DOCKETED	
Docket Number:	09-AFC-05C
Project Title:	Abengoa Mojave Compliance
TN #:	256766
Document Title:	Mojave Solar Project- Data Requests, Set 1 REDACTED
Description:	Mojave Solar Project- Data Requests, Set 1 REDACTED, This filing supersedes TN 256478
Filer:	Ashley Gutierrez
Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	6/10/2024 10:30:01 AM
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Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	5/21/2024 12:01:25 PM
Docketed Date:	5/21/2024

Mojave Solar LLC

42134 Harper Lake Road Phone: 760 308 0400
Hinkley, California 92347

Submitted Electronically

Subject: 09-AFC-5C
Description: Data Requests for Mojave Solar Project (09-AFC-05C) Addition of Two New Evaporation Ponds
Petition To Amend: TN#253750, TN#253751, TN#253752

May 6, 2024

Ashley Gutierrez, CPM
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814
Ashley.Gutierrez@energy.ca.gov

Ms. Gutierrez,

Please find enclosed response to the Data Requests for Mojave Solar Project (09-AFC-05C) Addition of Two New Evaporation Ponds dated April 3, 2024.

The requested raw digital data (MS Excel) of the inflow/outflow water is attached to this email. The data provided is being submitted in confidence pursuant to Title 20 Cal. Code. Regs., § 2505 et seq.) and is not public record.

Sincerely,

Mahnaz Ghamati

Quality, Environmental & Compliance Manager
ASI Operations LLC
42134 Harper Lake Rd
Hinkley, CA 92347
Cell: (760)498-0549
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Email Attachment: MSP_WTP_Inflow and Outflow Data

SOCIOECONOMICS AND TRANSPORTATION

Author: Steve Kerr

BACKGROUND

The project owner is proposing to construct one new evaporation pond at each plant (A-3 and B-3).

DATA REQUESTS

1. What is the estimated number of workers required for construction of the ponds? What is the estimated length of time required to complete construction of the ponds?
2. What is the estimated number of truck trips generated by the construction of the ponds? How many, if any, oversized trucks would be used for the construction of the ponds?

Responses to Data Requests (DRs) 1 and 2:

1. Up to 20 workers will be required. The duration of the construction period is estimated to be 5- 7 months. The intention is to build both evaporation ponds at the same time.

2. No oversized trucks will be used for construction. Approximately 12 truck trips will be required for for delivery of materials. Approximately three (3) 17- ton dump trucks will be located on-site for temporary placement of the soil piles adjacent to the construction area.

CULTURAL AND TRIBAL CULTURAL RESOURCES

Author: Patrick Riordan

BACKGROUND

Assessment of impacts on cultural and tribal cultural resources hinges in part on knowing the extent and character of ground-disturbing activities associated with a project. The applicant provides little information about the depth of excavation required to demolish existing improvements on the project site and to construct the proposed improvements, indicating only that "the depth of excavation for the proposed ponds is typically less than 6 feet and maximum depth of excavation for manholes and neutron probes is 15 feet". (Hushmand Associates, Inc., p. 4)

DATA REQUESTS

3. Please describe and characterize the scale of excavation (particularly depth) required for various project components, including:
   a. Demolition of existing concrete foundation and pavement at the site of the mirror assembly building
   b. Alpha and Beta ponds (with maximum depths of excavation identified for the liner system, sumps, leak detection pipes and manhole, and wastewater force main pipeline and control valves).
   c. Perched groundwater monitoring wells.
   d. Stormwater runoff retention basin.

Response to DR 3:

3a. The existing concrete foundation at the former mirror assembly building is approximately 8 to 10 inches in thickness. The existing asphalt paving is approximately 4 inches thick. Both the concrete and asphalt within the pond footprint will be removed.

3b. See Isopach figures (Appendixes 3 and 4) showing the Depth of cut and fill for the Alpha and Beta ponds. Depths are shown in feet below the existing ground Surface. The area of disturbance is also provided on the figures. Features within the pond limits are shown and depths of cut listed. The wastewater force main pipeline and control valves will be nominally 4 feet below existing ground Surface.

3c. The perched groundwater Wells will be drilled with an 8-inch diameter hollow stem auger drill rig. The Depth of the borings will be nominally 35 to 45 feet in Depth, depending on Depth to perched water which will be confirmed prior to well installation (i.e. pilot boring to confirm depth to groundwater).

