

October 31st, 2018

Ms. Rebecca Young, P.E.
Project Manager
Michael Baker International
3210 E. Guasti Road
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Ontario, CA 91716

**Subject: Route 60/World Logistics Center (WLC) Parkway Drainage Assessment – EA 0M590
– Caltrans Project No. 0813000109**

The project lies primarily within the city of Moreno Valley, with the northeast quadrant of the interchange in unincorporated Riverside County. The land use within and surrounding the project site is sparsely developed with exception of the 1.8 million square foot Skechers high-cube warehouse. The existing topography north of the project site primarily slopes gently at 3 percent to 4 percent from north to south. Five culverts cross Route 60 from north to south, however only the four culverts between Redlands Boulevard and WLC Parkway will be extended on the upstream ends as part of the project improvements. The south side of the project is mostly developed on the Skechers site. East of WLC Parkway is open space and the western limits of the Badlands area.

This drainage assessment is intended to evaluate the distribution of flow within the alluvial fan floodplain North of SR-60. Culvert hydraulics outside of the alluvial fan floodplain do not require 2-dimensional modeling.

Existing drainage facilities in the project vicinity are principally cross culverts beneath SR-60. Five culverts cross SR-60 between Redlands Boulevard and WLC Parkway. From west to east, the culverts are a 42-inch corrugated metal pipe (CMP), a triple barrel 4-ft span x 2-ft rise Reinforced Concrete Box (RCB), two separate double barrels 48-inch CMP crossings, and a double 72-inch CMP.

The 42-in CMP near Redlands Boulevard outlets south of SR-60 and west of Redlands Boulevard, and is not anticipated to be impacted by the project. The remaining four culverts are located between Redlands Boulevard and WLC Parkway. The crossings meet at a closed system (Moreno MDP Line F) adjacent to SR-60 on the south side. The closed system continues along the west side of the Skechers facility and outlets into a spreading basin south of Eucalyptus Avenue.

Two alternatives and two design variations were evaluated, Alternatives 2, 2a, 6 and 6a. The proposed drainage includes extending the existing culverts toward the north along the proposed toe of the grading plane. Inlet improvements such as headwalls and sloped invert paving are anticipated to be necessary and will be employed to replicate or improve the existing drainage patterns. Additionally, a graded channel along the toe of the roadway embankment is anticipated to be constructed to help direct the prevailing southerly flow toward the four principal culverts. Because this channel is basically parallel to the contours, the profile will be designed in a sawtooth fashion to reduce the tendency of the flow to pond adjacent to the roadway embankment.

The hydrology for the Skechers facility development calculated a combined peak flow of 1770 cfs for the 3-hr, 100-year event. The regional hydrology is based on a 2.59 square mile watershed. We do not foresee that the proposed roadway improvements will materially change the total flow for this watershed.

Depths of flow at the upstream end of the four cross culverts is expected to be the same, or somewhat reduced by the improved distribution of the streams along the toe of the proposed Westbound On-Ramp. Further study will be required during final design to evaluate this in more detail, but the extension of the culverts and the assumed grading conditions support the possibility of meeting or improving the existing flood depths at the four culverts.

Additional inlets and storm drains will be employed along the roadway shoulders and ramps to maintain the allowable flooded widths during the 25-year event in accordance with the Caltrans Highway Design Manual Table 831.3.

A preliminary estimate of roadway drainage quantities has been prepared and submitted separately.

Should you have any questions or require additional information, do not hesitate to call me at 949-855-7082.

