

APPENDIX A

MINING DISTRICTS

Figure 1: Mining Districts of Nevada

**Figure 2: Mining Districts Of Nevada: Crescent Valley
& Surrounding Areas**

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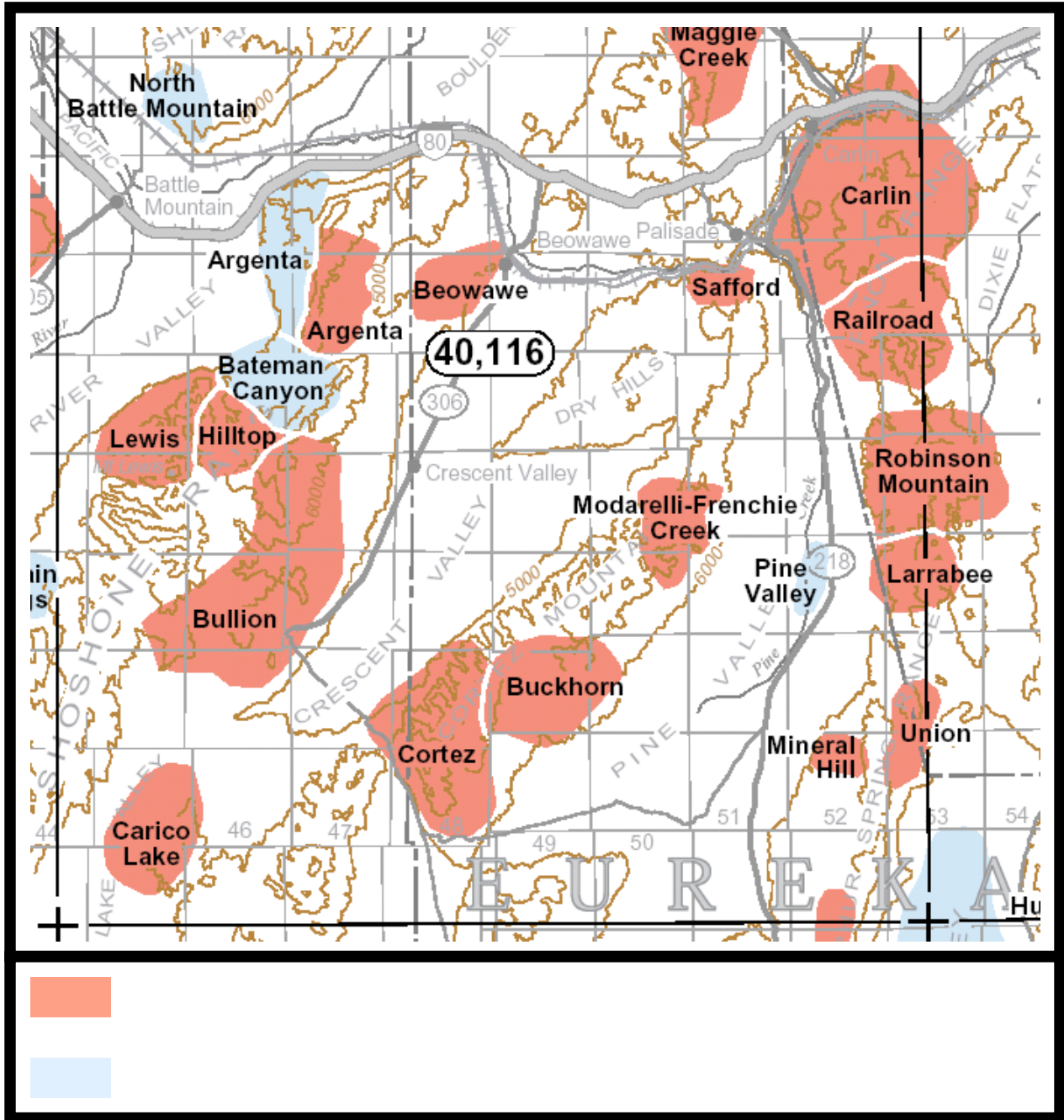


Figure 2

APPENDIX B

CORRIDOR MAPS

Figure 3: Land Use

Figure 4: Property Owners

Figure 5: Right of Way

APPENDIX C
PROPERTY VALUE
DIMINUTION

**Table 1:2003 Assessed Value of Private
Property Within 100' Each Side of Track**

Table 1: Assessed Value of Private Parcels Within 100' Each Side of Track

2003 Assessed Value of Private Parcels Crossed by Proposed Carlin Rail Corridor in Eureka County and Estimated Annual Property Tax-Loss to County: if Parcels are Purchased for Corridor

| APN | Land Value | Improvements | Agricultural | Net Assessed value | Acres | Name of Owner |
|-------------|---|--------------|--------------|--------------------|-------|-----------------------------------|
| 005-180-003 | 3,470 | - | - | 3,470 | 160 | ALY, ELSAYEDA MOHAMED |
| 005-220-004 | 2,600 | - | - | 2,600 | 30 | BASMAJIAN, EDNA LEE & JOHN |
| 005-090-056 | 3,470 | - | - | 3,470 | 40 | BEOVAWE LAND COMPANY, INC. |
| 003-141-027 | 1,410 | - | - | 1,410 | 20 | BUSH, DANIEL |
| 005-410-036 | 3,470 | - | - | 3,470 | 40 | CATTLEMEN'S TITLE GUARANTEE CO. |
| 005-090-057 | 3,470 | - | - | 3,470 | 160 | CIACCIA FAMILY TRUST |
| 005-590-001 | 3,532 | 59,696 | 79,219 | 142,447 | 2360 | CORTEZ JOINT VENTURE |
| 005-400-002 | - | - | 1,030 | 1,030 | 640 | CORTEZ JOINT VENTURE, THE |
| 005-590-003 | - | - | 1,004 | 1,004 | 638 | CORTEZ JOINT VENTURE, THE |
| 005-170-015 | 3,470 | - | - | 3,470 | 40 | DE GROOT, BERNARD W. |
| 005-470-042 | 3,760 | - | - | 3,760 | 43 | DORSEY-CAPRICORN PARTNERS |
| 005-410-005 | 3,470 | - | - | 3,470 | 160 | ELLIS TRUST & HADNOT PENSION |
| 003-196-001 | 620 | - | - | 620 | 9 | ENNA, LLC |
| 005-410-008 | 3,470 | - | - | 3,470 | 40 | EU CO TREAS (BROWN) |
| 005-410-009 | 2,940 | - | - | 2,940 | 80 | FIORANTE FAMILY LIVING TRUST |
| 005-220-005 | 2,600 | - | - | 2,600 | 30 | FRIEND, SAMPSON & LORENE |
| 005-410-004 | 2,940 | - | - | 2,940 | 80 | GARDNER, L. V. & L. M. TRUST |
| 003-194-004 | 650 | - | - | 650 | 9 | HADDAD, JACK & NUHA |
| 003-181-001 | 900 | - | - | 900 | 19 | HAMEL, CHARLES |
| 003-185-001 | 600 | - | - | 600 | 9 | HAMEL, CHARLES |
| 003-141-028 | 1,420 | - | - | 1,420 | 20 | HANSSON, DANIEL P. |
| 005-080-020 | - | - | 857 | 857 | 469 | J. B. B., INC. |
| 005-220-002 | 1,170 | - | - | 1,170 | 10 | KEATING, JOSEPH R. & BETTY |
| 005-080-030 | 1,820 | - | - | 1,820 | 20 | MAYER-LYNN, JUDITH C. |
| 005-170-042 | 2,940 | - | - | 2,940 | 80 | MAYER-LYNN, JUDITH C. |
| 005-470-015 | 1,270 | - | - | 1,270 | 11 | MCCRAY, LLOYD A. & KERTTU |
| 005-170-018 | 3,470 | - | - | 3,470 | 40 | MEYER, JOHN R. |
| 005-080-029 | 3,470 | - | - | 3,470 | 160 | MURANO, CATHERINE L. |
| 005-090-055 | 3,470 | - | - | 3,470 | 40 | MURPHY, EDDIE C. & MIA L. |
| 005-080-028 | - | - | 515 | 515 | 320 | NEVADA LAND & RESOURCE CO., LLC |
| 005-090-022 | - | - | 515 | 515 | 320 | NEVADA LAND & RESOURCE CO., LLC |
| 005-090-050 | - | - | 257 | 257 | 160 | NEVADA LAND & RESOURCE CO., LLC |
| 005-410-021 | 6,950 | - | - | 6,950 | 640 | OSTOJA, PAUL |
| 005-170-016 | 3,470 | - | - | 3,470 | 40 | OTT, WILLIAM J. ET AL |
| 005-080-032 | 1,820 | - | - | 1,820 | 20 | PETERS, B. & FREEMAN, R. L. |
| 003-191-001 | 870 | - | - | 870 | 18 | PIERCE, EDWARD F. |
| 005-470-016 | 1,270 | - | - | 1,270 | 11 | RAINS, WILLIE W. & GAY NELL |
| 005-230-023 | 2,604 | - | - | 2,604 | 120 | RIOS FAMILY TRUST, THE |
| 005-470-007 | 1,970 | - | - | 1,970 | 22 | SANCHEZ, EDWARD R. & SANDRA F. |
| 005-080-031 | 3,470 | - | - | 3,470 | 40 | SARTOR, ANTOINE C. & SILVIA TRUST |
| 005-470-041 | 3,760 | - | - | 3,760 | 43 | SHELL, CLYDE |
| 005-400-010 | 3,470 | - | - | 3,470 | 160 | SCHULTZ, DON R. |
| 003-185-004 | 610 | - | - | 610 | 9 | SMITH, LLOYD |
| 005-220-003 | 4,340 | - | - | 4,340 | 50 | SMITH, THOMAS L. & ANNE R. |
| 005-170-009 | 3,470 | - | - | 3,470 | 40 | STINTON, LOA & TITMUS, MICHAEL |
| 003-194-001 | 640 | - | - | 640 | 9 | TAYLOR, KENT |
| 003-191-003 | 630 | - | - | 630 | 9 | WEST, ROBERT RICHARD TRUST |
| 005-410-006 | 2,940 | - | - | 2,940 | 80 | WISE, JACQUELYNN V. ET AL |
| 005-080-021 | - | - | 20,954 | 20,954 | 2518 | ZEDA CORPORATION |
| | Total 2003 Assessed Value | | | 272,203 | | |
| | (times) 2002-2003 Eureka County property Tax Rate | | | 0.017773 | | |
| | Potential property tax loss to County at 2002-2003 assessed valuation and tax rate | | | \$4,837.86 | | |
| Sources: | Land Ownership and Assessed Value - Eureka County Assessor's Office | | | | | |
| | 2002-2003 Tax Rate - Nevada Department of Taxation | | | | | |
| | Map Depicting Potential Route of Carlin Corridor - U.S. Department of Energy | | | | | |

