Arizona
Statewide Rest Area Study

Final Working Paper 3

Evaluation Criteria and Plan for Improvements

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AASHTO	American Association of State Highway and Transportation Officials
ADA	Americans with Disabilities Act
ADOT	Arizona Department of Transportation
ASO	Alternative Stopping Opportunities
FMCSA	Federal Motor Carrier Safety Administrator
HOS	Hours of Service
MP	Milepost
PMT	Project Management Team
ROW	Right-of-Way
TAC	Technical Advisory Committee
TSM&O	Transportation Systems Management and Operations

1 Introduction

Section 1: This document, *Working Paper 3: Evaluation Criteria and Plan for Improvements*, builds upon previous working papers (*Working Paper 1: Existing Conditions* and *Working Paper 2: Forecast of Future Conditions and Deficiencies*) and summarizes the recommended improvements and evaluation framework used to prioritize improvements at the Arizona Department of Transportation's (ADOT) managed rest areas through 2042. The evaluation framework and criteria yield a list of prioritized projects for preservation, expansion, and modernization at all 19 rest areas (33 sites) for short-, mid-, and long-term implementation.

Section 2: Rest Area Evaluation Criteria summarizes the evaluation framework and criteria developed to prioritize rest area needs and improvements.

Section 3: Rest Area Preservation Prioritization summarizes the recommended preservation improvements and prioritized ranking of rest areas for each planning horizon.

Section 4: Rest Area Expansion Prioritization summarizes the recommended expansion improvements and prioritized ranking of rest areas for each planning horizon.

Section 5: Rest Area Modernization Priorities summarizes the recommended modernization improvements and prioritized ranking of rest areas for each planning horizon.

Section 6: Overall Project Priorities summarizes the overall short-, mid-, and long-term prioritized recommendations for each rest area.

2 Evaluation Criteria

This section discusses the approach, framework, and scoring criteria used to prioritize rest area expansion, rehabilitation/preservation, and modernization improvements for each planning horizon (short-, mid-, and long-term) through 2042.

Methodology

Data collected and forecasts developed as part of this study were analyzed to make prioritized recommendations (both short-, mid-, and long-term). As part of this analysis, evaluation tools were developed to document characteristics associated with rest areas and identify their potential needs using scores and weighted criteria to objectively compare rest areas. Prioritized rest area improvements for preservation, expansion, or modernization were identified based on a set of data categories which include, but are not limited to:

- Forecasted Deficiencies
- Availability of Alternative Stopping Opportunities (ASO)
- Nearby Rest Areas
- Proximity to Urban Areas
- Truck Parking Characteristics
- Completed and Programmed Improvements
- Years Since Previous Improvements
- Anticipated Water Demand
- Peer State and Industry Best Practices

Close coordination with the Project Management Team (PMT) and Stakeholders was conducted to refine the following evaluation criterion and scoring. The following sections describe in further detail the criteria used to rank and prioritize improvements for each improvement category.

Rest Area Preservation/Rehabilitation

Preservation projects were evaluated based on existing rest area needs, as well as their ability to continue functioning at an acceptable level for the traveling public through year 2042. Since the 2011 study, all short-term rehabilitation and/or preservation projects have been completed. **Table 3-1** in the Section 3 summarizes all improvements made since 2011.

Facilities Management and Transportation Systems Management and Operations (TSM&O) provided the expected life-cycle of mechanical, structural, electrical, and water and wastewater elements. In general, facilities located underground (e.g., water lines, conduit, etc.) are expected to have a life-cycle of approximately 30 years, while facilities above ground (e.g., structures, electrical components, etc.) are expected to have a life-cycle of approximately 15 years. This information was used to project when each facility would require rehabilitation based on the number of years since the previous improvements occurred. Water capacity deficiencies were calculated based on allowable pump capacity, projected water usage, and peak hour capture rates. Lastly, the years since previous improvements at each rest area were evaluated to identify in which year each rest area is expected to require rehabilitation. The

results of each input were compared to identify a list prioritized rehabilitation and preservation projects for each rest area through year 2042.

Expansion

As part of *Working Paper 2: Forecast of Future Conditions and Deficiencies,* forecasts for each planning period (5, 10, and 20 years) were developed to identify potential restroom and parking deficiencies at ADOT's managed rest areas. Because many of the rest areas were projected to have some deficiency by 2042, a scoring and weighted criterion was developed to prioritize parking or restroom expansions by short-, mid-, and long-term needs.

Some rest areas do not contain any existing truck parking spaces and were not included in the truck parking expansion portion of the analysis. In addition, some of the associated traffic data needed for forecast parking needs was not available for certain rest areas (i.e., capture rates). Therefore, the following rest areas were not evaluated for parking expansion at this time:

- Parks
- Christensen
- Mazatzal
- Salt River Canyon
- Hassayampa

Tier 1 Evaluation – Forecasted Deficiencies

Since this study is expected to be updated every 10 years (next updated is anticipated in 2032) and to ensure rest areas maintain flexibility as changes in the transportation landscape occur, forecasted deficiencies through 2032 were used to prioritize expansion needs. Furthermore, truck parking needs will be further evaluated as part of the planned Truck Parking Study in future years. Of those rest areas in which forecasts were developed, all but four sites (Sentinel Westbound, Sunset Point, Canoa Ranch Eastbound, and Canoa Ranch Westbound) had either car or truck parking deficiencies by 2032. A summary of the car and truck parking deficiencies at each rest area in 2032 is summarized Section 4.

Tier 2 Evaluation – Rest Area Prioritization

Since most rest areas are expected to require additional parking, a scoring criterion was developed to determine which sites should be prioritized first. Data categories included in this evaluation are as follows:

- Forecasted Parking Deficiencies in 2032
- Locations with Documented Undesignated Truck Parking
- Availability of Private Truck Parking Nearby
- Proximity to Urbanized Areas

Using logical assessment of existing conditions and statistical analysis, the following scoring ranges were applied to each category, as summarized in **Table 2-1**.

Table 2-1. Rest Area Prioritized Parking Expansion Scoring and Criteria

Evaluation Category	Description	Scoring Criteria	Weight Applied
Truck Parking Deficiencies (2032)	The Number of Deficient Truck Parking Spaces at Each Rest Area in 2032	-80 to -61 = 4 -60 to -41 = 3 -41 to- 21 = 2 -20 to -1 = 1 > 0 = 0	1.0
Undesignated Truck Parking at/near Rest Areas	Rest Areas within 20 Miles of A Documented Top 15 Undesignated Truck Parking Locations (*Source: 2019 Arizona Truck Parking Study*)	At Rest Area = 2 Within 20 Miles = 1 No = 0	1.5
Truck Parking at Nearby Private Facilities	The Number of Available Parking Spaces at Private Facilities within 30 Miles of Each Rest Area (Must Be within 2 Miles of an Interchange)	0 to 51 = 0 51 to 220 = -1 221 to 440 = -2 441 to 660 = -3 661 to 700 = -4	1.25
Distance to Urbanized Areas (in miles)	The Distance from the Rest Area to Urbanized Areas (Population >50,000) *(Source: 2010 U.S. Census Bureau)*	1 to 30 = 2 31 to 60 = 1 61 to 90 = 0	0.5

The weighting applied to each category was developed to counteract the limitations and/or constraints of AASHTO's forecast model. Specifically, the forecast does not account for overnight parking or nearby private parking locations. Therefore, these categories were weighted higher as compared to the forecasted deficiencies. In addition, the proximity to urbanized areas can affect the demand at rest areas as many commercial drivers will queue at these rest areas prior to morning and evening deliveries within the urban areas. However, the proximity to urbanized areas is only a small contributing factor in comparison to the overall system use.

Tier 3 Evaluation – Expansion Feasibility

For rest areas with parking deficiencies in 2032, recommendations were made based on the most reasonable and feasible method to accommodate parking at each site. Specifically, each site was evaluated for the following:

1. **The ability to expand parking within the existing right-of-way (ROW) without interruptions to the existing ramps and facilities**
2. **Expand parking within the existing ROW by using minor ramp realignments as needed**
3. **Expand parking by using overflow parking lots within the existing ROW or on adjacent land where feasible**
4. **Expand parking by relocating ramps and ramp gores within the existing ROW**

5 **Expand parking by extending the existing ROW and relocating ramps and gores**

6 **Identify nearby safe parking locations within existing nearby interchanges ROW**

7 **Identify nearby Alternative Stopping Opportunities (ASO) for potential public-private partnerships**

Since some of these existing sites would require major relocation of the existing ramps and gores to accommodate more truck parking spaces, overflow parking lots like those implemented at Meteor Crater were also evaluated for feasibility. In addition, if the adjacent land use surrounding the rest area was not suitable for expansion and development, then off-site, safe-parking only locations were identified. Lastly, if no suitable location was identified within proximity to the rest area for a safe-parking only location, then it was recommended ADOT engage with private facility owners for potential public-private partnerships. The results and analysis of expansion opportunities is documented in further detail in Section 4.

Truck Parking Overflow Lot Example (Meteor Crater – WB)

Modernization

Opportunities to modernize or expand services at each rest area to meet existing and future travelers' needs was also evaluated as part of this study. Each rest area was first evaluated based on nearby services (i.e., ASOs), distance to urban areas, distance to adjacent rest areas, and their anticipated usage in year 2042. Combined, these categories provide insight into the expected demand for services and amenities at each rest area over the next 20 years. The categories described and their associated scoring and weighting criteria is summarized in **Table 2-2**.

Table 2-2. Rest Area Usage and Nearby Services Scoring and Criteria

Evaluation Category	Sub-category	Description	Scoring Criteria	Weight Applied
Usage	Annual Usage Projection (2042)	Forecasted Total Annual Users in 2042	260K to 640K= 1 641K to 1M = 2 1.1M to 1.4M = 3 1.41M to 1.75M = 4	2.0
Nearby Services	Distance to Urban Areas	Distance to Urban Areas (miles)	1 to 30 = 1 31 to 60 = 2 61 to 90 = 3	0.5

Evaluation Category	Sub-category	Description	Scoring Criteria	Weight Applied
Nearby Services	Distance to Alternative Stopping Opportunities (ASOs)	Distance to Nearest ASO (miles)	1 to 15 = 1 16 to 30 = 2 31 to 60 = 3	1.25
	Distance to Adjacent Rest Areas	Distance to Nearest Rest Area (miles)	1 to 60 = 1 61 to 120 = 2 121 to 180 = 3	1.5

A statistical analysis of the resulting scores from the usage and nearby services evaluation was then used to determine the short-, mid-, and long-term implementation periods for each rest area. These implementation periods are used to represent the planning period in which these expanded services and/or amenities are recommended for implementation. The results from the rest area demand evaluation are summarized in detail in Section 5.

The expanded services and amenities were also evaluated based on 1) their ability to improve safety, 2) improve sustainability, 3) if they are documented peer state and/or industry best practice, and 4) their feasibility to be implemented. **Table 2-3** summarizes the evaluation categories and scoring criteria used to prioritize each improvement.

Table 2-3. Expanded Services and Amenities Evaluation Criteria

Evaluation Category	Sub-category	Description	Scoring Criteria	Weight Applied
Safety	Increased Visibility (Buildings and Parking Areas)	Does this improvement improve visibility in and around the rest area?	Very Likely = 2 Somewhat Likely = 1 Not Likely = 0	2.0
	Potential to Reduce Crashes	Does this improvement help to reduce crashes or incidents at or around rest areas?	Very Likely = 2 Somewhat Likely = 1 Not Likely = 0	
	Increased Access to Emergency Services	Does this improvement provide increased access to emergency services at rest areas?	Very Likely = 2 Somewhat Likely = 1 Not Likely = 0	
	Potential to Deter Criminal Activity	Does this improvement have the potential to deter criminal activity at rest areas?	Very Likely = 2 Somewhat Likely = 1 Not Likely = 0	
	Potential to Reduce Driver Fatigue	Does this improvement have the potential to increase travelers' length of stay, thereby reducing driver fatigue?	Very Likely = 2 Somewhat Likely = 1 Not Likely = 0	
Sustainability	Potential to Reduce Energy Use	Does this improvement have the potential to reduce energy consumption at rest areas?	Very Likely = 2 Somewhat Likely = 1 Not Likely = 0	1.5
	Potential to Reduce Water Use	Does this improvement have the potential to reduce water use at rest areas?	Very Likely = 2 Somewhat Likely = 1 Not Likely = 0	
	Reduced Environmental Footprint	Does this improvement have the potential to reduce the rest areas environmental footprint?	Very Likely = 2 Somewhat Likely = 1 Not Likely = 0	

Evaluation Category	Sub-category	Description	Scoring Criteria	Weight Applied
Peer State and Industry Best Practice	Peer State and Industry Best Practice	Was this improvement identified as a common practice among peer states or industry wide?	Yes = 2 Somewhat = 1 No = 0	1.5
Feasibility	Available Supporting Infrastructure	Is the infrastructure required to support this improvement already present at rest areas?	Very Likely = 2 Somewhat Likely = 1 Not Likely = 0	1.75
	Cost Estimate	Is the cost estimate for this improvement considered high, medium, or low compared to other improvements?	High = -1 Medium = 0 Low = 1	
	Impacts to Existing Facilities	Would this improvement result in substantial impact to the existing facilities (buildings, wastewater, etc.)?	Very Likely = -1 Somewhat Likely = 0 Not Likely = 1	
	Environmental Impacts	Would this improvement result in significant environmental impacts?	Very Likely = -1 Somewhat Likely = 0 Not Likely = 1	

The data associated with the potential benefits or effects of implementing each improvement was limited. Therefore, a stakeholder survey was also initiated to further define and rank each improvement. The amenities and services comparison survey was distributed to this study' Technical Advisory Committee (TAC) and stakeholders in December 2022. The results of the survey and comparative analysis are summarized in detail in Section 5.

Planning Period Prioritization

The results from each category evaluation were compiled to identify the overall implementation strategy for each rest area. For instance, if a rest area was prioritized for parking expansion and modernization within the short-term planning period, then this study recommends completing both improvements as part of one project. Conversely, if an improvement was not identified as a short-term need, but another improvement was, then the short-term improvement should be prioritized without any other improvements. A flowchart summarizing the overall framework and evaluation criteria used for this study is presented in

Figure *2-1*.

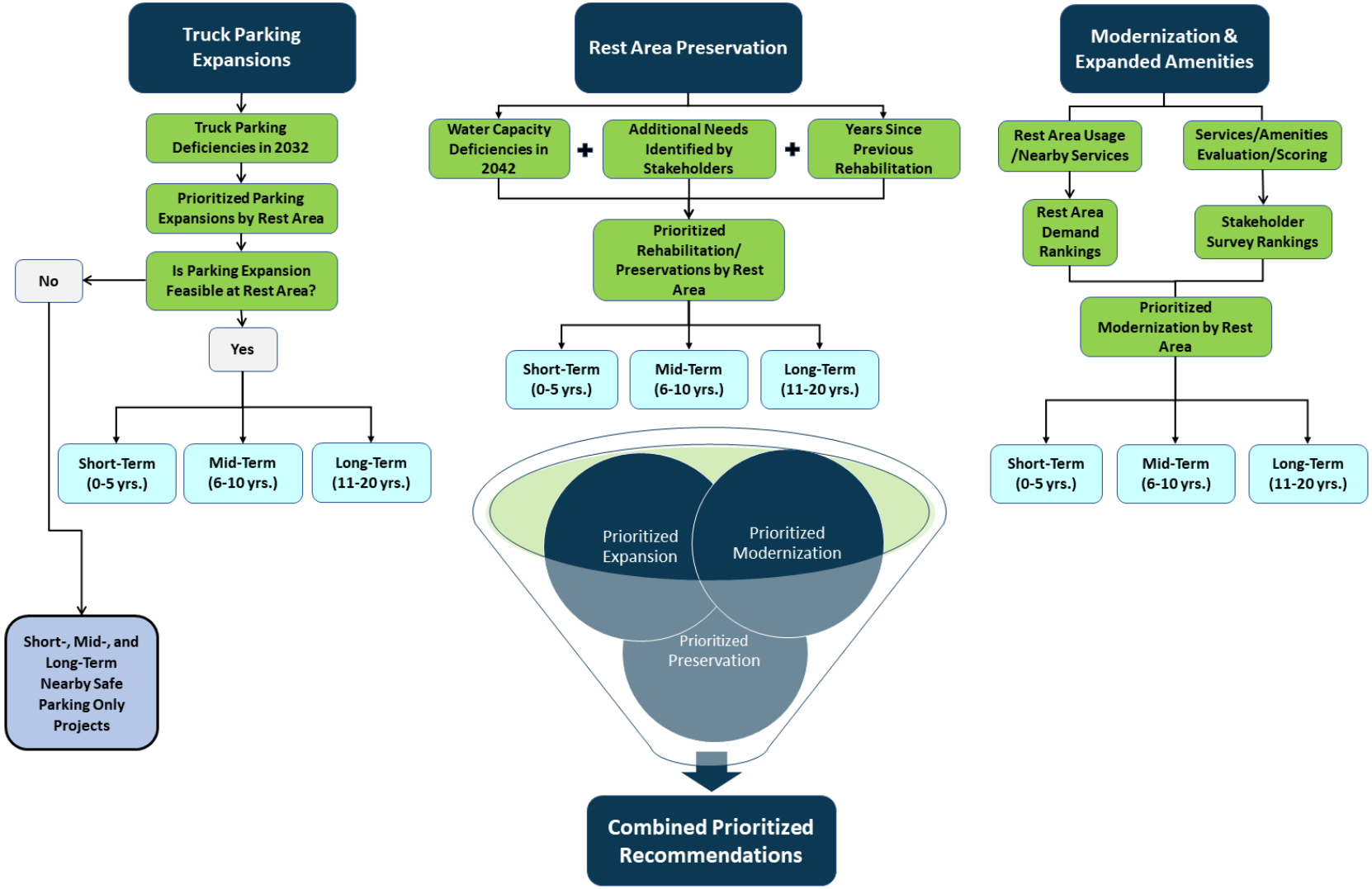


Figure 2-1. Rest Area Prioritization and Evaluation Framework

3 Rest Area Preservation/Rehabilitation

This section describes in detail the results and prioritized rehabilitation needs of each rest area for each planning horizon. As discussed previously, above ground facilities are expected to have a life-cycle of 15 years, while underground facilities are expected to have a life-cycle of 30 years. These expected life-cycles, combined with the timeframe since improvements were last made, were used to determine the approximate planning period when rest area facilities may require rehabilitation. Additionally, water usage forecasts were developed and compared the existing water capacity to determine if rest areas have existing or future water deficiencies. The results of the preservation/rehabilitation evaluation are summarized in the following sections.

