



Ramona Band of Cahuilla Indians

November 17, 2009

Presented by:

John Gomez, Jr.

Program Director

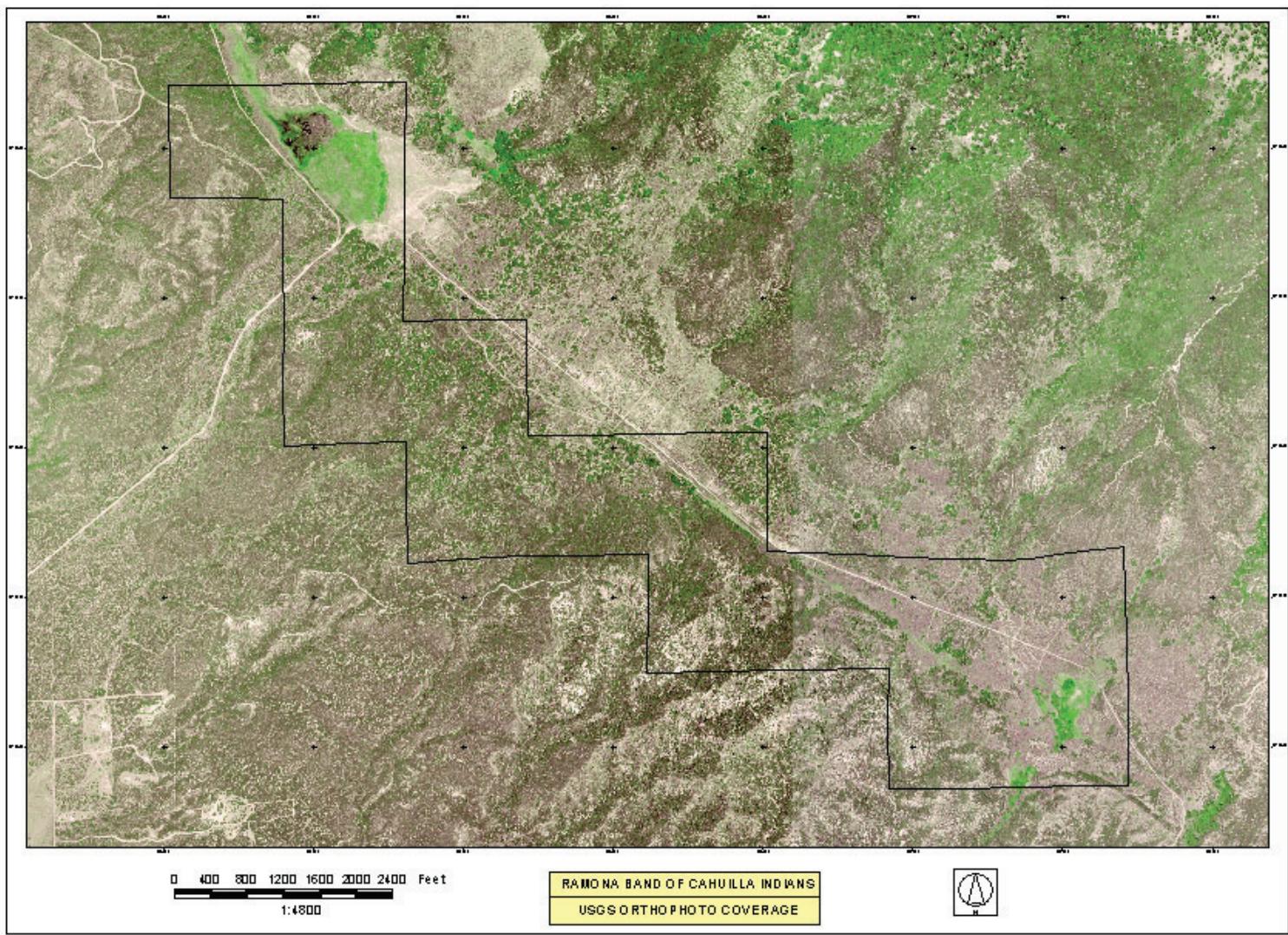


Ramona Tribe – Overview

- **ONE OF THE FIRST RESERVATIONS TO BE COMPLETELY OFF GRID**
- **ISSUES THE TRIBE FACED:**
 - REMOTE AND RURAL**
 - LAND LOCKED- SURROUNDED BY FEDERAL LAND (BLM and USFS)**
 - UTILITY COSTS WERE PROHIBITIVE (Nearest point of access to grid as ½ mile through USFS Land)**
- **ECO-TOURISM PROJECT**
- **HOUSING UNITS**



