

**Visual Simulation Report
and Visual Contrast Rating Analysis for the
White Mountain Wind Energy Project,
Sweetwater County, Wyoming**

**Prepared by
Tasco Engineering Inc.
Lehi, Utah**

**Bureau of Land Management
Rock Springs Field Office
Rock Springs, Wyoming**

and

**TRC Environmental Corporation
Laramie, Wyoming**

February 2010

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LIST OF ABBREVIATIONS AND ACRONYMS

BLM	Bureau of Land Management
ft	Foot or feet
GPS	Global positioning system
kV	Kilovolt
mi	Mile or miles
MW	Megawatt
Teton	Teton Wind LLC
TRC	TRC Environmental Corporation
VCR	Visual contrast rating
VRM	Visual resource management
WMWE	White Mountain Wind Energy

1.0 INTRODUCTION

Teton Wind LLC (Teton), a subsidiary of Tasco Engineering Inc. of Lehi, Utah, is proposing to develop a wind generation facility in Sweetwater County, Wyoming, located approximately 2.0 to 3.0 mi west-northwest of the City of Rock Springs. The White Mountain Wind Energy (WMWE) Project could potentially generate 360 megawatts (MW) of energy and could consist of up to 240 turbines if 1.5-MW wind turbines are used for this facility. As part of the permitting process for the project, Teton is required to prepare visual simulations of what the project may look like when in operation. Teton worked with the Bureau of Land Management (BLM) and Sweetwater County Planning and Zoning Department staff to determine points where simulations would be performed. Figure 1 presents the project area and the locations of the 21 base photo points used to produce the visual simulation of the proposed project. In addition to the visual simulations, an independent verification or accuracy assessment was conducted on the visual simulations.

As part of the simulation process, the BLM also requested that a visual contrast rating (VCR) analysis be conducted for eight culturally sensitive sites located between 1.0 and 17.0 mi outside of the WMWE project area, and the result of this analysis are included in this report.

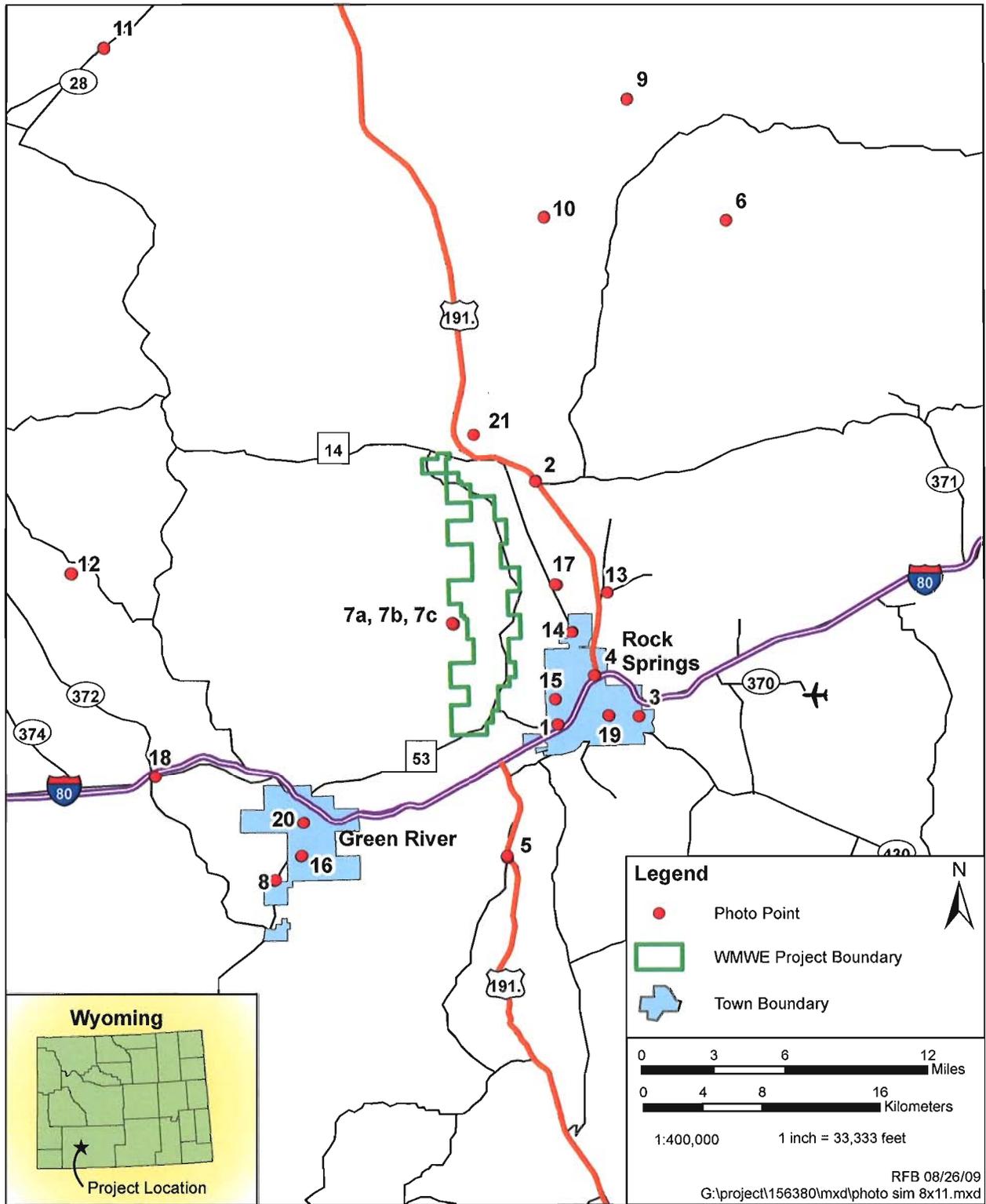


Figure 1 Project Area and Visual Simulation Photo Points.

2.0 WIND ENERGY GENERATING FACILITIES

The proposed wind turbines would stand approximately 118.5 m (388.8 ft) high (80.0-m [262.0-ft] tower and 38.5-m [126.0-ft] rotor blades). Viewers most sensitive to the structures were identified as residents predominantly within the Rock Springs area where the proposed structures would be most visible. The wind turbines would be the most visible feature of the proposed facilities given the structure size and height of the blades. Other facilities would be required to support wind energy generation, but these facilities were not included in the simulation process. These facilities include:

- meteorological towers (i.e., two permanent free-standing towers approximately 60.0 m [197.0 ft] tall);
 - electrical collection and distribution systems (i.e., pad mounted transformer, substation, switching station);
 - electrical substation and operations and maintenance facility (i.e., an electrical substation located on a 2.0-acre site with a concrete pad and electrical transformers and a 5,000-ft² operation and maintenance building located on a 2.0-acre cleared area with a gravel storage pad);
 - access roads (i.e., permanent and temporary roads used for turbine construction and crane transport); and
 - lay down areas (i.e., 0.73-acre gravel area located at the beginning of each turbine string during construction).
-

3.0 BLM VISUAL RESOURCE MANAGEMENT CLASSIFICATION SYSTEM

The BLM has undertaken visual resource management (VRM) on public lands under its management, including portions of the WMWE project area, with the overall objective to minimize visual resource impacts resulting from human activities. The VRM inventory process considers the scenic quality of the landscape, viewer sensitivity, and the distance from the viewer to the landscape. VRM relative values within the BLM Rock Springs Field Office are indicated by one of four assigned classes. According to the BLM VRM objectives as outlined in *Visual Resource Contrast Rating Handbook* (H-8431-1), areas with VRM Classes I and II are the most valued areas, Class III areas are of moderate value, and Class IV areas are of least (Table 1).

The WMWE project area has been mapped by the BLM for VRM. According to this information, approximately 86% (11,259 acres) of the WMWE project area is designated as a Class IV VRM area. The remaining 14% (1,906 acres) of the WMWE project area--the extreme northern and southeastern portion of the proposed project area--is within an area mapped as a Class III VRM area. Existing structures located in Class III VRM areas include a microwave reflector, telecommunication/radio tower and maintenance building in the extreme southeast corner, and three large 345-kilovolt (kV) transmission lines (owned by PacifiCorp) and shorter communication tower in the northern portion of the WMWE project area. A smaller (230-kV) power transmission line bisects the central portion of the WMWE project area, which has been mapped as VRM Class IV.

Table 1 BLM Visual Resource Management Class Objectives.¹

Class	Description
I	The objective of this class is to maintain a landscape setting that appears unaltered by humans. It is applied to wilderness areas, some natural areas, wild portions of the wild scenic rivers, and other similar situations where management activities are to be restricted.
II	The objective of this class is to design proposed alterations so as to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
III	The objective of this class is to design proposed alterations so as to partially retain the existing character of the landscape. Contrasts to the basic elements (form, line, color, and texture) caused by a management activity may be evident and begin to attract attention in the characteristic landscape. However, the changes should remain subordinate to the existing characteristic landscape. Structures located in the foreground distance zone (0-1/2 mile) often create a contrast that exceeds the VRM class, even when designed to harmonize and blend with the characteristic landscape. This may be especially true when a distinctive architectural motif or style is designed. Approval by the District Manager is required on a case-by-case basis to determine whether the structure(s) meet the acceptable VRM class standards, and if not, whether they add acceptable visual variety to the landscape.
IV	The objective of this class is to provide for management activities which require major modification of the existing character of the landscape. Contrasts may attract attention and be a dominant feature of the landscape in terms of scale; however, the change should repeat the basic elements (form, line, color, and texture) inherent in the characteristic landscape. Structures located in the foreground distance zone (0-1/2 mile) often create a contrast that exceeds the VRM class, even when designed to harmonize and blend with the characteristic landscape. This may be especially true when a distinctive architectural motif or style is designed. Approval by the District Manager is required on a case-by-case basis to determine whether the structure(s) meet the acceptable VRM class standards, and if not, whether they add acceptable visual variety to the landscape.

¹ Bureau of Land Management. 1996. Green River Resource Area Resource management plan and final environmental impact statement. U.S. Department of the Interior, Bureau of Land Management, Rock Springs District, Rock Springs, Wyoming. BLM/WY/PL-96/012 + 1610. 1,009 pp.

4.0 METHODOLOGY

4.1 VISUAL SIMULATIONS

A total of 21 photo points were identified by BLM and Sweetwater County staff, and a single photo point was taken at each photo point facing the location of the proposed WMWE Project, except for the Pilot Butte location where three photos (7a, 7b, and 7c) were taken (Table 2). The photos from this location were identified at various points covering an approximately 360° view of the project area.

A third-party consultant, TRC Environmental Corporation (TRC), took base photos from each of the photo points illustrated on Figure 1 and documented the specific location of each photograph using a Trimble GeoExplorer 3 correctable handheld global positioning system (GPS) unit. TRC's professional photographer used a Canon Rebel XSi digital camera with a Canon EFS18-55 lens, and the lens was set at 31 mm to compensate for crop factor (31 mm lenses setting X 1.6 crop factor = 49.6 mm output view); thereby creating a 50-mm equivalent focal length. The 50-mm equivalent focal length produces a 38.6° horizontal field of view (HFOV) which best represents the human visual perception (National Research Council 2007: 353). The base photographs were taken on March 2, 3, and 10, 2009, and representatives of Teton, BLM, and the Sweetwater County Planning and Zoning Department were present while each photograph was taken during the March 2 and 3 field sessions.