Water Capacity Deficiencies

Monthly water usage reports and groundwater well pump capacities were used in conjunction with peak hourly water demand calculations to determine if any of the rest areas using groundwater wells would experience water capacity deficiencies through 2042. Based on those calculations, no rest areas were anticipated to have water deficiencies by 2042. A summary of calculations and projected water usage are included as **Appendix A**.

Previous Improvements

A review of the most recent improvements and record drawings, combined with input from ADOT's Facilities Management and Rest Area Manager were used to determine the approximate year when facilities at the rest areas may require rehabilitation. This study began by evaluating the type of improvement made at each rest area since the previous study.

Completed Rehabilitations

Findings from that review revealed that major rehabilitation of 16 rest areas (or 28 sites) has occurred in the last 10 years. Rehabilitation projects generally included, but are not limited to:

- Water and wastewater system enhancements
- Structural, mechanical, and electrical rehabilitations
- Pavement rehabilitations
- ADA improvements
- Restroom expansions and renovations
- Truck parking expansions

The description of work and funding for rest area improvements were provided by the ADOT Facilities Management team and/or are documented in ADOT's previous and current Five-Year Transportation Facilities Construction Programs. **Table 3-1** summarizes the improvements made at each rest area since 2011, while **Error! Reference source not found.** summarizes the planned improvements over the next five years.

Table 3-1. Completed Rest Area Improvements (2011-2022)

Rest Area(s)	Description of Work	Funding Amount	Date Completed
Sunset Point	Drill new well; water system communications; ramada structural rehabilitation	$3,495,000	October 2013
Bouse Wash	Replace water/booster pumps (and related work); replace wastewater pond liners; ADA compliance; site paving; water system communication; structural, mechanical and electrical rehabilitation	$1,485,000	August 2013
McGuireville Hassayampa	**McGuireville:** Drill new well; replace water/ booster pumps (and related work); paint water storage reservoir; sanitary sewer system modifications; ADA compliance; water system communication; and structural rehabilitation **Hassayampa**: Septic tank and leach line cleaning ; parking lot rehabilitation	$1,400,000	**McGuireville:** October 2013 **Hassayampa:** October 2013
Salt River Canyon	Replace water/booster pumps (and related work); paint water storage reservoir; replace composting toilets; ADA compliance; site paving; and structural rehabilitation	$1,290,000	October 2014
Burnt Well Ehrenberg	**Burnt Well and Ehrenberg**: Replace water/booster pumps (and related work); replace septic tanks and leach fields; ADA compliance; site paving; paint water storage reservoir; water system communication; structural, mechanical, and electrical rehabilitation	$3,700,000	**Burnt Well:** October 2014 **Ehrenberg:** April 2015
San Simon	Drill new well; replace water/booster pumps (and related work); replace septic tanks and leach field; paint water storage reservoir; site paving; ADA compliance; water system communications; structural, mechanical, and electrical rehabilitation	$3,000,000	May 2016
Texas Canyon	Replace water/booster pumps (and related work); replace wastewater pond liners; replace septic tanks; replace water pipeline; paint water storage reservoir; ADA compliance; site paving; water system communication; structural, mechanical, and electrical rehabilitation	$4,795,000	June 2016
Mohawk	Replace water/booster pumps (and related work); replace septic tanks; replace water pipeline; rehabilitate water pump building; replace water storage reservoir; ADA compliance; site paving; water system communication; structural, mechanical and electrical rehabilitation	$4,200,000	July 2017
Sacaton Canoa Ranch	**Sacaton:** Replace water pipeline; replace septic tanks and leach fields; abandon old well; structural, mechanical, and electrical rehabilitation **Canoa Ranch**: Replace water pumps; install new water line; replace septic tanks and leach fields; replace water pipeline; paint water storage reservoir; water system communications; structural, mechanical, and electrical rehabilitation	$3,520,000	**Sacaton:** November 2018 **Canoa Ranch:** May 2019

Rest Area(s)	Description of Work	Funding Amount	Date Completed
Haviland	Replace water/booster pumps (and related work); paint water storage reservoir; replace septic tanks; ADA compliance; truck parking expansion and site paving; structural, mechanical, and electrical rehabilitation	**Phase1 &2:** $4,299,370 **Truck Parking Expansion:** $4,383,054	**Phase 1 (construction):** July 2019 **Phase 2 (landscape establishment):** December 2019 **Truck Parking Expansion:** June 2020
Painted Cliffs Meteor Crater	**Painted Cliffs:** Replace water pumps, septic tanks and leach fields; water system communications; site work; structural, mechanical and electrical rehabilitation **Meteor Crater:** Replace water pumps; evaporation pond liners; paint water storage reservoir; water system communications; site work; truck parking expansion; structural, mechanical, and electrical rehabilitation	$3,775,000	**Painted Cliffs**: September 2020 **Meteor Crater:** October 2021
Bouse Wash	Relocate septic tanks (and related work); rehabilitate well for higher water production; paint water storage reservoir; truck parking expansion; ADA compliance restroom/residence renovation; structural, mechanical, and electrical rehabilitation	$4,375,000	June 2022
Sentinel	Rehabilitate well, new pump house (and related work); replace septic tanks and leach fields; new water storage reservoir; truck parking expansion; ADA compliance; site work; structural, mechanical, and electrical rehabilitation	$7,125,000	December 2022

Programmed Rest Area Improvements - Fiscal Years (FY) 2023-2027

Rest Area (s)	Description of Work	Funding Amount	Expected Completion
Sunset Point	Rehabilitate old restroom building; residence renovation; replace aerators, power and related controls for the ponds; ADA compliance; demolition of old pump house interior (and related work); truck parking expansion; site work; structural, mechanical, and electrical rehabilitation	$6,400,000	Currently under construction. Expected Completion June 2023
McGuireville	Rehabilitate existing lift station and controls; install power and related controls for the evaporation ponds; residence renovation; ADA compliance; mechanical upgrade residence and restroom building; site painting and seal buildings; site work; truck parking expansion; structural, mechanical, and electrical rehabilitation	$6,500,000	February 2024

It should be noted that the three rest areas with no improvement made since 2011 (Parks, Christensen, and Mazatzal) have been closed since the previous study. Parks and Christensen are located near an urbanized area (Flagstaff) along I-40 and I-17, respectively. These locations have limited ASOs and rest areas nearby and a documented demand for truck parking. Although these sites were opened to truck parking only during the pandemic, the Park and Christensen rest areas are recommended to be converted to permanent truck parking only sites within the short-term planning horizon.

Input from ADOT's TSM&O and Facilities Management staff provided cost-effective solutions to convert these sites to permanent truck parking only locations to ensure demand at these sites is met and ADOT maintains the locations for future use. Solutions proposed include the following:

- Removal of existing restroom buildings
- Installation of vaulted toilets (water and wastewater facilities not required)
- Minor rehabilitation of existing ramadas
- Pavement rehabilitation (as needed)
- Installation of high-mast lighting (existing power on site)
- Formalized signage designations (Truck Parking Only Rest Areas)

The Hassayampa rest area was improved in 2013, but only included water system repair and parking lot rehabilitation. Facilities Management also noted that this site requires Americans with Disabilities Act (ADA) improvements. Therefore, this location is recommended as a short-term priority for structural, mechanical, and electrical rehabilitation, as well as ADA and site paving improvements.

Projected Year of Needed Rehabilitation

Based on input from Facilities Management regarding the life-cycle of rest area facilities, an analysis was conducted to determine when each facility type may require rehabilitation. The years since previous improvement was calculated and was subtracted from the expected life-cycle timeframe. That calculation provided the number of years until each facility type (above ground and below ground) may require rehabilitation. Above ground facilities were assumed to generally include ramadas, restroom building and fixtures, electrical, well pump-houses, caretaker's residences, pavement, and sidewalk. Below ground facilities were assumed to generally include water and wastewater facilities (i.e., septic tanks, leech field, pipes, etc.). **Table 3-2** summarizes the projected year of rehabilitation for above ground and below ground facilities at each rest area.

Table 3-2. Projected Year of Needed Rehabilitation per Rest Area

Priority Rank	Rest Area (RA)	Route	Traffic Direction Served	Forecasted Annual Users in 2042	Above Ground Facilities				Below Ground Facilities			
					Years Since Last Above Ground Facility Improvements	Number of Years Until Needed Rehabilitation (above ground facilities)	Anticipated Rehabilitation Year	Anticipated Rehabilitation Planning Period	Years Since Last Below Ground Facility Improvements	Number of Years Until Needed Rehabilitation (below ground facilities)	Anticipated Rehabilitation Year	Anticipated Rehabilitation Planning Period
1	Hassayampa	US 60	Both	[4]	9	6	2028	Mid-term	9	21	2043	Long-term
2	Salt River Canyon	US 60	Both	[4]	8	7	2029	Mid-term	8	22	2044	Long-term
3	Ehrenberg	I-10	EB	1,227,525	7	8	2030	Mid-term	7	23	2045	Long-term
4	Ehrenberg	I-10	WB	732,369	7	8	2030	Mid-term	7	23	2045	Long-term
5	Burnt Well	I-10	EB	1,730,908	6	9	2031	Mid-term	6	24	2046	Long-term
6	Burnt Well	I-10	WB	1,440,870	6	9	2031	Mid-term	6	24	2046	Long-term
7	Texas Canyon	I-10	EB	889,674	6	9	2031	Mid-term	6	24	2046	Long-term
8	Texas Canyon	I-10	WB	873,148	6	9	2031	Mid-term	6	24	2046	Long-term
9	San Simon	I-10	EB	636,317	6	9	2031	Mid-term	6	24	2046	Long-term
10	San Simon	I-10	WB	595,558	6	9	2031	Mid-term	6	24	2046	Long-term
11	Mohawk	I-8	WB	504,340	5	10	2032	Mid-term	5	25	2047	Long-term
12	Mohawk	I-8	EB	371,013	5	10	2032	Mid-term	5	25	2047	Long-term
13	Sacaton	I-10	WB	1,198,371	4	11	2033	Long-term	4	26	2048	Long-term
14	Sacaton	I-10	EB	1,194,337	4	11	2033	Long-term	4	26	2048	Long-term
15	Canoa Ranch	I-19	NB	483,850	3	12	2034	Long-term	3	27	2049	Long-term
16	Canoa Ranch	I-19	SB	422,646	3	12	2034	Long-term	3	27	2049	Long-term
17	Haviland	I-40	EB	430,600	3	12	2034	Long-term	3	27	2049	Long-term
18	Haviland	I-40	WB	416,338	3	12	2034	Long-term	3	27	2049	Long-term
19	Painted Cliffs	I-40	Both	820,358	2	13	2035	Long-term	2	28	2050	Long-term
20	Meteor Crater	I-40	WB	835,983	1	14	2036	Long-term	1	29	2051	Long-term
21	Meteor Crater	I-40	EB	834,938	1	14	2036	Long-term	1	29	2051	Long-term
22	Bouse Wash	I-10	EB	1,090,157	0	15	2037	Long-term	0	30	2052	Long-term
23	Bouse Wash	I-10	WB	940,117	0	15	2037	Long-term	0	30	2052	Long-term
24	Sunset Point[3]	I-17	Both	1,360,114	0	15	2037	Long-term	0	30	2052	Long-term
25	Sentinel	I-8	EB	551,596	0	15	2037	Long-term	0	30	2052	Long-term
26	Sentinel	I-8	WB	268,145	0	15	2037	Long-term	0	30	2052	Long-term
27	McGuireville	I-17	SB	708,418	-1	16	2038	Long-term	-1	31	2053	Long-term
28	McGuireville	I-17	NB	605,261	-1	16	2038	Long-term	-1	31	2053	Long-term

Notes:
[1]Above ground facilities are assumed to generally include ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residences, pavement, and sidewalks.
[2]Below ground facilities are assumed to generally include water and wastewater facilities (septic tanks, leech field, pipes, etc.).
[3]Rest area under construction as of December 2022
[4]No data available due to lack of capture rates.

Prioritized Preservation/Rehabilitation Projects

The analysis of existing conditions, years since completed improvements, planned improvements, and input form ADOT staff were used to recommend a prioritized list of rehabilitation improvements for each rest area. **Table 3-3** summarizes this study's prioritized recommendations for rehabilitation projects through 2042.

Table 3-3. Prioritized Recommendations for Rehabilitation Projects

Priority Rank	Rest Area	Route	Travel Direction Served	Type of Rehabilitation Improvements
Short-Term (0-5 Years) Prioritized Recommendations				
1	Parks	I-40	EB & WB	Conversion to permanent truck parking only facility (includes removal of existing restroom buildings, rehabilitation of ramadas and pavement, installation of vaulted toilets/composting, high-mast lighting, and signage).
2	Christensen	I-17	EB & WB	Conversion to permanent truck parking only facility (includes removal of existing restroom buildings, rehabilitation of ramadas and pavement, installation of vaulted toilets/composting, high-mast lighting, and signage).
3	Hassayampa	US 60	Both	Structural, Mechanical, and Electrical Rehabilitation; Site Paving; ADA Improvements.
Mid-Term (6-10 Years) Prioritized Recommendations				
4	Salt River Canyon	US 60	Both	Structural Rehabilitation; Replace composting toilets; Site Paving.
5	Ehrenberg	I-10	EB	Rehabilitation of ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residence, pavement, and sidewalks
6	Ehrenberg	I-10	WB	Rehabilitation of ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residence, pavement, and sidewalks
7	Burnt Well	I-10	EB	Rehabilitation of ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residence, pavement, and sidewalks
8	Burnt Well	I-10	WB	Rehabilitation of ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residence, pavement, and sidewalks
9	Texas Canyon	I-10	EB	Rehabilitation of ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residence, pavement, and sidewalks

Priority Rank	Rest Area	Route	Travel Direction Served	Type of Rehabilitation Improvements
10	Texas Canyon	I-10	WB	Rehabilitation of ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residence, pavement, and sidewalks
11	San Simon	I-10	EB	Rehabilitation of ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residence, pavement, and sidewalks
12	San Simon	I-10	WB	Rehabilitation of ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residence, pavement, and sidewalks
13	Mohawk	I-8	WB	Rehabilitation of ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residence, pavement, and sidewalks
14	Mohawk	I-8	EB	Rehabilitation of ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residence, pavement, and sidewalks
Long-Term (11-20 Years) Prioritized Recommendations				
15	Sacaton	I-10	WB	Rehabilitation of ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residence, pavement, and sidewalks
16	Sacaton	I-10	EB	Rehabilitation of ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residence, pavement, and sidewalks
17	Canoa Ranch	I-19	NB	Rehabilitation of ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residence, pavement, and sidewalks
18	Canoa Ranch	I-19	SB	Rehabilitation of ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residence, pavement, and sidewalks
19	Haviland	I-40	EB	Rehabilitation of ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residence, pavement, and sidewalks
20	Haviland	I-40	WB	Rehabilitation of ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residence, pavement, and sidewalks
21	Painted Cliffs	I-40	Both	Rehabilitation of ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residence, pavement, and sidewalks

Priority Rank	Rest Area	Route	Travel Direction Served	Type of Rehabilitation Improvements
22	Meteor Crater	I-40	WB	Rehabilitation of ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residence, pavement, and sidewalks
23	Meteor Crater	I-40	EB	Rehabilitation of ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residence, pavement, and sidewalks
24	Bouse Wash	I-10	EB	Rehabilitation of ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residence, pavement, and sidewalks
25	Bouse Wash	I-10	WB	Rehabilitation of ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residence, pavement, and sidewalks
26	Sunset Point	I-17	Both	Rehabilitation of ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residence, pavement, and sidewalks
27	Sentinel	I-8	EB	Rehabilitation of ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residence, pavement, and sidewalks
28	Sentinel	I-8	WB	Rehabilitation of ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residence, pavement, and sidewalks
29	McGuireville	I-17	SB	Rehabilitation of ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residence, pavement, and sidewalks
30	McGuireville	I-17	NB	Rehabilitation of ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residence, pavement, and sidewalks

4 Rest Area Expansion

As mentioned previously, all but four rest area sites have been forecasted to have either truck or car parking deficiencies by 2042. Therefore, an evaluation and scoring criteria to help determine the prioritization order of parking expansion projects was developed. In addition, each site recommended for parking expansion was evaluated to determine if parking expansion is at the existing rest area. The following sections summarize the results of the parking expansion evaluation.

Truck and Car Parking Deficiencies

The forecast model developed by the American Association of State Highway and Transportation Officials (AASHTO) was used to project the anticipated number of parking spaces at each rest area through 2042. The complete result of that forecast is documented in *Working Paper 2: Forecast of future Conditions and Deficiencies.*

Similar to the changes experienced between the previous study (in 2011) and this study, such as changes in commercial driving hours requirements and advancements in transportation technologies, this study acknowledges the potential for further changes in the transportation industry over the next 20 years. Therefore, to anticipate potential changes and ensure ADOT's rest areas remain agile to changing conditions, this study based any potential parking expansions on forecast through 2032. Furthermore, this study is anticipated to be updated every 10 years, allowing for any potential changes in traffic patterns, technology advancements, economic development patterns, and commercial driving requirements to be captured as part of that update. Although this study identified deficiencies through 2042, this study recommends reevaluating any potential deficiencies again in 10 years. **Table 4-1** summarizes the forecasted parking deficiencies at rest areas in 2032.