Ramona Indian Reservation





Ramona Indian Reservation Power Systems

- **Macro Grid Hybrid Power System: Eco-Tourism**
- **Micro Grid Hybrid Power System: Housing Units**

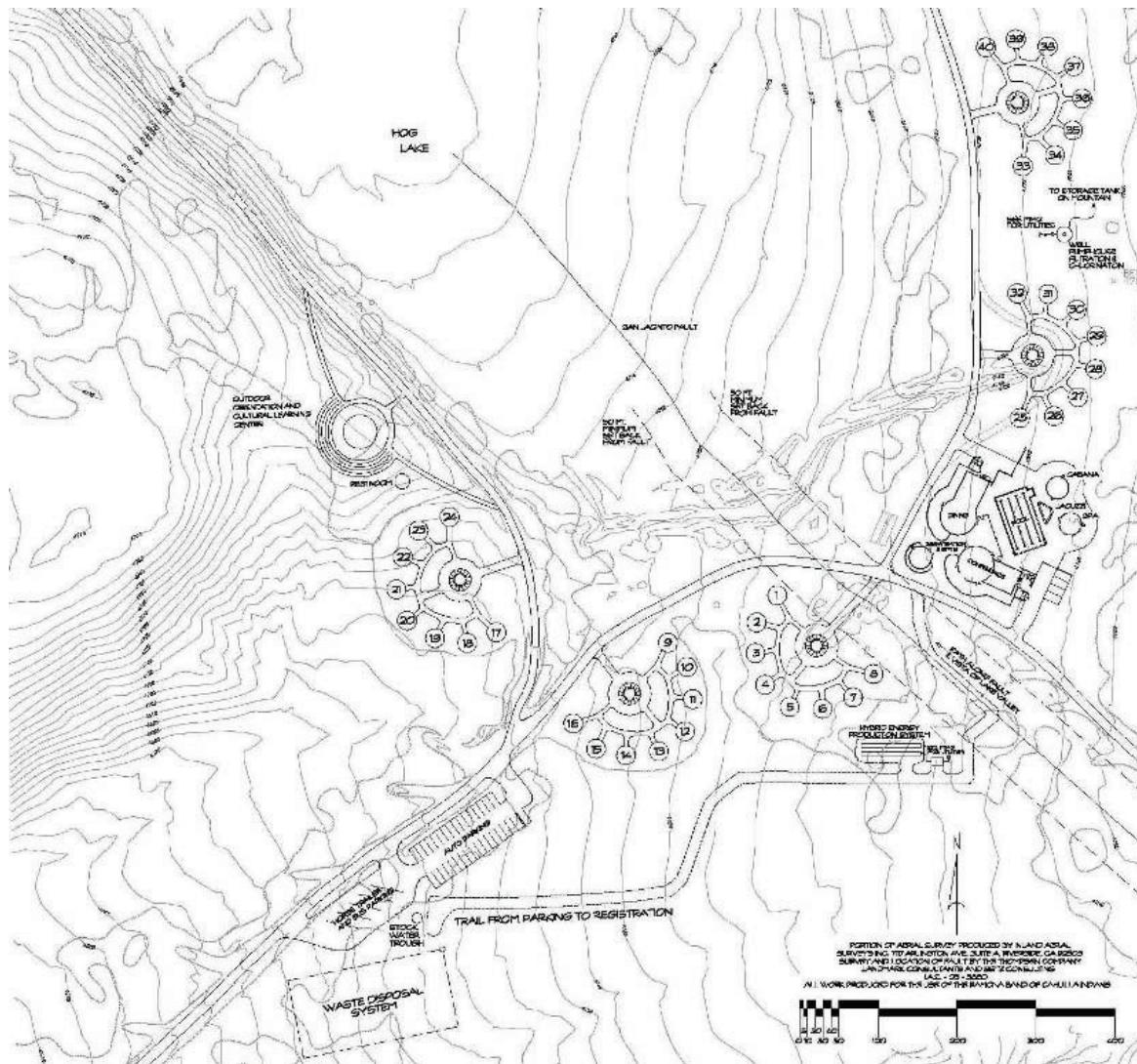


RAMONA ECO-TOURISM PROJECT OBJECTIVE

- TO PROVIDE POWER TO THE TRIBE'S ECOTOURISM BUSINESS VIA ALTERNATIVE ENERGY TECHNOLOGIES
- PROTECTION AND PRESERVATION OF CULTURE AND HERITAGE
- TO SHOW RENEWABLE ENERGY PLANNING CAN WORK IN INDIAN COUNTRY



