STATE OF CALIFORNIA

Energy Resources Conservation
and Development Commission

In the Matter of Complaint Against ORMAT NEVADA, INC. brought by California Unions for Reliable Energy	))))	Docket No. 11-CAI-02

RESPONDENT'S
PREHEARING CONFERENCE STATEMENT

ELLISON, SCHNEIDER & HARRIS L.L.P.
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September 12, 2011

Attorneys for ORMAT Nevada, Inc.

STATE OF CALIFORNIA

Energy Resources Conservation
and Development Commission

In the Matter of Complaint Against ORMAT NEVADA, INC. brought by California Unions for Reliable Energy	))))	Docket No. 11-CAI-02

RESPONDENT'S
PREHEARING CONFERENCE STATEMENT

On August 19, 2011, the Commission issued a Notice of Prehearing Conference and Evidentiary Hearing and Order ("Notice"). Pursuant to this Notice, Ormat Nevada, Inc. ("ORMAT" or "Respondent") submits this Prehearing Conference Statement containing the following information requested by the Notice.

1. ***The identity of each witness sponsored by the party; a brief summary of the testimony to be offered by each witness; qualifications of each witness; and the time required to present direct testimony by each witness.***

The identity of each witness that will be sponsored by Respondent and a brief summary of their testimonies are provided below. The qualifications of Respondent's witnesses are attached hereto as Attachment 1.

a. <u>Thomas Buchanan (Direct examination estimate- 30 min.):</u>

Mr. Buchanan is the Manager of Engineering and Special Projects for ORMAT Nevada, Inc. ("ORMAT"). Mr. Buchanan will testify to the generating capacities of the North Brawley Geothermal Development Project ("North Brawley") and the East Brawley Geothermal Development Project ("East Brawley"), the engineering characteristics and design of each project, and engineering constraints on the generating capacities of North Brawley and East Brawley.

b. <u>Don Campbell (Direct examination estimate- 30 min.):</u>

Mr. Campbell is an expert in the development of geothermal resources. Mr. Campbell will testify regarding the geothermal resource at the North Brawley Known Geothermal Resource Area, and specific resource characteristics and resource availability at the North Brawley and East Brawley sites. Mr. Campbell will also testify regarding the resource constraints at the two sites, including geothermal fluid temperatures, and the effects of scale,

fines, and fill on the efficiency and productivity of wells. Given certain restrictions on Mr. Campbell's ability to travel, Respondent respectfully requests that Mr. Campbell be permitted to testify via telephone, rather than in person.

c. Bob Sullivan (Direct examination estimate- 25 min.):

Mr. Sullivan is the Vice President of Business Development in the United States for ORMAT. Mr. Sullivan will testify to the development and permitting of North Brawley and East Brawley. Mr. Sullivan will also testify regarding the power purchase agreement for North Brawley, water supply agreements, and the interconnection requests, interconnection agreements, and transmission service agreements for each project, and the different schedules for the two projects.

d. Charlene Wardlow (Direct examination estimate- 25 min.):

Ms. Wardlow is the Director of Business Development for Ormat Nevada, Inc. Ms. Wardlow will testify to the development and permitting of North Brawley and East Brawley, including the separate Imperial County conditional use permit application process, local environmental review, and water supply agreements for the two projects.

2. ***An exhibit list identifying exhibits and declarations that each party intends to offer into evidence.***

Respondent's exhibit list is attached hereto as Attachment 2. Applications for confidential designation of the information contained in Exhibits 203 and 204 have been submitted to the Executive Director on September 2, 2011 and September 8, 2011, respectively. Copies of confidential Exhibits 203 and 204 have been provided on compact discs to the Committee, with an additional hard copy to Hearing Officer Celli. Copies of confidential Exhibits 203 and 204 can be provided on compact disc to other parties once a non-disclosure agreement between ORMAT and the other party is signed.

3. ***Proposals for briefing deadlines and other scheduling matters***.

a. Should the Committee conduct hearings on the question of administrative hearings, Respondent requests the opportunity to submit a written brief on the matter prior to the Committee's issuance of its proposed decision.
    i. Respondent proposes that parties be permitted to submit a written brief within seven (7) days after the close of hearings on the second phase of the proceeding for consideration by the Committee prior to its issuance of a proposed decision.

b. Should the Committee issue a proposed decision, Respondent requests the opportunity to provide written and oral submissions as permitted under Section 1236 of the Commission's regulations prior to the Commission's Decision on the matter.
    i. Respondent proposes that parties be permitted to submit written briefs within fourteen (14) days after the issuance of a proposed decision by the Committee.
    ii. Respondent proposes that parties be permitted to address the Commission prior to the adoption of a decision by the Commission.

4. ***Comments, if any, on the Committee's intention to use informal hearing procedures described below***.

Respondent has no objections to the Committee's intention to use informal hearing procedures for this proceeding.

Respectfully submitted,

September 12, 2011 By: _____

Christopher T. Ellison
Samantha G. Pottenger
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Sacramento, California 95816
Telephone: (916) 447-2166
Facsimile: (916) 447-3512

Attorneys for ORMAT Nevada, Inc.

ATTACHMENT 1
11-CAI-02

RESPONDENT ORMAT NEVADA, INC.'S

WITNESS RESUMES

THOMAS BUCHANAN
Manager, Engineering & Special Projects

PROFESSIONAL EXPERIENCE

2003 - Present **Ormat Nevada, Inc.**

2008- Present **Manager, Engineering & Special Projects**
Responsible for managing Operations Engineering support group in the areas of performance monitoring, process engineering, project management, industrial safety management systems permitting for all Geothermal and Recovered Energy Generation operations in North America.

2005 - 2008 **Senior Facilities Engineer**
Responsible for performance monitoring, project management, industrial safety management systems permitting for Geothermal and Recovered Energy Generation operations in California, Nevada and Hawaii.

2003 - 2005 **Manager Heat Recovery Systems**
Responsible for business development of Recovered Energy Generation (REG) power plants in the U.S. Duties included market planning, contract negotiation, applications engineering and sales support.

1978 - 2003 **EaglePicher Filtration & Minerals, Inc.**, Reno, NV

1999 - 2003 **VP Production/Technology**
Managed three diatomaceous earth processing facilities, division engineering, research and development, environmental, health, safety and quality functions including $42 million operating and $3-4 million capital budgets. Approximately 250 employees in union and non-union environments. Presentation of annual operating plans to CEO and Board of Directors.

1996 - 1999 **Director of Technology**
Managed all engineering and research and development functions and division capital budget. Responsible for contract and supervision of all legal, engineering and environmental outside services. Managed ISO-9002 quality system as Division Quality Manager

1992 - 1996 **Director of Engineering**
Managed all engineering functions and division capital budget of $4-5 million per year. Coordinated ISO-9002 quality system for division office

1990 - 1992 **Export Manager**
Full responsibility and accountability for international marketing and sales of diatomaceous earth products. Responsible for negotiation and administration of all international distribution contracts

THOMAS BUCHANAN
Manager, Engineering & Special Projects

1988 – 1990 **Operations Manager (Clark Operations)**
Full responsibility and authority for Clark Operations including four active mines, three process lines, 65 employee union operation

1982 – 1988 **Process Engineer**
Performed process engineering, plant engineering, project management, design, construction management, RFQ development, Contract bidding award and oversigh

1978 – 1982 **Development Engineer**
Performed chemical analysis, atomic absorption, x-ray diffraction, fire assay, technical sales support, filtration testing and engineering, material and energy balances, emissions testing, soils testing.

EDUCATION

1978 B.Sc., Chemical Engineering, University of Nevada, Reno Mackay School of Mines

1993 Mini-MBA, Ohio State University Executive Development Program

PATENTS

1999 U. S. Patent # 5,878,374 Computer-Controlled Electromechanical Device for Determining Filtration Parameters of a Filter Aid

LICENSES

Current Nevada State Contractors Board,
Qualified Individual – Classification: A- General Engineering
(Geodrill, Ormat Nevada, Inc.)

DON CAMPBELL

Chief Reservoir Engineer

Professional Experience:

Ormat Nevada Inc

Chief Reservoir Engineer *August 2008 – Present*

Responsible for evaluation and optimization of Ormat's existing US resource operations.

Exploration Manager *April 2007 - August 2008*

Responsible for Ormat's US exploration effort. Identified, evaluated, and recommended leasing of multiple prospect areas in the western US and Canada.

General Manager, Imperial Valley, CA *June 2002 - April 2007*

Managed Ormat's Imperial Valley (Ormesa and Heber) power plant and resource operations.

FPL Energy

Geothermal Resources Director *July 1996 - June 2002*

Managed FPL's Karaha Bodas, Indonesia resource exploration and development project, as well as acquisition, operation, and disposition of numerous geothermal interests in the western US.

Mesquite Group Inc

President *July 1985 - July 2006*

Managed geothermal resource consulting group offering full spectrum of services; including exploration, drilling, evaluation, development, and operations. Worked for numerous development, utility, and government clients in the US, Philippines, Japan, and Indonesia.

Republic Geothermal Inc.

VP Exploration and Development *July 1976 - July 1985*

Managed Republic's exploration and development projects in the western US.

Shell Oil Company

Sr Staff Reservoir Engineer *July 1964 - July 1976*

Numerous reservoir engineering assignments at the Division, Area, Region, and Head Office covering oil and gas, tar sands, and geothermal development/ operations throughout the US and Canada.

Education:

BS Geology – Occidental College - 1962
MS Oceanography - Scripps Institution of Oceanography, University of California, San Diego - 1964

ROBERT SULLIVAN
Vice President, Business Development for North America

Experience

2009 **Vice President, Ormat Nevada Inc.;** Responsible for Business Development North America.

2007 **Project Manager,** Ormat Nevada Inc.; North Brawley Geothermal Power Project.

2006 **COO 2nd in Charge,** Ormat Nevada Inc.; Operations Management for Ormat's US power plants. Responsible for planning, development of management programs, various project management. Manage US recovered energy facilities.

1991-2005 **Plant Manager,** Ormat Nevada Inc.; Ogden Power Corporation(1997-2003); Pacific Power Plant Operations(1995–1996); North American Energy Services Co. (1991-1994) -Mammoth Pacific Geothermal Project. Responsible for the administration of the contract for the operation and maintenance of the three binary geothermal power plants and the associated well field, consisting of 18 wells and eight turbine generator units with a combined output of 40 megawatts. Supervised 25 administrative, operational and maintenance personnel. Responsible for development and execution of numerous projects including geothermal exploration, well targeting, drilling and plant expansion. Developed and managed multiple research and development projects with cost sharing participation by the State of California and the Department of Energy.

1991 **Engineering Superintendent**, California Energy Co. Inc. Coso Geothermal Project. Responsible for multi-millions of dollars of contracting work including of the overhaul of three power plants and multiple steam turbines, supervising all plant engineering work, implementing design changes and overseeing numerous construction projects. Developed and implemented a corrosion monitoring and chemical analysis program. Responsible for plant chemist and I&C technicians.

1988-1991 **Operations Superintendent**, California Energy Company Inc. (Coso). Participated in the initial start-up of four power plants, responsible for the steady state operation of nine power plants, totally 240 megawatts, and the initial development of operational, administrative, personnel and safety procedures. Supervised over 50 people including eight supervisors. Developed initial operating procedures for and directly supervised the start-up of a hydrogen sulfide chemical abatement plant. Responsible for reporting to the all regulatory agencies.

Education

Graduated in top third of Navy's Nuclear Power School.

Graduated from various Navy and commercial maintenance schools.

Bachelor's degree in business from Capella University.

Awards/Activities

Awarded Geothermal Resources Council Geothermal Achievement Award for contributions to the Geothermal Industry in 2000.

Accepted California's Governors Economic and Environmental Leadership Award for Mammoth Pacific in 2003.

Board Member of the Geothermal Resources Council.

CHARLENE L. WARDLOW
Director of Business Development

EXPERIENCE

Ormat Technologies, Inc.
Reno, NV September 2006 – present

Director of Business Development - September 2009 to current

- Spearheading effort to permit new power plant at Mammoth Lakes with the USFS, BLM and Mono County agencies. This includes permitting and managing compliance for drilling operations with federal, state and local agencies under the National Environmental Policy Act and the California Environmental Quality Act (CEQA).
- Working with Imperial Irrigation District and local communities to acquire water for geothermal projects in Imperial County. The local communities would need to upgrade to tertiary treated water which requires design, funding and environmental review.
- Part of team permitting two new geothermal projects in Imperial County that includes drilling operations, pipelines, the power plant and transmission interconnection.

Environmental and Regulatory Affairs Administrator - September 2006 to August 2009

- Played key leadership and liaison role in assisting environmental staff with specific projects such as a settlement agreement with the Regional Water Quality Control Board and setting up compliance letters for new projects.
- Led Ormat's team in permitting and developing new geothermal energy projects in Imperial County which resulted in Ormat's first Greenfield geothermal project in California. Developed trusting, working relationships with county and state agencies and officials to bring projects to fruition. This included air permits under the Clean Air Act, discharge permits to comply with the Clean Water Act, biological surveys and mitigation to comply with the federal and state Endangered Species Acts and local planning regulations.
- Worked with drilling contractor and the state and local agencies to obtain approval to dispose of geothermal mud and cuttings at a local landfill saving the cost of trucking out of state.

Calpine Corporation
Middletown, CA 1981 – June 2006

Manager of Development Permitting - September 2001 – June 2006

- Led permitting and environmental review required by federal, state and local agencies for development of power plants, transmission lines, pipelines and wells including drilling operations at Glass Mountain and The Geysers in California. This included a DOE grant funding an Enhanced Geothermal System project on a well at Glass Mountain. Worked with three Indian Tribes who had historically used the area to address their concerns including coordination with the Advisory Council on Historic Preservation under Section 106 of the Historic Preservation Act and the State Historic Preservation Officer. Gave presentations in Siskiyou and Modoc counties to educate the elected officials and general public on how geothermal energy works and its environmental, economic and social benefits.

- Managed environmental/permitting budget for the Glass Mountain project and managed compliance during construction including drilling operations.
- Coordinated environmental due diligence team on potential acquisitions in California and Nevada for Calpine.
- Managed Calpine Geothermal Visitor Center staff, budget and tour program.

Environmental, Health and Safety Manager - April 1999 – September 2001

- Managed a staff of 17 environmental, health and safety (EHS) professionals responsible for 19 power plants and their associated well fields and the health and safety of about 400 Calpine employees at The Geysers; responsible for an EHS budget of more than $1 million. Lead this team in the consolidation of processes to reduce waste and costs to improve the viability of the project. This included internal education of the staff that came from an investor owned utility and a large oil company as to how the operations they had not worked in before operated and their permits and environmental compliance. This included third party audits and routine audits by staff to insure environmental compliance with the many permits required to operate The Geysers. Worked with plant managers, engineering and drilling departments to prepare Authority for Expenditure (AFE) requests for capital improvements, and operation and maintenance needs to present to management for approval of funding.
- Part of three person team that designed and built the $2.5 million Calpine Geothermal Visitor Center in Middletown, California.

Environmental Manager - 1991 – April 1999

- Oversaw the transfer of more than 400 permits and the regulatory review in concert with legal counsel to perform due diligence documentation for the acquisition of Pacific Gas & Electric's (PG&E) 14 power plants, Florida Power and Light's power plant and steam field and Unocal's well field at The Geysers in 1999, about $400 million in acquisitions.
- Lead environmental permitting effort to license (Sutter Project) the first power plant in California in almost 10-years. My leadership of this effort resulted in licensing a 550-mw combined-cycle natural gas power plant in California through the meticulous California Energy Commission (CEC) siting process. Permitting included the transmission interconnect with the Western Area Power Agency (WAPA) and natural gas pipeline to Pacific Gas and Electric (PG&E). To accomplish Calpine's goal, I created a strategic plan to impart its vision and persuade all involved of the necessity and value of this project. This included coordination with the lead agencies that prepared the environmental documents, the CEC and WAPA, and other permits and reviews required for the Corps of Engineers (ACOE), U.S. Environmental Protection Agency (EPA) and U.S. Fish and Wildlife Service (USFWS). This project had considerable opposition from the local neighbors as well as the agriculture community. Through a solution I offered, we were able to settle environmental intervention by the California Unions for Reliable Electricity (CURE) that also resolved permit issues for the Federal Endangered Species Act, Clean Water Act and Clean Air Act. Initiatives to educate the local community and elected officials through countless presentations and meetings resulted in re-zoning of the project site, acceptance by the populace and building of a valuable asset to the community.

Assistant Manager Environmental/Legislative Affairs - 1988 - 1991

- Permitting and environmental compliance are fluid, dynamic processes requiring continuous calculations of risks for the company and for the local communities and habitats. As a member of The Geysers environmental and legislative team for geothermal operations, my goal was to insure projects were 100% in compliance with oversight agencies. My approach to each facet of the process allowed me to anticipate potential problems, understand technical challenges and obtain new or modify existing permits in a timely manner. I demonstrated my ability to steer the company from costly fines and wasted employee resources, while maintaining trust and beneficial relationships with agencies, civic leaders and neighbors.

Petroleum Engineer - 1981 - 1988

- Initiated major project to set up and organize database with data from more than 100 wells for five-year period that became instrumental for reservoir modeling and future projections;
- Worked closely with management in project budgeting, economics, acquisitions and growth planning; made numerous presentations to senior management that generated confidence in budget forecasts and company projections;
- Worked as production engineer responsible for 50 oil wells; performed reservoir engineering in oil field and geothermal and worked in drilling department to support two-rig operation for development of two new power plants.
- Worked as a drilling engineer assisting with casing and cement jobs, including calculations and overseeing the operation.
- Prepared well decline curves to monitor performance and recommend well work. Oversaw well testing operations and prepared follow-up reports.

EDUCATION

Hazardous Materials Management Certificate Program
University of California - Davis - 1990
Master of Science in Petroleum Engineering
New Mexico Institute of Mining & Technology - 1981
Bachelor of Science in Geology
New Mexico Institute of Mining & Technology - 1979

ATTACHMENT 2
11-CAI-02

RESPONDENT ORMAT NEVADA, INC.'S
EXHIBIT LIST

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

IN THE MATTER OF COMPLAINT AGAINST
ORMAT NEVADA, INC. ***BROUGHT BY***
CALIFORNIA UNIONS FOR RELIABLE ENERGY

Docket No. 11-CAI-02

RESPONDENT'S EXHIBIT LIST

Exhibit	Brief Description	Offered	Admitted
RESPONDENT'S EXHIBITS			
200	Verified Answer of Ormat Nevada, Inc. to Verified Complaint and Request for Investigation by California Unions for Reliable Energy, and Appendixes (Dated August 29, 2011)		
201	Letter from ORMAT Nevada, Inc. to California Energy Commission Regarding North Brawley Geothermal Project Generating Capacity (Dated September 1, 2011)		
202	Letter from ORMAT Nevada, Inc. to California Energy Commission Regarding East Brawley Geothermal Project Generating Capacity (Dated September 1, 2011)		
203	Supporting Technical Data in Response to CEC Staff's Engineering Questionnaire **[CONFIDENTIAL]** (Dated September 2, 2011)		
204	Supporting Technical Data in Response to CEC Staff's Engineering Questionnaire, Set 2 **[CONFIDENTIAL]** (Dated September 8, 2011)		

STATE OF CALIFORNIA

Energy Resources Conservation
and Development Commission

In the Matter of Complaint Against ORMAT NEVADA, INC. Brought By CALIFORNIA UNIONS FOR RELIABLE ENERGY	)))))	Docket No. 11-CAI-02

PROOF OF SERVICE

I, Karen A. Mitchell, declare that on September 12, 2011, I served the attached *Respondent's Prehearing Conference Statement* via electronic and U.S. mail to all parties on the attached service list.

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

Karen A. Mitchell

SERVICE LIST
11-CAI-02

RESPONDENT

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6225 Neil Road
Reno, NV 89511

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Samantha Pottenger
Ellison, Schneider and Harris, LLP
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COMPLAINANT

California Unions for Reliable Energy
c/o Adams Broadwell Joseph & Cardozo
Marc D. Joseph
Tanya A. Gulesserian
Elizabeth Klebaner
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South San Francisco, CA 94080
mdjoseph@adamsbroadwell.com
tgulesserian@adamsbroadwell.com
eklebaner@adamsbroadwell.com

INTERESTED AGENCIES/ENTITIES/PERSONS

Imperial County Planning and Development Services
801 Main Street
EI Centro, CA 92243

Imperial County Air Pollution Control District
150 South 9th Street
EI Centro, CA 92243-2801

Imperial Irrigation District
333 E. Barioni Boulevard
Imperial, CA 92251

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STATE OF CALIFORNIA

Energy Resources Conservation
and Development Commission

In the Matter of:

Complaint & Investigation Jurisdictional Determination Regarding East and North Brawley Geothermal Developments	)	Docket No. 11-CAI-02

VERIFIED ANSWER OF RESPONDENT ORMAT NEVADA, INC. TO VERIFIED COMPLAINT AND REQUEST FOR INVESTIGATION BY CALIFORNIA UNIONS FOR RELIABLE ENERGY

Pursuant to the Commission's July 26, 2011 Scheduling Order, Ormat Nevada, Inc. ("Ormat" or "Respondent") hereby answers the Verified Complaint and Request for Investigation ("Complaint") by California Unions for Reliable Energy ("CURE" or "Complainant"), which was served upon Ormat on August 8, 2011.[1] Specific responses to the material allegations contained in CURE's Complaint required by Section 1233 of the Commission's Regulations are provided in Appendix A.

I. INTRODUCTION

Seeking leverage for a project labor agreement, CURE has filed this complaint alleging that Ormat's North Brawley Geothermal Development Project ("North Brawley")[2] and East Brawley Geothermal Development Project ("East Brawley")[3] are subject to the exclusive licensing jurisdiction of this Commission rather than Imperial County.[4] CURE alleges (1) that these two facilities are subject to licensing by the California Energy Commission ("Commission" or "CEC") as a single facility, or, in the alternative, that each individual facility is subject to the Commission's jurisdiction on the basis that the generating capacity of each power plant is 50 MW, and (2) that Ormat has violated the Warren-Alquist Act by failing to seek licensing of North Brawley and East Brawley by the Commission. CURE fails to use the Commission's

[1] As indicated in the Commission's Letter Regarding Proper Service of Complaint Upon Ormat, dated August 8, 2011, Ormat was not properly served on July 26, 2011 due to an administrative error.
[2] North Brawley was developed by ORNI 18, LLC, a subsidiary of Ormat.
[3] East Brawley was developed by ORNI 19, LLC, a subsidiary of Ormat.
[4] Verified Complaint and Request for Investigation by California Unions for Reliable Energy, 11-CAI-02 pp. 1, 6 (June 28, 2011) ("CURE Complaint").

adopted method of calculating generating capacity to support its allegations, and fails to provide any factual support beyond conclusory accusations and misrepresentations of the specific project details of North Brawley and East Brawley renders CURE's Complaint fatally flawed. CURE's Complaint must be denied as CURE has failed to set forth a prima facie case supporting its allegations. Moreover, CURE's complaint is also barred by the doctrine of laches as it is untimely, particularly with regard to the North Brawley Project that is already built and operating pursuant to county permits issued on November 27, 2007. These permits were reasonably relied upon by Ormat for the expenditure of substantial time, money, and resources to develop the facility. Ormat has filed a concurrent Motion to Dismiss the Complaint, and incorporates by reference all facts and arguments thereto.

II. DISCUSSION.

A. CURE's Complaint fails to make a prima facie case regarding the generating capacity of North Brawley and East Brawley, and should be dismissed without further hearing.

Section 2003 of the Commission's regulations contains a specific methodology for assessing the generating capacity of thermal power plants for the purpose of evaluating the Commission's jurisdiction over the licensing of a thermal power plant project. CURE's Complaint conspicuously fails to use the Commission's adopted method in asserting that the generating capacity of each facility, North Brawley and East Brawley, is 50 MW or more.[5] As such, CURE has failed to make a prima facie case that either North Brawley or East Brawley are subject to the Commission's jurisdiction. As discussed below, the generating capacities of both North Brawley and East Brawley, as calculated pursuant to the Commission's methodology, are each 49.5 MW. CURE's Complaint not only offers no facts supporting a different conclusion, it never even asserts a contrary position. Therefore, using the Commission's methodology, it is uncontested that neither North Brawley nor East Brawley are subject to the Commission's jurisdiction, and CURE's Complaint should be dismissed.

[5] Public Resources Code Section 25120 defines the Commission's jurisdiction to apply to thermal powerplants "with a generating capacity of **50 megawatts** or more." Thermal powerplants with a generating capacity less than 50 MW are exempt from the Commission's jurisdiction.

1. Pursuant to the methodology established by Section 2003 of the Commission's regulations for determining the Commission's jurisdiction the generating capacity of each facility (North Brawley and East Brawley) is less than 50 megawatts.

CURE's Complaint does not apply the Commission's regulations on calculating generating capacity to the specific engineering characteristics of North Brawley and East Brawley. As set forth in Section 2003 of the Commission's regulations, the generating capacity of an electrical generating facility is the difference between the maximum gross rating of the plant's turbine generator(s) in megawatts, at the steam conditions and at those extraction and induction conditions which yield the highest generating capacity on a continuous basis,[6] and the minimum auxiliary load for the facility.[7] For geothermal facilities, such as the North Brawley and East Brawley, the minimum auxiliary load includes the minimum electrical operating requirements for the associated geothermal field which are necessary for and supplied directly by the power plant.[8]

a. North Brawley

The generating capacity of North Brawley, as calculated pursuant to the Commission's methodology, is 49.5 MW based on the following figures. The gross rating of the facility's five Ormat Energy Converter ("OEC") binary generating units is 72.8 MW, based on a baseload operation mode. North Brawley's electrical losses are 0.70 MW. In addition, the minimum auxiliary load for North Brawley is 22.60 MW, which includes 3.63 MW for the OEC pumps, 0.20 MW for the OEC auxiliary load, 2.55 MW for the cooling tower fans, 2.75 MW for the cooling tower pumps, and 10.10 MW for the production wells pumps.

b. East Brawley

The generating capacity of East Brawley, as calculated pursuant to the Commission's methodology is, 49.5 MW based on the following figures. The gross rating of the facility is 69.75 MW, based on a baseload operation mode. East Brawley's electrical losses will be 0.63 MW. East Brawley's minimum auxiliary load is 19.62 MW, which includes 3.60 MW for the OEC pumps, 0.20 MW for the OEC auxiliary load, 2.55 MW for the cooling tower fans, 2.75 MW for cooling tower pumps, and 7.75 MW for production wells pumps.

[6] 20 C.C.R. § 2003(b)(1); this is the provision for steam turbine generators. Combustion turbine generators are subject to different requirements to determine the maximum gross rating. It should be noted that neither North Brawley nor East Brawley utilize steam, but rather use vaporized fluid for generating purposes.
[7] 20 C.C.R. § 2003.
[8] 20 C.C.R. § 2003(c).

c. Resource limitations make generation of 50 MW or more at each Project Impossible.

In addition to the fact that the generating capacity of each facility is less than 50 MW when calculated pursuant to the Commission's prescribed methodology, there are resource limitations at the site of each project that independently make generation of 50 MW or more of net capacity impossible. Based on the recent capacity demonstration for North Brawley, which is the best method to determine the generating capacity of the facility, the geothermal field for North Brawley are able to sustain approximately 33 MW of net output. Thus, even if the generating equipment was resized to generate 50 MW or more using the Commission's calculation method, the power plant is not physically capable of generating anywhere near 50 MW, given the resource constraints. Therefore, North Brawley is not subject to the Commission's jurisdiction.

Due to similar resource constraints, current development plans at East Brawley, which will be designed to maximize use of the available resource, include the installation of only three OEC units. The gross capacity of these units will be 41.85, with an expected net output of 29.7 MW. Therefore, due to the resource limitations at East Brawley, the proposed facility will not be capable of a generating capacity of 50 MW or more, and the plant would not be subject to the Commission's jurisdiction.

2. Reference to capacity in a power purchase agreement ("PPA") is irrelevant to the Commission's determination of a thermal power plant's generating capacity under Section 2003 of the Commission's Regulations.

CURE's allegation that the generating capacities of North Brawley and East Brawley are each 50 MW is based solely on language from a California Public Utilities Commission resolution describing the contract capacity of the North Brawley Project. The contract capacity for that project was originally described as 50 MW but was subsequently reduced to 33.178 MW on June 6, 2011.

The contract capacity referenced in a PPA is simply irrelevant in determining whether the generating capacity of a facility meets the Commission's methodology for measuring the generating capacity of thermal powerplant. Furthermore, it is unclear how the language from a CPUC resolution discussing the ORNI 18, LLC PPA for North Brawley is relevant to East Brawley, or in any way indicative of any facts regarding East Brawley. Pursuant to the Commission's adopted methodology, leaving aside the issue of the resource limitations discussed

above, the generating capacities of North Brawley and East Brawley are each 49.5 megawatts. Therefore, based on the Commission's methodology, neither North Brawley nor East Brawley is subject to the Commission's jurisdiction. CURE has not used the methodology adopted in the Commission's regulations in asserting that generating capacities of North Brawley and East Brawley trigger the licensing jurisdiction of the Commission.

Moreover, if the contract capacity *were* relevant, it would support the conclusion that neither project is jurisdictional. The contract capacity for North Brawley project was adjusted to 33.178 MW on June 6, 2011. For East Brawley, there is no power purchase agreement and therefore there is no contract capacity. As the contract capacity of North Brawley is under 50 MW and under the Commission's jurisdictional threshold, and there is no contract capacity for East Brawley, neither project is subject to the Commission's jurisdiction.

B. CURE's Complaint fails to make a prima facie case that North Brawley and East Brawley are a single project.

Pursuant to the Warren-Alquist Act, the Commission has exclusive permitting jurisdiction over a thermal powerplant of 50 MW or more, and the powerplant site, which is the location on which the thermal power plant is constructed or is proposed to be constructed.[9] While the generating capacities of multiple generating machines on a single site being developed simultaneously can be aggregated for the purposes of determining the Commission's jurisdiction,[10] there is no support for CURE's proposition that the generating capacity of facilities located on separate sites and developed years apart may be aggregated for the purposes of determining Commission jurisdiction. As explained in detail below, CURE's reliance on the decision in the LuzSEGS Units III-VII proceeding to assert that the generating capacities of North Brawley and East Brawley should be aggregated is misplaced. The factual scenarios of the LuzSEGS Units III-VII proceeding and the instant proceedings are completely distinguishable.

[9] Cal. Public Resources Code § 25500, 25119, 25110.

[10] Proposed Order on the Commission's Jurisdiction Over the Proposed U.S. Dataport Generating Facility, 00-JUR-1 (Feb. 7, 2001). Although this proposed decision was ultimately not considered by the Commission, this proposed decision is indicative of the Chief Counsel's guidance on the issue.

1. North Brawley and East Brawley are located on separate sites 1.75 miles apart, and are physically separated by the New River.

CURE's Complaint incorrectly alleges that the two projects "are proposed on adjoining parcels of land."[11] North Brawley is located in Imperial County at 4982 Hovley Road, Brawley. East Brawley will be located at 5003 Best Road. These two sites, and the parcels on which they are located, are not adjoining. North Brawley and East Brawley are located 1.75 miles apart, and in completely different locations. Furthermore, the two sites of the two projects are physically separated by the New River. North Brawley is located on the west side of the river, and East Brawley will be located on the east side. This is a sharp contrast to the Luz SEGS Decision cited by CURE, where the Luz SEGS facilities were located on *contiguous* parcels in a common location, separated only by utility and access roads shared by the facilities.[12] Therefore, as North Brawley and East Brawley are located on separate sites, the generating capacities of these two facilities cannot be aggregated.

2. The application for a conditional use permit ("CUP") from Imperial County for the North Brawley was submitted more than a year prior to the submission of the East Brawley's application for a conditional use permit.

Other elements support the fact that North Brawley and East Brawley are separate projects on separate sites that should not be aggregated. North Brawley and East Brawley have been planned and developed separately, which was specifically intended to allow East Brawley to implement a design that improves upon that utilized for North Brawley. For example, as described in the East Brawley CUP application, the improved plant design proposed for East Brawley reduces the amount of water required for the project.[13] Other design improvements include an improved noncondensible gas treatment system and improved sand separation system.

North Brawley and East Brawley have been permitted separately due to the different timing and stages of development. On June 21, 2007, ORNI 18, LLC and Ormat submitted a CUP application for North Brawley to Imperial County for approval of a geothermal power plant of less than 50 MW, associated facilities, and well field to supply the geothermal fluids.[14] The CUP application for North Brawley was approved on November 14, 2007 by the Imperial

[11] CURE Complaint, p. 19.
[12] In the Matter of Staff Investigation of Possible Energy Commission Power Facility Siting Jurisdiction over Five 30 Megawatt Units Known As LuzSEGS Units III-VII, *Resolution Providing Direction to Staff*, p. 1, Appendix I, p. 3 (Oct. 29, 1986) ("LuzSEGS Decision").
[13] Appendix B, Revised East Brawley Project CUP Application, p. 4.
[14] The CUP application for North Brawley is provided as Appendix C to this Answer.

County Planning Commission.[15] Construction of North Brawley began in December 2007. North Brawley has both an interconnection agreement and transmission service agreement with IID, is currently operating, and has been producing capacity from the facility since 2008. Additionally, the advanced development of North Brawley enabled the project to obtain financing under ARRA.

In contrast, East Brawley is not yet permitted and has no power purchase agreement or transmission interconnection agreement. The CUP application for East Brawley, a geothermal powerplant of less than 50 MW, was filed by ORNI 19, LLC and Ormat with Imperial County on August 8, 2008, more than a year after the CUP application for North Brawley was submitted. This application was ultimately put on hold by Imperial County on October 30, 2008, due to difficulties obtaining a water supply for East Brawley.[16] On January 29, 2010, ORNI 19, LLC submitted a revised project description to Imperial County. The Notice of Preparation for an Environmental Impact Report for East Brawley was posted on June 17, 2010, and the draft EIR for the project issued on March 20, 2011.[17] The final EIR for East Brawley has not yet been issued.

The distinct difference in the development timeline for North Brawley and East Brawley is in marked contrast with the LuzSEGS case cited by CURE. In the LuzSEGS Decision, the CUP applications for the units were submitted simultaneously.[18] Additionally, the LuzSEGS units were identically designed, conceived and developed simultaneously by Luz.[19] Here, the permit applications for North Brawley and East Brawley were filed more than one year apart, and the development schedules for each have diverged even further since then. Based on present information, the minimum difference in the development schedules of the two projects is three years and the maximum is infinite pending future approval of the CUP and certification of an EIR by the Imperial County Board of Supervisors. Given the temporal differences between the development of North Brawley and East Brawley it is clear that these two projects are separate and distinct, and should not be aggregated as a single project. Therefore, CURE's allegation that

[15] Appendix D, Agreement for CUP #07-0017.
[16] Appendix E, County Letter Putting East Brawley CUP Application on Hold.
[17] Appendix F, Notice of Availability of a Draft Environmental Impact Report for Ormat, East Brawley Development Project, ORNI 19, LLC.
[18] LuzSEGS Decision, Appendix I, p. 2.
[19] LuzSEGS Decision, Appendix I, pp. 2-3.

North Brawley and East Brawley constitute a single facility should be disregarded, and CURE's Complaint dismissed.

3. North Brawley and East Brawley will not share utility service.

CURE's Complaint alleges that "North Brawley and East Brawley will also share utility service pursuant to a water supply agreement between Ormat and the City of Brawley."[20] This is incorrect. North Brawley receives water from the Imperial Irrigation District ("IID") pursuant to an October 23, 2008 water supply agreement between ORNI 18, LLC and IID. Under this agreement, IID supplies the water required for "use in and incidental to the operation of" North Brawley from IID's Spruce Canal.[21] No other use of the water is permitted, and there is no provision in this agreement for service to East Brawley.

East Brawley will receive water utility service from IID under an interim water supply agreement until the City of Brawley completes upgrades to its wastewater treatment plant. In its revised CUP application to Imperial County on January 29, 2010, ORNI 19, LLC stated that East Brawley would obtain water from IID, with delivery from IID's Rockwood Canal.[22] An alternative water supply for East Brawley was also proposed in the revised CUP application, where the proposed project would obtain treated or recycled wastewater from the City of Brawley's wastewater treatment plant ("BWWTP").[23] This alternative has now been incorporated into the final design for East Brawley. Ormat is in negotiations with the City of Brawley to upgrade the BWWTP to provide tertiary level treatment of outflow as cooling make-up water for the proposed East Brawley Project.[24] A memorandum of understanding between Ormat and the City of Brawley, which was submitted on April 8, 2010 and provided as Appendix C to the draft EIR for East Brawley, explicitly states that water obtained from the BWWTP will be used for East Brawley, not for both East Brawley and North Brawley.[25] The BWWTP only produces enough water to supply about 2/3 of the need of the proposed East Brawley power plant's needs.[26] Unlike the LuzSEGS units, North Brawley and East Brawley will not share water

[20] CURE Complaint, p. 20.
[21] Appendix G, Water Supply Agreement between Ormat and IID, pp. 1, 16; Section 3.1.
[22] Appendix B, Revised Project Description for East Brawley Project, p. 13.
[23] Appendix B, Revised Project Description for East Brawley Project, p. 13.
[24] Appendix H, Appendix C to the East Brawley Draft EIR, Tertiary Treatment System, Cover Letter, and Project Description, p. 1.
[25] Appendix H.
[26] CURE Complaint, p. 10. Given that CURE has been an avid participant in Imperial County's environmental review process for East Brawley, and in fact submitted comments on the application for tertiary treatment, it is curious that CURE relies on an outdated conceptual design report for the BWWTP to allege that "[t]reated effluent

utility service, will not share water service facilities, and will in fact obtain water from two different sources. Therefore, aggregation of North Brawley and East Brawley into a single facility is not appropriate.

4. North Brawley and East Brawley are entirely independent of each other, and will have individual facilities.

CURE's assertion that North Brawley and East Brawley will share utility service and infrastructure is incorrect.[27] As explained above, the two projects have entirely independent and separately operable equipment, including separate control rooms, substations, interconnection facilities and other equipment. North Brawley and East Brawley have independent and separate project components and equipment, including individual water supply pipelines and equipment, cooling towers, and individual substations.

5. North Brawley does not have a contract option to increase sales to 100 MW.

CURE's Complaint alleges that the North Brawley PPA contains an "option to increase sales up to 100 MW of generation."[28] CURE alleges that this is significant because Ormat "intends" to exercise the option to "increase sales to SCE to 100 MW with 50 MW of generation from the proposed East Brawley facility,"[29] and thus implies that North Brawley and East Brawley are collectively subject to the Commission's jurisdiction. While the ORNI 18, LLC PPA did contain an option that would allow ORNI 18, LLC to increase the contract capacity by an additional 50 MW of generation, from any additional source, not necessarily East Brawley, ORNI 18, LLC did not exercise that option, and that option has since expired. ORNI 19, LLC, which is not a party to the ORNI 18, LLC PPA, has been conducting PPA negotiations for East Brawley, however, a PPA for East Brawley has not yet been secured.

In summary, North Brawley and East Brawley are entirely separate and distinct projects on separate sites, physically, legally, temporally and financially. Neither depends upon the other in any way whatsoever. There is no basis to conclude that these two projects should constitute a single facility on a single site under the Warren-Alquist Act, as the facts show that these are two separate and distinct projects.

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from the BWWTP would also supply the North Brawley facility."

[27] CURE Complaint, p. 20.

[28] CURE Complaint, p. 15.

[29] CURE Complaint, pp. 17-18.

III. AFFIRMATIVE DEFENSES

A. CURE's Complaint is barred by the doctrine of laches.

CURE's Complaint is barred in part by laches. The doctrine of laches precludes a complaint brought after unreasonable delay, where the delay results in prejudice or injury to the respondent.[30] Given that North Brawley was approved by Imperial County almost four years ago and is currently operating, and that East Brawley has been in the permitting process for three years, CURE's delay in bringing this complaint is patently unreasonable, and is extremely prejudicial to Ormat, who has invested substantial time, money, and resources in these two projects. Therefore this complaint is barred by laches.

IV. CONCLUSION AND PRAYER FOR RELIEF.

As a matter of law, there is no merit to CURE's claim that either North Brawley or East Brawley has a generating capacity of 50 MW or more under the methodology established by the Commission's regulations. Furthermore, there is no merit to CURE's claim that the North Brawley and East Brawley comprise a single project under the Warren-Alquist Act. CURE has the burden of making a prima facie case and presenting evidence that could support the relief it seeks, and it has failed to meet this burden with respect to both grounds for its complaint.

Ormat requests that the Commission dismiss the complaint with prejudice without further hearing because the complaint is without merit, and fails to assert claims or facts supporting the assertion of Commission jurisdiction pursuant to the Commission's regulations.

Dated: August 29, 2011

Respectfully submitted,

ELLISON, SCHNEIDER & HARRIS L.L.P.

By _____

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Attorneys for Ormat Nevada, Inc.

[30] Vernon Fire Fighters Assn. v. City of Vernon (1986) 178 Cal. App. 3d 710, 719.

DECLARATION

I, Connie Stechman, declare as follows:

I am the Assistant Secretary for Ormat Nevada, Inc. I have read the attached Verified Answer, and all appendixes thereto, know the contents thereof, and I am informed and believe that the same is true.

I declare, under penalty of perjury under the laws of the State of California, that the foregoing is true and correct to the best of my knowledge and belief.

Dated: August 29, 2011

Signed: Connie Stechman
Connie Stechman

At: Reno, Nevada

APPENDIX A
CURE v. Ormat Nevada, Inc.
11-CAI-2

RESPONSES TO MATERIAL ALLEGATIONS IN CURE'S COMPLAINT

1. Respondent denies that it is developing a 150 megawatt geothermal facility in the North Brawley Known Geothermal Resource Area.

2. Respondent denies that the North Brawley Geothermal Development Project and East Brawley Geothermal Development Project are one facility with a combined generating capacity of 150 megawatts ("MW").

3. Respondent denies that the generating capacity of the North Brawley Geothermal Development Project, as defined by the Commission's regulations, is equal to or in excess of 50 megawatts.

4. Respondent denies that the generating capacity of the East Brawley Geothermal Development Project, as defined by the Commission's regulations, is equal to or in excess of 50 megawatts.

5. Respondent denies that it intends to sell 50 megawatts of generation from the East Brawley Geothermal Development Project to SCE under the ORNI 18, LLC PPA.

6. Respondent denies that it has executed a power purchase agreement for the sale of up to 100 megawatts of generation from the North Brawley Geothermal Development Project and the East Brawley Geothermal Development Project.

7. Respondent admits that on June 26, 2007 it filed a conditional use permit application with Imperial County to construct a 49.9 megawatt geothermal power plant located on the west side of the New River called the North Brawley Geothermal Development Project.

8. Respondent admits that on August 8, 2008 it filed a conditional use permit application with Imperial County to construct a 49.9 megawatt geothermal power plant located on the east side of the New River called East Brawley Geothermal Development Project.

9. Respondent denies that Ormat segmented permitting and development of North Brawley and East Brawley for the purpose of environmental review.

APPENDIX B
11-CAI-2

REVISED EAST BRAWLEY CONDITIONAL USE APPLICATION

EAST BRAWLEY
GEOTHERMAL DEVELOPMENT PROJECT

UPDATED PROJECT DESCRIPTION

January 29, 2010

Submitted to:

County of Imperial
Planning & Development Services
801 Main Street
El Centro, CA 92243-2811

Submitted by:

ORNI 19, LLC
Ormat Nevada Inc.
6225 Neil Road
Reno, NV 89511

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LIST OF FIGURES

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EAST BRAWLEY GEOTHERMAL DEVELOPMENT PROJECT UPDATED PROJECT DESCRIPTION

1.0 INTRODUCTION

ORNI 19, LLC, a wholly owned subsidiary of Ormat Nevada Inc. (Ormat), proposes to build the East Brawley Geothermal Development Project in the vicinity of the Brawley 2 Geothermal Exploration Project covered under Conditional Use Permit #07-0029 and the Environmental Impact Report (EIR) for the Geothermal Overlay Zone (g-zone). The project area is north of the City of Brawley in Imperial County, California (see Figure 1).

This Conditional Use Permit application is for the construction of a new 49.9 net megawatt (MW) binary power plant composed of six (6) Ormat Energy Converters (OEC), an expanded geothermal well field beyond the six exploration wells, pipelines to bring the geothermal brine to the power plant, pipelines to take the cooled brine to injection wells, pipelines to distribute noncondensible gases from production wells to power plant area and injection wells, an electric transmission line to interconnect to the substation at the North Brawley 1 Geothermal Power Plant, and a water pipeline to bring water from an Imperial Irrigation District (IID) canal to the power plant for cooling water.

2.0 SUMMARY OF PROPOSED PROJECT

The East Brawley Geothermal Development Project would be located on private agricultural lands just north of the City of Brawley in Sections 10, 11, 14, 15, 16, 21, 22, and 23, Township 13 South, Range 14 East, San Bernardino Base and Meridian (SBM). The project is in the g-zone that was covered by the Final EIR dated April 1979 and approved by the Board of Supervisors. It analyzed up to 800 megawatts in the g-zone (see Figure 2). The proposed project is located east of the New River, approximately 1.75 miles east of the North Brawley 1 Geothermal Power Plant along Best Road.

