SAN JOAQUIN SOLAR 1 & 2 HYBRID PROJECT
12-AFC-08

Supplemental Information
In Response To Cure Data Request Set #5

October 5, 2009

URS

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URS Project No.27658033

Data Request 206: Please provide EPI vendor specifications for the fluidized bed combustors that will be installed at the Project.

Response: The applicant has provided many specifications for the fluidized bed combustors from EPI. The vendor specifications for the fluidized bed combustors such as equipment dimensions or materials of construction are not finalized but a preliminary general arrangement is shown in the attached figure.

Data Request 207: Please demonstrate how the 5 million bone dry tons annually of biomass waste from orchards and vineyards in the Applicant's Response to Data Request Workshop Action Items was derived.

Response: The approximate acreage of orchards and vineyards is sourced from CSU Stanislaus, Endangered Species Recovery Program. The amount of green biomass produced per acre was based on the San Joaquin Valley Unified Air Pollution Control District Draft Feasibility Study Open Burning Biomass Incentive (attached), which estimated 2-3 truckloads (50-75 tons) of green biomass is produced per acre. To be conservative the lower number was used. A moisture content of 26% was assumed to convert to bone dry tons.

Data Request 208: Please discuss the discrepancy between the supply estimate of 5 million bone dry tons of agriculture-sourced biomass provided in the Applicant's Response to Data Request Workshop Action Items and the supply estimate of 645,188 bone dry tons per year of agriculture-sourced biomass (without cow manure) determined by the Biomass Fuel Supply Review for the Project provided in the AFC, Appendix A-4.

Response: The estimated value of biomass potentially produced from the orchard and vineyard crops located within 50 miles of SJS was based on the biomass yield presented in the SJVAPCD report referenced in response number 207. The Biomass Fuel Supply Review also uses a yield of 36 BTD (approximately 50 green tons) per acre for nut orchards and specifies this yield is expected during orchard removal activities. The Fuel Study assumes approximately 4% of total orchard acres are removed per year, the APCD report did not make this distinction so there is a discrepancy in the estimated biomass produced annually from orchards.

Data Request 209: Please specify whether the proposed fuel mix of "at least 50 percent agricultural wood waste and up to 50 percent municipal green waste" is anticipated on an annual average basis or on a continuous basis.

Response: The fuel mix of at least 50 percent agricultural wood waste and up to 50 percent municipal green waste is expected on an annual average basis.

Data Request 210: Please indicate whether the Applicant would accept a Condition of Certification requiring no less than 50 percent agricultural wood waste in the biomass fuel for the Project at any given time on a continuous basis.

Response: No the applicant would not accept a condition of certification regarding the fuel blend, because in any given hour the fuel may be any combination of municipal green waste or agricultural wood waste, or either individually.

Data Request 211: Please state whether the Project will rely on urban wood waste sourcing from metropolitan centers tributary to the San Joaquin Fuel Study Area. Please document your assumptions.

Response: The origin of urban wood waste has not been finalized since purchase agreements are not in place. Priority for locally supplied fuel will be given. SJS is expected to accept urban wood waste from metropolitan centers within or in tributaries to the Fuel Study area.

Data Request 212: If the Project will rely on urban wood waste sourcing from metropolitan areas tributary to the San Joaquin Fuel Study Area, please provide what percentage of the Project's fuel demand would be met by non-local sources, i.e. sources located farther than 60 miles from Coalinga.

Response: As stated in response to number 211, the origin of urban wood waste has not been finalized since purchase agreements are not in place, as such the percentage of fuel originating from non-local sources is unknown.

Data Request 213: Please demonstrate the basis for assuming that the average one way delivery distance for urban wood waste is 60 miles.

Response: Biomass fuel supply contracts have not been executed at this time. Priority will be given to fuel sources located closest to the site. Based on transportation costs, it is a reasonable assumption that the average delivery distance will be approximately 60 miles.

Data Request 214: Please specify the maximum feed rate for the Project's biomass combustors.

Response: From the data provided by the biomass combustor vendor, EPI, the maximum feed rate is anticipated to occur during full load operation combusting 100% urban wood waste with an ambient temperature of 30F, for a feed rate of 54,846 lb/hour per combustor or 219,384 lb/hour for all four combustors.

Data Request 215: Please discuss why emissions estimates were based on a biomass feed rate of 46,360 lb/hr for each combustor and 75 percent capacity rather than the maximum firing rate for the combustors of 53,847 lb/hr and 75 percent capacity. If necessary, please revise the emissions estimates for the biomass combustors based on the correct biomass feed rate and 75 percent capacity.

Response: The maximum biomass feed rate of 54,846 lb/hour per combustor or 219,384 lb/hour for all four combustors, for full load combustion of 100% urban wood waste with an ambient temperature of 30F, does not necessarily relate to the maximum potential emissions from the combustors. The maximum emissions from the combustors were analyzed for all short-term impacts and occurred during full load operations combusting 100% urban wood waste, but with different ambient temperatures. The maximum emissions for CO, SO_2 and NO_x occurred with an ambient temperature of 60F, for PM_{10} and $PM_{2.5}$ they occurred with an ambient temperature of 30F, and for VOC they occurred with an ambient temperature of 90F.

