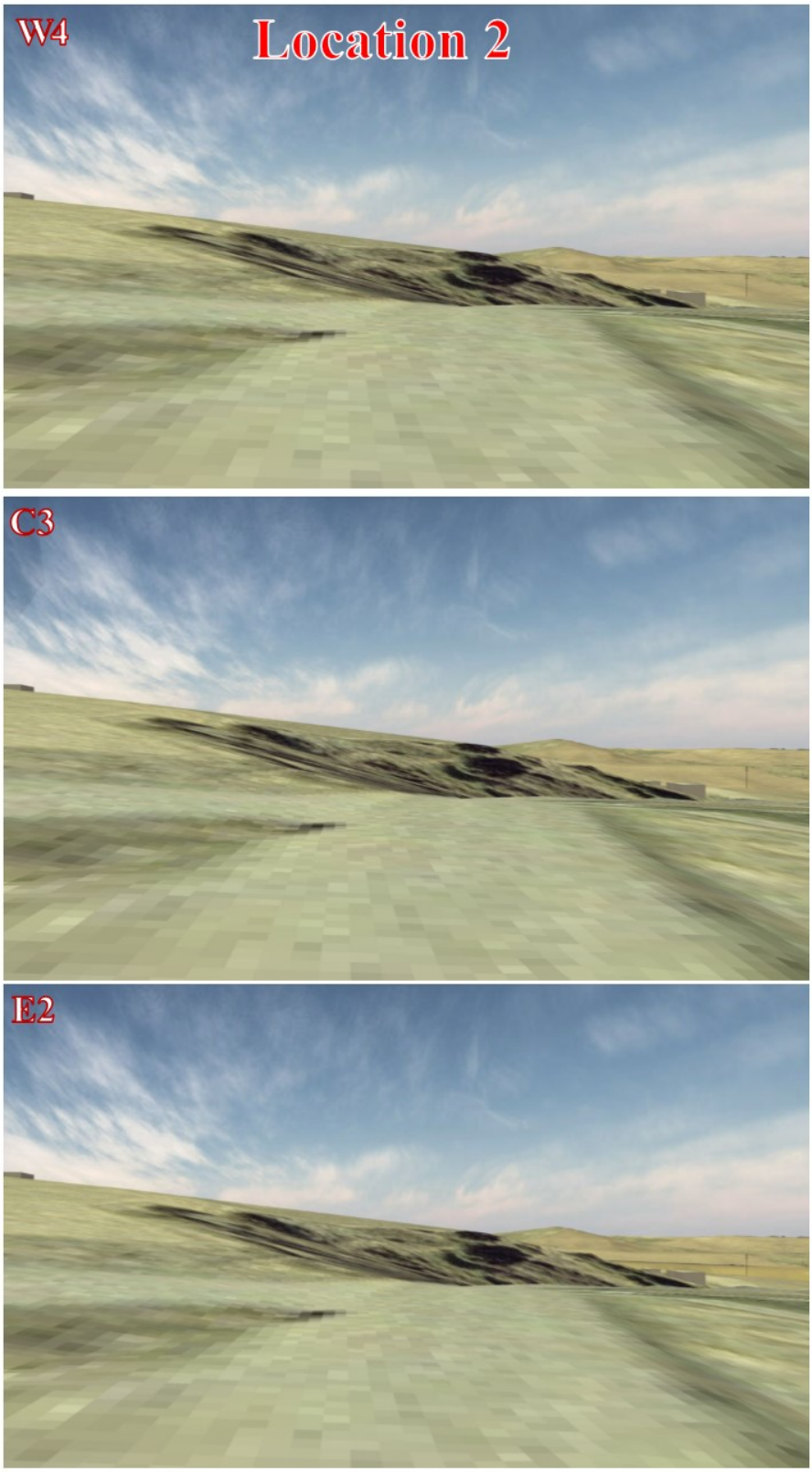


Exhibit 38. Community Visual Impacts (Location 3)

