

Infrastructure Feasibility Study

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Arizona State Land Department

Union Pacific Railroad

Planning and Engineering Study

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Acronyms

ADOT – Arizona Department of Transportation

ASLD – Arizona State Land Department

CAP – Central Arizona Project

cfs – cubic feet per second

FEMA – Federal Emergency Management Agency

FHWA – Federal Highway Administration

NEPA – National Environmental Protection Act

RSRSM – Regionally Significant Routes for Safety and Mobility(Pinal County)

SATS – Small Area Transportation Plan

STIP – State Transportation Improvement Program

TI – Traffic Interchange

UPRR – Union Pacific Railroad

URS – URS Corporation, consultant to UPRR

WRF – Water Reclamation Facility

EXECUTIVE SUMMARY

The Arizona State Land Department (“ASLD”) received an application from Union Pacific Railroad (“UPRR”) to purchase approximately 1,873 acres of land (“Proposed Sale Parcel”) along I-10 in the Red Rock area of Pinal County. UPRR intends to use the site to construct a Classification Yard in order to improve the efficiency of its operations (See Exhibit 1). Thousands of acres of State Trust land surround the Proposed Sale Parcel and would be affected by the sale. The ASLD is processing the application and a final decision on the application and the appropriate size and shape of the Proposed Sale Parcel is yet to be made.

The Proposed Sale Parcel is situated southeast of Picacho Peak State Park, on the east side of I-10 between the UPRR Sunset mainline, and the CAP canal (See Exhibit 1). To the northeast is McClellan Wash with a 100-year peak flow of approximately 12,800 cfs. (cubic feet per second). To the south is Parker wash with an estimated 100-year peak flow of 6,964 cfs. Parker Wash is not currently a FEMA delineated floodplain; however, based on Pinal County standards any wash over 500 cfs. is required to be delineated, and submitted to FEMA in the normal course of development. To the northeast of I-10 are the Picacho Mountains.

UPRR submitted several studies in support of their application. The most recent study is a technical report entitled “Red Rock Industrial Park Infrastructure Assessment,” dated March 2011, prepared by URS Corporation (the “URS Report”). The purpose of the URS Report is to conceptually demonstrate to the ASLD how the Classification Yard could develop and how the surrounding State Trust land might be developed and serviced as an Industrial Park (See Exhibit 2, Industrial Sites A and B). The study is preliminary, conceptual, and while it includes some sizing and preliminary details for some infrastructure, it is not intended to be a final design document.

The ASLD reviewed the URS Report and provided a response letter to UPRR dated August 16, 2011 outlining several concerns. UPRR responded by stating that the items listed in the ASLD letter were issues better addressed by Pinal County and others. On December 7, 2011 UPRR, Pinal County and ASLD met to discuss how to proceed. It was decided that technical groups would be formed consisting of representatives from UPRR, Pinal County and ASLD. These groups would then meet to discuss the various issues in an attempt to resolve them. ASLD decided an independent review of the URS Report would be a good basis for those discussions.

The purpose of this study, commissioned by ASLD and performed by RBF Consulting, is to evaluate the URS Report and provide information to facilitate discussions with Pinal County and UPRR. RBF Consulting reviewed the plans for the Classification Yard, the Industrial Park, relevant studies, and identified issues and potential costs associated with the provision of infrastructure for the remaining State Trust land should the sale of the Classification Yard move forward. More specifically, the study analyzed infrastructure associated with transportation, drainage, water, and wastewater.

Four (4) technical memoranda were prepared, one for each of the four areas of infrastructure. These were compiled into one final report with recommendations and conclusions. A summary of the report findings follows.

Selling the Proposed Sale Parcel as described in the URS Report would have significant implications for transportation and circulation for State Trust land in the Red Rock area. The Proposed Sale Parcel effectively eliminates access to I-10 for the State Trust land between the CAP canal and the Proposed Sale Parcel for a distance of approximately six (6) miles. In addition, access at each end of the Classification Yard is complicated by the presence of two (2) large washes, McClellan Wash to the north with flows of approximately 12,800 cfs., and Parker Wash to the south with flows of approximately 6,964 cfs.¹ These complications would require significant drainage and transportation improvements to provide access to proposed surrounding industrial sites, and the State Trust land beyond (See Exhibit 2).

The drainage improvements as proposed present several issues, the most significant of which is related to the reliance upon existing and proposed flood retarding structures, such as dams or berms. Under “post Katrina” regulatory requirements, these structures require a local jurisdiction to sponsor and certify that the structures provide adequate flood protection. The local jurisdiction would also be responsible for the maintenance and liability associated with the flood control structures. Pinal County does not currently have the wherewithal to take on the responsibility of the existing and proposed structures.

TRANSPORTATION

Traffic Interchanges

I. Greene’s Road

The Arizona Department of Transportation (“ADOT”) recently completed a Design Concept Report (“DCR”) for the widening of I-10 through the Red Rock area. The DCR for that area shows an interchange on I-10 at the Greene’s Road alignment; however, access to the east has not been planned because ADOT assumed that the Classification Yard would effectively block access. Should the Classification Yard not go forward, providing access to that land would require submitting a Change of Access Report with ADOT, and the interchange would be required to go through the federal environmental permitting process under the National Environmental Policy Act (“NEPA”) at the requester’s expense. According to the Arizona Government Accounting Office, preparing such a report can take up to 8 years, and the average time is 4.4 years.

Access to State Trust land east of I-10 from the Greene’s Road interchange will be effectively cut off.

II. Park Link Drive

The DCR report for the I-10 widening identifies a proposed interchange location for the Park Link interchange as shown in Exhibit 3. While the I-10 DCR conceptually identifies a location for the Park Link interchange, ADOT does not have the Park Link interchange in their State Transportation Improvement Plan (“STIP”). ADOT considers the interchange as a developer driven and funded interchange. This means that the need for the interchange is determined by development, and the beneficiaries of the interchange are required to fund it. This is contrary to the statement in the URS Report, “ADOT also plans to construct a full interchange with I-10 at Park Link Drive.” ADOT planned for the interchange, but they have no funding identified or plan to construct it at this point.

¹ 100-year peak flow cubic feet per second

Since ADOT is not funding this interchange they did not prepare the environmental documents to support it. The cost of this will be borne by future development. The future developer(s) will be required to prepare a Change of Access Report and submit it to ADOT for review to determine compliance with Federal requirements. One of the Federal requirements is that a project goes through the NEPA environmental permitting process at the requester's expense.

The URS Report also proposes an alternate location for the Park Link interchange (See Exhibit 3). The suggested alternate location is problematic because it would not meet ADOT and Federal Highway Administration ("FHWA") minimum spacing standards for interchanges. In an area like this, which is defined as "rural", the standard spacing for interchanges is every 3-6 miles; however, when the DCR was done, ADOT and FHWA agreed to an "urban" standard which is two mile spacing between interchanges. The URS Report proposal shows the Park Link interchange at approximately 1.6 miles from the existing Red Rock interchange. FHWA is unlikely to approve a deviation of more than a few hundred feet from the standard separation distance. If such a deviation were approved, a Change of Access Report would be required.

The Park Link Drive TI will not be built or funded by ADOT, rather by adjacent landowners who benefit from the interchange. The construction of this interchange will be more expensive due to crossing the UPRR Sunset mainline.

III. Picacho Peak Road

The existing Picacho Peak interchange leads to Camino Adelante, a frontage road along the northeast side of I-10 (See Exhibit 4). The DCR for the widening of I-10 did not include an environmental analysis for providing access northeast of this interchange beyond Camino Adelante and McClellan Wash. This is due to two factors. First, the access from that interchange is at-grade, and would require crossing the Sunset mainline tracks at-grade, which UPRR states they would not allow. Access could be provided with an above-grade crossing. Second, there are also concerns about the potential for cultural resources in this area since this is in the vicinity of the only Civil War skirmish site in Arizona. Because the environmental work was not completed for the DCR, providing access from this interchange to the east will require a Change of Access report. In addition to these factors, McClellan Wash presents a significant challenge for access to the east at the Picacho Peak Road interchange due to its size. Crossing the wash will require a long bridge possibly 4,200 feet or longer. More detailed engineering studies are necessary to determine the actual length of the bridge.

Providing access from this interchange to the northeast is challenging because of the expense associated with crossing the UPRR classification yard, the potential for significant cultural resource issues presented by the Civil War battlefield site, and expense and design issues associated with McClellan Wash.

Arterial Roadway Network

I. "Road E"

The URS Report shows a conceptual roadway within the McClellan Wash floodplain, identified as collector "Road E", from the Picacho Peak Road interchange to the east spanning 4,200 feet across McClellan Wash (See Exhibit 4). RBF's rough estimate to construct a four-lane Road E is \$55,796,707. Both the URS and RBF studies recognize Road E as proposed is not feasible and additional study is necessary to design a roadway that would provide access to State Trust Land to the north and east. If and when another study is conducted, access will still be complicated by the potential for cultural resources in the area and the need to cross both the Sunset mainline and McClellan Wash, and the Change of Access Report that would be required

to connect to the Park Link Drive interchange. The URS study indicates UPRR does not intend to use Road E as an access point to their property. UPRR is proposing to access the Classification Yard via Park Link Drive with an emergency access, for UPRR use only, to Camino Adelante Road.

Road E as proposed is not feasible and it is uncertain whether or not a feasible road can provide access to State Trust land if the classification yard moves forward.

II. “Road A”

The URS Report shows a “Road A” along the northeastern boundary of the Classification Yard. This road is proposed to be a public road providing access to the proposed industrial park. UPRR does not anticipate constructing this road, which will serve as an impediment to providing rail served access to the industrial park as multiple at grade rail crossings of Road A will create a hazard. Providing rail service to the industrial park is further complicated by a proposed berm along road A that is part of the proposed drainage solution.

Road A as proposed will not provide sufficient vehicular access to Industrial Site A in the event Industrial Site A develops as a rail-served industrial area.

III. Pinal County Conceptual Arterial Road Network

According to the Pinal County Small Area Transportation Plan and the Regionally Significant Roads for Safety and Mobility plan, the desired spacing for arterials to provide adequate access in the County is an arterial roadway every two (2) miles. Additional arterial road connections are necessary to support the proposed land uses in the Pinal County Comprehensive Plan. If a viable solution can be found for the Picacho Peak Road and the Park Link interchanges, it may be possible to provide access to the proposed industrial park. At this point the solution proposed by UPRR is not economically viable, nor does it meet ADOT design criteria for spacing of intersections adjacent to an interchange.

Options for providing adequate arterial road access to State Trust land in this area are severely limited by the loss of the Greene’s Road interchange connection.

DRAINAGE

Pinal County regulations state that each development entity must contain the impact of their respective drainage improvements on their property and not alter historical flows and any upstream or downstream off-site impacts.

The drainage solution proposed by URS relies on existing and proposed drainage structures (levees or dams) that must be certified under FEMA’s National Flood Insurance Program requirements to verify that they provide a 100-year level of flood protection.² The certification process requires a local government agency to be responsible for the long term operation, maintenance and liability of the structure. The existing drainage structures, the North Diversion Berm and the Pecan Diversion Berm (see Exhibits 1 and 2) are structures that were in place prior to the regulations coming into effect. They are improvements that were not placed by an entity with any responsibility for flood control in the County. They are likely berms that were historically used to protect farmland.

² Title 44, Chapter 1 Section 65.10 of the Code of Federal Regulations

Pinal County, under current policy, does not accept responsibility for drainage structures that require certification, even if someone else were to construct them. This is due to the high cost of insurance and the liability associated with structures that require certification.

The drainage solution also proposes channelizing approximately 2.9 miles of McClellan Wash which would require permitting by the Army Corps of Engineers.

The drainage solution will either have to be reworked to provide a solution that does not involve levees or berms, or UPRR will have to find a local government agency that is capable and willing to take on the responsibility and liability associated with those structures. The proposed drainage solution is preliminary and conceptual, and is likely to be adjusted as more detailed engineering studies are completed and reviewed by the appropriate agencies.

The drainage solution relies on existing and proposed flood retarding structures that would need to be sponsored and FEMA-certified by a local jurisdiction. These structures are not only expensive to construct but would require Pinal County to accept liability for them. Pinal County is not currently in a position to take on that liability.

WATER

Red Rock Utilities (“RRU”) is willing to serve the area and believes that there is sufficient groundwater available to serve UPRR and adjacent State Trust land while likely meeting ADWR requirements for an assured water supply; however, additional studies are necessary to confirm this. Water delivery will not be significantly impacted by the use proposed by UPRR, but ASLD should consider how the adjacent State Trust land could benefit by preparing to service the additional land east of I-10 by requesting additional sleeves under I-10 when UPRR has to jack and bore under I-10 to bring services to the Classification Yard.

WASTEWATER

RRU has indicated a desire to serve the Classification Yard and adjacent State Trust land. This requires an increase in RRU’s existing wastewater treatment capacity. RBF analyzed two options for providing the additional capacity. One option is expanding the existing RRU facility southwest of I-10, which would require lift stations and a jack and bore under I-10 to accommodate the pipes. The second alternative is constructing a package plant on the east side of I-10 which would allow the wastewater to be gravity fed to the plant, eliminating the need for lift stations. Preliminary analysis suggests that the package plant is the most cost effective way to service the development of the Classification Yard and the adjacent State Trust land.

List of Exhibits

Exhibit 1 – Red Rock Area Union Pacific Proposal Topography

Exhibit 2 – Red Rock Area Union Pacific Proposal Context Area

Exhibit 3 – Red Rock Area Union Pacific Proposal Proposed Park Link Traffic Interchange(s)

Exhibit 4 – Red Rock Area Union Pacific Proposal Picacho Peak Traffic Interchange

TECHNICAL MEMO NO. 1:TRANSPORTATION INFRASTRUCTURE ANALYSIS

Summary of Existing Roadways and Vehicular Access in the Area

The proposed UPRR Classification Yard is very long and narrow, adjacent and parallel to I-10 and the UP Sunset Line with a southern terminus at Park Link Road and a very narrow linear terminus north of Picacho Peak Road(See Exhibit 1).

Interstate 10

Interstate 10 is a six lane facility. Over the course of the last couple of years, ADOT completed the widening of I-10 in this area from 4 lanes to 6 lanes. There is no direct access from I-10 to the proposed UPRR Classification Yard. The existing Red Rock Traffic Interchange (“TI”) is approximately 1.5 miles east of the existing Park Link Dr. roadway. The Picacho Peak TI is approximately 5 miles west of the existing Park Link Dr. roadway.

I-10 Frontage Road/Camino Adelante Rd.

The I-10 frontage road (owned and maintained by Pinal County) is a two-way, two-lane paved roadway that runs parallel and adjacent to the proposed UPRR Classification Yard connecting the Picacho Peak TI with the Red Rock TI to the south. This frontage road is formally named Camino Adelante Road by Pinal County.

Picacho Peak TI

The existing Picacho Peak TI is a full access system TI with I-10 elevated above the Picacho Peak Road. The Picacho Peak TI is located at milepost 219. Picacho Peak Road terminates at Camino Adelante Rd. to the east. The Picacho Peak TI is approximately 5 miles west of the existing Park Link Dr.

Red Rock TI

The Red Rock TI is located at milepost 226.5 and is located approximately 1.5 miles east of the existing Park Link Dr. roadway. The existing Red Rock TI is a full access system TI providing all entrance and exit movements between the local roads and I-10. The layout is not typical of an urban area TI in the Phoenix region where all ramps are in the tight diamond configuration. The westbound ramps at Red Rock are a tight diamond configuration while the eastbound ramps are in an outer configuration similar to what is found in a full cloverleaf interchange.

Park Link Drive

Park Link Drive is currently a two-lane, two way paved Pinal County roadway facility providing the only east-west vehicular access and connection between I-10 and SR 79 for approximately 20 miles.

Pecan Road

This road is located approximately $\frac{3}{4}$ of a mile east of I-10 and intersects with Park Link Road. Pecan Road is situated east of the CAP canal and is thus outside of the immediate study area but is likely a future vital north-south collector road serving ASLD properties east of the CAP.

Summary of Planned Roadways and Vehicular Access in the Area – ADOT and Pinal County

The discussion below is designed to highlight the planned or future roadway facilities from ADOT and Pinal County perspectives, and how those agency plans compare and contrast with what is provided in the UPRR technical memos.

Park Link Drive

Park Link Drive is planned as a “Regionally Significant Route for Safety and Mobility” (“RSRSM”). The Pinal County Small Area Transportation Study (“SATS”) identifies Park Link Dr. as a “high/critical priority”. The RSRSM is superior to the SATS and designates Park Link Drive as a future “parkway” with 6-lanes, indirect left turns and a 200-foot right-of-way.

Interstate 10

The I-10 DCR calls for ADOT to be a ten (10) lane facility at build-out. The UPRR technical memo notes that, “ADOT has plans to widen the interstate to ten lanes in the future”. The DCR establishes ADOT’s long-term plans to fund, design and/or construct additional lanes on I-10. ADOT has not budgeted money for near or intermediate term design or construction of additional widening of I-10.

Interstate Change of Access

While ADOT owns and operates Interstate 10, the Federal Highway Administration (FHWA) is responsible for administering access to the interstate highway system. The FHWA document “Interstate System Access Information Guide, August 2010” outlines the requirements and procedures for interstate system access change requests. Change of access is considered to be not only the addition of new interchanges, but can include the reconfiguration of existing interchanges. The Park Link TI requires change of access because it is a new interchange. The Red Rock TI requires a change of access because it is a reconfiguration of an existing TI. Even though FHWA approves changes of access, ADOT makes the formal request and is responsible to ensure that the request meets all FHWA requirements. The request needs to address eight requirements of FHWA policy:

1. The access change satisfies a regional traffic need
2. Improvements within the interchange will not adequately address the need
3. An operational and safety analysis needs to include all elements of the interstate (ramps, weaving sections, etc.)
4. The change will accommodate full interchange movements
5. Demonstrate consistency with local transportation plans and interstate corridor planning
6. Demonstrate there are no operational conflicts with adjacent interchanges
7. Demonstrate orderly development including modifications to local road system to support the change

8. Demonstrate compliance with National Environmental Policy Act requirements.

Park Link Drive TI

The ADOT I-10 DCR identifies a future TI location at the Park Link Drive alignment. The UPRR technical memo states that, "ADOT also plans to construct a full interchange with I-10 at Park Link Drive". While the I-10 DCR conceptually identifies Park Link Drive as a suitable location for a future traffic interchange, our discussions with ADOT representatives have confirmed ADOT does not currently have a TI for Park Link Drive identified in the State Transportation Improvement Plan (STIP) nor have they identified funding for this TI. In fact, ADOT considers this to be an interchange that will serve future development and will expect those future beneficiaries to bear the cost of planning, design and construction of the interchange.

Greene's Road TI

The ADOT I-10 DCR identifies a future TI location at the Greene's Road alignment which is situated at the two mile mid-point between the existing Picacho Peak TI and the Park Link Drive alignment. While the I-10 DCR conceptually identifies Greene's Road as a suitable location for a future traffic interchange, providing access to the south and west only, our discussions with ADOT representatives have confirmed ADOT does not currently have a TI for Greene's Road identified in the State Transportation Improvement Plan (STIP) or funding for this TI. Also, ADOT considers this to be an interchange that will serve future development and will expect those future beneficiaries to bear the cost of planning, design and construction. The planned location for the TI is located in the middle of the proposed UPRR Classification Yard, limiting any potential access from this TI to the east due to the railroad track configuration. ADOT assumed the UPRR railyard would be in place and did not plan for access to the northeast of Greene's Road.

Red Rock TI

The existing Red Rock TI is currently in the midst of a Change of Access application process submitted on behalf of Pulte Homes. To the best of our knowledge, Pulte will contribute funds in escrow to pay for their portion of the bridge reconstruction. All interim ramp improvements will be paid for by Pulte. The phased implementation of the change would be addressed in the Change of Access which would be approved by FHWA. The benefit to Pulte is that this allows them to build the ramp reconfigurations in the short term to allow continued development of Red Rock Villages. In the absence of that approved phasing, the full interchange construction would have to be built, likely requiring ADOT to accelerate their funding or Pulte to fund the construction of the full interchange with an ADOT rebate to follow.

UPRR Proposed Access

In summary, the UPRR technical memorandums provided to ASLD and reviewed by RBF are the Red Rock Classification Yard Infrastructure Assessment (Draft) dated March 2011, the Sketch-planning Level Traffic Analysis memo dated March 2, 2011 and the TransSystems Evaluation of the Red Rock Facility memo dated March 31, 2009. According to the URS Red Rock Classification Yard Infrastructure Assessment, UPRR propose to obtain primary vehicular access, via Road "A", which will intersect with Park Link Drive approximately 800 feet north of the Camino Adelante right of way (See Exhibit 1 and 6). This spacing would be sufficient in the absence of a Park Link Drive TI with I-10. However, ADOT guidelines recommend

additional distance from an interchange ramp to a road intersection. The 800 foot spacing will not comply with those guidelines and will require reconfiguration of the intersection of Road "A" with Park Link Drive when the interchange is built. The I-10 Access Management Plan for cross roads at interchanges requires the following spacing from the ramp terminus:

- 1400' to the first signalized intersection
- 750' to the first right in-right out access on the right
- 990' to the nearest upstream access

ADOT will impose these standards by means of a joint project agreement. The agreement will require the local jurisdiction to enforce this requirement as a condition of ADOT's approval of the change of access.

