

# **BRIGHTLINE WEST – LAS VEGAS TO VICTOR VALLEY – HISTORIC PROPERTIES TREATMENT PLAN**

**DRAFT December 2022**

Prepared for  
Federal Railroad Administration, Washington, D.C.

Prepared by  
Micah J. Hale, Ph.D. and Loukas Barton, Ph.D.

**DUDEK**

605 Third Street, Encinitas, California 92024

And

Kimberly Demuth, Leslie Schwab, and Donald Craig

**HNTB**

777 108th Avenue NE Suite 1000, Bellevue, WA 98004



1	<b>Contents</b>	
2	Abbreviations and Acronyms .....	iv
3	1. Executive Summary .....	1
4	2. Project Description .....	6
5	2.1. Project Location .....	6
6	2.2. Area of Potential Effects (APE) .....	7
7	2.2.1. Area of Direct Impact (ADI) .....	9
8	2.2.2. Area of Indirect Impact (All) .....	9
9	3. Historic Properties Requiring Treatment .....	12
10	3.1. Affected Historic Properties Requiring Treatment—Archaeological Resources .....	12
11	3.1.1. Sidewinder Quarry Archaeological District .....	13
12	3.1.2. Mojave River Lithic Landscape Archaeological District .....	18
13	3.1.3. Soapmine Road Archaeological District .....	26
14	3.1.4. Cronese Lake Archaeological District .....	29
15	3.1.5. Individually-Affected Archaeological Sites in California .....	32
16	3.1.6. Individually-Affected Archaeological Sites in Nevada .....	37
17	3.2. Affected Historic Properties Requiring Treatment—Historic Built Environment .....	40
18	4. Treatment of Archaeological Resources .....	43
19	4.1. Prehistoric Research Design and Context .....	43
20	4.1.1. Prehistoric Archaeological Research Themes .....	43
21	4.2. Prehistoric Archaeological Site Treatment Methods .....	50
22	4.2.1. Field Methods .....	51
23	4.2.2. Prehistoric Archaeological Site Laboratory Methods .....	56
24	4.3. Historic Period Archaeological Research Themes .....	66
25	4.3.1. Historical Period Land Use and Settlement .....	66
26	4.3.2. Site Formation .....	67
27	4.3.3. Chronology .....	68
28	4.3.4. Subsistence .....	68
29	4.4. Historic Period Archaeological Site Treatment Methods .....	68
30	4.4.1. Archival Research .....	69
31	4.4.2. Field Methods .....	69
32	4.4.3. Laboratory Methods .....	70
33	4.5. Archaeological Avoidance Measures .....	70
34	4.6. Resolving Effects to Tribal Values Attached to Historic Properties .....	72

1        4.6.1.     Survey of Archaeological Districts in the APE-All ..... 72

2        4.6.2.     Ethnohistoric Study—Native American Interviews ..... 73

3        4.6.3.     Minimization of Noise and Vibration Effects to the CLAD..... 73

4        5.    Treatment of Historic Built Environment Resources ..... 75

5        5.1.    Built Environment Historic Properties: Avoidance Measures..... 75

6        6.    Procedures for Resolving Adverse Effects ..... 77

7        7.    Timeframes for Implementing Treatment of Known Historic Properties ..... 79

8        8.    Qualifications, Permitting, and Curation ..... 81

9        8.1.    Qualifications of Personnel ..... 81

10       8.2.    Required Permits..... 81

11       8.3.    Curation Agreement and Plan..... 81

12       9.    Treatment of Human Remains on Federally Administered Lands..... 83

13       9.1.1.    NAGPRA Plan of Action ..... 83

14       9.2.    Treatment of Human Remains Identified on Non-Federally-Administered

15            Land ..... 83

16       9.2.1.    California..... 83

17       9.2.2.    Nevada ..... 85

18       10.   Inadvertent Discovery and Post Review Effects Treatment Plan ..... 86

19       10.1.    Discovery of Cultural Resources..... 86

20       11.   Phased Identification and Evaluation, and Assessment of Effects to Historic

21            Properties..... 89

22       11.1.    Combined Inventory, Evaluation, and Assessment of Effect ..... 89

23       11.2.    Post-Review Inventory of Historic Properties ..... 89

24       11.2.1.    Inventory Methodology ..... 89

25       12.   Monitoring Plan ..... 94

26       12.1.    Monitoring..... 94

27       12.1.1.    Prior to Construction—Archaeological Monitoring Exhibit (AME)..... 95

28       12.1.2.    During Construction ..... 95

29       12.2.    Cultural Sensitivity Training..... 96

30       13.   Summary ..... 98

31       14.   References ..... 99

32

1 **Appendices**

2 Appendix A (Confidential): Maps depicting the location of affected historic properties

3 Appendix B (Confidential): Resource records for affected historic properties

4 Appendix C: NAGPRA Plan of Action

5 Appendix D: Flow Charts

6 Appendix E: Report Templates

7 **Figures**

8 Figure 2-1. Project Area and Vicinity ..... 10

9

10 **Tables**

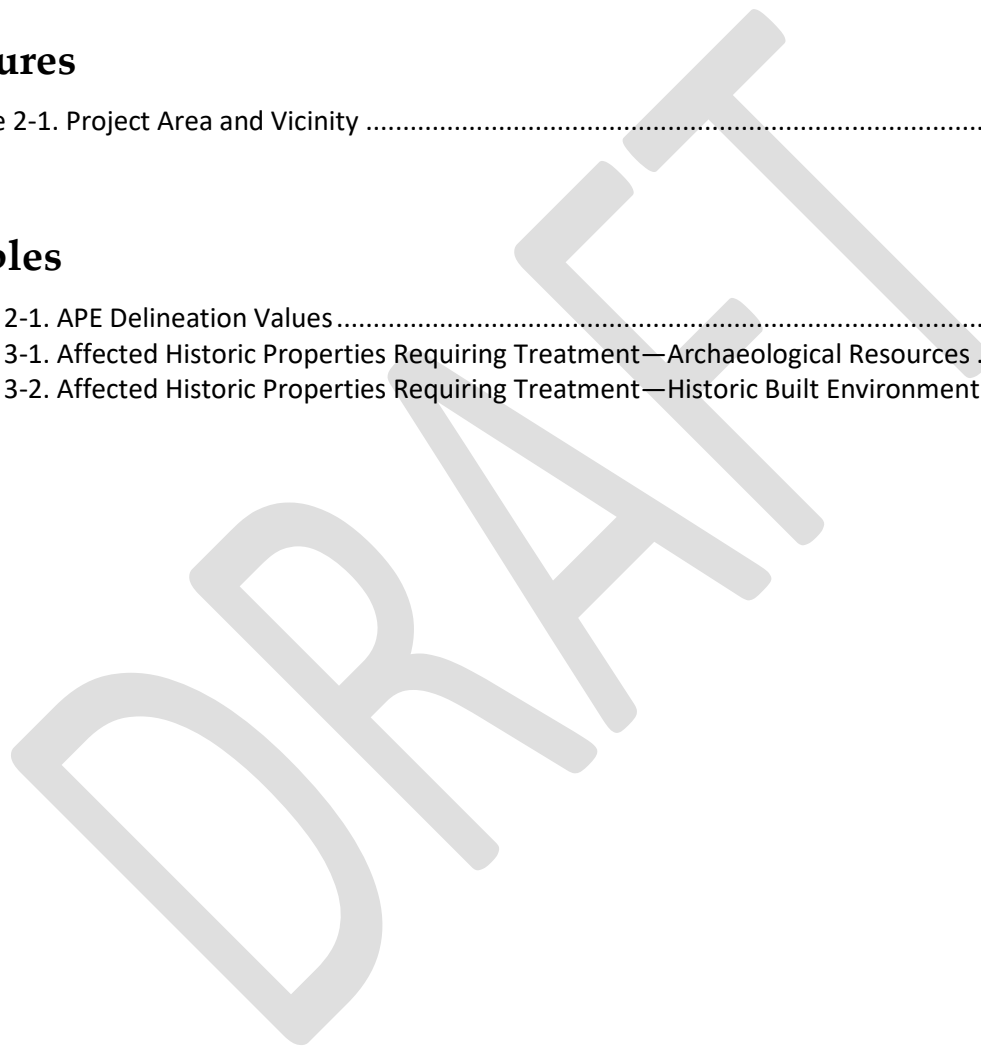
11 Table 2-1. APE Delineation Values ..... 7

12 Table 3-1. Affected Historic Properties Requiring Treatment—Archaeological Resources ..... 12

13 Table 3-2. Affected Historic Properties Requiring Treatment—Historic Built Environment ..... 41

14

15



## 1 **Abbreviations and Acronyms**

ACHP	Advisory Council on Historic Preservation
ADI	Area of Direct Impact
All	Area of Indirect Impact
AME	archaeological monitoring exhibit
APE	Area of Potential Effects
ARPA	Archaeological Resources Protection Act
BNSF	Burlington National Santa Fe
BLM	Bureau of Land Management
Caltrans	California Department of Transportation
CCS	cryptocrystalline silicate
CFR	Code of Federal Regulations
CLAD	Cronese Lake Archaeological District
cm	centimeters
CS	column sample
CSC	controlled surface collection
DPR	Department of Parks and Recreation
EIS	Environmental Impact Statement
EOF	end of field report
ESA	environmentally sensitive area
FHWA	Federal Highway Administration
FGV	fine-grained volcanics
FOE	finding of effect
FRA	Federal Railroad Administration
ft	feet
GIS	geographic information systems
HPTP	Historic Properties Treatment Plan
HSC	Health and Safety Code
I-	Interstate
km	kilometers
LADWP	Los Angeles Department of Water and Power
LOD	limits of disturbance

MLD	Most Likely Descendant
MNI	minimum number of individuals
MRLL	Mojave River Lithic Landscape
NAGPRA	Native American Graves Protection and Repatriation Act
NAHC	Native American Heritage Commission
NDOT	Nevada Department of Transportation
NEPA	National Environmental Policy Act
NISP	number of indentifiable specimens
NHPA	National Historic Preservation Act
NPS	National Park Service
NRHP	National Register of Historic Places
OHV	off-highway vehicle
PA	Programmatic Agreement
PI	Principal Investigator
PQS	professional qualifications standards
PRC	Public Resources Code
Project	Brightline West—Las Vegas to Victor Valley
ROW	right of way
SQAD	Sidewinder Quarry Archaeological District
SRAD	Soapmine Road Archaeological District
SRL	segregated reduction locus
SRU	surface recording unit
SSU	subsurface unit
STP	shovel test pit
TCL	Traditional Cultural Landscape
TU	test unit
UCLA	University of California, Los Angeles
U.S.C.	United States Code
WEAP	worker environmental awareness program





# 1. Executive Summary

This Historic Properties Treatment Plan (HPTP) (Attachment 5 to the Programmatic Agreement [PA]) provides for the treatment of historic properties identified in the Area of Potential Effects (APE) for the Brightline West – Las Vegas To Victor Valley High-Speed Rail Project (Project). The HPTP also includes a framework for additional phased identification, evaluation, and assessment of effects to historic properties that may be required due to changes to the Project as design progresses. Also included are an inadvertent discoveries plan and provisions for monitoring and sensitivity training. For California and Nevada, separate archaeological inventory reports were prepared for the Project (ICF and Dudek 2022; Hale et al. 2022; Barton and Hale 2022a, 2022b), documenting archaeological resources in the APE, along with separate archaeological National Register of Historic Places (NRHP) eligibility and effects reports prepared by Dudek (Hale and Barton 2022a, 2022b). Regarding historic built environment resources, separate reports were prepared for California and Nevada that inventoried and evaluated historic built environment resources (ICF and HNTB 2022). These documents are referenced as follows:

- Barton, Loukas, and Micah J. Hale  
2022a Subsurface Archaeological Inventory: Addendum to the XpressWest High-Speed Passenger Train Project, Archaeological Inventory Report, San Bernardino County, California, prepared for U.S. Department of Transportation, Federal Railroad Administration, Office of Railroad Policy and Development, Washington, DC, by Dudek, Encinitas, CA, March 15, 2022.
- Barton, Loukas, and Micah J. Hale  
2022b Subsurface Archaeological Inventory: Addendum to the XpressWest High-Speed Passenger Train Project, Archaeological Inventory Report, Clark County, Nevada, prepared for U.S. Department of Transportation, Federal Railroad Administration, Office of Railroad Policy and Development, Washington, D.C., by Dudek, Encinitas, CA, March 15, 2022.
- Hale, Micah J., and Loukas Barton  
2022a Brightline West—Las Vegas to Victor Valley—Archaeological Resources Finding of Eligibility and Effect: California. Prepared for the Federal Railroad Administration, Washington D.C.
- Hale, Micah J., and Loukas Barton  
2022b Brightline West—Las Vegas to Victor Valley—Archaeological Resources Finding of Eligibility and Effect: Nevada. Prepared for the Federal Railroad Administration, Washington D.C.

1 Hale, Micah J., Loukas Barton, Scott Wolf, and David Faith  
2 2022 FINAL *Confidential XpressWest High-Speed Passenger Train Project*  
3 *Archaeological Inventory Report, Clark County, Nevada*, February 2022. Prepared  
4 for the Federal Railroad Administration, Washington D.C.

5 ICF and Dudek  
6 2022 FINAL *Confidential XpressWest High-Speed Passenger Train Project*  
7 *Archaeological Inventory Report, San Bernardino County, California*, February  
8 2022. With edits by Micah Hale, Loukas Barton, Scott Wolf, and David Faith,  
9 Dudek. San Bernardino County, California. Prepared for the Federal Railroad  
10 Administration, Washington D.C.

11 ICF and HNTB  
12 2022 DRAFT *XpressWest High-Speed Passenger Train Project Historic Built*  
13 *Environment Technical Report: (one is for Nevada, one for California)*. Prepared  
14 for the Federal Railroad Administration, Washington D.C.

15 ICF and HNTB  
16 2022 FINAL *XpressWest High-Speed Passenger Train Project Historic Built Environment*  
17 *Technical Report: (one is for Nevada, one for California)*. Prepared for the  
18 Federal Railroad Administration, Washington D.C.

19

20 A previous HPTP was prepared by ICF (2020), *XpressWest High Speed Train Project, Historic*  
21 *Property Treatment Plan, San Bernardino County, California*. However, this earlier version was  
22 developed with the assumption that no resources would be evaluated for significance under  
23 the NRHP, and that a process-driven PA would guide evaluation and mitigation prior to a formal  
24 Finding of Effect. Also, the 2020 HPTP was limited to archaeological resources. Since the 2020  
25 HPTP was produced, all cultural resources (archaeological and historic built environment) in the  
26 APE were evaluated for significance, and effects to historic properties have been determined by  
27 the Federal Railroad Administration (FRA).

28 The Project will cause an adverse effect to 26 archaeological historic properties, including 23 in  
29 California and 3 in Nevada. For the Project as a whole, FRA determined that visual intrusions  
30 introduced by the Project would have no adverse effect to archaeological historic properties.  
31 Additionally, FRA determined that effects from the Project, when considered cumulatively, will  
32 have no adverse effect on historic properties in California and Nevada.

33 The Project will have no adverse effect on built environment historic properties. In total, there  
34 are six NRHP eligible built environment historic properties within the APE, two in California and  
35 four in Nevada. The built environment historic properties include four resources in the Los  
36 Angeles Department of Water and Power (LADWP) Boulder Dam to Los Angeles Transmission  
37 Lines (located in both California and Nevada), the SCE-owned 132 kV Hoover Dam Transmission

1 Line (within the APE in California, only) and the Jean Underpass, located in the vicinity of Jean,  
2 Nevada.

### 3 **Effects to Archaeological Historic Properties in California**

4 Twenty-three historic properties will be adversely affected by the Project in California. Physical  
5 effects from Project construction and operation would damage or displace artifacts from  
6 contributing elements to four archaeological districts (Sidewinder Quarry Archaeological  
7 District [SQAD], Mojave River Lithic Landscape [MRL], Soapmine Road Archaeological District  
8 [SRAD] and Cronese Lake Archaeological District [CLAD]), along with five individually-eligible  
9 archaeological sites not affiliated with archaeological districts (P-36-000541, P-36-000885, P-36-  
10 006023, XPW21-SW-015, ICF-XW2-007) and 14 sites that are both individually eligible and  
11 eligible as contributors to archaeological districts (P-36-000562, P-36-002283, P-36-008321, P-  
12 36-006950, P-36-003485, P-36-002129, P-36-000223, P-36-003694, ICF-XW1-010, ICF-XW2-017,  
13 ICF-BV-001, ICF-XW1-004, P-36-008923, P-36-004198). Effects from noise and vibration  
14 generated by Project construction and operation would have an adverse effect, which may be  
15 cumulative in nature, on the CLAD and on P-36-004198 (which is both individually eligible and  
16 eligible as a contributing element to CLAD). Visual intrusions generated from Project  
17 construction and operation would have no adverse effects to any archaeological historic  
18 property in California.

### 19 **Effects to Archaeological Historic Properties in Nevada**

20 In Nevada, physical effects from Project construction and operation would have adverse effects  
21 to three archaeological sites (26CK7189, 26CK11252, and 26CK5760). Visual intrusions and  
22 noise and vibrations generated from Project construction and operation would have no adverse  
23 effects to any prehistoric or historic sites in Nevada.

### 24 **Resolving Adverse Effects to Archaeological Historic Properties**

25 The methods used to resolve adverse effects to archaeological historic properties outlined in  
26 this HPTP are primarily phased data recovery, focused on the scientific investigation and  
27 recovery of an archaeological sample that best represents the affected archaeological sites or  
28 portions of sites. Minimization of adverse effects to the CLAD also includes erection of sound  
29 walls during construction and creative vegetation plantings to minimize effects due to noise  
30 and vibration during Project construction. Completion of additional site recordation in the APE-  
31 Area of Indirect Impact (All) and ethnological inquiry further minimizes effects to the  
32 Traditional Cultural Landscape type of significance conveyed by archaeological historic  
33 properties.

34 This HPTP provides for the treatment of unanticipated effects to known or newly discovered  
35 historic properties, including evaluation of significance and mitigation, and archaeological and  
36 Native American monitoring.

### 37 **Effects to Historic Built Environment Resources**

38 FRA determined that the Project would result in a Section 106 Finding of No Adverse Effect to  
39 built environment historic properties that are eligible for listing on the NRHP. This HPTP

- 1 outlines measures or conditions that can be incorporated into the Project to address
- 2 unanticipated adverse effects to NRHP-eligible built environment historic properties.
- 3

1

2

*DRAFT*

*This page intentionally left blank*

## 2. Project Description

The Project seeks to construct a 174.36-mile high-speed passenger train line connecting Victor Valley California, to Las Vegas, Nevada. Most of the fully grade-separated, passenger-only railroad would be constructed within the Interstate 15 (I-15) highway corridor. Two passenger stations would be built, one in Victor Valley, the other in Las Vegas; each would be located immediately adjacent to the I-15 corridor. The Project also includes ancillary operations and maintenance facilities, as well as utility corridors to link proposed electrical substations to external sources of power, thus accommodating the preferred electrically powered technology option.

In 2011, FRA issued a *Final Environmental Impact Statement and Final Section 4(f) Evaluation for the Proposed DesertXpress High-Speed Passenger Train from Victorville, California to Las Vegas, Nevada* (DesertXpress EIS) and a Record of Decision for the *DesertXpress High-Speed Passenger Train* (DesertXpress ROD), to comply with the National Environmental Policy Act (NEPA). The Project footprint has since been modified and significant time has passed since the 2011 DesertXpress ROD; as such, FRA, as lead federal agency, requested that the APE, surveys, and findings be updated as a result.

The purpose of this document is to provide a Historic Properties Treatment Plan for adversely affected historic properties in the Project APE and includes a framework for additional phased identification, evaluation, and assessment of effects to historic properties that may be required due to changes to the Project as design progresses. Also included are an inadvertent discoveries plan and provisions for treatment of unanticipated effects to known historic properties, monitoring and sensitivity training. This document focuses primarily on resources that intersect or are within the APE-Area of Direct Impact (APE-ADI). However, some resources located in the APE-Area of Indirect Impact (APE-AII) are also included in this document due to their proximity to the APE-ADI or relationship to archaeological resources within the APE-ADI. The treatments and methods in this report incorporate all actionable information received to date from Consulting Native American Tribes by FRA.

### 2.1. Project Location

The total Project APE extends 174.36 miles from Victor Valley, California to Las Vegas, Nevada, encompassing 52,134.79 acres. The California segment of the Project is located between Victor Valley, California, and Primm, Nevada; the Nevada segment of the Project is located between Primm and Las Vegas, Nevada (Figure 2-1). The Federal Highway Administration (FHWA) represented by the California Department of Transportation (Caltrans) has jurisdiction over the I-15 corridor as identified by rights-of-ways issued under 23 USC 317. Caltrans and the Nevada Department of Transportation (NDOT) have entered into agreements with Brightline West for lands within the I-15 corridor. FRA is the lead agency for compliance with Section 106 of the National Historic Preservation Act (NHPA) for the Project with the FHWA and the respective Departments of Transportation serving as the responsible resource agencies for land within the I-15 Right of Way (ROW).

40

## 2.2. Area of Potential Effects (APE)

The Area of Potential Effects (APE), as defined in 36 Code of Federal Regulations (CFR) § 800.16(d), is:

*...the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.*

Consistent with 36 CFR Part 800, FRA defined the APE in consideration of where potential effects resulting from the Project could occur. The total APE extends across California and Nevada along 174.36 linear miles for 52,134.79 acres. The APE in California totals 41,790.26 acres along 139.98 linear miles while the APE in Nevada totals 10,344.53 acres along 34.39 linear miles. Table 2-1 summarizes the delineation values for the Project APE.

**Table 2-1. APE Delineation Values**

Project Component		APE Delineation
Urban Alignment (CA, NV)	Trenched and At-Grade	450 ft (60.96 m) from centerline
--	Elevated At-Grade	750 ft (228.60 m) from centerline
--	Elevated Guideway/Elevated Roadway (emergency crossovers equate to elevated roadway)	1,000 ft (304.80 m) from centerline
Rural/Desert Alignment (CA, NV)	Trenched and At-Grade	1,000 ft (304.80 m) from centerline
--	Elevated At-Grade	1,500 ft (457.20 m) from centerline
--	Elevated Guideway/Elevated Roadway (emergency crossovers equate to elevated roadway)	1,500 ft (457.20 m) from centerline
Utility corridors (CA only)		200 ft (60.96 m) on either side of footprint (400 ft or 121.92 m total)
Station areas (CA, NV)		1,000 ft (304.80 m) from edge of footprint
Ancillary facilities (substations, autotransformers, temporary construction easements) (CA, NV)		100 ft (30.48 m) from edge of footprint
Access roads (CA, NV)		100 ft (30.48 m) from centerline (200 ft or 60.96 m total)
Historic Properties, including those of Religious or Cultural Significance to Tribes		Variable - Distance delineated in consultation with Consulting Parties including Tribes; PA will provide for a process to refine the APE further in consideration of new information provided by a Consulting Party to FRA

<b>Project Component</b>	<b>APE Delineation</b>
<b>Vertical height of project components (CA, NV)</b>	<b>Up to 65 ft (19.81 m) above current grade; 86 ft (26.21 m) in Barstow, CA only</b>
<b>Limits of Disturbance (alignment, highway improvements only, interchange modifications) (CA, NV)</b>	<b>Variable - Project footprint</b>
<b>Vertical depth of Project components (CA, NV)</b>	<b>Down to 120 ft (36.58 m) from current grade</b>

1  
2



### 1 **2.2.1. Area of Direct Impact (ADI)**

2 The APE-ADI, which is defined as the Project's Limits of Disturbance (LOD), considers where  
3 historic properties may be physically impacted by construction and operational activities. The  
4 APE-ADI includes the footprint of the alignment, facility features, and ancillary features. Facility  
5 features consist of station locations, substations, and operations, maintenance, and service  
6 facilities. Ancillary features include temporary construction easements, staging areas, roadway  
7 reconstruction locations, emergency crossovers, utility corridors, and autotransformers. The  
8 APE-ADI also includes all areas proposed for eventual double-tracking. The total Project APE-  
9 ADI contains 5,732.07 acres (3,607.27 acres in California and 2,124.8 acres in Nevada).

10 The APE-ADI for the Project takes into consideration the vertical depth of ground disturbance.  
11 FRA defined the vertical depth of the APE-ADI based on revised plan and profile designs  
12 prepared for the Project. It accounts for the final depths necessary to construct rail bed and  
13 footings or foundations of structural components. The APE-ADI depth is expected to range from  
14 a few feet (ft) for at-grade work, up to 8 ft (2.43 m) below grade to account for support pilings,  
15 and more than 100 ft (30.4 m) for footings associated with waterway crossings. Throughout  
16 most of the Project alignment, construction of tracks will require some 'over-excavation' to  
17 depths no greater than 2-3 ft (0.61-.91 m). Then, fill material is placed and it is mechanically  
18 compacted to provide a stable base for the trackway. Other Project features such as new  
19 underpasses with pilings and/or footings may require excavation to depths up to 100 ft (30.4  
20 m). To account for varying depths of project components and provide flexibility for minor  
21 project changes, FRA delineated the maximum depth of the Project APE-ADI as up to 120 ft  
22 (36.6 m) below current grade. Table 2-1 summarizes the delineation values for the Project APE-  
23 ADI.

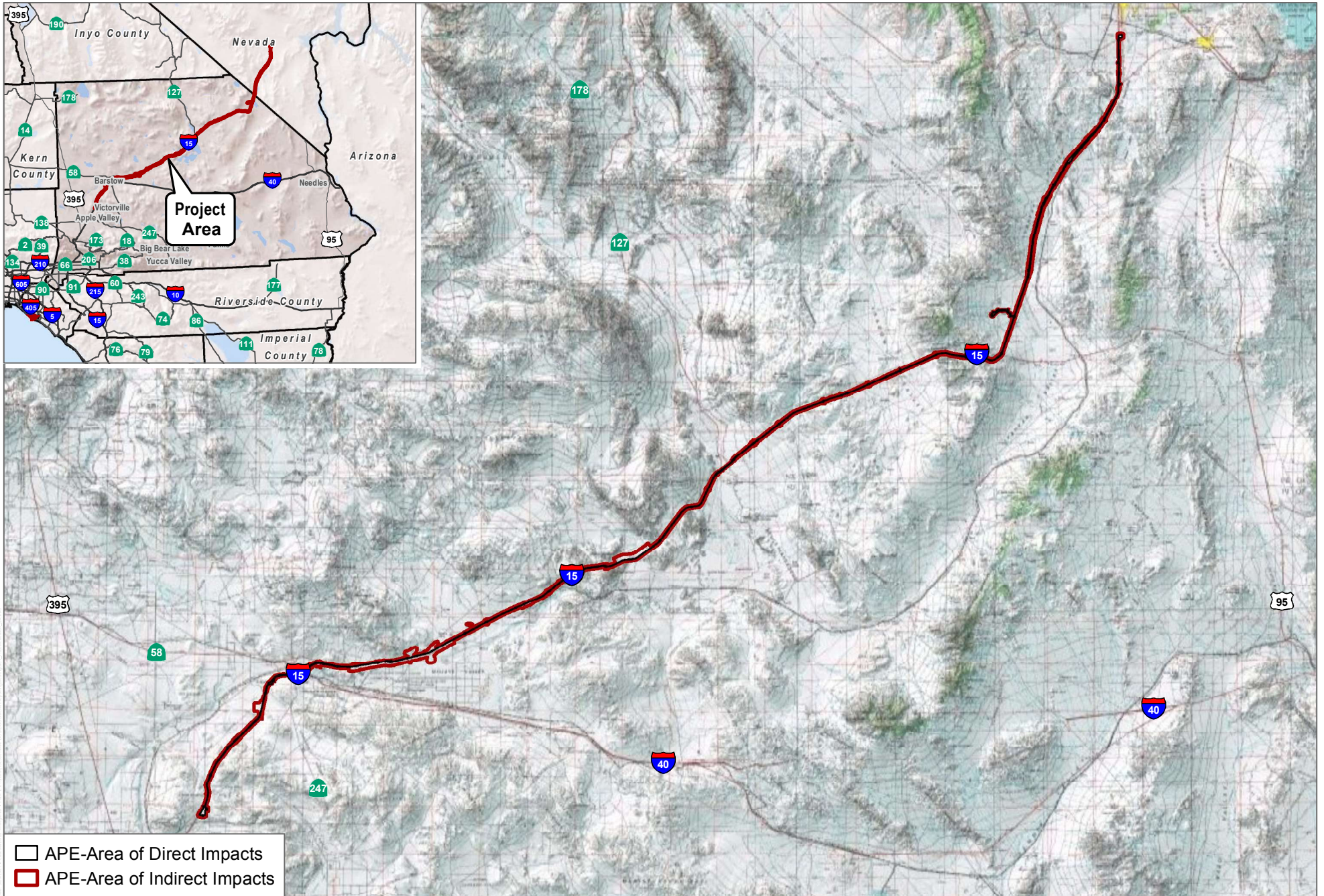
### 24 **2.2.2. Area of Indirect Impact (AII)**

25 The APE-AII, which encompasses the APE-ADI, considers both where historic properties may be  
26 physically harmed by construction and post-construction Project operation, and, where there  
27 may be changes in the pattern of use, or changes in historic character caused by visual  
28 intrusions, noise, and/or vibration. The APE-AII is a larger area than the APE-ADI to account for  
29 potential effects to historic properties of religious or cultural significance to Consulting Tribes  
30 that extend past the APE-ADI. This report focuses primarily on resources that intersect or are  
31 within the APE-ADI. However, records search-level information, including maps and site forms,  
32 are provided in Confidential Appendices A and B for those resources that have been previously  
33 recorded in the APE-AII. The total Project APE-AII contains 46,402.72 acres (38,182.99 acres in  
34 California and 8,219.73 acres in Nevada). Table 2-1 summarizes the delineation values for the  
35 Project APE-AII.

36

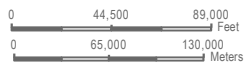
37

38



SOURCE: USGS 7.5-minute Quadrangle

**DUDEK**



**FIGURE 2-1**  
 Project Location  
 Brightline West

1

2

*This page intentionally left blank*

DRAFT

### 3. Historic Properties Requiring Treatment

#### 3.1. Affected Historic Properties Requiring Treatment—Archaeological Resources

A total of 26 archaeological historic properties are located in or partially in the APE and will be adversely affected by construction and operation of the Project, including four prehistoric archaeological districts, 14 individual archaeological sites within those districts, and eight individual archaeological sites (Table 3-1). Three of the individual archaeological sites are located in Nevada; the remaining five are located in California. Maps depicting the location of affected NRHP-eligible archaeological resources are located in Appendix A, and associated archaeological resource records can be found in Appendix B.

**Table 3-1. Affected Historic Properties Requiring Treatment—Archaeological Resources**

California		
Prehistoric Archaeological Districts		Adverse Effects
<b>SQAD</b>	<b>Eligible, Criteria A and D</b>	<b>Yes</b>
P-36-000562	Individual and Contributor, Criteria A and D	Possible
P-36-002283	Individual and Contributor, Criteria A and D	Possible (paved in ADI)
P-36-003485	Individual and Contributor, Criteria A and D	Yes
P-36-006950	Individual and Contributor, Criteria A and D	Possible
P-36-008321	Individual and Contributor, Criteria A and D	Possible
<b>MRL</b>	<b>Eligible, Criteria A and D</b>	<b>Yes</b>
ICF-XW1-010	Individual and Contributor, Criteria A and D	Yes
ICF-XW2-017	Individual and Contributor, Criteria A and D	Yes
P-36-000223	Individual and Contributor, Criteria A and D	Yes
P-36-002129	Individual and Contributor, Criteria A and D	Yes
P-36-003694	Individual and Contributor, Criteria A and D	Yes
<b>SRAD</b>	<b>Eligible, Criteria A and D</b>	<b>Yes</b>
ICF-BV-001	Individual and Contributor, Criteria A and D	Yes
ICF-XW1-004	Individual and Contributor, Criteria A and D	Yes
P-36-008923	Individual and Contributor, Criteria A and D	Yes
<b>CLAD</b>	<b>Eligible, Criteria A and D</b>	<b>Possible</b>
P-36-004198	Individual and Contributor, Criteria A and D	Possible
<b>Individual Archaeological Sites</b>		
P-36-000885	Eligible, Criterion D (prehistoric component)	Yes
P-36-006023	Eligible, Criterion D (both prehistoric and historic components)	Possible
P-36-000541	Eligible, Criterion D (prehistoric)	Possible
XPW21-SW-015	Eligible, Criterion D (prehistoric component only)	Yes
ICF-XW2-007	Eligible, Criterion D (historic)	Yes
Nevada		

Individual Archaeological Sites		
26CK5760	Eligible, Criterion D (historic)	Yes
26CK7189	Eligible, Criterion D (prehistoric)	Yes
26CK11252	Eligible, Criterion D (prehistoric)	Possible

### 1 3.1.1. Sidewinder Quarry Archaeological District

2 Five archaeological sites that are contributors to the Sidewinder Quarry Archaeological District  
3 (SQAD) (P-36-020375), as well as being individually eligible, will be affected by Project  
4 construction: P-36-000562, P-36-002283, P-36-003485, P-36-006950, and P-36-008321. Effects  
5 to these archaeological sites contribute to adverse effects to the SQAD itself by altering  
6 significance-conveying elements within the district.

#### 7 3.1.1.1. P-36-000562/CA-SBR-000562

8 P-36-000562 is a prehistoric lithic quarry site measuring 2,000 × 400 m (6,560 × 1,312 ft)  
9 located along the Caltrans ROW. The site was previously determined to be a contributing  
10 element of the Sidewinder Quarry Archaeological District and was revisited as part of the  
11 current survey. It is individually eligible and eligible as a contributor to the SQAD for NRHP  
12 listing under criteria A and D.

13 The site was originally recorded in 1971 by G. H. Strickler (1971) and was described as a quarry  
14 site containing chalcedony “bi-face cutting tools, scrapers, workshop material” and seven rock  
15 rings well imbedded into desert pavement. The site record was subsequently updated on a few  
16 occasions, most recently in 1990 by L. Glover (1990a) who expanded its boundaries. The update  
17 described the circular rock alignment features as being used as modern campfires by off road  
18 vehicle drivers. Glover also described cryptocrystalline debitage and cores at the site.