Table 4-1. Forecasted Parking Deficiencies at Rest Areas in 2032

REST AREA (RA)	ROUTE	TRAFFIC DIRECTION SERVED	PARKING: EXCESS (+) / DEFICIENCIES (-) IN 2032	
			CARS[4]	TRUCKS[5]
Mohawk[3]	I-8	EB	3	-10
Mohawk[3]	I-8	WB	-6	-6
Sentinel	I-8	EB	-6	-9
Sentinel	I-8	WB	11	4
Ehrenberg	I-10	EB	-19	-38
Ehrenberg	I-10	WB	-2	-17
Bouse Wash	I-10	EB	2	-27
Bouse Wash	I-10	WB	-2	-21
Burnt Well	I-10	EB	-52	-56
Burnt Well	I-10	WB	-12	-18
Sacaton	I-10	EB	20	-13

REST AREA (RA)	ROUTE	TRAFFIC DIRECTION SERVED	PARKING: EXCESS (+) / DEFICIENCIES (-) IN 2032	
			CARS[4]	TRUCKS[5]
Sacaton	I-10	WB	6	-10
Texas Canyon	I-10	EB	-8	-62
Texas Canyon	I-10	WB	-4	-72
San Simon	I-10	EB	0	-38
San Simon	I-10	WB	14	-42
Haviland	I-40	EB	13	-31
Haviland	I-40	WB	9	-27
Parks[2]	I-40	EB	(1)	(1)
Parks[2]	I-40	WB	(1)	(1)
Meteor Crater	I-40	EB	-6	-31
Meteor Crater	I-40	WB	-3	-33
Painted Cliffs	I-40	Both	3	-18
McGuireville	I-17	NB	20	-6
McGuireville	I-17	SB	17	-16
Sunset Point[3]	I-17	Both	13	3
Christensen[2]	I-17	NB	(1)	(1)
Christensen[2]	I-17	SB	(1)	(1)
Canoa Ranch	I-19	NB	9	9
Canoa Ranch	I-19	SB	23	10

Notes:
[1] No data available
[2] Rest area permanently closed, but temporarily open to truck parking
[3] Rest area under construction, but temporarily open to truck parking
[4] FHWA vehicles C1-C3 and C5-C7
[5] FHWA vehicles C4 and C8-C13

Prioritized Parking Needs

AASHTO's Parking Forecast Constraints

In 2018 the U.S. Department of Transportation Federal Motor Carrier Safety Administrator (FMCSA) entered into the full compliance phase of the mandated "hours of service" (HOS) regulations for commercial vehicle operators. The AASHTO's parking forecast formula for rest areas was published in 2001 and has not been updated since that time. Therefore, the formula is limited in its ability to account for changes in truck parking demand since it was first published. Specifically, the AASHTO's formula does not account for nearby private parking facilities, nor does it account for site-specific parking patterns at

each rest area or changes in commercial driver's mandatory rest periods and driving hour restrictions. For instance, the formula anticipates that the commercial drivers would only remain at rest areas for 20 minutes per stop. However, commercial drivers are required to take a 30-minute break when they have driven for 8 consecutive hours. Furthermore, drivers are required to take a 10 consecutive hour off-duty break after 14 consecutive hours of driving, at which a minimum of 8 hours must be in their sleeper berth, if using.[1] Although, this study did adjust the formula to account for the required 30-minute break, many commercial drivers park overnight at rest areas to sleep or meet early morning deliveries at nearby locations.

Truck Parking Expansion Prioritization

To account for the limitations in AASHTO's formula and to ensure all characteristics related to truck parking demand are captured, a scoring and weighting criterion was developed to help identify the recommended planning period for rest area expansion projects. As summarized in Section 2, the categories included in the scoring criteria were 1) forecasted parking deficiencies in 2032, 2) locations with documented undesignated truck parking, 3) availability of private truck parking nearby, 4) rest area proximity to urbanized areas. In addition, a heavier weight was applied to undesignated parking locations and nearby private parking to counteract the formula's limitations.

Table *4-2* summarizes the results of the scoring and weighted criterion applied.

[1] https://www.fmcsa.dot.gov/regulations/hours-service/summary-hours-service-regulations#:~:text=Drivers%20must%20take%20a%2030,combination%20of%20these%20taken%20consecutively

Table 4-2. Truck Parking Expansion Prioritization Results

Priority Rank	Weighting Criteria			Truck Parking Deficiencies (2032)			Undesignated Truck Parking at/near Rest Areas			Truck Parking at Nearby Private Facilities			Distance to Urbanized Area (Miles)				
	Truck Parking Deficiency At Rest Areas = 1.0 Available Truck Parking At Private Facilities =1.5 Undesignated Parking At/Near Rest Areas = 1.25 Distance From Rest Areas to Urban Areas = 0.5			Description: The Number of Deficient Truck Parking Spaces at Each Rest Area in 2032	Scoring Criteria: -80 to -61 =4 -60 to -41 = 3 -41 to- 21 = 2 -20 to -1= 1 > 0 = 0	Weight Applied: 100%	Description: Documented Top 15 Undesignated Truck Parking Location (At or Within 20 Miles of Rest Area) *Source: 2019 Arizona Truck Parking Study*	Scoring Criteria: At Rest Area = 2 Nearby (within 20 miles) = 1 No = 0	Weight Applied: 150%	Description: The Number of Available Parking Spaces at Private Facilities within 30 Miles of Each Rest Area (Must Be within 2 Miles of an Intersection)	Scoring Criteria: 0 to 51 =0 51 to 220 = -1 221 to 440 = -2 441 to 660 = -3 661 to 700 = -4	Weight Applied: 125%	Description: The Distance from Existing Rest Areas to Urbanized Areas (Population >50,000) *Source: 2010 U.S. Census Bureau*	Scoring Criteria: 1 to 30 = 2 31 to 60 = 1 61 to 90 = 0	Weight Applied: 50%		
	Rest Area	Corridor	Direction Served	Spaces	Raw Score	Weighted Score	Undesignated Truck Parking	Raw Score	Weighted Score	Spaces	Raw Score	Weighted Score	Distance	Raw Score	Weighted Score	Total Raw Score	Total Weighted Score
1	Texas Canyon	I-10	WB	-72.4	4	4	Yes	2	3	314	-2	-2.5	16	2	1	6	5.50
2	Texas Canyon	I-10	EB	-62.5	4	4	Yes	2	3	314	-2	-2.5	16	2	1	6	5.50
3	Bouse Wash	I-10	EB	-27.0	2	2	Near	1	1.5	20	0	0	33	1	0.5	4	4.00
4	Bouse Wash	I-10	WB	-20.6	2	2	Near	1	1.5	20	0	0	33	1	0.5	4	4.00
5	San Simon	I-10	WB	-41.5	3	3	No	0	0	40	0	0	83	0	0	3	3.00
6	Sunset Point	I-17	Both	3.0	0	0	Yes	2	3	78	-1	-1.25	26	2	1	3	2.75
7	Ehrenberg	I-10	EB	-38.1	2	2	Yes	2	3	452	-3	-3.75	5	2	1	3	2.25
8	Haviland	I-40	EB	-30.7	2	2	Yes	2	3	465	-3	-3.75	25	2	1	3	2.25
10	Haviland	I-40	WB	-27.1	2	2	Yes	2	3	465	-3	-3.75	25	2	1	3	2.25
11	San Simon	I-10	EB	-37.9	2	2	No	0	0	40	0	0	83	0	0	2	2.00
12	McGuireville	I-17	NB	-15.7	1	1	No	0	0	0	0	0	8	2	1	3	2.00
13	McGuireville	I-17	SB	-1.8	1	1	No	0	0	0	0	0	8	2	1	3	2.00
14	Meteor Crater	I-40	EB	-30.6	2	2	Near	1	1.5	230	-2	-2.5	16	2	1	3	2.00
15	Meteor Crater	I-40	WB	-32.8	2	2	Near	1	1.5	230	-2	-2.5	16	2	1	3	2.00
16	Ehrenberg	I-10	WB	-16.8	1	1	Yes	2	3	452	-3	-3.75	5	2	1	2	1.25
17	Sentinel	I-8	EB	-8.8	1	1	No	0	0	0	0	0	70	0	0	1	1.00
18	Painted Cliffs	I-40	Both	-18.5	1	1	No	0	0	208	-1	-1.25	21	2	1	2	0.75
19	Mohawk	I-8	EB	-9.7	1	1	No	0	0	120	-1	-1.25	41	1	0.5	1	0.25
20	Mohawk	I-8	WB	-6.0	1	1	No	0	0	120	-1	-1.25	41	1	0.5	1	0.25
21	Burnt Well	I-10	EB	-55.8	3	3	No	0	0	532	-3	-3.75	26	2	1	2	0.25
22	Sentinel	I-8	WB	3.9	0	0	No	0	0	0	0	0	70	0	0	0	0.00
23	Canao Ranch	I-19	NB	9.4	0	0	No	0	0	90	-1	-1.25	29	2	1	1	-0.25
24	Canao Ranch	I-19	SB	10.3	0	0	No	0	0	90	-1	-1.25	29	2	1	1	-0.25
25	Sacaton	I-10	EB	-13.1	1	1	Near	1	1.5	679	-4	-5	13	2	1	0	-1.50
26	Sacaton	I-10	WB	-10.2	1	1	Near	1	1.5	679	-4	-5	13	2	1	0	-1.50
27	Burnt Well	I-10	WB	-17.7	1	1	No	0	0	532	-3	-3.75	26	2	1	0	-1.75

Prioritization Results and Considerations

The results of the truck parking expansion scores yield 14 of the 26 sites evaluated scoring above the mean score of 1.54. To assign a prioritized planning period to each rest area, a statistical analysis of the scores was completed. The 4 rest area sites scoring one standard deviation above the mean (or above 3.47) include Texas Canyon (Eastbound and Westbound) and Bouse Wash (Eastbound and Westbound).

Although, the eastbound Burnt Well rest area is among those rest areas with one of the highest forecasted deficiencies in 2032, it has a large quantity of private parking spaces nearby and was not located at or near a top undesignated parking location. However, based on existing capture rates and anticipated traffic growth, this eastbound site may require car parking expansion by 2032, as it is forecasted to be deficient 52 spaces.

Certain rest areas that scored above the mean but not above one standard deviation of the mean should still be evaluated for potential short-term improvements. For instance, despite having a large quantity of private parking nearby, the Haviland rest areas and the Ehrenberg rest areas experience large amounts of undesignated truck parking at the rest areas or nearby. In fact, Haviland was the number one location with undesignated truck parking in the state, with the second location occurring just 13 miles south of the rest area along I-40. Similarly, the Ehrenberg rest areas was among the top locations with undesignated parking, with two other locations located just east of the rest area. Meteor Crater was also one of the top locations with undesignated parking occurring.[2] However, both the Haviland and Meteor Crater rest areas were expanded since 2018 to include an additional 38 and 58 truck parking spaces, respectively. Therefore, the presence of undesignated truck parking at these locations may have changed.

Truck parking expansion at Eastbound Meteor Crater rest area. (Source: ADOT)

Feasibility Analysis

Each rest area site that was forecasted to have truck parking deficiencies by 2032 was evaluated to determine if and/or where additional truck parking spaces could be added. A tiered approach of implementing additional spaces was conducted for each site, beginning with the most cost-effective solution that would result in little to no disruptions to the existing ramps and facilities. The feasibility of expanding truck at each site was conducted in the following order:

1. **The ability to expand parking within the existing right-of-way (ROW) without interruptions to the existing ramps and facilities**
2. **Expand parking within the existing ROW by using minor ramp realignments as needed**

[2] https://azdot.gov/sites/default/files/2019/08/wp3-truck-parking-supply-demand-and-gaps.pdf

3. **Expand parking by using overflow parking lots within the existing ROW or on adjacent land where feasible**
4. **Expand parking by relocating ramps and ramp gores within the existing ROW**
5. **Expand parking by extending the existing ROW and relocating ramps and gores**
6. **Identify nearby safe parking locations within existing nearby interchanges ROW**
7. **Identify nearby Alternative Stopping Opportunities (ASO) for potential public-private partnerships**

Many of the rest area sites have already implemented additional truck parking since the previous study and are not able to accommodate more spaces without changes to the existing ramps or ROW. Only 4 sites (Eastbound Meteor Crater, Westbound Meteor Crater, Eastbound Texas Canyon, and Westbound Texas Canyon) were able to accommodate additional spaces without any ramp realignments. In addition, some the highest prioritized sites for parking expansion are restricted by adjacent topography (e.g., Texas Canyon). **Table 4-3** summarizes the feasibility analysis conducted for each site and provides the location and number of spaces that can be implemented at each site based on the type of expansion evaluated. To aid ADOT in the potential design and decision making for implementing each parking expansion project, conceptual schematics were developed to further detail the location, number of spaces, and type of expansion feasible at each rest area site. The conceptual schematics for parking expansion are included as **Appendix B**.

Table 4-3. Truck Parking Expansion Feasibility at Rest Areas

Rest Area	Route	Anticipated Number of Deficient Truck Parking Spaces in 2032	No New ROW				Expanded ROW	Notes
			Simple Expansion No/Minor Approach Roadway Work	Minor Roadway Realignment- Retain Existing Ramp Gores	Provide Overflow Parking Area Within Existing Rest Area	Major Ramp Relocation Along Freeway With New Ramp Gore or Gores	Expand Rest Area ROW-Major Ramp Relocation Along Freeway With New Ramp Gore or Gores	
			Number of Truck Parking Spaces Gained					
Mohawk EB	I-8	-10	3 (interior)	10 (interior + east)	20	20+ (east)	[x]	Overflow Area in SW corner
Mohawk WB	I-8	-6	3 (interior)	12 (interior + west)	N/A	12 (east)	[x]	
Sentinel EB	I-8	-9	0	0	N/A	0	TBD	
Sentinel WB	I-8	4	0	0	N/A	0	[x]	
Ehrenberg EB	I-10	-38	0	8 (east)	N/A	38	[x]	
Ehrenberg WB	I-10	-17	0	7 (west)	10	10 (east)	[x]	Overflow Area in NE corner
Bouse Wash EB	I-10	-27	0	0	N/A	7 (east)	TBD (To East)	
Bouse Wash WB	I-10	-21	0	0	N/A	6 (east)	TBD (To East)	
Burnt Well EB	I-10	-56	0	4	10	20 (east + west)	TBD	Overflow Area in SW corner
Burnt Well WB	I-10	-18	0	4	20	30 (east + west)	[x]	Overflow Area in NW corner
Sacaton EB	I-10	-13	0	6 (west) +7 (east)	N/A	>13 (west)	[x]	
Sacaton WB	I-10	-10	0	8 (east)	N/A	12 (east)	[x]	
Texas Canyon EB	I-10	-62	3	10 (west)	N/A	0	13 (east)	Adjacent rock outcropping restricts expansion
Texas Canyon WB	I-10	-72	2	7 (east)	N/A	0	0 - Terrain Restrictions	Adjacent rock outcropping restricts expansion
San Simon EB	I-10	-38	0	0	15	14 (west)	TBD (To West)	Overflow Area in SW corner
San Simon WB	I-10	-42	0	0	10	8 (west): 10 (east)	TBD (To East)	Overflow Area in NE corner
Haviland EB	I-40	-31	0	9 (west)	30 (TBD)	0	[x]	Overflow Area in SE corner
Haviland WB	I-40	-27	0	10 (east)	20 (TBD)	0	[x]	Overflow Area in SW corner
Meteor Crater EB	I-40	-31	0	0	25 (TBD)	0	[x]	Overflow Area in SW corner
Meteor Crater WB	I-40	-33	0	0	N/A	0	TBD (To East)	
Painted Cliffs	I-40	-18	0	0	N/A	0	TBD	Adjacent terrain restricts all expansion
McGuireville NB	I-17	-2	0	0	N/A	0	[x]	Overflow Area in east end
McGuireville SB	I-17	-16	0	4 (west)	15 (TBD)	0	[x]	Overflow Area between ponds and restroom building
Sunset Point	I-17	3	0	20 (south)	0	0	[x]	
Canoa Ranch NB	I-19	9	0	0	N/A	0	[x]	
Canoa Ranch SB	I-19	10	0	0	N/A	0	[x]	

Notes:
[x] *Not needed by 2032 if other options utilized*
TBD = Number of exact spaces to be determined during design
Interior = Spaces to be added within the interior of the existing truck parking spaces
East = Spaces to be added to the east end of the existing truck parking spaces
West = Spaces to be added to the west end of the existing truck parking spaces

Prioritized Parking Expansion Recommendations

The results of the parking expansion feasibility and the prioritized ranking analysis was relied on to determine the recommended planning horizon and the type of improvement for each site. **Table 4-4** summarizes this study's prioritized recommendations for parking expansions at rest areas through 2042.