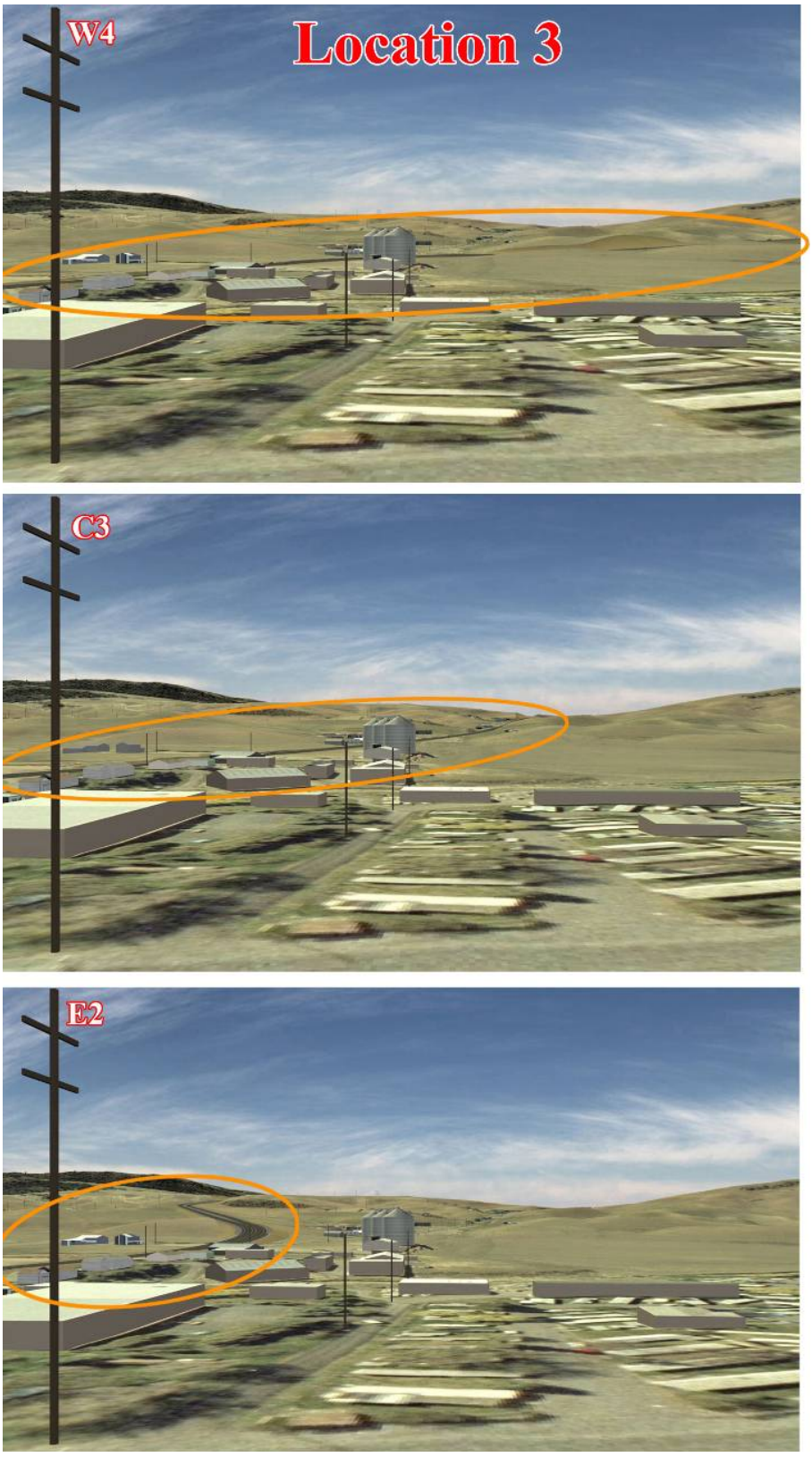


Exhibit 39. Community Visual Impacts (Location 4)

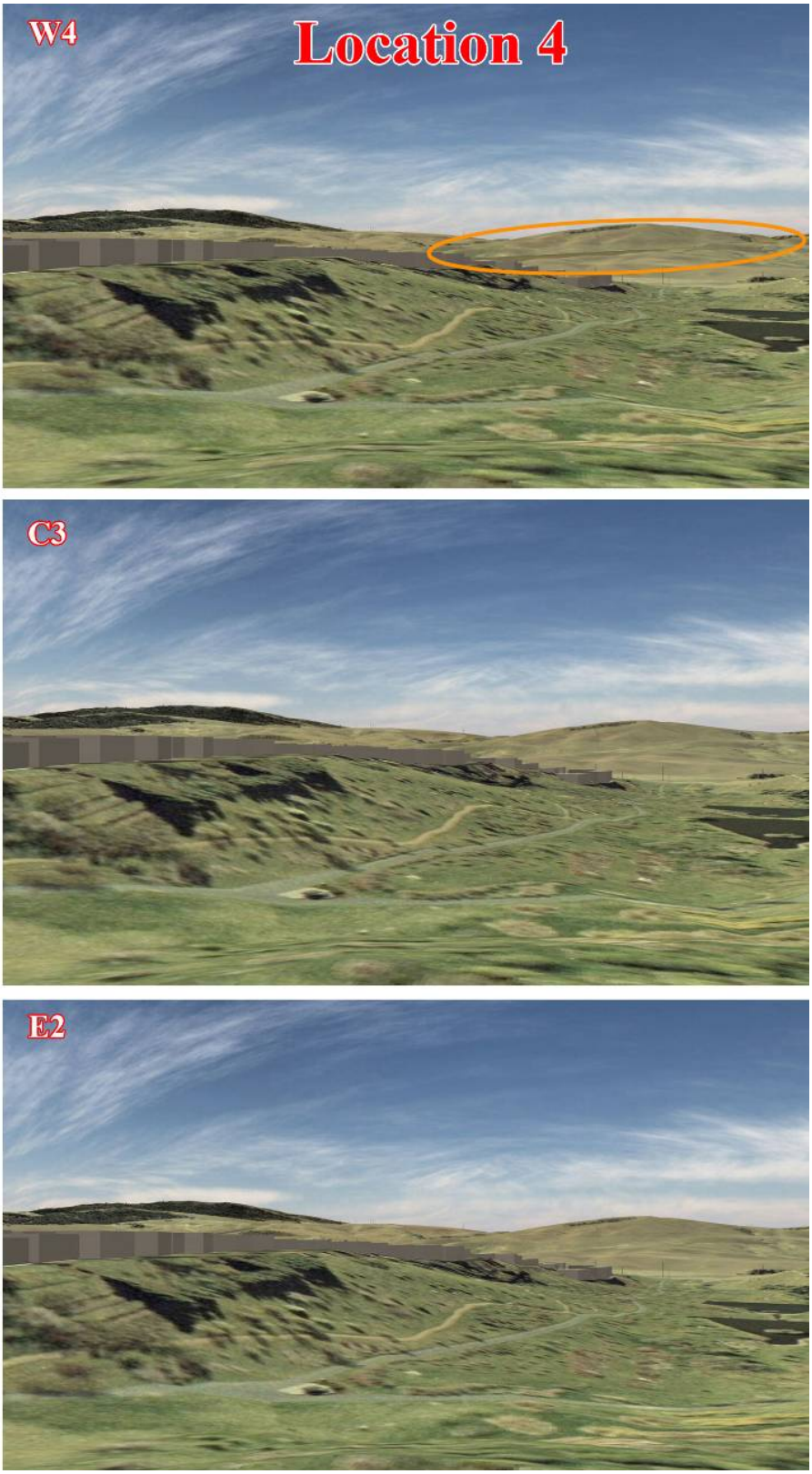


Exhibit 40. Community Visual Impacts (Location 5)