3d. The Isopach figure for Alpha Pond (Appendix 3) shows the Depth of excavation for the stormwater runoff retention basin and area of disturbance.

WATER RESOURCES

Author: James Ackerman

BACKGROUND

The project owner submitted a petition to amend (PTA) on November 29, 2023, to increase the berm height by 2 feet at the eastern end of each existing evaporation pond (Alpha-East, Alpha-West, Beta-East, and Beta-West). The purpose of this proposed action was to increase pond capacity due to the lower elevation of the berm at each of the existing evaporation ponds. Based on the original Alpha evaporation pond construction plans, the slope along the top of the berm is approximately one foot per 90 feet or a gradient of 0.011. This PTA (TN# 253380) was subsequently withdrawn; however, according to the Design Memorandum included as Appendix 10.1 in this PTA, "*The intent of the design was to replicate the existing evaporation pond design to the extent practical and consistent with current pond liner systems*". Based on design plan No. C004, *Alpha Site Grading and Drainage Plan*, included as Appendix 10.2 of the PTA, it appears that this design flaw may have been corrected. However, the finished grade elevation contours are not apparent.

DATA REQUEST

4. Will the top berm surface of the proposed evaporation ponds at the Alpha and Beta sites be constructed with or without a minimum slope?

Response to DR 4:

The top berm surface of the proposed evaporation ponds will be sloped at a minimum 1% away from the pond to promote surface water runoff and divert stormwater away from the evaporation ponds. Additional notes will be included in the drawings provided to the contractor.

The Mojave Solar Plant ("MSP") disagrees that there was a "design flaw" in PTA (TN# 253380); however, since that statement was in reference to the withdrawn PTA, MSP will not address this item further.

BACKGROUND

Section 6.1 of the PTA justifies the construction of additional evaporation ponds to increase storage capacity based on accumulating wastewater over time due to decreasing evaporation rate as a result of increasing salinity and the installation of bird netting. However, CEC staff has been wondering why the original evaporation pond design could not compensate for seemingly small conditional changes and would like to investigate other possibilities for the increase in stored wastewater.

DATA REQUEST

5. Please provide the inflow/outflow water records for both the Alpha and Beta water treatment plants during the life of the Mojave Solar Project in Excel format.

Response to DR 5:

The requested data is provided as Attachment 1 to these Responses, submitted in confidence and contemporaneously with these Responses saved as "MSP_WTP_Inflow and Outflow."

MSP Two New Permanent Evaporation Ponds-Data Requests- Responses

BACKGROUND

In response to a CEC staff request, the project owner submitted a Post Certification Project Change Questionnaire (PCQ) describing modifications to the Beta water treatment plant that took place in 2019 and included changes to the reverse osmosis system being operated as a Closed-Circuit Reverse Osmosis (CCRO) system. The PCQ stated that the modification did not result in any changes in the plant water flow balance. CEC staff understands that the CCRO system works by recirculating pressurized feedwater until a desired recovery level is reached and brine is replaced with fresh feed without stopping

the flow of pressurized feed or permeate. CEC staff would like to understand this change in relation to the original system design and is concerned that this system change may have increased freshwater use, thereby increasing wastewater discharged to the evaporation ponds. In addition, given recent issues with system pipe leakage, it is possible that system pressures may have exceeded the original design parameters.