The southern boundary of the project area is just north of the City of Brawley's boundary within their "sphere of influence" and just north of the in-construction Highway 111 bypass in an area zoned M-1 Light Manufacturing. The southwestern boundary of the project is the Del Rio Country Club bounded by the New River. The land to the north and east is agriculture. The eastern boundary of the project is Dietrich Road and to the north Rutherford Road. The majority of the project is along Best Road from Shank to Rutherford Roads. An at-grade intersection will built at the Highway 111 bypass and Best Road which will provide the best access to the plant site and well field. Well pads may be accessed from the other county roads in the area: Dietrich, Groshen, Rutherford, Ward and Wills. There are also farm and IID canal roads that will be used to access some well locations (see Figure 3).

ORNI 19, LLC/Ormat Nevada Inc. proposes to permit, construct, operate and maintain the East Brawley Geothermal Development Project that would consist of the following facilities:

- A 49.9 net MW geothermal power plant consisting of up to six (6) OEC binary generating units (16 MW gross each) with vaporizers, turbines, generators, condensers, preheaters, pumps and piping, motive fluid (isopentane) storage, a motive fluid vapor recovery system (VRU), a gas scrubber, and possibly a regenerative thermal oxidizer (RTO) and related ancillary equipment;
- Two (2) cooling tower batteries with a total of 14-20 cell counter flow, induced draft with drift eliminators of 0.0005 efficiency;
- A control room, office, maintenance shop, parking, and other facilities located at the power plant site;
- Approximately 34 total wells, approximately half for production and half for injection. The final number of wells will be determined by drilling results. Each well will average 4500 feet in depth. Production wells will have a gas separator and corrosion and scale inhibitor and a geothermal fluid booster pump to pump the fluid to the power plant. Each well will also have a sand separator and/or filtration system;
- Piping from production wells to the power plant and from the power plant to the individual injection wells. Gas pipelines will take the gas contained in the brine from the gas separators to either the injection wells or to the gas scrubber at the power plant;
- Blowdown wells (2-4) at the power plant site to provide for injection of the cooling tower blowdown;
- Pumps, tank, valves, controls, flow monitoring and other necessary equipment to the wells and pipelines;
- Maintenance of the production and injection wells cited above;
- Piping, canals or ditches and pumps to bring water from IID's Rockwood Canal to the power plant;
- A pipeline crossing over New River, that would primarily allow connection of geothermal wells located on both sides of the river. This crossing was included in an amendment to the East Brawley CUP application submitted to the County in March 2009, and in Section 5.7 below; and
- A substation with a 2 mile long double circuit 13.8 and 92 kilovolt (kV) transmission line with 66 high poles to interconnect to the IID at the North Brawley 1 substation at Hovley and Andre Roads.

The major components of the proposed East Brawley Development Project, and their function and location are summarized in Table 1.

Table 1: East Brawley Geothermal Development Facilities Summary

East Brawley Geothermal Development Project Facilities Summary			
Facility	**Size**	**Location**	**Function**
Well pads	Up to 34 well pads (including the four existing exploration well pads) would be about 316 feet by 356 feet in size (~2 acres each). A mud sump/containment basin of about 75 feet x 260 feet x 7 feet deep would be located on each well pad.	Identified well pads from the exploration phase would be utilized to the extent feasible. Additional wells would be drilled as needed to provide adequate production fluid and injection capacity at well sites.	Well pads include all the equipment necessary to operate a well. During development, any additional drilling would occur from the well pads. Well pads also include containment basins for drilling and maintenance of the wells
Production Wells	Inside diameter of the production wells would be approximately 30 inches at the top and would telescope with depth. Wells are expected to average about 4,500 feet deep.	Production wells would be located on the well pads at the well sites shown in. Approximately 17 production wells each on separate well pads are projected.	Production wells flow geothermal fluid to the surface that is then transported via above ground pipelines to the power plant to generate electricity.
Injection Wells	Injection wells would be the same size as production wells.	Injection well locations have not yet been designated but would be among the well sites. Up to 3 injection wells could be located on each pad. A total of 17 injection wells each on separate well pads are projected.	Injection wells are used to inject spent geothermal fluid from the power plant back into the geothermal reservoir. Injection ensures the longevity and renewability of the geothermal resource.
Geothermal Production Fluid Pipeline	The pipeline system would vary in insulated diameter from 8 to 30 inches depending on individual well productivity. Up to about 9 miles of production pipeline could be constructed.	The piping system would connect the wells to the power plant. The production fluid pipeline would be located within the pipeline corridors.	Geothermal fluid would be transported from the production wells to the power plant via the geothermal production fluid pipeline.

East Brawley Geothermal Development Project Facilities Summary			
Facility	**Size**	**Location**	**Function**
Injection Fluid Pipeline	The injection piping system would vary in insulated diameter from 8 to 30 inches. Piping would extend from the power plant to the injection wells. Up to about 9 miles of injection pipeline could be constructed.	The injection pipeline would be located among the pipeline routes.	Cooled geothermal fluid would be transported from the power plant to the injection wells via the injection fluid pipeline where it would be injected into the geothermal injection reservoir.
Access Roads	Access roads would be no less than 10 feet wide.	Access roads would extend from existing County roads to the well pads. Existing farm roads would be used to the extent practical. Access roads developed for exploration would be used for any wells and pads that are used for development. Where new pads are created, new access road would be developed.	Access roads are used during development to construct the production wells and install equipment. During utilization, access roads are used for accessing wells for maintenance.
OEC Units	Six, 16 MW (gross) OEC units (manufactured by Ormat Turbines, Ltd.) comprised of vaporizers, turbines, generators, condensers, preheaters, pumps, and piping.	The modular OEC units would be located on the power plant site.	The OEC units are the proprietary modular binary geothermal power generation equipment used on the power plant site.
Motive Fluid Pressure Vessels	The motive fluid would be stored in two, 11,880-gallon pressure vessels.	The motive fluid pressure vessels would be located on the power plant site.	The motive fluid pressure vessels would be used to store isopentane for use in the OEC units.
Vapor Recovery Unit	The vapor recovery unit consists of a diaphragm pump, a vacuum pump, and activated carbon canisters.	The vapor recovery unit is located on the power plant site.	The vapor recovery unit would provide a mechanism to minimize emissions of isopentane from the OEC units during maintenance.
Substation	The substation would occupy a site about 150 feet by 150 feet in size (about 0.5 acres).	The substation would be located adjacent to the power plant.	The substation converts power generated from the plant to the proposed line voltage, 92 kV.

East Brawley Geothermal Development Project Facilities Summary			
Facility	**Size**	**Location**	**Function**
Interconnection Transmission Line	There would be a new two-mile long double circuit 13.8- and 92-kilovolt (kV) interconnection transmission line with 66-foot high poles.	The interconnection transmission line would connect to the IID grid at the North Brawley 1 substation at Hovley and Andre Roads. The new line would span the New River. One proposed route and one alternative route are under consideration.	The interconnection transmission line would transfer the electricity generated by project to the existing power grid for distribution.
Noncondensible Gas Distribution Line	The noncondensible gas distribution line would range from 4-8 inches in diameter. Up to about 4.3 miles of pipe could be constructed.	Noncondensible gas distribution lines would run from well pad separators and power plant site separators to the injection wells.	Noncondensible gases from separators and other equipment would be compressed and injected into the subsurface reservoir.
Regenerative Thermal Oxidizer (RTO) and Caustic Scrubber	The top of the scrubber would be about 30 feet high.	The RTO/scrubber is located adjacent to the power plant.	The RTO/scrubber unit is BACT for the abatement of potential NCG emissions
Cooling Tower	Two cooling tower units (each with seven to ten cells), would be used (manufactured by Cooling Tower Depot, Inc.). The cooling towers would be the largest and most prominent facility on the power plant site (about 54 feet in height).	The cooling towers would be located on the power plant site.	The cooling towers would provide cooling water to condense the motive fluid vapor in the condensers.
Water Conveyance System	The water conveyance system would be a 10 - 24 inch pipeline, about one mile in length, for water coming from IID source. See text for alternatives to IID water.	Water intake from the IID Rockwood Canal Gate 131 would be either underground or put inside of the Livesley Drain that runs between the canal and the power plant site. See text for alternatives to IID water.	The water conveyance system would provide makeup water for the cooling tower at the power plant site.
Blowdown Wells	Two to four cooling water blowdown injection wells would be constructed similar to the geothermal injection wells.	The blowdown injection wells would be located adjacent to the power plant.	The dedicated blowdown wells are used to inject cooling water blowdown to reduce the concentration of dissolved solids in the cooling water.

East Brawley Geothermal Development Project Facilities Summary			
Facility	**Size**	**Location**	**Function**
Power Plant Site and Common Facilities	The power plant would occupy about 15 acres of the 30-acre parcel on which it would be located.	The power plant would be located on private land owned by ORNI 19, LLC.	The power plant site is the physical location where electricity would be generated using modular OEC binary geothermal power plant technology.
Control Room, Office and Maintenance Shop	The footprint of these facilities is depicted on Figure 5.	Each of the facilities would be located on the power plant site.	These habitable structures would be used to control, manage and maintain the project operations.

Construction would commence soon after the CUP is issued. Construction of the power plant would require approximately 15 months. Construction would require up to 200 workers at peak construction. Well drilling, pipeline construction, interconnection transmission line construction, and construction of the power plant would all be concurrent.

3.0 PROJECT LOCATION AND ACCESS

The project area is located within Imperial County, California, about 12 miles southeast of the Salton Sea and 25 miles north of the U.S. border with Mexico (Figure 1). The project is within the North Brawley Geothermal Overlay Zone and the Brawley KGRA, in the Imperial Valley, California (Figure 2). The geothermal overlay zone is a zoning classification developed by the County of Imperial to facilitate development and utilization of geothermal resources in areas of identified geothermal development potential.

The project area is comprised of multiple geothermal leases overlaying privately owned cultivated properties in Sections 10, 11, 14, 15, 16, 21, 22, and 23, Township 13 South, Range 14 East, San Bernardino Base and Meridian (SBB&M).

The project is comprised of a power plant and a wellfield; the specific locations of each of these are described below.

3.1 Location and Access of Power Plant

The East Brawley Geothermal Power Plant would be located on private agriculture lands in the southeast corner of Section 15, Township 13 South, Range 14 East, SBB&M identified by Assessor's Parcel Number 037-140-06-01. This is located about one mile north of the City of Brawley. The total property size is 32.81 acres and will not be subdivided. The power plant area will be enclosed by a 6 foot wire fence in an area approximately 900 by 600 feet not including the substation or stormwater retention basin. The house that is currently on the property is vacant and will be demolished as part of project construction activities. A house across the street

will be vacated and also demolished during construction and prior to the delivery of isopentane to the new plant.

Access to the power plant will be on Best Road just north of Ward Road from a left hand turn pocket built for this project (see traffic study). Best Road will be widened by about 20 feet in this section to accommodate a northbound left turn lane at the entrance point. The necessary tapers are provided, based on 55 mph design, which represents the Prima Facia speed limit, the design speed for the road and Caltrans design criteria. It will be necessary to cover Best Canal along the property frontage to accommodate widening of the road for the turn pocket.

The emergency access will be from Best Road into the south end of the property on the north side of the Livesley Drain. The emergency access road will be constructed with an all-weather surface and lead to a locked gate that can be opened by any emergency responders.

Both of the entrances into the plant site provide excellent access from the new Highway 111 bypass that will include an exit onto Best Road just south of Shank Road. Traffic will come from Interstate 8, north on Highway 111 to Best Road.

3.2 Location and Access of Well Field

The East Brawley geothermal wellfield is laid out in a grid pattern over much of the project area. The power plant site would be centrally located within the wellfield in Section 15. The well field will be located between Rutherford Road on the north, Dietrich Road on the east, the New River on the west, and just north of Shank Road on the south. Access to the wellpads and pipelines will be from Best, Baum (not a county road), Groshen, Kerhsaw, Rutherford, Ward, and Wills Roads. Additionally, farm and IID roads may be used for access. Encroachment permits for ingress/egress and irrigation canal and drain crossings would be obtained from the Imperial County Public Works Department and IID as applicable.

Access to farm land would be coordinated with the landowners to minimize impacts to the farming operations. The wellpads and pipelines will be along the edges of the fields. New access roads would be constructed or improved only as needed to safely accommodate traffic required for wellpad construction, well drilling and well and road maintenance. Road widths to well pads would typically be no less than ten feet wide.

4.0 DESCRIPTION OF POWER PLANT

The proposed power plant can be described as having four interdependent operating systems: (a) the geothermal fluid system; (b) the motive fluid system and fire suppression; (c) the geothermal NCG and RTO/gas scrubber system; and (d) the cooling water system. Each of the OEC units would be able to operate independently but would share common ancillary components such as isopentane storage, geothermal brine supply and injection equipment, cooling towers, substation, etc. Each of the power plant systems are described below.

4.1 Geothermal Fluid System

Geothermal fluid from the geothermal reservoir at about 4,500 feet below the surface would be pumped to the surface from the geothermal production wells. At the surface the geothermal fluid would be transported from the well field via a pipeline system to the power plant site. At the power plant site the produced geothermal fluid would be directed to flow through the six proposed OEC units. The geothermal fluid system is a closed loop system. The geothermal fluids from the production wells would be transported to the power plant site and would flow through the level 1 and level 2 vaporizers and preheaters of each OEC unit, transferring the heat to the isopentane motive fluid through the OEC's shell and tube heat exchangers. The cooled or spent geothermal brine would then be sent to the geothermal brine injection system without coming into contact with the atmosphere.

4.2 Motive Fluid System and Fire Suppression

The OEC is a power generation unit which converts low and medium temperature heat energy into electrical energy. Each OEC unit is an integrated closed cycle vapor turbo-generator system that recycles an organic motive fluid in a fully closed loop with no discharges to the environment. The OEC unit operates in a standard power generation cycle (Rankine cycle) similar to the power generation cycle used in a steam turbine.

The motive fluid selected for the East Brawley Project is isopentane. Isopentane is a flammable, but nontoxic, petroleum hydrocarbon that vaporizes at relatively low temperatures under most atmospheric conditions. The isopentane is circulated through the OEC unit. Heat from the geothermal fluid would be transferred via heat exchangers to vaporize the isopentane in a two-level series of preheaters and vaporizers. The vaporized isopentane would be directed through turbines which rotate generators converting mechanical energy into electricity.

On the backside of the turbine-generators the isopentane vapor would be cooled and condensed back to liquid form in water-cooled condensers. The liquid isopentane would then be returned to a storage tank where it would be cycled back to the OEC units again for reuse. The spent geothermal fluid would be transported on the surface via pipelines to injection wells in the well field where it would be pumped back into the subsurface geothermal reservoir.

The generated electricity would be transformed into line voltage and delivered via an interconnection transmission line to a local utility power grid for distribution. ORNI 19, LLC is negotiating a power purchase agreement (PPA) for sale of the energy generated by the project with a major California utility.

The vaporized isopentane motive fluid from the level 1 and level 2 vaporizers would turn the level 1 and level 2 turbines which together turn a common generator that produces the electricity that is delivered to the substation where it is delivered to the transmission lines. The vaporized isopentane is then condensed in a shell and tube condenser and returned to the preheaters and vaporizers to repeat the cycle. The isopentane motive fluid is therefore also circulated within a closed-loop system, with no significant, routine release or discharge of isopentane.

The isopentane motive fluid system includes the isopentane side of the OEC Units, two (2) 11,880-gallon isopentane pressure vessels, and an OEC vapor recovery unit (VRU) on each OEC condenser. A vapor recovery unit would be used during major maintenance activities on any of the OEC Units.

Each OEC Unit contains approximately 23,000 gallons of isopentane (in the vaporizers, preheaters, condensers and piping). In each OEC, the motive fluid system is designed as a closed-loop, although there would be minor fugitive leaks from the valves, connections, seals, and tubes. Isopentane from these leaks would be released to the atmosphere or would leak into the geothermal or circulating cooling water lines. Operators would frequently inspect the OEC Units leaks and visual signs of fugitive emissions. Isopentane leak detectors are utilized throughout the facility and continuously monitored.

Any noncondensible gases in the air or water which may leak into the isopentane system would eventually collect in the OEC condenser and reduce the efficiency of the OEC Unit. In order to remove these noncondensible gases, each OEC condenser would have a small (~0.106 scf/hr) OEC VRU. Each OEC VRU would consist of two chambers and a set of isolation valves. Operation of each OEC VRU would be controlled by the power plant computer control system, which would start the OEC VRU noncondensible gas "purge" sequence whenever the efficiency of the OEC Unit fell below a set point. During "purging," nearly all of the isopentane vapors in the OEC VRU would be compressed into liquid isopentane and returned to the OEC Unit, while the noncondensible gases, together with some small quantity of isopentane vapors, are discharged to the atmosphere.

Some major maintenance activities require that at least a portion of an OEC Unit be cleared of isopentane motive fluid liquid and vapors prior to performing the maintenance activities. To control and minimize isopentane emissions during these maintenance activities, the liquid isopentane is drained from the section of the OEC Unit (preheater, vaporizer or condenser) to be maintained or repaired and transferred to another portion of the OEC Unit, the isopentane storage tank, or another OEC Unit. A vacuum pump would then be used to evacuate and compress most of the remaining isopentane vapors, returning the isopentane liquid to the OEC Unit. Those isopentane vapors which do not condense would be released through the isopentane vapor recovery unit, which would adsorb nearly all of the remaining isopentane vapors.

To reduce the risk of fire, isopentane vapor and flame detectors connected to the power plant computer control system are placed at strategic locations around the OEC Units to quickly alert the plant operators to any such hazardous situations. The fire protection system would include an approximately 2,500-gpm diesel firewater pump. Water nozzles/monitors would be placed at the power plant site to be used to minimize the risk of a fire spreading should one start within the power plant. A Risk Management Plan would be prepared for this facility for isopentane.

4.3 Noncondensible Gas and Regenerative Thermal Oxidizer/Gas Scrubber

NCGs are naturally occurring gases in the geothermal fluid that are not easily condensed by cooling. They are predominantly (99.9%) made up of nitrogen, carbon dioxide and methane. The NCG separated from the geothermal production fluid would be compressed and injected back

into the geothermal reservoir with the spent geothermal fluid. Under very high NCG content in the geothermal production fluid conditions, some of the NCG may be treated in a regenerative thermal oxidizer (RTO) and gas scrubber system to remove air pollutants from the NCG before venting the scrubbed NCG to the atmosphere.

Each of the production wells would deliver geothermal fluid to the power plant through production pipelines. The geothermal fluids would first flow from the production wells through closed, high-pressure well pad separators which would separate most of the geothermal noncondensible gases from the geothermal brine. If the quantity of geothermal noncondensible gases in the geothermal fluid is less than the high end of the possible range, all of these separated geothermal noncondensible gases would flow through other dedicated pipelines to the power plant site, to be dissolved or entrained in the geothermal brine as it is injected into the geothermal fluid injection wells. Small quantities of these separated geothermal noncondensible gases would be discharged to the atmosphere along the dedicated pipelines as condensate, created as the gases cool, is drained from the pipeline.

However, if the quantity of geothermal noncondensible gases in the geothermal fluid is at the high end of the possible range, up to twenty-five percent of these separated geothermal noncondensible gases would flow through other dedicated pipelines to the RTO unit/caustic scrubber system located at the power plant site. The remaining seventy-five percent of the separated geothermal noncondensible gases would flow through the dedicated pipelines to be dissolved or entrained in the geothermal brine as it is injected into the geothermal fluid injection wells. As described above, small quantities of these separated geothermal noncondensible gases would be discharged to the atmosphere along the dedicated pipelines as condensate created as the gases cool is drained from the pipeline.

Up to twenty-five percent of the geothermal noncondensible gases separated at each of the well pads would be delivered through dedicated noncondensible gas pipelines to the RTO unit/caustic scrubber system located at the power plant site. The proposed RTO unit would receive the noncondensible gases from the noncondensible gas pipelines. These gases are expected to contain sufficient hydrocarbons and oxygen (with supplemental air and a small amount of propane) to support complete combustion. Propane would also be used to pre-heat the RTO unit during cold start-ups.

The RTO unit would oxidize the hydrocarbons in the NCGs and supplemental propane to carbon dioxide and water vapor in an exothermic process.

The RTO unit would initially combust, and then abate, at least 97 percent of the benzene, methane and other hydrocarbons in the NCGs it receives. It is considered Best Available Control Technology (BACT) for the abatement of hydrocarbons and volatile organic gases in a wide variety of applications. The RTO unit would also oxidize at least 97 percent of the hydrogen sulfide in the NCGs delivered to the RTO unit. The oxidation of hydrogen sulfide in the RTO unit would produce sulfur dioxide (SO2) and water vapor. The resulting SO2 emissions would be controlled by the caustic scrubber.

The low temperature combustion in the RTO unit is flameless and, thus, would not create appreciable nitrogen oxides (NOX) from the oxidation of atmospheric nitrogen.

The proposed caustic scrubber would receive the carbon dioxide, water vapor, sulfur dioxide, nitrogen oxides and other gases produced from the oxidation process in the RTO unit (as well as the gases passing through the RTO unit unoxidized). Before entering the caustic scrubber, the hot gases would be cooled through a direct contact quenching process. The quenched gases would then proceed to the caustic scrubber, where they would be subjected to counter-flows of caustic absorbate (water and sodium hydroxide). The caustic absorbate reacts with the sulfur oxides in the quenched gases to produce sodium sulfates and sulfites, both water-soluble compounds that are dissolved in the caustic scrubber water and piped to a storage sump at the bottom of the scrubber. The remaining gases from the RTO unit are vented out the top of the caustic scrubber through a 30-foot tall stack. The small quantity of spent absorbate would be drained from the storage sump and piped to one of the cooling towers. Fresh absorbate would be added as needed to make up for the loss of exhausted absorbate. The caustic scrubber would remove at least 97.5 percent of the sulfur oxides in the gases it receives. It is considered Best Available Control Technology (BACT) for the control of sulfur dioxide.

A control panel with a programmable logic controller would be used to provide monitoring and control of the RTO unit/caustic scrubber system. RTO unit/caustic scrubber system scheduled maintenance would be coordinated with the maintenance schedule for the East Brawley power plant. The RTO unit/caustic scrubber system would operate at least 95.9 percent of the hours the power plant is operating (equivalent to operating 8,400 hours per year if the power plant operates 8,760 hours per year). When the RTO unit/caustic scrubber system is undergoing unscheduled maintenance or otherwise not operating, the geothermal NCGs would bypass the RTO unit/caustic scrubber system and would be delivered to the cooling towers for release to the atmosphere unabated.

4.4 Cooling Water System

The cooling water system would consist of cooling towers using standard wet cooling tower technology. Cooling water would be used to cool the motive fluid in the condensers and would cycle back to a cooling tower where the water would be cooled, stored and made available for reuse as system process water.

A simplistic diagram of the geothermal system processes minus the NCG and air emission abatement system is schematically represented in Figure 4.

The isopentane vapor condensate is cooled by water circulating from the cooling tower through the condensers. Evaporative cooling in the cooling tower cools the circulating water. A small portion of the circulating water would be injected into the geothermal reservoir via dedicated cooling tower blowdown wells adjacent to the power plant site. The cooling tower blowdown removes the dissolved solids from the water that are concentrated as the water is cycled or reused in the cooling tower.

4.5 Water Conservation and Water Supply

4.5.1 Estimate of Quantity of Make-Up Water

The cooling towers would circulate an average of approximately 195,000 gallons per minute (gpm) total of cooling water to the OEC Units. An average of approximately 2,600 gpm of circulating cooling water would be evaporated from both cooling towers, and both would also blowdown (discharge) an average of approximately 800 gpm. To maintain water balance, the cooling towers would require an average of approximately 3,400 gpm or 5,500 acre-feet per year (total) of cooling tower makeup water.

Binary power plants such as the one proposed are closed loop systems such that geothermal brine produced from the geothermal reservoir is injected in whole back into the geothermal reservoir. Therefore, only a brackish water supply is needed for the cooling system. This is different from a geothermal flash plant where the condensed geothermal steam is used for the cooling water. Flash plants are used on higher temperature geothermal resources than is the case with the East Brawley resource.

Sodium hypochlorite (bleach) would be used for bacterial control in the towers as well as other chemicals for pH control and corrosion inhibition.

4.5.2 Water Saved by Conservation Measures

The estimated amount of water required for the East Brawley power plant is about 5,500 acre-feet. This is 27% proportionally less than that initially requested for Ormat's nearby North Brawley power plant and a 9% further reduction from North Brawley's final design quantity. This is the result of plant design and water optimization changes that were also implemented for the East Brawley power plant, thus a decreased amount than originally stated in the East Brawley CUP application.

The East Brawley Project area occupies approximately 100 acres so the water required for this project equates to about 67 acre-feet/acre. By comparison, farmland consumes about 5.5 acre-feet/acre. However, the project would supply electricity to 50,000 people, or about the entire population of Brawley, and would generate revenue of $6,500/acre-foot of water compared to $164/ac-ft for alfalfa based on data from the Summit Blue Consulting, LLC *Renewable Energy Feasibility Study* prepared for Imperial County in 2008.

4.5.3 Water Supply from IID

Ormat plans to obtain its water for cooling tower make-up from the Imperial Irrigation District (IID). Therefore, water losses (via evaporation and blowdown) from the cooling tower would be made up by irrigation water obtained under contract from the IID. Although the Best Canal is closest to the power plant, IID has indicated it does not have the capacity to deliver the water from this canal due to changes in that canal south of the City of Brawley. Makeup water would be obtained from IID Gate 131 on the Rockwood Canal located about one-half mile east of the power plant site. The water from the Rockwood Canal would be gravity fed or pumped in a 10-24 inch pipeline that would be either underground or put within the Livesley Drain that runs east to west between the canal and the power plant (Figure 3).

The project's water consumption would be met by the IID through their current resources, transfers from other sources or would be offset through water conservation projects identified and approved by IID. Water taken from IID would be subject to the approved Equitable Distribution program during years of water supply demand imbalances. The IID is currently developing an Integrated Water Resources Management Plan to address the water supplies for new non-agricultural projects. In the immediate term the IID has completed an *Interim Water Supply Policy for New Non-Agricultural Project*s (IID 2009) which was recently approved by the IID Board of Directors approval. The IID is expected to execute the pending contract agreement with Ormat for Project water supply upon approval of the interim policy.

4.5.4 Water Supply Alternative: From City of Brawley Wastewater Treatment Plant

As described above, Ormat plans to obtain its water for cooling tower make-up from IID. However, as an alternative and/or supplemental source of water supply, Ormat is currently working with the City of Brawley to obtain treated, or recycled, water from their wastewater treatment plant located immediately west of the power plant site (Figure 2). Ormat and the City of Brawley have entered into a Memorandum of Understanding to facilitate exclusive negotiations for the reclaimed wastewater which includes the construction of a tertiary system to the City's secondary system which is currently being upgraded by the City. The additional agreements include an operations and maintenance (O&M) agreement for operation of the tertiary facility. The City would ultimately own and operate the tertiary facility when it is completed.

This source of water would not be available until 2013 when the tertiary treatment plant would be expected to be completed. Therefore, in the interim period, water from the IID and/or other alternative sources (as described below) would still be needed for the project.

Under this alternative, the City would deliver reclaimed water to the East Brawley Project which is approximately ¼-mile east of the treatment plant adjacent to the New River where it currently discharges treated wastewater under an NPDES permit. The City currently generates approximately 4,400 acre-feet (3.9 mgd) of wastewater per year. As stated above, the estimate of the water requirement for the East Brawley Power Plant would be 5,500 acre-feet per year. Assuming that the effluent from the WWTP will average 4,400 acre-feet a year, ORNI 19, LLP would be capable of utilizing all (100 percent) of the recycled water for cooling water makeup. However, as noted below, an additional source of water would be required during the hot summer months.

As noted, the new tertiary treatment facility is currently scheduled to be operational in early 2013. Thus, water from the Imperial Irrigation District and/or other alternative sources (as described below) would be needed for the project in the interim period. A summary of the conceptual design of the City of Brawley tertiary treatment and delivery system is provided below. The design of this project is currently only in conceptual design phase, so the final design may change somewhat from that described below.

<u>Description of Current WWTP and Planned Expansion</u>

This treatment plant utilizes a lagoon system to treat 3.9 mgd of domestic sewage (2008 average daily flow). The City of Brawley is currently upgrading the existing WWTP to increase its average daily flow capacity to 5.9 mgd, and to meet more stringent NPDES permit requirements for ammonia removal. Construction of the plant upgrade is expected to being in early 2010 and be completed by late 2012. Although the upgraded and expanded plant will produce a higher quality secondary effluent, this effluent will not be of the quality required to meet the California Title 22 criteria for direct use of recycled water in open recirculating cooling water systems. Additional tertiary treatment facilities will be required in order to meet these requirements, as well as water quality requirements specific to cooling water system operation.

Water Supply Objectives from Brawley WWTP

Ormat's objective is to meet 100 percent of the make-up water demand for the cooling towers at the proposed East Brawley power plant with reclaimed water. As noted above, engineering estimates are that for a 50 MW plant, the make-up requirement would be up to 5,500 acre-feet per year, which means that Ormat will use 100 percent of the recycled water from the WWTP and will need an additional water supply. Additional water sources are described in Section 4.5.5 below.

Tertiary Treatment Objectives

Tertiary treatment consisting of coagulation, filtration and disinfection will be required to meet or exceed the performance objectives of the California Recycled Water Criteria (Disinfected Tertiary Title 22 Recycled Water; California Code of Regulations (CCR), Title 22) for direct use in open recirculating cooling water systems. This level of treatment will produce effluent that is low in turbidity, BOD, and microorganisms. Title-22 disinfected tertiary recycled water means a filtered and subsequently disinfected wastewater that meets the following criteria from the CDPH Purple Book Update. The requirements for filtered wastewater are at 22 CCR 60301.320, and the disinfection requirements at 22 CCR 60301.230.

Tertiary Treatment Processes

Secondary treatment involves oxidation and clarification, which are already provided by existing plant. In order to provide tertiary treatment, three components are traditionally necessary according to 22 CCR. These processes include flocculation, filtration and disinfection. The tertiary system will be based on either the addition of flocculation tanks and filtration systems, or the use of membrane bioreactors, and upgrading the disinfection process in order to assure meeting the applicable requirements. As stated above, a conceptual plan for the project is currently underway but not yet finalized. Per an internal draft of the conceptual plan, possible treatment methods to be included in the tertiary treatment plant include the following:

- Pretreatment
  - May include some form of phosphate reduction/removal, including chemical precipitation with lime, alum, polyaluminum chloride, or ferric chloride – if phosphate reduction is not low enough from the City's upgraded secondary treatment system. Minimum phosphate levels are required to protect the cooling tower system from corrosion.

  - Solids Processing, which would include pumping coagulated, settled solids/sludge from the sedimentation basins into a 100,000 gallon concrete storage sump, and from there the solids would be pumped to solids processing. The options for solids processing include recycling tertiary solids to WWTP (pumping the solids to the WWTP's activated sludge thickeners, or centrifuges), pumping the solids to the WWTP lagoons, or dewatering the solids with new centrifuges.

- Filtration. The following three alternatives for filtration/removal of suspended organic and inorganic solids from water have been considered:
  - Multi-media (such as use of silica sand, crushed anthracite coal, and garnet or ilmenite, alone or in dual and triple combinations) filters (gravity filters and pressure filters)
  - Cloth disk media filters (use of a cloth membrane as the filter medium)
  - Immersed membrane filters (including use of micro-filtration (MF) and/or ultra-filtration (UF) membranes)

- Disinfection: The tertiary treated water must be disinfected in order to meet the Title 22 criteria for recycled water use within open recirculating cooling water systems. In addition, disinfection of water controls biological activities in the cooling water systems as part of the chemical treatment program. Disinfection options include the following:
  - Ultraviolet light (UV) disinfection (either by using the WWTP's new UV system or a new system)
  - Chlorination disinfection, using either by dissolving chlorine gas in water or by adding hypochlorite salts or solution, all of which lead to the formation of hypochlorous acid (HOCL).

Water Storage

The effluent from the tertiary treatment system will be directed to a storage unit before it is conveyed to the East Brawley plant. Three options are being considered:

- Conversion of the current Lagoon #4 at the WWTP to a storage pond. This pond can store about 5 million gallons of water (currently preferred option)
- Construction of a water storage tank, about 5 million gallons, to be located on the property of the Brawley WWTP
- Construction of a water storage tank, about 5 million gallons, to be located on Ormat's East Brawley power plant property, immediately adjacent to the WWTP

Conveyance/Pipeline

The City of Brawley WWTP is within ½ mile of the East Brawley Power Plant, making conveyance of water relatively simple. The water would be conveyed via a pipeline, approximately 2,000 feet in length from the WWTP to the to East Brawley cooling towers. The pipe would be manufactured from HDPE, and would be about 20 inch diameter. It would be buried about three (3) feet below ground, except being deeper below the railroad bed. The pipeline route is shown on Figure 8. The only property other than the City's and Ormat's would be the railroad, of which Ormat would obtain permits to place the pipe under the railroad right of way.

Need for Additional Water Supply During Summer Heat Conditions

After 2013 when the tertiary treatment system would be complete, Ormat's engineering calculations show that during summer heat conditions, the water from the WWTP may not be enough in itself for cooling tower make-up and additional water may be required from another source. It is estimated that on average the additional amount of water that will be required would be approximately 700 gpm (1,100 acre-ft/yr). The possible sources of additional water are described below.

1. Future Growth of Brawley. With estimated growth rates of the City of Brawley, there should be year-round adequate supply of water from the WWTP in about 10 years. After this, Ormat would not need any additional water source.
2. Water Supply from IID: In the even that Ormat relies entirely on WWTP recycled water, a smaller water contract with the IID will be considered for the secondary water source. This is the primary option until Ormat can obtain enough water from WWTP after further growth of Brawley. As described above, water will be obtained from IID Gate 131 on the Rockwood Canal and piped to the plant. If canal water is used, 1,100 acre-ft a year would be required to supplement the amount from the WWTP.
3. Use of Blowdown Water: Treatment of the cooling tower blowdown water (from both this plant and possibly North Brawley plant) is being investigated so that the water can be reused in the cooling tower instead of injected into the geothermal reservoir.
4. Water from Shallow Groundwater Wells: Using "ground water", as a back-up water source during peak periods. The groundwater would need to be treated, either with reverse osmosis membranes or with a nano-filtration membrane. This is a desirable water source as it is currently not used and unusable for most other applications (the total dissolved solids is too high for use in agriculture), and the only impact we can see brought up as an issue being subsidence, but mitigation measures will be incorporated into the project for this (as described below).

   Description of Possible Groundwater System: As a backup water source during peak periods, it is estimated that there would be about two groundwater wells that will be drilled and used to supply this water, with each well will being about 400-700 feet in depth. The wells would be approximately 24 inches in diameter at the top and telescope with depth. Each well pad will be up to 5 x 6 feet (30 ft^2). The total production capacity of the wells will be up to about 1,500 gpm if used only as a backup source. In order to pump the water from the wells, on each well a centrifugal vertical production pump will be installed. The water will be pumped through carbon steel pipes to a water desalination system for purification for use in the cooling tower. The system would be based on salt rejection membranes (nanofiltration and reverse osmosis). The water desalination system will be installed in a 40 foot shipping container adjacent to the cooling tower.

   The system would be comprised of various components including a sand separator, chemical dosing system (anti-scalant and acid), a series of micron filters and membranes, two booster pumps, and a control system (PLC controlled). The desalination system is

expected to have 40% to 60% recovery ratio (40%-60% of the feed will be purified and used as cooling water makeup). The water desalination system will have two streams coming out of it: Permeate and Concentrate. The permeate will be used for cooling tower makeup. Because this water will be so clean, it is expected that 5-10 cycles of concentration in the cooling tower will be achieved with this water source. The concentrate will be injected into the geothermal reservoir together with the cooling tower blowdown.

Mitigation Measure Incorporated into Project for Subsidence from Use of Groundwater: The following measures are incorporated into the project to monitor and mitigate for subsidence:

- Adequate subsidence network benchmarks will be placed around the plant site and tied to the County first order network and will be surveyed annually to detect the occurrence of subsidence. This data will be promptly submitted to the Imperial County Department of Public Works (ICPWD). The benchmarks would be installed to conform to County standards. Surveying would be performed to National Geodetic Survey (NGS) standards. The North Brawley 1 project has received approval for the program for the North Brawley Geothermal Overlay Zone which also covers the East Brawley project area.
- Mitigation measures such as increased injection rates, deeper injection wells and/or curtailed production operations are initiated subject to Division approval if a recognizable subsidence bowl forms in the project vicinity, or if unusual aquifer or injection interval pressure changes are observed.

4.5.5 Potential Impacts from Water Usage

Impacts to Water Supply/Utilities/Water Service Systems: Development Design Engineering (DDE) of El Centro prepared a SB610 Water Supply Assessment (WSA) of the proposed project (DDE, 2009). This study was intended for use by the County of Imperial in its evaluation of water supplies for existing and future land uses. The evaluation examined water availability, expected demands of the project, and reasonably foreseeable planned future water demands to be served by IID. DDE, worked extensively over 9 months in close consultation with IID to gather and confirm the accuracy of the data and information presented in the WSA. IID water staff provided significant input to the document and deemed it acceptable before it was submitted to County Planning. A summary of the report is provided below.

The Water Supply Assessment has determined that IID's water supply is sufficient to meet project needs. Water supplies for the Imperial Unit are anticipated to satisfy projected water demands for 20-years given IID's existing agricultural, municipal and industrial uses, water conservation and transfer requirements, rules and regulations, and operational policies. Particular operational policies are the draft Interim Water Supply Policy (IWSP), and the in-process Integrated Water Resources Management Plan (IWRMP).

The WSA stated that water supplies for the Imperial Unit are sufficient to satisfy water demands of IID's current agricultural, municipal and industrial uses, water conservation, and transfer requirements for the term of the QSA. Given IID's rules and regulations, operational policies,

water supply for new uses in the Imperial Unit are anticipated to satisfy water demands for the 20-year projection of this WSA. In particular, the draft IWSP and the in process IWRMP provide that 25,000 acre-feet will be made available in the near-term and an expected 50,000 acre-feet in the long-term for new municipal, commercial and industrial uses.

The area that would be taken out of agricultural production as a result of the EBGDP is estimated to use 991 acre-feet per year as farmland which uses a consumption rate of 5.25 acre-feet per acre annually. Based on the history of water delivered to the same area by IID from 1998 to 2007, on average the project site has received 912 acre-feet per year. A change in land use from agricultural to industrial for the area that would be taken out of agricultural production as a result of the EBGDP results in an annual consumption of 5,500 acre-feet per year. This is an increase of 455.00 +/- and 503.07 +/- percent when compared to the annual water usage for the area that would be taken out of agricultural production as a result of the EBGDP based on a consumption rate of 5.25 acre-feet per acre per year, and the average of IID's 10-year annual delivery history for the same area respectively.

In addition to the WSA, it is important to point out that the IID has approved and allocated the use of 25,000 acre-feet per year for non-agricultural/industrial uses through its "Interim Water Supply Policy for Non-Agricultural Projects" (dated 9-29-09). The approved 25,000 afy for potential non-agricultural projects within the IID's water service area far exceeds the combined water needs of all of the non-agricultural projects currently proposed. As such, sufficient water resources should be available for each of the projects. Additionally, as described above, Ormat has received a signed MOU with the City of Brawley to construct facilities designed to supply water to this geothermal project.

Impacts to Biological Resources: Prior to the County's preparation of the Initial Study for the East Brawley project, Development Design Engineering (DDE) of El Centro, prepared a study of the impacts of the project to the IID drains and the Salton Sea. DDE's analysis of the impacts to the IID drains and the Salton Sea ecosystem concluded that the impacts would be less than significant. This is supported by the information we present below and by the simple inference that because DDE's evaluation clearly concluded that the proposed project would have a negligible or less-than-significant impact to the water supply to the Salton Sea, it can be inferred or implied that the impacts to biological resources as a result of this insignificant reduction in water would also be insignificant.

Potential Impact to IID Drains & Salton Sea: Development, Design & Engineering (DDE) prepared an evaluation of the impacts of the proposed project to IID Drains & Salton Sea, dated December 3, 2009. As summarized in this report, the proposed water use for the facility is 5,500 acre-feet / year. This is the approximate amount of water needed to irrigate 1,048 +/- acres of agricultural land in Imperial Valley based on the assumption that an average acre of agricultural land uses 5.25 acre-feet per year, which is the 2009 apportionment for water users that have eligible farmable cropland. After analyzing the impacts of the project to IID drains and the Salton Sea, DDE determined that any potential impacts are negligible, or less than significant, for the following reasons:

- The agricultural equivalent of land that correlates with ORMAT'S proposed water use equates to approximately 0.23% of IID's irrigated acreage, an insignificant amount.
- Approximately 13% of the total irrigated acreage within the Imperial Unit is irrigated at least twice, which conveys additional water to IID drains and the Salton Sea. When compared to this additional drainage water, the proposed project's reduction to drainage water is insignificant.
- Assuming the total average irrigated acreage of the Imperial Unit uses 5.25 acre-feet per acre per year; ORMAT proposes to use approximately 0.2% of all water used for agriculture in the Imperial Unit, an insignificant amount.
- The proposed project's reduction in drainage water is approximately 0.12% of the total outflow of the Salton Sea through evaporation, an insignificant amount.
- The proposed project's loss of drainage water is approximately 0.2% of the amount of drainage water generated from Imperial Unit's total average irrigated area, an insignificant amount.

Cumulative Impacts from Use of Water: In response to the report described above, IID inquired about an assessment of cumulative impacts considering other industrial facilities whose water use (or potential water use) would reduce the inflow conveyed to IID drains and subsequently, the Salton Sea. Following is a cumulative impact analysis on inflow to IID Drains and the Salton Sea, prepared in concert between Ormat, DDE, and Barrett's Biological Services.

The geothermal projects for which water applications have been submitted to IID and/or where CUP applications have been submitted to Imperial County for new industrial projects total approximately 8700 ac-ft. These include:

- East Brawley at 5500 ac-ft,
- Approximately 800 ac-ft for CHAR's Hudson Ranch 1 project, and
- Approximately 2400 ac-ft for CalEnergy's Black Rock projects at 800 ac-ft each.

This total combined amount of water from these projects is approximately 1/3 of the 25,000 ac-ft allocated by IID for industrial use under the IWSP for non-agriculture projects. Using the same calculations as those previously done for East Brawley, 8700 ac-ft calculates to 2523 ac-ft less to the drains (8700 * 29% (% of water to tile/drains) which is less than 0.2% of the water evaporated from the Salton Sea. Thus, this cumulative loss of water to the drains and ultimately from proposed projects is also insignificant. Additionally, no one drain will be impacted more than another. As a side note, rather than an adverse cumulative impact, there is actually a positive cumulative impact from these projects, in that this water reduces the amount of salt going to the sea by 8,700 tons.

The approved 25,000 afy for potential non-agricultural projects within the IID's water service area far exceeds the combined water needs of all of the non-agricultural projects currently proposed. As such, sufficient water resources should be available for each of the projects.

Which Drains will be Impacted by Reduction of Water: In the same response to DDE's December 3 report, IID stated that "the project proponent did not address which drains will be impacted by the facility (there may be direct impacts to the drains discharging to the Salton Sea

and that may have pupfish present). Also the assessment lacked proper location of facility; making it difficult to evaluate any other wildlife species issues, such as Yuma Clapper Rail." Following is information to respond to this comment, again, prepared in concert between Ormat, DDE, and Barrett's Biological Services.

There are no drains near the proposed East Brawley power plant site that drain directly to the Salton Sea. Biological surveys completed in the area for the East Brawley project found no pup fish or Yuma Clapper Rail habitat. The project site is only 32.75 acres which will equal (32.75 x 5.25 = 172 ac-ft x 29%) 50 ac-ft of water less to the Livesley Drain which is adjacent to the property. The 5500 ac-ft needed for this project and the loss of 1595 ac-ft to the drains that results would not come from that specific area but generically from the entire IID system. Taking "away" 5500 acre-feet of water from agriculture, which is what is implied, would be spread across the IID's district, not in the project area. Thus, 5500 ac-ft x 29% = 1595 ac-ft less to drains across the county. If the same assumption is used for 8700 ac-ft, (8700 ac-ft/2,730,000), 0.32% less water goes to the drains from these proposed industrial projects. This is an insignificant cumulative loss which also would not affect vegetation and/or wildlife found in the drains and/or the Salton Sea.

Review of IID's draft Integrated Water Resources Management Plan (IWRMP aka IRP) and Interim Water Supply Policy (IWSP) for Non-Agricultural Projects. Ormat has reviewed the IWRMP, participated in IID meetings and submitted extensive comments. The document contains much incorrect data about existing geothermal projects in the valley in addition to cooling technologies that are not viable in this meteorological environmental. We have submitted similar comments to the California Energy Commission. The use of geothermal steam condensate for cooling water, which is source of water for flash plants, causes depletion of the geothermal resource, subsidence, and release of the noncondensible gases from the geothermal fluid and produces geothermal scales that may be hazardous. Whereas, the Ormat binary process which requires "raw" water eliminates these negative environmental impacts. This is viewed as that the Ormat binary process is a much cleaner and environmentally sound method over steam and flash type plants, and certainly an environmental improvement over coal and gas power plants.

