

California High-Speed Rail Authority

# *Bakersfield to Palmdale Project Section*

Draft Project  
Environmental Impact  
Report/Environmental  
Impact Statement

Appendix 3.9-A: Geology, Soils,  
Seismicity, and Paleontological  
Resources

January 2020



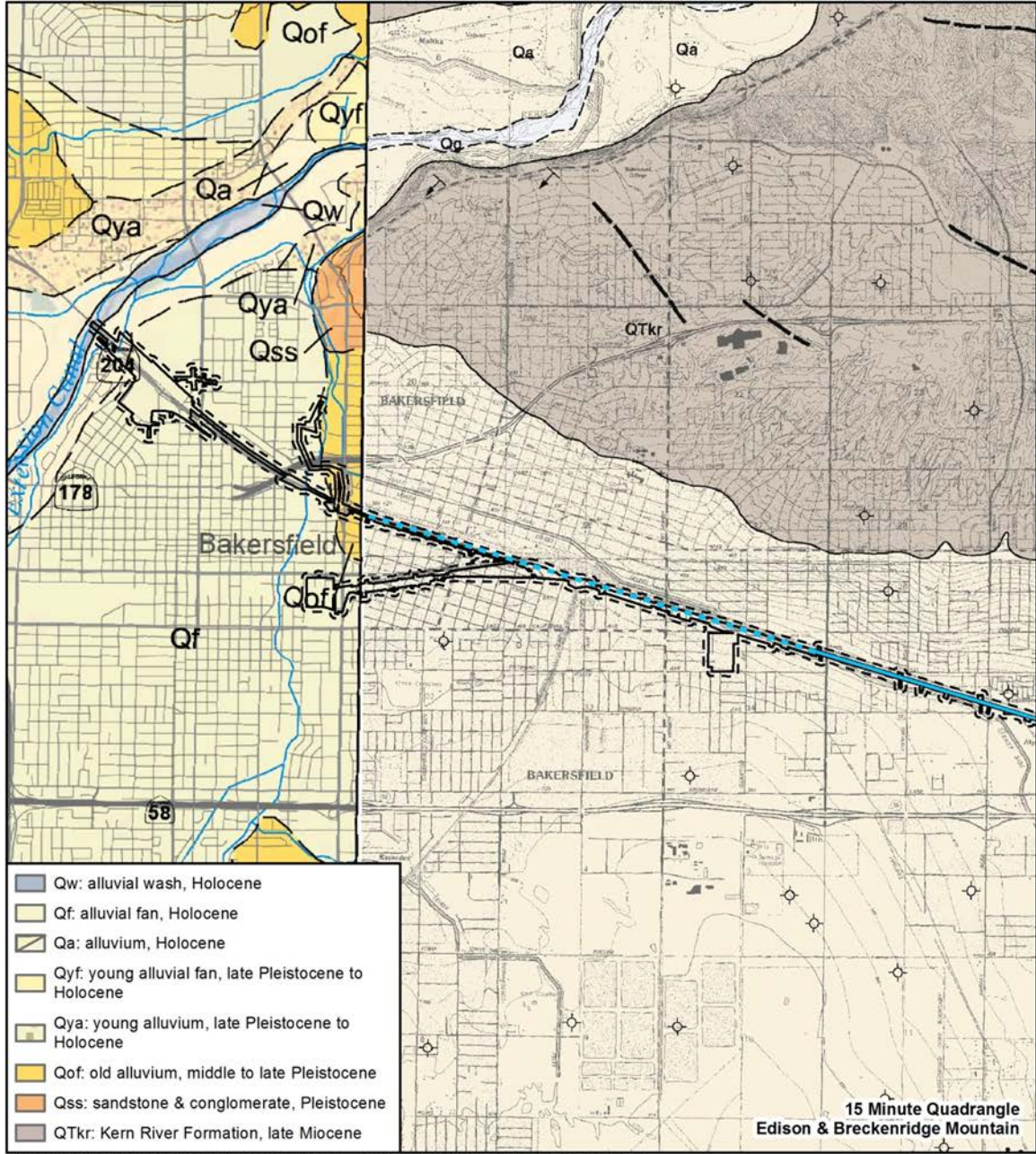
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## **APPENDIX 3.9-A: GEOLOGY, SOILS, SEISMICITY, AND PALEONTOLOGICAL RESOURCES**

This appendix provides tables and figures pertaining to the paleontological resources that could affect or be affected by the Bakersfield to Palmdale Project Section of the California High-Speed Rail (HSR) System. The tables identify the geologic units and paleontological sensitivity along the project section within the paleontological resources study area. The figures identify the geologic units and paleontological sensitivity within the paleontological resources study area. Tables and figures are designed to elucidate the text and are referenced to portions of the text for accessible interpretation.

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PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED  
 SOURCE: Inset Background image from Esri/National Geographic (2016); Phase 4B Engineering data from CHSR (04/2016); Dibblee (2008b); Hayden and Hayhurst (2011). Sheet 1 of 13

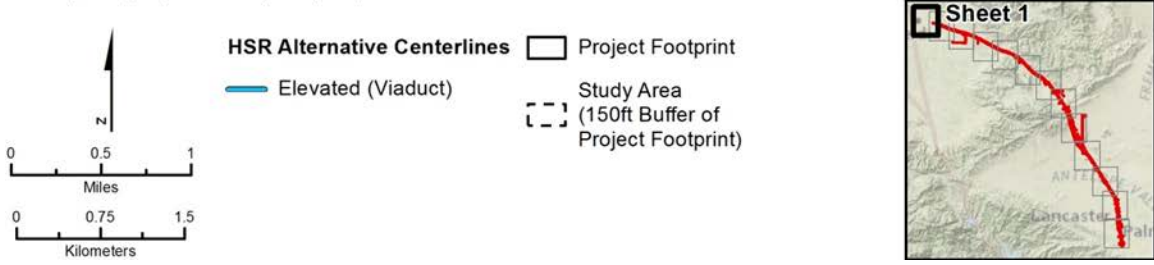
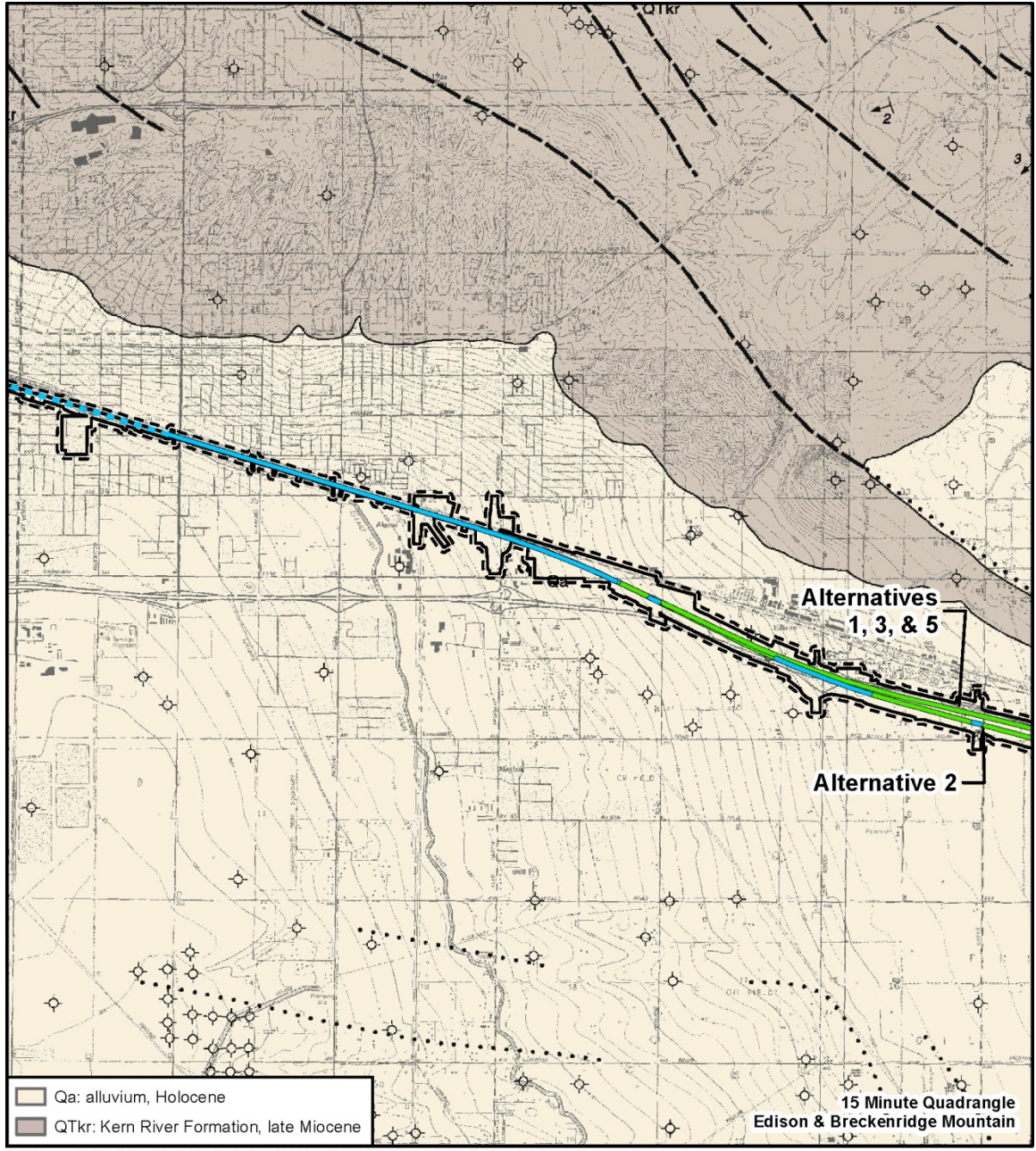


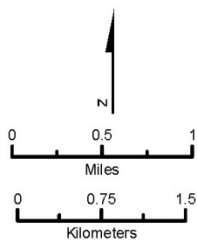
Figure 3.9-A-1 Geologic Map (Sheet 1)





PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED  
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 Dibblee (2008b).

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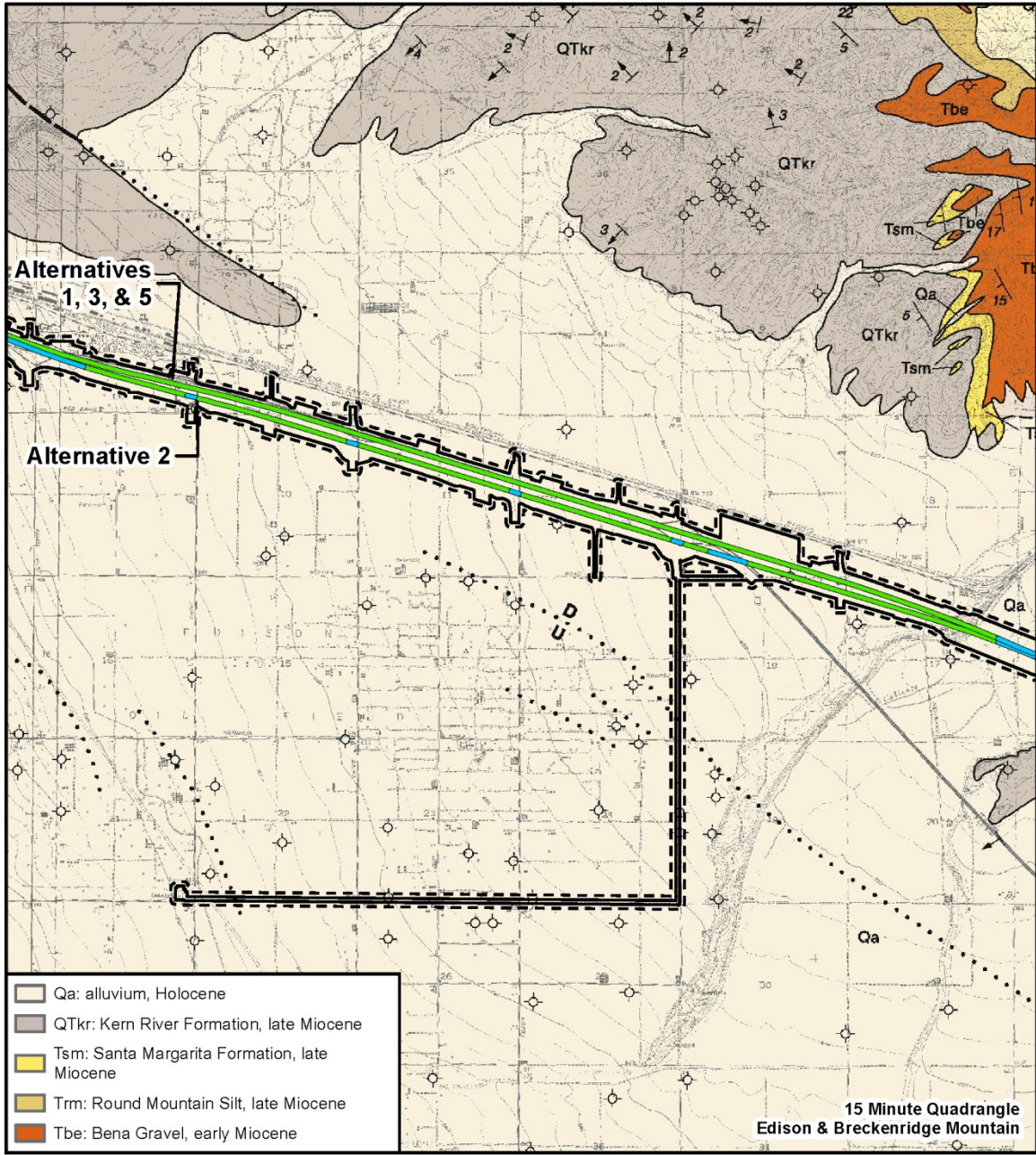


- |                                    |  |
|------------------------------------|--|
| <b>HSR Alternative Centerlines</b> | Project Footprint                              |
| Surface                            | Study Area (150ft Buffer of Project Footprint) |
| Elevated (Viaduct)                 |  |



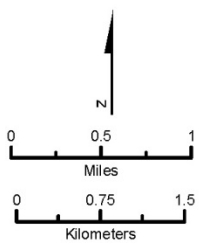
**Figure 3.9-A-1 Geologic Map (Sheet 2)**





PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED  
 SOURCE: Inset Background image from Esri/National Geographic (2016); Phase 4B Engineering data from CHSR (04/2016); Dibblee (2008b).