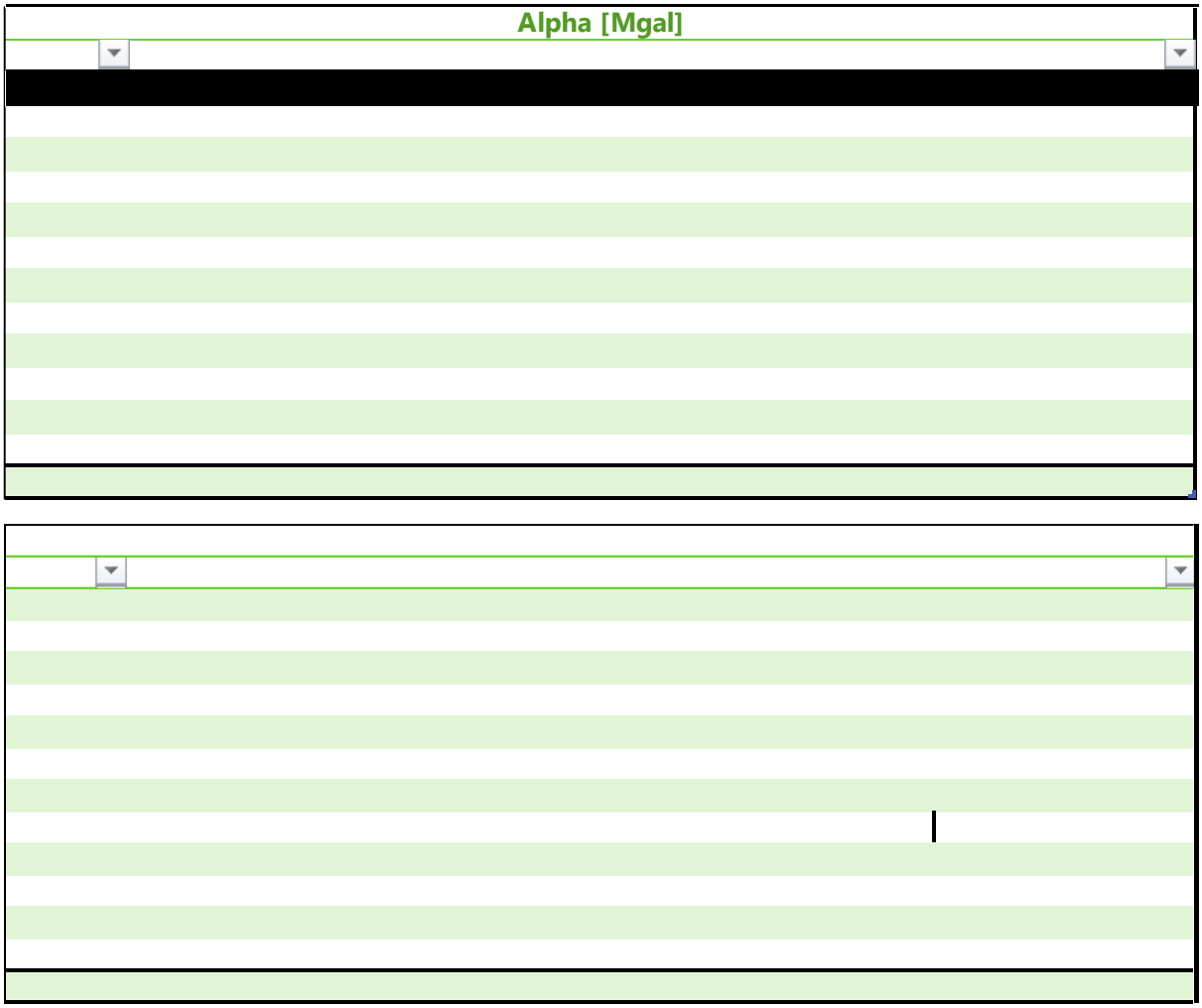
DATA REQUEST

6. Please provide analysis regarding how much additional feed water is used since the 2019 modifications, and data justifying why the modification did not result in an increase in flow from the system to the ponds. Discuss operating pressures including original and new design parameters.

Response to DR 6: To clarify, there is no system pipe leakage at the Mojave Solar Project. The discharge pipe to the Beta evaporation ponds is clogged.

With respect to freshwater, all freshwater use by the Mojave Solar Project has been within the permitted limit of 2,160 AF/y set forth in the Final Decision for the facility. Furthermore, the CCRO system did not result in an inflow increase. Information regarding the inflow is provided below, and as Attachment 1 to these Responses, submitted in confidence and contemporaneously with these Responses saved as "MSP_WTP_Inflow and Outflow." Notably, the ratio of freshwater used to megawatt hours generated [gal/MWh] went, on average, from 842.0 before the CCRO (2017-2019) to 809.9 after the CCRO (2021-2023), demonstrating a reduction in freshwater use per MWh with the CCRO, *see chart below.*

Outflow:



Pressure:

Originally, the operating pressure inside the RO Pressure Vessels ranged from 185 to 230 psi, with the reject line pressure at 195 psi. After the CCRO, the pressures inside the RO Pressure Vessels now range from 200 to 575 psi, while the reject line pressure has decreased by 7-10 psi. These pressure ranges are all with the manufacturer's design rate for the vessels.

BACKGROUND

During the site visit conducted by CEC staff on December 12, 2023, a tank truck was observed discharging wastewater into the east end of the Beta West evaporation pond.