The annual biomass feed rate and associated emissions were estimated based on a fuel mix consisting of 50 percent agricultural wood waste and 50 percent municipal green waste at a 75% operating capacity. No emissions estimates need to be revised.

Data Request 216: Please demonstrate the annual biomass fuel requirements for the Project at 75 percent capacity (450,000 vs. 492,000 vs. 572,000 bone dry tons per year) using the appropriate combustor feed rate determined in response to Data Requests Nos. 214 and 215. Please be specific regarding the assumed fuel mixture and average moisture content of the biomass fuel.

Response: The annual fuel requirement for the entire SJS1&2 is based on the use of a fuel mix consisting of 50 percent agricultural wood waste and 50 percent municipal green waste at a 75% operating capacity, is 609,170 tons per year as received (not bone dry). This annual fuel requirement was used in calculations to estimate fugitive emissions from material handling and mobile emissions from truck deliveries.

Assuming a 19.25% moisture content of the fuel equates to approximately 492,000 bone dry tons per year.

Data Request 217: Please provide a discussion of alternative combustion technologies including circulating fluidized bed combustors ("CFBs") or biomass gasifiers.

Response: Please see the attachment to response to CURE data Request Set #3, dated Aug 26, 2009 for a discussion on biomass gasifiers (section 5.2) and circulating fluidized bed combustors (pages 35, 38 and 41).

Data Request 218: Please indicate whether the Applicant would be willing to accept a Condition of Certification prohibiting the use of rail ties, tires, and municipal solid waste as fuel.

Response: As stated in the Response to CURE data Request Set #3, dated Aug 26, 2009, response number 45 the Applicant has no intention of using these fuels. However, the applicant will not accept a condition of certification specifically prohibiting their use since compliance with other emissions limitations will preclude the use of these fuels.

Data Request 219: Please discuss the potential waste materials contained in "miscellaneous residential and commercial wood waste." Please indicate whether these could potentially include pre-separated paper or cardboard as fuel.

Response: Biomass fuel supply contracts have not been executed at this time. The intended fuel mix will include urban wood waste and residential green waste from local municipalities. As such, pre-separated paper and cardboard will not be targeted as a specific fuel source; however, potential materials contained in the urban wood waste and residential green waste fuel streams may include paper and cardboard products.

Data Request 220: Please indicate whether the Applicant would be willing to accept a Condition of Certification prohibiting the use of pre-separated paper and cardboard as fuel.

Response: The applicant will not accept a condition of certification specifically prohibiting the use of pre-separated paper and cardboard as fuel.

Data Request 221: Please explain how the addition of the Project would impact total miles traveled for delivery of fuel for biomass within the San Joaquin Valley Air Pollution Control District.

Response: Please see Objections To Data Requests Of California Unions For Reliable Energy, Set 5, dated September 24, 2009.

Data Request 222: Given that Rule 4103 applies only to agricultural waste, please substantiate your conclusion that the 60 miles average driving distance for urban wood waste truck deliveries would remain unchanged with the addition of this Project.

Response: Urban wood waste and agricultural waste are considered two separate "streams" in the biomass material market. Limitations on the open burning of agricultural wood waste is not be expected to impact the average driving distance for urban wood waste deliveries.

Data Request 223: Please provide N2O and CH4 emission factors for the Project's biomass combustors for the various types of fuel mixes and combustion temperatures. Please document all your assumptions.

Response: Please see Objections To Data Requests Of California Unions For Reliable Energy, Set 5, dated September 24, 2009.

Data Request 224: Please provide estimates of annual carbon dioxide-equivalent emissions of N2O and CH4 for the Project biomass combustors. Please document all your assumptions.

Response: Please see Objections To Data Requests Of California Unions For Reliable Energy, Set 5, dated September 24, 2009.

Data Request 225: Please revise the entrained road dust emissions estimates for vehicle travel on off-site paved roads based on emission factors for the fleet-average weight of all vehicles traveling the respective roads tributary to the Project site (rather than based on emissions factors for each vehicle class) and the appropriate silt loading factors. Please calculate emissions for vehicle travel for each road type, i.e., freeway, major arterials, collector, local, and rural roads tributary to the Project site.

Response: Please see Objections To Data Requests Of California Unions For Reliable Energy, Set 5, dated September 24, 2009.

Data Request 226: Please clarify whether the estimates of particulate matter ("PM") emissions from the WSACs provided with the Applicant's Response to Data Request Workshop Action Items dated August 26, 2009 are PM_{10} or total PM.

Response: The emissions estimated from the WSACs are total PM, although it was conservatively assumed that all PM released from the cooling towers would be PM10.

Data Request 227: Please provide an updated summary of on-site operational emissions from the SJS 1&2 Project that accounts for the revised WSAC drift emissions of PM_{10} based on a 0.0005 percent drift eliminator control provided with the Applicant's Response to Data Request Workshop Action Items dated August 26, 2009.

Response: The total on-site operational emissions from the SJS 1&2 Project, including the WSAC emissions based on a 0.0005 percent drift eliminator control, are presented in Table DR-227.