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- HSR Alternative Centerlines**
- Surface
- Elevated (Viaduct)
- Project Footprint
- Study Area (150ft Buffer of Project Footprint)

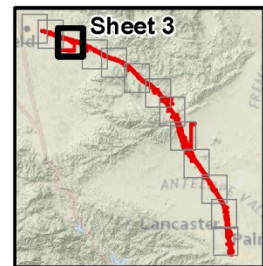
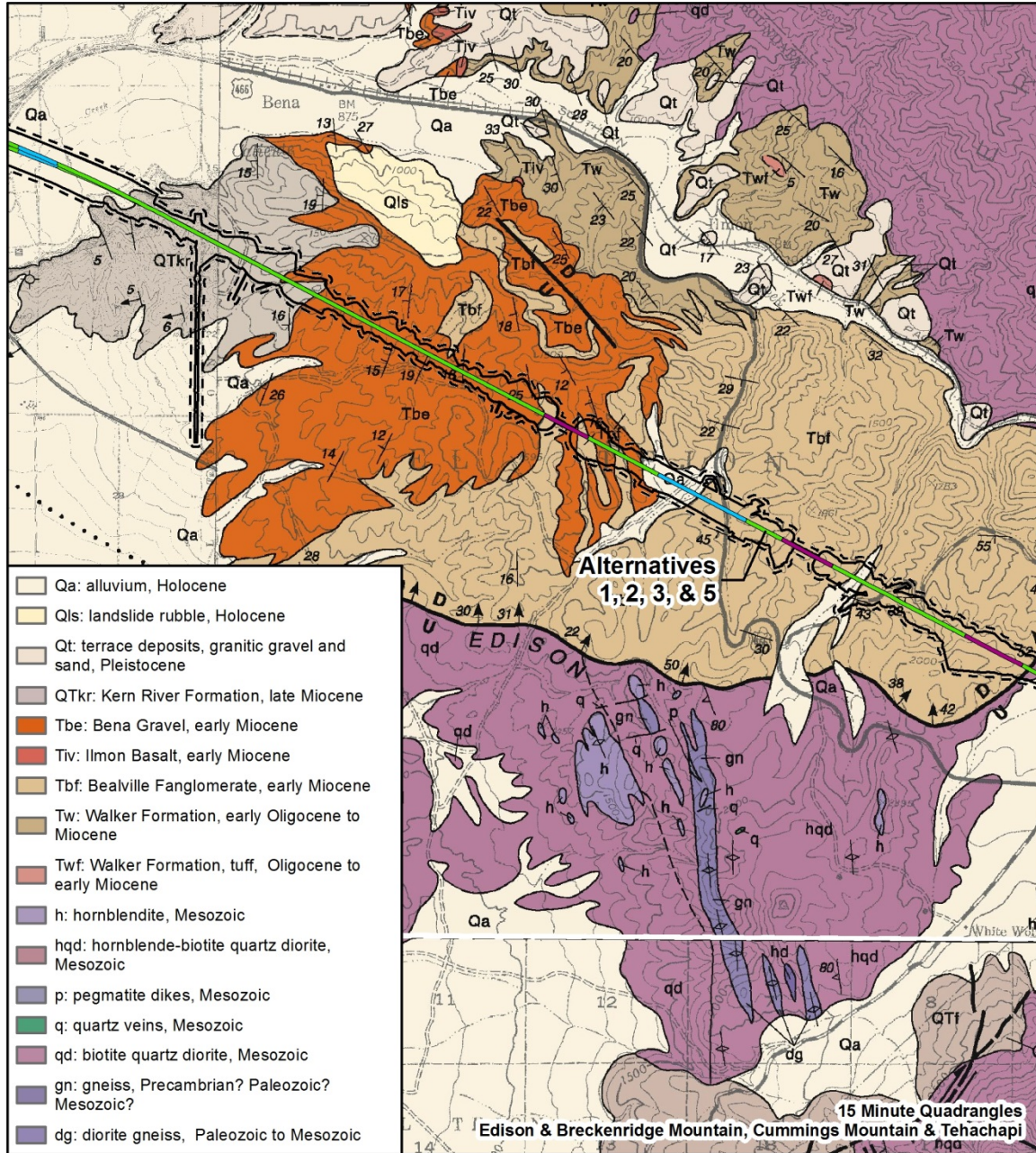


Figure 3.9-A-1 Geologic Map (Sheet 3)





PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED

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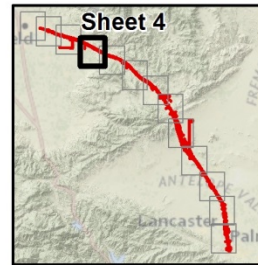
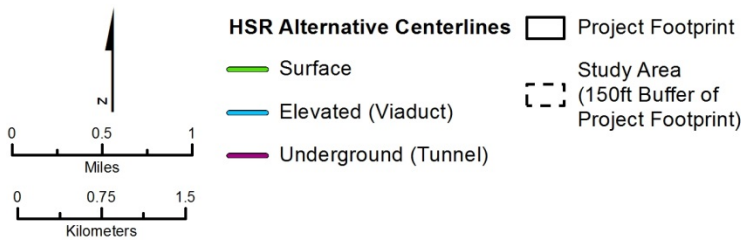
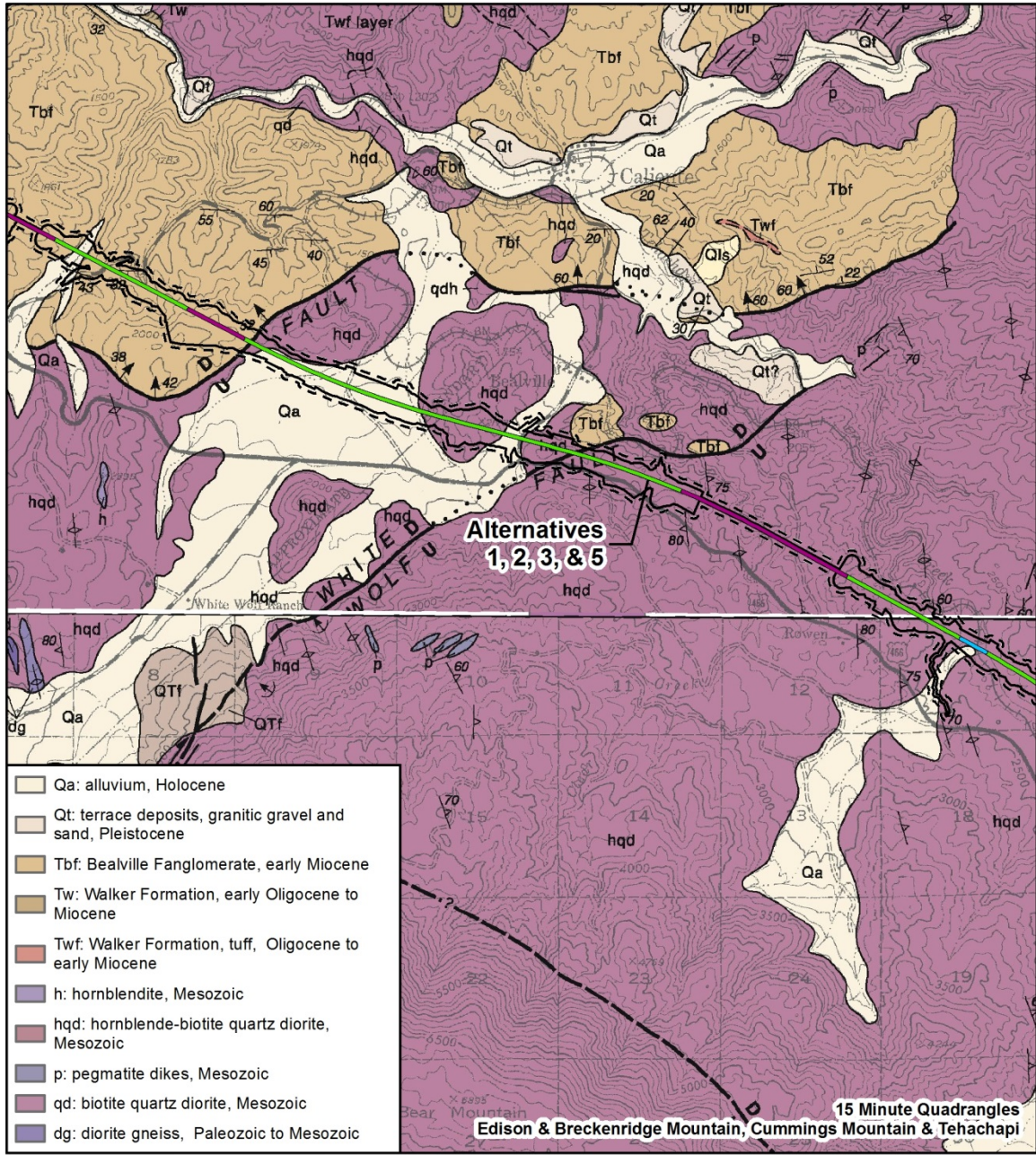


Figure 3.9-A-1 Geologic Map (Sheet 4)





PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED  
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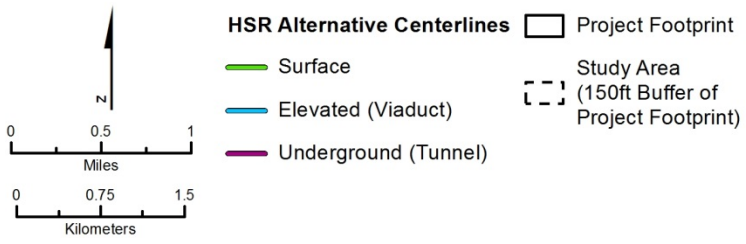
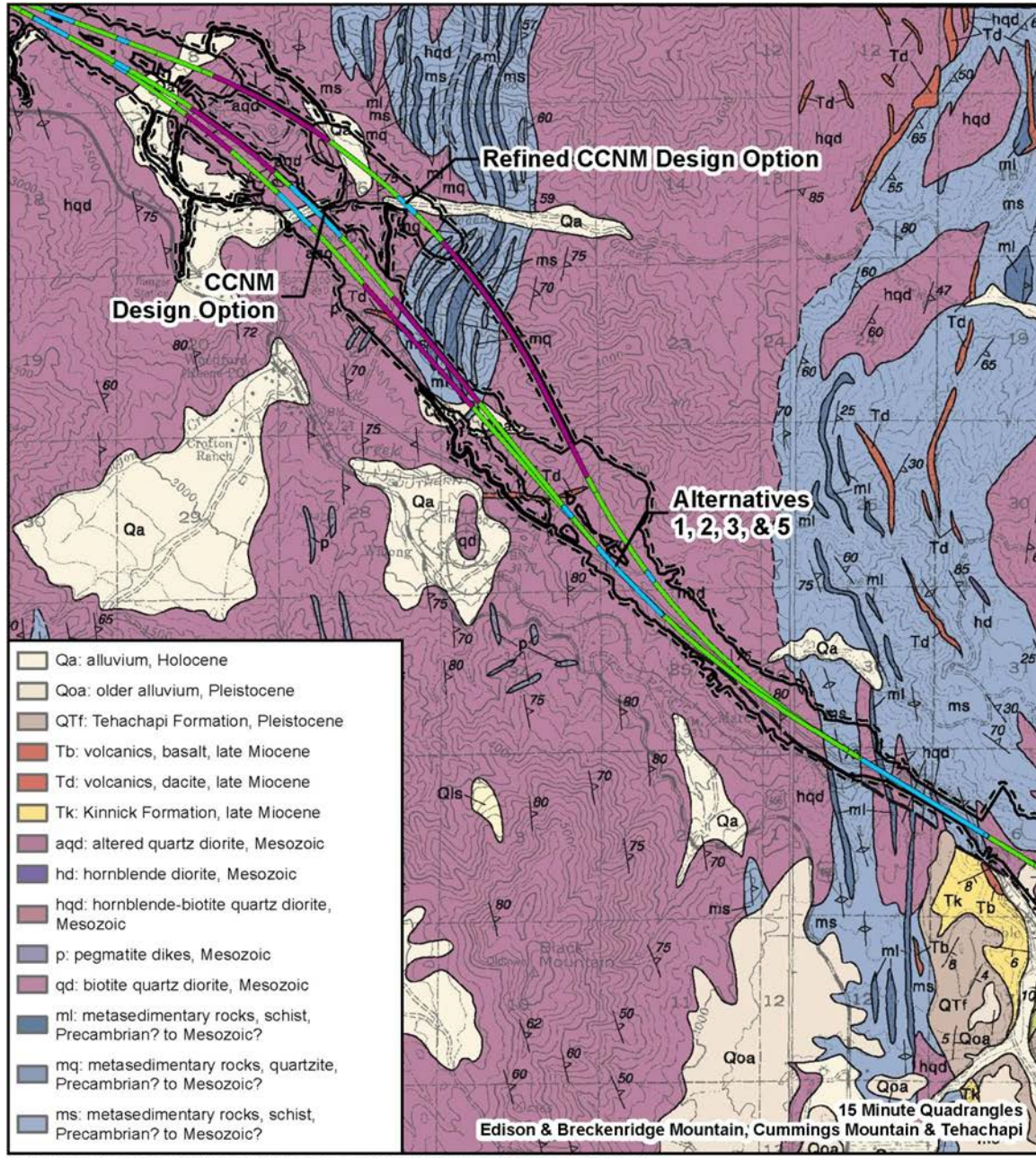


Figure 3.9-A-1 Geologic Map (Sheet 5)

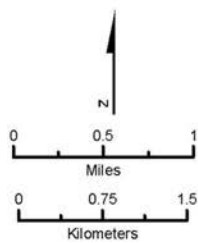




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SOURCE: Inset Background image from Esri/National Geographic (2019); Phase 4B CCNM Engineering data from CHSR (09/2019); Dibblee (2008a, b).

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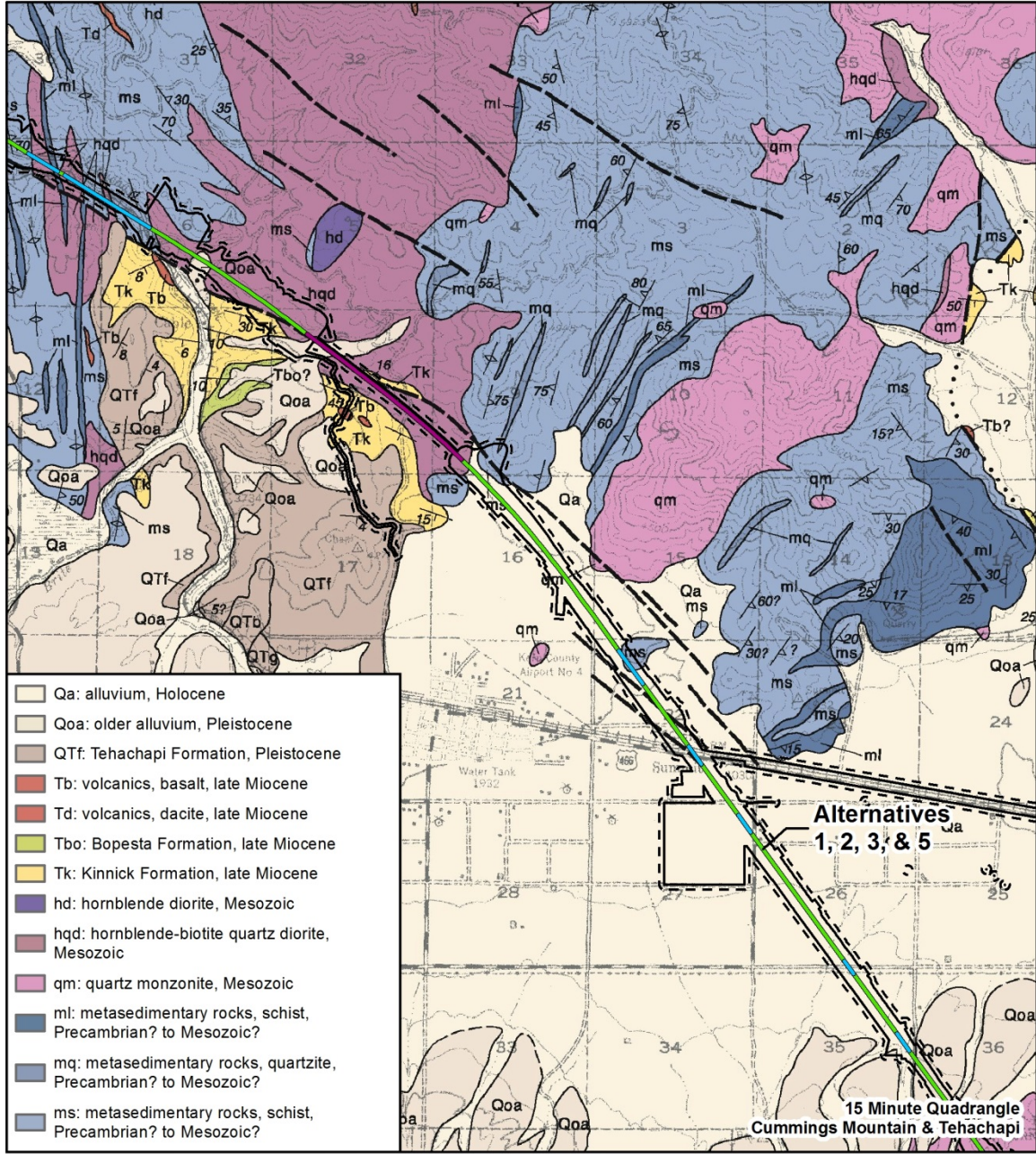
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 Surface  
 Elevated (Viaduct)  
 Underground (Tunnel); Tunnel

Project Footprint  
 Study Area (150ft Buffer of Project Footprint)



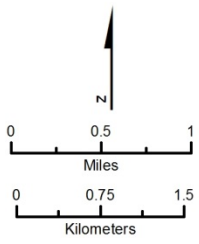
Figure 3.9-A-1 Geologic Map (Sheet 6)





PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED  
 SOURCE: Inset Background image from Esri/National Geographic (2016); Phase 4B Engineering data from CHSR (04/2016); Dibblee (2008a).

