KimaniBrooks
CONSULTING, INC

Hydrographic Basin Summary and Groundwater Monitoring Plan

Bonanza Peak Solar Project
Pahrump Valley Groundwater Basin
East Inyo County, California



Prepared for
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1. PROJECT BACKGROUND

Bonanza Peak Solar, LLC, a subsidiary of Hanwha Renewables has proposed to construct, operate, and decommission an up to 500-megawatt photovoltaic (PV) solar energy generating facility and associated infrastructure in southeastern Inyo County, California. The Bonanza Peak Solar Project (Project) is proposed on no more than 2,400 acres of private land situated adjacent to the Nevada-California border in southeastern Inyo County. The Project is located in the Charleston View Solar Energy Development Area (SEDA) in southeastern Inyo County, adjacent to the Nevada state line just north of Old Spanish Trail Highway (**Figures 1 and 2**).

The Project also includes approximately 2,400 acres of contiguous land as proposed groundwater mitigation areas. This land consists of the entire approximately 1,859-acre Kingston View site and approximately 600 acres to be selected from the approximately 2,000-acre Campito Peak Mitigation Site Evaluation Area. The final Campito Peak mitigation area is currently being evaluated and will be selected based on biological-resource value and other relevant considerations. The Kingston View and the final Campito Peak mitigation areas would form contiguous mitigation properties located south of, lateral to, and slightly up-gradient from the Project within the same flow path of the Project site. The final mitigation properties would be deed restricted to prohibit groundwater pumping except as required for mitigation activities. **Figure 3** presents the Project Area and mitigation areas.

2. REGIONAL HYDROGEOLOGIC CONDITIONS

The Project site is located in the Pahrump Valley Groundwater Basin (CA Basin 28-6), which is comprised of approximately 93,100 acres located in southeastern Inyo County and part of San Bernadino County, California (CDWR, 1964) (**Figure 4**). The east and northeast boundary of this basin is defined by the California-Nevada state border.

Although the California-Nevada state line defines the basin to the northeast, it is commonly believed that a portion of the lower Pahrump Valley, a Nevada hydrographic basin (NV Basin 162) communicates hydraulically with CA Basin 28-6 via inter-basin flow. This may be significant, as NV Basin 162 is primarily charged by precipitation in the Spring Mountain Range to the northeast of the Project site. According to hydrogeologic mapping by the USGS, approximately 18,000 AFY leaves NV Basin 162 as inter-basin subsurface groundwater flow moving westward into California recharging CA Basin 28-6 up-gradient of Shoshone and Tecopa (Harrill, 1982). Additional replenishment to CA Basin 28-6 occurs by the percolation of surface runoff through alluvial fan deposits at the base of the Nopah and Kingston ranges.

Basin wide groundwater levels have remained relatively unchanged or declined slightly from 1956 through 2001 (CDWR, 2004). The groundwater in CA Basin 28-6 is exploited primarily for the following low-density uses; agricultural, domestic/municipal, recreational, and wildlife support.

2.1. Recent Water Use

As a significant portion of recharge to the CA Basin 28-6 originates in NV Basin 162 via inter-basin flow, accurately tracking water development and use can be troublesome. However, a general understanding of changes in water use can be developed based on available California and Nevada state records.

According to the Nye County Water Management Plan (Buqo, 2004), Pahrump Valley (Nevada Basin 162) has a perennial yield of approximately 20,000 acre-feet, but the basin is over-appropriated. However, the majority of water rights have not historically been exercised, resulting in a 2015 cumulative reported pumpage of 16,085 acre-feet (NDWR, 2016), for a surplus of approximately 3,915 AFY. In support of this premise, groundwater levels in the Project area have remained fairly constant over the past decade

2.2. Local Hydrogeologic Conditions

The alluvial aquifers are recharged locally by precipitation and run-off at the base of the Spring Mountains to the east, and the Nopah and Kingston Ranges to the west. The Spring Mountains reach approximately 11,900 feet above mean sea level (AMSL) and receive an average annual precipitation of approximately 23 inches plus 97 inches of annual snowfall (DRI, 2016). The Kingston Range reaches approximately 7,300 feet AMSL and receive approximately 4 to 8 inches of annual precipitation (CDWR, 2004). The Nopah Range reaches approximately 6,400 feet and receives approximately 3 to 5 inches of annual precipitation, with minimal snowfall (USDA, 2015). These two ranges account for the majority of local recharge to the alluvial aquifers on the California portion of the Pahrump Basin (CDWR, 1964).