Design of Eco-Resort



PORTION OF AERIAL SURVEY PROVIDED BY N-LAND ASIAL
SURVEY AND LOCATION OF FAULT BY THE TECNICON COMPANY
LAND AND CONSTRUCTION BY THE TECNICON COMPANY
DATE: 10/10/2003

ALL WORK PERFORMED FOR THE USE OF THE RAMONA BAND OF CAHUILLA INDIANS



PROJECT PARTICIPANTS

- **AGENCIES**

RAMONA BAND OF CAHUILA – SUPPLEMENTAL FUNDING

DOE – ECOTOURISM POWER

HUD CDBG – ECOLODGE

USDA RD - ECOTENTS

BOR – ECOTOURISM WATER

U.S. FOREST SERVICE – ROAD ACCESS



Macro-Grid Hybrid Power System

- **10kw Photovoltaic Array**
- **VRLA (Value Regulated Lead Acid) Battery Banks**
- **15kVA continuous inverter with 175A disconnect**
- **60kw 3 Phase Diesel Generator (is being phased out)**
- **Power Station Building 12' x 16'**
- **Monitoring System, Inverter, Breaker Box, Wiring, etc.**



EVERGREEN SOLAR CEDAR LINE PHOTOVOLTAIC MODULES EC-100 SERIES





SOLAR PANELS – SIDE VIEW

- 60 Module Solar Array:
175w operating at 100
volts DC
- Total of 10,500w
- Feed two inverter banks
 - Main Lodge System
 - Ecotents





POWER BUILDING FRONT VIEW





POWER BUILDING SIDE VIEW





ABSOLYTE IIP BATTERIES

- **Battery Output:** 10,800 Ah at 48 volts
- **Life Capacity:** up to 20 years
- **Weight:** 300 lbs per unit