APPENDIX D

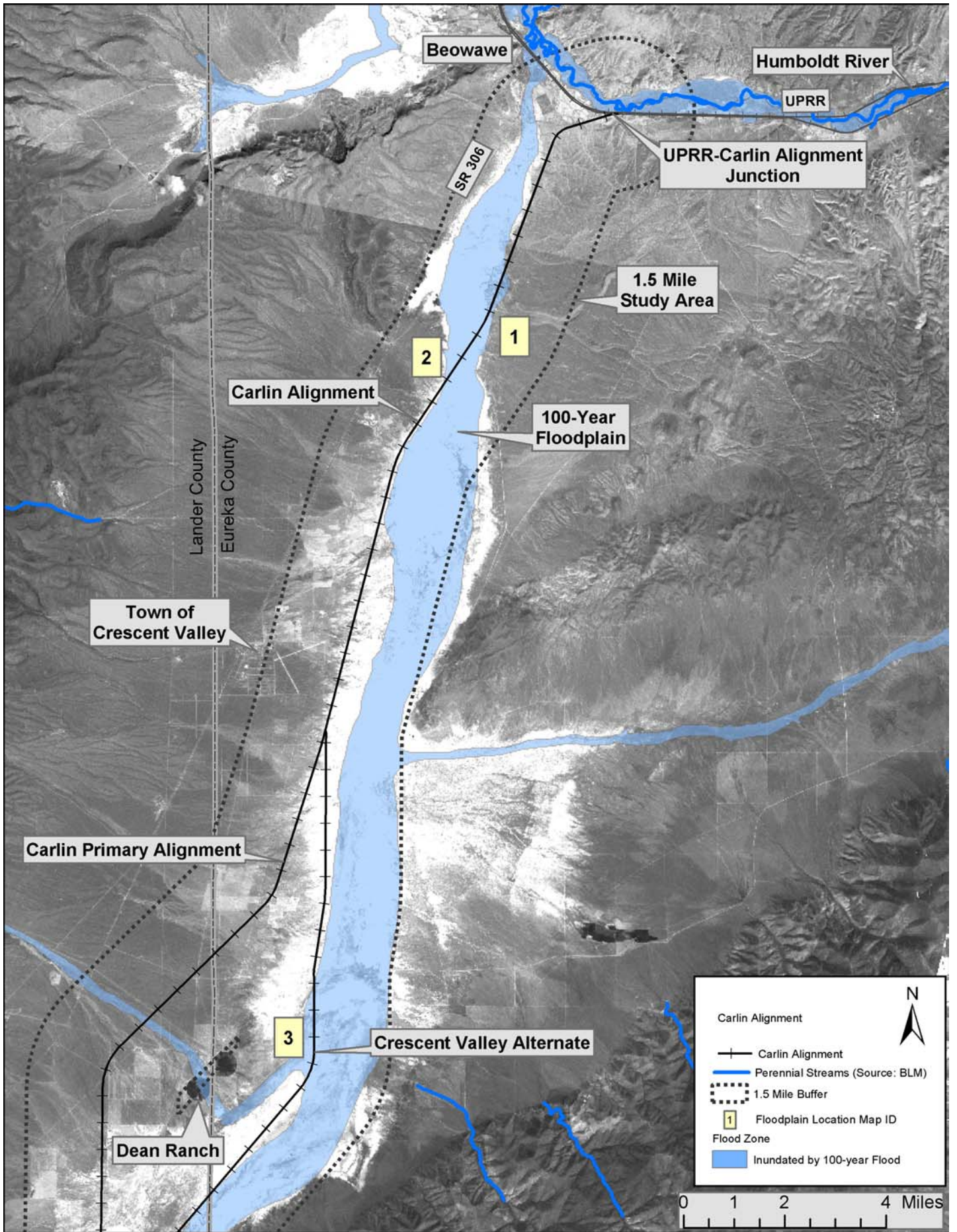
FLOODPLAIN LOCATION MAPS

Figure 6: Floodplain Location Overview

Figure 7: Floodplain Crossing A

Figure 8: Floodplain Crossing B

Figure 9: Floodplain Crossing C

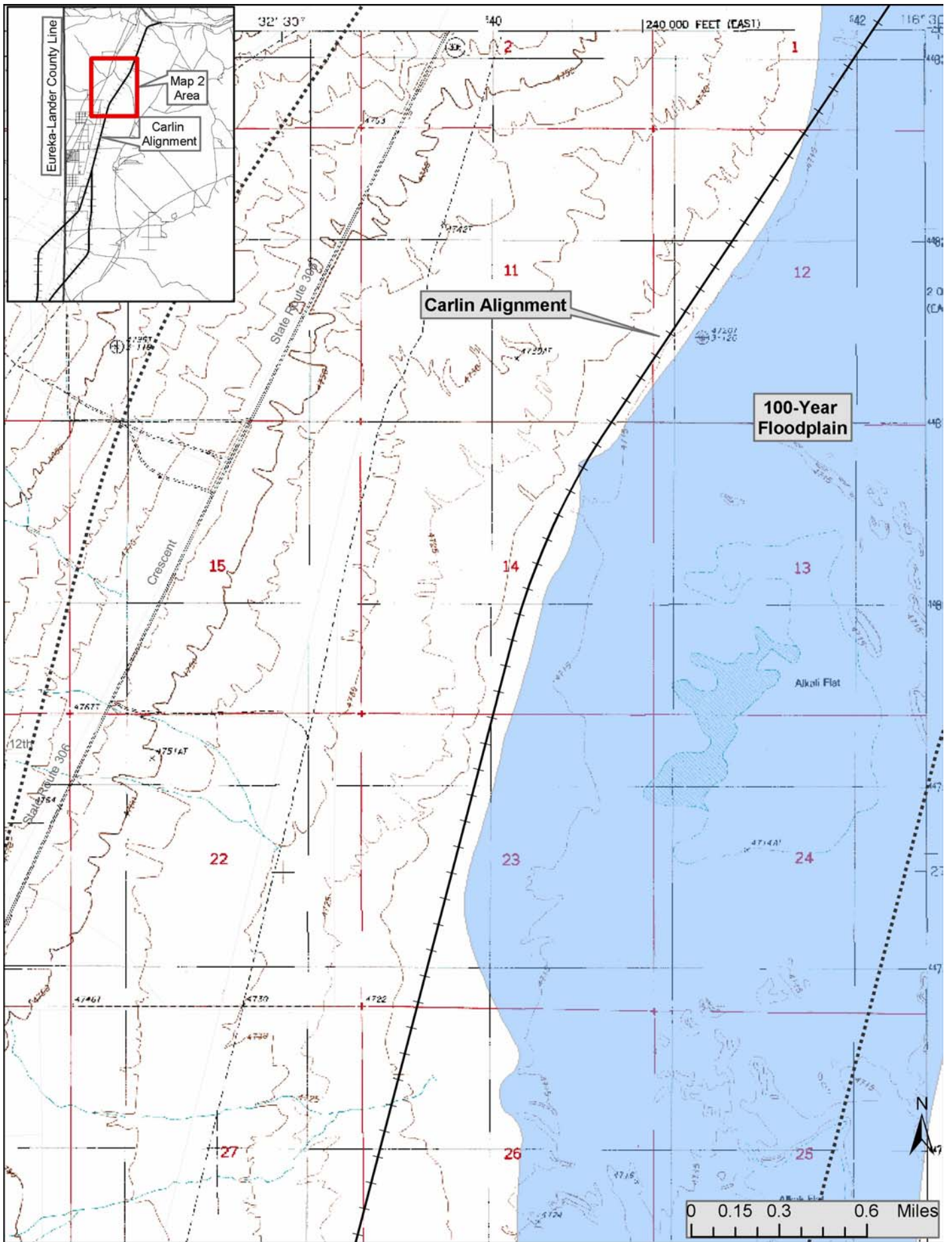


Carlin Rail Alignment
Eureka County, Nevada

Floodplain Location Overview

Figure 6

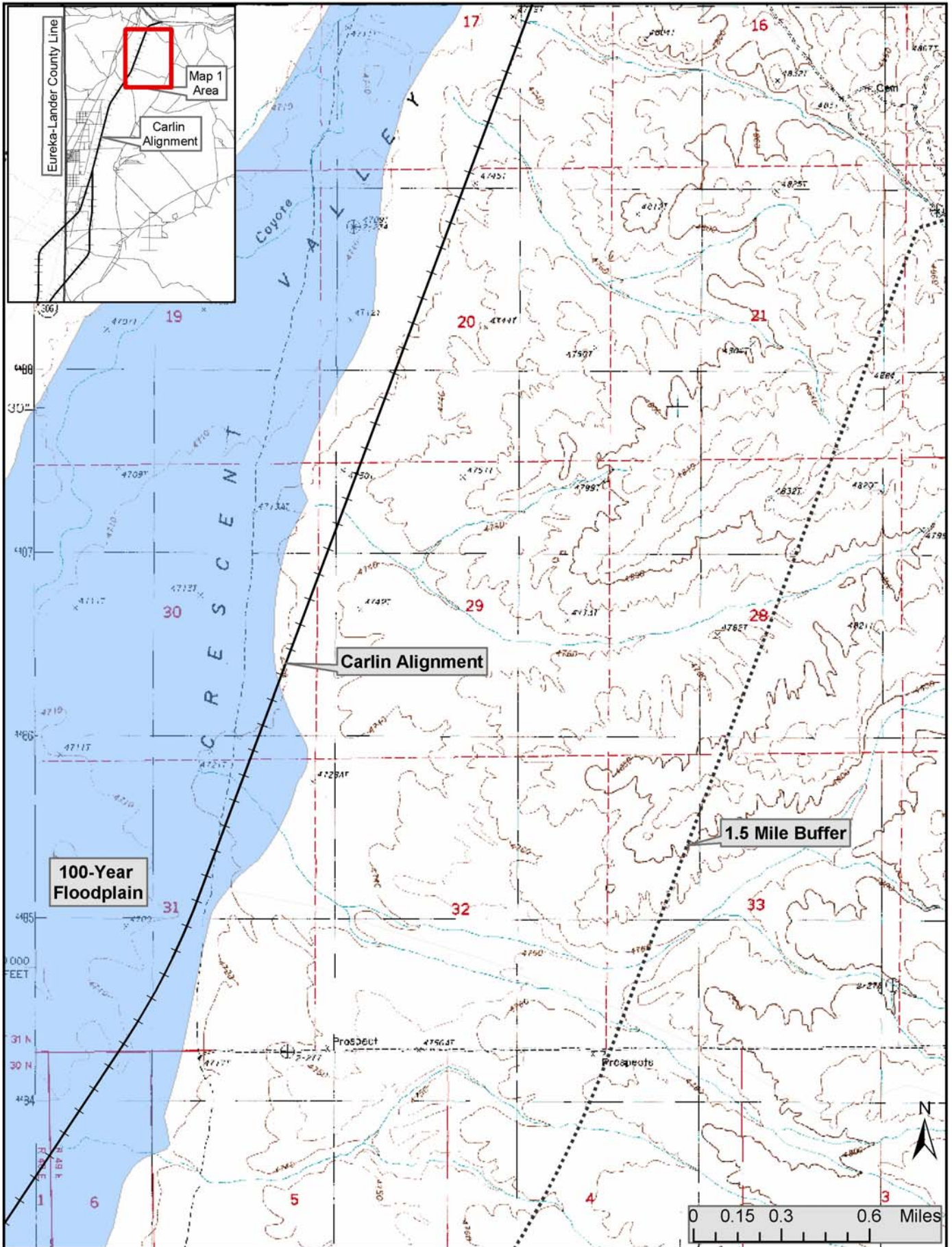




Carlin Rail Alignment
 Eureka County, Nevada
Floodplain Crossing

Figure 7

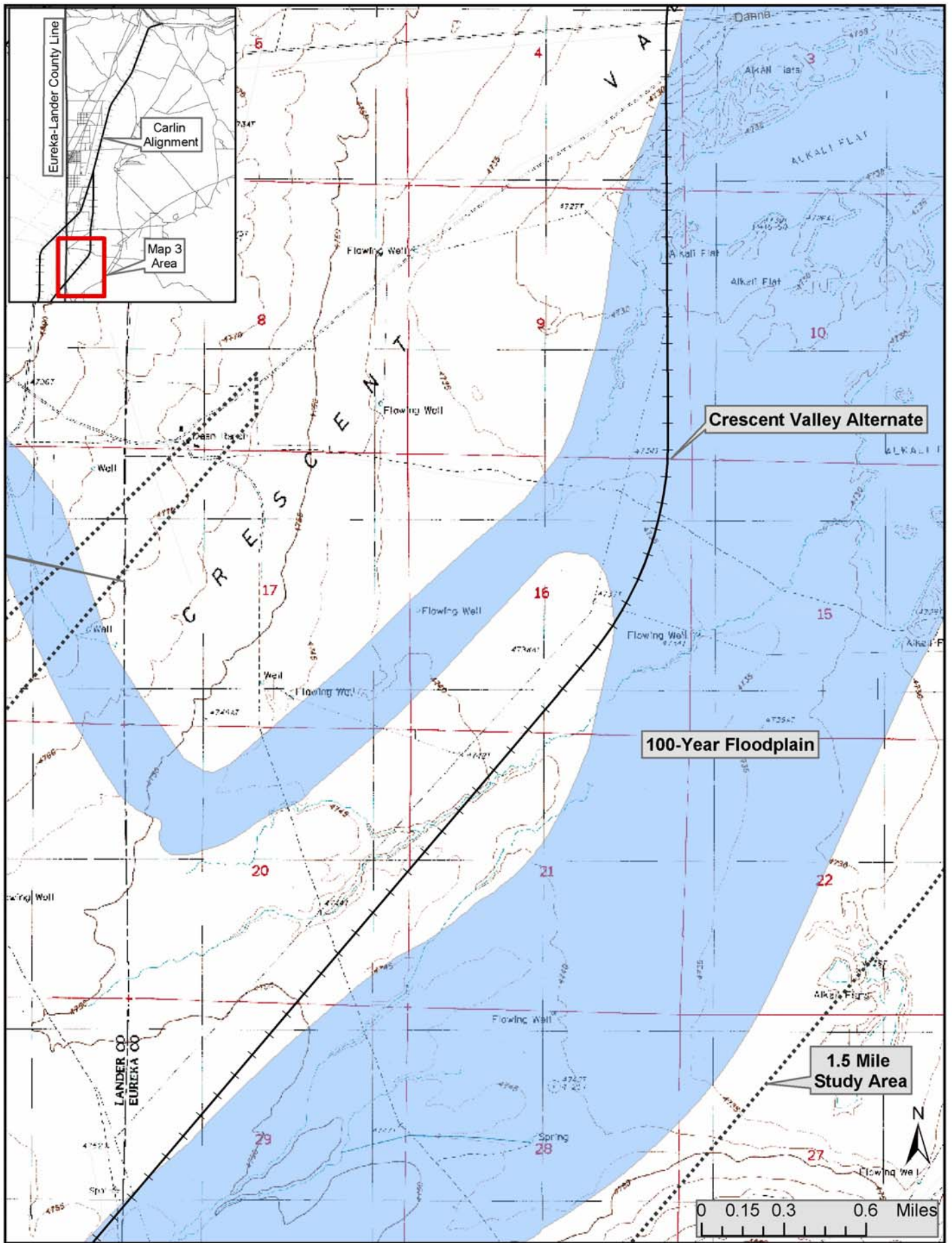




Carlin Rail Alignment
 Eureka County, Nevada
Floodplain Crossing

Figure 8





Carlin Rail Alignment
 Eureka County, Nevada
Floodplain Crossing

Figure 9



APPENDIX C

WIND DATA TABLES

Table 5: Wind Speed Observations A

Table 6: Wind Speed Observations B

Table 7: Percentage Observations A

Table 8: Percentage Observations B

Table 5

| WIND DIRECTION VERSUS WIND SPEED | | | | | | | | | | | | |
|---|---------------------------------------|-----|-----------------------------|-------|-------|-------|---------------------------------------|-------|---------|-------|---------------|-----|
| STATION: CV Dean Ranch | | | HOURS: 144 Observations/Day | | | | PERIOD OF RECORD: 11/1/03 TO 12/31/03 | | | | | |
| DIRECTION | 10 MINIUTE OBSERVATIONS OF WIND SPEED | | | | | | | | | | AVERAGE SPEED | |
| | MPH | | | | | | | | | | TOTAL | MPH |
| | 0-3 | 4-7 | 8-12 | 13-18 | 19-24 | 25-31 | 32-38 | 39-46 | 47 OVER | | | |
| N | 159 | 193 | 128 | 19 | 0 | 0 | 0 | 0 | | 499 | 5.8 | |
| NNE | 303 | 289 | 131 | 7 | 0 | 0 | 0 | 0 | | 730 | 4.7 | |
| NE | 257 | 244 | 74 | 6 | 0 | 0 | 0 | 0 | | 581 | 4.4 | |
| ENE | 495 | 237 | 35 | 4 | 0 | 0 | 0 | 0 | | 771 | 3.2 | |
| E | 312 | 110 | 20 | 2 | 0 | 0 | 0 | 0 | | 444 | 2.9 | |
| ESE | 182 | 70 | 15 | 1 | 0 | 0 | 0 | 0 | | 268 | 3.1 | |
| SE | 154 | 54 | 11 | 4 | 0 | 0 | 0 | 0 | | 223 | 3.1 | |
| SSE | 168 | 75 | 12 | 8 | 1 | 0 | 0 | 0 | | 264 | 3.5 | |
| S | 233 | 119 | 38 | 10 | 3 | 2 | 0 | 0 | | 405 | 4.1 | |
| SSW | 171 | 165 | 204 | 134 | 49 | 22 | 15 | 10 | | 770 | 10.1 | |