19 In 1996, Michael K. Lerch (Lerch 1996) defined the Sidewinder Quarry Archaeological District,  
20 and included P-36-000562 within its boundaries as a contributing element. Lerch recommended  
21 the district as eligible for inclusion in the NRHP under criterion D for a number of characteristics  
22 and noted that despite some disturbance from the construction of I-15, the district and the  
23 sites within it maintain integrity of location, setting, materials workmanship, feeling and  
24 association. The most recent 2018 site form update was conducted by John Romani (2018a) as  
25 part of a Caltrans project for widening of I-15. The site boundaries were extended 400 m, and  
26 the description of cultural materials was consistent with previous recordation and updates.  
27 Romani noted that the site appeared to be surficial in nature. Romani also noted that the  
28 southwestern portion of the site was heavily disturbed within the Caltrans ROW. Romani noted  
29 that the portion of the site within the Caltrans ROW was considered non-contributing to the  
30 site and the Sidewinder Quarry Archaeological District due to the amount of disturbance.

31 ICF surveyed portions of the site due to changes to the Project APE-ADI on three different  
32 dates: August 11, May 27, and May 29, 2020. A relatively small portion (approximately 13 acres)  
33 of the overall site boundary falls within the Project APE-ADI of this project and was surveyed.  
34 Most of the area surveyed is within the Caltrans ROW and is heavily disturbed because of  
35 highway construction. A substantial portion of the surveyed area is within the Sidewinder  
36 Road/Outlet Center Drive interchange and has been subject to grading and/or construction

1 activities. Other portions of the Project APE-ADI along the highway have been graded or  
2 altered. Areas beyond the Caltrans ROW are mostly intact, with some disturbance related to  
3 off-highway vehicle (OHV) activity. Topographically, the setting of the site varies from low  
4 rolling hills to relatively flat terrain. The ground surfaces consist of a combination of alluvial  
5 sediments and desert pavement surfaces in varying degrees of development. Most of the area  
6 surveyed within the Project APE-ADI of this project consisted of highly disturbed sediments.  
7 Vegetation within the Project APE-ADI consists of sparse growths of creosote, Russian thistle,  
8 bursage, and seasonal grasses. A narrow 20-m-wide strip measuring 290-m long within the  
9 Project APE-ADI appears to be undisturbed. A granite hammerstone was identified within the  
10 graded shoulder of northbound lanes of I-15, roughly 470 m north of Outlet Center Drive.  
11 Surveyors identified a single white multidirectional chert core measuring 3 × 3 × 2 centimeters  
12 (cm) and displaying 30 percent cortex was located near the southeastern boundary of the  
13 Project APE-ADI on the south side of Outlet Center Drive. Additionally, other debitage was  
14 noted in low lying areas adjacent to Outlet Center Drive at the east end of the Project APE-ADI.  
15 Surveyors did not identify any other cultural resources within the site boundaries surveyed for  
16 the Project APE-ADI of this project. Most of the previously recorded portion of the site is  
17 located outside the Project APE-ADI, and pedestrian surveys were not conducted in these areas.  
18 Freeway construction and maintenance has severely affected the portions of the site that were  
19 surveyed.

20 The central, northern, and northeastern extents of the site are located on depositional  
21 landforms that have the potential for containing surface exposed and buried, Holocene-aged  
22 alluvial deposits. The extreme southern and northwestern extents of the site are located on an  
23 erosional landform that has limited potential for containing buried deposits. Project  
24 construction would directly impact a portion of this site through the damage, displacement, or  
25 removal of artifacts within the APE-ADI.

### 26 **3.1.1.2. P-36-002283/CA-SBR-002283**

27 P-36-002283 is a prehistoric lithic quarry and habitation site measuring 270 × 100 m (886 × 328  
28 ft) located along Caltrans ROW and private lands, and is individually eligible and eligible as a  
29 contributor to the SQAD under criteria A and D. The site was first recorded in 1972 by G.H.  
30 Strickler who observed 21 “sleeping circles,” three “house rings,” and several flaked stone  
31 artifacts on the east side of the I-15 highway. In 1998, the site was revisited by Romani (1998b)  
32 as part of the Caltrans I-15 road widening project. Romani recorded 19 rock rings, and at least  
33 45 flaked stone artifacts and tools. Romani expanded the site to extend across both sides of I-  
34 15. The site is situated on a low ridge surrounded by intermittent drainages. The site measures  
35 approximately 270 m (east to west) by approximately 100 m (north to south) and is bisected by  
36 I-15, which runs NNE/SSW at this location. As part of this project, ICF archaeologists surveyed  
37 the Project APE-ADI which consists of a corridor within the median of I-15 at this site. An  
38 approximately 4,268 m<sup>2</sup> portion of the site is intersected by the Project APE-ADI, and of this  
39 area, 100 percent of the ground surface was covered with pavement or asphalt. As such,  
40 intensive pedestrian survey of the Project APE-ADI through site P-36-002283 could not be  
41 conducted, and as a result, no cultural resources associated with P-36-002283 were observed  
42 during the 2019 survey (ICF and Dudek 2022).

1 The site has been disturbed by the construction and widening of I-15 as the highway has  
2 essentially bisected the site. Aerial photographs dating back to 1952 (NETR 2020) show the  
3 amount of disturbance created and resulting in an approximately 85 meter wide by 100-meter-  
4 long swath of land (approximately 1.95 acres or 7,872 m<sup>2</sup>) that was removed or graded from  
5 within the site boundary. It is assumed that because resources were encountered on both sides  
6 of the highway, they had originally continued into the area currently occupied by the highway  
7 ROW and were destroyed.

8 Project construction would directly impact a portion of this site within the median of I-15  
9 through the damage, displacement, or removal of artifacts. However, given that the ADI is  
10 within a paved median, it is unlikely that substantial or intact archaeological deposits are  
11 located beneath the pavement. Moreover, the site is characterized as a lithic quarry located on  
12 deflated desert pavement that typically do not have substantial subsurface components.

### 13 **3.1.1.3. P-36-003485/CA-SBR-3485**

14 P-36-003485 is a prehistoric lithic quarry site measuring 225 × 222 m (138 × 128 ft) situated on  
15 a series of small ridges incised by intermittent drainages along Caltrans ROW and private lands.  
16 The site is individually eligible and eligible as a contributor to the SQAD under criteria A and D.

17 The site was originally recorded in 1979 by H. James as a small lithic scatter (James 1979)  
18 consisting of “several dozen flakes” scattered over an area of approximately 400 m<sup>2</sup>. The site  
19 was later updated and expanded (Lerch 1996) to include 25 discrete lithic reduction areas (Loci  
20 A through Y) consisting of a total of 300+ chert flakes, 19 cores, 5 hammerstones, 2 anvil stones,  
21 and numerous tested chert clasts. During an update by EDAW in 2007 (Melmed 2007), 11 of  
22 these loci were relocated and recorded, including loci B, C, E, I through O, and Y. A prehistoric  
23 trail (P-36-008323) bisects the site.

24 ICF surveyed the Project APE-ADI adjacent to this site in 2019. At the time, the previously  
25 recorded site boundaries ranged from 12–70 m west of the Project APE-ADI. Cultural  
26 constituents of the site were found to be in similar condition as those described in the 2007  
27 update, however, additional materials were documented within the Project APE-ADI which was  
28 located along the west shoulder of the south bound exit ramp to Sidewinder Road. The newly  
29 expanded portion of the site located within the Project APE-ADI includes a light density scatter  
30 of chert and chalcedony flakes, tested clasts, hammerstones, and cores. The newly added  
31 portion measures roughly 230 m northeast to southwest by approximately 65 m west to east  
32 and extends from the western edge of the Project APE-ADI along the exit ramp to the eastern  
33 edge of the original site boundary. Modifications to the Project APE-ADI in 2021 (ICF and Dudek  
34 2022) further ensured that the site intersects the APE-ADI.

35 Soils are described as sandy gravelly loam with a near-ubiquitous surface scatter of poorly  
36 sorted sub-rounded to sub-angular gravels comprising several material types including  
37 metavolcanic, basalt, quartz, quartzite, and granitic. Topographically, the site is located on a  
38 low ridge that is part of a large, dissected alluvial fan. Ground visibility is 80 percent across the  
39 site, and vegetation in the area consists of sparse growths of creosote, bursage, Russian thistle,  
40 and seasonal grasses.

1 Disturbances within this portion of the site include OHV traffic, several unnamed dirt roads,  
2 freeway construction and maintenance, possible damage from flooding, and natural erosion.  
3 Although numerous disturbances are noted, the site does appear to retain integrity

#### 4 **3.1.1.4. P-36-006950/P-36-006951**

5 P-36-006950/P-36-006951 is a prehistoric lithic quarry site measuring 225 × 222 m (738 × 728 ft)  
6 and is situated on a broad dissected alluvial fan at the northwest edge of Stoddard Valley along  
7 Caltrans ROW. The site is individually eligible and eligible as a contributor to the SQAD under  
8 criteria A and D. Soils are described as sandy gravelly loam with a near-ubiquitous surface  
9 scatter of poorly sorted sub-rounded to sub-angular gravels and cobbles comprising several  
10 material types including metavolcanic, basalt, quartz, quartzite, and granitic. Topographically,  
11 the site is located on a large dissected alluvial fan. Ground visibility is 80 percent across the site,  
12 and vegetation in the area consists of sparse growths of creosote, bursage, Russian thistle, and  
13 seasonal grasses.

14 The site was originally recorded in 1990 by L. Glover as a moderately sized cobble test/quarry  
15 site consisting entirely of cryptocrystalline silicate (CCS) flakes, cores, and shatter (Glover  
16 1990b). No formal tools were noted at that time. Disturbances included off road vehicles and  
17 construction activities related to I-15. Sediments were described as a loose, sandy alluvium with  
18 a surface layer of small rocks and gravels. A second, very similar site (P-36-006951) was  
19 recorded 125 m north at that time.

20 ICF surveyed the Project APE-ADI adjacent to this site in May and August of 2020. During the  
21 May field effort, one pink tertiary chert flake (A9) and a chalcedony tertiary flake (A10) were  
22 identified within the site boundary. An additional eight artifacts (A1–A8) were identified  
23 extending 250 m south along the graded median of I-15 northbound. Three more artifacts  
24 (A10–A13) were identified north of the site between P-36-006950 and P36-06951. The  
25 encompassing Sidewinder Quarry Archaeological District is known to be a lithic procurement  
26 landscape due to the abundant cobbles of usable materials which can be found on the ground  
27 surface. Lithic debitage, tested cobbles, hammerstones, and other stone artifacts are  
28 alternately exposed and obscured due to the shifting sands. During the August field effort, the  
29 area was surveyed again; however, no artifacts were observed at that time. The spread of the  
30 lithic artifacts recorded in May and their proximity to the two known sites, P-36-006950 and P-  
31 36-06951 led ICF to combine the two sites under P-36-006950 and expand the site boundary to  
32 measure 225 × 222 m (ICF and Dudek 2022).

33 Disturbances within this portion of the site include OHV traffic, several unnamed dirt roads,  
34 freeway construction and maintenance, possible damage from flooding, and natural erosion.  
35 Although numerous disturbances are noted, the site does appear to retain integrity east of the  
36 Caltrans ROW fence line. Extensive grading of the road shoulders has intermixed mechanically  
37 broken nodules with culturally modified lithic material of the same type.

38 Based on the geology of the area, it was concluded the expanded site is located on the  
39 boundary between a depositional and erosional landform. The northern half of the site is  
40 located on an erosional landform that has limited potential for containing buried deposits. The



1 southern half of the site is located on a depositional landform that has potential for containing  
2 surface exposed and buried, Holocene-aged alluvial deposits.

3 The combined site of P-36-006950/P-36-006951 consists of a moderate-sized, moderate-  
4 density lithic scatter/quarry site containing numerous flaked stone artifacts, cores,  
5 hammerstones, and shatter. It is unknown if a subsurface component exists at the site. No  
6 hearth or other thermal features have been noted in any of the previous studies of this site nor  
7 did the current survey identify any such features.

8 The site boundary was expanded again as a result of a subsurface inventory conducted by  
9 Dudek (Barton and Hale 2022a; ICF and Dudek 2022). Artifacts were recorded from four  
10 positive test units (XPW21-I-112, XPW21-I-113, XPW21-I-114, and XPW21-I-115), and a single  
11 surface find (A1) on the west side of the Interstate. Sixteen additional subsurface probes were  
12 excavated in the process of boundary testing for this site, all of which were negative. The site,  
13 which had previously been known only on the east side of the Interstate was thus expanded to  
14 the west.

15 Project construction would directly impact most of this site along the east and west side of I-15  
16 through the damage, displacement, or removal of artifacts within the APE-ADI. Already the site  
17 has been bisected by the construction of I-15.

#### 18 **3.1.1.5. P-36-008321/CA-SBR-8321**

19 P-36-008321 is a prehistoric lithic quarry site measuring 165 × 100 m (541 × 328 ft) and is  
20 situated on a broad dissected alluvial fan at the northwest edge of Stoddard Valley along  
21 Caltrans ROW. The site is individually eligible and eligible as a contributor to the SQAD under  
22 criteria A and D.

23 The site was originally recorded in 1996 and was described as a “lithic resource procurement  
24 area with multiple reduction loci and a light-to-moderate density lithic scatter situated on a  
25 level area of desert pavement” (Lerch 1996). The site was updated in 2007 and described as a  
26 “lithic quarry area with multiple reduction areas of local white chalcedony/chert nodules”  
27 (Melmed 2007). The site as previously delineated consists of 14 individual lithic reduction loci  
28 and a scatter of lithic materials. The site is located on an excessively drained alluvial fan  
29 approximately 9 km west of Daggett Ridge, approximately 10 km west of Iron Mountain, and  
30 centrally between Hinkley, Brisbane, and Stoddard Valleys. Vegetation in the area consists of  
31 sparse growths of creosote bush, saltbush, Mormon-tea, Joshua trees, Indian rice grass, and  
32 annual grasses and forbs. The depositional setting for the site and greater vicinity is alluvium  
33 derived from multiple sources with gravel and cobble inclusions. Sediments within the site  
34 boundary are classified as a coarse sandy loam with up to 60 percent of the matrix composed of  
35 gravel inclusions. Overall, there was good (90 percent) surface visibility, with some areas  
36 slightly obscured by seasonal grasses and creosote. The portion of the Project APE-ADI surveyed  
37 near the site during ICF’s 2019 fieldwork was located approximately 30 m east of the boundary  
38 originally mapped for the site. Cultural materials were identified at the western edge of the  
39 Project APE-ADI, on the shoulder of the southbound lanes of I-15, approximately 30 m from the  
40 original site boundary. The newly identified portion of the site consists of two chert primary  
41 flakes, and one chert secondary flake. The archaeological materials were identified within an

1 approximately 30-meter diameter area situated on a gently sloping, slightly undulating surface  
2 on the north side of a barbed wire fence. Artifacts documented during this update are similar to  
3 those previously recorded elsewhere on the site and within the district as a whole. The  
4 debitage represents early stage lithic reduction. The portion of the larger site that was not  
5 located within the Project APE-ADI was not surveyed as the property ownership of this area was  
6 unknown.

7 Disturbances noted in the portion of the site (within the Project APE-ADI), include a dirt road,  
8 construction of the I-15 and maintenance of the ROW, a metal chain link fence, and effects  
9 from flooding and natural erosion. Previously recorded resources which fell outside of the  
10 Project APE-ADI were not investigated by ICF, and as such, no determination can be made  
11 about the overall condition of the site. Within the Project APE-ADI, the site has been heavily  
12 disturbed. Construction activities within the APE-ADI would physically remove the western  
13 extremity of this site, affecting the artifacts listed above.

#### 14 ***3.1.1.6. Effects to the SQAD***

15 Project construction would directly impact individual contributing archaeological sites within  
16 the boundaries of the SQAD through the damage, displacement, or removal of artifacts within  
17 the APE-ADI. These impacts also constitute adverse effects to the district itself by altering  
18 elements that, together, convey the significance of the district under criteria A and D.

#### 19 **3.1.2. Mojave River Lithic Landscape Archaeological District**

20 Five archaeological sites that are individually eligible and eligible as contributors to the Mojave  
21 River Lithic Landscape (MRL) will be affected by Project construction: ICF-XW1-010, ICF-XW2-  
22 017, P-36-000223, P-36-002129, and P-36-003694. Effects to these individual sites contribute to  
23 adverse effects to the MRL itself by altering significance-conveying elements within the  
24 district.

##### 25 ***3.1.2.1. ICF-XW1-010***

26 ICF-XW1-010 is a prehistoric lithic scatter measuring 20 × 153 m (66 × 502 ft) and located on  
27 poorly formed desert pavement along Caltrans ROW. It consists of over 300 lithic artifacts  
28 including cores, debitage, hammerstones, and four concentrations measuring 160 × 21 m  
29 located within the median of I-15. The site is individually eligible and eligible as a contributor to  
30 the MRL under criteria A and D.

31 Topographically, the site rests on the valley floor near the base of a series of alluvial fans  
32 dissected by numerous small and large drainage channels. The site rests on an exposed, poorly  
33 formed desert pavement surface along a slightly elevated ridge. Several small drainage  
34 channels cut the ridge and are filled with sediment. Soils on the site consist of sandy loam, and  
35 accumulations of finer sand and silt in lower lying drainage channels. Vegetation on the site  
36 consists of sparse growths of creosote, Russian thistle, and seasonal grasses.

37 The site consists of over 300 lithic artifacts including four concentration features and 16 tools  
38 such as cores, hammerstones, and utilized flakes. Two of the four features contain single  
39 reduction loci representing materials testing and/or reducing to produce tools or preforms. The

1 point provenienced artifacts include multiple bifacial and multidirectional cores, flaked tools of  
2 various types, and vesicular basalt hammerstones. Lithic material types identified within the  
3 site boundary include chalcedony, metavolcanics, and chert. The predominate lithic material  
4 utilized at the site is chert which occurred in various colors including white, grey banded, and  
5 pink in various color combinations. All phases of flaked stone reduction are represented,  
6 however most of the debitage appears to represent early-stage reduction. Artifacts observed  
7 are highly weathered, some with “desert varnish” on one side. Feature 1 contains three distinct  
8 lithic reduction loci. The loci represent isolated flintknapping episodes in which a single type of  
9 raw chert material was reduced. Furthermore, most edges on artifacts are moderately rounded  
10 likely from aeolian processes which would also cause some artifacts to be deposited in low  
11 areas.

12 Overall, the site retains its physical integrity, however it has been disturbed by the construction  
13 of I-15 and has been affected by vehicular traffic driving through the median. Refuse dumping  
14 from passing traffic has also affected the site. Additionally, natural processes of erosion and  
15 deposition are actively disturbing the site, albeit to a moderate degree. Modern roadside refuse  
16 is lightly scattered within the site boundary. The site is cut by several shallow drainages and  
17 lower areas within the site are filled with sediment. Despite the site’s location within the  
18 median and being subject to vehicular traffic, the site is in surprisingly good condition. The  
19 desert pavement surface that the site rests on is in fairly stable condition, and it does not  
20 appear that construction of the highway disturbed the natural topography of this site.

21 No temporally diagnostic artifacts or dateable materials have been identified at the site, and no  
22 features other than discreet reduction loci were recorded. Project construction would directly  
23 impact this site through the complete damage, displacement, or removal of artifacts, as this site  
24 is entirely within the project footprint.

### 25 **3.1.2.2. ICF-XW2-017**

26 ICF-XW2-017 is a prehistoric lithic scatter measuring 14 × 223 m (46 × 731 ft) located in the  
27 median of I-15. This site is individually eligible and eligible as a contributor to the MRLL under  
28 criteria A and D. The site is located at the northeast end of the Mojave Valley, south of Alvord  
29 Mountain, north of the Mojave River and northeast of Manix Wash. The site consists of a large,  
30 dense lithic scatter including one concentration (Concentration 1) and extends for  
31 approximately 200 m for the entire width of the median. Most of the artifacts are located on  
32 high spots in an undulating terrain of poorly formed desert pavement.

33 Topographically, the site rests on the valley floor near the base of a series of alluvial fans  
34 dissected by numerous small and large drainage channels. The site rests on an exposed, poorly  
35 formed desert pavement surface along a slightly elevated ridge. Several small drainage  
36 channels cut the ridge and are filled with sediment. Soils on the site consist of sandy loam, and  
37 accumulations of finer sand and silt in lower lying drainage channels. Vegetation on the site  
38 consists of sparse growths of creosote, Russian thistle, and seasonal grasses. Visibility is  
39 excellent (approximately 95 percent) across the project site.

40 The site contains a lithic concentration of over ninety large primary flakes, secondary flakes,  
41 debitage, a smaller number of tertiary flakes, and one core (PP1). Many artifacts and

1 unmodified cobbles exhibit rubification on either their top or undersides and heavy weathering  
2 indicating that these materials have been exposed for a long period of time. The predominant  
3 lithic materials are chert and chalcedony with metavolcanics identified less frequently. A large  
4 percentage of the material is extremely weathered, making in-field analysis of the lithic  
5 material difficult. It is likely that some of the debitage may have been utilized as expedient  
6 tools, but without magnification or better means of analysis it was difficult to determine  
7 whether the materials had use ware due to the degree of weathering. Concentration 1 is  
8 located at the southern end of the site and consists of over forty pieces of debitage. A 1 × 1-m  
9 sample unit was recorded from within Concentration 1 to ascertain the representative types of  
10 lithic artifacts and material types in the concentration. Three chert primary flakes, 3 chert  
11 secondary flakes, and 3 chert tertiary flakes were identified within the sample unit. Most of the  
12 debitage measures greater than 5 cm in length and width. A single multidirectional chert core  
13 was also identified at the site (ICF and Dudek 2022).

14 Generally, the site retains its physical integrity and is in fair condition. The northern and  
15 southern boundaries within the median are obscured by fill associated with the construction of  
16 the I-15 north and southbound lanes. It is likely that the site continues on either side of the  
17 highway considering that the archaeological materials extend to the edges of the median and  
18 the landform that the site is situated on continues on the northern and southern sides of the  
19 highway ROW. Alluvial and aeolian activity has partially buried many of the artifacts and it is  
20 likely that others are completely obscured. Additionally, the site has been affected by the  
21 construction of I-15 through the movement of equipment and vehicles over the ground surface.  
22 Numerous artifacts and other cobbles appear to have been displaced as they exhibit  
23 rubification on their dorsal surfaces when the ventral (underside) should exhibit this property.  
24 The site is also affected by the presence of modern refuse dumping from vehicular traffic along  
25 I-15.

26 The site appears to be the location of opportunistic lithic materials acquisition, testing and  
27 reduction. Although the portion of the site within the Project APE-ADI certainly has been  
28 impacted due to the construction of the highway and from vehicular traffic, the archaeological  
29 deposits appear mostly intact. A majority of the lithic debitage represents early-stage lithic  
30 reduction and materials testing, however all stages of reduction are noted. A single chert core  
31 was the only artifact identified that wasn't debitage. No other artifact types, faunal material, or  
32 features have been recorded at the site.

33 No temporally diagnostic artifacts or dateable materials have been identified at the site, and no  
34 features other than one lithic concentration were recorded. Project construction would directly  
35 impact this site through the complete damage, displacement, or removal of artifacts, as this site  
36 is entirely within the project APE-ADI.

### 37 **3.1.2.3. P-36-000223/CA-SBR-223**

38 P-36-000223/CA-SBR-223 is a multicomponent site consisting of historic period structural  
39 foundations and refuse scatters along with an expansive lithic quarry. The site measures 2,050 ×  
40 780 m (6,724 × 2,558 ft) and is located along Caltrans ROW and private lands. The prehistoric

1 component of this site is individually eligible and eligible as a contributor to the MRL under  
2 criteria A and D.

3 The site was originally recorded in 1939 by Malcolm J. Rogers as Site SDM-M-100 and described  
4 as a dense quarry site with a total of 52 rock cairns spaced at large intervals and generally  
5 following the crests of the hills they were placed on. Rogers noted a high density of flaked stone  
6 both within and surrounding the cairns. Subsequent updates (1958, 1970, 1971, 1987, 1988,  
7 1999, 2008, and 2012 – see ICF and Dudek 2022) mention numerous cores and unifacially and  
8 bifacially flaked tools, including scrapers and choppers. The presence of a stratified subsurface  
9 deposit is also described. In 2012, Chambers Group (Bodmer et al. 2013a) extended the site  
10 boundaries to include numerous historic resources, including concrete foundations, historic  
11 refuse concentrations, mining pits and debris and two historic/modern rock alignments that  
12 form the letters “R” and “P” associated with a historical period quarry.

13 The site is located on a series of low, alluvial finger ridges and a ridgeline which extend to the  
14 dry lakebed known as Lake Manix. The well-developed desert pavement on the ridge tops  
15 becomes less well developed toward lower elevations and grades into alluvial sand deposits at  
16 the bottom. The hills are dissected by a number of wash channels that run off in all directions  
17 from the crests of the hills. Vegetation on site is of the Creosote Bush Community. A large  
18 portion of the site was destroyed when I-15 was constructed by grading directly through a  
19 portion of the ridgeline that site components are located on.

20 The portion of the site within the Project APE-ADI was surveyed in December of 2019 by the ICF  
21 team and was found to be in similar condition as described in the 2012 update, however  
22 additional artifacts were identified and the site boundary was extended approximately 100 m  
23 to the north and west of the southbound side of I-15. The newly added portion of the site is  
24 located within the south bound shoulder of I-15 and includes a dense scatter of primarily chert,  
25 basalt, and chalcedony debitage, predominately representing early-stage reduction and/or  
26 materials testing. Numerous primary, secondary, and tertiary flakes were observed, along with  
27 at least nine cores and five flaked tools. Primary, secondary, and tertiary flakes are present in  
28 many different size classes, and material types and at least one piece of debitage with edge  
29 modification was noted. Although the revisited portion of the site is consistent with previously  
30 recorded data, the site boundary was expanded 80 m to the north and 50 m to the west to  
31 incorporate newly identified site components. This portion of the Project APE-ADI is located  
32 along a large cut into a hill for I-15 within and adjacent to an approximately 3-m-wide by 0.76-  
33 m-deep drainage ditch along the south bound shoulder of I-15. Historical period resources were  
34 not observed within the surveyed portion of the site. The majority of known historical period  
35 components of the site are located outside of the current Project APE-ADI. Vegetation in the  
36 area consists of sparsely scattered creosote, Russian thistle, bursage, and seasonal grasses.  
37 Surface visibility was very good at approximately 90–100 percent.

38 Disturbances within this portion of the site include potential OHV traffic, Hacienda Road, I-15  
39 construction/maintenance, alluvial activity, and natural erosion. Overall, the site retains good  
40 integrity, however, it has been affected by construction of I-15 and the prehistoric component  
41 has been affected by historical period quarrying activities. The construction of I-15 through the  
42 southern section of the site has had a major impact that likely displaced a significant number of

1 cultural materials. Artifacts identified during this survey (ICF and Dudek 2022) were seen at the  
2 crest of the graded hill, and were seen to be eroding down the steep slope of the cut that was  
3 created as a result of highway construction. As a result, artifacts were also identified in the  
4 median of I-15 some 20 ft or more below where they were originally deposited. These artifacts  
5 were clearly redeposited during grading for the highway.

6 The prehistoric component of the site represents gathering and processing of lithic resources  
7 on a large scale, and likely over a long period of time. The portion of the site that was updated  
8 in the Project APE-ADI was extremely dense with lithic materials, however no features were  
9 identified. This area may have mainly been used for resource extraction with a base camp being  
10 located somewhere nearby, such as at the lake margins. ICF's 2019 update does not change the  
11 interpretation of the site but further bolsters what has been previously recorded.

12 Construction within the median of I-15 would physically remove a portion of this site. The  
13 project would permanently destroy all elements of the site within the APE-ADI.

#### 14 **3.1.2.4. P-36-002129/ CA-SBR-002129**

15 P-36-002129 is an extensive prehistoric lithic quarry measuring  $3.6 \times 0.88$  km ( $11,808 \times 2,886$  ft)  
16 located along Caltrans ROW and private lands. The site is individually eligible and eligible as a  
17 contributor to the MRLL under criteria A and D.

18 P-36-002129 is very large and extends approximately 3 kilometers (km) north and east of the  
19 Project APE-ADI. The site was originally recorded by G. Smith at an unknown date and known as  
20 the Toomey Hills site under the trinomial SBCM-1508 locus 168B. The record has been updated  
21 multiple times since the original recordation. Sayles and Leakey conducted updates to the site  
22 from 1963 to 1967 (see ICF and Dudek 2022). The Sayles 1966 update noted the presence of  
23 reduction loci, features, bifaces, choppers, scrapers, and thousands of flakes within the upper 2  
24 ft of the deposit and as depth of 6 ft (1.8 m) to lake deposits. Sayles and Leakey noted  
25 "workshop clusters" surrounding the "main" portion of the site, which was described as the  
26 quarry area. Sayles and Leakey also noted that the site was being looted and that there was  
27 disturbance from natural erosion and two track roads. The site was updated again in 1979 by  
28 Lipp, who established the sites current boundary as covering " $2.5 \times 0.75$ -mile." Lipp's  
29 description of the site was similar to earlier documentation of the site.

30 ICF archaeologists surveyed areas adjacent to the site on December 13, 2019, and August 7–10,  
31 2020. In December, the ICF team surveyed the median of I-15 adjacent to the previously  
32 recorded site boundaries; however, only one isolate was recorded consisting of two pieces of  
33 debitage. At the time, these artifacts were interpreted as an isolated occurrence and not part of  
34 the site. After additions were made to the Project APE-ADI, areas adjacent to the site  
35 boundaries were surveyed again in August of 2020. These areas consisted of two large blocks  
36 adjacent to the north and south sides of the highway. On the north side of the highway, a  
37 scatter of artifacts was found that connected the previously mapped southern boundary of the  
38 site to the highway. Survey in the block on the southern side of the highway encountered  
39 another relatively dense scatter of artifacts, expanding the boundary further to the south.  
40 Dudek archaeologists surveyed the area again, along the north side of the southbound lane of I-  
41 15 in August 2021, and in both the median and the shoulder south of the northbound lane in

1 October, 2021 as part of the Subsurface Inventory (Barton and Hale 2022a). This effort  
2 recorded an additional 19 isolated artifacts on both sides of the interstate (though not in the  
3 median), requiring an addition expansion of the site boundary to the southside of the interstate  
4 east of the ICF's expansion.

5 The expanded portion of the site is located on an alluvial fan with a slight slope of 0 to 2  
6 percent towards the Mojave River to the south. Surface soils consist of alluvium derived from  
7 mixed sources (SoilWeb 2020). The underlying formation is uplifted sedimentary bedrock  
8 containing numerous cobbles and pebbles of a variety of lithic material types. This uplifted  
9 formation has been incised by the construction of the I-15 in some areas. The sediments at the  
10 site are identified as grayish brown silt and coarse sand with occasional rounded to sub-  
11 rounded gravels on a slight slope with a deflated surface of rhyolite, chert, chalcedony, gabbro,  
12 and a mixture of other lithic sources at the top of the ridge to the north. Vegetation on site  
13 consists mostly of creosote and Russian thistle, with some seasonal grasses. Vegetation density  
14 decreases at the top of the ridge.

15 The expanded portion of the site within and immediately surrounding the Project APE-ADI was  
16 found to contain five discrete lithic reduction loci containing debitage indicating all stages of  
17 reduction, exhausted cores, battered and tested cobbles, formal flaked tools, a rock cairn  
18 feature (F1) and a large, tested CCS boulder (F2). This newly recorded lithic assemblage is  
19 consistent with materials recorded in earlier documentation of site P-36-002129, and it was  
20 decided that the new materials would be recorded as an expansion of the site (ICF and Dudek  
21 2022). As discussed previously, cultural materials within the Project APE-ADI and up to 20 m  
22 beyond the boundaries of the Project APE-ADI were analyzed and recorded in full, whereas  
23 materials from 20 to 100 m beyond the Project APE-ADI were tallied and noted but not fully  
24 analyzed. The site boundaries appear to expand beyond 100 m in all directions to an unknown  
25 distance from the original southern boundaries of the site. Another very large prehistoric lithic  
26 scatter and lithic quarry site (P-36-001933) is located approximately 400 m to the south of the  
27 southern-most recorded artifacts at P-36-002129, and it is possible that the two lithic scatters  
28 may connect.

29 The expanded portion of the site is bisected by I-15 and measures approximately 210 m south ×  
30 420 m east to west. It extends approximately 50 m north of Yermo Road, 240 m west of Call Box  
31 15 916, and 200 m west of Coyote Lake Road. However, as discussed above, it is likely that the  
32 site boundaries extend even further south. Newly added elements to the site include 23 point  
33 provenienced lithic flaked artifacts, 4 discreet reduction loci, and 1 cairn feature.

34 In addition to point-provenienced tools and features, the ICF team conducted a tally of lithic  
35 artifacts within the Project APE-ADI and within a buffer of 20 to 100 m. The dominant lithic  
36 material observed during the tally was debitage and tools of various kinds of CCS, such as cherts  
37 and chalcedony, with a smaller number of artifacts of igneous materials such as rhyolites and  
38 basalts represented. The purpose of the tally was to determine a general density, material type,  
39 and range of stages of the lithic assemblage present within the newly expanded portion of P 36  
40 002129 beyond the Project APE-ADI and 20-m buffer that was more intensively analyzed and  
41 recorded. A total of 724 lithic artifacts were tallied by material type and artifact. This tally  
42 includes the entire expanded area both north and south of I-15. It was noted that artifacts

1 continued south of the expanded boundary, although full recordation of the materials beyond  
2 100 m of the Project APE-ADI boundaries was beyond the scope of the inventory.

3 Disturbances within the newly recorded portion of the site include road toss refuse, OHV  
4 activity, foot traffic, looting, I-15 construction/maintenance, natural alluvial and aeolian  
5 activity, and natural erosion. Overall the site retains good integrity; however, it has been  
6 affected by construction of I-15, likely the construction of Yermo Road and the Union Pacific  
7 Railroad, and has been affected by historical period excavation and looting of the site. The  
8 construction of I-15 through the site has certainly displaced or destroyed a significant number  
9 of cultural materials. The pre-I-15 Route 91, now Yermo Road, is still in use and has provided  
10 passers-by easy access to the site for decades. Artifacts identified during this survey were seen  
11 at the crest of the graded hill to the north and eroding down the steep slope of the cut created  
12 because of highway construction. Artifacts identified in the northern portion of the bisected  
13 expanded area north of the I-15 southbound lanes were likely moved from their original  
14 depositional contexts.

