APPENDIX ALT-4B
WATER DEMAND UPDATE MEMORANDUM
(NOVEMBER 2023)
WATER SUPPLY ASSESSMENT FOR ALTERNATIVE 1

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MEMORANDUM

To:	Alison Little, Associate Planner Planning and Environmental Review 827 7th Street, Room 225, Sacramento, California 95814
From:	Matt Naftaly, Dudek
Subject:	Sloughhouse Solar Farm Project, Sacramento California
Date:	November 3, 2023

Dudek prepared a Water Supply Assessment and Groundwater Resources Impact Analysis (WSA/GRIA) for the Sloughhouse Solar Farm Project (SSFP), dated July 2022 to fulfill the requirements of SB 610 which necessitates the evaluation of water supplies for any project that is subject to the California Environmental Quality Act (CEQA) and meets certain requirements codified in CWC Division 6, Part 2.10 (Sections 10910–10915). The WSA/GRIA concludes that, "…the proposed water supply is estimated to be sufficient under normal-year, single-dry-year, and multiple-dry-year conditions over a 20-year projection and the estimated 35-year life of the project, accounting for the projected water demand of the SSFP, in addition to other existing and planned future uses of the identified water supply. The Project Impact Analysis supports this conclusion and indicates no significant project impacts related to groundwater."

A recent review of the SSFP has resulted in a small increase in the estimated water demand of 0.5 acre-feet per year (AFY) for landscape irrigation for the five years following project construction. This memorandum reports on the evaluation of the impacts of the additional water demand on the existing WSA/GRIA conclusions. Although the additional water demand results in minor changes to several water use parameters, none are significant enough to result in a change the conclusions of the SSFP/GRI.

1 Water Demand Increase

With the additional water demand for landscape irrigation, the SSFP water demand for the construction, decommissioning, and operation and maintenance phases of the Project is shown in Table 1. The values without the additional landscaping water demand are shown in parentheses.

Table 1. SSFP Water Demand Estimates

SSFP Phase	Estimated Water Demand
Construction	96 AF
Operation and Maintenance with Irrigation (years 2 - 6)	2.5 AFY (2.0 AFY)
Operation and Maintenance (after year 6)	2 AFY
Decommissioning and Removal	96 AF

The resulting amortized water demand for the 20-year analysis period required by SB 610 and the 35-year estimated project life is shown in Table 2. The values without the additional landscaping water demand are shown in parentheses.

Table 2. SSFP Amortized Construction, Operations and Maintenance, and Decommissioning Water Demand

WSA 20-Year Amortization*	Project Life 35-Year Amortization
6.9 AFY (6.7 AFY)	7.6 AFY (7.4 AFY)

Notes: SSFP = Sloughhouse Solar Farm Project; WSA = Water Supply Assessment; AFY = acre-feet per year

* Decommissioning water demand was not included in the 20-year amortization because the SSFP would still be operational at the end of that time.

2 Changes to Water Supply Inventory

Since preparation of the SSFP WSA/GRIA, the Cosumnes Groundwater Basin - Groundwater Sustainability Plan (GSP) has been finalized, submitted to, and approved by, the Department of Water Resources (DWR). A review of the approved GSP indicates that the data used for evaluation of the SSFP water demand as it related to groundwater resources has not changed. This includes the estimated groundwater basin historical overdraft and basin estimated sustainable yield. No other changes to the water supply inventory effecting the SSFP WSA/GRI are known to have occurred.

3 Analysis Results with Increased Water Demand

This section of this memorandum shows numerical changes to relevant parameter values with the increased water demand due to landscape irrigation. The values without the additional landscaping water demand are shown in parentheses. Parameters unaffected by the increased water demand are not shown.

Groundwater Well Yield Required to Meet SSFP Demand: 1.5 gpm (1.2 gpm)

Maximum Groundwater Storage Reduction Over Project Life: 266 AF (259 AF)

Estimated Amortized SSFP/GRIA Groundwater Use: 0.019 AFY/acre (0.019 AFY/acre – within rounding)

Table 3. Groundwater Storage Volume Reduction

SSFP Scenario	Water Demand (AF)	Period (Years)	Total Volume (AF)	Percent of Storage
20-Year Amortized (AFY)	6.9 (6.7)	20	138 (134)	1.4
35-Year Amortized (AFY)	7.6 (7.4)	35	266 (259)	2.8 (2.7)
First Year (Construction Only) (AF)	96	1	96	1.0
Operation Phase (5 Years)	2.5 (2.0)	5	12.5 (10.0)	0.13 (.10)
Operation Phase (15 Years)	2	15 (20)	30 (38)	0.31 (0.40)
Operation Phase (30 Years)	2	30 (35)	60 (66)	0.62 (0.70)
Operation Phase (20 Years)	-	20	42.5	0.44 (0.40)
Operation Phase (35 Years)	-	35	72.5	0.76 (0.70)
Decommission (Year 35)	96	1	96	1.0

