Water Quality Management Plan

Heber 1 Parasitic Solar Project

Prepared for: Imperial County Planning and Development Services

May 24, 2024

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Document Information

Prepared for	Heber Field Company (a wholly owned subsidiary of Ormat Technologies, Inc.)
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Professional Certification

Water Quality Management Plan

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This report has been prepared by Catalyst Environmental Solutions Corporation under the professional supervision of the Principal(s) and/or staff whose signature(s) appear hereon.

The scope of work and specifications are presented in accordance with generally accepted professional engineering practice and those of the California State Water Resources Control Board Order No. 2013-001-DWQ. There is no other warranty either expressed or implied.

Paden Voget, PE
State of California Professional Engineer #69238

Project Owner's Certification

This Water Quality Management Plan (WQMP) has been prepared for Heber Field Company, LLC (HFC) (a subsidiary of Ormat Technologies, Inc. [ORMAT]) by Catalyst Environmental Solutions Corporation. This WQMP seeks compliance with the stormwater management requirements of the County of Imperial and the Phase II Small MS4 General Permit Imperial Valley Watershed. The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of the site consistent with the Phase II Small MS4 Permit and the intent of the County of Imperial and the unincorporated community of Heber. Once the undersigned transfers its interest in the property, its successors in interest and the city/county/town shall be notified of the transfer. The new owner will be informed of its responsibility under this WQMP. A copy of the approved WQMP shall be available on the subject site in perpetuity.

"I certify under a penalty of law that the provisions (implementation, operation, maintenance, and funding) of the WQMP have been accepted and that the plan will be transferred to future successors."

Project Data			
Permit/Application Number(s):	New CUP for Heber 1 Parasitic Solar Project	Grading Permit Number(s)	N/A
Tract/Parcel Map Number(s):	APN 059-020-001	Building Permit Number(s)	N/A
CUP, SUP, and/or APN:			
Owner's Signature			
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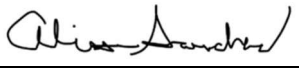
Signature:		Date:	May 24, 2024

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SECTION 1 Project Description

Heber Field Company, LLC (Applicant; a subsidiary of Ormat Technologies, Inc. [ORMAT]), proposes to develop a 20 megawatt (MW; net generation) solar energy facility that will provide parasitic load to the existing Heber 1 geothermal energy facility (Heber 1 Plant) via a new medium voltage cable (Project) in unincorporated Imperial County (**Figure 1**). As a behind-the-meter parasitic solar facility, the proposed solar field would serve as an extension of the existing Heber 1 geothermal facility. The solar facility would be developed on APN 059-020-001 which is owned by the Applicant.

The Applicants propose the following actions:

- Twenty (20) megawatt (MW) solar photovoltaic field exclusively dedicated to providing parasitic load to the existing Heber 1 geothermal plant.
- Medium voltage cable from new solar facility to the Heber 1 geothermal plant. Three possible routes are proposed as alternatives from the solar facility to the geothermal plant.
- Demolition of a single-family home for solar development.

As provided in Table 1 below, the total project disturbance from the proposed development varies from 114.9 to– to 121.5 acres depending on the cable route/alternative.

Table 1: Heber 1 Parasitic Solar Project Disturbance Estimate

Facility	*Disturbance (Acres)*
Parasitic Solar Field	106.2
Medium Voltage Cable*	
Route Option 1	11.1
Route Option 2	8.7
Route Option 3	15.3

Notes: *assumes a 25-foot disturbance width.

Site Preparation

The Heber 1 solar site is currently used for alfalfa cultivation, geothermal energy wells/pipelines, and irrigation canals. After the crops are collected, the site would be cleared and a chain-link security fence would be installed around the solar construction site. To ensure the proposed facilities are situated on safe and stable surfaces, minor excavation and compaction activities would be performed. Material and equipment staging areas would be established on-site. The staging area would include an airconditioned temporary construction office, a first-aid station and other temporary facilities including, but not limited to, sanitary facilities, worker parking, 10,000-gallon water storage tank, truck loading and unloading, and a designated area for assembling the support structures for the placement of photovoltaic (PV) modules. On-site soil that has been stockpiled during excavation will be used as backfill material, as necessary. Only soil that is free of debris and deleterious matter would be used as backfill material. The proposed facilities would be placed on shallow spread footers and wall footers to support the structures. All site preparation and fill placement activities will be monitored by a qualified geotechnical engineer to detect undesirable materials and/or site conditions that may arise during site preparation.