Teton then obtained the photos (with corrected GPS locations) and created the visual simulations using height contour lines and visualization software using Wind Pro 2 (an advanced wind energy software) to locate and correctly dimension the model of the proposed project components (i.e., the wind turbines) into the photographic image from each photo point location. A 3-D model of the wind turbines was also created in the visualization software program based on engineering specifications for the proposed turbine to be used for this project (the GE 1.5 MW turbine). The model was then incorporated into the UTM Zone 12, NAD 83 coordinate system data, and the wind turbines were placed at the easting and northing specified by the project engineering drawings. The shading or color density of the wind turbines was automatically adjusted by the software to account for the date and time each photograph was

Table 2 Location of Visual Simulations.¹

Photo Point	Description of Location	Photograph Date	Northing	Easting
1	White Mountain Mall	3/3/2009	4604672.075	644877.357
2	U.S. Highway 191 North Pullout	3/3/2009	4621157.869	643351.613
3	Fire Station at Hillcrest, Prairie Addition	3/3/2009	4605236.173	650314.014
4	McDonalds Parking Lot	3/3/2009	4607976.309	647360.691
5	Little Firehole Turnout	3/3/2009	4595649.727	641402.176
6	Cedar Canyon	3/3/2009	-- ²	-- ²
7a	Pilot Butte - North	3/3/2009	4611552.689	637695.204
7b	Pilot Butte - East	3/3/2009	4611552.689	637695.204
7c	Pilot Butte - South	3/3/2009	46115523689	637695.204
8	South of Green River, State Highway 530	3/2/2009	4594122.837	625729.047
9	Boars Tusk	3/2/2009	4647056.010	649525.627
10	White Mountain Petroglyphs	3/2/2009	4639034.634	643939.910
11	Pilot Butte Overlook State Highway 28	3/2/2009	4650516.710	614082.847
12	County Picnic Grounds, County Road 6	3/2/2009	4614891.629	611898.903
13	Reliance	3/2/2009	4613615.529	648173.832
14	Sweetwater Fairgrounds	3/2/2009	4610952.138	645800.019
15	Recreation Center	3/2/2009	4606363.644	644671.294
16	Upland Way Green River	3/2/2009	4595771.872	627486.598
17	Indian Knolls Area	3/2/2009	4614123.306	644743.108
18	I-80/State Highway 372 Interchange	3/2/2009	4601153.775	617596.331
19	Historic Downtown Rock Springs	3/2/2009	4605263.845	648301.087
20	Historic Downtown Green River	3/2/2009	4598035.338	627620.627
21	New Fork Wagon Road	3/10/2009	4623886.775	638872.823

¹ Refer to Figure 1 for photo locations.² Coordinates not provided due to the cultural sensitivity of the site.

taken. Two photos are reflected: one showing the current view and the other representing the likely visual changes should the project be fully developed. For each location both photos are shown on a single page at a size of 3.7 x 5.5 inches for quick reference, with the individual photos at a size of 8.5 x 5.5 inches on the following two pages. Given that “the relationship between the size of the photograph and the distance of the observer is important for creating a realistic image” (National Research Council 2007: 355) it is recommended that these photos be viewed at a distance of approximately 12 inches. This distance is based on the following formula provided by the National Research Council (2007):

Distance from image to viewer (inches) = Width of image (inches) / (2 x tan [HFOV/2])

Where, the HFOV is equal to 38.6° based on the use of a 50-mm equivalent lens. If the size of the viewed photograph is changed (i.e., viewed electronically or projected onto a screen), the appropriate viewing distance should be adjusted using the above formula.

In addition, Teton, at the request of the BLM, had TRC prepare verification simulations or accuracy assessment of five photo points using 3DS Max 9 visualization software to verify the simulations done by Teton. The verification process was used to provide an independent assessment of the accuracy of the visual simulations prepared by Teton.

4.2 VISUAL CONTRAST RATING ANALYSIS

The BLM also uses a VCR analysis to evaluate visual impacts of the proposed project and to develop mitigation measures to reduce potential visual impacts. For the purpose of this analysis eight locations near the WMWE project area, were selected by BLM and TRC was tasked with the responsibility of evaluating the eight selected locations and documenting the result of this VCR analysis. The VCR analysis locations included:

- White Mountain Petroglyph Site (Photo Point 10),
 - Cedar Canyon Petroglyph Site (Photo Point 6),
 - Cherokee Trail Segment CT-1 (Photo Point 2),
 - Pilot Butte Site (Photo Points 7a-c),
 - Boars Tusk Site (Photo Point 9),
-

-
- Historic Downtown Rock Springs Site (Photo Point 19),
 - Historic Downtown Green River Site (Photo Point 20), and
 - New Fork Wagon Road (Photo Point 21).

The degree to which a proposed activity would affect visual quality depends on the contrast between the existing landscape and the proposed development. Contrast is measured by comparing the basic elements of form, line, color, and texture of the existing landscape with the elements introduced by the proposed project, and the degree of contrast are listed as either none, weak, moderate, or strong. The visual simulations were then used to complete the VCR worksheet for each site using standard BLM protocol.

5.0 RESULTS

5.1 VISUAL SIMULATIONS

The location and date that each photograph used for this visual simulation effort are presented in Table 2 and the photographic results (current view and simulated view) of the 21 photo locations are presented in Addendum A.

The TRC photo verification or accuracy assessment was also completed for each of the five locations, as requested by the BLM, and a copy of the TRC letter documenting the methodology and verifying the results of the Teton visual simulations is presented in Addendum B. The results of the accuracy assessment noted that the visual simulations prepared by TRC and by Teton are visually very similar in terms of size, scale, and placement of the proposed wind turbines, and both photographs provide the reviewer with a reasonable and an appropriate representation of the view of the proposed wind energy project. It also states that there are some minor differences related to the renderings of the wind turbines (e.g., related to the placement of a few of the wind turbines and the apparent thickness and shading of the wind towers and blades). These differences are primarily due to possible differences in the digital elevation models and specific attributes of the different 3-D computer models used by TRC and Teton. The overall appearance of the renderings is not significantly altered. These differences are minor compared to the overall quality of the visual simulations.

The methods used to prepare these visual simulations comply with Appendix D, A Visual Impact Assessment Process for Evaluating Wind Energy Projects, as presented in Environmental Impact of Wind-Energy Projects prepared by the National Research Council (2007). Therefore, it is TRC's professional opinion that the visual simulations prepared by Teton are reasonably accurate and are consistent with accepted commercial and customary practices.

5.2 VCR ANALYSIS

VCR analyses were completed for eight culturally sensitive locations located between 1.0 and 17.0 mi from the WMWE project area. The initial results of the VCR analyses are documented in Fleming et al. (2009) and the revised analyses for Sites 48SW302 (White Mountain Petroglyph Site), 48SW943 (Cedar Canyon Petroglyph Site), and Site 48SW4128 (Boars Tusk) are presented in a subsequent report (Fleming 2009). The combined results are summarized in Table C.1 (Addendum C), and the individual VCR worksheets are also included in Addendum C.

6.0 REFERENCES

National Research Council.

2007 *Environmental Impacts of Wind-energy Projects*. Board on Environmental Studies and Toxicology, Division on Earth and Life Sciences. National Academies Press, Washington, D.C. 376 pp.

ADDENDUM A:
VISUAL SIMULATIONS

Table A.1 Location of Visual Simulations.¹

Photo Point	Description of Location	Page No.
1	White Mountain Mall	C-A-2 to C-A-4
2	U.S. Highway 191 North Pullout	C-A-5 to C-A-7
3	Fire Station at Hillcrest, Prairie Addition	C-A-8 to C-A-10
4	McDonalds Parking Lot	C-A-11 to C-A-13
5	Little Firehole Turnout	C-A-14 to C-A-16
6	Cedar Canyon	C-A-17 to C-A-20
7a	Pilot Butte - North	C-A-21 to C-A-23
7b	Pilot Butte - East	C-A-24 to C-A-26
7c	Pilot Butte - South	C-A-27 to C-A-29
8	South of Green River, State Highway 530	C-A-30 to C-A-32
9	Boars Tusk	C-A-33 to C-A-36
10	White Mountain Petroglyphs	C-A-37 to C-A-40
11	Pilot Butte Overlook State Highway 28	C-A-41 to C-A-43
12	County Picnic Grounds, County Road 6	C-A-44 to C-A-46
13	Reliance	C-A-47 to C-A-50
14	Sweetwater Fairgrounds	C-A-51 to C-A-54
15	Recreation Center	C-A-55 to C-A-57
16	Upland Way Green River	C-A-58 to C-A-60
17	Indian Knolls Area	C-A-61 to C-A-63
18	I-80/State Highway 372 Interchange	C-A-64 to C-A-66
19	Historic Downtown Rock Springs	C-A-67 to C-A-69
20	Historic Downtown Green River	C-A-70 to C-A-72
21	New Fork Wagon Road	C-A-73 to C-A-75

¹ Refer to Figure 1 for photo locations.

Visual Simulations

White Mountain Mall (Photo Location 1)

Current View



Simulation





White Mountain Mall (Photo Location 1)

Current View

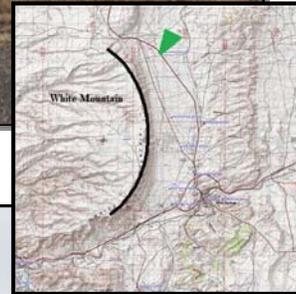


White Mountain Mall (Photo Location 1)

Simulation

U.S. Highway 191 North Pullout (Photo Location 2)

Current View



Simulation



North Landscapes 191



U.S. Highway 191 North Pullout (Photo Location 2)

Current View

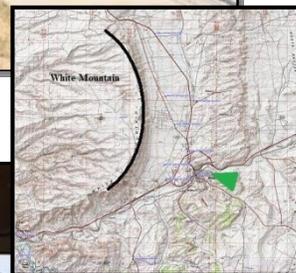
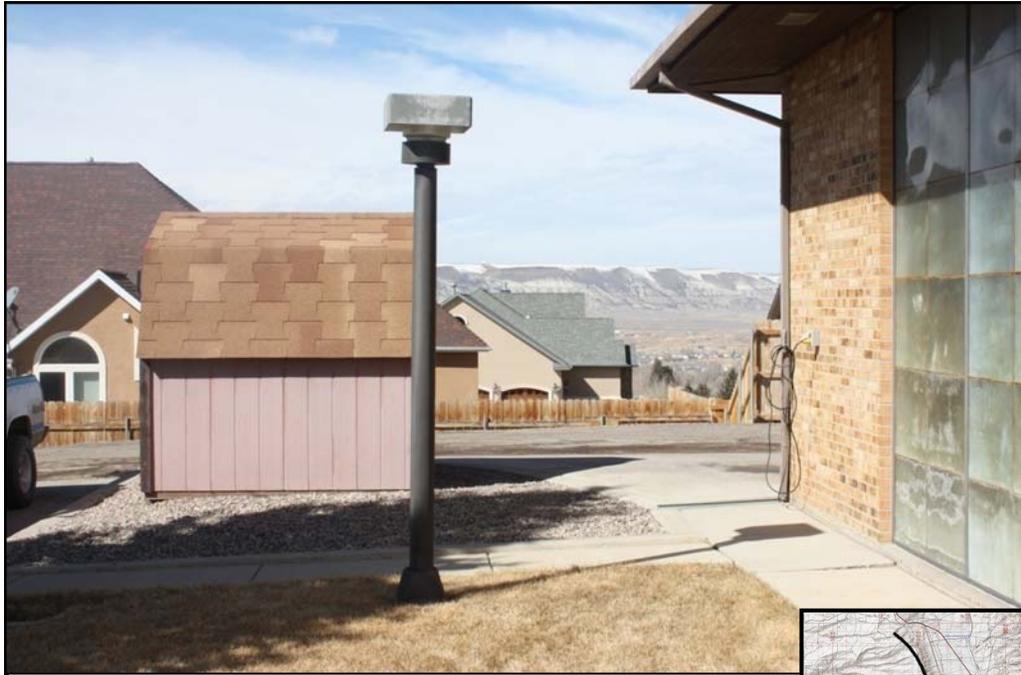


U.S. Highway 191 North Pullout (Photo Location 2)

Simulation

Fire Station at Hillcrest, Prairie Addition (Photo Location 3)

Current View



Simulation





Fire Station at Hillcrest, Prairie Addition (Photo Location 3)

Current View

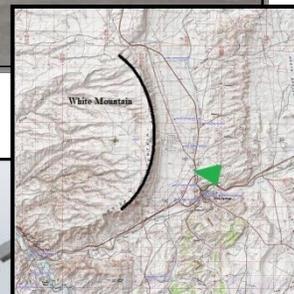


Fire Station at Hillcrest, Prairie Addition (Photo Location 3)

Simulation

McDonalds Parking Lot (Photo Location 4)