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**HSR Alternative Centerlines**

- Surface
- Elevated (Viaduct)
- Underground (Tunnel)

**Project Footprint**

- Project Footprint
- Study Area (150ft Buffer of Project Footprint)

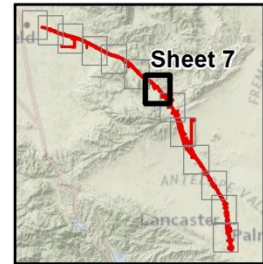
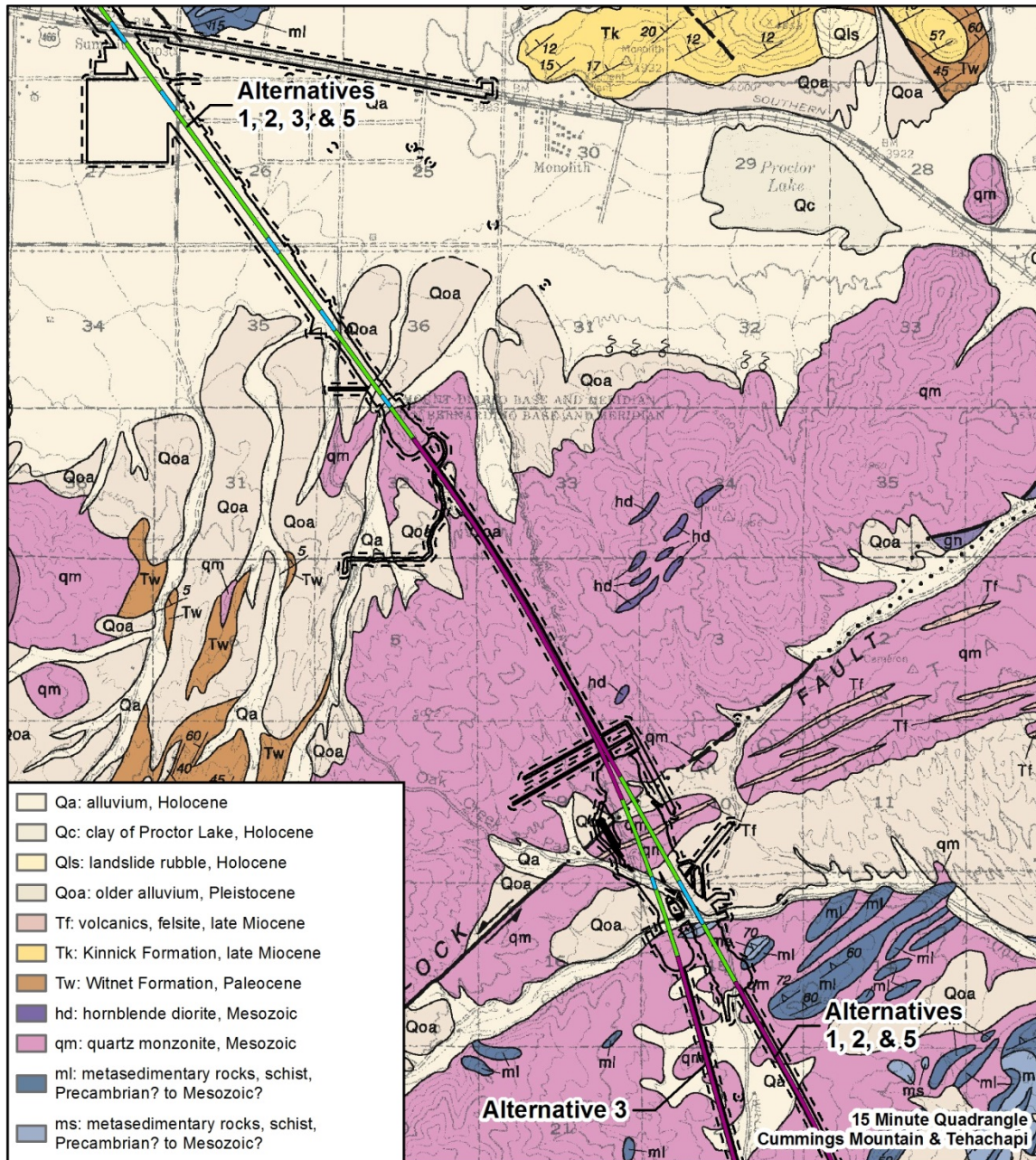


Figure 3.9-A-1 Geologic Map (Sheet 7)

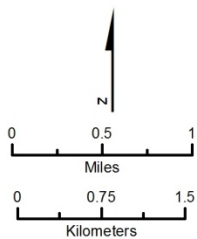




PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED

SOURCE: Inset Background image from Esri/National Geographic (2016); Phase 4B Engineering data from CHSR (04/2016); Dibblee (2008a).

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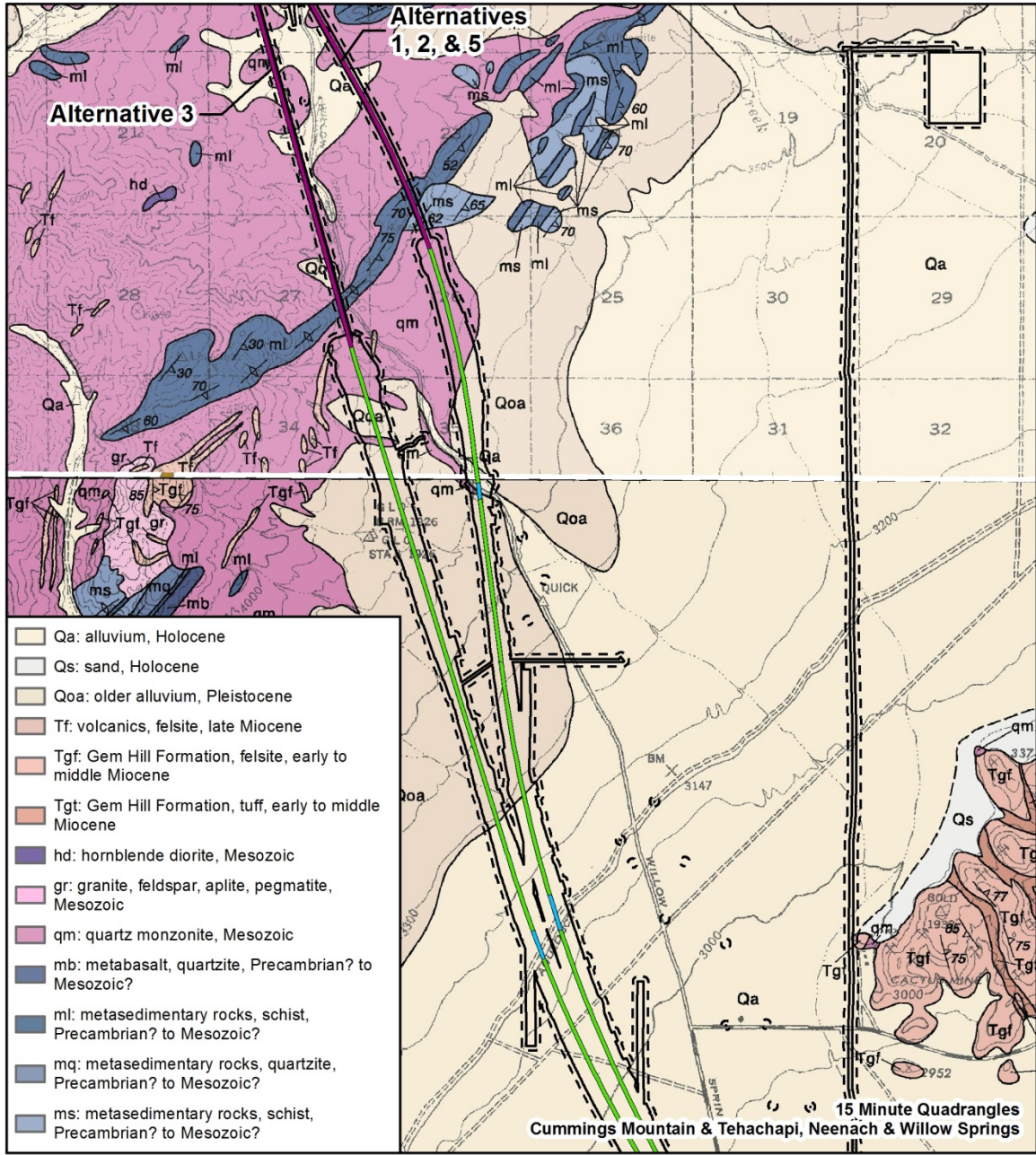


- HSR Alternative Centerlines**
  - Surface (green line)
  - Elevated (Viaduct) (blue line)
  - Underground (Tunnel) (purple line)
- Project Footprint** (solid black line)
- Study Area (150ft Buffer of Project Footprint)** (dashed black line)



Figure 3.9-A-1 Geologic Map (Sheet 8)





PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED  
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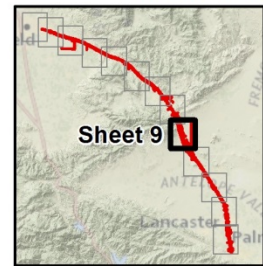
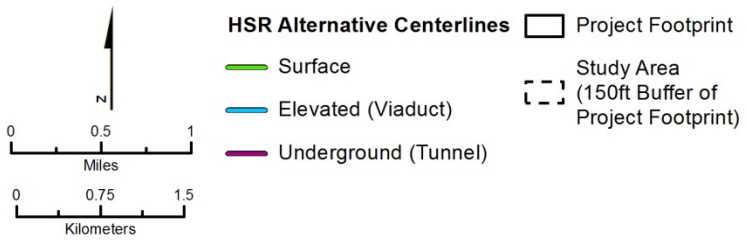
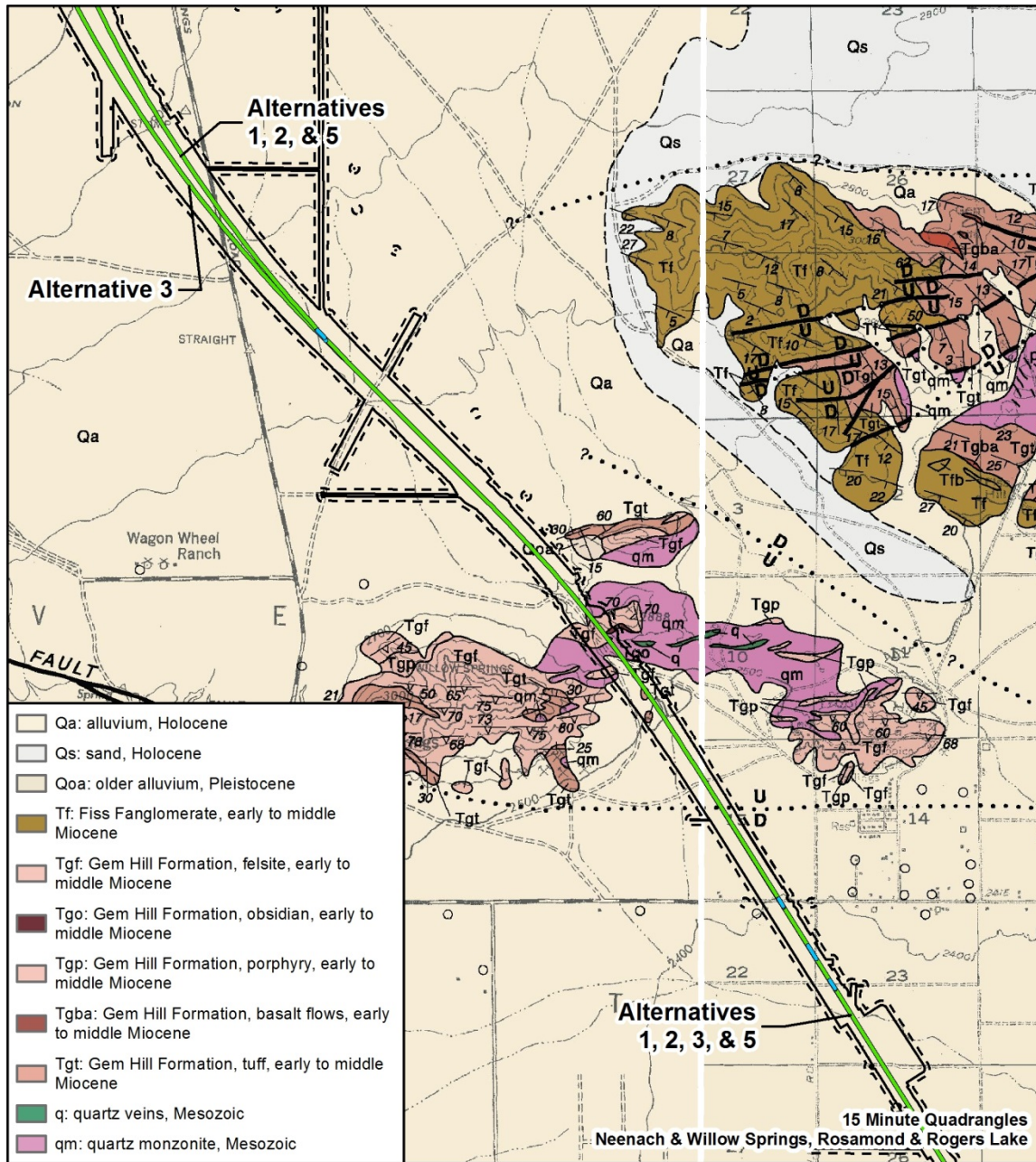


Figure 3.9-A-1 Geologic Map (Sheet 9)





PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED

SOURCE: Inset Background image from Esri/National Geographic (2016); Phase 4B Engineering data from CHSR (04/2016); Dibblee (2008d, e).

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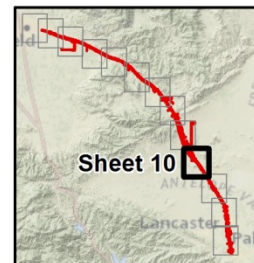
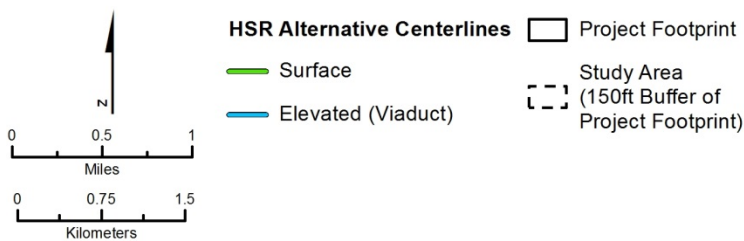
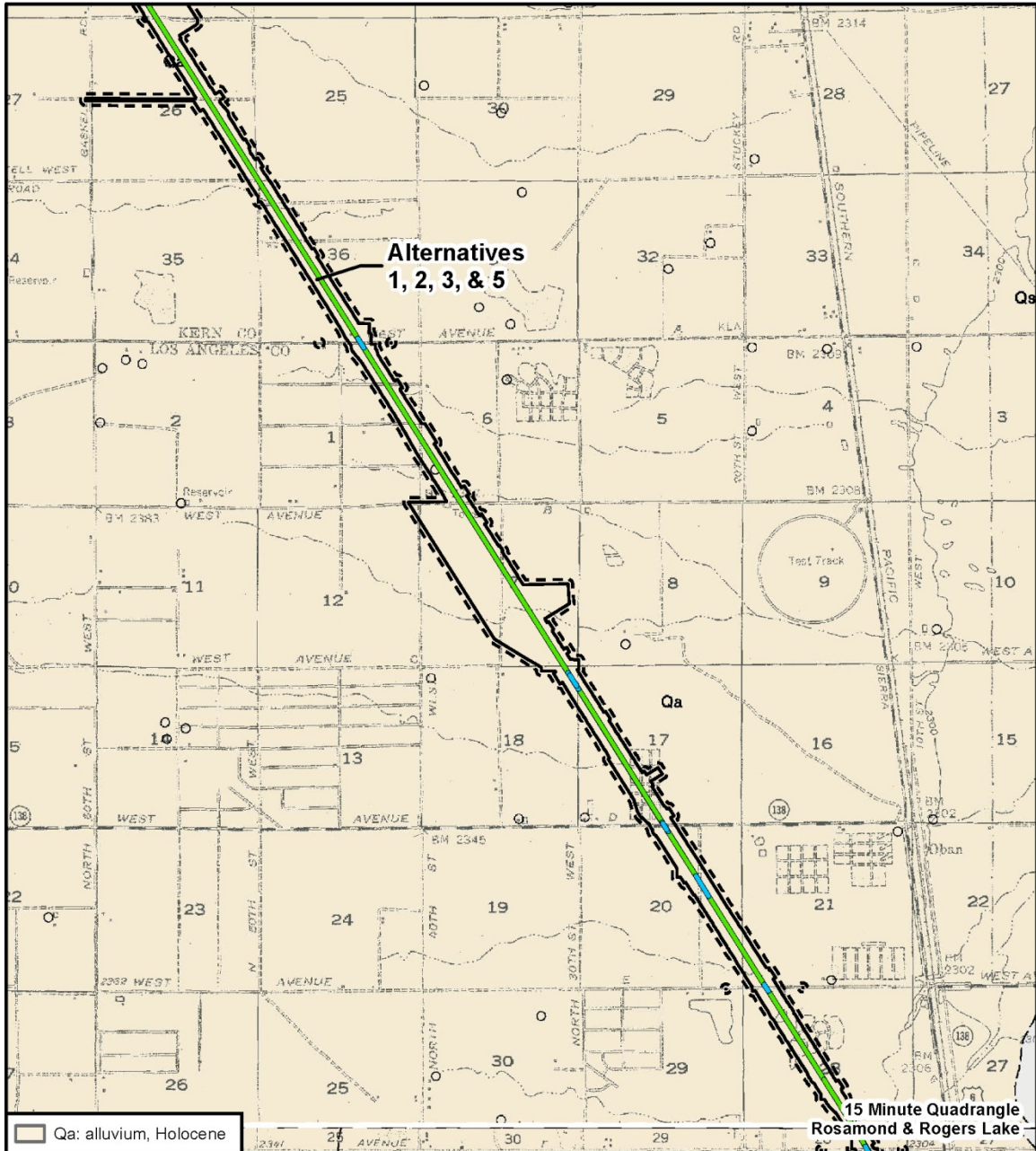


