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Visual Resources Technical Report

Final Environmental Impact Statement

US-95 Thorncreek Road to Moscow

Project No. DHP-NH-4110(156);Key No 09294

US 95 THORNCREEK ROAD to MOSCOW PROJECT

FINAL VISUAL RESOURCES REPORT
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Provided For
Idaho Transportation Department, District 2

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INTRODUCTION

Most transportation projects create at least some visual impacts. These impacts result from visual contrasts associated with new cuts, fills, or a new road surface introduced into the existing environment. Results of a visual analysis aid planners and the public in their overall understanding of visual resources and the potential impacts to sensitive viewers. Three questions regarding visual resources must be answered during any analysis:

- Who is impacted and/or is concerned about visual impacts?
- How many people can see the landscape at any given time?
- How close are these people to an impact?

The US 95 Thorncreek Road to Moscow Project from Martinsen Road to the City of Moscow is located within Latah County, Idaho. The rolling hills of the Palouse and small farms characterize much of the landscape. Paradise Ridge, a prominent feature, is located in the eastern portion of the study area, and dense urban areas associated with the City of Moscow are located to the north. Most of the land in the area is privately owned.

Ten alternative alignments for this route have been identified and studied, for visual impacts as well as other environmental impacts. The visual analysis consisted of two phases, an inventory and an assessment of data. During the inventory, Visual Genesis investigators looked at key observation viewpoints, project visibility, variety classes, and distance zones. Then during the subsequent assessment, collected data were analyzed to determine the potential impacts of each alternative alignment to visual resources.

INVENTORY METHODS AND RESULTS

Investigators visited the area three times, in different seasons, to gain a full understanding of the landscape. When possible, inventory methods developed for use on public lands were used. However, most of the lands in the study area are private. So available land planning documents were reviewed to identify policies or guidelines for visual resources. In the absence of formal guidelines for private ownership, the visual inventory focused on landscape scenery and viewer sensitivity associated with residential developments, farms, and recreation areas.

In addition, investigators reviewed photogrammetric (aerial photography) and geographic information system (GIS) data to “ground-truth” information collected during the three study area visits. Use of GIS technology allows investigators to overlay different “perspectives” of an area to see whether there might be resource conflicts or cumulative benefits arising from certain actions. Verified data were inputted to the GIS to maintain an accurate database for use in the visual resources analysis. The integration of data facilitated development of a matrix used for later analysis.

Investigators were also able to use a three-dimensional (3D) virtual model that had been developed. This 3D model allows a user to "travel" the area in a car or see the area from any point. The purpose of the 3D model was to verify potential impacts and help simplify complex engineering data. It has also been a useful tool for facilitating public input since the public can view each alternative alignment in the 3D form.

To answer the necessary questions regarding visual resources, the inventory consisted of the following components, each of which is discussed in more detail below:

- Key observation viewpoints
- Project visibility
- Variety class
- Distance zones

Key Observation Viewpoints

Key observation viewpoints are those locations where viewers who are most sensitive to visual change are likely to be found. Two types of viewpoints, residential and recreation, were determined to be associated with this project (see Figure 1). Viewers at these types of viewpoints generally have a high concern for visual change within the study area.

- Residential viewers are typically the most sensitive to visual change. These viewers have long view duration and perceive scenic resources as very important. Residential viewers included urban dwellers found in and around the City of Moscow and rural dwellers associated with outlying areas and farms.

- Recreation viewpoints are typically associated with parks, golf courses, trails, and scenic overlooks. Viewers at these viewpoints are concerned with visual impacts because these impacts influence their perception of the recreation experience. Several parks are located within the study area. They include several day-use parks and the golf course at the University of Idaho.

Project Visibility

The inventory component on project visibility determines whether lands are visible from sensitive viewpoints and how many viewers can see potential changes to the area. Visual impacts typically increase with greater numbers of viewers. After an inventory of key observation viewpoints, investigators performed a GIS visibility analysis using a viewer height of 8 feet (see Figure 2). Although this height does not represent the height of viewers, it was considered a conservative guideline.