Current View



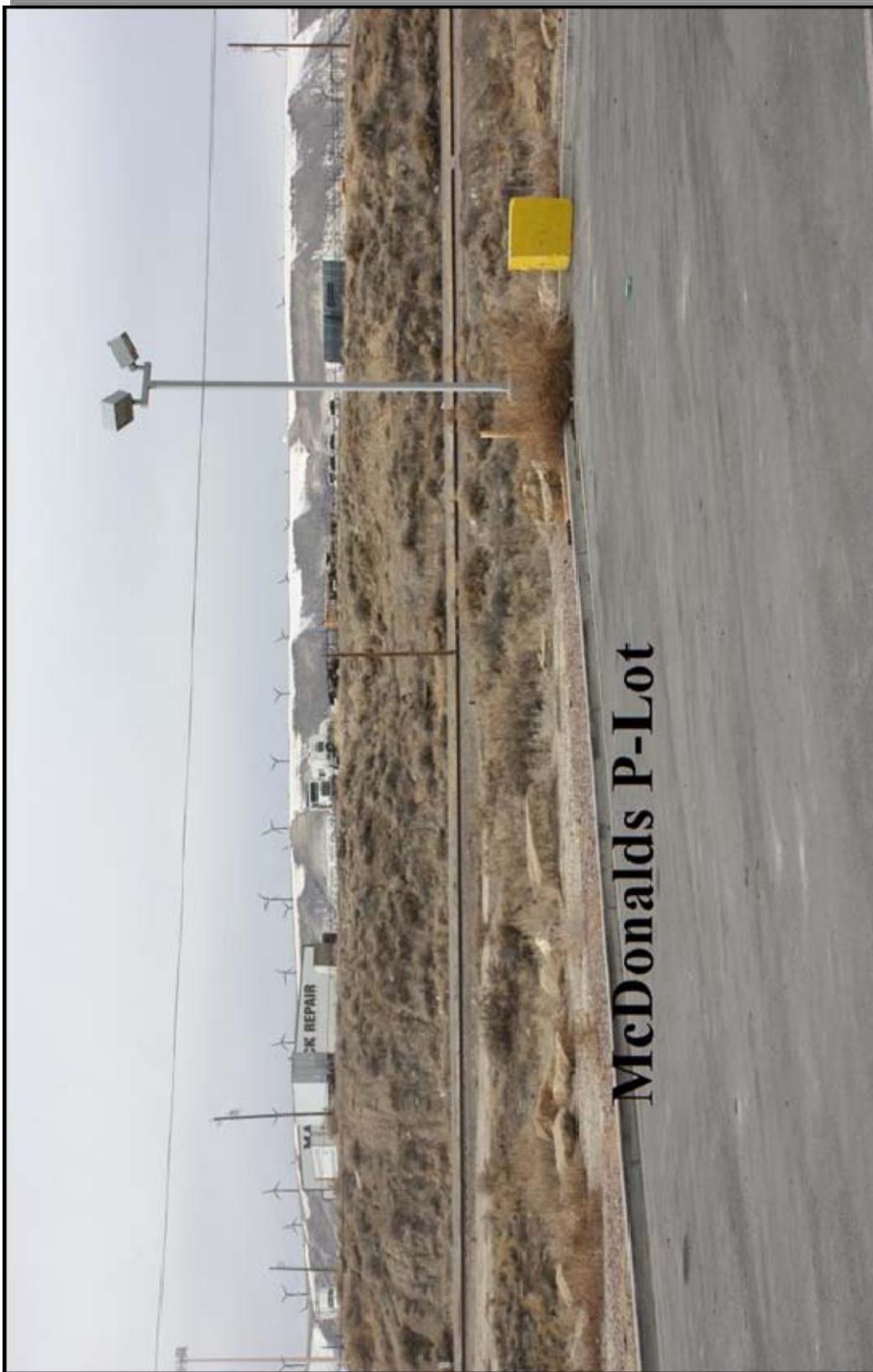
Simulation





McDonalds Parking Lot (Photo Location 4)

Current View



McDonalds Parking Lot (Photo Location 4)

Simulation

Little Firehole Turnout (Photo Location 5)

Current View



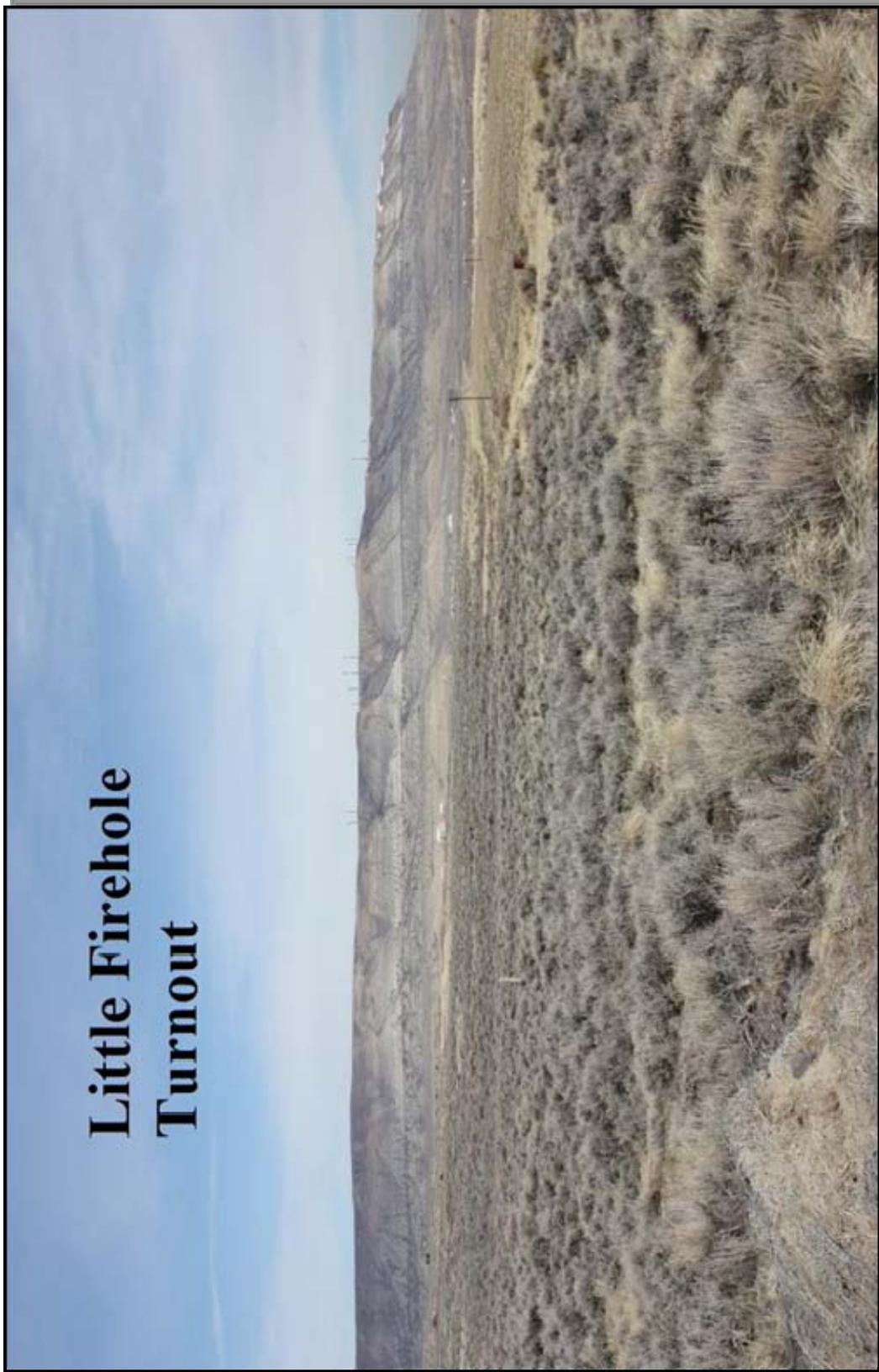
Simulation





Little Firehole Turnout (Photo Location 5)

Current View



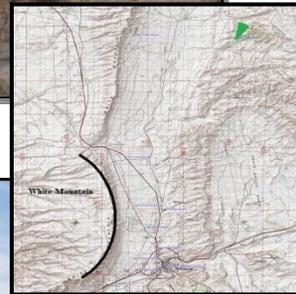
**Little Firehole
Turnout**

Little Firehole Turnout (Photo Location 5)

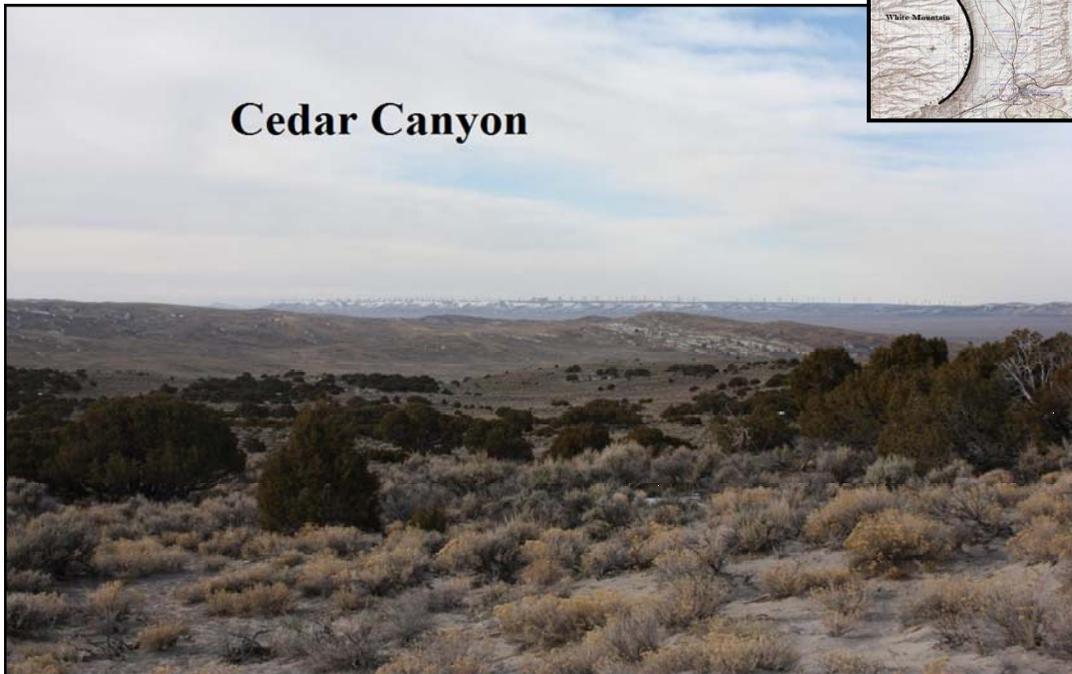
Simulation

Cedar Canyon (Photo Location 6)