TABLE DR-227 MAXIMUM ANNUAL OPERATIONAL EMISSIONS FROM THE SJS 1&2 PROJECT

	Maximum Annual Emission Rate (ton/yr)					
	NO_X	**CO**	**VOC**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Onsite Emission Sources						
Stationary Sources						
Combustion Emissions						
Fluidized Bed Combustors with Natural Gas Burners	49.03	111.40	17.37	50.28	100.75	100.75
Emergency Generators	0.169	0.093	0.026	0.0001	0.005	0.005
Fire Water Pumps	0.141	0.075	0.021	0.0001	0.004	0.004
WSAC					6.19	6.19
Fugitive Emissions						
Biomass, Limestone and Ash Handling Fugitive Dust					0.090	0.019
Heat Transfer Fluid Leakage			1.7			
Total Onsite Stationary Source Emissions	*49.34*	*111.57*	*19.12*	*50.28*	*107.03*	*106.96*
Mobile Sources						
Combustion Emissions						
Biomass Handling Equipment	0.20	0.15	0.03	0.0003	0.02	0.02
Water Trucks (Cleaning Solar Mirrors & Dust Control)	0.01	0.01	0.001	0.00002	0.0008	0.0007
Worker Vehicles - Travel Onsite	0.03	0.10	0.009	0.00022	0.0045	0.0038
Delivery Trucks - Travel & Idling Onsite	2.30	1.00	0.475	0.002	0.096	0.091
Fugitive Emissions						
Water Trucks (Cleaning Solar Mirrors & Dust Control)					0.67	0.07
Worker Vehicles - Travel Onsite					0.08	0.01
Delivery Trucks - Travel Onsite					5.18	0.77
Total Onsite Mobile Source Emissions	*2.53*	*1.26*	*0.51*	*0.00*	*6.04*	*0.96*
Total Onsite Emissions	***51.87***	***112.82***	***19.63***	***50.28***	***113.07***	***107.92***

Data Request 228: Please disclose whether the revised particulate matter drift emissions from the WSACs provided with Applicant's Response to Data Request Workshop Action Items dated August 26, 2009 are accounted for in the ERC offset package provided to SJVAPCD on August 21, 2009.

Response: The revised WSAC particulate matter emissions have been provided to SJVAPCD and are accounted for in their most recent estimation of project related ERC requirements.

Data Request 229: Please discuss why the WSAC drift eliminator control was revised from 0.0002 percent (WSAC emission estimate dated August 21, 2009) to 0.0005 percent (WSAC emission estimate dated August 26, 2009).

Response: The design engineer decided that the very low drift eliminator control of 0.0002 percent had not been proven in practice for the type of WSACs to be used at SJS 1&2, thus the proven technology of using a drift eliminator control of 0.0005 percent was the preferred technology.

Data Request 230: Please clarify whether the emissions estimate of 1.7 tons per year of fugitive VOC from the heat transfer fluid system provided by the Applicant in response to CURE Data Request No. 86 accounts for fugitive HTF emissions from one or both plants of the SJS 1&2 Project.

Response: The fugitive VOC emissions from the heat transfer fluid system of 1.7 tons per year are from the entire SJS 1&2 Project.

Data Request 231: Please provide an updated summary of on-site operational emissions from the SJS 1&2 Project that accounts for fugitive VOC emissions from the heat transfer fluid system.

Response: Table DR-227 presents the maximum annual on-site operational emissions from the SJS 1&2 Project, and it contains the fugitive VOC emissions from the heat transfer fluid system.

Data Request 232: Please discuss potential mitigation measures to mitigate the Project's mobile source emissions, including the feasibility of a "Clean Air Truck" program (retrofit and replacement of trucks owned by trucking firms delivering biomass) such as proposed by the Liberty Quarry Applicant.

Response: Please see Objections To Data Requests Of California Unions For Reliable Energy, Set 5, dated September 24, 2009.

Data Request 233: Please indicate the maximum percentage of C&D wood waste anticipated in the municipal green waste used for fuel at the Project. Please indicate how this maximum percentage would be monitored.

Response: Biomass fuel supply contracts have not been executed at this time therefore the maximum percentage of C&D wood waste is unknown. Details such as managing the various components of urban wood waste will be determined during contract negotiations.

Data Request 234: Please provide specifications for C&D wood waste that fuel suppliers must meet to ensure that the majority of contaminants and non-burnables are removed from the C&D waste.

Response: Biomass fuel supply contracts have not been executed at this time therefore the specifications for the fuel supply is unknown. Details such as managing the various components of urban wood waste will be determined during contract negotiations.

Data Request 235: Please describe the testing and sampling procedures for the fuel at both the C&D processing facility and at the Project to assure that the fuel quality will be maintained.

Response: Biomass fuel supply contracts have not been executed at this time therefore the testing and sampling procedures for the fuel supply is unknown. Details such as this will be determined during contract negotiations.

Data Request 236: Please provide vendor specifications for the fluidized bed combustors that will be installed at the Project including toxic air contaminant emission factors.

