

Supplement in Response to
Data Adequacy Comments
on the
Application for Certification
for the
Roseville Energy Park
Roseville, California
03-AFC-01

Submitted to the
California Energy Commission

Submitted by
Roseville Electric

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1.0 INTRODUCTION

This supplement to Roseville Electric's Application for Certification (AFC) for the Roseville Energy Park (03-AFC-01), responds to comments that California Energy Commission (CEC) Staff have made on data adequacy worksheets that Staff have provided to Roseville Electric. The format for this supplement follows the order of the AFC, and provides additional information and responses to CEC information requests on Project Overview (Chapter 2), Transmission System Engineering (Chapter 6), Air Quality (Chapter 8.1), Biological Resources (Chapter 8.2), Cultural Resources (Chapter 8.3), Paleontological Resources (Chapter 8.8), Socioeconomics (8.10), Soils and Agriculture (8.11), Traffic and Transportation (Chapter 8.12), Visual Resources (Chapter 8.13), and Water Resources (Chapter 8.15). Only sections for which CEC Staff posed requests or questions related to data adequacy are addressed in this supplement. If the response calls for additional appended material, it is included at the end of each section.

2.0 PROJECT OVERVIEW

1. Site Maps (Appendix B[a][1][C]):

A description of and maps depicting the region, the vicinity, and the site and its immediate surroundings.

Information required to make AFC conform with regulations:

Provide a map depicting the site and its immediate surroundings.

Response—See Figure 1.1-S1 (attached).

2. Map Scale (Appendix B[b][1][A]):

Maps at a scale of 1:24,000 (1" = 2000'), along with an identification of the dedicated leaseholds by section, township, range, county, and county assessor's parcel number, showing the proposed final locations and layout of the power plant and all related facilities.

Information required to make AFC conform with regulations:

Maps which meet the criteria contained in Appendix B(b)(1)(A) and show the proposed final location and layout of the Power Plant and all related facilities.

Response—See Figure 1.1-S1 (attached).

3. Transmission Line Route Maps (Appendix B[b][2][A]):

Maps at a scale of 1:24,000 of each proposed transmission line route, showing the settled areas, parks, recreational areas, scenic areas, and existing transmission lines within one mile of the proposed route(s).

Information required to make AFC conform with regulations:

Maps which meet the criteria contained in Appendix B(b)(2)(A).

Response—See Figure 1.1-S1 (attached).

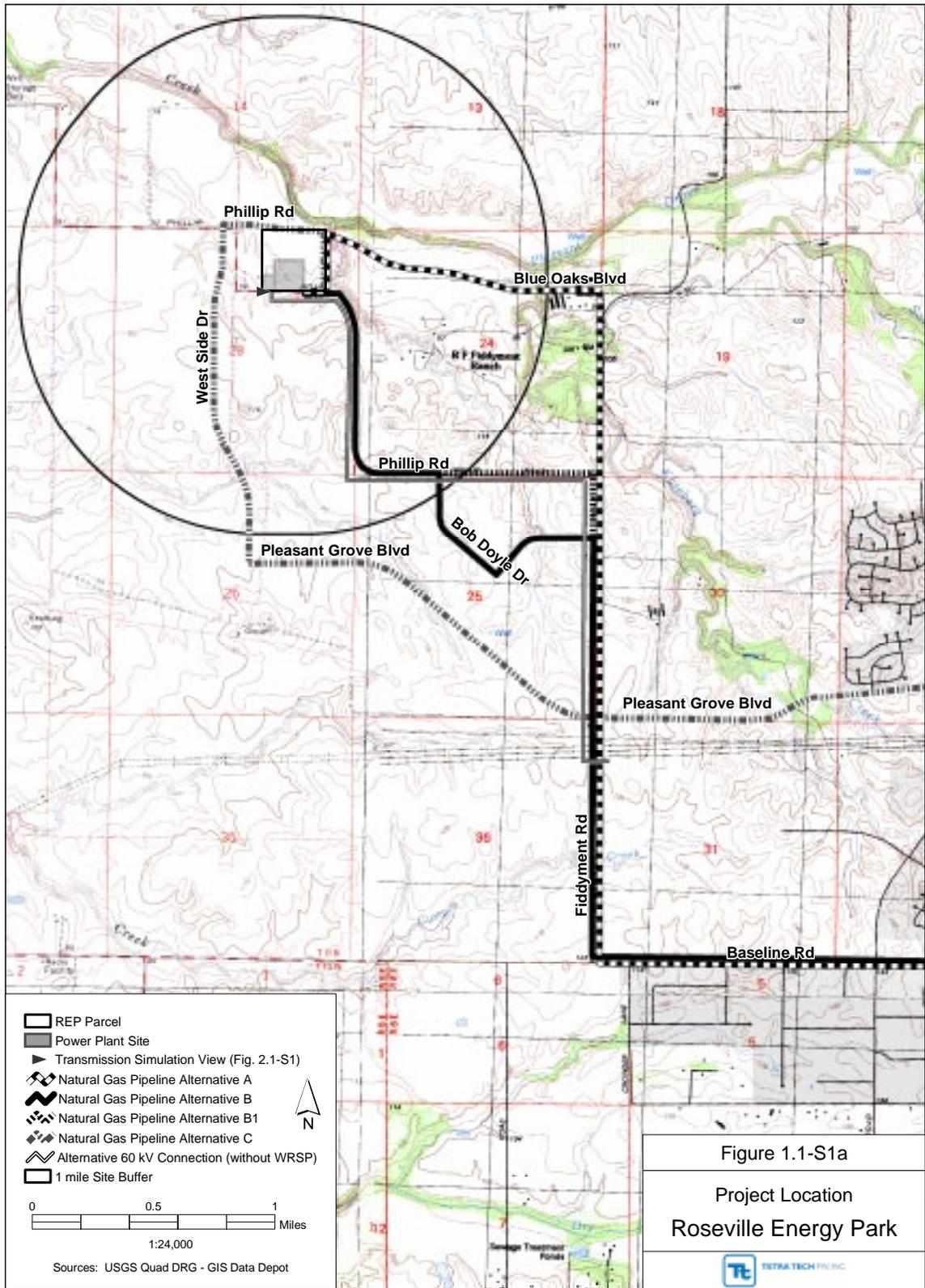
4. Transmission Line Color Reproduction (Appendix B[b][2][B]):

A full-page color photographic reproduction depicting a representative above ground section of the transmission line route prior to construction and a full-page color photographic simulation of that section of the transmission line route after construction.

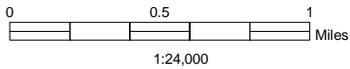
Information required to make AFC conform with regulations:

Color reproductions which meet the criteria specified in Appendix B(b)(2)(B) for the proposed transmission routes and any alternatives.

Response—See Figure 2.1-S1 (attached).



-  REP Parcel
-  Power Plant Site
-  Transmission Simulation View (Fig. 2.1-S1)
-  Natural Gas Pipeline Alternative A
-  Natural Gas Pipeline Alternative B
-  Natural Gas Pipeline Alternative B1
-  Natural Gas Pipeline Alternative C
-  Alternative 60 kV Connection (without WRSP)
-  1 mile Site Buffer