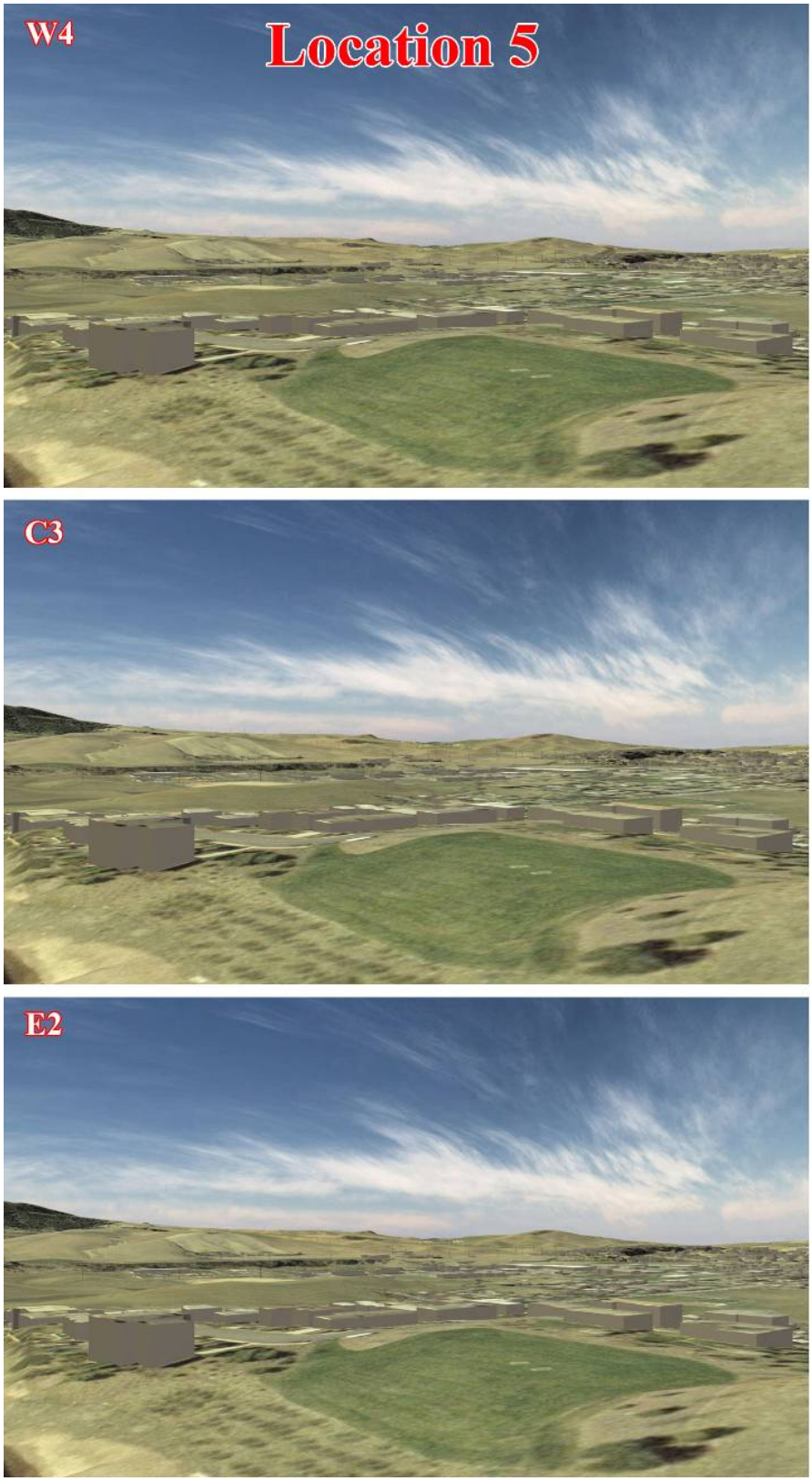
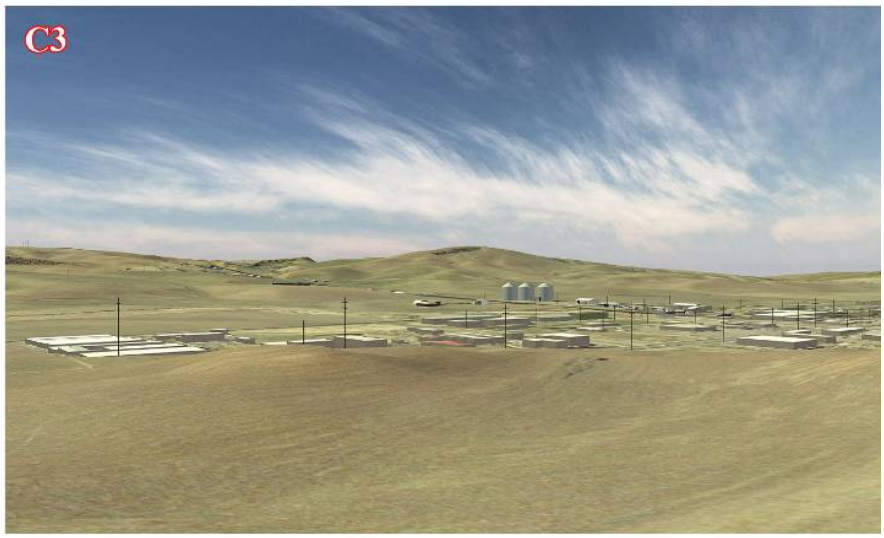


Exhibit 41. Community Visual Impacts (Location 6)