Table 4-4. Prioritized Parking Expansion Recommendations

Priority Rank	Rest Area	Route	Travel Direction Served	Type of Parking Expansion	Number of Anticipated Truck Spaces Gained
Short-Term (0-5 Years) Prioritized Recommendations					
1	Texas Canyon	I-10	EB	Expand truck parking within the existing ROW using minor ramp realignment.	8
2	Texas Canyon	I-10	WB	Expand truck parking within the existing ROW using minor ramp realignment.	7
3	New Safe Truck Parking Only Location	I-10	Both	Construct a safe truck parking only location along I-10 between **Texas Canyon** and **San Simon** within an existing interchange or adjacent to the interstate as a pull-off (site to include high-mast lighting, vaulted toilets, and trash receptacles).	TBD
4	Bouse Wash	I-10	EB	Expand truck parking by expanding rest area ROW and relocating ramp along freeway with new ramp gore(s).	TBD
5	Bouse Wash	I-10	WB	Expand truck parking by expanding rest area ROW and relocating ramp along freeway with new ramp gore(s).	TBD
4	San Simon	I-10	WB	Expand truck parking by expanding rest area ROW and relocating ramp along freeway with new ramp gore(s).	TBD
6	Sunset Point	I-17	Both	Expand truck parking within the existing ROW using minor ramp realignment.	20
7	Ehrenberg	I-10	EB	Expand car and truck parking within the existing ROW by relocating ramp along freeway with new ramp gore(s).	38
8	Haviland	I-40	EB	Provide overflow parking area in SE corner of existing rest area.	30
9	Haviland	I-40	WB	Provide overflow parking area in SW corner of existing rest area.	20

Priority Rank	Rest Area	Route	Travel Direction Served	Type of Parking Expansion	Number of Anticipated Truck Spaces Gained
10	San Simon	I-10	EB	Expand truck parking by expanding rest area ROW and relocating ramp along freeway with new ramp gore(s).	TBD
Mid-Term (6-10 Years) Prioritized Recommendations					
11	Ehrenberg	I-10	WB	Expand truck parking within the existing ROW using minor ramp realignments and provide overflow parking area in SW corner.	17
12	McGuireville	I-17	SB	Provide overflow parking between the ponds and restroom building.	15
13	Meteor Crater	I-40	EB	Provide overflow parking area in the SW corner existing rest area.	25
14	Meteor Crater	I-40	SB	Expand truck parking by expanding rest area ROW and relocating ramp along freeway with new ramp gore(s).	TBD
15	Ehrenberg	I-10	WB	Expand truck parking within the existing ROW using minor ramp realignments and provide overflow parking in the NE corner	17
16	New Safe Truck Parking Only Location	I-40	Both	Construct a safe truck parking only location along I-40 between **Meteor Crater** and **Painted Cliffs** within an existing interchange or adjacent to the interstate as a pull-off (site to include high-mast lighting and trash receptacles).	TBD
17	Mohawk	I-8	EB	Expand truck parking within the existing ROW using minor ramp realignment.	10
18	Mohawk	I8	WB	Expand truck parking within the existing ROW using minor ramp realignment.	12
19	Burnt Well	I-10	EB	Expand car and truck parking by expanding rest area ROW and relocating ramp along freeway with new ramp gore(s).	TBD
Long-Term (11-20 Years) Prioritized Recommendations					
20	Sacaton	I-10	EB	Expand parking within the existing ROW by relocating ramp along freeway with new ramp gore(s).	13+
21	Sacaton	I-10	WB	Expand parking within the existing ROW by relocating ramp along freeway with new ramp gore(s).	12

Priority Rank	Rest Area	Route	Travel Direction Served	Type of Parking Expansion	Number of Anticipated Truck Spaces Gained
22	Burnt Well	I-10	WB	Provide overflow parking area in NW corner of existing rest area.	20

Notes:
TBD = Number of exact spaces to be determined during design.

5 Modernization

Potential modernization improvements were identified through reviews of peer state and industry best practices, as well as through coordination with ADOT staff and stakeholders. The improvements are intended to improve safety, sustainability, and provide expanded services to meet existing and future travelers' needs. This section summarizes the rest area improvements considered and the results of the prioritization criteria.

Rest Area Usage and Nearby Services

As documented in Section 2, each site was evaluated for the existence of nearby services (i.e., ASOs), its distance to urban areas, its distance to adjacent rest areas, and its anticipated annual usage in year 2042. These categories were chosen because they best reflect the anticipated traveler demand at each rest area. For instance, the annual usage in year 2042 was used to help identify rest areas that are anticipated to be used more heavily than other rest areas. Similarly, rest areas with limited nearby ASOs or rest areas are expected to have a higher demand or need to the traveling public. By prioritizing the more heavily used rest areas, or those most needed by travelers, this study seeks to maximize the benefit to the public by expanding or modernizing those rest areas first.

The results of the scoring and weighted criteria represent each rest area's anticipated demand for modernization and expanded amenities. A statistical analysis was then conducted based on the resulting weighted scores to determine under which planning horizon each site should be improved. Rest areas that are permanently closed or those that are only open to truck parking were not included as part of this analysis. **Table 5-1** summarizes the results of that evaluation.

Table 5-1. Rest Area Usage and Nearby Services Evaluation

				Usage			Nearby Services										
				Annual Usage Projection (2042)			Distance to Urban Areas			Distance to ASOs			Distance to Adjacent Rest Areas				
				Description	Criteria	Weight Applied	Description	Criteria	Weight Applied	Description	Criteria	Weight Applied	Description	Criteria	Weight Applied		
				Forecasted Annual Users in 2042	260K to 640K= 1 641K to 1M = 2 1.1M to 1.4M = 3 1.41M to 1.75M = 4	2	Distance to Urban Areas (mi)	1 to 30 = 1 31 to 60 = 2 61 to 90 = 3	0.75	Distance to Nearest ASO (mi)	1 to 15 = 1 16 to 30 = 2 31 to 60 = 3	1.25	Distance to Nearest Rest Area	1 to 60 = 1 61 to 120 = 2 121 to 180 = 3	1.5		
User Demand Rank	**Rest Area (RA)**	**Route**	**Direction Served**	**Usage**	**Score**	**Weighted Score**	**Distance**	**Score**	**Weighted Score**	**Distance**	**Score**	**Weighted Score**	**Distance**	**Score**	**Weighted Score**	**Total Weighted Score**	**Implementation Period**
1	Burnt Well	I-10	EB	1,730,908	4	8	26	1	0.8	8	1	1.3	34	1	1.5	11.50	Short-term
2	Burnt Well	I-10	WB	1,440,870	4	8	26	1	0.8	8	1	1.3	34	1	1.5	11.50	Short-term
3	Sacaton	I-10	EB	1,194,337	3	6	13	1	0.8	10	1	1.3	97	2	3.0	11.00	Short-term
4	Sacaton	I-10	WB	1,198,371	3	6	13	1	0.8	10	1	1.3	97	2	3.0	11.00	Short-term
5	Painted Cliffs	I-40	Both	820,358	2	4	21	1	0.8	1	1	1.3	123	3	4.5	10.50	Short-term
6	Bouse Wash	I-10	EB	1,090,157	3	6	33	2	1.5	7	1	1.3	34	1	1.5	10.25	Short-term
7	Salt River Canyon	US 60	Both	[1]		0	39	2	1.5	38	3	3.8	175	3	4.5	9.75	Mid-term
8	Canoa Ranch	I-19	NB	483,850	1	2	29	1	0.8	20	2	2.5	None	3	4.5	9.75	Mid-term
9	Canoa Ranch	I-19	SB	422,646	1	2	29	1	0.8	20	2	2.5	None	3	4.5	9.75	Mid-term
10	Ehrenberg	I-10	EB	1,227,525	3	6	5	1	0.8	1	1	1.3	48	1	1.5	9.50	Mid-term
11	Sunset Point	I-17	Both	1,360,114	3	6	8	1	0.8	10	1	1.3	27	1	1.5	9.50	Mid-term
12	Texas Canyon	I-10	EB	889,674	2	4	16	1	0.8	2	1	1.3	68	2	3.0	9.00	Mid-term
13	Texas Canyon	I-10	WB	873,148	2	4	16	1	0.8	2	1	1.3	68	2	3.0	9.00	Mid-term
14	Meteor Crater	I-40	EB	834,938	2	4	16	1	0.8	19	2	2.5	54	1	1.5	8.75	Mid-term
15	Meteor Crater	I-40	WB	835,983	2	4	16	1	0.8	19	2	2.5	54	1	1.5	8.75	Mid-term
16	Haviland	I-40	EB	430,600	1	2	25	1	0.8	13	1	1.3	159	3	4.5	8.50	Mid-term
17	Haviland	I-40	WB	416,338	1	2	25	1	0.8	13	1	1.3	159	3	4.5	8.50	Mid-term
18	San Simon	I-10	EB	636,317	1	2	83	3	2.3	7	1	1.3	68	2	3.0	8.50	Mid-term
19	San Simon	I-10	WB	595,558	1	2	83	3	2.3	7	1	1.3	68	2	3.0	8.50	Mid-term
20	Bouse Wash	I-10	WB	940,117	2	4	33	2	1.5	7	1	1.3	34	1	1.5	8.25	Mid-term
21	Ehrenberg	I-10	WB	732,369	2	4	5	1	0.8	1	1	1.3	48	1	1.5	7.50	Mid-term
22	McGuireville	I-17	SB	708,418	2	4	8	1	0.8	10	1	1.3	27	1	1.5	7.50	Mid-term
23	Sentinel	I-8	EB	551,596	1	2	70	3	2.3	14	1	1.3	28	1	1.5	7.00	Mid-term
24	Sentinel	I-8	WB	268,145	1	2	70	3	2.3	14	1	1.3	28	1	1.5	7.00	Mid-term
25	Hassayampa	US 60	Both	[1]		0	5	1	0.8	4	1	1.3	175	3	4.5	6.50	Long-term
26	Mohawk	I-8	EB	371,013	1	2	41	2	1.5	11	1	1.3	28	1	1.5	6.25	Long-term
27	Mohawk	I-8	WB	504,340	1	2	41	2	1.5	11	1	1.3	28	1	1.5	6.25	Long-term
28	McGuireville	I-17	NB	605,261	1	2	26	1	0.8	11	1	1.3	45	1	1.5	5.50	Long-term
	Notes: [1]No Data Available																

Usage and Nearby Services Ranking

Rest areas that had a score higher than one standard deviation (SD) above the mean score (9.78) were designated as short-term needs, while those within one SD above or below the mean (6.84 - 9.79) were designated as mid-term needs. Only four sites were designated as long-term needs (lower than one SD of the mean). The rest areas that were designated as short-term needs include:

- Burnt Well (EB)
- Burnt Well (WB)
- Sacaton (EB)
- Sacaton (WB)
- Painted Cliffs
- Bouse Wash (EB)

Although the eastbound Ehrenberg and Sunset Point rest areas were designated as mid-term modernization needs, these sites should be considered in the short-term planning horizon based on their forecasted usage, popularity, and truck parking demand.

Modernization and Expanded Amenities Evaluation

The improvements being considered were also evaluated to determine which improvements are needed and most likely to provide benefits to the traveling public. A qualitative scoring criterion was developed to rank and prioritize each improvement based on their ability to improve safety, increase sustainability, if they are among peer state and/or industry best practices, and feasibility of being implemented. The results of this qualitative scoring are summarized in **Table 5-2**.

Table 5-2. Modernization and Amenities Evaluation Results

Evaluation Category	Safety					Weight Applied = 2.0	Sustainability			Weight Applied = 1.5	Peer State and Industry Best Practice	Weight Applied = 1.5	Feasibility				Weight Applied = 1.75	Totals	
Proposed Improvement	Increased Visibility (Buildings, Parking Areas)	Potential to Reduce Crashes	Increased Access to Emergency Services	Potential Criminal Activity Deterrent	Potential to Reduce Driver Fatigue	Weighted Total	Energy Use Reduction	Water Use Reduction	Reduced Environmental Footprint	Weighted Total	Peer State Best Practice	Weighted Total	Supporting Infrastructure	Estimated Cost	Impacts to Existing Facilities	Environmental Impacts	Weighted Total	**Total Raw Score**	**Total Weighted Score**
LED Lighting	1	1	0	1	0	6	2	0	2	6.0	2	3	2	1	1	1	8.75	16	**23.8**
High-Mast Lighting	2	1	0	2	0	10	1	0	1	3.0	2	3	2	0	0	0	3.5	13	**19.5**
Security Cameras	2	0	0	2	0	8	0	0	0	0.0	2	3	1	1	1	1	7	11	**18.0**
Wireless Internet	0	1	2	0	1	8	0	0	0	0.0	1	1.5	1	1	1	1	7	9	**16.5**
Telephone Call Boxes	0	0	2	1	0	6	0	0	0	0.0	2	3	1	1	1	1	7	10	**16.0**
Digital Displays	0	1	0	0	1	4	0	0	0	0.0	1	1.5	1	1	1	1	7	7	**12.5**
Low-Flow Plumbing	0	0	0	0	0	0	0	2	2	6.0	2	3	1	0	-1	1	1.75	8	**10.8**
Solar Panels	0	0	0	0	0	0	2	0	2	6.0	1	1.5	0	-1	-1	0	-3.5	3	**4.0**
Family Restrooms	0	0	0	0	1	2	0	0	0	0.0	2	3	0	-1	-1	0	-3.5	0	**1.5**

Evaluation Ranking

The expanded services and amenities scoring evaluation resulted in LED Lighting and High-Mast Lighting being among those improvements with weighted scores higher that one SD above the mean score. In addition, family restrooms are the only improvement that scored lower than one SD below the mean. All other improvements were designated as being in the mid-term needs, as they scored within one SD of the mean score. The result of the qualitative analysis yields the following prioritization for modernizing rest areas.

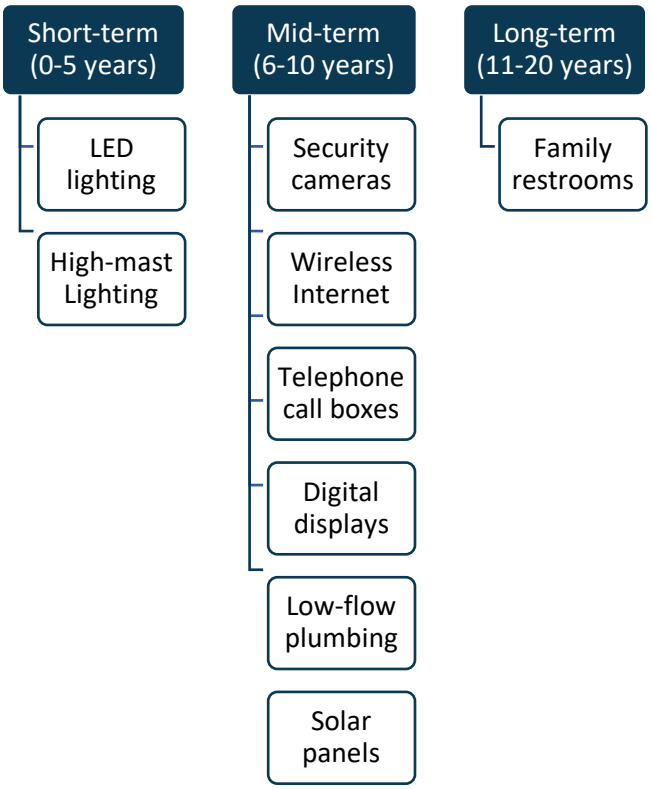


Figure 5-1. Modernization and Expanded Amenities Scoring Results

Stakeholder Survey Results

As stated previously, this study's TAC and stakeholders were engaged in a survey to further evaluate and rank the potential modernization and expanded amenities. The survey was developed to have four categories of improvements to rank. The first category was for all potential improvements considered, while the remaining categories were delineated between safety improvements, sustainability improvements, and expanded amenities. The stakeholder survey was distributed in December 2022 and received a total of 12 responses. Of those that responded, 66 percent ranked LED lighting as a top 3 improvement, while security cameras were ranked 58 percent of the time in the top 3. Conversely, digital displays were only ranked 16 percent of the time as a top 3 improvement. **Figure 5-2** presents the ranking results of all improvements included for consideration.

Rank	Improvement
1	LED Lighting
2	Security Cameras
3	Family Restrooms
4	Wireless Internet
5	High-Mast Lighting
6	Low-Flow Plumbing
7	Solar Panels
8	Telephone Call Boxes
9	Digital Displays

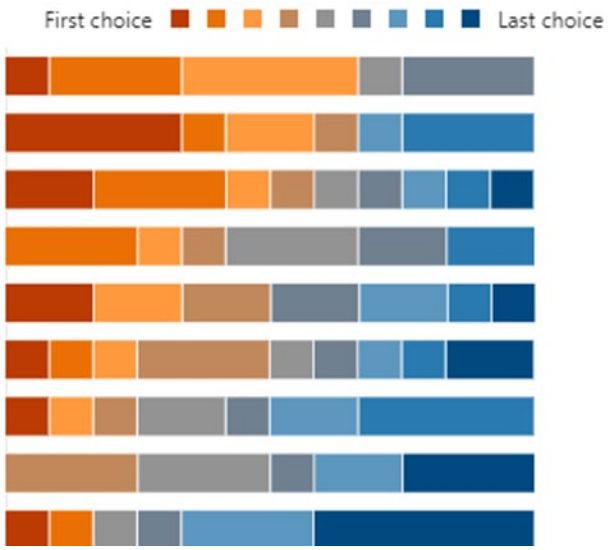


Figure 5-2. Stakeholder Survey Rankings (all improvements)

To further define each improvement's potential need, the improvements were sub-categorized to rank them amongst each other within their respective improvement type. Among the safety improvements considered, high-mast lighting was ranked first 44 percent of the time, while 33 percent of respondents ranked security cameras first. Among the sustainability improvements, solar panels were ranked first by all respondents. For the expanded amenities category, wireless internet was selected as a top 2 choice by 75 percent of respondents, while family restrooms were ranked in the top 2 by 50 percent of respondents. **Figure 5-3**, **Figure 5-4**, and **Figure 5-5** present the results of each sub-category's ranking.