Access from I-10 to the proposed UPRR Classification Yard in the absence of new interchanges would be provided via existing interchanges at Picacho Peak Road and/or Red Rock Rd. Traffic can access those interchanges using the Camino Adelante frontage road to and from Park Link Drive.

Key Assumptions

1. The UPRR property and any associated infrastructure improvements needed to serve the Classification Yard will be constructed first and prior to the development of the adjacent 1,200 acres of ASLD parcels planned for a rail-served potential industrial park.
2. The proposed 1,200 acre rail served potential industrial park (identified as Site A in the URS report) will be sold to, subdivided and developed by one master developer (who may sell separate parcels to end users but would oversee the development process). For traffic demand forecasting purposes, this 1,200 acre park will assume to be developed into a rail-served potential industrial park whose land uses primarily consist of warehouse and distribution (not manufacturing) uses.
3. For purposes of forecasting future vehicular trips, the UPRR technical memos utilize a 1,500 acre size for the ASLD potential industrial park (Site A and Site B). The UPRR technical memo indicates that their analysis assumes 80 + warehouses on the ASLD potential industrial park and could generate 57,500 vehicles trips per day. The actual vehicle trips produced by Site A only will be less than what is reported in the UPRR technical memo. Our cursory review of the methodology and findings of the conceptual traffic analysis provided by UPRR appears satisfactory.
4. For purposes of this analysis, no critique of the methodology used in the UPRR technical memos was completed and the assumption is that the methodology used is sound and reasonable.

Evaluation of Proposed Improvements and Findings of Fact **Surface Streets**

1. The UPRR technical memo concludes that approximately 3,000 vehicle trips per day (vpd) for the 300 employees anticipated working at the UPRR Classification Yard. Presuming the vpd figure is accurate; Pinal County suggested that minimal

improvements to existing roadways to service the UPRR Classification Yard are necessary.

2. UPRR has proposed one primary public vehicular access roadway via Park Link Drive. The UPRR technical memo refers to this roadway as Road "A". The memo identifies this road as providing two driveway access points to the UPRR Classification Yard. The Road "A" alignment is located just north of the proposed UPRR Classification Yard and could serve as access to the adjacent ASLD potential industrial park and would be intended to be turned over to Pinal County as a public roadway (See Exhibit 6).
3. The UPRR technical memo proposes an emergency and maintenance access roadway from the Camino Adelante (frontage road) near the northern portion of the Proposed Sale Parcel, but south of Picacho Peak TI. This access is proposed to be a private, at-grade crossing for use by UP personnel and emergency response vehicles. This access will be gated and locked.
4. The very long and linear nature of the Proposed Sale Parcel effectively precludes additional options for roadway access to the balance of ASLD parcels north and east of the proposed UPRR Classification Yard. In an effort to demonstrate how an additional roadway access could be provided to the 1,200 acres ASLD potential industrial park (and adjacent ASLD parcels), the UPRR memo identifies Road "E" (see Exhibit 7) as providing access to the surrounding ASLD parcels as well as providing another vehicular access to the UPRR Classification Yard. As Exhibits 4 and 7 illustrate, the alignment of Road "E" would lay within the McClellan Wash 100-year floodplain. The memo concludes that the Road "E" option as shown creates an undesirable intersection spacing with Camino Adelante at Picacho Peak Road and would require the construction of a 4,200-foot long bridge to flyover McClellan Wash, the railroad tracks and the land area between the railroad tracks and the frontage road (Camino Adelante). The 2-lane bridge facility itself is estimated to cost \$16-23 million and is not seen as a feasible option in their March 2011 "Red Rock Industrial Park Infrastructure Assessment."

Traffic Interchanges

1. The UPRR Classification Yard in and of itself will not generate enough vehicle trips per day to warrant the construction of the Park Link Drive TI.
2. The UPRR technical memo suggests that the ASLD potential industrial park (assuming 1,500 acres) will generate up to 57,500 vehicle trips per day. This volume of traffic, particularly with the anticipated volume of truck traffic trips, will require an additional traffic interchange access to I-10.
3. From discussions with ADOT representatives, it is unlikely that the Park Link TI will be built by anyone other than a private entity (or entities) that would drive the need to construct this facility. The build out condition of the 1,200 acre potential industrial park may justify the need to construct a TI. Pinal County noted that the County Attorney advised them that according to State Statute, Counties are prohibited from using County money to fund state highway/interstate improvements.
4. The Red Rock TI has existing funding partner obligations from Pulte Homes. Walton International who owns approximately 300 acres of commercial and industrial property would like to promote the expansion of the Red Rock TI to provide for access to the east

side of I-10 that does not exist today. As an existing facility, ADOT is more likely to program funding for the upgrade of the Red Rock TI (versus the construction of a new Park Link TI) when warranted, and the notion of additional contributions from others could possibly enhance ADOT's willingness (but not guarantee fiscal cooperation) to contribute towards the cost of upgrades to the Red Rock TI. By way of general policy, ADOT does not fund new interchanges that are needed to serve new development.

5. The UPRR proposed location for the Park Link TI is approximately ½ mile away from the ADOT approved location (See Exhibit 3).
6. In the evaluation of the comparison between the ADOT preferred Park Link TI location and the suggested UPRR location(See Exhibit8), ADOT has advised that ADOT will not make a definitive ruling on this issue at this advanced planning stage in the process. It is our understanding that FHWA has allowed a deviation from its two-mile TI spacing requirement, but only minimal shifts as dictated by engineering design. To the best of our knowledge, FHWA has never approved a deviation to the extent being proposed by UPRR. This is based on a few factors:
 - a. At this advanced planning stage in the process, ADOT does not want or need to deviate from the existing policy without the benefit of additional studies and full NEPA review and compliance. Additional DCR-level studies, change of access studies and supplemental engineering designs are the tools that ADOT would utilize to make a more informed decision to allow a shift from the current designated alignment.
 - b. The FHWA designates this stretch of I-10 as "Rural," for which TI spacing is sixmiles. Changing to the twomile spacing triggers FHWA "suburban" designation policy requirements which alter interstate designs and posted speed limits to less than the current 75 mph. ADOT acceded to the two mile suburban spacing based on the proposed future land use for this area.
7. ADOT designates Greene's Road TI as a future viable interchange location although the cross road is only shown as providing access to the west/south and connection to the Camino Adelante frontage road. This was based on the likelihood of the UPRR Classification Yard given the planning underway at the time and the initiatives by UPRR to acquire the land from ASLD for the yard. Any change that would extend Greene's Road to the east/north will require additional planning and engineering studies, operational and safety analyses and NEPA conformity studies. Should UPRR not acquire ASLD land to develop the classification yard, thatland could be directly served by a connection to the Greene's Road TI. Since the approved DCR and EA do not include that connection, the change would require a Change of Access report, full engineering, operational and environmental analysis.
8. ADOT plans improvements to the Picacho Peak TI that enhance operations and safety whilemaintaining access to Camino Adelante, and to the west/south. Any new road connections to the interchange will trigger the Change of Access requirements including NEPA analysis. A new bridge crossing the railroad tracks will require 23' clearance which creates substantial visual impacts.

9. The Final Environmental Assessment and Section 4(f) Evaluation of the I-10 Corridor Study: Junction I-8 to Tangerine Road resulted in a Finding of No Significant Impact (“FONSI”). This is predicated on no road connections to the Greene’s and Picacho Peak TIs across the UPRR to the east or other new connections to the existing Picacho Peak TI. As neither Road “E” nor any other easterly connections to either the new Greene’s Road TI or the existing Picacho Peak TI are included in the FONSI, any such “new” connections will require a separate change of access study and environmental clearance. Specifically relevant to the Picacho Peak TI, Mitigation Measure 6 of the Final Environmental Assessment is “During final design the Arizona Department of Transportation will coordinate with representatives from Picacho Peak State Park to identify measures that will minimize impacts to the Park.” There is also concern about visual and other impacts associated with bridges required to cross the UPRR tracks.

Recommendations and Conclusions

Surface Streets

1. In general, Pinal County requires two all-weather access points to new subdivisions. A divided roadway may satisfy this requirement because one-half of the roadway could remain open to traffic if the other half should be closed due to a traffic incident or other causes. However, good planning practice provides redundant capacity; that is, a totally separate road other than Park Link.
2. Pinal County is likely to require minimal road improvements to serve the UPRR Classification Yard. Required County improvements are likely to consist of one lane of pavement widening to Park Link Drive, possible turning lanes (left in, right out) at the Park Link Drive and Road “A” intersection. The construction of Road “A” wouldn’t necessarily be required from a Pinal County perspective, but if it is built, will have to be constructed to County standards. A second all-weather emergency access roadway is also likely and could occur in accordance with UPRR’s proposed emergency access location off Camino Adelante near the north terminus of the UPRR property just north of McClellan Wash.
3. The proposed location of Road “A” is located just north of the UPRR Classification Yard. This road will serve as suitable public access to the UPRR Classification Yard prior to any development of the adjacent potential industrial park. If the adjacent potential industrial park never develops, Road “A” would serve as suitable public access in perpetuity. If and when the 1,200 acre potential industrial park were to develop, the location of Road “A” would present multiple conflicts with the various rail spurs that would be necessary to serve multiple potential industrial park parcels (regardless of which rail spur orientation option were developed) on Site A, which is the 1,200 acres of adjacent ASLD property. As such, if the potential industrial park were to be constructed, this roadway would have to be re-aligned to provide ingress and egress around the perimeter of the 1,200 acre potential industrial park (Road “B”). The UPRR memos do identify Road “B” on Exhibit’s 7 and 8.
 - a. Due to the fact that the Road “A” proposed alignment is situated north of the UPRR Classification Yard, it is recommended that Road “A” be designed and constructed outside of the UPRR Classification Yard. The width of this right-of-way should conform to Pinal County requirements. Given the lack of other planned roadways in this immediate area, it is suggested that Road “A” be designed and constructed as an

- “arterial” roadway to accommodate the trips generated from the UPRR and 1,200 acre potential industrial park properties. The Pinal County Subdivision and Infrastructure Design Manual requires 110-foot right-of-way width for a minor arterial and 150-foot width for major arterials/parkways.
- b. Pinal County will have to review and approve the proposed intersection location of Road “A” with Park Link Dr. The UPRR Infrastructure Assessment states that the proposed location is approximately 800-feet north of the I-10 frontage road. In our discussions with Pinal County, it was suggested by RBF and preliminarily agreed as a group that 800-feet is likely suitable distance for allowing full turning movements for the UPRR facility. In the event that the 1,200 acre potential industrial park develops, this location will likely be reconfigured with added improvements to Park Link Dr. and the Road “A” intersection will likely become limited to a right-in, right-out condition with a signalized full turning movement intersection being provided further east on Park Link Dr. in a manner more consistent with ADOT access management guidelines. This becomes an “upstream access” relative to the future Park Link TI and ADOT would require a 990 foot clearance from the ramp terminal.
4. The secondary emergency and maintenance access road is needed and we recommend that this be permitted to occur in the location and manner proposed by UPRR. It is suggested that UPRR demonstrate to Pinal County that there is sufficient storage distance and turn-around area between the Camino Adelante right-of-way and gate facility.
 5. The Proposed Sale Parcel is approximately 6 miles in length from its southern terminus at Park Link Drive to the Picacho Peak Interchange. Due to the nature of the UPRR facility, the opportunity to provide additional roadway access needed to someday serve the balance of the ASLD parcels to the north and east (whether there is a potential industrial park or not) is limited, requiring additional roadways to be located either south or north of this 6 mile reach of proposed UPRR Classification Yard. Moreover, ADOT has identified the Greene’s Road alignment – located two miles south of Picacho Peak Rd and two miles north of Park Link Drive as a suitable location for a future TI on I-10. If the UPRR facility were to be constructed, any contemplation of a Greene’s Road TI being built would not provide access to the east due to the UPRR Classification Yard and thus (if ever built) would be limited to providing access to the west only.
 - a. As a result of these factors, a minimum 6 mile separation between interchanges exists, and additional road access to surrounding ASLD parcels is very much needed to support the proposed land uses in the Pinal County Comprehensive Plan. The Pinal County SATS recommends a two mile grid system in this area. A connection from the Picacho Peak Rd. alignment serves as the most viable roadway connection candidate. The current proposal (Road “E”) however is likely cost prohibitive, and providing appropriate access will be challenging. The likely future construction of the Red Rock TI two miles south of Park Link Drive will afford additional circulation opportunities in this area.
 - b. It is recommended that UPRR (and/or other contributing entities besides ASLD) be responsible for constructing (or cause to be constructed) some portion of a public roadway from Picacho Peak Rd. to a location over and beyond (to the east) of McClellan Wash and the UPRR Classification Yard. It is, after all, the proposed development of this area by UPRR as a Classification Yard that creates the need to

evaluate alternative methods of access, and ASLD should not be responsible for constructing the crossings of a re-aligned McClellan Wash and railroad tracks that were triggered by the development design of others.

- c. We suggest here that the design and construction cost of a roadway crossing McClellan Wash could be reduced by reconsidering the alignment of McClellan Wash and locating Road "E" along the west (or protected side) of the re-configured McClellan Wash. This could greatly reduce the length of bridge span and thus the cost. An adequate grade separated crossing will still be necessary over the railroad tracks. There is a rational nexus for the construction of these improvements and is therefore recommended that UPRR and/or other contributing entities be responsible for the design and construction of Road "E" improvements needed to cross McClellan Wash and the UPRR railroad tracks. Additional future users will then be required to extend Road "E" to the east to serve their respective parcels. It is worth noting that, because Greene's Road TI is not likely to provide access to the east due to the configuration of the Proposed Sale Parcel, UPRR or others have potentially relieved themselves of any potential contribution towards the construction of this TI.
- d. In addition, we concur with the UPRR Infrastructure Assessment, that the current depiction of the Road "E" and Picacho Peak Rd. intersection represents an undesirable intersection spacing. Additional design studies to further evaluate the existing and proposed roadway geometrics of this intersection are necessary.

Traffic Interchange(s)

A few additional considerations include:

1. The UPRR Infrastructure Assessment suggests that approximately 3,000 average vehicle trips per day will be generated from the UPRR Classification Yard. This minimal volume of traffic will not warrant the need to construct the Park Link Dr. TI to serve the Classification Yard.
2. A "Do Nothing" alternative, meaning no improvements to the existing Interchange or construction of a new one, would require capacity enhancements to Camino Adelante and Park Link Drive. Traffic would use Camino Adelante to access Picacho Peak Rd. TI and Red Rock TI. It could also use Park Link to access SR 79 but that is unlikely. The "Do Nothing" option results in two miles of travel on the frontage road instead of the interstate.
3. Construct the Park Link Drive TI in accordance with the UPRR proposal. There is no ADOT funding identified for the Park Link TI, nor is there likely to be in the future.
4. Walton's Red Rock Industrial Park includes an access road that connects to Park Link Drive (See Exhibit 3). This access road could be extended south to a linkage to the Red Rock TI. This alternative provides an additional benefit in that existing Camino Adelante would remain in place and provide a level of redundant roadway network capacity as well as the frontage road connection to the Picacho Peak TI. However, Camino Adelante should be reviewed for improvement requirements in this scenario. It also provides the opportunity for multiple funding partners for the Red Rock TI including Walton, Pulte, and ADOT.

Funding

Park Link Drive– Pinal County will likely require minimal improvements to surface streets to service the UPRR Classification Yard. UPRR, like any other development entity will be responsible for the funding of any required Pinal County roadway improvements. Pinal County does have a Traffic Impact Fee ordinance that includes Park Link Dr. They would collect impact fees from UPRR for Park Link but would also issue credits for any improvements UPRR builds on Park Link. Those improvements could result from perimeter road improvements as required by Pinal County subdivision regulations or by improvements identified in a traffic impact study.

Road “A” – The design and construction of Road “A” should be funded entirely by UPRR. The acquisition of right-of-way for Road “A” from ASLD will be necessary and likely funded by UPRR. Please see Exhibit 6 for the location of Road “A”.

Road “E” – Please see recommendations and conclusions for detailed discussion. Road “E” is effectively intended to serve as an additional public roadway to provide access to future ASLD parcels to the north and east of the UPRR parcel and providing ultimate access to Picacho Peak Road TI. Please see Exhibit 7, Detail B for the location of Road “E”.

Park Link TI – ADOT does not identify the Park Link Drive TI as a priority and thus has not programmed funding. The Park Link Dr. TI is not identified in the State Transportation Improvement Plan (STIP). There are no other funding partners identified for the construction of this TI. As noted above, ADOT will not fund this TI but will require beneficiaries of the TI to fund it.

Red Rock TI – This is an ADOT system TI that does not meet current standards and ADOT will fund improvements to bring the interchange up to standard to meet current travel demand. Additional capacity improvements will need to be funded by the beneficiaries. Pulte, Walton and possibly UPRR or Site A and Site B developers are potential partners. ADOT has not identified funding for TI improvements but may consider identifying and accelerating funding if private parties bring funds to the project.

Items Needing Additional Consideration

1. Evaluation of the intersection geometrics of the proposed intersection of Picacho Peak Rd and Road “E”. Additionally, UPRR should provide typical sections of the Picacho Peak Rd extension including the 4,200 foot bridge across the UPRR and McClellan Wash re-channelization. This should be provided once the final design concept for McClellan Wash is determined because the final drainage design of the wash will have a significant impact on the roadway designed to cross it.
2. Evaluation of how an alternative and more compatible design of McClellan Wash and Road “E” improvements can reduce construction costs and enhance vehicular access to adjacent ASLD parcels.
3. Further evaluation of the proposed roadway intersections of Road “A” and the Walton International planned access road to ensure that these two roadways create one unified 4-point intersection and not create an off-set intersection. Please refer to Exhibit 3 and Exhibit 9 which illustrate the locations of Road “A” and the Walton collector road respectively.

4. Neither Road “E” or any other easterly connections to either the new Greene’s Road TI or the existing Picacho Peak TI are included in the existing FONSI, the “new” connections of proposed Road “E” (or other alignment not identified here) will require a separate change of access study and environmental clearance.

Planning-Level Cost Estimate

The following cost estimate was prepared to provide a conceptual level cost associated with transportation infrastructure needed to serve the potential industrial park. Only major roads were included in this estimate. For the purpose of this estimate the Road “E” cross section was assumed to be an 80 ft right of way (Pinal County’s major collector classification) with two travel lanes in each direction, and a center turn lane (Pinal County’s minor arterial classification without bike lanes, curb, gutter, and sidewalk). The aforementioned March 2011 UPRR infrastructure assessment contemplates a two-lane roadway.

Due to the numerous development scenarios, each road segment was provided as an individual cost estimate. The estimate for Road “E” includes the bridge crossing of the UPRR tracks and McClellan wash as a 4 lane cross section. The potential industrial park collector also includes a bridge crossing for the Parker Wash.

The developer of the potential industrial park will likely contribute a pro-rata share of the Red Rock TI. There are many factors that will be evaluated to determine how the funding of the TI will be split. For the purposes of this study a value of the replacement cost for Red Rock TI or the construction of a new Park Link TI is assumed to be \$40,000,000.

	QUANTITY	UNIT	UNIT PRICE	TOTAL
Collector Road E				
Asphalt (5” AC)	6,742	Ton	\$35	\$235,970
ABC (12” ABC)	8,267	CY	\$35	\$289,345
Bridge (4,200 LF)	252,000	SF	\$150	\$37,800,000
			Subtotal	\$38,325,315
R/W	15	AC	\$15,000	\$225,000
Design			10%	\$3,832,532
CM			15%	\$5,748,797
Contingency			20%	\$7,665,063
			TOTAL	\$55,796,707
Potential industrial park Collector (Road “B”)				
Asphalt (5” AC)	47,850	Ton	\$35	\$1,674,750
ABC (12” ABC)	58,667	CY	\$35	\$2,053,345
Bridge (Parker Wash Crossing)	9,600	LF	\$100	\$960,000
			Subtotal	\$4,688,095
R/W	49	AC	\$15,000	\$735,000
Design			10%	\$468,810
CM			15%	\$703,214
Contingency			30%	\$1,406,429

	QUANTITY	UNIT	UNIT PRICE	TOTAL
			TOTAL	\$8,001,547
Estimated Red Rock TI Cost*			\$20,000,000 - \$40,000,000	
Estimated Park Link TI Cost**				\$40,000,000
Park Link TI Flyover	95,000	SF	\$100	\$9,500,000

*Depending on ADOT contribution, if any.