| SW | 236 | 197 | 330 | 459 | 242 | 80 | 21 | 4 | | 1569 | 12.8 | |
| WSW | 170 | 134 | 213 | 287 | 90 | 18 | 0 | 0 | | 912 | 11.0 | |
| W | 152 | 70 | 61 | 50 | 18 | 1 | 0 | 0 | | 352 | 6.9 | |
| WNW | 162 | 61 | 16 | 8 | 5 | 0 | 0 | 0 | | 252 | 3.8 | |
| NW | 184 | 114 | 34 | 16 | 4 | 5 | 1 | 0 | | 358 | 4.9 | |
| NNW | 171 | 125 | 61 | 20 | 8 | 1 | 0 | 0 | | 386 | 5.3 | |
| | | | | | | | | | | TOTAL | 8784 | 5.6 |

Table 6

| WIND DIRECTION VERSUS WIND SPEED | | | | | | | | | | | |
|---|------|------|-----------------------------|-------|-------|-------|---------------------------------------|-------|---------|-------|---------------|
| STATION: CV Airport | | | HOURS: 144 Observations/Day | | | | PERIOD OF RECORD: 11/1/03 TO 12/31/03 | | | | |
| 10 MINIUTE OBSERVATIONS OF WIND SPEED | | | | | | | | | | | AVERAGE SPEED |
| DIRECTION | MPH | | | | | | | | | TOTAL | MPH |
| | 0-3 | 4-7 | 8-12 | 13-18 | 19-24 | 25-31 | 32-38 | 39-46 | 47 OVER | | |
| N | 6 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | | 9 | 3.8 |
| NNE | 2 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | | 6 | 4.9 |
| NE | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | | 1 | 10.0 |
| ENE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0.0 |
| E | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0.0 |
| ESE | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | | 2 | 5.5 |
| SE | 3 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | | 7 | 5.1 |
| SSE | 7 | 15 | 5 | 0 | 0 | 0 | 0 | 0 | | 27 | 5.3 |
| S | 1670 | 1519 | 484 | 37 | 0 | 0 | 0 | 0 | | 3710 | 4.4 |
| SSW | 1340 | 948 | 658 | 572 | 163 | 49 | 26 | 1 | | 3757 | 7.6 |
| SW | 377 | 159 | 77 | 92 | 32 | 3 | 0 | 0 | | 740 | 6.0 |
| WSW | 87 | 88 | 54 | 26 | 9 | 3 | 0 | 0 | | 267 | 6.9 |
| W | 56 | 30 | 14 | 5 | 3 | 0 | 0 | 0 | | 108 | 4.9 |
| WNW | 23 | 30 | 20 | 3 | 3 | 0 | 0 | 0 | | 79 | 6.5 |
| NW | 13 | 28 | 5 | 4 | 0 | 0 | 0 | 0 | | 50 | 5.7 |
| NNW | 5 | 9 | 5 | 1 | 1 | 0 | 0 | 0 | | 21 | 6.9 |
| TOTAL | | | | | | | | | | 8784 | 5.2 |

