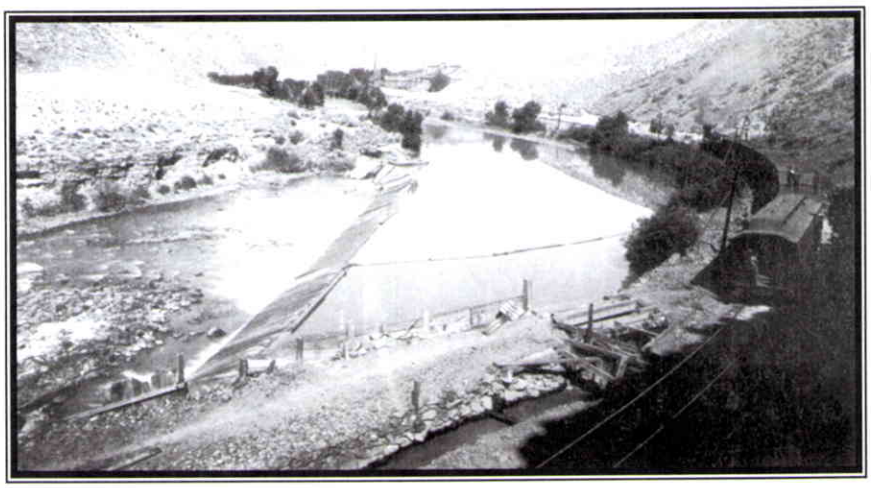
Virginia & Truckee Railway Reconstruction Project Phase 3, Lyon and Carson City Counties, Nevada Cultural Resources Inventory Report



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EXECUTIVE SUMMARY

The Commission for the Reconstruction of the Virginia & Truckee Railway proposes to implement Phase 3 of the Virginia & Truckee Railway project in Lyon and Carson City Counties, Nevada. This would result in the construction of 20,720 feet of grade extending from where the line reconnects with the original V & T Railroad grade (south of the Mound House area), south down into the Carson River Canyon, and then west along the edge of the canyon to the area now occupied by the Bertagnolli & Associates Gravel Operation. In 2000 the Nevada Department of Transportation (NDOT) prepared an inventory report entitled "*An Archeological Survey of the Virginia & Truckee Railroad Grade from Empire to Gold Hill, Nevada*" (Matranga 2000). That study examined a 200-foot wide corridor centered on the Virginia & Truckee Railroad alignment. In April of 2003, the Federal Highway Administration (FHWA) and NDOT released an Environmental Assessment (FHWA-NV-EA 03.03) addressing potential environmental impacts associated with reconstruction of the Virginia & Truckee Railway. While the presence of cultural resources was acknowledged along the entire project corridor, the Environmental Assessment focused on Phase 1 of the overall project (FHWA 2003:50-51).

Phases 3 of the project will be constructed within a right of way that passes across public and private lands. The Bureau of Land Management (BLM), who administers public lands located along the Phase 3 corridor, has issued a right of way grant (N-60566) to the Commission to construct the Virginia & Truckee Railroad. Given that it is the primary federal funding authority, the FHWA has assumed the role of lead federal agency for Phase 3 of the Virginia & Truckee Railway project. In January of 2006 federal and state agencies entered into an agreement entitled "*Programmatic Agreement Among the Federal Highway Administration, Bureau of Land Management, and Nevada State Historic Preservation Office Regarding Reconstruction of the Virginia & Truckee Railroad.*"

The overall railroad reconstruction project was discussed with BLM, Nevada State Historic Preservation Office (SHPO), and NDOT personnel in September of 2005. Based on those discussions, and based on terms of the V & T Programmatic Agreement, a number of cultural resource tasks were identified. This work was intended to augment the earlier inventory carried out by NDOT (Matranga 2000), to ensure continued compliance with the Environmental Assessment, and to demonstrate compliance with the V & T Programmatic Agreement. Based on those considerations, the following activities were carried out:

- An Area of Potential Effect for Phase 3 was developed.
- A detailed characterization of the railroad grade was prepared, including information regarding engineering aspects of the Virginia & Truckee Railroad construction along the Phase 3 corridor.
- The previous archives searches for the Phase 3 project corridor was refreshed with an emphasis on the identification of "historic" roads.
- Culverts located along the Phase 3 project corridor were documented.
- Geo-technical excavations conducted along selected portions of the Phase 3 project corridor were monitored.
- The need to inventory proposed access roads was assessed. Two road segments were inventoried to Class III Standards (9.19 acres were inventoried).

- The need to inventory proposed staging areas and material storage areas was assessed. Three areas were inventoried to Class III Standards (14.33 acres were inventoried).
- The need to inventory drainage and slope easements was assessed. Six areas were inventoried to Class III Standards (9.65 acres were inventoried).
- Features located along the Phase 3 project corridor that have not been identified previously were documented.
- Mapping was developed that shows the location of cultural resource sites and features located along the Phase 3 project corridor.

The purpose of project-related inventory activities was three fold. First, abandoned Virginia & Truckee Railroad grade and associated features along the Phase 3 project corridor were documented. Second, locations associated with ancillary construction activities (staging areas, material storage areas, access roads, and drainage and slope easements) required examination. This resulted in the inventory of 33.17 acres (26.96 acres of privately owned property and 6.21 acres BLM of administered land). Finally, previously recorded sites located in the Phase 3 project corridor were reviewed and, as necessary, site forms were prepared. National Register eligibility recommendations were developed and project effects to individual properties and features were assessed. As necessary, treatment recommendations were developed. The results of these activities are summarized in the following table.

Site / Feature Number	Land Status	Description	Theme	National Register Eligibility	Proposed Treatment
156	Private	Culvert	V & T	Not Contributing	[redacted]
157	BLM	Waste Rock	V & T	Contributing	None, no impact
158	BLM	Shoo-Fly Road	V & T	Contributing	None, no impact
159	BLM		V & T	Unevaluated	Construct avoidance fence and monitor
160	BLM	Retaining Wall	V & T	Contributing	Monitor Construction
161	BLM	Terrace – Borrow	V & T	Not Contributing	[redacted]
162	BLM	Road	V & T	Contributing	None, no impact
163	BLM	Culvert	V & T	Unevaluated	Monitor Construction
164	BLM	Terrace – Borrow	V & T	Not Contributing	[redacted]
165	BLM	Ditch	V & T	Contributing	None, no impact
166	BLM	Waste Rock	V & T	Contributing	None, no impact
167	BLM	Retaining Wall	V & T	Contributing	None, no impact
168	BLM	Siding	V & T	Contributing	Construct avoidance fence and monitor
169	BLM	Shoo-fly Road	V & T	Contributing	Construct avoidance fence and monitor
170	BLM	Ditch	V & T	Contributing	Construct avoidance fence and monitor
171	BLM	Waste Rock	V & T	Contributing	Construct avoidance fence and monitor
172	BLM	Terraced Roads	V & T	Contributing	Construct avoidance fence and monitor
173	BLM	Shoo-fly Road	V & T	Contributing	Construct avoidance fence and monitor
174	BLM		V & T	Not Contributing	[redacted]
175	Private	Terrace – Borrow	V & T	Not Contributing	

Site / Feature Number	Land Status	Description	Theme	National Register Eligibility	Proposed Treatment
176	Private	Terrace – Borrow	V & T	Not Contributing	
177	Private	Terrace – Borrow	V & T	Not Contributing	
178	Private	Step Terrace	V & T	Not Contributing	
179	Private	Step Terrace	V & T	Not Contributing	
180		Mile Post	V & T	Not Contributing	
181	Private	Retaining Wall	V & T	Contributing	Conduct Treatment
182	Private	Retaining Wall	V & T	Contributing	Construct avoidance fence and monitor
183	Private	Retaining Wall	V & T	Contributing	Construct avoidance fence and monitor
184	Private	Retaining Wall	V & T	Contributing	Construct avoidance fence and monitor
185	Private	Terrace	V & T	Contributing	None, no impact
186	Private	Waste Rock	V & T	Contributing	Construct avoidance fence and monitor
187	Private	Shoo-fly Road	V & T	Contributing	Construct avoidance fence and monitor
188	Private	Road	Milling	May contribute to mill eligibility	Construct avoidance fence and monitor
189	Private	Ditch	V & T	Contributing	Construct avoidance fence and monitor
190	Private	Waste Rock	V & T	Contributing	Construct avoidance fence and monitor
191	Private	Waste Rock	V & T	Contributing	Construct avoidance fence and monitor
192	Private	Retaining Wall	V & T	Contributing	Construct avoidance fence and monitor
193	Private	Mile Post	V & T	Not Contributing	
194	Private	Retaining Wall	V & T	Contributing	Construct avoidance fence and monitor
195	Private	Culvert	V & T	Unevaluated	Monitor Construction
196	Private	Terrace – Borrow	V & T	Not Contributing	
197	Private	Retaining Wall	V & T	Contributing	Construct avoidance fence and monitor
198	Private	Retaining wall	V & T	Contributing	Construct avoidance fence and monitor
199	Private	Waste Rock	V & T	Contributing	None, no impact
200	BLM	Culvert	V & T	Contributing	Conduct Treatment
201	Private	Culvert	V & T	Contributing	Conduct Treatment
202	Private	Whistle Post	V & T	Not Contributing	
203	Private	Mile Post	V & T	Not Contributing	
204	Private	Mile Post	V & T	Not Contributing	
205	Private	Crossing Sign	V & T	Not Contributing	
206	Private	Siding	V & T	Contributing	Construct avoidance fence and monitor
207	Private	Waste Rock	V & T	Contributing	None, no impact
208	Private	Clearance Post	V & T	Not Contributing	
210	Private	Whistle Post	V & T	Not Contributing	
211	Private	Crossing Sign	V & T	Not Contributing	
212	Private	Retaining Wall	V & T	Contributing	Construct avoidance fence and monitor

Site / Feature Number	Land Status	Description	Theme	National Register Eligibility	Proposed Treatment
213	Private	Retaining Wall	V & T	Contributing	Construct avoidance fence and monitor
214	Private	Retaining Wall	V & T	Contributing	Construct avoidance fence and monitor
215	Private	Retaining Wall	V & T	Contributing	Construct avoidance fence and monitor
216	Private	Crossing Sign	V & T	Not Contributing	[redacted]
217	Private	Platform	V & T	Not Contributing	
218	Private	Whistle Post	V & T	Not Contributing	
03-1419	BLM	Eureka Trestle	Milling	May contribute to mill eligibility	Construct avoidance fence and monitor
03-1449 26Or304	Private	Ore Bin	Milling	May contribute to mill eligibility	Construct avoidance fence and monitor
03-1457 26Or305	Private	Retaining Wall	Milling	May contribute to mill eligibility	Construct avoidance fence and monitor
03-1457 26Or305	Private	Rock Structure	Milling	May contribute to mill eligibility	None, no impact
	BLM	Copper Canyon Mill	Milling	Not Found	[redacted]
03-1458 26Or306	Private	Spur	Milling	Contributing to the V & T	Construct avoidance fence and monitor
03-1435 26Or301	Private	Footings and Waste Rock	Milling	May contribute to mill eligibility	None, no impact
03-1435 26Or301	Private	Spur	Milling	Contributing to the V & T	None, no impact
03-1435 26Or301	Private	Foundations and Pits	Milling	May contribute to mill eligibility	Construct avoidance fence and monitor
03-6956	Private	Road	Milling	Not Eligible	[redacted]
03-1435 26Or301	Private	Ditch	Milling	May contribute to mill eligibility	None, no impact
03-1435 26Or301	Private	Terrace	Milling	May contribute to mill eligibility	None, no impact
03-1435 26Or301	Private	Dam	Milling	May contribute to mill eligibility	None, no impact
03-1435 26Or301	Private	Retaining Wall	Milling	May contribute to mill eligibility	None, no impact
03-1435 26Or301	Private	Waste Rock	Milling	May contribute to mill eligibility	None, no impact
03-1371 26Or144	Private	Tailing Pond	Milling	May contribute to mill eligibility	None, no impact
03-1371 26Or144	Private	Tailing Pond	Milling	May contribute to mill eligibility	None, no impact
03-1371 26Or144	Private	Tailing Pond	Milling	May contribute to mill eligibility	None, no impact
03-1371 26Or144	Private	Blanket Sluice	Milling	May contribute to mill eligibility	None, no impact
03-1371 26Or144	Private	Tailing Pond	Milling	May contribute to mill eligibility	None, no impact
03-1371 26Or144	Private	Footing Walls	Milling	May contribute to mill eligibility	None, no impact

The project design contains several elements that limit impacts to significant cultural resources. Impacts to steep cut slopes have been minimized, the cross section width of the grade has been reduced, and the elevation of the finished grade had been dropped. All of these design elements were included with the specific intent of minimizing impacts to historic properties and reducing the visual impact of the reconstructed railroad grade.

Reconstruction of the Virginia & Truckee Railroad does have the potential to impact selected sites and features that are recommended as National Register eligible, or as contributing elements to sites that are National Register eligible. In most cases, treatment would take the form of erecting construction fencing along site or feature edges and routine monitoring by a cultural resource professional.

Treatment is recommended at three V & T Related features (features 181, 200, and 201). Given the simplicity of the features at issue, it is recommended that a formal historic properties treatment plan is not necessary. Documentation will be developed consistent with standards prescribed in BLM guidelines, Appendices D and H of the Protocol Agreement between BLM and the SHPO, SHPO photographic documentation standards, and conditions of the V & T programmatic agreement. Cut slopes would be addressed in the same manner as was approved by the SHPO for use as part of previous phases of the V & T Railway Project. The proposed project will result in the abandonment of some historic culverts, construction atop others, and the potential to uncover previously unrecorded culverts. In cases where culverts might be uncovered, a monitor will be present to document remains that are unearthed. Culverts scheduled to be abandoned in place and/or covered have been documented. No further treatment will occur in these cases. Many features that will be impacted are small in size and are simple in character. The detailed grade characterization provided as part of the V & T IMACS form update constitutes sufficient documentation of these features. No further treatment will occur at these features. Finally, sections I, K, and L of the V & T Programmatic Agreement provide conditions related to monitoring, inadvertent discoveries, and burials, respectively. Project inspectors and construction supervisors will be made aware of these conditions prior to the onset of any construction activities.

An overriding determination of effect for the V & T Railway Project was defined within the V & T Programmatic Agreement. If a particular phase of the project is conducted in a manner consistent with terms of that agreement, then further consideration of a phase specific determination of effect is not required. All aspects of the Phase 3 cultural resource investigation (APE definition, inventory, eligibility evaluations, treatment planning, reporting) were carried out in accordance with the V & T Programmatic Agreement. As a result, it is recommended that implementation of the treatment measures as listed in this report will insure that Phase 3 of the V & T Railway Project addresses cultural resources in a manner consistent with terms of the V & T Programmatic Agreement.