Variety Classes

Variety classes account for the overall diversity of a landscape and uniqueness of to the study area. Classifications are based on the premise that all landscapes have some aesthetic value but that viewers are more sensitive to change in areas with the most variety, diversity, or uniqueness. For the inventory, three classes were established. Table 1 describes each of the three variety classes.

Table 1 Variety Class Definitions

Variety Classification	Description
Class A	These are areas where features of landform, vegetation patterns, and rock formations are outstanding within the study area. These features are typically unique and dominate the landscape.
Class B	These are areas where features contain variety in form, line, color, and texture or combinations thereof. But these features tend to be common throughout the study area.
Class C	These are typically areas with minimal variety in form, line, color, and texture or that have been significantly altered by human presence. These areas are typically associated with urban areas (such as the City of Moscow).

Information from the photogrammetric review, 3D virtual model, and study area visits was used to delineate areas as A, B, or C variety classes (see Figure 3).

- Class A—The upper portions of Paradise Ridge were the only areas delineated as Class A. A high diversity in landform, vegetation, and uniqueness to the study area contributed to this classification.

- Class B—The rolling hills of the Palouse as well as the lower slopes of Paradise Ridge were classified as B. While common to the Palouse country, these areas exhibit variety in color, texture, and landform.

- Class C (urban areas)—The urban areas associated with the City of Moscow were classified as C. Heavily altered, these areas are dominated by structures, roads, and other man-made amenities.

Distance Zones

Distance zones were established based on perception thresholds, in other words, based on the fact that visual perception of form, texture, color, and other visual criteria changes as distance from a viewpoint increases. Elements on the landscape tend to become less obvious and detailed. Elements of form and line become more dominate than color and texture at longer viewing distances. There are four thresholds (see Figure 4):

- Extreme Foreground (0 to 0.25 mile)—The extreme foreground is the dominant view threshold. Details are easily perceived and obvious. Changes may dominate the landscape. Textural and other aesthetic qualities, such as vegetation, rock outcrops, and other features, are well perceived in this zone.

- Foreground (0.25 miles to 0.5 mile)—The foreground is the viewed area in which details are perceived and obvious. Textural and other aesthetic qualities of vegetation are normally perceived within this zone.

- Middleground (0.5 to 1 mile)—The middleground is the zone where details of foliage and fine textures cease to be perceptible. Vegetation begins to appear as patterns.

- Background (1 to 3 miles)—The background is the portion of the landscape where texture is weak and landform becomes the most dominant element.

IMPACT ASSESSMENT METHODS AND RESULTS

Matrix Development and Analysis

After the various components of the visual inventory were completed, a visual analysis was performed. Conditions on project visibility, variety classes, and distance zones were combined into a matrix, which allowed investigators to determine overall potential visual impacts of the project (see Figure 5). The analysis identified where people may be most concerned about visual changes to the landscape. Each condition resulted in a visual impact level (see next section for results).

The matrix used data on project visibility, variety classes, and distance zones to codify visual impacts. Potential impacts of project visibility tend to be higher with a greater number of viewers sensitive to visual change. Three conditions of project visibility were developed through the viewer inventory and GIS visibility analysis:

- Low—Areas of an alternative alignment that are not visible
- Moderate—Areas of an alternative alignment that are visible at 1 to 10 viewpoints
- High—Areas of an alternative alignment that are visible at more than 10 viewpoints

Potential impacts regarding variety classes tend to be higher where landscape variety is diverse but lower in areas where landscapes are common or heavily influenced by human activity. Again, three variety classes—A, B, and C—were developed, with Class A including areas where features of landform, vegetation patterns, and rock formations were outstanding and unique within the study area while Class C included areas with minimal variety in form, line, color, and texture (see the earlier section on the inventory for full descriptions of these classes).