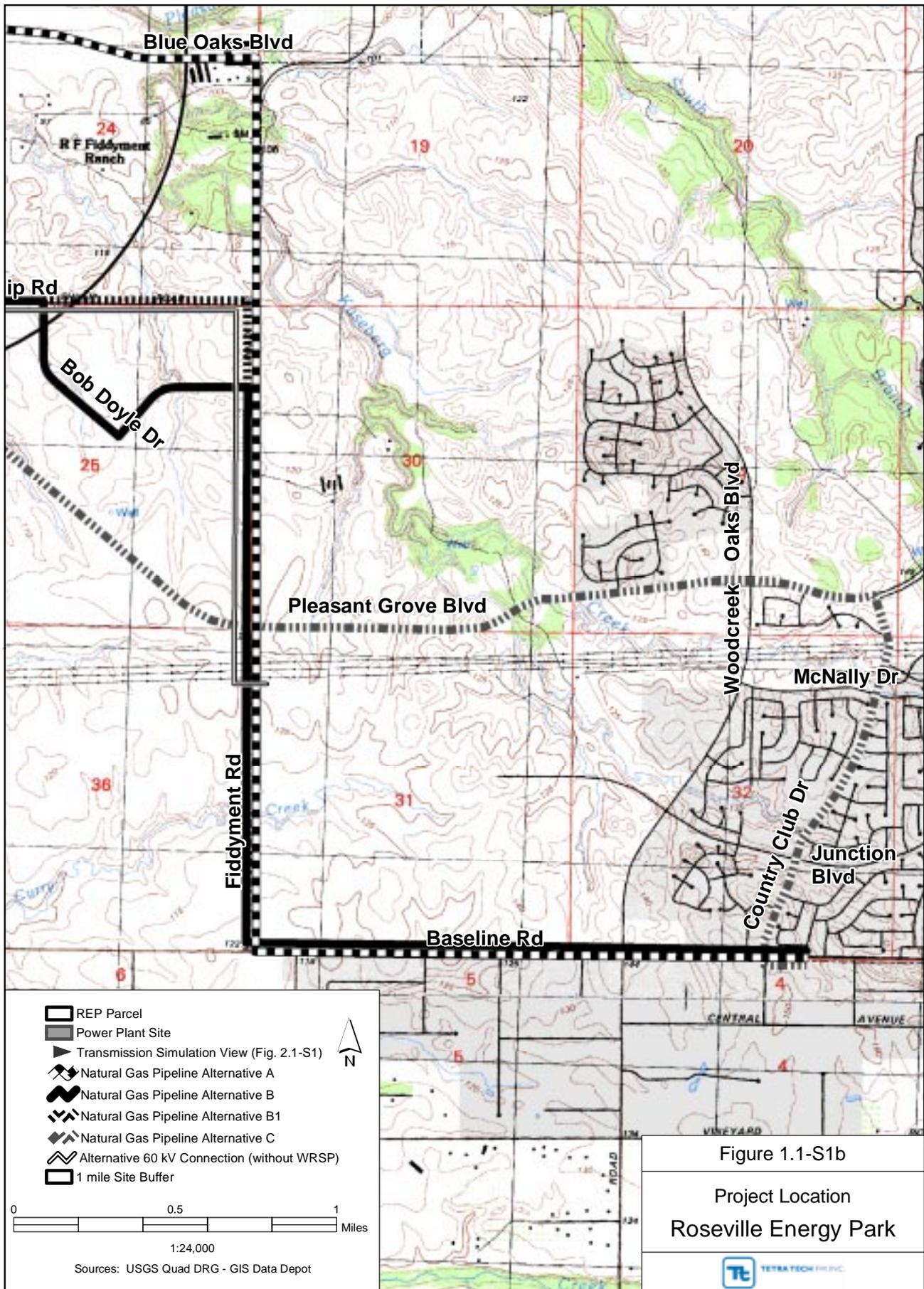


Sources: USGS Quad DRG - GIS Data Depot

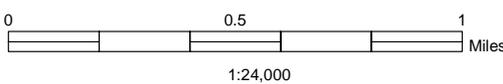
Figure 1.1-S1a

Project Location
Roseville Energy Park





- REP Parcel
- Power Plant Site
- Transmission Simulation View (Fig. 2.1-S1)
- Natural Gas Pipeline Alternative A
- Natural Gas Pipeline Alternative B
- Natural Gas Pipeline Alternative B1
- Natural Gas Pipeline Alternative C
- Alternative 60 kV Connection (without WRSP)
- 1 mile Site Buffer



Sources: USGS Quad DRG - GIS Data Depot

Figure 1.1-S1b
 Project Location
 Roseville Energy Park





Figure 2.1-S1a. Existing view east along Phillip Road from PGWWTP entrance.



Figure 2.1-S1b. Simulated view with project and 60 kV transmission line (without WRSP).

6.0 TRANSMISSION SYSTEM ENGINEERING

1. Basis for 60 kV configuration (Appendix B[i][2][A]):

A discussion of the need for the additional electric transmission lines, substations, or other equipment, the basis for selecting principal points of junction with the existing electric transmission system, and the capacity and voltage levels of the proposed lines, along with the basis for selection of the capacity and voltage levels

Information required to make AFC conform with regulations:

If the 230kV interconnection to Western's Fiddymont substation is proposed for licensing, please provide the Interconnection Study information identified on page 2 of this Data Adequacy Worksheet. If the 60kV configuration was selected, discuss the basis for the selection.

Response—In early 2003, Roseville Electric performed a preliminary detailed facility study to determine the effects of adding 150 MW of generation to Roseville Electric's 60 kV sub-transmission system. Two options were studied: 1) connection to a 60 kV line planned for the West Roseville Specific Plan (WRSP) development area, or 2) connection to Western Area Power Administration's (WAPA's) 230 kV transmission system at Fiddymont Station. Before the study, Roseville Electric had determined that the 60 kV connection would be preferred if feasible. The preliminary detailed facility study showed that both options are electrically feasible. With this knowledge, Roseville Electric choose the 60kV option for the following reasons:

- **Lower Cost**—Connecting directly to the planned West Roseville 60 kV sub-transmission line located immediately adjacent to the planned power plant site would be much less expensive than building a new 230 kV transmission line that would extend for 3.3 miles from the power plant site to Fiddymont Station. In addition, with this option, Roseville Electric could defer the planned addition of a second 230 kV to 60 kV 150 MVA transformer at its Fiddymont Station. This new transformer would be needed to accommodate future load growth. Connecting the 150 MW of generation to the 230 kV system would require that Roseville Electric install the planned new transformer along with the transmission line.
- **Less Environment Impact**—Adding a 3.3-mile, 230 kV transmission line could have more environmental impacts than connecting directly to the West Roseville 60 kV line (<100 feet). In the unlikely event that the annexation and development of the WRSP area did not take place as planned or was indefinitely delayed, Roseville Electric would build a 60 kV transmission line from the power plant site to Fiddymont Station, as described in AFC Section 6.0 at page 6-1 and on Figure 6.1-1.
- **Less Visual Impact**—A 60 kV transmission line would consist of 65-foot-high wooden poles and tubular steel corner poles, where a 230 kV transmission line would likely make use of larger and taller steel lattice towers. In addition, assuming WRSP proceeds in a timely fashion, the length of the REP's transmission connection to the West Roseville 60 kV line would be less than 100 feet, as opposed to 3.3 miles for the 230kV transmission line option.

2. Design Description (Appendix B[b][2][C]):

A detailed description of the design, construction, and operation of any electric transmission facilities, such as powerlines, substations, switchyards, or other transmission equipment, which will be constructed or modified to transmit electrical power from the proposed power plant to the load centers to be served by the facility. Such description shall include the width of rights of way and the physical and electrical characteristics of electrical transmission facilities such as towers, conductors, and insulators. This description shall include power load flow diagrams that demonstrate conformance or nonconformance with utility reliability and planning criteria at the time the facility is expected to be placed in operation and five years thereafter.

Information required to make AFC conform with regulations:

Please provide the following (see items a-f, below):

Response:

- a. *Identify major assumptions in the base cases including the Commission approved new generation projects and generation queue.*

The base cases include the following generators which include both projects that have obtained CEC licenses and projects currently under review at the Commission as of April 11, 2003:

Cosumnes Power Plant	500 MW
East Altamont Power Plant	1,070 MW
Potrero Unit 7	370 MW
Los Esteros (LEGP)	580 MW
Russell City Energy Center (FGP)	600 MW
Tesla Power Plant	978 MW
United Golden Gate	395 MW
Contra Costa (Mirant)	590 MW
Three Mountain Power Plant	430 MW
Metcalf Energy Center	600 MW
San Joaquin Valley Energy (FEC)	354 MW

- b. *Please clarify the year(s) of base case(s) used for the N-0 overload(s).*

The base case year is 2006.

- c. *Provide short-circuit studies (Optional-Data requests will follow).*

This information will be provided later if requested through a data request.

- d. *Analyze the system for Transient Stability and Post-transient voltage conditions under critical N-1 and N-2 contingencies, and provide related plots, switching data and a list for voltage violations in the studies (Optional-Data requests will follow).*

This information will be provided later if requested through a data request. Stability studies have been performed in the past two years with 560 MW of new generation at Elverta Substation and 700-900 MW of new generation at Roseville Substation. These studies showed no adverse effects to the system with the additional generation and it is likely that the much smaller REP will show similar results.