15 Based on the geology of the area, it was concluded the site extends across both depositional  
16 and erosional landforms. The southern, south-central, and northern portions of the site are  
17 located on depositional landforms that have the potential for containing surface exposed and  
18 buried, Holocene aged alluvial deposits. The central portion of the site is located on an  
19 erosional landform that has limited potential for containing buried deposits. Previous  
20 recordation of the site suggests that a subsurface component exists, and it appears that some  
21 form of subsurface testing may have been conducted; however, no reporting on the results of  
22 this activity could be located.

23 Because of its size, many of the main site constituents were not updated due to their locations  
24 outside of the Project APE-ADI. The site has been disturbed by several different activities,  
25 including the construction of I-15, grading, OHV activity, looting, and natural erosional and  
26 depositional activity. Large portions of the site, however, appear to be mostly unaltered. The  
27 portions of the site within the Project APE-ADI that were documented by ICF have been heavily  
28 disturbed.

29 Project construction would directly impact a portion of this site through the damage,  
30 displacement, or removal of artifacts within the APE-ADI. Although the impact area is small  
31 relative to the overall area of the site, it is unknown if buried deposits exist there. If present,  
32 buried deposits would be located to the north and south of I-15 since the median consists of  
33 displaced and prepared sediments from construction of the highway, including a substantial cut  
34 to the north.

### 35 **3.1.2.5. P-36-003694/CA-SBR-3694/H (*The Midway Site*)**

36 P-36-003694 is a multicomponent site that includes mid-twentieth century foundations and  
37 refuse and a lithic quarry measuring 560 × 5,300 m (1,836 x 17,384ft) and located along  
38 Caltrans ROW and private lands. This site is individually eligible and eligible as a contributor to  
39 the MRLL under criteria A and D.

40 P-36-003694, also known as the Midway Site, is a large lithic scatter located along the southern  
41 edge of the I-15 near the Midway Safety Roadside Rest stop (Clyde V. Kane Rest Area).



1 Hammond and Lando originally recorded the site in 1979, describing it as a temporary camp  
2 represented by a discontinuous scatter of lithic tools and debris dispersed over a large area.  
3 The site was revisited in 1987 by R. Apple and T. Gonzalez, who described it as a large lithic  
4 procurement and reduction site. In 2008, J. Peabody, M. Button, P. Meadville, and R. Abell  
5 updated the site and its boundaries to include multiple historic period trash scatters within the  
6 site boundary. Peabody updated the site again in 2008 to include additional prehistoric lithics.  
7 Caltrans also visited and updated the site in 2008 and described prehistoric and historic  
8 resources within the site boundaries adjacent to the Clyde V. Kane Rest Area.

9 The 1979 site record appears to show the site boundaries on both sides of I-15, and Prehistoric  
10 cultural constituents recorded at the site include numerous pieces of debitage of different  
11 materials, cores, utilized flakes and bifaces, a “Gypsum Cave” projectile point, a projectile point  
12 base, grinding implements such as manos and metate fragments, discreet chipping stations,  
13 and one rock ring feature with associated cores and debitage. The historical component of the  
14 site includes structural remains associated with an old service station and scatters of historical  
15 period artifacts said to date from the early to mid-twentieth century.

16 The current project required survey of the median of I-15, portions of the shoulder of the  
17 southbound lanes and portions of the graded areas at the Clyde V. Kane Rest Area. Surveys  
18 within and adjacent to the previously recorded site boundary were conducted by ICF on  
19 December 19, 2019 (median), August 5, 2020 (rest stop area), and August 6, 2020 (new Project  
20 APE-ADI north of I-15). As a result, ICF identified previously unrecorded lithic assemblages in  
21 the highly disturbed survey area north of the site boundary on the shoulder of the southbound  
22 lanes and in the median of I-15. The discovery of artifacts and features led to the expansion of  
23 the site boundaries to the northwest. ICF also recorded two lithic artifacts in the highly  
24 disturbed survey areas adjacent to Clyde V. Kane Rest Area within the existing site boundary. In  
25 addition to five pieces of chert debitage, one white-grey chert secondary flake, one red and  
26 brown mottled core fragment and two rock rings of unknown age were also identified within  
27 the median of I-15. The rock ring features are of unknown age, as there were no temporally  
28 diagnostic materials that could be directly associated with them. Some portions of the median  
29 in this area appear to be significantly disturbed from grading of the median and construction of  
30 the highway, whereas other areas appear to be relatively undisturbed and look similar to the  
31 surrounding landscape. It is unknown whether the lithic artifacts identified in the median are  
32 intact or have been moved or redeposited as a result of highway construction and/or  
33 maintenance (ICF and Dudek 2022).

34 Soils on the site are described as poorly sorted sand and decomposing granite with sub-angular  
35 and sub-rounded gravel and pebble inclusions. Ground visibility is 90 percent across the site  
36 and vegetation is described as patchy Russian thistle, creosote, and seasonal grasses.

37 Disturbances within this portion of the site include the construction of I-15 and the Clyde V.  
38 Kane Rest Area. Some portions of the median have been significantly graded, whereas other  
39 areas appear to be relatively undisturbed. Large drainpipes and “guzzlers” or intake drains are  
40 also present in the median, however it is unknown how extensive this system of drainage pipes  
41 is. The Clyde V. Kane Rest Area has significantly disturbed a portion of the site and destroyed a  
42 previously recorded historical period portion of the site. A mid-twentieth century service

1 station was in this area and has been demolished; however, remnants of foundations and  
2 scattered artifacts remain.

3 Project construction would directly impact a portion of this site through the damage,  
4 displacement, or removal of artifacts within the APE-ADI. Permanent impacts in the APE-ADI  
5 include Project construction in the I-15 median, and construction of an emergency crossover.  
6 Although the impact area is small relative to the overall area of the site, it is unknown if buried  
7 deposits exist in the impact area.

#### 8 ***3.1.2.6. Effects to the MRL***

9 Project construction would directly impact individual contributing archaeological sites within  
10 the boundaries of the MRL through the damage, displacement, or removal of artifacts within  
11 the APE-ADI. These impacts also constitute adverse effects to the district itself by altering  
12 elements that, together, convey the significance of the district under criteria A and D.

#### 13 **3.1.3. Soapmine Road Archaeological District**

14 Three archaeological sites that are individually eligible and eligible as contributors to the  
15 Soapmine Road Archaeological District (SRAD) that will be affected by Project construction are  
16 ICF-BV-001, ICF-XW1-004, and P-36-008923. Effects to these individual archaeological sites  
17 contribute to adverse effects to the SRAD itself by altering the significance-conveying elements  
18 of the district under criteria A and D.

##### 19 ***3.1.3.1. ICF-BV-001***

20 ICF-BV-001 is a prehistoric lithic scatter measuring 20 × 17 m (66 × 56 ft) and located on the  
21 north side of a bend in the Mojave River east of Barstow along Caltrans ROW. The site sits on a  
22 small terrace at the foot of a large weathered igneous outcrop identified as dominantly Dacite  
23 on the USGS 1954 Nebo 1:24,000 Geologic map south of Mitchell Range, and east of the Marine  
24 Corps Supply Center (Nebo area). The site is individually eligible and eligible as a contributor to  
25 the SRAD under criteria A and D.

26 Topographically, the site is located near the base of an incised alluvial fan or backslope with a  
27 slight slope to the southeast. Sediments consist of sandy alluvium derived from granitic sources  
28 with cobbles derived from the volcanic sources upslope. Vegetation in the area consists of  
29 creosote, saltbush, Russian thistle, and other members of the creosote scrub community.  
30 Visibility on the site is good (approximately 80 percent). Some disturbance to the site is likely  
31 because of construction of the I-15 overpass adjacent to the site, and a wash channel that cuts  
32 along its northeastern boundary.

33 ICF-BV-001 is a sparse lithic scatter consisting of jasper, chert, quartzite, and rhyolite debitage,  
34 representing all stages of lithic reduction, cobble testing, and tool use and retouch. Tools  
35 identified at the site include 1 chert expedient tool (A3) and 1 multidirectional rhyolite core  
36 fragment (A1). Other artifacts identified at the site include primary, secondary, and tertiary  
37 flakes of chert, jasper, quartzite, and rhyolite. All stages of lithic reduction took place at the site  
38 with a focus on later stage reduction as indicated by the identification of 2 primary flakes, 21  
39 secondary, and 8 tertiary flakes. It is likely that some expedient tool production and tool

1 manufacture or retouch took place at the site. The archaeological team (ICF and Dudek 2022)  
2 did not record distinct reduction loci, and materials appear to be randomly dispersed across the  
3 site. No features were identified at the site.

4 The site appears to be moderately disturbed via the effects of natural erosion and disturbance  
5 from the construction of I-15 located almost immediately adjacent to the site on its western  
6 boundary. A residential property is located on the southeastern edge of the site that appears to  
7 have been graded. It is unclear whether the grading has affected the location of the site,  
8 however the presence of more dense vegetation within the site boundary indicates a low  
9 likelihood of such disturbance. Review of aerial photographs dating back to 1952, prior to the  
10 construction of I-15 appear to show the area of the site undisturbed and with the same  
11 drainage located in the western portion of the site. The site is subject to erosional activity from  
12 adjacent drainages and alluvial deposition from the hills above the site to the north. Project  
13 construction would directly impact this site through the almost complete damage,  
14 displacement, or removal of artifacts, as this site is almost entirely within the project APE-ADI.

#### 15 **3.1.3.2. ICF-XW1-004**

16 ICF-XW1-004 is a prehistoric lithic scatter measuring 67 × 35 m (220 × 115 ft) and located south  
17 of Mitchel Range, southwest of the Calico Mountains, and northeast of the Mojave River along  
18 Caltrans ROW. The site is individually eligible and eligible as a contributor to the SRAD under  
19 criteria A and D.

20 Topographically, the site is located on the toeslope of an alluvial fan adjacent to a large wash.  
21 The fan is dissected by numerous large and small drainages. The ground surface is a moderately  
22 developed desert pavement consisting of mostly granitic, volcanic, and metavolcanic pebbles  
23 and cobbles. Chert nodules and cobbles area also found in this pavement surface. Sediments  
24 within the site boundary are classified as loamy coarse sand with up to 60 percent of the matrix  
25 composed of gravel and cobble inclusions. Ground visibility is 90 percent across the site.  
26 Vegetation on the site is characterized by species associated with the creosote scrub  
27 community and primarily consists of sparse growths of creosote and spiny hopsage.

28 ICF-XW1-004 consists of a lithic scatter with four artifact concentrations and five flaked and  
29 battered stone tools situated on a well-developed desert pavement surface (ICF and Dudek  
30 2022). The lithic material types recorded at the site include various types of chert,  
31 metavolcanics, basalt, and quartzite. The lithic tools documented at the site include 1 edge  
32 modified flake, 1 quartzite hammerstone, and 2 bifacial flake cores. In addition to artifacts  
33 within concentrations, lithic debitage and tools are dispersed across the site, roughly  
34 conforming to areas where the pavement surface is exposed. Over 35 pieces of debitage  
35 representing all stages of lithic reduction in relatively even numbers were documented within  
36 the site boundaries. Materials include various kinds of chert, jasper, chalcedony, rhyolite and  
37 metavolcanics.. Some artifacts are embedded in the desert pavement surface, and it is likely  
38 that other artifacts are obscured by siltation from shallow drainage channels that cross the site.

39 Concentration 1 is a small concentration of chert that consists of debitage from all stages of  
40 core reduction. At least two different types of chert are represented in this concentration.  
41 Concentration 2 is a discreet single episode reduction locus that consists of 20 pieces of

1   metavolcanic (likely rhyolite) debitage representing mostly early-stage core reduction of a  
2   single cobble. Concentration 3 is a large concentration of lithic debitage and two bifacial cores.  
3   Most of the debitage in Concentration 3 is representative of late-stage core reduction. Two  
4   bifacial chert flake cores are likely the source of most of the debitage within the concentration.  
5   Concentration 4 is a relatively dense concentration consisting of two chert cores and chert and  
6   metavolcanic debitage representing all stages of core reduction.

7   The site is in fair condition. It is likely the site has been affected by modern development as the  
8   I-15 freeway and associated ROW is to the north and a graded transmission line access road is  
9   to the south. The northern margin of the site has been affected by road construction, and  
10   vehicular tracks from OHV was noted across the site boundaries. Additionally, the site is subject  
11   to erosion associated with several shallow drainage channels that cut through it. Despite the  
12   various impacts on the site from natural and other human-induced causes, the desert  
13   pavement that the site rests on is mostly intact. Project construction would directly impact a  
14   portion of this site through the damage, displacement, or removal of artifacts within the APE-  
15   ADI.

### 16   **3.1.3.3. P-36-008923/ CA-SBR-8923**

17   P-36-008923 is an expansive prehistoric quarry measuring 1,035 × 822 m (3,395 × 2,700 ft)  
18   containing multiple rock cairns, rock alignment features, and discrete lithic reduction loci. It is  
19   located along Caltrans ROW and private land. The site is individually eligible and eligible as a  
20   contributor to the SRAD under criteria A and D.

21   The site was first recorded in 1997 by ASM Affiliates and described as an extensive prehistoric  
22   quarry. The site is situated on desert pavement surfaces covering a series of alluvial fan fingers  
23   or terraces dissected by small drainages. Multiple discrete lithic reduction loci, six rock cairn  
24   features, and a rock alignment were recorded amongst a light to moderate density lithic  
25   scatter. ASM described most of the debitage as representing early-stage reduction and  
26   materials testing. The site record was updated later in 1997, also by ASM Affiliates, to  
27   document 10 or more rock cairns which they stated were either from the historic or modern  
28   periods. At that time, 347 artifacts were collected, with curation planned at a facility that was  
29   not identified.

30   ICF visited the area immediately north of the 1997 site boundary, within the median of I-15,  
31   south of the I-15 northbound lanes, and within the Old CA Highway 58 interchange (ICF and  
32   Dudek 2022). A relatively small portion of the site overall (approximately 41,224 m<sup>2</sup> or 10 acres)  
33   fell within this ICF survey area. Within the previously recorded site area surveyed by ICF, two  
34   pieces of debitage and one rock ring of undetermined age were identified. Four concentrations  
35   of lithic artifacts and two rock rings were identified and documented north of the 1997 site  
36   boundary by the ICF team. Survey by ICF was confined to those portions of the site within the  
37   Project APE-ADI. As a result of the ICF survey, the site boundaries were extended approximately  
38   100 m to the north to include newly recorded archaeological materials.

39   Dudek visited the area immediately north of the 1997 site boundary and east of ICF's  
40   investigation in the process of conducting boundary testing as part of the Subsurface Inventory  
41   (Barton and Hale 2022a). One concentration of artifacts (Concentration 5) and one point-

1 provenienced artifact (LB-501) not associated with a concentration were recorded. This  
2 warranted expansion of the site boundary to the northbound lane of I-15.

3 The topography surrounding the site is characterized as erosional, consisting of well-developed  
4 desert pavement cut by seasonal drainages and washes. Sediments consist of sandy and  
5 gravelly loam with up to 15 percent pebbles and up to 10 percent cobble inclusions. Ground  
6 visibility was good, described as 90 percent across the site. Vegetation on the site consists of  
7 moderate growths of creosote, bursage, hopsage, Mormon tea, yucca, and occasional Joshua  
8 trees.

9 Overall, portions of the site have been altered by a few different activities including the  
10 construction of I-15 and modern refuse dumping. Large portions of the site, however, appear to  
11 be mostly unaltered. The portions of the site within the Project APE-ADI that were documented  
12 by ICF have been moderately disturbed, however, additional archaeological studies are  
13 necessary to determine the exact level of disturbance.

14 Construction activities within the permanent and temporary project footprint would physically  
15 remove the northern portion of this site. It is unknown whether the site contains a subsurface  
16 deposit because archaeological testing activities have not been conducted; however, the soil  
17 onsite indicates some potential for buried deposits to exist.

#### 18 **3.1.3.4. *Effects to the SRAD***

19 Project construction would directly impact individual contributing archaeological sites within  
20 the boundaries of the SRAD through the damage, displacement, or removal of artifacts within  
21 the APE-ADI. These impacts also constitute adverse effects to the district itself by altering  
22 elements that, together, convey the significance of the district under criteria A and D.

#### 23 **3.1.4. Cronese Lake Archaeological District**

24 One archaeological site that is individually eligible and contributes to the Cronese Lake  
25 Archaeological District (CLAD) and will be affected by Project construction is P-36-004198.  
26 Effects to this individual site contribute to adverse effects to the CLAD itself by altering  
27 significance-conveying elements within the district under criteria A and D.

##### 28 **3.1.4.1. *P-36-004198/ CA-SBR-4198***

29 P-36-004198 is a large prehistoric habitation site measuring 465 × 350 m (1,525 × 1,148 ft) and  
30 situated along the southeastern shore of East Cronese Lake along Caltrans ROW and private  
31 lands. The site is individually eligible and eligible as a contributor to the CLAD under criteria A  
32 and D.

33 P-36-004198 has a long history of archaeological work and has undergone several iterations of  
34 site boundaries during this time. Previously recorded evidence of habitation includes pottery,  
35 flaked and ground stone, hearth features, shell beads, worked bone artifacts, textiles,  
36 cremations and inhumations, temporally diagnostic artifacts, house pits, as well as burned  
37 faunal bone and shell. Portions of the site were originally recorded and excavated by Malcolm  
38 Rogers in 1928 and was described as the largest habitation site of the Mojave Sink region.  
39 Rogers identified and analyzed washed out cremations including five cremation pits with

1 human remains, grave goods of stone and bone tools, shell adornments, and pottery sherds.  
2 Rogers conducted testing at the site and artifacts from that excavation were dated to the  
3 Yuman II horizon, which Rogers determined to be the period of major occupation (Rogers  
4 1928). Sutton (1981) and Tambunga (1981), of the BLM each updated the site and both  
5 described it as a large complete habitation site affected by erosional activities within a dune  
6 complex (Sutton 1981). The updates described artifacts such as ceramics, fire affected rock,  
7 ground stone, freshwater mussel shell, burned tortoise shell, blown out hearths, activity areas,  
8 lithic debitage, and possible human remains. Both archaeologists noted that the site is likely to  
9 be more extensive and buried under dune sands. Prior to the current Inventory Project, the  
10 most recent updates to the site occurred in 2012 and 2013 by Bodmer et al. (Bodmer et al  
11 2013b), who recorded two loci of artifact concentrations with a curiously small site boundary  
12 that didn't include the extents of previous recordings. Bodmer et al. identified similar artifacts  
13 to those recorded by previous researchers in addition to worked bone, worked ceramics, a  
14 projectile point, and decorated ceramics. Bodmer et al. (2013b) were restricted by their Project  
15 APE and only recorded cultural materials within an approximately 60-m diameter area. These  
16 authors also noted that the site was likely to be mostly buried under dune sands.

17 Additional site components were observed during the ICF 2019 survey adjacent to and within  
18 the Project APE-ADI (ICF and Dudek 2022). The boundary has been expanded to include these  
19 new components and now encompasses the Basin Road I-15 interchange. Survey was  
20 conducted to the northwest of the Project APE-ADI to verify that the newly identified resources  
21 are contiguous with the previously recorded site boundaries to the north. The ICF team found a  
22 continuous scatter of artifacts, ecofacts, and features extending into the boundaries of the  
23 previously recorded site. The updated portion of the site measures approximately 25 acres and  
24 is located within undulating unstable sand dunes within the Cronese Basin. The general vicinity  
25 is characterized by actively shifting sands from the dry lakebeds within the Basin (Bodmer et al.  
26 2013b).

27 The depositional setting for the site and greater vicinity is an excessively drained igneous  
28 alluvium derived from multiple sources and a sandy dune surface. Ground visibility is 95  
29 percent across the site, however, constantly shifting dunes clearly obscure surface visibility and  
30 have buried cultural resources. Vegetation surrounding the site is of the Creosote Bush  
31 Community and consists primarily of moderate growths of creosote, mesquite, and bunch  
32 grasses.

33 The newly expanded portion of the site includes a dense shell bead and possible cremation  
34 feature (F1), a shell midden feature (F2), a possible human cremation feature (F3), two deflated  
35 thermal features (F4 and F5), and a second shell midden feature (F6), as well as numerous  
36 surface artifacts, including 26 point-provenienced prehistoric artifacts. Surface artifacts  
37 recorded include shell and stone beads, ground stone fragments, projectile points, pottery  
38 sherds of various types, and possible cremated human bone fragments. F1 measures  
39 approximately 20 m (northeast to southwest) × 25 m (northwest to southeast) and is located  
40 north of the median of I-15. F1 consists of more than 20 shell beads, including disk beads,  
41 possible *Olivella* sidewall beads, possible *Mytilus* disk beads, and numerous fragments of bone;  
42 some that are calcined and possibly representative of human cremations. FRA is in the process  
43 of making formal identification findings of the possible human remains. F2 measures 30 m in

1 diameter and is also located within the southbound offramp area north of the I-15 median. F2  
2 consists of a moderately dense freshwater shell midden composed of primarily callus and nacre  
3 fragments from species including gastropod, freshwater mollusk, and bivalves. F3 measures 10  
4 × 10 m and is located north of the southbound offramp of I-15. F3 consists of a possible human  
5 cremation, burned bone fragments, more than 30 brown and buffware body sherds, and shell  
6 and faunal fragments. F4 and F5 each measure 10 m in diameter and are also located north of  
7 the southbound offramp of I-15. F4 and F5 consist of two deflated hearth or roasting pit  
8 features with burned shell and bone fragments. F6 covers roughly 100 × 25 m and includes  
9 more than 200 fragments of freshwater mussel shell nacre scattered off the south side of the  
10 eastbound I-15 exit ramp. The newly recorded portion of the site extends the previously  
11 recorded boundary by approximately 460 m to the south and 440 m to the east.

12 Overall, cultural material and features within the newly expanded portion of the site are  
13 consistent with the previously recorded large lakeside habitation site containing a high density  
14 of freshwater shell, brown and buff ware ceramics, lithic debitage, shell and stone beads, faunal  
15 bone, projectile points, ground stone fragments, midden areas, and possible cremated human  
16 remains. Both flaked and ground stone artifacts were identified including ground vesicular  
17 basalt and sandstone, and debitage representing later stage lithic reduction using multiple  
18 material types such as various colors of chert, basalt, chalcedony, and jasper. Three projectile  
19 points were recorded: a basalt concave based triangular Cottonwood arrow point, a yellowish  
20 chalcedony Desert Side-Notched arrow point, and an opaque chalcedony Desert Side-Notched  
21 point. Sherds of brown ware and Colorado buffware ceramics, including rim sherds and  
22 numerous body fragments, were recorded as well as “pot drops” likely representing whole  
23 vessels. The site is situated in an area of dune sands and hummocks covered in gravel bars or  
24 poorly developed pavement surfaces. There is a high potential for subsurface materials due to  
25 the constantly moving sand dunes, and natural aeolian deposition.

26 Natural aeolian deposition has likely buried much of the site; and portions have been disturbed  
27 as a result of the construction of I-15, the Basin Road overpass, and on and off ramps. However,  
28 resources were identified in the areas between off ramp road segments and the highway  
29 indicating that much of the site remains intact within the Project APE-ADI despite highway  
30 construction. Disturbances to the site include off-road recreational vehicle traffic, intrusive  
31 modern refuse, access to the site by passers-by, rodent activity, apparent looting, and natural  
32 erosion and aeolian deposition. Overall, the site retains high integrity having been mostly  
33 buried by shifting dunes. Fragments of freshwater shell were identified within the center  
34 median of I-15 within the Project APE-ADI; however, no other cultural materials were identified  
35 in this area. The extent of disturbance to the site within the median is unknown at this time,  
36 however it is likely that some portion of the ground surface was modified during construction  
37 of the highway.

38 P-36-004198 represents an area of dense prehistoric habitation including material evidence of a  
39 wide variety of daily and possibly ceremonial activities (Bodmer et al. 2013b). The site has been  
40 identified by numerous researchers for many years as important to understanding the  
41 prehistory of the Mojave Desert (Coombs et al. 1979; Drover 1979; Moratto 1984; Rogers 1929;  
42 Sutton 1996, 2017). Although the site has been recognized as an important site in the region,  
43 and for its ability to address numerous research questions, according to documentation

1 available to ICF the site does not appear to have been formally evaluated for its potential  
2 inclusion in the NRHP. The site is slightly altered due to construction of I-15. There is no  
3 development (residential or otherwise) in the general region surrounding the site, and apart  
4 from a small portion of the site that has been intersected by the highway site characteristics  
5 generally remain intact.

6 Construction activities within the APE-ADI would physically remove a portion of this site. It is  
7 unknown whether the site contains a subsurface deposit within the Project APE-ADI; however,  
8 the property's location in an active dune complex indicates a high potential for buried deposits  
9 to exist. Moreover, the Project will adversely affect possible cremation features near to but  
10 outside of the APE-ADI to the north through noise and vibration generated during construction.

### 11 **3.1.4.2. *Effects to the CLAD***

12 Project construction would directly impact individual contributing archaeological sites within  
13 the boundaries of the CLAD through the damage, displacement, or removal of artifacts within  
14 the APE-ADI and through construction-phase noise and vibration that disturb the setting and  
15 feel of sensitive portions of P-360004198. These impacts also constitute adverse effects to the  
16 district itself by altering elements that, together, convey the significance of the district under  
17 criteria A and D.

### 18 **3.1.5. Individually-Affected Archaeological Sites in California**

19 Five individual archaeological sites without archaeological district affiliation located in California  
20 will be affected by Project construction: P-36-000885, P-36-006023, P-36-000541, XPW21-SW-  
21 015, and ICF-XW2-007.

#### 22 **3.1.5.1. *P-36-000885/ CA-SBR-885/H***

23 P-36-000885 is a multicomponent site consisting of historic period commercial features and  
24 refuse with a prehistoric component that includes a lithic quarry and habitation features  
25 contained in a 620 × 310 m (2,034 × 1017 ft) area within Caltrans ROW. The site is individually  
26 eligible for NRHP listing under Criterion D because archaeological deposits at the site have high  
27 information value.

28 The site was originally recorded in 1972 by an unknown person who listed Mike McCormack a  
29 "5th grade student at Mt. Pass Elementary School" as the person who recorded the site. The  
30 McCormack family were the property owners and residents of the Valley Wells Station. The  
31 1972 site record described circular rock alignments at the site. The site was updated in 1979 by  
32 R. A. Musser, and was described as having a bedrock mortar, displaced metates, and other  
33 historical period debris. The site was updated again in 2018 by Dicken Everson and Ashley  
34 Bowman of Caltrans District 8. At that time, it was indicated that a "brief reconnaissance" not a  
35 "full recording of cultural materials" had been completed at the site. The cursory survey of the  
36 site identified scatters of historical period artifacts, a single metate fragment, and scattered  
37 modern refuse associated with the Valley Wells Safety Roadside Rest Area.

38 ICF examined a portion of the site north of the historic Valley Wells Station area, including a  
39 small knoll which is easily visible from the surrounding area (ICF and Dudek 2022). In this area,



1 the site was found to include a more complete prehistoric component including eight circular  
2 rock alignments, a rock shelter, a prospect pit, pottery sherds, a flake, a mano, and a historic  
3 rock feature. These elements are located outside of the current ADI. The site boundary has  
4 been expanded to include these newly identified resources. The site now measures 620 m (east  
5 to west) × 310 m (north to south).

6 Overall, the historical period component of P-36-000885 consists of the historic location of the  
7 Valley Wells Station (a demolished roadside service station, restaurant, and motel) and contains  
8 associated historical period refuse scattered structural debris, a prospector's pit, and a large  
9 limestone rock pile. The prehistoric component includes several portable metates which were  
10 noted as possibly having been brought to the area as a result of historic ranching (as indicated  
11 by their position on top of historical period glass fragments), a single bedrock mortar north of  
12 the Valley Wells Station, several circular rock alignment features, a rock shelter, and scattered  
13 prehistoric artifacts such as ceramics and lithic debitage. An active rest stop was constructed in  
14 place of the Valley Wells Station on the north side of I-15 several years ago and affected some  
15 of the cultural materials originally recorded on the site. The site covers 620 m (east to west) ×  
16 310 m (north to south), an area of 192,200 m<sup>2</sup>; however, only a 225 × 1–4-m strip is located  
17 within the current Project APE-ADI. The ground surface within the Project APE-ADI has been  
18 subject to grading for the construction and maintenance of the freeway and rest stop. Much of  
19 the approximately 350 m<sup>2</sup> area surveyed for this project was covered in asphalt or pavement or  
20 consisted of areas that had been mechanically graded to an unknown depth.

21 No cultural materials were identified during the ICF 2019/2020 survey effort in the center  
22 median of I-15. It is unknown whether a subsurface component exists at this site, or the extent  
23 of disturbance that was caused by construction of the I-15 highway and the Valley Wells Rest  
24 Area. Given the surficial expression of site constituents, it does not appear to intersect the  
25 current APE-ADI for the Project.

26 Although cultural materials were not identified within the Project APE-ADI, the prehistoric  
27 component for the site overall appears to be representative of a long-term habitation given the  
28 diversity of cultural materials and the presence of features such as the circular rock alignments.  
29 Such features have been interpreted as being related to living areas or to serve a ceremonial  
30 function.

31 The overall site as currently mapped is approximately 37.29 acres, however no direct and  
32 permanent impacts are anticipated as a result of construction in the I-15 median due to  
33 extensive previous disturbances. Adverse effects may occur when Project construction removes  
34 current paved surfaces and exposes buried deposits.

### 35 **3.1.5.2. P-36-006023**

36 P-36-006023 is a multi-component site known primarily as the Yermo dump, a historic period  
37 rural mass-refuse disposal site. However, this site also contains four individual concentrations  
38 of prehistoric flaked lithic debris. Historic period refuse deposits at P-36-006023 are a  
39 contributing element to the historic district known as the Community of Yermo (P-36-029386)  
40 under Criterion D because these deposits can inform on historic period consumption. The

1 prehistoric component is also considered individually eligible for NRHP listing under Criterion D  
2 for its information potential.

3 In 2019 ICF archaeologists visited the portion of the site within the Project APE-ADI that  
4 included areas directly northwest of the original site boundary, within the Caltrans right of way  
5 and including the Calico Road/I-15 overpass and on and off ramps. The ICF team identified an  
6 additional 30 historic refuse concentration features as well as four concentrations of prehistoric  
7 lithic artifacts and a low-density scatter of historic and prehistoric artifacts (ICF and Dudek  
8 2022). ICF expanded the boundary 1,850 ft (564 m) to the west and 950 ft (290 m) to the north.  
9 The site now measures 5,675 ft (1,730 m) (east to west) by 1,665 ft (507 m) (north to south).  
10 The topography surrounding the site is a flat dry lakebed.

11 The newly recorded historical period component of the site is composed of 30 discreet refuse  
12 dump features and a scatter of artifacts. Most of the materials identified within features  
13 include typical household refuse including food and beverage containers, decorative items,  
14 tools, household chemicals, and architectural debris. The newly identified features and artifacts  
15 are consistent with materials identified during the original recordation of the site. Temporally  
16 diagnostic artifacts were common in many of the features and display a wide range of dates  
17 indicating that the area was used for refuse disposal for a long duration prior to waste  
18 management services being offered in the region. Some features and artifacts were partially  
19 embedded into the ground surface indicating the possibility that buried materials may exist.  
20 There were no obvious indications that refuse was intentionally buried at the time of disposal,  
21 but the original recordation of the site noted that artifacts were seen in looters pits to depths  
22 of 50 cm below the ground surface.

23 The prehistoric portion of this site consists of approximately 65 pieces of debitage and one  
24 biface fragment in four concentrations. The depositional context of these items, which are  
25 intermixed with and overlain by historic period refuse, indicates that some disturbance to the  
26 lithic deposits occurred in the past. However, there does remain some integrity to deposits with  
27 potential for buried deposits. Moreover, enough diversity exists in the types of chert material  
28 to indicate that lithic tool repair occurred onsite with the discard of extralocal chert.

29 Construction within the median of I-15 and the interchange of I-15 and Calico Road would  
30 physically remove a portion of this site, including both prehistoric and historic period deposits.  
31 The Project would permanently destroy portions of the site within the APE-ADI. It is unknown  
32 whether the site contains a subsurface deposit; however, site characteristics indicate the  
33 potential for buried deposits to exist.

### 34 **3.1.5.3. P-36-000541/ CA-SBR-541**

35 P-36-000541 is a prehistoric quarry measuring 850 × 920 m (2,788 × 3,018 ft) located along  
36 Caltrans ROW. The site is individually eligible for NRHP listing under Criterion D due to high  
37 information value.

38 P-36-000541 is a prehistoric site that was originally recorded in 1964 as part of the University of  
39 California Archaeological Survey by Nordstrom. At that time, the site was described as a “work  
40 area on gravel terraces with evidence of Early Man industry” (Nordstrom 1964). The site was  
41 said to contain “crude scrapers and raw flakes” and measured 610 × 91 m. The site was later

1 updated in 1970 by Reynolds and described as a “crude quarry” containing bifaces, choppers,  
2 and other artifacts known as the “Baker Site.” The Reynolds site record also mentions previous  
3 excavations by Norm Nakamura of the University of California, Los Angeles (UCLA). The site was  
4 again updated by James C. Benton in 1976 as a 30 × 10 m rhyolite quarry north of I-15. Benton  
5 also described the excavations by Nakamura as happening in 1965 with a resulting collection of  
6 2,902 artifacts. In 2014, WSA surveyed a 30 m-wide linear corridor that crossed through the  
7 southern portion of the site boundary. WSA identified an area of quarrying and cobble testing  
8 (Locus 1) that was described as a small chert reduction area consisting of two concentrations of  
9 lithic reduction within a wider area of lithic debris that included two cores. Locus 1 was located  
10 on desert pavement and measured 36 × 19 m. It contained a total of 60–80 chert secondary and  
11 tertiary flakes and two core fragments.

12 In December 2019, ICF surveyed an area within the median of I-15 that cuts through the center  
13 of the previously recorded site boundary of P-36-000541 (ICF and Dudek 2022). Survey was  
14 confined to the site area within the Project APE-ADI. More than 200 pieces of a purple/red/gray  
15 banded metavolcanic or rhyolite material were observed scattered throughout the I-15 median,  
16 mixed in with introduced road gravels and naturally occurring granitic, volcanic, metavolcanic  
17 and quartz gravels and cobbles. The identification of these artifacts resulted in the extension of  
18 the site approximately 300 m northeast from the original eastern site boundary. Most of these  
19 materials resembled shatter, likely from materials testing and early-stage reduction, with some  
20 large primary and secondary and some smaller tertiary flakes and several cores. Much of the  
21 material had the appearance of being mechanically created, however, at least 25 artifacts  
22 exhibited flaking attributes.