** Assumes no contribution from ADOT.

List of Exhibits

Exhibit 5 – URS Red Rock Classification Yard: Existing Roads

Exhibit 6– URS Red Rock Classification Yard: Roadway Improvements

Exhibit 7 – URS Red Rock Classification Yard: Industrial Park Access

Exhibit 8 – URS Red Rock Classification Yard: Park Link Drive Interchange

Exhibit 9 – ASLD UPRR Walton Option B Red Rock Industrial Park Access Road Preferred Alignment

TECHNICAL MEMO NO. 2:DRAINAGE ANALYSIS

Synopsis of Existing Drainage Conditions

The offsite drainage impacts occur mostly from two major washes, McClellan Wash and Parker Wash. The North Diversion Berm, Pecan Road Diversion Berm, and Central Arizona Project (CAP) Canal direct the majority of the offsite flow into these two washes. Refer to Exhibit 10 which shows the Proposed Sale Parcelin relationship to these structures. McClellan Wash flows westerly toward the UPRR rail line, at the UPRR rail line it turns and flows to the northwest along the UPRR rail line for approximately 2.9 miles before diverging from the UPRR and flowing to the north. McClellan Wash is a Federal Emergency Management Agency (FEMA) delineated Zone AE floodplain. The 100-year peak flow is approximately 12,800 cfs. The Pecan Road Diversion Berm and the CAP Canal reroute Parker Wash to cross the CAP Canal overchute before directing it southwest to the southern portion of the UPRR. If these berms did not exist and redirect area flows, Parker Wash would flow through the center of the proposed Classification Yard. There is an existing railroad trestle that low flows pass through, but during large rainfall events the water overtops the UPRR and/or diverts the water north along the UPRR to six (6) additional structures. The infrastructure Assessment estimated the 100-year peak discharge of Parker Wash to be 6,964 cfs. Parker Wash is not currently a FEMA delineated floodplain. However, based on Pinal County standards any wash over 500 cfs. will be required to be delineated and submitted to FEMA through the normal course of the development process in Pinal County.

UPRR Proposal

In summary, the UPRR Master Drainage Plan provided to ASLD dated March 2011 and supplemental Technical Drainage Memorandum contemplates one possible scenario to protect the UPRR property from drainage impacts. In general, the UPRR proposed concept is to collect the offsite drainage along the eastern boundary and route it through and/or around the Classification Yard and provide onsite retention for the project drainage area. The proposed solution can be further divided into the McClellan Wash and Parker Wash solutions.

The UPRR Infrastructure Assessment describes the evaluation of four alternatives for McClellan Wash. These four alternatives in reality are subtle variations of one central concept and channel location. The only difference between alternatives is the variation of the channel bottom and overbank widths. The proposed concept includes filling in the existing McClellan Wash for the new track, and reconstructing a trapezoidal channel shifted a minimum of 256 feet from the centerline of the new track for approximately 2.9 miles. Exhibit 11 illustrates the location of the proposed channelized McClellan Wash relocation limits. The proposed channel has average depths from six to thirteen feet deep, a bottom width of 26-feet with 3:1 side slopes. Refer to Exhibit 12 for McClellan Wash general cross section.

The Parker Wash proposed concept includes an open channel that runs parallel to the railroad track and proposed levee along the west UPRR property frontage. The channel bottom varies from approximately 70 feet to 8 feet. The channel decreases in size as water is diverted to the west through the existing railroad and Interstate 10 structures. Diversion structures are proposed at these locations to properly balance the diverted flow with the remaining downstream flow. Interceptor channels are proposed along the east side of the Classification Yard to direct the offsite flows from the area between the CAP Canal and the Classification Yard. A proposed detention basin is located near McClellan Wash to ensure the flows received from interceptor channels do not increase the McClellan Wash flows. This proposed basin appears to be located within a portion of the 1,200 acre potential industrial park. This would require UPRR to purchase or lease additional property from ASLD. Once the 1,200 acre

potential industrial park develops, the interceptor and detention basin would not be necessary so it could potentially be converted to provide retention for the 1,200 acre potential industrial park. This solution requires the construction of levees to provide 100-year protection. Refer to Exhibit 13, which shows the Parker Wash proposed solution.

Key Assumptions

1. That the UPRR property and any associated infrastructure improvements needed to serve the Classification Yard will be constructed first and prior to the development of the adjacent 1,200 acres of ASLD parcels planned for a rail-served potential industrial park.
2. The proposed 1,200 acre rail served potential industrial park (identified as Site A in the Infrastructure Assessment) will be sold to, subdivided and developed by one master developer (who may sell separate parcels to end users but would oversee the development process).

Evaluation of Proposed Improvements and Findings of Fact

1. There has not been a Jurisdictional Delineation (JD) obtained from the U.S. Army Corps of Engineers. The JD could significantly impact the proposed project from a design and schedule aspect. The Infrastructure Assessment has conflicting information relative to the potential JD and required regulatory permit type, if there are jurisdictional waters. For example, the preliminary JD prepared by URS shows McClellan Wash as jurisdictional but in the discussion of the McClellan Wash, it is assumed that McClellan Wash is not jurisdictional and a 404 permit is not required.

If McClellan Wash and Parker Wash are jurisdictional, the proposed solution creates significant impacts including filling in 2.9 miles of McClellan Wash and creating a soft-structural trapezoidal channel. The extent of the proposed impacts could not be permitted using Nation-wide permits and would require an individual permit. Individual permits are more onerous in the documentation, requiring additional studies and justification for the impacts due to the amount of the impacts. Individual permits are more time consuming to obtain and include prescribed public comment forums that may bring undesired public commentary about the UPRR project as a whole. In contrast, nation-wide permits do not have these same requirements.

2. The existing drainage condition involves the use of levees or berms to direct the water to McClellan Wash and Parker Wash, and provide protection to the railroad and Interstate 10. The proposed drainage concept includes the use of existing levees and the construction of new channels and levees. The use of levees is often not the preferred drainage solution due to increased risk for the property owner and local governmental agencies, rigorous FEMA National Flood Insurance Program (Title 44, Chapter 1, Section 65.10 of the Code of Federal Regulations), and regular maintenance to ensure safety.
3. McClellan Wash is a delineated FEMA floodplain and the proposed improvements would alter the existing floodplain (See Exhibit 2). This would require preparation and submittal of a Conditional Letter of Map Revision (CLOMR) and Letter of Map Revision (LOMR). The CLOMR is preconstruction showing the proposed improvements and the LOMR is post construction using the as-built conditions. Procedure Memorandum 64 – Compliance with the Endangered Species Act (ESA) for Letters of Map Change states

that confirmation of ESA compliance must be received from the Services (U.S. Department of Interior's Fish and Wildlife Service and the U.S. Department of Commerce's National Fisheries Services) for all CLOMRs. The proposed project impacts relative to the ESA will need to be determined as part of the CLOMR submittal requirements.

4. Parker Wash is not currently a FEMA delineated floodplain. However, based on the Pinal County Drainage Manual any wash over 500 cfs needs to be delineated and submitted to FEMA through the typical development process and procedures of Pinal County. The Parker Wash 100-year storm event is approximately 7,000 cfs and thus meets this criterion though the UPRR Infrastructure Assessment does not identify this requirement.
5. The proposed drainage solution uses existing and proposed levees in order to provide the necessary 100-year protection. Under FEMA's National Flood Insurance Program requirements (Title 44, Chapter 1, Section 65.10 of the Code of Federal Regulations) levees would need to be "certified" as providing 100-year level of protection. One of these requirements is that a local government agency provides this "certification" thus ensuring the long term operation, maintenance, and liability associated with any levee included in the newly delineated FEMA floodplain area. This levee primarily consists of the proposed levee associated with the channelization of Parker Wash on the UPRR property. Based on the current jurisdiction of the property, Pinal County would be the only agency to maintain this certification. A special district created under Title 48 ARS enabling statutes is another entity that could be considered to obtain this certification status if so desired. Based on current Pinal County policy and direction, it is highly unlikely that Pinal County would accept the operation and maintenance of the levee. Even if policy and direction were changed in Pinal County to accept the operation and maintenance of levees, there would still be the issue of liability and insurability of Pinal County to operate and maintain such structures.
6. Several existing levees including the North Diversion Berm, Pecan Road Diversion Berm, and Central Arizona Project (CAP) Canal have been included as being functional in the offsite drainage analysis. Pinal County has stated if these structures are used to provide flood protection in the drainage analysis there needs to be someone who takes responsibility for the maintenance. The ownership and maintenance of these structures needs to be determined. In addition, if these structures cannot be relied upon for flood protection, additional drainage solutions will need to be implemented to protect the areas downstream in the event these structure fail to perform their intended purpose.

Funding

UPRR or any other development entity will be required to design and construct necessary infrastructure up front. Pinal County regulations state that each development entity must contain the impacts of their respective drainage improvements on their property and not alter the historical flows and any upstream or downstream off-site impacts. Based on the nature of the likely type of drainage improvements needed to be performed to service this area, it is highly likely and strongly recommended that UPRR consider alternative approaches that include the potential acquisition and construction of improvements offsite that are needed and have great potential to aid the development of their site and at the same time enhance the develop-ability of the 1,200 acre ASLD potential industrial park.

Recommendations and Conclusions

1. The proposed project does not have a JD from the U.S. Army Corps of Engineers. We recommend that the JD is obtained for the proposed project in order to determine what portions of the UPRR site as well as the 1,200 acre ASLD potential industrial park will be subject to USACE 404 regulations. A significant nexus analysis could be performed to facilitate the jurisdictional determination of McClellan and Parker Wash. This information is necessary to evaluate the regulatory requirements and the permit requirements for the proposed project. It will also help determine the timeline before any improvements can be constructed if there are jurisdictional washes.
2. The proposed drainage concept involves the use of new levees. Primarily due to the complexities or difficulty in obtaining governmental “certification” of the proposed levee, we recommend additional alternatives be evaluated that eliminate the need for new levees or justify why levees are the best viable solution and provide information for the operation and maintenance of the new levees. We also recommend evaluating the ownership and maintenance of North Diversion Berm, Pecan Road Diversion Berm, and Central Arizona Project (CAP) Canal to determine if these should be included in the drainage analysis. If these berms are not providing protection, the potential industrial park will warrant additional improvements to develop and the interceptor channels are undersized until the potential industrial park develops.
3. The ESA compliance from the U.S. Department of Interior’s Fish and Wildlife Service and the U.S. Department of Commerce’s National Fisheries Services will be needed for a CLOMR on McClellan Wash. We recommend the environmental project information is reviewed or obtained if not available. We also recommend having preliminary discussions with the Services to gage their perception of compliance with the ESA for the proposed improvements.

Items Needing Additional Consideration

1. Determine if there are subsidence and fissures issues affecting the proposed project.
2. Determine if there are cultural or historical items that could impact the project and 404 permitting. Pinal County expressed concern about the potential for cultural issues in the area.
3. The individual 404 permit process includes a public comment period. If this project is controversial or has a lot of opposition it could give them a venue to voice their opposition.
4. It is difficult to determine if the McClellan Wash proposed trapezoidal channel has 100-year capacity. If it does, why is a levee proposed at the same height as the existing levee adjacent to the railroad tracks. The detail seems to indicate the channel is below grade and the report does not explicitly state that McClellan Wash is sized to accommodate the 100-year event.
5. Due to the conceptual nature of the existing drainage report provided in the Infrastructure Assessment, an opinion of probable cost estimate to complete the proposed drainage improvements was unable to be performed. It is recommended that

UPRR complete a cost estimate or provide a sufficient level of detail (i.e., earthworks, quantities of improvements proposed) to complete an estimate.

List of Exhibits

Exhibit 10 – URS Red Rock Classification Yard: Existing Drainage Conditions

Exhibit 11 – URS Red Rock Classification Yard: 60% Site Design McClellan Wash Relocation

Exhibit 12 – URS Red Rock Classification Yard: McClellan Channel Detail

*Exhibit 13 – URS Red Rock Classification Yard: Infrastructure Assessment
Surrounding Industrial Development Proposed Drainage – Red Rock Yard*

TECHNICAL MEMO NO. 3: WATER INFRASTRUCTURE ANALYSIS

UPRR Proposal

In summary, the UPRR technical memorandum provided to ASLD (UPRR Classification Yard Water and Sewer Infrastructure Alternatives Memo dated March 1, 2011) contemplates two possible scenarios to serve the UPRR property with water. The first scenario contemplates receiving water from the existing RRU infrastructure located near and adjacent to the Pulte community of Red Rock approximately 2 miles south of the Proposed Sale Parcel (See Exhibit 14). The memo suggests that the average day water usage for the UPRR Classification Yard is approximately 162,000 gallons and maximum day water usage would be approximately 310,000 gallons per day. The memo uses 4 equivalent dwelling units (EDUs) per acre (1188 gpd) of industrial park water demand. A 1,200 acre project yields an average day demand of about 1,430,000 gallons and a maximum day would be about 2,860,000 gallons. The second alternative evaluates the development of a separate system of water wells, reservoirs and associated infrastructure on and near the Proposed Sale Parcel east of I-10. See Exhibit 15.

The memorandum acknowledges that “the biggest factor will be the timing of construction” but does not indicate or conclude what entity would assume a lead role in designing, funding or constructing water infrastructure.

The memorandum in summary concludes that the construction of water infrastructure facilities near the UPRR Classification Yard east of I-10 is advantageous for the long term service of UPRR and surrounding ASLD parcels and that utilities will be gravity fed which is generally considered a more favorable water system design.

Key Assumptions

1. That the UPRR Classification Yard and any associated infrastructure improvements needed to serve the Proposed Sale Parcel will be constructed first and prior to the development of the adjacent 1,200 acres of ASLD parcels planned for a rail-served potential industrial park.
2. The proposed 1,200 acre rail served potential industrial park (identified as Site A in the Infrastructure Assessment) will be sold to, subdivided and developed by one master developer (who may sell separate parcels to end users but would oversee the development process). For water consumption forecasting purposes, this 1,200 acre park will assume to be developed into a rail-served potential industrial park whose land uses primarily consist of warehouse and distribution uses as assumed by the Infrastructure Assessment.
3. For purposes of forecasting future water demands for UPRR and adjacent 1,200 acre potential industrial park, it is assumed that the industrial park parcels will require approximately 1,188 gallons of water per acre per day (1.33 acre feet/year) and the UPRR classification yard will need about 180 gallons of water per acre per day (.2 acre feet/year). It is estimated that the current agricultural demand of over 4 acre feet per year.
4. The development of the UPRR Classification Yard by itself may not trigger the need to subdivide. The development of the proposed 1,200 acre potential industrial park would require a subdivision.

5. RRU can adequately serve the UPRR Classification Yard with water and fire flow through an extension of their existing facilities.
6. The elevation of the State land proposed 1,200 acres of industrial park is near the same elevation or slightly lower than the Red Rock Project. Therefore it is anticipated that UPRR and the 1,200 acres of State land could be served by the same pressure zone as Red Rock.

Evaluation of Proposed Improvements and Findings of Fact

1. Red Rock Utilities plans to and has the physical availability of water to provide water service to the UPRR and adjacent ASLD parcels. RRU has an approved CAAG 208 that covers over 20,000 acres of property including the proposed UPRR parcel and surrounding ASLD parcels. Red Rock Village has an approved water supply of 2230.2 acre feet per year to serve 3,808 residential units. The ADWR file no. is 28-400918.
2. The Proposed Sale Parcel adjacent ASLD properties are located within the Tucson Active Management Area and subject to ADWR rules and regulations.
3. Tucson AMA Considerations: The Tucson AMA is trying to accomplish a safe yield (which is a balanced aquifer). This area is naturally recharged by a large drainage area. In the past the local agricultural demands were supplied by wells. Over the past 15 years those properties within the Central Arizona Irrigation and Drainage District (CAIDD) have moved from well use to CAP water use to meet their demands.
4. While the surrounding ASLD property is not part of the CAIDD, the overall groundwater use in the general area has decreased since the CAIDD moved to using CAP water. An average consumptive use for crops is 1.5 to 6.3 acre-ft/year depending on the type and frequency of crop. The Proposed Sale Parcel is anticipated to require a use of 0.2 acre-ft/year and the 1,200 acre ASLD rail served potential industrial park is anticipated to utilize 1.3 acre-ft/year.
5. The new land use would be equal to or less than the lowest crop consumptive use and would in most cases reduce the water demand as compared to the current agricultural use. The reduction in demand would bring the aquifer closer to the desired safe yield. Should waste water treatment be developed on site, reclaimed water could be used for non-potable demands. The use of reclaimed water would further reduce the demand for water from the underlying aquifer. Drought tolerant native plants should be considered for this development to reduce the respective irrigation demands.
6. RRU has not applied for a CC&N at this time. The ACC requires that infrastructure must be built and "in the ground" within two years of CC&N approval. RRU will not expend the time and resources to apply for a CC&N now (prematurely) until there is a "bonafide" project in place that would provide a greater degree of certainty to trigger a definitive need for RRU or others to construct water infrastructure improvements and thus satisfy ACC requirements. Any CC&N would only contemplate a portion of those areas within the approved CAAG 208 area that it plans to serve. This area can initially include the additional 1,200 acres of adjacent ASLD property along with the UPRR Classification Yard.

7. Red Rock Utilities stated that Basin Wells has done a preliminary analysis at the local area aquifer and feels that there is a 100 year water supply in the ground. The existing Red Rock 100-year Adequacy Report only covers the Pulte Development project. A Certificate of Assured Water Supply would need to be obtained if the UPRR Classification Yard adjacent 1,200 acre potential industrial park were to subdivide.
8. The issue of the need to obtain a 100-year assured water supply is still dependent on whether UPRR would need to perform a subdivision of property. The subdivision of property would trigger the need to obtain a 100-year assured water supply. RRU suggests that regardless if there will be a subdivision or not, UPRR or others should conduct an Analysis of Assured Water Supply.
9. The existing wells on State land property have not been tested for water quality. The Red Rock Utility wells in the Pulte Homes subdivisions meet drinking water standards.
10. According to RRU, it will be a requirement for UPRR to connect to their existing system. ADWR policy requires that all water improvements need to be located within 660 feet from existing water improvements in order to be considered part of the existing water providers system.
11. Based on the presumption that the UPRR facility water demand of 180 gallons of water per acre per day, total average day water demand for the UPRR facility would be 162,000 gallons per day. This level of demand would require the construction of an 8 inch service line connection to the existing RRU infrastructure to adequately feed and fill and on-site tank to service the UPRR property. The report notes that an 18-inch line would be necessary to connect to existing RRU facilities and presumes no on-site tank is needed.
12. Based on the presumption that the 1,200 acre potential industrial park maintains a water demand of 1,188 gallons of water per acre per day, total average day water demand for the 1,200 acre ASLD potential industrial park would be 1,425,600 gallons. It is anticipated that additional source water, storage, and boosting facilities would be necessary to serve the potential industrial park.

Funding

UPRR or any other private development entity seeking water service from RRU will be required to design and construct and necessary infrastructure up front. RRU has established a reimbursement agreement policy prescribed in large measure by the ACC. The reimbursement agreement essentially provides that UPRR would be responsible for the design and construction of any new water service infrastructure necessary to serve their Classification Yard. UPRR or others would be reimbursed based on a percentage of revenue generated from the new user. Typically this is equivalent to approximately 10% of gross revenues for up to 10 years. The sum total of reimbursement however would likely equate to a fraction of the total cost to design and construct needed improvements. These funding provisions do not provide any funding implications to ASLD as a result of the sale to UPRR.

Recommendations and Conclusions

1. Due to the regulatory hurdles from ADWR to establish a new well field and stand-alone water facilities to serve the Proposed Sale Parcel and ASLD parcels “on site”, RRU’s suggested approach was to link the UPRR Classification Yard to the existing RRU infrastructure. This would require the extension of an 8” main service line of approximately 14,000 linear feet, a storage tank of 250,000 gallons for fire flow, booster station(s), jack and bore under I-10, the CAP lateral, and the Union Pacific Rail Road tracks.
2. That is not to say that water service could not be accommodated with an “on-site” system of drilling of additional well(s), storage and treatment facilities on or near the UPRR Classification Yard. Though the water quality has not been tested, preliminary tests of the aquifer suggest there is a 100-year supply available. The challenge is that in order to drill new wells or possibly use an existing agriculture well, UPRR or others must acquire one year’s equivalent supply of water rights to establish rights for a well farther away than 660 feet from an existing water line. This is not necessary if tying into existing system.
3. Additional engineering studies are recommended to evaluate and determine the precise design and sizing of water mains, storage needs, booster requirements, and jack and bore requirements of Interstate 10, CAP lateral, and the Union Pacific Rail Road tracks.
4. In order to meet the UPRR potable demand for their Classification Yard, a minimum of an eight inch line would need to be extended from RRU to the UPRR Classification Yard and furnish a peak hour demand of 368 gpm. This line could also feed a tank that would need to have a device to circulate the water so it could act as a backup if the 8 inch line was out of service. The tank would also provide the required fire flow for the UPRR Classification Yard.

In lieu of the 8” line and storage, a 16 inch line could provide the fire flow (2,000 gpm plus 215 gpm) from the Red Rock system. A complete water model would be required to confirm the line sizes. This could potentially remove the need for a separate storage tank for fire flow, but would likely cause stagnation of the water because the potable demand is so low.

To serve the proposed 1,200 acre potential industrial park, an additional water source would be needed. There are several existing agricultural wells within the vicinity of the project. If the water from these wells has adequate water quality and once the main is extended from Red Rock to the project area, then these wells could be brought into the system. Tanks and a booster station would need to be built to provide the 1,200 acres of State land fire flow and potable water demand. The tank needed for build out would need to be 1.25 times average day plus fire flow which is slightly larger than 2 million gallons.