DATA REQUEST

7. Is the source of this discharge different from the water treatment plant and tracked separately?

Response to DR 7:

No. The water truck is being used to transfer the water treatment discharge from the Beta Water Treatment Plant to Beta ponds due to clogging of the discharge pipe.

LAHONTAN REGIONAL WATER QUALITY CONTROL BOARD

Author: Todd Battey

BACKGROUND

Lahontan Regional Water Quality Control Board (LRWQCB) staff provided the following questions to better understand plant processes associated with the construction of the two new evaporation ponds.

DATA REQUESTS

8. Please provide the groundwater flow direction for the perched groundwater zone on a figure showing the evaporation ponds and the proposed perched groundwater monitoring wells to better document that the proposed wells are located appropriately.

9. Please document the nearest downgradient water table groundwater monitoring well, including how far away it is and how close (directionally) to being directly downgradient based on flow direction in the water table aquifer. This could be documented on a figure showing the evaporation ponds with an arrow pointing to the downgradient water table well with the distance listed, and another arrow showing the flow direction in the water table aquifer.

10. If perched groundwater is not encountered during drilling of the proposed perched groundwater monitoring wells, then one or more deeper water table groundwater monitoring wells may be required to monitor for groundwater impacts from the new ponds. Please document this groundwater monitoring strategy.

11. As detailed in title 27, Section 20530, the "site shall be designed to discourage unauthorized access by persons and vehicles by using a perimeter barrier or topographic constraints." The PTA describes the use of netting, apparently without perimeter fencing or topographic barrier. Historically, the Lahontan Regional Water Quality Control Board requires perimeter fencing for Title 27 sites unless adequate justification is provided. Please provide additional information about how the netting (and perhaps other measures) will prevent unauthorized access by persons and vehicles.

Response to DR 8:

See Appendixes 1 & 2 which depict the existing evaporation ponds, existing perched groundwater monitoring wells, proposed evaporation ponds, and proposed perched groundwater monitoring wells. The perched groundwater contours are based on the data provided in the July 30, 2023, Detection Monitoring Program/ Groundwater Monitoring Plan (prepared by Ninyo & Moore).

Response to DR 9:

See Appendix 1, as provided in the July 30, 2023, Detection Monitoring Program/ Groundwater Monitoring Plan (prepared by Ninyo & Moore). The distance from the proposed Beta Pond to existing downgradient wells are provided. There are currently no monitoring wells downgradient of the proposed Alpha Pond.

Response to DR 10:

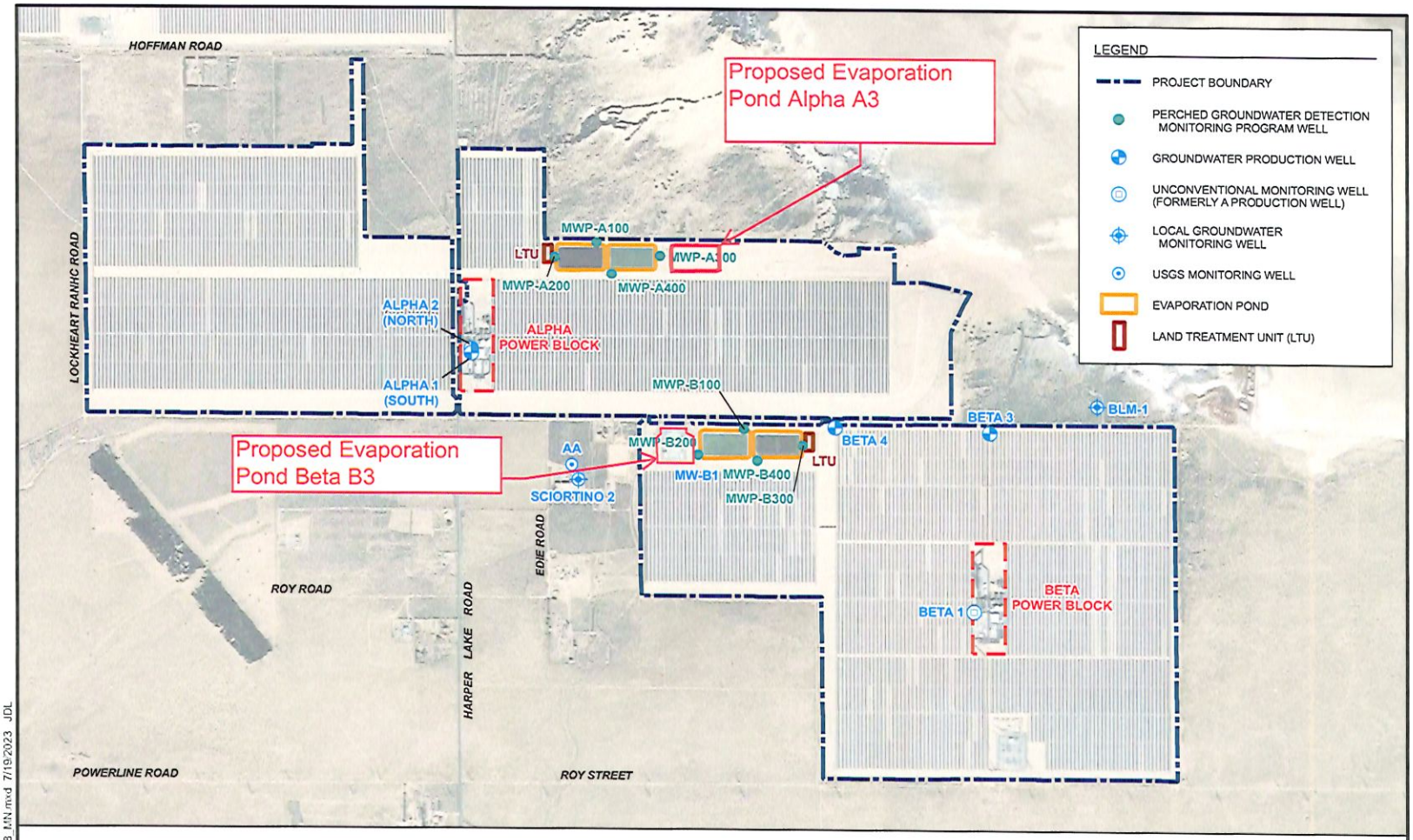
Based on past experience, there has been perched water located in the area of the evaporation ponds. The depth to perched groundwater is currently in the range of 26 to 36 feet below ground surface. Since the proposed evaporation ponds are generally in close proximity to the existing ponds and existing wells, it is highly probable that perched groundwater will be encountered. The perched groundwater table has been getting deeper and therefore the proposed wells would likely extend to 40 to 50 feet below ground surface. MSP is planning to perform pilot borings to confirm the depth to perched groundwater. In the unlikely event that perched groundwater is not encountered during the drilling of the new monitoring wells, MSP will need to develop a revised groundwater monitoring plan.

Response to DR 11:

The Mojave Solar Project Site has a fully enclosed perimeter chain-link fence to control ingress and egress from the site. Access to the site is restricted to registered vendors and visitors only and they are escorted around the site such that unauthorized access to the plant or to the evaporation ponds is almost impossible. In addition to the access restriction, the whole site is monitored with surveillance cameras 24/7 to address any suspicious activities. The addition of the netting adds additional measures to keep persons and vehicles away from the ponds and liner systems.

Appendix 1

Groundwater Monitoring Network



3_105879028_MN.mxd 7/19/2023 JDL

NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE. | SOURCES: REFERENCE: MERRELL JOHNSON ENGINEERING, 2009, MOJAVE SOLAR ONE SITE PLAN; ESRI WORLD IMAGERY, 2023