Rank	Safety Improvement
1	High-Mast Lighting
2	Security Cameras
3	LED Lighting

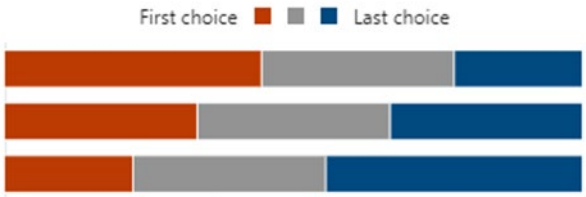


Figure 5-3. Stakeholder Survey Rankings (safety improvements)

Rank	Sustainability Improvement
1	Solar Panels
2	Low-Flow Plumbing

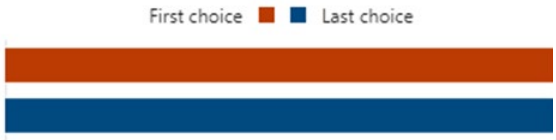


Figure 5-4. Stakeholder Survey Rankings (sustainability improvements)

Rank	Amenity Improvement
1	Wireless Internet
2	Family Restrooms
3	Digital Displays
4	Telephone Call Boxes

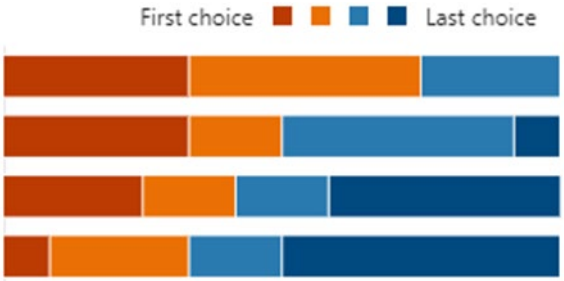


Figure 5-5. Stakeholder Survey Rankings (amenities)

Prioritized Modernization and Expanded Amenities

Based on the results from the usage and nearby services evaluation, as well as the modernization and expanded amenities scoring and ranking, the following modernization improvements and expanded amenities are recommended for implementation at high demand rest areas.

1. High-mast lighting
2. LED lighting
3. Security cameras

Any short-term improvements identified by this study as either a preservation/rehabilitation project or parking expansion project, should include high-mast lighting, LED lighting, and security cameras as part of the improvements. This study also recommends that as the broadband network gets extended throughout Arizona, wireless internet should be incorporated at rest areas with high usage or demand, or as part of other planned improvements. Wireless internet has the potential to be implemented at certain locations using rest area sponsorships or public-private partnerships (P3s), as documented in *Working Paper 2*.

Despite not having annual usage data for the Salt River Canyon rest area, this site was ranked 7th among those evaluated for traveler demand (**Table 2-2**). Through coordination with the San Carlos Apache Tribe, additional improvements (not all evaluated here) were proposed for the Salt River Canyon rest area. Improvements proposed by the Tribe include:

- Expanded Solar Panels
- Safety Improvements (e.g., security cameras, lighting, and hazard signing)
- Installation of Digital Cultural Displays
- Flash Flood Warning Signs for Salt River
- Wireless Internet
- Information Displays for nearby recreational activities and services

Since power and water access is very limited at this site, security cameras, wireless internet, expanded lighting, and digital displays are not currently feasible at the rest area. However, this study recommends flash flood warning signs for Salt River be installed, as well as static displays to highlight cultural information, recreational activities, and services related to the San Carlos Apache Tribe.

Table 5-3. Prioritized Modernization Recommendations

Priority Rank	Rest Area	Route	Travel Direction Served	Type of Modernization Improvements
Short-Term (0-5 Years) Prioritized Recommendations				
1	Various Locations	N/A	N/A	Install high-mast lighting, upgrade interior lighting with LED lights where applicable, and install security cameras as part of other short-term prioritized rehabilitation and/or expansion improvements (i.e., Texas Canyon, Bouse Wash, Sunset Point, Ehrenberg EB, Haviland, San Simon EB, Parks, and Christensen).
2	Salt River Canyon	US 60	Both	Install flash flood warning signs, static context-sensitive displays, high-mast lighting, LED lighting, and security cameras
3	Burnt Well	I-10	EB	Install high-mast lighting and install security cameras
4	Burnt Well	I-10	WB	Install high-mast lighting and install security cameras
5	Sacaton	I-10	EB	Install high-mast lighting, upgrade interior lighting with LED lights, and install security cameras
6	Sacaton	I-10	WB	Install high-mast lighting, upgrade interior lighting with LED lights, and install security cameras
7	Painted Cliffs	I-40	Both	Install high-mast lighting, upgrade interior lighting with LED lights, and install security cameras
Mid- and Long-Term (6-20 Years) Prioritized Recommendations				
8	Various Locations	N/A	N/A	Implement **wireless internet** at rest areas with high utilization/demand or at locations near the state border (potential to use rest area sponsorships or P3s)
9	Various Locations	N/A	N/A	Installation of **solar panels** rest areas with high utilization/demand to offsite energy use and long-term operations cost (i.e., Burnt Well, Sacaton, Painted Cliffs, Bouse Wash, Ehrenberg, and Sunset Point)
10	Various Locations	N/A	N/A	Construction of **family restrooms** (within or separate from existing restrooms) and replacement of existing plumbing with **low-flow plumbing** as part of other planned rehabilitation improvements

Priority Rank	Rest Area	Route	Travel Direction Served	Type of Modernization Improvements
11	Various Locations	N/A	N//A	Installation of **telephone call boxes** at rest area locations more than 30 miles from an urban area (i.e., Bouse Wash, San Simon, Sentinel, and Mohawk)
12	Various Locations	N/A	N/A	Install **digital displays** to highlight weather and traffic conditions, as well as context-sensitive information related to the surrounding region. Should be installed at rest areas located along Arizona's border and regions with high-frequency of severe weather (i.e., Ehrenberg, Haviland, San Simon, Painted Cliffs, and Sacaton).

6 Overall Project Prioritization

The evaluation and prioritization process for identifying potential rehabilitation, expansion, and modernization projects yields separate prioritized lists. Therefore, this study evaluated the recommendations from each evaluation to identify if any of the improvements could be combined into one project. Doing so, may help to create a more efficient process for improvements, while also reducing ADOT's design and construction costs. Although, the ranking for each project type differs, if rest areas were identified as having a short-term need in more than one category, then those projects should be combined. Furthermore, if a rest area project was ranked just outside the short-term horizon, but a separate project at the same rest area was identified within short-term horizon, then those projects were also combined. Similarly, the same approach was used for mid- and long-term recommended priorities. The following sections and tables summarize the overall recommended priorities for all ADOT managed rest areas.

Short-Term (0-5 years) Priorities

Table 6-1 summarizes this study's overall short-term prioritized recommendations through 2027.

Table 6-1. Overall Short-Term Priortized Recommendations

Priority Rank	Rest Area	Route	Travel Direction Served	Type of Improvements
Short-Term (0-5 Years) Prioritized Recommendations				
1	Texas Canyon	I-10	EB & WB	• Expand truck parking within the existing ROW using minor ramp realignment; • Install high-mast lighting, upgrade interior lighting with LED lights, and install security cameras; • Rehabilitation of ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residence, pavement, and sidewalks.
2	New Safe Truck Parking Only Location	I-10	Both	• Construct a safe truck parking only location along I-10 between **Texas Canyon** and **San Simon** within an existing interchange or adjacent to the interstate as a pull-off (site to include gravel lot, high-mast lighting, and trash receptacles).
3	Bouse Wash	I-10	EB & WB	• Expand truck parking by expanding rest area ROW and relocating ramp along freeway with new ramp gore(s); • Install high-mast lighting, upgrade interior lighting with LED lights, and install security cameras.
4	Parks	I-40	EB & WB	• Conversion to permanent truck parking only facility (includes removal of existing restroom buildings, rehabilitation of ramadas and pavement, installation of vaulted toilets/composting, high-mast lighting, and signage).
5	Christensen	I-17	EB & WB	• Conversion to permanent truck parking only facility (includes removal of existing restroom buildings, rehabilitation of ramadas and pavement, installation of vaulted toilets/composting, high-mast lighting, and signage).
6	Salt River Canyon	US 60	Both	• Install flash flood warning signs, static context-sensitive displays;

Priority Rank	Rest Area	Route	Travel Direction Served	Type of Improvements
Short-Term (0-5 Years) Prioritized Recommendations				
				• Structural Rehabilitation; Replace composting toilets; Site Paving.
7	Hassayampa	US 60	Both	• Structural, Mechanical, and Electrical Rehabilitation, Site Paving, and ADA improvements; • Install high-mast lighting, upgrade interior lighting with LED lights, and install security cameras
8	San Simon	I-10	EB & WB	• Expand truck parking by expanding rest area ROW and relocating ramp along freeway with new ramp gore(s); • Install high-mast lighting, upgrade interior lighting with LED lights, and install security cameras. • Rehabilitation of ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residence, pavement, and sidewalks
9	Ehrenberg	I-10	EB & WB	• Rehabilitation of ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residence, pavement, and sidewalks; • Install high-mast lighting, upgrade interior lighting with LED lights, and install security cameras. **EB:** • Expand car and truck parking within the existing ROW by relocating ramp along freeway with new ramp gore(s). **WB:** • Expand truck parking within the existing ROW using minor ramp realignments and provide overflow parking area in NE corner.
10	Haviland	I-40	EB & WB	• Install high-mast lighting, upgrade interior lighting with LED lights, and install security cameras. **EB:** • Provide overflow parking area in SE corner of existing rest area. **WB:** • Provide overflow parking area in SW corner of existing rest area.

Priority Rank	Rest Area	Route	Travel Direction Served	Type of Improvements
Short-Term (0-5 Years) Prioritized Recommendations				
11	Sunset Point	I-17	Both	• Expand truck parking within the existing ROW using minor ramp realignment.

Mid-Term (6-10 years) Priorities

Table *6-2* summarizes this study's overall mid-term prioritized recommendations between years 2028 and 2032.

Table 6-2. Overall Mid-Term Prioritized Recommendations

Priority Rank	Rest Area	Route	Travel Direction Served	Type of Improvements
Mid-Term (6-10 Years) Prioritized Recommendations				
12	Burnt Well	I-10	EB & WB	• Rehabilitation of ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residence, pavement, and sidewalks; • Install high-mast lighting and security cameras; **EB:** • Expand car and truck parking by expanding rest area ROW and relocating ramp along freeway with new ramp gore(s). **WB:** • Provide overflow parking area in NW corner of existing rest area.
13	Mohawk	I-8	EB & WB	• Rehabilitation of ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residence, pavement, and sidewalks; • Install high-mast lighting, upgrade interior lighting with LED lights, and install security cameras • Expand truck parking within the existing ROW using minor ramp realignment.

Priority Rank	Rest Area	Route	Travel Direction Served	Type of Improvements
Mid-Term (6-10 Years) Prioritized Recommendations				
14	McGuireville	I-17	NB	• Install high-mast lighting, upgrade interior lighting with LED lights, and install security cameras **SB:** • Provide overflow parking between the ponds and restroom building.
15	Meteor Crater	I-40	EB & WB	• Install security cameras **EB:** • Provide overflow parking area in the SW corner existing rest area. **WB:** • Expand truck parking by expanding rest area ROW and relocating ramp along freeway with new ramp gore(s).
16	New Safe Truck Parking Only Location	I-40	Both	• Construct a safe truck parking only location along I-40 between **Meteor Crater** and **Painted Cliffs** within an existing interchange or adjacent to the interstate as a pull-off (site to include gravel lot, high-mast lighting, and trash receptacles).
17	Various Locations	N/A	N/A	• Implement **wireless internet** at rest areas with high utilization/demand or at locations near the state border (potential to use rest area sponsorships or P3s)
18	Various Locations	N/A	N/A	• Installation of **solar panels** rest areas with high utilization/demand to offsite energy use and long-term operations cost (i.e., Burnt Well, Sacaton, Painted Cliffs, Bouse Wash, Ehrenberg, and Sunset Point)

Long-Term (11-20) years) Priorities

Table 6-3 summarizes this study's overall long-term prioritized recommendations between years 2033 and 2042.

Table 6-3. Overall Long-Term Prioritized Recommendations

Priority Rank	Rest Area	Route	Travel Direction Served	Type of Improvements
Long-Term (11-20 Years) Prioritized Recommendations				
19	Sacaton	I-10	EB & WB	• Rehabilitation of ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residence, pavement, and sidewalks; • Install high-mast lighting, security cameras, wireless internet, family restrooms, solar panels, and upgrade interior lighting with LED lights. • Expand parking within the existing ROW by relocating ramp along freeway with new ramp gore(s).
20	Painted Cliffs	I-40	Both	• Rehabilitation of ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residence, pavement, and sidewalks; • Install high-mast lighting, security cameras, wireless internet, family restrooms, solar panels, and upgrade interior lighting with LED lights.
21	Canoa Ranch	I-19	NB & SB	• Rehabilitation of ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residence, pavement, and sidewalks; • Install high-mast lighting, security cameras, wireless internet, family restrooms, solar panels, and upgrade interior lighting with LED lights.
22	Haviland	I-40	EB & WB	• Rehabilitation of ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residence, pavement, and sidewalks; • Install wireless internet, family restrooms, and solar panels.
23	Meteor Crater	I-40	EB & WB	• Rehabilitation of ramadas, restroom building and fixtures, electrical, well pump house, caretaker's residence, pavement, and sidewalks; • Install wireless internet, family restrooms, and solar panels.

Appendix A - Water Deficiency Calculations

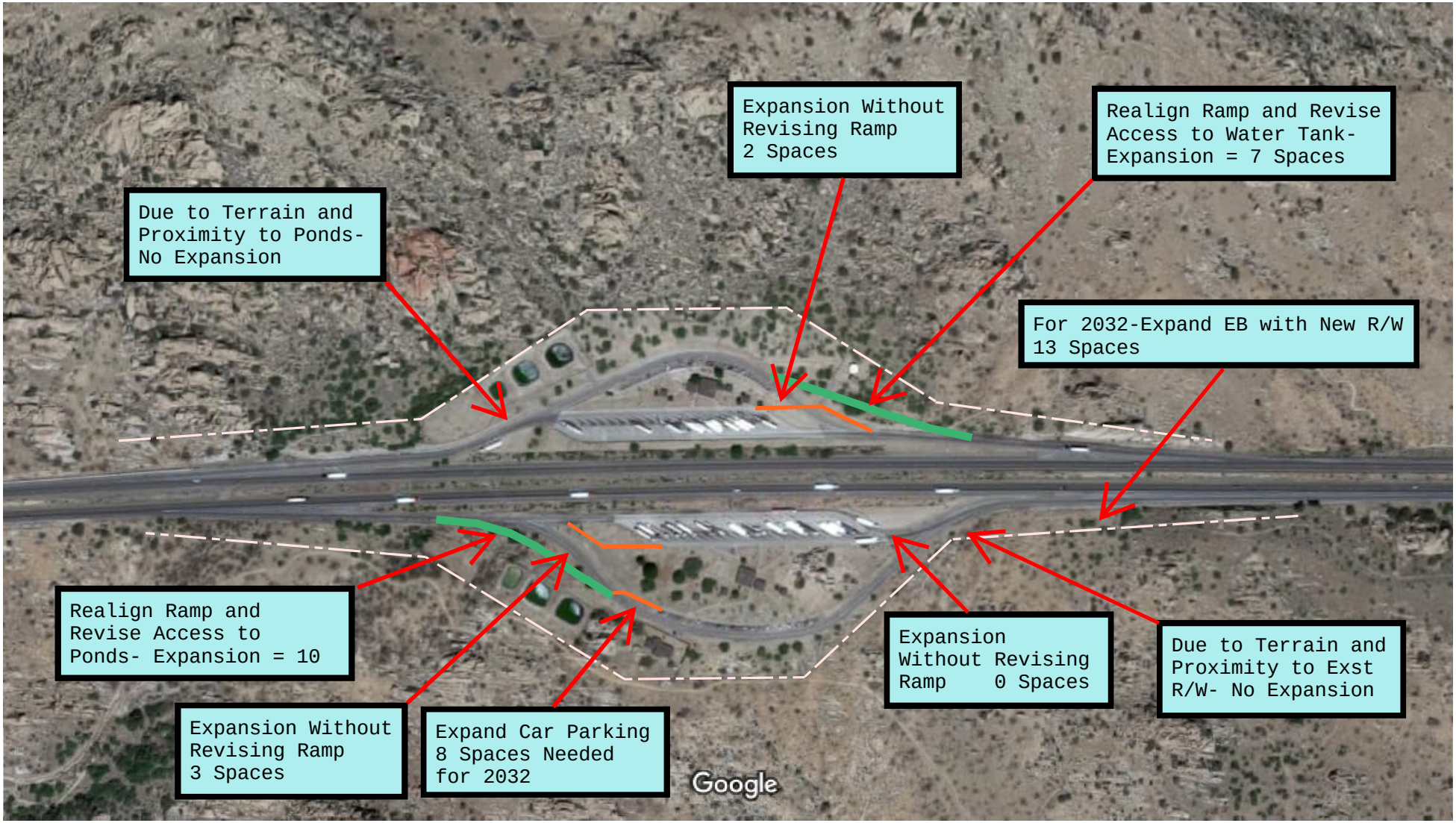
REST AREA (RA)	ROUTE	PEAK HOUR TRAFFIC PERCENT (K-Factor %)	AVERAGE DAILY WATER USE (gal/day)[1]	2022 PEAK HOUR WATER USE (gal/hour)	2027 PREDICTED PEAK HOUR WATER USE (gal/hr)	2032 PREDICTED PEAK HOUR WATER USE (gal/hr)	2042 PREDICTED PEAK HOUR WATER USE (gal/hr)	CALCULATED WATER NEED: PEAK HOURLY DEMAND[4] (gallons/hour)				PUMP CAPACITY (gallons/ minute)[2]	PUMP CAPACITY (gallons/hour)	WATER EXCESS (+) / DEFICIENCIES (-) (gallons/hour)			
								2022	2027	2032	2042			2022	2027	2032	2042
Burnt Well	I-10	7%	6,201	434	494	562	727	4,919	5,576	6,348	8,212	20	1,200	766	706	638	473
Sacaton	I-10	9%	4,876	439	489	544	674	4,033	4,492	4,993	6,195	[5]	-	-	-	-	-
Painted Cliffs	I-40	6%	1,608	96	112	130	174	1,178	1,365	1,584	2,124	20	1,200	1,104	1,088	1,070	1,026
Canoa Ranch	I-19	8%	-	-	-	-	-	-	-	-	-	[5]	-	-	-	-	-
Salt River Canyon[6]	US 60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ehrenberg	I-10	12%	3,578	429	488	556	719	3,030	3,440	3,912	5,074	20	1,200	771	712	644	481
Sunset Point	I-17	7%	6,943	486	543	607	758	2,256	2,526	2,818	3,521	20	1,200	714	657	593	442
Texas Canyon	I-10	9%	4,122	371	421	479	617	2,751	3,124	3,542	4,564	20	1,200	829	779	721	583
Meteor Crater	I-40	7%	4,054	284	326	374	492	2,505	2,865	3,282	4,326	20	1,200	916	874	826	708
Haviland	I-40	6%	915	55	63	72	95	1,269	1,462	1,668	2,193	20	1,200	1,145	1,137	1,128	1,105
Mazatzal[3]	SR 87	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
San Simon	I-10	7%	2,454	172	195	222	288	1,914	2,176	2,476	3,189	20	1,200	1,028	1,005	978	912
Bouse Wash	I-10	11%	5,776	635	724	826	1,074	3,115	3,552	4,043	5,256	20	1,200	565	476	374	126
McGuireville	I-17	11%	4,652	512	556	604	714	2,443	2,655	2,877	3,401	20	1,200	688	644	596	486
Hassayampa	US 60	7%	1,018	71	77	82	95	-	-	-	-	20	1,200	1,129	1,123	1,118	1,105
Sentinel	I-8	8%	3,296	264	297	336	427	1,313	1,486	1,659	2,122	20	1,200	936	903	864	773
Mohawk	I-8	7%	2,826	198	221	247	309	1,461	1,626	1,820	2,266	20	1,200	1,002	979	953	891
Parks[4]	I-40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Christensen[4]	I-17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
[1]Calculated average daily use based on daily totals from November 2022
[2]Maximum allowable gallons per minute per ADOT
[3]Rest area currently closed
[4]Rest area closed but open to truck parking
[5]Pump capacity not available because rest area uses city water
[6]Rest area does not use potable water