These facilities could be an expansion to the water campus needed to serve the classification yard. At build-out for the State land parcel it would take at least three wells that produce about 1,000 gpm, which is maximum day plus a redundant well.

4. Advantages of providing water service to the Proposed Sale Parcel via connection to the existing RRU water infrastructure:

- Connection to the existing RRU infrastructure can occur in a timelier, less regulatory and cost effective fashion.
 - Less regulatory hurdles as no need to obtain a water right for one year due to these facilities being over 660-feet away from nearest water infrastructure under CC&N.
 - More expeditious to provide “start-up” water service to UPRR
5. Disadvantages of providing water service via connection to existing RRU water infrastructure:
- Infrastructure will include jack and bore under I-10, CAP lateral and Union Pacific Rail Road.
 - Working out agreements for using the existing infrastructure.

Items Needing Additional Consideration

1. The fire flow requirements are not known for UPRR, but the first memo assumes 2,000 gallons per minute for 2 hours. There will probably need to be an on-site tank, however a model should be created to determine if all or at least some of this can be provided by the existing system. If a large enough line is extended from Red Rock Utilities to UPRR, then there may not be any need for additional fire flow improvements. Also once the line connects UPRR then additional water lines can be extended to existing agricultural wells in the area. These wells may need to be upgraded for potable water purposes. These wells pump between 900 to 1800 gpm which should provide water for the proposed industrial park. Additional storage would be needed for the industrial park along with pressure booster pumps or a permit to place a tank about a mile and a half east on the State land so it can be fed by gravity.
2. Reverse Osmosis (RO) will remove Total Dissolved Solids (TDS) from well water. The existing potable wells at RRU have acceptable levels of TDS and do not require additional treatment. It is uncertain whether RO treatment would be required for the ASLD wells.
3. Given the past use of the ASLD land as primarily agriculture, it is possible that water from the surrounding wells may evidence nitrate levels that are above the acceptable level. If nitrate treatment (ion exchange & brine evaporation ponds) is required for the ASLD wells, the cost for those treatment systems could prove to be prohibitively expensive. If the wells are currently pumping water, tests could be performed, for less than \$1,000 that would identify the respective TDS and nitrate levels. RBF Consulting recommends that these tests be performed. Depending on the results of the water quality testing, treatment may or may not be required. Evaluation of the results may also provide an alternative solution of blending wells, or isolating levels of the aquifer containing nitrates to achieve acceptable nitrate levels.
4. Any potential water solution involving the development of new infrastructure will require additional groundwater water quality testing at a minimal cost and will bring greater

clarity/refine the water treatment and infrastructure solution(s) for water service to this area.

5. Evaluation of existing ASLD Type I or Type II groundwater rights and how those rights may or may not influence the development of any on-site infrastructure. In other words, can ASLD provide existing water rights to provide the equivalent of one year supply of water needed to develop on-site facilities if that becomes a necessary or viable option for future expansion of the system to service future development beyond the UPRR facility.
6. An analysis of assured water supply for the 1,200 acre industrial park and the UPRR Classification Yard should be done prior to the disposition of any State land to assure water is available at a quality suitable for development to occur.
7. During our research of the area, we discovered two wells located on the west side of I-10 adjacent to the proposed Classification Yard. The wells are owned by the Picacho Peak Water Company and both produce about 1,500 gpm. Additional research should be completed on the viability of using the Picacho Peak Water Company to service the proposed project, or at a minimum, be cognizant of how these wells could affect well spacing within this project.

Planning-Level Cost Estimate

The following cost estimates were prepared to provide conceptual costs for the major infrastructure components required to develop and deliver water to the projects. An on-site distribution system was not developed nor included in the following cost estimate. The cost estimate assumes an 8 inch water line will be constructed to connect to the existing RRU facilities with the initial phase of construction.

Water treatment costs were not included in the cost estimates due to the lack of water quality information on the existing agricultural wells. It should be noted that treatment costs could be significant depending on the type of treatment needed.

	QUANTITY	UNIT	UNIT PRICE	TOTAL
UPRR Yard				
8" Water Line (connection to existing RRU system)	14,000	LF	\$60	\$840,000
Jack and bore (includes 16" steel casing and spacers, assumes 3 pits)	660	LF	\$750	\$495,000
250,000 gallon storage facility	1	LS	\$250,000	\$250,000
Booster Station	1	EA	\$250,000	\$250,000
			Subtotal	\$1,835,000.00
Design, permitting, and contingency			25%	\$458,750
			TOTAL	\$2,293,750

	QUANTITY	UNIT	UNIT PRICE	TOTAL
Potential industrial park				
3 wells (existing ag wells converted to potable wells, 1,000 gpm)	3	EA	\$100,000	\$300,000
2,000,000 gallon storage facility	1	LS	\$2,000,000	\$2,000,000
Booster Station (complete)	1	EA	\$250,000	\$250,000
			Subtotal	\$2,550,000.00
Design, permitting, and contingency			25%	\$637,500
			TOTAL	\$3,187,500

List of Exhibits

Exhibit 14 – URS UPRR Classification Yard: Conceptual Water Plan (Off-Site) Alternative 1

Exhibit 15 – URS UPRR Classification Yard: Conceptual Water Plan (Off-Site) Alternative 2

Technical Memo No. 4:Waste Water Infrastructure Analysis

UPRR Proposal

In summary, the UPRR technical memorandum provided to ASLD (UPRR Classification Yard Water and Sewer Infrastructure Alternatives Memo dated March 1, 2011) contemplates two possible scenarios to serve the UPRR property with wastewater. The first scenario contemplates pumping the sewage from UPRR to the existing RRU infrastructure located near and adjacent to the Pulte community of Red Rock approximately 2 miles south of the proposed UPRR Classification Yard. See Exhibit 16. The second alternative evaluates the development of a separate wastewater treatment plant at a low point near north and west of the proposed UPRR Classification Yard. The URS report refers to this proposed facility as the Basin 5 water reclamation facility (WRF). See Exhibit 17. Additional information RBF obtained from Westland Resources provides that the UPRR Classification Yard will generate approximately 200,000 gallons of waste water per day. The daily waste water production figure is not expressly identified in the URS memo but was obtained through follow up discussions with RRU and/or their engineer representatives.

Key Assumptions

1. That the UPRR Classification Yard and any associated infrastructure improvements needed to serve the Classification Yard will be constructed first and prior to the development of the adjacent 1,200 acres of ASLD parcels planned for a rail-served potential industrial park.
2. The proposed 1,200 acre rail served potential industrial park (identified as Site A in the URS report) will be sold to, subdivided and developed by one master developer (who may sell separate parcels to end users but would oversee the development process). For waste water demand forecasting purposes, this 1,200 acre park will assume to be developed into a rail-served potential industrial park whose land uses primarily consist of warehouse and distribution (not manufacturing) uses.
3. For purposes of forecasting future waste water demands for UPRR and adjacent 1,200 acre potential industrial park, it is assumed that the industrial park parcels will generate approximately 864 gallons of waste water per acre per day (1,036,800 gallons per day) and the UPRR Classification Yard will generate approximately 200,000 gallons of waste water per day.
4. In order to accommodate waste water flows generated from UPRR, RRU will need to either expand capacity at the existing RRU treatment plant or build some form of a Basin 5 plant near the northern terminus of the Proposed Sale Parcel's property line. Both scenarios are addressed and approved in the approved CAAG 208 amendment for RRU.
5. Any proposed effluent would need to be treated so that it could be reused for washing trains and irrigation needs or be recharged into the aquifer.

Evaluation of Proposed Improvements and Findings of Fact

1. Red Rock Utilities plans to provide waste water service to the UPRR and adjacent ASLD parcels. RRU has an approved CAAG 208 that covers over 20,000 acres of property including the Proposed Sale Parcel, surrounding ASLD parcels and the Walton International 300 acre property. The CAAG 208 plan is fortuitous in that it identifies

waste water collection and treatment alternatives that identify a new plant (known as the Basin 5 plant) and/or the expansion of the existing waste water treatment plant with lift stations. See Exhibit 14 – CAAG 208 Plan Amendment.

2. RRU has not applied for a CC&N at this time. The ACC requires that infrastructure must be built and “in the ground” within two years of CC&N approval. RRU will not expend the time and resources to apply for a CC&N now (prematurely) until there is a “bonafide” project in place that would provide a greater degree of certainty to trigger a definitive need for RRU or others to construct waste water infrastructure improvements and thus satisfy ACC requirements. Any CC&N would only contemplate a portion of those areas within the approved CAAG 208 area that it plans to serve. This area can initially include the additional 1,200 acres of adjacent ASLD property along with the UPRR Classification Yard.
3. The URS report notes that the approved CAAG 208 identifies a sewer force main crossing I-10 and through the UPRR track areas. The CAAG 208 also identifies a 21-inch gravity main traversing the UPRR Classification Yard as well. The report suggests that the crossing is not acceptable to UPRR and that another crossing location that does not interfere with UPRR track operations will need to be identified. The relocation of the line so as to not interfere with UPRR tracks may be a challenge due to the existing configuration of the CAAG 208 service area, i.e., potential relocation of this alignment may require the line to be constructed outside of the existing CAAG 208 service area.
4. The first scenario proposed by UPRR for waste water service suggests that off-site lines can be gravity fed from the southeast corner of the UPRR property to the existing Red Rock WRF. Based on the topography in the area, and the need to bore under I-10 and the canal location, cursory investigations appear to indicate that this line cannot be gravity fed to the Red Rock WRF and a force main(s) and lift station(s) will likely be necessary. In addition, the existing sewer infrastructure within the Red Rock Community would be undersized because the initial design did not contemplate the extension of services for parcels in the vicinity of the proposed UPRR facility and adjacent parcels. Any contemplation of a proposed gravity line to serve the UPRR would need to tie directly into the wet well at the WRF and would require additional engineering studies to evaluate the feasibility of this potential design solution.
5. In our meeting with RRU, the RRU was somewhat indifferent as to the desired waste water solution for UPRR. Either scenario – building a new WRF in Basin 5 to service the UPRR and surrounding ASLD parcels with gravity flow mains or providing lengthy line extensions with lift station(s) to connect to the existing facilities. There are advantages and disadvantages to both and they are outlined below. The group discussion indicated that as a practical matter, it was most logical to lean toward the construction of a new WRF facility in Basin 5. This system could be designed with a package plant for the first phase to accept and process UPRR waste water flows and then incrementally expand as additional users are brought online. A package plant is a commercially available, pre-engineered facility that is a complete reclamation facility. Package plants are commonly used where there is a need for treatment of smaller wastewater flow rates or during the start-up of a new development that will initially generate smaller flow rates. The package plant can be left in place indefinitely, or integrated into a larger system or removed completely once flow rates dictate construction of a larger facility.

6. Regardless of which waste water collection and treatment infrastructure scenario is selected, RRU will control the design (financed by UPRR or others) and UPRR or others would primarily fund the construction of the facility. RRU would contribute some portion (yet to be determined) of upfront construction dollars.
7. The URS memo infers that the Basin 5 plant will be built by others and/or suggests that they would connect “when the facility is built” but never suggests that UPRR would be a contributor to the design and construction process.
8. The existing Red Rock Utilities WRF capacity is committed to the Pulte Homes project. More than likely an expansion of the plant for UPRR and ASLD would need to be built. The cost of having a lift station and boring under the freeway and extending facilities to the existing plant is more expensive than putting in a new plant. In fact, the estimate indicates that the Basin 5 WRF solution is approximately 35% less costly construction costs and is also less expensive on operations and maintenance in the long term as well.

Funding

UPRR or any other private development entity seeking water service from RRU will be required to design and construct any necessary infrastructure up front. RRU has established a reimbursement agreement policy prescribed in large measure by the ACC. The reimbursement agreement essentially provides that UPRR would be responsible for funding the design and construction of any new waste water collection and treatment infrastructure necessary to serve the Classification Yard. UPRR or others would be reimbursed based on a percentage of revenue generated from the new user. Typically this is a portion of funds that are less than the ACC provisions established for water service (i.e. less than 10% of the gross revenues for a 10 year period). The sum total of reimbursements however would only equate to a fraction of the total cost to design and construct improvements.

Recommendations and Conclusions

1. RRU has an approved CAAG 208 wastewater plan in place in order to serve the UPRR and ASLD parcels. The CC&N would be needed to commence construction of improvements.
2. RBF suggests that the design and construction of the Basin 5 WRF to initially serve UPRR and ultimately serve the 1,200 acre ASLD potential industrial park is the preferred alternative. The cost estimate that compares and contrasts the two alternatives will provide additional support and clarity to this recommendation.
3. The development of the Basin 5 WRF should be designed and constructed in conjunction with the development of the UPRR Classification Yard. The Basin 5 WRF can be designed initially as a .2 MGD facility with the ability to provide incremental expansion as additional potential industrial park users come on line.
4. A minimum of a 10-inch gravity main will be necessary to adequately serve the UPRR Classification Yard. This line may be upsized initially to accommodate additional planned flows from the 1,200 acre potential industrial park or maintained as a 10-inch line for just UPRR use. If this line is constructed as a 10-inch line, provisions for a second gravity main will be necessary to serve the 1,200 acre potential industrial park.

5. RRU has suggested that the Basin 5 WRF may be preferred but that ultimately either alternative is workable from their perspective. RRU will support either alternative as long as that alternative is agreed upon by the parties contributing to the funding.
6. Reuse water from the plant can be purchased for use. This should be considered as a conservation practice for water.
7. If a force main is used as required in alternative 1 then it will need to be bored under I-10, the CAP lateral and UPRR tracks. The design and construction of a 6 inch force main would be necessary to adequately serve UPRR waste water flows. Once development of the 1,200 acre ASLD potential industrial park is in process, additional parallel force mains could be constructed, however the construction of the Basin 5 WRF is the more cost effective solution. The 6 inch force main would likely be abandoned.
8. UPRR should acquire the appropriately sized parcel of land from ASLD for the development of the Basin 5 WRF.

Advantages of Basin 5 WRF

- a. CAAG 208 is approved with ability to construct WRF facility.
- b. No need to enter into potentially protracted negotiations with Pulte Homes and RRU on the need to purchase and physically acquire capacity rights at the existing RRU facility.
- c. Waste water flows would need to pipe to existing WRF. The existing infrastructure was not sized to accept flow from this development.
- d. Does not require force mains (potentially 3 separate force mains) to be constructed under I-10, irrigation lateral, or UPRR tracks.
- e. No need to have lift stations on the UPRR Classification Yard. Reduces electricity costs and long term O&M costs for UPRR and additional future users.
- f. Could use effluent to further reduce water demands for non-potable uses.

Disadvantages of Basin 5 WRF

- a. Potentially higher start-up capital costs and longer permitting time.
- b. Ability to treat and dispose of effluent.
- c. Loss of efficiencies for RRU in having two smaller WRF's rather than one larger facility.
- d. Based on the UPRR employee estimate anew plant would not operate efficiently until additional development occurred.

Items Needing Additional Consideration

The use of effluent generated from any treatment alternative should be investigated to help achieve the goals set forth by the Tucson AMA. Potential uses include irrigation, equipment wash down facilities, dust control, cooling applications, or aquifer recharge.

Planning-Level Cost Estimate

Cost estimates have been generated to conceptually illustrate the cost differential between Alternative #1 (connecting to the existing RRU WRF) and Alternative #2 (constructing the Basin #5 WRF). The collection system (i.e. gravity sewer mains, manholes) was not included in the cost estimates. The collection system should be similar in costs for each of the alternatives. Alternative #1 assumes three force mains will be needed to convey the flow to the RRU WRF rather than constructing one large force main. The smaller force mains are needed for the initial phases of the project to achieve the minimum velocity requirements and the duration of time sewage is in the force main. As additional development occurs, more flows are generated which necessitates the construction of additional force mains.

ALTERNATIVE #1

	QUANTITY	UNIT	UNIT PRICE	TOTAL
UPRR Yard				
Lift station (complete)	1	EA	\$150,000.00	\$150,000
6" force main	15,000	LF	\$55.00	\$825,000
Jack and bore (includes 16" steel casing and spacers, assumes 3 pits)	660	LF	\$750.00	\$495,000
Additional sewage treatment RRUWRF	200,000	GPD	\$12.00	\$2,400,000
			Subtotal	\$3,870,000
Design, permitting, and contingency			25%	\$967,500
			Total	\$4,837,500
Potential industrial park				
Lift station (complete)	2	EA	\$200,000.00	\$400,000
8" force main (assumes phased/dual force mains)	30,000	LF	\$60.00	\$1,800,000
Jack and bore (includes 16" steel casing and spacers, assumes 3 pits, 2 crossings)	1,320	LF	\$750.00	\$990,000
Additional sewage treatment RRUWRF	1,036,800	GPD	\$12.00	\$12,441,600
			Subtotal	\$15,631,600
Design, permitting, and contingency			10%	\$1,563,160
			Total	\$17,194,760

ALTERNATIVE #2

	QUANTITY	UNIT	UNIT PRICE	TOTAL
UPRR Yard				
New package plant (200,000 gpd)	1	EA	\$2,400,000	\$2,400,000
Engineering, permitting, contingency	1	%	30%	\$720,000
			Total	\$3,120,000
Potential industrial park				
Additional sewage treatment Basin #5 WRF	1,036,800	GPD	12	\$12,441,600
Engineering, permitting, contingency	1	%	10%	\$1,244,160
			Total	\$13,685,760

List of Exhibits

Exhibit 16 – URS UPRR Classification Yard: Conceptual Sewer Plan (Off-Site) Alternative 1

Exhibit 17 – URS UPRR Classification Yard: Conceptual Sewer Plan (Off-Site) Alternative 2

Exhibit 18 – Westland Resources, Inc., 208 Plan Amendment Proposed Sewer Basin Delineation, Wastewater Reclamation Facilities & Trunk Sewer Mains

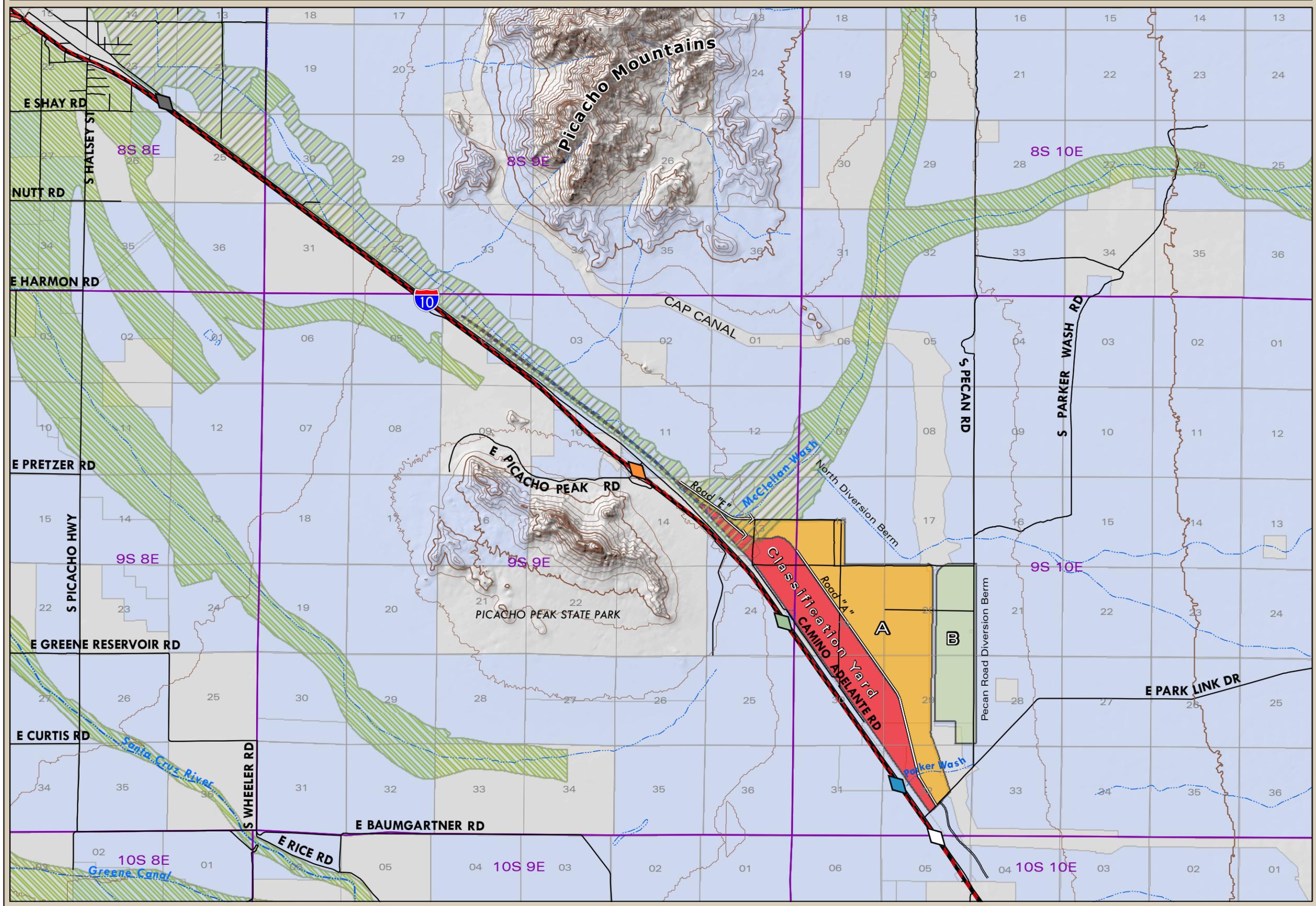
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Red Rock Area - Union Pacific Proposal - Topography