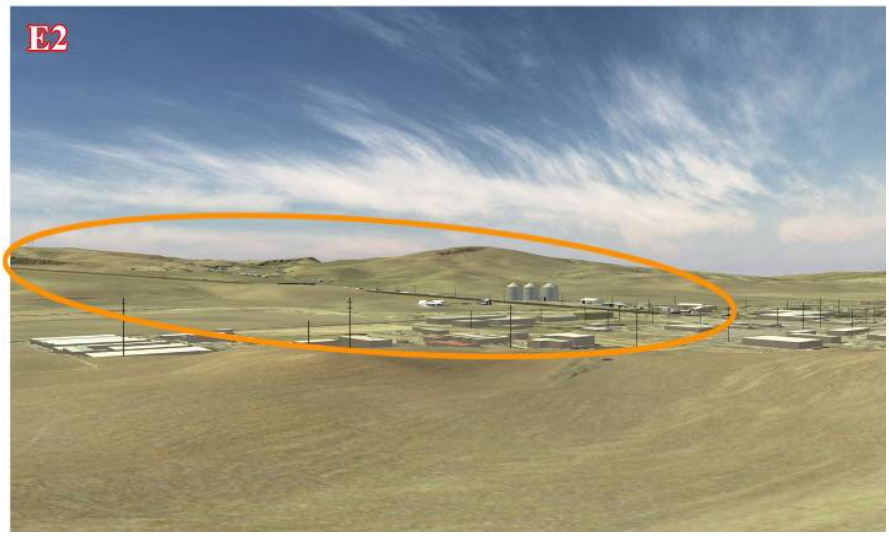
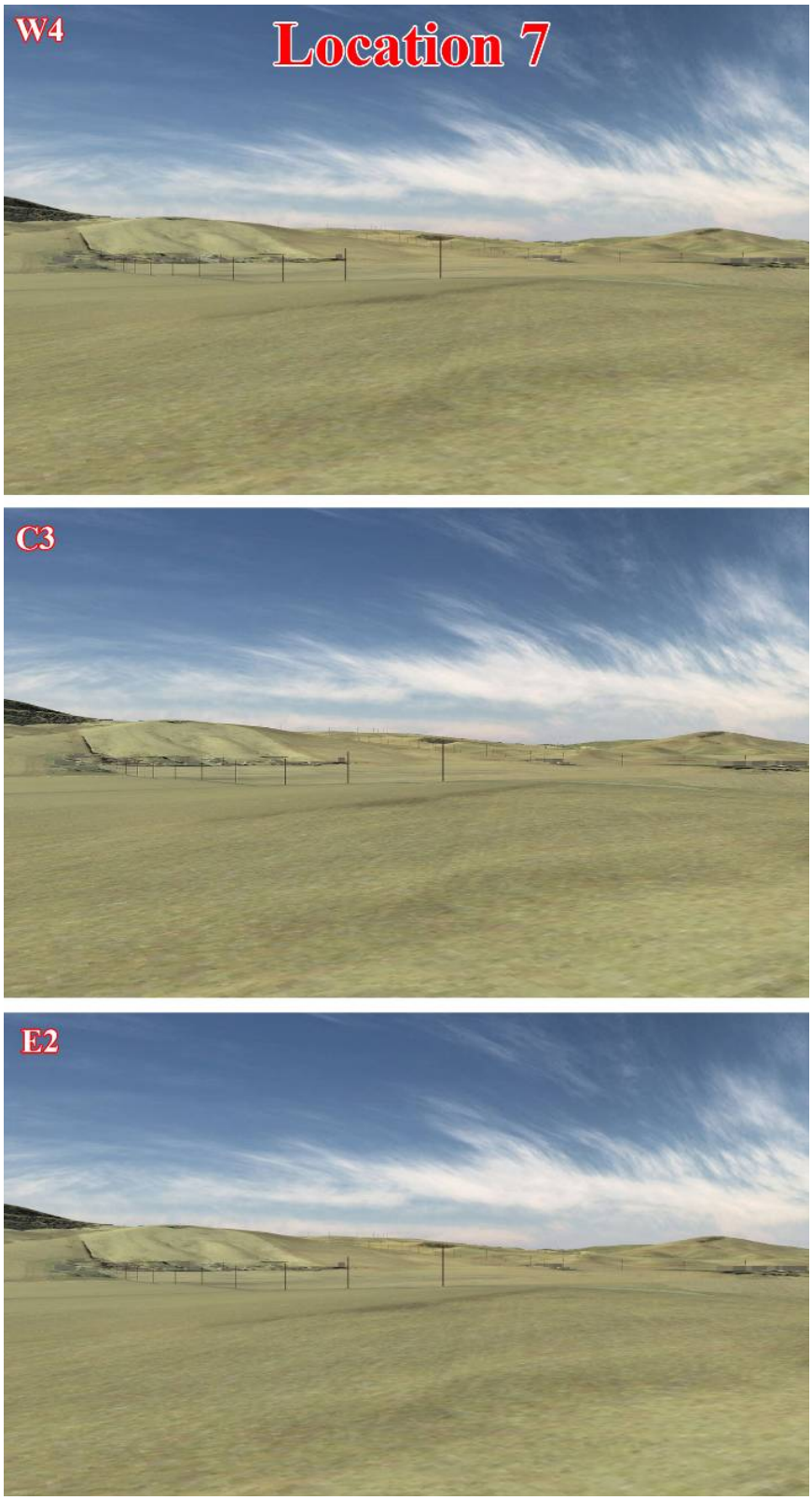


Exhibit 42. Community Visual Impacts (Location 7)



4.12 Traffic Noise Effects

4.12.1 Traffic Noise Impacts

The FHWA has established NAC standards for several categories of land use activities, which are shown in Table 36. FHWA Noise Abatement Criteria (NAC). See Table 61. Predicted Noise Effects. A traffic noise impact occurs when the existing or future noise levels approach (1 dBA below the FHWA NAC) or exceed the FHWA Noise Abatement Criteria (NAC) or when the predicted future traffic noise levels substantially exceed the existing noise levels, even if the predicted noise levels may not approach or exceed the FHWA NAC. The ITD Noise Policy for a substantial increase is 15 dBA over existing conditions, which would be considered over twice as loud to the human ear. A Leq, A-weighted, one-hour, (Leqah) noise measurement is used as the basis to assess the impacts that a roadway has on the sensitive receptors that are located along the proposed road.

Table 61. Predicted Noise Effects

No.	Address	Category	Existing Leq dBA	No Action Leq dBA	2037 Modified W-4 Leq dBA	2037 C-3 Leq dBA	2037 E-2 Leq dBA
1	3336 US 95***	B	59.3	61.2	62.6**	62.5**	62.2**
2	3335 US 95	B	55.6	57.4	59.0	58.5	59.4
3	3379 US 95	B	58.9	60.8	62.1	62.0	61.8
4	3455 US 95	B	57.9	59.8	58.0*	57.1*	41.6
5	3460 US 95	B	55.2	57.1	58	57.6	42.3
6	1010 Eid Rd	B	58.9	60.8	62.3**	62.4**	39.5
7	1071 Eid Rd #3	B	37.2	39.1	39.4	39.5	**56.9****
8	1071 Eid Rd, #5	B	37.3	39.1	39.5	39.6	**57.9***
9	1071 Eid Rd, #7	B	37.2	39.1	39.4	39.4	**58.9***
10	1071 Eid Rd, #9	B	37.1	39.0	39.3	39.3	**62.3***
11	1071 Eid Rd, #8	B	36.9	38.8	39.1	39.1	**60.9***
12	1071 Eid Rd, #2	B	36.9	38.8	39.1	39.2	**59.2***
13	1084 Eid Rd	B	36.8	38.7	39.0	39.1	**57.9***
14	3621 US 95	B	58.2	60.0	60.5*	38.5	32.9
15	3625 US 95	B	55.4	57.3	**69.7***	38.5	32.9
16	1005 Zeitler Rd	B	58.4	60.3	45.1	41.2	33.7
17	Undeveloped	G	34.5	36.3	35.3	38.5	42.7
18	Undeveloped	G	38.9	40.8	52.7	36.2	32.2
19	3672 US 95	B	60.1	62.0	42.9	40.7	33.7
20	3693 US 95	B	61.8	63.7	41.9	40.3	34.0
21	3125 US 95	B	54.5	56.4	41.8	40.2	34.0
22	3096 US 95	B	61.5	63.4	39.5	44.3	35.0