Parasitic Solar Energy Facility

The 20 MW solar photovoltaic energy field would be developed to provide parasitic load to the existing Heber 1 Plant. These solar facilities are proposed as exclusive *behind-the-meter* and would provide supplemental energy directly to the Heber 1 geothermal units (i.e., OECs); this energy would not be sold or enter the transmission grid. The solar facility would effectively allow for the more efficient generation of geothermal energy.

XMD Switch and Medium Voltage Cable

The energy generated by the solar facility may be collected at an on-site XMD switch and transmitted along a medium voltage cable. There are three route options proposed to connect the solar facility to the Heber 1 Plant as illustrated in **Figure 2**. The intent of proposing three route alternatives is to obtain feedback from Imperial County or IID on potential impacts and land use implications of each route so that the preferred alternative(s) is submitted in the CUP Application. To minimize ground-disturbance, the cable would be attached via trays to existing pipelines as feasible, but the Applicant is also open to burying the cable, as feasible, to minimize impacts. The XMD switch would be located on either the northwest or northeast corner of the Project Site, depending on which cable route alternative is selected.

Route 1 – the medium voltage cable would exit the northeast corner of the solar site and travel north along an existing raised berm. The cable would either be directionally buried or strung on monopoles to cross the Central Main Canal and Willoughby Road. The cable would continue along Ware Road for approximately a third of a mile where it would meet an existing pipeline alignment that runs to the Heber 1 Plant. All road, canal, and rail crossings would be overhead via 30' monopoles or would be directionally buried underground if feasible.

Route 2 – the medium voltage cable would exit the northeast corner of the solar site and travel north along an existing raised berm. Before Willoughby Road, the cable would turn west for approximately 0.15 miles and then the cable would either be directionally buried or strung on monopoles to cross span Willoughby Road and the Central Main Canal to an existing geothermal well pad. The cable would run east along an existing pipeline alignment and then turn north along the same pipeline alignment along Ware Road for approximately a third of a mile where it would meet an existing pipeline alignment that runs to the Heber 1 Plant. All road, canal, and rail crossings would be overhead via 30' monopoles or would be directionally buried underground if feasible.

Route 3 – the medium voltage cable would cross Dogwood Road and be attached via trays to the existing pipeline that runs west before turning north to cross the Beech Drain and Main Canal at the existing above-ground pipeline crossing. The cable would continue to follow the existing pipeline alignment to the Heber Geothermal Energy Complex (HGEC) and travel along the northern boundary to exit the HGEC's northeast corner. The cable would not connect to any HGEC energy facilities, simply pass through the site. The cable would then cross back over Dogwood Road and continue down an existing pipeline alignment to the Heber 1 Plant. All road and rail crossings would be overhead via 30' monopoles or would be directionally buried underground if feasible.

Water Use and Source

Water required for facility construction activities, including grading and dust control, will be obtained from the Applicant's existing contract with IID. Up to 5,000 gallons per day (gpd) of water will be required for the first 2-4 months of development of the facility. Approximately 2,000 gpd will be consumed during the remaining development schedule of approximately 12-18 months. Thus, approximately 1.1 million gallons of water (10.1 acre-feet) will be used on-site during construction. A 10,000 gallon water storage tank may also be staged onsite for fire readiness. Once operating, up to approximately 325 gpd (0.36 acre-feet per year) of non-potable water will be required and provided by the Applicant's existing IID contract/allocation.

1.1 SITE LOCATION

The proposed 20 MW solar energy facility would be located on APN 059-020-001 at 602 Dogwood Road, Heber, CA (**Figure 1**). There are three route options proposed (refer to **Figure 2**), of which only one will be chosen, for the medium voltage cable that would connect the new Heber 1 solar facility to the existing Heber 1 geothermal power plant, located on APN 054-250-036 at 895 Pitzer Road, Heber, CA. The site is within the Heber quadrangle of the U.S. Geological Survey (USGS) 7.5" topographic map, and sits within Township 16 South, Range 14 East of the San Bernardino Base and Meridian in Imperial County, California.