August 2012
DRAFT

Exhibit 1 Topography



State Land

UPRR Classification Area

- Classification Yard 945 Ac
- Industrial Site A 1,330 Ac
- Industrial Site B 545 Ac

Interchanges

- Existing Interchange
- Existing Picacho Peak TI (full)
- Proposed Greenes Rd TI
- ADOT Approved Location Park Link TI
- UP Proposed Location Park Link TI

Pinal County Roads

- Pinal County Roads
- Access Roads

Pinal County Contours - 100'

- 100' Interval
- Index Contours (Every 500')

DFIRM Flood Zones - Pinal

- A
- AE

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Base Layer: 10m Hillshade

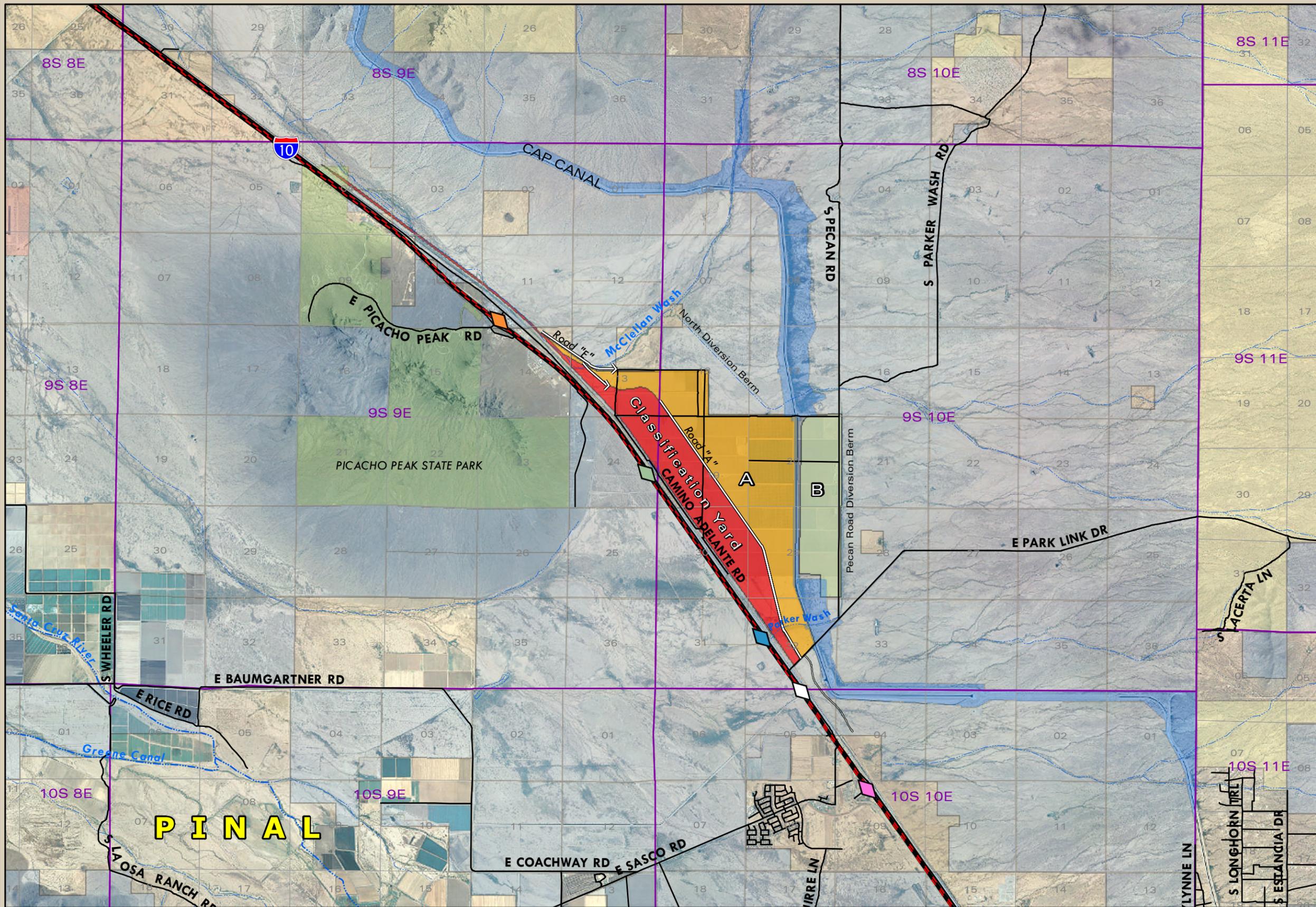
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Red Rock Area - Union Pacific Proposal

August 2012
DRAFT

Exhibit 2 Context Area



State Land

UPRR Classification Area

- Classification Yard 945 Ac
- Industrial Site A 1,330 Ac
- Industrial Site B 545 Ac

Interchanges

- Existing Picacho Peak TI (half)
- Proposed Greenes Rd TI
- ADOT Approved Location Park Link TI
- UP Proposed Location Park Link TI
- Existing & Proposed Improvements Red Rock TI

Public Land Ownership

- Private
- BLM
- Military
- Picacho Peak State Park
- Bureau of Reclamation

Pinal County Roads

Access Roads

0 1 2 Miles

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Imagery - NAIP2010

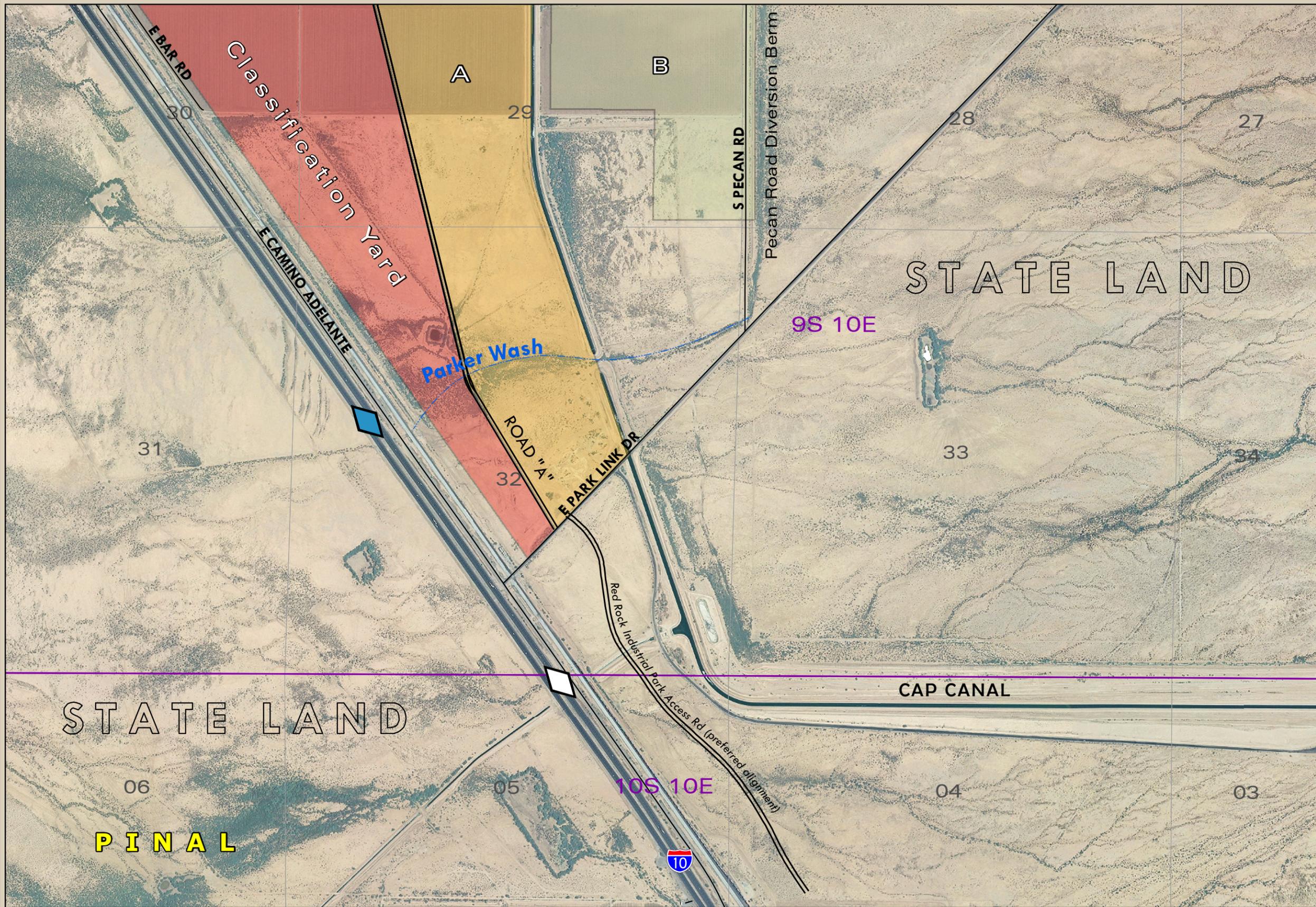
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Red Rock Area - Union Pacific Proposal - Proposed Park Link Traffic Interchange(s)

August 2012
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Exhibit 3 Park Link



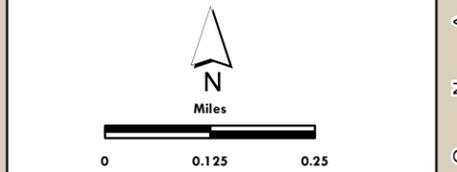
UPRR Classification Area
 Classification Yard 945 Ac

Industrial Site A 1,330 Ac

Industrial Site B 545 Ac

Interchanges
 ADOT Approved Location Park Link TI
 UP Proposed Location Park Link TI

— Pinal County Roads
 == Road A
 == Access Roads



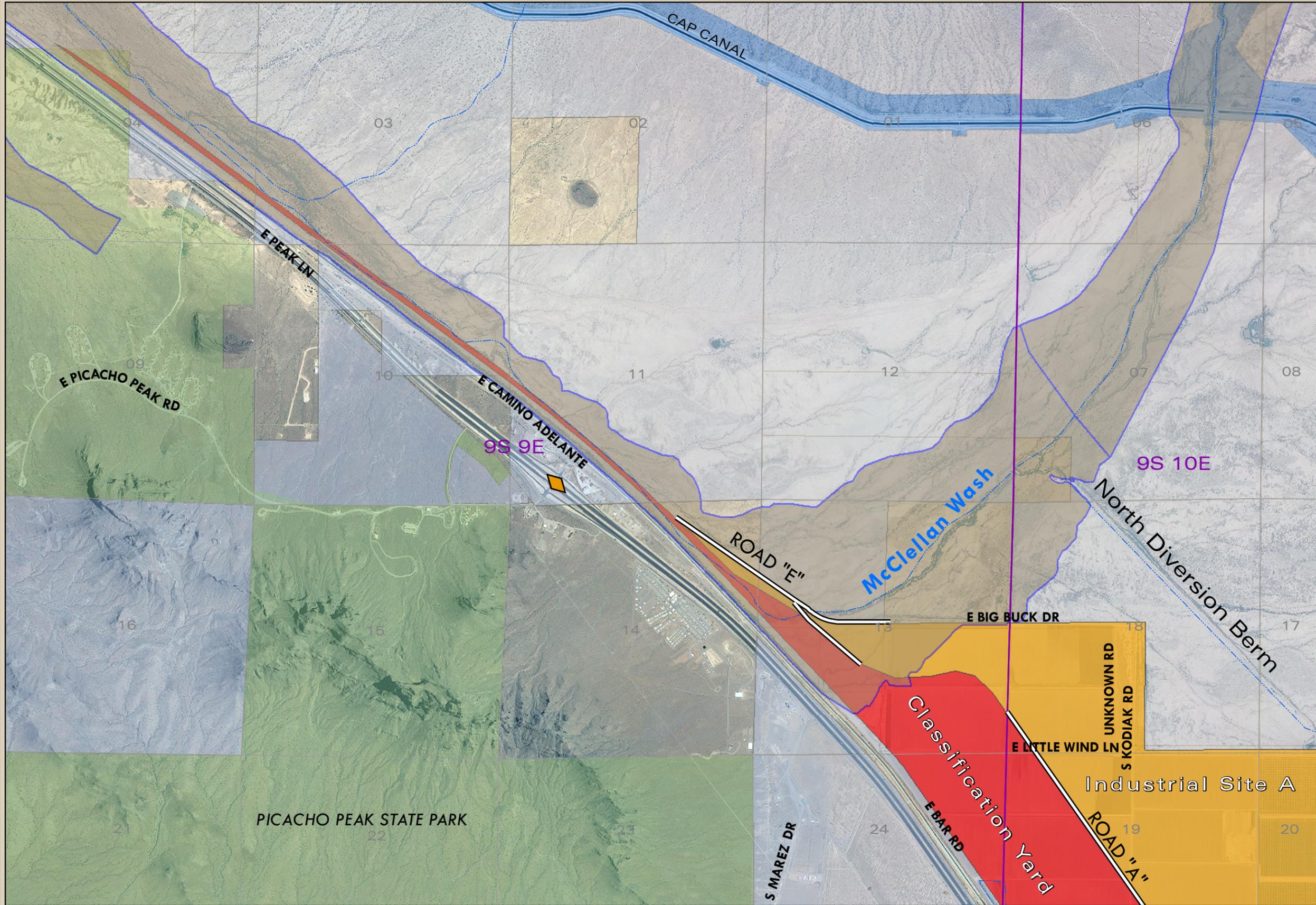
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Red Rock Area - Union Pacific Proposal - Picacho Peak Traffic Interchange

August 2012
DRAFT

Exhibit 4 Picacho Pk



- State Land
- UPRR Classification Area**
- Classification Yard 945 Ac
- Industrial Site A 1,330 Ac
- Interchanges**
- Existing Picacho Peak TI (full)
- Public Land Ownership**
- Private
- Picacho Peak State Park
- Bureau of Reclamation
- DFIRM Flood Zones - Pinal**
- 100 Year Floodplain

N

Miles

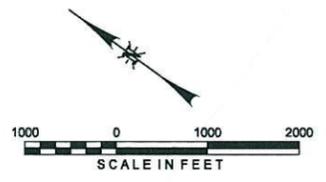
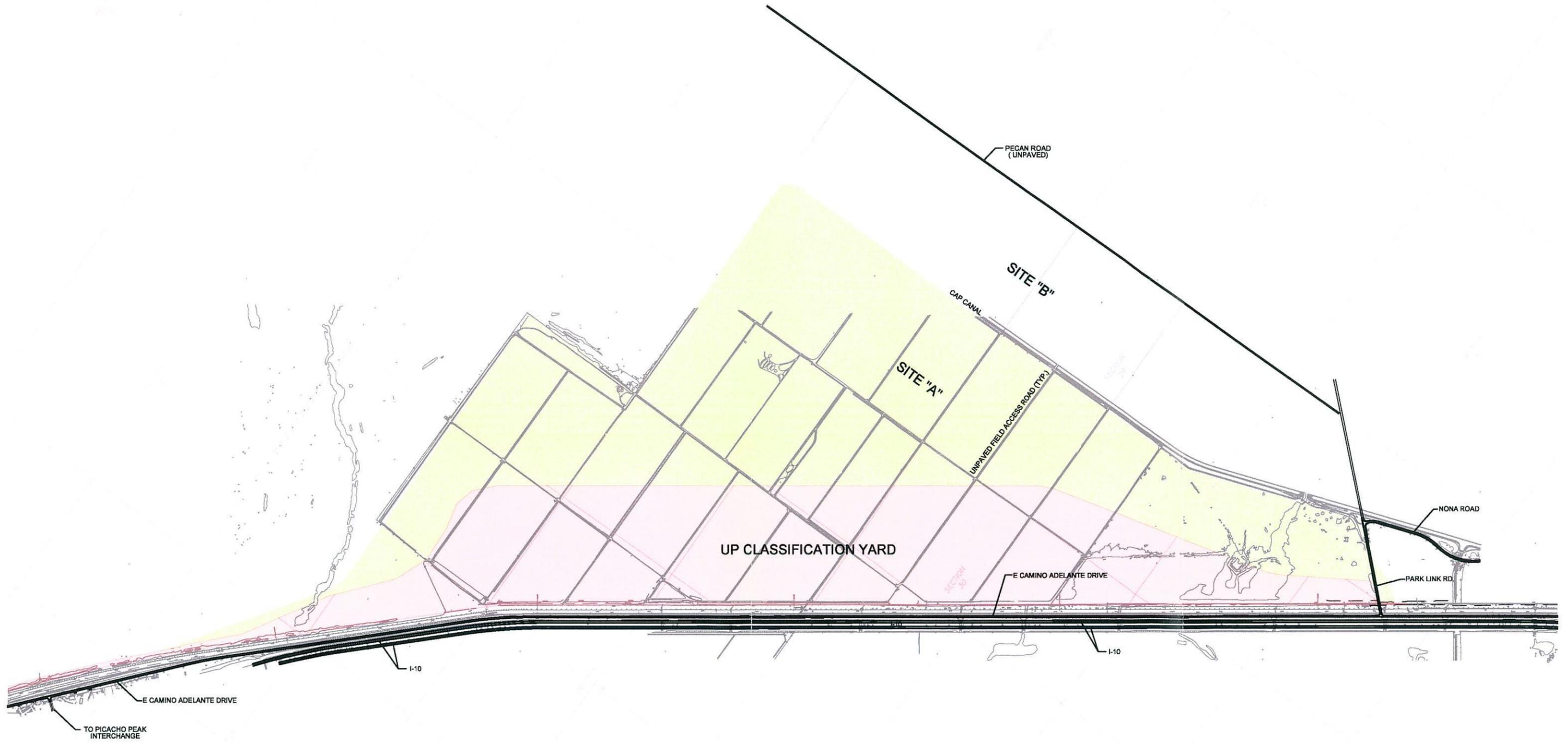
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ASLD makes no warranties, implied or expressed, regarding information shown on this map.
Produced by Planning/JW 8/2012
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Imagery - NAIP2010

Datum & Projection:
North American Datum 1983 HARN
UTM Zone 12 North - Meters

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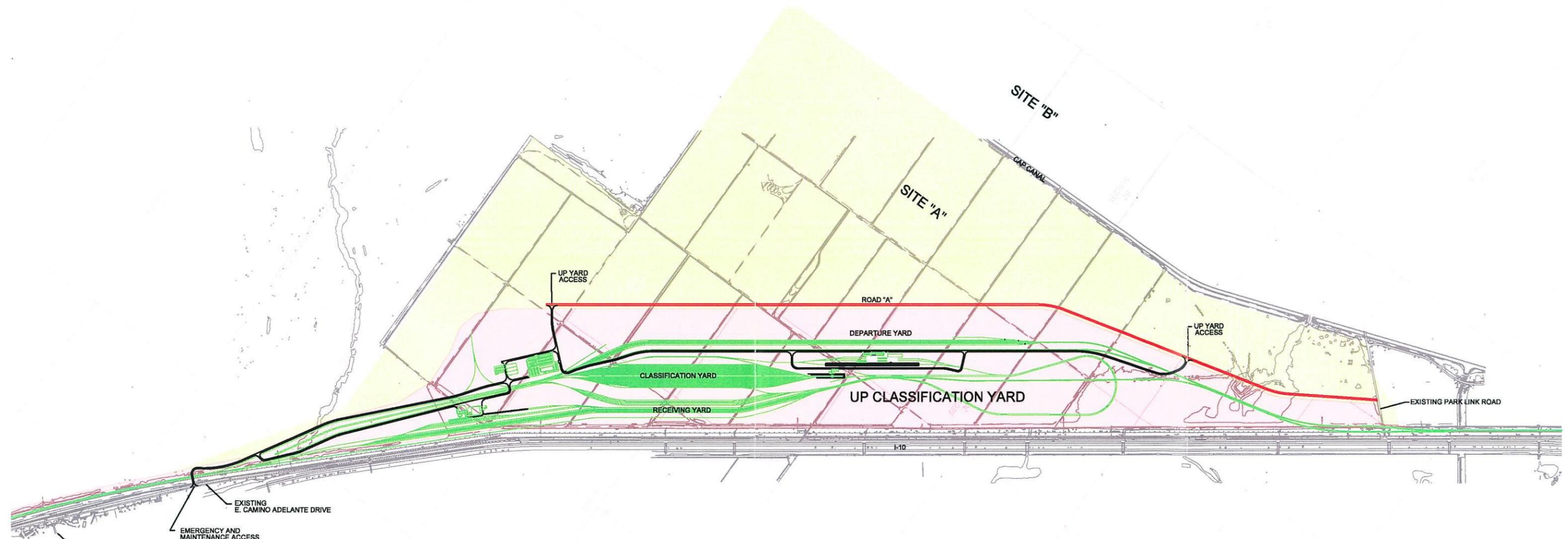
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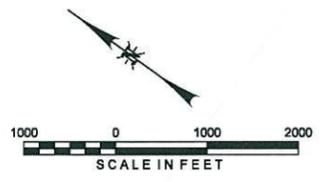
UNION PACIFIC RAILROAD	Office of Assistant Vice President Engineering Design
LOCATION:	RED ROCK CLASSIFICATION YARD RED ROCK ARIZONA
EXHIBIT TITLE:	EXISTING ROADS FIGURE 7

LEGEND

- CLASSIFICATION YARD SITE
- INDUSTRIAL SITE "A"
- INDUSTRIAL SITE "B"
- CLASSIFICATION YARD TRACK
- CLASSIFICATION YARD PRIMARY ROADS (PAVED)
- INDUSTRIAL ROAD NETWORK



NOTE:
ROAD "A" IS PROPOSED TO BE TURNED OVER TO THE COUNTY AS A PUBLIC ROAD.