Figure 3.9-A-1 Geologic Map (Sheet 10)



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED  
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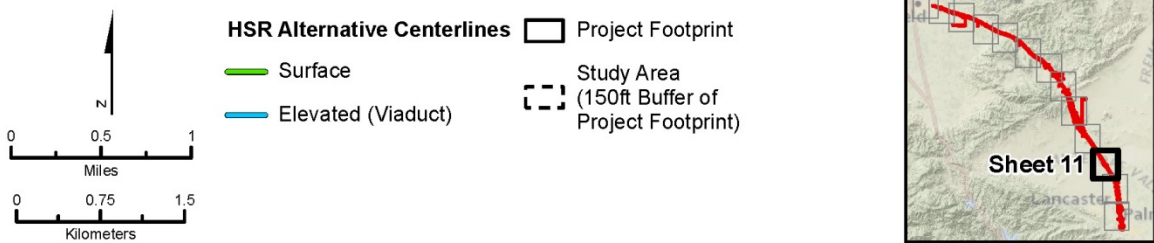
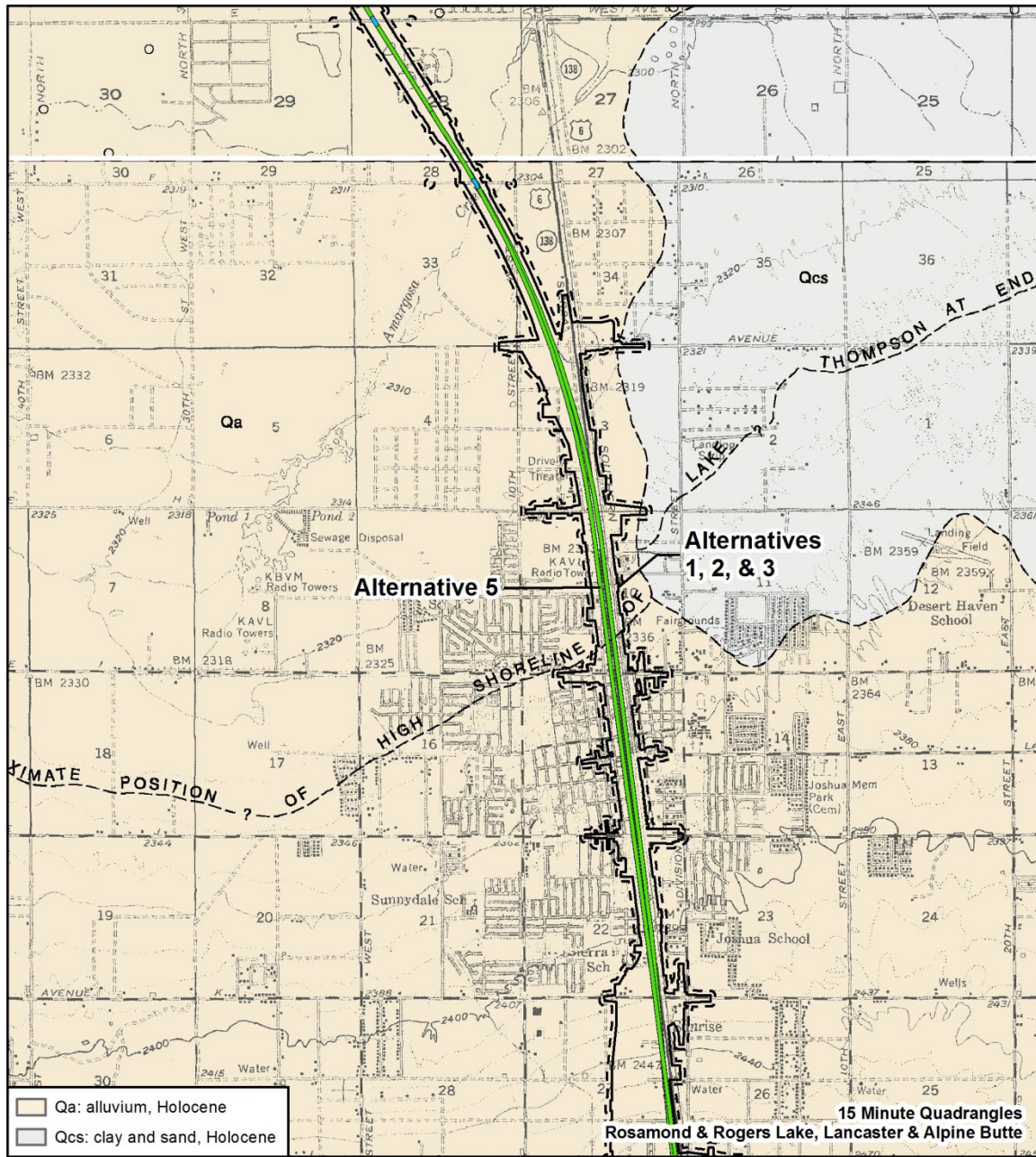


Figure 3.9-A-1 Geologic Map (Sheet 11)

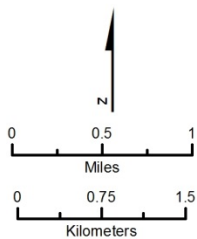




PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED

SOURCE: Inset Background image from Esri/National Geographic (2016); Phase 4B Engineering data from CHSR (04/2016); Dibblee (2008c, e).

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- HSR Alternative Centerlines**
- Surface (green line)
- Elevated (Viaduct) (blue line)
- Project Footprint (solid black line)
- Study Area (150ft Buffer of Project Footprint) (dashed black line)

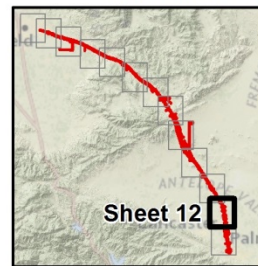
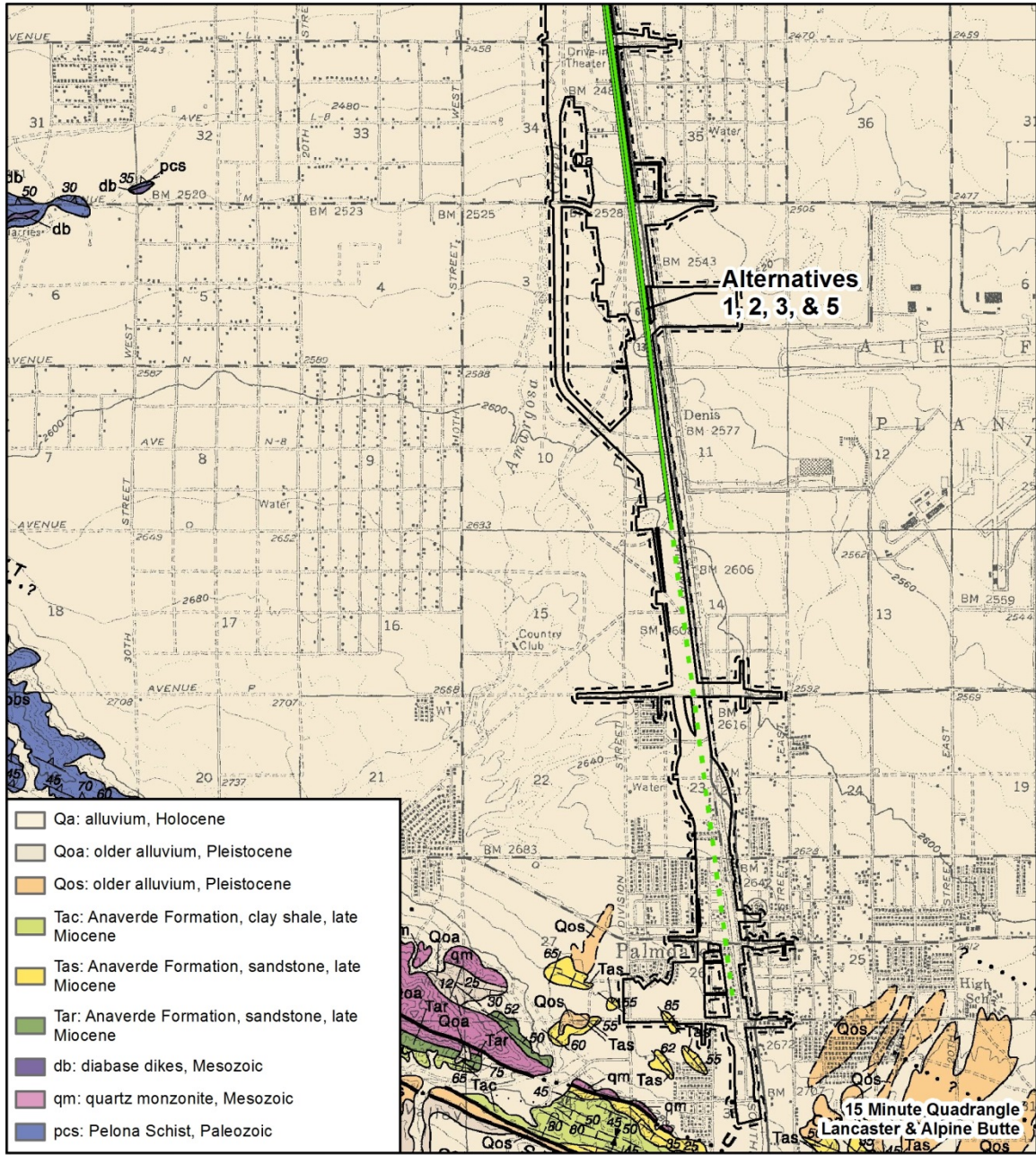


Figure 3.9-A-1 Geologic Map (Sheet 12)





PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED  
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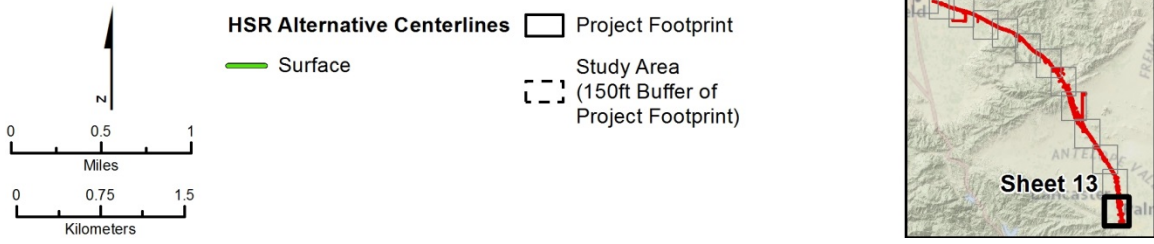
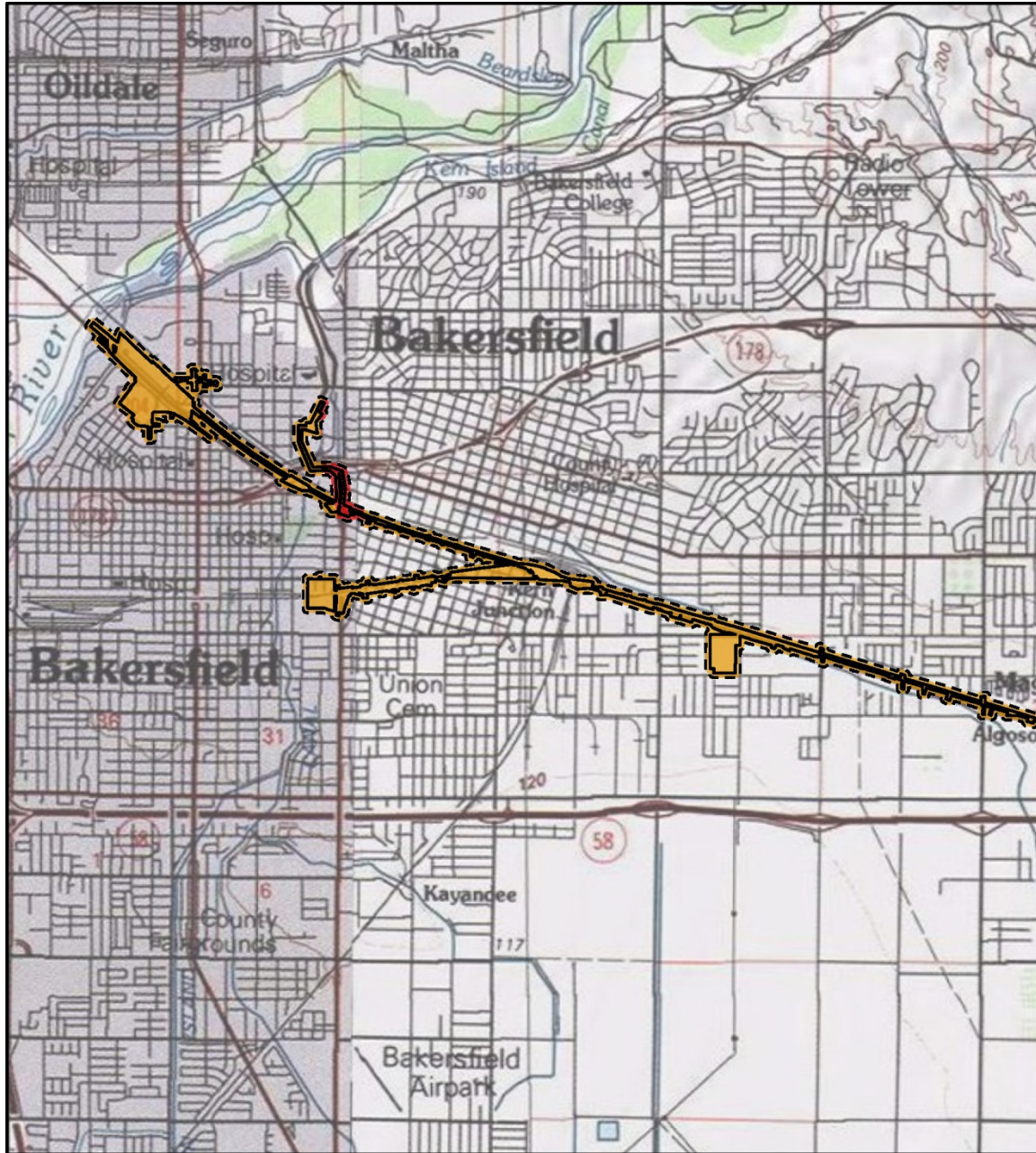
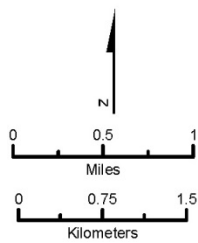


Figure 3.9-A-1 Geologic Map (Sheet 13)





PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED  
 SOURCE: USGS Topographic Quadrangles from Esri/National Geographic Society (2015);  
 Phase 4B Engineering Data from CHSR (04/2016).