1.2 LAND USE AND TOPOGRAPHY

The Project site is zoned as A-2-G SPA, for General Agriculture (A-2) and Geothermal Overlay Zone (G). The Project site lies at an elevation of approximately 5 feet below mean sea level (msl) in the Imperial Valley region of the California low desert. The surrounding properties lie on flat terrain, part of a large agricultural valley. The Site is currently cultivated and is actively disturbed as part of historic agricultural activities.

1.3 SITE GEOLOGY, HYDROGEOLOGY, AND SOILS

The part of Imperial County containing Heber lies within the Pliocene to Holocene, Q Geologic Unit (McCrink et al. 2011). Three natural geomorphic provinces underlay Imperial County, including the Peninsular Ranges, the Colorado Desert, and the Mojave Desert. The Colorado Desert geomorphic province spans central Imperial County and contains the Salton Sea and the Imperial valley. This Basin and Range province, sometimes referred to as the Salton Trough, is composed of a low-lying barren desert basin located between alluvium-covered, active branches of the San Andreas Fault containing Cenozoic sedimentary rocks and alluvial, lacustrine, and eolian deposits. The surface of sediments in the middle of the trough are about 275 feet below sea-level (bsl) (Digital Desert 2019).

Surface water in the area of the Site consists of canals and agricultural drains operated and maintained by the Imperial Irrigation District. Canals adjacent to the Project Site include Dogwood Canal, Beach Canal, Date Drain No. 3, and Beech Drain as illustrated in **Figure 3**. These canals ultimately drain to the Alamo River, a tributary to the Salton Sea. Surface runoff within the Project Site occurs primarily as sheetflow across the lot generally to the north, eventually flowing into the adjoining ditches.

The regional groundwater flow direction within the Imperial Valley is toward the Salton Sea, a closed basin with a surface elevation of approximately 225 feet below sea level. Groundwater flow in the Project area flows in a general northwest direction.

Imperial silty clay and Imperial Glembar silty clay loams dominate the project site surface, typically to a depth of 60 inches. These silty clays are considered moderately well drained (Natural Resources Conservation Service 2024).

1.4 HYDROMODIFICAITON APPLICABILITY

For construction of the parasitic solar field, limited grading is proposed for the Project that would not result in changes to the permeability of the site nor alter the existing drainage patterns. As such, the post-development runoff volume, time of concentration, and peak flow velocity would not be altered from that of the pre-development condition.

1.5 POTENTIAL STORMWATER POLLUTANTS

Table 2 summarizes expected stormwater pollutants of concern based on land use and site activities.

Table 2: Pollutants of Concern

Pollutant	Potential to Impact Stormwater (Y/N)	Additional Information and Comments
Pathogens (Bacterial/Virus)	N	--
Nutrients – Phosphorous	N	--
Nutrients - Nitrogen	N	--
Noxious Aquatic Plants	N	--
Sediment	Y	Overland flows over unpaved surface may result in sediment in stormwater runoff
Metals	Y	Leaks/spills in Project area may result in metals in stormwater runoff
Oil and Grease	Y	Leaks/spills in Project area may result in oil and grease in stormwater runoff
Trash/Debris	Y	Improperly disposed of trash/debris may result in trash in stormwater runoff
Pesticides/Herbicides	N	--
Other	N	--

SECTION 2 Best Management Practices

This section describes the Best Management Practices (BMPs) that will be implemented and maintained throughout the life of the project. The BMPs will be used to prevent and minimize water pollution that can be caused by stormwater runoff. **Table 3** details the BMPs selected to be implemented at the Project site based on the potential pollutants. Because the Project does not propose any changes to the existing stormwater volume, peak flow velocity, time of concentration or drainage patterns, no structural BMPs are proposed.