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FIGURE 3

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

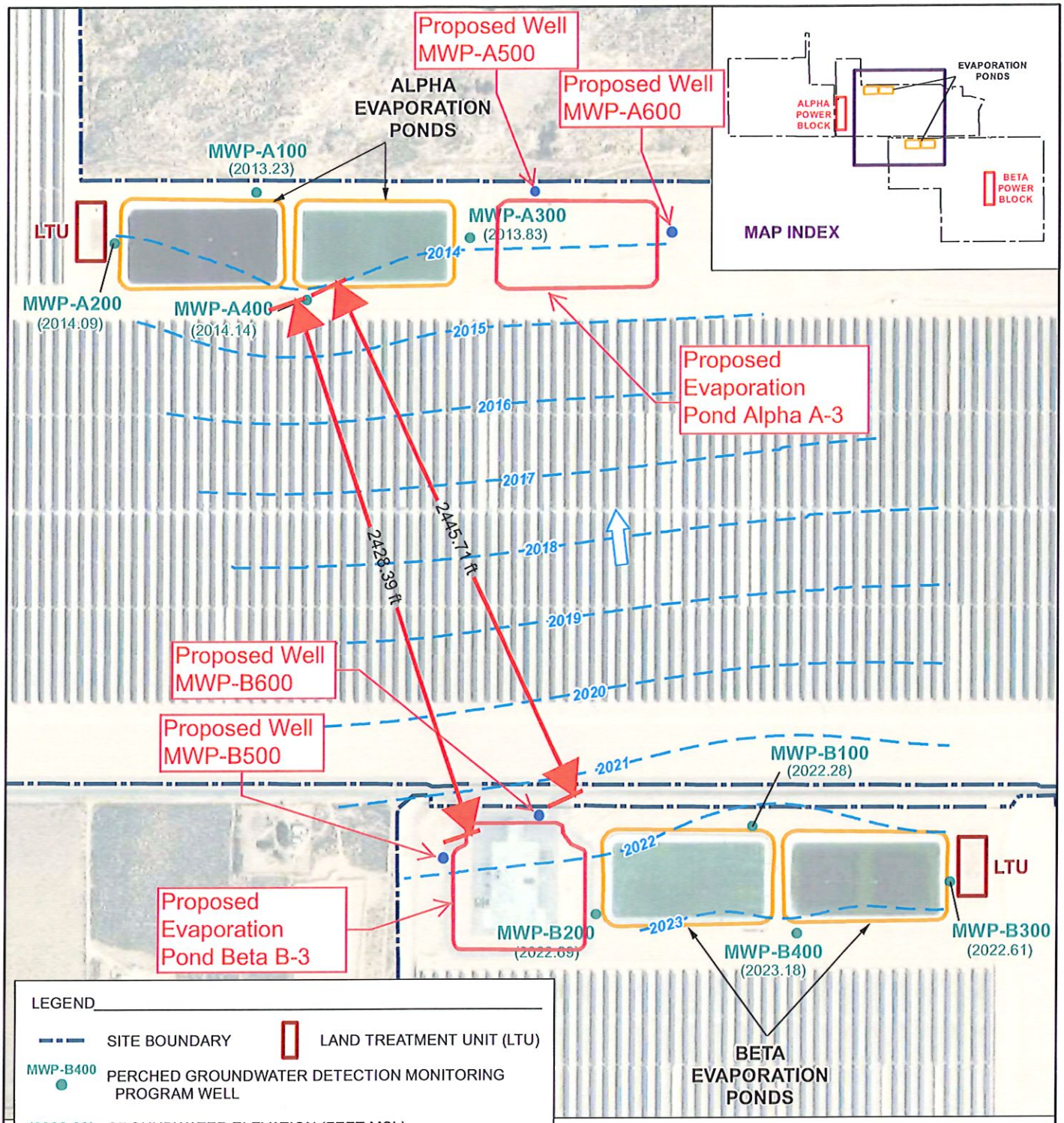
GROUNDWATER MONITORING NETWORK

MOJAVE SOLAR PROJECT
SAN BERNARDINO COUNTY, CALIFORNIA

105879028 | 7/23

Appendix 2

Perched Groundwater Wells



4_105879028_PGW_230208.mxd 7/19/2023 JDL

NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE. | SOURCES: MERRELL JOHNSON ENGINEERING, 2009 MOJAVE SOLAR ONE SITE PLAN; ESRI WORLD IMAGERY, 2023