Table 7

| WIND DIRECTION VERSUS WIND SPEED | | | | | | | | | | | |
|---|---------------------------------------|-------|-----------------------------|-------|--------------|-------|---------------------------------------|-------|------------|---------------|------|
| STATION: CV Dean Ranch | | | HOURS: 144 Observations/Day | | | | PERIOD OF RECORD: 11/1/03 TO 12/31/03 | | | | |
| DIRECTION | PERCENTAGE OBSERVATIONS OF WIND SPEED | | | | | | | | | AVERAGE SPEED | |
| | 0-3 | 4-7 | 8-12 | 13-18 | MPH 19-24 | 25-31 | 32-38 | 39-46 | 47 OVER | TOTAL | MPH |
| N | 1.8% | 2.2% | 1.5% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | | 5.7% | 5.8 |
| NNE | 3.4% | 3.3% | 1.5% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | | 8.3% | 4.7 |
| NE | 2.9% | 2.8% | 0.8% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | | 6.6% | 4.4 |
| ENE | 5.6% | 2.7% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | | 8.8% | 3.2 |
| E | 3.6% | 1.3% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | | 5.1% | 2.9 |
| ESE | 2.1% | 0.8% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | | 3.1% | 3.1 |
| SE | 1.8% | 0.6% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | | 2.5% | 3.1 |
| SSE | 1.9% | 0.9% | 0.1% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | | 3.0% | 3.5 |
| S | 2.7% | 1.4% | 0.4% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | | 4.6% | 4.1 |
| SSW | 1.9% | 1.9% | 2.3% | 1.5% | 0.6% | 0.3% | 0.2% | 0.1% | | 8.8% | 10.1 |
| SW | 2.7% | 2.2% | 3.8% | 5.2% | 2.8% | 0.9% | 0.2% | 0.0% | | 17.9% | 12.8 |
| WSW | 1.9% | 1.5% | 2.4% | 3.3% | 1.0% | 0.2% | 0.0% | 0.0% | | 10.4% | 11.0 |
| W | 1.7% | 0.8% | 0.7% | 0.6% | 0.2% | 0.0% | 0.0% | 0.0% | | 4.0% | 6.9 |
| WNW | 1.8% | 0.7% | 0.2% | 0.1% | 0.1% | 0.0% | 0.0% | 0.0% | | 2.9% | 3.8 |
| NW | 2.1% | 1.3% | 0.4% | 0.2% | 0.0% | 0.1% | 0.0% | 0.0% | | 4.1% | 4.9 |
| NNW | 1.9% | 1.4% | 0.7% | 0.2% | 0.1% | 0.0% | 0.0% | 0.0% | | 4.4% | 5.3 |
| TOTAL | 39.9% | 25.7% | 15.7% | 11.8% | 4.8% | 1.5% | 0.4% | 0.2% | | 100.0% | |

Table 8

| WIND DIRECTION VERSUS WIND SPEED | | | | | | | | | | | |
|---|---------------------------------------|-------|-----------------------------|-------|--------------|-------|---------------------------------------|-------|------------|---------------|------|
| STATION: CV Airport | | | HOURS: 144 Observations/Day | | | | PERIOD OF RECORD: 11/1/03 TO 12/31/03 | | | | |
| DIRECTION | PERCENTAGE OBSERVATIONS OF WIND SPEED | | | | | | | | | AVERAGE SPEED | |
| | 0-3 | 4-7 | 8-12 | 13-18 | MPH 19-24 | 25-31 | 32-38 | 39-46 | 47 OVER | TOTAL | MPH |
| N | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | | 0.1% | 3.8 |
| NNE | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | | 0.1% | 4.9 |
| NE | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | | 0.0% | 10.0 |
| ENE | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | | 0.0% | 0.0 |
| E | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | | 0.0% | 0.0 |
| ESE | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | | 0.0% | 5.5 |
| SE | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | | 0.1% | 5.1 |
| SSE | 0.1% | 0.2% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | | 0.3% | 5.3 |
| S | 19.0% | 17.3% | 5.5% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | | 42.2% | 4.4 |
| SSW | 15.3% | 10.8% | 7.5% | 6.5% | 1.9% | 0.6% | 0.3% | 0.0% | | 42.8% | 7.6 |
| SW | 4.3% | 1.8% | 0.9% | 1.0% | 0.4% | 0.0% | 0.0% | 0.0% | | 8.4% | 6.0 |
| WSW | 1.0% | 1.0% | 0.6% | 0.3% | 0.1% | 0.0% | 0.0% | 0.0% | | 3.0% | 6.9 |
| W | 0.6% | 0.3% | 0.2% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | | 1.2% | 4.9 |
| WNW | 0.3% | 0.3% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | | 0.9% | 6.5 |
| NW | 0.1% | 0.3% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | | 0.6% | 5.7 |
| NNW | 0.1% | 0.1% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | | 0.2% | 6.9 |
| TOTAL | 40.9% | 32.3% | 15.1% | 8.4% | 2.4% | 0.6% | 0.3% | 0.0% | | 100.0% | |

APPENDIX F

RAIL ROUTE MAPS

Figure 10: United States Rail Routes
Figure 11: Potential Nevada Rail Routes

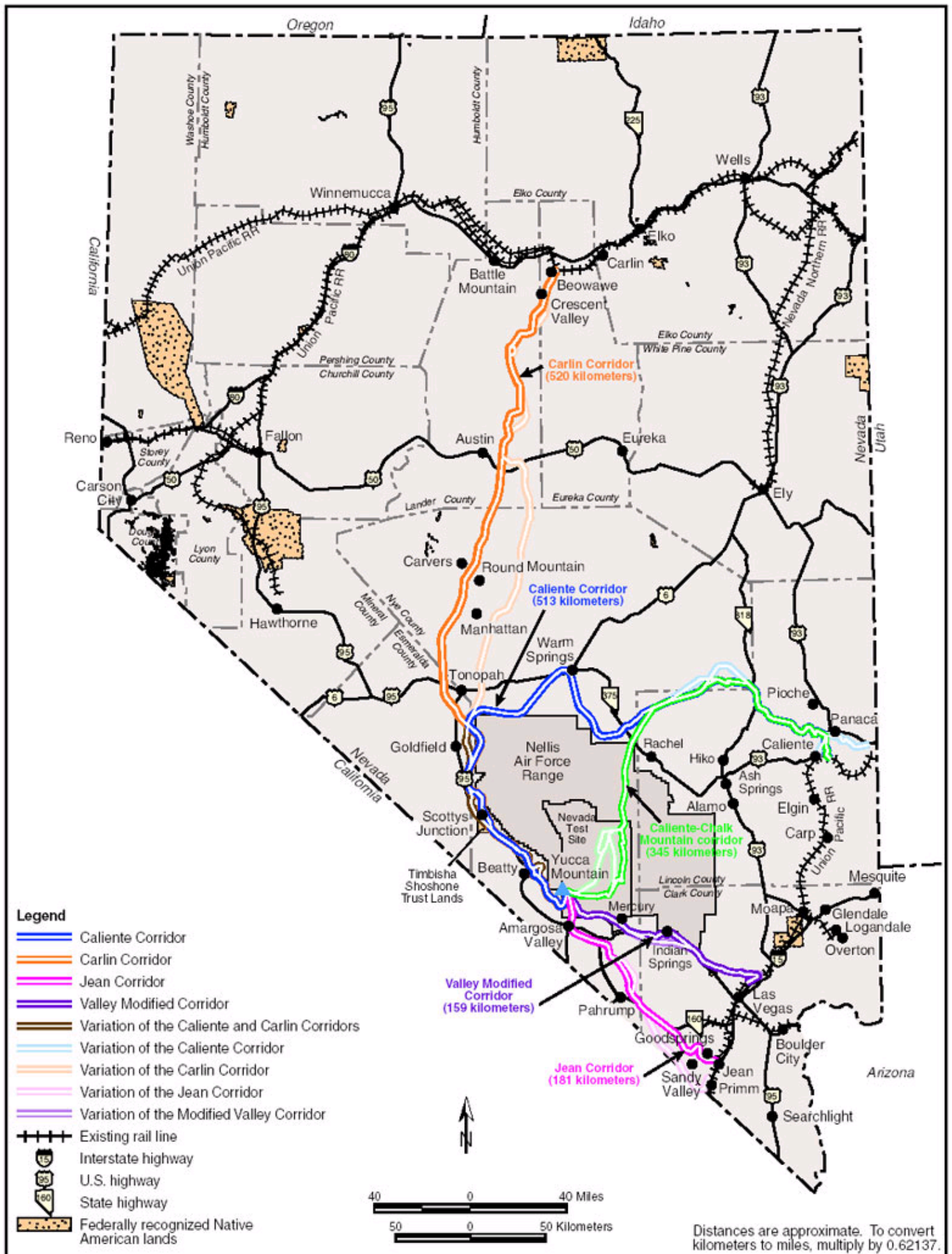


Figure S-13. Potential Nevada rail routes to Yucca Mountain.

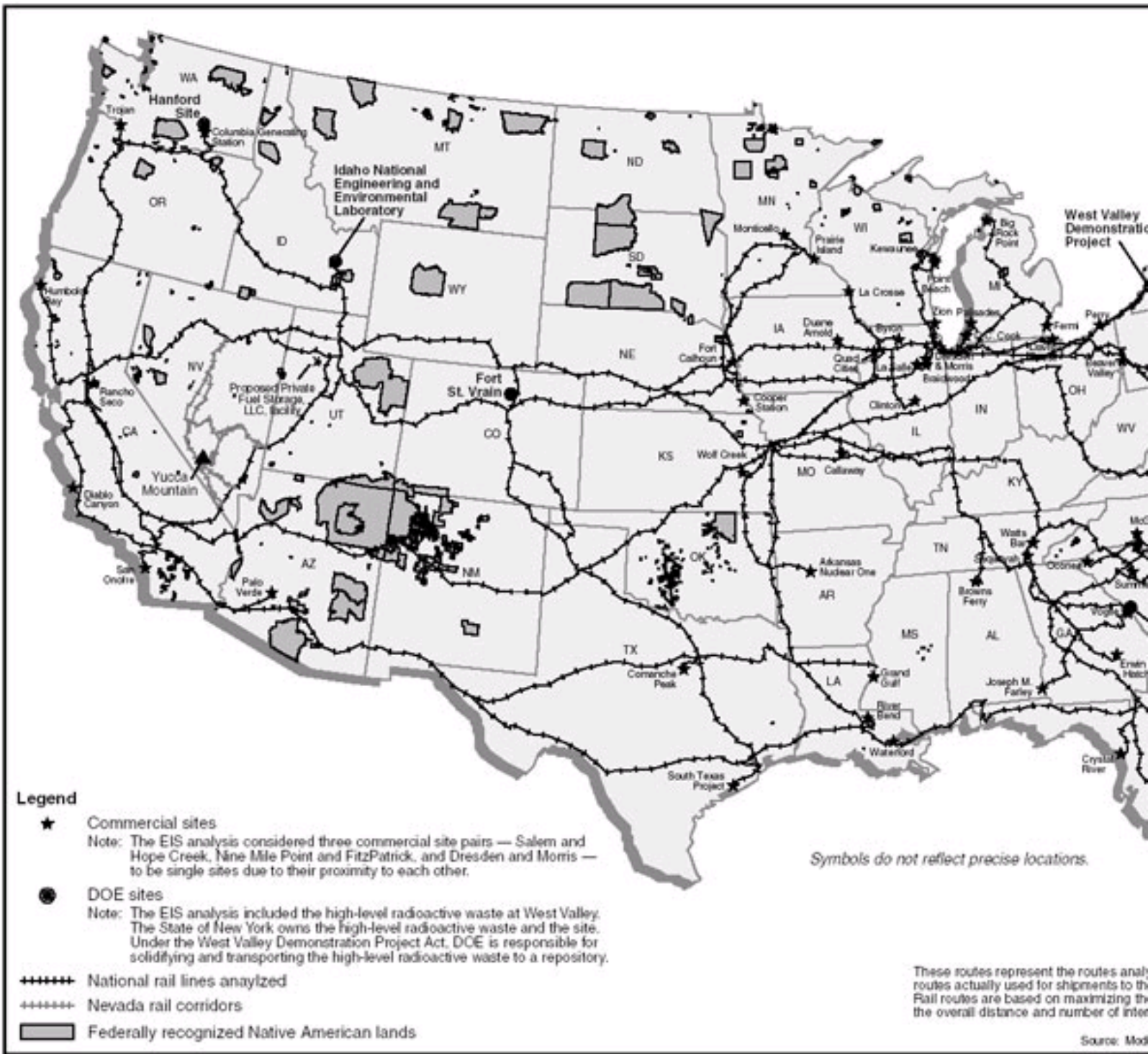


Figure 10: Representative Rail Routes From Commercial and DOE Sites to Yucca Mountain.