Table 3: Non-Structural Source Control BMPs

Pollutant Source	Pollutant	BMP	Existing?	New/Revised?
Stormwater run-on and runoff	Erosion, sediment, contaminated stormwater	• Stabilize drainage with rocks, gravel, vegetation, or riprap • Provide perimeter control to isolate sediment (loose dirt). Includes earthen berms, fiber rolls, silt fence, etc.	X	
Vehicle Track Out	Sediment, Dust	• Provide tracking control devise • Conduct street sweeping	X	
Work Areas	Trash	• Regularly monitor and clean trash • Provide employee training for good housekeeping	X	
Equipment Areas (PV panels, XMD Switch and cable)	Sediment	• Control drainage patterns with berms • Use water truck for dust control • Conduct routine inspections	X	X
Stored materials and equipment maintenance	Oil, grease, hydraulic fluid, anti-freeze, metals	• Provide good housekeeping training • Store materials in secondary containment • Spill kit and response training	X	

In addition to the activities listed above, the Applicant follows all approved operational guidelines that are currently in place. Temporary and permanent soil erosion control BMPs will be implemented in conformance with the BMP Fact Sheets provided in the California Stormwater Quality Association (CASQA) Stormwater Best Management Practice Handbook – Industrial and Commercial (2019).

2.1 NON-STRUCTURAL BMPS

Sections 3 through 10 provide prevention practices utilized to minimize the probability of pollution of stormwater discharge.

SECTION 3 Good Housekeeping

As a component of this program, good housekeeping practices are performed so that facility is kept in a clean and orderly condition. Proper housekeeping practices include:

- Periodic cleanup of equipment, as needed, based upon facility inspections,
- Sweeping impervious surfaces, as needed, based upon facility inspections,
- Proper waste disposal practices and covering of waste storage areas at all times,
- Proper storage and covering of materials at all times,
- Removal of any oil-stained soil/gravel, especially around equipment locations and loading areas,
- Cleaning of significant oil and grease stains on surfaces that drain to the stormwater drainage areas, and
- Cleaning the exterior of oil containers on hydraulic machinery upon discovery of an accumulation of hydraulic fluid.

SECTION 4 Preventative Maintenance

As a component of this program, operations and maintenance staff perform preventative maintenance of stormwater management devices to assure their proper operation. Preventative maintenance of stormwater management devices includes the following:

- Cleaning of accumulated sediment, potential contaminants, and debris from the Site;
- Inspection of secondary containment structures as part of the regular daily visual inspections;
- Maintenance and inspection of secondary containment structures, as needed, based upon inspections;
- Daily inspection and maintenance of equipment and associated piping and valves as required by preventive maintenance procedures;
- Inspection and maintenance of rainfall protection coverings for waste storage bins and receptacles on a periodic basis; and
- A comprehensive preventive maintenance schedule is performed on all facility operations equipment as part of routine procedures.

SECTION 5 Spill Response

Spill prevention and response is performed according to the facility's SPCC Plan. Copies of this plan are located in the ORMAT office at 947 Dogwood Road, Heber, CA.

A limited amount of spill cleanup equipment is stored onsite. This equipment is found within hazardous material storage areas. Detailed information concerning spill cleanup equipment and resources is included in the SPCC Plan.

The volume of containment areas surrounding each potential source is designed to hold the contents of a spill from the largest vessel / container. The SPCC Plan summarizes the capacity of potential sources and volume of the respective secondary containment areas.

SECTION 6 Material Handling and Storage

Construction and operation activities may include use and storage of common chemicals such as fertilizers, solvents, paints, cleaners, and automotive products. All hazardous waste generated onsite would be stored in 55-gallon drums and other Department of Transportation (DOT) approved packaging within a contained area located on the Site. Stormwater that accumulates within the hazardous material and hazardous waste containment area is collected via vacuum truck and disposed of off-site or recycled back into the production system. A bill of lading, non-hazardous waste manifest or uniform hazardous waste manifest is used to document all such shipments.

SECTION 7 Employee Training

A combined annual Storm Water Compliance / SPCC Plan training program is conducted for the Pollution Prevention Team members and operations personnel. Participants undergo stormwater management training for all areas and operations at this facility, as well as reviewing the spill response, control and countermeasure procedures. Other stormwater training is done on an as-needed basis.

SECTION 8 Waste Handling/Recycling

If any product or oily waste streams are transferred from the facility in 55-gallon drums, a bill of lading, non-hazardous waste manifest or uniform hazardous waste manifest must be used to document all such shipments. Operations or contractor personnel closely monitor loading of transport vehicles. Collection and satellite accumulation containers for hazardous and non-hazardous waste are kept covered to prevent contact with stormwater. Appropriate spill control equipment and supplies are kept readily available in case of a spill.