Cover Photo: The Merrimac Dam in the early 1870s. The Brunswick Mill is in the background (Wurm and Demoro 1983:41).

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1.0 INTRODUCTION

1.1 Project Description

As its name implies, the Commission for the Reconstruction of the Virginia & Truckee Railway (Commission) proposes to reconstruct the historic Virginia & Truckee Railroad between Carson City and Gold Hill. In 2000 the Nevada Department of Transportation (NDOT) prepared an inventory report entitled "*An Archaeological Inventory of the Virginia & Truckee Railroad Grade from Empire to Gold Hill, Nevada*" (Matranga 2000). That study examined a 200-foot wide corridor centered on the Virginia & Truckee Railway alignment as then proposed. In April of 2003, the Federal Highway Administration (FHWA) and NDOT released an Environmental Assessment (FHWA-NV-EA 03.03) addressing potential environmental impacts associated with reconstruction of the Virginia & Truckee Railway. While the presence of cultural resources was acknowledged along the entire project corridor, the Environmental Assessment focused on Phase 1 of the overall project (FHWA 2003:50-51). Construction of Phase 1 of the Virginia & Truckee Railway project occurred in 2005-2005 using federal funds administered by FHWA. Construction of Phases 2A/2B was completed in the spring of 2008 and construction of Phase 2C is currently underway. Federal funding has been provided to the project through the Transportation Act of 2005, administered by FHWA. Given its role as the primary funding federal authority, FHWA has assumed the role as lead federal agency for the Virginia & Truckee Railway project.

The Commission now proposes to implement Phase 3 of the Virginia & Truckee Railway project in Carson City and a very small corner of Lyon County, Nevada. This 20,720-foot portion of the grade extends southwest from where the line reconnects with the original V & T Railroad grade (south of the Mound House area), south down into the Carson River Canyon, and then west along the edge of the canyon to the area occupied by the Bertagnolli & Associates Gravel Operation (Attachment One, Figures 1 and 2). This portion of the grade will include numerous structures and railway improvements. Structures will include a Mechanically Stabilized Earth (MSE) wall where an historic rockery wall has failed, several additional short (less than 4 feet tall) retaining walls, and two private crossings. Railroad improvements will include grading of existing cut and fill slopes, new cut and fill slope construction, rock fall mitigation measures, numerous culverts, utility sleeves and two sidings (near the Eureka Ore Chute and the Yerington Smelter).

Phases 3 of the project will be constructed within a right of way that passes across public and private lands. The Bureau of Land Management (BLM), who administers public lands located along the Phase 3 corridor, has issued a right of way grant (N-60566) to the Commission to construct the Virginia & Truckee Railroad. Continued BLM participation in the project is anticipated. Resource evaluations will be necessary, as will impact evaluations and inter-agency consultations. The proposed construction right-of-way ranges from 50 feet wide in low relief areas to 100 or more feet wide in areas of proposed or existing cuts or fills (needed to accommodate slope easements). Additional areas of wider easements are in areas of drainage improvements, staging areas, disposal areas and access road crossings.

In January of 2006 federal and state agencies entered into an agreement entitled "*Programmatic Agreement Among the Federal Highway Administration, Bureau of Land Management, and Nevada State Historic Preservation Office Regarding Reconstruction of the Virginia & Truckee Railroad.*" Concurring parties to that agreement included the Nevada Department of Transportation and the Nevada Commission for the Reconstruction of the Virginia & Truckee Railway. As certified local governments, Carson City and Storey Counties were invited to participate in the programmatic agreement but they declined; they felt participation on the Commission afforded adequate opportunity to participate in aspects of project planning.

Based on results of agency consultation regarding phased construction of the project, a number of cultural resource tasks were identified. This work was intended to augment the earlier inventory carried out by the Nevada Department of Transportation (Matranga 2000), to ensure continued compliance with the Environmental Assessment, and to demonstrate compliance with the V & T Programmatic Agreement. The following activities were identified:

- Develop an Area of Potential Effect for Phase 3.
- Characterize segments of the old railroad grade located within the Phase 3 corridor
- Provide information regarding engineering aspects of the Virginia & Truckee Railroad construction as reflected in the Phase 3 corridor.
- Refresh the archives search for the Phase 3 project corridor with an emphasis on the identification of "historic" roads.
- Examine and document culverts located along the Phase 3 project corridor.
- Flag previously and recently recorded sites and features along the Phase 3 project corridor allowing them to be added to design drawings as avoidance areas. Flagging was removed after boundaries were surveyed.
- Monitor geo-technical excavations conducted along the Phase 3 project corridor. Address any inadvertent discoveries identified during monitoring.
- Assess the need to inventory proposed access roads; conduct needed inventories. Two road segments were inventoried to Class III Standards (9.19 acres).
- Assess the need to inventory proposed staging areas and material storage areas; conduct needed inventories. Three areas were inventoried to Class III Standards (14.33 acres).
- Assess the need to inventory drainage and slope easements; conduct needed inventories. Six areas were inventoried to Class III Standards (9.65 acres).
- Document sites or features located along the Phase 3 project corridor that have not been documented previously.
- Develop mapping that shows the location of sites and features located along the Phase 3 project corridor.
- Develop an inventory report summarizing all of the above listed activities.

The purpose of the present report is to demonstrate project compliance with all cultural resource tasks identified in association with Phase 3 of the Virginia & Truckee Railway reconstruction project. Of immediate concern is the abandoned Virginia & Truckee Railroad grade and associated features located along the Phase 3 project corridor. For purposes of description, emphasis is placed on railroad and other features located within a 200-foot wide corridor centered on the old railroad grade. This corridor corresponds with the one inventoried by Matranga (2000). Features located immediately adjacent to and visible from the corridor were noted. Finally, locations associated with ancillary construction activities (staging areas, material

5.0 RESULTS OF THE PRESENT EFFORT

Field activities performed in advance of Phase 3 of the Virginia & Truckee Railway Reconstruction project were multi-faceted. Each type of field activity is described in this chapter.

5.1 Recorded Sites

One new archaeological site (a road segment) was recorded as a result of the present study. In addition, seven existing site forms (the V & T and six Comstock era mill locations) were updated (see Attachments Two and Attachment Three). It should be noted that no attempt was made to record or map the full extent of the Comstock era mills, the major portion of which extends well outside the current study area. Rather, emphasis was placed on documenting mill-related elements contained within the immediate V & T Project study corridor.

5.1.1 Site CrNv-03-4412 (26Ly536/Or311) – The V & T Railroad Grade – Update

As a result of discussions with the BLM and the State Historic Preservation Office, Zeier & Associates was asked to develop a more detailed characterization of the railroad grade than was provided in the Nevada Department of Transportation report (Matranga 2000). As part of this effort, Zeier & Associates, LLC was to document any additional sites or features noted along the Phase 3 project corridor. It should be noted that a formal Class III inventory was not performed along the railroad grade as part of the present study. The present effort was intended to augment work performed by Matranga (2000). Results of the grade characterization work are included in an amendment to the Virginia & Truckee Railroad Grade (26Ly536/Or311) IMACS form (Attachment Two). That amendment includes descriptive information for each segment and a detailed listing of features and sites located within the Phase 3 project corridor. The segment description sheets served as convenient places to store information drawn from numerous sources. Field observations, feature descriptions, typical cross sections, photographs (historic and recent), geological data, information developed during monitoring activities all made their way into the segment descriptions. The site form amendment also includes a table that lists all features and sites present within the 200-foot wide study corridor.

Much of the Phase 3 project corridor is located along the steep face of the Carson River canyon. Along this route, it often intersects ridgelines and ephemeral drainages. Only toward the RRW end of the corridor does it intersect larger ephemeral drainages and alluvial features. As a result, construction of the Virginia & Truckee Railroad along this corridor required a considerable amount of cutting and filling. For purpose of description, the grade has been divided into segments based on the primary construction method. Three segment types were identified along the Phase 3 corridor – cut, fill, and cut/fill segments. The defined segments are summarized in Table 4 and are depicted on maps contained in Attachment One. Phase 3 includes a total of 36 segments; 10 cut segments (3,180 linear feet), 13 fill segments (3,848 linear feet), and 13 cut/fill segments (13,692 linear feet).

Table 4. Segment Definition and Location

Segment	Type	RRW		RRE		Length
		Current	1916	Current	1916	
67	Fill	483+40	2109+55	484+58	2110+73	118
68	Cut	478+30	2104+45	483+40	2109+55	510
69	Fill	474+30	2100+45	478+30	2104+45	400
70	Cut & Fill	456+20	2082+35	474+30	2100+45	1,810
71	Fill	452+00	2078+15	456+20	2082+35	420
72	Cut & Fill	446+30	2072+45	452+00	2078+15	570
73	Cut	443+70	2069+85	446+30	2072+45	260
74	Cut & Fill	438+00	2064+15	443+70	2069+85	570
75	Cut	433+60	2059+75	438+00	2064+15	440
76	Fill	430+70	2056+85	433+60	2059+75	290
77	Cut	428+30	2054+45	430+70	2056+85	240
78	Cut & Fill	424+30	2050+45	428+30	2054+45	400
79	Fill	422+00	2048+15	424+30	2050+45	230
80	Cut & Fill	416+50	2042+65	422+00	2048+15	550
81	Fill	414+80	2040+95	416+50	2042+65	170
82	Cut	412+30	2038+45	414+80	2040+95	250
83	Cut & Fill	394+80	2020+95	412+30	2038+45	1,750
84	Cut	389+50	2015+65	394+80	2020+95	530
85	Cut & Fill	377+40	2003+55	389+50	2015+65	1,210
86	Fill	376+70	2002+85	377+40	2003+55	70
87	Cut	376+00	2002+15	376+70	2002+85	70
88	Fill	374+70	2000+85	376+00	2002+15	130
89	Cut	373+90	2000+05	374+70	2000+85	80
90	Fill	372+70	1998+85	373+90	2000+05	120
91	Cut & Fill	367+00	1993+15	372+70	1998+85	570
92	Cut	363+40	1989+55	367+00	1993+15	360
93	Cut & Fill	345+90	1972+05	363+40	1989+55	1,750
94	Fill	344+50	1970+65	345+90	1972+05	140
95	Cut & Fill	338+20	1964+35	344+50	1970+65	630
96	Fill	337+50	1963+65	338+20	1964+35	70
97	Cut & Fill	326+80	1952+95	337+50	1963+65	1,070
98	Fill	314+00	1940+15	326+80	1952+95	1,280
99	Cut	309+60	1935+75	314+00	1940+15	440
100	Cut & Fill	290+80	1916+95	309+60	1935+75	1,880
101	Fill	286+70	1912+85	290+80	1916+95	410
102	Cut & Fill	277+38	1903+53	286+70	1912+85	932

In 1916, the Virginia & Truckee Railroad prepared a set of drawings it referred to as the "Right of Way and Track Map." These drawings contain information on the location of numerous features along the grade such as culverts, road crossings, stations, sidings, mile posts, and whistle posts. Zeier & Associates, LLC developed a table showing all such features. Working with the 1916 map and project drawings, it was possible to define the position of the features based on current project stationing and defined grade segments. Several previously recorded sites

are located, in part or in whole, within the project corridor. Many relate to some aspect of the railroad or its operation. Information regarding these sites was added to our table, again assigning them to a segment and defining their location based on project stationing. Finally, while in the field defining and describing the various segments, we noted several features associated with the grade. Information regarding these features was also added to the table.

Eighty-three 83 features were identified along the Phase 3 portion of the railroad grade. Of these, 61 are V & T related, while the remaining 22 are milling related. As noted, some were identified based on field observations, while others were identified based on examination of the 1916 V & T map (not all were observed in the field). A summary of features noted or once present within the Phase 3 project corridor is provided in Table 5. Site and feature locations are also depicted in an accompanying map set (see Attachment One, Figure 4 and design drawings).

Table 5. Summary of Features Present Within Phase 3 Project Corridor.

Feature / Site Type	Total Number	Number Observed
V & T Related		
Waste Rock Pile	8	8
Borrow Pit / Terrace	6	6
Step Terrace	2	2
Terrace	1	1
Culvert	5	5
Retaining Wall	14	14
Road Segment	2	2
Shoo-fly Road	4	4
Ditch	3	3
Siding	2	2
Trestle	2	-
Milepost	4	-
Clearance Post	1	-
Whistle Post	3	-
Road Crossing Sign	3	-
Platform	1	-
Milling Related		
Ore Bin / Trestle	1	1
Ore Bin	2	2
Road Segment	2	2
Rock Structure	1	1
Mill Site	1	1
Spur	2	2
Footings / Waste Rock	1	1
Foundations / Pits	1	1
Ditch	1	1
Terrace	1	1
Dam	1	1
Retaining Wall	1	1
Waste Rock	1	1
Tailing Pond	4	4
Blanket Sluice	1	-
Footings	1	1

5.1.2 Site CrNv-03-1371 (26Or144) – The Brunswick Mill – Update

Elements of the Brunswick Mill located in or adjacent to the V &T right-of-way include a series of four tailing ponds located immediately adjacent to and upslope of the V & T Railroad grade, a blanket sluice adjacent to the down slope side of the grade, a set of footing walls, and a waste rock pile located near the mill (see Ross 1999 for a description of extant historic features present within the current Bertagnolli gravel operation). The tailing ponds are confined by earthen berms along the downhill side, which run parallel to the railroad grade. Similar berms serve to separate the individual ponds. 'The ponds extend end to end for a distance of some 1,800 ft and vary in width from 75 to 100 ft. The ponds are clearly shown on period photographs of the Brunswick Mill (see the updated site form in Attachment Three). Evidence of the blanket sluice (also clearly shown in period photographs) is more elusive. What appears to be a relatively level layer of river cobble is present that may have formed the foundation of the sluice. This leveled terrace is now covered with willow and other riparian vegetation. Footing wall segments were found near the current Bertagnolli repair shop. The walls appear to have supported some element of the Brunswick mill. 'The south and west walls are exposed. The walls stand 6 feet tall and are 3 feet thick. The walls are 7 courses tall and arc constructed of dressed sandstone blocks. Very loose lime mortar cements the blocks. Individual blocks are approximately 12 inches tall and wide. They vary from 12 to 24 inches in length. The south wall extends into the Bertagnolli pit tailings. It is partially collapsed. Located at the far northeastern corner of the mill complex is a 50 by 90 foot pile of waste rock. Neither an adit nor a shaft is present. As a result, this waste rock does not appear to have been the result of mineral prospecting activities. Given its physical proximity to the mill it is assumed that it was somehow related to that operation.