- e. *Identify the reliability and planning criteria utilized to determine the criteria violations.*

The Western Electric Coordinating Council (WECC) and the North American Electric Reliability Council (NERC) planning criteria were used to evaluate the potential impact of the REP.

- f. *Provide a list of contingencies evaluated for each study.*

See the contingency list attached at the end of this section.

- g. *List mitigation measures considered for the post project overloads (required) and those selected. (Optional-Data requests will follow).*

Upon commissioning in 2006, the Roseville Energy Park will not cause overloads under either N-0 or N-1 conditions. Note that for several elements, existing overloads are improved (for example, the 60 kV Fiddymment to Foothill line). Also, Roseville Electric requested that WAPA perform preliminary analysis for projected 2010 conditions for the purpose of its own system planning. Attached at the end of this section is a table showing mitigation measures for Overloaded Elements with and without 150 MW of generation on Roseville's 60 kV system.

- h. *Provide power flow diagrams (MW, % loading and P.U. voltage) for post project overloads. Verify that figures 2 through 11 are under N-0 conditions.*

Power flow diagrams for post-project overloads are provided at the end of this section. These replace Figures 1-11 in the System Impact Study filed with the AFC and include MW, percent loading, and P.U. voltage. Figures 1-9 show N-0 conditions. Figure 10 shows the Elverta Bus Tie Breaker in open position and Figure 11 shows the Fiddymment Transformer in open position.

- i. *Provide electronic copies of *.sav and *.drw PSLF files (Optional-Data requests will follow).*

Electronic copies of the *.sav and *.drw files are being submitted on a separate CD-ROM.

- j. *If the 230 kV connection is proposed for licensing, please provide an electrical one-line diagram for the Fiddymment substation.*

A 60 kV connection is proposed for licensing. No 230 kV connection is proposed.

3. Selection of the 60 kV configuration (Appendix B[b][2][D]):

A discussion of how the route and additional transmission facilities were selected, and the consideration given to engineering constraints, environmental impacts, resource conveyance constraints, and electric transmission constraints.

Information required to make AFC conform with regulations:

If the 230 kV interconnection to Western's Fiddymment substation is proposed for licensing, please provide a description of the route and additional transmission facilities. If the 60 kV configuration was selected discuss the rationale.

Response—A 230 kV interconnection is not proposed for the REP project. See the response to Item #1 for a discussion of the rationale for selecting the 60 kV option.