Current View



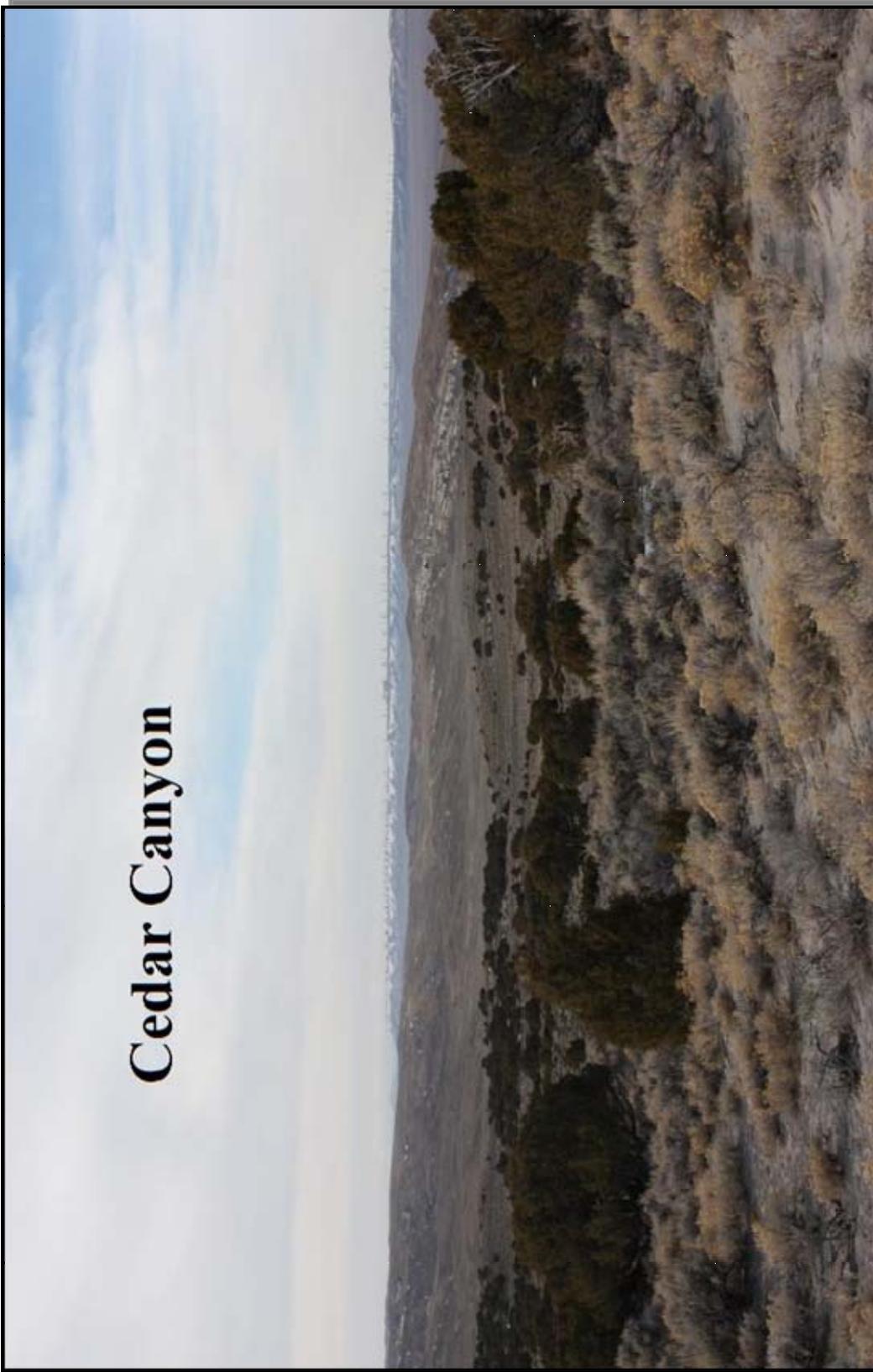
Simulation





Cedar Canyon (Photo Location 6)

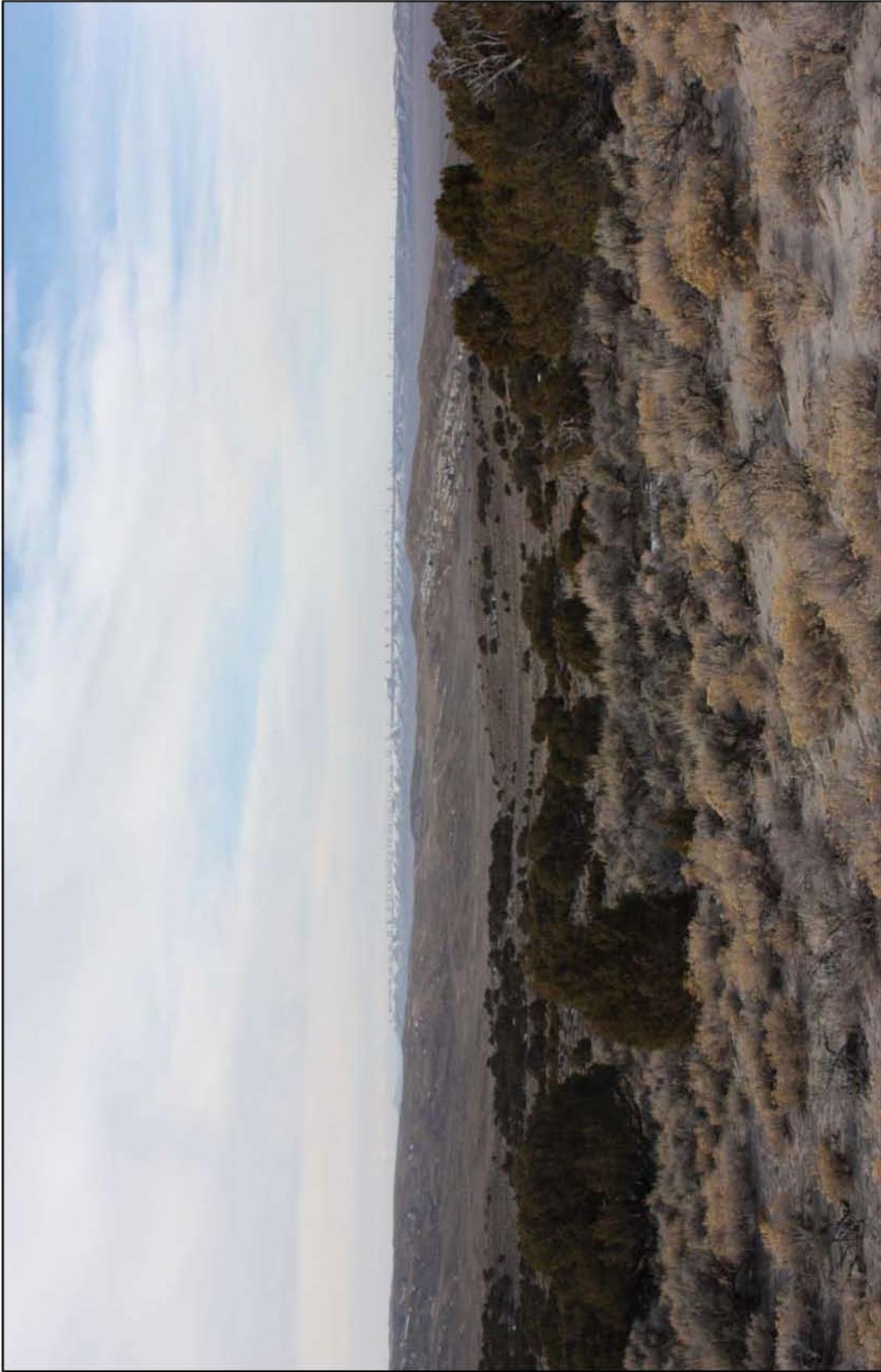
Current View



Cedar Canyon

Cedar Canyon (Photo Location 6)

Simulation

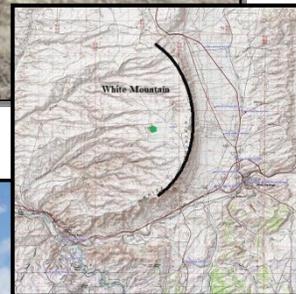


TRC Verification Simulation

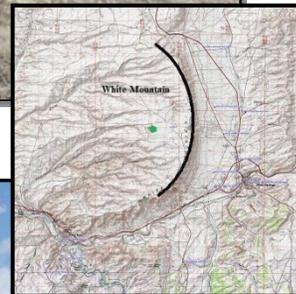
Cedar Canyon

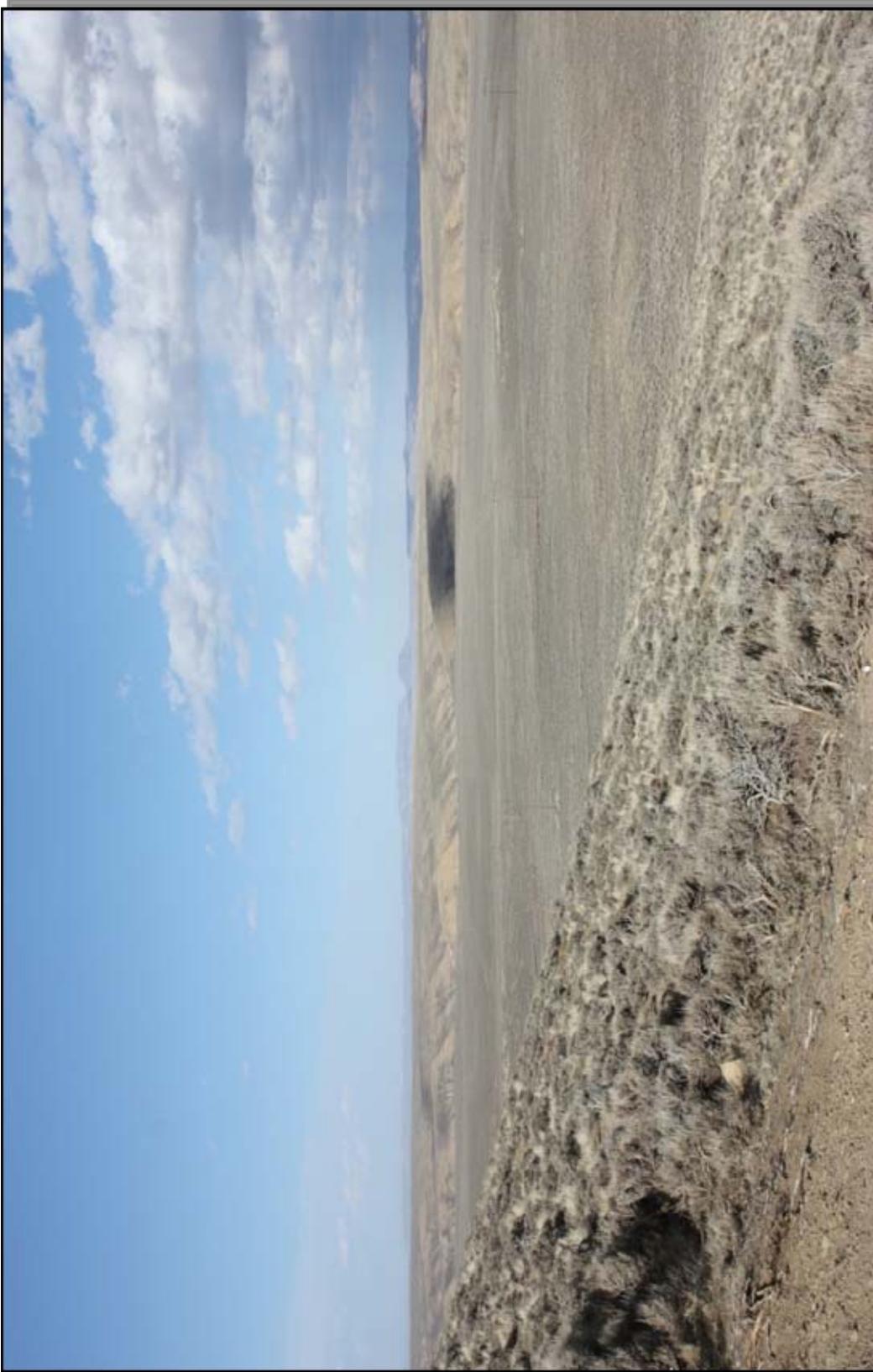
Pilot Butte – North (Photo Location 7a)

Current View



Simulation





Pilot Butte – North (Photo Location 7a)

Current View



Pilot Butte – North (Photo Location 7a)

Simulation

Pilot Butte – East (Photo Location 7b)

Current View



Simulation





Pilot Butte – East (Photo Location 7b)

Current View



Pilot Butte East

Pilot Butte – East (Photo Location 7b)

Simulation

Pilot Butte – South (Photo Location 7c)

Current View



Simulation





Pilot Butte – South (Photo Location 7c)

Current View



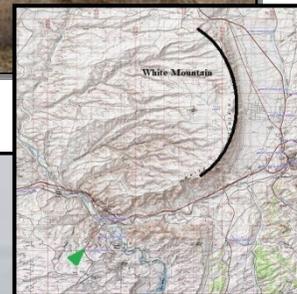
Pilot Butte South

Pilot Butte – South (Photo Location 7c)

Simulation

South of Green River, State Highway 530 (Photo Location 8)

Current View



Simulation



South Green River 530



South of Green River, State Highway 530 (Photo Location 8)

Current View

South Green River 530

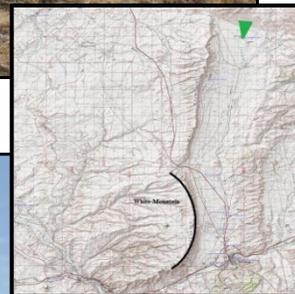


South of Green River, State Highway 530 (Photo Location 8)

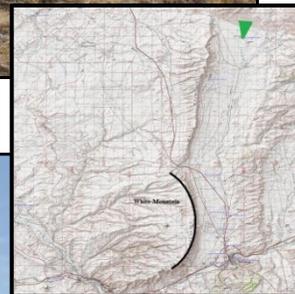
Simulation

Boars Tusk (Photo Location 9)