Sincerely,

Bradley M. Losey, P.E.
Project Manager

Attached:

- Location Hydraulics Study Flood Hazard Mapping, Exhibit 1, 1.1, 2 and 2.1
- SR-60/ WLC Parkway – 2D Floodplain Analysis, Exhibits 3, 4, 5, and 6

C: Gary Warkentin, John Moynier

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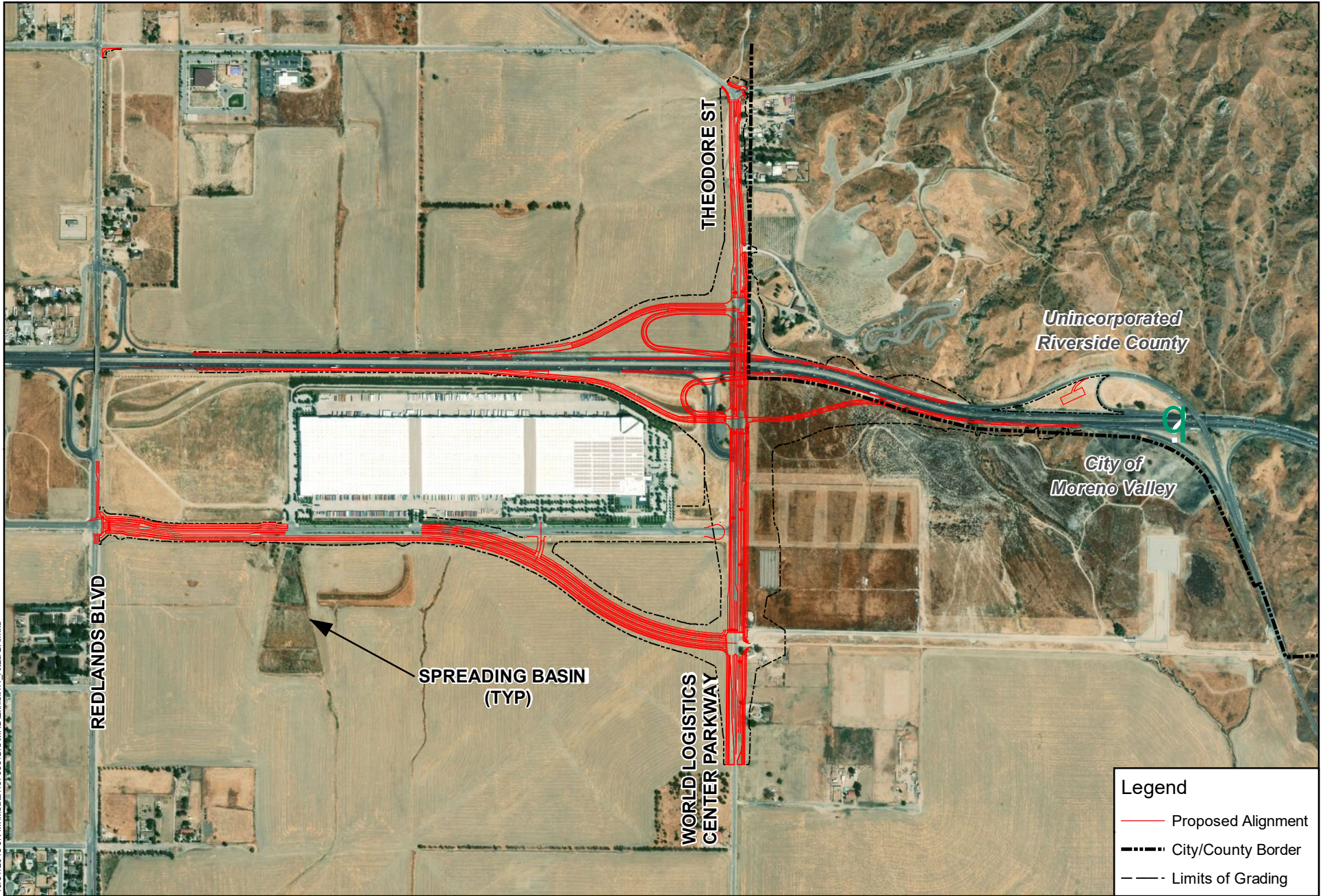


Legend

- Proposed Alignment
- City/County Border
- Limits of Grading



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REDLANDS BLVD

THEODORE ST

WORLD LOGISTICS CENTER PARKWAY

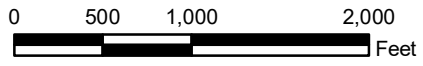
SPREADING BASIN (TYP)