Appendix B – Conceptual Schematics of Rest Area Parking Expansion

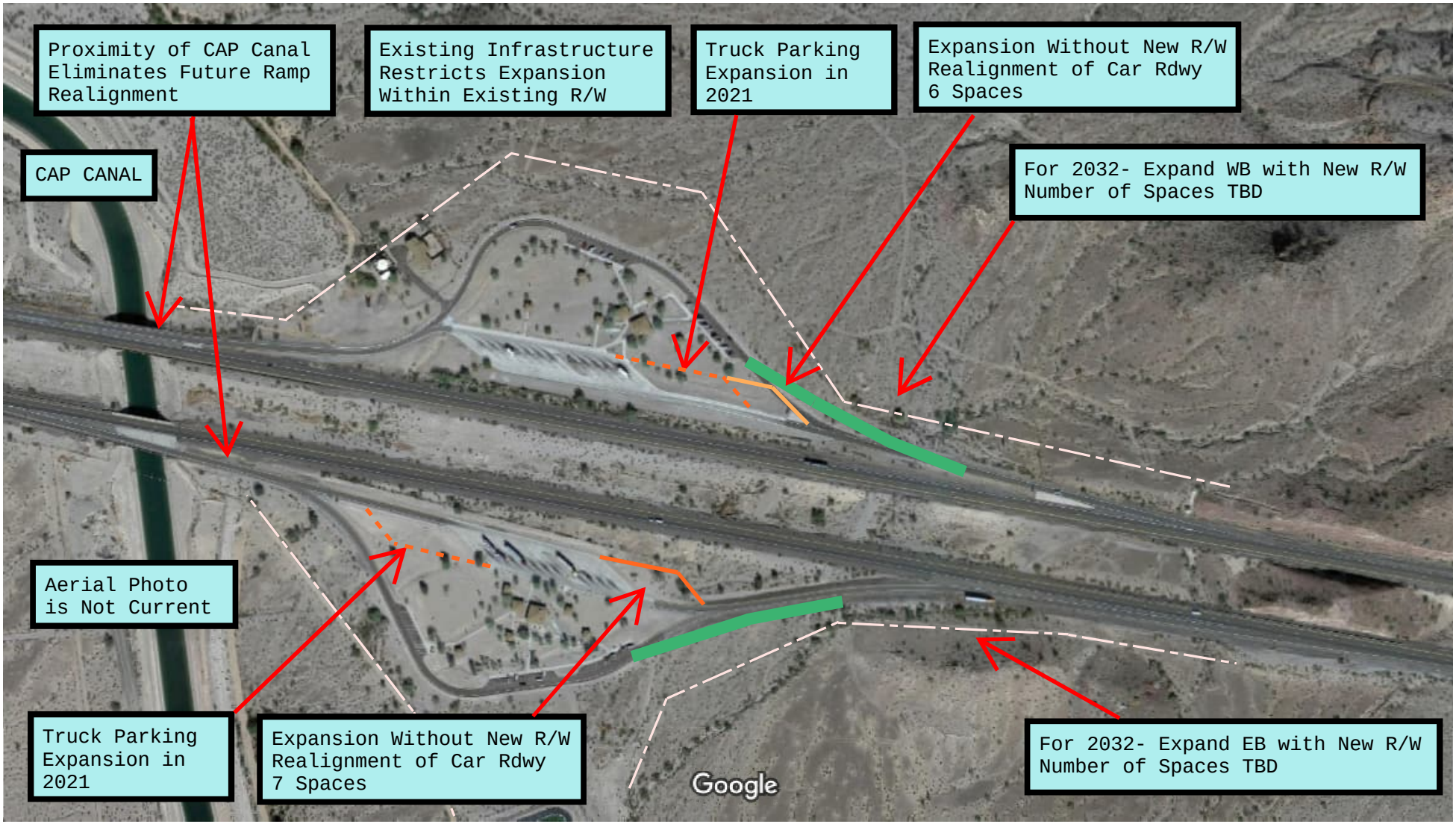
Google Maps

TEXAS CANYON REST AREAS PARKING EXPANSION



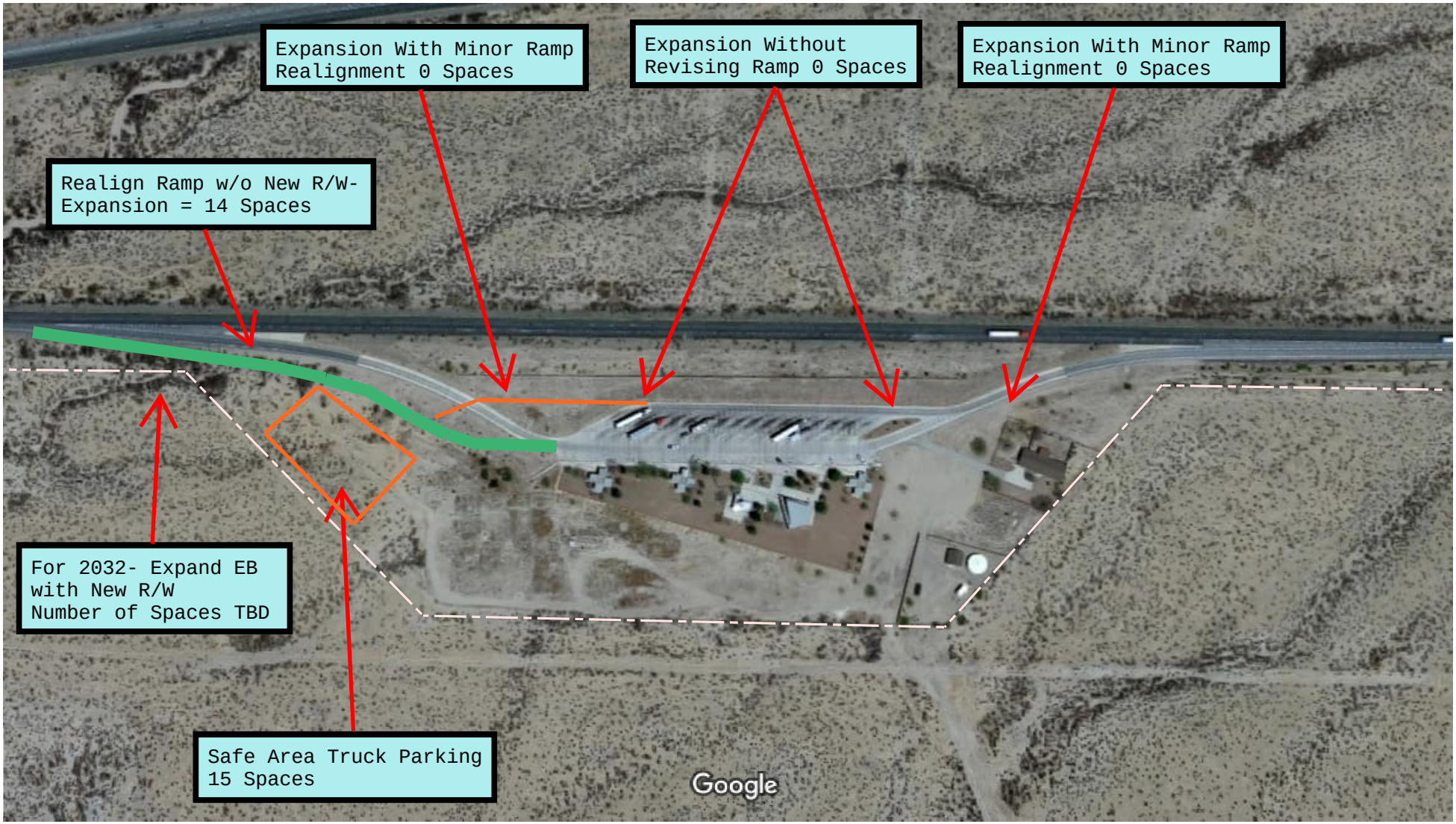
Google Maps

BOUSE WASH REST AREA PARKING EXPANSION



Google Maps

SAN SIMON (EB) REST AREA PARKING EXPANSION

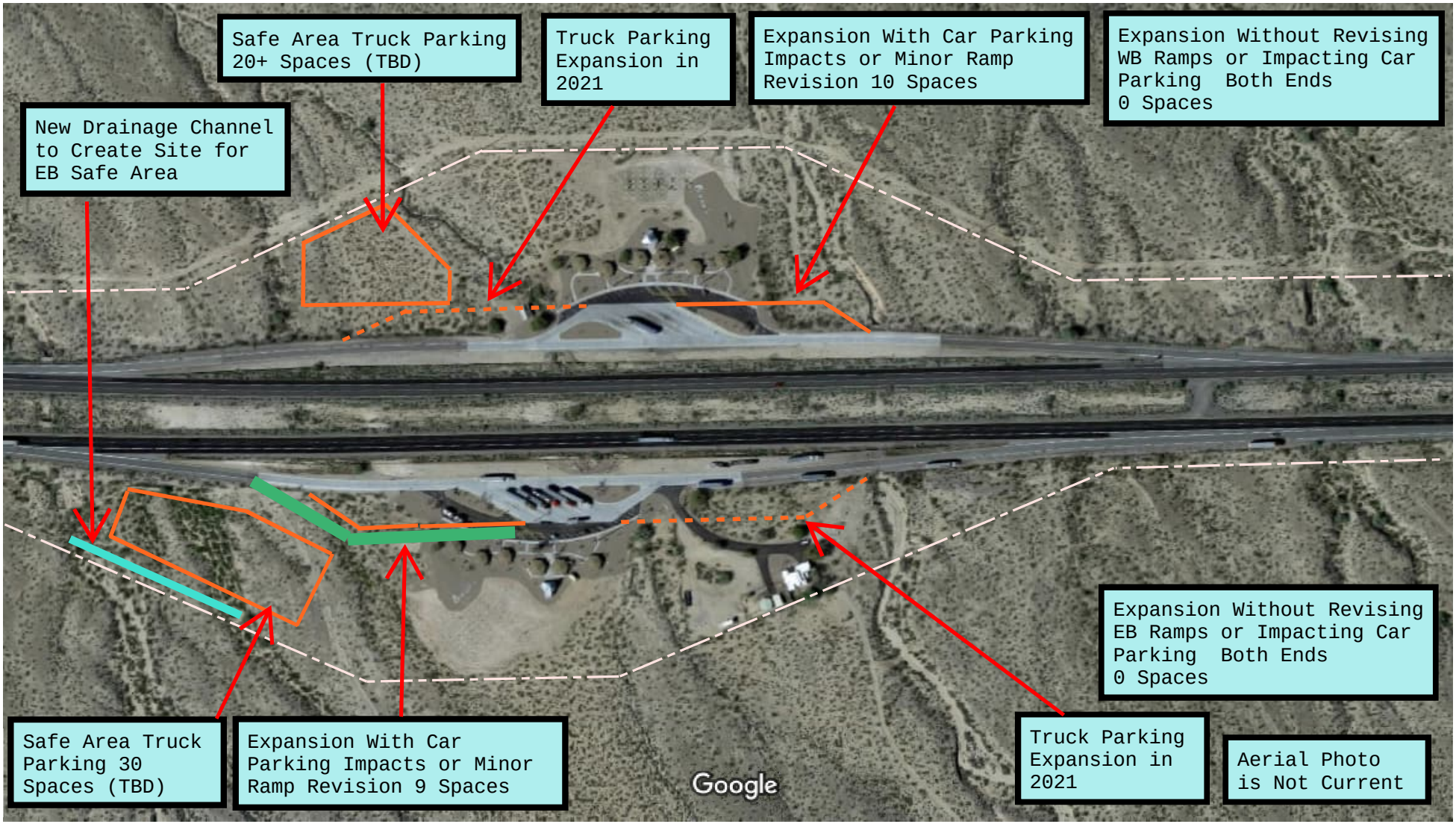


Google Maps

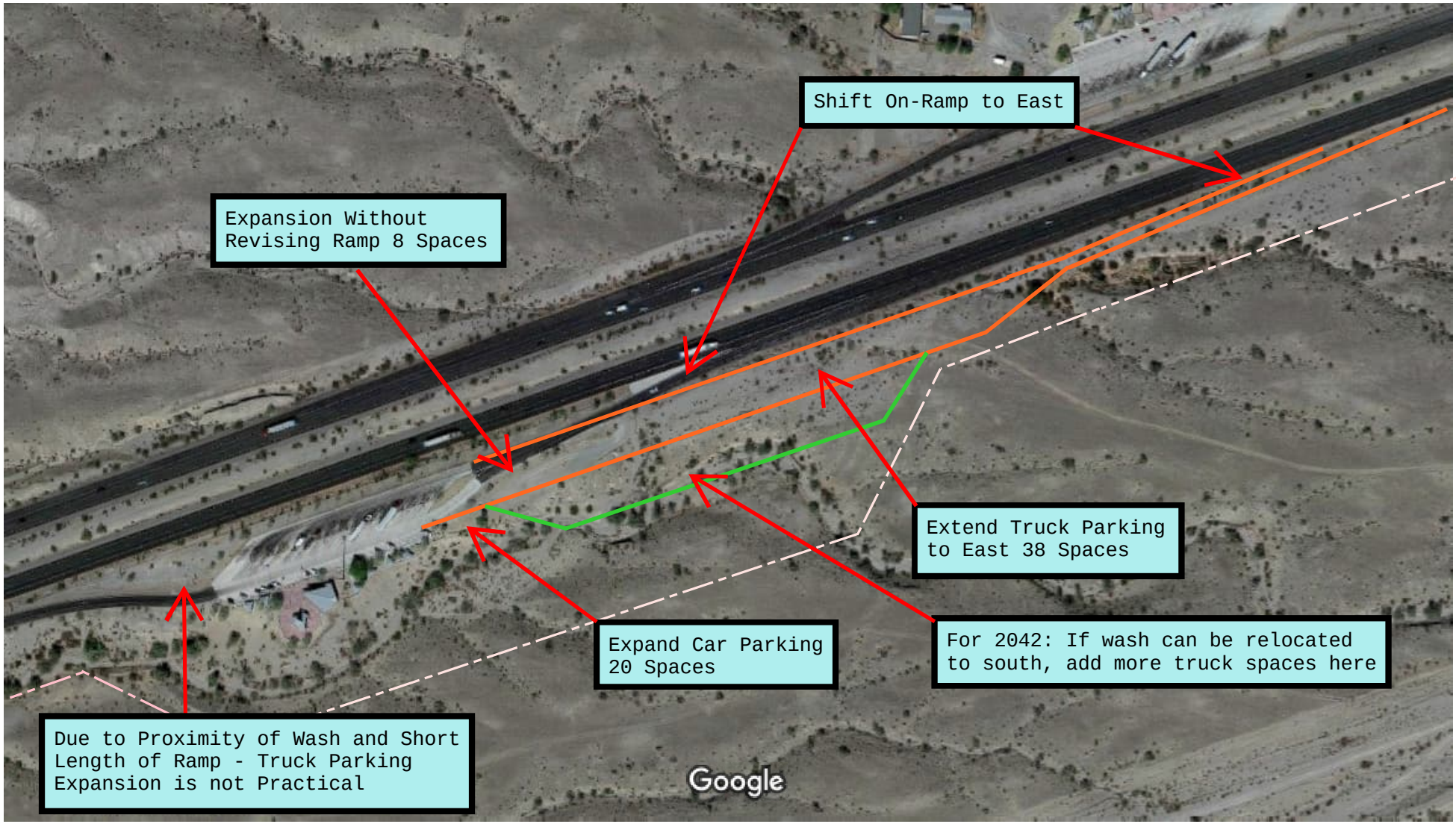
SAN SIMON (WB) REST AREA PARKING EXPANSION