Current View



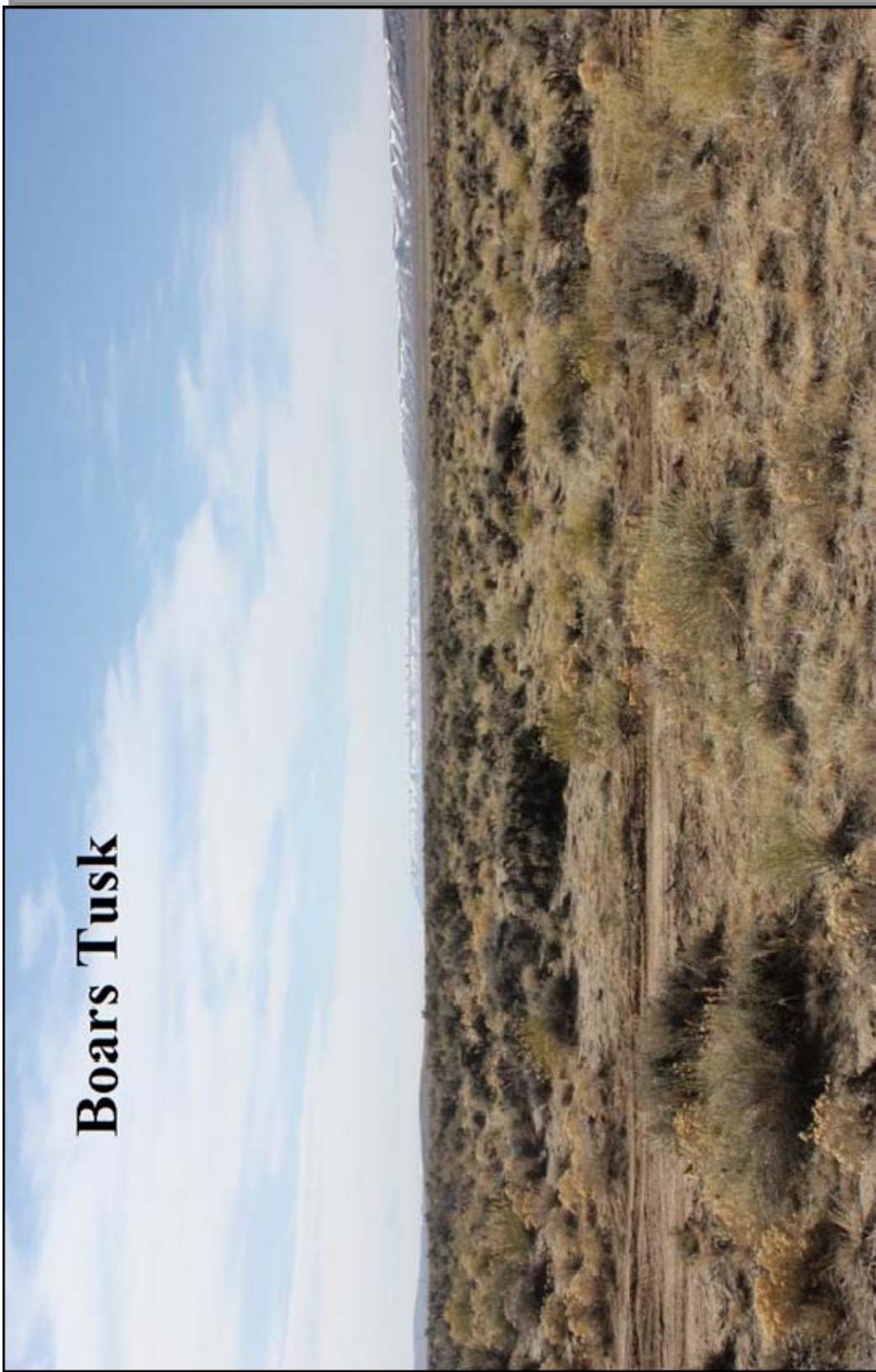
Simulation





Boars Tusk (Photo Location 9)

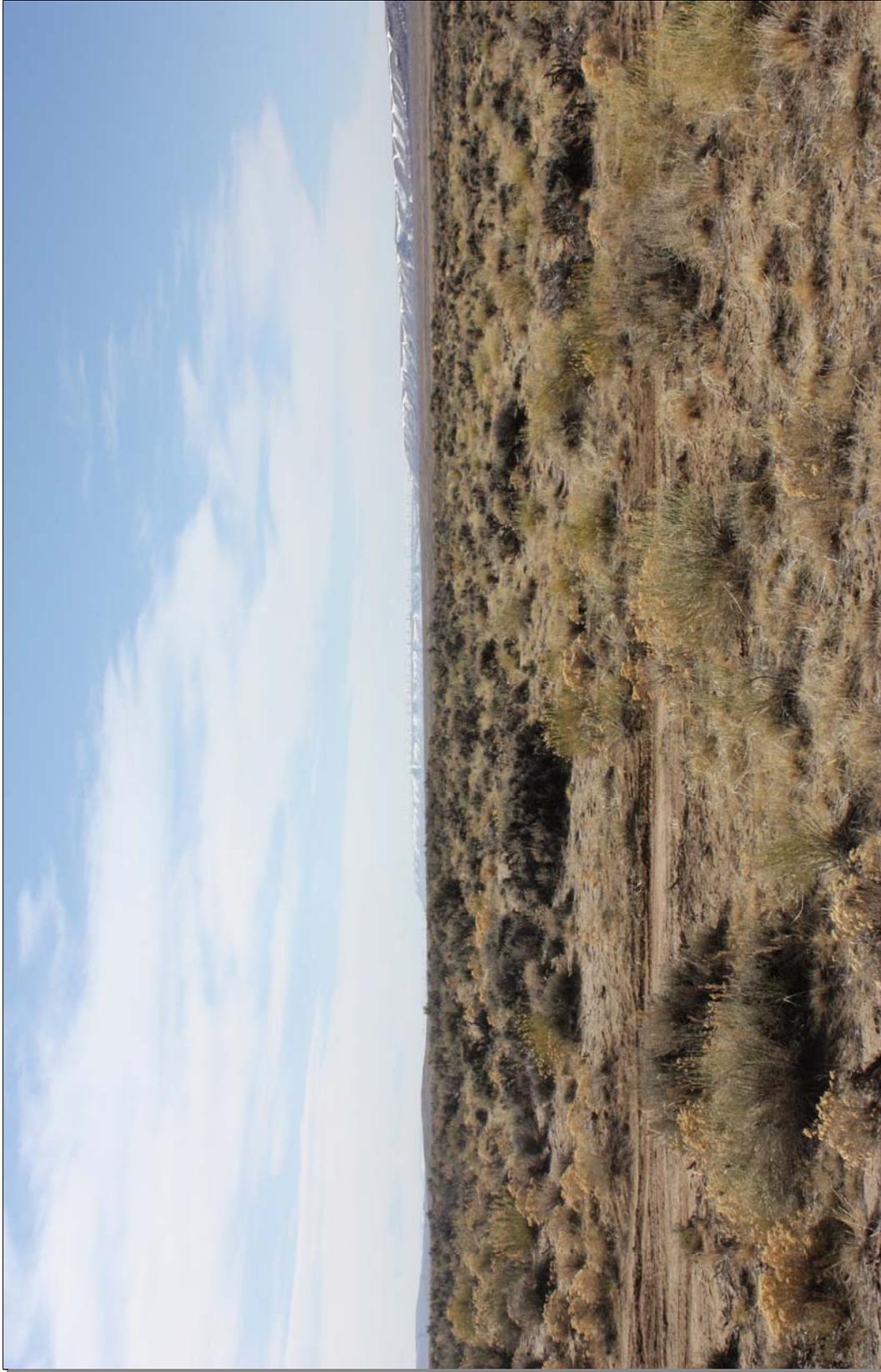
Current View



Boars Tusk

Boars Tusk (Photo Location 9)

Simulation



TRC Verification Simulation

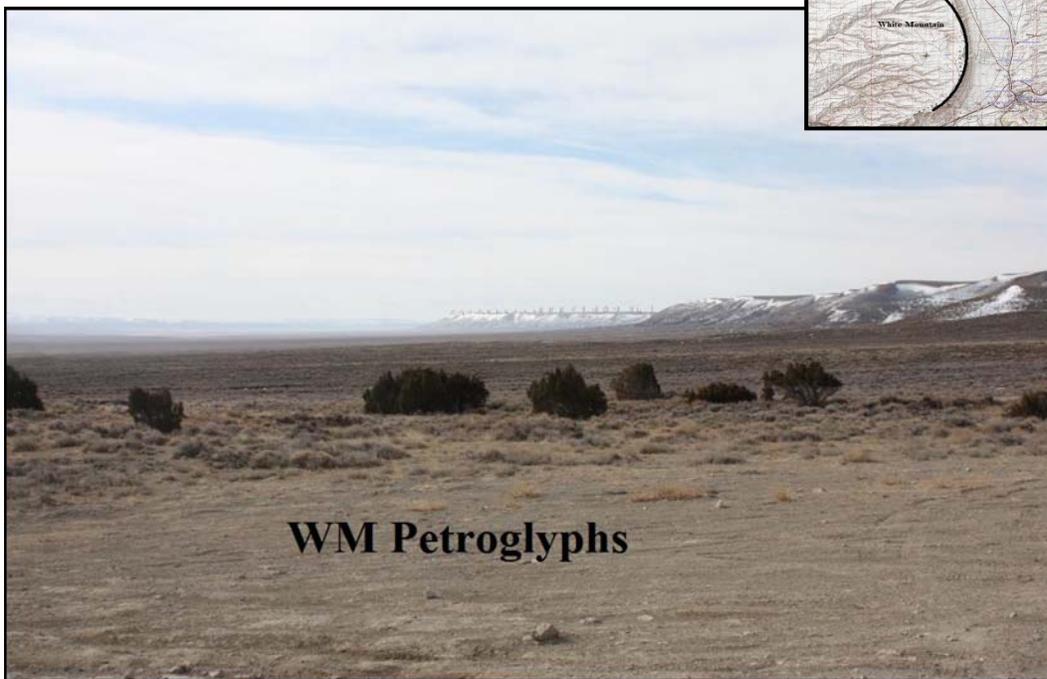
Boars Tusk

White Mountain Petroglyphs (Photo Location 10)