23 Dudek revisited the area in the median and on either side of I-15, both east and west of the site  
24 in 2021 as part of the boundary testing portion of the Subsurface Inventory (Barton and Hale  
25 2022a). One subsurface unit (SSU) in the median northeast of the pre-existing site boundary  
26 produced a single fine-grained volcanic interior flake, 2 cm below surface, along with glass and  
27 asphalt. Six meters away, one assayed fine-grained volcanic cobble and one piece of volcanic  
28 shatter were also recorded. Though these artifacts may have been redeposited from the main  
29 site area during highway construction, Dudek expanded the site boundary to include them. The  
30 expansion is entirely within the median, 200 m northeast of the pre-existing boundary. The  
31 memo entitled *Subsurface Archaeological Inventory: Addendum to, XpressWest High-Speed*  
32 *Passenger Train Project, Archaeological Inventory Report, San Bernardino County, California,*  
33 attached to the inventory report (Barton and Hale 2022a) contains additional details on the  
34 results of the subsurface inventory.

35 In the central portion of the site, the APE-ADI cuts through several tall ridges and it is likely that  
36 approximately 6 m or more of sediment was removed for construction of the highway. Other  
37 areas that have not been cut to this extent do appear to have been graded and leveled to an  
38 unknown depth below the original ground surface. Despite these disturbances, this site  
39 contains a relatively dense accumulation of flaked lithics with intact features representing  
40 singular reduction events, along with less common colors of CCS raw material within the APE-  
41 ADI.

1 Construction activities within the permanent and temporary project footprint would physically  
2 remove the portions of this site within the APE-ADI. Despite extensive disturbance, intact  
3 and/or buried deposits may exist in some portions of the site.

#### 4 **3.1.5.4. XPW21-SW-015**

5 XPW21-SW-015 is a multicomponent site measuring 85 × 140 m (279 × 459 ft) located on the  
6 northbound side of the I-15 headed towards Ivanpah and Primm NV within Caltrans ROW and  
7 on private lands. The site is located west-southwest of the Nipton Road I-15 exit, and 20 m  
8 south of the northbound I-15 roadside edge. This site is also located approximately 120 m  
9 northeast and downslope from a currently occupied, private, rural multi-structure residence.  
10 The site is individually eligible for NRHP listing under Criterion D for the information value of  
11 the prehistoric archaeological deposits.

12 The site contains a total of six features: three prehistoric quarry features (F2-4), one  
13 temporally-unknown burnt rock feature of unknown function (F5), two historic domestic refuse  
14 deposits (F1 and F6), and a general background scatter of historic refuse and debris covering a  
15 1.9-acre area (ICF and Dudek 2022). Notably, none of the features were identified within the  
16 Project APE-ADI; only a moderately diffuse scatter of historic domestic trash and other historic  
17 building material debris was identified within the APE-ADI.

18 Features 2 through 4 are individual locations of prehistoric opportunistic lithic procurement  
19 with a source cobble or exposed bedrock with a low-density scatter of lithic debitage  
20 surrounding the source material. All three of these locations are within an approximate 7 × 7 m  
21 area, located just 5 m northeast of Feature 1. The site retains strong integrity with the  
22 possibility of buried archaeological deposits.

23 This 1.9-acre multicomponent site is located partially within the Project APE-ADI. Project  
24 construction would directly impact a portion of this site through the damage, displacement, or  
25 removal of artifacts.

#### 26 **3.1.5.5. ICF-XW2-007**

27 ICF-XW2-007 represents the location of a demolished homestead, measuring 255 × 146 m (836  
28 × 479 ft) on private lands and dating from the mid-1920s to the late 1960s, with the only  
29 remaining features being several refuse deposits (ICF and Dudek 2022). The historic period  
30 refuse deposits at this site are individually eligible for NRHP listing under Criterion D for their  
31 information value.

32 A residence which was likely associated with the refuse deposit features was present at this  
33 location prior to 1932 and was demolished sometime around 1969 based on historic maps and  
34 aerials of the site<sup>1</sup>. Research at <https://glorerecords.blm.gov/> revealed a homestead patent was  
35 awarded for this parcel of land in 1924 to a Ms. Carrie L. Boyd, formerly Carrie L. Taylor. Based  
36 on the dates of occupation evidenced by the artifact assemblage, historic maps and aerials, and  
37 historical documents, it can be assumed that these burned domestic deposits are associated  
38 with the day-to-day life of Ms. Carrie L. Boyd and her household beginning in the mid-1920s

---

<sup>1</sup> Historic aerials.com 2020; <https://livingatlas.arcgis.com/topoexplorer/index.html> 2020

1 and continuing up to the 1960s. No structures remain at this site, but refuse deposits are  
2 discrete and dense, with strong indications of buried refuse deposits. As this site offers an  
3 opportunity to understand the domestic consumption patterns of local homesteaders in the  
4 early 1900s, this site is eligible for NRHP listing under Criterion D for its archaeological  
5 information potential. Criteria A-C would not apply as Ms. Carrie Boyd is not a person of  
6 significance in local or regional history, the homestead was not part of significant events in  
7 history, and nothing about the ruins are especially unique.

8 Construction of the Dale Evans Station in the APE-ADI would physically remove a substantial  
9 portion of this site. The presence of diagnostic historic period artifacts and the potential for  
10 subsurface deposits provides the opportunity for the site to address important research  
11 questions for the region.

### 12 **3.1.6. Individually-Affected Archaeological Sites in Nevada**

13 Three individual archaeological sites without archaeological district affiliation located in Nevada  
14 will be affected by Project construction: 26CK5760, 26CK7189, and 26CK11252.

#### 15 **3.1.6.1. 26CK5760**

16 26CK5760 is a multicomponent site consisting primarily of a railroad construction camp but also  
17 having a rock ring and lithic scatter. The site measures 280 × 190 m (918 × 623 ft) and is located  
18 on a low alluvial plain on lands administered by NDOT and BLM, and on private land. It is  
19 eligible for NRHP listing under Criterion D due to the data potential of the historic period refuse  
20 deposits.

21 This site was originally documented by James and Briggs Archaeological Services in 1999 as a  
22 light to dense historic refuse scatter suggested as the remains of the historic Erie Railroad stop  
23 that began operation in 1905. In 2007 EDAW archaeologists revisited the site and established  
24 that it was significant as an historic property and eligible under Criteria A and D although this  
25 recommendation did not receive concurrence from the NV SHPO. In addition to some 26  
26 concentrations of historic artifacts, debris, and features (including a well, an earthen berm, and  
27 earthen and concrete platforms) the site also contains a rock ring associated with a light lithic  
28 scatter (n=4 pieces of chipped stone debris). EDAW contended that the site contains reasonable  
29 potential for documenting the role of distinct ethnic groups – including Native Americans – in  
30 the railroad enterprise.

31 The portion of the site examined by Dudek in 2021 is limited to the Project APE-ADI, which is  
32 only a small portion of the total site. This adds approximately 6 acres to the total area of the  
33 site. Dudek inventory reaffirms previous assessments that this is a historic site directly  
34 associated with the 19th and 20th century operations of the Union Pacific Railroad (UPRR). The  
35 expanded portion of the site minimally consists of foundation remains, many discrete consumer  
36 trash deposits (several with cans and artifacts ranging in the hundreds per deposit), soil staining  
37 and a general scatter of historic consumer trash and habitation refuse debris. The site  
38 boundaries were not completely defined due to the massive area of scattered features and  
39 debris that extends far beyond the current APE-ADI. The Dudek addition is situated  
40 approximately 250 m east of the northbound lane of I-15, and it is located approximately 4.75

1 miles south of the Sloan Road exit off I-15 in Nevada (Hale et al. 2022). More generally, the site  
2 is located inside Clark County, Nevada, and approximately 7.5 miles west of the Sloan Canyon  
3 National Conservation Area.

4 Topographically, the site is situated within a massive alluvial fan deposit. Sediments are sandy  
5 alluvium derived from granitic sources. Vegetation in the area consists of a variety of desert  
6 scrub bushes, including the Sonora-Mojave Creosote bush and the White Bursage Desert Scrub.  
7 Visibility on the site is generally good (approximately 75 percent), however, the desert  
8 vegetation is somewhat of a visual impediment.

9 This historic railroad site boundary was not defined completely because it is very large and  
10 exists mostly beyond the current APE-ADI. Throughout the site there are numerous unidentified  
11 structure foundation remains, many discrete consumer trash deposits (several with cans and  
12 artifacts ranging in the hundreds per deposit), large areas of anthropogenic soil staining, and a  
13 general scatter of historic consumer trash and habitation refuse debris. The refuse deposits  
14 consist of several very dense concentrations of artifacts (cans, glass, and other materials); there  
15 are also hundreds of cans and historic refuse spread more diffusely across the site area. The  
16 eastern boundary of the site is currently defined by the active UPRR, but the actual northern,  
17 eastern, and southern boundaries are only estimated; only the western boundary was defined  
18 in this survey.

19 Almost all the above-mentioned features and dense deposits are located outside the APE-ADI.  
20 The portion of the site recorded within the APE-ADI is represented only by a diffuse scatter of  
21 approximately 12 to 15 crushed food and beverage cans and a single deflated cobble and milled  
22 wood post feature (F1). This scatter does not constitute an actual original deposit of historic  
23 cans, as all these cans sit loosely and diffusely on the ground surface.

24 Feature 1 (F1), the only historic feature located within the APE-ADI, is identified as a deflated  
25 rock cairn with a milled lumber post. The feature consists of approximately 75 various-sized  
26 rocks, cobbles, and small boulders loosely consolidated in a roughly 8 × 8 m area. All the rocks  
27 and cobbles appear to be of immediate local origin and are all roughly sub-angular to angular  
28 and unrefined in shape. A heavily weathered milled lumber post measuring approximately 4 × 4  
29 × 36 inches is lying loosely on top and in the center of this dispersed pile of rock. No artifacts of  
30 any era or age were directly associated with this feature; however, this feature is located along  
31 a section of land that has very faint evidence of possible old dirt roads or trails and/or possibly  
32 an intersection. Areal imagery of this location offers evidence of the possible existence of a  
33 historic dirt road along the edge of this feature which heads southeast directly towards the  
34 approximate center of this site.

35 While this site retains some physical integrity and some of the artifact deposits are in generally  
36 good condition, the site has undergone a moderate amount of post-depositional disturbance.  
37 The areas outside of the APE-ADI have high data potential but the portion of this site within the  
38 APE-ADI retain low probability of containing significant subsurface deposits. Project  
39 construction would directly impact this site through the damage, displacement, or removal of  
40 artifacts in the APE-ADI.

### 1 **3.1.6.2. 26CK7189**

2 Site 26CK7189 is an artifact scatter located at the edge of an alluvial fan in a relatively flat area  
3 near small hummocky dunes, northwest of Roach Lake Playa. The site measures 325 × 350 m  
4 (1,066 × 1,148 ft) and is located on lands administered by NDOT and the local government. This  
5 site is individually eligible for NRHP listing under Criterion D for its archaeological information  
6 potential.

7 Numerous creosote brush scrub intermixed with rabbitbrush and desert-thorn is scattered  
8 within the site boundary and surrounding area with a total ground coverage of 15 percent. The  
9 sediment consists of light-brown, sandy loam with gravel.

10 Site 26CK7189 was originally recorded by MACTEC Engineering and Consulting, Inc. in 2004 as a  
11 light artifact scatter northwest of Roach Lake Playa containing more than 25 pieces of debitage,  
12 lithic tools, and a limestone milling stone. Lithic tools consist of a chert cobble with battering  
13 along the bifacial edge, two obsidian bifaces, and a rhyolite pestle that appeared to be fire  
14 affected. Noted materials included obsidian, rhyolite, chert, chalcedony, and basalt. Notably,  
15 one obsidian biface (3.0 × 1.5 × 0.5 cm) resembles either a Pinto or Little Lake projectile point,  
16 which are known to date from approximately 9,000 – 4,500 years ago. The alluvial setting of  
17 this site indicates that it retains some potential for harboring buried archaeological deposits.

18 26CK7189 is eligible for NRHP listing under Criterion D because it contains obsidian artifacts  
19 that can be subject to geochemical sourcing and hydration analysis, potentially yielding  
20 chronological information for site habitation which is relatively rare for the local area. Notably,  
21 this site is only 1,100 m northeast of the boundary for the Devil Peak obsidian source and  
22 quarry (26CK3865). The obsidian projectile point, some obsidian debitage, ground stone, and  
23 other artifacts are located within the APE-ADI.

24 Numerous artifacts are located in the APE-ADI which has been moderately disturbed, although  
25 intact cultural deposits are likely present. Project construction would directly impact the  
26 portion of this site within the APE-ADI through the damage, displacement, or removal of  
27 artifacts.

### 28 **3.1.6.3. 26CK11252**

29 Site 26CK11252 is a large 428 × 215 m (1,404 × 705 ft) prehistoric lithic scatter located  
30 approximately 3.5 miles north of the I-15 exit in Jean, Nevada (NV-161), 175 m east of I-15 and  
31 30 m west of the UPRR. More generally, the site is located about 10 miles southwest of the  
32 Sloan Canyon National Conservation Area and 2.5 miles northwest of the Jean Dry Lakebed.  
33 This site is eligible for NRHP listing under Criterion D for its archaeological information  
34 potential.

35 Topographically, the site sits along the eastern side of the crest and three, small bowl-shaped  
36 drainages of a south-north-trending outcrop of a heavily weathered exposure of gravel  
37 conglomerates. This uplift is likely related to the volcanic exposures of the Jean Hills at the  
38 southern end of the exposure. Vegetation in the area consists of sparse growths of creosote,  
39 saltbush, seasonal grasses, and other sparse members of the Sonora-Mojave Creosote bush-  
40 White Bursage Desert Scrub vegetation community. Visibility of the land surface is generally

1 good (approximately 85 percent). Site 26CK11252 is a prehistoric quarry and lithic scatter  
2 located approximately north of the I-15 exit in Jean, Nevada situated east of I-15, and on the  
3 west of the UPRR. Four concentrations of lithic artifacts and one isolate were identified,  
4 including approximately 120 artifacts such as debitage, cores, tested cobbles, bifaces, simple  
5 flake tools, and a source cobble. Material types include CCS, quartzite, and rhyolite. The  
6 presence of tools discarded on site indicates site occupants visited the area to make stone tools  
7 from the abundant raw material exposed on the landform.

8 The site retains its physical integrity and is in decent condition. Many of the artifacts are  
9 partially embedded into the ground surface likely because of flooding or natural alluvial  
10 processes. The artifacts are somewhat weathered, likely due to the ongoing natural aeolian  
11 forces that affect the site. The site is situated between the I-15 highway and South Las Vegas  
12 Boulevard. There is a dirt road that intersects the site. Moreover, some of the site is situated on  
13 an east-facing (and at some points relatively steep) slope, and many of the artifacts have likely  
14 been transported a short distance downhill over time (or are prone to do so). The site is nearly  
15 entirely within the APE-ADI and Project construction would directly disturb or displace  
16 archaeological materials.

### 17 **3.2. Affected Historic Properties Requiring Treatment—Historic Built** 18 **Environment**

19 Six built environment historic properties are considered NRHP eligible historic properties in the  
20 APE: the LADWP Boulder Dam to Los Angeles Transmission Lines (Boulder Lines 1, 2, and 3) (P-  
21 36-007694/CK6238/CK6237/CK6242) (located in both California and Nevada), the SCE-owned  
22 132 kV Hoover Dam Transmission Line (P-36-010315) (within the APE in California, only) and the  
23 Jean Underpass(S581) (located in the vicinity of Jean, Nevada).The Project is not expected to  
24 cause adverse effects to built environment historic properties as adverse effects will be  
25 avoided. However, if adverse effects to built environment historic properties are identified,  
26 established context and research themes from HNTB 2022 would be used as a basis for a site  
27 specific HPTP, to be developed in accordance with Chapter 6 of this HPTP.

28 Maps depicting the location of NRHP-eligible historic built environment resources are located in  
29 Appendix A, and associated resource records are located in Appendix B.  
30



1 **Table 3-2. Affected Historic Properties Requiring Treatment—Historic Built Environment**

2

California		
Built Environment Historic Properties		Effects
<b>P-36-007694</b>	<b>Criteria A and C</b>	<b>No Adverse Effect</b>
<b>P-36-010315</b>	<b>Criteria A and C</b>	<b>No Adverse Effect</b>
Nevada		
Built Environment Historic Properties		Effects
<b>26CK6238</b>	<b>Criteria A and C</b>	<b>No Adverse Effect</b>
<b>26CK6237</b>	<b>Criteria A and C</b>	<b>No Adverse Effect</b>
<b>26CK6242</b>	<b>Criteria A and C</b>	<b>No Adverse Effect</b>
<b>S581</b>	<b>Criterion C</b>	<b>No Adverse Effect</b>

3

1

2

*This page intentionally left blank*

## 4. Treatment of Archaeological Resources

### 4.1. Prehistoric Research Design and Context

The research design included in this HPTP builds on the full cultural context and research themes provided in the archaeological inventory reports (ICF and Dudek 2022; Hale et al. 2022) and eligibility and effects reports (Hale and Barton 2022a, 2022b) prepared separately for California and Nevada segments of the Project.

#### 4.1.1. Prehistoric Archaeological Research Themes

The archaeological inventory report for this Project (ICF and Dudek 2022) included an in-depth research design with defined cultural context themes. The context identified important prehistoric and historic period research themes, drawing on the available published literature for the broader region. The research design generated questions from the cultural context with the goal of guiding the NRHP evaluation of identified archaeological sites as they were discovered. As is often the case, the initial research design cannot be addressed completely with the data generated from archaeological sites identified in the inventory. Therefore, those research themes and questions that are relevant to this analysis are summarized herein.

##### 4.1.1.1. *Site Formation Processes*

The archaeological inventory report for this Project (ICF and Dudek 2022) emphasized depositional integrity and geologic context as important considerations for evaluating eligibility. Integrity is defined as the ability to discern occupational components, or episodes, because the artifact-bearing deposits have not been mixed to the point that spatial associations of artifacts and features have been destroyed. For archaeological sites, the interpretive value of an artifact is reduced if it's spatial association with other artifacts cannot be established, hindering efforts to understand chronology of occupation and the human behaviors that resulted in artifact disposition. For example, if ten different artifacts are discovered in a deposit, do those artifacts represent ten independent occupations for different reasons, or one occupation for ten different tasks? This oversimplified question cuts to the core of depositional integrity and the archaeological desire to associate artifacts for the purpose of interpretation.

Geologic context of artifact deposition is also a major factor in determining spatial associations. Depositional environments that accumulate tend to segregate different episodes of human occupation stratigraphically, while deflated desert pavements can compress sediments into a single stratum resulting in the appearance of association between artifacts from different occupations. The truth is more nuanced, particularly when it comes to the dynamics of site formation processes and post-depositional disturbances. For example, desert pavements often harbor undisturbed archaeological deposits, sometimes at great depths such as at the Goldstone Site (CA-SBR-2348) on Fort Irwin located just northwest of Cronese Basin (Basgall and Hall 1994).

Enough archaeological research has been completed across the Mojave Desert that broad patterns of lithic raw material acquisition and stone tool production are relatively clear such that nuances characterizing cultural chronologies are relatively easy to spot, even in mixed

1 assemblages. For instance, Pinto period stone tool production and use resulted in  
2 comparatively less uncontrolled shatter and more refined debitage profiles than the later  
3 Saratoga Springs period that saw widespread use of the bow and arrow. As it turns out,  
4 production of arrow points and simple flake tools from unprepared raw material masses  
5 produced less edge finishing flakes than production of atlatl (i.e., dart) points and formed flaked  
6 tools from prepared cores during the Pinto period (Hale et al. 2010).

7 Such region-level patterning is a blunt interpretive instrument and very difficult to apply to  
8 individual assemblages but when viewed at the landscape level with larger datasets, such  
9 patterns become more visible making components of individual sites easier to understand. In  
10 this scenario, a Pinto period archaeological deposit would fit poorly into the debitage profile of  
11 a Saratoga Springs deposit, the diverging patterns of lithic reduction revealing their behavioral  
12 context. Indeed, the archaeological literature of the Mojave Desert is full of examples where  
13 researchers tease apart occupational components based on such technological hints, even  
14 though the endeavor is theoretically and methodologically weak (Giambastiani et al. 2008).

15 Considering the current suite of prehistoric archaeological sites in the Project APE, lithic raw  
16 material acquisition and stone tool production is the most robust pattern observable amongst  
17 prehistoric sites, owing primarily to the abundance of stone tool quality raw material exposed  
18 in the desert pavements of relatively old colluvium. Erosional processes and a dry climate  
19 collectively reduced fine sand and silts to the point that heavier pebbles and gravels settle  
20 together resulting in a natural pavement-like surface. In this context, when different types of  
21 stone are easy to distinguish visually it makes opportunistic extraction of tool-quality raw  
22 material less costly by reducing the time required to search for it.

23 Resulting archaeological deposits tend to be discrete clusters of debitage, cores, and the  
24 occasional stone tool (or aggregates of such deposits termed “segregated reduction loci”[(SRL]).  
25 Turning back to site formation processes, these kinds of sites arguably retain strong spatial  
26 integrity. The problem of deflation mixing different occupational debris does not present itself  
27 as a major issue for interpreting sites.

## 28 **Data Requirements**

29 Data bearing on the temporal and physical integrity of project sites are critical to assessments  
30 of significance, data potential, and management needs. The degree to which temporally  
31 discrete components remain, in accordance with their structural integrity, must be considered  
32 when completing mitigation or delineating areas for long term protection. To the extent that  
33 site integrity enhances or devalues the interpretive potential of a cultural deposit, it may  
34 contribute to or detract from its scientific value:

- 35 • Do inclusive chronometric data from the project sites permit the identification and  
36 definition of temporally and/or spatially discrete prehistoric occupations? Can  
37 significant, intact deposits be located in the APE-ADI and targeted for data recovery?
- 38 • Is there any evidence that sites are vertically structured and if so, do artifacts sort  
39 according to this structure?

- 1 • Are the definitions of discrete components supported by multiple, independent
- 2 chronological controls, and if so, how similar are their age estimates?
- 3 • Is there substantial evidence of occupational “overprinting”? How has this affected the
- 4 temporal integrity of habitation components?

#### 5 *4.1.1.2. Chronology*

6 Like site formation processes, chronology is a key tenet of archaeological interpretation and  
 7 NRHP eligibility determinations. The ability to place artifact deposits in time, even relative to  
 8 one another, allows us to decipher human behavior through temporal patterning between  
 9 chronologically distinct deposits. Chronological indicators ranging from absolute dates, such as  
 10 those obtained through radiocarbon or obsidian hydration dating, to time sensitive artifact  
 11 forms and technological patterns are useful for placing deposits in time. Unfortunately, artifacts  
 12 suitable for absolute dating, time sensitive artifacts such as projectile points and beads, and  
 13 other artifacts with time markers, are not commonly found, thus placing the burden of  
 14 deciphering chronology on highly assumptive technological patterning (such as lithic reduction  
 15 techniques or types of ground stone tools).

16 In the Project APE, prehistoric archaeological deposits primarily reflect short term camps, and  
 17 these are less likely to contain information that can be used to place the sites in time, unless  
 18 time-sensitive artifacts are found, such as projectile points or beads. Longer spans of  
 19 occupation are more likely to result in the accumulation of food residues such as charcoal or  
 20 animal bone that can be dated with the radiocarbon method, along with other assemblage  
 21 constituents that can yield chronological information. Longer term encampments are also more  
 22 likely to produce robust archaeological deposits, such as those in the Cronese Lake basin.

23 Strong chronological control of prehistoric archaeological deposits identified within the Project  
 24 APE is challenging, having only identified a handful of time sensitive artifacts from low density  
 25 lithic scatters. Moreover, of the identified prehistoric sites that have time sensitive artifacts,  
 26 most are located outside of the APE-ADI. Despite these limitations, some patterns can  
 27 approximate age, such as the degree of weathering. Artifacts exposed on the surface for longer  
 28 periods of time are more likely to have eroded surfaces, smoothing sharp edges and developing  
 29 patina from exposure than those that have been exposed for a shorter period of time. The  
 30 problems in such comparisons are obvious but highly eroded artifacts or those with extreme  
 31 patina can be assumed to have been exposed for long periods of time, allowing chronology to  
 32 be determined for prehistoric occupation in general.

#### 33 **Data Requirements**

34 Judging by the size and diversity of individual prehistoric assemblages, individual sites, features,  
 35 and even isolates appear to represent both short-term, transient occupations, and longer  
 36 encampments. No truly sedentary “villages” are present in the Project APE, but none are  
 37 anticipated, given what is known about prehistoric hunter-gatherers in the region, and from  
 38 ethnographic accounts. Some confusion exists around the term “village” in the archaeological  
 39 literature, including Sutton’s (1996) reference to Gypsum period habitations on valley fringes.

1 The issue of occupational duration has implications for our ability to place archaeological  
2 deposits chronologically. Short term camps are less likely to contain information that can be  
3 used to place the sites in time, unless time-sensitive artifacts are found, such as projectile  
4 points and beads. The idea here is that longer spans of occupation are more likely to result in  
5 the accumulation of residues and other assemblage constituents that can yield chronological  
6 information, such as charcoal or animal bone that can be radiocarbon dated (Binford 1979).  
7 Because chronological controls are essential to any archaeological investigation, it is important  
8 to ask a few basic questions concerning the temporal data potential of evaluated sites:

- 9 • Can the chronological placement of individual sites be determined?
- 10 • What kinds of chronometric data do individual sites contain? Of those already obtained,  
11 how well do they correlate in terms of the age estimates they provide (e.g., projectile  
12 point types versus obsidian hydration dates)?
- 13 • Are there data indicating the presence of multiple occupation episodes at project sites?
- 14 • Do marker artifacts appear to fit with temporal patterns recognized in the region? Are  
15 there any unique diagnostic items present?
- 16 • Can chronometric data from project sites help to refine local dating schemes?

#### 17 ***4.1.1.3. Technology, Subsistence, and Settlement Patterning***

18 Subsistence and settlement are two parts of life inextricably linked to the technologies people  
19 use to access their environment. For prehistoric sites, the study of lithic technologies (flaked  
20 and ground stone) provides clues about how people pursued, acquired, and processed food,  
21 and the ways that they embedded those activities in where they lived and for how long  
22 (settlement). Ground stone, for example, indicate processing of plants, animals, and other  
23 materials (e.g., pigments). Additionally, flat slabs and hand stones are functionally distinct from  
24 the morphologically more formal mortars and pestles that indicate more intensive processing  
25 and longer use-lives. Likewise, formed flake tools were curated items while simple flake tools  
26 (i.e., utilized flakes) were intended as single use expedient tools. Therefore, lithic tool  
27 assemblages say a lot about the intent of resource exploitation and site occupation.

28 Several prehistoric sites in the Project APE are lithic quarries where pebbles on the surface  
29 were quarried to replenish stone tool kits. These activities did not require much time and as  
30 such, very little other artifacts were deposited at these sites other than the lithic debris  
31 discarded during stone tool production, and the occasional broken tool that was replaced. That  
32 such quarry sites saw only transient occupation for a temporally and behaviorally limited task  
33 does not necessarily reduce their significance but helps build a picture of Native American  
34 settlement in the broader region where stone tool manufacture was embedded in a larger  
35 settlement system.

#### 36 **Data Requirements**

37 In examining prehistoric sites, the study of lithic technologies (flaked and ground stone) often  
38 provides clues to the placement of sites within associated subsistence-settlement regimes and  
39 offers insight to the various functions and emphases of site occupations. Ground stone, for

1 example, indicates processing of plants, animals, and other materials (e.g., pigments).  
 2 Additionally, flat slabs and hand stones are functionally distinct from the morphologically more  
 3 formal mortars and pestles that indicate more intensive processing. Likewise, formed flake  
 4 tools were curated items while simple flake tools (i.e., utilized flakes) were intended as single  
 5 use expedient tools. Investment in lithic tools then, says a lot about the intent of resource  
 6 exploitation and site occupation. Among many others, the following questions apply:

- 7 • What kinds of manufacturing and tool use activities are represented at the prehistoric  
 8 sites in the project area?
- 9 • If formal lithic tools are present, what is the context? Are they present at small artifact  
 10 scatters or more prevalent in deposits that indicate longer term encampment?
- 11 • What can be inferred from the composition of lithic assemblages about the kinds of  
 12 resources and habitats exploited by the site inhabitants?
- 13 • Do observed lithic technologies at prehistoric sites have any implications for residential  
 14 mobility and settlement ranges? What does the lithic material profile indicate about the  
 15 source origins and how raw materials might have arrived at the project sites?
- 16 • Can any inference be made in lithic tool or raw material assemblages about Native  
 17 American themes that extend beyond basic utilitarian concepts, such as those indicating  
 18 ceremony? For instance, past researchers have suggested the rock cairns within the  
 19 SRAD are ceremonial markers; can information be gleaned from these that lend support  
 20 to that inference?

#### 21 **4.1.1.4. Exchange and Mobility**

22 The Mojave River, roughly paralleling part of the Project APE, anchored trade and exchange  
 23 between disparate Native American groups (Warren and Crabtree 1986). All known Mojave  
 24 Desert Native American groups are considered to have practiced residential (i.e., household)  
 25 mobility, the longevity of residential encampments varying by season, and over the entirety of  
 26 prehistory. For example, ethnohistoric accounts indicate that the Mohave people of the lower  
 27 Colorado River often traveled through the Mojave Desert, at times to the California coast for  
 28 purposes of trade and exchange (Kroeber 1925). Indeed, archaeological sites in Serrano  
 29 territory commonly contain *Olivella* sp. shell beads manufactured along California's southern  
 30 coast. Raw material sources within the Project APE also exhibit wide ranging distribution, such  
 31 as the turquoise mined by Native Americans at Halloran Springs. Sigleo (1970, 1975) identified  
 32 Halloran Springs turquoise beads from Snaketown, a Hohokam site north of Phoenix, Arizona,  
 33 and Rogers (1929) describes Lower Colorado Buffware found near the Halloran Springs mine  
 34 (see Leonard and Drover 1980 and Sutton 2017).

35 It is likely that some of the lithic raw material (especially the CCS such as chert and chalcedony)  
 36 quarried from desert pavements that intersect the Project APE were also transported relatively  
 37 long distances away in the hands of those who used it to extract and process resources during  
 38 the course of foraging. However, CCS are notoriously difficult to assign to a geographic source  
 39 without obvious and unique macroscopic attributes and/or elemental/molecular composition.  
 40 Other lithic raw materials (namely obsidian, which can be assigned to a geographic source)

1 were certainly imported to the Project APE and have been identified in a few archaeological  
2 sites in the Project APE.

3 Finally, several Native American routes of travel, or trails, have been identified as intersecting  
4 the Project APE-ADI in several locations. The Old Spanish Trail, Arrowhead Trail, and Mormon  
5 Road are recorded within the APE-ADI and APE-All, and essentially follow large portions of the I-  
6 15 corridor, and the Project alignment in California and Nevada. These routes of travel are  
7 known to have been used during the historic period and used by Native Americans during both  
8 historic and prehistoric times is also inferred and substantiated by archaeological evidence. The  
9 Mojave Road, formerly Mojave Trail, which passes through the Mojave Desert, began as a  
10 Native American trail and became firmly established as a travel route by non-Native Americans  
11 by the 1830s (Norris and Carrico 1978). It stretches westward more than 140 miles from the  
12 Colorado River, near present-day Fort Mojave in Arizona to the Mojave River in California,  
13 where it connects with the Armijo Route of the Old Spanish Trail. All trails were formally  
14 discussed and evaluated in the historic built environment report, entitled *XpressWest High-  
15 Speed Passenger Train Project Historic Built Environment Technical Report: California* (ICF and  
16 HNTB 2022). However, that these trails intersect and/or parallel the Project APE-ADI provides  
17 further context for understanding Native American sites in a broader landscape where lithic  
18 raw material acquisition, subsistence, trade/exchange, and spiritual or religious activities  
19 occurred.

## 20 **Data Requirements**

21 Prehistoric archaeological sites in the Project APE-ADI can add value to the regional  
22 understanding of Native American trade and exchange, but fine-grained data on specific  
23 instances of this are lacking within the APE-ADI. Data recovery at prehistoric sites can address  
24 these issues through the acquisition of greater numbers of artifacts and materials for sourcing  
25 and potentially for dating. Such information can speak to the place of a particular site or group  
26 of sites in the larger regional framework and interaction sphere.

- 27 • What materials were locally available on a specific site, and what materials are  
28 indicative of trade? What are the proportions of locally available materials versus non-  
29 local materials?
- 30 • What are the sources of non-local materials, such as obsidian, ceramics, marine shell,  
31 and steatite? Are there patterns evident in the proportions of such materials, and do  
32 these patterns change over time?
- 33 • What forms were non-local materials traded in? Were materials provided in raw form,  
34 or were non-local materials traded as complete artifacts?
- 35 • Does the presence of non-local materials represent long-distance trade and exchange,  
36 or is it indicative of the presence of different cultural groups in the area?
- 37 • Is there evidence (such as ceramic artifacts) of an Ancestral Puebloan or Lower Colorado  
38 presence?
- 39 • Are there any technological indications of broader patterns of travel or trade that can  
40 speak to information on Native American cosmologies, rites of passage, or other themes



1 conveyed by Tribes? Do certain kinds of lithic raw materials follow specific trails, for  
2 instance that speak to specific stories?

### 3 **4.1.1.5. Ethnological Inquiry**

4 FRA received information from Consulting Tribes on the cultural importance of certain places  
5 along the Project alignment, including general information regarding traditional ties to the  
6 landscape, and more specific information on what certain areas were occupied for.

7 Locations named by Consulting Tribes may refer to a specific location occupied for a specific  
8 reason, such as seed gathering, or it may refer to a broader area, such as the Salt Song trail. No  
9 specific place names have been given within Project alignment, but specific locations have been  
10 identified as culturally important. Moreover, many sites in the Project APE (All and ADI) reflect  
11 regular transient occupation, indicating that the Project APE may have included common  
12 stopover points for people heading to neighboring areas that have existing place names.