Google Maps

HAVILAND REST AREAS PARKING EXPANSION

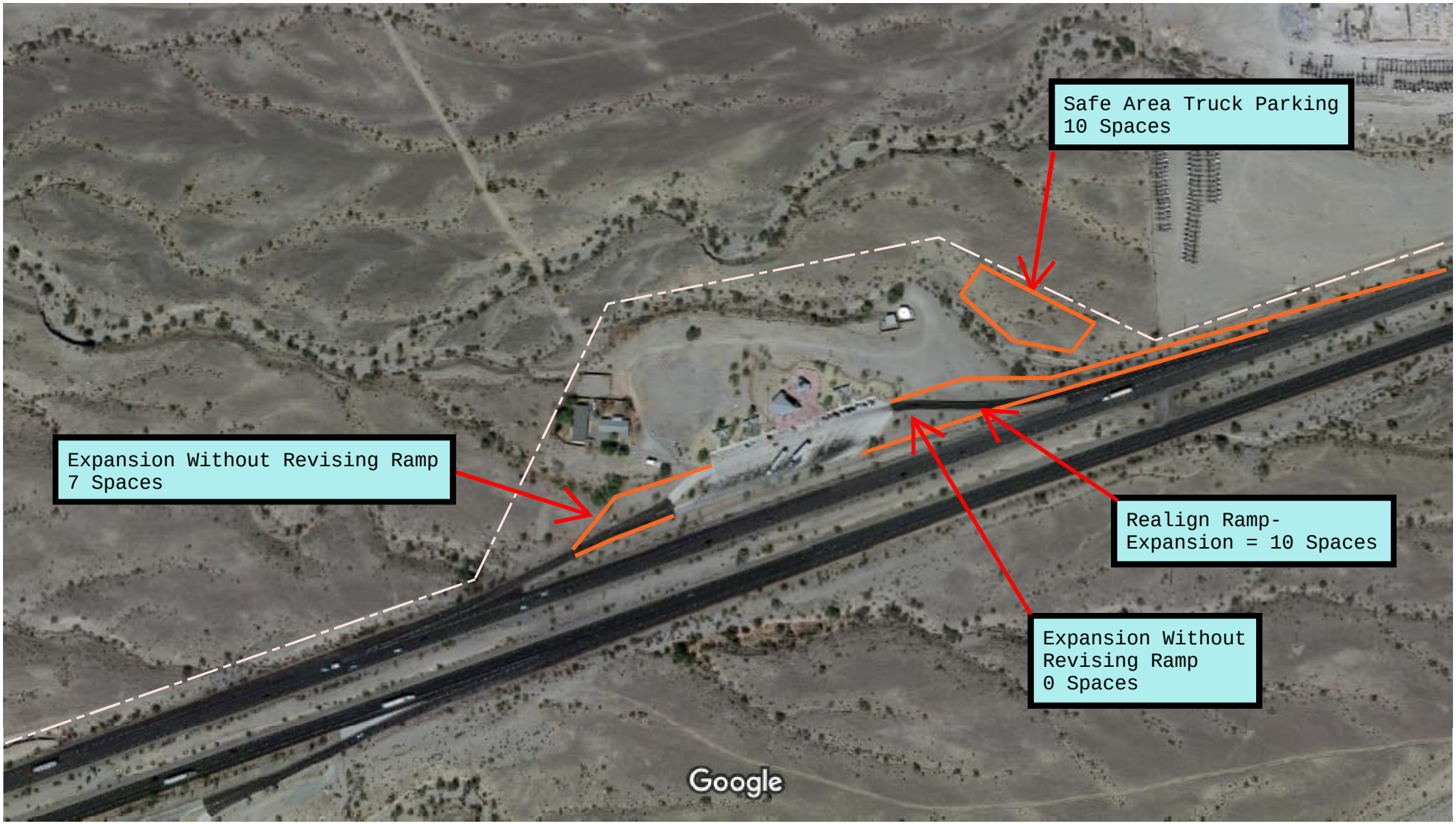


EHRENBERG (EB) REST AREA PARKING EXPANSION



Google Maps

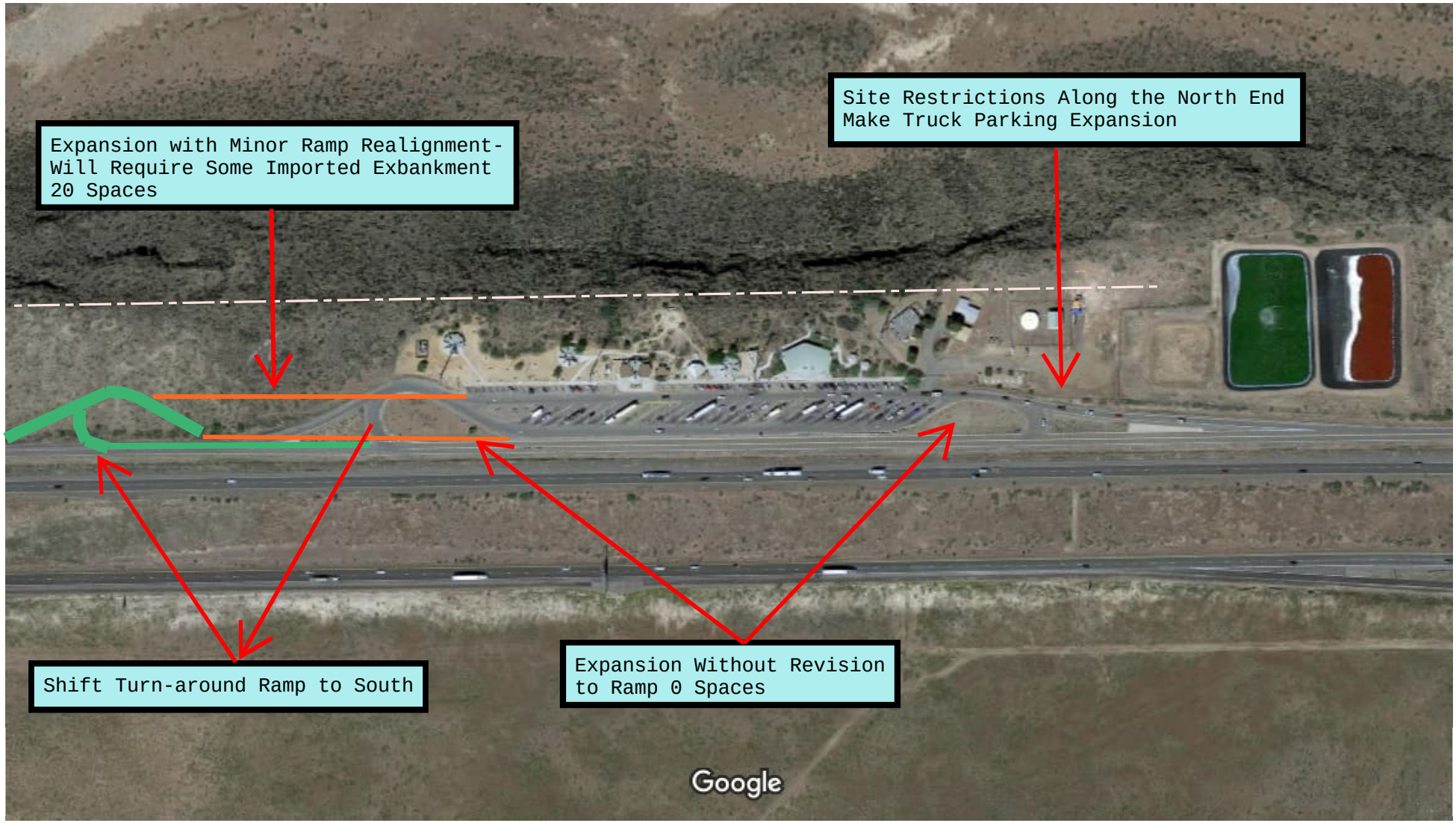
EHRENBERG (WB) REST AREA PARKING EXPANSION