FIGURE 4

PERCHED GROUNDWATER ELEVATIONS - FEBRUARY 7 AND 8, 2023

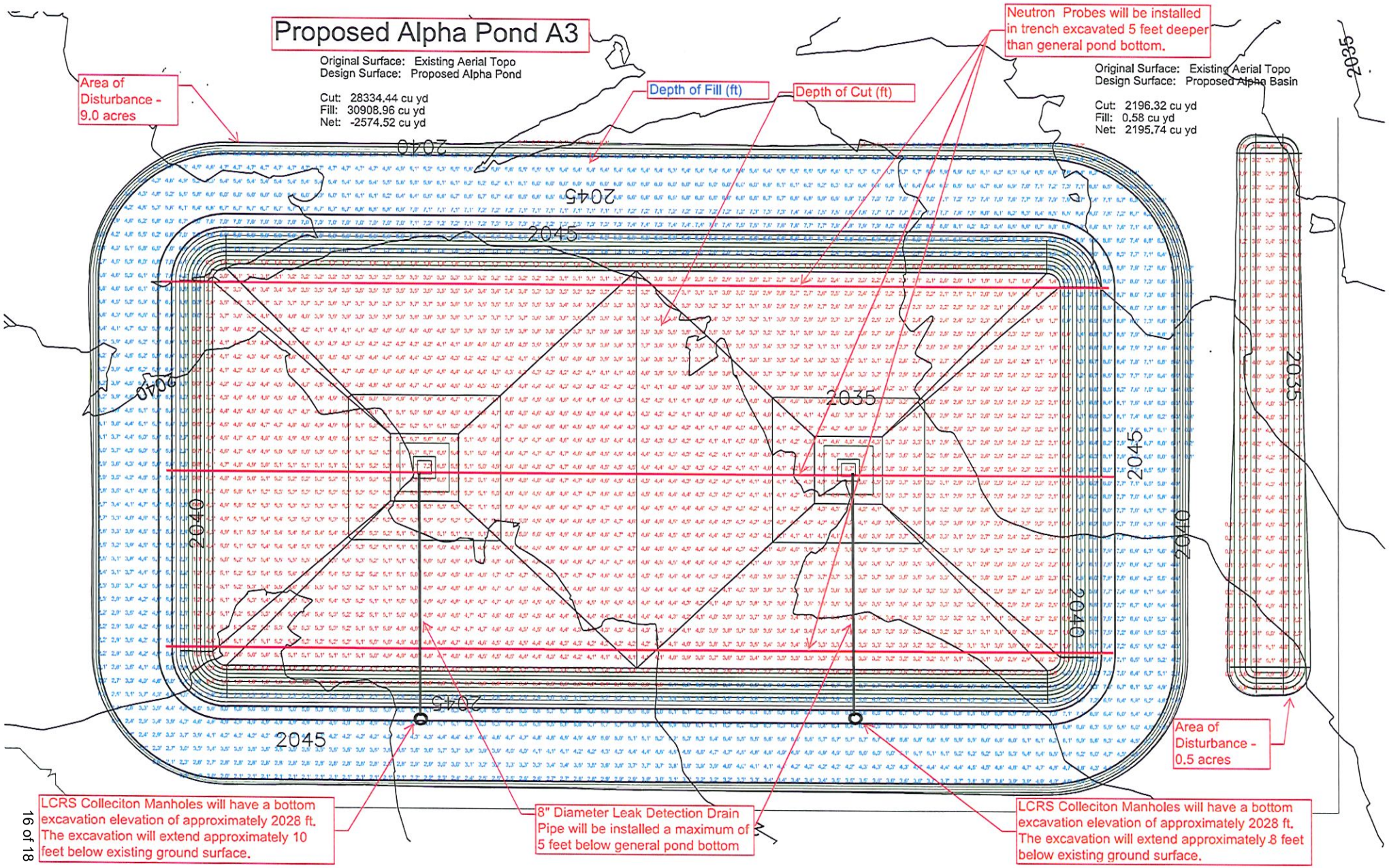
MOJAVE SOLAR PROJECT
SAN BERNARDINO COUNTY, CALIFORNIA