**CONTINGENCIES ANALYZED
IN THE SYSTEM IMPACT STUDIES**

I. N-1 OUTAGES

**** CASE NUMBER **** 1
OPEN LINE
"RNCHSECO 230.00" "COSUMNES 230.00" "2" 1
DONE

**** CASE NUMBER **** 2
OPEN LINE
"RNCHSECO 230.00" "COSUMNES 230.00" "1" 1
DONE

**** CASE NUMBER **** 3
OPEN LINE
"EAEC230 230.00" "WESTLEY 230.00" "2" 1
DONE

**** CASE NUMBER **** 4
OPEN LINE
"EAEC230 230.00" "WESTLEY 230.00" "1" 1
DONE

**** CASE NUMBER **** 5
OPEN LINE
"EAEC230 230.00" "TRCY PMP 230.00" "2" 1
DONE

**** CASE NUMBER **** 6
OPEN LINE
"EAEC230 230.00" "TRCY PMP 230.00" "1" 1
DONE

**** CASE NUMBER **** 7
OPEN LINE
"ELVERTAW 230.00" "HURLEY S 230.00" "2" 1
DONE

**** CASE NUMBER **** 8
OPEN LINE
"ELVERTAW 230.00" "HURLEY S 230.00" "1" 1
DONE

**** CASE NUMBER **** 9
OPEN LINE
"TRACY YG 70.00" "MODESTO 69.00" "2" 1
DONE

**** CASE NUMBER **** 10
OPEN LINE
"TRACY YG 70.00" "MODESTO 69.00" "1" 1
DONE

**** CASE NUMBER **** 11
OPEN LINE
"KESWICK 230.00" "OBANION 230.00" "1" 1
DONE

**** CASE NUMBER **** 12
OPEN LINE
"OLINDAW 230.00" "OBANION 230.00" "1" 1
DONE

**** CASE NUMBER **** 13
OPEN LINE
"SUTTER 230.00" "OBANION 230.00" "1" 1
DONE

**** CASE NUMBER **** 14
OPEN LINE
"OBANION 230.00" "ELVERTAW 230.00" "2" 1
DONE

**** CASE NUMBER **** 15
OPEN LINE
"OBANION 230.00" "ELVERTAW 230.00" "1" 1
DONE

**** CASE NUMBER **** 16
OPEN LINE
"KESWICK 115.00" "KNAUF 115.00" "1" 1
DONE

**** CASE NUMBER **** 17
OPEN LINE
"KESWICK 115.00" "EUREKA 115.00" "1" 1
DONE

**** CASE NUMBER **** 18
OPEN LINE
"KESWICK 115.00" "SULP CRK 115.00" "1" 1
DONE

**** CASE NUMBER **** 19
OPEN LINE
"AIRPORTW 230.00" "COTWDWAP 230.00" "1" 1
DONE

**** CASE NUMBER **** 20
OPEN LINE
"COTWDWAP 230.00" "ROUND MT 230.00" "1" 1
DONE

**** CASE NUMBER **** 21
OPEN LINE
"COTWDWAP 230.00" "ROSEVILL 230.00" "1" 1
DONE

**** CASE NUMBER **** 22
OPEN LINE
"COTWDWAP 230.00" "SHASTA 230.00" "1" 1
DONE

**** CASE NUMBER **** 23
OPEN LINE
"COTWDWAP 230.00" "SHASTA 230.00" "2" 1
DONE

**** CASE NUMBER **** 24
OPEN LINE
"FOLSOM 115.00" "NIMBUS 115.00" "1" 1
DONE

**** CASE NUMBER **** 25
OPEN LINE
"KESWICK 230.00" "AIRPORTW 230.00" "1" 1
DONE

**** CASE NUMBER **** 26
OPEN LINE
"KESWICK 230.00" "J.F.CARR 230.00" "1" 1
DONE

**** CASE NUMBER **** 27
OPEN LINE

"KESWICK 230.00" "J.F.CARR 230.00" "2" 1
 DONE

**** CASE NUMBER **** 28
 OPEN LINE
 "KESWICK 230.00" "SPRINGCR 230.00" "2" 1
 DONE

**** CASE NUMBER **** 29
 OPEN LINE
 "MELONES 230.00" "WILSON 230.00" "1" 1
 DONE

**** CASE NUMBER **** 30
 OPEN LINE
 "OLINDAW 230.00" "COTWDWAP 230.00" "1" 1
 DONE

**** CASE NUMBER **** 31
 OPEN LINE
 "OLINDAW 230.00" "COTWDWAP 230.00" "2" 1
 DONE

**** CASE NUMBER **** 32
 OPEN LINE
 "OLINDAW 230.00" "KESWICK 230.00" "1" 1
 DONE

**** CASE NUMBER **** 33
 OPEN LINE
 "FIDDYMNT 230.00" "ELVERTAW 230.00" "1" 1
 DONE

**** CASE NUMBER **** 34
 OPEN LINE
 "FIDDYMNT 230.00" "ROSEVILL 230.00" "1" 1
 DONE

**** CASE NUMBER **** 35
 OPEN LINE
 "FLANAGAN 230.00" "KESWICK 230.00" "1" 1
 DONE

**** CASE NUMBER **** 36
 OPEN LINE
 "FLANAGAN 115.00" "SHAST LK 115.00" "1" 1
 DONE

**** CASE NUMBER **** 37
 OPEN LINE
 "FLANAGAN 115.00" "KNAUF 115.00" "1" 1
 DONE

**** CASE NUMBER **** 38
 OPEN LINE
 "SHAST LK 115.00" "KNAUF 115.00" "1" 1
 DONE

**** CASE NUMBER **** 39
 OPEN LINE
 "ROSEVLL1 60.00" "ROSEVLL2 60.00" "1" 1
 DONE

**** CASE NUMBER **** 40
 OPEN LINE
 "ROSEVLL1 60.00" "PARKEAST 60.00" "1" 1
 DONE

**** CASE NUMBER **** 41
 OPEN LINE
 "PARKWEST 60.00" "ROSEVLCT 60.00" "1" 1
 DONE

**** CASE NUMBER **** 42
 OPEN LINE
 "ROSEVLCT 60.00" "BLUE OAK 60.00" "1" 1
 DONE