### 13 **Data Requirements**

14 Archaeological sites in Project APE share common assemblage themes pointing mostly to short  
15 term occupation to exploit lithic raw materials and seasonally abundant resources, presumably  
16 around freshwater stands. The common assemblage themes suggest at a minimum that trans-  
17 Holocene occupations visited locations in the Project APE area for similar purposes, and that  
18 the ethnohistoric and ethnographic accounts provide good insight into prehistoric occupation.  
19 Direct historical approaches aside, the value of Tribal information can convey significance  
20 beyond scientific research potential and provide archaeological correlates for ceremonies and  
21 other activities that are significant under Criterion A of Section 106. For instance, where shell  
22 beads or broken ground stone artifacts are present, are they burned and/or associated with  
23 other items that indicate ceremonies related to human cremation or burial? Or, when  
24 prehistoric rock cairns are present, are they marking lithic raw material harvesting sites or  
25 representations of the broader landscape where the mundane and sacred activities or events  
26 are comingling?

27 Generating data to better understand ethnohistoric occupations is relatively straightforward so  
28 long as archaeological deposits can be placed appropriately in time. But, as Delacorte (1991)  
29 demonstrates, looking for evidence of the ethnohistoric record in archaeological deposits is  
30 risky, partly because the ethnohistoric record is biased by the observers, and because  
31 ethnographies for the region are based on limited observations from a time after aboriginal  
32 lifeways were substantially altered by the effects of disease and emerging Euro-American  
33 economies (see Lightfoot and Simmons 1998). Consulting Tribes have indicated that Tribal  
34 values can intersect with archaeological values, not to demonstrate that the people of  
35 ethnohistoric times have deep temporal roots, but to better understand ancestral aboriginal  
36 behavior. With this in mind, the research goals and methods applied to archaeological themes  
37 representing value under NRHP Criterion D also partially address the traditional cultural  
38 landscape type of significance as a pattern of important Tribal events.

39 All too often, issues of archaeological site significance are limited to whether or not a site can  
40 contribute scientific value under Section 106 Criterion D. However, while Tribal values have  
41 strong overlap with archaeological values, there is some divergence where Tribal perspectives

1 on human-environment interaction find value in events of significance (Criterion A). For  
2 example, a ceremonial place or a place where ceremony is implied, such as a human cremation,  
3 could convey significance under Criterion A.

4 Ethnohistoric information directly describes Native American presence in the Mojave during  
5 historic times (see Earle 1990, 2005, and 2010). Notwithstanding academic concerns of  
6 extending ethnohistoric and ethnographic information into the prehistoric era, given the  
7 similarity in archaeological assemblages across much of the Holocene in the Project APE (mostly  
8 lithic quarrying with some focal areas of habitation), it is likely that the ethnohistoric  
9 information is indicative of a broader pattern of aboriginal use that spanned several millennia.  
10 This pattern would have been anchored by transient, regular visitation of lithic raw material  
11 extraction areas along routes of travel that visited well-watered areas with seasonal abundance  
12 of plants and small to medium bodied prey, such as Cronese Basin.

13 Kelly (1995) describes how social activities are deeply embedded in everyday economic  
14 activities and that these socioeconomic processes result in the comingling of the mundane and  
15 ceremonial aspects of life. Taken together with the archaeology of the Project APE and  
16 ethnohistoric information, we should expect to find that some locations have archaeological  
17 material reflective of value relating to places and things of cultural significance that may have  
18 comparatively little value for understanding subsistence or resource extraction. Indeed, some  
19 sites have revealed the presence of archaeological materials that convey the significance of  
20 places and items that would not on their own be NRHP eligible under Criterion D.

- 21 • Which archaeological resources contain archaeological materials that convey Tribal  
22 values apart from scientific values?
- 23 • Can information be obtained from individual sites that points to culturally significant  
24 activities, such as the possible remnants of ceremonial features in the Cronese Lake  
25 Archaeological District?
- 26 • As with research questions about mobility, are items present, such as marine shell  
27 artifacts or stone from a distant location that can speak to broad patterns of travel or  
28 exchange that convey the traditional cultural landscape type of significance under  
29 Criterion A?

## 30 **4.2. Prehistoric Archaeological Site Treatment Methods**

31 Treatment methods are described in general by the kinds of methods used with site specific  
32 treatment provided thereafter. Adverse effects to archaeological sites will occur when  
33 implementation of the undertaking materially alters archaeological deposits or materials that  
34 convey significance under Section 106 significance criteria A or D. Archaeological data recovery  
35 is the primary method for mitigating adverse effects and involves sampling affected elements of  
36 historic properties within the APE to obtain information that can be used to address research  
37 questions and Tribal inquiry. The data recovery methods proposed in this HPTP involve  
38 standard forms of sampling that combine intensive surface inspection, exploratory and targeted  
39 hand excavation, and backhoe trenching, followed by detailed field and laboratory analyses.  
40 Moreover, additional methods are provided to resolve adverse effects to properties significant

1 under Criterion A that cannot be mitigated in whole or part through archaeological data  
2 recovery.

3 All methods proposed herein are broadly consistent those completed for other major  
4 undertakings in the Mojave. Field and lab methods have been developed and honed over  
5 decades of study in the Mojave Desert and have their foundation in studies by Basgall (1993)  
6 and others (see Basgall and Giambastiani 2000; Giambastiani and Basgall 1999; Hall 1993; Hale  
7 et al. 2020; McGuire and Hall 1988). A heavy emphasis on surface characterization is well suited  
8 to desert cultural deposits that are commonly aggregated in surface or near-surface contexts  
9 due to prolonged or accelerated erosion. Subsurface methods are designed to accommodate  
10 the range of depositional variability expected within the Project APE. In all, the methods  
11 proposed herein achieve data requirements for mitigation while affording the flexibility  
12 required to allow reactionary allocation of field effort to maximize data potential of  
13 unanticipated deposits, and to allocate field efforts to address more focused Tribal inquiry that  
14 may occur during the course of field investigation.

#### 15 **4.2.1. Field Methods**

16 Conducting data recovery across a broad archaeological landscape requires staging of data  
17 recovery methods to better define in-field approaches to sampling. The following  
18 methodological stages are separated into broad categories of surface documentation,  
19 subsurface exploration, and targeted sampling of key contexts. These categories are not  
20 intended to be mutually exclusive or always performed in sequence but represent basic forms  
21 of field strategy that come in and out of use during the broader process of data recovery. For  
22 instance, exploration of archaeological deposits using a backhoe may be required during the  
23 surface analysis stage if aeolian sands appear to obscure promising archaeological deposits. The  
24 backhoe exploration would be completed prior to targeted hand excavation of standard 1 × 1 m  
25 test units that are intended to sample key deposits. In other cases, the location of  
26 archaeological deposits requiring focused hand excavation may be identifiable without  
27 exploration using backhoe trenches or other methods of investigation.

28 For this Project, data recovery will occur in two phases: Phase 1 will involve further delineation  
29 of significant archaeological deposits that require mitigation; and Phase 2 will involve targeted  
30 sampling of identified significant deposits. In order to protect features and other deposits  
31 uncovered during Phase 1 delineation, Phase 2 targeted sampling of identified deposits can  
32 occur as soon as the deposit has been identified.

##### 33 **4.2.1.1. Phase 1 Surface Analysis**

34 The data recovery program will begin with re-inspection of site characteristics, first to re-  
35 familiarize field crews with the archaeological deposits, and then to determine whether existing  
36 conditions match those documented during previous site visits.

37 It is anticipated that existing site boundaries will broadly encapsulate inclusive surface deposits,  
38 especially in areas with dense artifact concentrations. Thus, while site boundaries remain an  
39 important management tool, more attention will be paid to identifying areas with stronger

1 contextual associations, features, or other unique characteristics that have high value relative  
2 to research questions and defining single component occupations.

3 Upon arriving at each site, the first task will be to relocate the site datum, or establish one, and  
4 to relocate any items, deposits, or features identified during previous field efforts. Next, a  
5 systematic surface inspection will be performed to identify artifacts and features and areas that  
6 may require exploration (such as larger hummocks or dunes that may harbor buried deposits).  
7 To do this, each site will be thoroughly traversed to mark formed artifacts (i.e., projectile points  
8 or beads), artifact concentrations, and features with pin-flags. Formed artifacts (e.g., flaked and  
9 ground stone tools, pottery, beads) will be double flagged with a blue flag; unmodified flakes  
10 will be marked with single flags of any color other than blue. Any concentrations of artifacts or  
11 features will be triple-flagged in multiple colors. Pin-flags or flagging tape will be used to denote  
12 the edges of lithic concentrations and occupational loci within site boundaries.

13 The ESRI Collector application will be loaded with site boundaries, aeriels, topographic maps,  
14 and other relevant layers to facilitate real-time recordation of loci, particularly interesting  
15 artifacts, or areas of interest, such as those that may contain buried deposits. This real-time  
16 recording platform will enable efficient allocation of personnel and equipment during data  
17 recovery fieldwork, and will facilitate quick and meaningful communication between FRA,  
18 principal investigators, field directors, crew chiefs, and Consulting Tribe representatives.

19 Once the surface of a site, or the affected area within the APE-ADI, is adequately inspected and  
20 demarcated, decisions will be made regarding the veracity of pursuing complete surface  
21 collection versus in-field surface analysis. The same sample units used for surface collection can  
22 also be used for in-field surface analysis. The decision to complete surface collection will take  
23 into account the uniqueness or data potential of the surface deposits.

24 Sites containing some minimum density of surface artifacts in a concentrated area will  
25 xsampled with 10 × 10 m surface recording units (SRU). Each of these units will be divided into  
26 four 5 × 5 m cells (labeled A through D). SRUs are flexible units, allowing for detailed mapping,  
27 or collection depending on field conditions and constraints. The original intent of SRUs is to  
28 individually plot and describe individual artifacts using a grid of sufficient resolution (i.e., 50 ×  
29 50 cm, etc.), leaving these artifacts in situ, with formal tools collected individually as piece  
30 plots; the fourth cell may be excavated using surface scrape units (SSU). Controlled inventory  
31 using SRUs will supplement the collection of all artifacts located outside these units. SRUs are  
32 expandable in 5 × 5 m increments to accommodate artifact scatters that are larger or require  
33 more detailed analysis than an SRU provides (as opposed to general inspection of individual  
34 artifacts). In some situations, a general “grab sample” collection will be made to supplement  
35 individually collected piece plots. These are simply general surface collections that do not  
36 record individual artifact provenience. Grab samples are the least preferred method of  
37 collection and analysis but can aid in analysis when unique artifacts are scattered over a broad  
38 area in densities too high to warrant piece plots and too low to warrant establishment of SRUs.

39 Where appropriate, features or unique artifact concentrations or geologic features will be  
40 micro-mapped with precision equipment, such as a total station, or using a 10 cm grid to  
41 photograph and hand draw individual artifacts and deposits. Such methods are typically

1 reserved for thermal features that have strong spatial integrity, human cremations, individual  
2 lithic reduction areas where pieces of stone refit, or the like.

3 For excessively large sites, such as within the MRL, the site itself will be divided into segments  
4 to efficiently identify areas for targeted exploration. In this scenario, the site will be divided up  
5 according to areas where deposits are known versus unknown. Where no deposits have been  
6 previously identified, save for a low density surface scatter, a subsurface inventory using shovel  
7 test pits (STPs) measuring 0.5 × 0.25 meters (m) may be excavated to identify areas with buried  
8 archaeological deposits. This is the same method that was used in the inventory outside of  
9 buffers around known archaeological site boundaries (see ICF and Dudek 2022a and 2022b).

#### 10 *4.2.1.2. Phase 1 Exploration*

11 Having fully characterized the surface structure and content of individual cultural deposits, the  
12 focus shifts to subsurface contexts and the exploration of discrete features. It is proposed that  
13 this phase of investigation deploy a range of fine- to coarse-grained methodology, including  
14 small excavation exposures to sample the buried content of limited areas as well as mechanical  
15 techniques (i.e., backhoe trenches) to rapidly assess the stratigraphy and integrity of specific  
16 landforms like dune hummocks or undifferentiated alluvial fan formations. The initial surface  
17 inspections will be used to determine where the two approaches are more useful.

18 Based on surface geomorphology and the distribution of visible cultural materials, decisions will  
19 be made regarding the most efficient fine-grained exploration strategy to pursue. Where  
20 potential subsurface deposits are expected to have at least moderate depth, a series of shovel  
21 test pits (STPs) will be allocated to better gauge the horizontal and vertical extent of buried  
22 components, to identify discrete contexts of high artifact density, and to document structure  
23 of depositional (natural and cultural) strata across and between sites. These will be distributed  
24 based on the size of artifact accumulations as well as the initial yields resulting from such  
25 probes; if most STPs are effectively devoid of subsurface remains, the effort will be curtailed  
26 and field resources reserved for more productive activities.

27 The STP units will measure 0.5 × 0.25 m in size, be removed in arbitrary 20 cm increments (to a  
28 minimum depth of 60 cm or until sterile strata are encountered), with sediments processed  
29 over 1/8" or 1/4" screen mesh depending on soil conditions. Because these are not,  
30 fundamentally, used to recover archaeological materials but to assess the overall content and  
31 structure of often extensive artifact accumulations, the use of coarser screen mesh is  
32 considered appropriate. In some cases, it may be useful to open adjacent STP exposures,  
33 particularly where soil induration is great and the tempo of excavation can be significantly  
34 increased by opening a larger unit; these will be physically removed as single 0.5 × 1.0 m blocks.

35 It is expected that most project deposits will lack substantial buried deposits and be essentially  
36 surface accumulations. Should the STP program indicate that cultural materials still do occur in  
37 near-surface contexts, the field strategy would move to excavation of SRUs. These will be  
38 deployed as larger exposures, 2.0 × 2.0 to 5.0 × 5.0 m in size, with sediments removed in 5 cm  
39 or 10 cm levels and processed over 1/8" screen mesh. In some cases, SRUs may be excavated  
40 stratigraphically, removing artifact-bearing deposits from the surface down to 20 to 25 cm, if  
41 conditions warrant. These SRUs will be allocated to spatial contexts that harbor higher densities

1 of artifacts or ecofacts and could be paired up if particularly productive situations are identified.  
2 This will be the most effective means of mitigating what are significant, sparse, but mostly  
3 surficial cultural deposits.

4 In all this it is important to understand that Mojave Desert prehistoric sites almost always  
5 represent sporadic, short-term human occupations that generated minimal quantities of  
6 human debris. As a consequence, artifact densities will be consistently low and sufficient  
7 sediment volume needs to be inspected to generate statistically reliable estimates of site  
8 content. Likewise, cultural features may be few and widely dispersed.

9 The previously completed subsurface archaeological inventory avoided excavation within  
10 known archaeological sites, including a buffer. As such, it may be determined that continuation  
11 of the subsurface archaeological inventory within the boundaries of known sites is a suitable  
12 sampling method for identifying potential buried archaeological deposits. The density and scale  
13 of STP transects for a subsurface inventory will be determined based on results of the detailed  
14 surface inspection.

15 Finally, the last strategy used for subsurface exploration will involve mechanical excavation with  
16 a backhoe. In addition to being a cost-effective means of opening large exposures, the backhoe  
17 offers a means of assessing larger landscape features that may contain ancillary classes of data  
18 that are invaluable to understanding the cultural record. Within the Project APE-ADI, even non-  
19 cultural contexts may contain buried, intact strata useful for documenting the evolution of  
20 environments that human populations were exploiting; these might include buried organic  
21 horizons that portray extended periods of more mesic climate or interrupted soil processes that  
22 reflect times of regional desiccation and landscape instability.

23 By the same token, mechanical trenching can be an effective means of exploring discrete  
24 cultural deposits. There is no better way to synchronize depositional variability across large site  
25 areas than to open short, discontinuous trench exposures that clarify structural and temporal  
26 relationships across space. Backhoe trenching is also useful in identifying buried cultural  
27 features that might otherwise be totally missed by smaller, more scattered excavations.  
28 Trenches will be deployed in cultural and putatively non-cultural situations where a broader  
29 subsurface window has high potential to elucidate research objectives. Given the spoils that  
30 such trenches generate, it is not possible to screen all sediments; but targeted samples of  
31 backhoe sediments will be screened over 1/4" screen mesh to assess the presence or absence  
32 of cultural remains. The project intends to limit the extent of backhoe excavation in cultural  
33 deposits that are obviously significant based on other criteria.

#### 34 ***4.2.1.3. Phase 2 Targeted Sampling***

35 Based on other stages of surface documentation and exploratory excavation, certain site  
36 contexts will emerge that offer optimal opportunities to address key research questions posed  
37 for the project. These deposits will, subsequently, be the target of more intensive and focused  
38 data recovery efforts. While some of these situations may represent near-surface  
39 accumulations that are most effectively sampled with broad surface scrape exposures, others  
40 are expected to constitute deeper, more substantial deposits that retain high artifact densities,  
41 good organic preservation, and intact cultural features and stratigraphy. It is further anticipated

1 that such contexts will retain good to high chronological integrity and represent locations  
2 where behavioral coherence is maximized.

3 Such locations will be targeted with a more intensive excavation program as part of the data  
4 recovery effort. The standard procedure will involve use of TUs to recover high-quality data  
5 from these deposits, a methodology sensitive enough to react to depositional nuances as they  
6 are encountered. Such exposures will be standardized as 1.0 × 1.0 m units but can be expanded  
7 as needed to encompass larger feature constructions or expose more extensive blocks. The TUs  
8 will be removed in arbitrary 10 cm levels to a depth of up to 2 m (with appropriate shoring)  
9 depending on rates of cultural recovery; as this effort is designed for maximal recovery of high  
10 caliber archaeological data, all sediments will be processed over 1/8" screen mesh. Where  
11 particular situations warrant and clear-cut archaeological strata can be identified, excavation  
12 will adhere to those soil units. TUs will be the primary method employed to generate the  
13 approximate 2 percent sample goal for data recovery, although SRUs will also factor in where  
14 subsurface deposits are 20 cm deep or less. Sufficiently diverse archaeological deposits may  
15 require greater sampling to ensure that data redundancy has been achieved and that the sites  
16 have been fully characterized.

17 Any features exposed within TUs (or found using alternative excavation protocols) will be fully  
18 documented as discrete cultural contexts. Depending on their structure, such phenomena as  
19 burned rock concentrations, living surfaces, chipping areas, and the like will be carefully  
20 exposed, drawn and photographed in plan and section; associated cultural remains will be  
21 retained as separate sub-samples. Such features will also be subject to various specialized  
22 sampling procedures. These may include recovery of datable organics, flotation samples for  
23 carbonized plant remains and other micro-constituents, and sediments for potential chemical  
24 or pollen analysis. The stratigraphy of representative TU exposures will be drawn and  
25 photographed, with sediment and column samples removed to characterize variation in soil  
26 composition (Munsell color, grain-size, etc.). Where deemed appropriate, bulk sediment  
27 samples may be extracted from sidewalls for possible flotation, pollen, chemical, and micro-  
28 constituent sampling.

29 Phase 2 targeted sampling is anticipated to occur as soon as substantial archaeological deposits  
30 are identified, or shortly thereafter, to ensure the integrity of exposed deposits without having  
31 to backfill exploratory excavation units. Maximum levels of effort cannot be determined at this  
32 time, but data recovery will have the goal of recovering a 2 percent sample of subsurface  
33 materials, or a statistically redundant sample when additional artifact recovery will not likely  
34 produce increased diversity in assemblage composition.

#### 35 ***4.2.1.4. Phase 2 Specialized Field Sampling***

36 Several specialized sampling techniques will be used to address finer-grained sampling needs,  
37 including column samples, pollen sampling, and various residue samples (including in-field  
38 residue sampling on stationary ground stone (bedrock, excessively large stones, or those that  
39 for other reasons will be left in place). Where appropriate, a 20 × 20 cm column sample (CS) will  
40 be excavated from the sidewall of a TU and removed in arbitrary 10 cm levels, separated  
41 stratigraphically within those levels when necessary. All column sample sediments will be

1 placed in plastic bags inside buckets, labeled by provenience, and processed using flotation  
2 techniques to extract heavy and light fractions. Sediments processed through flotation produce  
3 light fraction materials that float into cloth and are subject to microscopic identification and  
4 analysis. Heavy fraction materials are then sorted through various screen sizes from 1/4-in to  
5 1/32-in.

#### 6 **4.2.2. Prehistoric Archaeological Site Laboratory Methods**

7 The basic laboratory and analytical methods used to treat collections include cataloging,  
8 standard artifact analysis, artifact-specific analysis, and special studies. Cultural remains and  
9 record documentation generated at the project sites will be organized in the field, boxed  
10 according to provenience, and returned to Dudek facilities for further treatment. Non-  
11 perishable artifacts will be washed prior to cataloging; fragile remains such as non-human  
12 bone are cleaned without water, while bulk soil and charcoal samples are simply repackaged  
13 into more permanent containers. As with ground stone or any formal lithics, prehistoric pottery  
14 is not initially cleaned to preserve the possibility that surface residues can be either dated or  
15 identified via chemical testing.

##### 16 **4.2.2.1. Cataloging and Basic Processing**

17 Catalogs are generated using the Microsoft Access relational database program and contain  
18 pertinent information regarding the context and composition of all materials. Attendant paper  
19 documentation (level records, feature records, mapping data, etc.) and digital photographs will  
20 be inventoried and organized in preparation for eventual curation. The unique number used for  
21 each artifact is the accession number for the collection, trinomial number for the site, followed  
22 in turn by a lot number (1 for surface material, 10 for subsurface), and individual catalog  
23 designation. Formed artifacts (flaked, ground, and battered stone) are assigned individual  
24 numbers, while bulk materials (debitage, bone, etc.) are given one number per provenience  
25 unit. Samples intended for special studies will be assigned unique catalogue designations as  
26 well. All artifacts are stored in re-sealable 4 mil plastic bags with labels printed on acid-free  
27 paper for long-term preservation.

28 A wide array of lithic material types is represented at project sites, including numerous variants  
29 of CCS, basalt, rhyolite, felsite, igneous, quartz, quartzite, granite, and obsidian, among others.  
30 Inasmuch as toolstone was acquired from a host of local and extra-local geological sources, it is  
31 essential that materials are consistently identified. While classification of non-cryptocrystalline  
32 materials is relatively straightforward, the segregation of cryptocrystalline types is complicated  
33 by major differences in material color, opacity, surface texture, and heat treatment. Mirroring  
34 studies done at other Mojave Desert localities (Basgall 1993; Basgall and Giambastiani 2000;  
35 Giambastiani and Basgall 1999), CCS artifacts will be separated into seven categories based on  
36 color differences: white (CCS-W), clear/chalcedony (CCS-C), brown jasper (CCS-B), red jasper  
37 (CCS-R), yellow jasper (CCS-Y), mottled (CCS-M), and other (CCS-O). Coded data is entered into a  
38 Microsoft Access database that serves as the master catalog. This catalog is subsequently  
39 exported to a Microsoft Excel spreadsheet format for purposes of analysis and printing. Entries  
40 in the master catalog include the catalog number, recovery type (e.g., SRU, TU, etc.), a  
41 provenience number, top and bottom depths of the excavation level, sorting method (e.g., 1/8-



1 in dry screen), class (including biface, simple flake tool, retouched flake, formed flake tool,  
2 ground stone tools, percussing tools, core, debitage, aboriginal ceramics, shell artifact, bone  
3 artifact, vertebrate faunal remains, invertebrate faunal remains, and historic artifacts), and  
4 material type (e.g., granitic, volcanic, obsidian, quartz, rhyolite).

5 Debitage is sorted as primary (with at least 70 percent dorsal cortex), secondary (dorsal cortex  
6 less than 70 percent), interior (no dorsal cortex), and shatter (no platform or bulb of  
7 percussion). When possible, cores will be separated by platform variability into subclasses such  
8 as multidirectional, unidirectional, and bifacial types. Percussing tools, potentially including  
9 hammers and abraders, are defined based on their morphology and the type of macroscopic  
10 use-wear they exhibit. Ground stone artifacts are classified by type, including milling stones,  
11 hand stones, and pestles. Maximum length, width, and thickness measurements were taken on  
12 all prehistoric tools.

#### 13 **4.2.2.2. Flaked Stone Analysis**

14 Flaked stone artifacts will be sorted into nine general categories: projectile points, point blanks,  
15 bifaces, formed flake tools, simple flake tools, cores, core tools, assayed cobbles, and debitage.  
16 Formed artifacts and samples of debitage are assigned to discrete material types defined  
17 above. All tools received standard measurements (maximum length, maximum width,  
18 maximum thickness, and weight), are examined for the presence of use-wear (micro-chipping,  
19 edge-flaking, step-fracturing, edge-grinding or edge-dulling), and assigned a condition type  
20 (whole or near-complete, proximal, margin, distal, medial, or indeterminate end). Further  
21 characteristics specific to individual artifact categories are outlined below.

#### 22 **4.2.2.3. Formed Artifacts**

23 Bifacially modified tools retaining diagnostic hafting elements such as shoulders, shaped stems,  
24 notches, or tangs, are classified as projectile points. Where possible, specimens will be placed  
25 into accepted categories consistent with other regional projects. Points are also examined for  
26 evidence related to functional trajectories, including signs of impact fractures or margin  
27 damage that might relate to use. Point blanks are percussion flakes that exhibit margin  
28 trimming to obtain greater symmetry and planar consistency. Generally affiliated with arrow  
29 point forms, in some cases these have limited bifacial retouch, but some blanks are unifacially  
30 modified or even abraded into form. The pieces are ready to be retouched across the  
31 ventral/dorsal surfaces and notched as appropriate. Point blanks are treated in the same  
32 fashion as other flake-based artifact forms, measured for dimension, characterized by flake  
33 type, and assessed for margin modification.

34 Artifacts displaying continuous flake removal scars along opposing surfaces and lacking  
35 diagnostic basal elements are classified as bifaces. Bifaces are assigned to one of five reduction  
36 stages based on a combination of technology and overall morphology that includes  
37 width/thickness ratio and number of arrises. Stage 1 bifaces are thick in cross section, exhibit  
38 limited planar symmetry with irregular, sinuous margins, and are shaped solely by percussion  
39 flaking. Stage 2 bifaces are also characterized by percussion flake removals, but are more  
40 symmetrical, less sinuous along margins, and slightly thinner in cross-section than Stage 1  
41 forms. Stage 3 bifaces are preforms with good planar symmetry, regular margins, and extensive

1 percussion thinning, generally with flake scars that extend across the mid-section of the  
2 artifact. Stage 4 bifaces are further reduced preforms that are completely symmetrical or nearly  
3 so, have regular margins and uniform cross-sections, and are substantially retouched by  
4 pressure flaking. Finally, Stage 5 bifaces are well-refined, finished tool forms (frequently  
5 comprising fragments of projectile points) that are extensively pressure flaked, opposing  
6 surfaces showing total or near-complete coverage by closely spaced, parallel flake removal  
7 scars.

8 In addition to the above attributes, each biface is examined to determine its original core form  
9 (produced from a flake blank or a bifacial preform), end shape (convex-pointed, convex-  
10 rounded, rectangular, etc.), presence or absence of use-wear, spine-plane angles, and overall  
11 size (arrow point, dart point, or larger core/knife-size), providing clues to intended use and  
12 estimates of desired artifact dimensions. It is often clear that late-stage bifaces were made  
13 directly from flake blanks rather than being reduced from larger, bifacial cores.

14 Formed flake tools are flakes with margins that have been intentionally shaped by intrusive  
15 pressure retouch into continuous, uniform edges; these items are distinguished from simple  
16 flake tools by the heavy modification, often intentional, of flake margins. In addition to  
17 documenting morphological attributes such as flake type, generic shape (e.g., amorphous or  
18 domed), and the number of worked edges, analysis of these implements focuses on observing  
19 the general shape of edges (straight, concave, or convex with even or jagged/irregular  
20 modification), angle (in degrees), types and degree of modification (micro-chipping, step-  
21 fracturing, edge-rounding and/or battering, and unifacial or bifacial flaking, these occurring  
22 with either regular or irregular consistency), and the particular surface used for each modified  
23 edge (dorsal, ventral, or both).

24 Simple flake tools are more casual implements, with edge shapes conforming closely to the  
25 shape of original flake margins rather than being significantly altered. Edge modification is  
26 generally limited and, in some instances, may be a wholly unintentional consequence of use-  
27 wear. Simple flake tools are examined for a range of attributes similar to that scrutinized on  
28 formed flake tools, including type of flake used and number of worked edges, each individual  
29 edge characterized by its shape, type of modification, surface used, and angle. The distinction  
30 between simple and formed flake tools is an important one, the presence of minimal tool  
31 shaping and use damage on the former variants emphasizing their relatively expedient nature.

32 A core is considered to be any mass of toolstone shaped by the removal of two or more flakes  
33 from the same platform surface; these flakes subsequently serve as blanks for formed or casual  
34 implements. Each core will be assigned to a general type category based on overall  
35 configuration (having one unidirectional platform, one or more bifacial platforms [detachments  
36 from the same platform margin related to bifacial thinning], one or more bidirectional  
37 platforms [detachments from the same platform margin but unrelated to bifacial thinning], or  
38 multidirectional platform orientations), examined to assess original form (created from a  
39 tabular, globular, angular, or split cobble), and checked to determine the number of individual  
40 platform surfaces; opposing platforms, and those on the same surface but separated by an  
41 absence of removals, are considered distinct. In turn, each platform surface is characterized by  
42 configuration (unifacial, bifacial, bidirectional, or multidirectional) and platform surface type

1 (cortical, interior, or prepared surface); note that multidirectional cores can encompass singular  
2 examples of bifacial, unidirectional, or bidirectional platforms. The length of the largest flake  
3 removal scar is also measured on each platform face in an effort to determine the maximum  
4 flake size produced before the core was discarded. Core tools are treated in a similar manner,  
5 with additional information recorded regarding patterns of edge modification (number of  
6 discrete edges, edge angles, and kind of wear observed).

7 Assayed cobbles comprise masses of toolstone that have only a single flake removed from any  
8 one platform, or fewer than three flake removals overall. Besides recording information on  
9 material, dimensions, and weight of individual specimens, efforts will be made to assess  
10 possible reasons for discard, which might include poor material quality (indicated by the  
11 presence of bedding planes, fissures, cracks, and inclusions), awkward shape of the raw  
12 material package (although the material may be of suitable flaking quality, an irregular form can  
13 make further reduction problematic).

#### 14 **4.2.2.4. Debitage**

15 Debitage includes all flaking debris resulting from the manufacture, use, and repair of chipped  
16 stone tools. For the most part, this detritus results from the manufacture of flaked stone  
17 implements only, but for certain materials (e.g., granite) it may comprise waste from the  
18 intentional thinning or use-related breakage of ground and battered stone tools. All flakes will  
19 be sorted by material type, counted, and weighed by recovery unit (surface collection cell or  
20 excavation level). A sample from each site or depositional locus will then be subjected to fine-  
21 grained technological analysis, wherein each flake was assigned a specific material type  
22 according to the classification key, sorted into a general size category (<1.0 cm, 1.0-2.0 cm, 2.0-  
23 3.0 cm, 3.0-5.0 cm, >5.0 cm), and evaluated for technological (reduction) affinity.

24 Fifteen technological flake types are recognized during this analysis: (1) primary decortication,  
25 any flake with more than 70% dorsal cortex; (2) secondary decortication, any flake with less  
26 than 70% cortex or only a cortical platform; (3) cortical shatter, small, chunky pieces ofdebitage  
27 that retain any cortex; (4) simple interior percussion, flakes straight in cross-section, with one  
28 dorsal arris; (5) complex interior percussion, flakes straight in cross-section, with more than one  
29 dorsal arris; (6) linear interior percussion, any flake straight in cross-section, twice as long as  
30 wide, with one linear arris, and without cortex; (7) early biface thinning, flakes curved in  
31 longitudinal-section with one or two dorsal arrises; (8) late biface thinning, any flake curved in  
32 long-section, with more than two dorsal arrises; (9) angular percussion, cuboidal or chunky  
33 pieces of shatter without cortex; (10) percussion fragments, sections of percussion flakes  
34 lacking other diagnostic attributes; (11) edge preparation/pressure, small flakes retaining  
35 remnants of tool or core margins with complex dorsal surfaces that cannot be definitively  
36 related to pressure-retouch; (12) linear pressure, small flakes with greater length than width,  
37 one linear dorsal arris and a well-defined platform; (13) rounded pressure, small pressure flakes  
38 with round or amorphous outlines and simple dorsal surfaces; (14) indeterminate percussion,  
39 whole percussion flakes that cannot be typed due to weathering or other fragmentation; and  
40 (15) indeterminate pressure, complete or broken pressure flakes that cannot be assigned to  
41 categories 11-13. Indeterminate percussion and pressure flakes (types 14 and 15) are  
42 differentiated because the latter reflect observer constraints in the classification process rather

1 than the effects of fragmentation; similarly, the frequency of type 11 flakes may be diagnostic  
2 of certain reduction activities and contributing proportions of pressure versus edge preparation  
3 debris can often be inferred on other technological criteria.

4 For comparative purposes, these flake types can be combined into six broader groups:  
5 decortication, interior percussion, biface thinning, and pressure flakes; percussion fragments;  
6 and indeterminate. The first four are considered to reflect sequential “stages” of lithic  
7 reduction, the latter two are considered non-diagnostic groupings. These more inclusive  
8 categories help bolster sample sizes and allow inferences concerning: (1) the use of different  
9 materials (including CCS color variants) at project sites; (2) which materials were reduced locally  
10 and which were worked prior to arrival in the study area; and (3) the range of stone working  
11 activities represented at particular locations. Decortication flakes include flake types 1, 2, and 3,  
12 and represent debris from primary cobble/core reduction. Interior percussion debris includes  
13 flake types 4, 5, and 6, waste produced from secondary reduction and shaping of core masses.  
14 Biface thinning flakes includes types 7 and 8, detritus from the reduction of bifacial cores or  
15 platforms. Pressure flakes include types 11, 12, 13, 15, and contain debris from activities such  
16 as platform preparation, tool edge resharpening and maintenance, and pressure retouch  
17 finishing. Percussion fragments that include flake types 9 and 10 (angular shatter and  
18 unclassifiable percussion fragments), and the indeterminate group (type 14) includes all other  
19 unclassifiable percussion flaking debris.

#### 20 *4.2.2.5. Ground and Battered Stone Analysis*

21 Apart from standard morphological characterizations of the ground and battered stone  
22 (dimensions, weight, condition, and material composition), attributes will be examined that  
23 might aid in assessing how such tools were made, used, and incorporated into regular toolkits.  
24 Inasmuch as utilitarian technologies of this sort are likely influenced more by functional and  
25 situational issues than by social or stylistic parameters (Basgall 1988, 2008; Basgall and Hall  
26 1994; Nelson and Lippmeier 1993; Noble 2011), variables relating to the acquisition, form, use,  
27 condition, and discard of these tools offer useful measures of how the technology was  
28 organized as part of routine subsistence-settlement practices (Hale 2001, 2009). Several types  
29 of ground and battered stone might be expected at sites in the Project APE, hand stones,  
30 milling stones, pestles, mortars, cobble tools, and miscellaneous ground fragments.