SECTION 9 Record Keeping and Internal Reporting

All inspection, sampling, maintenance, corrective action records, and any other information that is a part of this plan are maintained at the facility office. All records are maintained for a period of at least three (3) years.

SECTION 10 Erosion Control and Site Stabilization

Permanent BMPs used at the existing HGEC facility to prevent soil erosion include routing runoff along earthen swales or drainage areas, and preventing run-off with berms along certain sections of the property line. Temporary BMPs used at the Site to prevent soil erosion include the use of sandbags, crushed rock, and silt fence. These BMPs are used as and where needed, especially in areas that are undeveloped or in the process of being developed.

SECTION 11 Operation and Maintenance Plan

The following non-structural water quality best management practices (BMPs) are proposed for the Project:

- Good Housekeeping
- Preventative Maintenance
- Spill Response
- Material Handling and Storage
- Employee Training
- Waste Handling/Recycling
- Record Keeping and Internal Reporting
- Erosion Control and Site Stabilization

11.1 MAINTENANCE RESPONSIBILITY

The Heber Field Company (subsidiary of ORMAT) is the property owner and is responsible for BMP maintenance. Since HFC/ORMAT is the owner, no access agreement or easement is necessary to maintain the BMPs. HFC/ORMAT funds will be used to support Operation and Maintenance (O&M) activities to maintain BMP functionality. HFC/ORMAT maintenance staff are expected to perform the maintenance.

11.2 MAINTENANCE ACTIONS AND FREQUENCY

Maintenance actions are generally grouped into two categories: routine and intermittent.

Routine Maintenance

Routine inspections of the Project facilities and grounds will be performed annually. During these inspections staff evaluate if there is significant accumulation of trash, debris, or sediment that would need to be removed. Cleaning is done as needed based on the results of the inspections. The inspection frequency may be adjusted based on experience at the site (e.g., if inspections rarely find any material that needs to be cleaned out, then the inspection frequency can be reduced).

Intermittent Maintenance

Intermittent maintenance activities include more substantial maintenance that is not required as frequently as routine maintenance. The most likely form of intermediate maintenance is removal of sediment from existing drainage infrastructure and detention basins where necessary to maintain the capacity of the basins. Given that the Project Site is pervious and will not be graded or significantly altered and that rain is infrequent in Heber, this type of maintenance is expected to be required approximately once every year.

11.3 MAINTENANCE PROCEDURES

During each maintenance visit, the maintenance crew will evaluate existing drainage paths and infrastructure by inspecting for the maintenance indicators in **Table 4**. When a maintenance indicator is observed, the action described in the "Maintenance Actions" column will be taken.

Note that regardless of the projected maintenance type (routine or intermittent) described in the previous section, when a maintenance indicator is observed, the required maintenance action will be taken. For example, if significant sediment accumulation is observed in year three instead, then the accumulated sediment will still be cleaned out, even though the estimated frequency was once every year.

Table 4: Maintenance Indicators and Actions for BMPs

Typical Maintenance Indicator	Maintenance Action
Erosion due to concentrated stormwater runoff flow	Repair eroded areas and make appropriate corrective measures such as adding berm or stone at flow entry points, or re-grading as necessary.
Accumulated sediment, litter, or debris	Remove and properly dispose of accumulated materials, without damage to stormwater drainage structures.
Standing water	Remove any obstructions or debris or invasive vegetation, loosing or replace top-soil to allow for better infiltration, or minor re-grading for proper drainage.
Obstructed inlet or outlet structures	Clear obstructions.
Damage to structural components such as inlet or outlet structures	Repair or replace as applicable.

SECTION 12 References

California Stormwater Quality Association (CASQA). 2019. Industrial and Commercial Best Management Handbook. 2019.

Digital Desert. 2019. Ecological Sections: Mojave Desert. Available online at: http://digital-desert.com/ecosections/322c.htm).

McCrink, T.P., Pridmore, C.L., Tinsley, J.C., Sickler, R.R., Brandenberg, S.J., and J.P. Stewart. 2011. Liquefaction and other ground failures in Imperial County, California, from the April 4, 2010, El Mayor–Cucapah earthquake: U.S. Geological Survey Open-File Report 2011–1071 and California Geological Survey Special Report 220, 94 p. pamphlet, 1 pl., scale 1:51,440. Available online at http://pubs.usgs.gov/of/2011/1071.

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