105879028 | 7/23

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

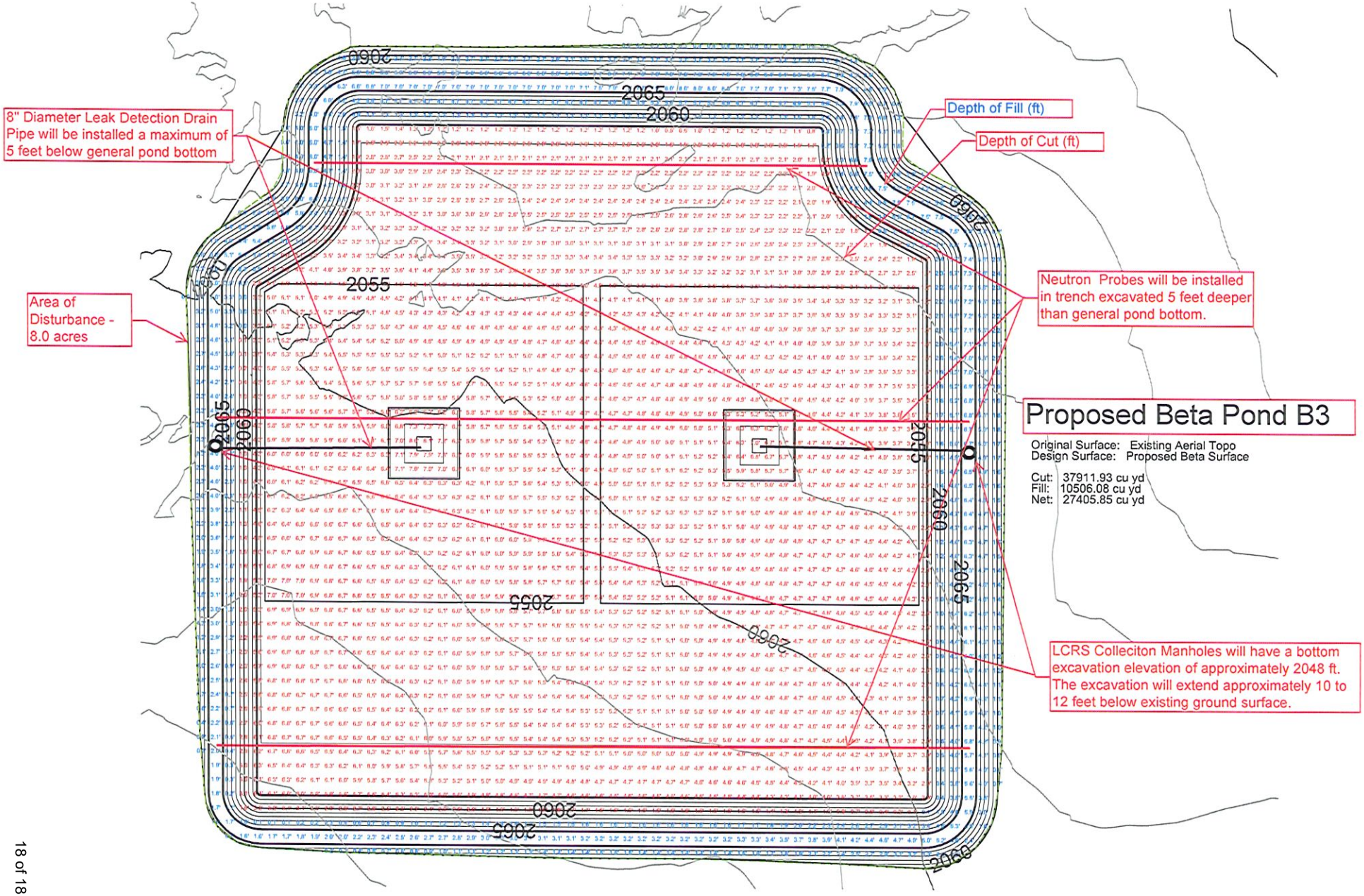
Appendix 3

ISOPACHS-Alpha


Proposed Alpha Pond A3
Original Surface: Existing Aerial Topo
Design Surface: Proposed Alpha Pond
Cut: 28334.44 cu yd
Fill: 30908.96 cu yd
Net: -2574.52 cu yd
Area of Disturbance - 9.0 acres
Depth of Fill (ft)
Depth of Cut (ft)
Neutron Probes will be installed in trench excavated 5 feet deeper than general pond bottom.
Original Surface: Existing Aerial Topo
Design Surface: Proposed Alpha Basin
Cut: 2196.32 cu yd
Fill: 0.58 cu yd
Net: 2195.74 cu yd
Area of Disturbance - 0.5 acres
LCRS Colleciton Manholes will have a bottom excavation elevation of approximately 2028 ft. The excavation will extend approximately 10 feet below existing ground surface.
8" Diameter Leak Detection Drain Pipe will be installed a maximum of 5 feet below general pond bottom
LCRS Colleciton Manholes will have a bottom excavation elevation of approximately 2028 ft. The excavation will extend approximately 8 feet below existing ground surface.

Appendix 4

ISOPACHS-Beta


8" Diameter Leak Detection Drain Pipe will be installed a maximum of 5 feet below general pond bottom
Area of Disturbance - 8.0 acres
Depth of Fill (ft)
Depth of Cut (ft)
Neutron Probes will be installed in trench excavated 5 feet deeper than general pond bottom.
LCRS Colleciton Manholes will have a bottom excavation elevation of approximately 2048 ft. The excavation will extend approximately 10 to 12 feet below existing ground surface.
Proposed Beta Pond B3
Original Surface: Existing Aerial Topo
Design Surface: Proposed Beta Surface
Cut: 37911.93 cu yd
Fill: 10506.08 cu yd
Net: 27405.85 cu yd