Potential impacts of a project typically diminish with distance. Therefore, as mentioned earlier, four distance zones were delineated. The foreground and extreme foreground included areas 0.25 to 0.5 and 0 to 0.25 mile from alternative alignments, respectively. The middleground included areas 0.5 to 1 mile from alternative alignments. And the background included areas 1 to 3 miles from alternative alignments.

Resulting Impact Levels

After areas were delineated according to project visibility, variety class, and distance zone, the matrix was able to indicate visual impacts from different conditions. Four levels

of impact were developed, and investigators used these four levels (see below) to evaluate potential visual impacts from alternative alignments.

- 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 significant change to visual resources, they may warrant mitigation.

- Moderate High—These conditions occur where viewers are sensitive to change to the landscape, changes are moderately visible (seen at 1–10 viewpoints), and they may dominate the viewshed. Impacts may cause adverse change but not significant change to visual resources.

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

- 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. Impacts may cause no or minimal change to existing visual resources.

As mentioned earlier, these impact levels were established to create a context for evaluating potential impacts of alternative alignments to visual resources. In addition, results were compared with photogrammetric and GIS data, as well as with information about on-site conditions, as noted during the three study area visits. The 3D virtual model was also used to verify the analysis. Figure 6 shows the location and level of visual impacts, while Table 2 provides a summary of impacts by mile for each alternative alignment.

Table 2 Potential Visual Impacts by US 95 Thorncreek Road to Moscow Alternative Alignments

Alternative and Overall Length (ft)	Initial Visual Impact	Length (ft)	Percentage of route	Length (miles)
C1	Low	2684.50	7.03	0.51
38195.24	Moderate	26442.75	69.23	5.01
	Moderate High	7311.42	19.14	1.38
	High	1756.57	4.60	0.33
C2	Low	3598.90	9.33	0.68
38574.82	Moderate	18060.10	46.82	3.42
	Moderate High	8349.48	21.64	1.58
	High	8566.34	22.21	1.62
C3	Low	3165.23	8.91	0.60
35520.35	Moderate	24264.06	68.31	4.60
	Moderate High	5128.96	14.44	0.97
	High	2962.10	8.34	0.56
E1	Low	1523.08	4.14	0.29
36792.18	Moderate	16283.37	44.26	3.08
	Moderate High	9523.62	25.88	1.80
	High	9462.12	25.72	1.79
E2	Low	956.08	2.71	0.18
35316.88	Moderate	16537.83	46.83	3.13
	Moderate High	8759.79	24.80	1.66
	High	9063.17	25.66	1.72
E3	Low	1258.60	3.60	0.24
34964.79	Moderate	16297.81	46.61	3.09
	Moderate High	9452.11	27.03	1.79
	High	7956.27	22.76	1.51
W1	Low	8099.68	18.07	1.53
44834.10	Moderate	16730.20	37.32	3.17
	Moderate High	14585.65	32.53	2.76
	High	5418.57	12.09	1.03
W2	Low	4051.18	10.14	0.77
39962.05	Moderate	11526.87	28.84	2.18
	Moderate High	13541.29	33.89	2.56
	High	10842.70	27.13	2.05
W3	Low	6607.44	16.37	1.25
40363.84	Moderate	12184.94	30.19	2.31
	Moderate High	12174.37	30.16	2.31
	High	9397.09	23.28	1.78
W4	Low	4265.39	10.80	0.81
39500.77	Moderate	22911.11	58.00	4.34
	Moderate High	9192.54	23.27	1.74
	High	3131.73	7.93	0.59