**** CASE NUMBER **** 43
 OPEN LINE
 "RSCHP 60.00" "FIDDYMNT 60.00" "1" 1
 DONE

**** CASE NUMBER **** 44
 OPEN LINE
 "RSCHP 60.00" "FTHILL 60.00" "1" 1
 DONE

**** CASE NUMBER **** 45
 OPEN LINE
 "FIDDYMNT 60.00" "FTHILL 60.00" "1" 1
 DONE

**** CASE NUMBER **** 46
 OPEN LINE
 "FTHILL 60.00" "RSCIND 60.00" "1" 1
 DONE

**** CASE NUMBER **** 47
 OPEN LINE
 "RSCIND 60.00" "ROSEVLL1 60.00" "1" 1
 DONE

**** CASE NUMBER **** 48
 OPEN LINE
 "PLGROVE2 60.00" "FTHILL 60.00" "1" 1
 DONE

**** CASE NUMBER **** 49
 OPEN LINE
 "PLGROVE2 60.00" "PLGROVE1 60.00" "1" 1
 DONE

**** CASE NUMBER **** 50
 OPEN LINE
 "PLGROVE1 60.00" "ROSEVLL1 60.00" "1" 1
 DONE

**** CASE NUMBER **** 51
 OPEN LINE
 "ROSEVLL2 60.00" "DOUGLAS2 60.00" "1" 1
 DONE

**** CASE NUMBER **** 52
 OPEN LINE
 "ROSEVLL2 60.00" "DOUGLAS1 60.00" "1" 1
 DONE

**** CASE NUMBER **** 53
 OPEN LINE
 "VERRSC 60.00" "BASLN 60.00" "1" 1
 DONE

**** CASE NUMBER **** 54
 OPEN LINE
 "BASLN 60.00" "FIDDYMNT 60.00" "1" 1
 DONE

```

**** CASE NUMBER **** 55
OPEN LINE
"PARKEAST 60.00" "PARKWEST 60.00" "1" 1
DONE

**** CASE NUMBER **** 56
OPEN LINE
"RSCIND 60.00" "ROSEVLL1 60.00" "2" 1
DONE

**** CASE NUMBER **** 57
OPEN LINE
"DOUGLAS2 60.00" "CIRBY 60.00" "1" 1
DONE

**** CASE NUMBER **** 58
OPEN LINE
"ROSEVLL2 60.00" "HARDROCK 60.00" "1" 1
DONE

**** CASE NUMBER **** 59
OPEN LINE
"ROSEVLL2 60.00" "SO_EAST 60.00" "1" 1
DONE

**** CASE NUMBER **** 60
OPEN LINE
"RSC 230 230.00" "FIDDYMNT 230.00" "1" 1
DONE

**** CASE NUMBER **** 61
OPEN LINE
"ELVERTAW 230.00" "ROSEVILL 230.00" "1" 1
DONE

**** CASE NUMBER **** 64
OPEN LINE
"WEST RSC 60.00" "BLUE OAK 60.00" "1" 1
DONE

**** CASE NUMBER **** 65
OPEN LINE
"WEST RSC 60.00" "RSCHP 60.00" "1" 1
DONE

**** CASE NUMBER **** 66
OPEN LINE
"SHASTA 230.00" "FLANAGAN 230.00" "1" 1
DONE

**** CASE NUMBER **** 67
OPEN LINE
"TRCY PMP 230.00" "TESLA D 230.00" "1" 1
DONE

**** CASE NUMBER **** 68
OPEN LINE
"TRCY PMP 230.00" "TESLA D 230.00" "2" 1
DONE

**** CASE NUMBER **** 69
OPEN LINE
"TRCY PMP 230.00" "HURLEY S 230.00" "1" 1
DONE

**** CASE NUMBER **** 70
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"TRCY PMP 230.00" "HURLEY S 230.00" "2" 1
DONE

**** CASE NUMBER **** 71
OPEN LINE
"TRCY PMP 230.00" "LLNL 230.00" "1" 1
DONE

**** CASE NUMBER **** 72
OPEN LINE
"TRINITY 230.00" "J.F.CARR 230.00" "2" 1
DONE

**** CASE NUMBER **** 73
OPEN LINE
"ELVERTAS 230.00" "ELVERTAW 230.00" "1" 1
DONE

**** CASE NUMBER **** 74
OPEN LINE
"CAMINO S 230.00" "LAKE 230.00" "1" 1
DONE

**** CASE NUMBER **** 75
OPEN LINE
"CAMINO S 230.00" "UNIONVLY 230.00" "1" 1
DONE

**** CASE NUMBER **** 76
OPEN LINE
"CAMINO S 230.00" "WHITEROK 230.00" "1" 1
DONE

**** CASE NUMBER **** 77
OPEN LINE
"CAMPBELL 230.00" "HEDGE 230.00" "1" 1
DONE

**** CASE NUMBER **** 78
OPEN LINE
"CAMPBELL 230.00" "POCKET 230.00" "1" 1
DONE

**** CASE NUMBER **** 79
OPEN LINE
"CARMICAL 230.00" "HURLEY S 230.00" "1" 1
DONE

**** CASE NUMBER **** 80
OPEN LINE
"CARMICAL 230.00" "ORANGEVL 230.00" "1" 1
DONE

**** CASE NUMBER **** 81
OPEN LINE
"ELKGROVE 230.00" "HEDGE 230.00" "1" 1
DONE

**** CASE NUMBER **** 82
OPEN LINE
"ELKGROVE 230.00" "RNCHSECO 230.00" "1" 1
DONE

**** CASE NUMBER **** 83

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OPEN LINE
 "ELVERTAS 230.00" "FOOTHILL 230.00" "1" 1
 DONE
 **** CASE NUMBER **** 84
 OPEN LINE
 "ELVERTAS 230.00" "ORANGEVL 230.00" "1" 1
 DONE
 **** CASE NUMBER **** 85
 OPEN LINE
 "FOOTHILL 230.00" "ORANGEVL 230.00" "1" 1
 DONE
 **** CASE NUMBER **** 86
 OPEN LINE
 "HEDGE 230.00" "RNCHSECO 230.00" "1" 1