Unincorporated Riverside County

City of Moreno Valley

Legend

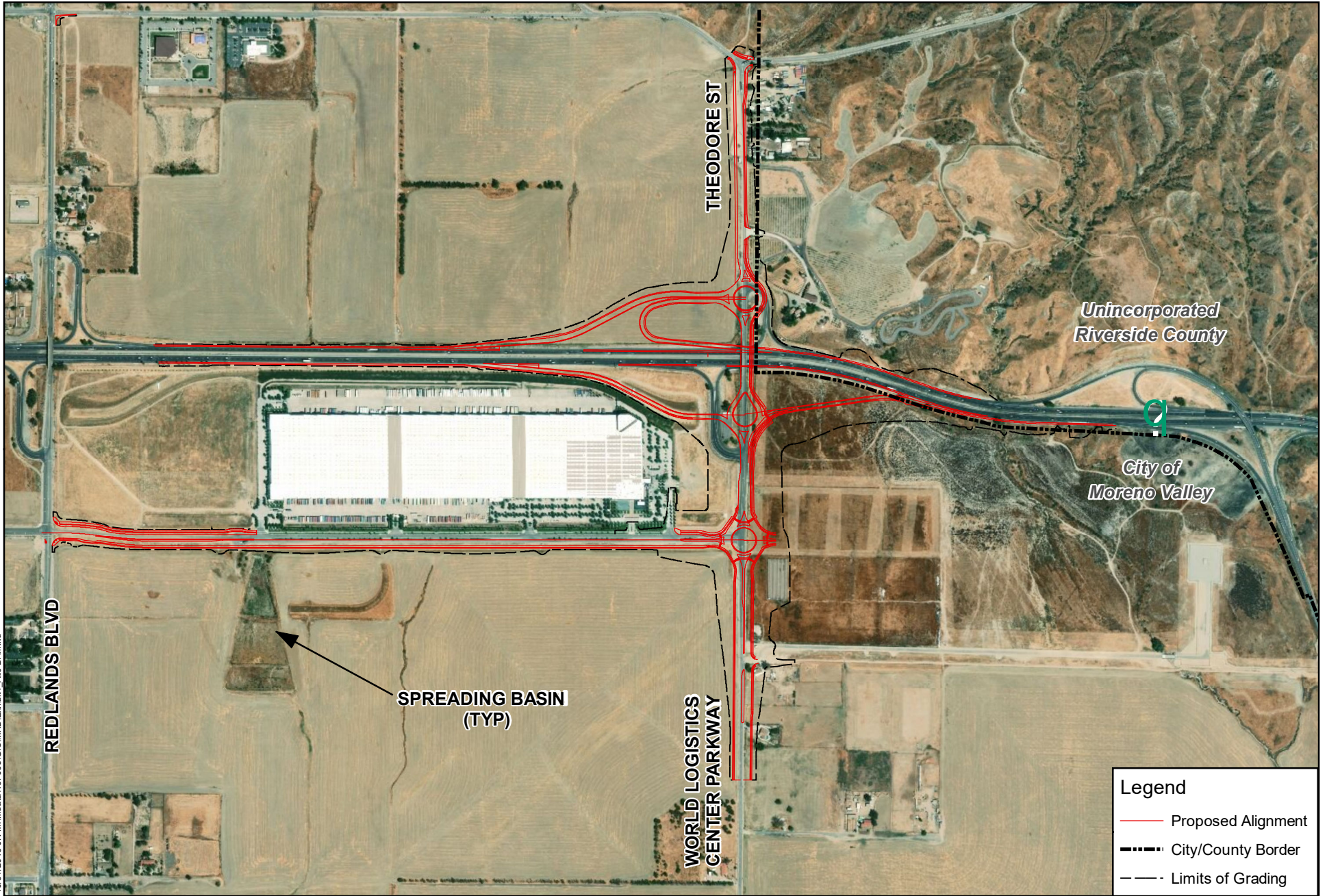
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Source: FEMA, Eagle Aerial 2014