Response: Please see Objections To Data Requests Of California Unions For Reliable Energy, Set 5, dated September 24, 2009.

Data Request 237: Please provide source tests for the Mendota Biomass Power Plant for toxic air contaminant emissions including a description under which these emissions were measured (load, fuel mix including specification of the fraction of C&D wood, combustion temperature, control equipment, etc.).

Response: Please see Objections To Data Requests Of California Unions For Reliable Energy, Set 5, dated September 24, 2009.

Data Request 238: Please discuss how the toxic air contaminant emission factors measured at the Mendota Biomass Power Plant are applicable for the Project given that the Mendota Biomass Power Plant uses circulating fluidized bed combustors and the Project would use bubbling fluidized bed combustors.

Response: As stated in the attachment to response to CURE data Request Set #3, dated Aug 26, 2009, "the fundamental difference between bubbling-bed and circulating-bed boilers is the fluidization velocity (higher for circulating)." The fluidization velocity has no appreciable impact on the air toxic emissions, which are mainly determined by the fuel composition. Additionally, the SJVAPCD provided these emission factors to the Applicant as representative of the technology to be used at the project facility.

Data Request 239: Please provide emission factors for toxic air contaminant emissions measured at a plant with bubbling fluidized bed combustors and under similar conditions (load, fuel mix, combustion temperature, control equipment, etc.) as proposed for the Project.

Response: Please see Objections To Data Requests Of California Unions For Reliable Energy, Set 5, dated September 24, 2009.

Data Request 240: Please indicate whether the Applicant would be willing to install a continuous dioxin/furan emission monitoring device at the Project.

Response: The applicant is not willing to install a continuous dioxin/furan emission monitoring device at the SJS 1&2 Project.

Data Request 241: Please explain whether the TPH-d detected was at a concentration of 23,000 mg/kg or 23,000 ug/kg. In other words, please confirm the correct concentration for TPH-d.

Response: Review of the analytical report indicates that the concentration of TPH-D is reported in mg/kg and not ug/kg as indicated in the text of the June 1, 2009 report. Despite this inconsistency in the report, the areas of TPH-containing soil are di minimis, and the Applicant will work with DTSC to determine the affected area and the proper response based on the Phase II testing results.

Data Request 242: Please provide a comparison of the TPH-d sample concentrations to regulatory agency screening levels.

Response: Please see Objections To Data Requests Of California Unions For Reliable Energy, Set 5, dated September 24, 2009.

Data Request 243: Please evaluate individual, rather than average, toxaphene soil exceedences of ESLs and CHHSLs in determining whether they would pose a risk to site workers and if they would constitute hotspots that would require excavation, removal, and confirmatory sampling.

Response: Please see Objections To Data Requests Of California Unions For Reliable Energy, Set 5, dated September 24, 2009.

Data Request 244: Please document if notification of Fresno County or the Regional Water Quality Control Board (RWQCB) is required under the Aboveground Storage Tank program requirements.

Response: Please see Objections To Data Requests Of California Unions For Reliable Energy, Set 5, dated September 24, 2009.

Data Request 245: Please explain whether the Applicant intends to seek a Voluntary Cleanup Agreement with DTSC.

Response: As discussed with DTSC, a Voluntary Cleanup Agreement will be contingent on the findings of the Phase II report expected to be docketed in October 2009.

Data Request 246: Please provide any agency communication regarding whether site assessment is conducted to regulatory standards.

Response: Please see Objections To Data Requests Of California Unions For Reliable Energy, Set 5, dated September 24, 2009.

Data Request 247: Please provide records of communication with Fresno County CUPA program to document regulation of the ASTs by the County.

Response: No communication regarding ASTs has occurred since the project includes no ASTs containing petroleum. Existing ASTs located on the site are the responsibility of the property owner and will be removed prior to site mobilization.

Data Request 248: Please provide the Applicant's Soil Management Plan to ensure protection of nearby sensitive receptors from inhalation of dust-borne contaminants.

Response: The applicant has not prepared a Soil Management Plan. If required by CEC certification requirements or Fresno County development permit requirements, the applicant will prepare a Soil Management Plan. Currently, the draft Drainage, Erosion, and Sediment Control Plan (DESCP), construction Stormwater Pollution Prevention Plan (SWPPP), draft Industrial SWPPP, and Air Quality Construction Mitigation Plan (AQCMP) are the only known requirements from the CEC that are required to address this concern.

Data Request 249: Please provide a revised comprehensive and Site-specific Erosion and Sediment Control Plan that incorporates pesticide and TPH-d data.

Response: Please see Objections To Data Requests Of California Unions For Reliable Energy, Set 5, dated September 24, 2009.

Data Request 250: Please explain the effectiveness of the construction and post-construction BMPs in mitigating erosion and runoff of TPH-d- and pesticide-contaminated soils. Please document any assumptions.

Response: The DESCP, draft Construction Stormwater Pollution Prevention Plan (SWPPP), and draft Industrial SWPPP provide a list of BMPs suggested for use on the site. These plans will be updated prior to construction and operation to address any remaining TPH-d and pesticide contaminated soils onsite.