No.	Address	Category	Existing Leq dBA	No Action Leq dBA	2037 Modified W-4 Leq dBA	2037 C-3 Leq dBA	2037 E-2 Leq dBA
23	3094 US 95	B	63.7	65.6	39.5	44.4	35.0
24	3098 US 95	B	**67.1**	**69.0**	39.7	44.0	34.9
25	3082 US 95	B	60.7	62.6	39.4	44.8	35.1
26	3080 US 95	B	62.5	64.4	39.4	44.8	35.1
27	3060 US 95	B	62.6	64.5	39.1	45.7	35.4
28	3055 US 95	B	58.7	60.6	39.5	44.4	35.3
29	3045 US 95	B	59.4	61.3	39.0	44.8	35.9
30	3015 US 95	E	65.8	67.7	38.6	47.3	36.6
31	2979 US 95, #22	B	**66.7**	**68.6**	38.3	49.2	36.9
32	2979 US 95, #23	B	63.7	65.6	38.3	49.6	37.0
33	2979 US 95, #20	B	59.1	61.0	38.4	48.4	36.8
34	2979 US 95, #21	B	57.1	59.0	38.4	48.3	36.9
35	2979 US 95, #24	B	57.3	59.2	38.3	48.6	37.0
36	2979 US 95, #26	B	60.2	62.0	38.3	49.7	37.1
37	2979 US 95, #25	B	**67.0**	**68.9**	38.2	50.7	37.1
38	2979 US 95, #03	B	63.8	65.7	38.2	50.6	37.2
39	2979 US 95, #05	B	59.8	61.7	38.2	50.5	37.3
40	2979 US 95, #02	B	62.8	64.7	38.1	52.2	37.4
41	2979 US 95, #01	B	63.2	65.1	38.1	52.7	37.5
42	2949 Clyde Rd	B	58.5	60.4	38.1	52.5	37.6
43	2946 US 95	B	62.3	64.2	37.7	**69.0***	38.7
44	2936 US 95	B	59.6	61.5	37.7	60.1	39.2
45	2940 US 95	B	59.2	61.1	38.1	59.4	38.6
46	2922 US 95	B	**67.7**	**69.6**	38.1	64.8	39.4
47	2921 Cameron Rd****	C	**67.1**	**69.0**	38.3	64.1**	39.7
48	2921 Cameron Rd****	C	**67.2**	**69.1**	38.3	64.1**	39.7
49	2921 Cameron Rd****	C	**67.4**	**69.3**	38.4	64.2**	39.7
50	2921 Cameron Rd****	C	59.2	61.1	38.2	58.1**	39.9
51	2921 Cameron Rd****	C	59.2	61.1	38.2	58.0**	40.0
52	2921 Cameron Rd****	C	59.0	60.9	38.1	57.9**	39.9
53	2880 US 95	B	65.5	**67.4**	39.1	62.9**	40.5
54	2880 US 95	F	65.4	67.3	39.0	62.8**	40.5
55	2860 US 95	F	64.4	66.3	39.0	62.3**	40.7
56	2850 US 95	F	65.9	67.8	39.2	63.3**	40.8
57	2848 US 95	B	65.8	**67.7**	39.4	63.6**	41.1
58	2845 US 95	B	59.8	61.7	39.8	60.3**	40.3

No.	Address	Category	Existing Leq dBA	No Action Leq dBA	2037 Modified W-4 Leq dBA	2037 C-3 Leq dBA	2037 E-2 Leq dBA
59	2820 US 95	F	65.3	67.2	39.8	63.4**	41.6
60	2822 US 95	B	55.7	57.6	39.7	55.7	42.4
61	2805 US 95	B	60.4	62.3	41.0	60.7	41.7
62	2740 US 95	F	59.0	60.9	43.0	58.6	45.8
63	2726 US 95	F	58.5	60.4	46.2	57.3	49.0
64	2720 US 95	F	64.0	65.9	52.0	62.4	52.2
65	2710 US 95	F	61.6	63.5	49.5	60.1	51.0
66	2670 US 95	F	64.4	66.3	54.6	62.8**	54.0
67	2650 US 95	F	64.8	66.7	56.3	63.2**	54.9
68	2650 US 95	F	66.1	68.0	59.2	64.5**	56.8
69	2551 US 95	F	62.2	64.1	62.4	60.8	54.9
70	2555 US 95	F	54.8	56.7	54.3	54.0	53.1
71	2500 US 95	B	54.5	56.4	54.3	53.8	57.8
72	2305 US 95	F	63.2	65.1	61.6	61.6	60.4
73	2205 US 95	F	62.8	64.7	61.4	61.4	60.7
74	2205 US 95	B	61.4	63.3	60.5	60.4	60.3
75	2113 US 95	F	59.6	61.5	59.7	59.3	59.7
76	2113 US 95	B	56.2	58.1	57.6	56.6	57.8

Bolded numbers indicate a noise impact

*Receptor/residence will be impacted by the project right-of-way and assumed to no longer exist after project construction. These are not considered in the totals for noise-impacted receptors.

Residential or business structure(s) potentially impacted by the project right-of-way but residence or business assumed to exist after construction.* Only garage is impacted by the project. Residence is assumed to remain.

****Receptors 47-52 are Green Acres RV Park spaces and considered one business impact.

The details regarding predicted noise levels at receptors by 2037 are shown in in Table 61. Predicted Noise Effects. Table 62. Summary of Noise Effects summarizes the noise impacted receptors by alternative.

Several noise receptors (residences and businesses) may be physically impacted or potentially impacted by project right-of-way. The noise receptors that are physically impacted by right-of-way are assumed to no longer exist after project construction. Potentially impacted receptors (residences and businesses) could result in removal of residential or business structures but not the actual residence or business. These receptors are assumed to be present after the project is constructed. In addition, four empty trailer spaces, a garage and a shop were considered as potential residential or business impacts but they are not included as noise receptors and therefore not listed under this section.