OUTBACK INVERTERS/CHARGERS

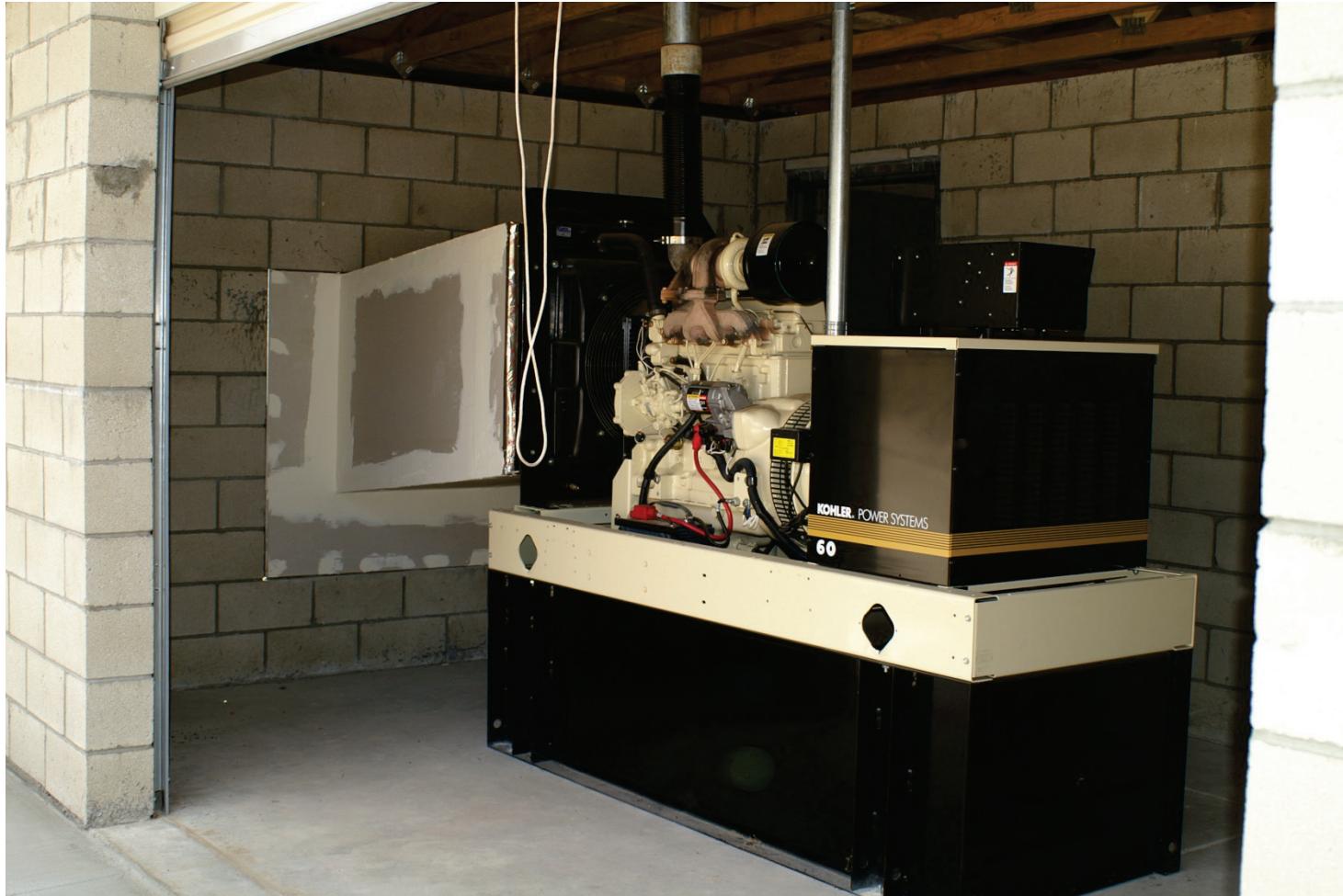
- 36 Kw Inverters
- 120/240 Volts





KOHLER 60HZ GENERATOR

- 60Kw 3 Phase Generator





RAMONA ECOTENTS

Funded by USDA Rural Development





COMPLETED ECOTENTS





ECOTENT SKYLIGHT OPENING





COMPLETED SKYLIGHT OPENING





VIEW INSIDE OF ECOTENTS





VIEW INSIDE OF ECOTENTS





TECHNICAL/MANAGEMENT ISSUES

- COORDINATION OF MULTI-AGENCIES WHICH SLOWS PROJECT PROGRESS
- ENVIRONMENTAL RESTRICTIONS
- TRAINING OF TRIBAL MEMBERS AND STAFF IN USE AND MAINTENANCE OF SYSTEM



ACTIVITIES REMAINING

- **PHASE 1 - EXTEND LINES TO THE WATER SYSTEM**
- **PHASE 2 - CONSTRUCT ECOLODGE
(RESTAURANT, EDUCATION CENTER,
CONFERENCE CENTER, OFFICES, RESERVATION
OFFICE, GIFT SHOP, ETC.)**
- **PHASE 2 - EXTEND LINES TO THE ECOLODGE
WHEN COMPLETE**



Housing Complex: Micro-Grid Hybrid System

- **2Kw wind turbine capacity with wireless controls**
- **6.3Kw large photovoltaic modular array**
- **VRLA (Value Regulated Lead Acid) battery banks**
- **25Kw propane generator**
- **Propane storage tank**



Southwest Wind Power Skystream 3.7 Wireless Model





Wind Turbine and Solar Cells for Housing Complex producing 8.3 Kw





Power House (includes back-up propane generator, battery bank, and inverters/chargers)





FUTURE PLANS

- COMPLETE CONSTRUCTION FOR POWER SUPPLY
- BUILD OUT OF THE ECOTOURISM DESTINATION RESORT INCLUDING ACQUIRING ADDITIONAL FINANCING
- DEVELOP ECOTOURISM PROGRAMS
 - ALTERNATIVE ENERGY EDUCATION
 - CULTURAL – LANGUAGE, TRIBAL HISTORY, & TRADITIONAL GATHERING
 - HERBOLOGY
 - PARTNERSHIP WITH U.S. FOREST SERVICE AND BLM
- CONTINUE TO BE SELF SUFFICIENT



Contact Information

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