Current View



Simulation

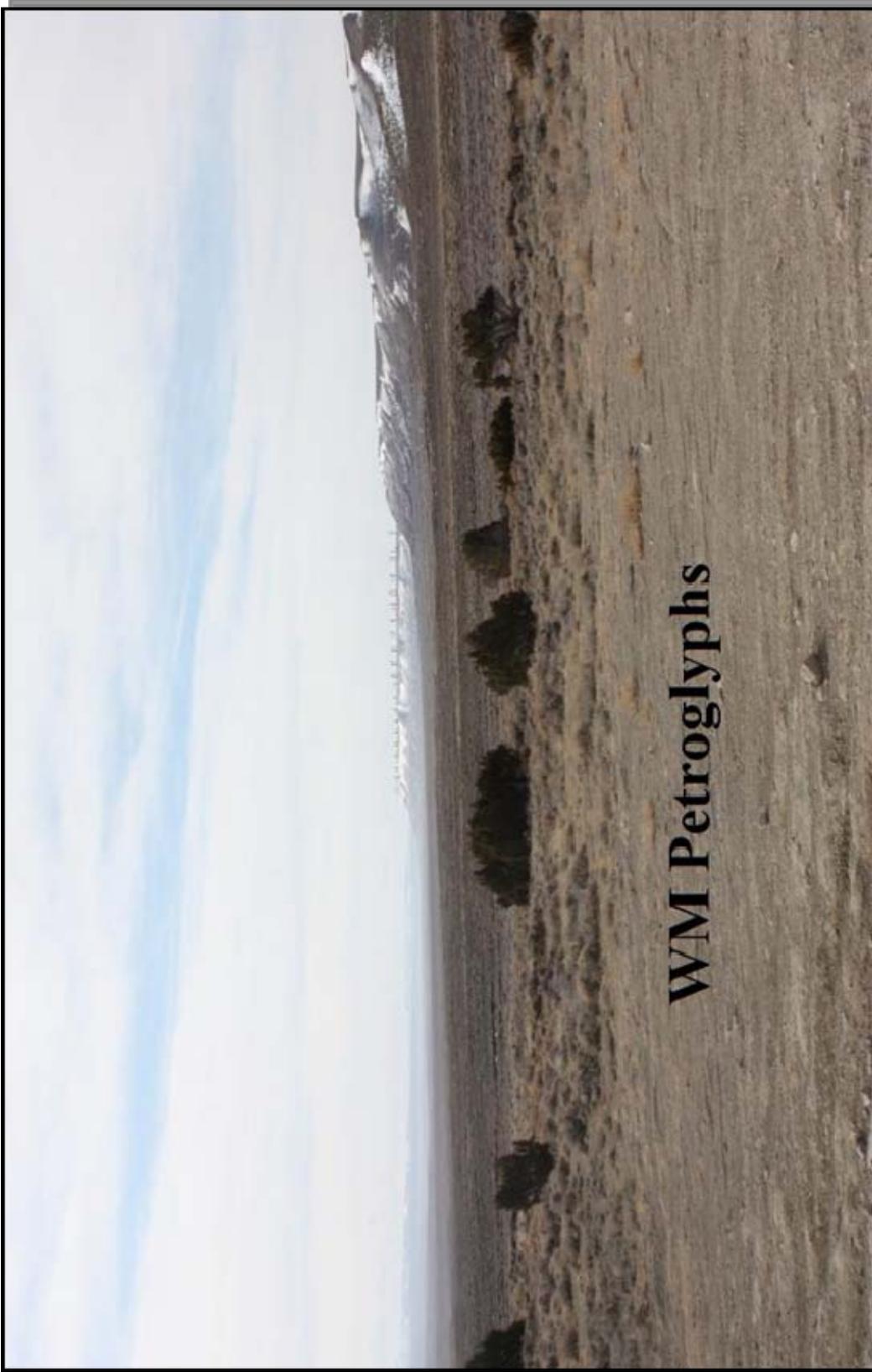


WM Petroglyphs



White Mountain Petroglyphs (Photo Location 10)

Current View



White Mountain Petroglyphs (Photo Location 10)

Simulation



TRC Verification Simulation

White Mountain Petroglyphs

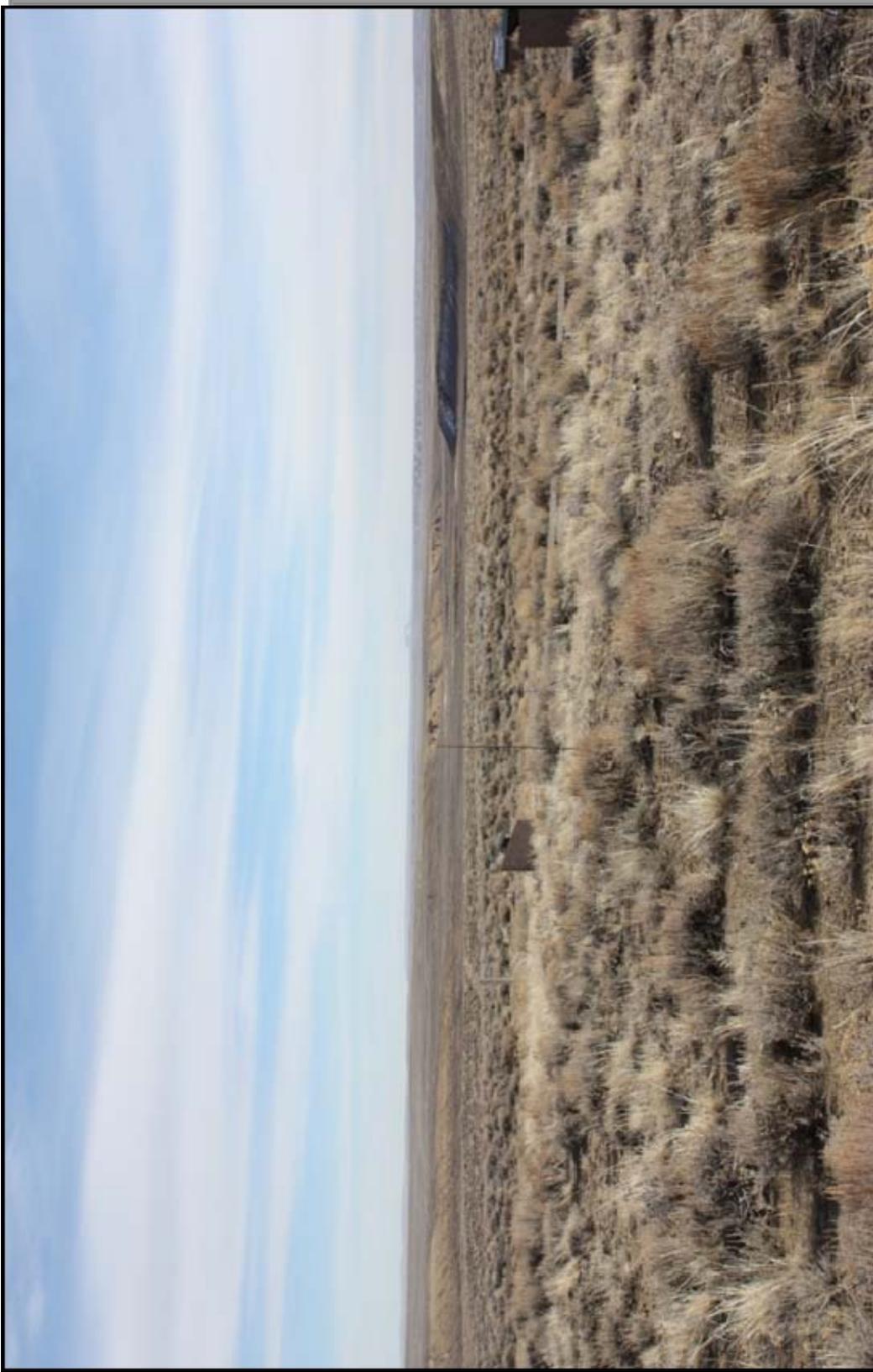
Pilot Butte Overlook State Highway 28 (Photo Location 11)

Current View



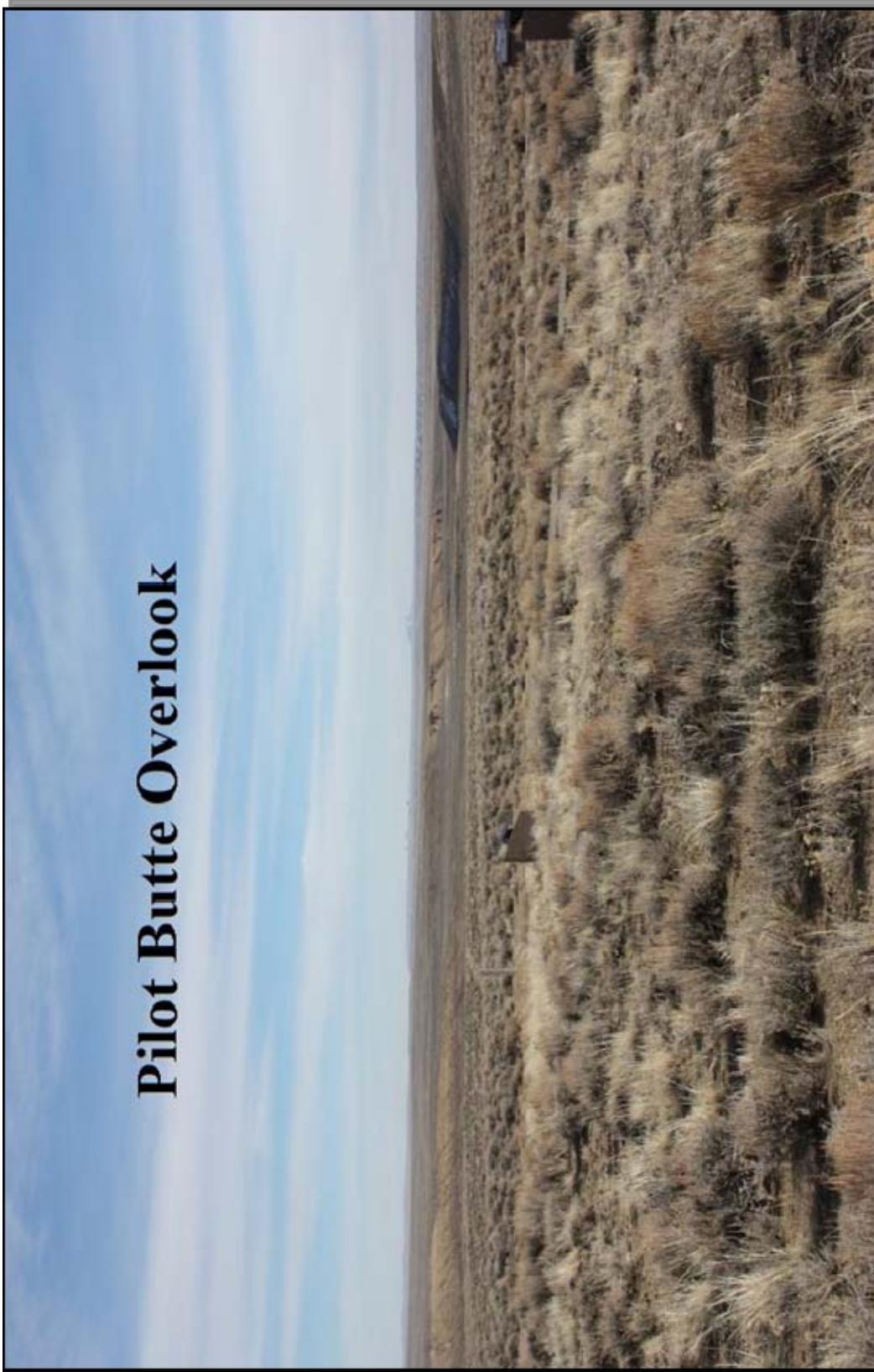
Simulation





Pilot Butte Overlook State Highway 28 (Photo Location 11)

Current View



Pilot Butte Overlook State Highway 28 (Photo Location 11)

Simulation

County Picnic Grounds, County Road 6 (Photo Location 12)