Data Request 252: Please discuss whether the TDS content in the WSAC makeup water could be reduced to permit an increase in the number of cycles of concentration, thereby reducing the Project's water demand for cooling.

Response: The project's process water treatment system and recycle capacity is currently designed for the maximum number of cycles of concentration based upon the current plant cooling process.

Data Request 253: Please provide the status of the WWTF annexation application to the Fresno LAFCo.

Response: Please see Objections To Data Requests Of California Unions For Reliable Energy, Set 5, dated September 24, 2009.

Data Request 254: Please provide a schedule of construction for the proposed WWTF.

Response: Please see Objections To Data Requests Of California Unions For Reliable Energy, Set 5, dated September 24, 2009.

Data Request 255: Please state whether the Applicant would agree to a Condition of Certification that limits the Project's reliance on groundwater.

Response: The Applicant does not agree to a Condition of Certification that limits the Project's reliance on groundwater.

Data Request 256: Does the data from the drillers logs submitted as part of the "pre-aquifer test" screen multiple aquifers?

Response: The term "pre-aquifer test" is not understood. The State of California well completion report for the Anderson Well pumped during aquifer testing as described in the 2/19/09 URS technical memo indicates that the materials encountered in the aquifer underlying the site ranged in texture from clay to gravel-sized particles which is consistent with the highly lenticluar alluival deposits described for the Pleasant Valley subbasin in California's Groundwater Bulletin 118. Division of the more permeable zones encountered into separate aquifers is a question of scale, as recent work has described the Central Valley as one continuous heterogeneous aquifer system (Claudia C. Faunt, editor, 2009. Groundwater Availability of the Central Valley Aquifer, California. USGS Professional Paper 1766).

Data Request 257: Please provide supporting evidence that any portion of the tested aquifer is truly confined.

Response: Please see Objections To Data Requests Of California Unions For Reliable Energy, Set 5, dated September 24, 2009.

Data Request 258: Please provide justification that the Theis (1935) recovery method is suitable as a stand-alone analytical method for assessment of aquifer behavior during the lifetime of the proposed Project in light of DWR's identification of the aquifer as unconfined.

Response: The Theis equation with all its assumptions, is derived for confined aquifers; however if the drawdown in monitoring wells does not exceed 25% of the saturated thickness, the equation can be applied to unconfined aquifers, with certain adjustments. For draw downs that are less then 10% of the aquifers pre-pumping thickness (which was the case for the aquifer test described in the 2/19/09 URS technical memo), it is not necessary to adjust the recorded drawdown since the error introduced by using the Theis equation is small. Several other analytical methods were used during analysis of the aquifer test; however the Theis method provided the best match and was therefore considered most appropriate for the analysis.

Data Request 259: Please provide comparative analysis of the time-drawdown data using the conventional Cooper-Jacob ("steady-state") technique for a confined aquifer, Hantush ("leaky semi-confined aquifer") technique, and unconfined aquifer techniques (Neuman and Moench methods, at a minimum).

Response: Please see Objections To Data Requests Of California Unions For Reliable Energy, Set 5, dated September 24, 2009.

Data Request 260: Please explain the effect of the Applicant's test well partial penetration on the estimates of aquifer behavior.

Response: The amount of drawdown is relatively small compared to the penetration of the aquifer by the pumping well which limits the potential for impact of partial penetration on estimates of aquifer behavior.

Data Request 261: Please explain the resultant uncertainties introduced to estimates of long-term aquifer yield and drawdown as a result of the Applicant's test well partial penetration. Please provide all data that supports your answer.

Response: Please see Objections To Data Requests Of California Unions For Reliable Energy, Set 5, dated September 24, 2009.

Data Request 262: Please provide information regarding transducer depth placement in the test well.

Response: Drawdown data for the Anderson Well pumped during the aquifer testing were measured using an airline (not a transducer) as described in the 2/19/09 URS technical memo.

Data Request 263: Please provide information regarding transducer depth placement in each of the observation wells.

Response: The transducers in the Coalinga State Hospital Well (Observation Well #1) and Anderson Agricultural Well (Observation Well #2) as described in the 2/19/09 URS technical memo were set approximately 75 feet and 27 feet below static water level respectively prior to the aquifer test.

Data Request 264: Please provide well construction details for the two observation wells.

Response: Well logs provided by the California Department of Water Resources for the area surrounding the Anderson Well are representative of aquifer conditions, but cannot be definitively attributed to a specific existing well.

Data Request 265: Please provide any well logs, other than the two provided, that the Applicant used to support its analysis.

Response: Additional well logs (outside of the property boundary) are not available as public information through the Department of Water Resources or local agencies, and cannot be provided.

Data Request 266: Please provide logs for a minimum of six additional nearby wells, spaced at distances greater than 230 feet from the Project site test well.

Response: Please see Objections To Data Requests Of California Unions For Reliable Energy, Set 5, dated September 24, 2009.

Data Request 267: Please provide the Applicant's pump test (specific capacity) test data from each of the additional nearby wells.

Response: Please see Objections To Data Requests Of California Unions For Reliable Energy, Set 5, dated September 24, 2009.