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|-------------------------------------|--|
| <b>Paleontological Sensitivity</b>  | Project Footprint                              |
| High Sensitivity                    | Study Area (150ft Buffer of Project Footprint) |
| High Sensitivity Below 5-Foot Depth |  |

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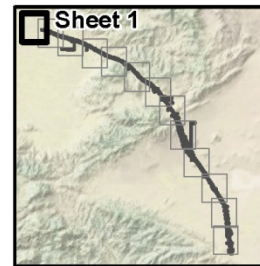
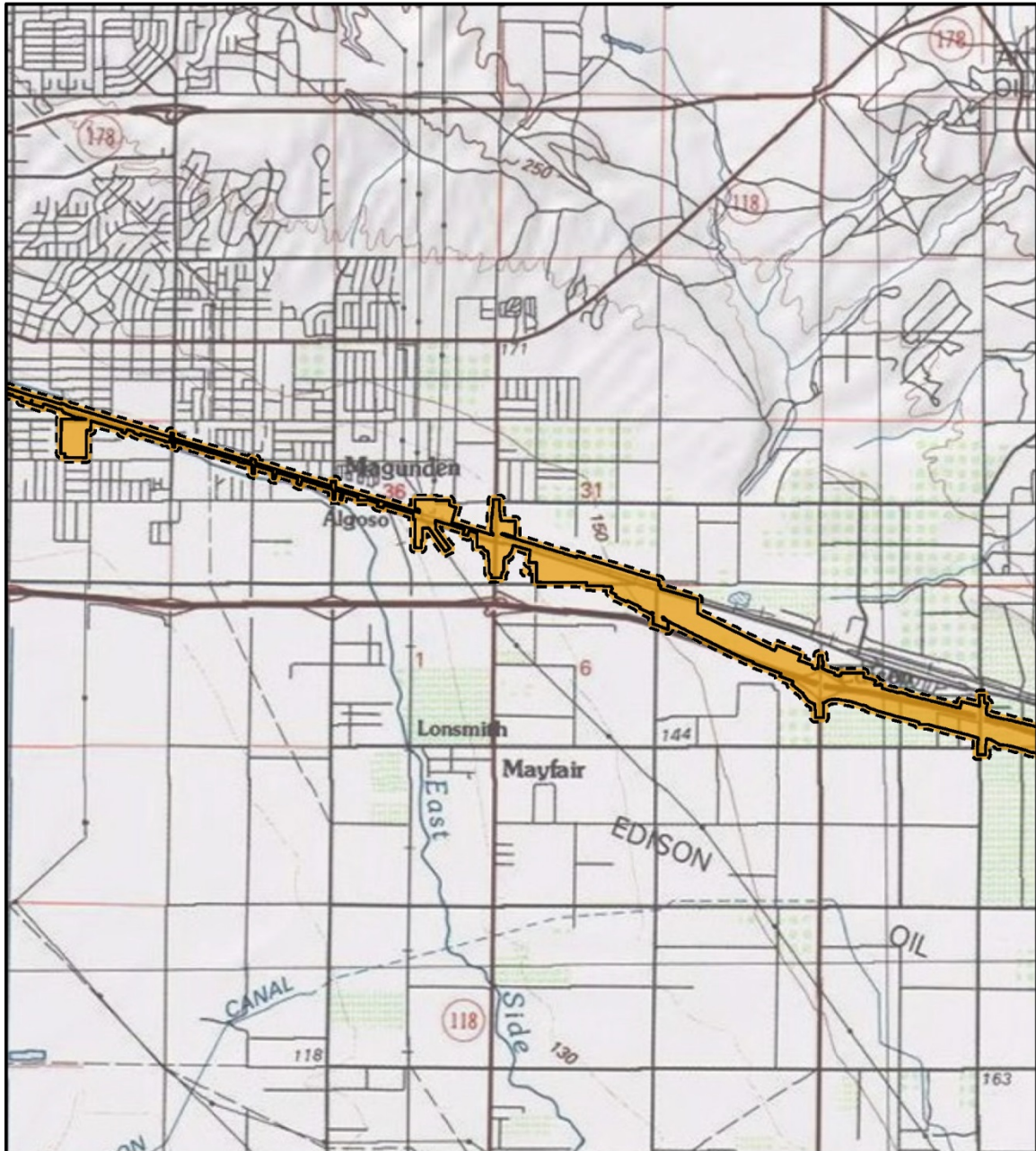


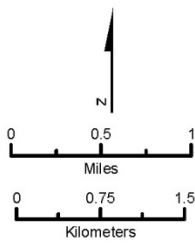
Figure 3.9-A-2 Paleontological Sensitivity (Sheet 1)



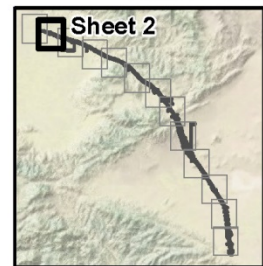


PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED  
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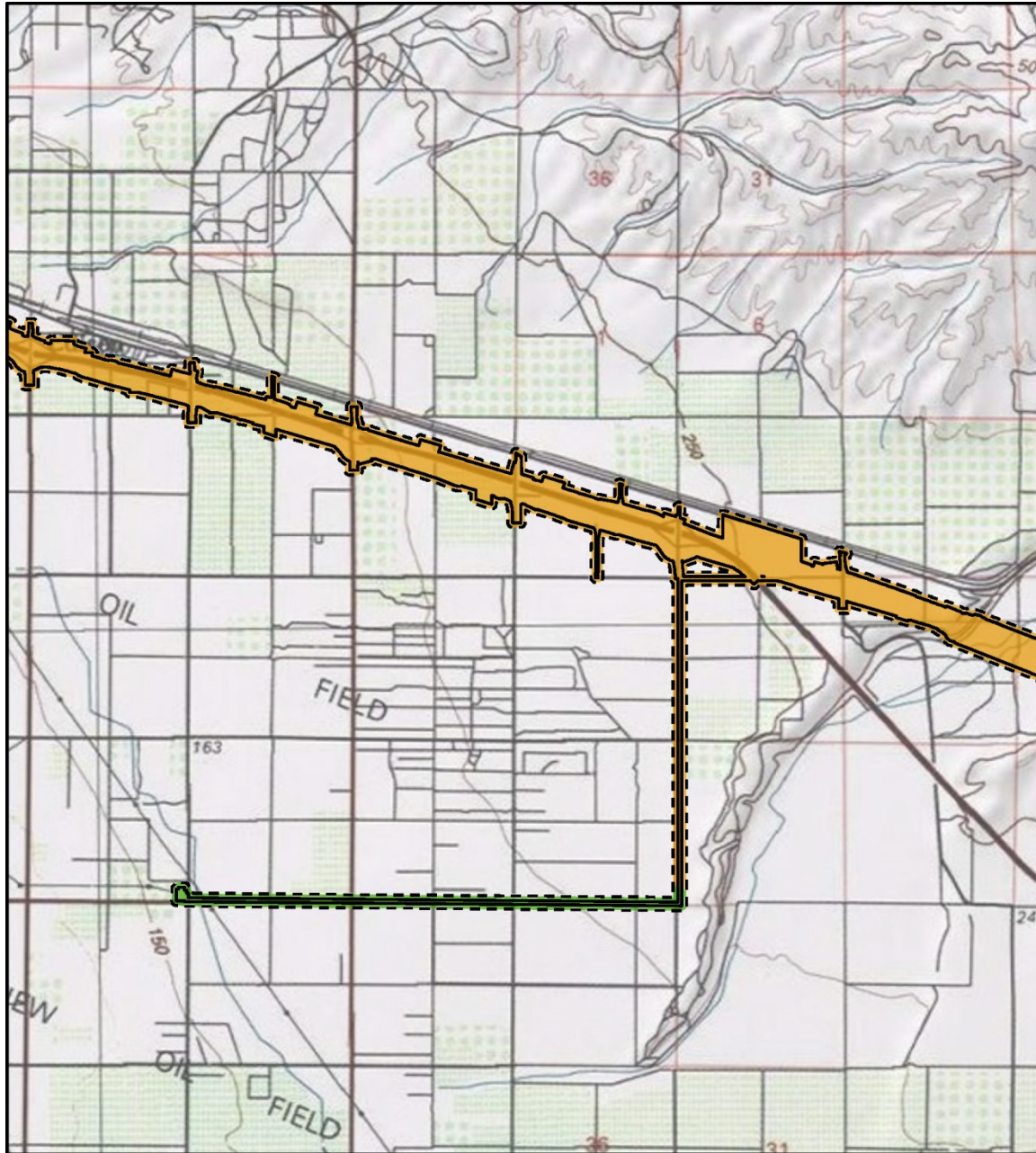
Sheet 2 of 13



- Paleontological Sensitivity**
- High Sensitivity Below 5-Foot Depth
  - Project Footprint
  - Study Area (150ft Buffer of Project Footprint)

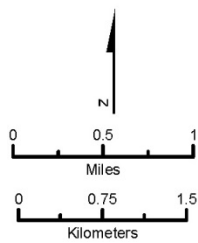


**Figure 3.9-A-2 Paleontological Sensitivity (Sheet 2)**

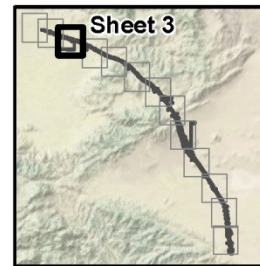


PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED  
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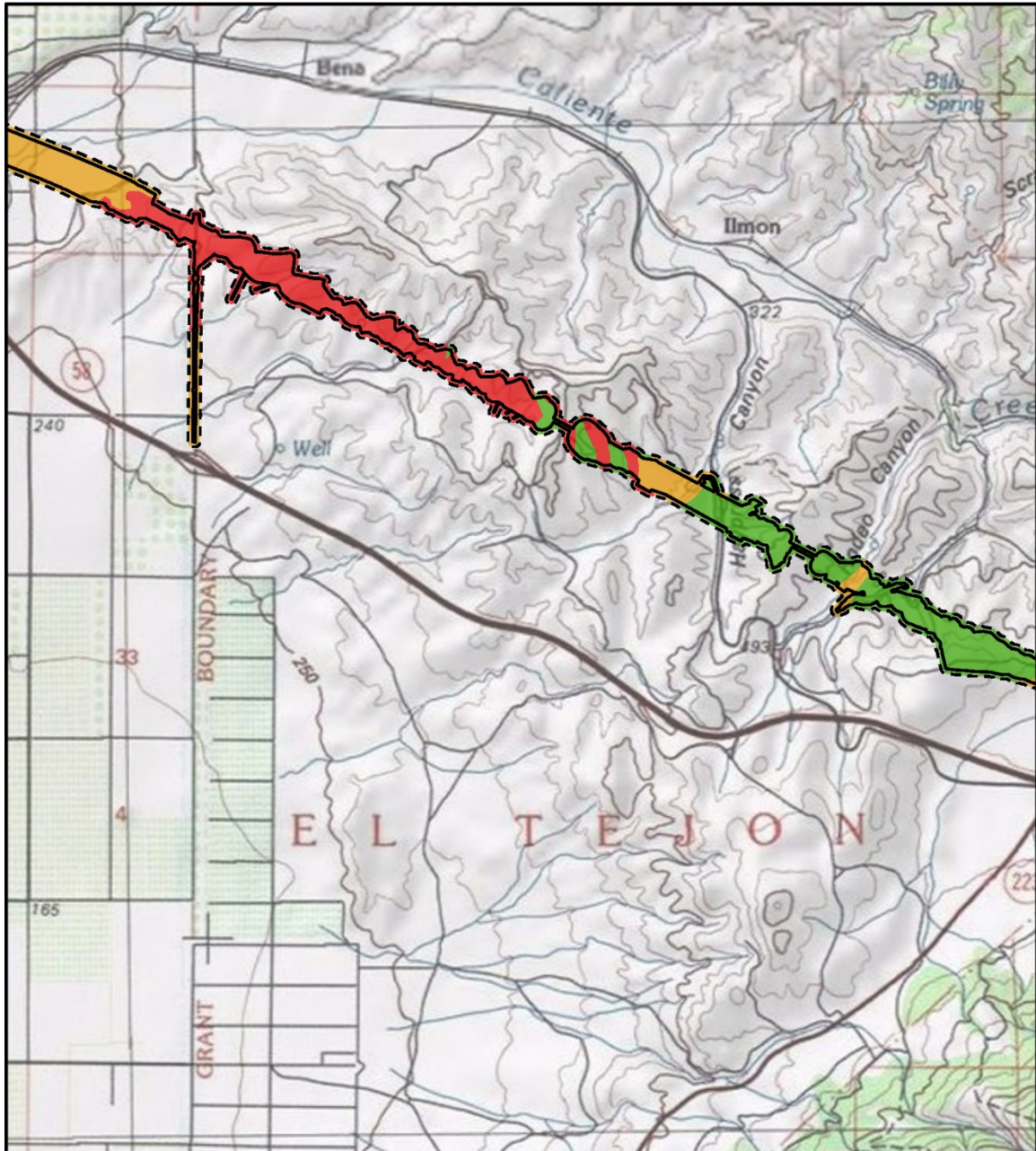


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| <b>Paleontological Sensitivity</b>  | Project Footprint                              |
| High Sensitivity Below 5-Foot Depth | Study Area (150ft Buffer of Project Footprint) |
| Low or No Sensitivity               |  |



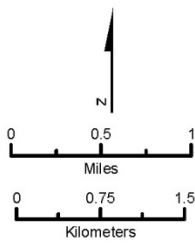
**Figure 3.9-A-2 Paleontological Sensitivity (Sheet 3)**





PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED  
 SOURCE: USGS Topographic Quadrangles from Esri/National Geographic Society (2015);  
 Phase 4B Engineering Data from CHSR (04/2016).

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|-------------------------------------|--|
| <b>Paleontological Sensitivity</b>  | Project Footprint                              |
| High Sensitivity                    | Study Area (150ft Buffer of Project Footprint) |
| High Sensitivity Below 5-Foot Depth |  |
| Low or No Sensitivity               |  |

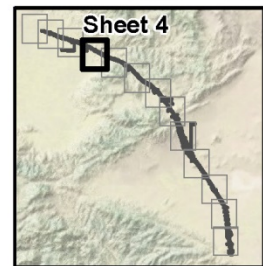
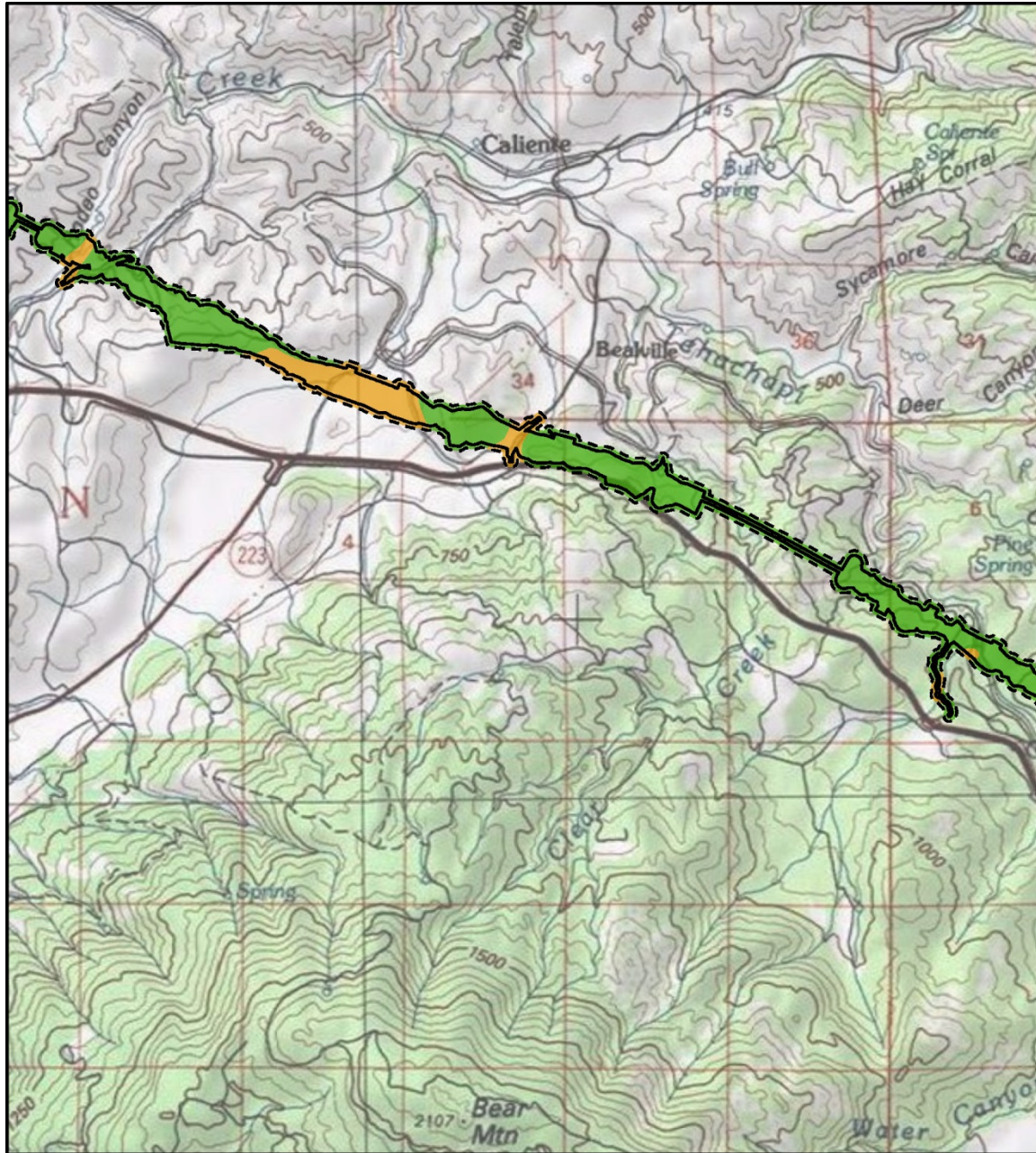
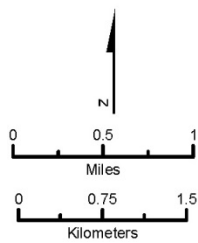