Current View



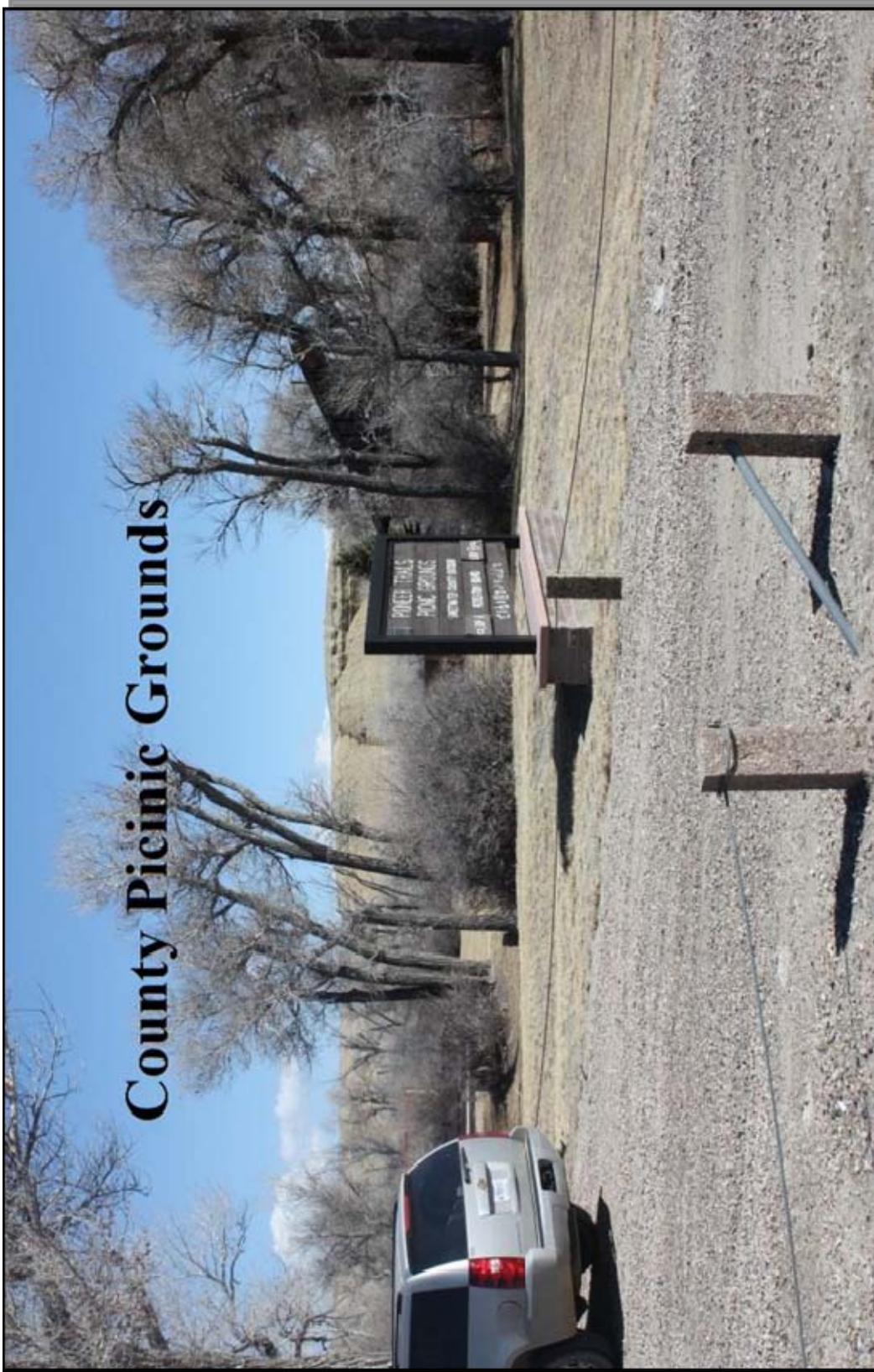
Simulation





County Picnic Grounds, County Road 6 (Photo Location 12)

Current View

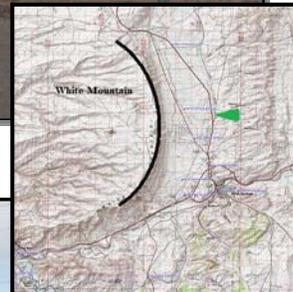


County Picnic Grounds, County Road 6 (Photo Location 12)

Simulation

Reliance (Photo Location 13)

Current View



Simulation





Reliance (Photo Location 13)

Current View



Reliance (Photo Location 13)

Simulation



TRC Verification Simulation

Reliance

Sweetwater Fairgrounds (Photo Location 14)

Current View



Simulation



Sweetwater Fairgrounds



Sweetwater Fairgrounds (Photo Location 14)

Current View



Sweetwater Fairgrounds (Photo Location 14)

Simulation



TRC Verification Simulation

Sweetwater Fairgrounds

Recreation Center (Photo Location 15)

Current View



Simulation



Recreation Center



Recreation Center (Photo Location 15)

Current View

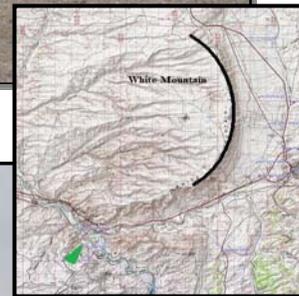


Recreation Center (Photo Location 15)

Simulation

Upland Way Green River (Photo Location 16)

Current View



Simulation

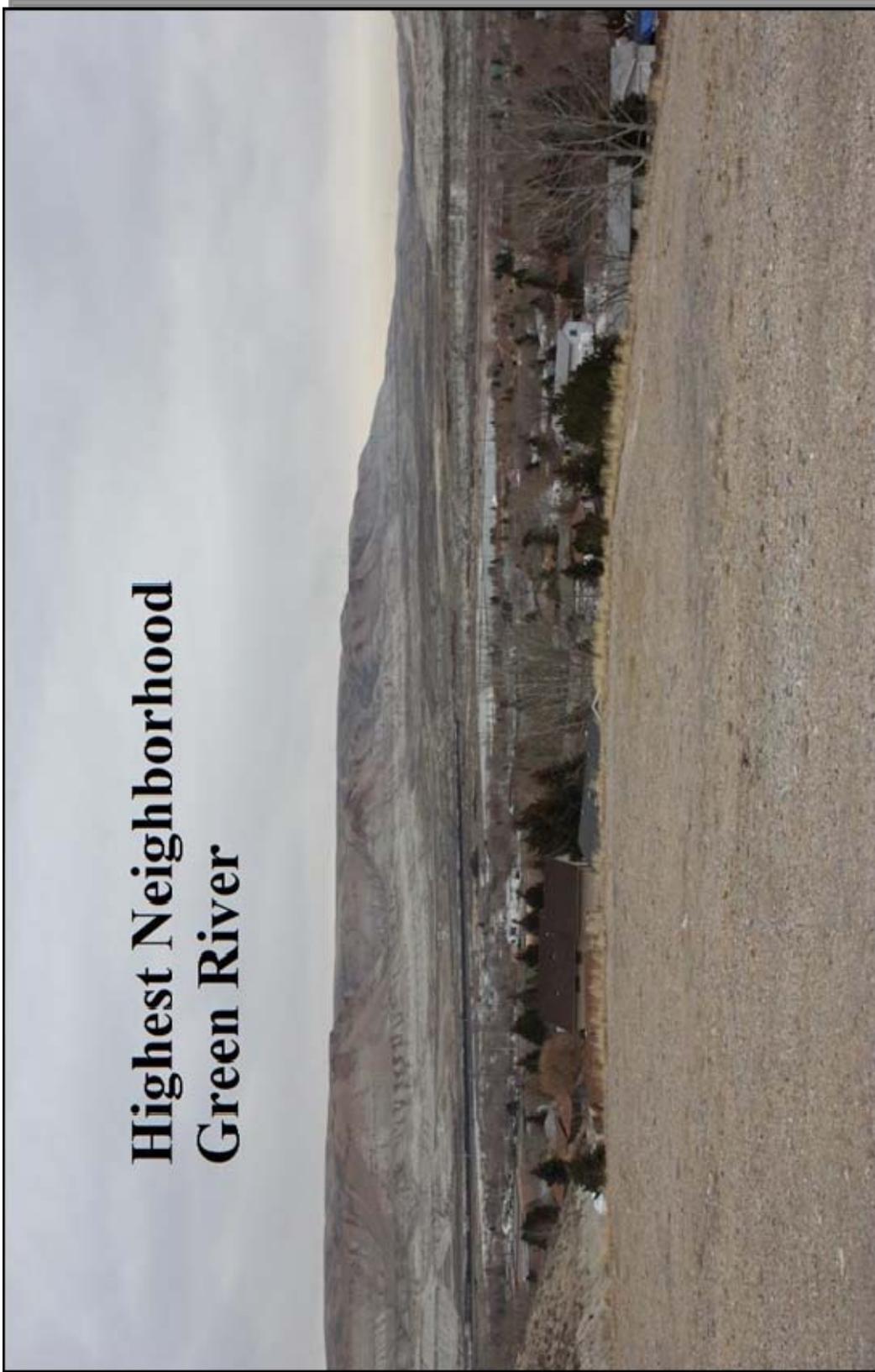


**Highest Neighborhood
Green River**



Upland Way Green River (Photo Location 16)

Current View



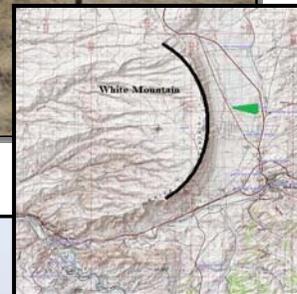
**Highest Neighborhood
Green River**

Upland Way Green River (Photo Location 16)

Simulation

Indian Knolls Area (Photo Location 17)

Current View



Simulation



Indian Knolls



Indian Knolls Area (Photo Location 17)

Current View



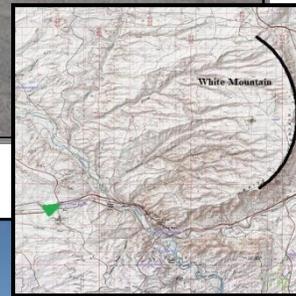
Indian Knolls

Indian Knolls Area (Photo Location 17)

Simulation

I-80/State Highway 372 Interchange (Photo Location 18)

Current View



Simulation



I-80 and 372



I-80/State Highway 372 Interchange (Photo Location 18)

Current View

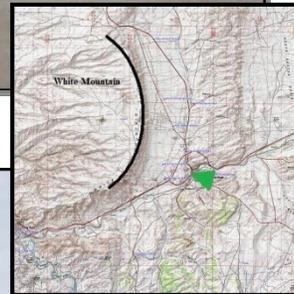


I-80/State Highway 372 Interchange (Photo Location 18)

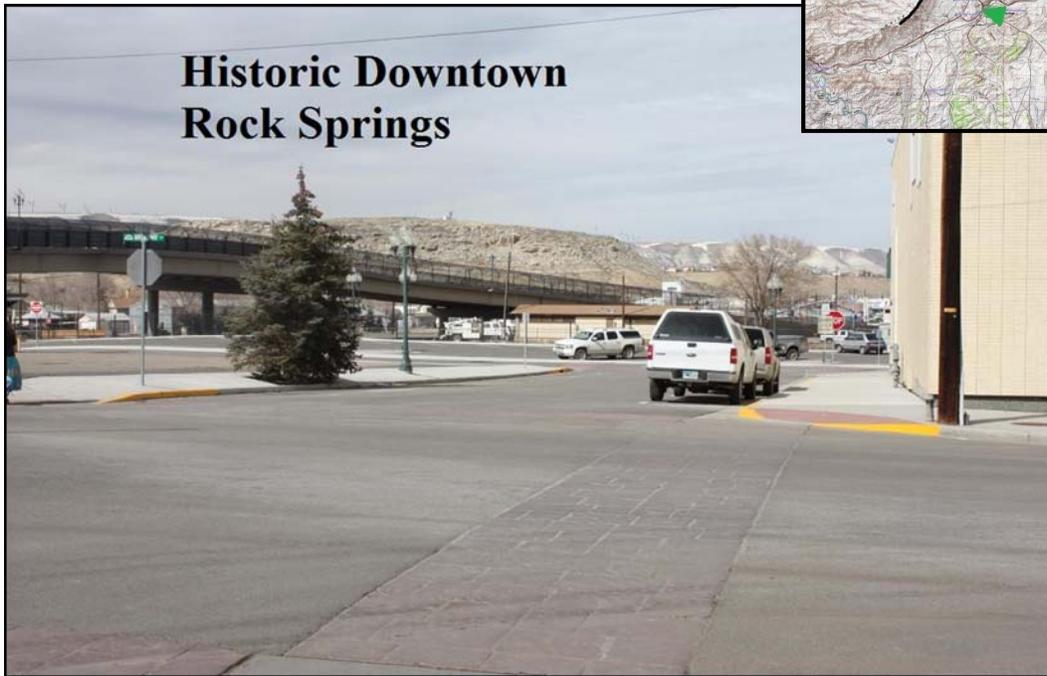
Simulation

Historic Downtown Rock Springs (Photo Location 19)

Current View



Simulation



**Historic Downtown
Rock Springs**



Historic Downtown Rock Springs (Photo Location 19)

Current View



**Historic Downtown
Rock Springs**

Historic Downtown Rock Springs (Photo Location 19)