Review and Compliance with the IID Water Conservation and Transfer Project Draft Habitat Conservation Plan (HCP): Ormat and its team of consultants reviewed these documents. As shown in the calculations above, the proposed amount of water is insignificant to biological resources and, thus, will not impact either individually or cumulatively the requirements of the IID Water Conservation and Transfer Project draft HCP. In addition, pending the City of Brawley's completion of upgrades to the treatment plant currently scheduled for 2012, tertiary treated water is planned to replace IID's pending water contract. Therefore, this is a temporary use of canal water from IID, about 2-5 years.

5.0 DESCRIPTION OF WELLFIELD, DRILLING, TESTING, PRODUCTION, INJECTION

5.1 Geothermal Wellfield (Revised)

The Brawley geothermal wellfield is laid out in a grid pattern over cultivated fields in the project area. The grid pattern is generally aligned along field roads located adjacent to existing irrigation channels or drains.

A description of the revised/updated well field was included in an amendment to the East Brawley CUP application submitted to the County in March 2009. This information is provided below. A copy of the latest wellfield map is provided in Figure 3.

The well field was revised in March 2009 to reflect addition land that has been leased and the results of the exploration well drilling to date. The total well count has also dropped from 60 to about 34. It will still be split about equal between production and injection wells. The New River pipeline crossing is also reflected on the revised map. The amount of pipeline in the well field will be reduced as a result of less wells and a consolidated well field. Several of the well pads on the south end of the field will be best accessed from Shank Road.

Ormat has obtained an easement from the Imperial Irrigation District (IID) for the transmission line routing along Ward Road to the west of the proposed plant location. They own parcel number 037-160-51-01, a 5.78 acre parcel between the railroad and the Veysey parcel.

Ormat was selected by the City of Brawley to negotiate exclusively for the water from their Waste Water Treatment Plant. Ormat proposes to build the upgrades needed to bring the facility to tertiary treatment and then give the facility to the City and pay for the water via an operations and maintenance agreement. The City will be the CEQA lead agency for this project. The treatment plant will generate enough water for the East Brawley power plant such that canal water from the IID will only need to be a backup once the facility is built. Ormat is requesting that the County and the City work together under a Memorandum of Understanding to prepare a single CEQA document that satisfies both the City and the County because the issues brought up in the EEC hearing would be the same – impacts to water and ecosystems of the IID drains and Salton Sea.

This realignment of the well field will have less impact than the project as originally proposed as it is smaller. Biological and cultural resource surveys will be performed to duplicate those already completed on the other areas of the project.

Access to the well pads and pipelines would be from Andre, Best, Baum (not a County road), Groshen, Kershaw, Rutherford, Ward, and Wills Roads. Additionally, farm roads and IID roads (with permission) may be used for access. Encroachment permits for ingress/egress and irrigation canal and drain crossings would be obtained from the Imperial County Public Works Department and IID as applicable. With the exception of two well sites (14-15 and 15-15), all of the proposed well sites are located east of the New River. Access to farmland would be

coordinated with the landowners to minimize impacts to the farming operations. The well pads and pipelines would be along the edges of the fields. New access roads would be constructed or improved only as needed to safely accommodate traffic required for well pad construction, well drilling, and well and road maintenance. Road widths to well pads would typically be no less than ten feet wide.

5.2 Well Drilling

Geothermal well drilling would be conducted from constructed well pads approximately 316 feet by 356 feet (about 2 acres). A well pad sump/containment basin (nominally 75 feet x 260 feet x 7 feet deep) would be constructed on each well pad to contain drilling mud and rock cuttings from the drilling operations (Figure 6). A Stormwater Pollution Prevention Plan (SWPPP) has been prepared for the geothermal well field and is amended for the construction of each new well pad to prevent stormwater discharges from the well pads during site construction.

Standard geothermal well drilling equipment and well drilling operations would be implemented for the project. The wells would be drilled using a large rotary drilling rig whose diesel engines are permitted under the California Air Resources Board (CARB) Portable Engine Registration Program (PERP). The wells would be drilled with water-based mud to circulate the drill cuttings to the surface. During drilling, the top of the drill rig derrick would be as much as 175 feet above the ground surface, and the rig floor could be 20 to 30 feet above the ground surface. The typical drill rig and associated support equipment (rig floor and stands; draw works; derrick; drill pipe; trailers; mud, fuel and water tanks; diesel generators; air compressors; etc.) would be brought to the prepared site on approximately 40 or more large tractor-trailer trucks. The placement of this equipment within each prepared site would depend on rig-specific requirements and site-specific conditions.

The well bore would be drilled using non-toxic, temperature stable gel-based drilling mud or gel and polymer drilling fluid to circulate the rock cuttings to the surface where they are removed from the drilling mud. The mud is then recirculated. Rock cuttings would be captured in the containment basin. Additives would be added to the drilling mud as needed to prevent corrosion, increase mud weight, and prevent mud loss. The inside diameter of the wells would be approximately 30 inches at the top and would telescope with depth. The typical design depth of both the production and injection wells is projected to be about 4,500 feet. Each geothermal well would be drilled and cased to the design depth or the depth selected by the project geologist. The final determination of well depth and well completion would be based on geological and reservoir information obtained as wells are drilled.

The California Division of Oil, Gas and Geothermal Resources (CDOGGR) regulates geothermal well drilling operations on private lands in California. CDOGGR approves the drilling program for each well including the blow out prevention equipment (BOPE) to ensure the drilling operations are safe, protect the community, and protect land and water resources. Drilling operations would take place for 24 hours per day, 7 days per week. Each geothermal well would take approximately 30 days to complete.

5.3 Well Testing

Wells would be tested while the drill rig is still over the well. The residual drilling mud and cuttings would be flowed from the well bore and discharged into the drilling sump. This cleanout flow test may be followed by one or more short-term flow tests, each lasting from several hours to a day and also conducted while the drill rig is over the well. These tests typically consist of producing the geothermal well into portable steel tanks brought onto the well site while monitoring geothermal fluid temperatures, pressures, flow rates, chemistry and other parameters. Steam from the geothermal fluid would be allowed to discharge to the atmosphere. Produced fluid from the short-term flow test would be pumped back into the well.

An injectivity test could also be conducted by injecting the produced geothermal fluid from the steel tanks back into the well and the geothermal reservoir. The drill rig would likely be moved from the well site following completion of these short-term test(s). Following the short-term test, all equipment would be removed and the well shut in. Temperature profiles of the wellbore would be measured during the shut in period.

After the rig has moved, a longer-term test could be conducted using a test facility consisting of approximately ten, 21,000-gallon steel tanks, injection pumps, coil tubing, nitrogen pumps, filtration units, flow meters, recorders, and sampling apparatus. This test could last for 30 days. Steam from the geothermal fluid would typically be allowed to discharge to the atmosphere. The remaining water would be injected back into either the well from which it was produced or into a second well via temporary pipeline routed along the well site access roads.

Following completion of the short-term geothermal well testing, all of the drilling and testing equipment would be removed from the site. The surface facilities remaining on the site would typically consist of several valves on top of the surface casing, which would be chained and locked and surrounded by an approximately 12-foot by 12-foot by 6-foot high fence to prevent unauthorized access and vandalism.

5.4 Production and Injection Wells

Geothermal resources required to supply the power plant would be supplied from the production wells surrounding the power plant location. Geothermal fluid injection wells would be required to inject the geothermal fluid produced for the project back into the geothermal reservoir. The production and injection wells would be drilled from selected well sites. More than one injection well may be placed on an injection well pad to reduce the use of farmland for the project.

As geothermal production and injection wells age they typically produce less and/or cooler geothermal fluid, or inject less fluid, and may need to be redrilled or worked over. Redrilling or reworking a well requires many of the same activities required to drill a new well. These activities would occur periodically over the life of the project. Any of the geothermal production wells which do not demonstrate sufficient commercial productivity may be converted to an injection well. Any of the wells could also be converted to a monitoring well, or could be abandoned in conformance with the requirements of the CDOGGR.

Dedicated cooling tower blowdown wells (2-4) would be drilled in the same way as an injection well. The only difference is the fluids they take for injection is the water from the cooling tower which is not geothermal brine. These wells would be located adjacent to the power plant.

5.5 Well Site Production and Injection Equipment

Each new production well would be equipped with a pump driven by an electric motor located on top of the well pump discharge head. A small, truck-mounted well maintenance rig would install these pumps in the wells. Other small trucks and vehicles would be involved in installing the pump, which is normally conducted only during daylight hours. An electric cable installed along the pipeline from the power plant would provide the electricity to power the well pump motor. Mineral oil is pumped down from the surface at the rate of one to three gallons per day to lubricate the downhole pump lineshaft bearings. This lineshaft bearing lubrication water or mineral oil would be discharged into the produced geothermal fluid and eventually injected into the geothermal fluid injection reservoir. The mineral oil is less than 2 ppm of the volume injected. Production wells would have corrosion and scale inhibitor located on the well pad with secondary containment.

Production wellhead dimensions are not expected to exceed a height of fifteen feet above the ground surface or four feet in diameter. An approximately 8-foot by 15-foot, 10-foot high motor control building may be located within approximately 50 feet of each production well. It would house and protect the auxiliary well systems, motor switchgear controls and sensors, and transmitters for temperature, pressure, and flow rate data. The wellhead, pump motor and motor control building would each be painted an earth tone color to blend with the area and minimize visibility. A gas separator would also be located on each well pad used for production wells. They are 6 feet in diameter, 20 feet long and stand 18 feet tall. Up to about twenty-five percent of the geothermal noncondensible gases separated at each of the well pads may be delivered through dedicated noncondensible gas pipelines to the geothermal noncondensible gas scrubbing system located at the power plant site as described previously.

Each well pad would also include a sand separator for removing sand from the geothermal fluid and a booster pump to increase geothermal fluid pressure. Neither wellhead pumps nor the auxiliary equipment or motor control buildings are required at the injection well sites. Instead, injection pumps located at the power plant site would pump the geothermal injection fluid through the injection pipeline system, providing sufficient pressure to inject the cooled geothermal fluid back into the geothermal reservoir. More than one injection well may be located on an injection wellpad. It is likely that some sort of sand separator and/or filtration system will be located at the injection well pads (in addition to production well pads).

5.6 Geothermal Pipeline Systems

Above ground pipelines will be constructed to deliver the produced hot geothermal fluid from the production wells to the power plant site (aka geothermal production fluid pipelines). Similarly, above ground pipelines will be constructed to return the cooled or spent geothermal fluid from the power plant site to injection wells for subsurface injection of the fluid back into the geothermal reservoir (aka geothermal injection fluid pipelines). The proposed interconnecting production and injection fluid pipeline routes are shown on Figure 3.

Each of the production wells would deliver geothermal fluid to the power plant through new pipelines routed in corridors adjacent to existing farm roads or parallel to, but outside of the rights-of-way of County roads. The total length of new pipeline would depend on which of the production wells were connected to the power plant. Ormat either has geothermal leases with the landowners where the pipelines would be located or would work with the landowners to obtain easements for the placement of the pipelines to minimize impact to farming operations and to stay outside of Imperial County rights-of-way, not only existing but for future expansion.

Similarly, the injection fluid pipelines to the injection wells would be routed in corridors adjacent to existing farm roads or parallel to, but outside of the rights-of-way of County roads. In some sections, the injection pipeline would also parallel the new production pipeline. Here the injection pipeline would either be placed adjacent to, or atop ("piggyback") the production pipeline. The total length of new injection pipeline would also depend on which of the injection wells were connected to the power plants.

The total length of new pipeline would depend on which of the wells were connected to the power plant. If all of the approximately 35 wells were connected, then approximately 9 miles of new production fluid pipeline would be constructed.

The production and injection pipelines would be constructed from steel pipe designed, constructed, tested and inspected pursuant to current industry standards for high temperature, high pressure piping. The diameter of the steel pipe would vary depending on the type and amount of geothermal fluid to be conveyed. Once covered with about two inches of insulation (one inch for injection pipelines) and a protective metal sheet (appropriately colored to blend with the area), the overall outside diameter of the finished pipe would range from 8 to 36 inches. The pipelines would be constructed near ground level (averaging about one foot off the ground) on pipeline supports installed approximately every 20 to 40 feet along the pipeline routes.

"Expansion loops" would be constructed about every 250 to 500 feet along the production pipeline route so that the pipeline could "flex" as it lengthens and shortens due to heating and cooling. These square bends in the pipeline are typically horizontal, approximately 40 feet in length by 40 feet in width. Some expansion loops are vertical, although these are typically smaller, 15 to 20 feet high. Electrical power and control cables for the production well pump motors and valves, and production and injection wellhead instrumentation would be installed in steel conduit constructed on the pipe supports, buried in a trench dug next to the pipelines or provided by an aboveground electrical distribution line. Injection pipelines have fewer expansion loops.

Some new access roads would be built for pipeline construction or maintenance. Pipeline construction would not require significant grading of the pipeline route. The pipeline would be constructed to cross beneath existing roads to allow continued access. Pipeline crossings of any unpaved roads (including Ward) would typically be constructed by the cut-and-fill method, which minimizes the time during which traffic on the road would be impacted. A trench would be cut through the road and a prefabricated U-shaped section of insulated, wrapped geothermal

fluid pipe, placed inside a larger diameter pipe or otherwise protected so that it is strong enough to support traffic on the road above, would be placed in the trench. The excavated dirt would then be backfilled and compacted around and above the pipeline or pipe sleeve, and the roadbed material would be repaired or replaced. Access would typically be restricted for only a few hours during actual construction. Appropriate traffic controls (including detour signs) would be in place during any construction within the roadbed or adjacent shoulders of each road to warn and control traffic.

For the crossing of Best Road, the pipeline and accompanying power and control cables would be installed by cut and fill technique or with microtunneling procedures. The latter technique does not disrupt traffic and neither technique would cause settlement of the roadbed. Microtunneling would be conducted by specialty contractors using specialized equipment. Oversize steel casing would be installed behind a boring machine that would be advanced under the road by "jacking." Pits would first be excavated and braced at each end of the casing run. The boring machine and casing sections would then be lowered into one pit. The boring machine (with casing behind it) would be "jacked" under the road using specially designed jacks. Casing sections would be welded together as they are moved forward to form a continuous casing under the road. Once the welded casing is in place under the entire road the boring machine would be removed through the other pit. Cement grout under pressure would be used to fill any voids between the casing and the dirt under the road.

The pipeline crossing of the New River would interconnect facilities on the east and west sides of the river. The crossing is discussed in further detail in Section 5.7 below.

Pipeline crossings of the Imperial Irrigation District (IID) canals or drains would be above ground or underground at their request. All River and IID canal and drain crossings would be engineered and constructed in conformance with the applicable IID encroachment permit requirements. Field drains and head ditches would be crossed by the pipelines as agreed to with the individual landowner/geothermal lessor.

Pipeline construction would be conducted concurrent with the construction of the power plant.

5.7 New River Pipeline Crossing

A description of this project was included in an amendment to the East Brawley CUP application submitted to the County in March 2009. This information is provided below. See the March 2009 submittal for draft figures and drawings; however, the plans have been revised/refined somewhat and the latest preliminary draft plans are available from Ormat.

This project involves the installation of piping over the New River north of the City of Brawley, east of Highway 111 and Andre Road and just south of the City of Brawley's Wastewater Treatment Plant (See attached figure). It will located on private land (APN 037-140-02-01) owned by Veysey, Victor V. & Janet D and under lease to ORNI 17, LLC in the southeast corner of Tract 118 (see map). Several pipes from geothermal pads on the east side of New River will be extended across the New River (WGS 84 33^{o}1'01.4"/115 ^{o}31'12.1"). The pipes will allow connection of geothermal wells located on both sides of the river. The pipe crossing at the river

will be approximately 18 feet wide and begins at the end of a private road on each side of the river.

The crossing will support the following equipment:

- 2 x 24 inch geothermal brine lines
- 2 x 12 inch noncondensible gas lines (mostly carbon dioxide)
- 1 x 16 inch pipe for canal water for cooling tower make up
- 1 x 12 inch pipe for cooling tower blow down water (possibly from North Brawley to East Brawley)
- A 36 inch cable tray for power and control cables
- A man walkway for maintenance and inspection

The crossing would be a truss structure spanning the river. The footings to support the structure and pipes will be approximately 15-20 foot square on each side of New River. A total of two footings will be placed approximately 10 feet east and west of the bank of New River. The footings are located in an area of sparse vegetation consisting of salt cedar (*Tamarix sp.)*. The area necessary for construction activities will be approximately 100 feet and will be located east and west of the bank of New River.

The pipes will be constructed of industrial standard designation of "extra heavy" wall thickness. An automatic injection pump shut-off and check-valve system will immediately stop fluid flow should a leak or break occur in any of the pipes. A system of pressure and flow sensing devices, capable of detecting any leak or spill, would be installed and maintained. Additionally, the pipelines would be inspected on a regular basis. The crossing and pipelines will be designed, engineered, manufactured and assembled to perform and comply with all the relevant county, state and federal regulations such as California Building Code, ASME and OSHA.

The pipe will be positioned through the use of cranes located east and west of the bank of New River. Other construction equipment will include a forklift, water truck, backhoe and loader. The area on each side of the river where the crossing will be anchored is flat and will require minimal grading. No grading permit is anticipated to be required based on the amount of dirt to be moved. The anchors will be away from the river bed. Erosion control measures will be implemented if the final design indicates that protection of the river is needed from potential erosion or run-off during construction. Construction time will be brief; approximately five to six weeks.

Locked gates will be located over the pipelines on each end of the crossing to prevent public access. There will be a walk way area to allow workers to inspect the pipelines, there is no vehicle access. The gates will signed "private property" and "no trespassing" in both English and Spanish.

Potential impacts to biological resources, cultural resources, and other issues were discussed in the March 2009 submittal with a conclusion of no significant impact from the New River Bridge Crossing.

6.0 TRANSMISSION AND INTERCONNECT

ORNI 19, LLC is negotiating a power purchase agreement (PPA) for sale of the energy generated by the project with Southern California Edison (SCE). If these negotiations falter, the project would not stop as ORNI 19 LLC could either contract with other utilities or energy companies or could use an option under the existing North Brawley Geothermal Project PPA with SCE which allows them to sell up to 100 MWs.

A substation would be located on the west side of the power plant site. A new transmission line would interconnect to the IID at the North Brawley 1 substation located near the intersection of Hovley and Andre Roads. The interconnection line would be a 2- to 5-mile long double circuit 13.8- and 92-kilovolt (kV) transmission line with 66-foot high poles. The transmission line pole and turning structure designs have not yet been completed, but the distance between the conductors and the ground wire near the top of poles will exceed 60 inches to prevent the potential electrocution birds that may perch on the poles. Both the new substation and the interconnection transmission line would be part of the East Brawley Project. The new line would span the New River, but no structures would be constructed within the River. Encroachment permits and easements would be obtained from the landowner or agencies as required for permitting and installation of the interconnection transmission line.

The proposed interconnection transmission line route and one alternative route are under consideration as shown in Figure 7. The proposed interconnection line would be routed to the west from the power plant substation, crossing the New River and would be aligned north of Andre Road to the interconnection point at the North Brawley 1 substation (west route). The alternative interconnection transmission line route would course northerly to an alignment on the south side of Baum/West Baughman Road turning west and crossing the New River to Hovley Road where it would turn to the south to the North Brawley 1 substation interconnection point (north route). The substation and interconnection transmission line construction would be conducted concurrent with the construction of the power plant.

The substation at North Brawley is the point of demarcation between Ormat and the IID. The substation is owned by ORNI 18, LLC. The transmission lines beyond the substation are owned and operated by IID to a point of interconnection with California Independent System Operator's (CAISO) controlled grid.

7.0 ABANDONMENT AND SITE RESTORATION

The projected life of the Project is a nominal 30 years. At the end of the useful life of the Project, equipment and facilities would be properly abandoned. The geothermal wells would be abandoned in conformance with the well abandonment requirements of the CDOGGR. Abandonment of a geothermal well involves plugging the well bore with clean drilling mud and cement sufficient to ensure that fluids would not move across into different aquifers. The wellhead (and any other equipment) would be removed, the casing cut off at least six feet below ground surface, and the well site reclaimed.

At the end of power plant operations, the project would prepare and implement a Site Abandonment Plan in conformance with Imperial County and CDOGGR requirements. The Plan would describe the proposed equipment dismantling and site restoration program in conformance with the wishes of the respective landowners/lessors and requirements in effect at the time of abandonment. Typically, above-ground equipment would be dismantled and removed from the site. Some below ground facilities may be abandoned in place. The surface of the site would then be restored to conform to approximate pre-project land uses.

8.0 ALTERNATIVES CONSIDERED BUT ELIMINATED

An alternative project location for the project was considered, but it was determined that the proposed project was specific to Ormat's geothermal leases in East Brawley. A geothermal project must be sited near the commercial geothermal resource it is utilizing because the geothermal resource cannot be transported long distances without losing its heat and viability as an exploitable energy source. Ormat acquired the proposed power plant location because of its location with respect to the geothermal resource and the availability for purchase. As such, an alternative project location was eliminated from further consideration.

9.0 ENVIRONMENTAL PROTECTION MEASURES

Measures intended to mitigate potential impacts from occurring as a result of the Project construction and operations were listed in the CUP application and applicant's provided Environmental Assessment.

10.0 LIST OF OTHER STUDIES PERFORMED FOR PROJECT

Barrett's Biological Surveys. 2008. *Ormat East Brawley Plant, Preconstruction Survey, Imperial County.* (May 2008). Prepared for Ormat Nevada, Inc.

Barrett's Biological Surveys. 2007. *Biological Technical Report, Ormat Geothermal Plant Site, North Brawley, California*. (May 15, 2007). Prepared for Ormat Nevada, Inc.

Darnell & Associates, 2009. *Traffic Study for East Brawley Geothermal Development Project*. December 1, 2009 (revised)

Development Design & Engineering. 2009. *East Brawley Geothermal Development Project, SB 610 – Water Supply Assessment – FINAL*. (August 11, 2009). Prepared for Ormat Nevada Inc.

Development, Design & Engineering, 2009. *Environmental Assessment of ORMAT's East Brawley Geothermal Development Project's Potential Impact to IID Drains & Salton Sea.* December 3, 2009

Environmental Management Associates, 2008. *Application for Authority to Construct ORNI 19, LLC – Ormat Nevada, Inc., East Brawley Geothermal Development Project.* October.

Tierra Environmental Services. 2008. *A Cultural Resources Survey of 189-Acres Proposed for Geothermal Development near Brawley, Riverside* [sic] *County, California*. (November 2008).

Tierra Environmental Services. 2009. Letter Report: *Additional Cultural Resources Survey for the East Brawley Geothermal Project.* (March 17, 2009).

FIGURES

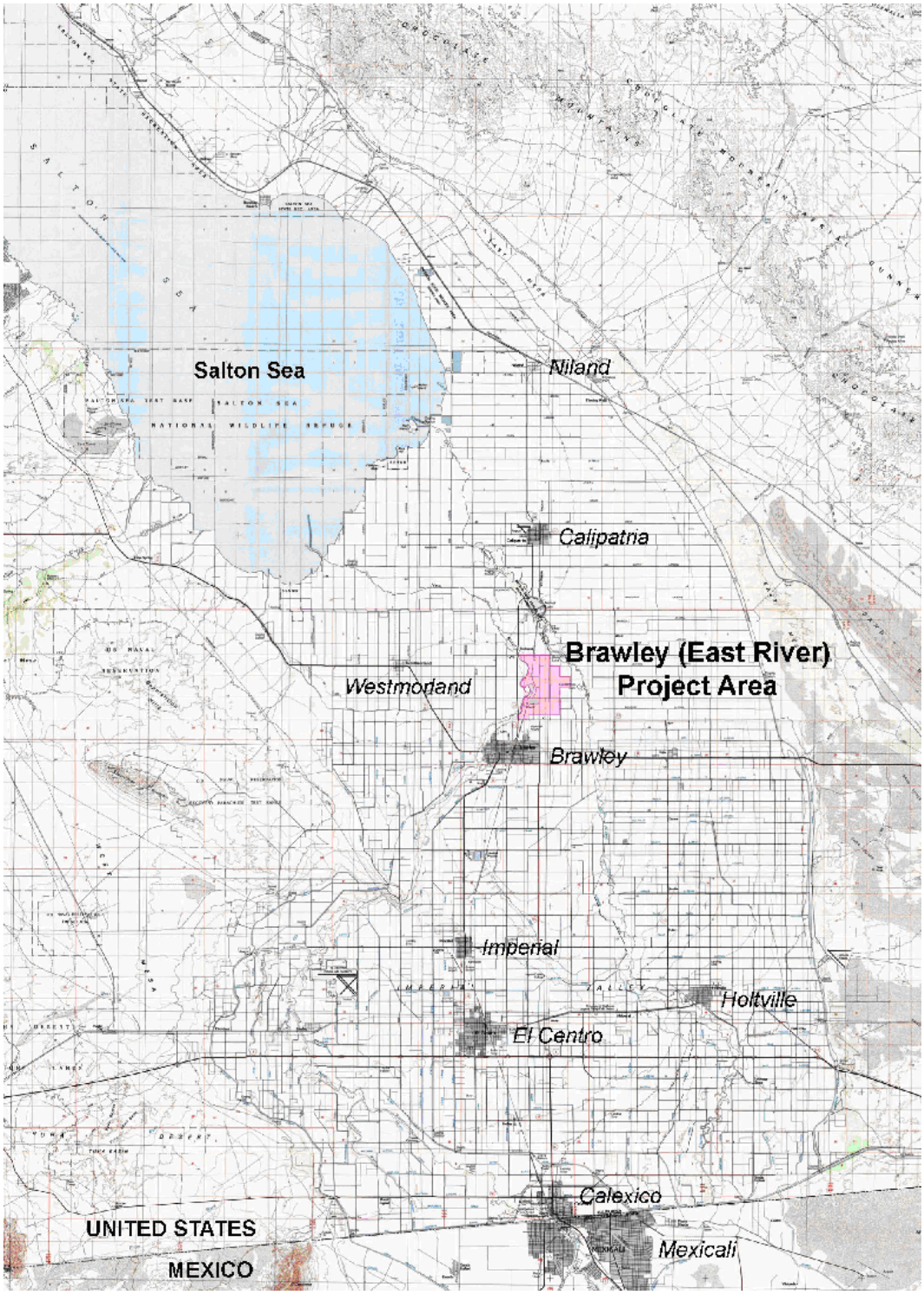


Figure 1: Location Map – Brawley East River Geothermal Development Project

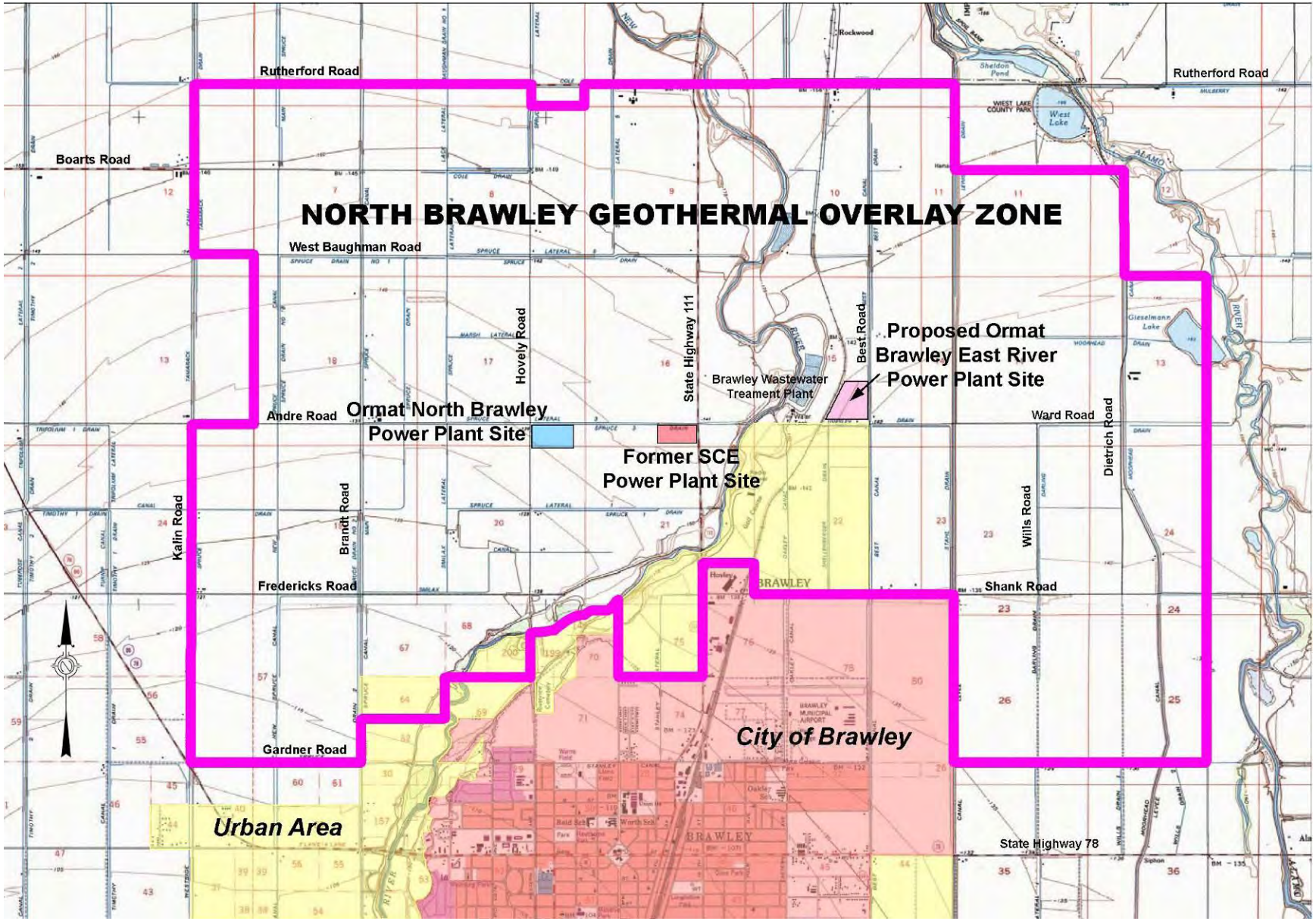


Figure 2: North Brawley Geothermal Overlay Zone Map Geothermal Wellfield – Brawley East River Development Project

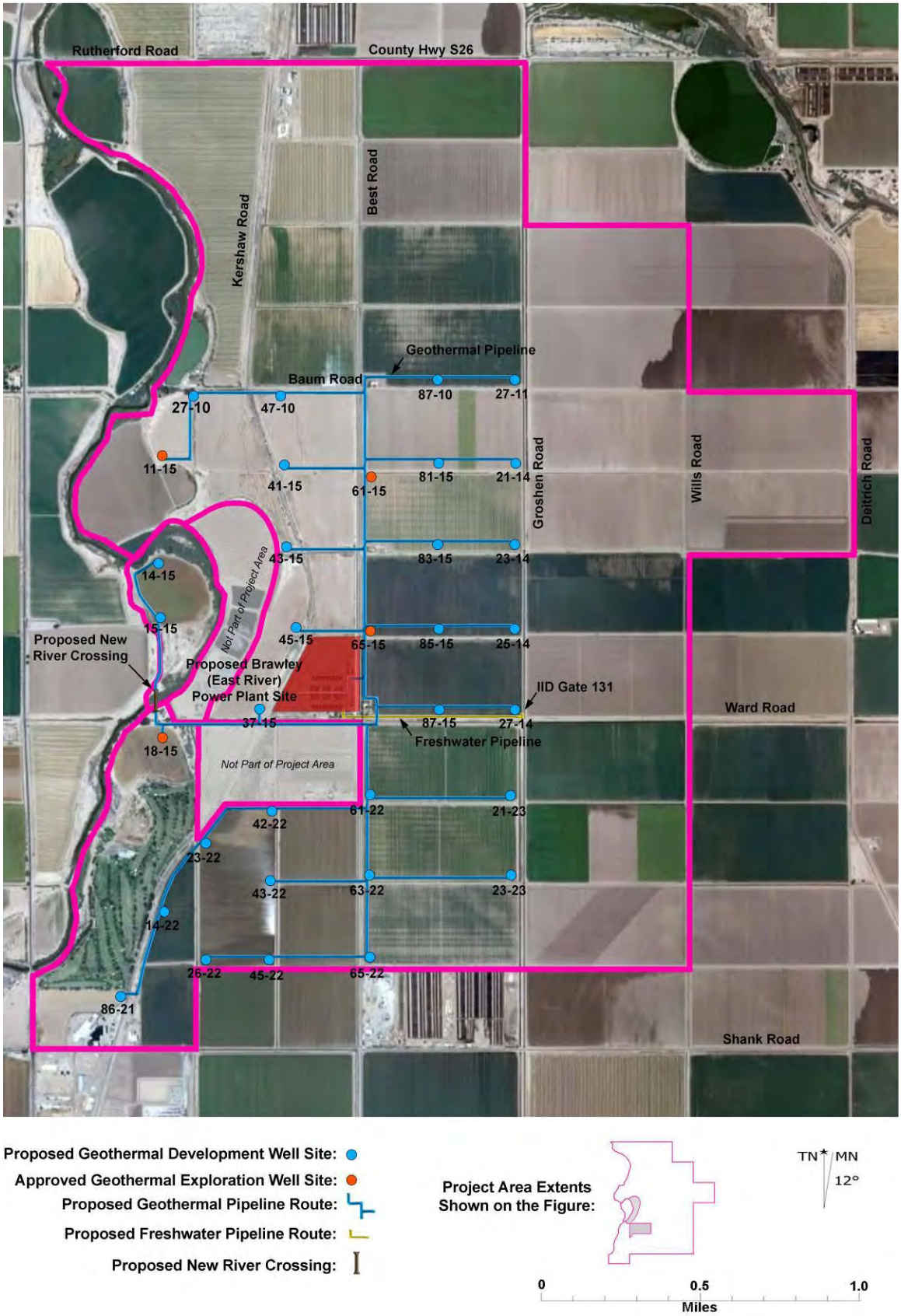


Figure 3: Geothermal Wellfield – East Brawley Development Project

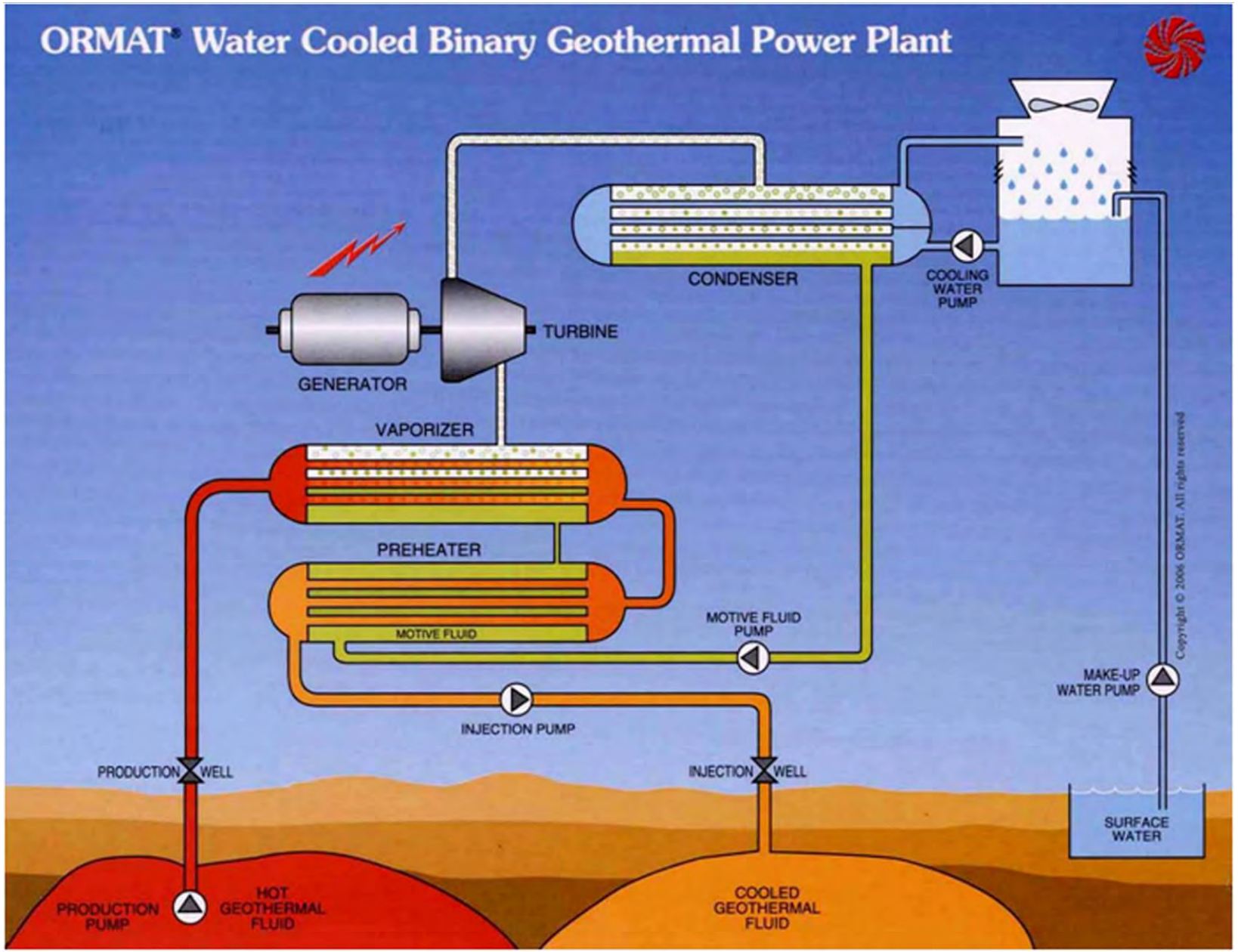
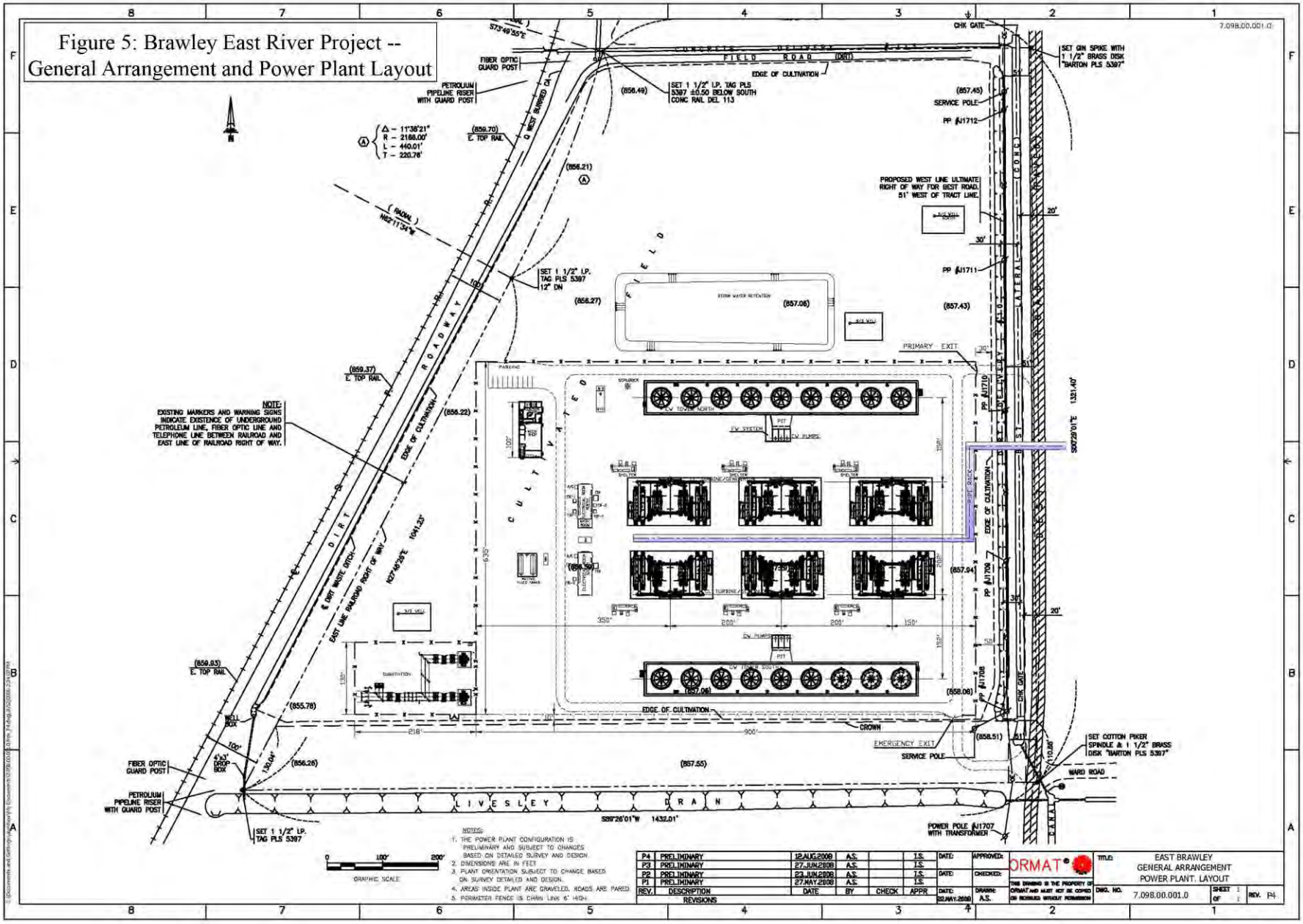


Figure 4: Schematic of Ormat Water Cooled Binary Geothermal Power Plant

Figure 5: Brawley East River Project -- General Arrangement and Power Plant Layout