If the residence or business impacts would approach or exceed NAC but would result in relocation due to right-of-way impacts, it was not counted as noise impacted receptors as they would no longer exist after project construction. Residential and business impacts will be determined more accurately during the design process when more detailed topography, design detail and survey data are available. This is indicated with the astrices in the table below.

The seven noise impacted receptors for the E-2 alignment would result from substantial increases from the existing noise levels of 15 dBA or more. Six of these noise-impacted receptors are impacted and removed due to right-of-way acquisition. The remaining receptor (Receptor 7) would be impacted by traffic noise and would remain after construction.

The Modified W-4 and C-3 alternatives would have no remaining noise impacted receptors after construction. Receptor 18 shows a substantial increase with the Modified W-4 alignment, however it is a Category G receptor, undeveloped and unplatted lands; therefore it has no NAC threshold and is not considered an impact.

Table 62. Summary of Noise Effects

Alternative	Number of Noise Impacted Receptors in 2037 (number of impacted receptors after ROW acquistion)
No Action	9
Modified W-4	1* (no noise impacted receptors would remain after construction)
C-3	1* (no noise impacted receptors would remain after construction)
E-2	7** (one noise impacted receptor would remain after construction)

*This receptor exceeds FHWA NACs but is impacted by ROW and would no longer exist.
** Six of these impacted receptors are residences impacted by ROW and would no longer exist.

Compression brakes could be used on the prominent hill descents and increase noise for any of the alternatives.

4.12.2 Traffic Noise Abatement

23 CFR 772 requires that if a noise impact is identified then noise abatement must be considered. Measures which are determined to be both reasonable and feasible should be incorporated into

the project. The ITD Traffic Noise Policy uses Noise Barrier Abatement Checklists and Noise Abatement Decision Checklists as the basis for determining if traffic noise abatement measures are reasonable and feasible. The checklists are included in the Traffic Noise Technical Report.

The required considerations for abatement include:

- Acquisition of property rights for construction of noise barriers
- Construction of noise barriers
- Noise insulation of public use or non-profit institutional structures

Optional considerations for abatement include:

- Traffic management measures
- Alteration of horizontal and vertical alignments
- Acquisition of real property or interests therein for buffer zones

The required and optional abatement measures were not considered feasible and reasonable for the impacted receptors. However, any future receptors should be required to adhere to setback regulations deemed appropriate by the local jurisdiction. The remaining receptor that is not impacted by the E-2 Alternative right-of-way, receptor 7, is located along Eid Road. The E-2 Alignment would be on an elevated bridge structure near the receptor. Construction of a noise wall on the bridge structure would be feasible but would not be reasonable based on the cost benefit calculations. See the Traffic Noise Technical Report for details.

4.13 Air Quality Effects

4.13.1 Air Quality

The project is not within a federally designated air quality non-attainment or maintenance area, nor is it within an IDEQ air quality area of concern. Therefore, the project has minimal likelihood of exceeding federal air quality standards.

4.13.2 Mobile Source Air Toxins (MSAT)

The realigned and additional travel lanes resulting from the Action Alternatives would move some traffic closer to nearby homes, schools, and businesses. Therefore, each alternative may have localized areas where ambient concentrations of MSAT could be higher than the No Action Alternative. The localized increases in MSAT concentrations would likely be most pronounced along the realigned roadway sections that would be built as part of alternatives Modified W-4 and E-2. The magnitude and the duration of these potential increases resulting from the Action

Alternatives compared to the No Action Alternative cannot be reliably quantified due to incomplete or unavailable information in forecasting project-specific MSAT health effects.

Effects could be offset with increased speeds and reduced congestion that is associated with lower MSAT emissions for the Action Alternatives. Also, MSAT would be lower in other locations such as near the existing US-95 alignment when the majority of the traffic shifts away from most of the sensitive receptors in the area. On a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, would over time, in almost all cases, cause region wide MSAT levels to be significantly lower than today.

4.13.3 Greenhouse Gas Emissions (GHG)

While there are no accurate methods for predicting project effects to climate change, climate change is believed to be associated with the emissions of greenhouse gases (GHG) such as CO2. GHG emissions, including CO2, are directly related to energy consumed. Surface transportation-related emissions can be related to VMT. Table 63. Estimated Vehicle Miles Traveled (VMT) shows the calculated and projected VMTs for the No Action and Action Alternatives. Fuel consumption by alternative is in Section 4.15 Energy Effects.

Table 63. Estimated Vehicle Miles Traveled (VMT)

Alternative	Existing 2010 VMT	Projected 2037 VMT
No Action	34,008	54,042
Modified W-4	35,671	56,685
C-3	31,862	50,633
E-2	31,433	49,951

E-2 is expected to have the lowest projected VMT and to generate the least amount of GHGs by 2037. E-2 would result in a 7.6 percent decrease in VMTs compared to the No Action Alternative.

Examples of strategies being implemented to reduce GHG levels include providing alternatives to driving alone (such as carpooling, vanpooling, and transit); developing transportation facilities that encourage transit, high-occupancy vehicle (HOV), bike, and pedestrian modes; supporting land use planning and development that encourage such travel modes (such as concentrating growth within urban growth areas); and optimizing system efficiency. While the project would not preclude implementation of these strategies, due to the rural nature of the project area they are not included as part of the project alternatives.

4.14 Hazardous Materials Effects

The Hazardous Materials Scan prepared for the project identified sites with Underground Storage Tanks (USTs), Aboveground Storage Tanks (ASTs), and other sites containing hazardous materials and requiring cleanup. Table 64. Hazardous Material Sites Effects summarizes the effects by alternative. Exhibit 43. Hazardous Material Site Effects shows the location of the hazardous material sites relative to the Action Alternatives. See the Hazardous Materials Technical Report for more detail. Mitigation measures are discussed in Chapter 9, Environmental Commitments.