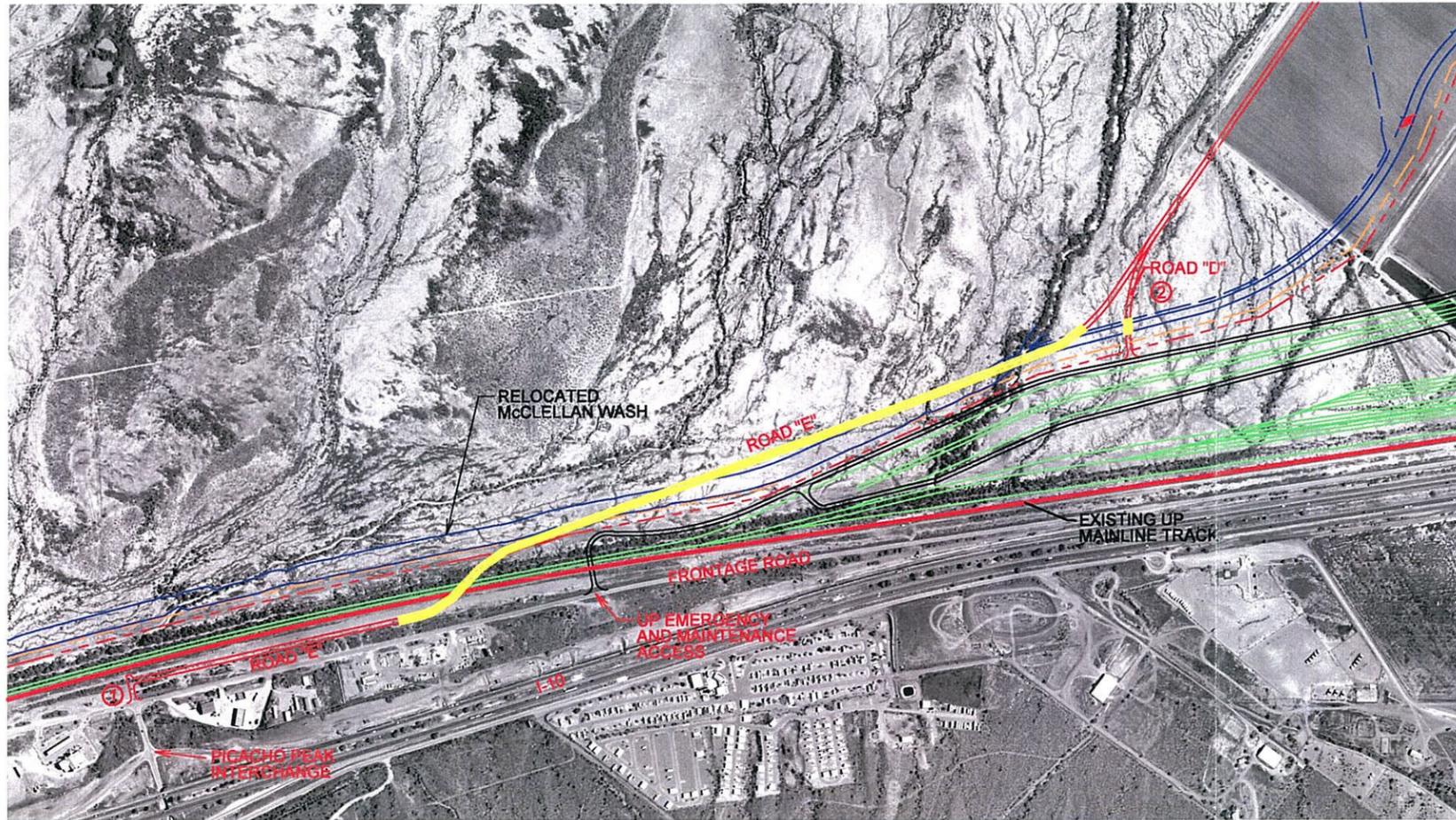
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LOCATION: RED ROCK CLASSIFICATION YARD
RED ROCK ARIZONA

EXHIBIT TITLE: CLASSIFICATION YARD ROADWAY IMPROVEMENTS
FIGURE 9

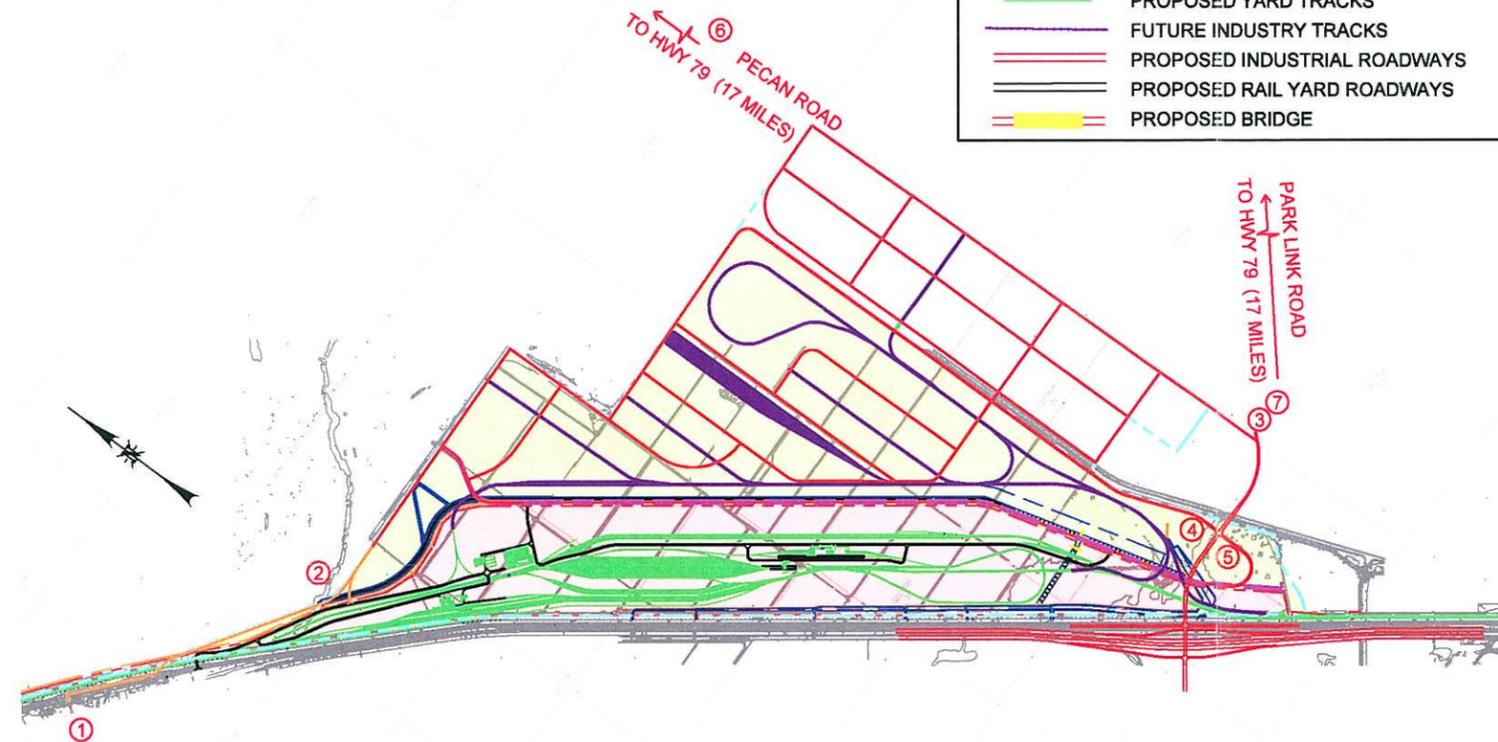


DETAIL B : NORTH END ACCESS CONNECTIONS

LEGEND	
	PROPOSED UP YARD RIGHT OF WAY
	PROPOSED YARD TRACKS
	FUTURE INDUSTRY TRACKS
	PROPOSED INDUSTRIAL ROADWAYS
	PROPOSED RAIL YARD ROADWAYS
	PROPOSED BRIDGE



DETAIL A : SOUTH END ACCESS CONNECTIONS

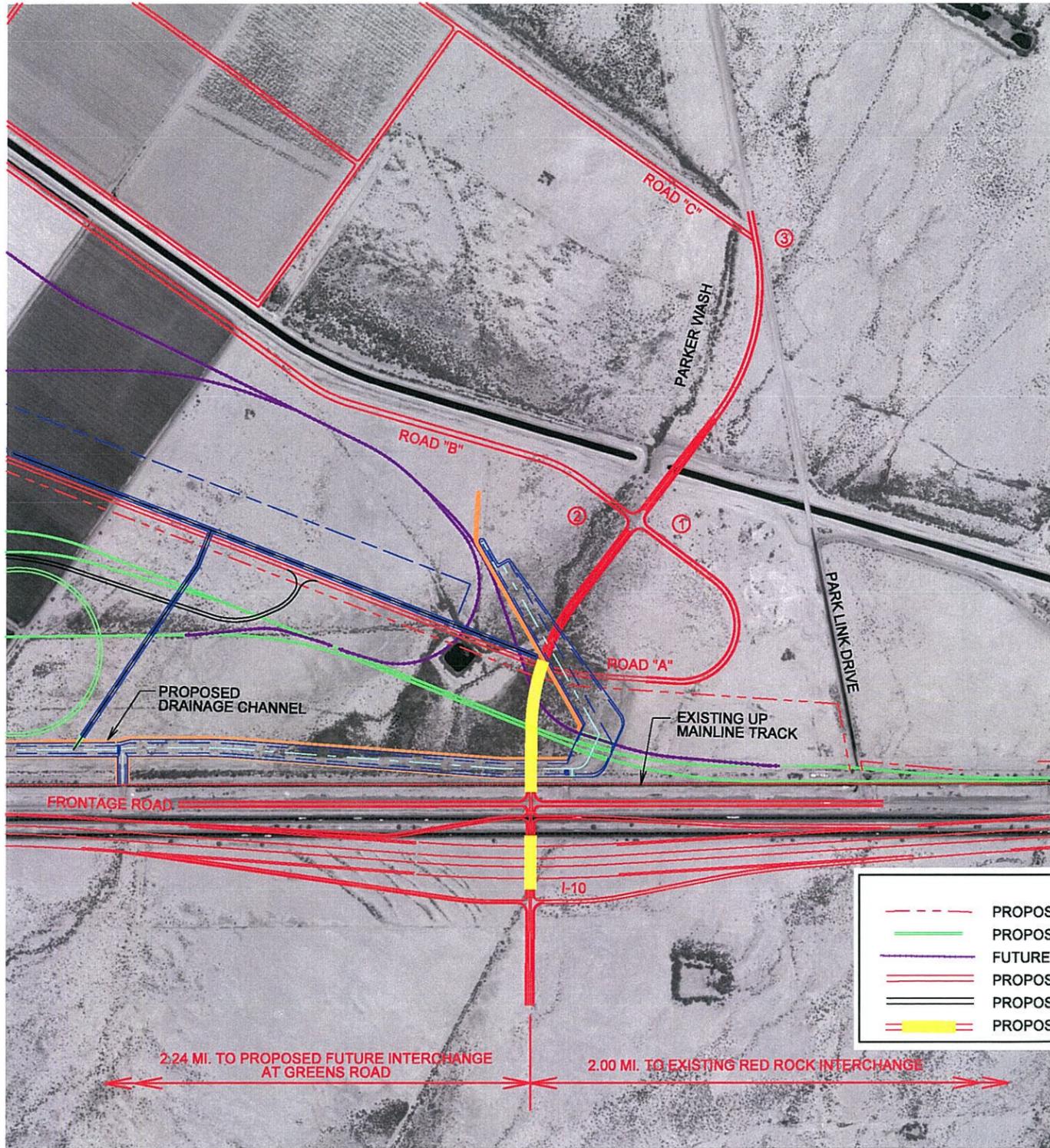


POSSIBLE ROAD ACCESS CONNECTIONS POINTS

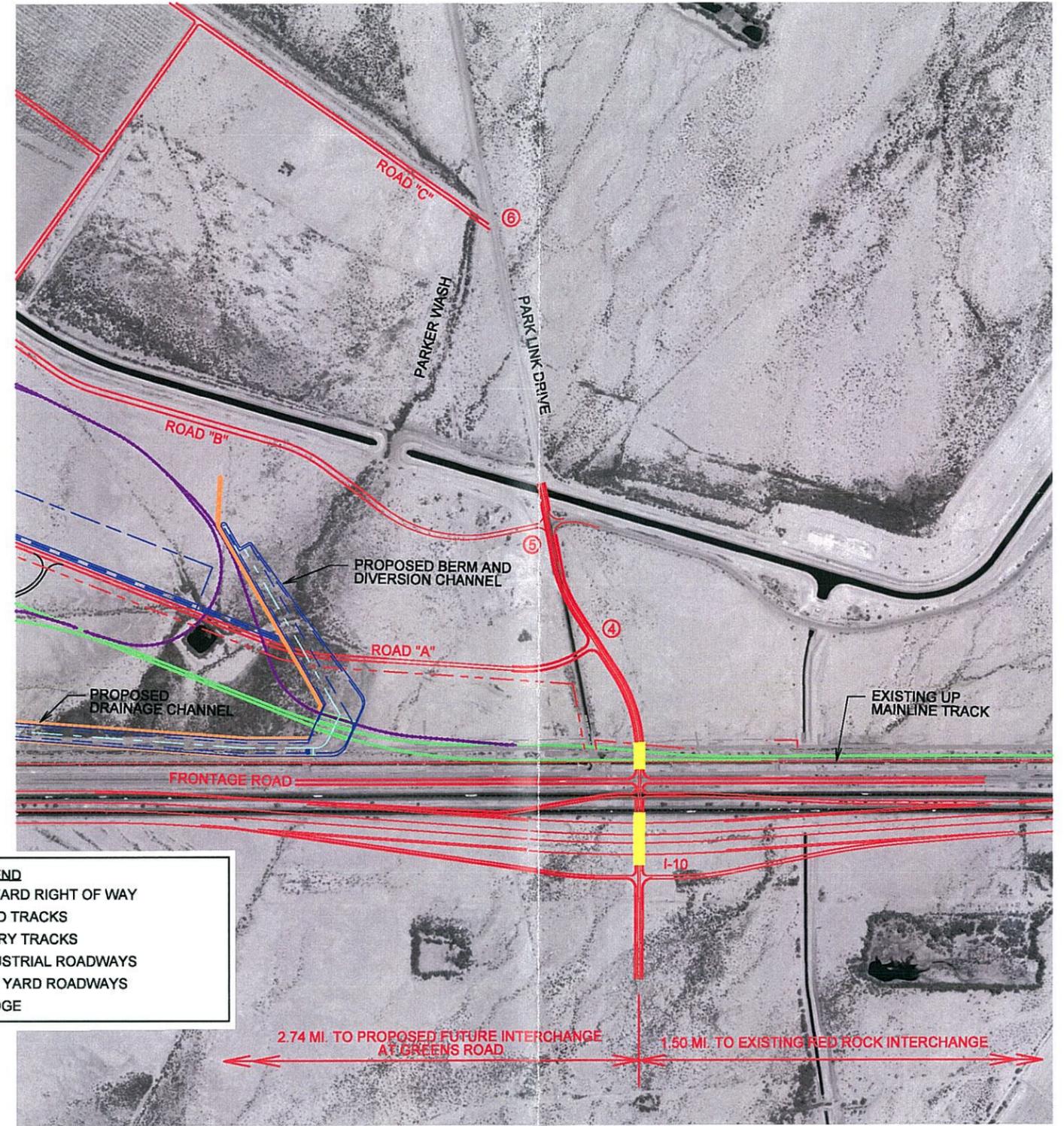
- ① CONNECT FROM ROAD "E" GRADE SEPARATED OVER PROPOSED AND EXISTING TRACKS FOR CONNECTION TO EXISTING FRONTAGE ROAD AT PICACHO PEAK INTERCHANGE
- ② CONNECT FROM ROAD "D" INTO CLASSIFICATION YARD USING UPRR'S INTERNAL ROADWAY SYSTEM TO EXIT ONTO EXISTING FRONTAGE ROAD THROUGH AN AT-GRADE RAILROAD CROSSING
- ③ CONNECT FROM ROAD "C" TO EXISTING PARK LINK DRIVE
- ④ CONNECT FROM ROAD "B" TO REALIGNED PARK LINK DRIVE
- ⑤ CONNECT FROM ROAD "A" TO REALIGNED PARK LINK DRIVE
- ⑥ CONNECT FROM PECAN ROAD TO STATE HIGHWAY 79 AT A DISTANCE OF APPROXIMATELY 17 MILES
- ⑦ CONNECT FROM PARK LINK ROAD TO STATE HIGHWAY 79 AT A DISTANCE OF APPROXIMATELY 17 MILES



UNION PACIFIC RAILROAD Office of Assistant Vice President Engineering Design
 LOCATION: RED ROCK CLASSIFICATION YARD RED ROCK ARIZONA
 EXHIBIT TITLE: INDUSTRIAL PARK ACCESS FIGURE 11



DETAIL A : ADOT INTERCHANGE RECOMMENDATION



DETAIL B : URS INTERCHANGE RECOMMENDATION

LEGEND	
	PROPOSED UP YARD RIGHT OF WAY
	PROPOSED YARD TRACKS
	FUTURE INDUSTRY TRACKS
	PROPOSED INDUSTRIAL ROADWAYS
	PROPOSED RAIL YARD ROADWAYS
	PROPOSED BRIDGE

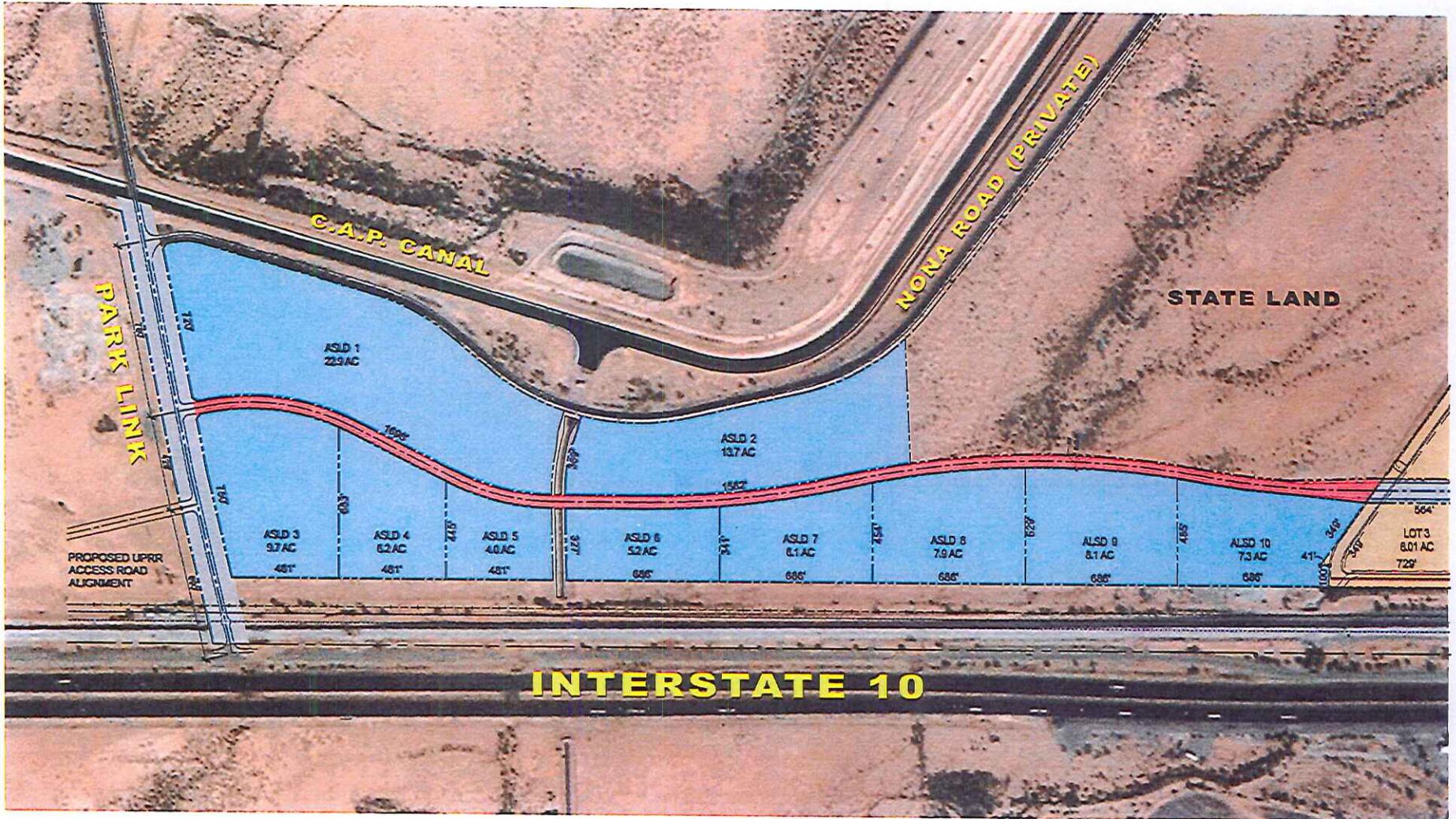
- ① CONNECT FROM ROAD "A" TO REALIGNED PARK LINK DRIVE AT PROPOSED INTERSECTION
- ② CONNECT FROM ROAD "B" TO REALIGNED PARK LINK DRIVE AT PROPOSED INTERSECTION
- ③ CONNECT FROM ROAD "C" TO REALIGNED PARK LINK DRIVE