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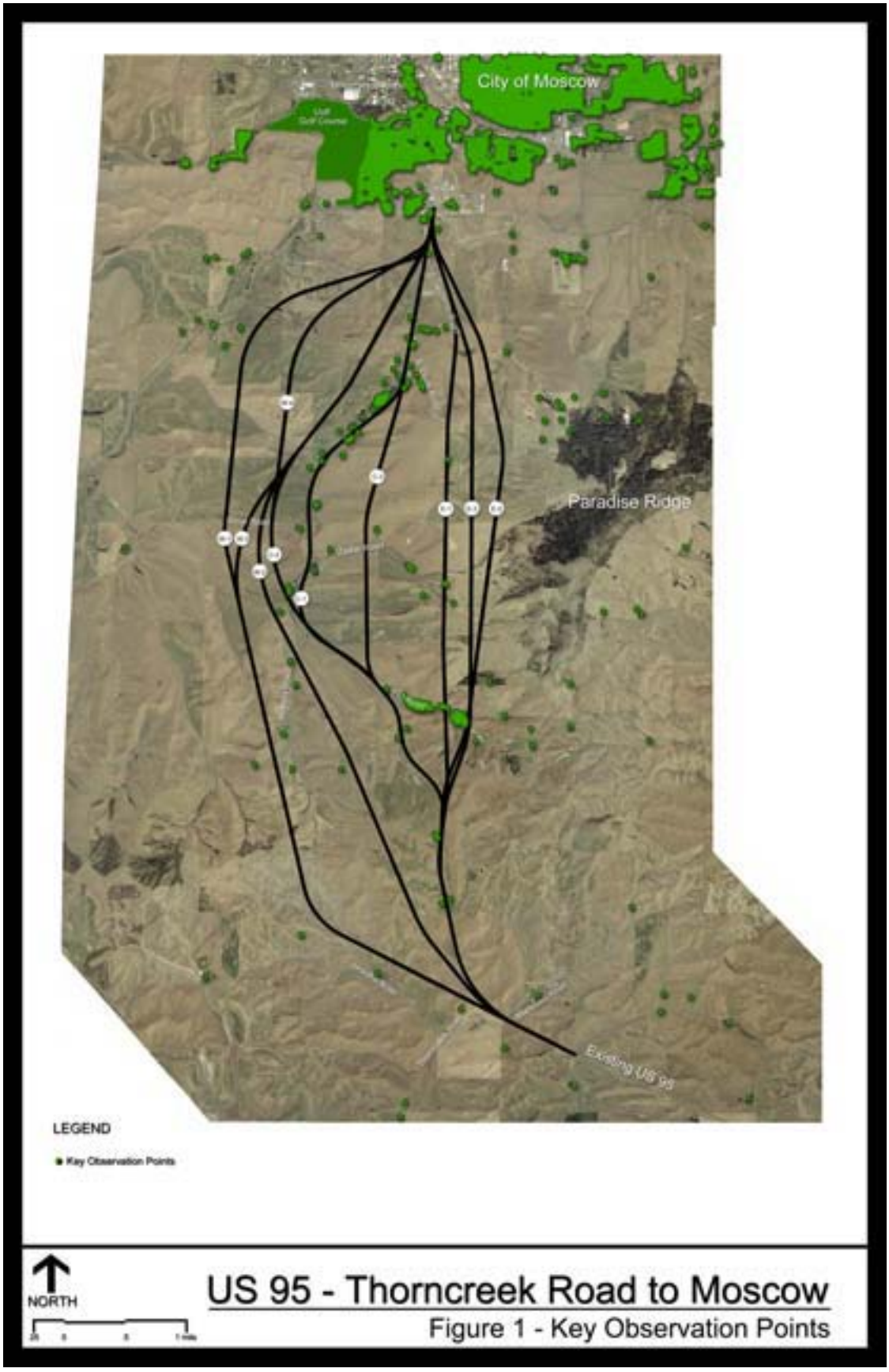

Figure 1 Key Observation Points in the US 95 Thorncreek Road to Moscow Study Area