Table 64. Hazardous Material Sites Effects

Alternative	Number of Affected Sites	Location and Description of Affected Sites
No Action	0	None
Modified W-4	4	Four 200 to 500 gallon tanks with propane or petroleum
		3460 Hwy 95 (Private-propane)
		2500 Hwy 95 (Private-AST*)
		2211 Hwy 95 (Boat shop-removed UST**)
		1010 Eid Rd (Private-propane)
C-3	13	Thirteen properties with 200-500 gallon tanks with propane, petroleum or oil tanks. The Goodman Oil property also has 3 bulk storage ASTs and a subsurface plume could be affected if acquired.
		3460 Hwy 95(Private-propane)
		2500 Hwy 95 (Private-AST)
		2211 Hwy 95 (Boat shop-removed UST)
		2710 Hwy 95 (Gary's Heating & Oil-petroleum)
		2710 Hwy 95 (Goodman's Oil-Petroleum pumps & AST)
		2922 Hwy 95 (Johnson's Trucking-UST & AST)
		2880 Hwy 95 (Mr. Cabinet Mfg.-propane)
		2850 Hwy 95 (Private-propane)
		2848 Hwy 95 (Upholstery shop-propane)
		2820 Hwy 95 (Private-propane)
		2650 Hwy 95 (Business-propane)
		Hwy 95 (Mundy's Machine and Welding-propane)
		1010 Eid Rd. (Private-propane)
E-2	4	Four 200-500 gallon tanks with propane or petroleum
		2500 Hwy 95 (Private-AST)
		2211 Hwy 95 (Boat shop-removed UST)
		1071 #7 Eid Rd. (Private-propane)
		1084 Eid Rd. (Private-propane)

*AST=Aboveground Storage Tank ** UST=Underground Storage Tank

No Action

The No Action Alternative would not require right-of-way acquisition or major construction. Therefore, there would be no effects to hazardous material sites.

Modified W-4

This alternative would affect four sites, primarily ASTs associated with farms and residences such as propane tanks and petroleum tanks of 500 gallons or less. These would be properly handled and disposed of during right-of-way acquisition and would pose a low risk.

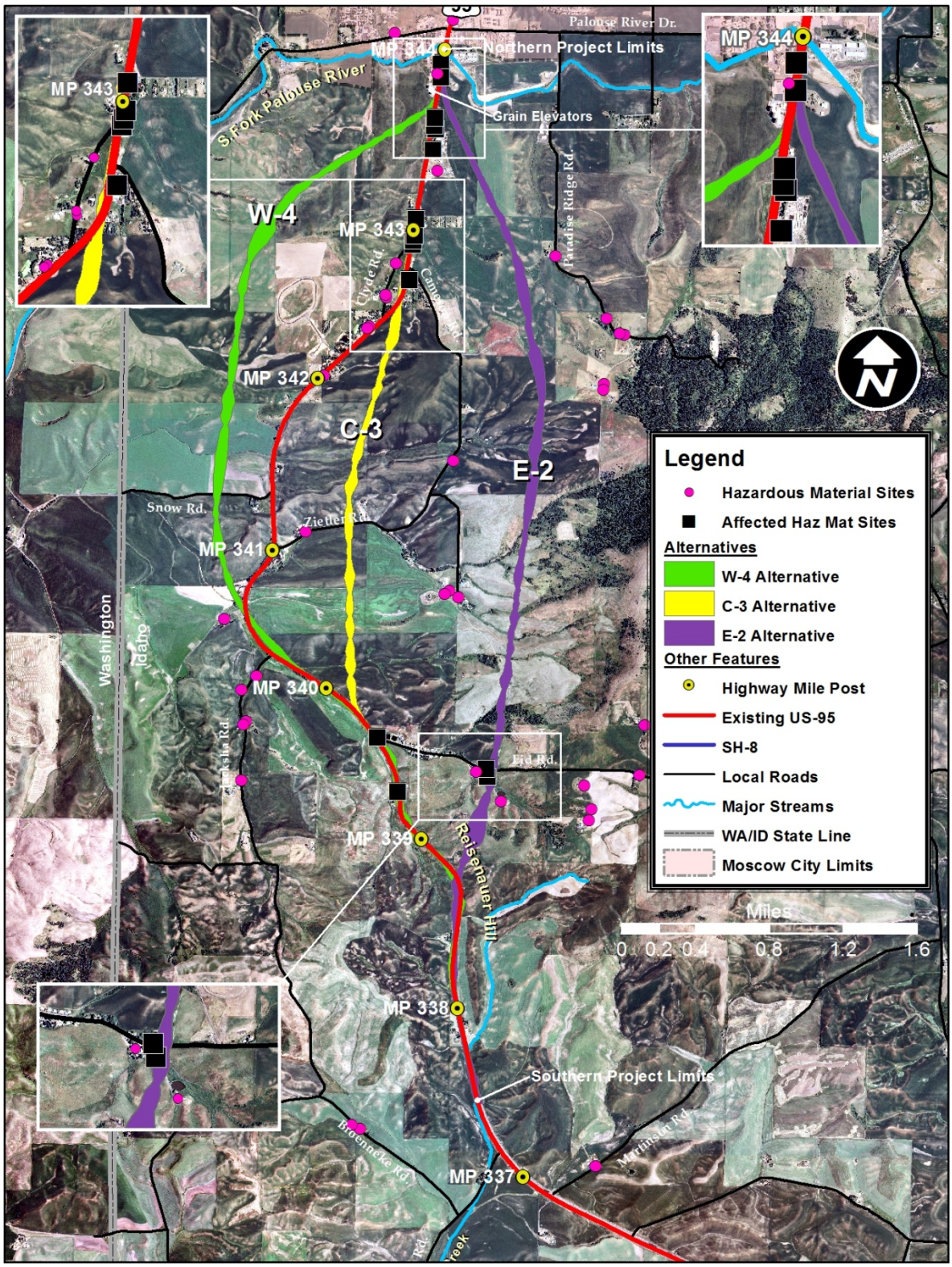
C-3

C-3 would affect 13 sites, one of which is Goodman Oil, a listed site with a contaminated plume. This would need to be remediated if acquired. Acquisition, liability and remediation of this site would result in greater cost but it would result in an environmental benefit after the clean up or abatement. Goodman Oil would pay the cost of cleanup but the liability for cleanup could also transfer to ITD if ITD purchases it. The remaining sites are low risk because there are no records of leakage and they are easily visible.

E-2 (Preferred Alternative)

E-2 would affect four sites, primarily ASTs that contain primarily propane or petroleum in tanks of 500 gallons or less. These would pose a low risk to the project because they are not leaking and are easily visible. The vast majority of homes built before 1950 contained substantial amounts of lead-based paint. Due to the age of many of the existing structures there is the potential risk of lead-based paint and asbestos contained in the structures that would be demolished by each alternative.