According to CDWR online records, there are 34 registered wells in CA Basin 28-6, 29 are registered for domestic use and the remaining 5 are for monitoring purposes at the Project Area. Of the 29 domestic wells, 17 are in Stewart Valley in the northern portion of the basin, and the remaining 12 are located to the south and west of the Project Area. These wells would be expected to conservatively produce less than 29 AFY. Based on our research of public records, the basin's perennial yield has not been estimated. However, subsurface inflow is estimated to be approximately 18,000 AFY from Pahrump Basin (Harrill, 1982). This groundwater inflow (inter-basin flow) has been inferred based on:

1. The monotonic southwestward slope of the water table under Pahrump Valley toward the northern Nopah Range;
2. The absence of significant discharge from springs or playas in the southwestern part of the Pahrump Valley; and
3. The presence of presumably permeable Paleozoic carbonate rocks in the Nopah and Resting Spring Ranges to the west of Pahrump Valley (Malmberg, 1967; Harrill, 1986).

The elevation across the Project ranges from approximately 2,680 to 2,580 feet AMSL, grading downward in an approximate easterly direction. The Stateline Fault Zone, shown on **Figure 4**, which generally runs along the northwest to southeast state border, acts as an intermittent low-permeability groundwater barrier that disrupts local flow resulting in shallow water

elevation on the northeast side relative to deeper water elevation on the southwest side (i.e., where the Project is located). While not a true hydraulic barrier, it does create a mounding effect where present that may govern or buffer local groundwater elevation changes along the state line.

Water levels measured in Project site wells (Orchard Well and Well 3B, see **Figures 6 and 7**) between 2012 and 2026 varied slightly, but showed no discernable trend. The measured depths to static groundwater in the Orchard Well ranged from 108 to 110 feet below grade. The measured depths to static groundwater in Well 3B ranged from 129 to 133 feet below grade. These wells represent only a small sampling of wells over a relatively short time interval, but their trends are consistent with one another. Stable groundwater levels over time would indicate a relatively balanced basin groundwater budget. These wells are proposed for continued monitoring throughout Project construction.

2.3. Local Hydrogeologic Studies

In 2012, Cardno ENTRIX performed a long-term aquifer test using Well 3B located near the southern Project boundary. Well 3B was tested for 14 days at a constant rate of approximately 45 gpm. This flow rate resulted in a water drawdown of approximately 214 feet in the well, for a specific yield of approximately 0.21 gallons per minute per foot of drawdown. Per the testing report, the long-term constant rate test "provided reliable measurements of the aquifer properties at the project site." Additionally, the report states that "off-site water level drawdowns are not expected to occur and therefore there won't be project-associated drawdown caused by either the nearby private domestic well or at Stump Spring." KimaniBrooks reviewed the Cardno ENTRIX report and determined that Well 3B functioned properly during testing and based on its relatively recent construction did not require rehabilitation.

The Biological Resources Technical Report (Appendix G to the Addendum) describes natural resources surveys performed for the Project, including surface hydrology and vegetation surveys. These surveys identified several ephemeral washes across the Project Area, but they identified no phreatophyte vegetation within the Project Area or on adjacent lands. The nearest phreatophyte vegetation relative to the Project Area is approximately 14 miles to the southwest past Tecopa and Shoshone in the California Basin.

The October 19, 2026, a Water Supply Assessment performed by ERM (Appendix N to the Addendum) concluded that the groundwater basin contains sufficient water to sustain the Project, and the Project will have minimal impact on the long-term groundwater basin supply or groundwater-dependent surface water features. Specifically, the ERM study found that proposed Project withdrawals during construction of a maximum of 729 AFY represented approximately 8.2% of the lowest data point of estimated local recharge and inflow of 8,872 AFY. No information obtained since the date of that report, including the analysis in this technical memorandum, undermine this previously performed analysis.