 DONE
 **** CASE NUMBER **** 87
 OPEN LINE
 "JAYBIRD 230.00" "UNIONVLY 230.00" "1" 1
 DONE
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 OPEN LINE
 "JAYBIRD 230.00" "WHITEROK 230.00" "1" 1
 DONE
 **** CASE NUMBER **** 89
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 "LAKE 230.00" "ORANGEVL 230.00" "1" 1
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 "ORANGEVL 230.00" "WHITEROK 230.00" "1" 1
 DONE
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 "POCKET 230.00" "LAKE 230.00" "1" 1
 DONE
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 "POCKET 230.00" "RNCHSECO 230.00" "1" 1
 DONE
 **** CASE NUMBER **** 93
 OPEN LINE
 "POCKET 230.00" "RNCHSECO 230.00" "2" 1
 DONE
 **** CASE NUMBER **** 94
 OPEN LINE
 "PROCTER 230.00" "HEDGE 230.00" "1" 1
 DONE
 **** CASE NUMBER **** 95
 OPEN LINE
 "PROCTER 230.00" "HURLEY S 230.00" "1" 1
 DONE
 **** CASE NUMBER **** 96
 OPEN LINE
 "WHITEROK 230.00" "HEDGE 230.00" "1" 1
 DONE

**** CASE NUMBER **** 97
 OPEN LINE
 "EAST CTY 115.00" "HEDGE 115.00" "1" 1
 DONE
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 "EAST CTY 115.00" "HURLEY 115.00" "1" 1
 DONE
 **** CASE NUMBER **** 99
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 "EAST CTY 115.00" "MID CTY 115.00" "1" 1
 DONE
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 OPEN LINE
 "EAST CTY 115.00" "MID CTY 115.00" "2" 1
 DONE
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 "ELVERTAS 115.00" "NORTHCTY 115.00" "1" 1
 DONE
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 "HEDGE 115.00" "SOUTHCTY 115.00" "1" 1
 DONE
 **** CASE NUMBER **** 103
 OPEN LINE
 "HEDGE 115.00" "SOUTHCTY 115.00" "2" 1
 DONE
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 "HURLEY 115.00" "NORTHCTY 115.00" "1" 1
 DONE
 **** CASE NUMBER **** 105
 OPEN LINE
 "HURLEY 115.00" "NORTHCTY 115.00" "2" 1
 DONE
 **** CASE NUMBER **** 106
 OPEN LINE
 "MID CTY 115.00" "STA. B 115.00" "1" 1
 DONE
 **** CASE NUMBER **** 107
 OPEN LINE
 "NORTHCTY 115.00" "STA. A 115.00" "1" 1
 DONE
 **** CASE NUMBER **** 108
 OPEN LINE
 "NORTHCTY 115.00" "STA. A 115.00" "2" 1
 DONE
 **** CASE NUMBER **** 109
 OPEN LINE
 "NORTHCTY 115.00" "STA. B 115.00" "1" 1
 DONE
 **** CASE NUMBER **** 110
 OPEN LINE
 "NORTHCTY 115.00" "STA. B 115.00" "2" 1

DONE

**** CASE NUMBER **** 111
 OPEN LINE
 "SOUTHCTY 115.00" "STA. B 115.00" "1" 1
 DONE

**** CASE NUMBER **** 112
 OPEN LINE
 "STA. A 115.00" "STA. D 115.00" "1" 1
 DONE

**** CASE NUMBER **** 113
 OPEN LINE
 "STA. B 115.00" "STA. D 115.00" "1" 1
 DONE

**** CASE NUMBER **** 114
 OPEN LINE
 "JONESFRK 69.00" "UNIONVLY 69.00" "1" 1
 DONE

**** CASE NUMBER **** 115
 OPEN LINE
 "LOON LK 69.00" "ROBBS PK 69.00" "1" 1
 DONE

**** CASE NUMBER **** 116
 OPEN LINE
 "LOON LK 69.00" "UNIONVLY 69.00" "1" 1
 DONE

**** CASE NUMBER **** 117
 OPEN LINE
 "ELVERTA1 69.00" "ELVERTA2 69.00" "1" 1
 DONE

**** CASE NUMBER **** 118
 OPEN LINE
 "MCCLELLN 69.00" "FOOTHIL1 69.00" "1" 1
 DONE

**** CASE NUMBER **** 119
 OPEN LINE
 "ROBBS PK 69.00" "UNIONVLY 69.00" "1" 1
 DONE

**** CASE NUMBER **** 120
 OPEN LINE
 "SRWTP 69.00" "POCKET 1 69.00" "1" 1
 DONE

**** CASE NUMBER **** 121
 OPEN LINE
 "UCDMC 22.00" "MID CTY3 22.00" "1" 1
 DONE

**** CASE NUMBER **** 122
 OPEN LINE
 "NATOMAS 230.00" "HURLEY S 230.00" "1" 1
 DONE

**** CASE NUMBER **** 123
 OPEN LINE
 "ELVERTAS 230.00" "NATOMAS 230.00" "1" 1
 DONE

**** CASE NUMBER **** 124

OPEN XFMR
 "FIDDYMNT 230.00" "FIDDYMNT 60.00" "1" 1
 DONE

**** CASE NUMBER **** 125
 OPEN XFMR
 "FIDDYMNT 230.00" "FIDDYMNT 60.00" "2" 1