Figure 2 Project Visibilty in the US 95 Thorncreek Road to Moscow Study Area

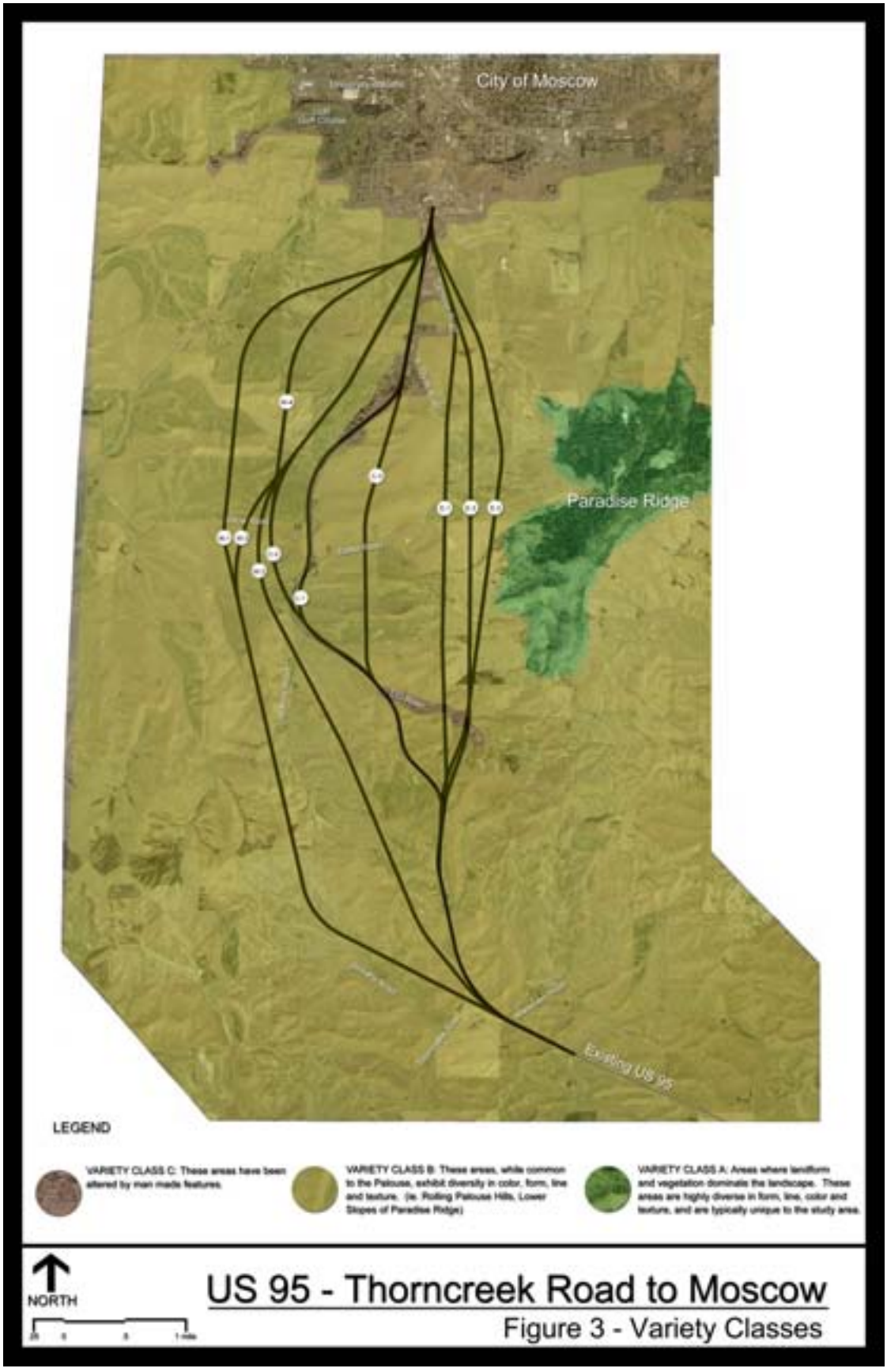

Figure 3 Variety Classes in the US 95 Thorncreek Road to Moscow Study Area

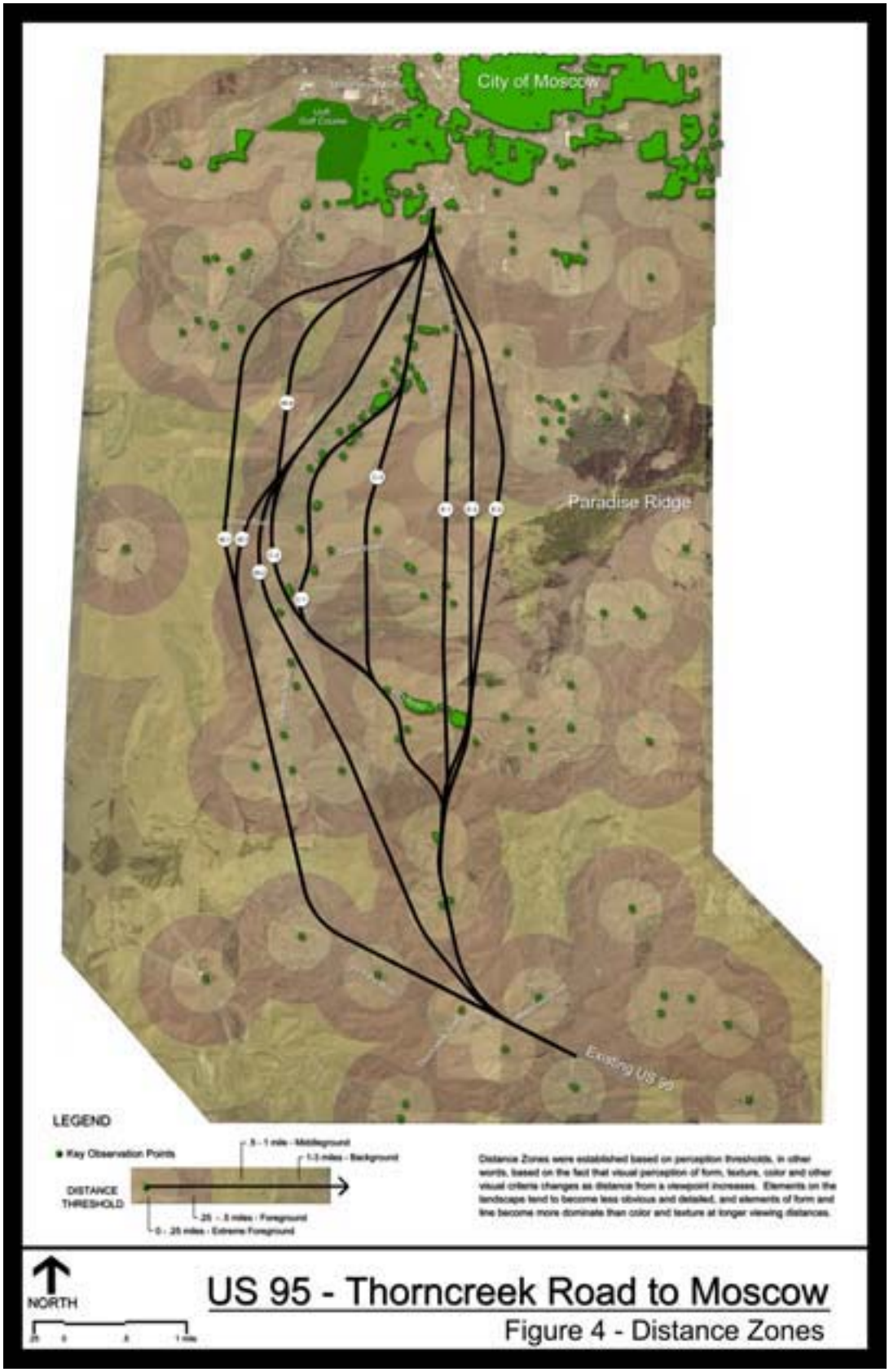

Figure 4 Distance Zones in the US 95 Thorncreek Road to Moscow Study Area

FIGURE 5 - VISUAL IMPACT MATRIX

	Variety Class A				Variety Class B				Variety Class C			
Project Visibility	Extreme Foreground 0-.25 miles	Foreground .25 - .5	Middleground .5 - 1	Background 1 - 3	Extreme Foreground 0-.25 miles	Foreground .25 - .5	Middleground .5 - 1	Background 1 - 3	Extreme Foreground 0-.25 miles	Foreground .25 - .5	Middleground .5 - 1	Background 1 - 3
Low (Not Seen)	L	L	L	L	L	L	L	L	L	L	L	L
Moderate 1-10 viewpoints	H	H	MH	M	MH	MH	M	M	M	M	L	L
High (10+)	H	H	H	MH	H	MH	M	M	M	M	L	L

Visual Impact Description

Low
Moderate
Moderate High
High

Note: Low Moderate Designation is usually reserved for areas seen beyond 3 miles. There was none identified in the study area.