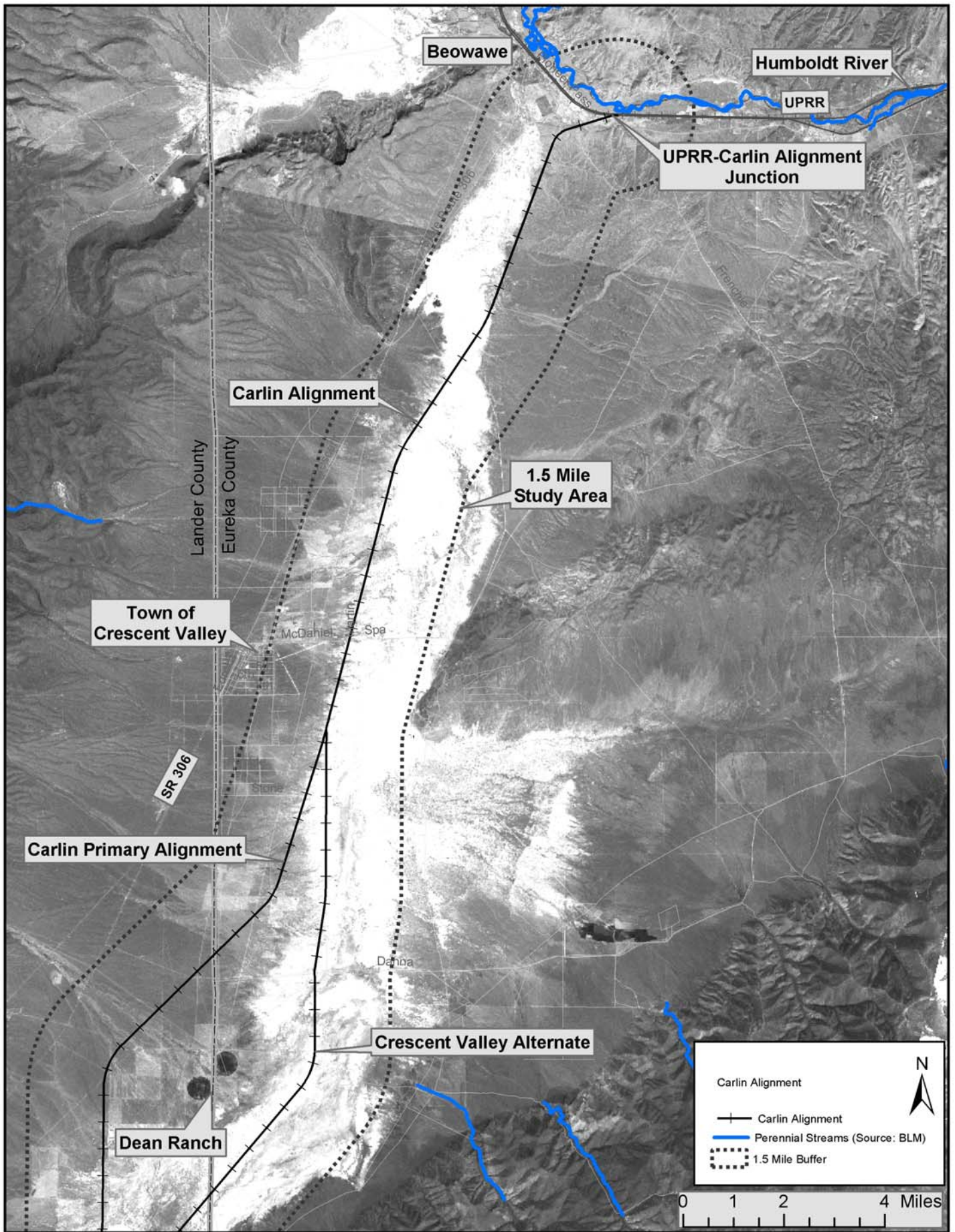
APPENDIX G
CORRIDOR MAPS FOR
ANALYSIS

Figure 12: Carlin Alignment

Figure 13: Water Resources

Figure 14: Soils

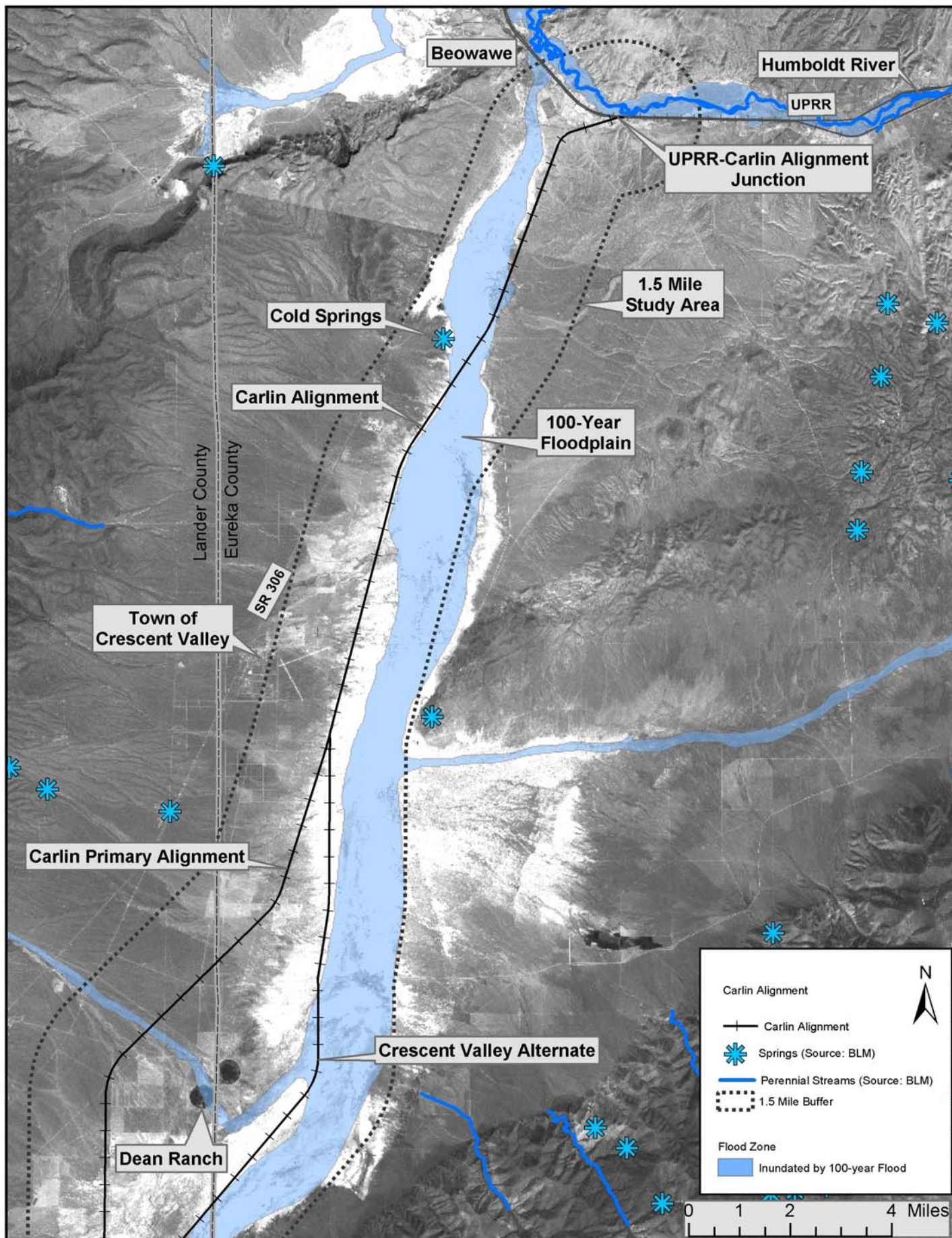
Figure 15: Area of Potential Ground Subsidence