 200 ft

Google Maps

SUNSET POINT REST AREA PARKING EXPANSION



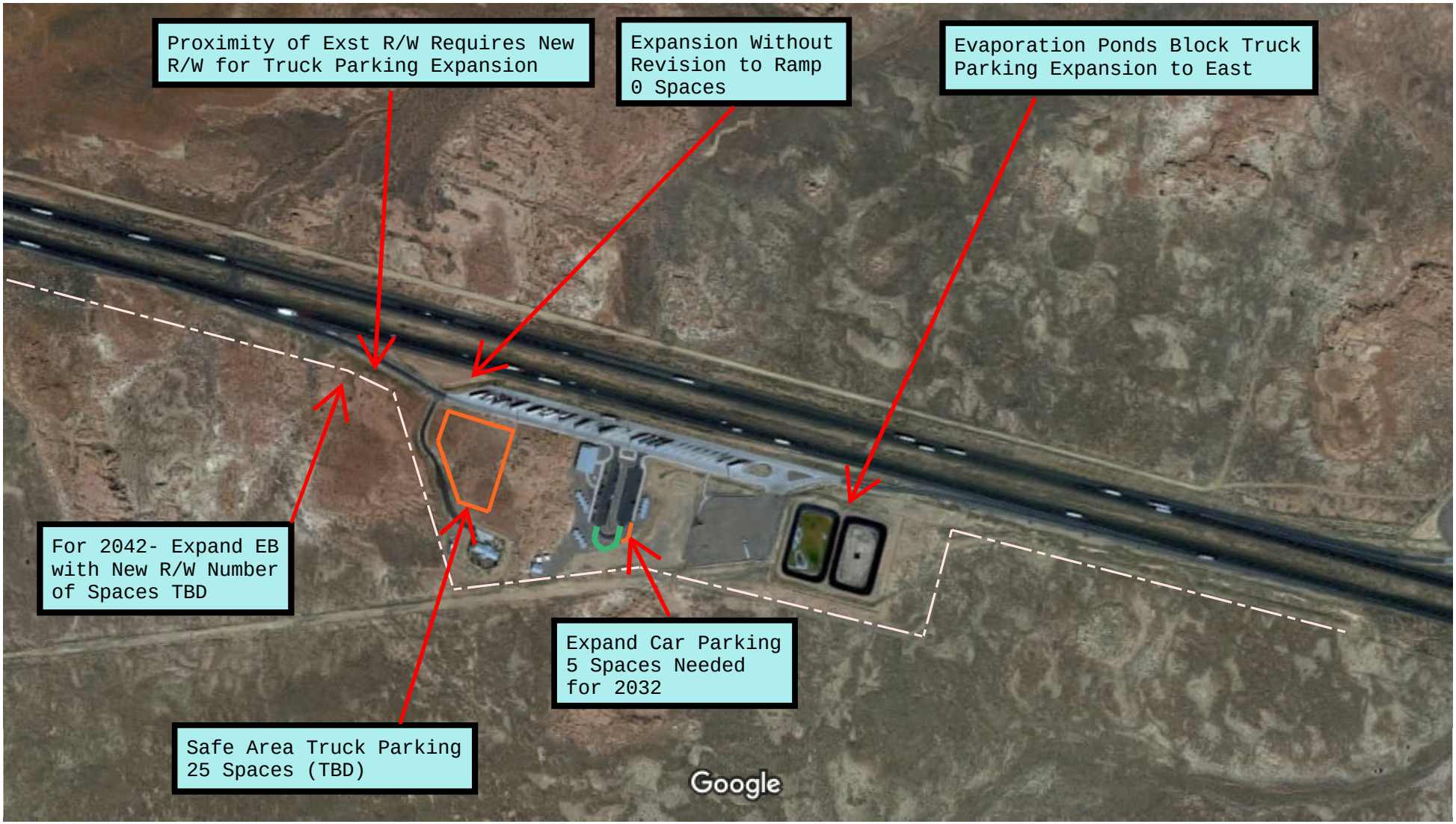
Google Maps

PAINTED CLIFFS REST AREAS PARKING EXPANSION

 200 ft

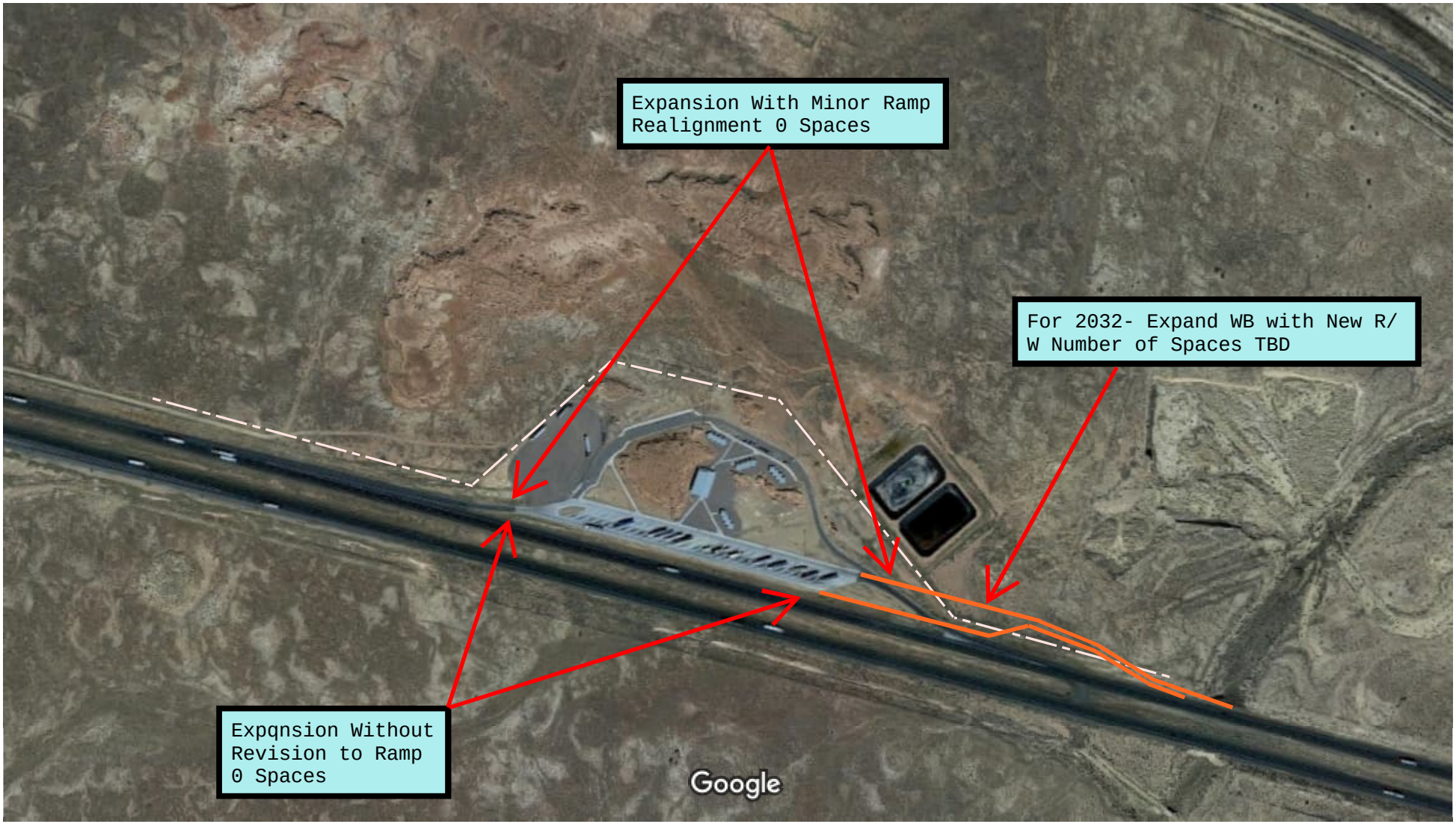
Google Maps

METEOR CRATER (EB) REST AREA PARKING EXPANSION



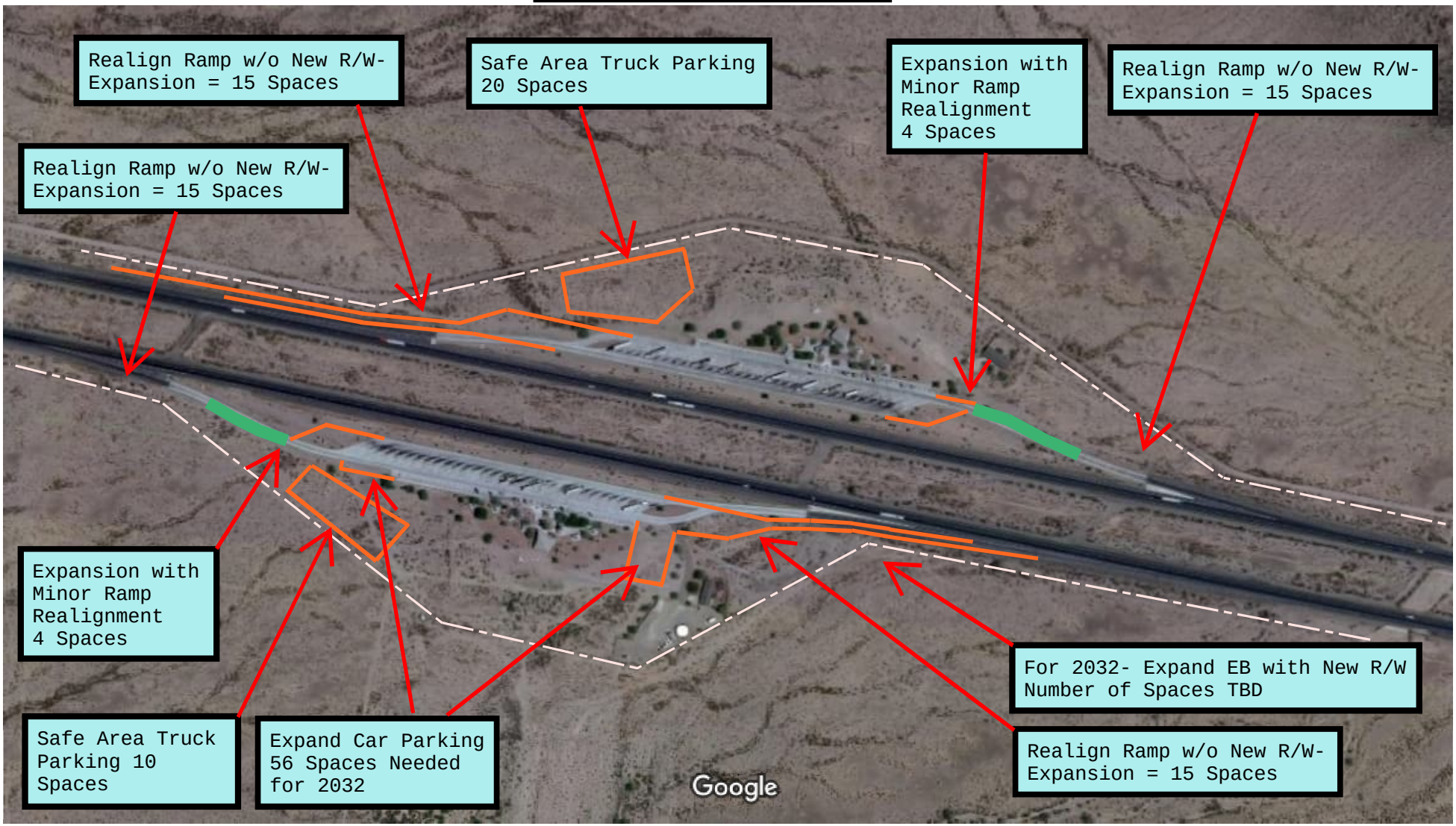
Google Maps

METEOR CRATER (WB) REST AREA PARKING EXPANSION

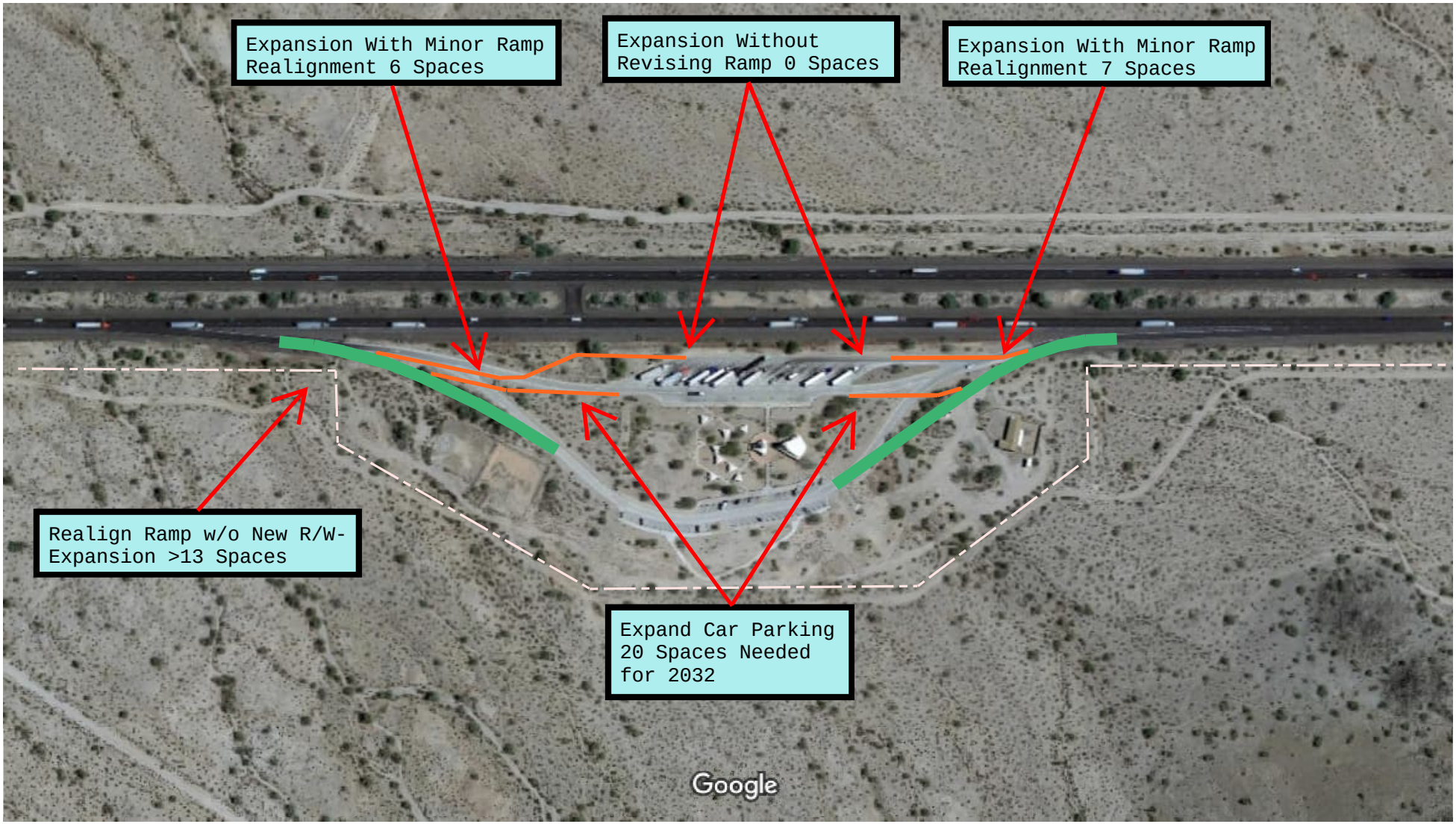


Google Maps

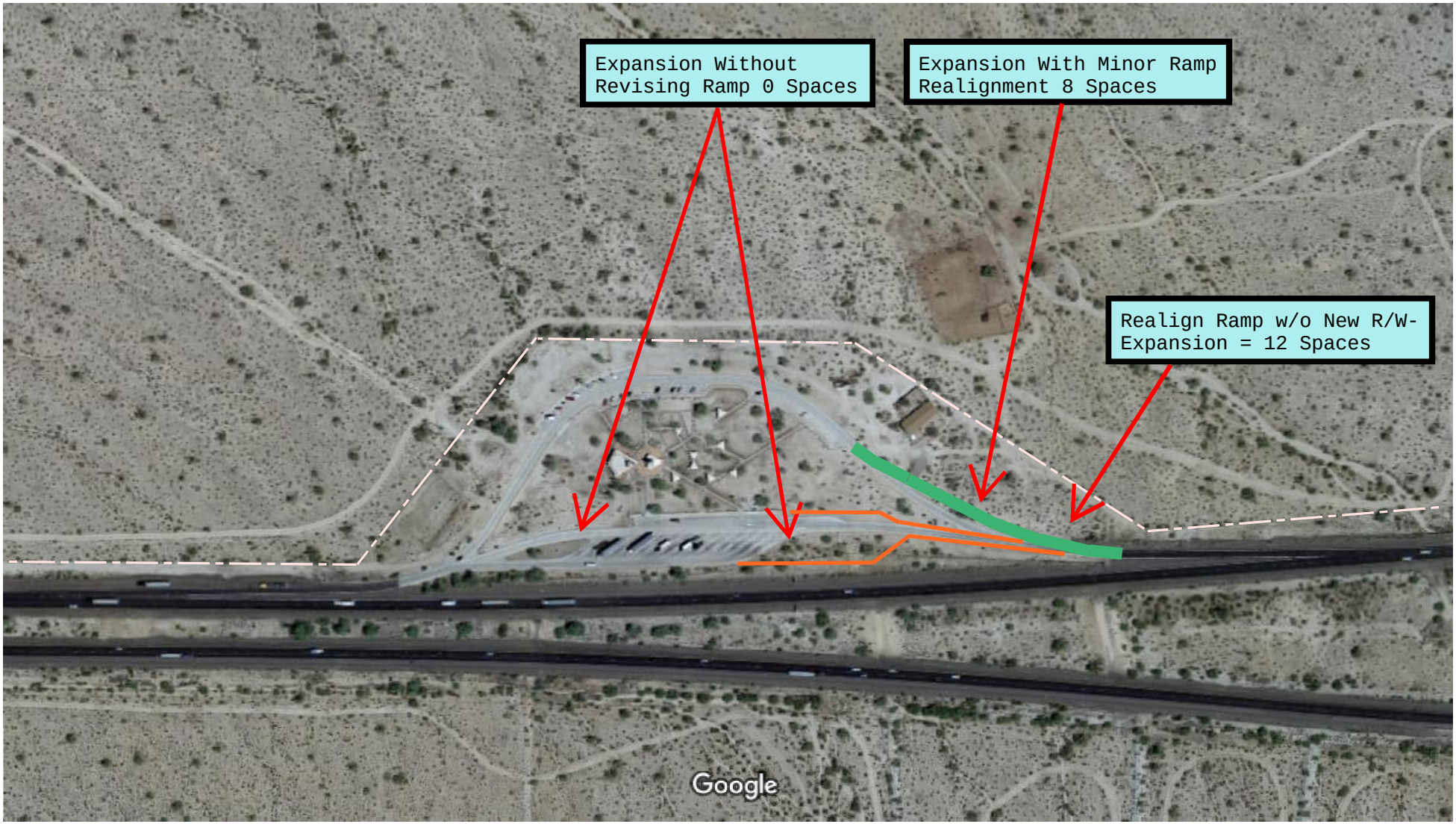
BURNT WELL PARKING EXPANSION



SACATON (EB) REST AREA PARKING EXPANSION

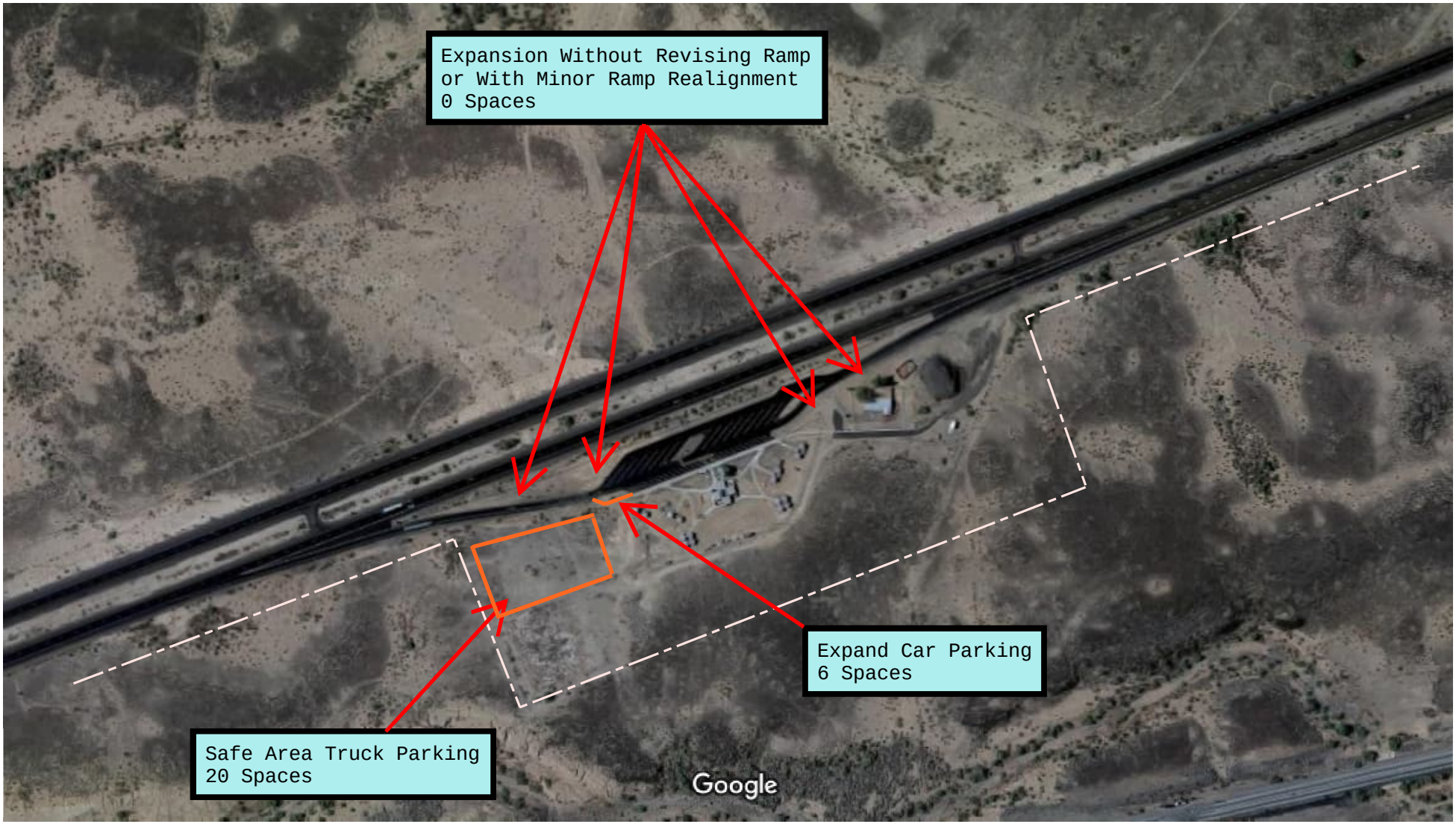


SACATON (WB) REST AREA PARKING EXPANSION



Google Maps

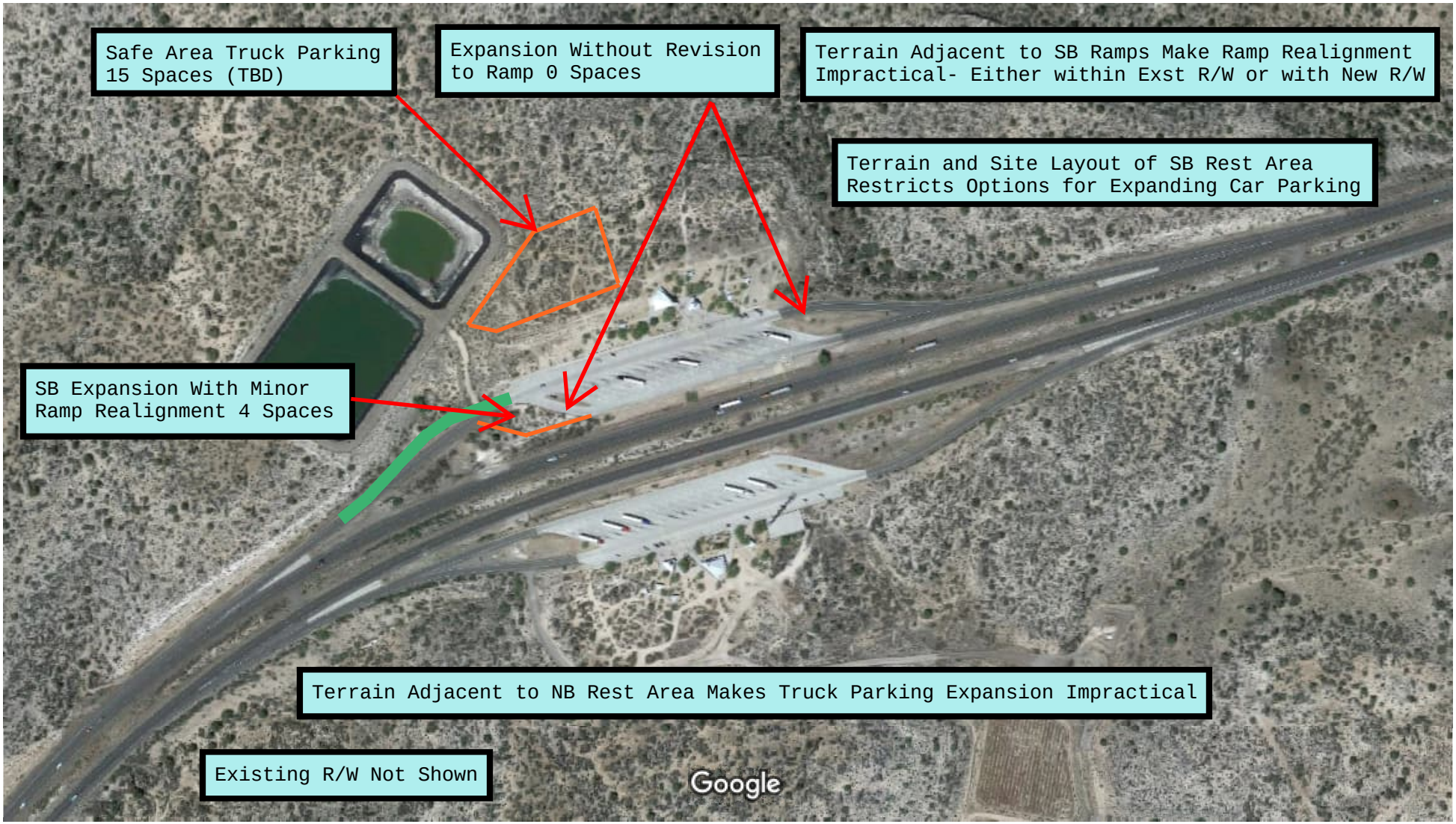
SENTINEL EB REST AREA PARKING EXPANSION



Google Maps

SENTINEL (WB) REST AREA PARKING EXPANSION

McGUIREVILLE REST AREAS PARKING EXPANSION



Google Maps

MOHAWK REST AREA PARKING EXPANSION