In July 2026, yield testing was performed by KimaniBrooks Consulting on the Orchard Well. The Orchard Well was rehabilitated and then yield tested at approximately 100 gpm for approximately 6 hours at which point the resulting groundwater drawdown was measured at approximately 99.4 feet in the well, for a specific yield of approximately 1 gallon per minute per foot of drawdown. Factors that may have influenced the differences in the two well yields may be that the Orchard Well is constructed as a 20-inch diameter by 800-foot well, whereas Well 3B is only an 8-inch diameter by 400-foot well.

Based on the test results, KimaniBrooks projected that the Orchard Well may be capable of a sustained yield of 200 gpm. Well 3B may be able to sustain a yield of 50 gpm if managed properly. However, these two on-site wells are the closest in proximity to local residential wells in the community of Charleston View. As the Cardno ENTRIX drawdown modeling predicted no off-site drawdown from the less efficient Well 3B, then pumping at 200 gpm from the more efficient Orchard Well would not be expected to affect the closest off-site residential wells. Regardless of this assertion, the Project proponent has opted to drill and construct a new water well at a more distant location from the nearby residential wells, as depicted on **Figure 5**. The location of the proposed new well is approximately 1.7 miles from the closest existing off-site residential wells, further reducing the chance of local impacts to groundwater levels or private water supply.

3. ANTICIPATED PROJECT WATER USE AND POTENTIAL IMPACTS

Construction of the Project would be accomplished by multiple construction crews specializing in various construction trades. The overall construction period is estimated to be approximately 18 months and may occur over two phases. Construction would be initiated as soon as June 2027. Construction would occur Monday through Friday, 7:00 am to 6:00 pm, unless project schedule demands require a temporary extension of those hours.

During construction, it is conservatively assumed that 0.3 af will be required for each acre of ground-disturbing activity annually; it is also conservatively assumed that ground disturbance could span up to 2,430 acres.[1] A maximum expected annual water demand of 729 AFY is projected, for a total of 1,094 acre-feet over the 18-month construction phase. This is a very conservative estimate that assumes water application on a 24-hour, seven-day (24/7) basis. While 11-hour workdays are planned, the 24-hour estimate is used as a contingency, should work progress fail to keep pace with the Project schedule. During operation of the Project, an estimated 0.014 AFY is projected, for a total of 0.68 acre-feet for the 48.5-years the Project is in use; this is equivalent to a single residence. During decommissioning of the Project, an estimated 729 AFY is projected for a maximum 12-month period. This too is based on a 24/7 work schedule, as opposed to an 11-hour work schedule. Based on these estimates, total life-of-project water demand is approximately 1,824 AF.

The relatively short period of pumping during construction is not expected to result in long-term groundwater declines in the basin. The Cardno ENTRIX 2012 study showed that drawdown

[1] Refer to the Water Supply Assessment for the Bonanza Peak Energy Project, prepared by ERM, for more details.

created during the long-term pumping from Well 3B did not extend off of the Project site, and that the local aquifer rebounded quickly following cessation of pumping. Furthermore, pumping levels measured during the Orchard Well yield test indicated a lower draw-down level despite a higher pumping flow rate, indicating a higher local permeability than the Well 3B area. Aquifers with high permeabilities tend to be less susceptible to impacts from long-term pumping. Additionally, the proposed new well will be located approximately 1.75 miles further to the north than Well 3B.

In summary, recent water use trends and monitoring data indicate that the local alluvial aquifer in the Project area appears to have remained relatively stable over the past decade. The majority of the demand is short term during the construction and decommissioning periods, which are expected to result in a temporary and localized effect on the aquifer. The groundwater basin contains sufficient water to sustain the Project, and the Project will have minimal impact on the long-term groundwater basin supply. The adjacent lands are mostly undeveloped, with sparsely located residences operating private wells or hauling water manually. Testing indicates that groundwater pumping induced drawdown during project development and operation is not expected to extend off of the Project Area (Cardno, 2014) and therefore is unlikely to impact vegetation or springs. Based on the available data including recent studies, the five existing private residential wells located near to the southern Project Area boundary are not expected to be impacted by the construction and operation of the proposed Project.

4. PRE-EMPTIVE MITIGATION MEASURES

Regardless of the hydrogeologic conditions described in the previous sections, the project proponent proposes to take a cautious approach to the construction and operation of the Project. The following sections describe measures to be taken to preclude possible impacts to the local aquifer.