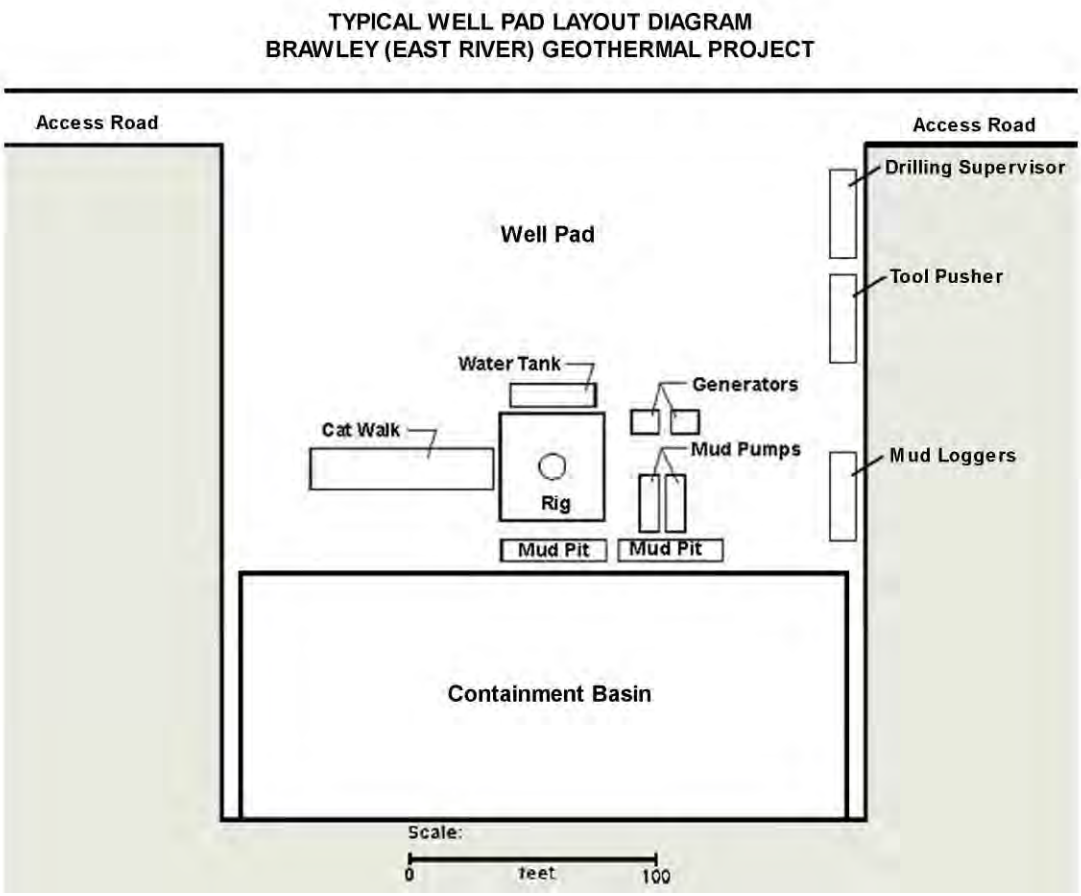


Figure 6: Typical Well Pad Layout Diagram

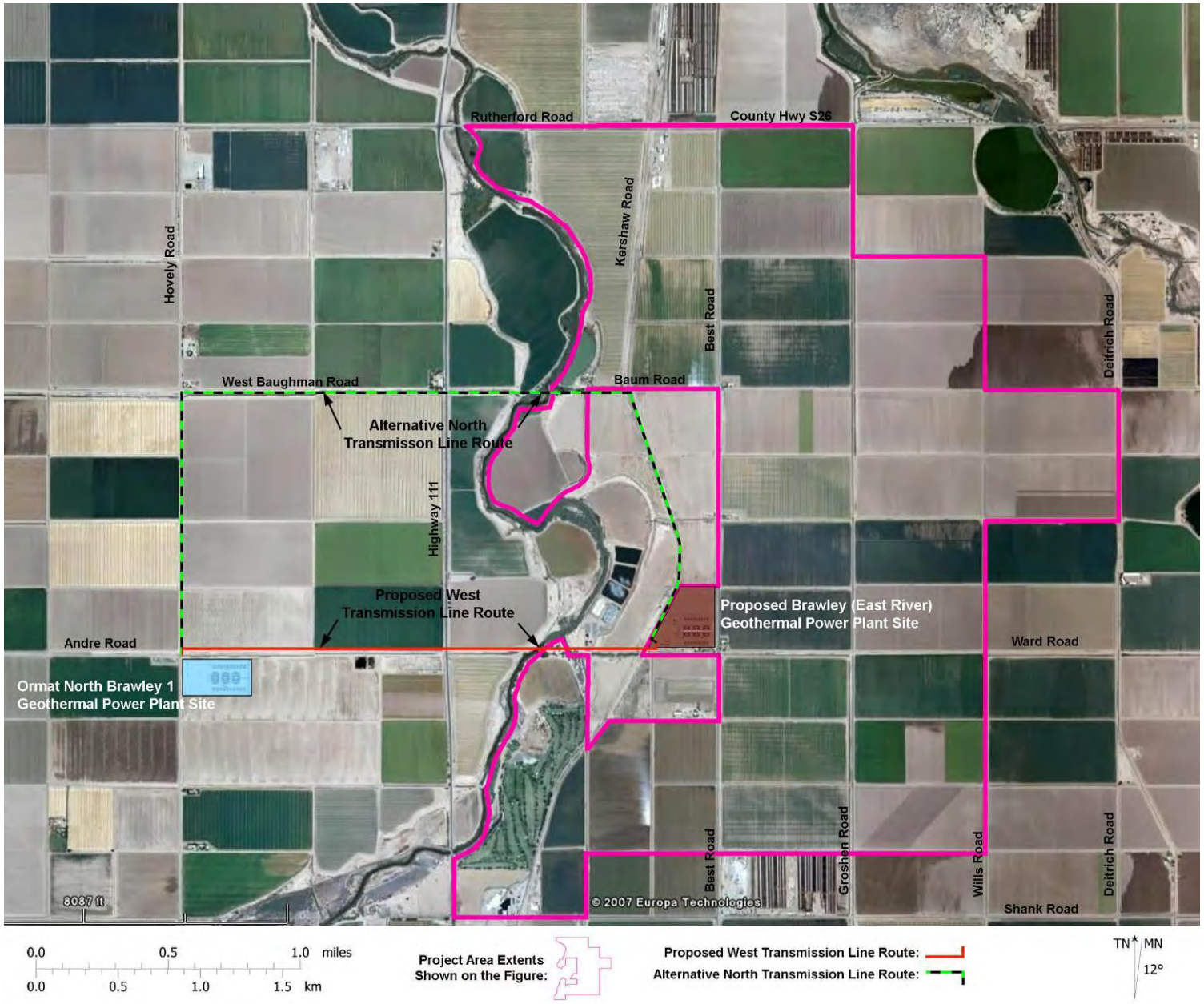


Figure 7: Proposed and Alternative Transmission Line Routes

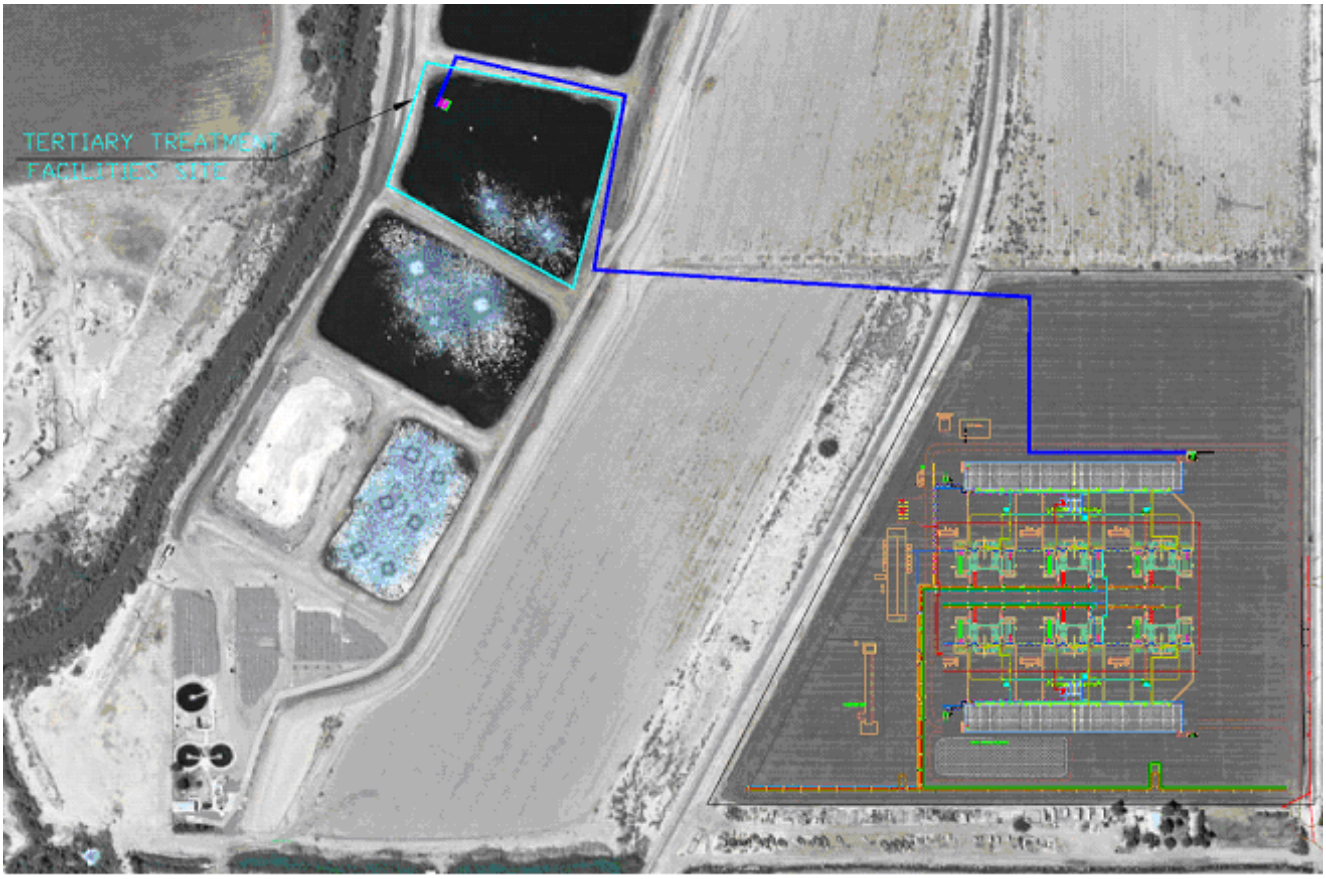


Figure 8: Proposed Tertiary Water Pipeline Route

APPENDIX C
11-CAI-2

NORTH BRAWLEY GEOTHERMAL DEVELOPMENT PROJECT
CONDITIONAL USE PERMIT
APPLICATION

ORMAT®

North Brawley
GEOTHERMAL DEVELOPMENT PROJECT

APPLICATION FOR A
CONDITIONAL USE PERMIT

June 2007

Submitted to:

County of Imperial
Planning & Development Services Department
801 Main Street
El Centro, CA 92243-2811

Submitted by:

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INTRODUCTION

ORNI 18, LLC, a wholly owned subsidiary of Ormat Nevada, Inc. (Ormat), proposes to build the North Brawley Geothermal Development Project in the vicinity of the North Brawley Geothermal Exploration Project covered by Conditional Use Permit #06-0021 and the Environmental Impact Report (EIR) for the Geothermal Overlay Zone (g-overlay zone). This project is just north of the town of Brawley in Imperial County, California (see Figure 1).

This Conditional Use Permit application is for the construction of a new 49.9 net MW binary power plant composed of six (6) Ormat Energy Converters (OEC), a transmission line interconnect, the geothermal well field beyond the six wells permitted by CUP #06-0021, pipelines to bring the geothermal fluids to the power plant and brine to wells for injection and a water conveyance system to bring water from the Imperial Irrigation District (IID) to the power plant for cooling.

BACKGROUND

The North Brawley Geothermal Development Project would be located on private agriculture lands just north of the City of Brawley in Sections 9, 16, 17, 20 and 21, Township 13 South, Range 14 East, San Bernardino Base and Meridian in the North Brawley Known Geothermal Resource Area. The project area is in the same general area of the former Southern California Edison 10 MW Brawley Unit 1 geothermal experimental power plant and the geothermal wells drilled by Unocal for the project (Figure 2). It is the g-overlay zone that was permitted by the Final EIR dated April 1979 that includes Ormat's proposed power plant project which will not utilize the previous power plant location or well sites. Additionally, the former power plant and wells have been plugged and abandoned.

The southern boundary of the project area is about 1 mile north of the City of Brawley. The city is currently updating their general plan which will not include residential development north of the new Highway 111 bypass (Figure 2). This includes the city's "sphere of influence." The bypass is scheduled to start construction in the late fall of 2007 by Caltrans and follow Shank and then Fredericks Road on the north of town. The first phase of construction will take the bypass as far as the New River. This is the only substantial change in the area since the EIR was completed in 1979. The project will use Hovley Road for primary access to the power plant site. Highway 111, and county roads N. Baughman and Andre Road will be used to access well locations. There are also farm and IID ditch roads that will be used to access some well locations.

The Ormat North Brawley Geothermal Development Project would consist of the following facilities:

(a) A 49.9 MW (net) geothermal power plant, consisting of six OEC binary generating units (OEC Units 1 through 6) with vaporizers, turbines, generators, condensers, preheaters, pumps and piping, motive fluid storage, a motive fluid vapor recovery system, two cooling towers with 8-10 cells each, substation, approximately a 250 foot transmission line interconnect and related ancillary equipment;
(b) A control room, office, maintenance shop and other facilities located at the power plant site;
(c) Twenty to 26 (6 may be production or injection) production wells averaging 3000 feet deep, including four of the six exploration wells, with associated pumps, piping, electrical and other related ancillary equipment;
(d) Fourteen to 20 (6 may be production or injection) injection wells, including two of the six exploration wells, averaging 3000 feet deep with associated pumps, piping, electrical and other related ancillary equipment;
(e) Piping from production wells to the power plant and from the power plant to the individual injection wells;
(f) Blowdown(s) wells at the power plant site for cooling tower Blowdown;
(g) Pumps, tanks, valves, controls, flow monitoring and other necessary appurtenances to the above wells and pipelines;
(h) Maintenance of the production and injection wells cited in (c), (d), (e), (f) and (g), above;
(i) Piping, canals or ditches and pumps to bring water from the Westside Main Canal to the power plant; and
(j) Transmission line to interconnect to the IID system.

PROJECT DESCRIPTION

Project Overview

ORNI 18 LLC/Ormat Nevada Inc. proposes to construct, operate and maintain the North Brawley Development Project (see Figure 3):

- Install six 12.5 MW (gross) Ormat Energy Converters (OEC), each consisting of vaporizers, turbines, a generator, condensers, preheaters, pumps and piping, to generate 49.9 net mw's of electricity;
- Install two (2) 8 to 10-cell film, counter flow, induced draft cooling towers , each one supporting 3 OEC units, and other ancillary components to support the OEC Units;
- Connect the new OEC Units to the geothermal fluid production and injection piping system, electrical equipment and ancillary systems, and electrical transmission system;

- Add as production wells four of the six geothermal exploration wells (OB-1, OB-2, OB-4 and OB-6) approved as the North Brawley Geothermal Exploration Project in CUP #06-0021 and connect these wells to the new geothermal brine pipeline system;
- Add as injection wells two of the six geothermal explorations wells (OB-3 and OB-5) and connect these wells to the new injection pipeline system;
- Build a water conveyance system to bring water from the IID Westside Main Canal to the power plant for cooling water.
- Build a transmission line to interconnect with IID's 92 kV transmission line that runs parallel to Hovley Road or their 161 kV line 3.5 miles east of the project parallel to Andre and then Ward Road.

Ormat plans to begin Project construction in the fall of 2007 and begin Project operation in the spring of 2008.

Project Location and Access

The proposed North Brawley Geothermal Power Plant Project would be located on private agriculture lands in the Southeast corner of Section 17, Township 13 South, Range 14 East, SB B&M, identified as Assessor's Parcel Number (APN) 037-130-40-01 and be approximately 1100 feet by 600 feet in size.

The North Brawley Geothermal Development Project wellfield areas (see **Error! Reference source not found.**) consist of private lands zoned Geothermal Overlay located in:

- Section 9, 16, 17, 20 and 21, Township 13 South, Range 14 East, SBB&M;

The geothermal production and injection wells proposed for this development project are listed, together with the assessor parcel numbers for the land on which they are located, in Table 1.

Primary highway access to the Project area is from Interstate 8 (about 16 miles south), north on California State Highway 111, west on California State Highway 78 and north on North Western which turns into Hovley Road just north of the City of Brawley (see Figure 2). Immediate access to the power plant site would be from Hovley Road. Improvements to Hovley Road would be provided at the plant entrance with a commercial driveway. Ingress and egress will be right turn only. Immediate access to the new production and injection well sites would be off of Hovley Road, N. Baughman Road, Andre Road and Hwy 111 (see Figure 3). Encroachment permits for ingress/egress and irrigation canal and drain crossings would be obtained from the California Department of Transportation, the Imperial County Public Works Department and Imperial Irrigation District, as applicable and required.

Existing access would be utilized to the extent practical. Any new access required for the Project would be constructed adjacent to the edges of the agricultural fields and parallel to irrigation canals and drains that traverse the Project area. New access roads would be

constructed or improved and maintained as needed to safely accommodate the traffic required for the Project activities. Road widths would typically be a minimum ten feet.

North Brawley Project Power Plant

The North Brawley power plant would be located within an approximately 1100-foot by 600-foot area (about 12.7 acres) just east of Hovley Road. Figure 4 shows the general arrangement of the power plant facilities (map view).

Figures 5 and 6 are basic block diagrams of the power plant, which shows how the three separate fluids (geothermal fluid, isopentane working fluid and cooling water) flow through each of the OEC Units. Figure 7 shows a perspective view of one of the six OEC Units. Each of the six OEC Units would be able to operate independently of other, but would share common ancillary components (additional isopentane storage, geothermal fluid supply and injection, the electrical substation, etc.).

The geothermal fluids from the production wells would flow through the level 1 and level 2 vaporizers and preheaters of each OEC Unit, transferring the heat to the isopentane working fluid through the OEC Unit shell-and-tube heat exchangers. The cooled geothermal fluid would then be sent to the geothermal fluid injection system without coming in contact with the atmosphere.

The vaporized isopentane working fluid from the level 1 and level 2 vaporizers would turn the level 1 and level 2 turbines, which together would turn a common generator, which would produce the electrical energy which would be delivered to the existing IID 92 kV or 161 kV electrical transmission systems through the new electrical substation (Figure 8 – the substation is shown in the SE instead of the SW corner). The vaporized isopentane would be condensed in a shell-and-tube condenser and returned to the preheaters and vaporizers to repeat the cycle.

The isopentane vapor condenser would be cooled by water circulated from the cooling tower. Water from the condensers is cooled in the cooling tower by evaporating the circulating water. Water for the cooling tower and the make-up water to replace the evaporated water would be obtained under contract from the Imperial Irrigation District (IID). Figure 9 shows the IID canals in the area of the project and the options for water conveyance to the power plant as described below. A small portion of the circulating water would be injected into the geothermal reservoir with the geothermal injection fluid or through a dedicated blowdown injection well(s) to remove dissolved salts which are concentrated through the evaporation process.

<u>Water Conveyance Options</u>

- Water would be gravity fed in an underground pipeline 30-36" in diameter

Or

- Water would be pumped in an underground pipeline 10-12" in diameter

Or

- Water would be conveyed in existing or new open canals or ditches

And

- Pipelines may be aboveground where brine pipelines are built.

Alternative 1

Westside Main Canal (WSM) to the Spruce Canal (SC) to Spruce Lateral 4 to a conveyance to the plant.

Alternative 2

WSM to the SC to the Smilax to the Smilax Lateral 1 to a conveyance to the plant.

Alternative 3

WSM to the SC to the Smilax to the Smilax Lateral 1 to the Spruce Lateral 1 to a conveyance adjacent to Hovley Road to the plant.

Alternative 4

WSM to the Tamarack to a conveyance along Andre Road to the plant.

Alternative 5

WSM to a conveyance along Tamarack and then Andre Road to the plant.

Alternative 6

WSM to the SC to the Smilax to the Smilax Lateral 1 to the Spruce Lateral 1 to an existing drainage ditch to the plant.

Construction of the power plant would require approximately eight to ten months, although it may take longer if the six OEC Units are constructed in sequence, rather than at the same time. Construction would require an estimated 50 to 60 workers. Construction is scheduled to commence in the fall of 2007. Production and injection well drilling and pipeline construction in the wellfield would be conducted concurrently.

Isopentane Motive Fluid System and Fire Suppression

The isopentane motive fluid system includes the isopentane side of the OEC Units, two (2) 8800 gallon isoisopentane storage tanks, and an OEC vapor recovery unit (VRU) on each OEC condenser. A vapor recovery unit would be used during major maintenance activities on any of the OEC Units.

Each OEC Unit contains approximately 23,000 gallons of isopentane (in the vaporizers, preheaters, condensers and piping). In each OEC, the motive fluid system is designed as a closed-loop, although there would be minor leaks from the valves, connections, seals, and tubes. Isopentane from these leaks would be released to the atmosphere or would leak into the geothermal or circulating cooling water lines. Operators will frequently inspect the OEC Units leaks and visual signs of fugitive emissions. Isopentane leak detectors are utilized throughout the facility and continuously monitored.

Any noncondensible gases in the air or water which may leak into the isopentane system would eventually collect in the OEC condenser and reduce the efficiency of the OEC Unit. In order to remove these noncondensible gases, each OEC condenser would have a small (~0.106 scf/hr) OEC VRU. Each OEC VRU would consist of two chambers and a set of isolation valves. Operation of each OEC VRU would be controlled by the power plant computer control system, which would start the OEC VRU noncondensible gas "purge" sequence whenever the efficiency of the OEC Unit fell below a set point. During "purging," nearly all of the isopentane vapors in the OEC VRU would be compressed into liquid isopentane and returned to the OEC Unit, while the noncondensible gases, together with some small quantity of isopentane vapors, are discharged to the atmosphere.

Some major maintenance activities require that at least a portion of an OEC Unit be cleared of isopentane motive fluid liquid and vapors prior to performing the maintenance activities. To control and minimize isopentane emissions during these maintenance activities, the liquid isopentane is drained from the section of the OEC Unit (preheater, vaporizer or condenser) to be maintained or repaired and transferred to another portion of the OEC Unit, the isopentane storage tank, or another OEC Unit. A vacuum pump would then be used to evacuate and compress most of the remaining isopentane vapors, returning the isopentane liquid to the OEC Unit. Those isopentane vapors which do not condense would be released through the isopentane vapor recovery unit, which would adsorb nearly all of the remaining isopentane vapors.

To reduce the risk of fire, isopentane vapor and flame detectors connected to the power plant computer control system are placed at strategic locations around the OEC Units to quickly alert the plant operators to any such hazardous situations. The fire suppression system would include an approximately 2800 gpm diesel fire water pump. Water nozzles/monitors would be placed at

the power plant site to be used to minimize the risk of a fire spreading should one start within the power plant. A Risk Management Plan will be prepared for this facility for isopentane.

Cooling Water System

Each of the two (2) 8 to 10-cell cooling towers would circulate an average of approximately 240,000 gallons per minute (gpm) of cooling water to its associated OEC Units. An average of approximately 4340 gpm of circulating cooling water would be evaporated from both cooling towers, and both would also blowdown (discharge) an average of approximately 1860 gpm. To maintain its water balance both cooling towers would require an average of approximately 6200 gpm of cooling tower makeup water. This water would be obtained from the IID. Sodium Hypochlorite (bleach) will be used for bacterial control in the towers as well as other chemicals for pH control and inhibition.

Cooling water blowdown from the cooling towers would be injected into the geothermal reservoir through either the geothermal fluid injection wells or a dedicated injection blowdown well(s).

North Brawley Wellfield

Geothermal resources required to power the power plant would be supplied from four of the six geothermal exploration wells approved under CUP #06-0021 and an additional 16 to 22 production wells, for a total of 20 to 26, surrounding the power plant location (see Figure 3). The average depth of the wells will be 3000 feet. The final determination will be based on geological and reservoir information obtained as wells are drilled. The California Department of Oil, Gas and Geothermal Resources (CDOGGR) authorizes the drilling of the wells under a Notice of Intent. Mr. Michael Woods, Petroleum Engineer for the CDOGGR El Centro office, reviews and approves the drilling program for each well including the blow out prevention equipment (BOPE) to insure the drilling operations are safe and will protect the community, land and water resources.

Two of the six exploration wells are planned for injection and an additional 12 to 18 new geothermal fluid injection wells would be required to inject the geothermal fluid produced for the Project back into the geothermal reservoir for a total of 14 to 20 injection wells (see Figure 3). They will also average 3000 feet in depth and go through the same review with the CDOGGR as the production wells.

Appendix A provides a description of the activities which may be required to drill the geothermal production, injection and blowdown wells for the Project. As geothermal production and injection wells age they typically produce less and/or cooler geothermal fluid, or inject less fluid, and may need to be redrilled or worked over. Redrilling or reworking a well requires many of the same activities required to drill a new well, as described in Appendix A.

Any of the geothermal production wells which did not demonstrate sufficient commercial productivity may be converted to an injection well. Any of the wells could also be converted to a monitoring well, or could be abandoned. Any such change in status would be conducted as described in Appendix A, and in conformance with the requirements of the CDOGGR.

Dedicated Blowdown wells are drilled the same as an injection well. The only difference is the fluids they take for injection is the water from the cooling tower which is not geothermal brine.

Well Site Production and Injection Equipment

Each new production well would be equipped with a pump driven by a vertical electric motor located on top of the well pump discharge head. A small, truck-mounted well maintenance rig would install these pumps in the wells. Other small trucks and vehicles would be involved in installing the pump, which is normally conducted only during daylight hours. An electric cable installed along the pipeline from the power plant would provide the electricity to power the well pump motor. Either water or mineral oil is pumped down from the surface at the rate of one to three gallons per day to lubricate the downhole pump lineshaft bearings. This lineshaft bearing lubrication water or mineral oil would be discharged into the produced geothermal fluid and eventually injected into the geothermal fluid injection reservoir. The mineral oil is less than .001%, less than 2 ppm, of the volume injected.

Production wellhead dimensions are not expected to exceed a height of fifteen feet above the ground surface or four feet in diameter. An approximately 8-foot by 15-foot, 10-foot high motor control building may be located within approximately 50 feet of each production well. It would house and protect the auxiliary well systems, motor switch gear controls and sensors, and transmitters for temperature, pressure, and flow rate data. The wellhead, pump motor and motor control building would each be painted an appropriate color to blend with the area and minimize visibility.

Neither wellhead pumps nor the auxiliary equipment or motor control buildings are required at the injection well sites. Instead, injection pumps located at the power plant site would pump the geothermal injection fluid through the injection pipeline system, providing sufficient pressure to inject the cooled geothermal fluid back into the geothermal reservoir.

Geothermal Pipeline Systems

Each of the production wells would deliver geothermal fluid to the power plant through new production pipelines routed in corridors adjacent to existing farm roads or parallel to, but outside of the rights-of-way of County roads or State Highways. The total length of new production pipeline would depend on which of the production wells were connected to the power plant. If all 20 to 26 wells were connected, then approximately 7 miles of new production pipeline would be constructed. The pipelines would be in the lands leased as shown

in Table 1. Ormat will work with the farmers to obtain easements for the placement of the pipelines to minimize impact to farming operations and to stay outside of county rights-of-way, not only existing but for future expansion, for example, the proposed expansion of Hovley Road to 4 lanes.

Similarly, the injection fluid pipelines to the 14 to 20 injection well sites would be routed in corridors adjacent to existing farm roads or parallel to, but outside of the rights-of-way of County roads or State Highways. In some sections the injection pipeline would also parallel the new production pipeline. Here the injection pipeline would either be placed adjacent to, or atop ("piggyback") the production pipeline. The total length of new injection pipeline would also depend on which of the injection wells were connected to the power plants. If all 14 to 20 wells were connected, then approximately 7 miles of new injection pipeline would be constructed.

The production and injection pipelines would be constructed from steel pipe designed, constructed, tested and inspected pursuant to current industry standards for high temperature, high pressure piping. The diameter of the steel pipe would vary depending on the type and amount of geothermal fluid to be conveyed. Once covered with about two inches of insulation and a protective metal sheath (appropriately colored to blend with the area), the overall outside diameter of the finished pipe would range from 10 to 30 inches. The pipelines would be constructed near ground level (averaging about one foot off the ground) on pipeline supports installed approximately every 20 to 40 feet along the pipeline routes.

"Expansion loops" would be constructed about every 250 to 500 feet along the production pipeline route so that the pipeline could "flex" as it lengthens and shortens due to heating and cooling. These square bends in the pipeline are typically horizontal, approximately 40 feet in length by 40 feet in width. Some expansion loops are vertical, although these are typically smaller, about 15 feet high. Electrical power and control cables for the production well pump motors and valves, and production and injection wellhead instrumentation would be installed in steel conduit constructed on the pipe supports or, in some circumstances, buried in a trench dug next to the pipelines. Injection pipelines have fewer expansion loops.

No new roads would be built for pipeline construction or maintenance, and pipeline construction would not require grading of the pipeline route. The pipeline would be constructed under existing roads to allow continued access. Pipeline crossings of any unpaved roads (including Andre) would typically be constructed by the cut-and-fill method, which minimizes the time during which traffic on the road would be impacted. A trench would be cut through the road and a prefabricated "U"-shaped section of insulated, wrapped geothermal fluid pipe, placed inside a larger diameter pipe or otherwise protected so that it is strong enough to support traffic on the road above, would be placed in the trench. The excavated dirt would then be backfilled and compacted around and above the pipeline or pipe sleeve, and the roadbed material would be repaired or replaced. Access would typically be restricted for only a few hours during actual construction. Appropriate traffic controls (including detour signs) would be

in place during any construction within the roadbed or adjacent shoulders of each road to warn and control traffic.

For the crossing of Highway 111 and other paved roads such as Hovley Road, the pipeline and accompanying power and control cables will be installed by cut and fill technique or with micro-tunneling procedures. The latter technique does not disrupt traffic and neither technique would not cause settlement of the road bed. Micro-tunneling would be conducted by specialty contractors using specialized equipment. Oversize steel casing would be installed behind a boring machine that would be advanced under the road by "jacking." Pits would first be excavated and braced at each end of the casing run. The boring machine and casing sections would then be lowered into one pit. The boring machine (with casing behind it) would be "jacked" under the road using specially designed jacks. Casing sections would be welded together as they are moved forward to form a continuous casing under the road. Once the welded casing is in place under the entire road the boring machine would be removed through the other pit. Cement grout under pressure would be used to fill any voids between the casing and the dirt under the road.

Pipeline crossings of the Imperial Irrigation District (IID) canals or drains would be above ground. All IID canal and drain crossings would be engineered and constructed in conformance with the applicable IID encroachment permit requirements. Field drains and head ditches would be crossed by the pipelines as agreed to with the individual landowner/geothermal lessor.

Pipeline construction would be conducted concurrently with construction of the power plant.

Abandonment

The projected life of the Project is a nominal 30 years. At the end of the useful life of the Project, equipment and facilities would be properly abandoned.

The geothermal wells would be abandoned in conformance with the well abandonment requirements of the CDOGGR. Abandonment of a geothermal well involves plugging the well bore with clean drilling mud and cement sufficient to ensure that fluids would not move across into different aquifers. The well head (and any other equipment) would be removed, the casing cut off at least six feet below ground surface, and the well site reclaimed.

At the end of power plant operations, the Project would prepare and implement a Site Abandonment Plan in conformance with Imperial County and CDOGGR requirements. The Plan would describe the proposed equipment dismantling and site restoration program in conformance with the wishes of the respective landowners/lessors and requirements in effect at the time of abandonment. Typically, above-ground equipment would be dismantled and removed from the site. Some below ground facilities may be abandoned in place. The surface of the site would then be restored to conform to approximate pre-Project land uses.

Environmental Protection Measures

All Ormat and contractor personnel would be informed of Ormat's policy regarding undue degradation of the environment. These measures are intended to prevent all unacceptable impacts from occurring as a result of the site construction and Project operations.

Fire Prevention: The construction sites and access roads would be cleared of all vegetation. The cleared areas would be maintained during well drilling and power plant operations. Fire extinguishers would be available on the active sites. Water that is used for power plant operations and drilling would also be available for fire fighting. Personnel would be allowed to smoke only in designated areas.

Flammable gas vapor and flame detectors would be placed at strategic locations around the OEC Units and connected to the power plant computer system to detect potentially hazardous situations. The power plant would have a fire suppression and fire water supply system. Water nozzles/monitors would be placed around the power plant site.

Surface and Ground Water Quality Protection: The Project would submit a revised Report of Waste Discharge to the California Regional Water Quality Control Board, Colorado River Basin Region (CRWQCB), for the new geothermal injection wells and sumps, and would comply with the CRWQCB permit conditions to protect water resources. This would revise Orders R7-2007-0012 to cover the additional production and injection wells. The power plant site will drain to a stormwater retention basin. After a rain event the water will either be pumped to injection or discharged after sampling within 3-days as required by Imperial County Public Health Department design criteria to prevent mosquito harborage and breeding.

Ormat will supply bottled drinking water for the employees that work at the project. The IID water that is coming to the plant for cooling will also be used for the control room building and labeled as non-potable. The project is not scheduled to have more than 25 employees during normal operations.

The Project would also submit encroachment permit applications to the Imperial Irrigation District (IID) for roads and activities that may occur in IID rights-of-way, and would comply with the IID permit conditions to protect irrigation canals and other water delivery facilities in the area. Required permits would be obtained from the IID for any construction or drilling water to be produced from IID canals.

Surface water and ground water pollution from geothermal well drilling and testing would be prevented by steel casing cemented to below these zones.

Only non-toxic, non-hazardous drilling mud would be utilized during drilling operations. Waste drilling mud and drill cuttings would be stored in above-ground storage tanks or lined

containment basins. Any runoff from the well sites would be discharged into containment basins. The well site containment basins would be constructed and maintained such that permeability would not exceed 1×10^{-6} cm/sec.

Wells would be cased and cemented to prevent interzonal migrations of fluids and reduce the possibility of blowouts. The Petroleum Engineer for the CDOGGR will review all drilling programs and approve the drilling of all production and injection wells as well as providing on-site inspections during drilling operations. No over-pressured or gas-rich zones are expected to be encountered.

Air Quality Protection: The Project would obtain an Authority to Construct to drill and test the new geothermal wells and an Authority to Construct and Permit to Operate for the new power plant and wellfield from the Imperial County Air Pollution Control District (ICAPCD). The Project would comply with any requirements of these permits concerning emissions of air pollutants from construction and operation of the power plant and well-drilling equipment including ICAPCD Rule 207 for control of hydrogen sulfide emissions.

The Project would also comply with the ICAPCD's requirements to control dust by implementing the requirements of ICAPCD Regulation VIII, Fugitive Dust Control. Fugitive dust generation during construction and use of non-surfaced access roads and well sites would be minimized by watering and restricting vehicle speeds, as necessary.

Prevention of Noise: The Project would comply with County-specified noise control measures, including:

1. Using hospital mufflers on diesel equipment used for drilling within 1,320 feet of any occupied residence, and using noise mufflers or silencers during well venting and testing at these wells;
2. Heavy truck traffic, well site preparation, and pipe stacking would be limited to the hours of 7:00 a.m. and 7:00 p.m. for any wells located within 1,320 feet of any occupied residence unless authorized by the County; and
3. Hydroblasters used in descaling operations when used within 1,000 feet of an occupied residence would be limited to the hours of 7:00 a.m. to 7:00 p.m. unless authorized by the County.
4. To further abate noise levels from drilling operations conducted within 0.25 miles (1,320 feet) of occupied residences, additional noise-reduction techniques, such as placing rubber mats on the V-door and placing hay bales around the drill rig engines, would be implemented. Ormat would also work with any residents living within 0.25 miles (1,320 feet) of any well to further reduce the noise impacts to them during the drilling operations.

Geotechnical and Geologic Hazards: Any necessary geotechnical investigations of soil characteristics affecting the power plant facilities would be conducted by a qualified geologist or engineer. The report of any geotechnical assessment would be made available to the County on request.

The facilities would be built in accordance with the County Building Code requirement applicable to "Seismic Zone 4." Building permits would be obtained for the Project from the County prior to commencement of power plant construction.

No human-occupied structures would be placed across the trace of an active fault, and no human-occupied structure would be placed within fifty feet of the trace of an active fault or within a seismic special studies zone without a geologic report, satisfactory to the State Geologist, demonstrating that no undue hazard would be created by the construction or placement of the structure. The closest surface expression of the Brawley fault is 4.4 miles southeast of the project at McConnell Road and the Lavender Canal.

The Project would participate in the County's subsidence detection program, with approval of the Imperial County Department of Public Works (ICPWD), to reflect any anticipated changes resulting from the Project. Subsidence monuments would connect with the County's geothermal subsidence detection network. The benchmarks would be installed to conform to County standards. Surveying would be performed to National Geodetic Survey (NGS) standards.

The Project would participate in the County's seismic monitoring program and would submit a plan to the ICPWD for approval.

Protection of Public Health and Safety: The Project would obtain required site access encroachment permits from the ICPWD and the IID, and would consider traffic safety in transporting equipment and materials to the Project site. Safety measures would include the use of temporary signs warning motorists on adjacent roadways when equipment is being brought to and from the Project site.

The Project would coordinate the movement of any required oversize loads on County roads with the ICDPW and/or on State highways with Caltrans and the El Centro California Highway Patrol office. Transportation of oversized equipment would be minimized as much as possible.

An Emergency Response Plan (ERP) would be developed for the project. The ERP would be maintained to cover possible emergencies (well blow-outs, major fluid spills, earthquakes, etc.). There would be at least one employee "on call" at all times (i.e., available to respond to an emergency by reaching the facility within a short period of time) with the responsibility of coordinating all emergency response measures. The "on call" emergency coordinator would be

familiar with the ERP and would have the authority to commit the resources needed to carry out the contingency plan.

Project personnel and equipment would be available to respond to emergencies, including providing first aid during Project construction and operation with first aid training for Project employees.

A Hazardous Materials Management Plan (HMMP) would be prepared and submitted to the California Department of Toxic Substances Control (CDTSC), as the Certified Unified Program Agency (CUPA) for Imperial County. The HMMP would be maintained and revised as necessary.

Protection of Fish, Wildlife, and Botanical Resources: Direct impacts to wildlife habitat and botanical resources would be minimized by clearing only the area required for Project facilities and access roads. Any fish habitat would be protected through the prevention of erosion.

Well cellars would be designed to prevent wildlife entry and entrapment. Pipelines would be constructed so as not to become a barrier to wildlife movement.

Burrowing owls (*Athene cunicularia hypugaea*) are known to occur in the vicinity of the Project area. To ensure that no significant impacts to this species would occur from Project operations, Ormat has retained Marie Barrett, a qualified biologist, who has conducted preliminary surveys of the potentially affected portions of the Project area prior to conducting any surface disturbing activities. The surveys have followed established protocols (*Burrowing Owl and Survey Protocol and Mitigation Guidelines* (1993)) approved by the California Department of Fish and Game (CDFG). If burrowing owls are present in the Project area, Ormat would adopt the established mitigation guidelines and protocol guidance for avoidance of impacts to the species. Ormat has mitigated for burrowing owls at several of the well pads in the North Brawley Exploration Project and provided training to the drilling rig crews and trucking contractors.

Protection of Cultural Resources: The Project would monitor areas of surface disturbance and if any unusual specimens of bone, stone, or ceramic are discovered during construction of the facilities, all construction affecting the discovery site would be suspended until a qualified archaeologist reviewed the specimens. The Project would comply with the recommendations of the archaeologist prior to resuming construction. However, the area was surveyed for the EIR and no resources were found at that time and are not anticipated to contain any due to the number of years of farming.

Prevention of Soil Erosion: No cut or fill slopes would be needed to construct any of the Project sites. Runoff would be channeled to energy dissipaters as necessary to minimize erosion. In addition, the Project would adopt relevant CRWQCB best management practices if

necessary to further prevent soil erosion. A Storm Water Pollution Prevention Plan would be prepared for the power plant site construction.

Prevention of Spills: Blowout prevention equipment (BOPE) would be used on all geothermal wells in accordance with the requirements of CDOGGR.

The power plant site would be designed and constructed to prevent spills from leaving the site and endangering adjacent properties and waterways, and to prevent runoff from any source being channeled or directed in an unnatural way so as to cause erosion, siltation, or other detriments. A system of pressure and flow sensing devices and regular inspection of all lines, capable of detecting leaks and spills, would be instituted and maintained.

Visual Resources: Power plant and drill rig lighting would be projected downward to mitigate nighttime visibility of the facilities. The cooling towers will produce a visible water vapor plume in the daylight depending on the relative humidity and ambient temperature, mostly in the early morning. The plume will be visible from Highway 111, nearby farm residents and the north end of the City of Brawley. Drift eliminators required by the ICAPCD help to reduce the plume. Dry or air cooling is not an option for this facility due to the high summer ambient temperatures.

Waste Disposal: During well drilling operations, a containment basin would be located on each well site. All used drilling mud and cuttings would be contained in these basins until drilling operations on each well site were complete. Alternatively, all used drilling mud and cuttings would be discharged into steel tanks.

After drilling operations were complete, the mud and associated drilling liquids would be allowed to evaporate. The solids would be tested for pH, oil and grease, and metals (TTLC and TCLP) or as required by the Waste Discharge Orders from the CRWQCB. If the solids were inert, and if authorized by the landowner and the CRWQCB, these materials would be spread and dried on the site, then buried in the on-site containment basin in conformance with the applicable requirements of the CRWQCB. If burial on site was not authorized by the landowner or the CRWQCB, the solids would be removed and disposed of in a waste disposal facility authorized to receive and dispose of these materials.

During power plant construction and drilling operations, portable chemical sanitary facilities would be used by all construction and drilling personnel. These facilities would be maintained by a local contractor.

During construction, drilling and power plant operations, the Project would ensure that any generated wastes, liquid or solid, would be disposed of in compliance with all appropriate local, state, and federal regulations. Any discharges into surface water would meet all requirements of the CRWQCB (e.g., National Pollution Discharge Elimination System permit restrictions) and

solid wastes would be disposed of in an approved solid waste disposal site in accordance with County requirements. Solid waste materials (trash) would be routinely collected and deposited at an authorized landfill by a disposal contractor.

The binary power plant process does not expose the geothermal brine to atmosphere unlike the flash system used at the Salton Sea. Thus, the binary process does not generate geothermal scale and solids seen in a flash power plant. Additionally the total dissolved solids in the North Brawley resource is less than 10% of that seen in the Salton Sea resources. The project is not expected to generate brine waste and/or impact landfill facilities in Imperial County.

Environmental Monitoring: Regular, routine visual inspections of the power plant and wellfield facilities and access roads would be conducted by the on-site operations personnel to quickly detect and correct any operational issues that could lead to environmental problems. An Environmental Specialist would monitor and inspect the operations, as necessary, and be responsible for implementation and enforcement of all mitigation measures placed on the project by the regulatory agencies who will issue permits for the construction and operation of the project.

Table 1: Proposed Project Land Ownership Information

	Assessor's Parcel Number	Zoning	Surface Land Owner	Well Site Access	Nearest Residence
OB-1	APN:037-140-02 (325.47 Acres)	A2G	Victor V. & Janet D. Veysey Trust 3651 Austin Road Brawley, CA 92227 (760) 344-9800	Along farm road south of N. Baughman Road and north of Andre Road access	~ 0.25 miles southwest
OB-2 OB-11 OB-15	APN: 037-140-02 (325.47 Acres)	A2G	Victor V. & Janet D. Veysey Trust 3651 Austin Road Brawley, CA 92227 (760) 344-9800	Along farm road south of Baughman Road east and north of Andre Road access east of the State Highway 111	~ 0.25 miles west-northwest
OB-3 OB-7 OB-8 OB-9 OB-10 OB-12 OB-13 OB-14	APN: 037-140-01 (325 Acres)	A2G	Victor V. & Janet D. Veysey Trust 3651 Austin Road Brawley, CA 92227 (760) 344-9800	Along IID ditch on the southside of Baughman Road west of the State Highway 111 access	~ 0.45 miles east-northeast
OB-4 OB-16 OB-23	APN: 037-160-47 (36.27 Acres)	A2G	Victor V. & Janet D. Veysey Trust 3651 Austin Road Brawley, CA 92227 (760) 344-9800	Along farm road east of Hovley Road access	~ 0.56 miles south
OB-5 OB-6 OB-17 OB-18 OB-19 OB-20 OB-24 OB-25 OB-26 OB-29 OB-30 OB-31	APN: 037-130-40 (240 Acres)	A2G	John Robert Benson and Barbara Meyer P.O. Box 239 Brawley, CA 92227 (760) 344-4591	Along farm road east of Hovley Road access	~ 0.52 miles west

OB-21 OB-22 OB-27 OB-28 OB-32 OB-33	APN: 037-130-41 (240 Acres)	A2G	Barbara Meyer P.O. Box 239 Brawley, CA 92227 (760) 344-4591	Along farm roads west of Hovley Road access	~ 0.25 miles South
OB-34	APN 037-130-50 (76.33 acres)	A2G	Jack Bros., Inc. P.O. Box 116 Brawley, CA 92227 (760) 427-3439	Along farm roads east of Hovley Road	~ 0.5 miles west
OB-35 OB-36 OB-38	APN 037-130-42 (80 acres)	A2G	John Robert Benson and Barbara Meyer P.O. Box 239 Brawley, CA 92227 (760) 344-4591	Along farm roads east of Hovley Road	300 feet southeast
OB-37	APN 037-130-21 (40 acres)	A2G	Daniel H and R.J. Lillywhite P.O. Box 1387 Brawley, CA 92227	Along farm roads west of Hovley Road	300 feet northwest
OB-39 OB-40	APN 037-160-29 (112.49 acres)	A2G	Brawley Development Group c/o Tierra Management 4563 E. 30th Place Yuma, AZ 85365 (928) 284-5300	Along farm road/IID road north of Fredericks Road east of Hovley Road	1.5 miles west

APPENDIX D
11-CAI-2

AGREEMENT FOR CONDITIONAL USE PERMIT
NORTH BRAWLEY GEOTHERMAL DEVELOPMENT PROJECT

Please return to:

Imperial County Planning & Development Services Department
801 Main Street
El Centro, CA 92243

AGREEMENT FOR
CONDITIONAL USE PERMIT #07-0017
ORMAT NEVADA, INC/ORNI 18, LLC

This Agreement is made and entered into on this 14th day of November 2007, by and between Ormat Nevada, Inc. and ORNI 18, LLC, hereinafter referred to as Permittee, and the COUNTY OF IMPERIAL, a political subdivision of the State of California, (hereinafter referred to as "COUNTY").

RECITALS

WHEREAS, Permittee is the owner, lessee or successor-in-interest in certain land in Imperial County located east of Hovley Road, west of State Highway 111, north of the City of Brawley, California, described as the southeast corner of Section 17, Assessor's Parcel Number 037-130-040-000, Township 13 South, Range 14 East, SBB&M; and,

WHEREAS, Permittee has applied to the County of Imperial for a Conditional Use Permit #07-0017 ("Project") for the above geothermal power plant project;

GENERALCONDITIONS:

The "GENERAL CONDITIONS" are shown by the letter "G". These conditions are conditions that are either routinely and commonly included in all Conditional Use Permits as "standardized conditions and/or are conditions that the Imperial County Planning Commission has established as a requirement on all CUP's for consistent application and enforcement. The Permittee is hereby advised that the General Conditions are as applicable as the Site Specific conditions.

G-1 GENERAL LAW:

The Permittee shall comply with all local, state and/or federal laws, rules, regulations, ordinances, and/or standards as they may pertain to the project, whether specified herein or not.

G-2 PERMITS/LICENSES:

The Permittee shall obtain any and all local, state and/or federal permits, licenses, and/or other approvals for the construction and/or operation of the Project. This shall include, but not be limited to, local requirements for Health, Building, Sanitation, ICAPCD, Public Works, Imperial County Sheriff, Fire/Office of Emergency Services, Regional Water Quality Control Board, California Division of Oil, Gas and Geothermal Resources (CDOGGR), among others. Permittee shall likewise comply with all such permit requirements and shall submit a copy of such additional permit and/or licenses to the Planning and Development Services Department within 30 days of receipt, as deemed necessary.