Figure 3.9-A-2 Paleontological Sensitivity (Sheet 4)



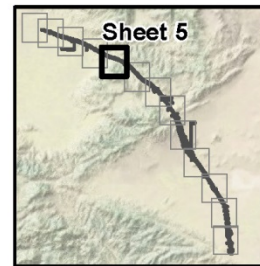


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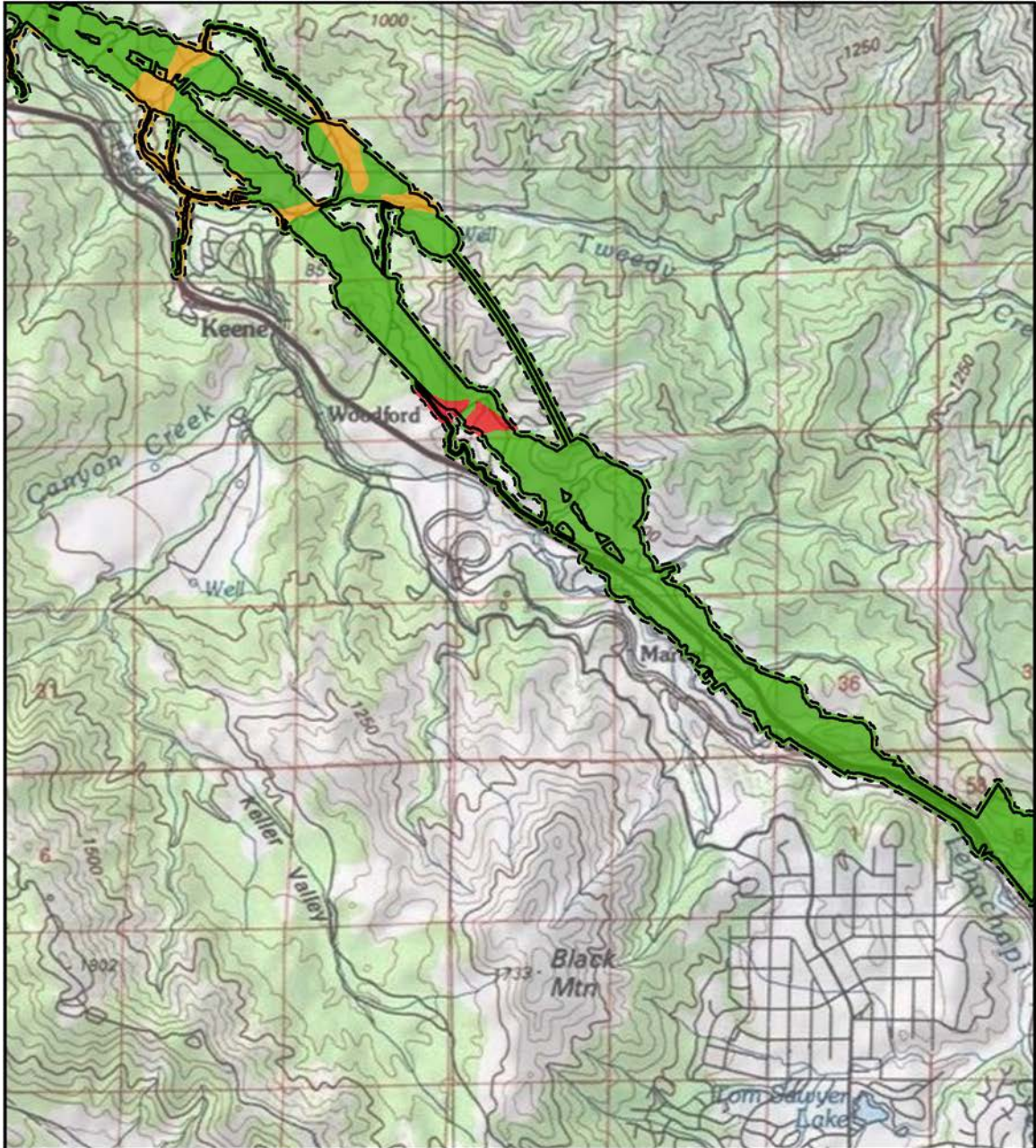
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| <b>Paleontological Sensitivity</b>  | Project Footprint                              |
| High Sensitivity Below 5-Foot Depth | Study Area (150ft Buffer of Project Footprint) |
| Low or No Sensitivity               |  |

Sheet 5 of 13



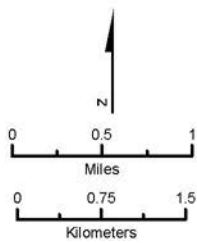
**Figure 3.9-A-2 Paleontological Sensitivity (Sheet 5)**





PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED  
 SOURCE: USGS Topographic Quandrangles from Esri/National Geographic Society (2019);  
 Phase 4B CCNM Engineering Data from CHSR (10/2019).

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|-------------------------------------|--|
| <b>Paleontological Sensitivity</b>  | Project Footprint                              |
| High Sensitivity                    | Study Area (150ft Buffer of Project Footprint) |
| High Sensitivity Below 5-Foot Depth |  |
| Low or No Sensitivity               |  |

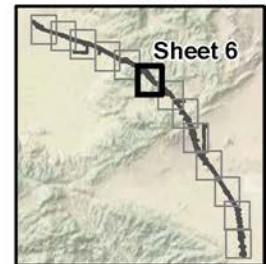
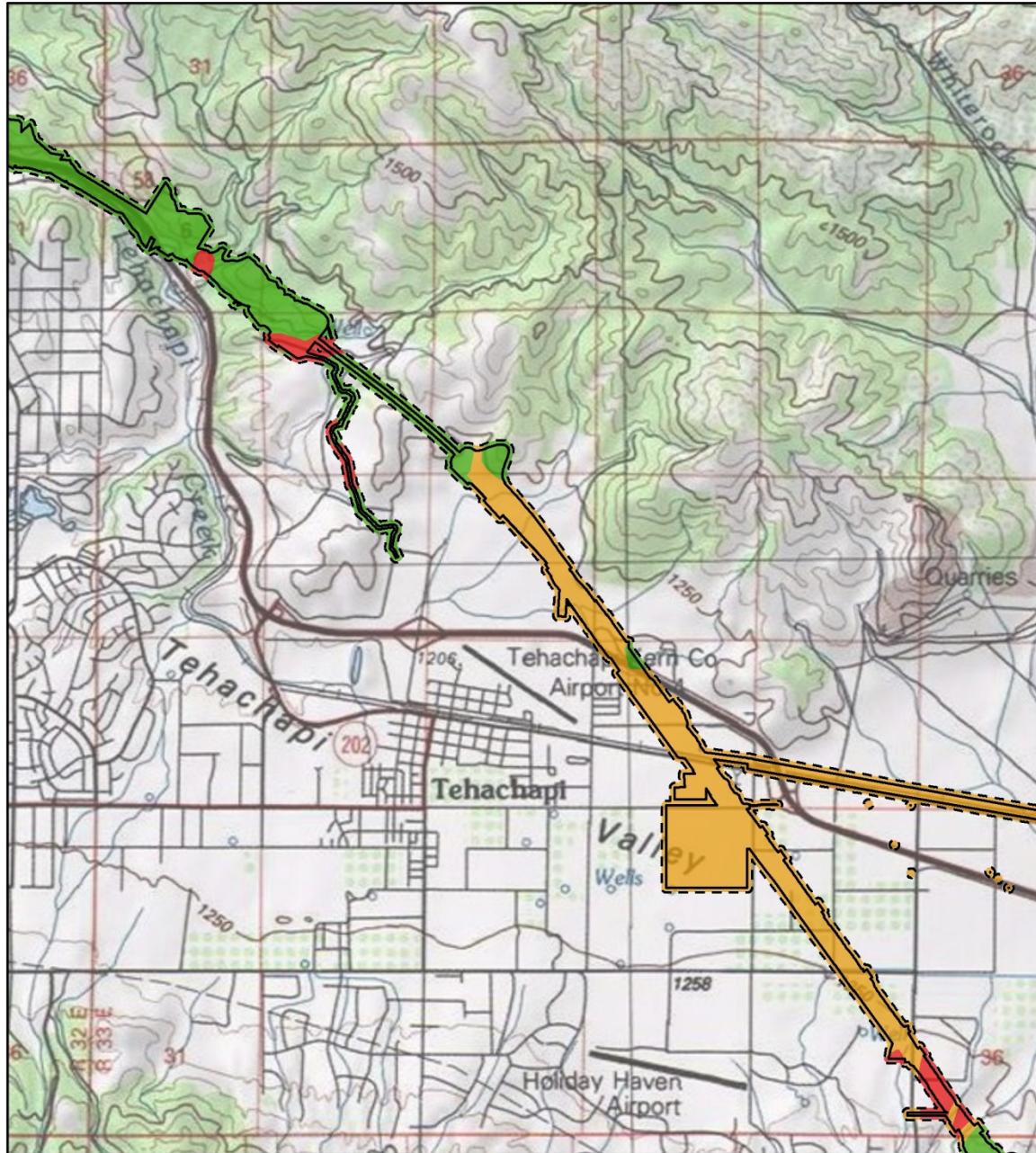


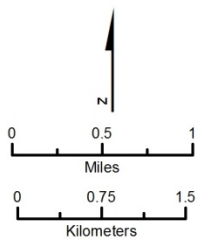
Figure 3.9-A-2 Paleontological Sensitivity (Sheet 6)



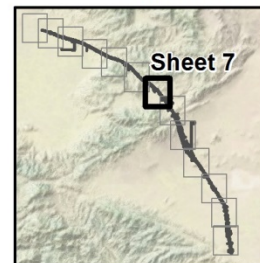


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 Phase 4B Engineering Data from CHSR (04/2016).

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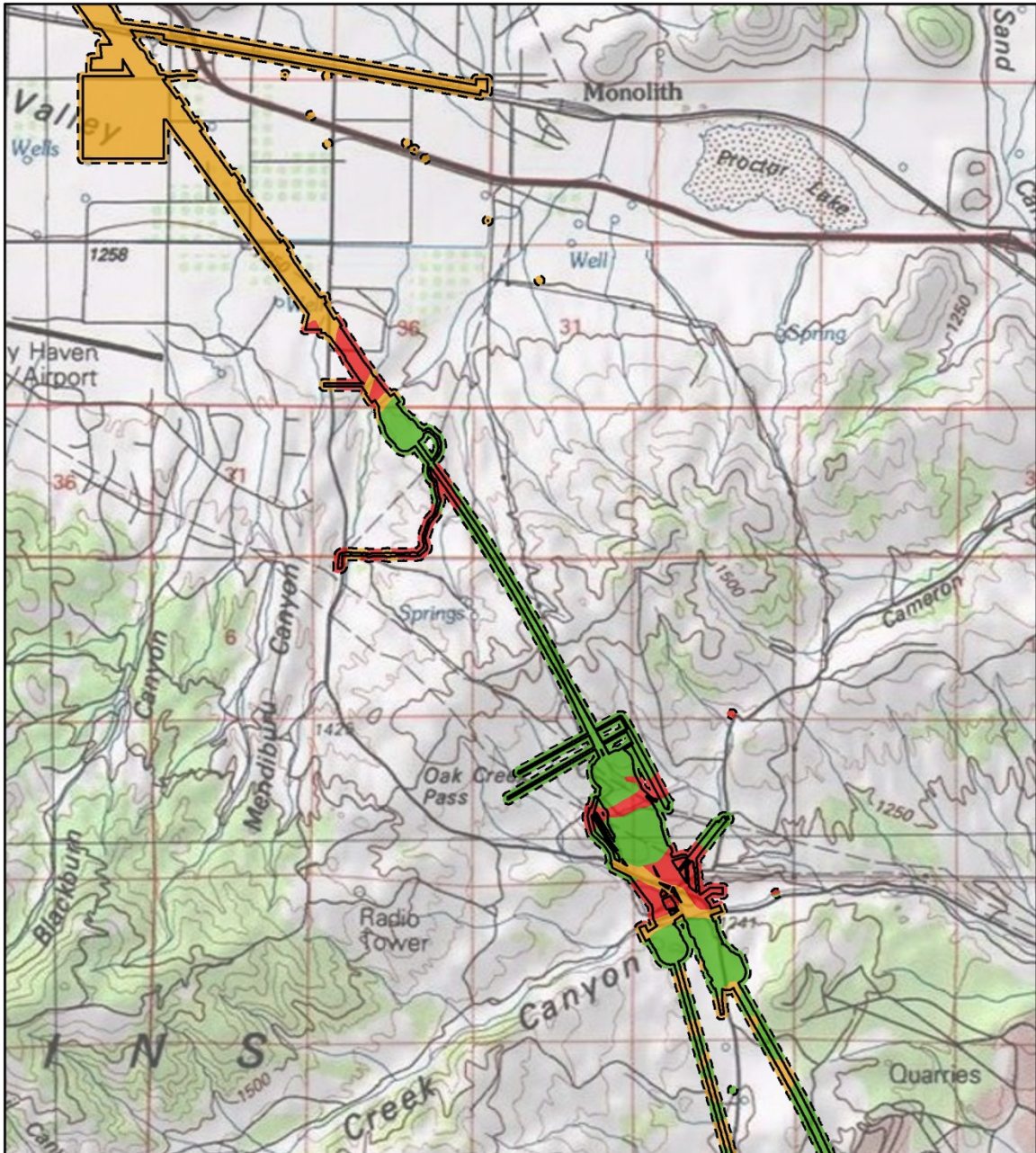


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|-------------------------------------|--|
| <b>Paleontological Sensitivity</b>  | Project Footprint                              |
| High Sensitivity                    | Study Area (150ft Buffer of Project Footprint) |
| High Sensitivity Below 5-Foot Depth |  |
| Low or No Sensitivity               |  |



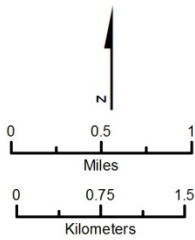
**Figure 3.9-A-2 Paleontological Sensitivity (Sheet 7)**





PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED  
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 Phase 4B Engineering Data from CHSR (04/2016).