Data Request 268: Please use data requested in Data Request Nos. 259 to 261 to provide a revised conceptual model of the local aquifer system surrounding the proposed Project site (at least 1.5 miles from the on-site test well).

Response: Please see Objections To Data Requests Of California Unions For Reliable Energy, Set 5, dated September 24, 2009.

Data Request 269: Please evaluate and comment on the impacts of the Applicant's revised conceptual model provided in response to Data Request 268 on the results of the aquifer test, and upon the predicted Theis drawdown estimates after 1, 10 and 20 years of continuous pumping from the test well.

Response: Please see Objections To Data Requests Of California Unions For Reliable Energy, Set 5, dated September 24, 2009.

Data Request 270: Please provide the Applicant's evaluation of perennial yield (operational safe yield) of the PVB that establishes the baseline for the Project's analysis of the proposed Project water demand impacts.

Response: Please see Objections To Data Requests Of California Unions For Reliable Energy, Set 5, dated September 24, 2009.

Data Request 271: Please provide an evaluation of perennial yield (operational safe yield) of the PVB, in order to establish a defensible baseline for justifying proposed Project water demands, using the following:
a. Data as far back as 1950, if possible; and
b. Total basin groundwater extractions from as many pumpers as possible; and
c. Water level data from a minimum of six (6) wells within a 1.5 mile radius of the proposed Project site.

Response: Please see Objections To Data Requests Of California Unions For Reliable Energy, Set 5, dated September 24, 2009.

Data Request 272: Please explain the effects of foreseeable future continued drought and climate change conditions on availability and sustainability of future groundwater extractions in the PVB, and their bearing on availability of groundwater to meet proposed Project demands. Please provide as probability values and quantitative estimates of uncertainty in support of your answer. Data for this analysis may be found via the State DWR, AWWA, ACWA, US Geological Survey, academic research institutions and/or the National Resources Defense Council. Extrapolations of historic effects from the Westside Basin can be used for comparison.

Response: Please see Objections To Data Requests Of California Unions For Reliable Energy, Set 5, dated September 24, 2009.

Data Request 273: Please provide the Applicant's evaluation of the potential effect of continued restricted imported water supplies to PVB via the CVP-SWP system, as a result of Bay-Delta legal decisions, CEQA process and uncertainties. Please assume that future restrictions may be even less than the prevailing 40% allocation. Extrapolations from the conditions in the adjacent Westside Basin may be useful, but should not form the sole basis for the evaluation.

Response: Please see Objections To Data Requests Of California Unions For Reliable Energy, Set 5, dated September 24, 2009.

Data Request 274: If the Applicant disagrees that future restrictions may be even less than the current 40% allocation, please demonstrate how the effect of continued restricted imported water supplies to the PVB will impact A) the Project and B) the groundwater basin, based on the Applicant's scenario of future CVP-SWP allocations during the proposed 20-year Project duration. Please justify your allocations based the Applicant's information and analysis of possible future drought and political scenarios.

Response: Please see Objections To Data Requests Of California Unions For Reliable Energy, Set 5, dated September 24, 2009.

Data Request 275: Please explain the Project's potential impacts on the PVWD water banking facility planned one mile south of the proposed Project.

Response: Some drawdown would be expected one mile south of the proposed Project under likely groundwater pumping scenarios considered in the 2/19/09 URS technical memo regarding aquifer testing. Drawdown of banked water would be expected even without the proposed project due to irrigation wells currently operating within the area described. Regardless, PVWD board member and Project-site property owner indicates that nothing is happening at this point within the PVWD with respect to banking of water.

Data Request 276: Once a suitable perennial yield evaluation is completed for the PVB, augmented by probable uncertainties in water supply due to climate and Bay-Delta constraints, please perform an assessment of the potential impacts of SJS 1 & 2 groundwater extractions on the planned PVWD water banking facility.

Response: There is insufficient data to evaluate perennial yield for the PVB. PVWD board member and Project-site property owner indicates that nothing is happening at this point within the PVWD with respect to banking of water.

Data Request 277: In light of the comments above, please explain why pumping simulations based upon only the simplified Theis analytical method were chosen to predict proposed Project impacts on local water supply.

Response: The Theis method is considered an adequate analytical method as a screening tool for this project because the primary goal of the aquifer test described in the 2/19/09 URS technical memo was to model predicted drawdown for surrounding wells due to the Project. Only two observation wells were available for the aquifer test, so the solution is validated within a limited radial distance of the pumping well. Analytical models solve one equation of groundwater flow at a time, and the results (i.e. drawdown) can then be applied to points in the surrounding aquifer (such as a neighboring well). Given the limitations of the aquifer test, the Theis method is considered an appropriate method to predict what impact the Project might have on local groundwater conditions

Data Request 278: Responses to Data Request No. 277 notwithstanding, as an alternative to the simple Theis analytical method, please develop a robust three-dimensional conceptual and numerical groundwater flow model for the northern portion of the PVB where the proposed SJS 1 & 2 Project is to be located, to simulate effects of Project groundwater withdrawals on neighboring pumpers and planned PVWD groundwater recharge facilities. Please use some form of conventional and reasonably available commercial software, such as WHI Visual Modflow© (version 3.1 or greater) or an equivalent. If an existing groundwater flow model has been developed for the Project area and is available and not subject to proprietary use restrictions, that may be considered for the simulations. The following conditions should be met by any such model used or developed:

Response: Please see Objections To Data Requests Of California Unions For Reliable Energy, Set 5, dated September 24, 2009.