G-3 RECORDATION/COMMENCEMENT OF WORK:

This permit shall not be effective until it is recorded at the Imperial County Recorders Office and payment of the recordation fee shall be the responsibility of the Permittee. If the Permittee fails to pay the recordation fee within six (6) months from the date of approval, this permit shall be deemed null and void. The Planning and Development Services Department will submit the executed CUP to the Imperial County Recorder's office for recordation purposes. Permittee shall commence construction of the permitted activities or provide evidence of substantial progress within eighteen (18) months from the effective date of this permit, i.e. recordation date.

G-4 CONDITION PRIORITY:

The Project shall be constructed and operated as described in the Conditional Use Permit application, and as specified in these conditions.

G-5 INDEMNIFICATION:

As a condition of this permit, Permittee agrees to defend, indemnify, hold harmless, and release the County, its agents, officers, attorneys, and employees from any claim, action, or proceeding brought against any of them, the purpose of which is to attack, set aside, void, or annul the permit or adoption of the environmental document which accompanies it. This indemnification obligation shall include, but not be limited to, damages, costs, expenses, attorneys fees, or expert witness fees that may be asserted by any person or entity, including the Permittee, arising out of or in connection with the approval of this permit, whether there is concurrent, passive or active negligence on the part of the County, its agents, officers, attorneys, or employees. This indemnification shall include Permittee's actions involved in construction, operation or abandonment of the permitted activities.

G-6 INSURANCE:

The Permittee shall secure and maintain liability in tort and property damage, insurance at a minimum of $1,000,000 or proof of financial responsibility to protect persons or

property from injury or damage caused in any way by construction and/or operation of the permitted facilities.
The Permittee shall require that proper Workers' Compensation insurance cover all laborers working on such facilities, e.g. during construction and maintenance, as required by the State of California. The Permittee shall also secure liability insurance and such other insurance as may be required by the State and/or Federal Law.

Evidence of such insurance shall be provided to the County prior to commencement of any activities authorized by this permit, e.g. a Certificate of Insurance is to be provided to the Planning and Development Services Department by the insurance carrier and said insurance and certificate shall be kept current for the life of the permitted project. Certificate(s) of insurance shall be sent directly to the Planning and Development Services Department by the insurance carrier and shall name the Department as a recipient of both renewal and cancellation notices.

G-7 INSPECTION AND RIGHT OF ENTRY:

The County reserves the right to enter the premises to make appropriate inspection(s) and to determine if the condition(s) of this permit are complied with. The owner or operator shall allow authorized County representative(s) access upon the presentation of credentials and other documents as may be required by law to:

(a) Enter at reasonable times upon the owner's or operator's premises where the permitted facilities are is located, or where records must be kept under the conditions of the permit;

(b) Have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit;

(c) Inspect at reasonable times any facilities, equipment, or operations regulated or required under the permit.

G-8 SEVERABILITY:

Should any condition(s) of this permit be determined by a Court or other agency with proper jurisdiction to be invalid for any reason, such determination shall not invalidate the remaining provision(s) of this permit.

G-9 PROVISION TO RUN WITH THE LAND/PROJECT:

The provisions of this project are to run with the land/project and shall bind the current and future owner(s), successor(s)-in-interest, assignee(s) and/or transferee(s) of said project. Permittee shall not without prior notification to the Planning and Development Services Department assign, sell, transfer, or grant control of project or any right or privilege therein. The Permittee shall provide a minimum of sixty (60) days written notice prior to such proposed transfer becoming effective.

G-10 TIME LIMIT:

Unless otherwise specified within the specific conditions, this permit shall be limited to a maximum of thirty (30) years from the recordation of the CUP. The CUP may be extended for successive thirty (30) year period by the Planning Director upon a finding by the Planning and Development Services Department that the project is in compliance with all conditions of the CUP as stated herein and any applicable Land Use regulation of the County of Imperial. If an extension is necessary, the Permittee shall file a written extension request at least sixty (60) days prior to the expiration of the Permit. Such an extension request shall include the appropriate extension fee, pursuant to the Land Use Ordinance, Title 9, Division 9, Section 90901.03 et. seq., General Planning fees. If the original approval was granted by the Planning Commission and/or the Board of Supervisors, such an extension shall only be considered by the approving body, after a noticed public hearing. Nothing stated or implied within this permit shall constitute a guarantee that an extension will be granted. An extension may not be granted if the project is in violation of any one or all of the conditions or if there is a history of non-compliance with the permit conditions.

G-11 COST:

The Permittee shall pay any and all amounts determined by the County Planning and Development Services Department to defray any and all cost(s) for the review of geothermal studies/reports, field investigations, subsidence/seismicity monitoring, provisions for geothermal waste services, and other activities directly related to the enforcement/monitoring for compliance of this Conditional Use Permit, County Ordinance or any other applicable law as provided in the Land Use Ordinance, Section 90901.03 et. seq., General Planning fees. All County Departments, directly involved in the monitoring/enforcement of this project may bill Permittee under this provision, however said billing shall only be through and with the approval of the Planning and Development Services Department.

G-12 REPORTS/INFORMATION:

If requested by the Planning Director, Permittee shall provide any such documentation/report as necessary to ascertain compliance with the Conditional Use Permit. The format, content and supporting documentation shall be as required by the Planning Director.

G-13 DEFINITIONS:

In the event of a dispute the meaning(s) or the intent of any word(s), phrase(s) and/or conditions or sections herein shall be determined by the Imperial County Planning Commission. Their determination shall be final unless an appeal is made to the County Board of Supervisors within the required time, i.e. ten (10) calendar days, pursuant to the Land Use Ordinance, Title 9, Division 1, Chapter 4, Section 90104.05, *Appeal from Decision.*

G-14 MINOR AMENDMENTS:

The Planning Director may approve minor modifications to the permit to accommodate minor changes or modifications to the design, construction, and/or operation of the project provided said changes are necessary for the project to meet other laws, regulations, codes, or conditions of the CUP and provided further, that such changes will not result in any additional environmental impacts.

G-15 SPECIFICITY:

The issuance of this permit does not authorizes the Permittee to construct or operate the project in violation of any state, federal, local law nor beyond the specified boundaries of the project as shown the application/project description/permit, nor shall this permit allow any accessory or ancillary use not specified herein. This permit does not provide any prescriptive right or use to the Permittee for future addition and or modifications to the project.

G-16 NON-COMPLIANCE (ENFORCEMENT & TERMINATION):

Should the Permittee violate any condition herein, the County shall give notice of such violation. If Permittee does not act to correct the identified violation and, after having given reasonable notice and opportunity, e.g. typically at least thirty (30) days, the County may revoke the permit.

(a) If the Planning Commission finds and determines that the Permittee or successor-in-interest has not complied with the terms and conditions of the CUP, or cannot comply with the terms and conditions of the CUP, or the Planning Commission determines that the permitted activities constitute a public nuisance, the Planning Director shall provide Permittee with notice and a reasonable opportunity to comply with the enforcement or abatement order;

(b) If after receipt of the order, (1) Permittee fails to comply, and/or (2) Permittee cannot comply with the conditions set forth in the CUP, then the matter shall be referred to the Planning Commission for permit modification suspension, or termination, or to the appropriate prosecuting authority.

G-17 GENERAL WELFARE:

All construction of the project shall be conducted with consistency with all laws, conditions, adopted County policies, plans and the application so that the project will be in harmony with the area and not conflict with the public health, safety, comfort, convenience, and general welfare.

G-18 PERMITS OF OTHER AGENCIES INCORPORATED:

Permits granted by other governmental agencies in connection with the Project are incorporated herein by reference. The County reserves the right to apply conditions of

those permits, as the County deems appropriate; provided that enforcement of a permit granted by another agency shall require concurrence by that agency.

G-19 HEALTH HAZARD:

If the County Health Officer determines that a significant health hazard exists to the public, the Health Officer may require appropriate measures and the Permittee shall implement such measures to mitigate the health hazard. If the hazard to the public is determined to be imminent, such measures may be imposed immediately and may include temporary suspension of permitted activities, the measures imposed by the County Health Officer shall not prohibit the Permittee from requesting a special Planning Commission meeting, provided the Permittee bears all related costs.

G-20 APPROVALS AND CONDITIONS SUBSEQUENT TO GRANTING PERMIT:

Permittee acceptance of this permit shall be deemed to constitute agreement with the terms and conditions contained herein. Where a requirement is imposed in this permit that Permittee conduct a monitoring program, and where the County has reserved the right to impose or modify conditions with which the Permittee must comply based on data obtained therefrom, or where Permittee is required to prepare specific plans for County approval and disagreement arises, the Permittee, operator and/or agent, the Planning Director or other affected party, to be determined by the Planning Director, may request that a hearing be conducted before the Planning Commission whereby they may state the requirements which will implement the applicable conditions as intended herein. Upon receipt of a request, the Planning Commission shall conduct a hearing and make a written determination. The Planning Commission may request support and advice from a technical advisory committee. Failure to take any action shall constitute endorsement of staff's determination.

G-21 COMPLIANCE WITH COUNTY STANDARDS:

The planning, drilling, and production standards set forth in the County's Geothermal/Alternative Energy and Transmission Element shall be complied with, except as may be modified by more specific or restrictive conditions of this permit.

G-22 OPERATIONS:

All operations shall be conducted under the direction of a responsible agent. The name and telephone number of this individual shall be provided to the County Public Works Department and the Planning and Development Services Department. This agent shall ensure that appropriate personnel and equipment shall be available to respond to on-site emergencies.

SITE SPECIFIC CONDITIONS:

S-1 AUTHORIZED SCOPE OF ACTIVITIES:

The Permittee is authorized to construct and operate the following facilities in compliance with the County's General Plan, Geothermal/Alternative Energy and Transmission Element, Land Use Ordinance, and all other applicable local, state, and federal laws, ordinances, regulations and standards:

(a) The North Brawley Geothermal 49.9 MW net binary power plant consists of six (6) Ormat Energy Converters (OEC Units 1 through 6) with vaporizers, turbines, generators, condensers, preheaters, pumps and piping, motive fluid storage, a motive fluid vapor recovery system, two cooling towers with 8-10 cells each, substation, approximately a 250-foot transmission line interconnect and related ancillary equipment;

(b) A control room, maintenance shop and other facilities located at the power plant site;

(c) Twenty to 26 (6 may be production or injection) production wells averaging 3,000 feet deep, including four of the six exploration wells, with associated pumps, piping, electrical and other related ancillary equipment;

(d) Fourteen to 20 (6 may be production or injection) injection wells, including two of the six exploration wells, averaging 3,000 feet deep with associated pumps, piping, electrical and other related ancillary equipment;

(e) Piping from production wells to the power plant and from the power plant to individual injection wells;

(f) Blowdown(s) wells at the power plant side for cooler tower blowdown;

(g) Pumps, tanks, valves, controls, flow monitoring and other necessary appurtenances to the above wells and pipelines;

(h) Maintenance of the production and injection wells cited above;

(i) Piping, canals or ditches and pumps to bring water from the IID Canal to the power plant; and,

(j) Transmission line to the interconnection to the IID system.

Except as specifically authorized in this permit, expanding the geothermal power plant beyond 49.9 MW and/or supplemental activities requiring additional major equipment or facilities shall require separate permits.

The County, in issuing this permit, in no way assures or otherwise vests any right, with respect to the issuance of a permit(s) for supplemental activities and Permittee shall also comply with all applicable geothermal standards in the Land Use Ordinance.

S-2 AIR QUALITY AND DUST EMISSIONS:

The Permittee shall comply with the Imperial County Air Pollution Control District's (ICAPCD) air-monitoring criteria for PM-10 to control dust or other emissions, including Fugitive Dust Control conditions (Rule 800) under the new source review rule. All fugitive dust emissions shall be controlled by watering, clean gravel, or application of soil stabilizers or oil to the plant site. The Permittee shall obtain an Authority to Construct and the Permit to Operate prior to any construction and operation of the plant.

S-3 AESTHETICS:

Due to potential aesthetics impacts to adjacent sensitive receptors, the following mitigation measures shall apply:

Mitigation Measures:

(a) A landscaping plan shall be submitted to the Planning and Development Services Department for review and approval prior to the issuance of any building permits.

(b) All landscaping, in the form of trees, shrubs, and groundcover, must be planted at the main entrance to the power plant and around the offices and parking area of the power plant. Trees must be planted along the perimeter of the project site abutting Hovley Road and all landscaped areas must be permanently maintained in a neat and viable condition. With this mitigation measure, the proposed power plant would not substantially degrade the existing visual character or quality of the site and its surroundings.

(c) Project light sources during drilling and flow-testing be confined to the drill rig and other operational areas as necessary for safety and that the light from the drill site during drilling and flow testing be focused downwards to prevent glare onto adjoining properties and roadways.

(d) All exterior light fixtures shall be arranged and shrouded or down-shielded so as to keep light away from adjoining properties and roadways. With these mitigation measures, the project would not create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

S-4 AGRICULTURE:

Due to surrounding agricultural practices, the following mitigation measures apply:

Mitigation Measures:

(a) All pipelines shall be placed along existing road rights-of-way and/or IID canals/drains to the extent feasible in order to reduce the amount of agricultural land taken out of production or impacted by the project.

(b) The project's disturbed lands be returned to agricultural use (or use compatible with surrounding land uses) once the power plant and wells are abandoned, the pipelines removed, and the well pads reclaimed.

(c) The Permittee establish and maintain a weed abatement program at the plant site to keep the site free of weeds and their seeds, to avoid impacts to surrounding agricultural lands.

S-5 AIR QUALITY:

The Permittee shall comply with the Imperial County Air Pollution Control District's (ICAPCD) air-monitoring criteria for PM-10 to control dust or other emissions, including Fugitive Dust Control conditions (Rule 800) under the new source review rule. All fugitive dust emissions shall be controlled by watering, clean gravel, or application of soil stabilizers or oil to the plant site. The Permittee shall obtain an "Authority to Construct" and the "Permit to Operate" prior to any construction and operation of the power plant.

Also, the permits would require the Permittee to comply with all applicable federal, state and local requirements for controlling air pollutant emissions. Thus, the project would not be authorized to construct or operate if it were to violate any air quality standard or contribute substantially to an existing or projected air quality violation.

S-6 ARCHAEOLOGICAL, CULTURAL & PALEONTOLOGICAL RESOURCES:

If any unusual specimens of bone, stone, or ceramic are discovered during grading, well pad, pipeline construction of the permitted facilities, all construction affecting the discovery site, shall cease until a qualified Cultural Resource archaeologist retained by the Permittee and approved by the Quechan Tribe, Torres-Martinez Tribe, and/or the County, reviews the specimens. The recommendations of the approved Cultural Resource archaeologist shall be complied with prior to resuming such activities.

S-7 BIOLOGICAL RESOURCES:

The Permittee shall coordinate with the U.S. Fish and Wildlife Service (USF&WS) and the California Department of Fish and Game (CDF&G) for any preparation, implementation, and monitoring activities deemed necessary for the protection of nesting birds and the Burrowing Owl at the relocated site as follows:

Mitigation Measures:

(a) Permittee shall hire a qualified biologist to conduct a pre-construction survey (within three days prior to work in the area or 30 days for Burrowing Owl) to determine

the presence or absence of active nests within or adjacent to the project site to avoid the nesting of breeding migratory birds or Burrowing Owls.

(b) If not breeding or nesting activities are detected within 200 feet (Burrowing Owl: 160 feet (September through January) or 250 feet (February through August) of the proposed work area, construction activities may proceed.

(c) If breeding/nesting activity is confirmed, work activities within 200 feet of the active nest shall be delayed until the young birds have fledged and left the nest.

(d) All Burrowing Owls observed were off-site. They will be protected by a berm that has been established by dredging of the Spruce 3 Drain. There is a separation of approximately 187 feet which, with the berm, will mitigate any effect of construction on the plant site.

(e) Construction foremen should receive Burrowing Owl Worker's Training.

(f) No construction traffic to north of Spruce 3 Drain.

S-8 BRINE CHEMISTRY:

Permittee shall conduct brine chemistry tests which shall include, but not be limited to, analysis for hydrogen sulfide, mercury, arsenic, fluoride, boron, ammonia, strontium, iron, zinc, barium, lithium, lead, copper, chromium, and radon-222. The results of such tests shall be provided by the County upon request. To the extent information contained in test results are proprietary, such information shall not be released to the public.

S-9 CONSTRUCTION STANDARDS:

The plant and other permitted facilities shall be built in accordance with the County Building Code requirement applicable to "Seismic Zone 4". All structures and facilities shall be designed in accordance with the publication entitled "Recommended Lateral Force Requirements and Commentary by the Structural Engineers Association of California". The structural components of the plant and other permitted facilities shall be reviewed by the Building Official/Planning Director. Building permits shall be procured for the Project from the County prior to commencement of any construction of the project.

Flood protection improvements for the plant area shall meet Federal Emergency Management Agency design specifications and shall be submitted for approval to the Planning and Development Services Department and shall be constructed and maintained by Permittee as approved.

S-10 DRIFT:

Permittee shall implement a program to minimize cooling water drift. The cooling tower maximum drift rate shall be 0.0005%. Periodic monitoring shall be conducted to detect boron, biocides, or other toxic elements and take remedial steps to keep such elements below the permitted levels.

S-11 ELECTRICAL TRANSMISSION:

The power produced and sold will pass from the plant onto the Imperial Irrigation District (IID) 92kV line through a new electrical transmission line to be constructed, owned, and operated by the IID.

S-12 EMERGENCY RESPONSE PLAN:

(a) An Emergency Response Plan shall be prepared and maintained for the project covering possible emergencies, e.g. blow-outs, major fluid spills, impacts due to earthquakes, and other foreseeable accidents and emergencies. The plans shall be prepared in consultation with the County, CDOGGR, RWQCB, local emergency service agencies, public utilities, and other state agencies as appropriate and shall include information useful in combating the emergencies. The plan shall be available on-site, and provided to agencies responsible for preparing for and addressing emergencies, on request. At all times, there shall be at least one employee "on call", i.e., available to respond to an emergency by reaching the facility within a short period of time, with the responsibility of coordinating all emergency response measures.

The Emergency Coordinator shall be thoroughly familiar with all aspects of the Emergency Response Plan and have the authority to commit the resources needed to carry out the contingency plan. Adequate personnel and equipment shall be available to respond to emergencies and to insure compliance with the conditions of the permit, to include appropriate first aid provisions during project construction and operation with appropriate first aid training for project employees and implement all worker safety and fire protection programs and plans;

(b) A Hazardous Materials Business Plan shall be prepared and be submitted to the Certified Unified Program Agency (Imperial Hazardous Materials/Waste Unit, Calexico, California) and shall be maintained by the Permittee;

(c) The Permittee shall meet all NFPA requirements and also submit an Engineer-certified (California-licensed Engineer) fire suppression/protection plan to the Imperial County Fire/OES Department for review and approval;

(d) Permittee shall comply with all the applicable conditions of the letter from the County Fire/OES Department, or as may be modified by mutual agreement of the Permittee and Fire/OES, prior to the issuance of a building permit for the power plant.

S-13 FIRST AID:

Appropriate first aid provisions for project operations shall be made for emergency response during project construction and operation with appropriate first aid training for project employees. During construction, drilling, testing, clean-out and work over, a member of each working crew shall be trained in basic first aid and supplied with necessary medical equipment to respond to emergencies as provided for in the Emergency Response Plan required above.

S-14 GEOTECHNICAL:

Geotechnical investigations of soil characteristics affecting the project shall be conducted by qualified people at the Permittee's expense. The geotechnical report prepared shall be made available to the County on request.

S-15 GEOLOGIC HAZARDS:

No structure meant to be, or which actually is, regularly, habitually, or primarily, occupied by humans shall be placed across the trace of an active fault. Further, no such structure shall be placed within fifty (50) feet of the trace of an active fault, nor anywhere within a seismic special studies zone, unless a geologic report, satisfactory to the State Geologist, is prepared and shows that no undue hazard would be created by construction or placement of the structure.

Subsidence Mitigation Measures:

(a) Permittee shall participate in the County's subsidence detection program, and in connection therewith, submit a plan for Public Works Department approval, showing proposed locations of benchmark monuments. Monuments shall connect with the County's geothermal subsidence detection network. Benchmarks installed shall conform to County standards. Surveying shall be performed to National Geodetic Survey standards and all field surveying procedures shall conform with such standards.

(b) Permittee shall perform surveying on an annual basis as required by the Director of Public Works, except the Director may require such surveying at shorter intervals if he deems it necessary. All work shall be performed under the supervision of a person licensed to practice surveying in California.

(c) All field surveying data (such as forms and instrument checks), along with an adjustment of said data and analysis, all in conformity with the National Geodetic Survey standards, shall be submitted for review and approval to the Department of Public Works within two months of completion of field work.

(d) If the Department of Public Works determines good cause exists to require additional surveying and analysis or additional subsurface data, the County

reserves the right to require such work to be accomplished at the expense of the Permittee. The County further reserves the right, with Permittee's input, to designate the consultant or firm to accomplish the work. Proprietary information shall not be released to the public.

S-16 HAZARDS & HAZARDOUS MATERIALS:

A Risk Management Plan/CalARP Program Plan (RMP) shall be prepared for the project pursuant to these regulations will describe the methods of delivery, storage, transfer, use, and recovery of isopentane and additional safety measures to reduce the risk of damage from release of this flammable substance. The RMP will include the detailed specifications for the safe handling of isopentane and describe the training programs for employees, operators, emergency responders, and contractors on site. It also will summarize the incident investigations, compliance audits, management of change procedures, and pre-startup reviews for isopentane. The project will also have an Emergency Response Plan in place before start up that provides for notification of the public, evacuation of the site, and procedures to be undertaken in the event of an accidental fire or release of isopentane.

S-17 NOISE:

The power plant shall be equipped with noise control measures shall include, but are not limited to, the following:

(a) Between October 1 and March 1, all project activities within 1,000 feet of the New River shall conform to the Open Space curve of the Class II noise standards. No well drilling or well testing shall take place within this area from October 1 to March 1;

(b) Diesel equipment used for drilling within 1,000 feet of any residence shall have hospital-type mufflers. Well venting and testing at these wells shall be accompanied by the use of an effective muffling device or "silencer";

(c) Noise from the non-condensable gas vent stack shall be mitigated with a commercial blowoff silencer. The turbine/generator and the condenser/air ejector shall be enclosed or shielded to reduce noise. Any hydroblaster used in de-scaling operations shall be enclosed in a building or a complete noise-attenuating housing;

(d) Heavy truck traffic, well site preparation, and pipe stacking shall be limited to the hours of 7:00 a.m. and 7:00 p.m. for any wells within 1,000 feet of any residence. When a well drilling rig and other large equipment is being brought to or from the site, temporary signs warning tourists, and flagmen, as necessary, shall be used;

(e) Hydroblasters used in descaling operations when used within 1,000 feet of a residence shall be limited to the hours of 7:00 a.m. to 7:00 p.m.;

(f) The Permittee may propose and the Planning Director may approve a modification of the above measures.

S-18 PROJECT DESIGN:

The following shall be followed in project design:

(a) All expansion loops in fluid lines shall be horizontal except where requested in writing by the owners of the surface rights within five hundred (500) feet of a new or proposed expansion loop, or where the design constraints require otherwise;

(b) Marking and lighting of drill rigs and permanent facilities shall be maintained in accordance with Federal Aviation Administration regulations and Permittee shall use pile driver shield enclosures on all pile driving equipment to contain noise created by pile drivers during construction of the plant site and well pad areas;

(c) On-site parking shall be provided for all employees, customers, clients, and visitors. All facility roads and parking areas shall be constructed and surfaced to County standards;

(d) Shrubs, trees and ground cover shall be planted and maintained to compliment the appearance of the project, in accordance with a landscaping plan approved by the Planning Director;

(e) Permittee shall submit any requested architectural and landscaping plans for the facilities to the Planning Director and the Director shall not unreasonably withhold approval of any required plans;

(f) All lights shall be directed or shielded to confine any direct rays to the relocated plant site, and shall be muted to the maximum extent consistent with safety and operational necessity specified by local, state and federal Occupational Safety and Health Administration regulations;

(g) The location of new power pole lines adjacent to County roads shall be reviewed and approved by the Public Works Department and the Imperial Irrigation District prior to construction/installation of the power poles and be equipped with bird diverters as deemed necessary;

(h) The Planning Director may authorize, as requested in writing by Permittee, minor relocation of the plant site and its internal components, well sites, pipelines, and other minor adjustments to insure that the facilities comply with the conditions of this permit and those required by other governmental agencies.

S-19 PROTECTION OF WILDLIFE:

Measures approved by the Planning Director shall be employed to discourage or prevent wildlife and avian entry into project brine ponds at the plant site. Any well cellars shall be designed to prevent wildlife entry and entrapment. Any required pipelines for the project shall be constructed so as not to become a barrier to wildlife movement.

S-20 REPORTING:

The Permittee shall furnish to the County, within a reasonable time, any relevant reports/information which the County requires for monitoring purposes to determine whether cause exists for revoking this permit, or to determine compliance with this permit, i.e. relevant reports are those defined within this permit and/or requested by the County. The Permittee shall submit all required reports to the Planning Director, Planning and Development Services Department, 801 Main Street, El Centro, CA 92243.

S-21 INDUCED SEISMICITY:

Permittee shall participate in the County's seismic monitoring program, and in connection therewith, submit a plan for Public Works Department approval, and shall implement the plan as approved. If evidence of detrimental seismicity induced by project operations at the plant site is indicated, changes in operations, including possible cessation of operations, may be ordered by the Department of Public Works after consultation with the California Department of Oil, Gas and Geothermal Resources (CDOGGR) and Permittee.

S-22 SYSTEM SHUT DOWN AND SITE ABANDONMENT:

The Permittee shall prepare and implement a plan for when the operation of the plant site and other permitted facilities herein authorized has ceased, that all facilities shall be dismantled, and the land involved be made compatible with the surrounding uses, or as requested by the landowner and as agreed to by the County Planning Director.

A Bond, Letter of Credit, or other acceptable surety, or other forms of security acceptable to Imperial County, in the amount of $1,000,000, in addition to any amount set by the California Division of Oil, Gas and Geothermal Resources, shall be filed with the County that guarantees restoration of the land at the plant site to its condition prior to development. Upon completion of such site restoration, the Bond (or other surety) shall be released by the County.

S-23 REINJECTION:

The plant shall inject fluids equivalent to 100% of produced brine fluids by weight on an annual basis back into the reservoir subject to the requirements of CDOGGR. If the CDOGGR does not approve this injection rate and orders another, Permittee shall modify this injection rate.

If the County Director of Public Works, or the CDOGGR, detects detrimental subsidence, or detrimental seismicity, loss of reservoir pressure, or other detriments attributable to the project at the plant site, corrective measures may be ordered by the County. Corrective measures may include, but are not limited to, a change in production/injection rates,

deeper injection wells, re-leveling of affected areas, or reduction or total cessation of geothermal activities.

S-24 SPILLS AND RUNOFF:

The site shall be designed and constructed to prevent spills from endangering adjacent properties and waterways, and to prevent runoff from any source being channeled or directed in an unnatural way so as to cause erosion, siltation, or other detriments. A system of pressure and flow sensing devices and regular inspection and monitoring of all lines, capable of detecting leaks and spills, shall be instituted and maintained. Blowout prevention equipment shall be used in accordance with the requirements of CDOGGR. The site shall be graded and constructed so that all spills will drain into the brine pond with a plan for diverting birds, in the case of an emergency, shall be prepared in coordination with the U.S. Fish and Wildlife Service.

S-25 MAINTENANCE OF WATER QUALITY:

A water quality monitoring program, acceptable to the Regional Water Quality Control Board (RWQCB) shall be instituted and maintained for the site. If injection fluids intrude into shallow groundwater, a modification of the injection program may be ordered by the County in consultation with RWQCB, CDOGGR and the Permittee. Any additional sumps and holding ponds shall be constructed and maintained so that permeability does not exceed 1 X 10-6 cm/sec.

The Permittee shall furnish a Grading and Drainage Study Plan to provide for property grading and drainage control on the plant site, which shall also include prevention of sedimentation or damage to off-site properties. The Study Plan shall be submitted to the Department of Public Works for review and approval. The Permittee shall implement the approved Plans. Employment of appropriate Storm Water Best Management Practices (BMPs) shall be included.

S-26 PUBLIC SERVICES:

The Permittee shall install all fire suppression and fire control improvements of types, sizes, and at locations specified by the Imperial County Fire/OES Department. Plans for said improvements shall be reviewed and approved by the County Fire/OES Department prior to installation.

An alternative emergency access driveway, at lease 20-feet wide and surfaced for all-weather conditions, and as approved by the Fire/OES Department, shall be constructed.

S-27 TRAFFIC SAFETY:

The Permittee shall obtain all encroachment permits and consider traffic safety in transporting equipment and materials to the relocated plant site and other permitted facilities to include temporary signs warning motorists on adjacent roadways and flagmen shall be used when equipment is being brought to and from the Project site.

(a) The Permittee shall coordinate the movement of any required oversize loads on County roads with the DPW, on State Highways with CALTRANS as well as the El Centro CHP office and such transportation of oversized equipment should be minimized as much as possible;

(b) The Permittee shall be required to obtain any necessary rights-of-way on property under the lease and control of the Permittee and to provide any necessary road work on County roads, e.g. Hovley and/or Andre Roads, as deemed necessary by the DPW;

(c) The Permittee shall coordinate with DPW for their requested dedication of rights-of-way needed for adjacent County roads;

(d) The Permittee shall file for an encroachment permit for any work or proposed work in the affected County road rights-of-way at the plant site;

(e) The Permittee shall coordinate the maintenance of any unpaved County roads used for construction activities and obtain approvals from DPW;

(f) A transportation permit shall be required for heavy equipment and/or large vehicles which impose greater than legal loads on riding surface, including bridges.

S-28 TRAFFIC STUDY:

A traffic study for short-term construction and long term use of the project and relocated site with suggested mitigations for all nearby road intersections as well as road right-of-way was prepared, dated October 10, 2007, and subject to review and approval of DPW that included the following mitigation measures:

Mitigation Measures:

(a) Construction of the pipeline system to serve the project will require that the Permittee secure permits from the County of Imperial for the three (3) Hovley Road crossings. These crossings can be constructed using open cut and trench methods with proper traffic controls. The crossing of SR-111 at Andre Road shall require the approval of Caltrans and issuance of necessary encroachment permit.

(b) The County of Imperial will require the Permittee to dedicate 42 feet of right-of-way along Hovley Road. Improvements shall provide for a deceleration and acceleration lane for the project's access without impacting the high voltage power system and poles along the eastside of Hovley Road adjacent to the project site;

(c) The County of Imperial shall also require the Permittee to provide 30 feet of dedication along the project's northerly boundary for the future Andre Road;

The Permittee shall comply with the applicable requirements outlined within the letters from the County Department of Public Works, dated August 29, 2007, as may be modified by mutual agreement of the Permittee and the Public Works Department, prior to the issuance of a building permit for the plant.

S-29 WATER COURSE CROSSINGS:

The Permittee shall provide one or more of the following techniques to decrease the potential for spills on or near Imperial Irrigation District water courses, e.g. surface water canals and/or drains, at the plant site as follows:

(a) Design considerations for piping should include factors such as metallurgy, stress analysis, pipe wall thickness, limiting the use of mechanical connections and protective coatings appropriate for the specific design application;

(b) Control logic and instrumentation shall be utilized to shut valves and stop pumps;

(c) Design of facilities shall protect surface and groundwater, e.g. handling of on-site drainage shall not adversely affect adjacent properties;

(d) Other spill prevention measures, proposed by the Permittee and approved by the County shall be implemented.

S-30 WATER AND WASTE DISPOSAL:

The Permittee shall insure that any discharged wastes, liquid or solid, at the site shall be disposed of in compliance with all appropriate local, state, and federal regulations, in effect or subsequently duly-enacted, i.e. discharge of wastes into surface water shall meet all requirements of the Regional Water Quality Control Board (National Pollution Discharge Elimination System permit restrictions) and any solid wastes shall be disposed of in an approved solid waste disposal site in accordance with County, state and federal regulations in effect or subsequently duly-enacted. Nothing here is intended to keep substances from being extracted from wastes for useful purposes as later applied for and approved.

S-31 ODORS:

All harmful or noxious emissions and odors shall be controlled to insure that quantities of air contaminants released do not exceed State standards, or constitute a public nuisance.

S-32 PARTICIPATION IN GEOTHERMAL COMMITTEE:

Permittee shall participate in the "Geothermal Industrial Committee".

S-33 ACCEPTANCE:

Acceptance of this permit shall be deemed to constitute agreement by Permittee with all terms and conditions herein contained.

NOW THEREFORE, County hereby issues the Conditional Use Permit #07-0017 and Permittee hereby accepts such upon the terms and conditions herein.

IN WITNESS THEREOF, the parties hereto have executed this Agreement the day and year first written.

PERMITTEES

Ohad Zimron, Vice-President
Ormat Nevada, Inc.

11-19-07
Date

Connie Stechman
Connie Stechman
ORNI 18, LLC

November 19, 2007
Date

COUNTY OF IMPERIAL, a political subdivision of the STATE OF CALIFORNIA

Jurg Heuberger, AICP, CEP, CBO
Planning & Development Services
Department Director

Date

PERMITTEE NOTARIZATION

STATE OF Nevada

COUNTY OF Washoe } S.S.

On November 19, 2007 before me, Georgia FUGLSANG a Notary Public in and for said County and State, personally appeared Connie STECHMAN, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal

GEORGIA FUGLSANG
Notary Public - State of Nevada
Appointment Recorded in Washoe County
No: 98-3090-2 - Expires February 24, 2011

Signature Georgia Fuglsang

ATTENTION NOTARY: Although the information requested below is OPTIONAL, it could prevent fraudulent attachment of this certificate to unauthorized document.

Title or Type of Document AGREEMENT FOR CONDITIONAL USE PERMIT #07-0017
Number of Pages 19 Date of Document 11-19-2007
Signer(s) Other Than Named Above Charlene L Waddow

Dated November 20, 2007

PERMITTEE NOTARIZATION

STATE OF Nevada

COUNTY OF Washoe } S.S.

On November 19, 2007 before me, Georgia FUGLSANG a Notary Public in and for said County and State, personally appeared CHAD ZIMRON, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal

GEORGIA FUGLSANG
Notary Public - State of Nevada
Appointment Recorded in Washoe County
No: 98-3060-2 - Expires February 24, 2011

Signature Georgia Fuglsang

ATTENTION NOTARY: Although the information requested below is OPTIONAL, it could prevent fraudulent attachment of this certificate to unauthorized document.

Title or Type of Document AGREEMENT FOR CONDITIONAL USE PERMIT #07-0017
Number of Pages 19 Date of Document 11-19-2007
Signer(s) Other Than Named Above Charlene L Wardlow

Dated November 20, 2007

APPENDIX E
11-CAI-2

LETTER FROM IMPERIAL COUNTY REGARDING EAST BRAWLEY CONDITIONAL USE APPLICATION

IMPERIAL COUNTY
PLANNING & DEVELOPMENT SERVICES
PLANNING / BUILDING INSPECTION / ECONOMIC DEVELOPMENT / PLANNING COMMISSION / A.L.U.C.

JURG HEUBERGER AICP, CEP, CBO
PLANNING & DEVELOPMENT SERVICES DIRECTOR

October 30, 2008

RECEIVED
NOV 03 2008
ORMAT RENO OFFICE

Charlene L. Wardlow
Director Project Development
Ormat Nevada Inc.
6225 Neil Road
Reno, NV 89511

RE: Conditional Use Permit #08-0023 (East Brawley Facility)
APN: 037-140-006-000

Charlene,

The Imperial County Planning & Development Services Department met with the Imperial Irrigation District (IID) today and discussed Ormat's proposed Geothermal Power Plant commonly referred to as the East Brawley Facility. In our discussion with the IID it was made clear that although IID staff has had one in contact with Ormat, said contact was preliminary and that no water availability contract has been drafted, nor is there one proposed in the near future. As you are well aware, availability of water is critical to the proposed Ormat East Brawley Facility and that absent a water contract with the IID this project is not feasible. That said, unless you have an alternative source of water we cannot proceed.

This Department finds that in order to proceed with the proposed Conditional Use Permit #08-0023 the availability of water will need to be resolved. Therefore, without the water issue resolved, in accordance with the Guidelines for California Environmental Quality Act, (California Code of Regulations, Title 14, Chapter 3, Section 15109) an "unreasonable delay" by the applicant has occurred, in the Department (Lead Agency for CEQA in Imperial County) is unable to complete the CEQA process. Therefore the Department hereby puts Conditional Use Permit #08-0023 on hold until such time that an executed water availability contract between the IID and Ormat is submitted to the Imperial County Planning & Development Services Department.

Additionally, all of the studies including the SB 610 Water supply Assessment previously requested by Department will need to be submitted prior to reactivation of the permitting process.

If you have any questions please contact me at (760) 482-4236 extension 4310 or e-mail me at Jurgheuberger@co.imperial.ca.us.

Sincerely,

Jurg Heuberger, AICP
Planning & Development
Services Director

CC: Darrell Gardner, Assistant Planning Director
CUP #08-0023
Files: 10.101, 10.102, 10.105
MS:\JH-MS:\APN FILES\037\140\006\CUP08-0023 poject on hold lt 10 30 08 Finalized MS.doc

APPENDIX F
11-CAI-2

NOTICE OF AVAILABILITY OF A DRAFT ENVIRONMENTAL IMPACT REPORT FOR ORMAT, EAST BRAWLEY DEVELOPMENT PROJECT, ORNI. 19, LLC.

(MARCH 20, 2011)

NOTICE OF AVAILABILITY OF A DRAFT ENVIRONMENTAL IMPACT REPORT FOR ORMAT, EAST BRAWLEY DEVELOPMENT PROJECT, ORNI. 19, LLC.

NOTICE IS HEREBY GIVEN that the County of Imperial Planning and Development Services Department, as lead agency, is circulating for public review a Draft Environmental Impact Report (EIR) in accordance with the California Environmental Quality Act (CEQA) for the proposed ORMAT, East Brawley Geothermal Development Project, Orni 19, LLC.

Project Title: Draft Environmental Impact Report for ORMAT, East Brawley Geothermal Development Project, Orni 19, LLC. (SCH No. 2010061054).

Project Location: The southern boundary of the project is located north of the City of Brawley within their sphere of influence and north of Highway 111. The eastern boundary of the project is Dietrich Road and Rutherford Road is to the north. The site is comprised of parcel numbers 037-140-(006, 017, 011) -000.

Project Description: The project would construct a new 49.9 net megawatt binary power plant composed of six Ormat Energy Converters, an expanded geothermal well field beyond the six exploration wells, and pipelines to carry the geothermal brine to the power plant. Also to be constructed are pipelines to carry the cooled brine to injection wells, pipelines to distribute non-condensable gas from production wells to the power plant area and injection wells, an electrical transmission line to interconnect to the substation at the North Brawley 1 Geothermal Power Plant, and a water pipeline to bring water from the Imperial Irrigation District canal to the power plant for cooling water.

Anticipated Significant Effects: The EIR will analyze potential impacts associated with the following: Aesthetics; Agricultural Resources; Air Quality; Biological Resources; Cultural Resources; Cumulative Impacts; Geology/Soils; Greenhouse Gas Emissions/Climate Change; Growth-Inducing Impacts; Hazards/Hazardous Materials; Hydrology/Water Quality; Land Use/Planning; Noise; Public Services/Utilities; and, Transportation/Circulation.

Availability: The Draft EIR/EA can be reviewed at the following location: Imperial County Planning and Development Services Department, 801 Main Street, El Centro, CA 92243.

Comments: Written comments regarding the Draft EIR should be directed to Angelina Havens, Planner III, County of Imperial Planning and Development Services Department, 801 Main Street, El Centro, CA 92243 and must be received **no later than May 03, 2011** (public review period March 16, 2011, 2011 through May 03, 2011). A Final EIR incorporating public input will be prepared for consideration by the Imperial County Planning Commission and Board of Supervisors at a future public meeting. For environmental review information for this project, please contact Angelina Havens at (760) 482-4236, ext. 4984.

This notice was published in the Imperial Valley Press on March 20, 2011.

APPENDIX G
11-CAI-2

WATER SUPPLY AGREEMENT
BETWEEN
IMPERIAL IRRIGATION DISTRICT
AND
ORMAT

WATER SUPPLY AGREEMENT

The parties to this Water Supply Agreement ("Agreement"), entered into this 23rd day of October, 2008 ("Effective Date"), are IMPERIAL IRRIGATION DISTRICT, a California irrigation district (hereinafter referred to as "IID"), and ORNI 18, LLC, a wholly owned subsidiary of Ormat Nevada, Inc., a Delaware corporation (hereinafter referred to as "ORMAT").

1. INTRODUCTION:

1.1. ORMAT is currently undertaking development activities precedent to the construction and operation of a 49.9 MW geothermal power plant (hereinafter referred to as the "Project") located within the service area of the IID, Imperial County, California. The site of the proposed Project is approximately 24 acres ("Project Site") located within a 240-acre parcel defined as the Southeast corner of Section 17, T.13S.R.14E., of the S.B.B.M. and designated as Assessor's Parcel Number (APN) 037-130-40-01 of which a 216.1 acre (FSA) portion was served historically by Spruce Lateral 1 Gate 66.

1.2. The Project is more specifically described in, and will be constructed and operated by ORMAT in conformance with, Conditional Use Permit #07-0017 ("Conditional Use Permit") approved by the County of Imperial and recorded on November 27, 2007 as Document # 2007-044103 of the Official Records of Imperial County, California.

1.3. The County, as lead agency, assessed the environmental effects of the Project pursuant to the California Environmental Quality Act ("CEQA"), California Public Resources Code Sections 21000 et seq., and the CEQA Guidelines, 14 California Code of Regulations Sections 15000 et seq., and the County approved a Mitigated Negative Declaration ("MND") for the Project in November 2007.

1.4. The Board of Directors of the IID ("IID Board") is willing to make available up to 6,800 acre of water per calendar year for beneficial consumptive use by ORMAT in connection with the Project in accordance with the terms and conditions set forth in this Agreement.

1.5. This Agreement shall be contingent and effective upon: (i) approval by the IID Board of the Environmental Compliance Report and its findings prepared by IID dated September 22, 2008, (ii) approval by the IID Board of this Agreement, and (iii) execution of this Agreement by the parties.

2. DEFINITIONS:

For the purposes of this Agreement, except as otherwise expressly provided or unless the context otherwise requires, the following terms shall have the following meanings:

2.1. Aggregate Requirement – With respect to any given calendar year, a volume of water consisting of the aggregate of (i) the Historical Use Amount and (ii) the Replacement Water volume.

2.2. Effective Date – The date on which the conditions described in Section 1.5 have been satisfied.

2.3. Equitable Distribution Plan – The Equitable Distribution Plan approved by the IID Board and the Regulations relating thereto, or any additional or superseding regulations approved by the IID Board providing for a system of water allocation, as the same may be amended and in effect from time to time during the Term of this Agreement.

2.4. Excess Requirement – With respect to any given calendar year, the volume of water consumed by ORMAT for the Project for such year (i) greater than the Historical Use Amount but (ii) less than the Aggregate Requirement applicable to such year.

2.5. Historical Use Amount – A volume of water determined annually based on an average agricultural historical use rate of 5.7 acre-feet/acre per calendar year for the Project Site of up to 24 acres that is converted from agricultural to industrial use as a result of the project. The Historical Use Amount shall not exceed 137 acre-feet per calendar year and is subject to the terms of Section 8.1 including assignment of the right to receive water service from the landowner as described in Section 8.1.

2.6. Imported Water – A volume of water from a source other than IID's Colorado River entitlement brought into the IID conveyance system to satisfy all or a portion of the Project's Maximum Use Amount (as defined in Section 2.7) during the Term of this Agreement (as defined in Section 5). Any non-IID water introduced into the IID conveyance system shall be of comparable quality to that of existing Colorado River supplies, subject to IID approval, and require the execution of a separate delivery agreement with IID. IID's approval shall be subject to: (i) compliance with CEQA and all other governmental laws, ordinances, rules and regulations ("Laws") applicable to the provision of such Imported Water, and (ii) issuance of all governmental permits and approvals ("Permits") required therefore. ORMAT shall pay all costs of compliance with such Laws, issuance of such Permits, and satisfaction of all conditions and requirements attached thereto.

2.7. Maximum Use Amount – The maximum volume of water to be delivered by IID during any calendar year during the Term of this Agreement, which shall be used by ORMAT for the Project. The Maximum Use Amount shall be 6,800 acre-feet reduced by the amount of Replacement Water which ORMAT is required to provide for the applicable calendar year, as set forth on Exhibit A attached hereto and made a part hereof.

2.8. Overrun Year – A calendar year in which IID's diversions from the Colorado River trigger a payback requirement by the U.S. Department of Interior under its adopted Inadvertent Overrun and Payback Policy.

2.9. Replacement Water – A volume of water to be provided by ORMAT, at its sole cost, for use in connection with the Project at the Project Site, commencing with the eleventh (11^{th}) calendar year of the Term and continuing for the balance of the Term of this Agreement, as indicated on Exhibit A, which amount shall reduce the amount of water required to be supplied by IID for such years. This water shall be provided by ORMAT from Imported Water, or by a reduction in the Project's water demand, or by measures implemented or funded by ORMAT within the District which conserve Colorado River water, subject to IID approval and outside the conservation measures identified and anticipated for the existing IID water conservation and transfer obligations, in an amount equal to the required Replacement Amount. The provision of any Replacement Water created by measures implemented by Ormat within the District is subject to IID approval, may require the execution of a separate delivery agreement with IID, and is subject to: (i) compliance with CEQA and all other governmental laws, ordinances, rules and (ii) issuance of all governmental permits and approvals ("Permits") required therefore. ORMAT shall pay all costs of compliance with such Laws, issuance of such Permits, and satisfaction of all conditions and requirements attached thereto.