5.1.3 Site CrNv-03-1419 – The Eureka Mill Ore Chute – Update

Elements of the Eureka Mill Railroad located in or adjacent to the V & T right-of-way include earthworks and footings associated with the trestle, and portions of the ore hopper located adjacent to the V & T Railroad grade at the upper end of the tramway. The trestle represents a spur that tied into the V & T Railroad at its northern end. At this location, the V & T grade is a broad curve and the spur was constructed along a tangent off of that curve. Construction of the trestle began with the excavation of a terrace into the hillside below the railroad grade. For much of its 400-foot length, this terrace is from 30 to 45 feet wide. At its northern end the terrace narrows and eventually ends at the very north end of the spur. Along much of its length, the surface of the terrace contains evidence of narrow depressions that run perpendicular to the length of the terrace. Spaced 14 feet apart, each depression once contained the footing of a timber set atop which the railroad track was placed. These timber sets are clearly evident in historic photographs of the spur (see updated site form in Attachment Three). Only limited evidence of the timber sets remains. Remains of footings associated with two timber sets were noted. It appears that each timber set was supported by up to four posts set into the ground which acted as footings. The outer two footing posts were ten feet apart and slanted inward. Although site evidence is limited, it appears that a second set of footing posts was present just inside the outer posts. These appear to have been set vertically. All of the footing posts were made of 12-inch square timbers that extended out of the ground about two feet. The inside surface at the top of each post had a large cut out that would have allowed another post to be set on the footings and bolted in place. A diagram of what the timber sets might have looked like is attached. Also present on site is a series of posts and beams that are assumed to represent the

upper most end of one of the railways that made up the tramway. This feature consists of a wooden platform that would have sat at an angle roughly parallel with the ground surface along the railway. It is constructed of 12-inch square timbers, notched, and bolted together. No direct evidence of the upper ore bin is present.

5.1.4 Site CrNv-03-1435 (26Or301) – The Merrimac Mill – Update

Elements of the Merrimac Mill contained within or immediately adjacent to the V & T Project study corridor include the interface between the mill and the V & T railroad (a spur that ran to the mill), a segment of the ditch that took water to the mill, footings and an associated waste rock area, and a series of features with an associated debris scatter. The spur consists of a narrow grade set atop a slightly raised earthen berm. Some 280 ft of the spur exist within the study corridor. No artifacts or features were noted along that portion of the spur located in the study corridor. A diversion dam was constructed across the Carson River. Water was directed into a ditch took water to the mill. Some 1,100 ft of the ditch is present in the study corridor. The portion of the ditch closest to the dam was protected by rock walls. These walls presumably were intended to keep the river from washing away the berm that was constructed to contain the ditch. Evidence of the dam is still present in the river (consisting of rock rubble on the stream bottom) and the retaining walls emerge from the vegetation at intervals along the river's edge. The ditch itself is quite large. It is at least 8 to 10ft deep and 10 to 15 ft wide at the top.

A series of six features and an associated debris scatter was noted northeast of the V & T grade, opposite the spur and ditch. The northeast edge of the feature complex is defined by a pronounced break in slope. A dirt road transects the site from west to cast. Feature 1 consists of a shallow depression (6 feet deep x 30 feet in diameter) excavated into the hill slope. Feature 2 consists of a 45 x 60 foot rectangular depression with a 5 foot bermed periphery. An earthen dividing wall partitions the feature creating a 45 foot southern section and a 15 foot northern section. Occasional flattened can fragments occur outside the feature. Features 3, 4, and 5 are small, circular pits approximately 3 feet in diameter 30 feet southwest of Feature 1. They appear to be pothunter pits possibly excavated in the vicinity of the Feature 1 privy. Feature 6 is a roughly rectangular depression excavated into the north side of the railroad grade at the western edge of the site. Modem debris piles and back dirt piles fill parts of the depression but a single course low rock wall and sparse scatter of rusted, flattened cans suggests historic origin. Overall, the feature complex covers an area 750 by 240 feet. Artifact densities increase around periphery of features, especially in the vicinity of feature 1. Outside the immediate vicinity of the features the scatter is quite diffuse, especially between the railroad grade and the dirt road that bisects the site. Artifacts noted in this large area included five flattened, soldered seam 5-gallon kerosene cans and three white ironstone fragments. Modem dumping and shooting debris is present throughout the feature complex. Broken glass and ammunition casings litter the area.

Two features were noted on the east side of the low ridge extending into the Merrimac Mill. The first consists of a series of footings that extend roughly along slope for 60 feet. All are made of concrete with sides formed to a sloping 4:12 pitch. Dimensions vary from 8 x 8 inches to 20 x 12 inches with 2, ½ inch bolts at varying centers. Footings are constructed of Portland cement with local aggregate to 2 inch diameter. The base of the footings contains rocks as large as 15 inches in diameter. A waste rock pile is located approximately 50 feet from the footings.

Comprised of three lobes, it is approximately 100 feet in diameter and 40 feet in height, There is no evidence of an adit or a shaft from which the waste rock might have been derived.

5.1.5 Site CrNv-03-1449 (26Or304) – The Santiago Mill – Update

Elements of the Santiago Mill contained within or immediately adjacent to the V & T Project study corridor include the interface between the mill and the V & T Railroad - an ore hopper and the uppermost portion of an excavated area in which a tramway was once placed. The hopper would have been used to load ore into carts that traveled on a surface tramway that extended down a steep slope to another hopper. Based on historic photographs (see updated site form in Attachment Three), it appears this lower hopper was integrated directly into the Santiago Mill building. Remains of the upper hopper are present within the V & T study corridor and are the subject of the present site form update. Prior to constructing the hopper, excavation occurred that extended directly down slope. This was carried out to create a cleared surface that descended at a consistent grade from the railroad grade to the canyon bottom. This resulted in a cut toward the top end, just below the V & T Railroad Grade. Excess material from this cut area was placed on two piles, one to either side of the excavated cut. These waste rock piles are clearly evident. What remains at the top of the cut, immediately adjacent to the V & T Railroad grade are a number of timbers that appear to represent footings that once supported the ore hopper. The footings consist of two walls offset by about three feet. Each wall consists of a series of large posts set vertically into the ground. Heavy wood boards are fastened to the back (uphill side) of these posts. Fill material was placed behind this wall. The second wall was constructed atop the level, filled are that formed the top of the lower wall. The second, upper wall was built in the same manner as the lower wall. Of note, the outer ends of the heavy wood boards attached to the back of the upper wall are cut at an angle, as if they were intended to tie into the adjacent hillside. Boards on the lower wall may also be cut in this manner, however this cannot be confirmed since their ends are covered by fill material. The posts associated with the upper wall are somewhat longer and extend above the top of the heavy wood board backing. The back of each posts, near the top, is mortised and appears to have been fabricated to accept a horizontally set piece with a tendon. These horizontal pieces may have served as the floor joist associated with the ore hopper. A light metal frame extends upward from the beam at the top of the upper wall. This frame may have been part of a door or chute that allowed ore to be dumped from the hopper into carts or whatever was used to lower the ore to the valley floor. Each of the footing walls is approximately 15 ft wide and 5 ft tall. The timbers are 8 by 12 and 8 by 8 inches in size and many are held together with mortise and tendon style joints. The wood planking is 2 by 12 inches in size. Many pieces are held together with 12-inch metal spikes and square nails of various sizes. Hand forged straps and large square headed bolts were used to reinforce the structure. A piece of heavy sheet metal is present near where the ore hopper would have once been situated. It has since bent over (at first glance, it looks like a culvert). This metal sheet may have once lined the inside of the ore hopper. No evidence of the tramway was observed adjacent to the railroad grade. While a wood frame associated with the tramway is visible in old photos (see attached), it is not possible to determine in any detail what type of system was used.

5.1.6 Site CrNv-03-1457 (26Or305) – The Vivian Mill – Update

Elements of the Vivian Mill contained within or immediately adjacent to the V & T Project study corridor include the interface between the mill and the V & T Railroad - an ore

hopper (or tipple) and a rock structure. It is assumed that this hopper was used to load ore into carts that traveled on a surface tramway that extended down a steep slope to another hopper. Examination of historic photos (see updated site form in Attachment Three) suggests that a short rail line ran from the lower hopper, across a bridge, and then on to the mill. Prior to constructing the hopper, excavation occurred that extended directly down slope. This was carried out to create a cleared surface that descended at a consistent grade from the railroad grade to the canyon bottom. This resulted in a cut toward the top end, just below the V & T Railroad Grade. Excess material from this cut area was cast to the side of the cut. At the nearby Santiago Mine, a similar ore chute was present that consisted of two footing walls set parallel to the grade atop which the upper ore hopper was constructed. At the Vivian ore hopper, these walls have largely washed out, leaving a concave depression immediately adjacent to the grade. What does appear to remain at the Vivian is the lower ore hopper. It is located well outside the V & T study corridor, but numerous timbers are present.

The rock feature is located on the west bank of the Carson River very near were the diversion dam would have been present. Noted in the field was a 20-foot semi circular rock structure at the end of a point bar on the lowest terrace of Carson River. The feature consists of dry laid stacked cobbles. A low (4 course) retaining wall lies along the east and south side of the structure providing a platform for a 2 foot wide walkway. Structure walls are 6 feet tall and taper from 3 to 6 feet in thickness. A 9-foot circular opening faces the river. Currently a cottonwood tree with a 24 inch trunk is growing in the open portion of the feature.

5.1.7 Site CrNv-03-1458 (26Or306) – The Yerington Smelter – Update

Elements of the Yerington Smelter contained within or immediately adjacent to the V & T Project study corridor include only the interface between the smelter and the V & T Railroad – a spur that extended from the railroad around smelter. As noted previously, a loop extended around the smelter connecting into the V & T Railroad at either end. Only one spur was evident in the field. That spur consists of a slightly elevated grade about 10 feet wide. No ties or rail arc present. The spur is now used as an informal roadway. The other spur appears to not to have been elevated. While evident on aerial photographs, the spur is used as a roadway that has expanded well beyond the extent of the original spur.

5.1.8 Site CrNv-03-6956 – The Merrimac Mill Road

Only that segment of the Merrimac Mill Road located within a proposed V & T right of way is described herein. It is noted that historically the road extended further to the north to where it tied into other roads that formed the 1860s Comstock road network. This road was established in 1861 to transport ore from Comstock mines to the Merrimac Mill. This use continued until construction of the V & T Railroad in late 1969. After that date, ore and materials were shipped to the Merrimac Mill via rail. The road would have been used infrequently through the 1870s and 1880s, probably by individuals traveling to and from the mill. With closure of the mill in the early 1890s, use of the road most likely declined even further. The road corridor was revived in the mid-twentieth century when it was used as an access corridor along a power line. The road is currently used as an access road for a power line. It also sees travel by some going between the Carson Rifle Range and the Carson River. The road bed is 15 feet wide with a 1 foot down slope berm. This berm appears to have been created when portions of the road were

bladed. The road is heavily traveled. No historic artifacts or associated features were observed on either side of the alignment within the V & T right of way. Approximately 1670 feet of Merrimac Road was surveyed and mapped.

5.2 Examination of Culverts

While the NDOT inventory (Matranga 2000) made reference to culverts located along the grade, it did not provide details as to their location or condition. As a result of agency consultation, Zeier & Associates was asked to locate and document existing culverts within the Phase 3 project corridor. Of the four culverts shown on the V & T 1916 map (Table 6), all four were relocated in the field. The inlet and outlet to the two wrought iron culverts (40-A and 40-B) have been largely buried by accumulations of sediment. Only traces of the culverts were observable. In their day, culverts 38-A and 38-B were somewhat unique. The features consisted of two rock walls built parallel to one another perpendicular to the railroad grade. Close-set lengths of rail were then laid across the opening between the walls. A layer of foundation or base material was placed atop the close-set rail and then the ballast and railroad track were placed atop the foundation. The larger of the two (Culvert 38-B) is intact. At some time, the rail top was removed from Culvert 38-A, a 24 inch diameter corrugated metal pipe was set between the rock walls, and then the area was filled in.

Table 6. 1916 Culverts Located in the Project Corridor

1916 Designation	1916 Stationing	Current Stationing	Description	Length (feet)	Diameter (inches)	Notes
40-B	2101+36	475+50	Wrought Iron	70	24	Observed
40-A	2079+66	453+51	Wrought Iron	150	24	Observed
38-B	1971+62	345+35 345+60	Rail Top6.5 ft wide	23		Observed
38-A	1964+05	337+80 337+95	Rail Top4.5 ft wide	21		Observed

One culvert was located in the field that was not depicted on the V & T 1916 map. Located at station 376+85, this 12 inch diameter culvert has been largely covered over. Only part of the inlet was still observable.

5.3 Monitoring Results, Geo-technical Excavations

Geo-technical excavations were conducted at 10 locations (Table 7) along the Phase 3 project corridor (Geocon 2009). The purpose of the geo-technical evaluation was to determine if material in the examined areas was competent to meet current design standards. In each case, a two-foot wide by about eight-foot long trench was excavated. Trenches tended to be about four feet in depth. All 10 of the excavations occurred within limits of the original Virginia & Truckee Railroad grade. Zeier & Associates, LLC monitored the ten geo-technical excavations that occurred along the Virginia & Truckee Railroad grade. Prior to the onset of excavation, the area was examined to ensure that no artifacts or feature were present. Backfill from the excavation was visually scanned as it was placed to the side of the pit to determine if artifacts were being unearthed. Finally, walls of the excavated trench were reviewed to determine if evidence was present regarding the grade's construction sequence. A general description of sediments was

prepared for all of the trenches and each one was photographed. Based on an agreement with the State Historic Preservation Office, a profile was drawn of a sample of trenches. Results of these efforts are reported in segment descriptions contained in Attachment Two. Monitoring of the geo-technical excavations did not result in an inadvertent discovery.

Table 7. Geo-technical Monitoring Locations and Results.

Pit Designation	Map	Land Status	Results
485+00	20	Public	Surface clear, nothing sub-surface
476+25	20	Public	Surface clear, nothing sub-surface
463+00	19	Public	Surface clear, nothing sub-surface
454+00	19	Public	Surface clear, nothing sub-surface
443+50	18	Public	Surface clear, nothing sub-surface
432+50	17	Public	Surface clear, nothing sub-surface
423+50	17	Private	Surface clear, nothing sub-surface
415+00	16	Private	Surface clear, nothing sub-surface
404+50	16	Private	Surface clear, nothing sub-surface
395+75	15	Private	Surface clear, nothing sub-surface

5.4 Inventory Activities and Results

The location of some proposed project activity areas was not known when Matranga (2000) conducted his inventory. Those areas consist of access roads, staging and material storage areas, and drainage and slope easements. As part of recent design efforts, the design team has identified some such areas. Zeier & Associates, LLC reviewed identified areas to determine whether they required inventory. When an inventory was required, it was performed in a manner consistent with current BLM and State of Nevada standards (see Attachment One, Figure 3).