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- |                                     |                                     |
|-------------------------------------|-------------------------------------|
| <b>Paleontological Sensitivity</b>  | Project Footprint                   |
| High Sensitivity                    | Study Area                          |
| High Sensitivity Below 5-Foot Depth | (150ft Buffer of Project Footprint) |
| Low or No Sensitivity               |                                     |

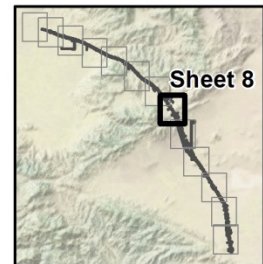
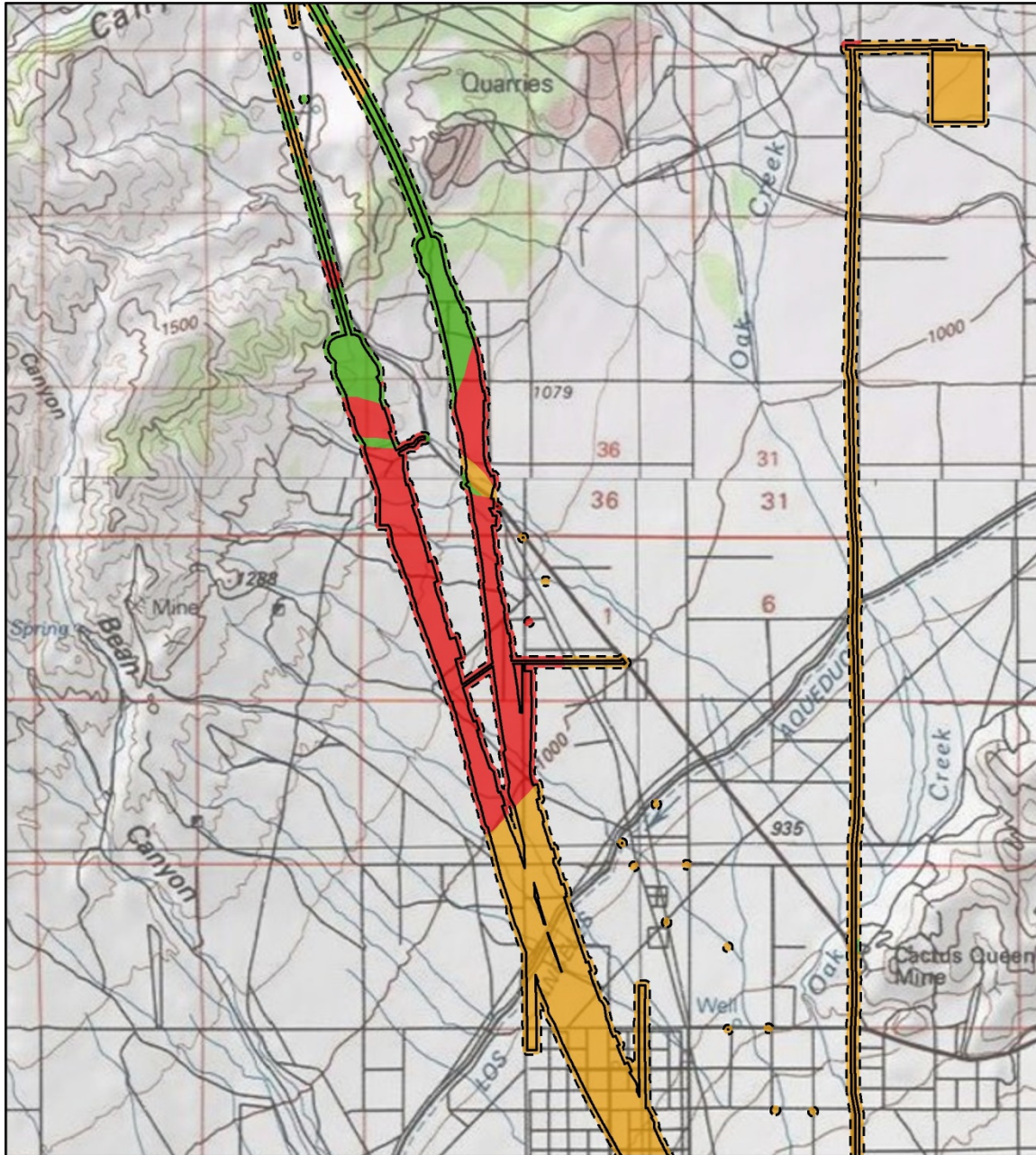


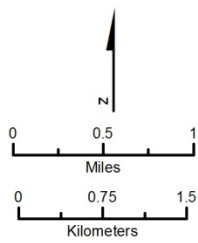
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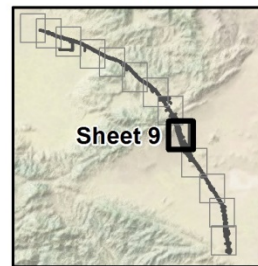


PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED  
 SOURCE: USGS Topographic Quandrangles from Esri/National Geographic Society (2015);  
 Phase 4B Engineering Data from CHSR (04/2016).

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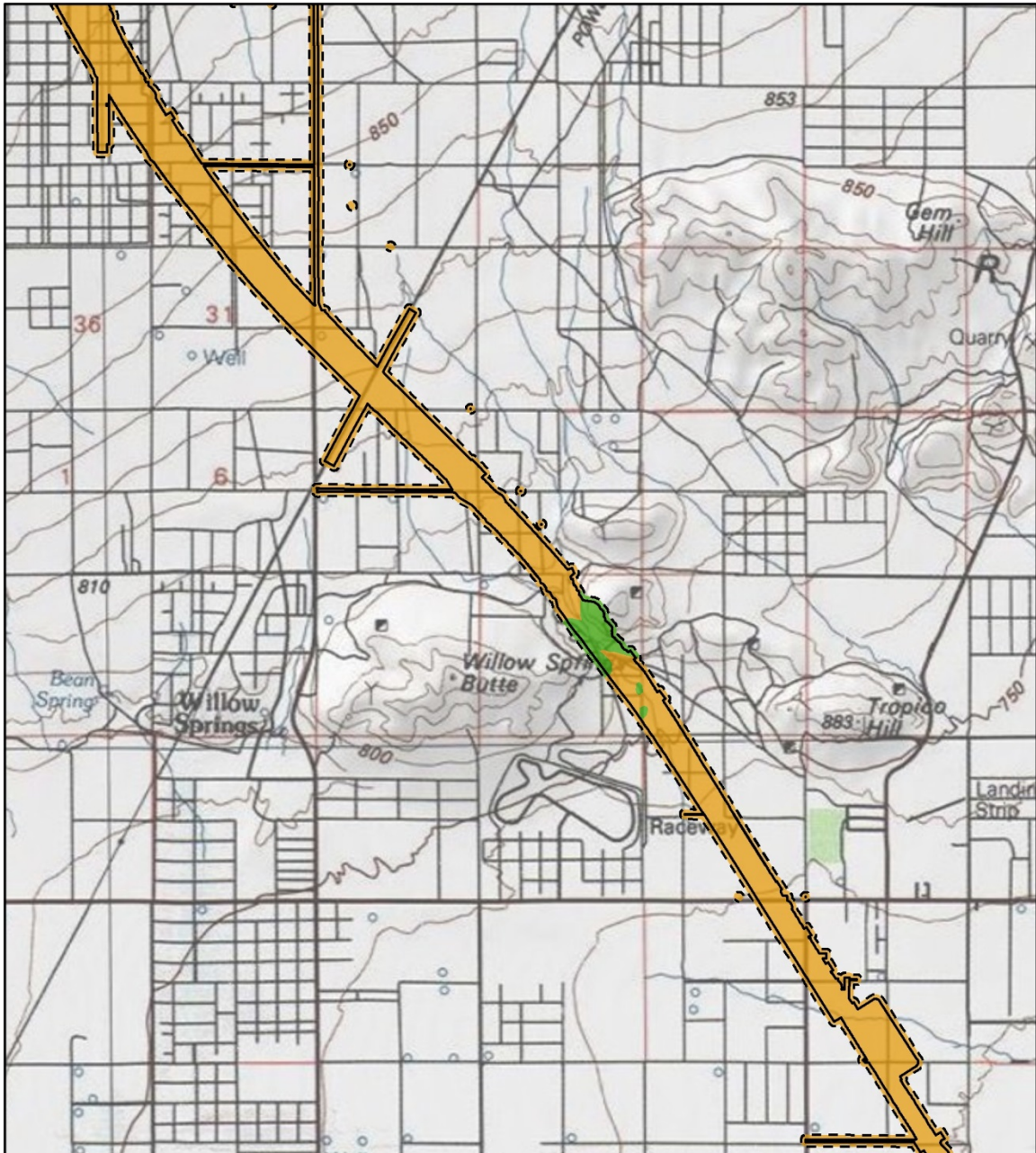


- |                                     |  |
|-------------------------------------|--|
| <b>Paleontological Sensitivity</b>  | Project Footprint                              |
| High Sensitivity                    | Study Area (150ft Buffer of Project Footprint) |
| High Sensitivity Below 5-Foot Depth |  |
| Low or No Sensitivity               |  |



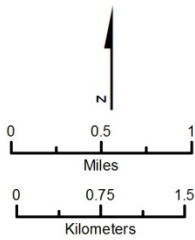
**Figure 3.9-A-2 Paleontological Sensitivity (Sheet 9)**





PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED  
 SOURCE: USGS Topographic Quandrangles from Esri/National Geographic Society (2015);  
 Phase 4B Engineering Data from CHSR (04/2016).

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- |                                     |  |
|-------------------------------------|--|
| <b>Paleontological Sensitivity</b>  | Project Footprint                              |
| High Sensitivity Below 5-Foot Depth | Study Area (150ft Buffer of Project Footprint) |
| Low or No Sensitivity               |  |

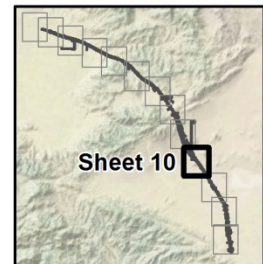
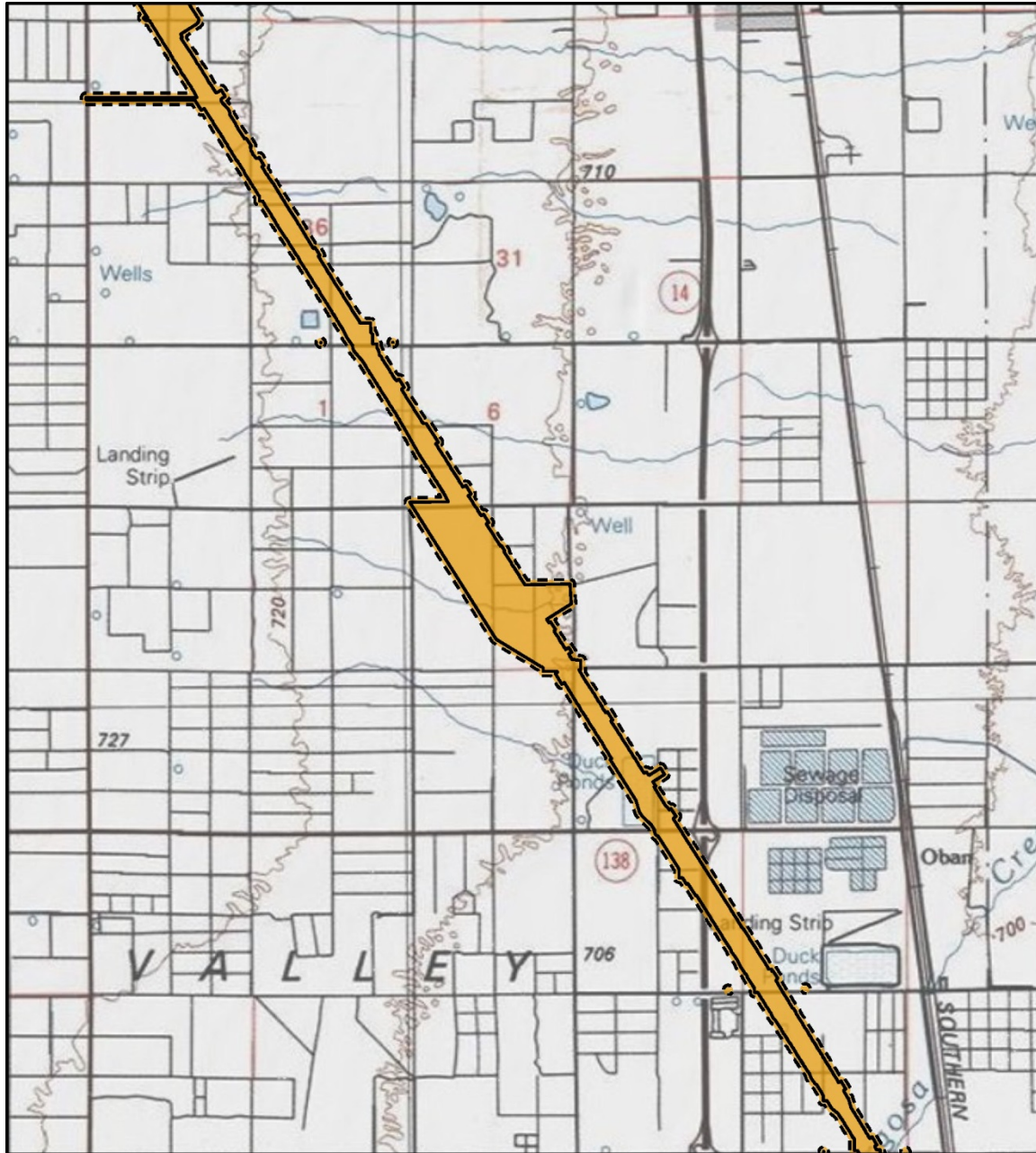
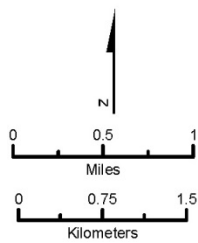


Figure 3.9-A-2 Paleontological Sensitivity (Sheet 10)

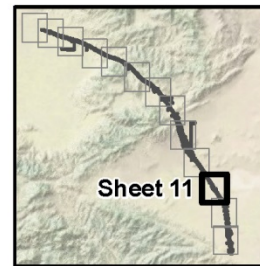


PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED  
 SOURCE: USGS Topographic Quadrangles from Esri/National Geographic Society (2015);  
 Phase 4B Engineering Data from CHSR (04/2016).

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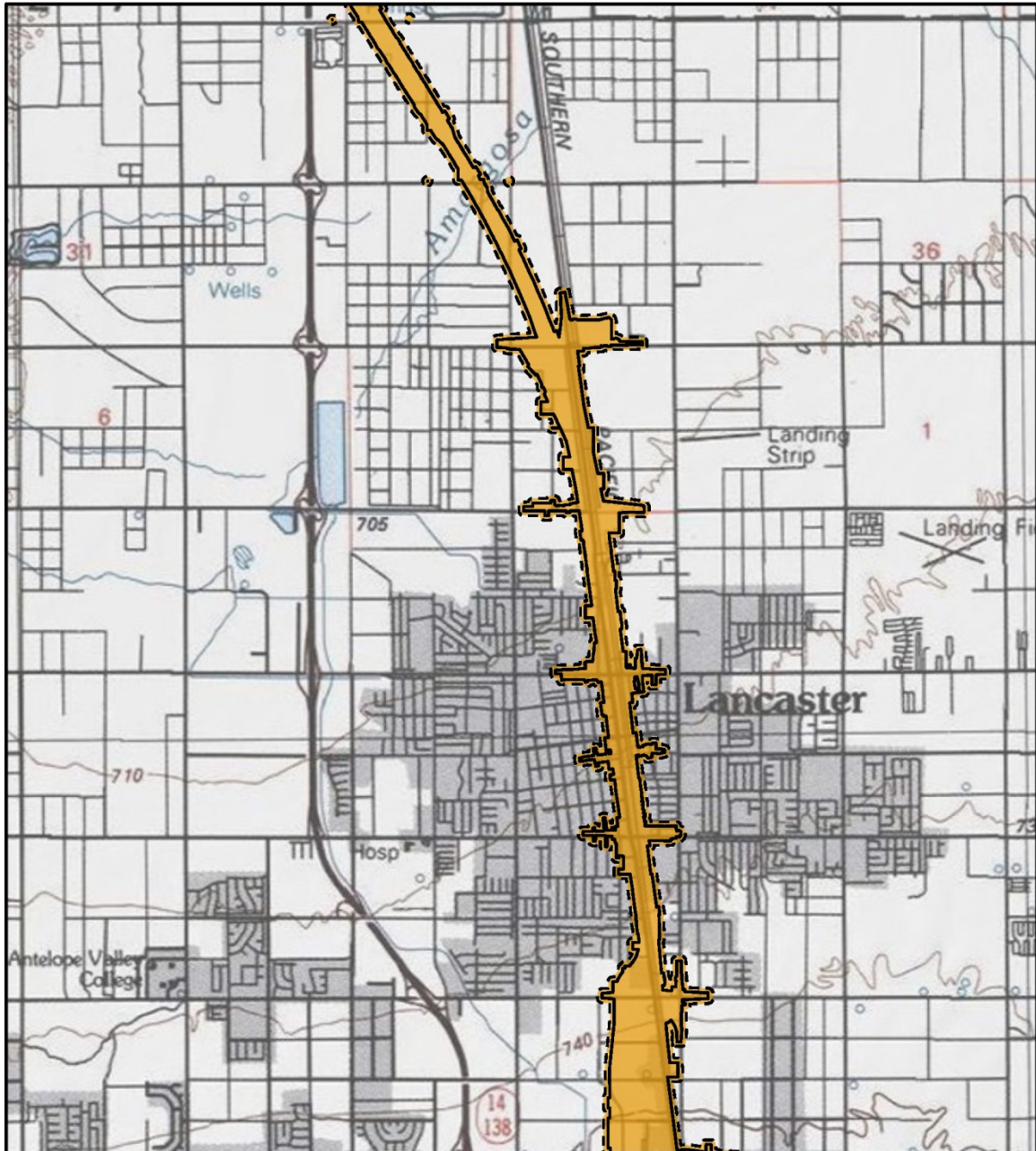


- Paleontological Sensitivity**
- High Sensitivity Below 5-Foot Depth
- Project Footprint
- Study Area (150ft Buffer of Project Footprint)

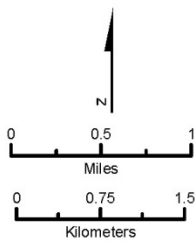


**Figure 3.9-A-2 Paleontological Sensitivity (Sheet 11)**





PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED  
 SOURCE: USGS Topographic Quandrangles from Esri/National Geographic Society (2015);  
 Phase 4B Engineering Data from CHSR (04/2016).