Carlin Rail Alignment
Eureka County, Nevada
Carlin Alignment

Figure 12

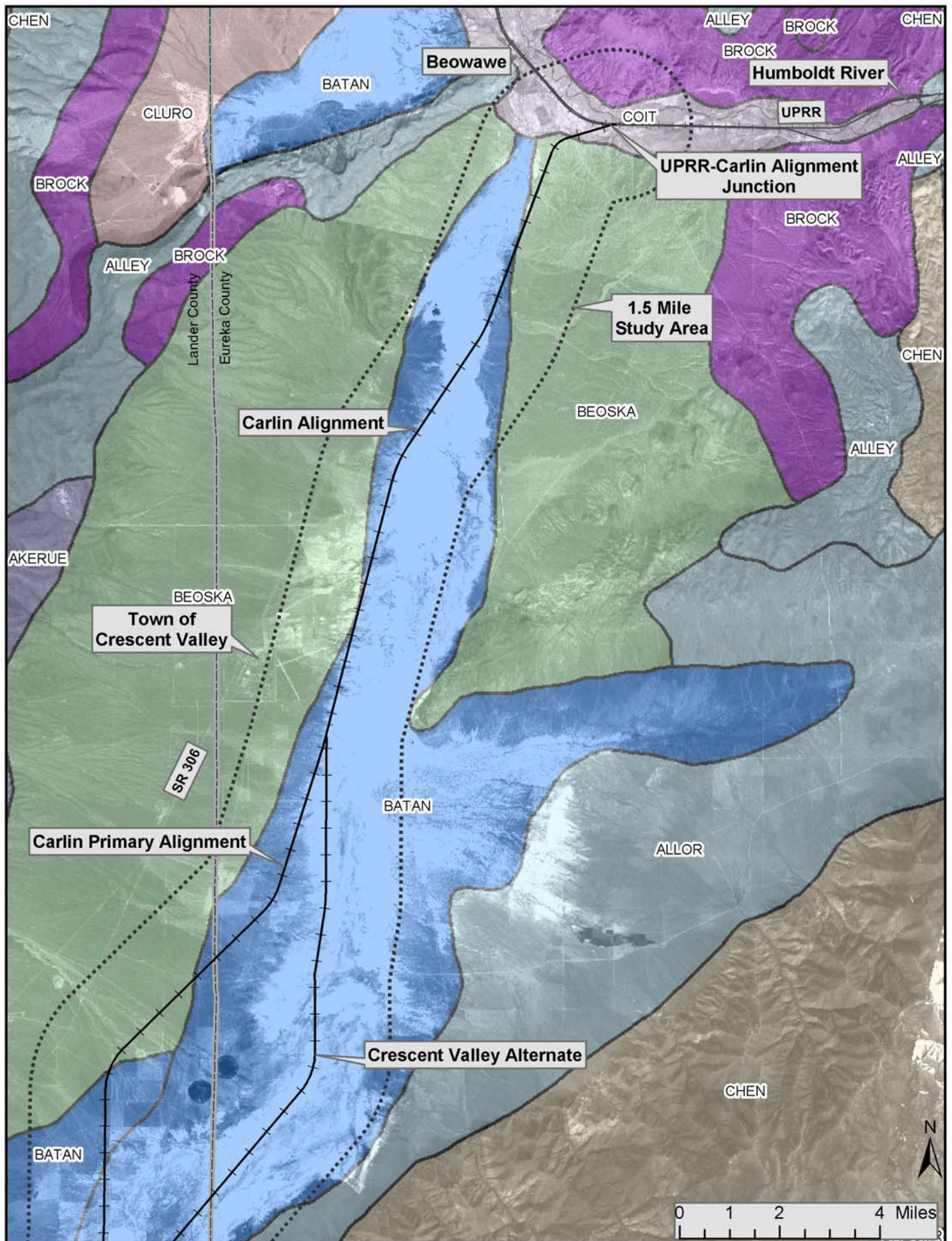




Carlin Rail Alignment
Eureka County, Nevada
Water Resources

Figure 13

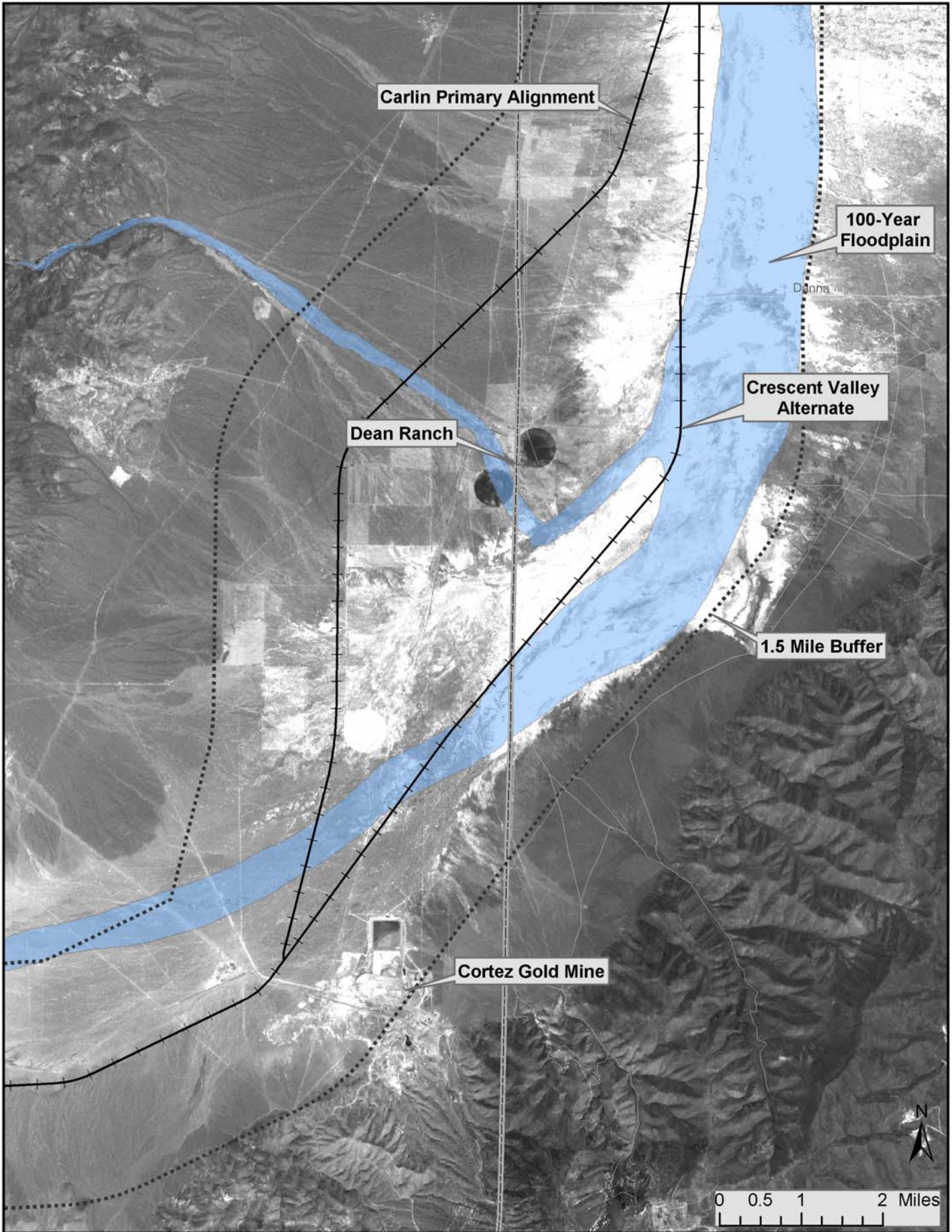




Carlin Rail Alignment
Eureka County, Nevada
Soils

Figure 14





Carlin Primary Alignment

100-Year Floodplain

Danna

Crescent Valley Alternate

Dean Ranch

1.5 Mile Buffer

Cortez Gold Mine

0 0.5 1 2 Miles



Carlin Rail Alignment
Eureka County, Nevada

Area of Potential Ground Subsidence



APPENDIX H

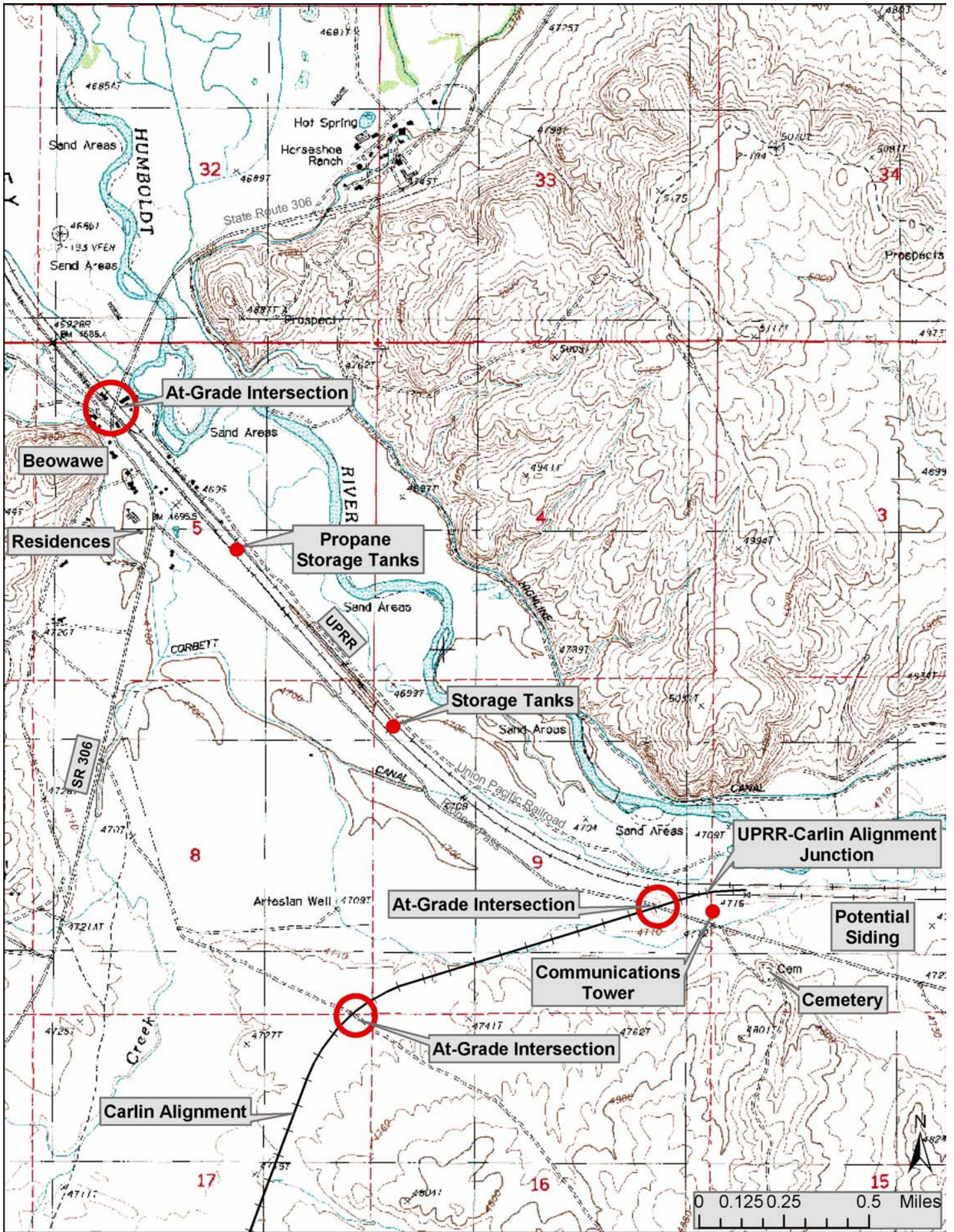
EXISTING INFRASTRUCTURE

Figure 16: Existing Infrastructure A

Figure 17: Existing Infrastructure B

Figure 18: Existing Infrastructure C

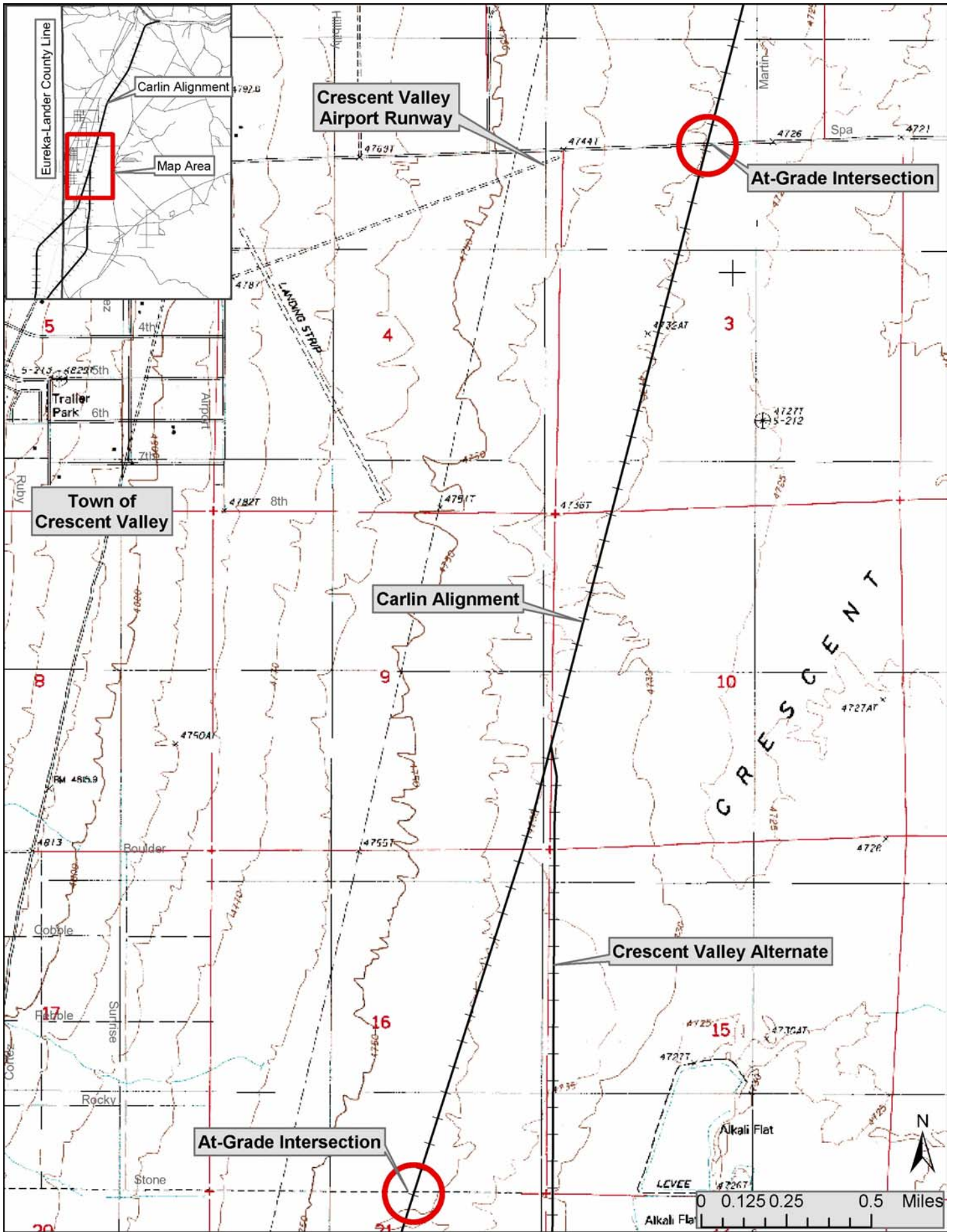
Figure 19: Existing Infrastructure D



Carlin Rail Alignment