5.4.1 Access Roads

Existing roads provide ready access to either end of the Phase 3 project corridor. Highland Drive (referred to herein as the A31 Line) extends to the RRE end of the corridor. This road, which follows the original route of the V & T Railroad, was addressed as part of Phase 2C (see Zeier and Reno 2007). The Brunswick Canyon Road (referred to herein as the DR Line) extends to the RRW end of the corridor. This road also follows the old V & T Railroad corridor but has been substantially improved to provide access to the Bertagnolli & Associates gravel operation. The hope is that most of Phase 3 of the Virginia & Truckee Railway Reconstruction project can be staged from these existing access roads. As a result, comparatively few access roads have been identified in the project design (Table 8). Those roads that have been identified are all existing roads that will see comparatively little modification prior to use.

Primary questions that needed to be addressed included whether any of the existing roads had been inventoried previously, and whether any were "historic," having been shown on old maps. The V & T Programmatic Agreement specifically addresses when it is appropriate to record linear resources (such as roads) that extend outside the 200-foot wide project corridor. Specifically, Section D.5 of the Programmatic Agreement identifies the following parameters.

- Category 1: Roads or linear features that are not mentioned in BLM Field Office records or included on General Land Office maps, that do not contain associated features or dateable artifacts, or that have lost all integrity through extensive blading. Linear features that fall into this category will not be recorded.
- Category 2: Roads, linear features or other resources mentioned on General Land Office maps but which are not associated with features or dateable artifacts and do not appear to be significant on the basis of known archival data will be treated as "isolated road segments." Linear features that fall into this category will be recorded in tabular form. Collected data will include at least two (2) GPS points, one at each end of the linear feature within the APE.
- Category 3: Roads or linear features mentioned on General Land Office maps (especially named roads) or known from other archival data to be potentially significant, or which have associated features or dateable artifacts will be recorded on short or long site forms depending on the complexity of the site.

Table 8. Phase 3C Access Roads.

Road	General Location (Map)	Land Status	Description	Portion in APE Inventoried Previously?	Category / Action	Results
DR	287+00 CR8	Private	Existing road along what once was railroad grade. Roadway improvements have removed remnants of grade and associated features.	Yes, by Matranga (2000)	1 No additional inventory needed, did not record road	V & T grade in this area (26Or311) obliterated. No other sites or features recorded in area.
MA	312+00 to 315+00 CR-10, 23	Private	Will realign road near grade changing crossing location. Existing dirt road, will add fill to raise the grade to meet that of the railroad	Partially, by Matranga (2000)	3 Inventoried an additional 6.93 acres, did record road	Road recorded as CrNv-03-6956. No other sites or features known to be in area.
PR	472+00 to 475+00 CR20	BLM	Existing dirt road serves as access to power line. Will realign road and add fill to raise the grade to meet that of the railroad	Partially, by Matranga (2000)	1 Inventoried an additional 2.26 acres, did not record road	Did not identify any sites or features. No other sites or features known to be in area.
A31	485+00 CR-21,22	Private, BLM	Existing road atop old railroad grade, limited surface grading but no other improvements scheduled	Yes, by Matranga (2000)	3 No additional inventory needed	Previously recorded as part of 26Ly536. No other sites or features known to be in area.

The DR Line is an existing improved gravel road that extends between Deer Run Road and the Bertagnolli & Associates gravel operation. This road also leads to the north end of a bridge that crosses the Carson River. From there, the road extends up Brunswick Canyon. The DR Line follows the corridor of the original V & T Railroad. The greatly improved, two-lane road now greatly exceeds the width of the V & T Railroad corridor which it follows. V & T features once present along the road corridor have been removed or buried as a result of this road construction. Given its disturbed nature, this road was assigned to Category 1. The old V & T corridor now occupied by the road was inventoried by Matranga (2000).

The MA Line is an existing unimproved dirt road that currently serves as an access corridor along an overhead power line. The road is shown on early historic maps of the area and appears to have been used to transport ore from Virginia City to the Merrimac Mill. Because of this, the MA Line was assigned to Category 3. A corridor extending 100 feet to either side of the existing road was inventoried (6.93 acres inventoried).

The PR Line is an existing unimproved dirt road that serves as an access corridor along an overhead power line. The road does not appear on GLO or other historic maps of the area. It is assumed that this road was established during construction of the power line. A private crossing will be retained in this area. This will require adjustments to the road grade on either side of the railroad grade. These adjustments would extend outside the previously inventoried project corridor (Matranga 2000). As a result, there was a need to inventory that portion of the road corridor that extends outside the project corridor (2.26 acres). Given its recent origin, it was assigned to Category 1.

The "A31" line is an existing dirt road located along a portion of the Virginia & Truckee Railroad grade. Improvement of the road would involve only limited surface grading. The railroad grade has been inventoried previously (Matranga 2000) and recorded as 26Ly535. No other sites or railroad features were located along the "A31" line as a result of that inventory. Given its age, the "A31" line was assigned to Category 3. Since it has been addressed previously, the road was not recorded.

When combined, review of the two access roads resulted in the examination of 9.19 acres.

5.4.2 Staging and Material Storage Areas

Design plans for Phase 3 of the Virginia & Truckee Railway project include several proposed staging and material storage areas. In some cases, these proposed areas would be located within the project corridor examined by NDOT (Matranga 2000). In other cases, part of the area is located outside the inventoried project corridor. Review of the design plan found three staging and material storage areas that extend outside that original inventory corridor (Table 9). In compliance with Section D.1(b) of the V & T Programmatic Agreement, these areas were inventoried to BLM Class III standards. The size denoted in Table 8 reflects only that portion of the easement located outside the NDOT inventory limits and a 100-foot buffer, as required by the V & T Programmatic Agreement. When combined, review of the three staging and material storage areas resulted in the examination of 14.33 acres.

Areas examined in association with the proposed staging and material disposal easements contain portions of sites or features. In some cases, those sites and features are not National Register eligible and would not require further consideration. In other cases, however, care will need to be taken to ensure that contributing features are not impacted.

Table 9. Phase 3 Staging and Material Storage Areas.

Designation	Location (Map)	Land Status	Description	Portion in APE Inventoried Previously?	Action	Results
Area C-27B / 28A (RRlf)	305+00 to 311+00 CR10	Private	Level area in the vicinity of the Merrimac Mill	Partially, by Matranga 2000	Inventoried an additional 2.81 acres	A portion of Feature 209 extends through the area. Elements of site CrNv-03-1435 are nearby.
Area C-28D ((RRlf)	316+50 to 326+00 CR10,11	Private	Level area in the area of the Yerington Smelter	Partially, by Matranga 2000	Inventoried an additional 8.59 acres	Elements of site CrNv-03-1458 extend through the area. Feature 206 is nearby.
Area C-29F (RRrt)	390+00 to 394+50 CR15	Private	Area atop the RRrt side of the Vivian Cut.	Partially, by Matranga 2000	Inventoried an additional 2.93 acres	Features 187, 188, and 189 extend through the area. Features 190 and 191 are located within the area. Features 186 and 192 are nearby.

5.4.3 Drainage Easements

Design plans for Phase 3 of the Virginia & Truckee Railway include several proposed drainage easements. Drainage easements are needed in conjunction with the placement of culverts. In all cases, the proposed culverts would be constructed within the study corridor examined by NDOT (Matranga 2000). However, in some cases additional space is required, allowing the design to address channel stability below culvert outlets. Review of the design plan found four drainage easements that extend outside limits of the NDOT inventory (Table 10). In compliance with Section D.1(b) of the V & T Programmatic Agreement, these areas were inventoried to BLM Class III standards. The size denoted in Table 9 reflects only that portion of the easement located outside the NDOT inventory limits and a 100-foot buffer, as required by the V & T Programmatic Agreement. When combined, review of the seven drainage easements resulted in the examination of 4.42 acres.

Table 10. Phase 3 Drainage Easements Requiring Inventory

Designation	Location (Map)	Land Status	Size	Results
C-29C	366+50 – 368+00 CR13	Private	1.35 acres	Feature 198 extends into the drainage easement
C-29E	372+50 – 377+85 CR14	Private	1.10 acres	Feature 196 is located near the drainage easement
C-29G	394+50 – 395+50 CR15	Private	0.94 acres	Feature 186 is located within the drainage easement; Features 185, 187, and 188 are located near the drainage easement
C-29K	414+50 – 416+50 CR16,17	Private	1.03 acres	Feature 177 is located near the drainage easement

Many of the areas examined around the proposed drainage easements contain portions of sites or features. In some cases, those sites and features are not National Register eligible and

would not require further consideration. In one case, however, care will need to be taken to ensure that potentially contributing features are not impacted.

5.4.4 Slope Easements

Design plans for Phase 3 of the Virginia & Truckee Railway include several proposed slope easements. Slope easements are needed in conjunction with the shaping and stabilization of slopes, typically those located along cut surfaces. In most cases, modification activities are confined to a small portion of the slope easement. The lower portions of the easements are located within the study corridor examined by NDOT (Matranga 2000). However, in some cases additional space is required, allowing the design to address slopes that extend outside that original inventory corridor. Review of the design plan found two slope easements that extend outside limits of the NDOT inventory (Table 11). In compliance with Section D.1(b) of the V & T Programmatic Agreement, these areas were inventoried to BLM Class III standards. The size denoted in Table 10 reflects only that portion of the easement located outside the NDOT inventory limits and a 100-foot buffer, as required by the V & T Programmatic Agreement. When combined, review of the two slope easements resulted in the examination of 5.23 acres.

Table 11. Phase 3 Slope Easements Requiring Inventory

Designation	Location (Map)	Land Status	Size	Results
C-25L	277+00 – 285+00 CR8	Private	1.79 acres	Not examined, heavily disturbed as part of the Bertagnolli gravel operation.
C-27A	290+75 – 302+00 CR9	BLM	3.95 acres	Feature 214 is within the slope easement; Features 212, 213, and 215, and elements of sites CrNv-03,1371 and 1435 are nearby
C-29L	414+50 – 416+50 CR16,17	Private	1.28 acres	Feature 79 is located near the slope easement

An additional slope easement that will be used as part of Phase 3 was reviewed and cleared as part of Phase 2C of the V & T Railway Reconstruction Project. Designated as area L1, it is located at the far RRE end of the Phase 3 corridor. It is located on private property.

6.0 NATIONAL REGISTER RECOMMENDATIONS

An important component of an intensive inventory is the development of recommendations regarding the National Register eligibility of identified resources. Eligibility is based on a consideration of two site characteristics – significance and integrity. Significance assesses the merits of a resource as measures against four criteria - does the resource contribute to a major pattern in history (Criterion A), is it associated with an important individual (Criterion B), is it an exemplary example of a distinctive type (Criterion C), or is it capable of contributing information relevant to important historic or prehistoric research questions (Criterion D)? Integrity refers to "...the authenticity of a property's historic or prehistoric period" (USDI 1982:35). Integrity is measured based on seven elements – location, design, setting, materials, workmanship, feeling, and association.

6.1 Procedural Considerations

Assessing the eligibility of resources present along the project corridor is complicated somewhat by the presence of partially overlapping historic districts. Overall, the Virginia & Truckee Railroad corridor can be divided into four logical categories:

- Areas within the Virginia City National Historic Landmark
- Areas within the Comstock State Historic District
- Areas within both the Virginia City National Historic Landmark and the Comstock State Historic District
- Areas that are outside of both districts

Some cultural resources fall into one spatial unit. Others, especially linear resources, extend across two, three, or all four types of spatial units. Examination indicates that the Phase 3 corridor falls into only one of the recognized spatial units – it is located outside of both districts.

The V & T programmatic agreement stipulates that when a linear historic period resource is located, parts of which are within and outside of the Virginia City National Historic Landmark, a determination will be made as to whether the resource relates to activities centrally associated with the Landmark. If so, emphasis will be placed on determining whether that resource is a contributing element to the Landmark at large. If such a determination cannot be made, emphasis will be placed on determining whether the resource is individually eligible to the National Register. Regardless of where a prehistoric period resource is located, emphasis will be placed on determining whether the resource is eligible to the National Register.

From an operational perspective, while the Virginia & Truckee Railroad is a resource that relates directly to activities centrally associated with the Landmark, it is also a sufficiently significant resource to stand on its own merit. As a result of a previous consultation, the Virginia & Truckee Railroad Grade was determined eligible for the National Register based on criteria A, C, and D. As a result, all railroad-related features will be evaluated in terms of their contribution to the significance of the railroad (CrNv-03-4412 [26Ly536/Or311]). Many of the features listed on the site form update are best considered as landscape elements whose ability to contribute is directly tied to the integrity of the railroad grade itself.

Mining related features were not encountered along the Phase 3 corridor, whereas milling related feature were. Most reflect small-scale features associated with larger site complexes that are located outside the area of potential effect. They will be evaluated individually to determine the likelihood that they may contribute to the National Register eligibility of the larger site complexes.

6.2 Previous Eligibility Determinations

Based on information provided by the BLM, and based on previous V & T Project consultations, one previously recorded site located within the Phase 3 APE has been the subject of a formal eligibility determination concurred upon by the SHPO. The V & T Railroad grade has been determined eligible for listing on the National Register based on criteria A, C, and D.

6.3 Previous Eligibility Recommendations

Other inventory reports have resulted in the documentation of resources in the vicinity of the Phase 3 APE (see Figure 3 and design set maps provided in Attachment One). None of those reports, however, provide National Register eligibility recommendations for sites located within the Phase 3 APE.

6.4 Current Eligibility Recommendations

Seven previously recorded site forms were updated and one new site was recorded as a result of Phase 3 field activities. National Register eligibility recommendations for those sites are provided below.

6.4.1 Site CrNv-03-4412 (26Ly536/Or311) – V & T Railroad Grade

Eighty-two features (see Table 4) were noted within and near the Phase 3 study corridor located along the Virginia & Truckee Railroad (CrNv-4412 [26Ly536/Or311]). Of those, sixty-one relate directly to the railroad. Each of the recorded features was reviewed to assess whether it contributes to the National Register eligibility of the site, which represents the archaeological reflection of the Virginia & Truckee Railroad grade. Results of that review are provided in Table 12 (also see Figure 3 and design set maps provided in Attachment One). Of the recorded features, it is recommended that thirty-six contribute to the eligibility of that site. These include constructed landscape features such as constructed retaining walls, shoo-fly roads, drainage ditches, and waste rock piles. It is recommended that eight recorded features do not contribute to the eligibility of the V & T Railroad. They include step terraces and borrow terraces. Activities that created these features involved making flat spots adjacent to the grade through the removal of material used elsewhere as fill. These areas have been heavily modified over the years as a result of constant reuse. It is further recommended that fourteen additional features do not contribute to the eligibility of the V & T Railroad. They represent locations shown on a 1916 map of the railroad that were not observed in the field. They included whistle posts, mile posts, crossing signs, platforms, and trestles. It is recommended that the remaining three features (partially exposed culverts) be left unevaluated at this time.