Data Request 278A: Please adhere to prevailing Standard Guides developed by the American Society for Testing and Materials (ASTM) for developing, calibrating, verifying and performing sensitivity analyses of groundwater flow models, as well as defining initial model conditions and boundary conditions.

Response: See above response to Data Request 278.

Data Request 278B: A model domain of not less than six square miles, centered on the proposed Project extraction well(s), should be used.

Response: See above response to Data Request 278.

Data Request 278C: In order to avoid “forced” boundary condition behavior, model boundaries should be set so as to not coincide with geologic or suspected hydrogeologic boundaries, such as the Guijarral Hills to the north, Kreyenhagen Hills to the west, or the subsurface Kettleman Hills anticline across Polvadero Gap east of the Project site.

Response: See above response to Data Request 278.

Data Request 278D: Horizontal discretization (gridding) of the domain should be constructed so as to have as many grid-centered wells as possible. Grid dimensions need not be any finer than necessary to reasonably simulate heads produced by the number of pumping wells or recharge sites presently in the domain, and new wells or recharge sites reasonably expected to be installed within the domain within the expected duration of the proposed Project.

Response: See above response to Data Request 278.

Data Request 278E: Vertical discretization should include as many discrete layers as are adequate for representation of the different physical properties and flow behavior of all significant aquifers and aquitards identified within the domain from review of local well logs. As many well logs as illustrated on Figure 5.5-4 of the AFC should be used as possible, in addition to an adequate number of wells east of Polverado Gap within the Westside Groundwater Basin to simulate the potential boundary condition in that area. The bottom layer of the discretized domain should include the base of the fresh water zone. Layer discretization should be able to lead to reasonable simulations of well capture zones developed due to preferential flow pathways in zones of higher hydraulic conductivity (something that a simplified Theis analysis cannot achieve).

Response: See above response to Data Request 278.

Data Request 278F: Static (non-pumping) water-level data should be used from as many local wells as possible for steady-state model calibration. It is recommended that heads measured during historic periods of maximum CVP-SWP imported water to PVB (and minimal groundwater pumping) be considered for steady-state calibration.

Response: See above response to Data Request 278.

Data Request 278G: Recovery data from the February 2009 aquifer test may be used for transient model calibration, but only if uncertainties with the "State Prison" test observation well can be resolved (e.g., aquifer stratigraphy and well construction details). Transient calibration should comparatively also involve heads measured from as many idle (non-pumping) wells as possible during historic periods of heavy groundwater pumping in other wells, although such a condition may not have ever existed. Nevertheless, a comprehensive review of local area wells should be performed to evaluate whether or not this is feasible.

Response: See above response to Data Request 278.

Data Request 278H: Assignment of "no-flow" and "constant head" boundary conditions in particular should only used with extreme prejudice, and be well-justified from suitable historic data.

Response: See above response to Data Request 278.

Data Request 278I: Following a reasonable effort at model calibration, the model should initially be verified by pumping simulations of the Applicant's aquifer test well using rates and time periods similar to those used for the previous Theis simulations, with all other wells in the domain set for non-pumping conditions. Subsequent model verification should be performed using those same Project test well extraction rates, in addition to other wells in the domain set to achieve cumulative extractions comparable to historic maximum pumping periods recorded in the PVB.