4.1. Proposed Groundwater Monitoring Plan

Construction of the Project is expected to take approximately 18 months to complete. This section describes a proposed groundwater monitoring plan designed to ensure that construction, operation, and decommissioning of the Project will not negatively impact local wells or the aquifer as a whole. This plan will be reviewed and revised upon consultation with Inyo County, and will be finalized prior to issuance of a building permit.

There are five off-site, private water supply wells located primarily to the south of the Project site. Two of these wells are located within 200 feet of the Project Area's southern boundary. These two wells are recommended for monitoring, should their owners volunteer to participate. It should be noted that MWs are located between the supplemental supply wells and the nearest off-site wells.

Four existing water supply wells are currently present on the Project site; designated on **Figure 2** as Well 6, Well 2, Well 3B, and Orchard Well. Two of these wells (Well 6 and Well 2) were found to have partially silted and are therefore not of use for production purposes. They do, however, have sufficient water columns that they could be useful in this Plan for monitoring

groundwater elevations throughout the early portions of the Project. Well 3B and the Orchard Well are planned to be used as supplemental supply wells if necessary during construction of the Project.

Several groundwater monitoring wells (MWs) are located near the southeast and southwest portion of the Project site. Two MWs (MW-1 and MW-2) are located near the Orchard Well, and four MWs are located near Well 3B. These MWs are proposed for use in monitoring local groundwater elevation during this Plan. The spatial geometry of Well 6, Well 2, and the MWs should provide sufficient water level data to confidently plot any pumping induced drawdown from the proposed new well and from the two supplemental wells (Well 3B and the Orchard Well) should they be needed. As presented in **Figure 5**, Well 6 and Well 2, along with MW-6, will monitor the potential effects caused by drilling, testing, and long-term operation of the proposed new well. Should the Orchard Well be put into use during construction, MW-1 and MW-2 should provide adequate monitoring data to act as early warning points between the Orchard Well and the nearest private residential well, (DW-3), as shown on **Figure 6**. Additionally, MW-3, MW-4, and MW-5 would act as early warning points around Well 3B and its nearest private well (DW-4) as presented in **Figure 7**.

4.1.1. Groundwater Monitoring Plan Details

KimaniBrooks prepared a preliminary design specification for the proposed new well, as follows:

Depth:	615 feet below grade;
Borehole Diameter:	20-inch nominal;
Well Casing Diameter:	16-inch; and
Static Depth to Water:	Estimated 130 feet below grade.

The Groundwater Monitoring Plan will be implemented to coincide with the drilling, construction, and testing of the proposed new well. The general scope of this Groundwater Monitoring Plan will involve the following main tasks:

1. Approximately one month prior to drilling the new water supply well, dedicated pressure transducers will be deployed into Well 6, Well 2, and MW-6 (**Figure 5**). The transducers will be programmed to measure the water level on a daily basis throughout the duration of drilling, construction, and testing of the new supply well. Water level data will be downloaded on a weekly basis, tabulated, and graphically plotted as hydrographs to visually observe apparent trends.
2. Solicit participants for the off-site private well monitoring program. Ideally, the owners of DW-2, DW-4, and DW-5 will opt into the monitoring program (**Figure 2**). The water levels in these wells should be manually measured on a weekly basis for one month, followed by a monthly basis thereafter until approximately one-month following cessation of construction water use at the Project site. Resulting data will be tabulated, graphically plotted, and analyzed as accumulated and presented as a monthly deliverable.
3. In unison with the off-site private monitoring program, the following wells will be manually monitored: Orchard Well, MW-1, MW-2, Well 3B, MW-3, MW-4, and MW-5 (**Figure**

6 and 7). The water levels in these wells will be manually measured on a weekly basis for one month, followed by a monthly basis thereafter until approximately one-month following cessation of construction water use at the Project site. Resulting data will be tabulated, graphically plotted, and analyzed as accumulated and presented as a monthly deliverable.

4. Following completion of the groundwater monitoring programs, all data will be tabulated and graphically plotted on well-specific hydrographs. The data and hydrographs will be documented in a summary report and shared with participants in the voluntary groundwater monitoring program.

In addition to the tasks listed above, nearby meteorologic stations will be monitored in real-time and compared to historic data. If conditions indicate pending or current drought conditions, then alternative water supply options would be considered.