Table 12. V&T Feature Eligibility Recommendations

Site / Feature Number	Land Status	Location & Design map	Design Map	Description	National Register Status
157	BLM	483+45 - 484+30	CR-20	Waste Rock	Contributing
158	BLM	478+40 - 483+40	CR-20	Shoo-Fly Road	Contributing
160	BLM	462+10 - 464+70	CR-19	Retaining Wall	Contributing
161	BLM	456+40 - 459+60	CR-19	Terrace – Borrow	Not Contributing
162	BLM	455+00 - 456+15	CR-19	Road	Contributing
164	BLM	449+90 - 451+50	CR-18	Terrace – Borrow	Not Contributing
165	BLM	443+40 - 451+80	CR-18	Ditch	Contributing
166	BLM	442+90 - 443+60	CR-18	Waste Rock	Contributing
167	BLM	441+10 - 442+50	C R-18	Retaining Wall	Contributing
168	BLM	439+10 - 441+85	CR-18	Siding	Contributing
169	BLM	433+00 - 438+30	CR-18	Shoo-fly Road	Contributing
170	BLM	435+40 - 438+00	CR-18	Ditch	Contributing
171	BLM	434+60 - 435+10	CR-18	Waste Rock	Contributing
172	BLM	433+80 - 435+00	CR-18	Terraced Roads	Contributing
173	BLM	436+10	CR-18	Shoo-fly Road	Contributing
175	Private	424+70 - 426+30	CR-17	Terrace – Borrow	Not Contributing
176	Private	420+45 - 421+90	CR-17	Terrace – Borrow	Not Contributing
177	Private	413+70 - 414+75	CR-16	Terrace – Borrow	Not Contributing
178	Private	412+90 - 413+35	CR-16	Step Terrace	Not Contributing
179	Private	411+85 - 412+65	CR-16	Step Terrace	Not Contributing
181	Private	405+80 - 406+90	CR-16	Retaining Wall	Contributing
182	Private	404+35 - 405+30	CR-16	Retaining Wall	Contributing
183	Private	402+80 - 403+90	CR-16	Retaining Wall	Contributing
184	Private	401+85 - 402+60	CR-16	Retaining Wall	Contributing
185	Private	396+10 - 397+50	CR-15	Terrace	Contributing
186	Private	394+70 - 395+90	CR-15	Waste Rock	Contributing
187	Private	389+40 - 394+95	CR-15	Shoo-fly Road	Contributing
188	Private	393+30 - 394+60	CR-15	Road	Contributing
189	Private	389+60 - 394+50	CR-15	Ditch	Contributing
190	Private	392+20 - 394+00	CR-15	Waste Rock	Contributing
191	Private	390+20 - 392+00	CR-15	Waste Rock	Contributing
192	Private	387+60 - 389+50	CR-15	Retaining Wall	Contributing
194	Private	379+60 - 380+20	CR-14	Retaining Wall	Contributing
196	Private	376+00 - 376+70	CR-14	Terrace – Borrow	Not Contributing
197	Private	369+60 - 370+30	CR-14	Retaining Wall	Contributing
198	Private	367+40 - 368+20	CR-13	Retaining wall	Contributing
199	Private	362+70 - 363+45	CR-13	Waste Rock	Contributing
200	BLM	345+35 - 345+60	CR-12	Culvert	Contributing
201	Private	337+80 - 337+95	CR-12	Culvert	Contributing
206	Private	317+80 - 320+95	CR-12	Siding	Contributing
207	Private	314+10 - 314+75	CR-10	Waste Rock	Contributing
212	Private	295+35 - 296+50	CR-9	Retaining Wall	Contributing
213	Private	293+80 - 295+00	CR-9	Retaining Wall	Contributing
214	Private	293+70 - 294+65	CR-9	Retaining Wall	Contributing
215	Private	292+40 - 292+90	CR-9	Retaining Wall	Contributing
Noted in the Field but Not Fully Exposed					
159	BLM	475+50	CR-20	Culvert	Unevaluated
163	BLM	453+51	CR-19	Culvert	Unevaluated

Site / Feature Number	Land Status	Location & Design map	Design Map	Description	National Register Status
195	Private	376+85	CR-14	Culvert	Unevaluated
Depicted on 1916 V & T Map but Not Found in the Field					
156	Private	485+65		Mile Post	Not Contributing
174	BLM	432+91		Mile Post	Not Contributing
180		407+54		Whistle Post	Not Contributing
193	Private	380+10		Mile Post	Not Contributing
202	Private	327+36		Mile Post	Not Contributing
203	Private	325+22		Crossing Sign	Not Contributing
204	Private	319+75		Clearance Post	Not Contributing
205	Private	318+25		Whistle Post	Not Contributing
208	Private	310+00		Crossing Sign	Not Contributing
210	Private	309+41		Crossing Sign	Not Contributing
211	Private	307+60		Platform	Not Contributing
216	Private	290+30		Whistle Post	Not Contributing
217	Private	286+18 - 285+55		Trestle	Not Contributing
218	Private	277+60 - 277+85		Trestle	Not Contributing

6.4.2 The Carson River Mills

Twenty-one features appear to be related directly to one of the six mill sites located in that portion of the Carson River Canyon traversed by the Phase 3 V & T Railway Reconstruction project corridor. They are the Brunswick Mill (CrNv-03-1371, 26Or144), the Eureka Mill (CrNv-03-1419), the Merrimac Mill (CrNv-03-1435, 26Or301), the Santiago Mill (CrNv-03-1449, 26Or304), the Vivian Mill (CrNv-03-1457, 26Or305), and the Yerington Smelter (CrNv-03-1458, 26Or306). None of the milling complexes were located within the present study corridor. The Brunswick was the closest, but portions of the mill site located closest to the grade have been substantially modified by an on-going gravel operation. The condition of the other mill sites is not known with any certainty. No standing structures appear to remain, although each might contain a rich archaeological record. Most see fairly regular use by the public as camping (often by vagrants) and picnic spots, or as is the case of the Yerington Smelter, as a shooting gallery. Abandoned, burned, and shot up automobiles abound. Given that the mill sites are located outside the project corridor, they were not recorded archaeologically. At the request of the BLM, readily available archival information was compiled and is provided in site form updates (provided in Attachment Three). Since the mill sites were not formally recorded, a recommendation is not provided regarding their National Register eligibility.

Only peripheral elements of the mills were found within the project corridor (Table 13). These included ore chutes (Eureka, Santiago, and Vivian), railroad spurs (Merrimac and Yerington Smelter), a dam and ditch complex (Merrimac), a tailing pond and blanket sluice complex (Brunswick), foundations or footings (Brunswick and Merrimac), and a rock structure (Vivian). The railroad spurs are considered to be contributing elements of the V & T Railroad. It is recommended that an evaluation of the Copper Canyon Mill is not necessary in that no evidence of the mill was located. It is recommended that evaluation of the remaining features be deferred until such time as the mills themselves can be formally recorded and evaluated. For purposes of the present effort, these features will be managed as if they are contributing elements associated with the various mill sites.

Table 13. Milling Related Feature Eligibility Recommendations

Site / Feature Number	Land Status	Location & Design map	Description	National Register Status
03-1419	BLM	444+80 - 448+20 CR-18	Eureka Trestle	Mill not evaluated; feature could be contributing element
03-1449 26Or304	Private	400+70 - 401+10 CR-15	Ore Bin	Mill not evaluated; feature could be contributing element
188	Private	393+30 – 394+60 CR-14	Road	Mill not evaluated; feature could be contributing element
03-1457 26Or305	Private	384+80 - 385+25 CR-14	Retaining Wall	Mill not evaluated; feature could be contributing element
03-1457 26Or305	Private	367+50 CR-13	Rock Structure	Mill not evaluated; feature could be contributing element
	BLM	CR-12	Copper Canyon Mill	Not Found
03-1458 26Or306	Private	322+70 - 325+00 CR-11	Spur	Contributing element of the V & T
03-1435 26Or301	Private	313+25 CR-9	Footings and Waste Rock	Mill not evaluated; feature could be contributing element
03-1435 26Or301	Private	308+00 - 311+20 CR-10	Spur	Mill not evaluated; feature could be contributing element
03-1435 26Or301	Private	303+50 – 311+00 CR-9	Foundations and Pits	Mill not evaluated; feature could be contributing element
03-6956	Private	309+72 CR-9	Road	Not Eligible
03-1435 26Or301	Private	298+50 - 308+20 CR-9, 10	Ditch	Mill not evaluated; feature could be contributing element
03-1435 26Or301	Private	298+80 - 299+85 CR-9	Terrace	Mill not evaluated; feature could be contributing element
03-1435 26Or301	Private	296+20 - 297+15 CR-9	Dam	Mill not evaluated; feature could be contributing element
03-1435 26Or301	Private	297+70 - 298+50 CR-9	Retaining Wall	Mill not evaluated; feature could be contributing element
03-1435 26Or301	Private	290+70 CR-8	Waste Rock	Mill not evaluated; feature could be contributing element
03-1371 26Or144	Private	287+85 - 290+90 CR-9	Tailing Pond	Mill not evaluated; feature could be contributing element
03-1371 26Or144	Private	286+10 - 287+60 CR-9	Tailing Pond	Mill not evaluated; feature could be contributing element
03-1371 26Or144	Private	283+70 - 285+90 CR-8, 9	Tailing Pond	Mill not evaluated; feature could be contributing element
03-1371 26Or144	Private	284+00 - 285+70	Blanket Sluice	Mill not evaluated; feature could be contributing element
03-1371 26Or144	Private	281+85 - 283+50 CR-8	Tailing Pond	Mill not evaluated; feature could be contributing element
03-1371 26Or144	Private	278+75 CR-7	Footing Walls	Mill not evaluated; feature could be contributing element

6.4.3 Site CrNv-03-6956 – The Merrimac Road

This site represents the present day manifestation of the old Merrimac Mill Road. This is the road that was used to transport ore from the Comstock to the Merrimac Mill prior to

construction of the V & T Railroad. It served this purpose from 1861 through 1869. Following completion of the railroad the road continued to be used but at a greatly decreased level of service. Traffic would have been limited to casual use by mill workers and visitors. After closure of the mill in the 1890s, even this traffic disappeared. The road was revived in the mid twentieth century as a power line access road. The road was graded to accommodate modem needs. While related to a historically important event, the road present today retains very little integrity. While in the same general location as during historic times, the road has seen regular use as a power line access corridor. Evidence was noted that the road has been bladed on occasion, destroying any integrity of design or workmanship once evident. No artifacts or construction features are present that date to the period of significance. It is recommended that this site is not National Register eligible.

7.0 PROJECT EFFECT AND TREATMENT CONSIDERATIONS

Provided in this chapter are discussions regarding the proposed project's impacts to significant cultural resources, and recommendations regarding the type and level of treatment appropriate given those impacts. These discussions are provided in the hope that they will help federal and state agencies arrive at a determination of project effect and treatment needs.

7.1 Project Effect Considerations

It is necessary to assess whether the proposed project will impact significant cultural resources. The consideration of project effects must take into account direct and indirect impacts that might occur due to construction of the proposed project, direct and indirect impacts that might occur due to long-term project related activities (drainage easements, slope easements, etc.), and direct and indirect impacts that might occur due to short-term project related activities (access roads, storage areas, etc.). Consistent with Section B.2d of the V & T Programmatic Agreement, consideration must also be given to visual impacts that might occur to nearby properties potentially eligible for listing on the National Register of Historic Places based on criteria A, B, or C. The potential for each type of impact will be addressed separately.

Project design drawings were reviewed to determine if documented sites and features recommended as National Register eligible or contributing would be impacted during project construction. Potential impacting activities include grade reconstruction, drainage feature construction, access road use, and staging area use. Results of that exercise are provided in Table 14. The nature and magnitude of anticipated impacts are discussed in the table.

Table 14. Project Impacts to Significant / Contributing Sites and Features

Site / Feature Number	Land Status	Location & Design map	Description	Comment
Contributing Elements – Virginia & Truckee Railroad 26Or311				
157	BLM	483+45 - 484+30 CR-20	Waste Rock	Feature is adjacent to slope treatment area. Feature would not be impacted; intact portions offset 20 feet from easement edge.
158	BLM	478+40 - 483+40 CR-20	Shoo-Fly Road	Feature would not be impacted; intact portions offset 20 feet from centerline.
160	BLM	462+10 - 464+70 CR-19	Retaining Wall	Construction limit would extend along the edge of this feature. Feature elements could be impacted during construction.
162	BLM	455+00 - 456+15 CR-19	Road	Feature would not be impacted; intact portions offset 40 feet from centerline.
165	BLM	443+40 - 451+80 CR-18	Ditch	Feature would not be impacted; intact portions offset 30 feet from centerline.
166	BLM	442+90 - 443+60 CR-18	Waste Rock	Feature would not be impacted; intact portions offset 30 feet from centerline.
167	BLM	441+10 - 442+50 CR-18	Retaining Wall	Feature would not be impacted; intact portions offset 30 feet from centerline.