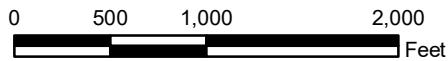
SR-60/WLC PARKWAY INTERCHANGE
Design Variation 2a

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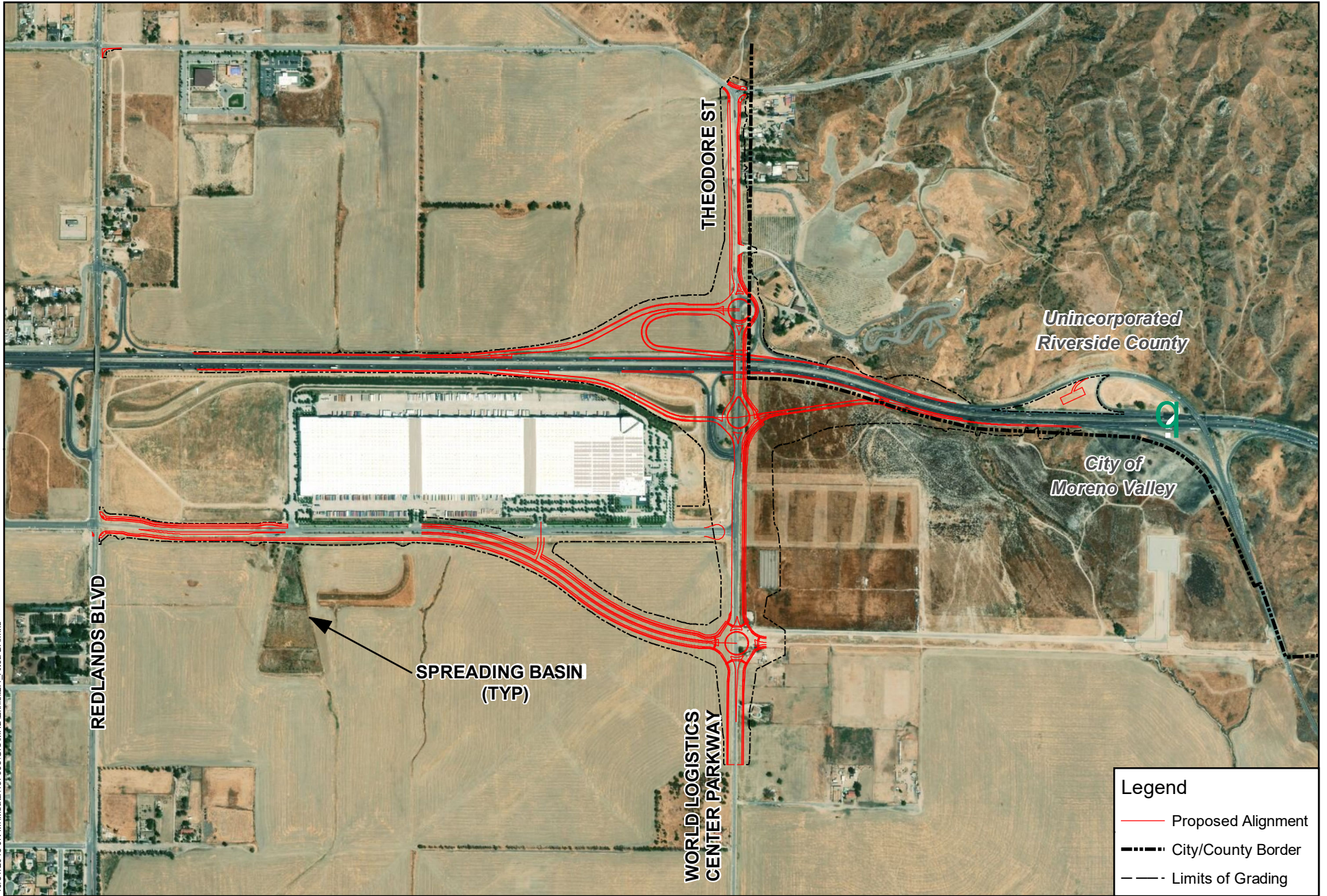