Exhibit 43. Hazardous Material Site Effects



4.15 Energy Effects

The alternatives are expected to result in slightly different operational energy usage. The alignments presented have been designed utilizing the same criteria. All have a posted speed of 65 mph in the rural section and 35 mph or 45 mph, depending on the alternative, at the north end, in the urban section. All alternatives would traverse the rolling terrain of the Palouse and have similar maximum grades and curvature for the purposes of estimating energy usage.

Operational energy usage by alternative was estimated by projecting the alternatives' ADTs for the 2037 design year then calculating the projected VMTs. The fuel usage per alternative was based on vehicle type (heavy truck or passenger vehicle) consumption rates and the highway length for each alternative. Table 65. Estimated Operational Energy Use summarizes the results per alternative.

Table 65. Estimated Operational Energy Use

Alternative	Alternative Length (miles)	Projected 2037 VMT	Projected 2037 Fuel Use (gal/day)
No Action	6.34	54,042	2,939
Modified W-4	6.65	56,685	2,955
C-3	5.94	50,633	2,753
E-2	5.86	49,951	2,716

Total fuel consumption for this segment of US-95 is currently estimated to be 1,773 gallons per day. The No Action Alternative is estimated to utilize 2,939 gallons of fuel per day by the 2037 design year. Based on the results, E-2, which is the shortest alignment, would result in the least fuel usage through the project corridor.

ITD will negotiate the transfer of the remaining US-95 loop to the NLHD who will be responsible for the safe maintenance of the roadway. NLHD budgets consist of revenues from local, state and federal funding sources which are used for road maintenance, such as plowing, dust control, equipment maintenance and labor costs. The existing US-95 loop will be within the county road system and traffic volumes will decrease by 95 to 97 percent compared to current volumes. Significantly lower traffic volumes will result in less maintenance. NLHD already travels US-95 to access country roads for snow removal so snow removal energy for mobilization is not expected to rise dramatically.

4.16 Relationship between Local Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity

Council for Environmental Quality (CEQ) NEPA Regulations [40 CFR 1502.16] requires discussion of the "relationship between short term uses of the environment and the maintenance and enhancement of long-term productivity" as part of an EIS. The proposed action was evaluated to determine whether long-term benefits are worth the short-term effects. Short-term effects are anticipated with the construction of any Action Alternative. These include, but are not limited to, travel delays, traffic congestion, restricted access to residences and the commercial establishments in the project area, visual intrusions to residents and motorists, noise to residents and other effects. The C-3 Alternative would have the greatest short-term effects because a greater portion of it is located along existing US-95 and adjacent to businesses and residences resulting in greater delays, congestion, noise, visual effects and access restrictions. The need for short-term and long-term transportation improvements is analyzed in an iterative, on-going planning effort at all levels of government.

The maintenance and enhancement of long-term productivity of resources of an area is based on a number of different factors, including transportation systems. The need for present and future transportation improvements is programmed and analyzed as part of the compilation of the Idaho Transportation Investment Program (ITIP). These plans take into account the requirements for long-term productivity of the transportation system. There would be a long-term benefit to the travelling public due to improved safety and capacity, increased mobility, and maintenance of the long-term economic viability locally, regionally and state-wide due to availability of safe and reliable transportation and reduced road user costs.

The improvement of the aging transportation infrastructure contributes to the maintenance and enhancement of long-term productivity of the communities in the project area and would outweigh the short-term effects. Additionally, US-95 is identified as a NAFTA route, which connects Canada to Mexico through Idaho and other western states, and contributes beyond the local and regional long-term productivity of this community. ITD is committed to mitigating both short- and long-term effects to the environment.

4.17 Irreversible and Irretrievable Commitment of Resources

CEQ's NEPA regulations require discussion of any irreversible or irretrievable commitment of resources in implementing a federally funded project [40 CFR 1502.16]. This applies primarily to use of nonrenewable resources, such as minerals or cultural resources, or to those factors, such as soil productivity, that are renewable only over long periods of time. The irretrievability of those resources applies to the loss of production, harvest, or use of natural resources. The implementation of any of the Action Alternatives would require a commitment of a range of

natural, physical, human, and fiscal resources. The conversion of private land from existing residential, agricultural, commercial, and native habitat uses to public highway is considered an irreversible commitment of resources. Despite that, if at some future time a greater need arises for use of the land or if the proposed public highway is no longer needed, the land could be converted to another use. The Action Alternatives would utilize existing right-of-way (ROW) where possible. Existing ROW would be used to differing extents between alternatives to meet the project purpose and need. See Table 66. Right-of-Way Effects.

Table 66. Right-of-Way Effects

Alternative	New ROW (acres)	Existing ROW (acres)	Total ROW (acres)
No Action	0	0	0
Modified W-4	206	45	251
C-3	154	55	209
E-2	207	22	229

Regarding fiscal resources, the Action Alternatives would require the commitment of funds for constructing, operating, and maintaining the proposed roadway. Funds would be required for right-of-way acquisition, construction, mitigation, and long-term maintenance of the new facilities. Maintenance of the existing US-95 loop would also be required but would be less due to the reduction in traffic volumes on that roadway by 95 to 97 percent compared to existing volumes. The use of public funds for the proposed action would be irreversible and irretrievable. Considerable amounts of labor, fossil fuels, and highway construction materials would be expended and would not be retrievable. Concrete, aggregate materials used in concrete and asphalt production such as sand and gravel, along with steel, water, and bituminous material, would all be used for the proposed action. Additionally, large amounts of labor and natural resources would be used in the fabrication, preparation, and transportation of construction materials. Such expenditures generally are not retrievable. The proposed action has the potential to change land use patterns in the project area by increasing visibility of, and accessibility to, developable land. Such change in land use patterns could result in different effects on the social, built, and natural environment, than otherwise would occur with existing development patterns.

Where historic resources are adversely affected such use would be irretrievable but would be minimized and mitigated. The proposed action also would replace land currently functioning as wildlife habitat, riparian areas, and wetlands with highway lanes and approaches. Where wetlands or floodplains cannot be avoided or effects cannot be further minimized, the proposed action would compensate for lost functions and values through compensatory mitigation. While wetland and floodplain mitigation are intended to create additional wetlands or floodplains that restore functions, the loss of the actual habitat affected is considered irreversible. The

commitment of the aforementioned resources is based on the concept that residents in the immediate area, region and state would benefit from the improved facility, as would NAFTA related travel. These benefits would consist of improved safety, and increased capacity to accommodate current and future traffic demand.