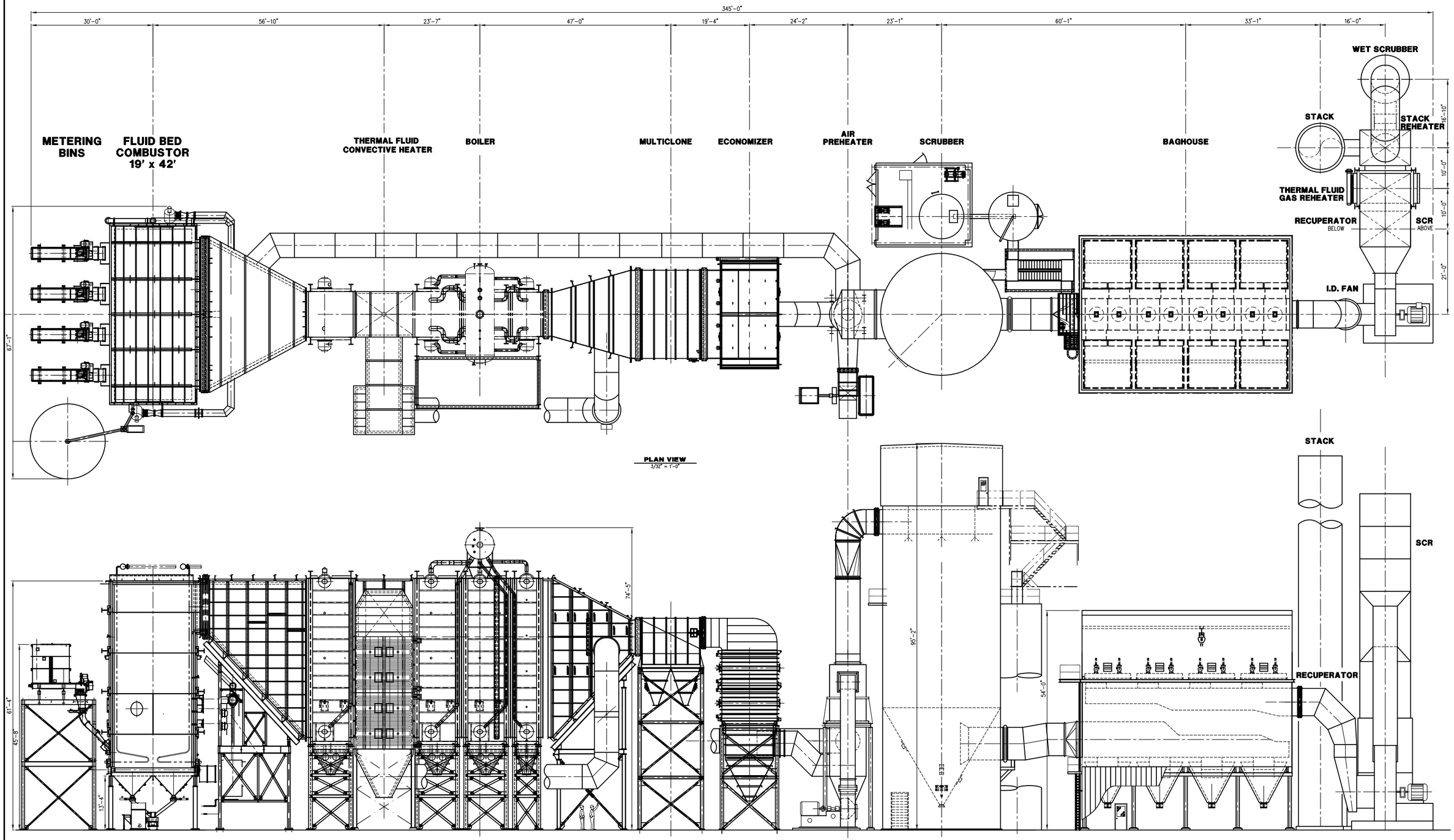
Response: See above response to Data Request 278.

Data Request 278J: If model calibration and verification efforts provide reasonable results, please use the model to verify PVB perennial yield.

Response: See above response to Data Request 278.

Data Request 278K: Please perform conventional sensitivity and uncertainty analyses for the model.

Response: See above response to Data Request 278.



CONCEPTUAL ARRANGEMENT

EQUIPMENT SHOWN REPRESENTS
PRELIMINARY LAYOUT AND IS
SUBJECT TO CHANGE UPON FINAL DESIGN

1	ISSUED FOR REVIEW AND COMMENT ONLY				
△	DESCRIPTION	BY	DATE	CHK.	DATE
	REVISIONS				

FINAL APPROVAL	
PROJ. MGR.	DATE

	BY	DATE
ROUTE		
DRAWN	CDG	9-05-08
CHECKED		
DESIGN ENG.		
CIVIL/STRUCT.		
PIPING/PROCESS		
I & C/ELECT.		
Q.A.		
PROJ. ENG.		

EPI Energy Products of Idaho
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Idaho Energy Limited Partnership

GENERAL ARRANGEMENT
SPINNAKER – STEAM CYCLE
SAN JUAQUIN, CA

DRAWING CONTROL INDEX	PROJECT	CODE	SIZE	SHEET	REV No.
	1587	02030	D	1	1

SCALE NONE | TOTAL SHEETS 1

SAVED: 09/05/08 3:45 pm
CAD File: J:\1587\02030-01-1.DWG

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV

APPLICATION FOR CERTIFICATION FOR THE *SAN JOAQUIN SOLAR UNITS 1 AND 2 LICENSING PROJECT*

Docket No. 08-AFC-12

PROOF OF SERVICE
(Revised 8/27/2009)

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Declaration of Service

I, Anne Runnalls, declare that on October 5, 2009, I served and filed copies of the attached Response to CURE Data Request Set #5, dated October 5, 2009. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at: [http://www.energy.ca.gov/sitingcases/sjsolar/index.html]. The document has been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

(C*heck all that Apply*)

For service to all other parties:

__x___sent electronically to all email addresses on the Proof of Service list;

__ ___by personal delivery or by depositing in the United States mail at Sacramento, California with first-class postage thereon fully prepaid and addressed as provided on the Proof of Service list above to those addresses NOT marked "email preferred."

AND

For filing with the Energy Commission:

_x___sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (preferred method);

OR

_____depositing in the mail an original and 12 paper copies, as follows:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 08-AFC-12
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512

docket@energy.state.ca.us

I declare under penalty of perjury that the foregoing is true and correct.

Anne Runnalls