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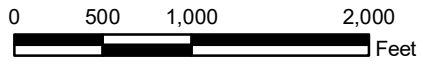


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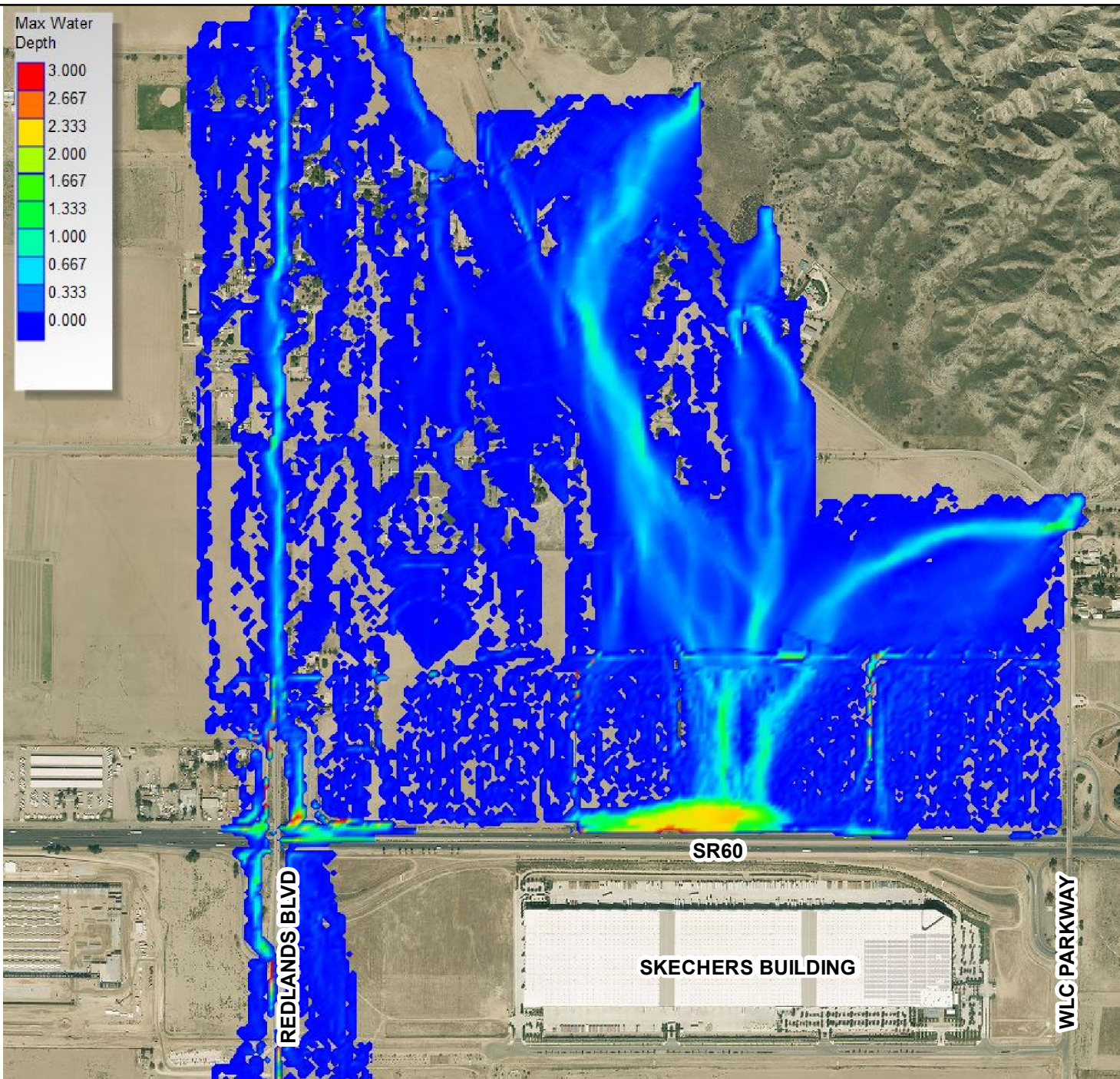