4.1.2. Water Well Contingency Planning

It is expected that the proposed new well will provide the majority of water during project construction. Well 6 and Well 2 will be the primary monitoring wells, with MW-6 as the secondary southern monitor.

In the event that the new well cannot meet demand, the Orchard Well and/or Well 3B will be activated to provide the make-up water. Monitoring wells MW-1 and MW-2 would be the primary monitoring wells between Orchard Well and off-site private well DW-2. Should Well 3B be put into production, MW-3, MW-4, and MW-5 would be the primary monitoring wells between Well 3B and off-site private well DW-4.

In the event that pumping induced drawdown is detected in any of the primary monitoring wells, as determined by a drop in water levels equal to or greater than two standard deviations from the cumulative statistical norm, the water levels in each of the participating off-site private wells will be manually measured to confirm/refute that they too have been impacted. The resulting water level readings will be immediately analyzed and reported to the project proponent and construction superintendent. Options to reduce the flow of one or more wells may necessitate one or more of the following:

1. Temporarily and/or intermittently cease pumping from the well nearest to the impacted off-site well to allow the local water table to recover.
2. Pause water-intensive activities long enough for the on-site water reservoir(s) to be refilled to full capacity from the distant one or two available wells (such as overnight or on weekends).

It is anticipated that two temporary water storage ponds would be utilized to support construction water needs. Each construction water storage pond would hold approximately 100,000 gallons, would be lined with a plastic and/or rubber liner, and would have a slight pitch to the corner closest to the transfer pump. Ponds would be filled as necessary from a Project well according to water demands.

4.1.3. Groundwater Monitoring Plan Summary

This plan assumes that an adaptive management approach would need to be used to address unforeseen conditions. This draft groundwater monitoring plan would remain open to revisions until the site-specific hydrogeologic conditions are better understood.

4.2. Water Management Plan

In addition to the groundwater monitoring plan described above, the Project will employ best management practices (BMPs), construction planning, and the scheduling of earthwork to minimize the volume of water needed on a daily basis.

The majority of water use will be for dust control in disturbed areas. In order to reduce the volume of water used, a low-water construction dust control plan will be employed that relies on physical surface covers such as gravel, speed reductions, and targeted application methods to meet emissions standards while conserving water. Dust palliatives could also be used. The following subsections describe some of the BMPs proposed for the Project.

4.2.1. Phased Clearing

The construction approach will involve the phased clearing and grading of only the immediate footprint required for daily operations, while leaving the rest of the site in its natural, stabilized state until necessary. In order to minimize the volume of water needed for dust control, each completed phase would be stabilized before progressing to the next phase.

4.2.2. Water Run-off Minimization

Drainage channels will be designed to convey surface water from the site without contributing to on- or off-site flooding and/or erosion. Twenty-one unlined sediment (stormwater) control basins totaling approximately 20 acres would be graded and cleared along the Project western boundary to capture stormwater and sediment leaving the site. These basins would minimize off-site erosion and help facilitate the return of water to the subsurface via percolation.

4.2.3. Clearing and Grading

Site preparation of vegetated areas would involve minimal cutting, leaving part of the shrub and the root structure intact to minimize soil disturbance and reduce potential impacts to desert tortoise habitat, if present. Details pertaining to vegetation management during construction will be included in the Project's Vegetation Management Plan.

Minimal grading would occur within the Project Area, primarily at the substation and O&M building site, plus the interior Project roads along electrical collection line corridors. These areas would account for approximately 3 percent of the total 2,400-acre Developable Area (69 acres). When combined with the 20 acres of grading for the proposed unlined sediment (stormwater) control basins (see Section 4.2.2 above), the total area to be graded is 89 acres.

Areas that have been temporarily disturbed by grading or other earthmoving activities would be restored to the preconstruction contours of the land to the extent possible and consistent with future operating needs. Work may consist of re-contouring areas, establishing vegetation, and applying mulch to provide additional erosion control.

4.2.4. Enhanced Groundwater Recharge Capacity

Construction plans will be designed to reduce the area of on-site impervious surface where appropriate, through increased use of surfacing materials such as gravel or pervious pavement; and use facilities such as retention/percolation basins and unlined drainage facilities to increase local infiltration and groundwater recharge.

4.2.5. Post-Construction Revegetation

Areas that have been temporarily disturbed by grading or other earthmoving activities would be restored to the preconstruction contours of the land to the extent possible and consistent with future operating needs. Work may consist of re-contouring areas, establishing vegetation, and applying mulch to provide additional erosion control.