- ④ CONNECT FROM ROAD "A" TO REALIGNED PARK LINK DRIVE
- ⑤ CONNECT FROM ROAD "B" TO REALIGNED PARK LINK DRIVE
- ⑥ CONNECT FROM ROAD "C" TO EXISTING PARK LINK DRIVE

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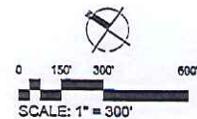
UNION PACIFIC RAILROAD Office of Assistant Vice President Engineering Design
 LOCATION: RED ROCK CLASSIFICATION YARD
 RED ROCK ARIZONA
 EXHIBIT TITLE: PARK LINK DRIVE INTERCHANGE
 FIGURE 8



Option B

Red Rock Industrial Park Access Road
I-10 & Park Link to Sasco
Pinal County, Arizona

Walton
Investing on Solid Ground®

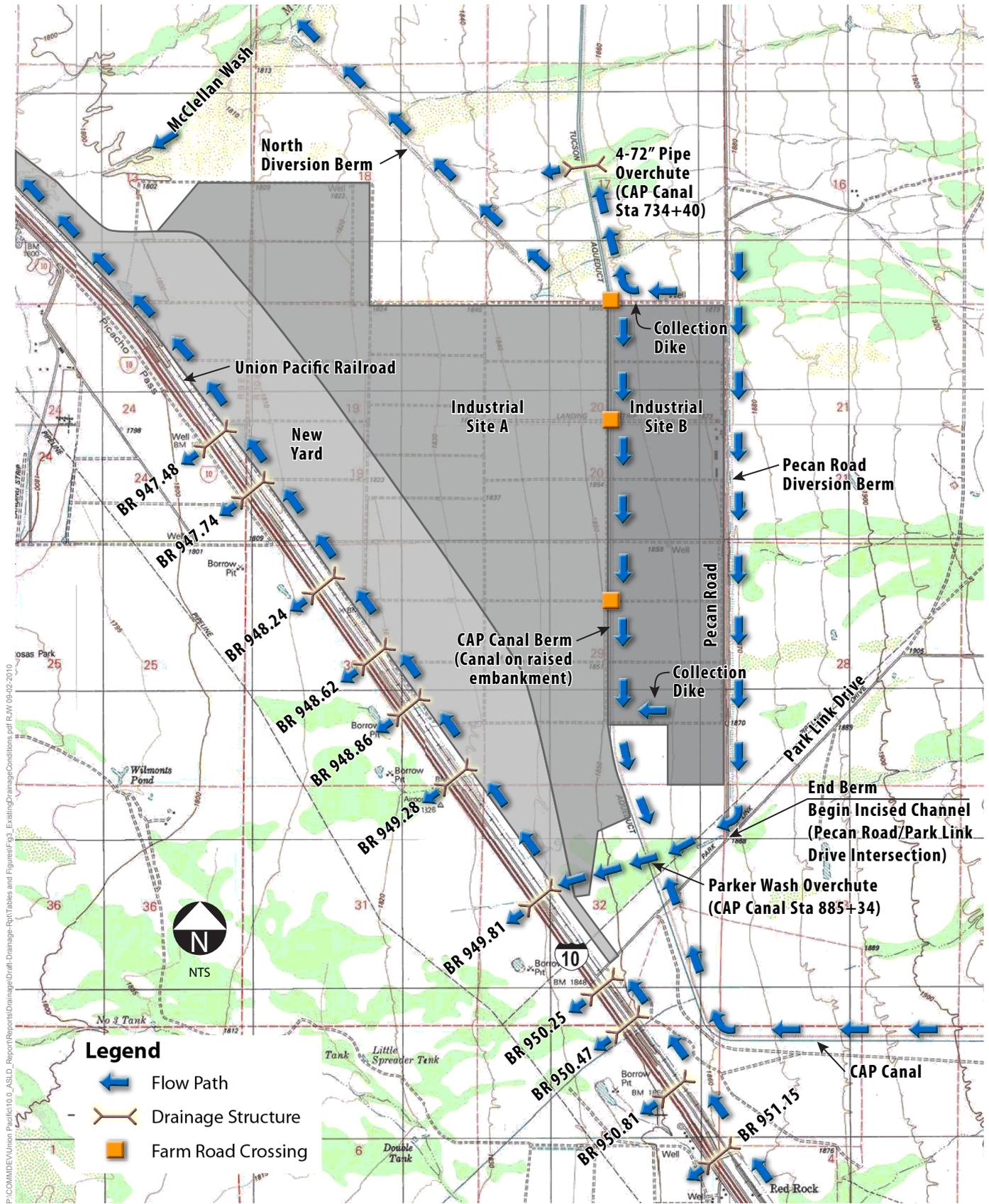


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Builder Design Group, Inc.
ARCHITECTS & ENGINEERS

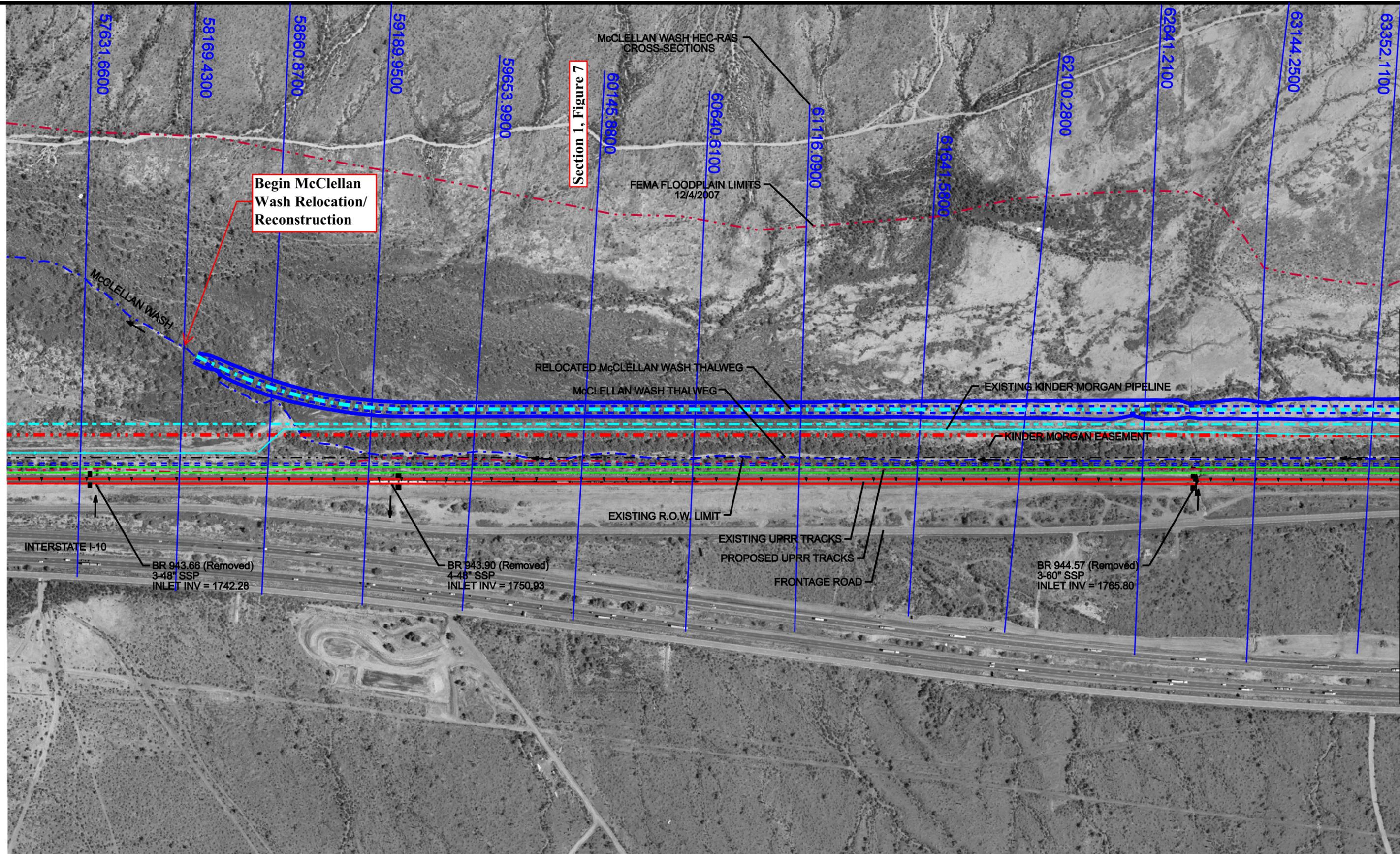
PREFERRED ALIGNMENT



Red Rock Classification Yard, Red Rock, Arizona

Figure 3
Existing Drainage Conditions





Begin McClellan Wash Relocation/Reconstruction

Section 1, Figure 7

McCLELLAN WASH HEC-RAS CROSS-SECTIONS

FEMA FLOODPLAIN LIMITS 12/4/2007

RELOCATED McCLELLAN WASH THALWEG

McCLELLAN WASH THALWEG

EXISTING KINDER MORGAN PIPELINE

KINDER MORGAN EASEMENT

EXISTING R.O.W. LIMIT

EXISTING UPRR TRACKS

PROPOSED UPRR TRACKS

FRONTAGE ROAD

BR 944.57 (Removed)
3-60" SSP
INLET INV = 1765.80

BR 943.90 (Removed)
4-48" SSP
INLET INV = 1750.93

BR 943.66 (Removed)
3-48" SSP
INLET INV = 1742.28

INTERSTATE I-10

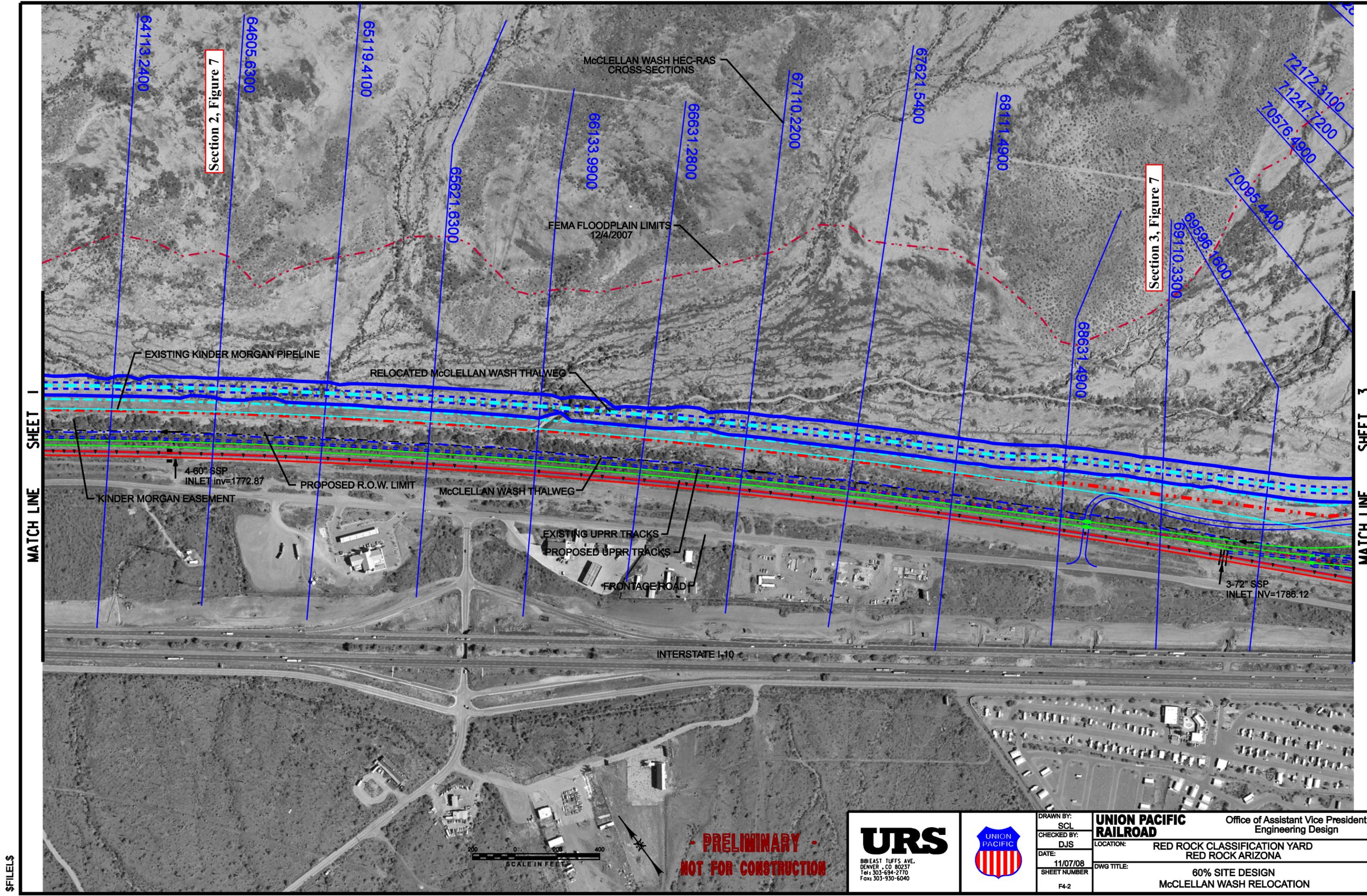
MATCH LINE SHEET 2



PRELIMINARY
NOT FOR CONSTRUCTION



DRAWN BY: SCL CHECKED BY: DJS DATE: 11/07/08 SHEET NUMBER: F4-1	UNION PACIFIC RAILROAD Office of Assistant Vice President Engineering Design LOCATION: RED ROCK CLASSIFICATION YARD RED ROCK ARIZONA DWG TITLE: 60% SITE DESIGN McCLELLAN WASH RELOCATION
--	--



Section 2, Figure 7

Section 3, Figure 7

MATCH LINE SHEET 1

MATCH LINE SHEET 3

McCLELLAN WASH HEC-RAS CROSS-SECTIONS

FEMA FLOODPLAIN LIMITS 12/4/2007

EXISTING KINDER MORGAN PIPELINE

RELOCATED McCLELLAN WASH THALWEG

4-60" SSP INLET inv=1772.87

PROPOSED R.O.W. LIMIT

KINDER MORGAN EASEMENT

McCLELLAN WASH THALWEG

EXISTING UPRR TRACKS

PROPOSED UPRR TRACKS

FRONTAGE ROAD

INTERSTATE I-10

3-72" SSP INLET INV=1786.12

64113.2400

64605.6300

65119.4100

65621.6300

66133.9900

66631.2800

67110.2200

67621.5400

68111.4900

68631.4900

69110.3300

69596.1600

70095.4400

70576.4900

71247.7200

72172.3100



PRELIMINARY
NOT FOR CONSTRUCTION

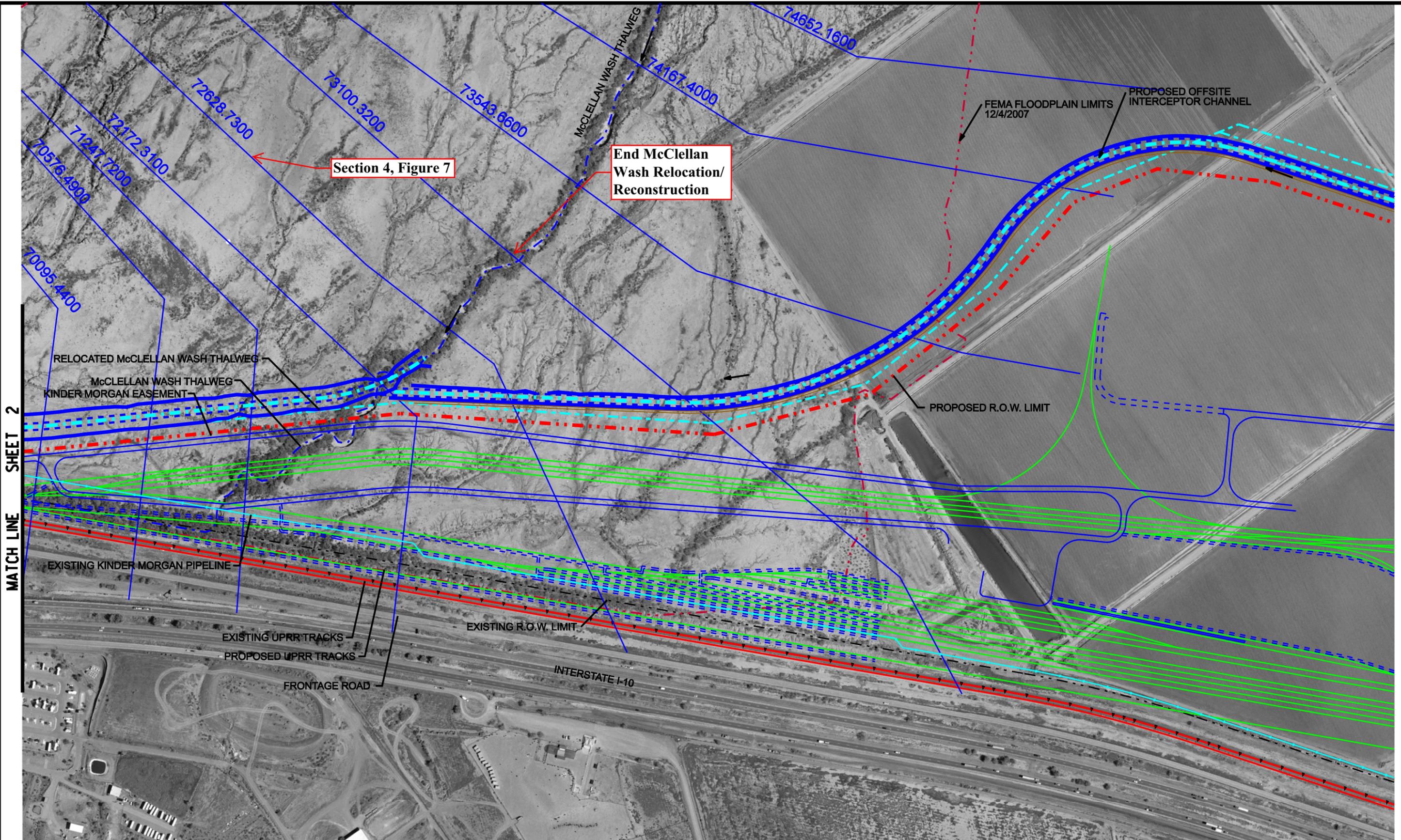
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SHEET NUMBER	F4-2