3. DELIVERY:

3.1. IID shall permit ORMAT to take delivery from the Spruce Canal or another location where otherwise agreed to in writing by the parties, such water as may be required by ORMAT for use in and incidental to the operation of the Project, and for no other purpose, in a total quantity not to exceed 6,800 acre-feet in any calendar year during the Term of this Agreement; provided, however, nothing in this Agreement shall be construed to require IID to modify or enlarge its existing canal system to make water available to ORMAT, and ORMAT shall not be entitled to take water at a rate which will deplete the supply available in the canal for other uses. ORMAT shall order water, up to the Maximum Use Amount, in accordance with IID's Rules and Regulations for ordering water, as amended as of the date of ordering, in compliance with Sections 6 and 8 below. The right of ORMAT to use water for the Project hereunder is not cumulative from year to year during the Term; that is, if ORMAT does not use the full Maximum Use Amount in any calendar year, ORMAT has no right to add the unused amount to the Maximum Use Amount in any succeeding calendar year. Any unused portion of the Maximum Use Amount for any calendar year may be used by IID as it, in its sole discretion, shall determine.

3.2. Pursuant to IID Regulation No. 13, ORMAT is required to construct a facility to hold water of a minimum volume equal to six days (based on 24 hours) of use in accordance with the District policy of six-day canal cutouts for maintenance and construction. IID hereby agrees that as an alternative ORMAT shall have the

option to construct an extension of the existing delivery pipeline to the Westside Main Canal in lieu of constructing the on-site storage facility described in IID Regulation No. 13, subject to the following terms and conditions:. (i) ORMAT shall deliver written notice to IID of whether it chooses to build the on-site storage facility or the extension of the existing delivery pipeline; (ii) ORMAT shall pay all costs of compliance with applicable Laws in connection with whichever structure is chosen, including CEQA compliance, issuance of all required Permits, and satisfaction of all conditions and requirements attached thereto; (iii) ORMAT, at its sole cost, shall construct, install, and maintain any structures, facilities or improvements necessary to store water in the storage facility or, if the extension of the existing delivery pipeline is chosen, any structures, facilities or improvements necessary to implement its retrieval of water from the Westside Main Canal, including a water metering device acceptable to IID at the connection with the canal that is annually calibrated and certified; and (iv) ORMAT shall complete construction of said storage facility or extension of the existing delivery pipeline and related facilities no later than 3 years from the Effective Date of this Agreement. IID may, without cost to IID, assist ORMAT to obtain any necessary easements, Permits or other rights to transport said water from the West Side Main canal to the Project and ORMAT may terminate this Agreement if it cannot reasonably obtain such Permits. ORMAT acknowledges and assumes all risks of water supply shortages, outages or use limitations due to operation and maintenance activities by IID, capacity limitations, or other infrastructure or field conditions that on-site storage or extension of the existing delivery pipeline to the West Side Main canal may have eliminated or reduced.

3.3. To the extent that IID receives an order or directive from a governmental authority having appropriate jurisdiction, reducing the volume of water available to IID from the Colorado River during all or any part of the Term of this Agreement, IID may reduce the Maximum Use Amount, as directed by the IID Board; provided however that in no event shall the ratio of (i) such reduction in the Maximum Use Amount to (ii) the total reduction of water available to IID from the Colorado River exceed the ratio of (a) the Maximum Use Amount to (b) the current total amount of water available to IID from the Colorado River for the otherwise applicable year during implementation of the Quantification Settlement Agreement and Related Agreements, as such available water is summarized on Exhibit B to the Colorado River Water Delivery Agreement among the IID, the United States Secretary of the Interior, and others. This reduction shall be separate from and in addition to any allocation authorized pursuant to the Equitable Distribution Plan.

3.4. If IID implements a water allocation program pursuant to the Equitable Distribution Plan during all or any part of the Term of this Agreement, IID shall have the right to apportion ORMAT's water as an Industrial User consistent with the Equitable Distribution Plan.

3.5. ORMAT understands and acknowledges that this Agreement does not require, and shall not be construed to require, IID to deliver any specific volume of water for the Project after termination of this Agreement.

3.6. During the Term of this Agreement, ORMAT shall implement Best Management Practices (BMPs), conservation measures or new technologies to reduce the Project's water demand from IID. The Replacement Water required in Section 3.7 may be provided, in whole or in part, by implementation of these BMPs and/or conservation technologies in connection with the Project at the Project Site.

3.7. During the Term of this Agreement, ORMAT shall provide Replacement Water in the amounts specified in Exhibit A for the applicable calendar year, which shall reduce the Project's water demand from IID for that year. ORMAT shall create Replacement Water by measures approved by IID and outside the conservation measures identified and anticipated for the existing IID water conservation and transfer obligations, in accordance with the schedule shown in Exhibit A. The requirement for ORMAT to provide Replacement Water during the Term of this Agreement will be delayed if water conservation projects are not identified through the Integrated Water Resources Management Plan by IID. Either party may request a status review of this Agreement annually.

4. DRAINAGE RIGHTS:

4.1. ORMAT has represented to IID that the Project will be designed as a zero discharge system and as a result ORMAT will not need drainage services that are typically provided to IID's industrial customers. ORMAT may be allowed to discharge, from time to time, occasional rain or storm water runoff to the appropriate IID drainage facility in accordance with IID Rules & Regulations.

4.2. Any discharge water shall be regulated by the Regional Water Quality Control Board (RWQCB). ORMAT shall comply with all NPDES and permitting requirements as necessary, including the implementation of appropriate BMPs.

4.3. A copy of all discharge records required under any RWQCB discharge permit shall also be submitted to the IID at the interval stated on the permit.

5. TERM:

5.1. The term of this Agreement ("Term") shall commence on the Effective Date and, unless sooner terminated as provided in this Agreement, shall terminate December 31, 2028.

5.2. In approving this Agreement, IID has relied upon the representation by ORMAT that the Project will be constructed and operated in conformance with the Conditional Use Permit described in Section 1.3. If the Conditional Use Permit is

terminated, or materially modified without IID's approval, this Agreement shall terminate.

6. REQUIREMENTS NOTICE:

6.1. ORMAT shall estimate the total quantity of water to be purchased by ORMAT on an annual basis, to reflect the anticipated water requirements for the Project. ORMAT shall, on or before September 1 of each year, provide IID with written notice of the approximate quantity of water to be purchased during each month of the following calendar year ("Quantity Notice Letter"). Such amount shall constitute a good faith estimate on the part of ORMAT, but shall not constitute a minimum or maximum quantity of water to be purchased during the specified period, except as provided in Section 6.2 below.

6.2. If IID has authorized implementation of a water allocation process in accordance with the Equitable Distribution Plan for any calendar year, then ORMAT shall be obligated to pay for the Maximum Use Amount during such calendar year. ORMAT shall provide IID with timely written notice on or before January 31 of each year if it intends to use less than the Maximum Use Amount to be delivered by IID for that year pursuant to Exhibit A. During such calendar year if so notified IID will limit water deliveries to the Project to this lesser volume, and ORMAT shall be billed for this revised volume.

7. PAYMENT/BILLING:

7.1. For the right to take and use water identified herein:

7.1.1. ORMAT shall pay a per acre-foot charge for water used by the Project at IID's industrial water rate, as amended from time to time, payable monthly.

7.1.2. In any Overrun Year, for water consumption above the Historical Use Amount per calendar year, ORMAT shall also be required to pay additional fees associated with its prorata share of IID's total cost to provide water for payback purposes, or obtain Imported Water in an equivalent volume to satisfy payback requirements. ORMAT's prorata share shall be based on its annual water use in the Overrun Year and shall not exceed ORMAT's Project's Excess Requirement or IID's total payback requirement for the Overrun Year. IID will issue a supplemental billing the year following the overrun year based on the projected cost of conservation measures to be implemented to generate conserved water for payback of an overrun.

7.1.3. In lieu of the obligation to fund payback obligations in Overrun Years for consumptive use above the Historical Use Amount pursuant to Section 7.1.2, ORMAT may utilize Imported Water to serve the consumptive use demands of the Project.

7.1.4. As additional consideration to IID, ORMAT shall pay to IID the amount of One Million Five Hundred Thousand Dollars ($1,500,000), which Seven Hundred Fifty Thousand Dollars ($750,000) shall be due and payable within thirty (30) days of the execution of this Agreement and prior to initial delivery of water to the Project with the balance due one (1) year from contract execution. IID shall use these monies to fund IID's upcoming Integrated Water Resources Management Plan (IWRMP) and implementation of any plan components as approved by the IID Board.

7.1.5. In the event that IID implements an allocation consistent with the Equitable Distribution Plan during all or any part of the Term of this Agreement, ORMAT shall make payments according to a schedule consistent with the Equitable Distribution Plan. In the event that IID adopts a rate schedule for industrial users in years that an allocation is triggered (consistent with the Equitable Distribution Plan), this Equitable Distribution rate schedule shall supersede IID's usual industrial rate and reflect costs of the assured water supply.

8. COMPLIANCE WITH LAWS, RULES AND REGULATIONS:

8.1. ORMAT shall be obligated to comply with the "Rules and Regulations Governing the Distribution and Use of Water" and the Equitable Distribution Plan (collectively, "Rules and Regulations") adopted by IID Board in their present form or as they may be amended hereafter. Prior to ordering any water in accordance with this Agreement, and continuing thereafter during the Term of this Agreement, ORMAT shall provide written authorization from the property owner to allow ORMAT to order water for the Project Site, in accordance with IID's standard procedure. Notwithstanding ORMAT's obligation to comply with said Rules and Regulations, in the event of any conflict or inconsistency between the provisions of this Agreement and said Rules and Regulations pertaining to ORMAT's payment obligation set forth in Section 7 of this Agreement, this Agreement shall govern.

8.2. ORMAT shall obtain and maintain in effect during the Term of this Agreement, all Permits required for construction and operation of the Project. ORMAT shall comply with all Laws applicable to the Project and the terms and conditions of all Permits.

9. GOVERNING LAW:

9.1. This Agreement shall be interpreted in accordance with the substantive and procedural laws of the State of California. All actions or proceedings arising in connection with this Agreement shall be tried and litigated exclusively in State court located in the County of Imperial, State of California and/or Federal court located in the County of San Diego or County of Imperial, State of California. The aforementioned choice of venue is mandatory, thereby precluding the possibility

of litigation between the parties with respect to or arising out of this Agreement in any jurisdiction other than that specified in this paragraph. Each party hereby waives any right it may have to assert the doctrine of forum non convenience or a similar doctrine or to object to venue with respect to any proceeding brought in accordance with this paragraph, and stipulates that the State and Federal courts located in the Counties of Imperial and San Diego, respectively, California, shall have in personam jurisdiction and venue over each of them for the purpose of litigating any dispute or proceeding arising out of or related to this Agreement. Each party hereby authorizes service of process sufficient for personal jurisdiction in any action against it at the address and in the manner for the giving of notice as set forth in this Agreement.

10. BINDING OBLIGATIONS; ASSIGNMENT:

10.1. This Agreement shall be binding upon and inure to the benefit of the parties and their successors and assigns, subject to the limitations set forth in this Section 10. No party may assign or transfer its rights or obligations under this Agreement without the prior written consent of the other party hereto, except as permitted herein. Such consent shall not be unreasonably withheld. However, without prior consent, IID may assign its rights under this Agreement as security for any water conservation financing IID might obtain in carrying out this Agreement. ORMAT may, without prior consent, assign its rights to a lender, lessor, and/or trustee acting on behalf of a lender or lessor, or any other financing entity which acquires an interest in the Project (collectively "Financing Entities") in connection with any financing involving the Project. In the event of an assignment of ORMAT's rights hereunder to any Financing Entities, IID shall take such further actions and execute such documents as are reasonably requested by such Financing Entities to effectuate such assignment, provided that such agreement does not materially, adversely affect IID's rights and obligations hereunder.

Solely with respect to any Financing Entity which acquires an interest in this Agreement, and provided IID has received written notice from ORMAT of such interest and request, IID agrees to give written notice to such Financing Entity of any default by ORMAT under this Agreement and will afford such Financing Entities a reasonable period of time to commence appropriate action to cure such default, should they choose to do so; provided, however, that any monetary default by ORMAT must be cured by such Financing Entity within thirty (30) days after expiration of the sixty (60) day cure period available to ORMAT under Section 16.1(a) and shall include late payments and penalties as described in Section 15.1. In the event that this Agreement is terminated by reason of bankruptcy of any party, IID will, at the option of any Financing Entity, enter into a new contract with such Financing Entities or their successors or assigns, having terms similar to this Agreement.

Except for the assignment to a Financing Entity for security purposes described above, ORMAT may only assign its rights under this Agreement to an entity which:

(i) is the assignee of ORMAT's rights under the Conditional Use Permit described in Section 1.2; (ii) owns fee title to, or a leasehold interest in, the Project Site; and (iii) has been authorized by the property owner to order water for the Project in accordance with IID's standard procedures. No such assignment shall be effective until the delivery to IID of a written document providing for the assignment of ORMAT's rights under this Agreement, the assignee's assumption, for the benefit of IID, of ORMAT's obligations under this Agreement, and representations by the assignee comparable to those by ORMAT in Section 21.

11. NO THIRD PARTY RIGHTS:

11.1. Except as provided in Section 10, the parties do not intend to create rights and/or to grant remedies to any third party or others as a beneficiary of this Agreement or of any duty, covenant, obligation or undertaking established hereunder.

12. NO DEDICATION OF FACILITIES:

12.1. Any undertaking by one party to another party under any provision of this Agreement shall not constitute the dedication of the system or any portion thereof of the party to the public or to the other party, and it is understood and agreed that any such undertaking under any provision of this Agreement by a party shall cease upon the termination of its obligations hereunder.

13. NON-WAIVER:

13.1. None of the provisions of this Agreement shall be considered waived by any party except when such waiver is given in writing. The failure of any party to insist in anyone or more instances upon strict performance of any of the provisions of this Agreement or to take advantage of any of its rights hereunder shall not be construed as a waiver of any such provisions or their relinquishment of any such rights for the future, but the same shall continue and remain in full force and effect.

14. UNCONTROLLABLE FORCES:

14.1. No party shall be considered to be in default in the performance of any of its obligations under this Agreement when a failure of performance shall be due to an uncontrollable force. The term "Uncontrollable Force" shall mean any cause beyond the control of the party affected including, but not restricted to, flood, drought, earthquake, tornado, storm, fire, pestilence, lightning and any other natural catastrophe, epidemic, war, riot, civil disturbance or disobedience, strike, labor dispute, labor or material shortage, sabotage, acts, including restraining or enjoinder by proper authority, of civil or military authority (whether valid or invalid), inaction or non-action by or inability to obtain or keep the necessary authorizations or approvals from any governmental agency or authority, which by

exercise of due diligence such party could not reasonably have been expected to avoid and which by exercise of due diligence it has been unable to overcome; provided, however, that uncontrollable forces shall not include financial inability or economic conditions generally. Nothing contained herein shall be construed as to require a party to settle any strike or labor dispute in which it may be involved. Any party rendered unable to fulfill any of its obligations under this Agreement by reason of uncontrollable force shall give prompt written notice of such fact to the other parties and shall exercise due diligence, and cooperate with any efforts of such other parties, to remove such inability with all reasonable dispatch

15. LATE PAYMENT PENALTY:

15.1. If ORMAT (solely with respect to the payments under Sections 7.1.1, 7.1.2, and 7.1.5) fails to pay any amount when due, an interest charge on the unpaid amount due based on the late payment charge percentage calculated by the Department of the Treasury and published quarterly in the Federal Register (but not less than 0.5% per month) shall be added on the first day following the due date and monthly thereafter until the payment, any penalty and interest are paid in full. Additionally, if any payment is not made within seven (7) business days after written notice is received by ORMAT, that such payment is overdue, a penalty of two percent (2%) of the amount due shall be added thereto. IID's remedies under this Section 15.1 shall be in addition to any remedies available to IID under Section 16 below.

16. TERMINATION:

16.1. If ORMAT breaches this Agreement, including failure to make payment when due or to provide Replacement Water as outlined in Exhibit A, IID shall have the following rights and remedies:

(a) If delivery charges for water used by the Project, or any other monetary amounts payable by ORMAT hereunder, are not paid within sixty (60) days after written notice is received by ORMAT and any Financing Entities (identified by notice to IID as described in Section 10.1), IID may suspend deliveries of water pursuant to this Agreement with respect to such Project, and such Project shall have no further rights to use water hereunder until and unless such default (plus penalty and interest) is fully cured within an additional six months. After such 6-month period, IID may terminate this Agreement with respect to such Project if such default is still outstanding. IID shall deliver written notice to ORMAT of its election to suspend deliveries and/or terminate this Agreement.

(b) IID may charge penalties and interest only in accordance with paragraph 16 above.

(c) In the event of a non-monetary default by ORMAT, or if any representation by ORMAT becomes false or materially misleading, IID may terminate this Agreement by written notice to ORMAT; provided, however, that IID has delivered written notice to ORMAT and any Financing Entities (identified by notice to IID as described in Section 10.1), and the default remains uncured after expiration of a thirty (30) day cure period, except that if the default is curable and reasonably requires additional time to cure, the cure period shall be extended for such reasonable time as long as ORMAT commences the cure within such 30-day period and diligently prosecutes such cure to completion thereafter.

(d) IID may institute any available and appropriate legal or equitable action to enforce the terms of this Agreement.

16.2. IID may use any or all of these rights and remedies in case of ORMAT's breach and if it selects one, shall not waive its right to select or use any other. IID acknowledges (and will accept) that any Financing Entities or other parties which acquire an interesting in the Project may cure any breach of this Agreement within the time periods specified in Section 10.1 and 16.1, as applicable, and such cure shall be considered as full performance hereunder.

17. INDEMNIFICATION:

17.1. To the fullest extent permitted by law, ORMAT shall defend, indemnify and hold harmless IID, its employees, agents and officials, from any: liability; claims; suits or actions (including alternative dispute resolution); losses; expenses; fees; or costs of any kind, whether actual, alleged or threatened; administrative, and regulatory proceedings; and any other costs or expenses of any kind whatsoever without restriction or limitation; so long as such things are in relation to, as a consequence of, arising out of, or in any way attributable actually, allegedly or implied, in whole or in part, to the performance of this Agreement and/or the construction and operation by ORMAT of any facilities for the delivery of water to the Project. All obligations under this provision are to be paid by ORMAT as they are incurred by IID.

Without affecting the rights of IID under any provision of this Agreement or this section, ORMAT shall not be required to indemnify and hold harmless IID as set forth above for liability attributable to the sole fault of IID, provided such sole fault is determined by agreement between the parties or the findings of a court of competent jurisdiction. This exception will apply only in instances where IID is shown to have been solely at fault and not in instances where ORMAT is partially at fault or in instances where the fault of IID accounts for only a percentage of the liability involved. In those instances, the obligation of ORMAT will be all inclusive and IID will be indemnified for all liability incurred, even though a percentage of the liability is attributable to conduct of IID.

ORMAT acknowledges that its obligation pursuant to this section extends to liability attributable to IID, if the liability is less than the sole fault of IID. However,

ORMAT has no obligation under this Agreement for liability proven in a court of competent jurisdiction or by written agreement between the parties to be the sole fault of IID.

The obligations of ORMAT under this or any other provision of this Agreement will not be limited by the provisions of any workers compensation act or similar act. ORMAT expressly waives its statutory immunity under such statutes or laws as to IID, its employees and officials.

ORMAT agrees to this indemnity provision and represents that it has been given an opportunity to take exception to all or any part of this, as well as all other provisions of the Agreement.

17.2. In the event of any legal action or proceeding instituted by a third party (i.e., neither IID nor ORMAT) challenging the validity and enforceability of this Agreement, the Project, or the CEQA compliance for this Agreement or the Project, the parties shall cooperate with each other in good faith to defend such action or proceeding; provided, however, that ORMAT shall indemnify, hold harmless and pay all reasonable costs for the defense of IID, including reasonable fees and costs for legal counsel regarding any such action or proceeding.

18. ATTORNEYS FEES AND COSTS:

18.1. If either party to this Agreement shall bring any action, claim, appeal, or alternative dispute resolution proceedings, for any relief against the other, declaratory or otherwise, to enforce the terms of or to declare rights under this Agreement (collectively, an Action), the losing party shall pay to the prevailing party a reasonable sum for attorneys' fees and costs incurred in bringing and prosecuting such Action and/or enforcing any judgment, order, ruling, or award (collectively, a Decision) granted therein. Any Decision entered in such Action shall provide for the recovery of attorneys' fees and costs incurred in enforcing such Decision. The court or arbitrator may fix the amount of reasonable attorneys' fees and costs on the request of either party. For the purposes of this paragraph, attorneys' fees shall include, without limitation, fees incurred in the following: (1) post-judgment motions and collection actions; (2) contempt proceedings; (3) garnishment, levy, and debtor and third party examinations; (4) discovery; and (5) bankruptcy litigation. "Prevailing party" within the meaning of this paragraph includes, without limitation, a party who agrees to dismiss an Action on the other party's payment of the sums allegedly due or performance of the covenants allegedly breached, or who obtains substantially the relief it seeks.

19. NOTICES:

19.1. All notices, requests, demands and other communications required or permitted under this Agreement shall be in writing and shall be deemed to have been received when delivered or faxed or on the fifth business day following the mailing, by registered or certified mail, postage prepaid, return receipt requested, thereof address as set forth below:

If to IID:

IMPERIAL IRRIGATION DISTRICT
Attention: General Manager
P.O. Box 937
333 E. Barioni Blvd.
Imperial, CA 92251

and

IMPERIAL IRRIGATION DISTRICT
Attention: Water Manager
P.O. Box 937
333 E. Barioni Blvd.
Imperial, CA 92251

If to ORMAT:

General Manager
ORMAT
947 Dogwood Road
Heber, CA 92249

With a copy to:

ORMAT NEVADA, Inc.
6225 Neil Road
Reno, NV 89511

Any party may change the addressee or address to which communications or copies are to be sent by giving notice of such change of addressee or address in conformity with the provisions of this paragraph for the giving notice.

20. AMENDMENT OR TERMINATION

20.1. This Agreement may be amended, in whole or in part, or terminated only by a written document executed by both parties.

21. ORMAT REPRESENTATIONS AND WARRANTIES.

21.1. ORMAT is a corporation duly organized and validly existing in good standing under the laws of the State of Delaware, and has all requisite power and authority to enter into and perform its obligations hereunder. The execution, delivery and performance by ORMAT of this Agreement has been duly authorized by all necessary action on the party of ORMAT and does not require any approval or consent of any holder (or any trustee for any holder) of any indebtedness or other obligation of ORMAT. This Agreement has been duly executed and delivered on behalf of ORMAT by the appropriate officers of ORMAT and constitutes the legal, valid and binding obligation of ORMAT, enforceable against ORMAT in accordance with its terms.

21.2. ORMAT holds a leasehold interest in the Project Site which allows ORMAT to occupy and use the Project Site for construction and operation of the Project, and ORMAT holds the rights to construct and operate the Project under the Conditional Use Permit.

22. INTEGRATION

22.1. This Agreement between ORMAT and IID and all attachments hereto, as well as any other documents referred to in this Agreement, constitute the entire Agreement between the parties with regard to the subject matter hereof and thereof. This Agreement supersedes all previous agreements between or among the parties. There are no other agreements, representations, or warranties between or among the parties other than those set forth in the documents identified above.

23. ENVIRONMENTAL COMPLIANCE AND MITIGATION.

23.1. ORMAT shall be responsible to ensure and fund all necessary efforts to comply with all environmental laws, including but not limited to CEQA, associated with the Project and the provision of water to the Project under this Agreement.

23.2. ORMAT shall be responsible to ensure and fund the implementation of necessary environmental mitigation required under all environmental laws, including but not limited to CEQA, associated with the Project and the provision of water under this Agreement.

24. Geothermal Mitigation.

24.1 ORMAT shall participate in the Imperial County Subsidence Detection Program and provide IID with all reports and findings. ORMAT shall provide IID with annual monitoring reports which shall be supplemented with defined benchmark/elevation locations to ascertain movement of IID's system. All costs will be funded by ORMAT.

24.2. In the event that geothermal induced ground movement from any and/or all ORMAT facility operations have impacted IID facilities, ORMAT shall be responsible for all costs involved in quantifying and mitigating said impacts to IID facilities such that a level of function at least equal to their function prior to operation of the various geothermal facilities is achieved.

IN WITNESS WHEREOF, ORMAT and IID have caused this Agreement to be executed and effective as of the Effective Date first above written.

IMPERIAL IRRIGATION DISTRICT

Date 10-7-08 By _____
President

Date 10-7-08 ATTEST: _____
Secretary

ORMAT Nevada, INC.

Date 10-23-08 By _____

EXHIBIT A

WATER DELIVERY AND REPLACEMENT WATER SCHEDULE
(Acre-Feet/Year)

Contract Year	Calendar Year	Maximum Delivery Volume	Replacement Water Provided by Ormat	Maximum Use Amount
1	2009	6,800	0	6,800
2	2010	6,800	0	6,800
3	2011	6,800	0	6,800
4	2012	6,800	0	6,800
5	2013	6,800	0	6,800
6	2014	6,800	0	6,800
7	2015	6,800	0	6,800
8	2016	6.800	0	6,800
9	2017	6,800	0	6,800
10	2018	6,800	0	6,800
11	2019	6,800	1,360	5,440
12	2020	6,800	1,360	5,440
13	2021	6,800	1,360	5,440
14	2022	6,800	1,360	5,440
15	2023	6,800	2,720	4,080
16	2024	6,800	2,720	4,080
17	2025	6,800	2,720	4,080
18	2026	6,800	2,720	4,080
19	2027	6,800	2,720	4,080
20	2028	6,800	2,720	4,080

APPENDIX H
11-CAI-2

DRAFT ENVIRONMENTAL IMPACT REPORT FOR ORMAT, EAST BRAWLEY DEVELOPMENT PROJECT, ORNI. 19, LLC.

APPENDIX C-APPLICATION FOR TERTIARY TREATMENT SYSTEM BRAWLEY WASTEWATER TREATMENT PLANT

APPENDIX C – APPLICATION FOR TERTIARY TREATMENT SYSTEM, BRAWLEY WASTE WATER TREATMENT PLANT

ORMAT®

April 8, 2010

Gordon Gaste, AICP, Planning Director
City of Brawley
400 Main Street
Brawley, CA 92227

Application for Tertiary Treatment System, City of Brawley Wastewater Treatment Plant

Dear Mr. Gaste:

Attached is Ormat Nevada, Inc. (Ormat)'s application and Environmental Information Form for the tertiary treatment system project at the City's waste water treatment plant. Ormat would use the water from the outflow of the tertiary treatment plant as cooling make-up water for our proposed East Brawley geothermal power plant on the adjacent property to the east.

As we have discussed, there would be no significant environmental impacts of this project as it is all on disturbed, developed land at the existing wastewater treatment plant on City property with a simple pipeline going from the tertiary plant to our power plant on adjacent property. We already have documentation prepared with assistance from our consultants (Marie Barrett and Design Development Engineering/DDE) stating that the impacts from our East Brawley project to IID drains and Salton Sea ecosystem would not be significant; however, we have agreed to an EIR with the County to be focused on these issues. The documentation of potential impacts to drains and Salton Sea is attached to this application package.

The only potential impacts from the tertiary treatment system project would be similar, so it would make sense to combine the efforts of the County and the City for a single CEQA document/EIR to be prepared jointly by the County and the City, with the County continuing their lead on this under agreement with the City. I understand that the County has already initiated discussions with the City for this agreement.

Please contact me at 775-336-0173 or via e-mail (rleiken@ormat.com) and let me know if there is anything we can do to assist in moving the CEQA process expiditiously.

Sincerely,

Ron Leiken

Ron Leiken, QEP
Environmental/Regulatory Affairs Administrator

cc: Gary Burroughs, City of Brawley
Angelina Havens, County of Imperial
Jurg Heuberger, County of Imperial
Charlene Wardlow, Ormat
Bob Sullivan, Ormat
David Band, Ormat

ORMAT Nevada
6225 Neil Road, Reno, NV, 89511-1163 • Telephone (775) 356-9029 • Facsimile (775) 356-9039

CITY OF BRAWLEY

PLANNING DEPARTMENT APPLICATION

Fee $ _____
Planning Staff Initials _____

CITY STAMP

Amount Received $ _____
Finance Initials _____

CHECK ALL THAT APPLY:

PROJECT

___ Conditional Use Permit
___ New ___Extension/Renewal
___ Adjustment Plat (Lot Line Adjustment/Lot Merger)
(*no additional parcels to be created*)
___ Certificate of Compliance (required with Adj. Plat)
_X_ Site Plan Review
___ Variance
___ Rezoning
___ General Plan Amendment
___ Right-of-Way / Alley Vacation
___ Parcel Map Waiver
___ Minor Subdivision (*4 or fewer parcels to be created)*
___ Major Subdivision (*5 or more parcels to be created*)
___ Final Map

CEQA STATUS

___ Notice of Exemption
(*ministerial and categorically exempt*)
___ Negative Declaration
(*requires initial environmental study*)
___ Environmental Impact Report (EIR)

___ Other (Please Specify) _____

	PROPERTY OWNER	ENGINEER / AGENT*
Name:	City of Brawley	Ron Leiken
Mailing Address:	400 Main Street	Ormat Nevada, Inc.
	Brawley, CA 92227	Reno, NV 89511
Phone:	(760) 344-8822	(775) 336-0173
Fax:	(760) 344-0907	(775) 356-9039
E-mail:		rleiken@ormat.com

Assessor Parcel Number(s): 037-140-011

Describe project, purpose/reason for your application, proposed/existing uses on the subject property, and adjacent land uses. Attach separate sheet if necessary.

(attached)

REQUIRED SUPPORT DOCUMENTS

1. All applicable information requested on the Tentative Map Checklist (*Major Subdivisions*), Final Map Requirements (*Final Maps*), or Site Plan Checklist (*all projects*).
2. Environmental Assessment (*completed by applicant or legal representative**).
3. Preliminary Title Report/Deed (*for proof of ownership*)
4. Fee
5. Copy of current property tax statement.
6. Other items as determined by Staff.

SPECIAL NOTES

Applicant or authorized representative* must be present at Planning Commission meeting(s) and/or City Council meeting(s) for action to be taken on the application.

Submit twenty (20) copies of Parcel Maps for Adjustment Plats.

Twenty (20) copies of a site plan must submitted with the application. Projects in the Airport Land Use Commission sphere require thirty (30) copies.

Staff's acceptance of the application or deeming the application complete does not imply that Staff will recommend approval of the project.

City of Brawley owns property; Ormat is applying for project

I, _____,
(*print name of property owner*)
hereby apply to the City of Brawley for the actions indicated above for the above-specified property that I own or control, as per the attached information, and in accordance with all applicable local, state, and federal laws and regulations.

I, _____,
(*print name of property owner*)
give the following person/organization permission to act as my agent* and to make decisions in my name as he/she/they feel necessary for the project described on the previous pages.

Ron Leiker — (*print name of agent*)

Ormat Nevada, Inc. — (*agent's company name, if applicable*)

I certify that the above information, to the best of my knowledge, is true and correct.

_____ Signature of Property Owner

_____ Date

Ron Leiker Signature of Agent

4/7/10 Date

*Property owner's signature must be notarized if an agent is being designated.

3/06

CITY OF BRAWLEY

ENVIRONMENTAL INFORMATION FORM

Date Filed: 04/06/2010

General Information

1. Developer or project sponsor

   Name: Ormat Nevada, Inc.

   Address: 6225 Neil Road (*street*) Reno (*city*) NV (*state*) 89511 (*zip*)

2. Person to contact concerning this project

   Name: Ron Leiken - Environmental / Regulatory Affairs Administrator

   Address: 6225 Neil Road (*street*) Reno (*city*) NV (*state*) 89511 (*zip*)

   (775) 336-0173 (*phone*) (775) 356-9039 (*fax*) rleiken@ormat.com (*e-mail*)

3. Address of project: 1550 Best Road, Brawley, CA

   Assessor's Block and Lot Number (s): Parcel # 037-140-011

4. Existing zoning district:

5. Permit Application Number(s) for the project:

6. List and describe any other related permits and other public approvals required for this project, including those required by city, regional, state and federal agencies:

   Imperial County - Conditional Use Permit for East Brawley pipeline and Power Plant

7. Proposed use of project site (attach separate sheets): (see attached)

Include In Project Description

8. Site size.
9. Square footage.
10. Number of floors of construction.
11. Amount of off-street parking provided.
12. Attach plans.
13. Proposed scheduling.
14. Associated projects.
15. Anticipated incremental development.
16. If residential, include the number of units, schedule of unit sizes, range of sale prices or rents and type of household size expected.
17. If commercial, indicate the type, whether neighborhood, city or regionally oriented, square footage of sales area, and loading facilities.
18. If industrial, indicate type, estimated employment per shift, and loading facilities.
19. If institutional, indicate the major function, estimated employment per shift, and loading facilities.
20. If the project involves a variance, conditional use or rezoning application, state clearly each is required.

Are the following items applicable to the project or its effects? Discuss below all items checked yes (attach additional sheets as necessary).

Yes	No		
[ ]	[x]	21.	Change in existing features of any bays, tidelands, beaches, lakes or hills, or substantial alteration of ground contours.
[ ]	[x]	22.	Change in scenic views or vistas from existing residential areas or public lands or roads.
[ ]	[x]	23.	Change in pattern, scale or character of general area project.
[ ]	[x]	24.	Significant amounts of solid waste or litter.
[ ]	[x]	25.	Change in dust, ash, smoke, fumes or odors in vicinity.
[ ]	[x]	26.	Change in ocean, bay, lake, stream or ground water quality or quantity, or alteration of drainage patterns.
[ ]	[x]	27.	Substantial change in existing noise or vibration levels in the vicinity
[ ]	[x]	28.	Site on filled land or on slope of 10 percent or more.
[x]	[ ]	29.	Use of disposal of potentially hazardous materials, such as toxic substances, flammables or explosives.
[ ]	[x]	30.	Substantial change in demand for municipal services (police, fire, water, sewage, etc.).
[ ]	[x]	31.	Substantially increase fossil fuel consumption (electricity, oil, natural gas, etc.).
[x]	[ ]	32.	Relationship to a larger project or series of projects. **(East Brawley Geothermal Power Plant)**

Environmental Setting

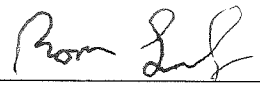
33. Describe the project site, as it exists before the project, including information on topography, soil stability, plants and animals, and any cultural, historical or scenic aspects. Describe any existing structures on the site, and the use of the structures. Attach photographs of the site. Snapshots or Polaroid photos will be accepted. **(attached)**

34. Describe the surrounding properties, including information on plants and animals and any cultural, historical or scenic aspects. Indicate the type of land use (residential, commercial, etc.), intensity of land use (one-family, apartment houses, shops, department stores, etc.), and scale of development (height, frontage, set-back, rear yard, etc.). Attach photographs of the vicinity. Snapshots or Polaroid photos will be accepted. **(attached)**

Certification:

I, Ron Leiken,
print name

hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this initial evaluation to the best of my ability, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.



signature

04/06/2010
date

Project Description – Brawley Tertiary System

Ormat is currently working with the City of Brawley to obtain treated, or recycled, water from their wastewater treatment plant located immediately west of the proposed East Brawley Power Plant site (Figure 2). Obtaining the reclaimed wastewater will require the construction of a tertiary system to the City's secondary system which is currently being upgraded by the City. The plan is to start construction in the 2nd quarter of 2010, and completion is expected in early 2013. The City of Brawley would ultimately own and operate the tertiary facility when it is completed.

The proposed tertiary treatment system will have a capacity of 5.9 mgd. As of 2008, existing Brawley WWTP average dry weather flows were 3.9 mgd. Therefore, the tertiary treatment system will operate at the initial available flow rate of 3.9 mgd but increase over time to 5.9 mgd as dry weather flow increases.

The new tertiary treatment system will receive water from a new Tertiary Treatment Diversion Structure which will be installed approximately 200 ft downstream of the existing Secondary Effluent Distribution Structure. Secondary effluent flow will be diverted from the existing 42-inch pipeline to the Tertiary Influent Pump Station wet well. From the wet well, water would be pumped into a flash mixing chamber for alum addition. Alum will be added using a high-energy direct-vacuum induction or pump diffusion system for near instantaneous and homogenous mixing.

Following flash mixing, the water will overflow into two (2) parallel flocculation and sedimentation trains. Flocculation will be based on a two-stage design. The first stage will provide greater mixing energy to begin particle agglomeration and floc formation. The second stage will impart less energy to avoid shearing and encourage continued growth of large settleable floc. After the flocculation chambers, water will flow into the rectangular sedimentation tanks. The majority of the suspended solids will be removed in the sedimentation basin and the supernatant will be collected via weirs from the top of the sedimentation basin. The supernatant would then flow into the multi-media filter by gravity. A polymer will be added to the water as needed to increase filter performance and minimize filtered effluent turbidity. The gravity multi-media filter would have four filtration cells operating in parallel with sand and anthracite media. The filtered water would be collected in the Filter Effluent Distribution Box.

The Filter Effluent Distribution Box will be designed with a three-way weir system that will allow the filtered water to flow into the Filter Backwash Supply Storage Sump, to the UV system by gravity, or to the Chlorine Contact Basin should the UV system become unavailable due to service interruption or maintenance. Once the water is disinfected by the existing UV system, the water would flow into the Effluent Pump Station Wet Well. Sodium hypochlorite will be injected at the dosage of 2 mg/L into the effluent pump station discharge pipe to maintain the residual disinfectant. The pump station would pump the disinfected tertiary water to the East Brawley Power Plant and/or to a storage equalization basin. The free chlorine residual will be monitored and analyzed downstream of the injection point. The equalization basin would hold approximately 5.0 MG to provide an operational buffer in case of WWTP or tertiary system interruptions, or Power Plant operational disruptions. A flow schematic for the normal operations in dry weather conditions is presented in Figure #2 – Process Flow Schematic.

If the UV system operations are disrupted for a brief amount of time, the secondary effluent would be diverted to the chlorine contact chamber instead of the tertiary treatment process. The secondary effluent would be chlorinated and discharged to the New River. In this short period the water demand at the East Brawley Plant would be met by utilizing the equalization storage.

The tertiary system would have infrastructure and control valves/gates in place to manually divert the tertiary effluent into the chlorine contact chamber (during dry weather periods only) for situations where the UV system would be unavailable for an extended period that would exhaust the equalization storage supply. To initiate this temporary tertiary disinfection mode, an operator would manually close the UV system inlet control gate which would cause water level in the filtered effluent distribution box to rise and overflow into the chlorine contact chamber. The chlorine contact chamber would be dosed with 5 mg/L of sodium hypochlorite to meet the Title 22 disinfected tertiary CT requirements. The chlorinated tertiary effluent would then flow to the Tertiary Effluent Pump Station via a dedicated pipeline and connect to the effluent pump station wet well bypassing the UV system. A flow schematic showing the described temporary dry weather operations with the UV system in service and out-of-service is presented in Figure #3 – Dry Weather Flow. A flow schematic showing the described temporary wet weather operations with the UV system in service and out-of-service is presented in Figure #4 – Wet Weather Flow.

As part of the normal dry weather tertiary operation, the Filter Effluent Distribution Box will allow the filtered effluent to flow into the Filter Backwash Supply Storage Sump. The weir height will be equivalent to the weir height that controls flow to the UV system. This would keep the Filter Backwash Supply Storage Sump full at all times. The sump would have the capacity to store water to satisfy two sequential filter backwash cycles without interrupting normal tertiary treatment system operation. The Filter Backwash Supply Pumps would convey the stored backwash supply water to the media filter at a higher rate to provide cleaning, fluidization and restratification of the media. The backwash wastewater would then be collected and conveyed back to the Influent Pump Station Wet Well.

Alum sludge will be collected from the sedimentation basin using a chain and flight system and conveyed to a sludge holding tank. The sludge pumps will convey the collected sludge to a new centrifuge system. Two parallel centrifuges will be installed near the existing centrifuge. A new polymer system would be utilized at the new centrifuge system to increase the dewatering efficiency. The concentrate from the centrifuge would then be recirculated to the Tertiary Influent Pump Station wet well and the solids from the centrifuge would be collected and transferred to solids drying beds for further dewatering. Once the water content of the dried solids is reduced below 50%, the solids will be hauled off to a landfill for final disposal.

Chemical storage, feed systems, and electrical distribution and control system will occupy separate areas in a common building. The chemical area will house the following chemical feed and storage systems:

- Alum
- Caustic
- Sulfuric Acid
- Sodium Hypochlorite
- Polymer (Flocculation)
- Polymer (Dewatering)
- Sodium Bisulfite

Environmental Setting

33. As shown below, the project site is already a developed area, free of vegetation, plants, animals, and cultural and historical aspects. The project site is located at the City of Brawley's Wastewater Treatment Plant, and approximately ¼ mile west of Ormat's proposed East Brawley Power Plant.

34. As shown below, the properties surrounding the site have been developed for agriculture. The Project site is bordered on the south by the City of Brawley Wastewater Treatment Facility and on the west by the New River.