Site / Feature Number	Land Status	Location & Design map	Description	Comment
168	BLM	439+10 - 441+85 CR-18	Siding	A new siding would be constructed atop the old siding. New ballast would be added to the existing terrace. No constructed features would be impacted.
169	BLM	433+00 - 438+30 CR-18	Shoo-fly Road	Feature is within Slope Easement C-29L. Feature elements could be impacted during construction.
170	BLM	435+40 - 438+00 CR-18	Ditch	Feature is within Slope Easement C-29L. Feature elements could be impacted during construction.
171	BLM	434+60 - 435+10 CR-18	Waste Rock	Feature is within Slope Easement C-29L. Feature elements could be impacted during construction.
172	BLM	433+80 - 435+00 CR-18	Terraced Roads	Feature is within Slope Easement C-29L. Feature elements could be impacted during construction.
173	BLM	436+10 CR-18	Shoo-fly Road	Feature is within Slope Easement C-29L. Feature elements could be impacted during construction.
181	Private	405+80 - 406+90 CR-16	Retaining Wall	Construction limit would most likely require removal of this wall. Feature elements would be impacted during construction.
182	Private	404+35 - 405+30 CR-16	Retaining Wall	Construction limit would extend along the edge of this feature. Feature elements could be impacted during construction.
183	Private	402+80 - 403+90 CR-16	Retaining Wall	Construction limit would extend along the edge of this feature. Feature elements could be impacted during construction.
184	Private	401+85 - 402+60 CR-16	Retaining Wall	Construction limit would extend along the edge of this feature. Feature elements could be impacted during construction.
185	Private	396+10 - 397+50 CR-15	Terrace	Feature would not be impacted; intact portions offset 15 feet from centerline.
186	Private	394+70 - 395+90 CR-15	Waste Rock	Feature is within Drainage Easement C-29G. Feature elements could be impacted during construction.
187	Private	389+40 - 394+95 CR-15	Shoo-fly Road	Feature is within Slope Easement C-29F. Feature elements could be impacted during construction.
189	Private	389+60 - 394+50 CR-15	Ditch	Feature is within Slope Easement C-29F. Feature elements could be impacted during construction.
190	Private	392+20 - 394+00 CR-15	Waste Rock	Feature is within Slope Easement C-29F. Feature elements could be impacted during construction.
191	Private	390+20 - 392+00 CR-15	Waste Rock	Feature is within Slope Easement C-29F. Feature elements could be impacted during construction.
192	Private	387+60 - 389+50 CR-15	Retaining Wall	Construction limit would extend along the edge of this feature. Feature elements could be impacted during construction.
194	Private	379+60 - 380+20 CR-14	Retaining Wall	Feature is within Slope Easement C-29D. Feature elements could be impacted during construction.
197	Private	369+60 - 370+30 CR-14	Retaining Wall	Feature is within Slope Easement C-29D. Feature elements could be impacted during construction.
198	Private	367+40 - 368+20 CR-13	Retaining wall	Feature is within Drainage Easement C-29C. Feature elements could be impacted during construction.
199	Private	362+70 - 363+45 CR-13	Waste Rock	Feature would not be impacted; intact portions offset 15 feet from centerline.
200	BLM	345+35 - 345+60	Culvert	Project construction may require removal of

Site / Feature Number	Land Status	Location & Design map	Description	Comment
		CR-12		feature. Site elements would be impacted.
201	Private	337+80 - 337+95 CR-12	Culvert	Project construction may require removal of feature. Site elements would be impacted.
206	Private	317+80 - 320+95 CR-122	Siding	A new siding would be constructed atop the old siding. New ballast would be added to the existing terrace. No constructed features would be impacted.
207	Private	314+10 - 314+75 CR-10	Waste Rock	Feature would not be impacted; intact portions offset 20 feet from centerline.
212	Private	295+35 - 296+50 CR-9	Retaining Wall	Construction limit would extend along the edge of this feature. Feature elements could be impacted during construction.
213	Private	293+80 - 295+00 CR-9	Retaining Wall	Construction limit would extend along the edge of this feature. Feature elements could be impacted during construction.
214	Private	293+70 - 294+65 CR-9	Retaining Wall	Feature is within Slope Easement C-27A. Feature elements could be impacted during construction.
215	Private	292+40 - 292+90 CR-9	Retaining Wall	Construction limit would extend along the edge of this feature. Feature elements could be impacted during construction.
Milling Related Features				
03-1419	BLM	444+80 - 448+20 CR-18	Eureka Trestle	Construction limit would extend along the edge of this feature. Feature elements could be impacted during construction.
03-1449 26Or304	Private	400+70 - 401+10 CR-15	Ore Bin	Construction limit would extend along the edge of this feature. Feature elements could be impacted during construction.
188	Private	393+30 – 394+60 CR-14	Road	Feature is within Slope Easement C-29F. Feature elements could be impacted during construction.
03-1457 26Or305	Private	384+80 - 385+25 CR-14	Retaining Wall	Construction limit would extend along the edge of this feature. Feature elements could be impacted during construction.
03-1457 26Or305	Private	322+70 – 325+00 CR-10	Rock Structure	Feature would not be impacted; intact portions offset 20 feet from edge of Drainage Easement C-29E.
03-1458 26Or306	Private	322+70 - 325+00 CR-11	Spur	Feature extends through Staging Area C-28D. It could be impacted during use of the area.
03-1435 26Or301	Private	313+25 CR-9	Footings and Waste Rock	Feature would not be impacted; intact portions offset 40 feet from centerline of Access Road MA South.
03-1435 26Or301	Private	308+00 - 311+20 CR-10	Spur	Feature extends through Staging Area C-28D. It could be impacted during use of the area.
03-1435 26Or301	Private	303+50 – 311+00 CR-9	Foundations and Pits	Feature is within Staging Area C-27B/28A. Feature elements could be impacted during construction.
03-1435 26Or301	Private	298+50 - 308+20 CR-9, 10	Ditch	Feature would not be impacted; intact portions offset 20 feet from edge of Staging Area C-27B/28A.
03-1435 26Or301	Private	298+80 - 299+85 CR-9	Terrace	Feature would not be impacted; intact portions offset 40 feet from centerline.
03-1435 26Or301	Private	296+20 - 297+15 CR-9	Dam	Feature would not be impacted; intact portions offset 60 feet from centerline.

Site / Feature Number	Land Status	Location & Design map	Description	Comment
03-1435 26Or301	Private	297+70 - 298+50 CR-9	Retaining Wall	Feature would not be impacted; intact portions offset 40 feet from centerline.
03-1371 26Or144	Private	290+70 CR-8	Waste Rock	Feature would not be impacted; intact portions offset 180 feet from centerline.
03-1371 26Or144	Private	287+85 - 290+90 CR-9	Tailing Pond	Feature would not be impacted; intact portions offset 15 feet from centerline.
03-1371 26Or144	Private	286+10 - 287+60 CR-9	Tailing Pond	Feature would not be impacted; intact portions offset 15 feet from centerline.
03-1371 26Or144	Private	283+70 - 285+90 CR-8, 9	Tailing Pond	Feature would not be impacted; intact portions offset 20 feet from centerline.
03-1371 26Or144	Private	284+00 - 285+70	Blanket Sluice	Feature would not be impacted; intact portions offset 20 feet from centerline.
03-1371 26Or144	Private	281+85 - 283+50 CR-8	Tailing Pond	Feature would not be impacted; intact portions offset 30 feet from centerline.
03-1371 26Or144	Private	278+75 CR-7	Footing Walls	Feature would not be impacted; intact portions offset 200 feet from centerline.
Unevaluated – Not Yet Recorded / Found				
159	BLM	475+50 CR-20	Culvert	Construction limits extend across culvert.
163	BLM	453+51 CR-19	Culvert	Construction limits extend across culvert.
195	Private	376+85 CR-14	Culvert	Construction limits extend across culvert.

For some 20,720 linear feet the new railroad will be constructed atop the old railroad grade. Horizontal deviations are slight. Within the Phase 3 project corridor, the old grade has been recorded as site 26Ly536/Or311. This site has been determined to be eligible for listing on the National Register of Historic Places. Since removal of the rail and ties in 1941, the railroad grade has been used as a roadway. This had affected the upper surface of railroad grade, causing the ballast material to be dispersed and rutted. It has been reported that the road was on occasion bladed, especially after sever winters or when substantial rock fall in cut areas impeded use of the roadway. In comparison to the ballast layer, the grade's foundation appears to remain intact. To minimize the amount of filling required along the grade, the design team has proposed that the finished grade (the elevation at the top of the rails) be dropped slightly. In some locations this would require the removal of old railroad ballast (the material that forms the current surface of the road) and a sliver of the old foundation. In other areas, impacts would be limited to removal of the old railroad ballast. As noted, the ballast layer has been impacted to some extent through its informal development, irregular maintenance, and regular use as a road. Although the existing ballast layer would be removed or buried, it would be replaced with a new ballast layer consistent in size and texture with the newly constructed track. Given that the proposed project's impact will be limited largely to the ballast layer and that the underlying foundation will remain essentially intact, it is recommended that construction of a new track atop the old grade will not impact the integrity or eligibility of site 26Ly536/Or311.

Construction of the Virginia & Truckee Railroad in 1869 required the excavation of several sizable cuts and the creation of several fills. Although not recorded specifically as features, these cut faces and fill slopes represent landscape features that now play into the railroad's integrity of setting. The cut faces have not remained static over the years. Exposure to the elements has caused erosion to occur. In some cuts, rocks of varying sizes have broken loose and tumbled to the toe of the slope, constricting or even blocking the roadway in some places. Along

some of the taller cuts, this has resulted in the development of a concave surface that is inherently unstable.

As part of Phase 3, all slope surfaces will be addressed in some manner. In some cases, activities will consist of little more that clearing rock fall and soil cover from the base of the slope. In nine locations construction activities would need to be more aggressive (Geocon 2009). Actions proposed at these cuts are described in Table 15. In two areas the existing cut slope is very steep and extends for some distance upslope of the railroad grade. These conditions preclude the use of wire mesh as the only means of controlling rock fall. In these locations, a more aggressive form of control is required. Narrow benches will be cut at intervals up the steep hillside (see representative cross sections included with segment descriptions in Attachment Two). The intervening hillside faces will be scaled. Rock fall would collect on the cut terraces, protecting the grade, trains, and passengers from potential harm. In all other cases, slopes would be laid back and scaled to dislodge loose rock and sediment. Wire mesh would be installed in some locations, depending on local circumstances. Given the steep nature of the river canyon through which Phase 3 passes, comparatively few slopes are scheduled to be modified. This reflects the design team's effort to maintain the current general size and configuration of the cut slopes, making only those changes necessary to accommodate construction and insure public safety. It is recommended that the proposed modification of cut slopes along the Phase 3 project corridor will not impact the integrity of setting associated with the National Register eligibility of site 26Ly536/0r311.

Table 15. Cut Slope Subject to Major Modification.

Location (Map)	Proposed Action
293+00 – 301+50 RRlf CR-8	Lay back the slope, cut up to four terraces at intervals up the steep hill slope, and scale intervening faces. Terraces would stabilize slopes and control rock fall. Wire mesh may be installed on some cleaned faces. To the extent possible, mesh and wall material to match color of natural slope. Feature 214 is located in this area and may be impacted.
326+00 – 330+00 RRlf CR-10	Lay back the slope, cut a single terrace mid slope, and scale intervening faces. The terrace would stabilize the slope and control rock fall. Wire mesh may be installed on some cleaned faces or in areas where large blocks of rock are left in place. To the extent possible, mesh and wall material to match color of natural slope. Some areas would be spot bolted. No known features are present in this area.
349+00 – 360+00 RRlf CR-11 & 12	Lay back the slope and conduct scaling along upper portions of the slope. Install wire mesh or low gabion walls to contain rock fall. To the extent possible, mesh and wall material to match color of natural slope. No known features are present in this area.
380+00 – 389+00 RRlf CR-13 & 14	Lay back the slope in selected areas. Scale loose rock above the slope crests. Install wire mesh or catchment fencing. To the extent possible, mesh and wall material to match color of natural slope. Feature 194 is located at the far RRW end of this area and may be impacted.
391+00 – 395+00 RRrt & RRlf CR-14	Scale both faces of the Vivian Cut. Wire mesh may be installed along the upper portions of both the RRrt and RR1fcut face to reduce toppling and rock fall. To the extent possible, mesh and wall material to match color of natural slope. Features 189, 190, and 191 are present in the area and may be impacted.
400+50 – 415+00 RRlf CR-14 & 15	Scale slopes adjacent to grade. Conduct limited scaling of isolated areas at the top of the cuts and in other identified high hazard areas. Isolated outcrops may warrant spot bolting or confinement with wire mesh. To the extent possible, mesh and wall material to match color of natural slope. No known features are present in this area.
429+00 – 431+00	Lay back the slope. Isolated outcrops may warrant spot bolting or confinement with wire

RRlf CR-16	mesh. To the extent possible, mesh and wall material to match color of natural slope. No known features are present in this area.
434+50 – 436+00 RRrt & RRlf CR-17	Lay back slopes on either side of this cut, conduct selected scaling, and install wire mesh. To the extent possible, mesh and wall material to match color of natural slope. Features 169, 170, 171, 172, and 173 are present in this area and may be impacted.
457+00 – 460+00 RRlf CR-17	Lay back slope, conduct selected scaling, and install wire mesh. To the extent possible, mesh and wall material to match color of natural slope. Feature 165 is present in this area and rnav be impacted.

Since their construction in 1869, fill slopes along the Virginia & Truckee Railroad have stabilized and become covered with vegetation typical of their specific environments. After abandonment of the grade, that vegetation has, in some places, begun to encroach onto the surface of the grade itself. Reconstruction of the railroad will require the removal of vegetation on the grade surface and along the upper edges of the fill slopes. Earthwork along the grade may result in the placement of limited amounts of fill material on fill surfaces. This will be most pronounced in areas where the horizontal alignment of the track has been shifted somewhat in comparison to the original alignment. In these cases, a new veneer of material would be deposited along one or both faces of an existing fill slope. It is recommended that these activities will not impact the integrity of design, material, or setting associated with the National Register eligibility of site 26Ly536/Or311.

7.2 Project Treatment Considerations

Discussions of project effect and the need for treatment should take into consideration both the good and the bad. It is proposed that the project design contains several elements that by their nature tend to limit impacts to significant cultural resources. First, as noted above, impacts to steep cut slopes have been minimized to the extent practicable. Second, the cross section width of the grade has been reduced over what was constructed as part of Phase 1. The intent is to keep the new grade on top of the existing foundation to the fullest extent possible without a need for extensive cuts or fills. Third, the elevation of the finished grade had been dropped slightly, greatly reducing the amount of fill material that would need to be placed along the grade. All of these design elements were included with the specific intent of reducing the visual impact of the reconstructed railroad grade.

However, reconstruction of the Virginia & Truckee Railroad does have the potential to impact selected sites and features that are recommended as National Register eligible, or as contributing elements to sites or districts that are National Register eligible. Table 16 provides a listing of those sites and features along with recommended treatment.

In many cases, treatment would take the form of erecting construction fencing along site or feature edges and routinely monitoring fencing and site integrity. All such activities would be carried out by a cultural resource professional. This monitoring would occur in accordance with provisions listed in Section I of the V & T Programmatic Agreement. The location of fencing would be shown on the final design drawings, along with call outs specifying the need for monitoring. At three culvert locations, the final design drawings would contain call outs specifying that a cultural resource monitor be present during ground disturbing activities. The purpose of the monitor is to document evidence of the culvert when and if it is uncovered during excavation activities. If evidence of the early culverts is encountered, work in the area would stop

so that the culverts could be properly documented in accordance with standards prescribed by SHPO and BLM.