- Paleontological Sensitivity**
- High Sensitivity Below 5-Foot Depth
  - Project Footprint
  - Study Area (150ft Buffer of Project Footprint)

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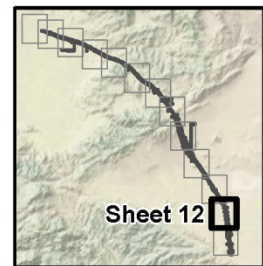
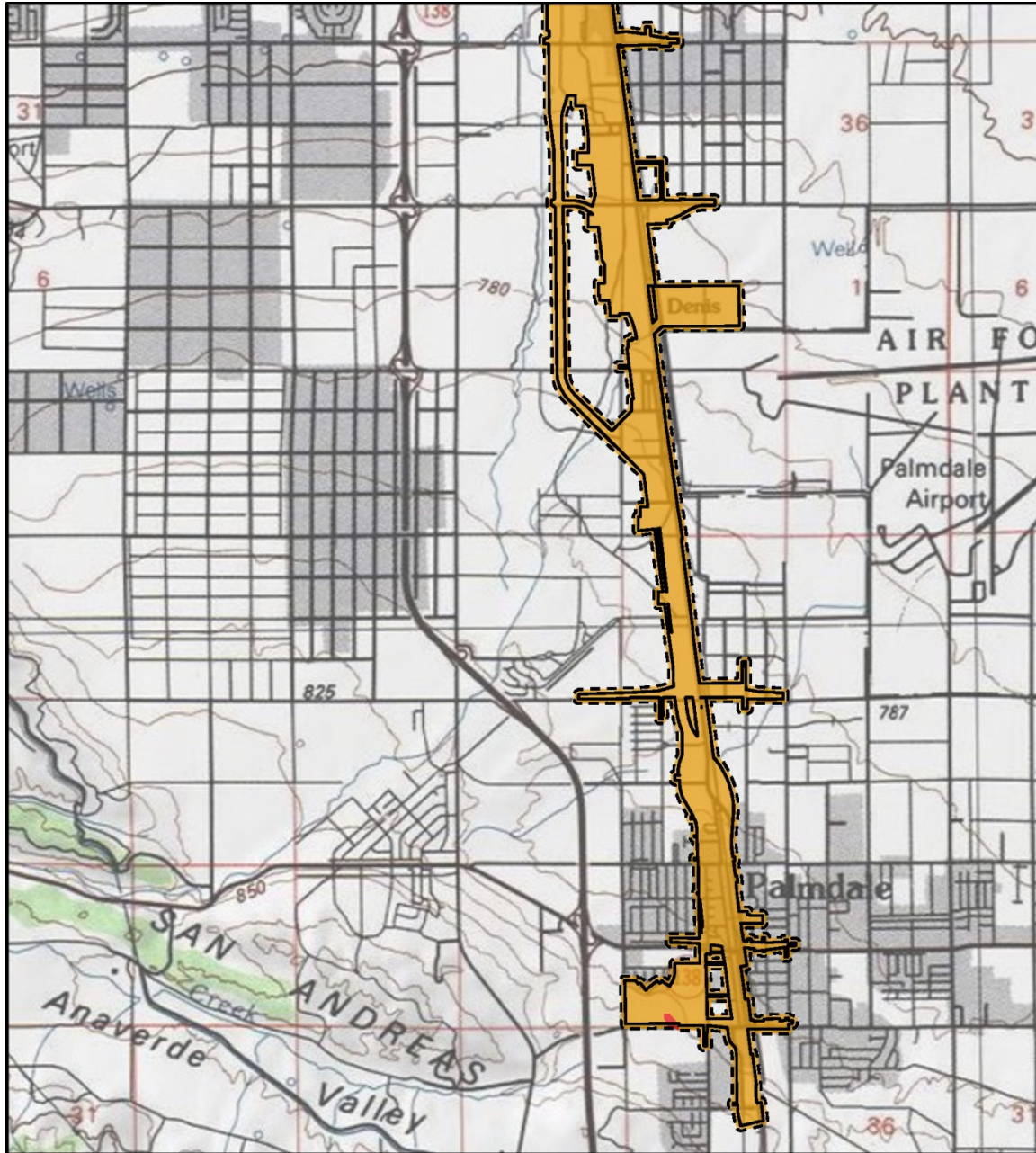
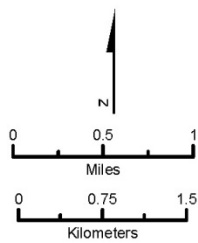


Figure 3.9-A-2 Paleontological Sensitivity (Sheet 12)

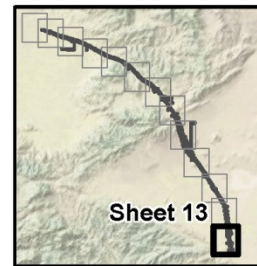


PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED  
 SOURCE: USGS Topographic Quadrangles from Esri/National Geographic Society (2015);  
 Phase 4B Engineering Data from CHSR (04/2016).



- |                                     |  |
|-------------------------------------|--|
| <b>Paleontological Sensitivity</b>  | Project Footprint                              |
| High Sensitivity                    | Study Area (150ft Buffer of Project Footprint) |
| High Sensitivity Below 5-Foot Depth |  |

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**Figure 3.9-A-2 Paleontological Sensitivity (Sheet 13)**



**Table 3.9-A-1 Segments of Alternative 1 with “High” and “High at Depth” Paleontological Sensitivity**

Figure	Station Start	Station End (from North)	Geological Units/ Sensitivity	Miles
3.9-11	17285	17875	Qa/(high at depth)	11.8
3.9-11	17875	17937	QTKr/(high)	1.24
3.9-11	17937	17942	Tbe/(high)	0.10
3.9-11	17942	17956	QTKr/(high)	0.30
3.9-11	17956	18033	Tbe/(high)	1.54
3.9-11	18040	18045	Tbe/(high)	0.10
3.9-11	18052	18057	Tbe/(high)	0.10
3.9-11	18064	18069	Tbe/(high)	0.10
3.9-11	18069	18090	Qa/(high at depth)	0.40
3.9-11	18148	18153	Qa/(high at depth)	0.10
3.9-11	18220	18273	Qa/(high at depth)	1.10
3.9-11	18299	18306	Qa/(high at depth)	0.14
3.9-11	18468	18472	Qa/(high at depth)	0.08
3.9-11	18505	18518	Qa/(high at depth)	0.26
3.9-11	18552	18555	Qa/(high at depth)	0.06
3.9-11	18569	18572	Qa/(high at depth)	0.06
3.9-11	18653	18657	Qoa/(high)	0.07
3.9-11	18659	18668	Qoa/(high)	0.18
3.9-11	18891	18898	Qoa/(high)	0.14
3.9-11	18945	18950	Qoa/(high)	0.10
3.9-11	19003	19082	Qa/(high at depth)	1.58
3.9-11	19092	19250	Qa/(high at depth)	3.16
3.9-11	19250	19270	Qoa/(high)	0.40
3.9-11	19270	19272	Qa/(high at depth)	0.05
3.9-11	19272	19275	Qoa/(high)	0.07
3.9-11	19275	19277	Qa/(high at depth)	0.05
3.9-11	19302	19319	Qoa/(high)	0.35
3.9-11	19425	19434	Qoa/(high)	0.20
3.9-11	19447	19470	Qoa/(high)	0.50
3.9-11	19470	19473	Qa/(high at depth)	0.05
3.9-11	19495	19504	Qa/(high at depth)	0.18
3.9-11	19508	19514	Qa/(high at depth)	0.12
3.9-11	19521	19535	Qa/(high at depth)	0.28
3.9-11	19630	19663	Qoa/(high)	0.70
3.9-11	19663	19668	Qa/(high at depth)	0.10
3.9-11	19670	19770	Qoa/(high)	2.00

Figure	Station Start	Station End (from North)	Geological Units/ Sensitivity	Miles
3.9-11	19770	20125	Qa/(high at depth)	7.10
3.9-11	20155	21268	Qa/(high at depth)	21.2
<b>Approximate total miles of “high” paleontological sensitivity in Alternative 1</b>				<b>8.9</b>
<b>Approximate total miles of “high at depth” paleontological sensitivity in Alternative 1</b>				<b>48.32</b>

**Table 3.9-A-2 Segments of Alternative 2 with “High” and “High at Depth” Paleontological Sensitivity**

Figure	Station Start	Station End (from North)	Geological Units/ Sensitivity	Miles
3.9-11	17285	17875	Qa/(high at depth)	11.8
3.9-11	17875	17937	QTkr/(high)	1.24
3.9-11	17937	17942	Tbe/(high)	0.10
3.9-11	17942	17956	QTkr/(high)	0.30
3.9-11	17956	18033	Tbe/(high)	1.54
3.9-11	18040	18045	Tbe/(high)	0.10
3.9-11	18052	18057	Tbe/(high)	0.10
3.9-11	18064	18069	Tbe/(high)	0.10
3.9-11	18069	18090	Qa/(high at depth)	0.40
3.9-11	18148	18153	Qa/(high at depth)	0.10
3.9-11	18220	18273	Qa/(high at depth)	1.10
3.9-11	18299	18306	Qa/(high at depth)	0.14
3.9-11	18468	18472	Qa/(high at depth)	0.08
3.9-11	18505	18518	Qa/(high at depth)	0.26
3.9-11	18552	18555	Qa/(high at depth)	0.06
3.9-11	18569	18572	Qa/(high at depth)	0.06
3.9-11	18653	18657	Qoa/(high)	0.07
3.9-11	18659	18668	Qoa/(high)	0.18
3.9-11	18891	18898	Qoa/(high)	0.14
3.9-11	18945	18950	Qoa/(high)	0.10
3.9-11	19003	19082	Qa/(high at depth)	1.58
3.9-11	19092	19250	Qa/(high at depth)	3.16
3.9-11	19250	19270	Qoa/(high)	0.40
3.9-11	19270	19272	Qa/(high at depth)	0.05
3.9-11	19272	19275	Qoa/(high)	0.07
3.9-11	19275	19277	Qa/(high at depth)	0.05
3.9-11	19302	19319	Qoa/(high)	0.35
3.9-11	19425	19434	Qoa/(high)	0.20
3.9-11	19447	19470	Qoa/(high)	0.50

Figure	Station Start	Station End (from North)	Geological Units/ Sensitivity	Miles
3.9-11	19470	19473	Qa/(high at depth)	0.05
3.9-11	19495	19504	Qa/(high at depth)	0.18
3.9-11	19508	19514	Qa/(high at depth)	0.12
3.9-11	19521	19535	Qa/(high at depth)	0.28
3.9-11	19630	19663	Qoa/(high)	0.70
3.9-11	19663	19668	Qa/(high at depth)	0.10
3.9-11	19670	19770	Qoa/(high)	2.00
3.9-11	19770	20125	Qa/(high at depth)	7.10
3.9-11	20155	21268	Qa/(high at depth)	21.2
<b>Approximate total miles of “high” paleontological sensitivity in Alternative 2</b>				<b>8.9</b>
<b>Approximate total miles of “high at depth” paleontological sensitivity in Alternative 2</b>				<b>48.32</b>

**Table 3.9-A-3 Segments of Alternative 3 with “High” or “High at Depth” Paleontological Sensitivity**

Figure	Station Start	Station End (from North)	Geological Units/ Sensitivity	Miles
3.9-11	17285	17875	Qa/(high at depth)	11.8
3.9-11	17875	17937	QTkr/(high)	1.24
3.9-11	17937	17942	Tbe/(high)	0.10
3.9-11	17942	17956	QTkr/(high)	0.30
3.9-11	17956	18033	Tbe/(high)	1.54
3.9-11	18040	18045	Tbe/(high)	0.10
3.9-11	18052	18057	Tbe/(high)	0.10
3.9-11	18064	18069	Tbe/(high)	0.10
3.9-11	18069	18090	Qa/(high at depth)	0.40
3.9-11	18148	18153	Qa/(high at depth)	0.10
3.9-11	18220	18273	Qa/(high at depth)	1.10
3.9-11	18299	18306	Qa/(high at depth)	0.14
3.9-11	18468	18472	Qa/(high at depth)	0.08
3.9-11	18505	18518	Qa/(high at depth)	0.26
3.9-11	18552	18555	Qa/(high at depth)	0.06
3.9-11	18569	18572	Qa/(high at depth)	0.06
3.9-11	18653	18657	Qoa/(high)	0.07
3.9-11	18659	18668	Qoa/(high)	0.18
3.9-11	18891	18898	Qoa/(high)	0.14
3.9-11	18945	18950	Qoa/(high)	0.10
3.9-11	19003	19082	Qa/(high at depth)	1.58
3.9-11	19092	19250	Qa/(high at depth)	3.16

Figure	Station Start	Station End (from North)	Geological Units/ Sensitivity	Miles
3.9-11	19250	19270	Qoa/(high)	0.40
3.9-11	19270	19272	Qa/(high at depth)	0.05
3.9-11	19272	19275	Qoa/(high)	0.07
3.9-11	19275	19277	Qa/(high at depth)	0.05
3.9-11	19302	19319	Qoa/(high)	0.35
3.9-11	19425	19430	Qoa/(high)	0.10
3.9-11	19450	19452	Qoa/(high)	0.05
3.9-11	19452	19457	Qa/(high at depth)	0.10
3.9-11	19457	19467	Qoa/(high)	0.20
3.9-11	19505	19510	Qa/(high at depth)	0.10
3.9-11	19515	19520	Qa/(high at depth)	0.10
3.9-11	19525	19530	Qa/(high at depth)	0.10
3.9-11	19535	16545	Qa/(high at depth)	0.20
3.9-11	19580	19590	Qoa/(high)	0.20
3.9-11	19630	19640	Qoa/(high)	0.20
3.9-11	19645	19787	Qoa/(high)	2.84
3.9-11	19787	20122	Qa/(high at depth)	6.70
3.9-11	20152	21265	Qa/(high at depth)	21.2
<b>Approximate total miles of “high” paleontological sensitivity in Alternative 3</b>				<b>8.35</b>
<b>Approximate total miles of “high at depth” paleontological sensitivity in Alternative 3</b>				<b>47.40</b>

**Table 3.9-A-4 Segments of Alternative 5 with “High” or “High at Depth” Paleontological Sensitivity**

Figure	Station Start	Station End (from North)	Geological Units/ Sensitivity	Miles
3.9-11	17285	17875	Qa/(high at depth)	11.8
3.9-11	17875	17937	QTkr/(high)	1.24
3.9-11	17937	17942	Tbe/(high)	0.10
3.9-11	17942	17956	QTkr/(high)	0.30
3.9-11	17956	18033	Tbe/(high)	1.54
3.9-11	18040	18045	Tbe/(high)	0.10
3.9-11	18052	18057	Tbe/(high)	0.10
3.9-11	18064	18069	Tbe/(high)	0.10
3.9-11	18069	18090	Qa/(high at depth)	0.40
3.9-11	18148	18153	Qa/(high at depth)	0.10
3.9-11	18220	18273	Qa/(high at depth)	1.10
3.9-11	18299	18306	Qa/(high at depth)	0.14
3.9-11	18468	18472	Qa/(high at depth)	0.08

Figure	Station Start	Station End (from North)	Geological Units/ Sensitivity	Miles
3.9-11	18505	18518	Qa/(high at depth)	0.26
3.9-11	18552	18555	Qa/(high at depth)	0.06
3.9-11	18569	18572	Qa/(high at depth)	0.06
3.9-11	18653	18657	Qoa/(high)	0.07
3.9-11	18659	18668	Qoa/(high)	0.18
3.9-11	18891	18898	Qoa/(high)	0.14
3.9-11	18945	18950	Qoa/(high)	0.10
3.9-11	19003	19082	Qa/(high at depth)	1.58
3.9-11	19092	19250	Qa/(high at depth)	3.16
3.9-11	19250	19270	Qoa/(high)	0.40
3.9-11	19270	19272	Qa/(high at depth)	0.05
3.9-11	19272	19275	Qoa/(high)	0.07
3.9-11	19275	19277	Qa/(high at depth)	0.05
3.9-11	19302	19319	Qoa/(high)	0.35
3.9-11	19425	19434	Qoa/(high)	0.20
3.9-11	19447	19470	Qoa/(high)	0.50
3.9-11	19470	19473	Qa/(high at depth)	0.05
3.9-11	19495	19504	Qa/(high at depth)	0.18
3.9-11	19508	19514	Qa/(high at depth)	0.12
3.9-11	19521	19535	Qa/(high at depth)	0.28
3.9-11	19630	19663	Qoa/(high)	0.70
3.9-11	19663	19668	Qa/(high at depth)	0.10
3.9-11	19670	19770	Qoa/(high)	2.00
3.9-11	19770	20125	Qa/(high at depth)	7.10
3.9-11	20155	21268	Qa/(high at depth)	21.2
<b>Approximate total miles of "high" paleontological sensitivity in Alternative 5</b>				<b>8.9</b>
<b>Approximate total miles of "high at depth" paleontological sensitivity in Alternative 5</b>				<b>48.32</b>