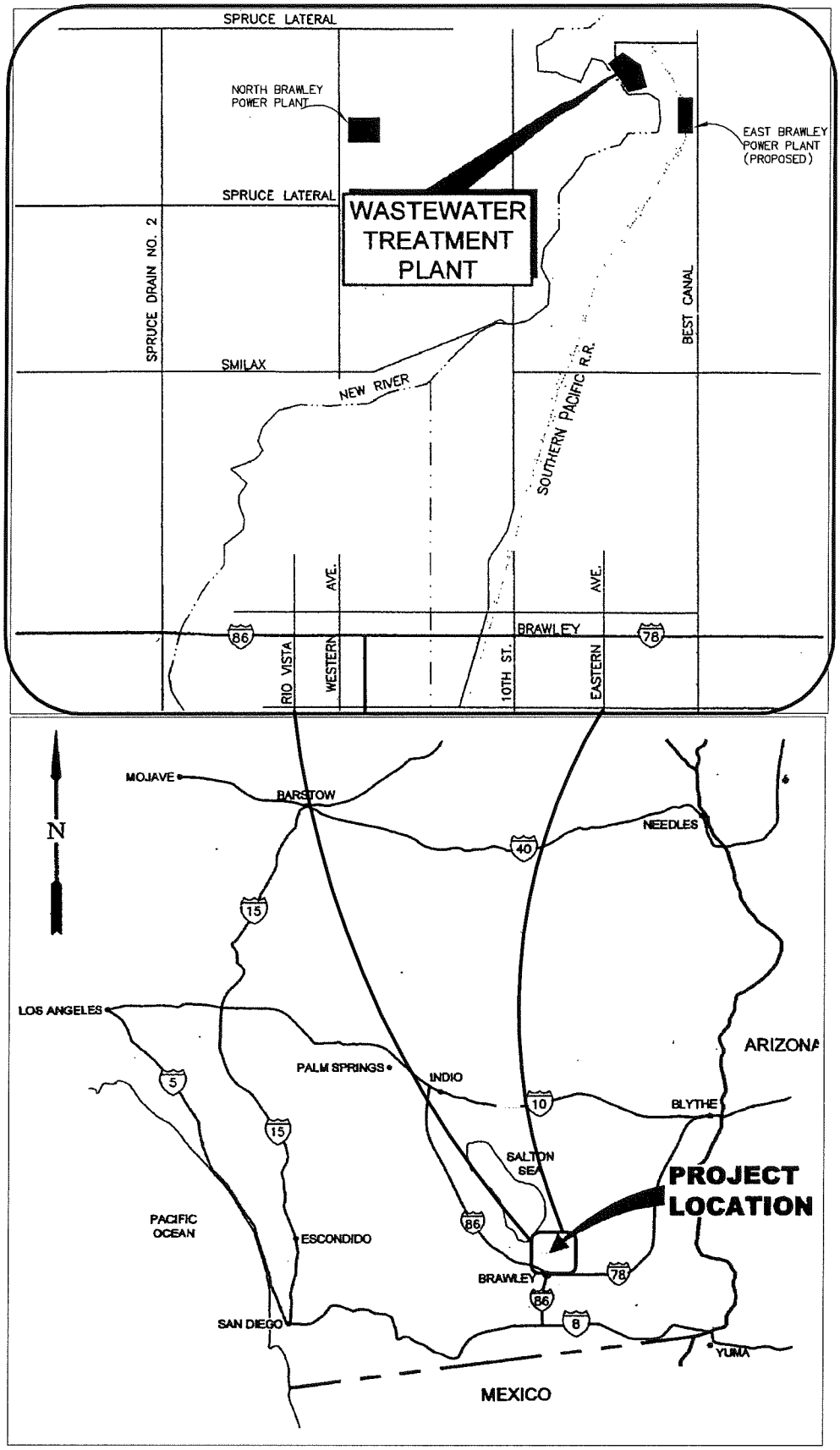
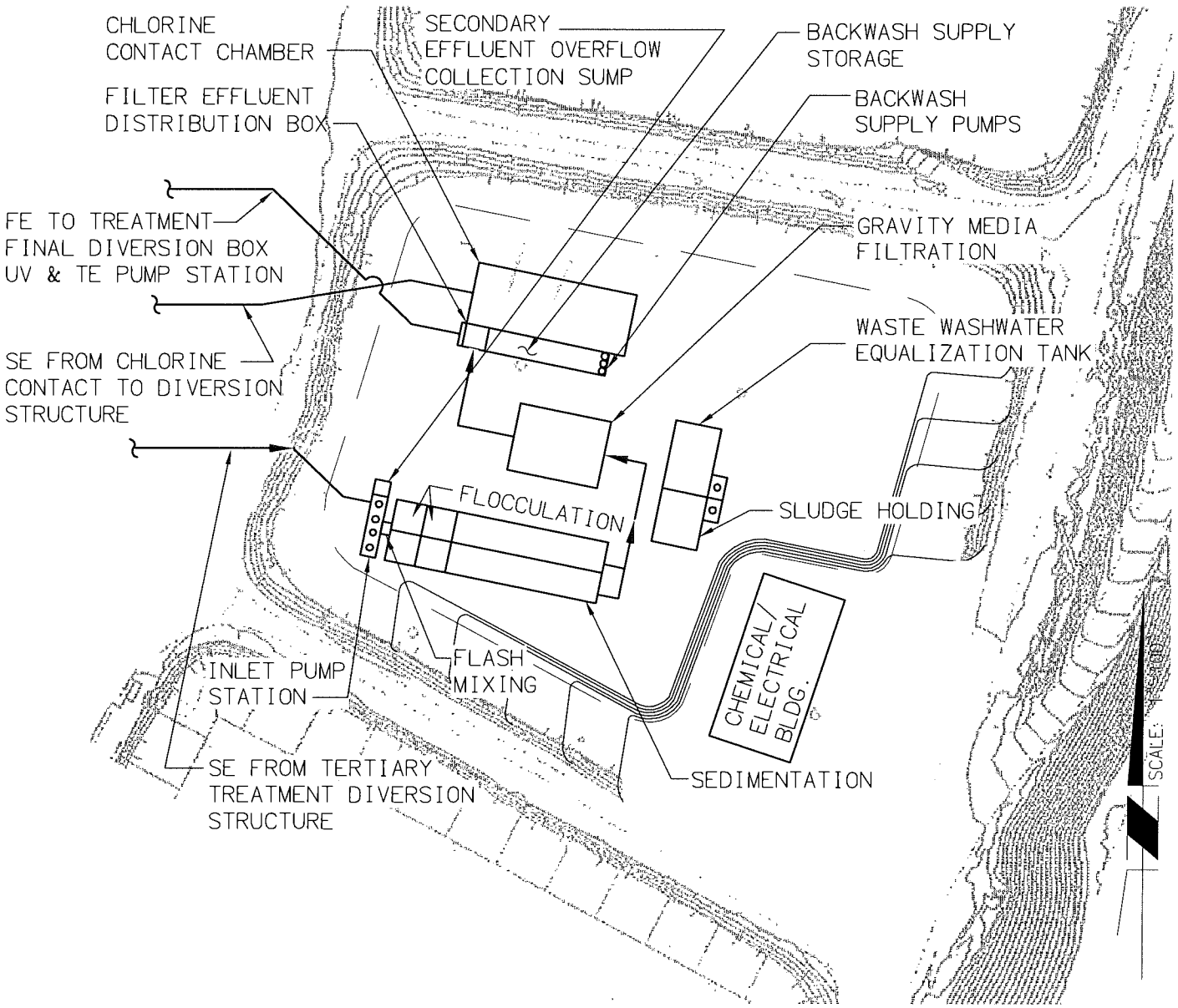
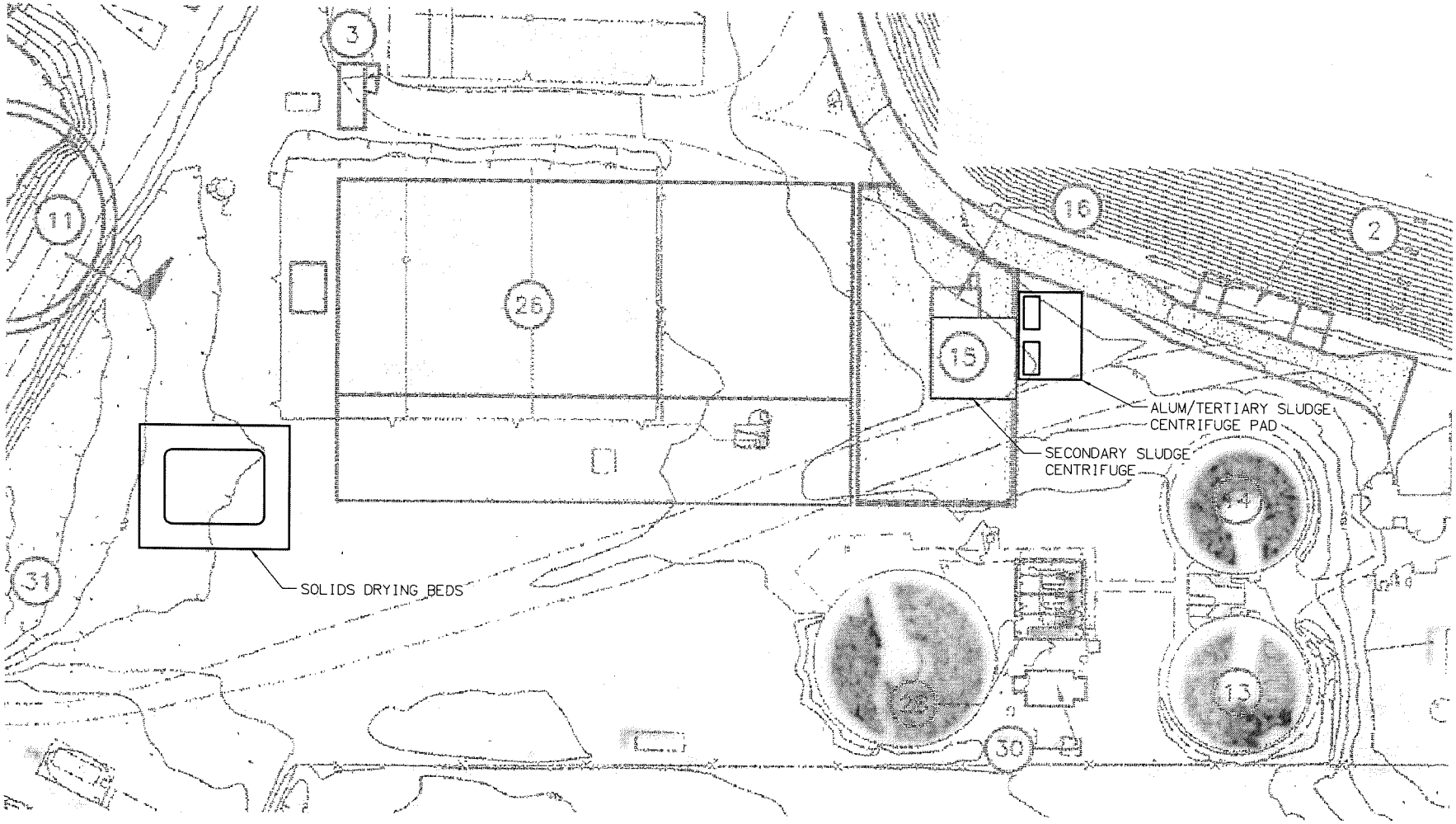


FIGURE 1-1
PROJECT LOCATION

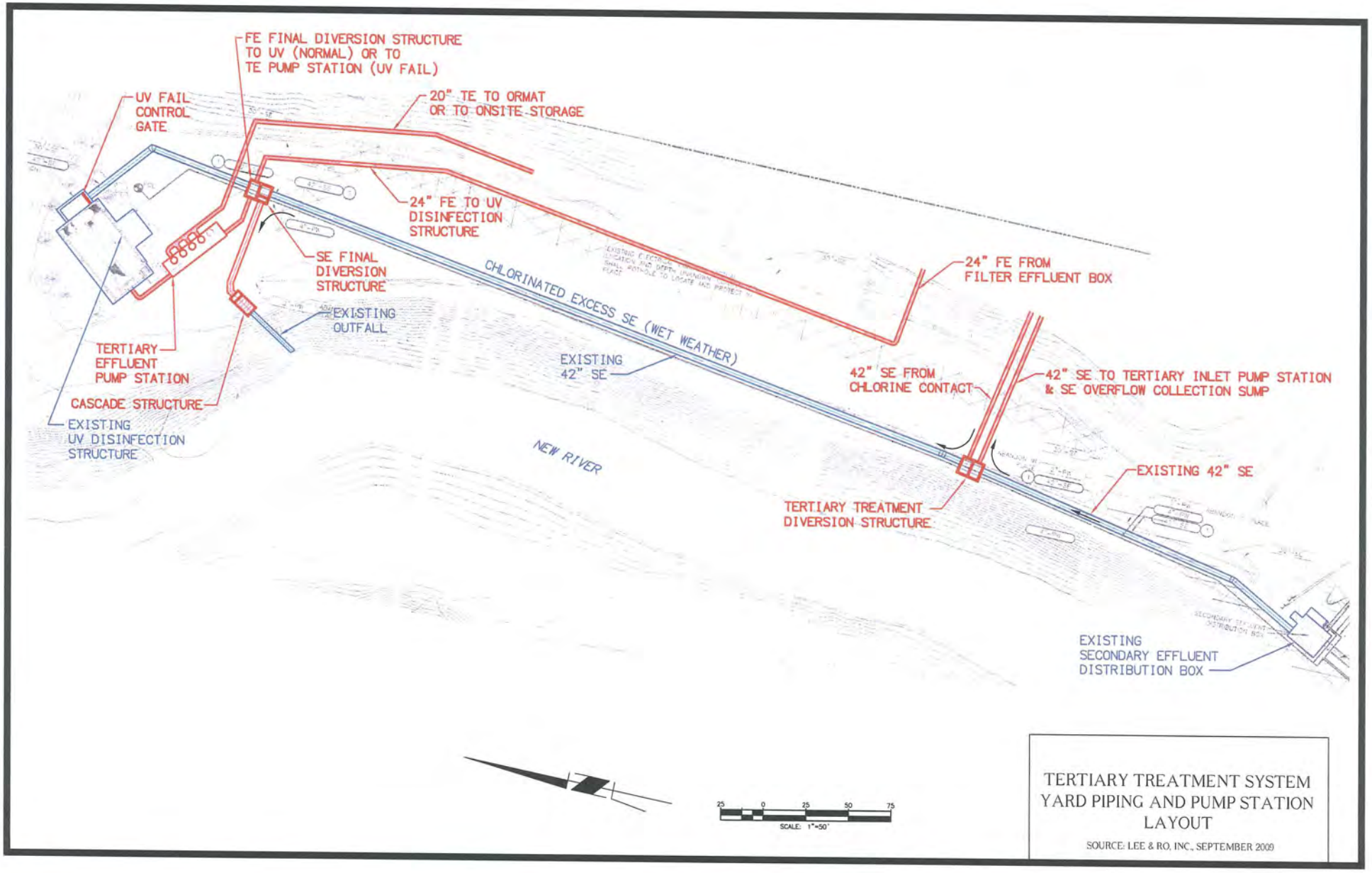


SITE PLAN FOR GRAVITY
MULTI-MEDIA FILTRATION
ALTERNATIVE



TERTIARY TREATMENT SYSTEM
CENTRIFUGE & SOLIDS DRYING BED
LAYOUT

SOURCE: LEE & RO, INC., SEPTEMBER 2009



TERTIARY TREATMENT SYSTEM YARD PIPING AND PUMP STATION LAYOUT

SOURCE: LEE & RO, INC., SEPTEMBER 2009

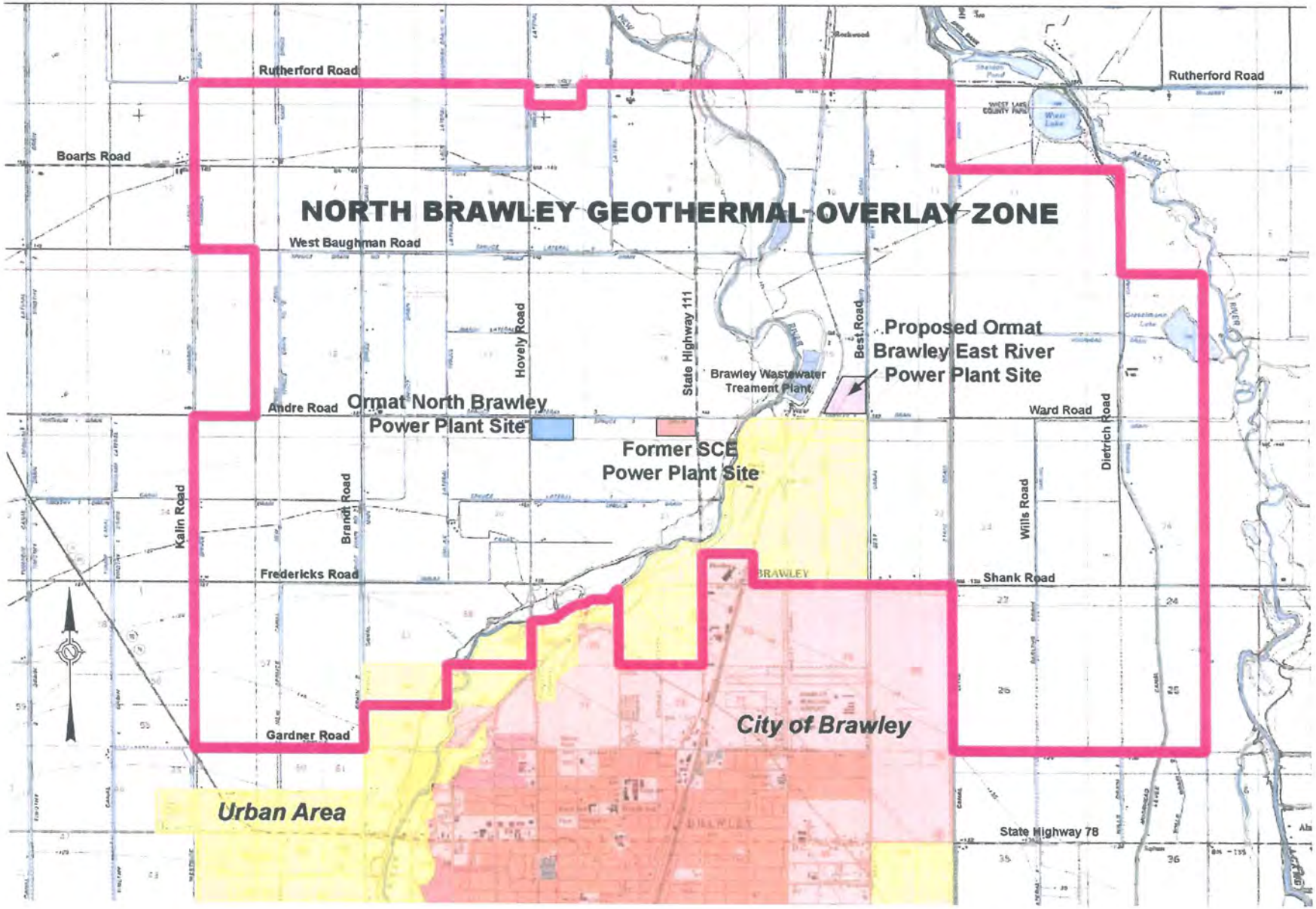


Figure 2: North Brawley Geothermal Overlay Zone Map Geothermal Wellfield – Brawley East River Development Project

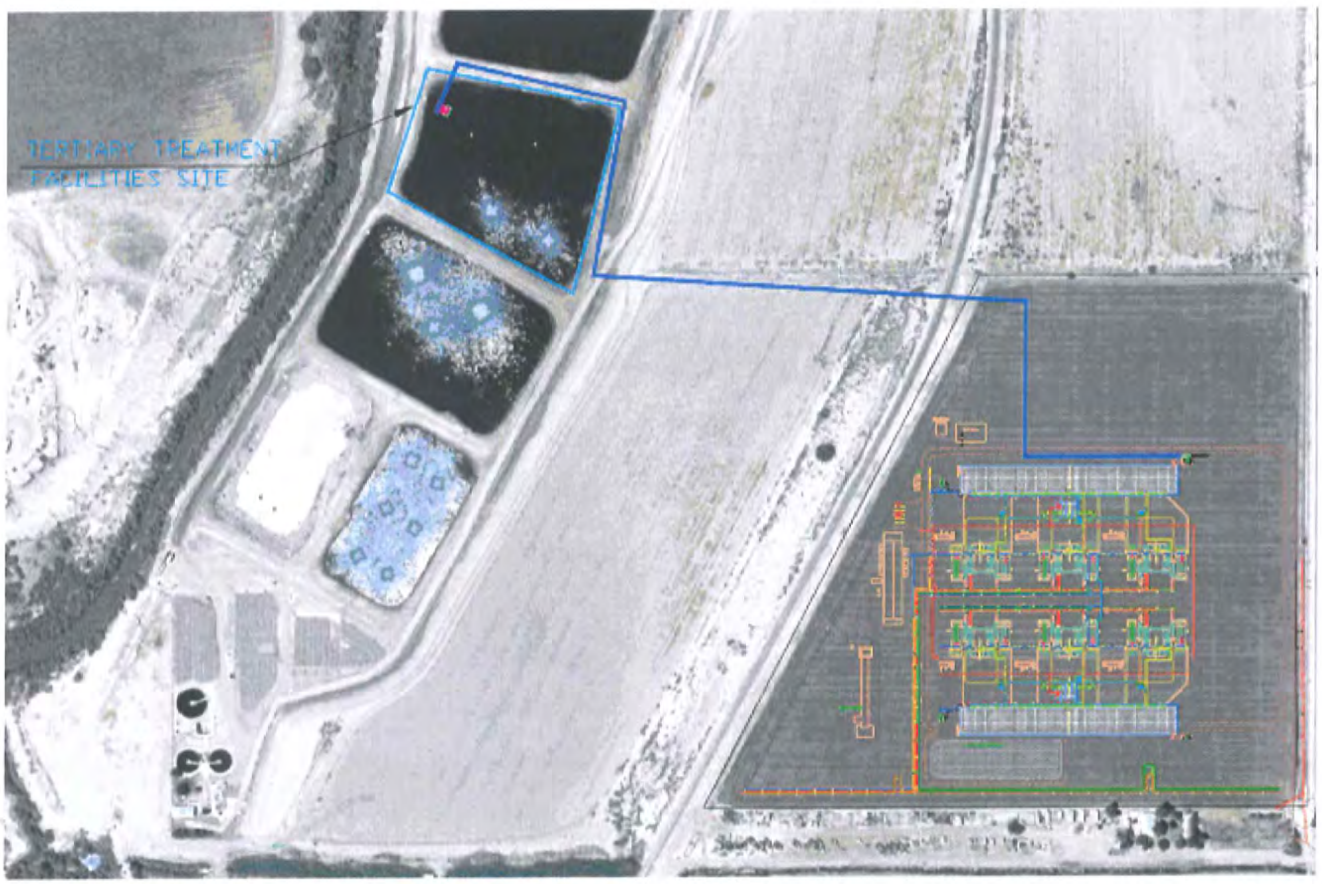


Figure 8: Proposed Tertiary Water Pipeline Route

Development
DESIGN &
ENGINEERING inc.

Date: December 3, 2009

To: Whom it may concern

From: Development Design & Engineering, Inc.
(Contact: Derek Dessert)

Re: ORMAT'S Environmental Assessment of East Brawley Geothermal Development Project's (EBGDP) Potential Impact to IID Drains & Salton Sea

Executive Summary

The purpose of this evaluation is to analyze the potential environmental impacts of ORMAT'S EBGDP to IID drains and the Salton Sea. ORMAT is proposing to construct and operate the East Brawley Geothermal Development Project northeast of the City of Brawley in Imperial County, California. The proposed water use for the facility is 5,500 acre-feet / year. This is the approximate amount of water needed to irrigate 1,048 +/- acres of agricultural land in Imperial Valley based on the assumption that an average acre of agricultural land uses 5.25 acre-feet per year, which is the 2009 apportionment for water users that have eligible farmable cropland.[1] After analyzing the impacts of the EBGDP to IID drains and the Salton Sea, we determined that any potential impacts are negligible, or less than significant, for the following reasons:

- The agricultural equivalent of land that correlates with ORMAT'S proposed water use equates to approximately 0.23% of IID's irrigated acreage, an insignificant amount.
- Approximately 13% of the total irrigated acreage within the Imperial Unit is irrigated at least twice, which conveys additional water to IID drains and the Salton Sea. When compared to this additional drainage water, EBGDP's reduction to drainage water is insignificant.
- Assuming the total average irrigated acreage of the Imperial Unit uses 5.25 acre-feet per acre per year; ORMAT proposes to use approximately 0.2% of all water used for agriculture in the Imperial Unit, an insignificant amount.
- ORMAT's reduction in drainage water is approximately 0.12% of the total outflow of the Salton Sea through evaporation, an insignificant amount.
- EBGDP's loss of drainage water is approximately 0.2% of the amount of drainage water generated from Imperial Unit's total average irrigated area, an insignificant amount.

The data supporting the above statements is provided in the section below.

[1] 5.25 acre-feet / acre / year is the 2009 apportionment amount approved by the IID Board of Directors on November 18, 2008; therefore, this analysis assumes it to be the annual-per-acre-water-usage for irrigable land within the Imperial Unit.

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1065 State Street
El Centro, CA 92243
info@dde-inc.net
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Section A: Imperial Unit Irrigated Acreage

The following was taken from the Salton Sea Ecosystem Restoration Program Programmatic Environmental Impact Report (SSERPPEIR):

> *The IID water service area encompasses 1,061,637 acres (IID, 2005a) including 460,000 irrigated acres. Total average irrigated acres of crops are over 520,000 acres/year due to multiple cropping efforts on the same land.*[2]

Based on the above-mentioned information, the agricultural equivalent of land that correlates with ORMAT's proposed water use (1,048 +/- acres) equates to approximately 0.23% of IID's irrigated area (approximately 460,000 acres). As IID's drainage conveyed to the Salton Sea is analyzed environmentally due to a reduction in the quantity of water used for agricultural purposes as development occurs, it is necessary to also consider increased drainage conveyed to the Salton Sea due to multiple cropping efforts per year on the same land. Based on the above-mentioned information from the SSERPPEIR, approximately 60,000 acres or 13% of the approximately 460,000 irrigated acres is being irrigated at least twice annually for agricultural purposes, thus conveying additional water to IID drains and the Salton Sea than compared to single irrigation efforts on such land. When the extra drainage water generated as a result of multiple cropping efforts per year on the same land is compared to the reduction in drainage water conveyed to District drains and the Salton Sea as an effect of the EBGDP, the result is clear that ORMAT's impact is insignificant. Under the assumption that the total average annual irrigated acreage (approximately 520,000 acres) of the Imperial Unit uses 5.25 acre-feet per acre per year, which equals 2,730,000 acre-feet per year, ORMAT is proposing to use 5,500 acre-feet per year or approximately 0.2% of the water used for agricultural production in the Imperial Unit.

Section B: Percentage of Conveyance to IID Drains and the Salton Sea / Evaporation

According to the SSERPPEIR the following is mentioned in regard to the quantity of drainage water conveyed to the Salton Sea:

> *Of the water delivered for on-farm use, 66 percent is used by crops, 3 percent is lost to evaporation from soil or water surfaces, 29 percent is captured in the drains as tailwater and tilewater that flows in the New and Alamo rivers or Salton Sea, and 2 percent seeps into the shallow groundwater and eventually flows into the Salton Sea.*[3]

Under the above projection, 29% of approximately 5,500 acre-feet per year (approximately 1,595 acre-feet per year) would no longer be conveyed to IID drains and the Salton Sea based on ORMAT's proposed water use for the EBGDP.

---

[2] Salton Sea Ecosystem Restoration Program Draft Programmatic Environmental Impact Report, pg. 5-10.
[3] Salton Sea Ecosystem Restoration Program Draft Programmatic Environmental Impact Report, pg. 5-10.

According to the SSERPPEIR, the following was stated regarding water inflow and outflow at the Salton Sea:

> *The estimated total average inflow to the Salton Sea, not including precipitation directly on the water surface, for the 1950 to 2002 period is estimated at 1,296,023 acre-feet/year with a minimum of 1,145,991 acre-feet/year in 1992 and a maximum of 1,464,736 in 1953. In recent years the total inflow has been about 1,300,000 acre-feet/year. The total outflow (through evaporation) for the historic period is estimated at 1,294,124 acre-feet/year*[4]

Upon comparison of the 1,595 +/- acre-feet per year that would no longer be conveyed to the Salton Sea as a result of project development with 1,294,124 acre-feet per year as the above-mentioned Salton Sea outflow through evaporation, it is apparent that 1,595 +/- is insignificant. 1,595 +/- acre-feet is equivalent to approximately 0.12% of the annual water that evaporates at the Salton Sea. According to the SSERPPEIR, "Evaporation is the single largest hydrologic component in the Salton Sea water budget and the largest outflow factor."[5] When 29% of the previously determined usage of 2,730,00 acre-feet per year for the Imperial Unit as well as ORMAT's projected use of 5,500 acre-feet per year are taken and compared, the result is EBGDP's loss of drainage water is 0.2 % of the amount of drainage water generated from Imperial Unit's total average irrigated area.

[4] Salton Sea Ecosystem Restoration Program Draft Programmatic Environmental Impact Report, pg. 5-17, 18.
[5] Salton Sea Ecosystem Restoration Program Draft Programmatic Environmental Impact Report, pg. 5-17.

From: Ron Leiken
Sent: Wednesday, December 09, 2009 9:33 PM
To: Vargas, Donald A
Cc: Angelina Havens; Remington, Michel D; VDBradshaw@IID.com; tshields@IID.com; Wilcox, Bruce; Marie Barrett; Derek Dessert; derek.dessert@gmail.com; Charlene Wardlow; Bob Sullivan; Randy Peterson; 'jurgheuberger@co.imperial.ca.us'; 'jimminnick@co.imperial.ca.us'
Subject: Ormat's response to IID comments on the East Brawley Geothermal Project's Potential Impact to IID Drains & Salton Sea

Dear Mr. Vargas,

This e-mail is in follow up to the one I sent this (Wednesday) morning. Because we were unable to meet in person today, I will provide our responses to your comments via this e-mail. I inserted our responses directly after your comments. Our responses are in blue font. If anybody is reading this from BlackBerry probably won't be able to see the font color and formatting. If anybody would like this in a Word document, please let me know.

Thank you again for your comments. Our responses below were prepared with assistance from our biological resources consultant, Marie Barrett, and Derek Dessert of DDE, the consultant who prepared the water supply assessment and the Salton Sea impact evaluation. In summary, as our responses below show, there are no significant impacts from the project. This is supported by the information we present below and by the simple inference that because DDE's evaluation clearly concluded that the proposed project would have a negligible or less-than-significant impact to the water supply to the Salton Sea, it can be inferred or implied that the impacts to biological resources as a result of this insignificant reduction in water would also be insignificant. We also show below that this project's contribution to cumulative impacts would also be less than significant.

Based on the previously completed studies and the information below, the recommendation for an Environmental Impact Report is unfounded and has no technical merit, as the numerous studies on the project over the last couple years clearly show that all potential impacts are less than significant. This includes professional studies on biological resources, cultural resources, traffic, air quality, noise, and water. All studies have shown that there are no potential significant impacts to any issue or topic area.

Ormat is a large private-sector employer in Imperial County, and adding this project to the several others we already have here would be of benefit to the County. As proven with other projects, Ormat is committed to implementing mitigation measures incorporated into the project and complying with our permit conditions. This project has already been stalled for a year, and we hope that we can get past these issues and move on and get this clean, renewable energy project started.

Regards,

Ron

Ron Leiken
Environmental/Regulatory Affairs Administrator
Main: (775) 356-9029 Ext. 32273
Cell: (775) 771-8717
6225 Neil Road
Reno, NV 89511
www.ormat.com | rleiken@ormat.com

From: Vargas, Donald A [mailto:DVargas@IID.com]
Sent: Tuesday, December 08, 2009 12:34 PM
To: Angelina Havens
Cc: Remington, Michel D; Bradshaw, Vikki Dee; Shields, Tina; Wilcox, Bruce
Subject: ORMAT'S Environmental Assessment of East Brawley Geothermal Development Project's Potential Impact to IID Drains & Salton Sea

Dear Ms. Havens

This is in response to Development, Design & Engineering's Environmental Assessment of ORMAT's East Brawley Geothermal Development Project's Potential Impact to IID Drains & Salton Sea dated December 3, 2009 and received today by e-mail.

The Imperial Irrigation District (IID) has reviewed the assessment and submits the following comments:

1. Since the attached document lacks any assessment of cumulative impacts considering other industrial facilities whose water use (or potential water use) would reduce the inflow conveyed to IID drains and subsequently, the Salton Sea, it's difficult to evaluate Ormat's findings. It is advisable that project proponent present a cumulative impact analysis on inflow to IID Drains and the Salton Sea.

   A brief cumulative impact analysis is as follows. The geothermal projects for which water applications have been submitted to IID and/or where CUP applications have been submitted to Imperial County for new industrial projects total approximately 8700 ac-ft. These include:

   a. East Brawley at 5500 ac-ft,

   b. Approximately 800 ac-ft for CHAR's Hudson Ranch 1 project, and

   c. Approximately 2400 ac-ft for CalEnergy's Black Rock projects at 800 ac-ft each.

   This total combined amount of water from these projects is approximately 1/3 of the 25,000 ac-ft allocated by IID for industrial use under the IWSP for non-agriculture projects. Using the same calculations as those previously done for East Brawley, 8700 ac-ft calculates to 2523 ac-ft less to the drains (8700 * 29% (% of water to tile/drains) which is less than 0.2% of the water evaporated from the Salton Sea. Thus, this cumulative loss of water to the drains and ultimately from proposed projects is also insignificant. Additionally, no one drain will be impacted more than another. As a side note, rather than an adverse cumulative impact, there is actually a positive cumulative impact from these projects, in that this water reduces the amount of salt going to the sea by 8,700 tons!

2. Project proponent did not address which drains will be impacted by the facility (there may be direct impacts to the drains discharging to the Salton Sea and that may have pupfish present). Also the assessment lacked proper location of facility; making it difficult to evaluate any other wildlife species issues, such as Yuma Clapper Rail.

   There are no drains near the proposed East Brawley power plant site that drain directly to the Salton Sea. Biological surveys completed in the area for the East Brawley project found no pup fish or Yuma Clapper Rail habitat. The project site is only 32.75 acres which will equal (32.75 x 5.25 = 172 ac-ft x 29%) 50 ac-ft of water less to the Livesley Drain which is adjacent to the property. The 5500 ac-ft needed for this project and the loss of 1595 ac-ft to the drains that results would not come from that specific area but generically from the entire IID system. Taking "away" 5500 acre-feet of water from agriculture, which is what is implied, would be spread across the IID's district, not in the project area. Thus, 5500 ac-ft x 29% = 1595 ac-ft less to drains across the county. If the same assumption is used for 8700 ac-ft, (8700 ac-ft/2,730,000), 0.32% less water goes to the drains from these proposed industrial projects. This is an insignificant cumulative loss which also would not affect vegetation and/or wildlife found in the drains and/or the Salton Sea.

3. We recommend that the project proponent review the IID's draft Integrated Water Resources Management Plan (IWRMP aka IRP) on the IID website (water page). Although the IRP will not have any significant impact until such time that our Board of Directors approves the plan, it provides a valuable source of information on water supply issues. However, pending approval of the IRP, the Interim Water Supply Policy (IWSP), will impact the project. The IID has adopted this Interim Water Supply Policy (IWSP) for Non-Agricultural Projects in order to address proposed projects that will rely upon a water supply from the IID

during the time that the IRP is still under development. The Interim Water Supply Policy is referenced in the IRP but can also be accessed at http://www.iid.com/Media/Interim-Water-Supply-Policy-6-16-09-final-draft.pdf

Ormat has reviewed the IWRMP, participated in IID meetings and submitted extensive comments. The document contains much incorrect data about existing geothermal projects in the valley in addition to cooling technologies that are not viable in this meteorological environmental. We have submitted similar comments to the California Energy Commission. The use of geothermal steam condensate for cooling water, which is source of water for flash plants, causes depletion of the geothermal resource, subsidence, and release of the noncondensible gases from the geothermal fluid and produces geothermal scales that may be hazardous. Whereas, the Ormat binary process which requires "raw" water eliminates these negative environmental impacts. This is viewed as that the Ormat binary process is a much cleaner and environmentally sound method over steam and flash type plants, and certainly an environmental improvement over coal and gas power plants.

4. Project proponent should comply with the various applicable requirements of the IID Water Conservation and Transfer Project draft Habitat Conservation Plan (HCP) and provide the analysis of compliance with the HCP (or at least the existing Section 7 Biological Opinion) and CESA 2081. The project's analysis and CEQA document should demonstrate that they have reviewed the requirements and provide some level of detail as to whether the project is in compliance or recommend mitigation consistent with the HCP and/or existing permit requirements. This should include some level of cumulative analysis and some recognition of the seasonal importance of the loss of drain water. The following are the access links to the documents mentioned:

    - The **HCP** is part of the IID Water Conservation and Transfer Project, Final EIR/EIS and can be found at *http://www.iid.com/Water/FinalEIREIS*; Volume II, Appendix A, Habitat Conservation Plan. The **HCP** in Draft EIR/EIS (there may be small changes in draft HCP from draft and final version of the EIR/EIS. It is in a different appendix in the draft than the final EIR/EIS. We use the draft HCP at his point; the final HCP will be approved with the NCCP can be accessed at *http://www.iid.com/Water/DraftEIREIS*
    - The **Biological Opinion** (federal ESA permit) is at *http://www.iid.com/Media/In-Valley-BO.pdf*
    - The **CESA 2081** (the water transfer operates under this state ESA permit until NCCP is approved) can be found at *http://www.iid.com/Media/California-Endangered-Species-Act.pdf* and at *http://www.iid.com/Media/LCR-MSCP-CESA-2081-Permit-Final.pdf*
    - The **MMRP** (Mitigation Monitoring and Report Program.) Various permits reference the EIR/EIS so the MMRP is used in our current implementation) *http://www.iid.com/Media/Exhibit-B---MMC_MMRP_Complete_6-12-08.pdf*

    We have reviewed the mentioned documents. As shown in the calculations above, the proposed amount of water is insignificant to biological resources and, thus, will not impact either individually or cumulatively the requirements of the IID Water Conservation and Transfer Project draft HCP.
    In addition, pending the City of Brawley's completion of upgrades to the treatment plant currently scheduled for 2012, tertiary treated water is planned to replace IID's pending water contract. Therefore, this is a temporary use of "raw" water from IID, about 2-5 years.

5. Due to the size of the project we feel it is appropriate to recommend that the project proponent develop an Environmental Impact Report (EIR).

    For the reasons stated at the top of this e-mail and in our direct responses above, the use of IID's temporary water commitment to the East Brawley project is insignificant. We feel it would be

completely inappropriate to recommend an EIR, as the many technical studies already performed for the project concluded there would be no significant impact. There is no technical merit to recommending or requiring an EIR.

Should you have any questions, please do not hesitate to contact me by phone at 760-482-3609 or by e-mail. Thank you for the opportunity to comment on this matter.

Donald Vargas
Environmental Specialist I
Environmental Compliance Unit
Environmental, Regulatory & Emergency Planning Section
Imperial Irrigation District
321 S. Waterman Ave., Suite 100
El Centro, CA 92243
Tel: (760) 482-3609
Cel. (760) 427-8099
Fax: (760) 482-3603
E-mail: dvargas@iid.com

"If you don't know where you're going any road will take you there" -George Harrison

STATE OF CALIFORNIA

Energy Resources Conservation
and Development Commission

In the Matter of Complaint Against ORMAT NEVADA, INC. Brought By CALIFORNIA UNIONS FOR RELIABLE ENEERGY	))))	Docket No. 11-CAI-02

PROOF OF SERVICE

I, Karen A. Mitchell, declare that on August 29, 2011, I served the attached **VERIFIED ANSWER OF RESPONDENT ORMAT NEVADA, INC. TO VERIFIED COMPLAINT AND REQUEST FOR INVESTIGATION BY CALIFORNIA UNIONS FOR RELIABLE ENERGY** via electronic and U.S. mail to all parties on the attached service list.

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

Karen A. Mitchell

SERVICE LIST
11-CAI-02

RESPONDENT

Ormat Nevada, Inc.
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North Brawley System Impact Study

An Analysis for the
Imperial Irrigation District

~Final Report~
December 11, 2007

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EXECUTIVE SUMMARY

Power Flow Analysis

KEMA Inc. and IID's Planning Section performed the Power Flow Analysis to review the impact of the proposed North Brawley 150 MW generation project ("Project") when delivering power to IID internal electrical network (50 MW), (50 MW) to SCE and 50 MW for North Brawley load project in the 2010 timeframe. The base case has modeled the new IID Niland Generation Project with 100 MW (Heavy Summer ON-Line, Light Winter OFF-Line). The Project was modeled as Twelve 12.5 MW generators connected to the "CO" 92 kV line. The System Impact Study included power flow, transient and post-transient stability analysis for peak (heavy summer) and off-peak (light winter) conditions, modeled using Western Electric Coordinating Council ("WECC") cases with a detailed IID system representation for 2010. The short circuit analysis, performed by PDS consulting, PLC, is also included as part of this system impact study at the request of IID.

For the conditions modeled, the system impact study indicated that the addition of the North Brawley Project will have some impact on IID's voltage and thermal loading conditions for the different scenarios studied under normal and contingency conditions. Voltage deviation and thermal rating violations attributable to the addition of the Project will require the design and implementation of a few System Operating Procedures (SOPs) and/or system upgrades. The addition of the Project and its associated dispatch to Southern California Edison showed 2.5 MW increase on IID system losses for the Heavy Summer and 5.0 MW for the Light Winter system condition. The study results show that there were pre-existing voltage and thermal violations under outage conditions that were not attributable to the project. These system violations were not included in this report and are being addressed in other planning forums.

Transient Stability

KEMA Inc. on behalf of Imperial District ("IID") performed this Transient Stability analysis indicated that the addition of the Project does not adversely impact the stability response of the system. On stability outages of the generator transformers, it has been noted that the generator itself must be tripped. Generation tripping for the loss of the step-up transformer is a common practice and does not represent any additional problems to the IID system.

LIST OF APPENDICES

Short Circuit Analysis

A short circuit analysis was performed by PDS consulting, PLC. The executive summary reports the following:

A short circuit study and breaker capability analysis has been performed to determine the impact of the additional North Brawley generation facility to the IID Energy transmission system. The analysis found minimal impacts to the interrupting capability of the IID Energy transmission system due to the addition of the North Brawley generation facility. The analysis also found that the interrupting capability of two of the breakers, H40 and H50, at the Euclid Substation will be exceeded (the pre-Project fault levels were at 99% of the interrupting capability while the post-Project fault level was found to be 101%), however IID Energy can re-schedule to an earlier date a project to replace the affected equipment with sufficient interrupting capacity prior to the in-service date of the North Brawley project.

The results of the study also indicated that there are a few fault interrupting devices on the IID Energy system which have fault current exposure levels near of their respective interrupting ratings (specifically Imperial Valley 230kV and El Centro 92kV). However, these interrupting rating concerns have been identified as pre-existing conditions and not directly related to the North Brawley generation project.

Sensitivity Short Circuit Analysis

A sensitivity analysis of to the original short circuit study and breaker capability analysis has been performed per project owner request to determine the impact of the North Brawley project phase A (6 generators in the amount of 12.5MW each) connected to the IID Energy transmission system.

The analysis found that the fault duty at the Euclid 92 kV substation will exceed the interrupting capability of two of the breakers, H40 and H50, at this substation (the pre-Project fault levels were at 98.4% of the interrupting capability while the post-Project fault level was found to be 100.04%), Even though these short circuit violations are marginal, the IID standard requires the replacement of these breakers once they reach their interrupting capability.

Post-Transient Stability Analysis

The addition of the North Brawley Project did not impact the existing reactive power margins at selected buses for all the outage simulation studied with the exception of the Imperial Valley – Miguel 500 kV line outage. An outage of the Imperial Valley-Miguel 500 kV line caused the reactive power margin at five (5) IID buses to decrease up to 4 MVAR. In particular, the addition of the North Brawley Project and the subsequent outage of the Imperial Valley –Miguel 500 kV line caused the reactive power margin at N. LAQUITA 92 kV bus to decrease from 103 MVAR to 99 MVAR.

A summary of the post-transient reactive power margin analysis can be found at Appendix B. Positive reactive power margins were obtained at all the buses monitored following the selected outages.

1 INTRODUCTION

KEMA Inc. and PDS Consulting, on behalf of Imperial Irrigation District ("IID"), performed this System Impact Study to review the impact of the proposed North Brawley 150 MW generation project ("Project") when delivering power to IID internal network (50 MW), (50 MW) to SCE and 50 (MW) to serve the Project internal load in the 2010 timeframe. The base case has modeled the new IID Niland Generation Project with 100 MW (Heavy Summer ON-Line, Light Winter OFF-Line). The Project was modeled as Twelve 12.5 MW generators connected to the "CO" 92 kV line. The System Impact Study included power flow, transient and post-transient stability analysis for peak (heavy summer) and off-peak (light winter) conditions, modeled using Western Electric Coordinating Council ("WECC") cases with a detailed IID system representation for 2010. The short circuit analysis, performed by PDS consulting, PLC, is also included as part of this system impact study at the request of IID.

2 STUDY ASSUMPTIONS

2.1 Cases Studied

This North Brawley analysis used power flow models representative of an IID 2010 system. The following peak (heavy summer) and off-peak (light winter) scenarios were studied:

Season	PSLF Case Name	Description
Heavy Summer	Pre-Project	Planned heavy summer configuration without the Project
Heavy Summer	Post-Project	Planned heavy summer configuration with Project - net output 100 MW
Light Winter	Pre-Project	Planned light winter configuration without the Project
Light Winter	Post-Project	Planned light winter configuration with the Project - net output 100 MW

2.2 Case Assumptions

The two WECC Approved Power Flow Base Cases used to develop the North Brawley System Impact Study were:
Heavy summer . . . . 10hs1a.SAV .....Approved 08/24/05
Light winter . . . . . 12lw1sa.SAV.....Approved 01/19/06

Both cases were selected because they were the most recently developed and available cases in the WECC library in the vicinity of the Project's in-service date. The IID system loads, resources, and topology were adjusted to represent the conditions expected in the year the Project planned to initiate operations.
The 2010 case used to model the impact of the Project included planned transmission elements internal to the IID system for the timeframe as well as the following changes to the base case:

- Generation was modeled according to the IID's current generation interconnection (IID Queue list) that reflects generation expected to be in operation during the study time frame. The generation at Niland 92 kV substation was dispatched according to typical usage, Heavy Summer ON-Line, Light Winter OFF-Line.
- IV – Dixieland 230 kV line and 230/92 kV transformer.
- El Centro 230/92 kV transformer.

2.3 Dynamic Models

The stability models used for the Project were provided by the Project sponsor and included:
Generator – GENSA1 - Salient pole generator represented by equal mutual inductance rotor modeling.
Exciter – EXAC8B – Brushless exciter with PID voltage regulator.
Governor –W2301- Woodward 2301 governor and basic turbine model.

2.4 Loads and Resources

The table below shows the IID loads, losses, generation, and area interchange for the cases studied.

Case	Summer Pre	Summer Post	Winter Pre	Winter Post
Load (MW)	1193.6	1243.6	268.5	318.5
Load (MVAR)	443.8	474.7	60.7	91.6
Losses (MW)	58.1	59.5	37.0	42.7
Losses (MVAR)	323.5	332.6	195.3	243.3
Interchange (MW)	74	174	770.7	870.3
Total IID Shunts (MVAR)	-558.7	-587.8	-197.4	-214.4
IID Generation (MW)	1325.5	1476.9	1076.3	1231.5
IID Generation (MVAR)	179.9	209.7	60.7	112.1

2.5 Power Flow Evaluation Criteria

For this analysis, the system was evaluated for its thermal loading capacity and voltage performance (primarily voltage drop). The system was evaluated both with all lines in service and under emergency or unplanned outage conditions that might occur such as the outage of a line or transformer. WECC Reliability Criteria and the North American Electric Reliability Council ("NERC") Planning Standards were used to evaluate the system as noted below. While the NERC/WECC criteria are applicable, the interconnecting transmission system owner/operator may have stricter voltage or thermal conditions based on operating or reliability needs.