Figure 5 Visual Impact Matrix for the US 95 Thorncreek Road to Moscow Project

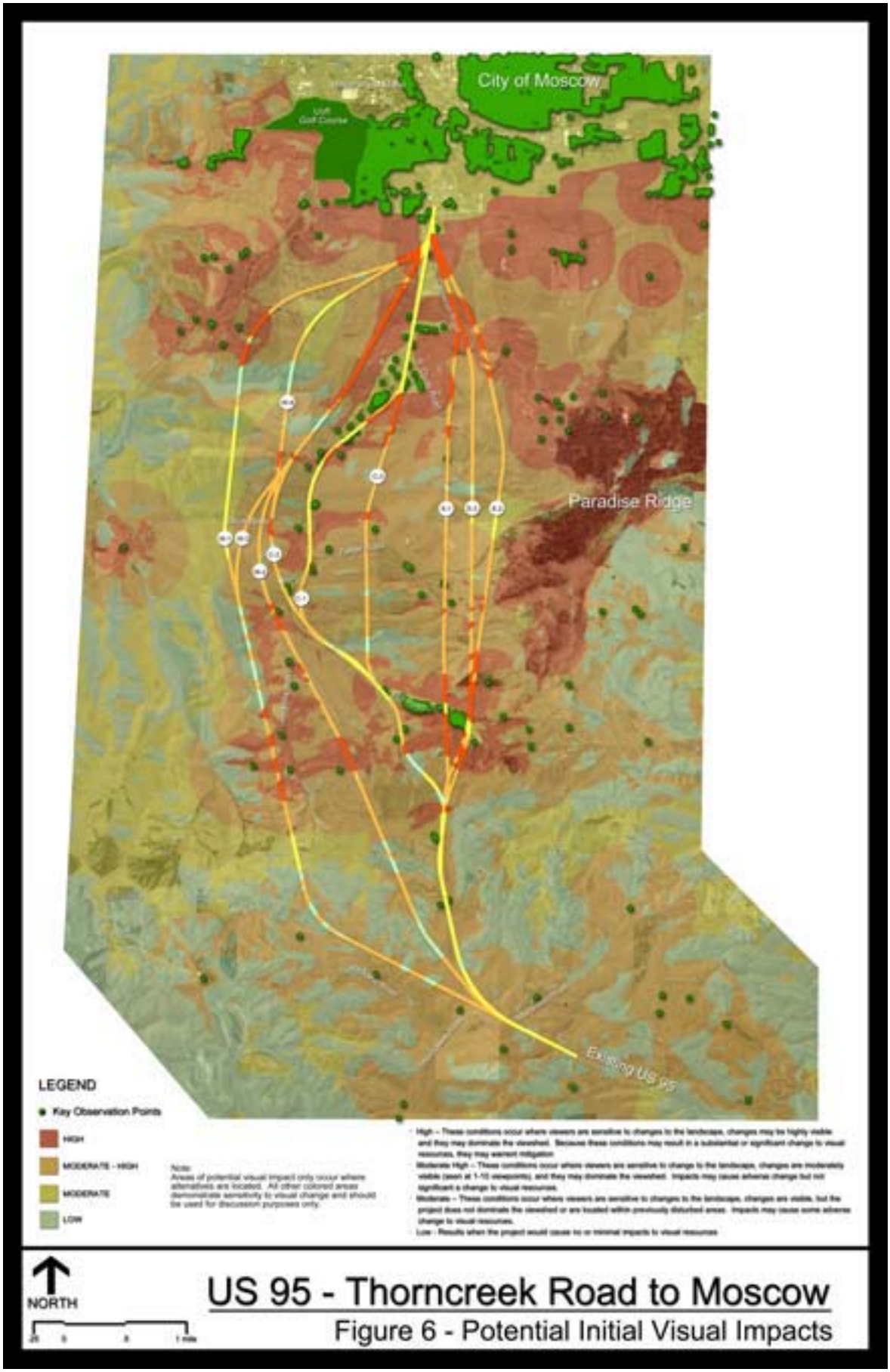

Figure 6 Potential Visual Impacts of the US 95 Thorncreek Road to Moscow Project

FIGURE 7 - POTENTIAL INITIAL VISUAL IMPACTS					
ALTERNATIVE	INT VISUAL_IMP	Overall Leng	LENGTH_FT	Percentage of Route	LENGTH_MILES
C1	LOW	38195.24	2684.50	7.03%	0.51
	MODERATE	38195.24	26442.75	69.23%	5.01
	MOD_HIGH	38195.24	7311.42	19.14%	1.38
	HIGH	38195.24	1756.57	4.60%	0.33
C2	LOW	38574.82	3598.90	9.33%	0.68
	MODERATE	38574.82	18060.10	46.82%	3.42
	MOD_HIGH	38574.82	8349.48	21.64%	1.58
	HIGH	38574.82	8566.34	22.21%	1.62
C3	LOW	35520.35	3165.23	8.91%	0.60
	MODERATE	35520.35	24264.06	68.31%	4.60
	MOD_HIGH	35520.35	5128.96	14.44%	0.97
	HIGH	35520.35	2962.10	8.34%	0.56
E1	LOW	36792.18	1523.08	4.14%	0.29
	MODERATE	36792.18	16283.37	44.26%	3.08
	MOD_HIGH	36792.18	9523.62	25.88%	1.80
	HIGH	36792.18	9462.12	25.72%	1.79
E2	LOW	35316.88	956.08	2.71%	0.18