Eureka County, Nevada
Existing Infrastructure

Figure 16

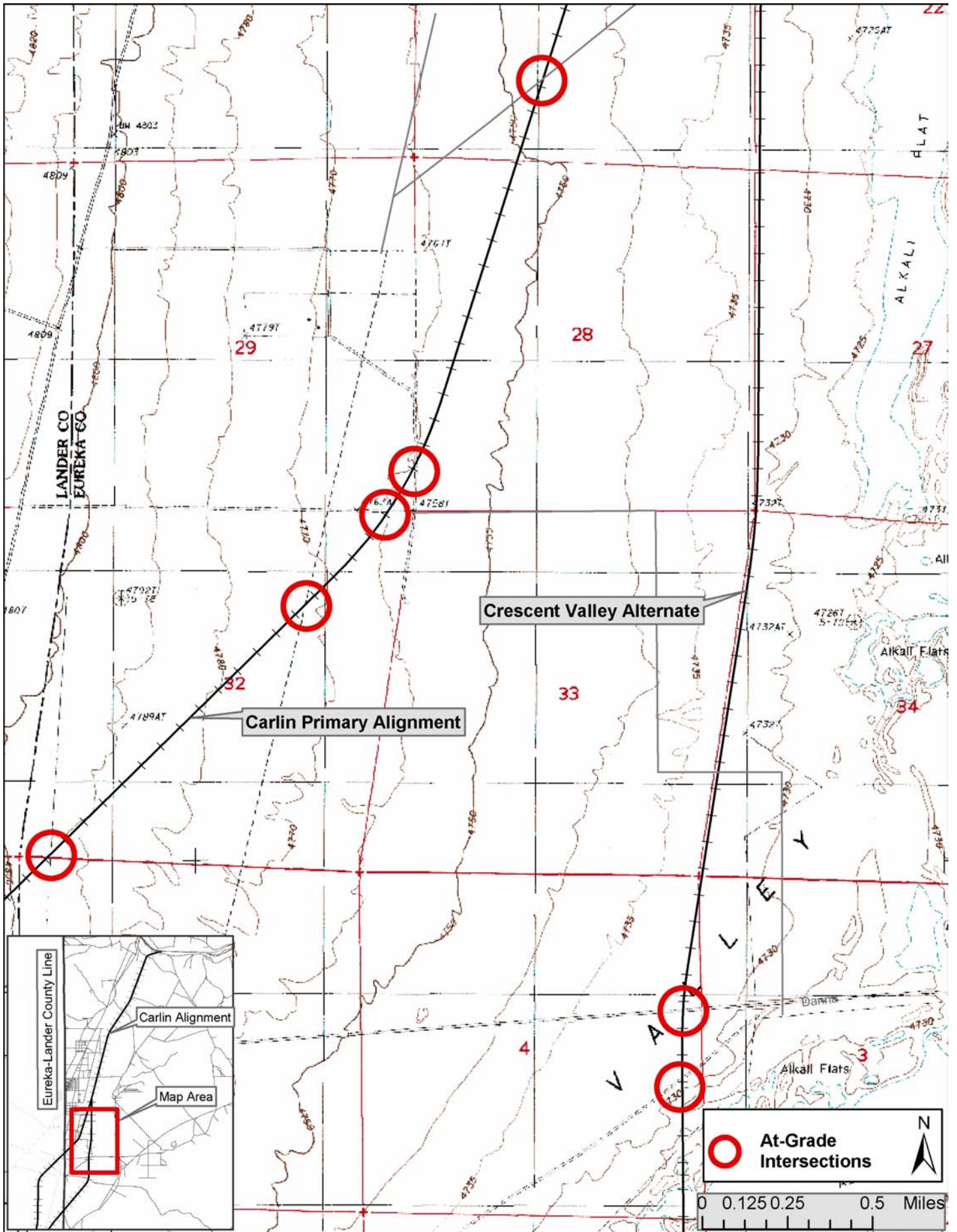




Carlin Rail Alignment
 Eureka County, Nevada
Existing Infrastructure

Figure 17

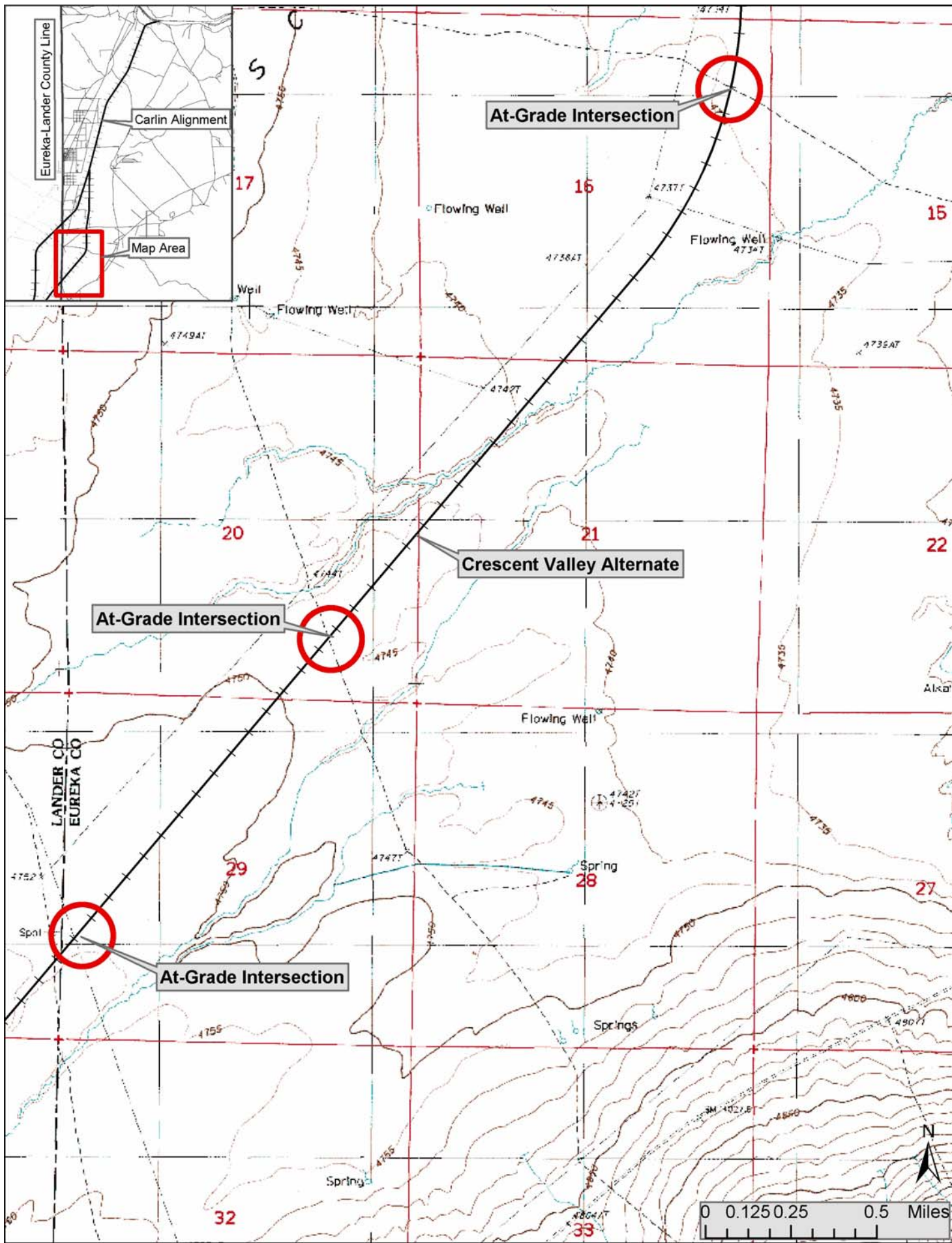




Carlin Rail Alignment
 Eureka County, Nevada
Existing Infrastructure

Figure 18





Carlin Rail Alignment
 Eureka County, Nevada
Existing Infrastructure

Figure 19



APPENDIX I

RAILROAD STANDARDS

Railroad Standards

Table 9: Proposed Horizontal Alignment

Table 10: Parameters

Table 11: Longitude Profile Parameter

Table 12:

Railroad Standards

Fundamental concepts of railroad construction terminology and performance standards are shown in Tables 1 and 2. Table 1 defines minimum and preferred standards for freight railroad for tangent and curved track and proposed standards for spiral lengths.