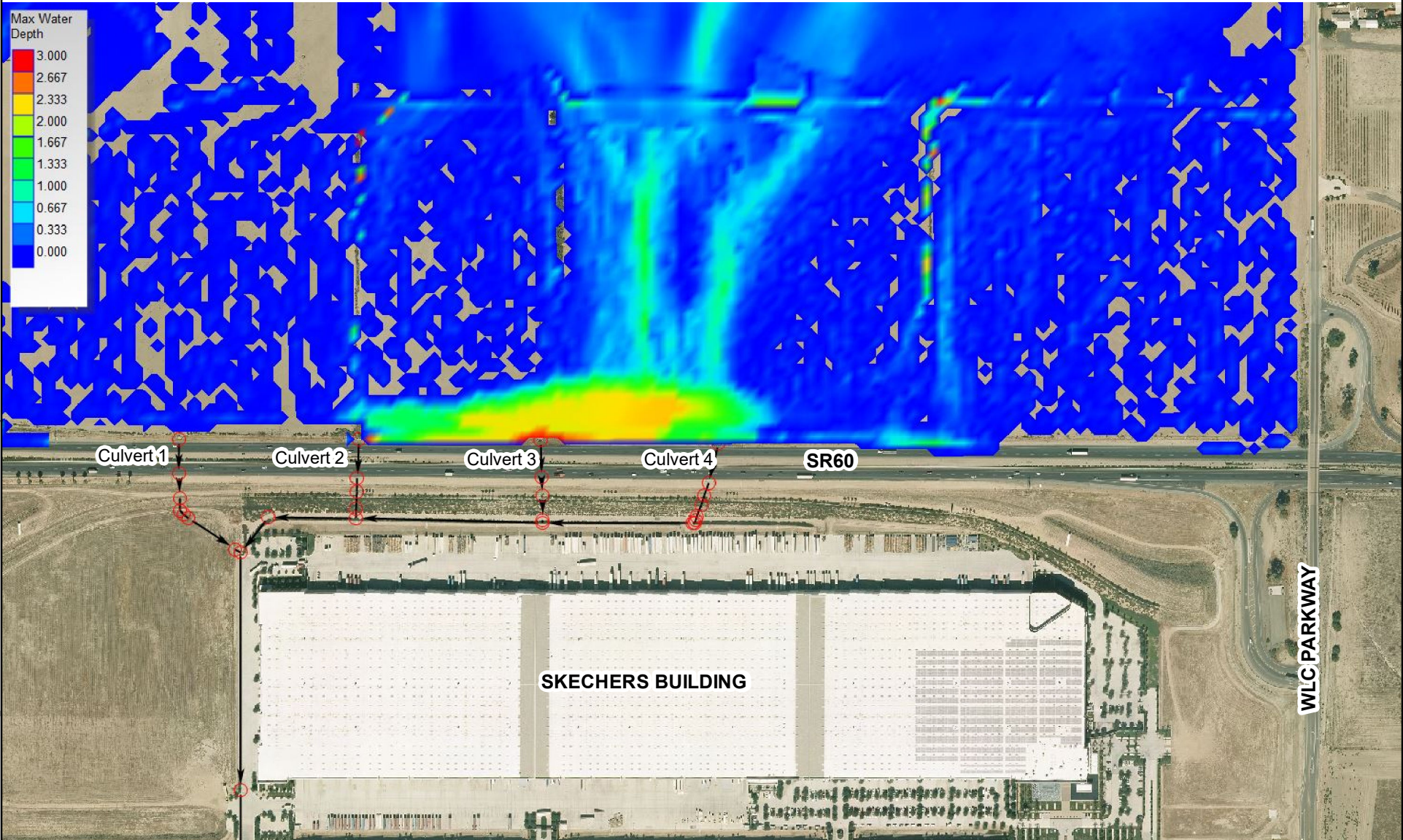
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