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FIGURE 1 - PROJECT LOCATION

Groundwater Monitoring Plan
Bonanza Peak Solar Project
Inyo County, California

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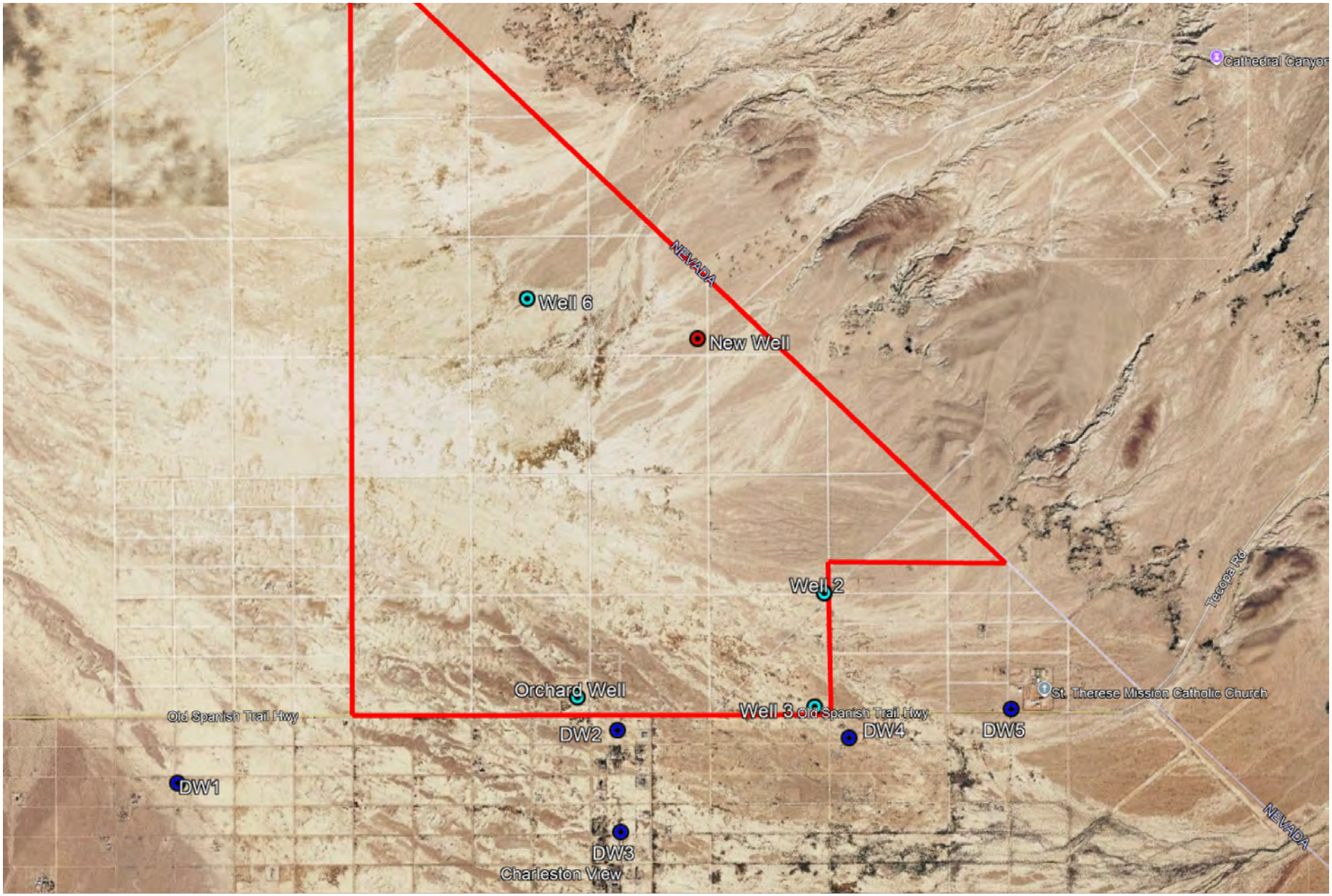