	MODERATE	35316.88	16537.83	46.83%	3.13
	MOD_HIGH	35316.88	8759.79	24.80%	1.66
	HIGH	35316.88	9063.17	25.66%	1.72
E3	LOW	34964.79	1258.60	3.60%	0.24
	MODERATE	34964.79	16297.81	46.61%	3.09
	MOD_HIGH	34964.79	9452.11	27.03%	1.79
	HIGH	34964.79	7956.27	22.76%	1.51
W1	LOW	44834.1	8099.68	18.07%	1.53
	MODERATE	44834.1	16730.20	37.32%	3.17
	MOD_HIGH	44834.1	14585.65	32.53%	2.76
	HIGH	44834.1	5418.57	12.09%	1.03
W2	LOW	39962.05	4051.18	10.14%	0.77
	MODERATE	39962.05	11526.87	28.84%	2.18
	MOD_HIGH	39962.05	13541.29	33.89%	2.56
	HIGH	39962.05	10842.70	27.13%	2.05
W3	LOW	40363.84	6607.44	16.37%	1.25
	MODERATE	40363.84	12184.94	30.19%	2.31
	MOD_HIGH	40363.84	12174.37	30.16%	2.31
	HIGH	40363.84	9397.09	23.28%	1.78
W4	LOW	39500.77	4265.39	10.80%	0.81
	MODERATE	39500.77	22911.11	58.00%	4.34
	MOD_HIGH	39500.77	9192.54	23.27%	1.74
	HIGH	39500.77	3131.73	7.93%	0.59

Figure 7 Potential Initial Visual Impacts in the US 95 Thorncreek Road to Moscow Study Area