 DONE

**** CASE NUMBER **** 126
 OPEN XFMR
 "ROSEVILL 230.00" "ROSEVLL1 60.00" "1" 1
 DONE

**** CASE NUMBER **** 127
 OPEN XFMR
 "ROSEVILL 230.00" "ROSEVLL2 60.00" "2" 1
 DONE

**** CASE NUMBER **** 128
 OPEN XFMR
 "RSC PP1 13.80" "RSC 230 230.00" "1" 1
 DONE

**** CASE NUMBER **** 129
 OPEN XFMR
 "RSC PP2 13.80" "RSC 230 230.00" "1" 1
 DONE

**** CASE NUMBER **** 130
 OPEN XFMR
 "RSC PP3 13.80" "RSC 230 230.00" "1" 1

II. N-2 OUTAGES

**** CASE NUMBER **** 1

OPEN LINE
"TRCY PMP 230.00" "HURLEY S 230.00" "1" 1
OPEN LINE
"TRCY PMP 230.00" "HURLEY S 230.00" "2" 1
DONE

**** CASE NUMBER **** 2

OPEN LINE
"TRCY PMP 230.00" "TESLA D 230.00" "1" 1
OPEN LINE
"TRCY PMP 230.00" "TESLA D 230.00" "2" 1
DONE

**** CASE NUMBER **** 3

OPEN LINE
"ELVERTAW 230.00" "HURLEY S 230.00" "1" 1
OPEN LINE
"ELVERTAW 230.00" "HURLEY S 230.00" "2" 1
DONE

**** CASE NUMBER **** 4

OPEN LINE
"OBANION 230.00" "ELVERTAW 230.00" "1" 1
OPEN LINE
"OBANION 230.00" "ELVERTAW 230.00" "2" 1
DELETE BUS
"SUTTER 230.00"
DONE

**** CASE NUMBER **** 5

OPEN LINE
"REP60 60.00" "FIDDYMNT 60.00" "1" 1
OPEN LINE
"REP60 60.00" "FIDDYMNT 60.00" "2" 1
DELETE BUS
"REP60 60.00"
DONE

**** CASE NUMBER **** 6

OPEN LINE
"REP60 60.00" "WEST RSC 60.00" "1" 1
OPEN LINE
"REP60 60.00" "WEST RSC 60.00" "2" 1
DELETE BUS
"REP60 60.00"
DONE

**** CASE NUMBER **** 7

OPEN LINE
"FIDDYMNT 230.00" "ELVERTAW 230.00" "1" 1
OPEN LINE
"ROSEVILL 230.00" "ELVERTAW 230.00" "1" 1
DONE

**** CASE NUMBER **** 8

OPEN LINE
"FIDDYMNT 230.00" "ELVERTAW 230.00" "1" 1
OPEN LINE
"FIDDYMNT 230.00" "ROSEVILL 230.00" "1" 1
DONE

**MITIGATION MEASURES FOR
POTENTIALLY OVERLOADED ELEMENTS**

Overloaded Elements with and without 150 MW of Generation on Roseville's 60kV System

OVERLOADED ELEMENTS												
NCPA CTs 50 MW												
NCPA CTs 0 MW												
Outage	From	kV	To	kV	Ckt	% Loading	% Loading	% Loading	% Loading	Change in % Loading (2006)	Change in % Loading (2010) *	Mitigation (2006)
						without RSC Generation (2006)	without RSC Generation (2010) *	with RSC Generation (2006)	with RSC Generation (2010) *			
West Roseville-Blue Oak 60kV	FIDDYMNT	60	FTHILL	60	1	n/a	n/a	94.6	101.75 **			N/A
O'Banion-Elverta #1	OBANION	230	ELVERTAW	230	2	176	177.94	172.2	174.05	-3.8	-3.89	Existing RAS
O'Banion-Elverta #2	OBANION	230	ELVERTAW	230	1	176	177.94	172.2	174.05	-3.8	-3.89	Existing RAS
Fiddymnt 230/60kV #1	FIDDYMNT	60	FTHILL	60	1	172	209.18	46	39.2	-126	-169.98	N/A
Fiddymnt 230/60kV #1	FTHILL	60	RSCIND	60	1	142	171.68	16.8	31.6	-125.2	-140.08	N/A
ElvertaS-ElvertaW	ELVERTAW	230	HURLEY S	230	2	140.6	134.52	150	144.14	9.4	9.62	T121 Operating procedures in place.
ElvertaS-ElvertaW	ELVERTAW	230	HURLEY S	230	1	135.8	130	145	139.3	9.2	9.3	T121 Operating procedures in place.
Fiddymnt 230/60kV #1	PLGROVE1	60	ROSEVLL1	60	1	117.7	141.93	31.6	45.8	-86.1	-96.13	N/A
ElvertaS-ElvertaW	HURLEY S	230	NATOMAS	230	1	114	113	114.3	113.76	0.3	0.76	T121 Operating procedures in place.
Camino-Lake 230kV	ORANGEVL	230	WHITEROK	230	1	112.3	113.79	110.7	111.3	-1.6	-2.49	T121 Operating procedures in place.
Cottonwood-Roseville	OBANION	230	ELVERTAW	230	2	103.8	105.04	101.6	102.71	-2.2	-2.33	T121 Operating procedures in place.
Cottonwood-Roseville	OBANION	230	ELVERTAW	230	1	103.8	105.04	101.6	102.71	-2.2	-2.33	T121 Operating procedures in place.
Roseville 230/60kV #1	ROSEVILL	230	ROSEVLL2	60	2	103	123.55	87	107.72	-16	-15.83	T121 Operating procedures in place.
Fiddymnt 230/60kV #1	PLGROVE2	60	PLGROVE1	60	1	102	123.6	17.2	28.7	-84.8	-94.9	N/A