FIGURE 2 – PROJECT AREA

Groundwater Monitoring Plan
Bonanza Peak Solar Project
Inyo County, California

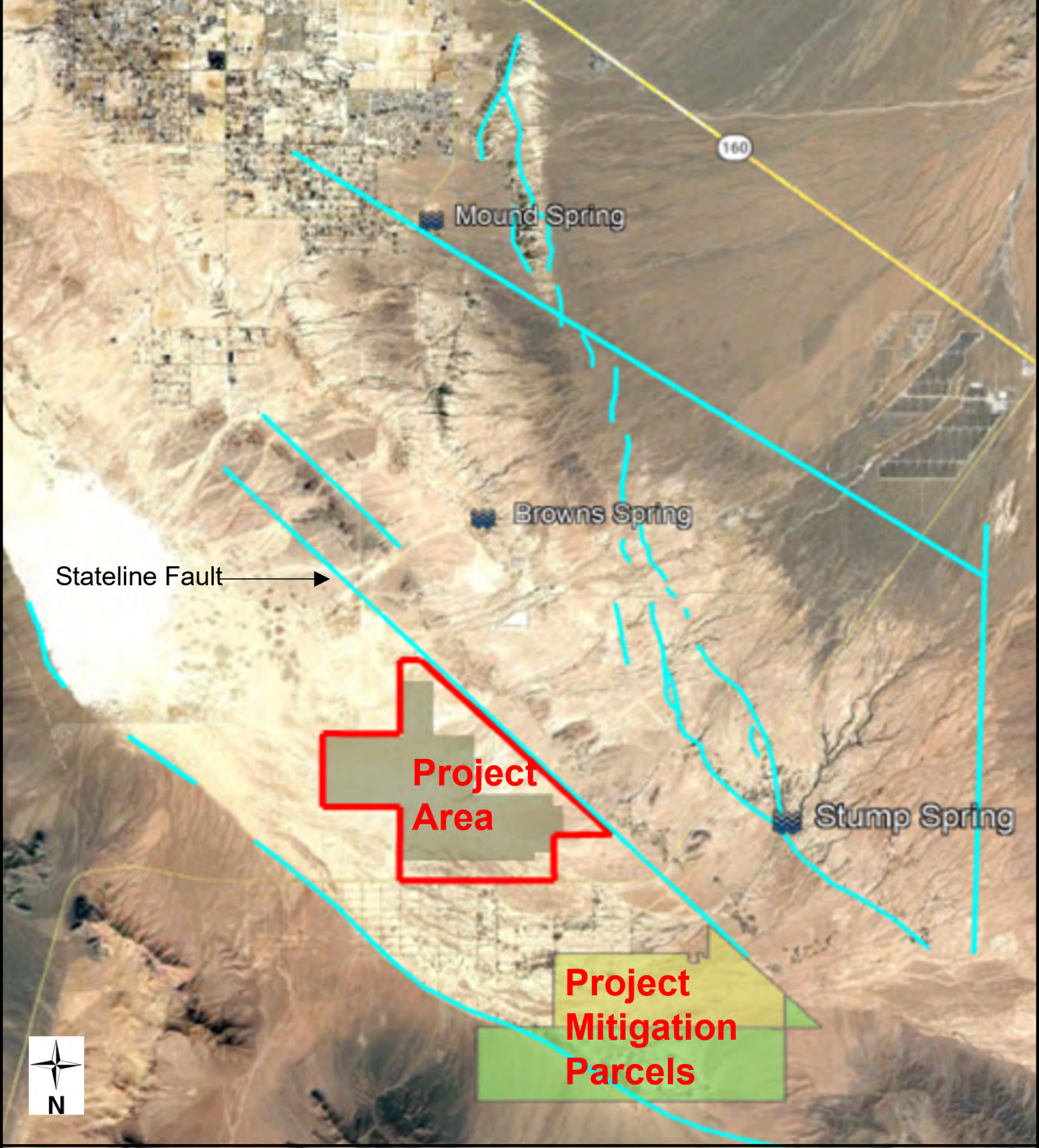


FIGURE 3 – PAHRUMP VALLEY FAULT ZONE

Groundwater Monitoring Plan
Bonanza Peak Solar Project
Inyo County, California

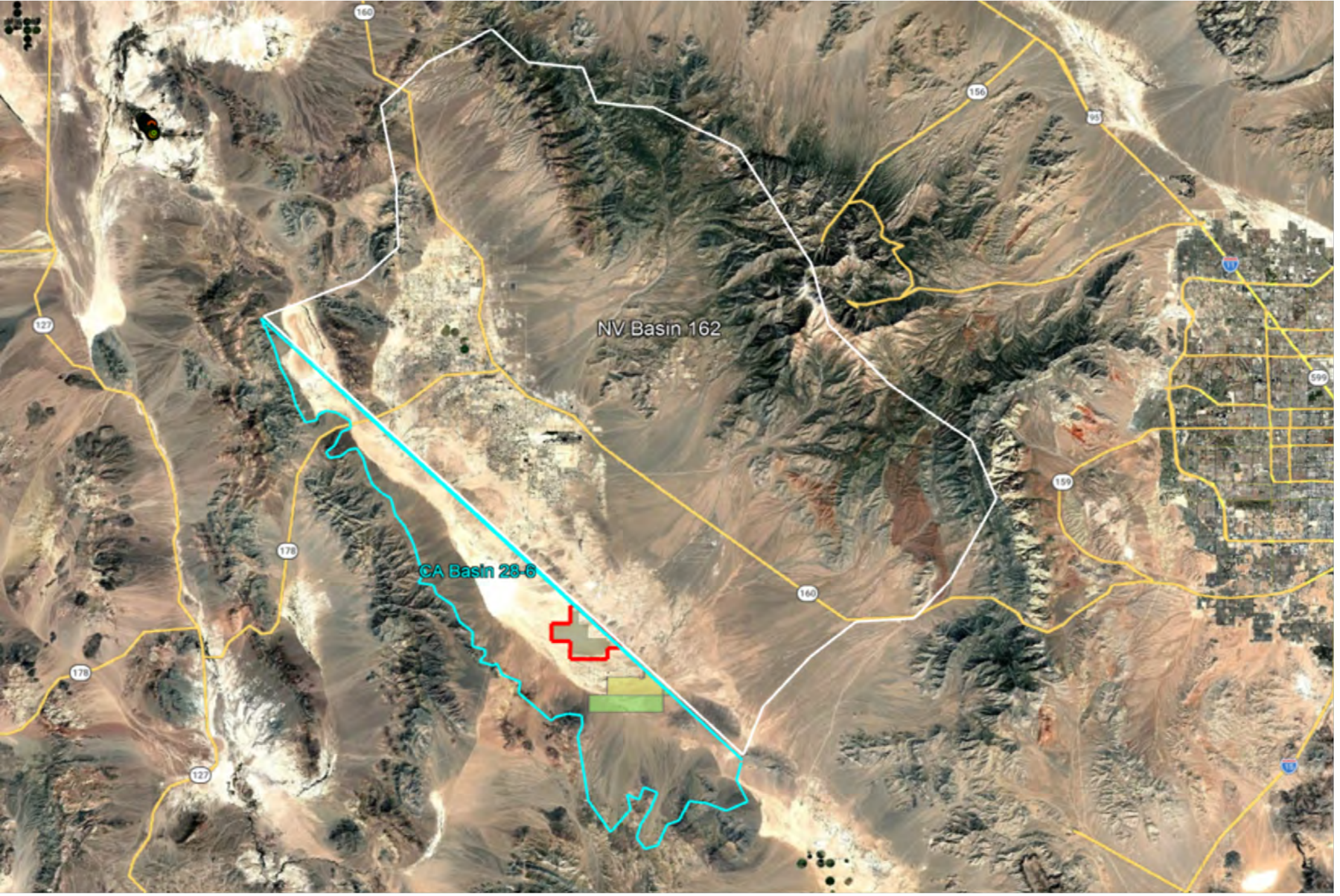


FIGURE 4 – BASIN BOUNDARIES

Groundwater Monitoring Plan
Bonanza Peak Solar Project
Inyo County, California



FIGURE 5 – NEW WELL MONITORING

Phase I Environmental Assessment
Golden Triangle Logistics Center
North Las Vegas, Nevada



FIGURE 6 – ORCHARD WELL MONITORING

Phase I Environmental Assessment
Golden Triangle Logistics Center
North Las Vegas, Nevada



FIGURE 7 –WELL 3B MONITORING

Phase I Environmental Assessment
Golden Triangle Logistics Center
North Las Vegas, Nevada