31 Hand stones are typically categorized into three basic groups based on their degree of  
32 formalization (shaped, unshaped, or indeterminate). This allows analysts to examine wear  
33 patterns in relation to the degree of modification for each class of hand stone. Worn surface  
34 textures are described as either smooth or irregular, where smooth forms maintain continuous,  
35 worn working surfaces and irregular surfaces exhibit restricted and often discontinuous, patchy  
36 facets. Ground surface shapes are considered either flat, slightly convex, or irregular. Degree of  
37 wear and evidence of reuse is further characterized by observing the number of ground  
38 surfaces, presence or absence of burning, signs of surface resharpening via pecking, and  
39 indications of secondary use-wear (e.g., batter/grinding on broken edges).

40 Milling stones are generally large flat to concave stones used in conjunction with a hand stone  
41 or cobble tool to grind plant, animal, or mineral resources. They are separated into three size

1 variants: thin slabs attaining a maximum thickness of 6.0 cm, thick variants measuring from 6.0  
2 to 13.0 cm, and block specimens over 13 cm thick. Only artifacts with intact dorsal and ventral  
3 surfaces are classified by size, all others are put into an indeterminate category. These thickness  
4 categories follow those employed at other Mojave Desert localities (e.g., Fort Irwin, China Lake,  
5 Twentynine Palms) and were used during previous studies in Bissell Basin and Rosamond Dry  
6 Lake (Basgall and Overly 2004; Giambastiani and Basgall 1999). Thickness has a strong  
7 correlation with the mass of the specimen and hence on the relative portability of such  
8 artifacts. Other observations made on milling stones include margin modification or shaping  
9 (via pecking, battering, or grinding), surface frequency, overall surface shape (slightly concave,  
10 concave, slightly convex, and flat), surface texture (smooth or irregular), the presence of  
11 pecking related to surface rejuvenation, secondary or multiple use signatures (burning or  
12 ancillary modification), and discard condition. These attributes provide important information  
13 regarding the intensity of milling stone use and, quite possibly, the duration of which they were  
14 retained in the toolkit.

15 Both pestles and mortars may occur infrequently at project sites, a technology used to pulverize  
16 food resources. Such implements were used to process various nut and seed crops (e.g.  
17 mesquite beans, acorns, pine nuts), but also soft resources like roots/tubers and small animals.  
18 Analysis will focus on artifact form, the location and nature of use-wear, tool condition, and  
19 lithological composition. Given their expected scarcity in the EUL, pieces will be described  
20 individually as appropriate.

21 Miscellaneous ground stone consists of fragments too small to be classified with confidence. As  
22 most of these pieces likely represent standard kinds of utilitarian ground stone (hand stones,  
23 milling stones, etc.), they are subject to similar morphological and surface analysis. Provisional  
24 determination of original tool form is made when possible. Standard attributes include the  
25 absence or presence of shaping, ground surface frequency, use-wear attributes (surface  
26 configuration, texture, and resharpening), burning, and secondary use-wear.

27 Cobble tools can express damage strictly on natural or cortical surfaces, usually angular margins  
28 or ends. Observations will be made regarding the general shape of the cobble, the position and  
29 extent of battering, and evidence for ancillary grinding or other secondary modification such as  
30 burning. The amount and location of battering is presumed to have strong functional  
31 connotations, edge-damaged cobbles more suitable for chopping activities than artifacts  
32 damaged strictly on cortical surfaces.

#### 33 **4.2.2.6. *Ceramics***

34 Ceramics recovered from the field will be washed to remove dirt and sorted into three types:  
35 rim sherds, general body sherds, and others (to include special items such as pipes, beads, and  
36 figurines). Samples identified in the field or lab for residue analysis and radiocarbon dating will  
37 not be washed on the surface to be tested; soil will be gently removed to expose the  
38 material/surface to be tested; the other surface will be dry brushed. Upon cleaning, these  
39 samples will be placed in clean aluminum foil to prevent contamination.

40 Ceramic analysis generally focuses on identifying vessel forms and fabric types in order to  
41 identify the types of activities for which ceramic vessels were used, production techniques, and

1 when possible, source location for vessel constituents. The first step in ceramic analysis is to  
2 differentiate the traditionally defined buffware and brownware fabrics, and to differentiate,  
3 when possible, Tizon Brown from Salton Brown. Macroscopic and microscopic visual analysis is  
4 performed, using the presence (Tizon) or absence (Salton) of amphibole (hornblende) as the  
5 distinguishing characteristic between the brownwares (Gallucci 2004). Differentiating between  
6 brownwares macroscopically is difficult at best, and even low-powered magnification has been  
7 shown to be much less accurate than microscopic analysis (Gallucci 2004; Hildebrand et al.  
8 2002). Differentiation between brownwares and buffwares is determined by a variety of  
9 characteristics, such as clay type, the size and abundance of quartz inclusions in the fabric, and  
10 color.

11 Vessel forms are distinguished primarily through rim sherd analysis, as it is unusual to recover  
12 sherds sufficiently large enough to clearly identify the vessel. Rim sherd diameter and form are  
13 documented following Cook (1987) and Waters (1982). Other distinguishing production  
14 characteristics and modifications noted during analysis include slips, decorations (e.g., paint,  
15 incisions, and etching), repair, evidence of burning, and evidence of production methods (e.g.,  
16 basket imprints, finder pints, remnant coils). Reconstruction (refitting) of vessels will focus  
17 primarily on rims sherds, bases, and decorated/modified body sherds to aid the identification of  
18 vessel types.

19 Depending upon the types and quantities of sherds recovered, additional analytical methods  
20 may be employed, including ceramic petrography, x-ray fluorescence, and thermoluminescence  
21 dating. Ceramic petrography is used to identify numerous characteristics within ceramic sherds,  
22 including production techniques (coiling, paddle and anvil, wheel thrown), firing method and  
23 conditions, differentiating natural inclusions from added inclusions (temper), amongst others,  
24 in order to determine the provenance of materials and vessels and to understand the  
25 technological choices of the potters and the distribution of their wares through space and time.  
26 X-ray fluorescence can be used to identify chemical variations in ceramic fabrics, which can help  
27 identify the provenance of clay sources and other materials in the vessel.

#### 28 *4.2.2.7. Analysis of Other Artifacts*

29 Although likely present in all small numbers at scattered locations, a variety of other artifact  
30 classes will almost certainly occur in the project area. These include such items as modified  
31 stone and bone (e.g., bone awls, atlatl weights, tablets or pendants), glass, stone, and shell  
32 ornaments; some of these artifacts may have important temporal or cultural affinities and can  
33 provide insight into regional exchange and social interaction. Such objects will be fully  
34 described and compared to appropriate regional typologies; observations will be made on  
35 overall morphology, methods of production, and wear patterns. This group could also include  
36 otherwise unmodified objects such as obsidian pebbles, rock crystals, and the like that are  
37 obviously introduced to the sites from exotic source areas. Lastly, ethnohistoric accounts  
38 indicate Native American presence in the project area during the 19th century; these  
39 occupations may have produced assemblages of Euroamerican artifacts that were appropriated  
40 and used by Native people (e.g., modified metal cans, buttons, worked bottle glass). Like other  
41 of these mostly unique items, analyses will conform to the nature of the object.

#### 1 **4.2.2.8. *Treatment of Items of Cultural Patrimony or of Other Special Tribal Significance***

2 Analysis of any item identified by Consulting Tribes as having cultural significance beyond basic  
3 utilitarian function will be directed by FRA in coordination with Consulting Tribes, including  
4 specified recording, analysis, collection or storage. Moreover, any items identified as having  
5 been ritually decommissioned may not be subject to standard analytical protocol, but their  
6 treatment will be directed by FRA in coordination with Consulting Tribes.

#### 7 **4.2.2.9. *Fauna***

8 Vertebrate and invertebrate faunal remains provide one of the more direct measures of  
9 prehistoric subsistence activities and how past populations responded to variation in ecological  
10 conditions. It is expected that the latter will be rare in excavated archaeological deposits,  
11 though small quantities of marine shell could be encountered in select circumstances, such as  
12 within the CLAD. Even vertebrate fauna will be less than ubiquitous given the poor organic  
13 preservation characteristic of Mojave Desert sites; this makes it all the more important to  
14 maximize the recovery of animal bone from both screen-derived contexts and flotation/soil  
15 samples.

16 Faunal analysis essentially involves determining the taxonomic composition of bone samples  
17 and then quantifying those data in an accurate fashion. After cataloguing, recovered animal  
18 bone will be sorted into identifiable and unidentifiable categories; the former skeletal elements  
19 will retain features that permit accurate assignment to particular animal forms. Unidentifiable  
20 fauna generally represent small fragments of nondescript that can at best be size-classed. All  
21 faunal debris will be assigned to the finest taxonomic class possible, species or genus if possible,  
22 but to family or order if necessary. Identifications will be made via comparative skeletal  
23 collections as well published osteological manuals. Specimens that cannot be assigned to at  
24 least order are further segregated into size classes for generic mammals, birds, and general  
25 vertebrates; these classes include large (artiodactyl-size forms), medium (jackrabbit to coyote  
26 size), and small (rodent size). Modification attributes noted during the identification process  
27 include evidence of burning, gnawing marks, and more generic weathering, data that help  
28 indicate whether the fauna were introduced into site deposits by cultural actions or natural  
29 processes. Finally, faunal data will be quantified by taxon to facilitate comparisons across sites,  
30 temporal periods, or discrete depositional contexts. Depending on sample size, samples will be  
31 quantified via minimum number of individuals (MNI), number of identifiable specimens (NISP),  
32 and raw bone weight (cf. Grayson 1984).

33 Any faunal remains identified by Consulting Tribes as having cultural significance apart from  
34 standard economic representation may not be treated according to standard analytical  
35 protocol; their treatment will be directed by Consulting Tribes. Such remains may include  
36 worked items or rare faunal material often not present in the region or known for subsistence  
37 and may signal ceremonial activities or representation.

#### 38 **4.2.2.10. *Paleobotanical Remains***

39 Carbonized plant remains, seeds, nutshells, and even root/tuber fragments, are occasionally  
40 found in standard field screens, but most such data are recovered via flotation of bulk soil

1 samples from cultural features or discrete midden deposits. This is largely a consequence of the  
2 minute size of many seeds and seed fragments that are not captured by 1/8" screen mesh; as  
3 with fauna, reviewed above, paleobotanical data from the larger Mojave Desert region are  
4 limited due to issues of poor preservation. The field investigations will, therefore, prioritize  
5 collection of flotation samples from good chronostratigraphic contexts. These will mostly  
6 comprise buried features like hearths, rock lined ovens, and living surfaces, but will include  
7 discrete midden horizons that lack obvious structural integrity.

8 Bulk sediments in these samples are first measured for volumetric size (liters of soil), which is  
9 then placed in a basin of water that floats out the lighter constituents (mostly carbonized wood  
10 and seed/nut parts) and also captures the heavier fraction (tiny flakes and bone fragments).  
11 Light fraction materials are recovered using 40/in scoops (carburetor mesh) and heavier  
12 constituents with 1/16" (window screen) mesh. Both fractions are then subject to further  
13 sorting and analysis. After drying, light fractions are sieved through 10/in, 16/in, 24/in, 35/in,  
14 and 40/in screens; contents then need to be sorted using a dissecting microscope (7X  
15 magnification), which is time-consuming due to the quantities of wood charcoal and modern  
16 plant debris contained in many light fractions. Wood and shrub charcoal is often identifiable to  
17 plant taxon, and can provide insight into local habitat structure, but it is usually the economic  
18 seeds that are the target of flotation studies.

19 This typically means that light fraction size-grades are sampled. Where overall samples are  
20 small, it is efficient to sort all grades in their entirety, but otherwise sorting is targeted  
21 according to screen size and associated time-investment. Thus, 100% of the 10/in fraction  
22 would be fully sorted, 50% of the 16/in, and 25% of the 24/in; where seed recovery is high,  
23 these proportions can be easily increased. Plant macrofossils then require taxonomic  
24 identification, a procedure facilitated by comparative native plant collections at academic  
25 institutions (e.g., UCLA, CSU Sacramento), the California Department of Food and Agriculture  
26 seed herbarium, and a series of photographic atlases. After identification, seed quantities are  
27 corrected to reflect the volume of the initial sediment size and any adjustments made due to  
28 sampling proportions; these standardized values allow comparison of macrofossil quantity  
29 across temporal and spatial contexts. As with faunal remains, taxonomic assignments are as  
30 precise as possible, usually to the family level but to genus and species where possible.

#### 31 **4.2.2.11. Special Studies**

32 A battery of special studies will augment the mostly in-house analyses reviewed in previous  
33 sections; these will be performed by outside consultants with recognized expertise in their  
34 fields, providing important information regarding chronology (radiocarbon and obsidian  
35 hydration dates), raw material sourcing (obsidian and fine-grained volcanics), prehistoric diets  
36 (starch grain and protein residue analysis), and paleoenvironmental reconstruction (pollen  
37 studies of core samples). Specific consultants will be identified during the course of the project  
38 as the particular needs emerge. Any analysis that diminishes the physical integrity of an artifact  
39 will first be approved by Consulting Tribes.



## 1 **Radiocarbon Dating**

2 Radiocarbon dating of old organic remains comprises the most reliable means of assessing the  
3 age of archaeological and non-archaeological deposits. Accuracy is dependent on good  
4 contextual controls and understanding the origin of dated materials, which can include  
5 charcoal, bone, shell, and organic sediments. Project samples will derive only from discrete  
6 cultural constructions such as hearths, ovens, and living surfaces, or from intact sediment  
7 horizons in other contexts. Charcoal is often present in other subsurface situations but cannot  
8 be linked to particular events or temporal intervals.

## 9 **Obsidian Hydration**

10 The obsidian hydration technique offers another important dating option, providing temporal  
11 estimates for individual tools or flakes in even disturbed archaeological contexts. Most obsidian  
12 at Project sites likely derives from the Coso Volcanic Field but volcanic glass has also been  
13 traced to more distant sources, or smaller local sources. While there remains debate on the  
14 hydration rate of Coso and other sources, how micron measurements correlate with calendrical  
15 ages, the issue is becoming clearer as research continues. The Project sites offer an  
16 opportunity, albeit limited, to refine these relationships and establish a firm hydration rate for  
17 Coso obsidian within the Project APE.

## 18 **Raw Material Sourcing**

19 Geochemical studies are essential for determining the geologic origin of lithic materials such as  
20 obsidian and fine-grained volcanic (FGV) rocks. Source identification is not only important in  
21 tethering hydration analyses, where rates are source-specific, but as importantly in measuring  
22 the extent and range of lithic exploitation patterns. Long-distance acquisition of toolstone  
23 might variously be accomplished via mobility and travel or through inter-group exchange with  
24 neighboring social groups, possibilities that can be assessed based on the character of artifacts  
25 in particular archaeological contexts. The current project will incorporate X-ray fluorescence  
26 techniques to trace samples of obsidian and FGV artifacts from optimal depositional contexts.  
27 Should other opportunities arise to provide raw material sourcing on other types of materials or  
28 ceramics, those studies will be developed and completed in discussion and with the approval of  
29 Consulting Tribes.

## 30 **Starch Grain Analysis**

31 Standard macro-botanical studies of carbonized plant material recovered via flotation studies  
32 are dependent on seeds being burned during the preparation process. Because not all  
33 resources have an equal chance of becoming burned, starch grain analysis has provided  
34 another measure of past plant exploitation. Starches are resilient and adhere directly to the  
35 artifacts used to process or cook the resources; they can be recovered by chemical washes of  
36 individual artifacts or milling surfaces, concentrated using centrifuges, and identified under  
37 high-powered microscopy. A select sample of ground and battered stone implements from  
38 project sites will be subject to starch analysis as a complement to traditional flotation studies.  
39 This may be especially important in documenting the extent and antiquity of mesquite  
40 exploitation in the Project area.

## 1 **Protein Residue Analysis**

2 Although still controversial in some quarters, protein residue analysis has emerged as an  
3 important means of identifying the animal and plant resources processed with particular  
4 archaeological tools. The technique relies on taxon-specific immunological reactions to remnant  
5 proteins on the artifacts to determine what resources came in contact with those surfaces.  
6 Results of previous studies have sometimes been counter-intuitive, finding traces of small  
7 animal residue on implements assumed to be related to plant processing. As with the starch  
8 grain studies, protein residues may be tested on a subset of artifacts from the project and may  
9 clarify the role of atypical subsistence practices.

## 10 **4.3. Historic Period Archaeological Research Themes**

11 The historic period research themes provided in this HPTP are limited to those that are relevant  
12 to affected NRHP-eligible historic period archaeological sites. These sites are limited to those  
13 that contain refuse deposits associated with homesteading (ICF-XW2-007), community refuse  
14 disposal (P-36-006023), and railroad construction camps (26CK5760). Early settlement is  
15 reflected in the homestead and community dump, and transportation themes are reflected in  
16 the railroad construction camp. None of the other major themes are directly implicated, such as  
17 mining, even though such activities may have been a major commercial draw to early  
18 settlement.

### 19 **4.3.1. Historical Period Land Use and Settlement**

20 The Mojave Desert is a harsh environment. That vast portions of the Project area are wholly  
21 undeveloped attests to the difficulty of settling permanently in the region by non-Native  
22 peoples. While the Native American occupants of the region developed a vast knowledge of the  
23 resources and a relationship with the harsh environment over thousands of years, non-Native  
24 people quickly moved into this land and attempted to control and harness its resources with  
25 little knowledge of its idiosyncrasies. In some cases, Spanish, Mexican, and American colonists  
26 were successful, but the desert also has evidence of the many who were not. Others still would  
27 insincerely make homestead claims or land patent claims as a means of reducing tax burden,  
28 resulting in a landscape pock marked by seemingly failed attempts to improve land (Hale et al.  
29 2010). Despite impediments, people still settled the area contributing to an economy that grew  
30 sporadically. In some cases, this took the form of agriculture, and in others it was ranching.  
31 Towns and communities, such as Barstow, Calico, Yermo, and Baker, developed largely in  
32 relation to mining and railroad enterprises, to provide services for travelers, and for moving  
33 freight both in small and large scale. These towns and communities also provided services for  
34 those traveling by vehicles and moving freight.

35 Most historic period archaeological sites lacked contextual information sufficient to address  
36 research questions relating to land use and settlement and were recommended as ineligible for  
37 inclusion in the NRHP (Hale and Barton 2022a, 2022b). However, two sites in California, a large  
38 community refuse dump (P-36-006023) and the location of a homestead (ICF-XW2-007), were  
39 determined eligible for NRHP listing due to the ability of refuse deposits at those sites to inform  
40 on community consumption (P-36-006023) and early homesteading (ICF-XW2-007). Another

1 site in Nevada, 26CK5760, is the Erie railroad station that contains substantial historic period  
 2 worker camps and refuse deposits, including a possible Native American laborer rock ring and  
 3 lithic scatter. Data recovery at these sites has the goal of extracting additional information  
 4 relevant to understanding these sites in more detail.

- 5 • Can socioeconomic status be understood from refuse deposits and features. Do  
 6 archaeological remnants reflect the nature life for farming, ranching, mining, or  
 7 transportation support?
- 8 • What is the relationship between the homestead and town of Yermo with food  
 9 production or consumption and/or transportation routes?
- 10 • Does the archaeological material provide insights into the ethnicity of the settlers that  
 11 occupied these sites? Can Native American labor be inferred from the potential Native  
 12 American deposits at 26CK5760?
- 13 • How did technological advances and the development of transportation systems affect  
 14 the region economically? Do we see the development of communities related to the  
 15 availability of goods as a result of railroad construction? What are the relationships of  
 16 small homesteads or farms/ranches to the major transportation thoroughfares?
- 17 • Is there evidence of children or elderly residents in refuse deposits at the homestead  
 18 (26CK5760) or within the community dump of Yermo (P-36-006023)?

#### 19 **4.3.2. Site Formation**

20 Historic period archaeological sites in the Project APE, which date to the last 130 years, have  
 21 not been exposed to post-depositional processes to the extent that most prehistoric sites have.  
 22 Historic period sites, dominated by refuse deposits, tend to occur as dump points that retain  
 23 spatial integrity, although some can scatters have been widely distributed by aeolian and  
 24 alluvial processes. Perhaps the strongest site formation process affecting historic period  
 25 archaeological sites is degradation of perishable items including metal, plastic, textiles, paper,  
 26 and food remains. Moreover, remote household dumping became common after the advent of  
 27 the automobile and early, abandoned homesites were often the recipients of disposed refuse  
 28 by residents unrelated to the dump area.

- 29 • Do refuse deposits retain enough integrity to determine the duration of occupation  
 30 versus overprinting of later, unrelated dump episodes?
- 31 • Can socioeconomically distinct refuse deposits be identified between features within a  
 32 single site?
- 33 • What can information distinct, overlapping refuse dumping provide regarding changing  
 34 socioeconomic conditions for local residents?
- 35 • How did recreation affect the degradation of refuse deposits? Is there evidence of  
 36 recreational target shooting of historic period or later refuse within the affected  
 37 deposits and if so, are there temporal patterns to such activities?

### 1 **4.3.3. Chronology**

2 Historic period chronological control is much easier to assess than for prehistoric sites, primarily  
3 because the age of manufacture for most disposed items is known, even if their precise age of  
4 consumption and disposal is not. It is also true that glass bottles and other containers were  
5 often kept by the consumer for secondary use for some time after the consumption of their  
6 original contents. However, historic refuse deposits typically yield enough chronological data to  
7 place them in a 20- to 40-year period of consumption and deposition. The advent of the  
8 automobile resulted in residents packing up old trash and disposing of it with newer trash in  
9 locations away from the home (see Hale et al. 2010). While still an important historical  
10 behavior, it muddles the time depth of the refuse deposit by combining artifacts of different  
11 consumption periods and placing them together in a location away from the point of  
12 consumption.

- 13 • Do affected historic period refuse deposits retain strong chronological indicators and if  
14 so, can the age of consumption or disposal be refined through these lines of evidence?
- 15 • Do refuse deposits offer the opportunity to place consumption trends of different goods  
16 in time?
- 17 • What can be determined about socioeconomic changes among local residents by  
18 examining refuse?
- 19 • Are artifacts present at 26CK5760 that would be a strong indicator of Native American  
20 labor at the railroad camp, such as aboriginally modified Euroamerican materials, or  
21 select consumption of specific foods or goods? More archival research into Native  
22 American consumption of Euroamerican goods will be necessary to fully address these  
23 questions.

### 24 **4.3.4. Subsistence**

25 Adequate samples of the objects people made and used, the remains of food they ate, animals  
26 they raised, and crops they planted, and evidence of their dwellings or other structures and  
27 features that they built are all important for deciphering the socioeconomic conditions of  
28 people who inhabited historic period archaeological sites or discarded refuse. Additional  
29 information about the time of year in which the site was occupied and/or farmed may also be  
30 available from seasonally diagnostic animal and plant remains.

31 Some specific questions and goals under this domain include:

- 32 • What can be learned about economy and subsistence from refuse deposits and are  
33 there differences indicated in refuse deposit profiles?
- 34 • Is there evidence of seasonality in refuse deposits and what would that look like? Were  
35 certain foods only available or harvested at certain times of the year?

## 36 **4.4. Historic Period Archaeological Site Treatment Methods**

37 The methods proposed to mitigate adverse effects to historic period archaeological sites are  
38 intended to gather information from myriad sources and often from complex deposits. Much of

1 the refuse is confined to near surface contexts and requires careful analysis of artifacts on the  
2 surface. However, some refuse is buried, such as in privies or from overlapping dump episodes,  
3 requiring careful excavation to differentiate between periods of deposition and possible  
4 changes in consumption. Overall, the approach to refuse deposit mitigation is built first on  
5 extensive archival research and followed by fieldwork that has the goal of capturing the  
6 socioeconomic variability of all historic occupants, as well as later historic period scavenging  
7 and refuse deposit that occurred onsite.

#### 8 **4.4.1. Archival Research**

9 Prior to the start of fieldwork, additional research will be conducted to better understand the  
10 homestead occupants at ICF-XW2-007, and the community composition of the town of Yermo  
11 that contributed to refuse disposal at P-36-006023. More research is also needed for the Erie  
12 railroad station (26CK5760) to contextualize refuse deposits there and to obtain potential  
13 information on Native Americans that may have camped there during the station's operation,  
14 whether for work or otherwise. Archival research will involve talking to local historians and  
15 visiting repositories of historical documents and literature.

#### 16 **4.4.2. Field Methods**

17 Field procedures at historic period homesites are similar to those used at prehistoric sites, with  
18 some important exceptions. First, SRU (surface recovery units) units will not be used, except in  
19 special circumstances because surface assemblages at historical sites are either very sparse or  
20 tightly clustered in one or more small dumps. Neither of these contexts is suited to SRU  
21 recovery; sparse deposits would yield too few artifacts and clusters would yield too many. For  
22 this reason, surface collections at historic period sites will be limited to piece-plot recovery. It is  
23 also possible to obtain needed functional and temporal data through detailed surface  
24 inventories for glass, cans, ceramics, and other kinds of artifacts. These inventories include the  
25 documentation of legible maker's marks, counts of specific artifact types, and functional  
26 assessments where warranted.

27 As for excavation procedures, STPs (shovel test pits) will not be used at historical sites because  
28 most refuse deposits are relatively rich in surface artifacts, particularly small constituents like  
29 glass shards, nails, wood, bits of metal, charcoal, and other similar remains. STPs are  
30 presence/absence indicator units that are appropriate for exploration, but not for sampling. In  
31 most cases, surface inventories and piece plot collection will suffice. Where excavation is  
32 necessary, sampling typically requires only one or two TUs (test units) to obtain a  
33 representative sample of artifacts. For the most part, the use of in-field inventories reduces the  
34 overall need for artifact recovery, in that many items (like cans) are of the same manufacturing  
35 type and age and others (like glass shards) provide comparatively few data by themselves. The  
36 interplay of surface analysis and excavation recovery will ensure that sufficient data are  
37 collected.

38 Where complex refuse accumulation is identified, backhoe trenching may be used to intersect  
39 the deposits after initial TU excavation to better define episodes of refuse disposal in an effort  
40 to identify chronological differences in consumption. This method is useful toward  
41 differentiating overprinting of historic period refuse with later deposits (historical or modern).

1 For the discovery of ruins, such as house foundations, TUs will be used to expose segments of  
2 the foundation in 1 m increments to identify methods of construction and to collect a sample of  
3 materials, such as mortar, for laboratory analysis on construction techniques. Contrary to  
4 prehistoric sites, 1/4" screen size may be used in TU excavation, especially when exposing  
5 foundations or other constructed features. These sample units will help clarify methods of  
6 construction that can speak to the socioeconomics of the builders.

7 These field methods will ensure that data are collected in ways that can help clarify research  
8 issues. In particular, site structure and integrity are crucial for understanding period of  
9 deposition and to tease apart refuse deposits that differ in age to discern changes in  
10 consumption. Methods proposed herein ensure that surface deposits are appropriately  
11 recorded and sampled (surface analysis and piece plot recovery) apart from buried refuse  
12 deposits (sampled with TUs) that require more intensive excavation. These methods will ensure  
13 that rich deposits, such as privies are treated differently than surface dumps.

#### 14 **4.4.3. Laboratory Methods**

15 Laboratory methods for historic period artifacts follow the same basic processing and  
16 cataloging procedures for prehistoric artifacts. The analysis of historical artifacts has the goal of  
17 placing artifacts into broad functional and temporal classes. This is accomplished using  
18 classificatory and dating schemes contained in the Intermountain Antiquities Computer System  
19 (IMACS) handbook and in various other references concerning the identification, manufacture,  
20 and dating of historical artifacts (e.g., Fike 1987; Godden 1964; Rock 1987; Toulouse 1971).  
21 Bottle websites (such as that of BLM) and other online resources are also used to identify  
22 maker's marks and manufacturing styles. While artifact recovery generally focuses on the  
23 collection of diagnostic items, other small refuse such as glass, nails, and ceramics are also  
24 recovered in small samples, identified, classified, and analyzed either individually or in batches  
25 as deemed appropriate. Such bulk refuse will not be curated unless it represented a unique  
26 artifact class, consistent with Praetzellis and Costello (2002).

27 These laboratory methods are consistent with those used for previous mitigation programs in  
28 the region and are key elements of the historic thematic studies (see Peyton and Pucket 2008).  
29 They ensure consistent categorization of recovered materials in order to facilitate regional  
30 assemblage comparison while addressing research themes.

#### 31 **4.5. Archaeological Avoidance Measures**

32 Prior to construction, environmentally sensitive areas (ESA) will be established within the  
33 Project APE to ensure avoidance of impacts to known historic properties. Construction  
34 personnel will be instructed to avoid ESAs through worker environmental awareness training  
35 (see Section 11.2 of this HPTP). Should avoidance be feasible for any new historic properties  
36 identified during construction, ESAs will be established around these properties to ensure that  
37 they are not inadvertently impacted by construction activities.

- 38 1. Under the supervision of the PI, archaeological monitors will flag and demarcate an area  
39 of 200 m (approximately 600 feet) around any known archaeological historic property. A  
40 Native American monitor will be present to observe demarcation of ESAs. Given special

- 1 circumstances, ESAs may require adjustment to provide for continued use of existing  
2 features or consideration of property limits. For example, where roads intersect the  
3 Project APE-ADI, ESAs may be delineated on either side of the active roads; however,  
4 grading restrictions must be clearly signed on either side. ESAs should be established  
5 using metal T-posts and rope with the intent of providing clearly recognizable limits.  
6 Posts will be marked with the following note: “ESA - No Access.” Colors, materials, and  
7 styles used for demarking ESAs will not conflict with construction markings; they must  
8 be clearly visible and differentiated from construction-related marking. The areas  
9 required for demarcation of ESAs will be clearly shown on maps, digital viewers, and  
10 other media as appropriate to facilitate construction scheduling.
- 11 2. All construction personnel will be notified during the worker environmental awareness  
12 program (WEAP) presentations of the presence and location of all ESAs within the  
13 Project area and the need to maintain the integrity of the ESAs.
- 14 3. The PI, archeological monitors, and Native American monitors will communicate the  
15 archaeological sensitivity and cultural importance of the resources to construction  
16 personnel through the duration of work.
- 17 4. Construction personnel will be informed that ESAs are strictly off limits to construction,  
18 and that no entrance is allowed at any time. ESAs will not be described as archaeological  
19 sites. The exact location of archaeological resources will be confidential to the extent  
20 feasible.
- 21 5. Construction personnel will be informed that damage, defacement, unpermitted  
22 excavation or removal of artifacts, or other tampering with archaeological resources on  
23 federal land is prohibited under the Archaeological Resources Protection Act for  
24 federally administered lands (16 USC 470aa–470 mm). For lands under Nevada  
25 jurisdiction, Nevada Revised Statutes (NRS) 381.195-227, .180, and .435, and NRS  
26 206.330 provide protections for archaeological resources and penalties for damage or  
27 destruction of such resources. For Lands under California jurisdiction, California  
28 Administrative Code, Title 14, Section 4308, Public Resources Code 5097.99, 5097.993,  
29 and 5097.994, and Health and Safety Code 7050.5, 7051 and 7052 establish protections  
30 and penalties for the disturbance or possession of archaeological materials or Native  
31 American human remains. Damage to archaeological sites is subject to civil and criminal  
32 penalties, including fines and imprisonment. Artifacts and archaeological sites are only  
33 to be handled by archaeological monitors and Native American monitors, and are not to  
34 be photographed for personal use and/or posted on social media.
- 35 6. Archaeological monitors and Native American monitors will maintain flagging/staking or  
36 exclusion fencing for ESAs to ensure that established ESAs are avoided and protected.
- 37 7. Archaeological monitors will have the authority to suspend work in the vicinity of any  
38 ESA that is disturbed by construction. The PI or archaeological monitor will also  
39 immediately report any violation of the ESA to FRA.
- 40 8. Subsequent to completion of initial earth-disturbing activities requiring monitoring,  
41 archaeological monitors will check ESAs periodically with the intent of ensuring that

- 1 ESAs remain present and related sites remain undisturbed through the duration of  
2 construction.
- 3 9. All ESA exclusionary measures will be removed at the conclusion of Project-related  
4 activities in the vicinity of an ESA that may result in ground disturbance, including  
5 pedestrian or vehicular travel in order to avoid attracting unnecessary attention to the  
6 area.
- 7 10. For known historic properties that will be mitigated within the APE-ADI, ESA  
8 exclusionary measures will be removed after FRA has determined that mitigation  
9 measures, such as data recovery, have been successfully completed to allow Project  
10 construction to occur within the ESA.
- 11 11. Exclusionary fencing for permanently avoided ESA's or portions thereof will be  
12 maintained throughout Project construction when construction activities in the vicinity  
13 of avoidance areas remains possible.
- 14 12. Temporary ESA exclusionary measures may be erected around unanticipated discoveries  
15 to ensure adequate avoidance of Project related ground disturbance until FRA has  
16 determined that treatment of the unanticipated discovery is concluded.

#### 17 **4.6. Resolving Effects to Tribal Values Attached to Historic Properties**

18 FRA has determined through Tribal consultation that the following treatment measures are  
19 warranted to mitigate for adverse effects to historic properties. These measures include  
20 minimization of noise and vibration effects to the CLAD, additional survey of all known  
21 prehistoric archaeological districts in the APE-AII, and interviews with members of consulting  
22 tribes.

##### 23 **4.6.1. Survey of Archaeological Districts in the APE-AII**

24 The Project Sponsor will provide for additional pedestrian survey of all known prehistoric  
25 archaeological districts (SQAD, MRL, SRAD, CLAD, Halloran Springs Archaeological District  
26 [HSAD]) in the APE. FRA will require a Supplemental Survey Plan to address effects to broader  
27 traditional cultural landscapes known only through currently recorded prehistoric  
28 archaeological sites. Supplemental Survey Plan will be developed by the PI in consultation with  
29 FRA and the Project Sponsor and will be submitted to consulting parties for review and  
30 comment according to the timelines described in Stipulation II.A of the PA.