Table 16. Recommended Treatment at Sites and Features Subject to Impacts

Site / Feature Number	Land Status	Location & Design map	Description	Comment
Contributing Elements – Virginia & Truckee Railroad 26Or311				
159	BLM	475+50 CR-19	Culvert	Cultural Resources Monitor to be present during ground disturbing activities; document culvert.
160	BLM	462+10 - 464+70 CR-19	Retaining Wall	Construct avoidance fence at edge of disturbance. Cultural resources monitor to inspect fence and site integrity.
163	BLM	453+51 CR-18	Culvert	Cultural Resources Monitor to be present during ground disturbing activities; document culvert.
168	BLM	439+10 - 441+85 CR-18	Siding	A new siding would be constructed atop the old siding. Cultural resources monitor to be present during initial surface disturbance.
169	BLM	433+00 - 438+30 CR-18	Shoo-fly Road	Design slope improvement to avoid impacts to feature. Construct avoidance fence at edge of disturbance. Cultural resources monitor to inspect fence and site integrity.
170	BLM	435+40 - 438+00 CR-18	Ditch	Design slope improvement to avoid impacts to feature. Construct avoidance fence at edge of disturbance. Cultural resources monitor to inspect fence and site integrity.
171	BLM	434+60 - 435+10 CR-18	Waste Rock	Design slope improvement to avoid impacts to feature. Construct avoidance fence at edge of disturbance. Cultural resources monitor to inspect fence and site integrity.
172	BLM	433+80 - 435+00 CR-18	Terraced Roads	Design slope improvement to avoid impacts to feature. Construct avoidance fence at edge of disturbance. Cultural resources monitor to inspect fence and site integrity.
173	BLM	436+10 CR-18	Shoo-fly Road	Design slope improvement to avoid impacts to feature. Construct avoidance fence at edge of disturbance. Cultural resources monitor to inspect fence and site integrity.
181	Private	405+80 - 406+90 CR-16	Retaining Wall	Conduct treatment prior to onset of construction near wall. Prepare photographic record and written description to current SHPO standards.
182	Private	404+35 - 405+30 CR-16	Retaining Wall	Construct avoidance fence at edge of disturbance. Cultural resources monitor to inspect fence and site integrity.
183	Private	402+80 - 403+90 CR-16	Retaining Wall	Construct avoidance fence at edge of disturbance. Cultural resources monitor to inspect fence and site integrity.
184	Private	401+85 - 402+60 CR-16	Retaining Wall	Construct avoidance fence at edge of disturbance. Cultural resources monitor to inspect fence and site integrity.
186	Private	394+70 - 395+90 CR-15	Waste Rock	Design drainage improvement to avoid impacts to feature. Construct avoidance fence at edge of disturbance. Cultural resources monitor to inspect fence and site integrity.

Site / Feature Number	Land Status	Location & Design map	Description	Comment
187	Private	389+40 - 394+95 CR-15	Shoo-fly Road	Design slope improvement to avoid impacts to feature. Construct avoidance fence at edge of disturbance. Cultural resources monitor to inspect fence and site integrity.
189	Private	389+60 - 394+50 CR-15	Ditch	Design slope improvement to avoid impacts to feature. Construct avoidance fence at edge of disturbance. Cultural resources monitor to inspect fence and site integrity.
190	Private	392+20 - 394+00 CR-15	Waste Rock	Design slope improvement to avoid impacts to feature. Construct avoidance fence at edge of disturbance. Cultural resources monitor to inspect fence and site integrity.
191	Private	390+20 - 392+00 CR-15	Waste Rock	Design slope improvement to avoid impacts to feature. Construct avoidance fence at edge of disturbance. Cultural resources monitor to inspect fence and site integrity.
192	Private	387+60 - 389+50 CR-15	Retaining Wall	Construct avoidance fence at edge of disturbance. Cultural resources monitor to inspect fence and site integrity.
194	Private	379+60 - 380+20 CR-14	Retaining Wall	Construct avoidance fence at edge of disturbance. Cultural resources monitor to inspect fence and site integrity.
195	Private	376+85 CR-13	Culvert	Cultural Resources Monitor to be present during ground disturbing activities; document culvert.
197	Private	369+60 - 370+30 CR-14	Retaining Wall	Design slope improvement to avoid impacts to feature. Construct avoidance fence at edge of disturbance. Cultural resources monitor to inspect fence and site integrity.
198	Private	367+40 - 368+20 CR-13	Retaining wall	Design drainage improvement to avoid impacts to feature. Construct avoidance fence at edge of disturbance. Cultural resources monitor to inspect fence and site integrity.
200	BLM	345+35 - 345+60 CR-12	Culvert	Conduct treatment prior to onset of construction near culvert. Prepare photographic record and written description to current SHPO standards.
201	Private	337+80 - 337+95 CR-12	Culvert	Conduct treatment prior to onset of construction near culvert. Prepare photographic record and written description to current SHPO standards.
206	Private	317+80 - 320+95 CR-122	Siding	A new siding would be constructed atop the old siding. Cultural resources monitor to be present during initial surface disturbance.
212	Private	295+35 - 296+50 CR-9	Retaining Wall	Construct avoidance fence at edge of disturbance. Cultural resources monitor to inspect fence and site integrity.
213	Private	293+80 - 295+00 CR-9	Retaining Wall	Construct avoidance fence at edge of disturbance. Cultural resources monitor to inspect fence and site integrity.
214	Private	293+70 - 294+65 CR-9	Retaining Wall	Construct avoidance fence at edge of disturbance. Cultural resources monitor to inspect fence and site integrity.
215	Private	292+40 - 292+90 CR-9	Retaining Wall	Construct avoidance fence at edge of disturbance. Cultural resources monitor to inspect fence and site integrity.

Site / Feature Number	Land Status	Location & Design map	Description	Comment
Milling Related Features				
03-1419	BLM	444+80 - 448+20 CR-18	Eureka Trestle	Construct avoidance fence at edge of disturbance. Cultural resources monitor to inspect fence and site integrity.
03-1449 26Or304	Private	400+70 - 401+10 CR-15	Ore Bin	Construct avoidance fence at edge of disturbance. Cultural resources monitor to inspect fence and site integrity.
188	Private	393+30 - 394+60 CR-15	Road	Design slope improvement to avoid impacts to feature. Construct avoidance fence at edge of disturbance. Cultural resources monitor to inspect fence and site integrity.
03-1457	Private	384+80 - 385+25 CR-14	Retaining Wall	Construct avoidance fence at edge of disturbance. Cultural resources monitor to inspect fence and site integrity.
03-1458 26Or306	Private	322+70 - 325+00 CR-11	Spur	Construct avoidance fence around feature. Cultural resources monitor to inspect fence and site integrity.
03-1435 26Or301	Private	308+00 - 311+20 CR-10	Spur	Construct avoidance fence around feature. Cultural resources monitor to inspect fence and site integrity.
03-1435 26Or301	Private	303+50 – 311+00 CR-9	Foundation and Pits	Design slope improvement to avoid impacts to feature. Construct avoidance fence at edge of disturbance. Cultural resources monitor to inspect fence and site integrity.
Unevaluated – Not Yet Recorded / Found				
159	BLM	475+50 CR-20	Culvert	Cultural resources monitor to review excavation activities. Document culvert as appropriate.
163	BLM	453+51 CR-19	Culvert	Cultural resources monitor to review excavation activities. Document culvert as appropriate.
195	Private	376+85 CR-14	Culvert	Cultural resources monitor to review excavation activities. Document culvert as appropriate.

Several Comstock era mill sites are present in the Carson River Canyon and were connected to the V & T Railroad. For the most part, the actual sites where the mill buildings were located are outside of the Phase 3 project corridor. No project activities are scheduled to occur on these mill site locations. Mill-related features located within the corridor tend to be limited to points of connection between the railroad and the mills. These typically include ore chutes, spurs, and sidings. These interconnecting elements can be protected through the placement of construction fencing along site or feature edges and routine monitoring of fencing and site integrity. The purpose of the monitor is to insure that the fenced sites and features are not physical damaged. If they observe evidence of any such damage, the monitor will comply with Section I of the V & T Programmatic Agreement. Work within 100 feet of the impacted resource will halt and an appropriate treatment plan will be developed and implemented.

Some proposed slope and drainage easements contain features that are recommended as contributing elements to sites that are National Register eligible. It is recommended that slope and drainage features be designed so as to avoid impacts to these features. Fencing and monitoring would be carried out to insure that the features are not inadvertently impacted during construction.

Based on the current design, three V & T related features would encounter substantial impacts due to project implementation. They are features 181, 200, and 201. As noted in Table 16, it is recommended that treatment activities be carried out at each feature prior to their disturbance. The features at issue, a rock retaining wall and two culverts, are comparatively simple and will not require extensive treatment. As a result, it is recommended that a detailed treatment plan is not required. Rather, it is recommended that a program be developed and implemented that is based on their primary documentation. This would include detailed plan, elevation and cross section drawings, and, as appropriate, detailed sketches depicting methods employed in their construction. This would be coupled with photographic documentation of a type and level defined based on consultation with the SHPO. A written report would be prepared that contains all of the developed information and photographs. The documentation will be developed consistent with standards prescribed in BLM guidelines, Appendices D and H of the Protocol Agreement between BLM and the SHPO, SHPO photographic documentation standards, and conditions of the V & T programmatic agreement.

The exact manner in which cut slopes will be treated has yet to be resolved. As noted in Section 7.1, an emphasis will be placed on modifications that allow the cut slopes to retain their current general size and configuration. Five cut slopes (see Table 13) will require the most aggressive modification. Proposed treatment includes scaling, the placement of wire mesh that will match natural slope colors, and limited terracing. It is recommended that the design team continue to coordinate with agency and SHPO personnel regarding cut slope treatment during development of the final design.

Numerous culverts were installed along the Virginia & Truckee Railroad at the time of its construction. Some are still evident while others have been removed or buried by subsequent sedimentation. It is recommended that extant, in place culverts are contributing element to the eligibility of 26Ly536/Or311. The proposed project will result in the abandonment of some culverts, construction atop others, and the potential to uncover previously unrecorded culverts. In cases where culverts might be uncovered, it is recommended that a monitor be present to document remains that are unearthed (see Table 16 and the map set provided in Attachment One). Culverts scheduled to be abandoned in place and/or covered have been documented as to their size, material, and location. No further treatment is recommended in these cases.

Many features that will be impacted are small in size and are simple in character. This includes two sidings (features 168 and 206) that are proposed for reestablishment as part of the Phase 3 construction effort. It is proposed that the detailed grade characterization provided as part of the V & T IMACS form upgrade constitute sufficient documentation of these features. As a result no further treatment is recommended at these features.

Finally, sections I, K, and L of the V & T Programmatic Agreement provide conditions related to monitoring, inadvertent discoveries, and burials, respectively. It is recommended that project inspectors and construction supervisors be made aware of these conditions prior to the onset of any construction activities.

Attachment One

Figures and Project Corridor Map Set

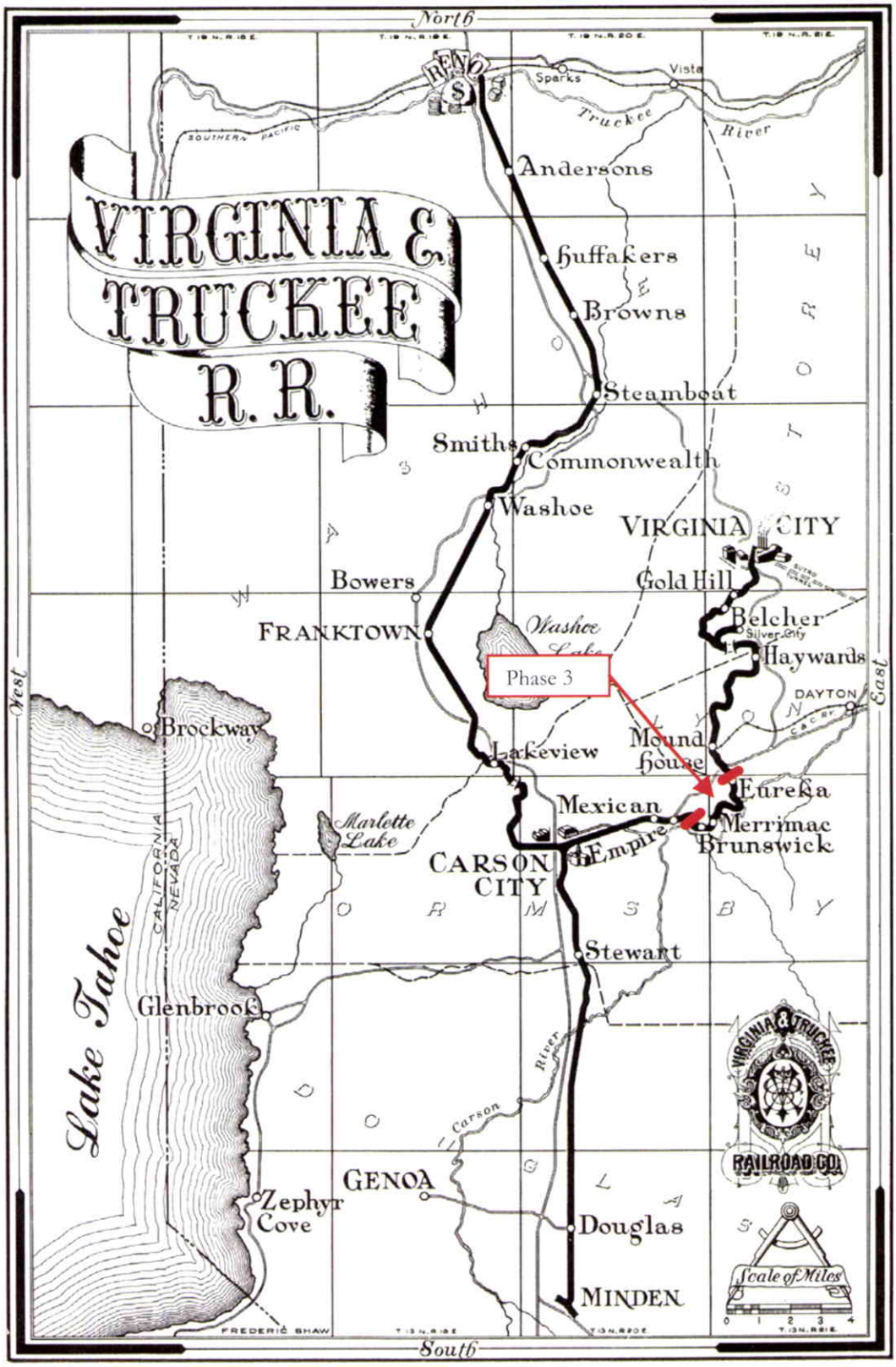


Figure 1. Map of the V & T Railroad
From Beebe and Clegg (1957:8)