The following criteria were used to determine the impact of the facility on IID's system for pre-contingency and post-contingency conditions:

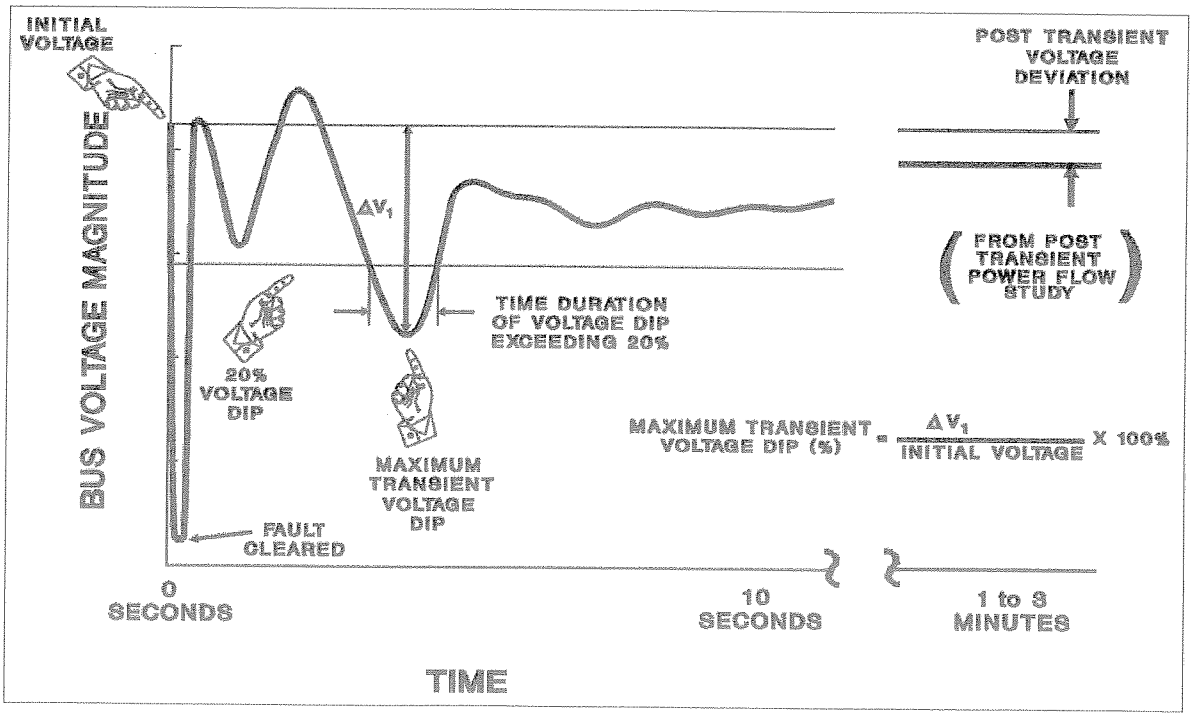
- Pre-disturbance bus voltage must be between 0.95 per unit and 1.05 per unit. (an IID-specific requirement)
- Allowable voltage deviation of five (5) percent for N-1 Contingencies (deviation from pre-disturbance voltage).
- Allowable voltage deviation of ten (10) percent for N-2 contingencies (deviation from pre-disturbance voltage).
- Post-transient bus voltage must be at least 0.90 per unit (an IID-specific requirement)
- Pre- and post-disturbance loading to remain within the emergency ratings of all equipment and line conductors. The emergency ratings are determined by the owner/operator of each equipment item.

As applied in the analysis, all tables and results for loading criteria were based on the normal or continuous rating (Rating 1) for all lines in service conditions and the emergency rating (Rating 2) for outage conditions.

2.6 Stability Analysis Evaluation Criteria

The following NERC/WECC stability criteria[1] were used to evaluate the impact of the Project:

NERC and WECC Categories	Outage Frequency Associated with the Performance Category (outage/year)	Transient Voltage Dip Standard	Minimum Transient Frequency Standard	Post Transient Voltage Deviation Standard
A System normal	Not Applicable	Nothing in addition to NERC		
B One element out-of-service	≥ 0.33	Not to exceed 25% at load buses or 30% at non-load buses. Not to exceed 20% for more than 20 cycles at load buses.	Not below 59.6Hz for 6 cycles or more at a load bus.	Not to exceed 5% at any bus.
C Two or more elements out-of-service	0.033 – 0.33	Not to exceed 30% at any bus. Not to exceed 20% for more than 40 cycles at load buses.	Not below 59.0Hz for 6 cycles or more at a load bus.	Not to exceed 10% at any bus.
D Extreme multiple-element outages	< 0.033	Nothing in addition to NERC		



[1] Reference: Western Electricity Coordinating Council NERC/WECC Planning Standards, Revised August 9, 2002, page 12-13.

3 STUDY METHODOLOGY

3.1 Power Flow Methodology

Power flow analysis considers a snapshot in time where tap changing transformers, static var devices, and phase-shifters have had time to adjust. In addition, a swing generator balances generation and load (plus losses) on the system during each contingency scenario. All power flow analysis was conducted with version 16 of General Electric's PSLF software. Power flow results were monitored and reported for the IID area.

Thermal and voltage performance of the system was evaluated under normal N-0 (no contingency), emergency N-1 (single contingency) and select N-2 (double contingency) conditions. Thermal loadings were reported when a modeled transmission component loaded to 100% or more of its normal MVA rating (as provided in the power flow database).

Transmission voltage violations for normal N-0 (no contingency) conditions were reported where per unit voltages were less than 0.95 or greater than 1.05. Emergency (N-1, single contingency and N-2 double contingencies) voltage violations were reported when per unit voltage was less than 0.90 or greater than 1.05. In addition, voltage deviations between the pre- and post-contingency conditions were recorded whenever these deviations were greater than 5% for single contingencies and 10% for double contingencies between the pre- and post-Project power flow cases.

3.2 Transient Stability Methodology

Transient stability analysis is a time-based simulation that assesses the performance of the power system shortly before, during, and shortly following a contingency. Transient stability studies were performed to verify the stability of the system following a system fault.

Transient stability analysis was performed based on WECC Disturbance-Performance Criteria for selected system contingencies using version 16 of General Electric's PSLF software. Transient stability contingencies were simulated for 10 seconds, including 1 second of pre-disturbance data and 9 seconds of post disturbance response. All faults for all voltages assumed a 4 cycle breaker clearing time. System damping was assessed visually with the aid of stability plots.

The following parameters were plotted on the stability plots:

Rotor Angle

The rotor angle plots assist in determining how the proposed Project would swing with respect to other generators in the area. The plots indicate whether the unit would remain synchronous with the rest of the system following a disturbance.

Generator Speed

The generator speed plots, assist in determining how the proposed Project would react (speed up, slow down) with respect to other generators in the area. The plots indicate whether the unit would remain synchronous with the rest of the system following a disturbance.

Bus Voltage

Bus voltage plots provide a means of detecting out-of-step conditions and are useful to assess the magnitude and duration of post disturbance voltage dips and peak-to-peak voltage oscillations. The voltage plots also indicate system damping response and the expected bus voltage following the disturbance.

Bus Frequency

Bus frequency plots provide expected magnitude and duration of post-disturbance frequency swings as well as indicating possible over-frequency or under-frequency conditions.

3.3 Post-Transient Stability Methodology

The WECC/NERC standard was used to assess the adequacy of the study results. The post-Transient analysis related evaluation criteria used are:

Maximum voltage deviations allowed at all buses in the post-transient time frame will be 5% for N-1 and 10% for N-2 unless a lower standard has been previously adopted on selected buses. Southern California Edison (SCE) allows a lower standard of 7% post-transient voltage deviation for N-1 contingencies. Table 1 also provides a summary of the WECC/NERC post-transient deviation standard.

The post-transient reactive power margin analysis evaluated criteria used are:

- Minimum reactive power margin at any bus following N-1 outage is 100 Mvar
- Minimum reactive power margin at any bus following N-2 outage is 50 Mvar.

NERC and WECC Categories	Outage Frequency Associated with the Performance Category (outage/year)	Transient Voltage Dip Standard	Minimum Transient Frequency Standard	Post Transient Voltage Deviation Standard
A System normal	Not Applicable	Nothing in addition to NERC		
B One element out-of-service	□ 0.33	Not to exceed 25% at load buses or 30% at non-load buses. Not to exceed 20% for more than 20 cycles at load buses.	Not below 59.6Hz for 6 cycles or more at a load bus.	Not to exceed 5% at any bus.
C Two or more elements out-of-service	0.033 – 0.33	Not to exceed 30% at any bus. Not to exceed 20% for more than 40 cycles at load buses.	Not below 59.0Hz for 6 cycles or more at a load bus.	Not to exceed 10% at any bus.
D Extreme multiple-element outages	< 0.033	Nothing in addition to NERC		

Table 1: WECC/NERC Post-Transient and Stability Analysis Evaluation Criteria

4 PEAK (HEAVY SUMMER) POWER FLOW FINDINGS

This section provides the results obtained by applying the assumptions and methodology. It illustrates the findings associated with the power flow analysis for the peak, heavy summer condition.

4.1 Peak (heavy summer) Pre and Post Project Cases

The pre-project case was used as a benchmark for the analysis. The post-Project case energized the North Brawley Project connected radial to the Calipatria – Park View 92 kV line and scheduled 50 MW of power for delivery to Southern California Edison.

As compared to the benchmark (pre-Project) case, the addition of the Project showed a few voltage and thermal loadings violations. These violations were noted in the base case under both, the single and double contingency scenarios. Below are violations attributable to the project as shown in the following tables. The impact to IID system losses was 2.5 MW. The primary direction of flow from the Project was towards the Park View substation.
The tables depict voltage deviation greater than 5% for N-1 conditions and greater than 10% for N-2 conditions.

N-1 Voltage Deviation Findings

Bus	Name	kV	Area	Zone	Outage	Pre	Post	Outage description
8378	SALTCITY	92	8	163	Line_8	0.0495	0.0509	Line AVE58-OASIS 92 Circuit 1

N-2 Voltage Deviation Findings

Bus	Name	kV	Area	Zone	Outage	Pre	Post	Outage description
NONE								

4.2 Peak (heavy summer) Loading Comparison tables

To ease the comparison between cases, the following tables show the loading on IID elements for all equipment in service (no outage, N-0) and for contingency conditions (N-1 and N-2). Overload percentages are based on the continuous rating for N-0 conditions and emergency ratings for contingency conditions. IID, for screening purposes, typically uses identical continuous and emergency ratings for its facilities. Typically 110% of continuous rating is an acceptable emergency rating.

4.2.1 Peak (heavy summer) N-0 Continuous Loading

No thermal loading violations were observed on any IID system element prior to simulating a contingency outage. This observation applies to both the pre-project and post-project summer cases.

4.2.2 Peak (heavy summer) N-1 Single Contingency Loading

The following table shows the element loadings for the most significantly overloaded elements and shows the impact the Project has on the loadings of elements due to outages. Please refer to Appendix B (Pre) and Appendix C (Post) for all the loading data.

From	Name	kV	To	Name	kV	ck	Type	MVA	Outage	Pre	Post	Outage description
8279	CVSUB	92	8808	CVSUB161	161	1	Tran	125	tran_96	95.30%	103.30%	Tran AVE58 92.00 to AV58 161.00 Circuit 1
8281	AVE58	92	8805	AV58	161	1	Tran	125	line_4	98.50%	101.60%	Line CVSUB 92.0 to JACKSON 92.0 Circuit 1
8281	AVE58	92	8805	AV58	161	1	Tran	125	line_8	97.40%	100.60%	Line AVE58 92.0 to OASIS 92.0 Circuit 1

4.2.3 Peak (heavy summer) N-2 Double Contingency Loading

The following table shows the element loadings for the most significantly overloaded elements and shows the impact the Project has on the loadings of elements due to outages. Please refer to Appendix B (Pre) and Appendix C (Post) for all the loading data.

From	Name	kV	To	Name	kV	ck	Type	MVA	Outage	Pre	Post	Outage description
NONE												

4.3 Peak (heavy summer) Element Flow

The following table highlights the magnitude (not direction) of flow (in MW) of various IID elements and WECC-defined paths under continuous conditions.

Element (unit of measure)	Summer Pre	Summer Post
EC 161/230 Transformer (MW)	6.6	0.2
AVE 58 161/92 Transformer Circuit 1 (MW)	109.4	113.3
NILAND 161/92 Transformer Circuit 1 (MW)	4.1	17.2
CV 92/161 Transformer Circuit 1 (MW)	44.9	52.3
IV 500/230 Transformer Circuit 1 (MW)	104.2	147.2
IV 500/230 Transformer Circuit 2 (MW)	23.4	33.1
Niland-Blythe 161 kV (MW)	-117.7	-109.1
Niland-Blythe 161 kV (MVAR)	34.3	30.8
IV-El Centro SW 230 kV (MW)	2.3	41.8
IV-El Centro SW 230 kV (MVAR)	30.8	27.6
Mirage-Ramon 230 kV (MW)	149.5	161.5
Mirage-Ramon 230 kV (MVAR)	-30.5	-20.3
Coachella-Devers 230 kV (MW)	58.0	67.3
Coachella-Devers 230 kV (MVAR)	-21.5	-23.0
Path 42 (MW)	207.2	228.4
Path 42 (MVAR)	-60.5	-65.2
Path 46 (MW)	6210.4	6241.5
Path 49 (MW)	4078.8	4034.4
SCIT (MW)	14218.3	14251.1

5 OFF-PEAK (LIGHT WINTER) POWER FLOW FINDINGS

This section provides the results obtained by applying the assumptions and methodology. It illustrates all findings associated with the power flow analysis for the winter, off-peak, conditions.

5.1 Off-peak (light winter) Pre and Post Project Cases

The pre-project case was used as a benchmark for the analysis. The post-Project case energized the North Brawley Project connected radial to the Calipatria – Park View 92 kV line and scheduled 50 MW of power for delivery to Southern California Edison

As compared to the benchmark (pre-Project) case, the addition of the Project showed a few voltage and thermal loadings violations. These violations were noted in the base case under both, the single and double contingency scenarios. The highlighted violations are attributable to the project as shown in the following tables. The impact to IID system losses was 5.0 MW. The primary direction of flow from the Project was towards the Park View substation.
The tables depict voltage deviation greater than 5% for N-1 conditions and greater than 10% for N-2 conditions.

N-1 Voltage Deviation Findings

Bus	Name	kV	Area	Zone	Outage	Pre	Post	Outage description
NONE								

N-2 Voltage Deviation Findings

Bus	Name	kV	Area	Zone	Outage	Pre	Post	Outage description
NONE								

5.2 Off-peak (light winter) Loading Comparison tables

To ease the comparison between cases, the following tables show the loading on IID elements for all equipment in service (no outage, N-0) and for contingency conditions (N-1 and N-2). Overload percentages are based on the continuous rating for N-0 conditions and emergency ratings for contingency conditions. IID, for screening purposes, typically uses identical continuous and emergency ratings for its facilities. Typically 110% of continuous rating is an acceptable emergency rating.

5.2.1 Off-peak (light winter) N-0 Continuous Loading

No thermal loading violations were observed on any IID system element prior to simulating a contingency outage. This observation applies to both the pre-project and post-project winter cases.

5.2.2 Off-peak (light winter) N-1 Single Contingency Loading

The following table shows the element loadings for the most significantly overloaded elements and shows the impact the Project has on the loadings of elements due to outages. Please refer to Appendix D (Pre) and Appendix E (Post) for all the loading data.

From	Name	kV	To	Name	kV	ck	Type	MVA	Outage	Pre	Post	Outage description
8331	ELCENTSW	161	8335	ELSTEAMP	92	1	Tran	125	line_42	77.8%	107.8%	Line ELCENTSW 230.0 to IMPRLVLY 230.0

5.2.3 Off-peak (light winter) N-2 Double Contingency Loading

The following table shows the element loadings for the most significantly overloaded elements and shows the impact the Project has on the loadings of elements due to outages. Please refer to Appendix D (Pre) and Appendix E (Post) for all the loading data.

From	Name	kV	To	Name	kV	ck	Type	MVA	Outage	Pre	Post	Outage description
NONE												

5.3 Off-peak (light winter) Element Flow

The following table highlights the magnitude of flow (in MW) of various IID elements and WECC-defined paths under continuous conditions.

Element (unit of measure)	Winter Pre	Winter Post
EC 161/230 Transformer (MW)	23.4	29.8
AVE 58 161/92 Transformer Circuit 1 (MW)	29.3	38.1
NILAND 161/92 Transformer Circuit 1 (MW)	22.1	40.1
CV 92/161 Transformer Circuit 1 (MW)	22.7	30.2
IV 500/230 Transformer Circuit 1 (MW)	190.5	222.0
IV 500/230 Transformer Circuit 2 (MW)	42.7	49.7
Niland-Blythe 161 kV (MW)	8.9	20.0
Niland-Blythe 161 kV (MVAR)	0.5	3.6
IV-El Centro SW 230 kV (MW)	164.5	208.4
IV-El Centro SW 230 kV (MVAR)	14.3	-1.2
Mirage-Ramon 230 kV (MW)	314.9	331.7
Mirage-Ramon 230 kV (MVAR)	18.1	-14.1
Coachella-Devers 230 kV (MW)	246.0	259.8
Coachella-Devers 230 kV (MVAR)	21.6	32.2
Path 42 (MW)	557.2	587.4
Path 42 (MVAR)	-13.7	-2.3
Path 46 (MW)	6733.1	6782.8
Path 49 (MW)	5185.8	5142.4
SCIT (MW)	5979.9	6030.8

6 TRANSIENT STABILITY FINDINGS

Transient stability analysis was performed to assess impacts pertaining to the North Brawley generators. Transient voltage dips and first swing angular stability were studied to identify any stability issues. Stability analysis was performed using the heavy summer and light winter base cases. Six normal fault clearing and six backup fault clearing cases (**Appendix D**) were selected very close to the proposed generator. Monitored parameters included rotor angles, terminal or bus voltage and frequency profiles. The study found that voltage dips are within acceptable limits and the rotor angles damp adequately followed by a disturbance in the system.

6.1 Peak (heavy summer) cases

The following outages were simulated and monitored for impact at the local project bus (North Brawley) and selected regional busses for the Pre-Project and Post-Project:

Outage	Summer Pre-Project	Summer Post-Project
No Outage	Stable	Stable
Three phase fault at bus 8963 opens: NTHBRTP2 92/13.2 transformer	Not in service	Stable
Three phase fault at bus 8967 opens: NTHBRTP2 92/13.2 GPNB01and NTHBRTP2 92/13.2 GPNB02 transformers	Not in service	Stable
Three phase fault at bus 8962 opens: NTHBRTP2 92/13.2 GPNB01, NTHBRTP2 92/13.2 GPNB02, NTHBRTP3 92/13.2 GPNB03 and NTHBRTP3 92/13.2 GPNB04 transformers plus NWSWYRD-NTHBRTP2 and NWSWYRD-NTHBRTP3 lines	Not in service	Stable
Three phase fault at bus 8970 opens: NTHBRTP2 92/13.2 GPNB01, NTHBRTP2 92/13.2 GPNB02, NTHBRTP3 92/13.2 GPNB03 and NTHBRTP3 92/13.2 GPNB04 transformers plus NWSWYRD-NTHBRTP2, NWSWYRD-NTHBRTP3, NTAP-PARKVEW and NTAP-CALIPAT lines (Entire project)	Not in service	Stable
Three phase fault at bus 8740 opens: PARKVIEW-BRAW92	Stable	Stable
Three phase fault at bus 8697 opens: CALIPAT-CALTP2	Stable	Stable

6.2Off-peak (light winter) Cases

Outage	Winter Pre-Project	Winter Post-Project
No Outage	Stable	Stable
Three phase fault at bus 8963 opens: NTHBRTP2 92/13.2 transformer	Not in service	Stable
Three phase fault at bus 8967 opens: NTHBRTP2 92/13.2 GPNB01and NTHBRTP2 92/13.2 GPNB02 transformers	Not in service	Stable
Three phase fault at bus 8962 opens: NTHBRTP2 92/13.2 GPNB01, NTHBRTP2 92/13.2 GPNB02, NTHBRTP3 92/13.2 GPNB03 and NTHBRTP3 92/13.2 GPNB04 transformers plus NWSWYRD-NTHBRTP2 and NWSWYRD-NTHBRTP3 lines	Not in service	Stable
Three phase fault at bus 8970 opens: NTHBRTP2 92/13.2 GPNB01, NTHBRTP2 92/13.2 GPNB02, NTHBRTP3 92/13.2 GPNB03 and NTHBRTP3 92/13.2 GPNB04 transformers plus NWSWYRD-NTHBRTP2, NWSWYRD-NTHBRTP3, NTAP-PARKVEW and NTAP-CALIPAT lines (Entire project)	Not in service	Stable
Three phase fault at bus 8740 opens: PARKVIEW-BRAW92	Stable	Stable
Three phase fault at bus 8697 opens: CALIPAT-CALTP2	Stable	Stable

7 SHORT CIRCUIT FINDINGS

A short circuit study and breaker capability analysis has been performed by PDS consulting, PLC. to determine the impact of the additional North Brawley generation facility to the IID Energy transmission system. The analysis found minimal impacts to the interrupting capability of the IID Energy transmission system due to the addition of the North Brawley generation facility. The analysis also found that the interrupting capability of two of the breakers, H40 and H50, at the Euclid Substation will be exceeded (the pre-Project fault levels were at 99% of the interrupting capability while the post-Project fault level was found to be 101%), however IID Energy can re-schedule to an earlier date a project to replace the affected equipment with sufficient interrupting capacity prior to the in-service date of the North Brawley project.

The results of the study also indicated that there are a few fault interrupting devices on the IID Energy system which have fault current exposure levels near of their respective interrupting ratings (specifically Imperial Valley 230kV and El Centro 92kV). However, these interrupting rating concerns have been identified as pre-existing conditions and not directly related to the North Brawley generation project.

8 SENSITIVITY SHORT CIRCUIT FINDINGS

A sensitivity analysis of to the original short circuit study and breaker capability analysis has been performed per project owner request to determine the impact of the North Brawley project phase A (6 generators in the amount of 12.5MW each) connected to the IID Energy transmission system.
The analysis found that the fault duty at the Euclid 92 kV substation will exceed the interrupting capability of two of the breakers, H40 and H50, at this substation (the pre-Project fault levels were at 98.4% of the interrupting capability while the post-Project fault level was found to be 100.04%). Even though these short circuit violations are marginal, the IID standard requires the replacement of these breakers once they reach their interrupting capability.

9 POST-TRANSIENT STABILITY FINDINGS

Imperial Irrigation District (IID) has contracted PDS consulting, PLC (PDS) to perform a post-transient power flow analysis including reactive power margin test for the integration of the North Brawley Generation Project to the IID energy system. The scope of the post-transient analysis is to determine the impact caused solely by the addition the North Brawley generation project to the IID Energy transmission system during the post-transient time frame.

9.1 Post-transient Power Flow Analysis

Post-transient power flow analysis was performed on both the pre-project and post-project base cases for the 2010 heavy summer and 2010 light winter operating conditions. The two base cases were used to simulate the impact of the North Brawley Project during single (N-1) as well as multiple contingencies. The N-1 and selected multiple contingencies simulated included:

- All single (92-230 kV) transmission circuit outages within the vicinity of the project
- All single transformer outages within the vicinity of the project
- Selected outages of double circuit tower lines (92-230 kV) within the vicinity of the project.

The contingency lists for the post-transient analysis can be found in Appendix C.

The WECC/NERC standard was used to assess the adequacy of the study results. The post-transient analysis related evaluation criteria used are:

- Maximum voltage deviations allowed at all buses in the post-transient time frame will be 5% for N-1 and 10% for N-2 unless a lower standard has been previously adopted on selected buses. Southern California Edison (SCE) allows a lower standard of 7% post-transient voltage deviation for N-1 contingencies. Table 1 also provides a summary of the WECC/NERC post-transient deviation standard.

9.2 Post-transient Reactive Power Margin

Post-transient reactive power margin analysis was performed on selected buses in the IID transmission system following selected critical outages. This analysis was performed using the 2010 pre- and post-project base cases. The list outages simulated and the buses monitored are provided below.

- N. Laquinta-Avenue42 92 kV line outage
- Imperial Valley-Miguel 500 kV line outage
- Palo Verde-Devers 500 kV line outage
- N. Gila-Imperial Valley 500 kV line outage
- Imperial Valley-Elcentro 230 kV line outage
- ELSTM2 and REPU2 generator outages

The monitored buses included:

- Avenue 58 161 kV
- Coachella Valley 161 kV
- N. Laquinta 92 kV
- Coachella Valley 92 kV
- Midway 92 kV
- Niland 92 kV
- Elcentro 92 kV
- Calexico 92 kV
- Pilot Knob 92 kV
- Dixieland 92 kV

The post-transient reactive power margin analysis evaluated criteria used are:

- Minimum reactive power margin at any bus following N-1 outage is 100 Mvar
- Minimum reactive power margin at any bus following N-2 outage is 50 Mvar.

Table 1: WECC/NERC Post-Transient and Stability Analysis Evaluation Criteria

NERC and WECC Categories	Outage Frequency Associated with the Performance Category (outage/year)	Transient Voltage Dip Standard	Minimum Transient Frequency Standard	Post Transient Voltage Deviation Standard
A System normal	Not Applicable	Nothing in addition to NERC		
B One element out-of-service	≥ 0.33	Not to exceed 25% at load buses or 30% at non-load buses. Not to exceed 20% for more than 20 cycles at load buses.	Not below 59.6Hz for 6 cycles or more at a load bus.	Not to exceed 5% at any bus.
C Two or more elements out-of-service	0.033 – 0.33	Not to exceed 30% at any bus. Not to exceed 20% for more than 40 cycles at load buses.	Not below 59.0Hz for 6 cycles or more at a load bus.	Not to exceed 10% at any bus.
D Extreme multiple-element outages	< 0.033	Nothing in addition to NERC		

9.3 POST TRANSIENT POWER FLOW STUDY RESULTS

Post-transient power flow solutions were achieved for most of the outages studied using both the 2010 heavy summer and 2010 light winter base cases. Two multiple outages however did not result in post-transient solution using both the 2010 heavy summer and 2010 light winter pre- and post-project base cases. These outages are:

- Coachella-Devers and Coachella-Ramon 230 kV lines (without RAS)
- Ramon-Mirage and Coachella-Devers 230 kV lines (without RAS)

Post-transient power flow solutions were however achieved by implementing the RAS associated with the above outages. In particular, to achieve a post-transient power flow solution following the simultaneous outages of Coachella-Devers and Coachella-Ramon 230 kV lines, about 120 MW of generation were tripped at the collector system connected to Midway 92 kV substation.

Several bus voltage deviation violations were recorded following selected N-1 outages using the 2010 heavy summer pre- and post-project base cases. However, only one bus voltage deviation violation at the Deseret Shores 92 kV bus was due to the addition of the North Brawley Project.

The following sections provide details of the post-transient power flow findings for each of the operating condition evaluated.

9.3.1 Heavy Summer 2010 Base Case

A summary of the post-transient power flow study results is provided in Appendix A. Key post-transient power flow findings from the studies performed using the 2010 heavy summer base case are:

- Post-transient power flow solutions were obtained for all the N-1 outages simulated using both the pre- and post-project base cases.
- Several bus voltage deviation violations were recorded following selected N-1 outages during the 2010 heavy summer operating condition. The majority of the bus voltage deviation violations recorded were not due to the addition of the North Brawley Project.
- Coachella-Devers and Coachella-Ramon 230 kV lines (without RAS) did not result in post-transient power flow solution using both pre- and post-project base cases. Post-transient solution was obtained by tripping up to 120 MW of generation connected to the Midway 92 kV substation collector systems following the outages.
- Coachella-Devers and Ramon-Mirage 230 kV lines (without RAS) did not result in post-transient power flow solution using both pre- and post-project base cases. Post-transient solution was obtained by the implementation of the Path 42 RAS (416.2 MW of IID's internal generation reduction)
- No post-transient bus voltage deviation violations were recorded following any of the multiple outages simulated.

9.3.2 Light Winter 2010 Base Case

Post- transient power flow solutions were obtained for all the N-1 outages. Two multiple outages did not result in post-transient power flow solution without RAS:

- Coachella-Devers and Coachella-Ramon 230 kV lines (without RAS)
- Ramon-Mirage and Coachella-Devers 230 kV lines (without RAS)

Solutions were obtained with implementation of the RAS associated with the outages. No bus voltage deviation violation was recorded for all the outages studied using the 2010 light autumn base case.

9.4 POST-TRANSIENT REACTIVE POWER MARGIN STUDY RESULTS

A summary of the post-transient reactive power margin analysis can be found at Appendix B. Positive reactive power margins were obtained at all the buses monitored following the selected outages.

The addition of the North Brawley Project did not impact the existing reactive power margins at the selected buses for all the outages with the exception of the Imperial Valley –Miguel 500 kV line outage. An outage of the Imperial Valley-Miguel 500 kV line caused the reactive power margin at five (5) buses to decrease up to 4 MVar. In particular, the addition of the North Brawley Project and the subsequent outage of the Imperial Valley –Miguel 500 kV line caused the reactive power margin at North La Quinta 92 kV bus to decrease from 103 Mvar to 99 Mvar.

10. CONCLUSIONS

During the development of the North Brawley System Impact Study the IID System Planning team found the following system impacts attributable solely to the interconnection of the 150 MW project. In addition, the North Brawley Plant will need to participate in coordination with the IID System Operator in mitigating other system violations not solely attributable to this Project in order to maintain the IID System reliability:

Heavy Summer (Pre & Post-Project Cases)

N-1 Condition:

- Thermal Rating Violations
  The outage of Coachella Valley-Jackson (CW) 92 kV Line overloaded the Avenue 58 161/92 kV Bank #1 above its normal rating of 125 MVA (101.6%) while having the Project generating at 150 MW.

  Two alternatives were selected to mitigate the violation; a) A temporary solution would be to implement a System Operating Procedure (SOP) which would require reduction of the North Brawley MW generation output up to the point that the loading on the Ave.58 Bank #1 becomes below their normal rating. The first priority for reduction will be on the 50 MW (Export) scheduled to SCE, the second priority would be on the 50 MW serving IID load. b) A permanent solution to avoid affecting the Project MW output is, to replace the Ave. 58 Bank #1 with a higher capacity bank. This would represent to set ahead the in service date for a project to replace such bank with a new 300 MVA bank.

  The outage of Avenue 58-Oasis (R) 92 kV Line overloaded the Avenue 58 161/92 kV Bank #1 above its normal rating of 125 MVA (100.6%) while having the Project generating at 150 MW.
  Two alternatives were selected to mitigate the violation; a) A temporary solution would be to implement an Operating Procedure which would require reduction of the North Brawley MW generation output up to the point that the loading on these Ave.58 Bank #1 becomes below their normal rating. The first priority for reduction will be on the 50 MW (Export) scheduled to SCE, the second priority would be on the 50 MW serving IID load. b) A permanent solution to avoid affecting the Project MW output is, to replace the Ave. 58 Bank #1 with a higher capacity bank. This would represent to set ahead the in service date for a project to replace such bank with a new 300 MVA bank.

  The outage of Avenue 58 161/92 kV Transformer Bank #1 overloaded the Coachella Valley 161/92 kV Transformer Bank #3 above its normal rating of 125 MVA (103.3%) while having the Project generating at 150 MW.
  Two alternatives were selected to mitigate the violation; a) A temporary solution would be to implement an Operating Procedure which would require reduction of the North Brawley MW generation output up to the point that the loading on these CV Bank #3 becomes below their normal rating. The first priority for reduction will be on the 50 MW (Export) scheduled to SCE, the second priority would be on the 50 MW serving IID load. b) A permanent solution to avoid affecting the Project MW output is, to replace the Coachella Valley 161/92 kV Transformer Bank #3 with a higher capacity bank.

- Voltage Deviation Violations
  The outage of Avenue 58-Oasis 92 kV (R) Line created a voltage deviation violation of +5.1% at the Salton City 92 kV bus while having the Project generating at 150 MW.

Two alternatives were selected to mitigate the violation; a) A temporary solution would be to implement an Operating Procedure which would include adjustment of the North Brawley MVAR generation output up to the point that the Salton City 92 kV bus voltage become within a normal range of 0.95-1.05 p.u. or, b) A permanent mitigating solution would be to implement an Special Protection Scheme (SPS) which would trip a 4.8 MVAR capacitor bank of Desert Shores substation with the outage of Avenue 58-Oasis 92 kV (R) Line, simultaneously. In reality, the extremes of the "R" Line to trip are at Avenue 58 and Desert Shores Substations.

N-2 Condition:

- Thermal Rating Violations
  No Thermal Rating violations attributable to the Project were found in the IID transmission system

- Voltage Deviation Violations
  No Voltage Deviation violations attributable to the Project were found in the IID transmission system. Also, in order to eliminate pre-existing voltage issues in the Coachella Valley zone due to the same outage, IID will need to continue implementing its Transmission Expansion Plan to mitigate a few pre-existing voltage deviation violations.

Light Winter (Pre & Post-Project Cases)

N-1 Condition:

- Thermal Rating Violations
  The outage of El Centro-Imperial Valley 230kV (S) Line overloaded the El Centro 161/92 kV Transformer Bank #2 to 107.8% of its normal rating of 125 MVA while having the Project generating at 150 MW.
  Two alternatives were selected to mitigate the violation; a) A temporary solution would be to implement an Operating Procedure which will require reduction of the North Brawley MW generation output up to the point that the loading on the El Centro 161/92 kV Transformer Bank #2 becomes below their normal rating. The first priority for reduction will be on the 50 MW (Export) scheduled to SCE, the second priority would be on the 50 MW serving IID load. b) A permanent solution to avoid affecting the Project MW output is, to upgrade of the EC Bank #2 to a larger capacity bank.

- Voltage Deviation Violations
  No Voltage Deviation violations attributable to the Project were found in the IID transmission system.

N-2 Condition:

- Thermal Rating Violations
  No Thermal Rating violations attributable to the Project were found in the IID transmission system.
- Voltage Deviation Violations
  No Voltage Deviation violations attributable to the Project were found in the IID transmission system.

In summary, the mitigations for thermal rating and/or voltage deviation violations attributable to the Project will require to prepare and implement a few System Operating Procedures (SOPs) to resolve temporarily the violations, however in order to resolve permanently those violations, it is recommended to implement the described system upgrades before the in-service date of North Brawley project besides continuing with the implementation of the IID Transmission Expansion Plan.

The revision to the RAS description is necessary to include 50% of the net North Brawley plant output into the scheme which represent 50 MW since the outage of Path 42 (Ramon-Mirage & CV-Devers 230 kV) together with the RAS creates a voltage deviation violation at a few buses in the IID system. With the addition of the North Brawley project, the RAS will also include the simultaneous tripping of the Midway 92kV and Highline 92 kV 24.5 MVAR Capacitor Banks with the RAS operation. This is a task required within the SOPs preparation since this project exacerbates the operating condition for certain contingencies that overloaded Path 42. This would represent additional studies to be performed by IID to determine and document the sequence of mitigating actions to be taken by the System and Plant Operators when any of the mentioned critical outages occurs. This additional study work was not part of the scope of work for this system impact study.

In addition, pre-existing thermal and voltage violations under outage condition not included in this report were considered not attributable to the Project and are being addressed by IID in other planning forums.

This System Impact Study considered that there were no schedule capabilities available to deliver the North Brawley generation power to SCE through path 42, since as of today the scheduled capacity of this path is fully subscribed. It will require a Path 42 Rating Upgrade Study among the SCE and IID.

Transient Stability

Stability analysis indicated that the addition of the Project does not adversely impact the stability response of the system. On stability outages of the generator transformers, it has been noted that both, the generator and transformer must be tripped simultaneously. Generation tripping for the loss of the step-up transformer is a common practice and does not represent any additional problem to the IID system.

Short Circuit

The analysis found minimal impacts to the interrupting capability of the IID Energy transmission system due to the addition of the North Brawley generation facility. The analysis also found that the interrupting capability of two of the breakers, H40 and H50, at the Euclid Substation will be exceeded (the pre-Project fault levels were at 99% of the interrupting capability while the post-Project fault level was found to be 101%), however IID Energy can re-schedule to an earlier date a project to replace the affected equipment with sufficient interrupting capacity prior to the in-service date of the North Brawley project. The replacement of the two breakers with higher interrupting capability is required before connecting the project to the IID system.

Sensitivity Short Circuit

A sensitivity analysis of to the original short circuit study and breaker capability analysis has been performed per project owner request to determine the impact of the North Brawley project phase A (6 generators in the amount of 12.5MW each) connected to the IID Energy transmission system.
The analysis found that the fault duty at the Euclid 92 kV substation will exceed the interrupting capability of two of the breakers, H40 and H50, at this substation (the pre-Project fault levels were at 98.4% of the

interrupting capability while the post-Project fault level was found to be 100.04%). Even though these short circuit violations are marginal, the IID standard requires the replacement of these breakers once they reach their interrupting capability.

Post-Transient Stability Analysis

The addition of the North Brawley Project did not impact the existing reactive power margins at selected buses for all the outage simulation studied with the exception of the Imperial Valley –Miguel 500 kV line outage. An outage of the Imperial Valley-Miguel 500 kV line caused the reactive power margin at five (5) IID buses to decrease up to 4 MVAR. In particular, the addition of the North Brawley Project and the subsequent outage of the Imperial Valley –Miguel 500 kV line caused the reactive power margin at N. LAQUITA 92 kV bus to decrease from 103 Mvar to 99 Mvar, this does not represent a limitation and does not required a mitigation.

ORMAT®

September 1, 2011

Mr. Terrence O'Brien
Deputy Director
Siting, Transmission and
Environmental Protection Division
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5512

Re: North Brawley Geothermal Project Generating Capacity

Dear Mr. O'Brien:

The information outlined in this letter is in response to your letter dated August 15, 2011. The information requested in the engineering questionnaire is enclosed separately or contained in the response filed in response to Docket 11-CAI-02. Some background information regarding the North Brawley Geothermal Development Project is provided below.

The North Brawley Geothermal Project ("North Brawley") is located within the North Brawley Known Geothermal Resource Area ("North Brawley KGRA") north of the City of Brawley and separated by the New River. The North Brawley Geothermal Exploration Project was permitted by Imperial County by Conditional Use Permit (CUP) #06-0021 in August 2006. The North Brawley Geothermal Development Project was permitted by Imperial County by CUP #07-0017 in November 2007. Construction of North Brawley began in December 2007. North Brawley has been operating since 2008.

1. Are there or will there be any shared facilities between North Brawley and existing or planned ORMAT local geothermal generation facilities, including East Brawley? If yes, please describe those facilites.

   North Brawley will likely share the same point of interconnection to the Imperial Irrigation District's ("IID's) transmission system as the proposed East Brawley Geothermal Development Project ("East Brawley"). North Brawley interconnects to IID's 92 kV line that runs north south along the east side of Hovley Road through the North Brawley substation. The proposed East Brawley power plant, which will also have its own substation, will also interconnect to the IID line at the North Brawley substation as this is where there is available capacity on the IID transmission system.

   In order to improve efficiency, while North Brawley and East Brawley will each have its own control room, the proposed East Brawley power plant would be designed to allow

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for monitoring and operation from dedicated computers at two locations: one located at the offices in the North Brawley power plant on Hovley Road, and the other at the East Brawley facility itself. Given that all instrumention is computerized this is common in today's power facilities.

Given the delay in getting East Brawley permitted and the well field problems encountered at North Brawley, the decision was made to request an amendment to the North Brawley CUP requesting that the exploration wells drilled for the East Brawley Geothermal Exploration Project be added to North Brawley to add additional production and injection capacity. The amendment to CUP #07-0017 was approved in June 2010. These wells are for the sole use of North Brawley, and will not be shared.

2. Does ORMAT plan to build additional power plants in the area? If yes, what is the schedule and what are the MW capacity increments.

   No. ORMAT has no plans to build any additional power plants within the North Brawley KGRA.

3. Does North Brawley have its own dedicated production and injection wells?

   Yes. The North Brawley Geothermal Development Project has both production and injection wells dedicated to it. There are currently 16 production and 15 injection wells.

4. Are North Brawley's geothermal steam production and delivery system shared or interconnected with another geothermal plant and or its geothermal steam production and delivery system, including East Brawley? If yes, please describe.

   No. There are no shared systems. The North Brawley power plant is a stand alone binary power plant that contains 5 Ormat Energy Converters (OECs). There is no steam production from the wells or a steam turbine at this facility, only hot geothermal fluid. Six wells drilled for the East Brawley Geothermal Exploration Project were connected to North Brawley as described in #1. These are not shared wells, and are for the sole use of North Brawley.

5. Will North Brawley's geothermal steam production and delivery system be shared or interconnected with another planned geothermal plant and or its geothermal steam production and delivery system, including East Brawley? If yes, please describe.

   No. There are no other interconnections planned.

6. If additional steam can be provided to North Brawley, what is the maximum generating capacity that the unit can achieve?

   If additional hot water from production wells and additional injection capacity can be developed for the North Brawley power plant the maximum gross generating capacity is 80 MW (16 MW x 5 OECs) based on generator limitations. There are other limiting factors such as cooling tower auxiliaries and gathering and injection pipe sizing that

would increasingly reduce efficiency as more brine was added to the facility beyond the design point of 80 MW gross. Based on the California Energy Commission method for determining the average net generation at 61 degrees Fahrenheit, the net capacity would be less than 50 MW, because of increasing auxiliary and parasitic load, and reduced efficiencies. See the information provided in the table for #3 of the engineering questionnaire calculations.This is a hypothetical case. Since cooling capacity is limited, heat input would have to be drastically increased from present resource conditions to reach a gross generating capacity of 80 MW.

7. Is there a transmission interconnection study for North Brawley and can it be provided to us?

   Yes. The Transmission Interconnection Study for North Brawley is included with this response.

Sincerely,

Charlene L Wardlow

Charlene L. Wardlow
Director Business Development

Enclosure: Engineering Questionaire responses

cc: Tom Buchanan, Ormat
Chris Davis, CEC
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Matthew Layton, CEC
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September 1, 2011

Mr. Terrence O'Brien
Deputy Director
Siting, Transmission and
Environmental Protection Division
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5512

Re: East Brawley Geothermal Project Generating Capacity

Dear Mr. O'Brien:

The information outlined in this letter is in response to your letter dated August 15, 2011. The information requested in the engineering questionnaire is enclosed separately or contained in the response filed on August 29, 2011 to Docket 11-CAI-02. Some background information regarding the North Brawley Geothermal Development Project is provided below.

The East Brawley Geothermal Development Project ("East Brawley") is located within the North Brawley Known Geothermal Resource Area ("North Brawley KGRA") north of the City of Brawley and separated by the New River from the North Brawley Geothermal Development Project. The East Brawley Geothermal Exploration Project was permitted by Imperial County by CUP #07-0029 in March 2008. The East Brawley Geothermal Development Project CUP application was submitted in August 2008. The Draft Environmental Impact Report was released earlier this year and the final EIR is pending.

1. Will there be any shared facilites between East Brawely and existing or planned ORMAT local geothermal generation facilities, including North Brawley? If yes, please describe those facilities.

   East Brawley will likely share the same point of interconnection to the Imperial Irrigation District's (IID's) transmission system at the North Brawley substation located at the North Brawley power plant which interconnects that project to the Imperial Irrigation District's (IID) 92 kV line that runs north south along the east side of Hovley Road. The East Brawley power plant, which will have its own substation

   In order to improve efficiency, the East Brawley power plant would be designed to allow for monitoring and operation from dedicated computers at two locations: one located at the offices in the North Brawley power plant on Hovley Road, and the other at the East

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Brawley facility itself. Given that all instrumention is computerized this is common in today's power facilities.

Given the delay in getting the East Brawley Geothermal Development Project permitted and the well field problems encountered at the North Brawley project, the decision was made to request an amendment to the North Brawley CUP requesting that the exploration wells drilled for the East Brawley Geothermal Exploration Project be added to North Brawley to add additional production and injection capacity. The amendment to CUP #07-0017 was approved in June 2010. These wells are for the sole use of North Brawley and will not be shared.

2. Does ORMAT plan to build additional power plants in the area? If yes, what is the schedule and what are the MW capacity increments?

   No, ORMAT has no plans to build any additional power plants around Brawley.

3. Will East Brawley have its own dedicated production and injection wells?

   Yes, the East Brawley Geothermal Development Project has both production and injection wells dedicated to it as described in the Conditional Use Permit appliction submitted to Imperial County.

4. Will East Brawley's geothermal steam production and delivery system be shared or interconnected with another geothermal plant and or its geothermal steam production and delievery system, including North Brawley? If yes, please describe.

   No, the proposed East Brawley power plant is a binary power plant that could contain 5 Ormat Energy Converters (OECs). See the information in the engieering quesitonnaire as the project is currently designed for just 3 OECs do to the resource constraints experienced at North Brawley. There would be no steam production or steam turbine at this facility, only hot geothermal fluid.

5. If additional steam can be provided to East Brawley, what is the maximum generating capacity that the unit can achieve?

   There are no steam production or delivery systems at East Brawley as the facility utilizes hot geothermal fluid. Based on the current design of 3 OECs for East Brawley the maximum gross generation is 48 megawatts, (16 MW x 3) and the net approximately 30 megawatts.

6. Is there a transmission interconnection study for East Brawley and can it be provided to us?

   Yes, the Transmission Interconnection Study for East Brawley is included with this response.

Sincerely,

Charlene L Wardlow

Charlene L. Wardlow
Director Business Development

Enclosures: Engineering Questionaire responses

cc: Tom Buchanan, Ormat
Chris Davis, CEC
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