31 These surveys will be completed by the archaeological PI, accompanied by Native American  
32 monitors within the APE-AII for portions of archaeological districts where no pedestrian surveys  
33 were conducted as a part of the historic property inventory efforts. The goal of these surveys is  
34 to revisit previously recorded sites, update site records, and complete a sample survey of  
35 additional lands encompassed by the district boundaries. Additional archaeological field survey  
36 and site recording efforts for select portions of districts within the APE-AII, as determined by  
37 FRA, may provide valuable information to Consulting Tribes on the presence of prehistoric  
38 archaeological deposits as they relate to the conveyance of the traditional cultural landscape  
39 type of significance over the broader region.



1 Many of the archaeological site records in the APE-All for portions of archaeological districts are  
2 dated and many are recorded on forms that preceded the standard California DPR 523 series  
3 resource records and Nevada IMACS forms. The PI will ensure that all previously recorded sites  
4 are accurately mapped in GIS, record any newly identified sites and isolates during the sample  
5 surveys, complete new site records, and prepare an addendum archaeological inventory report  
6 documenting the results.

7 Since these surveys will occur in areas that will not be subject to ground disturbing activities,  
8 completion of the surveys and documentation shall occur no later than 90 days before  
9 completion of Project construction. Timelines for review by FRA and consulting parties will  
10 follow the timelines in Stipulation II.A of the PA.

#### 11 **4.6.2. Ethnohistoric Study—Native American Interviews**

12 FRA will require the Project Sponsor to provide for interviews of Native American members of  
13 consulting Tribes to develop an ethnohistory focusing on various broad concepts, themes, and  
14 traditional practices and beliefs expressed to FRA during Native American consultation.

15 The archaeological PI will oversee completion of interviews of Native Americans identified by  
16 FRA through tribal consultation. The interviews will be completed by an ethnographer that  
17 meets Secretary of Interior’s Professional Qualification Standards under Archaeology with  
18 professional experience in ethnography. The goal of the interviews is to obtain first-hand  
19 information and current Native American perspectives on the Native American landscapes that  
20 intersect the Project APE. The information obtained through these interviews will be detailed in  
21 a standalone ethnohistorical report subject to Stipulation XIV (Confidentiality) of the PA.

#### 22 **4.6.3. Minimization of Noise and Vibration Effects to the CLAD**

23 FRA has determined that construction related noise and vibration will adversely affect  
24 archaeological deposits to which Consulting Tribes have attached special religious and cultural  
25 significance. Specifically, as Project construction occurs within 1,500 feet either side of Basin  
26 Road, these sensitive deposits will experience adverse effects due to unusually high levels of  
27 noise and vibration generated from construction that affect the setting and feeling of the CLAD.

28 To resolve these effects (though transient in nature), FRA will coordinate with Consulting Tribes  
29 and the Project Sponsor to minimize noise and vibration through measures that may include,  
30 but are not limited to:

- 31 • Selection of construction equipment and methods that minimize noise and vibration
- 32 • Erection of temporary noise and vibration barriers between construction activities and  
33 the sensitive archaeological deposits
- 34 • Development and implementation of a creative planting plan between construction  
35 activities and sensitive archaeological deposits
- 36 • Monitoring of noise and vibration during construction to ensure minimization efforts are  
37 sufficient

- 1
  - 2
  - 3
- Erection of exclusionary barriers between sensitive deposits and activity zones with a sufficient buffer

## 5. Treatment of Historic Built Environment Resources

For built environment historic properties previously identified within the APE, no context or research themes for those built environment resources are included in this HPTP as the Project would not result in adverse effects for NRHP-eligible, built environment resources; thus, the properties do not require specific treatment measures other than avoidance. This chapter addresses the measures that can be undertaken to ensure the avoidance of damage, defacement, or destruction of built environment historic properties during construction. This treatment plan discusses the measures that may be implemented during construction to ensure that construction personnel and equipment operators adhere to no-work zones (ESAs) and exclusionary measures put in place by the PI.

### 5.1. Built Environment Historic Properties: Avoidance Measures

Any newly identified built environment historic properties would utilize already established context and research themes from the previous reports as discussed in other sections of this HPTP. As needed to resolve adverse effects to those newly recorded properties, a site-specific HPTP would be developed in accordance with the sections of this HPTP that discuss additional phased identification, evaluation, and assessment of effects. For previously identified built environment historic properties, prior to construction, ESAs will be established within the Project's APE where it has been determined by FRA to be required to ensure avoidance of impacts to known historic properties, including the historic transmission line corridors within the APE (refer to Appendices A and B for locations of these resources and historical information for each). Construction personnel will be instructed to avoid ESAs. This generally applies to all known and recorded historic properties. Should a revised Project design result in newly identified built environment historic properties, ESAs will be established around them to ensure that these properties are not inadvertently impacted by construction activities and the following steps will be taken:

1. Under the supervision of the PI, archaeological monitors will flag and demarcate an area of 5 m (approximately 16 feet) around any known built environment historic properties adjacent to or within staging areas and construction areas. ESAs may require adjustment to provide for continued use of existing features or consideration of property limits. For example, where roads intersect the Project APE-ADI, ESAs may be delineated on either side of the active roads; however, grading restrictions must be clearly signed on either side. ESAs should be established using metal T-posts and rope with the intent of providing clearly recognizable limits. Posts will be marked with the following note: "ESA - No Access." Colors, materials, and styles used for demarking ESAs will not conflict with construction markings; they must be clearly visible and differentiated from construction-related marking. The areas required for demarcation of ESAs will be clearly shown on maps, digital viewers, and other media as appropriate to facilitate construction scheduling.
2. All construction personnel will be notified during the WEAP presentations of the presence and location of all ESAs within the Project area and the need to maintain the integrity of the ESAs.

- 1        3. The PI, will communicate the historical importance of the resources to construction  
2            personnel through the duration of work.
- 3        4. Construction personnel will be informed that ESAs are strictly off limits to construction,  
4            and that no entrance is allowed at any time. ESAs will not be described as built  
5            environment or archaeological sites.
- 6        5. Construction personnel will be informed that damage, defacement, or other tampering  
7            with historic resources is prohibited.
- 8        6. Archaeological monitors will maintain flagging/staking or exclusion fencing for ESAs to  
9            ensure that established ESAs are avoided and protected.
- 10       7. Archaeological monitors will have the authority to suspend work in the vicinity of any  
11           ESA that is disturbed by construction. The PI or archaeological monitor will also  
12           immediately report any violation of the ESA to FRA.
- 13       8. All ESA exclusionary measures will be removed at the conclusion of Project-related  
14           activities in the vicinity of an ESA that may result in alteration or destruction of an  
15           historic property.
- 16       9. ESA exclusionary measures will be removed after FRA has determined that mitigation  
17           measures, such as photographic recordation, have been successfully completed to allow  
18           Project construction to occur within the ESA.
- 19       10. Exclusionary fencing for permanently avoided ESA's or portions thereof will be  
20           maintained throughout Project construction when construction activities in the vicinity  
21           of avoidance areas remains possible.
- 22       11. Temporary ESA exclusionary measures may be erected around unanticipated discoveries  
23           to ensure adequate avoidance of Project related impacts until FRA has determined that  
24           treatment of the unanticipated discovery is concluded.  
25

## 6. Procedures for Resolving Adverse Effects

Implementation of procedures to resolve adverse effects will generally follow the methods identified in Chapters 4 and 5 of this HPTP for archaeological and built environment resources, respectively, or as specified in a resource-specific HPTP. Timelines for resolution of adverse effect shall follow Stipulation II.A of the PA, also summarized in Chapter 7 of the Project PA, except for inadvertent discoveries which are treated in Chapter 11 of this HPTP and conforming to Stipulation XI of the PA, or as specified in a resource-specific HPTP. The procedures for resolving adverse effects are as follows:

- For those historic properties that FRA has determined will be adversely affected by Project implementation, and for which mitigation measures have been provided, the Project Sponsor shall ensure that no Project construction with the possibility of causing effect to the historic property will occur within a reasonable buffer of the historic property, but not less than 150 feet from the known historic property boundary until FRA approves the HPTP and buffer area for construction. In consultation with the PI for archaeology or built environment, and the Project Sponsor, FRA may reduce the buffer or require additional buffer for construction activities for a specific historic property.
- FRA may require the Project Sponsor to install protective measures around the HPTP buffer, such as exclusionary fencing or avoidance signage.
- The PI (archaeological or built environment) will coordinate with the Project sponsor to determine an appropriate schedule for completing research, fieldwork, or other technical work required to resolve adverse effects and will communicate the proposed schedule to FRA.
- For archaeological historic properties, the PI will ensure that a Native American monitor is present during fieldwork according to the procedures summarized in Chapter 11 of this HPTP.
- Within 7 days of completing technical work required to resolve adverse effects, the PI shall submit to FRA a draft end of field (EOF) report to FRA for review.
- FRA and the PI will conform to the timelines for internal and consulting party review as specified in Stipulation II.A of the PA and Chapter 7 of this HPTP for known historic properties, or in Stipulation of XI of the PA and Chapter 11 of this HPTP for inadvertent discoveries, or as specified in a resource-specific HPTP.
- The Project Sponsor, in coordination with FRA, will direct that construction-related activities within the buffer zone will not occur until FRA concludes consultation on resolution of adverse effects with consulting parties.
- The Project Sponsor will provide for secure storage of recovered cultural material, excluding human remains and items of cultural patrimony. The PI may transport recovered cultural material to secure off-site storage locations or laboratories for additional analysis.

- 1       • The Project Sponsor will provide for payment and permanent curation of archaeological  
2 materials and documentation at the University of Nevada, Reno for materials recovered  
3 from archaeological sites in Nevada, and at the Western Science Center for materials  
4 recovered from archaeological sites in California. Storage or curation of materials  
5 produced from treatment of built environment historic properties will be determined in  
6 consultation with the appropriate SHPO and Consulting Parties and in conformance with  
7 guidance for any resource specific HPTP produced for that built environment historic  
8 property (since no curation of built environment materials is expected as no adverse  
9 effects to built environment historic properties is anticipated). .
- 10       • The PI shall submit final documentation of the treatment of adverse effects to historic  
11 properties and cultural resource monitoring within 180 days of the completion of all  
12 affected historic properties and all cultural resource monitoring activities for that  
13 historic property.
- 14       • These procedures shall also apply to historic properties that may be identified during  
15 inventory of new APE on non-federal lands.  
16

## 7. Timeframes for Implementing Treatment of Known Historic Properties

Except for inadvertent discoveries, all review periods are concurrent and fifteen (15) days, starting on the day the documents are provided by FRA and/or the Project Sponsor to the reviewing parties electronically, which constitutes notification.

The Project Sponsor will provide draft documentation to FRA for review and approval. FRA shall review the draft documentation within fifteen (15) days. Following receipt of FRA approval, the Project Sponsor will submit documentation to the Signatories, Consulting Tribes, and other Consulting Parties for review and comment for fifteen (15) days.

All notifications will be sent by e-mail and/or other electronic means, with larger documents uploaded to a SharePoint website for access. Hard copies will be sent following notification only to those self-identified Consulting Parties.

The Project Sponsor will forward a written summary of all comments received from Signatories, Consulting Tribes, and other Consulting Parties to FRA immediately at the end of the fifteen (15) day review period. The Project Sponsor, in consultation with FRA, will ensure that any written comments received within the review timeframe are considered and incorporated, as appropriate, into the documentation. At FRA's discretion, FRA may consider comments received after the close of a comment period.

If Signatories, Consulting Tribes, or other Consulting Parties do not provide written comments within the fifteen (15) day concurrent review period or otherwise specified review period, the Project Sponsor, in coordination with FRA, may proceed to the next step of the process without taking additional steps to seek comments from any party. In the absence of comment from the CA SHPO or NV SHPO, the Project Sponsor, in coordination with FRA, will adhere to 36 CFR § 800.3(c)(4) and proceed to the next step in the process.

The Project Sponsor, in coordination with FRA, will work expeditiously to consider and resolve comments, as appropriate. The Project Sponsor and FRA may consult with Signatories, Consulting Tribes, and/or other Consulting Parties to resolve such comments. The Project Sponsor, in coordination with FRA, will inform the Signatories, Consulting Tribes, and/or other Consulting Parties of the resolution in writing.

The Project Sponsor will provide final documentation to FRA for review and approval. FRA shall review the final documentation within fifteen (15) days. Following receipt of FRA approval, the Project Sponsor will submit final documentation to the Signatories, Consulting Tribes, and other Consulting Parties.

Final documentation may include a request for review of a finding or determination by the CA SHPO or NV SHPO. If the CA SHPO or NV SHPO do not provide written comments within the fifteen (15) day concurrent review period or otherwise specified review period, the Project Sponsor, in coordination with FRA, will adhere to 36 CFR § 800.3(c)(4) and may proceed to the next step in the process without taking additional steps to seek comments from the CA SHPO or NV SHPO. In the absence of comment from the CA SHPO or NV SHPO, FRA may consider that

1 the CA SHPO or NV SHPO does or do not object to a finding or determination and that the final  
2 document is complete.

3 If comments cannot be resolved through further consultation, FRA will resolve disputes through  
4 the process outlined in Stipulation XVII of the PA, except for disputes regarding eligibility. For  
5 eligibility disputes, FRA will seek formal Determination of Eligibility from the Keeper of the  
6 NRHP (Keeper), pursuant to 36 CFR Part 63. The Keeper’s determination will be considered  
7 final.

8

9 All official notices, comments, requests for further information, documentation, and other  
10 communications will be sent in writing by e-mail or other electronic means.

11



## 1 **8. Qualifications, Permitting, and Curation**

### 2 **8.1. Qualifications of Personnel**

3 All activities prescribed in this HPTP will be carried out by, or under the direct supervision of a  
4 person or persons meeting at a minimum the Secretary of Interior’s Professional Qualifications  
5 Standards (48 Federal Register (FR) 44738-44739) (PQS) in the appropriate disciplines. The  
6 Principal Investigator (PI) for the archaeological fieldwork associated with treatment of historic  
7 properties in the Project APE-ADI will meet the Secretary of the Interior’s Professional  
8 Qualification Standards for Archaeology and be listed as a PI on all appropriate permits.  
9 Properly supervised personnel who do not meet PQS may also participate in the completion of  
10 tasks described in this HPTP, as appropriate. Tribal observers designated by Consulting Tribes  
11 are not required to meet the Secretary of the Interior’s PQS.

12 All activities prescribed in this HPTP will reasonably conform to applicable standards and  
13 guidelines established by the Secretary of Interior’s Standards and Guidelines for Archaeology  
14 and Historic Preservation (48 FR 44716-44740), and any other pertinent guidance available to  
15 archaeologists by state agencies.

### 16 **8.2. Required Permits**

17 All necessary permits will be obtained prior to beginning fieldwork associated with treatment of  
18 historic properties.

19 Prior to beginning fieldwork, an Archaeological Resources Protection Act (ARPA) Permit will be  
20 obtained from the Bureau of Land Management (BLM) for lands under BLM management. The  
21 ARPA permit is a legal document that describes the nature and location of the archaeological  
22 work to be completed under the permit, the methods of conducting the work, where curation  
23 of cultural materials and research records will be curated, and other conditions. A copy of the  
24 ARPA permit and Fieldwork Authorizations will be kept with each field crew. It is assumed that  
25 this HPTP will satisfy the research design, context and methodological requirements of the  
26 ARPA permit.

27 Within Caltrans and NDOT ROW, an encroachment permit will be obtained from Caltrans  
28 District 8 prior to commencing fieldwork. The encroachment permit will include dates  
29 of fieldwork, approved activities, special provisions and requirements, and any restrictions. A  
30 copy of the encroachment permit will be placed on the dashboard of each vehicle parked on  
31 Caltrans or NDOT ROW.

32 If fieldwork associated with this HPTP occurs on private lands, permission to enter will be  
33 obtained from the applicable land owner.

### 34 **8.3. Curation Agreement and Plan**

35 Before fieldwork commences, the Project Archaeologist/PI will prepare a formal written  
36 curation agreement with a federally approved permanent curation facility, which will specify  
37 procedures for curating archaeological collections. If possible, the curation agreement will

1 include an accession number to be used for all curated cultural materials from the Project.  
2 Materials to be curated include archaeological specimens and samples, site catalogs, field  
3 notes, field and analysis forms, feature and burial records, maps, plans, profile drawings, photo  
4 logs, photographs, consultants' reports or special studies, and copies of the final technical  
5 report. These materials will be curated at a facility that meets federal standards as required in  
6 36 CFR Part 79, Curation of Federally Owned and Administered Archaeological Collections. It is  
7 anticipated that archaeological materials collected during Project construction will be curated  
8 at a repository in southern California as close to the Project location as possible. Currently, only  
9 a few institutions that meet federal standards in southern California are accepting collections  
10 from cultural resources management projects. The University of California, Riverside, the  
11 Western Science Center for Archaeology and Paleontology, and the San Diego Archaeological  
12 Center are some institutions currently taking collections. Other alternative curation facilities  
13 could be used with the agreement of FRA, Caltrans, and consulting parties. FRA may also  
14 determine that other forms of collections disposition may be suitable, depending on the  
15 outcomes of Tribal consultation and land ownership in accordance with Stipulation XII of the  
16 PA.

17 Curation agreements have been established between the archaeological PI and the University  
18 of Nevada, Reno for materials recovered in Nevada, and the Western Science Center for  
19 archaeological materials recovered in California. Transference of collections generated as a  
20 result of archaeological activities completed for this Project will occur within 180 days of  
21 completion of archaeological historic property treatment and monitoring for the Project,  
22 coinciding with the finalization of archaeological documentation. These curation facilities are  
23 able to curate archaeological materials in accordance with the Secretary of the Interior's  
24 Standards for Archaeological Documentation (1983) and the California Guidelines for the  
25 Curation of Archaeological Collections (OHP 1993).

26

## 9. Treatment of Human Remains on Federally Administered Lands

In accordance with Stipulation X.I.B, for Native American human remains, associated funerary objects, and unassociated funerary objects, sacred objects, and/or objects of cultural patrimony inadvertently discovered or intentionally excavated on Federal lands, the Project Sponsor, in coordination with FRA, will follow the procedures outlined in the Native American Graves Protection and Repatriation Act (NAGPRA) 25 U.S.C. 3001-3013 and as specified in the implementing regulations at 43 CFR § 10. A NAGPRA Plan of Action will apply to discoveries that occur on Federal lands. Federal land managing agencies may also elect to follow their respective agency procedures for discoveries occurring on land where they have jurisdiction. Refer to flow charts provided in Appendix D.

### 9.1.1. NAGPRA Plan of Action

A NAGPRA Plan of Action (POA) has been prepared for this Project, attached to this HPTP as Appendix C. The NAGPRA POA details the procedures and notification processes for compliance in the event of a discovery subject to the requirements of NAGPRA.

## 9.2. Treatment of Human Remains Identified on Non-Federally-Administered Land

### 9.2.1. California

For any human remains and funerary objects discovered on non-federally administered lands in California during the implementation of the Project, FRA will ensure the Project Sponsor follows the requirements of §7050.5(b) of the California Health and Safety Code (HSC) and §5097.98(a) – (h) of the California Public Resources Code (PRC). Refer to flow chart for discovery of human remains on non-federal lands in California in Appendix D.

Pursuant to §7050.5(c) of the California Health and Safety Code, if the county coroner determines that the human remains are of Native American origin, the discovery shall be treated in accordance with the provisions of §5097.98(a) – (h) of the California Public Resources Code. For all discoveries of potential human remains or associated items, the following procedures shall be followed:

- If potential human remains or indicators of potential human remains, such as mortuary monuments (gravestones), or other funerary items, the archaeological monitor will stop all Project related activities in the vicinity, immediately notify the PI and establish an exclusionary buffer of 50 ft around the discovery. The PI will immediately notify FRA and the Project Sponsor.
- FRA will provide notification within 24 hours to Consulting Parties of the potential human remains discovery.
- After a review by the PI and qualified human osteologist, if necessary, the PI will immediately notify FRA of the initial determination.

- 1       • FRA will coordinate the notification process between the Project Sponsor and County  
2       Coroner, ensuring that the Coroner is notified within 24 hours of the discovery.
- 3       • If the county coroner determines that the remains are Native American, the coroner  
4       must contact the Native American Heritage Commission (NAHC). The NAHC will  
5       immediately notify the Native American group(s) that it believes is the Most Likely  
6       Descendent (MLD) of the deceased Native American(s). With the permission of the FRA  
7       and Project Sponsor, the MLD can inspect the discovery site of the remains.
- 8       • Within 48 hours of their notification, the MLD will recommend to FRA and the Project  
9       Sponsor or landowner their preferred treatment of the remains and associated grave  
10      goods (if any).
- 11      • If the discovery can be protected in place, FRA may require security personnel to ensure  
12      protection of the discovery during the proceedings on disposition. The discovery will not  
13      be touched, moved, or further disturbed.
- 14      • To the extent permitted by applicable law and regulation, the Project Sponsor or  
15      landowner must consider the views of the MLD when it makes decisions about the  
16      disposition of Native American human remains and funerary objects. The FRA will  
17      ensure the respectful treatment of each set of remains and funerary objects.
- 18      • Treatment of the Native American remains may include the following:
- 19      – Non-destructive removal and analysis of remains and associated grave goods.  
20      Disinterment is to be conducted with dignity and in accordance with proper  
21      archaeological methods. If necessary, transport and storage of the remains to a  
22      predetermined secure location may occur.
- 23      – Preservation of remains and associated grave goods in place, if Project Sponsor  
24      determines avoidance in place is feasible.
- 25      – Relinquishment of remains and associated grave goods to the MLD group for  
26      reburial.
- 27      • After the treatment for the Native American remains and associated items are mutually  
28      agreed on by Project Sponsor or landowner, and the MLD, the plan will be implemented.
- 29      • In accordance with the California Public Resources Code Section 5097.98(e), if the NAHC  
30      cannot identify the Native American descendent group of the human remains, or if the  
31      MLD that has been identified fails to make a recommendation for the treatment of the  
32      remains, or if the Project Sponsor or landowner rejects the MLD’s recommendation and  
33      mediation provided for in California Public Resources Code subdivision (k) of Section  
34      5097.94 fails to provide measures acceptable to the Project Sponsor or Landowner for  
35      the treatment of the remains, the Project Sponsor or landowner shall reinter the  
36      remains and associated grave goods with appropriate dignity in an area where they will  
37      be left undisturbed in perpetuity.

- Construction activities will resume in the discovery area once all archaeological work has been completed and FRA confirms adequate conclusion of the treatment and consultation process.

#### 9.2.2. Nevada

For any human remains and funerary objects discovered on non-federally administered lands in Nevada during the implementation of the Project, FRA will ensure the Project Sponsor follows the requirements of Nevada Revised Statutes (Section 383.160 and Section 383.170). Refer to flow chart for discovery of human remains on non-federal lands in Nevada in Appendix D.

Pursuant to NRS Section 383.160 and 383.170, upon discovery of human remains, all work in the immediate vicinity stops while the Nevada Historic Preservation Office (HPO) is notified, who then notifies the Nevada Indian Commission (NIC). The following procedures shall be followed:

- Upon discovery of human remains in an archaeological context (see NRC Sections 383.160 and 383.170), work stops in the vicinity and the find shall be protected while determination of treatment is made.
- The discovery is immediately reported to Nevada HPO, who then notifies the NIC who notifies the appropriate Indian tribe.
- The Indian tribe may, with the permission of the landowner, inspect the site and recommend an appropriate means for the treatment and disposition of the site and all artifacts and human remains associated with the site.
- If the Indian burial site is located on private land and:
  - (a) The Indian tribe fails to make a recommendation within 48 hours after it receives notification pursuant to subsection 1; or (b) The landowner rejects the recommendation and mediation conducted pursuant to NRS 383.160 fails to provide measures acceptable to the landowner, the landowner shall, at his own expense, reinter with appropriate dignity all artifacts and human remains associated with the site in a location not subject to further disturbance.
- If the Indian burial site is located on public [non-federal] land and action is necessary to protect the burial site from immediate destruction, the office may cause a professional archaeologist to excavate the site and remove all artifacts and human remains associated with the site for subsequent reinterment, following scientific study, under the supervision of the Indian Tribe.
- Construction activities will resume in the discovery area once all archaeological work has been completed and FRA confirms adequate conclusion of the treatment and consultation process.

## 10. Inadvertent Discovery and Post Review Effects Treatment Plan

It is anticipated that inadvertent discoveries of cultural resources will occur during Project construction. These discoveries require determinations of NRHP eligibility and, if the discovery cannot be avoided, mitigation of adverse effects if the discovery is determined eligible for NRHP listing.

Should it be determined that previously avoided historic properties or portions thereof cannot be avoided and that Project construction will result in a newly identified adverse effect, treatment must follow the procedures outlined below in steps 7 and 8, , below.

### 10.1. Discovery of Cultural Resources

The protocol for treatment of unanticipated archaeological and built environment resources is described as follows and outlined flow charts provided in Appendix D, Cultural Resources Discovery Protocol, and as provided in Stipulation X.I of the PA.

1. Discovery. In the event that an archaeological or Native American monitor identifies a possible site or feature, or possible human remains, the monitor will notify the PI, who has the authority to divert all earth-disturbing work and project access, as appropriate for protection of the discovery. The archaeological monitor will immediately notify the PI, who will then notify FRA within 24 hours. FRA will inform the SHPO in the appropriate state and the Consulting Tribes within 24 hours of being notified of the find. The archaeological monitor will establish an ESA boundary to provide protection of the area using lathe and survey table, or other available materials. If possible, a minimum 50-foot buffer should be established, although this may be adjusted by the PI based on the work conditions and potential to impact the potential resource. Any comments provided by a Native American monitor should be documented.
2. Preliminary Inspection. Within 48 hours (2 business days), the archaeological monitor, or other qualified individual designated by the PI, will inspect the find to assess its nature and extent. The results of this inspection will be communicated to FRA and the Project Sponsor.
3. Determine Course of Action.
  - If the discovery is on federally administered lands, and if it consists of NAGPRA-regulated human remains or related items, they will be treated according to Section 9.4 of this HPTP.
  - If the discovery is on privately owned lands, and if it consists of human remains or a Native American cairn, they will be treated according to the process described in Section 9.5 of this HPTP.
4. Non-Isolate. Any non-isolate archaeological resources not covered by (3) above that are discovered will be treated in accordance with the remaining steps.

- 1 5. Assume NRHP Eligibility. FRA may assume any new sites, site components, or features  
2 identified within construction limits on BLM administered lands or private lands during  
3 work activities are eligible for the NRHP under Criterion D.
- 4 a. Assess Feasibility of Avoidance. The Project Sponsor, in coordination with FRA  
5 and the PI will review the location relative to Project construction plans to  
6 determine the feasibility of avoidance. If avoidance is feasible, FRA, will provide  
7 notification to Consulting Parties of the discovery and avoidance measures  
8 according to the timelines stipulated in Section II of the PA.
- 9 b. If the historic property can be avoided, no additional investigation will be  
10 required, and it will be left in place with an ESA established. The find may also be  
11 protected from future disturbance by additional measures, as needed and as  
12 potentially negotiated with the landowner at the location of the discovery. FRA  
13 will notify the SHPO, Consulting Tribes, and Consulting Parties (as appropriate  
14 and in consideration of confidentiality regarding locations of historic properties)  
15 of the outcome of NRHP eligibility and avoidance measures.
- 16 c. If the historic property cannot be avoided, FRA will determine the nature of  
17 adverse effects and communicate with consulting parties regarding adverse  
18 effects and treatment measures according to the procedures and timelines  
19 described in Stipulation XI of the PA for the treatment of inadvertent discoveries.
- 20 i. Resolution of adverse effects to inadvertent discoveries will follow the  
21 process identified starting in step 7, below.
- 22 6. Formal Evaluation of Significance for Inadvertent Discoveries. For inadvertent  
23 discoveries, FRA may provide formal determinations of significance and NRHP eligibility.  
24 Following notification of an unanticipated discovery or effect, the Project Sponsor will  
25 investigate the discovery site and evaluate the resource(s) in accordance with  
26 Stipulation IX.B.3 of the PA.
- 27 a. To the extent practicable, eligibility determinations will be based on information  
28 gathered during previous inventory and identification efforts. If the information  
29 gathering during previous inventory and identification efforts is determined by  
30 FRA to be adequate to determine site boundaries and NRHP eligibility, the  
31 Project Sponsor, in coordination with FRA, will determine NRHP eligibility  
32 consistent with the HPTP.
- 33 b. If the information gathering during previous inventory and identification efforts  
34 is determined by FRA to be inadequate to determine site boundaries or NRHP  
35 eligibility, the Project Sponsor, in coordination with FRA, will conduct additional  
36 identification and evaluation efforts for historic properties within the APE using  
37 procedures described in this HPTP.
- 38 i. For archaeological resources, the PI will gather information about the  
39 resource to address integrity and content of deposits and their spatial  
40 extents through standard field methods described in Chapter 4 of this

- 1 HPTP. These methods may include surface documentation or subsurface  
2 exploration.
- 3 ii. For built environment resources, the PI for built environment resources  
4 will gather information about the resource to assess integrity and to  
5 document the site boundary consistent with procedures provided in  
6 Chapter 11 of this HPTP.
- 7 iii. The PI for archaeology or built environment will make a recommendation  
8 of NRHP significance to FRA following completion of data gathering  
9 following the timelines established in Stipulation XI of the PA.
- 10 c. The Project Sponsor, in coordination with FRA, will prepare and submit a written  
11 document containing a proposed determination of NRHP eligibility for the  
12 resource and/or, if relevant, an assessment of the Project's effects on historic  
13 properties as well as consideration of measures to avoid adverse effects to  
14 historic properties and/or proposed resolution of adverse effects in accordance  
15 with the this HPTP .
- 16 7. In coordination with FRA, the Project Sponsor will provide the determination of  
17 eligibility and determination of effect document for review to the applicable SHPO,  
18 seeking SHPO concurrence on these determinations, and to Consulting Parties to  
19 concurrently review and provide written comments within seven (7) days to FRA and the  
20 Project Sponsor. If the unanticipated discovery is located on land under the jurisdiction  
21 of the BLM, Caltrans, or NDOT, FRA, in coordination with the Project Sponsor, will seek  
22 comment from the applicable agency regarding the eligibility and/or effects  
23 determination. In the event that the BLM, Caltrans, or NDOT does not respond within  
24 the concurrent review period of seven (7) days, FRA may consider nonresponse as  
25 nonobjection to the eligibility and/or effects determination and proceed. If the  
26 applicable SHPO does not concur with the eligibility and/or effects determination, FRA  
27 may elect to assume eligibility and/or adverse effects for expediency. If the  
28 unanticipated discovery is determined to be eligible, or is assumed eligible for the  
29 purposes of the undertaking only, for listing in the NRHP and/or adverse effects cannot  
30 be avoided, the Project Sponsor, in coordination with FRA, will implement treatment  
31 measures in the HPTP. The Project Sponsor, in consultation with FRA, will ensure  
32 construction-related activities within the buffer zone do not proceed until consultation  
33 with the Consulting Parties, concludes with SHPO concurrence that the agreed upon  
34 treatment measures have been implemented; or it has been agreed that the treatment  
35 measures provided in the HPTP can be completed within a specified time period after  
36 construction-related activities have resumed.
- 37 a. Should FRA determine that a resource-specific HPTP is required to address  
38 effects to the inadvertent discovery of a historic property, the timelines for  
39 submission and review shall follow Stipulation X.I of the PA.

40  
41



## 11. Phased Identification and Evaluation, and Assessment of Effects to Historic Properties

### 11.1. Combined Inventory, Evaluation, and Assessment of Effect

FRA anticipates that there may be refinement to the Project design as it is further developed and to the Project description as design refinements are proposed. The PA outlines requirements for amending the APE in Stipulation VII. Changes to the APE may result in changes to the APE-ADI and APE-All which may require additional historic property identification efforts. Refer to flow chart of phased identification, evaluation and assessment of effects in Appendix D.

Once the APE has been amended pursuant to Stipulation VII, the Project Sponsor, in coordination with FRA, will identify and evaluate historic properties that may be affected by the Undertaking within the amended APE. The Project Sponsor, in coordination with FRA, will document these efforts for the amended APE in an addendum to the already finalized Archaeological Inventory Reports and Historic Built Environment Technical reports for California and Nevada. In this post-review process, efforts to identify and evaluate historic properties (36 CFR § 800.4) and assess adverse effects (36 CFR § 800.5) will be combined within the amended and existing APE consistent with 36 CFR § 800.3(g).

### 11.2. Post-Review Inventory of Historic Properties

An inventory of historic properties will be completed within the APE, consistent with the *Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation* (48 Fed. Reg. 44716-44742, Sept. 29, 1983) and 36 CFR § 800.4. Although identification and evaluation of historic properties has occurred within the APE, FRA acknowledges that previously unidentified historic properties, or historic properties (including TCLs) with previously unknown eligibility under the NRHP criteria, or cultural resources that have recently reached the age threshold for consideration for eligibility for listing in the NRHP may be identified within the APE, as described in Stipulation I.X.B of the PA.

This inventory will be documented in Addendum Technical Reports for the amended APE separately for archaeological and historic built environment resources in accordance with procedures and timelines described in Stipulation II and Stipulation X.I of the PA, or as otherwise specified in a resource-specific HPTP, should FRA require one.

#### 11.2.1. Inventory Methodology

##### 11.2.1.1. Archival Research

- **Archaeology:** Prior to initiating fieldwork, the PI will determine if existing archival records searches have been completed to provide adequate coverage for the amended APE. It is likely that existing records searches are sufficient to document any changes to the APE-ADI due to the previous 1 mile buffer. The PI will coordinate this determination of adequacy with FRA. **Built Environment:** Prior to initiating fieldwork, the PI will

1 determine if existing archival records searches have been completed to provide  
2 adequate coverage for the amended APE and the original APE based on the new age  
3 range cutoff for resources. The PI will coordinate this determination of adequacy with  
4 FRA. However, the PI will utilize tax assessor data to incorporate resources in both the  
5 amended APE and original APE that may have come of age since historic property  
6 identification efforts were initially conducted and thus were previously not recorded.

#### 7 *11.2.1.2. Field Survey*

8 Archaeology: Survey methods shall generally be consistent with the methods used to survey the  
9 APE-ADI as documented in the Archaeological Technical Reports (ICF and HNTB 2022; Hale et al.  
10 2022; ICF and Dudek 2022). Prior to initiating survey, the PI will determine if the amended APE  
11 consists of previously disturbed or developed areas, or if native ground surfaces are present.