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DWG TITLE:	60% SITE DESIGN McCLELLAN WASH RELOCATION

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Section 4, Figure 7

End McClellan Wash Relocation/ Reconstruction

FEMA FLOODPLAIN LIMITS 12/4/2007

PROPOSED OFFSITE INTERCEPTOR CHANNEL

RELOCATED McCLELLAN WASH THALWEG
McCLELLAN WASH THALWEG
KINDER MORGAN EASEMENT

PROPOSED R.O.W. LIMIT

MATCH LINE SHEET 2

EXISTING KINDER MORGAN PIPELINE

EXISTING UPRR TRACKS
PROPOSED UPRR TRACKS

FRONTAGE ROAD

EXISTING R.O.W. LIMIT

INTERSTATE I-10

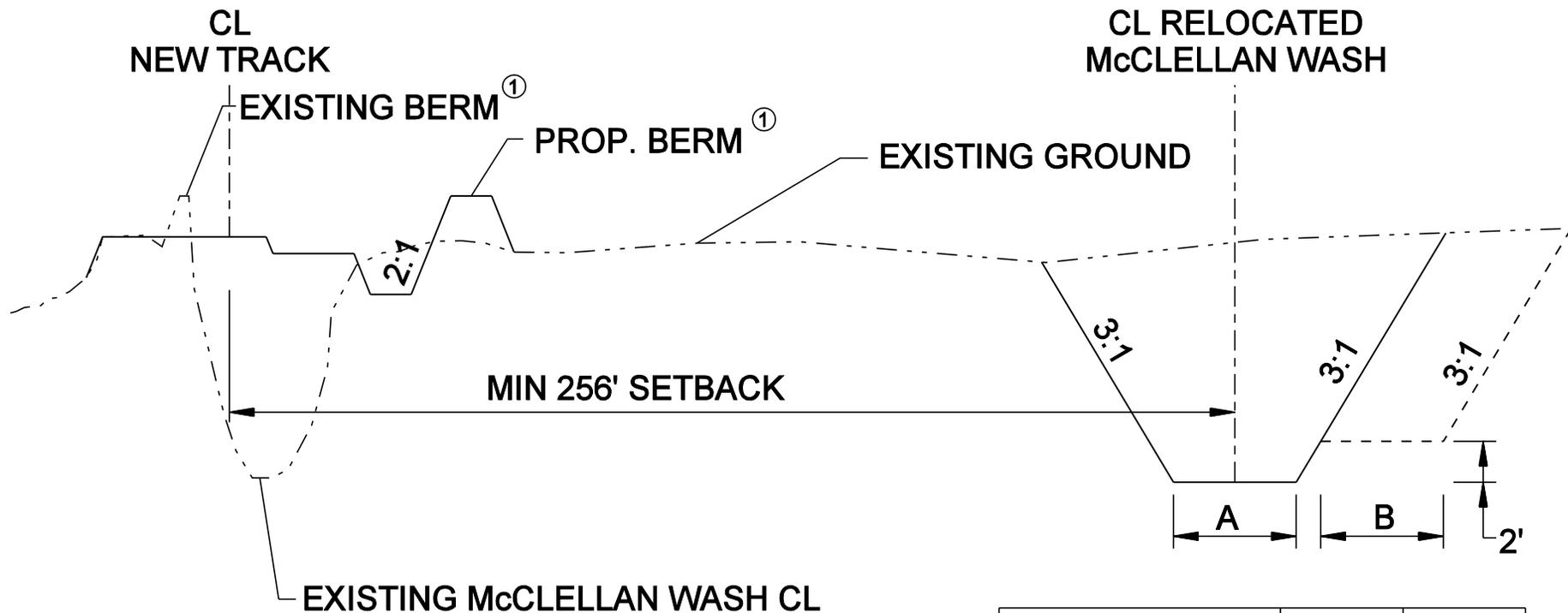


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CHECKED BY: DJS	LOCATION:	RED ROCK CLASSIFICATION YARD RED ROCK ARIZONA
DATE: 11/07/08	DWG TITLE:	60% SITE DESIGN McCLELLAN WASH RELOCATION
SHEET NUMBER F4-3		



RIVER STATION		ALT #1		ALT #2	
FROM	TO	A	B	A	B
59169.43	67622.42	30	0	30	0
68112.20	73100.32	30	30	30	40

McCLELLAN WASH RELOCATION TYPICAL CROSS-SECTION (LOOKING DOWNSTREAM, NORTHWEST)

① SET ELEVATION OF PROPOSED BERM EQUAL TO ELEVATION OF EXISTING BERM



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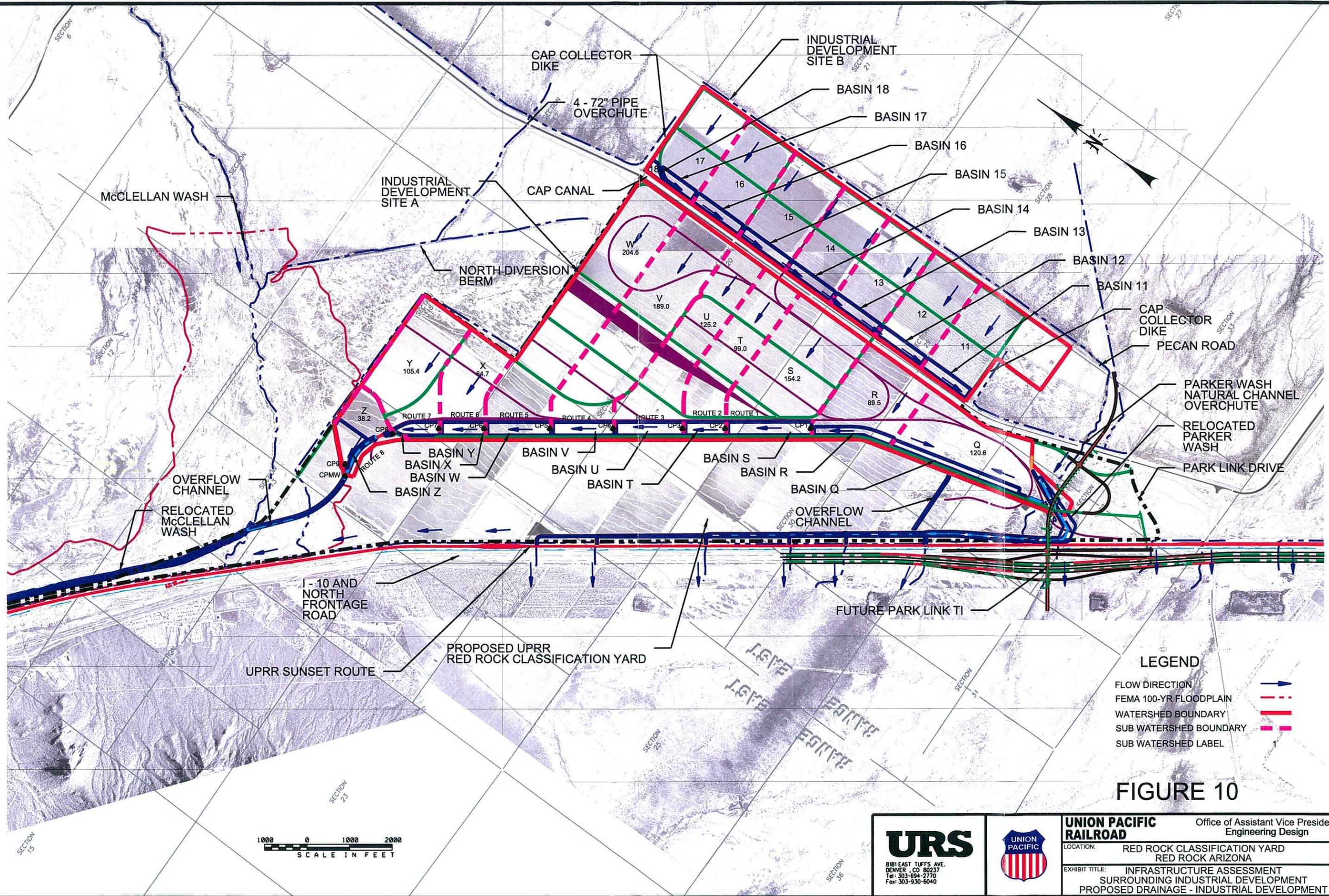
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SCL
CHECKED BY:
DJS
DATE:
09/02/08
SHEET NUMBER
1 OF 1

**UNION PACIFIC
RAILROAD**

Office of Assistant Vice President
Engineering Design

LOCATION: RED ROCK CLASSIFICATION YARD
RED ROCK ARIZONA

DWG TITLE:
McCLELLAN CHANNEL DETAIL
FIGURE 3



LEGEND

- FLOW DIRECTION
- FEMA 100-YR FLOODPLAIN
- WATERSHED BOUNDARY
- SUB WATERSHED BOUNDARY
- SUB WATERSHED LABEL 1

FIGURE 10



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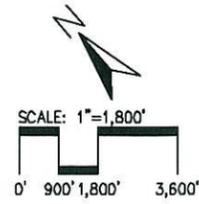
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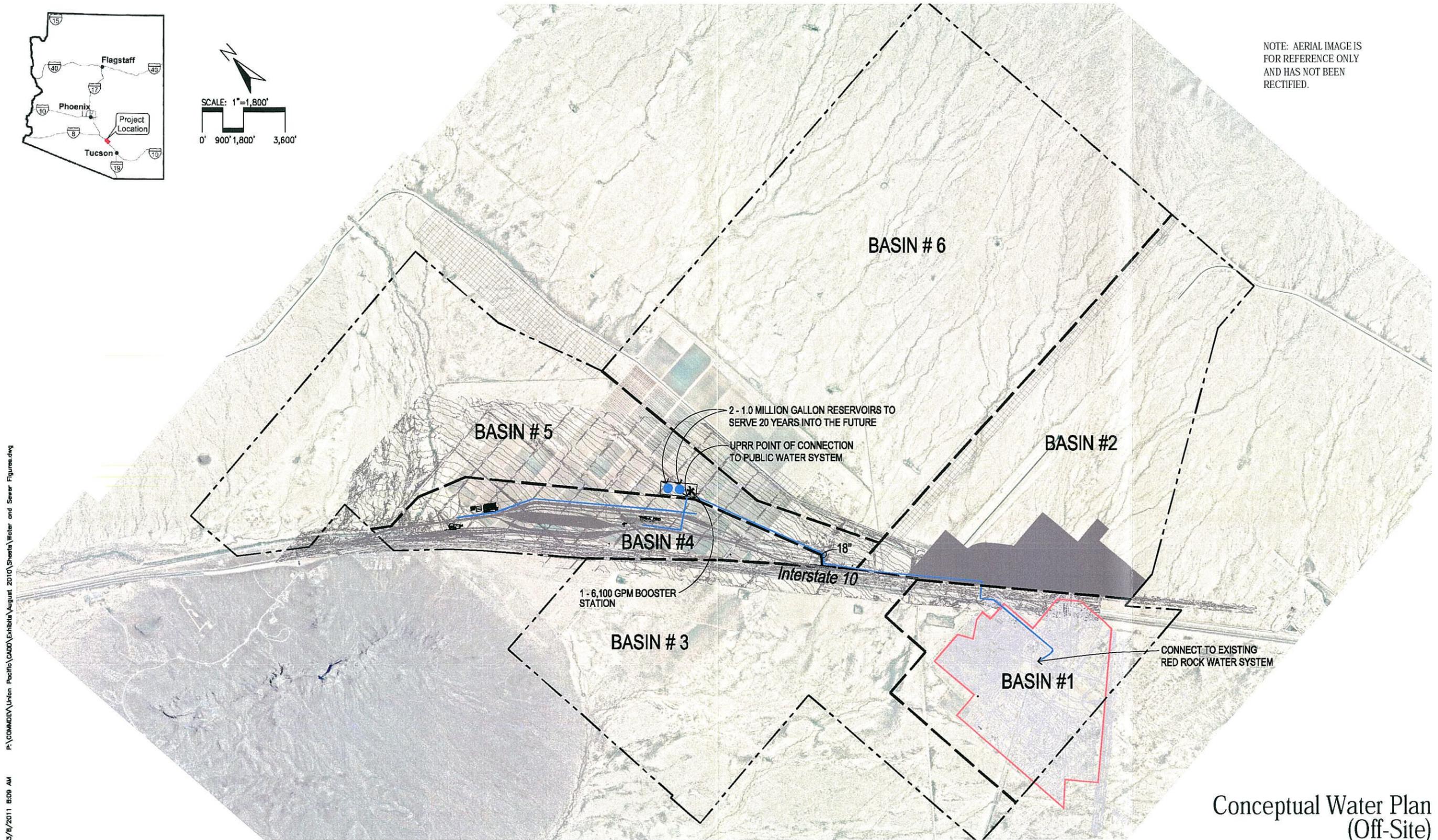
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LOCATION: RED ROCK CLASSIFICATION YARD
RED ROCK ARIZONA

EXHIBIT TITLE: INFRASTRUCTURE ASSESSMENT
SURROUNDING INDUSTRIAL DEVELOPMENT
PROPOSED DRAINAGE - INDUSTRIAL DEVELOPMENT



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Legend

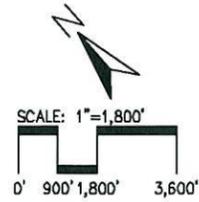
- Preliminary Site Design
- Proposed Water Alignment
- Private Property (Excluded)
- - - Sewer Basin Boundary
- ▨ Red Rock Utility Limits
- ▨ Interstate Highway
- Reservoir
- * Booster Station
- Well Site
- - - Red Rock Utilities 208 Boundary Limits

SOURCE:
 PRELIMINARY SITE DESIGN: URS
 AUG. 2010
 SURFACE MANAGEMENT:
 ARIZONA STATE LAND
 DEPARTMENT 2007
 BASE MAP: ALRIS 1997-2007

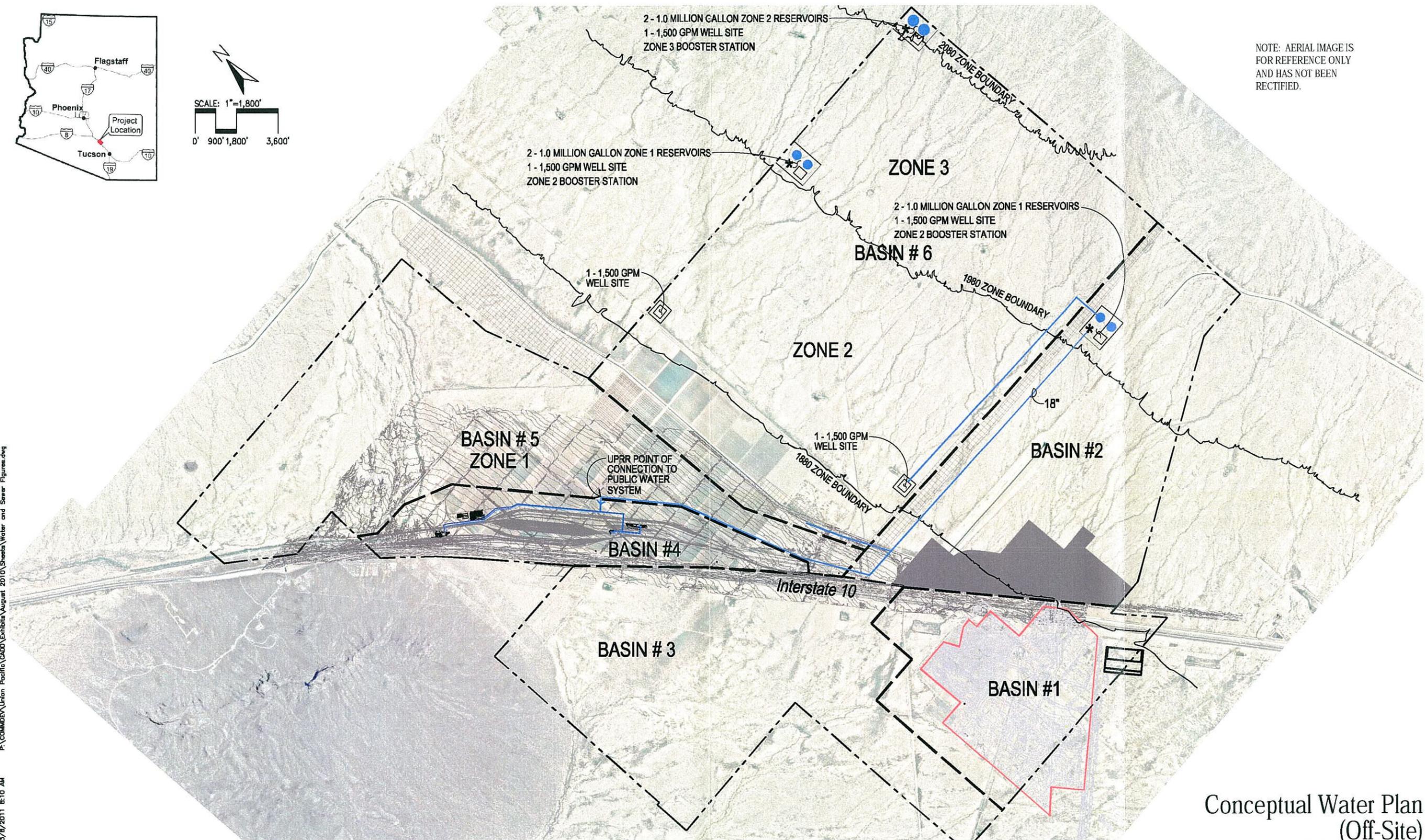


Conceptual Water Plan
 (Off-Site)
 Alternative 1

UPRR Classification Yard
 Red Rock Arizona
 Figure 4



NOTE: AERIAL IMAGE IS FOR REFERENCE ONLY AND HAS NOT BEEN RECTIFIED.



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Legend

- Preliminary Site Design
- Proposed Water Alignment
- Private Property (Excluded)
- Sewer Basin Boundary
- Red Rock Utility Limits
- Interstate Highway
- Reservoir
- Booster Station
- Well Site
- Red Rock Utilities 208 Boundary Limits

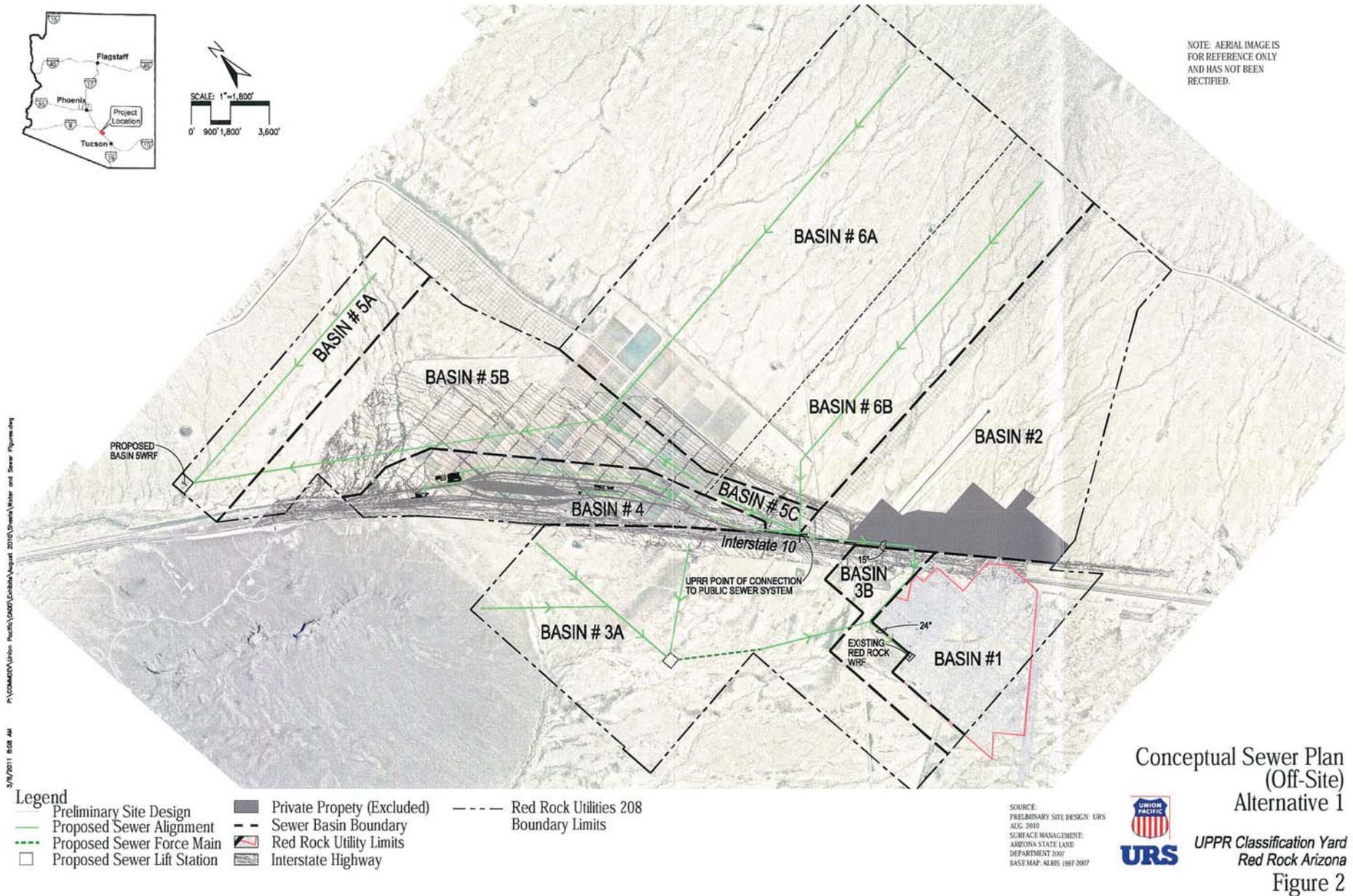
SOURCE:
PRELIMINARY SITE DESIGN: URS
AUG. 2010
SURFACE MANAGEMENT:
ARIZONA STATE LAND
DEPARTMENT 2007
BASE MAP: ALRIS 1997-2007



**Conceptual Water Plan
(Off-Site)
Alternative 2**

**UPPR Classification Yard
Red Rock Arizona
Figure 5**

FIGURE 12



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FIGURE 14

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