When a train encounters a horizontal curve it is subject to lateral centrifugal forces. To counteract this lateral force the outside rail is raised (super elevated) in accordance with accepted mathematical formulas related to weight, gravity, and velocity. The amount of rail raise (Ea) is usually expressed in inches. It is usually contained in a portion of the curve at the beginning and ending known as a spiral. A spiral is a transition curve from tangent to full radius alignment. The point at which a train can negotiate a curve safely is called unbalanced equilibrium (Eu). The spiral portion of a curve is where super elevation (Ea) is introduced into the curve to achieve unbalanced equilibrium. For freight traffic, one inch equilibrium unbalanced (Eu) is the FRA accepted standard for safety. These standards, as described, will also adhere to accepted AREMA criteria.

**Table 9
Proposed horizontal Alignment Parameters**

| POTENTIAL HORIZONTAL ALIGNMENT PARAMETERS | |
|---|---------------------|
| Maximum Design Speed | 60 MPH |
| Curve Formulas | |
| Equilibrium Elevation Equilibrium Formula | $4.01 * V^2 / R$ |
| Maximum Superelevation (Ea) | 5 inch |
| Maximum Superelevation (Ea) at Grade Crossing (All Superelevation (Ea) rounded up to nearest 1/4 Inch) | 1 inch |
| Minimum Tangent | |
| Desired Tangent between Reversing Curves | 500 feet |
| Minimum Tangent between Reversing Curves | 300 feet or 6V |
| Minimum Tangent Extended Beyond Siding Ends | |
| Preferred Tangent extended beyond Station ends | 75 feet |
| Minimum Tangent extended beyond Station ends | 50 feet |
| Travel Distance in Feet | |
| Speed mph | Distance in Feet |
| 30 | 44.00 |
| 35 | 51.33 |
| 40 | 58.67 |
| 45 | 66.00 |
| 50 | 73.34 |
| 55 | 80.67 |
| 60 | 88.00 |
| Equilibrium Formula | |
| $E_q = 4.01 V^2 / R$ | R = Radius |
| $E_q = V^2 0.007 D$ | V = Velocity |
| $E_q = V^2 R / 1428.57$ | Ea = Superelevation |
| 5" Max. Super Allowed (Ea) | Eu = Unbalanced |
| 1 Inch Unbalanced Formula (Eu) | |
| | |
| | |

POTENTIAL HORIZONTAL ALIGNMENT PARAMETERS (Continued)

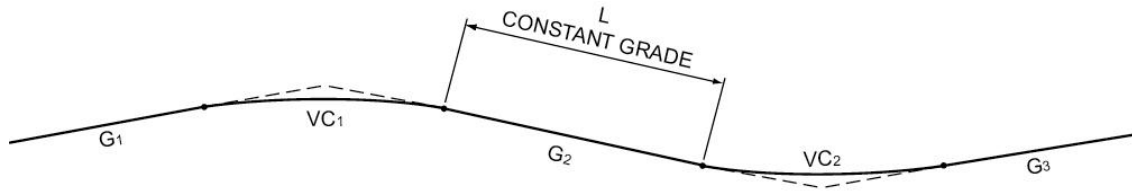
| | |
|---|---------------------|
| Minimum Tangents at Special Track work and Switches | |
| Tangent preceding Switch | 50 feet |
| Accepted Minimum preceding switch | 45 feet |
| Minimum Curve Length | |
| Preferred Curve Length | $L = 3V$ |
| Accepted Minimum | $1/12 R$ |
| Minimum Curve Radius | |
| Desirable off street and at grade, Direct fixation, and on Structures | 409.00 |
| Spiral Length Comfort Criteria (0.01g) | |
| (Use which ever is longer Ea or Eu Formula) | |
| Spiral Length | $1.10 * Ea V$ |
| Minimum Spiral Length | $0.82 * Eu V$ |
| Recommended minimum Spiral Length | 100 feet |
| Absolute minimum Spiral Length * | 31 feet |
| Spiral Runoff Length per 31 Feet | |
| Maximum rate of change $V < 15$ mph | 1 ½ inch |
| Maximum rate of change $16 V < 35$ mph | ¾ inch |
| Maximum rate of change $36 V < 60$ mph | ½ inch |
| * Prior Approval from Authority necessary | |
| Travel Distance in Feet | |
| Speed mph | Distance in Feet |
| 30 | 44.00 |
| 35 | 51.33 |
| 40 | 58.67 |
| 45 | 66.00 |
| 50 | 73.34 |
| 55 | 80.67 |
| 60 | 88.00 |
| Equilibrium Formula | |
| $Eq = 4.01 V^2 / R$ | R = Radius |
| $Eq = V^2 0.007 D$ | V = Velocity |
| $Eq = V^2 R / 1428.57$ | Ea = Superelevation |
| 5" Max. Super Allowed (Ea) | Eu = Unbalanced |
| 1" Unbalanced Formula (Eu) | |
| TABLE 10 | |

Table 11 illustrates proposed Vertical Profile Grades and minimum and preferred lengths of vertical curves. In addition, standards are specified for grades for main line, yards or storage trackage.

**Table 11
Longitudinal Profile Parameters**

| LONGITUDINAL PROFILE CRITERIA | |
|---|---|
| | |
| Equation 2.1.1 | |
| Operations or Equipment | Summit or Sag |
| Desirable Length | $\frac{LVC = D \times V^2 \times K}{A}$ |
| <p>*Vertical Curve Formula Abbreviations</p> <p>LVC = Length Vertical Curve in feet (Desirable) K = Algebraic factor to convert to feet given at 2.15 A = Vertical Acceleration (ft./sec./sec) D = Difference in Grade as percentage G₁ = percent grade of approaching tangent G₂ = percent grade of departing tangent V = design speed in mph</p> | |

**Table 12
LONGITUDINAL PROFILE CRITERIA
(Continued)**



VERTICAL ALIGNMENT

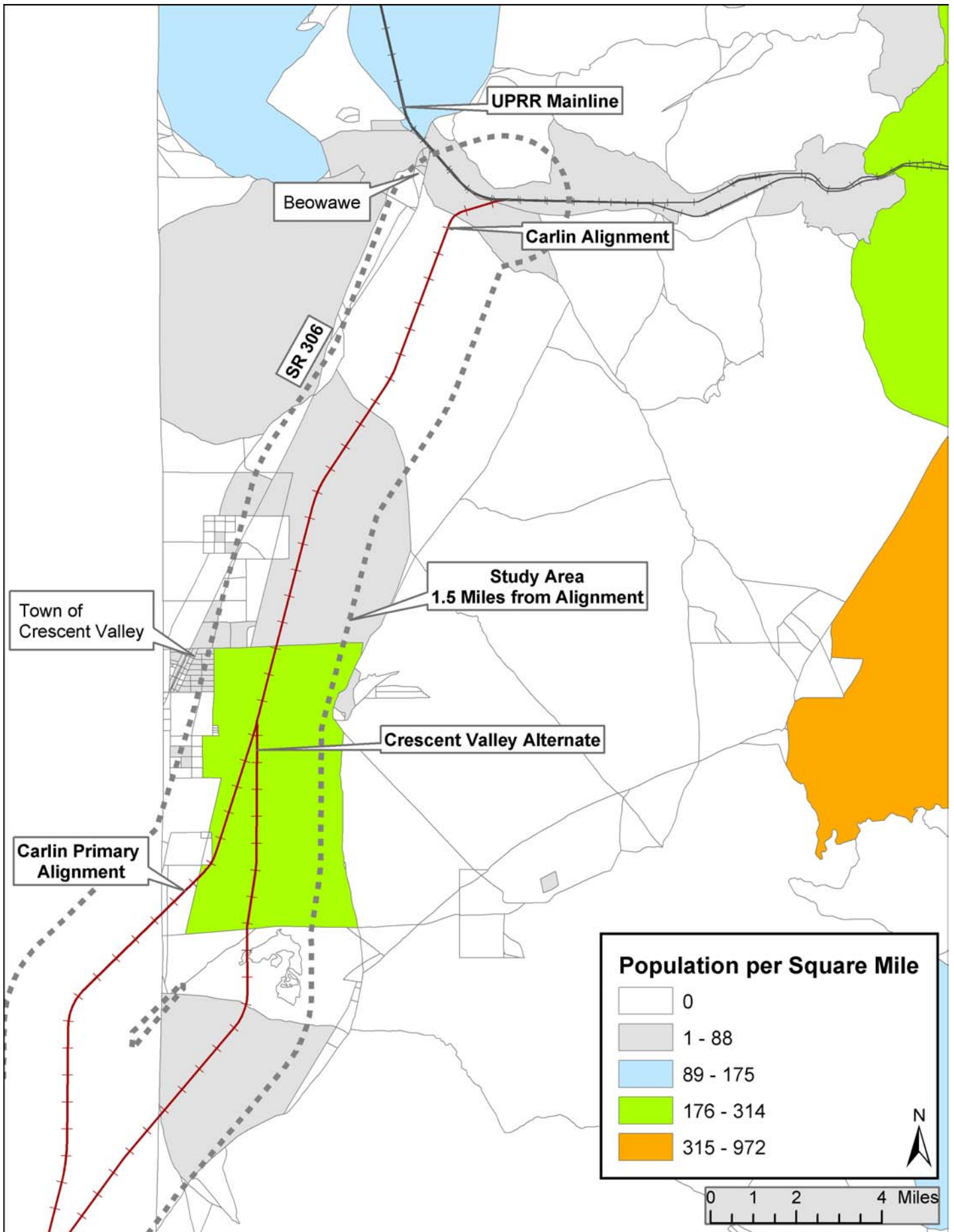
Equation 2.2.1

Grades in Percentage

| | |
|---|-------|
| Maximum (Long sustained grade) | 2.00% |
| Maximum (Short sustained grade up to 1000') | 3.00% |
| Desirable minimum for improved drainage | 0.50% |
| Absolute Minimal | 0.20% |
| Yard, Storage or Transfer | 0.10% |

Vertical Curve Formula Abbreviations

| |
|---|
| LVC = Length Vertical Curve in Feet |
| $A = (G_1 - G_2) =$ Algebraic difference in grades in percent |
| $G_1 =$ percent grade of approaching tangent |
| $G_2 =$ percent grade of departing tangent |
| $V =$ design speed in mph |



Carlin Rail Alignment
Eureka County, Nevada
Population Density

Figure
1