Table 4. Maximum Groundwater Level Drawdown for All Scenarios

Distance from Well (Feet)	Drawdown (Feet) for 20-Year Amortized	Drawdown (Feet) for 35-Year Amortized	Drawdown (Feet) for 8-Month Construction
50 – Near Well	0.023 (0.02)	0.026 (0.025)	0.370
1,000 – Closest Surface Water	0.014 (0.013)	0.016	0.183
4,134 – Closest GDE	0.010 (0.009)	0.011	0.094
5,531 – Farthest Point of Parcels	0.009 (0.008)	0.011 (0.010)	0.076

4 WSA/GRIA Conclusions with Increased Water Demand

The SSFP WSA/GRIA addressed multiple water use parameters in drawing its conclusions. Changes to those parameters were re-evaluated with the increased water use as shown in Section 3 of this memorandum.

Specific conclusions of the WSA/GRIA are evaluated in the context of the increased water demand, below:

- The maximum groundwater storage reduction over the life of the SSFP increased from 259 AF to 266 AF but remains less than 3% of the groundwater volume currently underlying the SSFP parcels as stated in the WSA/GRIA
- The maximum drawdown resulting from extraction from a single on-site well would occur close to the well (50 feet away) during the 8-month construction or decommissioning period and would be approximately 4.5 inches. Drawdown for the 20-year and 35-year amortization scenarios would not exceed 1 foot near the well or at distance (approximately 1 mile from the well). This conclusion remains unchanged from the WSA/GRIA since the maximum demand would occur during periods unaffected by the increased water demand due to irrigation.

- Because the recent groundwater level is approximately 150 feet below surface and because SSFP-related drawdown would be minimal, there is no risk of disconnection of surface water and groundwater, and no risk to GDE communities in the vicinity of the SSFP. This conclusion is consistent with that from the WSA/GRIA since the maximum drawdown of groundwater from the SSFP would occur during construction or decommissioning, periods which are unaffected by the increased irrigation water demand and because the Cosumnes Groundwater Basin overdraft and sustainable yield numbers remain unchanged in the final GSP submitted to DWR.
- Because there is little evidence of historical land subsidence, and because groundwater level decline from SSFP pumping would be minimal, there is little risk of the SSFP contributing to land subsidence. This conclusion remains consistent with the increased groundwater demand due to landscape irrigation because the increased water level decline due to landscape irrigation increases is less than a tenth of an inch.
- The SSFP is consistent with groundwater sustainability planning in that it would replace the recent groundwater extractions of approximately 68 AFY for irrigation with amortized extractions of less than 8 AFY year for construction, operation, and maintenance of the SSFP. This conclusion remains valid with the increased water demand due to landscape irrigation.
- The estimated SSFP amortized water demand is less than 8 AFY. This amount is insubstantial when compared to the magnitude of the groundwater supply, and would not substantially contribute to overdraft per the following:
    - The estimated SSFP water demand is 0.006% of the estimated sustainable yield and 0.08% of the estimated Cosumnes Subbasin overdraft.1 This remains valid with the increased water demand due to landscape irrigation with the final GSP adopted because values of overdraft and sustainable yield estimates are unchanged.
    - One method that DWR uses for basin prioritization is to evaluate per-acre water use. Per-acre groundwater use within the Cosumnes Subbasin is 0.65 AFY per acre. Under sustainable conditions, assuming the estimated overdraft of 10,000 AFY, the sustainable per-acre groundwater use within the Cosumnes Subbasin would be approximately 0.60 AFY per acre. The estimated amortized per-acre groundwater use for the SSFP is approximately 0.19 AF per acre, well below the Cosumnes Subbasin per-acre sustainable use.[2]

Based on a review of data and information pertinent to the conclusions of the SSFP WSA/GRIA and a recalculation of relevant parameters using an increase of 0.5 AFY for the five years following project construction, the conclusion of the WSA GRIA that "*…the proposed water supply is estimated to be sufficient under normal-year, single-dry-year, and multiple-dry-year conditions over a 20-year projection and the estimated 35-year life of the project, accounting for the projected water demand of the SSFP, in addition to other existing and planned future uses of the identified water supply. The Project Impact Analysis supports this conclusion and indicates no significant project impacts related to groundwater, "* remains valid.

1 Sustainable yield estimated to be 125,791 per the DWR prioritization calculations and estimated overdraft value of 10,000 AFY. 8 AFY/125,791 AFY = 0.006%, 8 AFY/10,000 AFY = 0.08%

2 7.6 AFY/400 acres = 0.19 AF/A