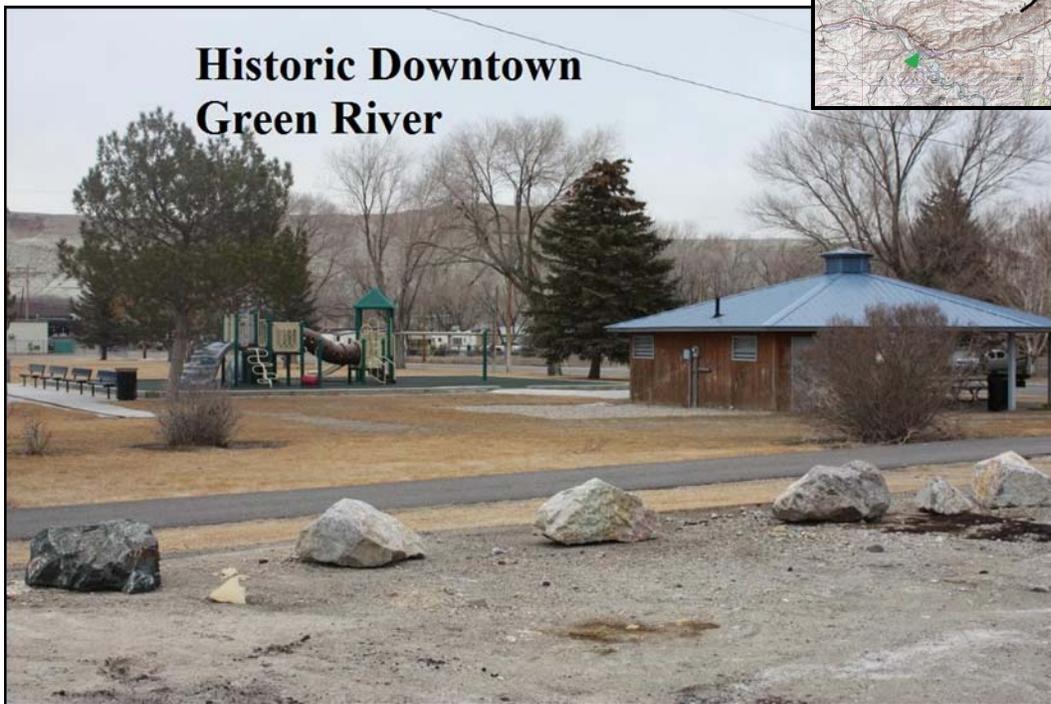
Simulation

Historic Downtown Green River (Photo Location 20)

Current View



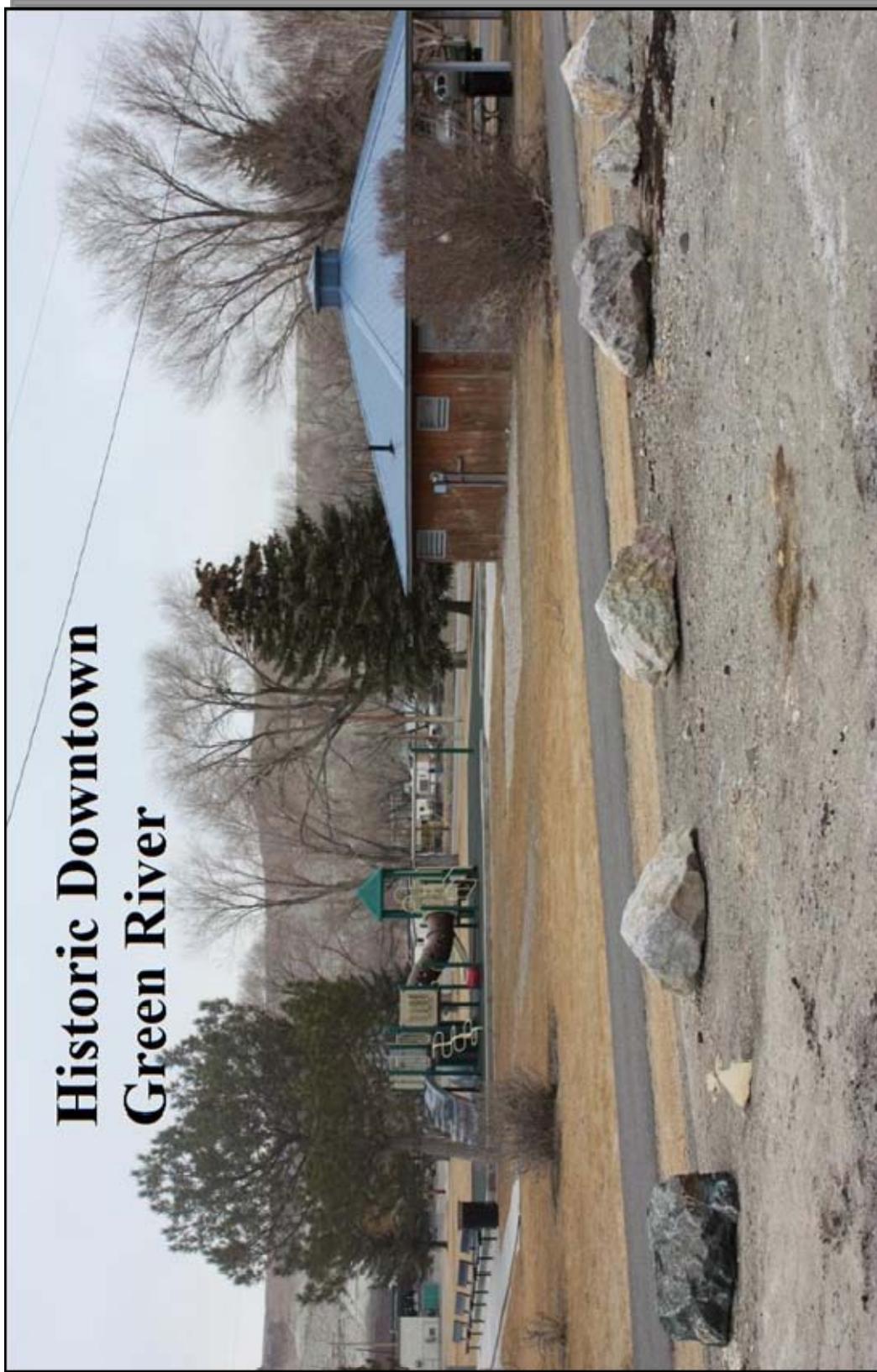
Simulation





Historic Downtown Green River (Photo Location 20)

Current View



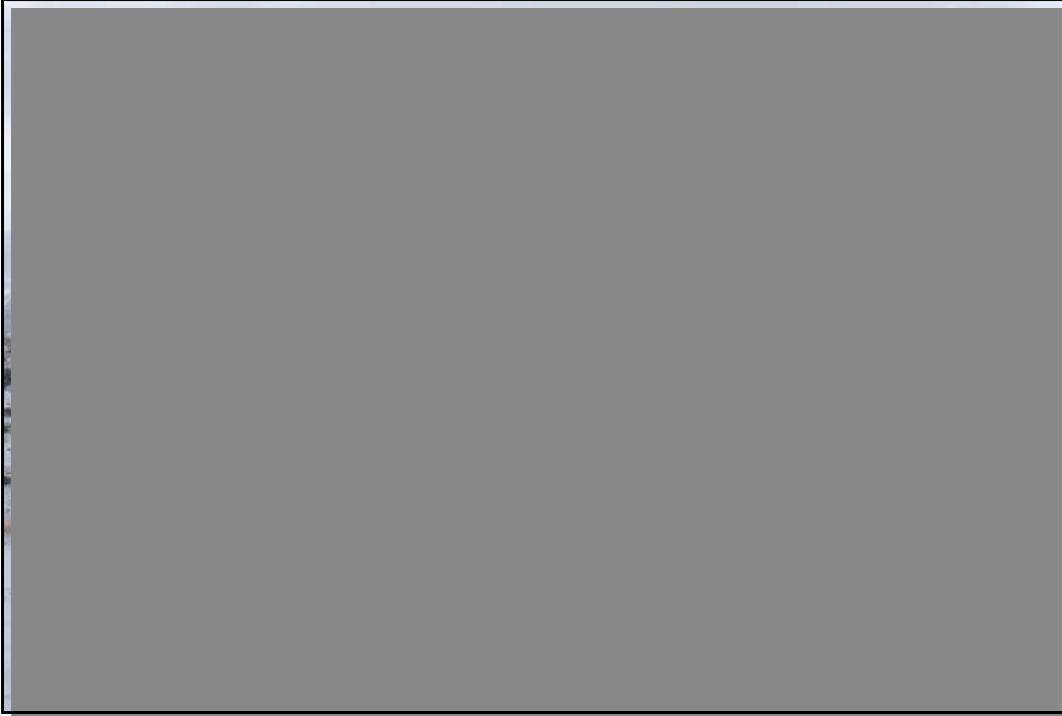
Historic Downtown Green River

Historic Downtown Green River (Photo Location 20)

Simulation

New Fork Wagon Road (Photo Location 21)

Current View



Simulation





New Fork Wagon Road (Photo Location 21)

Current View



New Fork Wagon Road (Photo Location 21)

Simulation

ADDENDUM B:

TRC VISUAL SIMULATION VERIFICATION LETTER



605 Skyline Drive
Laramie, WY 82070

307.742.3843 PHONE
307.745.8317 FAX

www.TRCSolutions.com

September 2, 2009

Mr. Jesse Tassainer
Tasco Engineering Inc.
2275 Mayflower Ave, Suite A
Lehi, UT 84043

RE: Accuracy Assessment of Visual Simulations for the White Mountain Wind Energy Project Located near Rock Springs, Wyoming

Dear Jesse:

At the direction of Tasco Engineering Inc. (Tasco), TRC Environmental Corporation (TRC) conducted an independent assessment of the general accuracy of the five visual simulations prepared by Tasco for the proposed White Mountain Wind Energy Project located near Rock Springs, Wyoming. The purpose of this assessment was to provide a third-party evaluation of the general accuracy of the visual simulations. This accuracy assessment was completed by producing visual simulations from five locations where TRC had collected baseline photographs and then visually comparing them to visual simulations prepared from the same photo points used by Tasco.

TRC used the exact same baseline photographs as Tasco, but the technical methodology used to prepare TRC visual simulations was different. To create the simulations, TRC used 3DS Max 9 visualization software to locate and correctly dimension the model of the proposed project components (i.e., the wind turbines) into the photographic image from each viewpoint location. A 3-D model of the wind turbines was also created in the visualization software program based on engineering specifications for the proposed turbine to be used for this project (the GE 1.5-megawatt [MW] turbine). The model was then incorporated into the UTM Zone 12, NAD 83 coordinate system and placed at the easting and northing specified by the project engineering drawings.

The model and placement of the wind turbines within the visualization software was further developed to position the viewer at the selected vantage point, and the camera view was adjusted so it matches the actual photograph. The camera position was entered into the model using data collected with global positioning system (GPS) equipment. The software "camera view" focal length was then set to 50 mm to replicate the camera conditions in the field and to be representative of the approximate view of the human eye. As such, relative dimensions in the model were proportionally represented. The coordinates of the reference locations were used to assist with placement of the wind turbines within the photograph. Additionally, a terrain analysis of White Mountain was performed, and a 3-D model of the mountain was generated and used as an object for model refinement. Final adjustments to the placement of the wind turbines were made using the terrain analysis and the coordinates of the reference locations from each photo point using data collected with GPS equipment.

Mr. Jesse Tassainer
Tasco Engineering Inc.
September 2, 2009
Page 2

The photographic results of the TRC and Tasco visual simulations are presented below. Figures 1, 3, 5, 7, and 9 are the visual simulations prepared by TRC, and Figures 2, 4, 6, 8, and 10 are the visual simulations prepared by Tasco. The photographs are paired together based on the same photograph location for easier comparison. Based on TRC experience in preparing visual simulations, it is TRC's professional opinion that the visual simulations prepared by TRC and by Tasco are visually very similar in terms of size, scale, and placement of the proposed wind turbines, and both photographs provide the reviewer with a reasonable and an appropriate representation of the view of the proposed wind energy project. There are some minor differences related to the renderings of the wind turbines (e.g., related to the placement of a few of the wind turbines and the apparent thickness and shading of the wind towers and blades). These differences are primarily due to possible differences in the digital elevation models and specific attributes of the different 3-D computer models used by TRC and Tasco. The overall appearance of the renderings is not significantly altered. These differences are minor compared to the overall quality of the visual simulations.

Therefore, while there are no definitive industrial standards for the preparation of visual simulations, it is TRC's professional opinion that the five visual simulations prepared by Tasco are reasonably accurate and are consistent with good commercial and customary practices.

Should you have any questions concerning this letter report, please contact me at (307) 742-3843.

Sincerely,

TRC Environmental Corporation



Scott W. Kamber
Principal and Senior Project Manager

SWK:jr
Enclosures
156380\letters\tassainer2-ltr.doc

**Photographs for this Letter Report are Presented in the Report Above
(Addendum A).**