- 12 • **Amended APE is developed:** If the amended APE is previously developed and either  
13 paved or consisting completely of fill material or roadbed, no pedestrian survey will be  
14 required. The PI will document the findings of archival research confirmation and  
15 determination of survey suitability in a brief memo to FRA using the template provided  
16 in Appendix E of this HPTP. No further identification efforts will be required.
- 17 • **Amended APE is disturbed but contains native sediments:** If the Amended APE is  
18 disturbed but contains native sediments, and is not developed through previous  
19 construction, a reconnaissance level pedestrian survey will be completed and  
20 documented in a brief memo to FRA using the template provided in Appendix E of this  
21 HPTP. Reconnaissance methods consist of direct observation of the ground surface in  
22 the amended APE, but do not require intensive level, spaced survey transects.
- 23 • **Amended APE is relatively undisturbed:** If the Amended APE is relatively undisturbed,  
24 an intensive level pedestrian survey will be completed, consisting of pedestrian survey  
25 transects spaced appropriately to the size and shape of the Amended APE, but spaced  
26 no more than 15 m apart. Survey efforts will be initially reported to FRA using a brief  
27 memo template provided in Appendix E of this HPTP.

28 Survey documentation shall include features, isolates, and re-recording of previously  
29 recorded sites, as necessary. Methods used in resource documentation will be consistent with  
30 the methods used in the archaeological Technical Reports prepared for this Project (ICF and  
31 HNTB 2022; Hale et al. 2022; ICF and Dudek 2022). The survey will ensure that potential  
32 historic properties such as landscapes, viewsheds, and traditional cultural properties (TCPs) and  
33 TCLs with significance to Tribes are recorded in addition to archeological sites. Recordation of  
34 historic structures, objects, and sites will be in conformance with the applicable state standards  
35 as described in Stipulation V of the PA, and in conformance with Nevada and California  
36 standards, as applicable.

37 Built Environment: Survey methods of the amended APE and original APE shall generally be  
38 consistent with the methods used to survey the original APE as documented in the Built  
39 Environment Technical Reports (ICF and HNTB 2022). These methods in Chapter 6 of both the  
40 technical reports for California and Nevada will account for built environment resources in the

1 amended APE and original APE that have come of age for consideration for eligibility, post  
2 review.

3 Survey documentation shall include recordation of historic structures, buildings, engineering  
4 features, landscapes, objects, and sites in conformance with the applicable state standards as  
5 described in Stipulation V of the PA, and in conformance with Nevada and California standards,  
6 as applicable. The survey shall be either reconnaissance or intensive level depending on the  
7 characteristics of the amended APE.

### 8 ***11.2.1.3. Significance Evaluation***

9 Any cultural resources identified in the inventory of an amended APE and newly identified in  
10 the original APE (in accordance with Stipulation IX.B) will require evaluation of significance  
11 under Section 106, consistent with 36 CFR. § 800.4 using the methods to determine  
12 significance as documented in the archaeological and built environment Technical Reports  
13 prepared for this Project (ICF and HNTB 2022; Hale et al. 2022; ICF and Dudek 2022), or may be  
14 assumed eligible for the NRHP per 36 CFR Part 800.13(c).

15 Archaeology: For archaeological resources, sufficient information may be obtained through  
16 surface observation to make a significance determination. Should FRA determine, after SHPO  
17 and Consulting Party review, that subsurface excavations are necessary to generate information  
18 pursuant to an eligibility determination for an archaeological resource, excavation methods  
19 shall generally conform to the methods described in Chapter 4 of this report, and procedures  
20 shall generally conform to those described in Chapter 9 of this HPTP, section 9.1, parts 6 and 7.  
21 Evaluation methods and levels of effort will be appropriately scaled to the nature and scale of  
22 the archaeological resource requiring evaluation. t.

23 The archaeological PI will submit a memo, following templates provided in Appendix E of this  
24 HPTP, documenting data gathering efforts and providing recommendations for determination  
25 of eligibility and determination of effect, along with proposed methods for resolving adverse  
26 effects, should it be an eligible resource. FRA will provide the memo for Consulting Party review  
27 and SHPO concurrence following the timelines described in Stipulation II or Stipulation IX. of the  
28 PA.

29 Built Environment: For built environment resources, FRA will evaluate the inventoried resources  
30 for NRHP eligibility, consistent with Stipulation IX. of the PA. The PI for built environment will  
31 prepare a memo for FRA, following templates provided in Appendix E of this HPTP, describing  
32 findings and recommendations which FRA will provide to SHPO and Consulting Parties for  
33 review and comment according to the timelines described in Stipulation II or Stipulation IX of  
34 the PA.

### 35 ***11.2.1.4. Assessment of Effects***

36 For newly identified historic properties, whether in an amended APE, or those identified  
37 through ongoing Tribal Consultation or that have come of age, as described in Stipulation IX.A  
38 and IX.B, assessments of effect will be documented in an Addendum Technical Report that  
39 combines results of inventory, determinations of eligibility, assessment of effect, and methods  
40 to avoid, minimize or resolve adverse effects, including cumulative effects, by applying the

1 Criteria of Adverse Effect pursuant to 36 CFR § 800.5. The Finding of Effect (FOE) may vary in  
2 content and length and may rely on information from other FOE reports depending on the  
3 needs of the assessment for the historic properties identified in the amended APE. The FOE will  
4 assess potential adverse effects to historic properties resulting from the Undertaking and  
5 identify mitigation measures that would eliminate or minimize such effects. The formal  
6 Addendum Technical Report will be prepared and submitted to FRA within 90 days of  
7 completion of fieldwork at the affected historic property.

#### 8 **Timeframes**

9 The Project Sponsor will not commence ground disturbing and/or construction activities within  
10 any portion of the amended APE or boundary of any newly identified historic properties that  
11 has been determined to be adversely affected prior to resolution of effects.

12 Timelines for consultation on effects to historic properties will follow Stipulation II or  
13 Stipulation IX of the PA, as appropriate, or those provided in a resource-specific HPTP.

14 Once the treatment of historic properties has been completed, the PI will submit an End of  
15 Field (EOF) memo documenting completion of treatment, including sufficient data, imagery,  
16 maps, and a summary of findings to FRA for review. After FRA review and necessary changes to  
17 the EOF are made, FRA will distribute the EOF to Consulting Parties for review and comment  
18 according to the timelines described in Stipulation II or Stipulation IX of the PA, or as provided  
19 in a resource-specific HPTP. If FRA receives no objections to the findings, avoidance measures  
20 can be removed and construction can resume in the avoided area following resource-specific  
21 measures required by FRA (e.g., archaeological and tribal monitoring).

#### 22 **11.2.1.5. Resource Specific HPTP**

23 FRA, in consultation with the Project Sponsor and PI, may determine that a separate, site  
24 specific HPTP is required to properly treat historic properties identified in an amended APE, and  
25 newly identified historic properties in the original APE (in accordance with Stipulation IX.B).  
26 Development of a separate HPTP will generally follow the methods, procedures, and timelines  
27 identified in Stipulation II and Stipulation IX of the PA, as appropriate.

#### 28 **Timeframes**

29 FRA will follow the timelines described in Stipulation II of the PA for review and comment on resource-  
30 specific HPTPs. The PI for archaeology and/or built environment, in coordination with FRA, will ensure  
31 that each HPTP is finalized prior to the commencement of the construction activity or activities posing  
32 the identified adverse effect. The HPTP will require a schedule for completion of the prescribed  
33 treatment(s), which, depending on the historic property type and nature of the treatment, may occur  
34 before, during or after construction takes place.

1

2  
3

*This page intentionally left blank*

DRAFT

## 1 **12. Monitoring Plan**

2 Archaeological monitoring and Native American monitoring must occur during Project  
3 construction to ensure the appropriate treatment of historic properties and resources that hold  
4 Native American value, regardless of NRHP eligibility status. The Project Sponsor, in  
5 coordination with FRA, will identify consulting Tribes that wish to provide Tribal monitors  
6 during fieldwork, treatment of historic properties, and Project construction. FRA will work with  
7 the Project Sponsor and PI to develop a Tribal monitor rotation schedule prior to construction.

8 Archaeological monitoring personnel will include the Secretary of the Interior-qualified PI, a  
9 lead archaeological monitor, and other archaeological monitors as the construction schedule  
10 requires. The archaeological monitors will be present during ground-disturbing activities with  
11 potential to disturb known and unanticipated archaeological resources. The Project Sponsor  
12 shall provide for archaeological and Native American monitoring to occur during activities  
13 involving ground disturbance. The Project Sponsor will work with the PI to provide FRA and  
14 Consulting Tribes a tentative construction schedule 1 to 2 weeks prior to the initiation of  
15 construction-related earth-disturbing activities requiring monitoring. During ongoing  
16 construction, the Project Sponsor, or designated representative will establish a Tribal monitor  
17 rotation schedule that provides equal opportunity to Native American monitors identified on  
18 the Tribal monitor rotations schedule. The schedule will provide at least one week advance  
19 notice for the need to monitor. Changes to work schedules will require no less than 48-hours'  
20 notice prior to initiating work.

### 21 **12.1. Monitoring**

22 The following list outlines the responsibilities of the archaeological monitors.

- 23 1. Archaeological monitors will maintain a daily work log to include the following:
  - 24 a. Date and time of work
  - 25 b. Area of work, including historic property, as applicable
  - 26 c. Type of work and equipment present
  - 27 d. Construction activities performed
  - 28 e. Monitoring activities performed
  - 29 f. Archaeological finds observed
  - 30 g. Description of any disturbance to established buffers around historic properties
  - 31 h. Name of the archaeological monitor and/or Native American monitor
- 32 2. If previously unknown archaeological resources or new components of previously  
33 documented archaeological resources are encountered during monitoring, monitors will  
34 follow the procedures presented in Chapter 10 of this HPTP.
- 35 3. Daily logs will be transmitted to the PI, who will provide weekly summaries to FRA and  
36 the Project Sponsor. Distribution of logs will be left to the discretion of FRA and may be

1 subject to specific confidentiality restrictions. The Project Sponsor will develop a list of  
2 tribal contacts to receive daily logs prior to construction. Any unanticipated finds will be  
3 communicated in accordance with Chapters 10 and 11 of this HPTP. Unanticipated finds  
4 will also be documented in the weekly summaries.

- 5 4. If isolates are exposed during monitoring, they will be mapped in situ by the  
6 archaeological monitor using a GPS unit and recorded on appropriate resource records.  
7 Isolates will not require formal notification but will be documented on daily logs that  
8 will be available for inspection by Consulting Parties upon request, and distributed to  
9 Consulting Parties in weekly summaries.
- 10 5. If a resource is exposed or otherwise encountered during monitoring, they will be  
11 mapped in situ by the archaeological monitor using a GPS unit and recorded on  
12 appropriate resource records, and notification will follow the timelines identified in  
13 Chapters 10 and 11 of this HPTP and Stipulations IX and XI of the PA.
- 14 6. If a non-isolate archaeological entity (e.g., cluster of in situ artifacts, intact hearth,  
15 historic foundation) is exposed during construction, the provisions in Chapter 10 of this  
16 HPTP are to be followed, and notification and treatment will follow the procedures and  
17 timelines identified in Stipulations IX and XI of the PA.
- 18 7. FRA will coordinate all discoveries of human remains according to land ownership  
19 pursuant to Chapter 9, Sections 8.4 and 8.5 of this HPTP.

#### 20 **12.1.1. Prior to Construction—Archaeological Monitoring Exhibit (AME)**

21 Prior to the start of construction, FRA will designate areas that require archaeological and  
22 Native American monitoring in consultation with Native American Tribes. Archaeological and  
23 Native American monitoring will occur in areas that are to be disturbed if there is a clear  
24 indication that archaeological materials may exist or have been exposed within a specific area  
25 since the initial site surveys, or in areas identified as particularly sensitive by Consulting Tribes.  
26 Areas that FRA designates for monitoring will be documented on an Archaeological and Native  
27 American Monitoring Exhibit (AME) and provided to Consulting Parties for review and comment  
28 following timelines provided in Stipulation II of the PA. The AME will clearly differentiate areas  
29 requiring monitoring, versus those that do not. FRA may identify levels of monitoring effort for  
30 different parts of the APE, such as intermittent spot-checking, areas that require sample  
31 screening of disturbed matrix, areas that require incremental earth moving to allow for more  
32 intense inspection, or other methodologies that FRA may identify during consultation on the  
33 AME.

34 The AME may be updated based on an amended APE, or newly identified historic properties.  
35 Updates to the AME will conform to the timelines established in Stipulation II or Stipulation XI  
36 of the PA, as appropriate.

#### 37 **12.1.2. During Construction**

38 Full-time monitoring presence during initial earth-disturbing activities will occur for earth-  
39 disturbing work in areas designated by FRA. Monitoring coverage will include, at a minimum,  
40 one archaeologist and one Native American monitor per construction crew. Monitoring

1 frequency should be adjusted on FRA’s review of the PI’s recommendation based on  
2 information gathered over the course of monitoring, such as visual inspection of exposed  
3 subsurface soil contexts and their potential to contain unanticipated resources. Floating  
4 monitors may cover multiple concurrent activities throughout the Project APE.  
5 All archaeological and tribal monitors will adhere to site safety requirements, attend daily  
6 safety briefings, and abide by all Occupational Safety and Health Administration requirements.

#### 7 ***12.1.2.1. Inspection of Potential Discoveries***

8 It is anticipated that archaeological and Tribal monitors will be able to inspect earthen  
9 exposures and sediment stockpiles to determine if deposits contain archaeological or sensitive  
10 items. Archaeological and Tribal monitors may request construction personnel to temporarily  
11 divert or suspend work in a particular area to inspect potential discoveries. The Project  
12 Sponsor will ensure that all construction personnel will work together with archaeological and  
13 tribal monitors and efficiently communicate in order to allow for the integration of monitoring  
14 activities.

15 Should archaeological or tribal monitors require more than momentary pauses in work to  
16 inspect disturbance zones, they shall communicate their request to the archaeological monitor  
17 and PI, who will investigate the request and coordinate with the Project Sponsor and FRA to  
18 determine the validity and duration of the request.

### 19 **12.2. Cultural Sensitivity Training**

20 The PI or designated PI representative, along with designated Native American representatives,  
21 will provide a cultural resource WEAP for construction personnel describing the potential for  
22 exposing archaeological sites and procedures to treat unexpected discoveries. The cultural  
23 resources WEAP will include the following:

- 24 • Overview of the archaeological and cultural sensitivity of the area
- 25 • Regulatory context and protocols
- 26 • Identification of ESA for known and unanticipated historic properties
- 27 • Roles and responsibilities of the FRA, Project Sponsor, archaeological PI, archaeological  
28 monitors, and Native American monitors
- 29 • Authority of archaeological monitors and Native American monitors to suspend work
- 30 • General artifact recognition
- 31 • Unanticipated archaeological discovery protocols, including stop work and notification  
32 requirements
- 33 • Direction that cultural materials and human remains are not to be disturbed
- 34 • Contact information for use in the discovery protocols and notification procedures



- 1       • Statutory protection afforded to cultural resources under the Archaeological Resources  
2       Protection Act, and Nevada and California state laws, along with criminal penalties for  
3       violation

4 All archaeological and Native American monitors will attend safety briefings held at the  
5 beginning of each field day. These briefings will address general and specific safety topics, work  
6 areas, field conditions, and work assignments. The lead archaeological monitor will confirm  
7 monitoring locations and requirements each morning, as appropriate.  
8

DRAFT

## 1 **13. Summary**

2 This Historic Properties Treatment Plan (HPTP) (Attachment 5 to the PA) provides for the  
3 treatment of historic properties identified in the APE for the Project.

4 Twenty-two (22) NRHP eligible archaeological sites and four (4) archaeological districts were  
5 identified in the Project APE-ADI that will be adversely affected; 14 of these are prehistoric sites  
6 that contribute to the NRHP eligibility of four archaeological districts: SQAD, MRLL, SRAD, and  
7 CLAD. The remaining eight (8) NRHP eligible archaeological sites in the APE-ADI include five (5)  
8 in California (including the prehistoric components of three individual archaeological sites  
9 unaffiliated with districts, one historic period archaeological site, and the prehistoric and  
10 historic period components of one site, P-36-006023), and three (3) sites in Nevada (including  
11 two prehistoric sites and one historic period site). Individual sites within archaeological districts  
12 were individually evaluated for NRHP significance within the APE-ADI. SQAD contained five  
13 archaeological sites that are individually eligible for NRHP listing under criteria A and D. MRLL  
14 contained five archaeological sites individually eligible for NRHP listing under criteria A and D.  
15 SRAD contained three archaeological sites individually eligible for NRHP listing under criteria A  
16 and D, and CLAD contained one archaeological site individually eligible under criteria A and D.  
17 Therefore, the Project will result in adverse effects to 26 archaeological historic properties (23  
18 in California; 3 in Nevada).

19 The methods used to resolve adverse effects to archaeological historic properties outlined in  
20 this HPTP are primarily phased data recovery, focused on the scientific investigation and  
21 recovery of an archaeological sample that best represents the affected archaeological sites or  
22 portions of sites. These methods partially address adverse effects to Tribal values under  
23 Criterion A. Additional measures to resolve adverse effects under Criterion A include sample  
24 survey of portions of archaeological districts that extend into the APE-All, completion of an  
25 ethnohistoric study, and erection of sound walls during construction, and creative planting to  
26 minimize effects due to noise and vibration during Project construction for the CLAD.

27 Six NRHP eligible, built environment historic properties have been identified in the Project APE.  
28 They are overhead transmission line corridors and an underpass on a previously existing, BNSF  
29 rail corridor. ESAs can be implemented to ensure that construction-related activities don't  
30 cause damage, defacement or destruction of these historic resources. If the Project design  
31 changes or new built environment historic properties are identified prior to or during  
32 construction, the treatment of these newly discovered historic properties will be consistent  
33 with the steps of the Section 106 process (36 CFR Part 800) specified in the Project's PA and this  
34 HPTP.

35 This HPTP provides for the treatment of unanticipated discoveries and the identification of  
36 historic properties in amended portions of the APE that may occur. Historic properties  
37 identified during construction, or through inventory of an amended APE will be documented  
38 through combined inventory, evaluation, and assessment of effect reports. Archaeological and  
39 Native American monitoring will occur in areas designated by FRA.

40

## 14. References

Barton, L., and M. J. Hale

2022a Subsurface Archaeological Inventory: Addendum to the XpressWest High-Speed Passenger Train Project, Archaeological Inventory Report, San Bernardino County, California, prepared for U.S. Department of Transportation, Federal Railroad Administration, Office of Railroad Policy and Development, Washington, DC, by Dudek, Encinitas, CA, March 15, 2022.

2022b Subsurface Archaeological Inventory: Addendum to the XpressWest High-Speed Passenger Train Project, Archaeological Inventory Report, Clark County, Nevada, prepared for U.S. Department of Transportation, Federal Railroad Administration, Office of Railroad Policy and Development, Washington, DC, by Dudek, Encinitas, CA, March 15, 2022.

Basgall, M. E.

1988 The Archaeology of CA-MNO-679: A Pre-Archaic Site in Long Valley Caldera, Mono County, California. In *Early Human Occupation in Far Western North America: The Clovis-Archaic Interface*, edited by J. A. Willig, C. M. Aikens, and J. L. Fagan, pp. 103-120. Nevada State Museum Anthropological Papers No. 21. Carson City.

1993 Early Holocene Prehistory of the North-central Mojave Desert. Ph.D. dissertation, Department of Anthropology, University of California, Davis.

2008 An Archaeological Assessment of Late Holocene Environmental Change in the Southwestern Great Basin. In *Avocados to Millingstones: Papers in Honor of D. L. True*, edited by G. Waugh and M. E. Basgall, pp. 251-267. Monographs in California and Great Basin Anthropology, No. 5. Archaeological Research Center, California State University, Sacramento.

Basgall, M. E., and M. A. Giambastiani

2000 An Archaeological Evaluation of 13 Locations in the Deadman Lake Basin, Marine Corps Air Ground Combat Center, Twentynine Palms, California. Report submitted to U.S. Army Corps of Engineers, Sacramento.

Basgall, M. E., and M. Hall.

1994 Archaeological Investigations at Goldstone (CA-SBR-2348): A Middle Holocene Occupation Complex in the North-Central Mojave Desert, California. Report on file at the U.S. Department of Defense, National Training Center, Fort Irwin.

- 1 Basgall, M.E., and S.A. Overly  
2 2004 Prehistoric Archaeology of the Rosamond Lake Basin, Phase II Cultural Resource  
3 Evaluations at 41 Sites in Management Region 2, Edwards Air Force Base,  
4 California. Report on file, Environmental Management Office, Conservation  
5 Branch, Edwards Air Force Base, California.
- 6 Binford, L. R.  
7 1979 Organization and formation processes: looking at curated technologies.  
8 *Journal of Anthropological Research* 35:255-273.
- 9 Bodmer, X. et al.  
10 2013a Site Record for P-36-000223. South Central Coastal Information Center.  
11 2013b Site Record for P-36-004198. South Central Coastal Information Center.  
12
- 13 Coombs, G. B., R. McCarty, T. Shepperson, and S. Dean  
14 1979 The Archaeology of the Western Mojave. Prepared for U.S. Department of the  
15 Interior Bureau of Land Management. On file at South Coastal Information  
16 Center, San Diego.
- 17 Delacorte, M.  
18 1991 The Prehistory of Deep Springs Valley, Eastern California: Adaptive Variation in  
19 the Western Great Basin. Unpublished Ph.D. dissertation, Department of  
20 Anthropology, University of California, Davis.
- 21 Drover, C. E.  
22 1979 The Late Prehistoric Human Ecology of the Northern Mojave Sink, San  
23 Bernardino County, California. Ph.D. dissertation, University of California,  
24 Riverside. University Microfilms, Ann Arbor.
- 25 Earle, D. D.  
26 1990 New evidence on the political geography of the Antelope Valley and Western  
27 Mojave Desert at Spanish Contact. In *Archaeology and ethnohistory of Antelope  
28 Valley and vicinity*, edited by Bruce Love, and William H. De Witt, pp. 87-104.  
29 Antelope Valley Archaeological Society Occasional Papers No. 2, Lancaster, CA.  
30 2005 The Mojave River and the Central Mojave Desert: Native settlement, travel, and  
31 exchange in the Eighteenth and Nineteenth Centuries. *Journal of California and  
32 Great Basin Anthropology* 25(1):1-38.  
33 2010 Fray Joaquin Pascual Nuez's account of the Mojave River expedition of 1819.  
34 *Journal of California and Great Basin Anthropology* 30(2):184-192.
- 35 EDAW  
36 2007 IMACS site record for 26CK5760, Nevada Cultural Resource Information System.

- 1 Federal Railroad Administration (FRA)  
2 2011 DesertXpress High-Speed Passenger Train Final Environmental Impact Statement  
3 and 4(f) Evaluation. March 8, 2011.  
4
- 5 Fike, R.E.  
6 1987 The Bottle Book: A Comprehensive Guide to Historic, Embossed, Medicine  
7 Bottles. Salt Lake City, UT: Peregrine Smith Books.
- 8 Gallicci, K.  
9 2004 Ceramic Analysis at *Wikalokal*, San Diego County (CA\_SDI\_4787). Proceedings of  
10 the Society for California Archaeology, Vol. 14:119-123.
- 11 Giambastiani, M.A., and M.E. Basgall  
12 1999 An Evaluation of Eighteen Archaeological Sites at Wood Canyon, Quackenbush  
13 Lake Training Area, Marine Corps Air Ground Combat Center, Twentynine Palms,  
14 California. Report on file, U.S. Army Corps of Engineers, Sacramento.
- 15 Giambastiani, M., M. J. Hale, M. Richards, and S. Shelley  
16 2008 Draft Report Phase II Cultural Resource Evaluations at 47 Archaeological Sites  
17 on the East and Northeast Shores of Rogers Lake, Management Region 3,  
18 Edwards Air Force Base, Kern and Los Angeles Counties, California.
- 19 Glover, L.  
20 1990a Site Record for P-36-000562. South Central Coastal Information Center.  
21 1990b Site Record for P-36-006950. South Central Coastal Information Center.
- 22 Godden, G.A.  
23 1964 Encyclopaedia of British Pottery and Porcelain Marks. Random House.
- 24 Grayson, D. K.  
25 1984 Quantitative zooarchaeology: topics in the analysis of archaeological faunas.  
26 Studies in archaeological science. Academic Press, Orlando.
- 27 Hale, M. J.  
28 2001 Technological organization of the Millingstone Pattern in southern California.  
29 MA, Anthropology, California State University, Sacramento, Sacramento.  
30 2009 Santa Barbara and San Diego: contrasting adaptive strategies on the southern  
31 California coast. PhD, Anthropology, University of California, Davis, Davis, CA.
- 32 Hale, M. J., M. E. Basgall, and J. Colston  
33 2020 Historic Properties Treatment Plan for the Edwards Solar Enhanced Use Lease,  
34 Edwards Air Force Base, California. Prepared for Edwards Solar LLC, San Diego,  
35 California. Dudek, Encinitas, California. February, 2020.

- 1 Hale, M. J., M. Giambastiani, J. Daniels, and M. Dalope  
2 2010 Final Report Phase II Cultural Resource Evaluations at 85 Archaeological Sites in  
3 Management Areas 2B, 2C, 3F, 3H, 3I, AND 4B, Edwards Air Force Base, Kern and  
4 Los Angeles Counties, California. Prepared for Richard Bark, JT3 LLC, Subcontract  
5 Number 1A10000101.
- 6 Hale, M. J., and L. Barton  
7 2022a Brightline West—Las Vegas to Victor Valley—Archaeological Resources Finding  
8 of Eligibility and Effect: California. Prepared for the Federal Railroad  
9 Administration, Washington D.C.  
10 2022b Brightline West—Las Vegas to Victor Valley—Archaeological Resources Finding  
11 of Eligibility and Effect: Nevada. Prepared for the Federal Railroad  
12 Administration, Washington D.C.
- 13 Hale, M. J., L. Barton, S. Wolf, and D. Faith  
14 2022 FINAL *Confidential XpressWest High-Speed Passenger Train Project*  
15 *Archaeological Inventory Report, Clark County, Nevada*, February 2022. Prepared  
16 for the Federal Railroad Administration, Washington D.C.
- 17 Hall, M. C.  
18 1993 Archeology of Seven Prehistoric Sites in Tiefert Basin, Fort Irwin, San Bernardino  
19 County, California. Report submitted to U.S. Army Corps of Engineers, Los  
20 Angeles.
- 21 Hildebrand, J.A., G.T. Gross, J. Schaefer, and H. Neff  
22 2002 Patayan Ceramic Variability: Using Trace Elements and Petrographic Analysis to  
23 Study Brown and Buff Wares in Southern California. In *Ceramic Production and*  
24 *Circulation in the Greater Southwest*, edited by D.M. Glowacki and H. Neff, pp.  
25 121-139. The Cotsen Institute of Archaeology, University of California, Los  
26 Angeles.
- 27 ICF  
28 2020 DRAFT XpressWest High Speed Train Project, Historic Property Treatment Plan,  
29 San Bernardino County, California, Prepared for the U.S. Department of  
30 Transportation, Federal Railroad Administration, Office of Railroad Policy and  
31 Development, Washington, D.C., by ICF, Los Angeles, California, December 2020.
- 32 ICF and Dudek  
33 2022 FINAL *Confidential XpressWest High-Speed Passenger Train Project*  
34 *Archaeological Inventory Report, San Bernardino County, California*, February  
35 2022. (ICF 387.19.) With edits by Micah Hale, Loukas Barton, Scott Wolf, and  
36 David Faith, Dudek. San Bernardino County, California. Prepared for the Federal  
37 Railroad Administration, Washington D.C.

- 1 ICF and HNTB  
2 2022 DRAFT XpressWest High-Speed Passenger Train Project Historic Built  
3 Environment Technical Report: (one is for Nevada, one for California). Prepared  
4 for the Federal Railroad Administration, Washington D.C.
- 5 ICF and HNTB  
6 2022 FINAL XpressWest High-Speed Passenger Train Project Historic Built Environment  
7 Technical Report: (one is for Nevada, one for California). Prepared for the  
8 Federal Railroad Administration, Washington D.C.
- 9  
10 James, H.  
11 1979 Site Record for P-36-003485/CA-SBR-3485. South Central Coastal Information  
12 Center.
- 13 Kelly, R. L.  
14 1995 The foraging spectrum: diversity in hunter-gatherer lifeways. Smithsonian  
15 Institution Press, Washington.
- 16 Kroeber, A. L.  
17 1925 Handbook of the Indians of California. *Bureau of American Ethnology*  
18 *Bulletin 78*. Washington.
- 19 Leonard, N., and C. Drover  
20 1980 Prehistoric Turquoise Mining in the Halloran Springs District, San Bernardino  
21 County, California. *Journal of California and Great Basin Anthropology* Vol. 2, No.  
22 2 (Winter 1980), pp. 245-256 (12 pages). Published By: Malki Museum, Inc.
- 23 Lerch, M.  
24 1996 Site Record for Sidewinder Quarry Archaeological District. South Central Coastal  
25 Information Center.
- 26 Lightfoot, K., and W. Simmons  
27 1998 Culture Contact in Protohistoric California: Social Contexts of Native and  
28 European Encounters. *Journal of California and Great Basin Archaeology*, V. 20,  
29 No. 2, pp. 138-170.
- 30 Lipp (no first name provided)  
31 1979 Site Record for P-36-002129. South Central Coastal Information Center.
- 32 MACTEC  
33 2004 IMACS site record for 26CK7189, Nevada Cultural Resource Information System.

- 1 McGuire, K.R., and M.C. Hall.  
2 1988 The Archaeology of Tiefert Basin, Fort Irwin, San Bernardino County, California.  
3 Far Western Anthropological Research Group. Prepared for U.S. Army Corp of  
4 Engineers, Los Angeles District.
- 5 Melmed, A.  
6 2007 Site Record for P-36-003485 Update. South Central Coastal Information Center.
- 7 Mindat.org  
8 2020 Data on mines accessed in 2020 for P-36-009359, Fearnot Mine.
- 9 Moratto, M. J.  
10 1984 California Archaeology. Orlando, FL: Academic Press.
- 11 National Park Service (NPS)  
12 1983 Secretary of the Interior's Standards and Guidelines for Archeology and Historic  
13 Preservation. Federal Register 48(190):44716-44742. Updates available at  
14 [www.nps.gov/articles/sec\\_stds\\_intro.htm](http://www.nps.gov/articles/sec_stds_intro.htm) (accessed December 12, 2022).
- 15 Nationwide Environmental Title Research, LLC. (NETR)  
16 2020 Historic Aerials Website (<https://www.historicaerials.com/viewer> Accessed  
17 8.22.2020)
- 18 Nelson, M. C., and H. Lippmeier  
19 1993 Grinding-tool design as conditioned by land-use pattern. American Antiquity  
20 58(2):286-305.
- 21 Noble, M.D.  
22 2011 An Examination of Variability in Northern California Ground Stone Technologies.  
23 Unpublished Master's Thesis, California State University, Sacramento.
- 24 Nordstrom (no first name provided)  
25 1964 Site record for P-36-000541/CA-SBR-541.South Central Coastal Information  
26 Center.
- 27 Office of Historic Preservation (OHP)  
28 1993 California Guidelines for the Curation of Archaeological Collections, State of  
29 California Resources Agency, State Historical Resources Commission,  
30 Department of Parks and Recreation, May 7, 1993.
- 31 Praetzellis, A. and J. G. Costello  
32 2002 Don't Keep Everything: Historic Artifacts Discard Policy. Society for California  
33 Archaeology Newsletter 36(3):30-33.



- 1 Rock, J.  
2 1989 Tin Canisters: Their Identification. Klamath national Forest, Yreka, California.
- 3 Rogers, M. J.  
4 1928 Malcolm Rogers Papers, East Cronese Basin. San Diego Museum of Man.  
5 1929 Report on an Archaeological Reconnaissance in the Mojave Sink Region. San  
6 Diego Museum of Man Papers No.1.  
7 1939 Early Lithic Industries of the Lower Basin of the Colorado River and Adjacent  
8 Desert Areas. San Diego Museum of Man Papers 3.
- 9 Romani, B.  
10 1998a Site Record for P-36-000562. South Central Coastal Information Center.  
11 1998b Site Record for P-36-002283. South Central Coastal Information Center.
- 12 Sigleo, X.  
13 1970 Site Record for Halloran Springs petroglyphs site. South Central Coastal  
14 Information Center.  
15 1975 Site Record for Halloran Springs petroglyphs site. South Central Coastal  
16 Information Center.
- 17 Smith, G.  
18 nd Site Record for P-36-002129. South Central Coastal Information Center.
- 19 SoilWeb  
20 2020 California Soil Research Lab. University of California Davis and Natural Resource  
21 Conservation Center.
- 22 Strickler, G. H.  
23 1971 Site Record for P-36-000562. South Central Coastal Information Center.  
24 1972 Site Record for P-36-002283. South Central Coastal Information Center.
- 25 Sutton, M.  
26 1981 Site Record for P-36-004198. South Central Coastal Information Center.  
27 1996 The Current Status of Archaeological Research in the Mojave Desert. *Journal of*  
28 *California and Great Basin Anthropology* 18(2):221–257.  
29 2017 Chasing Ghosts? Rethinking the Prehistory of the Mojave Desert. *Pacific Coast*  
30 *Archaeology Society Quarterly* 53(2).
- 31 Tamunga, X.  
32 1981 Site Record for P-36-004198. South Central Coastal Information Center.
- 33 Toulouse, J. H.  
34 1971 Bottle makers and their marks. Thomas Nelson. Inc., New York.

- 1 Warren, C.N., and R.H. Crabtree  
2 1986 Prehistory of the Southwestern Area. In: *Handbook of the North American*  
3 *Indians, Vol. 11: Great Basin*, edited by W. L. d’Azevedo, pp. 183–193.  
4 Smithsonian Institution, Washington, D.C.
- 5 Waters, M. R.  
6 1982 Lowland Patayan ceramic typology. In *Hohokam and Patayan: prehistory of*  
7 *southwestern Arizona*, edited by Randall H. McGuire, and Michael B. Schiffer, pp.  
8 537-570. Academic Press, New York.  
9

DRAFT



DRAFT

## Confidential Appendix A: Maps

# Confidential Appendix B: Site Records

DRAFT

## Appendix C: NAGPRA Plan of Action

# Appendix D: Protocol Flow Charts



DRAFT

## Appendix E: Reporting Templates