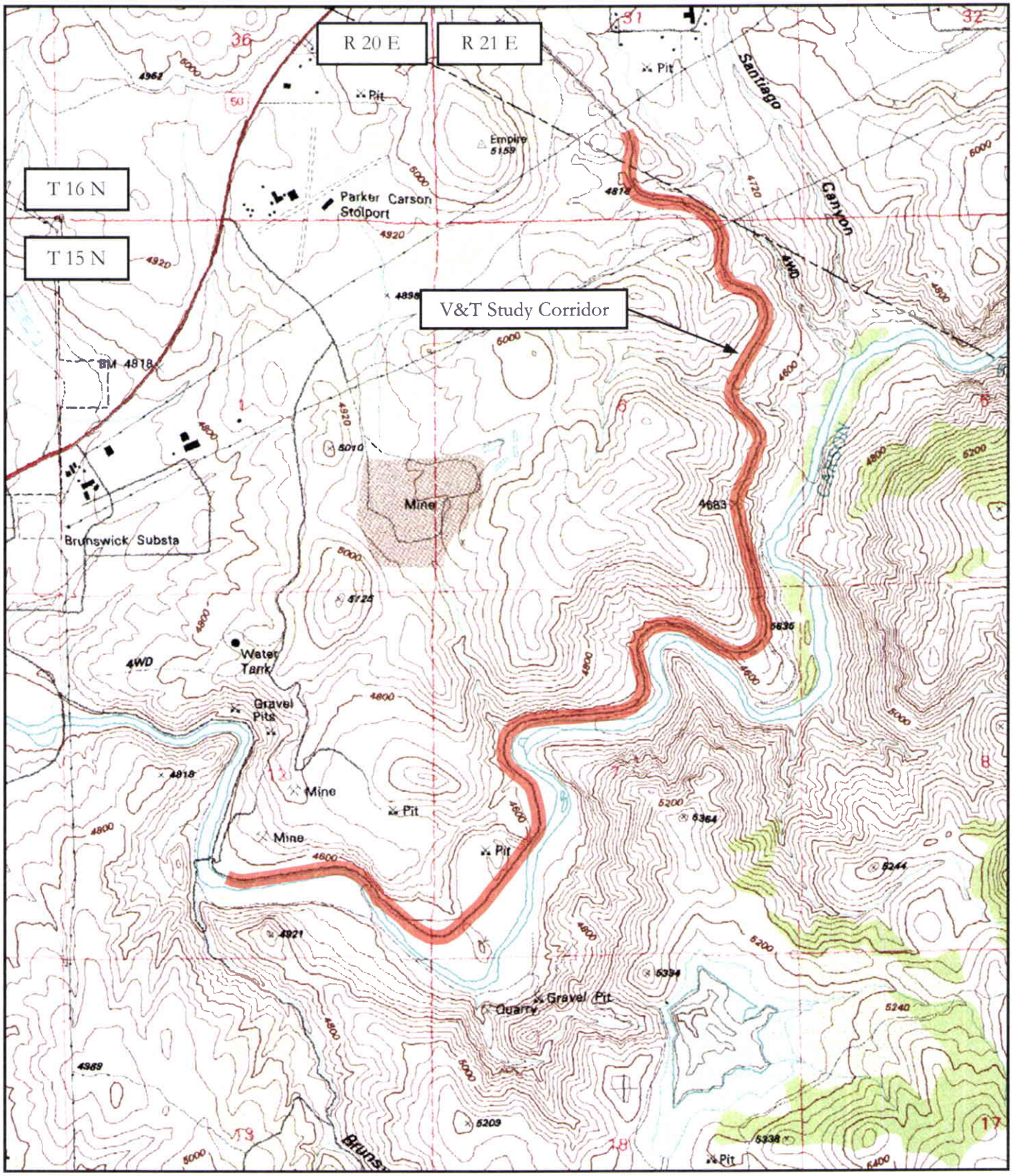


Figure 2. Phase 3, General Project Location New Empire USGS Quad,

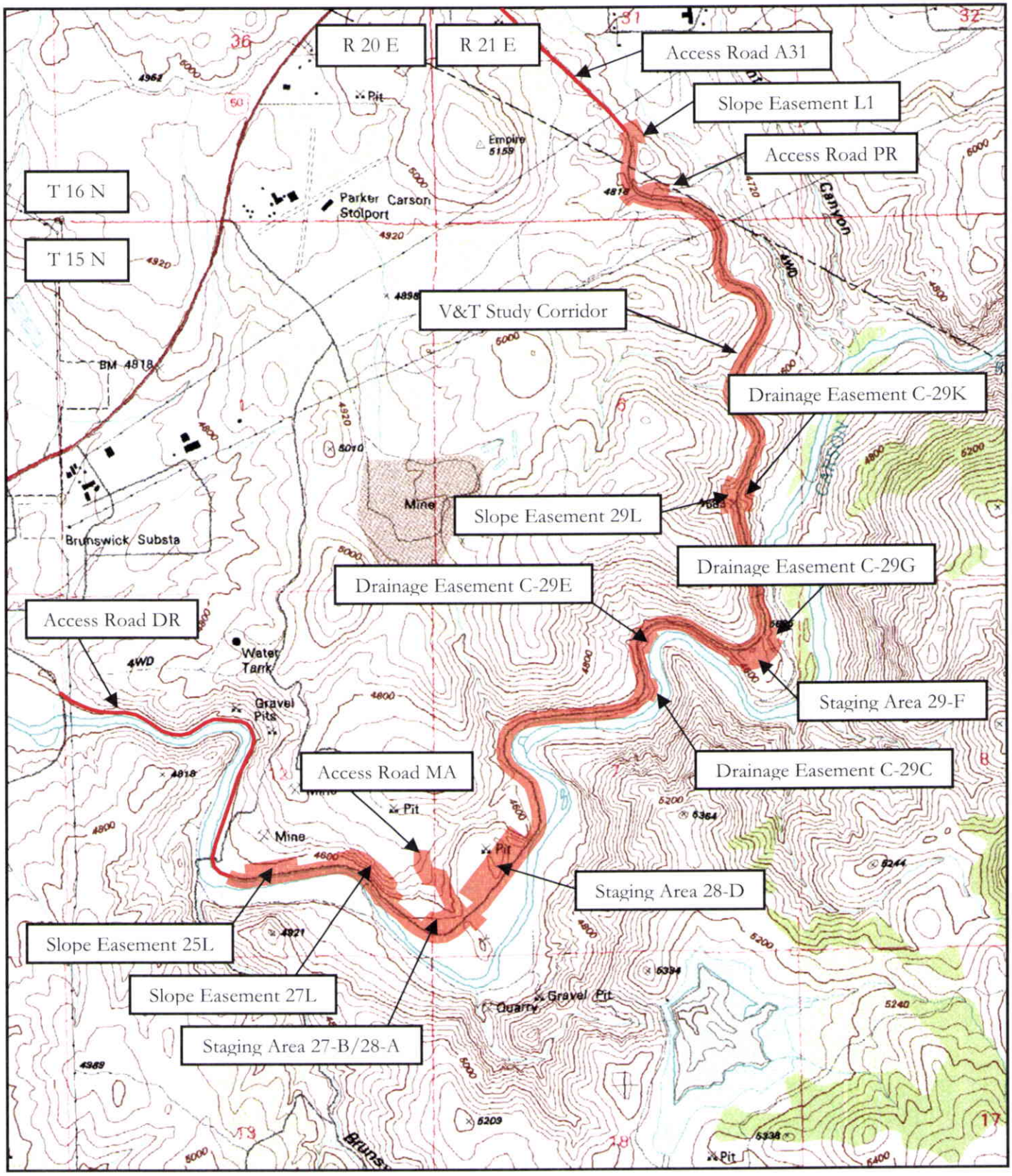


Figure 3. Phase 3, Project Component Locations, New Empire USGS Quad,

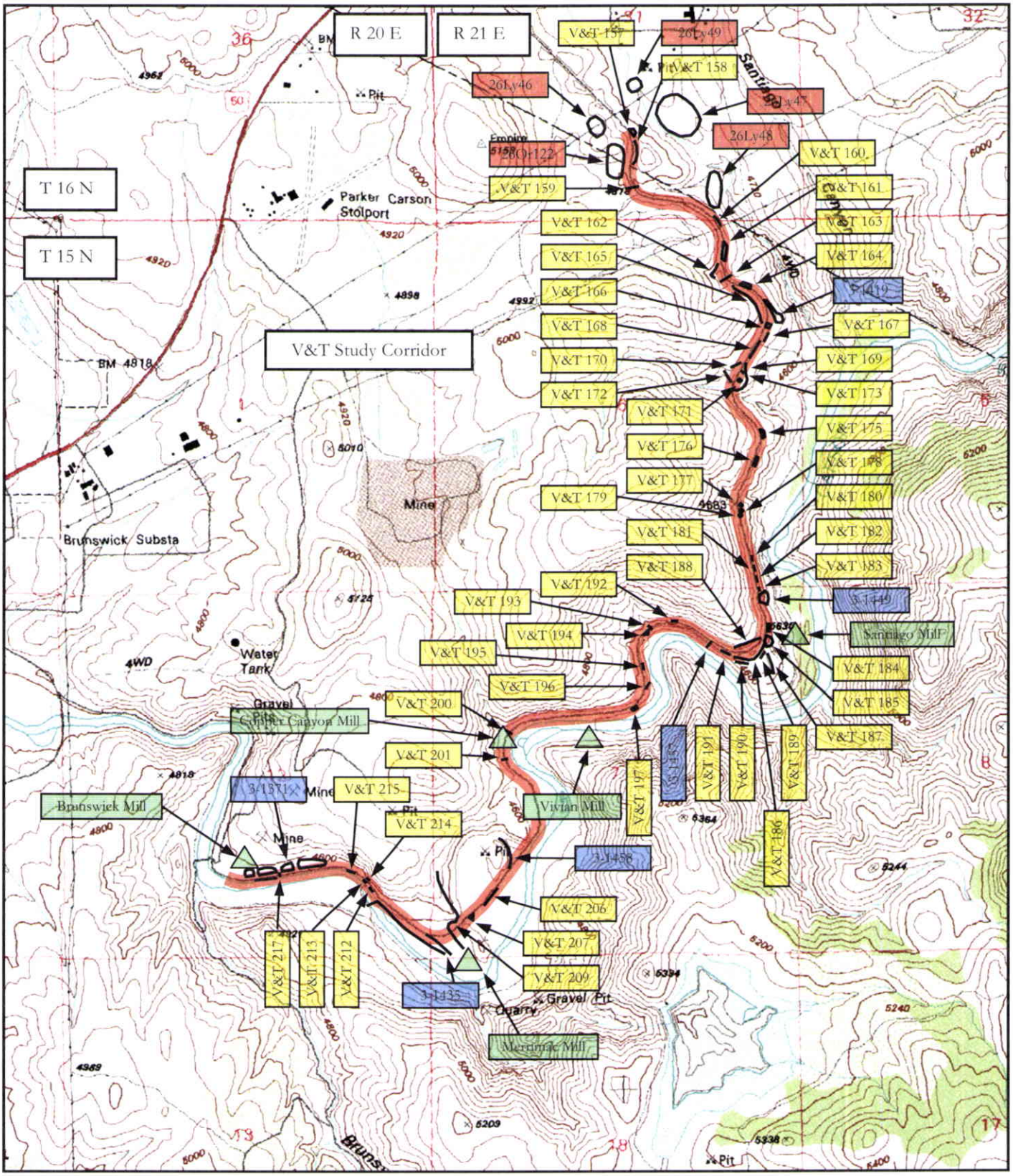
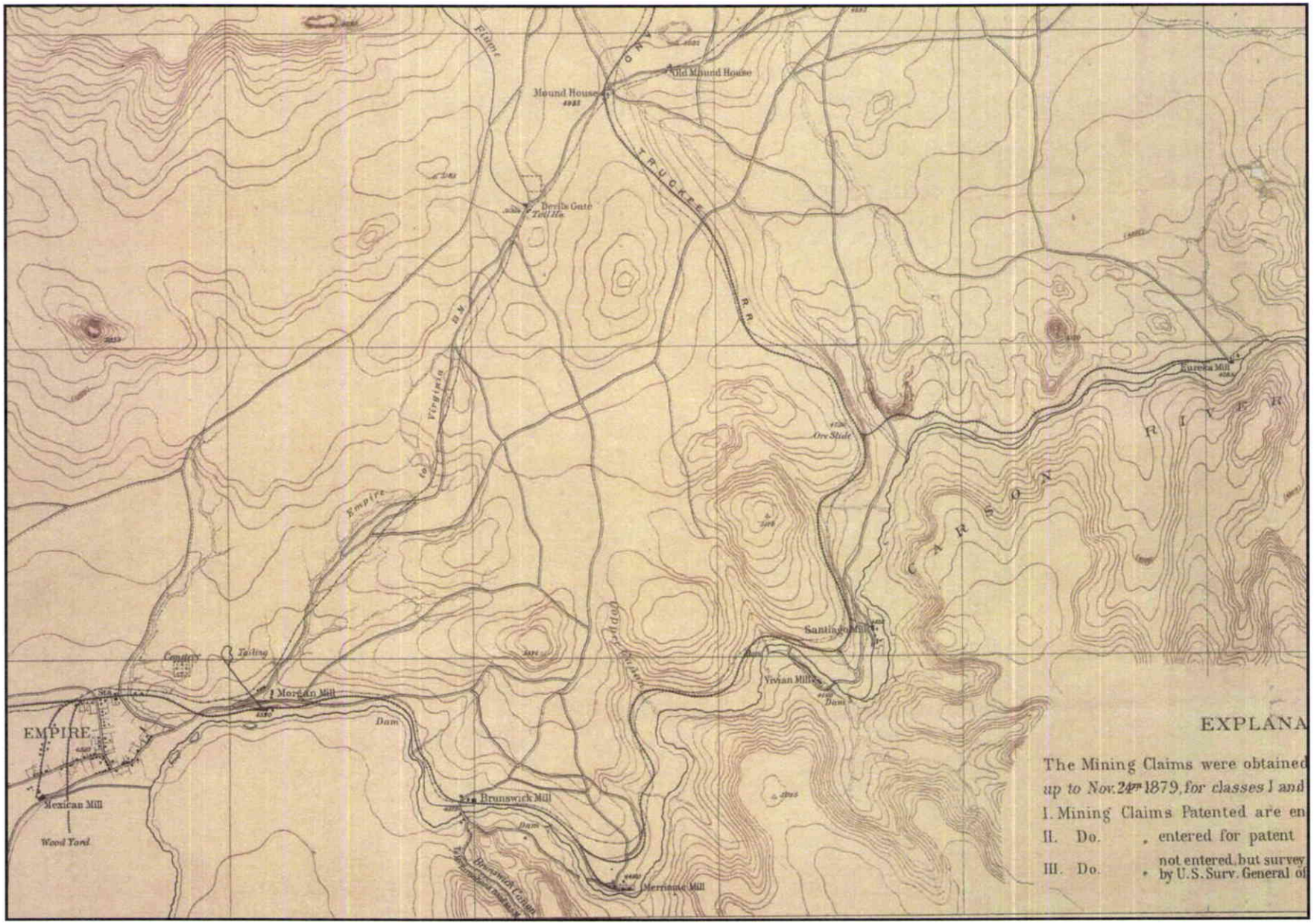


Figure 4. Phase 3, Site and Feature Locations, New Empire USGS Quad,



Fgure 5. Road network as depicted on the Wheeler (1879) map entitled "Outline Map of Washoe District, Nevada, Showing Comstock Lode, Location of Mineral Claims, Shafts, Mills, Mining Towns, Etc."