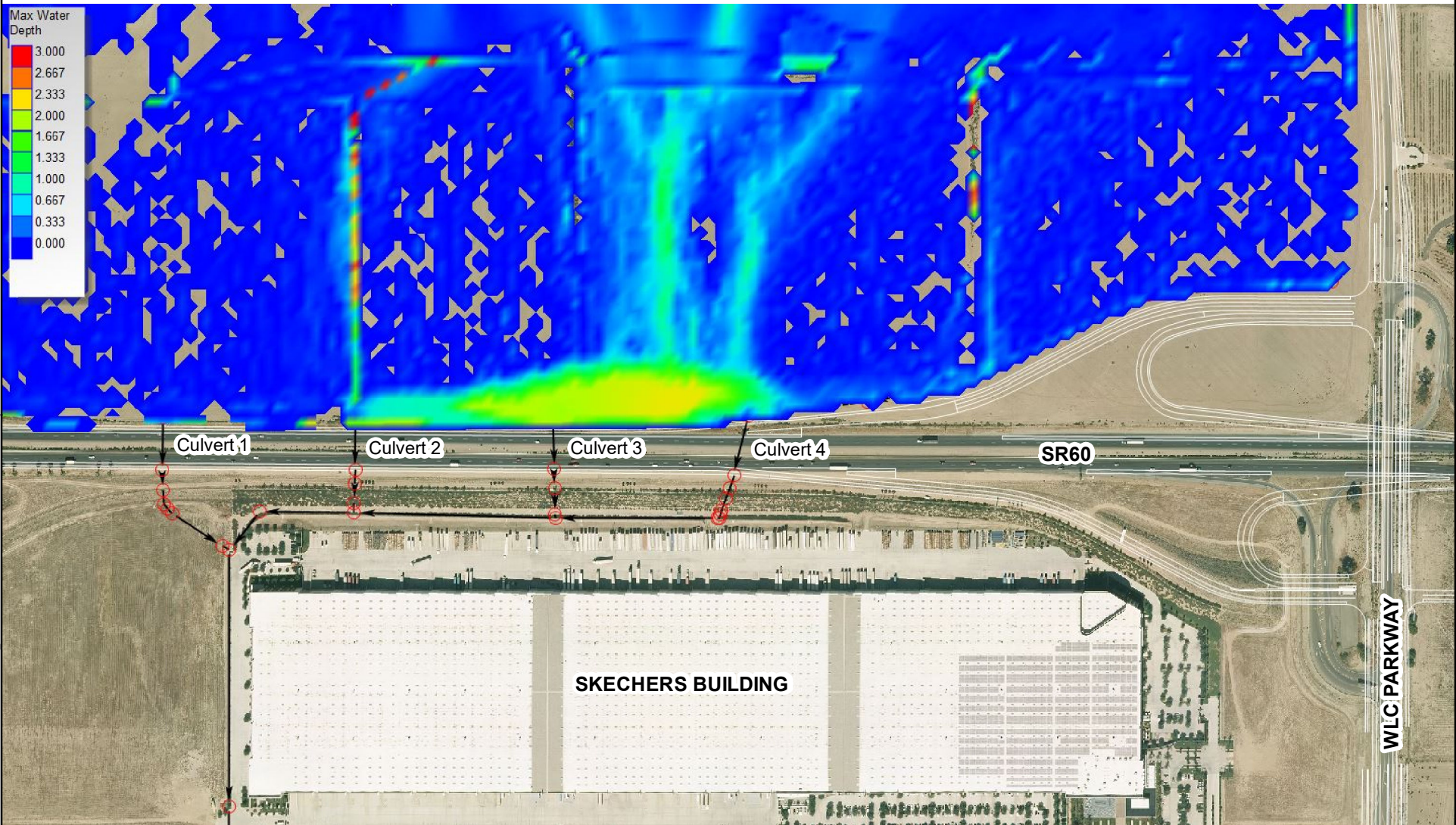


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