Tracy-Hurley #2	OBANION	230	ELVERTAW	230	2	102	103.29	99.6	100.82	-2.4	-2.47	T121 Operating procedures in place.
Tracy-Hurley #2	OBANION	230	ELVERTAW	230	1	102	103.29	99.6	100.82	-2.4	-2.47	T121 Operating procedures in place.
Tracy-Hurley #1	OBANION	230	ELVERTAW	230	2	102	103.12	99.2	100.67	-2.8	-2.45	T121 Operating procedures in place.
Tracy-Hurley #1	OBANION	230	ELVERTAW	230	1	102	103.12	99.2	100.67	-2.8	-2.45	T121 Operating procedures in place.
Roseville 230/60kV #2	ROSEVILL	230	ROSEVLL1	60	1	101.7	122.23	86	106.37	-15.7	-15.86	T121 Operating procedures in place.
Elk Grove-Rancho Seco 230kV	OBANION	230	ELVERTAW	230	2	99.7	100.76	97.6	98.58	-2.1	-2.18	N/A
Elk Grove-Rancho Seco 230kV	OBANION	230	ELVERTAW	230	1	99.7	100.76	97.6	98.58	-2.1	-2.18	N/A
SRWTP-Pocket 69kV	OBANION	230	ELVERTAW	230	2	99.7	100.73	97.6	98.62	-2.1	-2.11	N/A
SRWTP-Pocket 69kV	OBANION	230	ELVERTAW	230	1	99.7	100.73	97.6	98.62	-2.1	-2.11	N/A
Olinda-Keswick 230kV	OBANION	230	ELVERTAW	230	2	99.5	100.55	97.5	98.52	-2	-2.03	N/A
Olinda-Keswick 230kV	OBANION	230	ELVERTAW	230	1	99.5	100.55	97.5	98.52	-2	-2.03	N/A
Orangevale-Whiterock 230kV	OBANION	230	ELVERTAW	230	2	99.2	100.28	97.1	98.1	-2.1	-2.18	N/A
Orangevale-Whiterock 230kV	OBANION	230	ELVERTAW	230	1	99.2	100.28	97.1	98.1	-2.1	-2.18	N/A
Hedge-Rancho Seco 230kV	OBANION	230	ELVERTAW	230	2	99.1	100.24	97.1	98.1	-2	-2.14	N/A
Hedge-Rancho Seco 230kV	OBANION	230	ELVERTAW	230	1	99.1	100.24	97.1	98.1	-2	-2.14	N/A
Fiddymnt 230/60kV #1	ROSEVILL	230	ROSEVLL2	60	2	99	120.4	59.1	74.8	-39.9	-45.6	N/A
Keswick-Airport 230kV	OBANION	230	ELVERTAW	230	2	99	100.09	97.1	98.05	-1.9	-2.04	N/A
Keswick-Airport 230kV	OBANION	230	ELVERTAW	230	1	99	100.09	97.1	98.05	-1.9	-2.04	N/A
Fiddymnt 230/60kV #1	RSCIND	60	ROSEVLL1	60	2	97	117.36	19.5	36.8	-77.5	-80.56	N/A
Fiddymnt 230/60kV #1	ROSEVILL	230	ROSEVLL1	60	1	95	115.53	56.5	74.8	-38.5	-40.73	N/A
Fiddymnt 230/60kV #1	PLGROVE2	60	FTHILL	60	1	86	105.24	7.3	13.7	-78.7	-91.54	N/A
Roseville 230/60kV #1	FIDDYMNT	230	FIDDYMNT	60	1	85.6	104.45	38.1	52.8	-47.5	-51.65	N/A

Notes:

* In addition to the detailed facility study performed for adding the power plant in 2006, Roseville Electric had WAPA study the system with added forecasted load growth in 2010. This additional data is intended to assist Roseville Electric in planning for future load growth with or without addition of the power plant.

** As part of its long range system planning, Roseville Electric expects to mitigate the projected minor overloading in 2010 by rerating the line. Note that in the fourth row the same element is overloaded in the "Without RSC Generation" columns, but the addition of the Roseville Energy Park corrects this overload condition.

POWER FLOW DIAGRAMS

Figure 2 - No generation added, 2010 load forecast

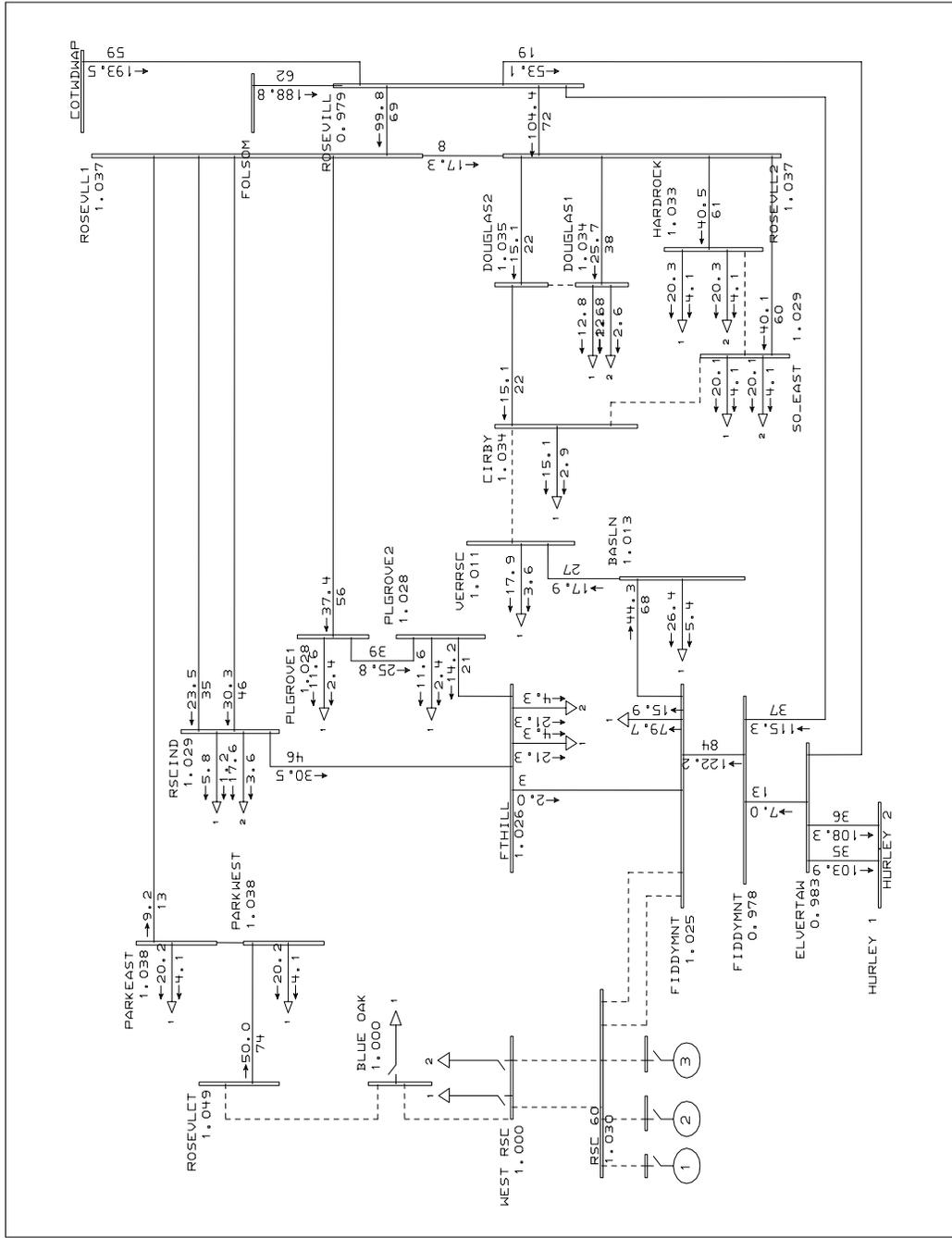


Figure 4 - 60kV Alternative I (2010 load) - 150 mw added to Roseville's 60kV system. two connections from Fiddymnt 60kV to Roseville PP, two connections from Roseville PP to West Roseville, connection from West Roseville to Blue Oaks.

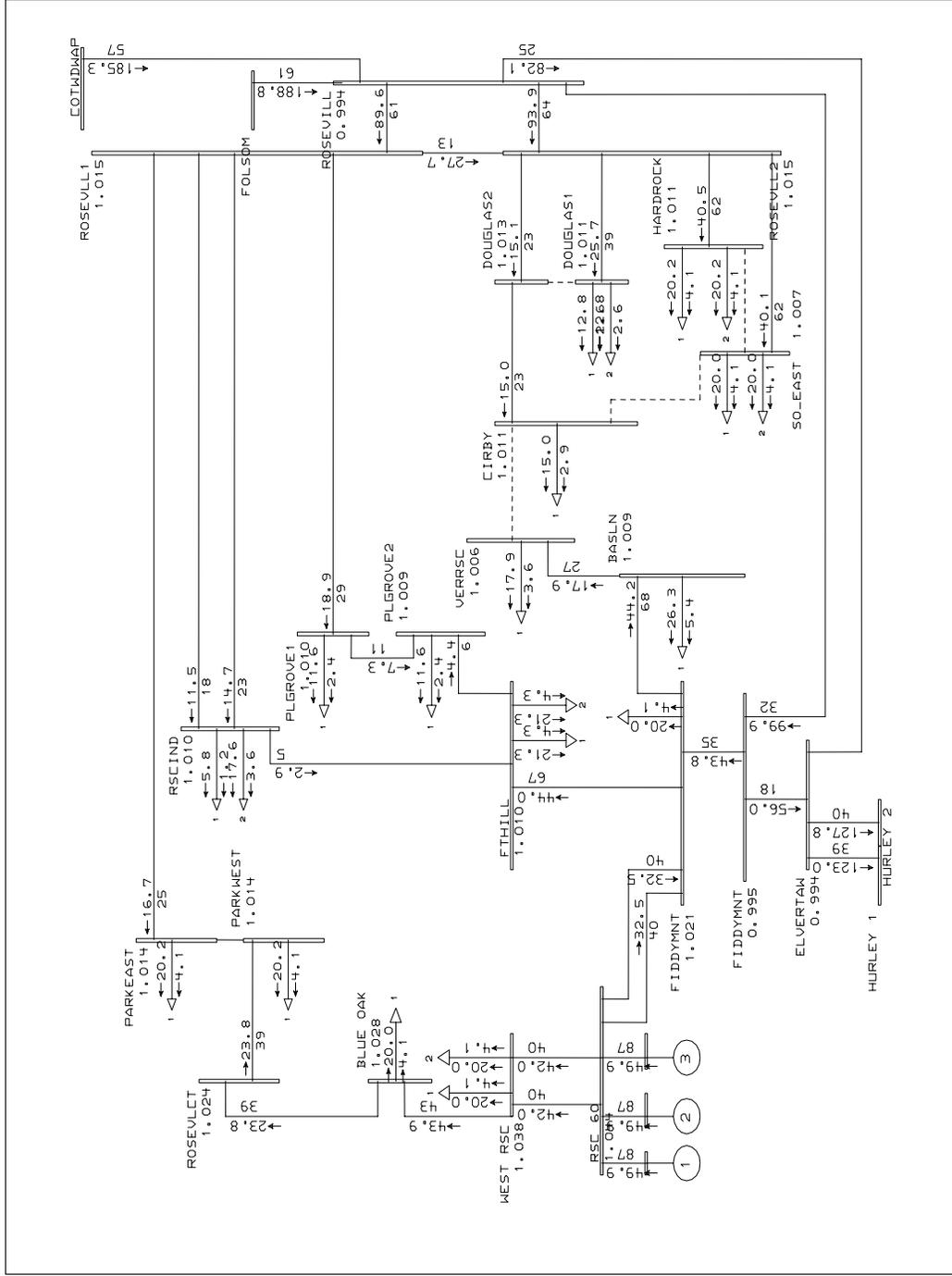


Figure 6 - 60kV Alternative III: Alternative I, II, and second transformer at Fiddymnt.

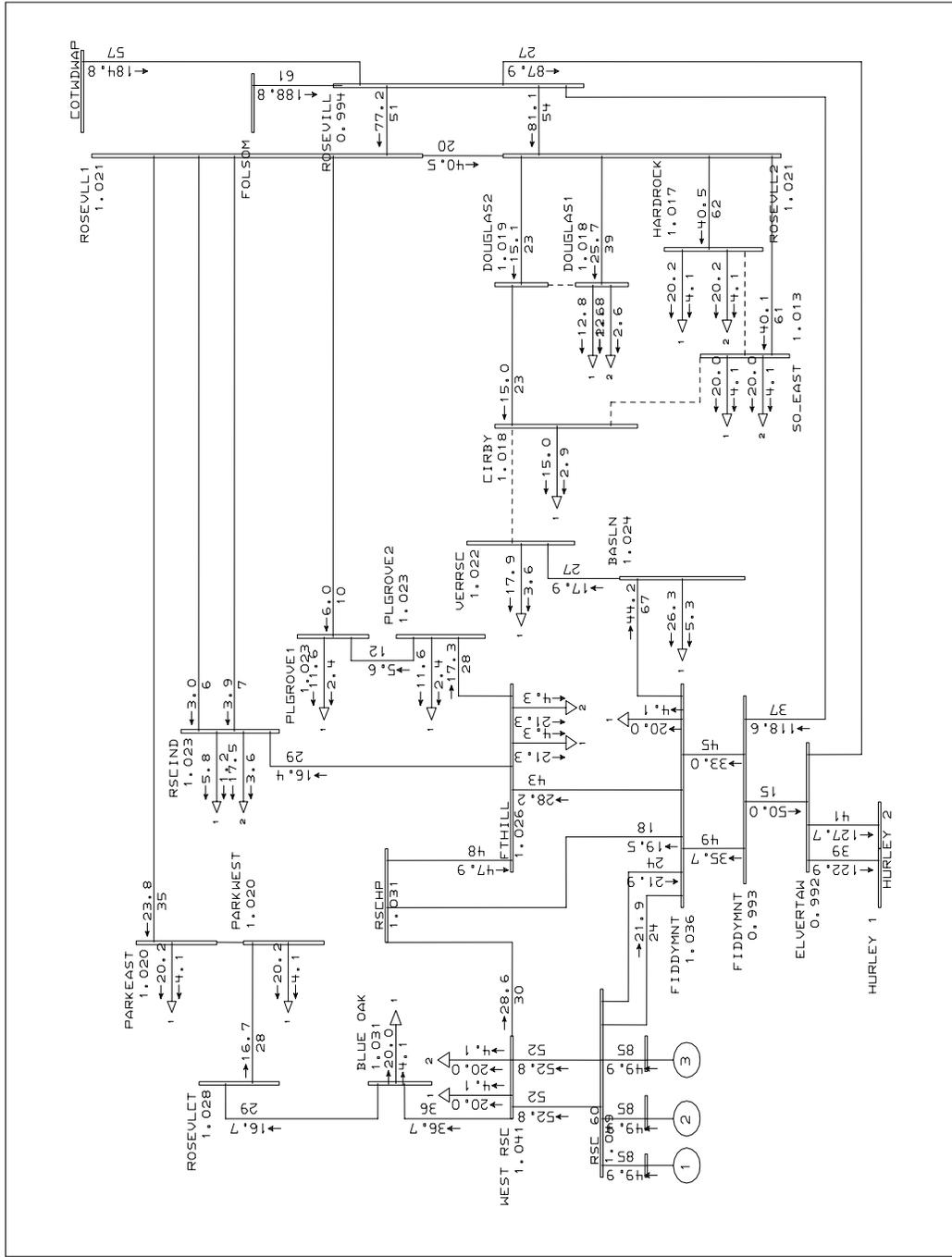


Figure 7 - 230kV Alternative Ia - 150 mw added to 230kV system, two connections from Fiddymnt 60kV to West Roseville, and one connection from West Roseville to Blue Oaks.

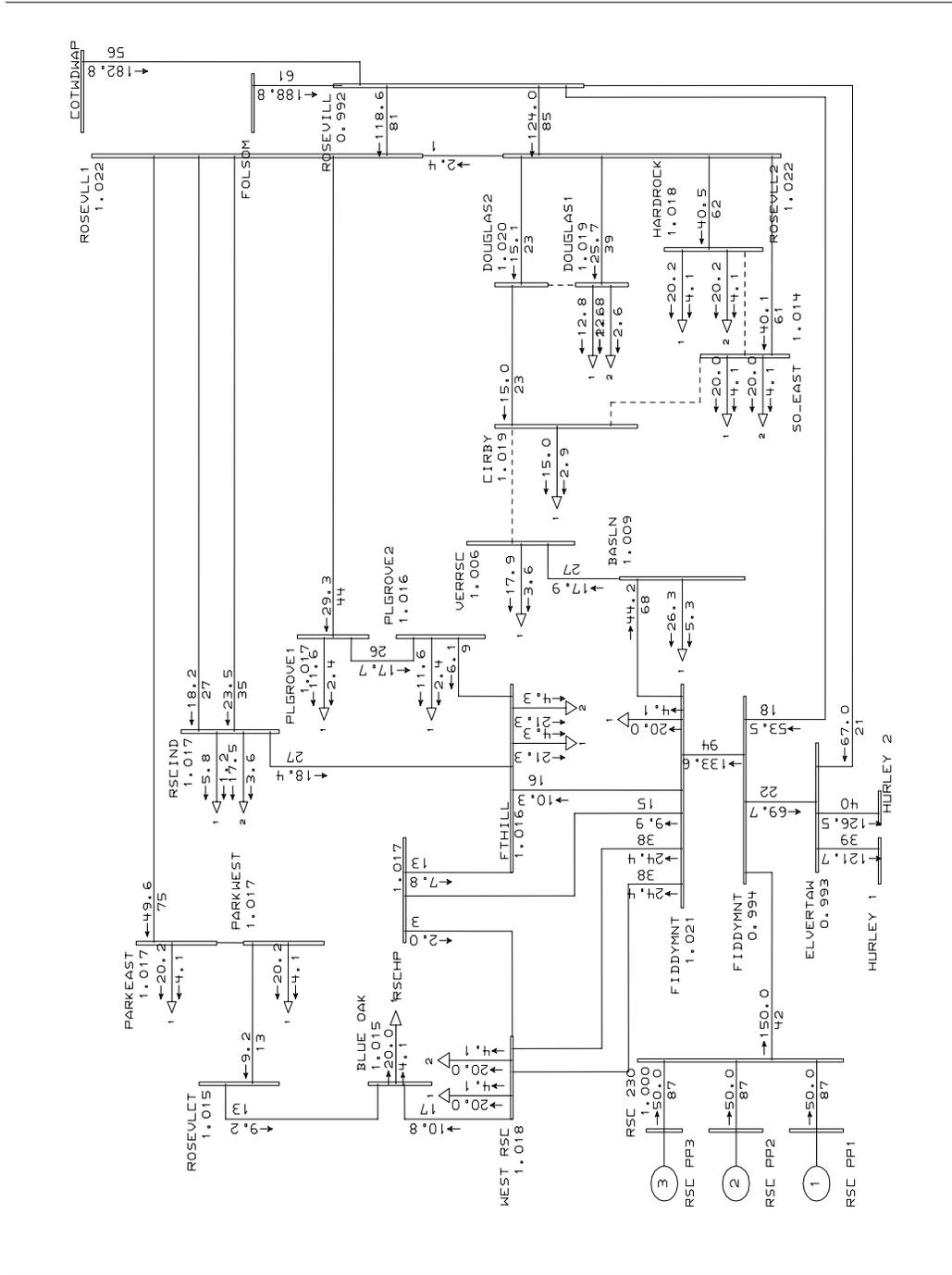


Figure 9 - 230kV Alternative IIIa: Alternative I, II, and second transformer at Fiddlydnt.

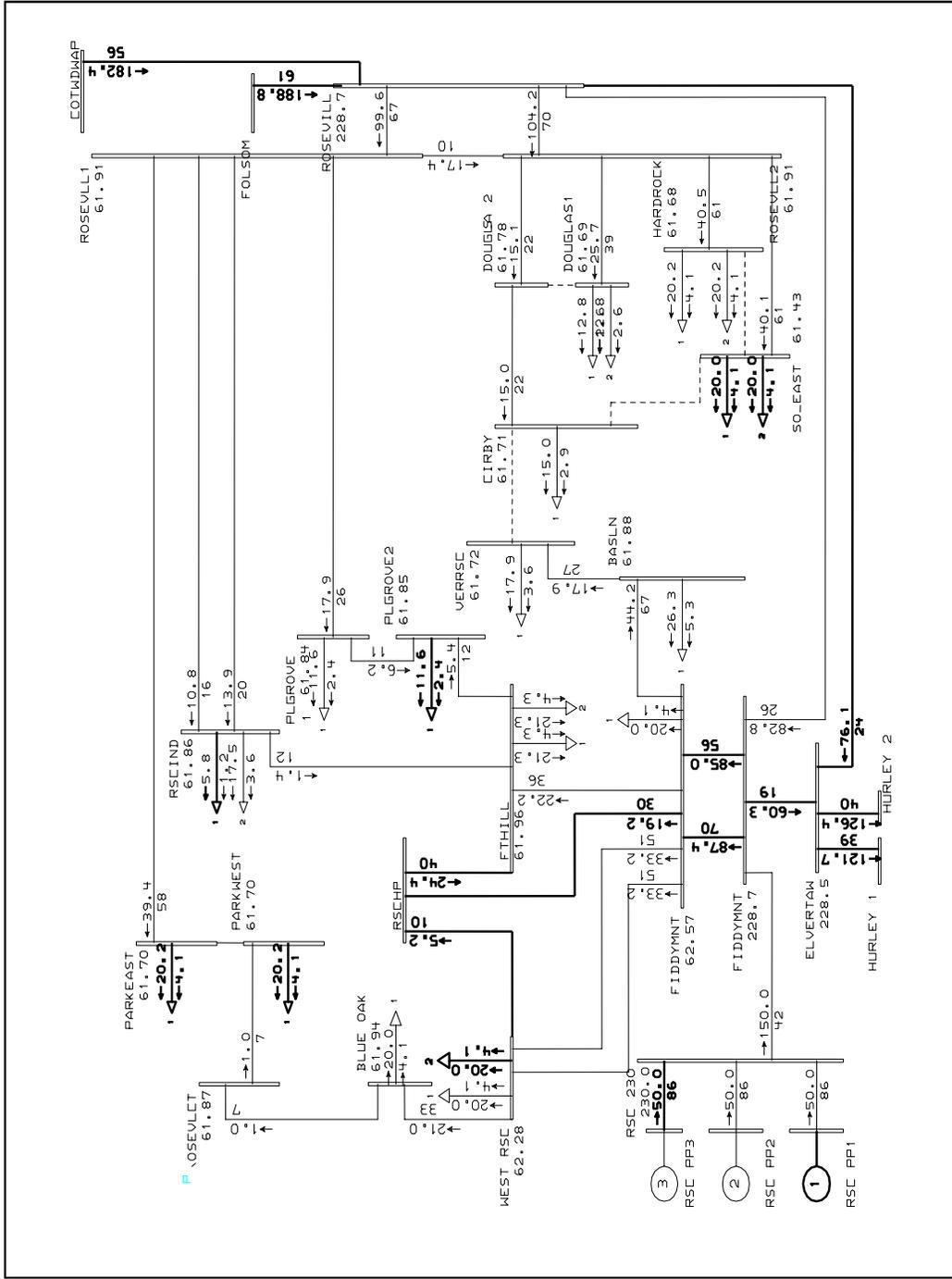
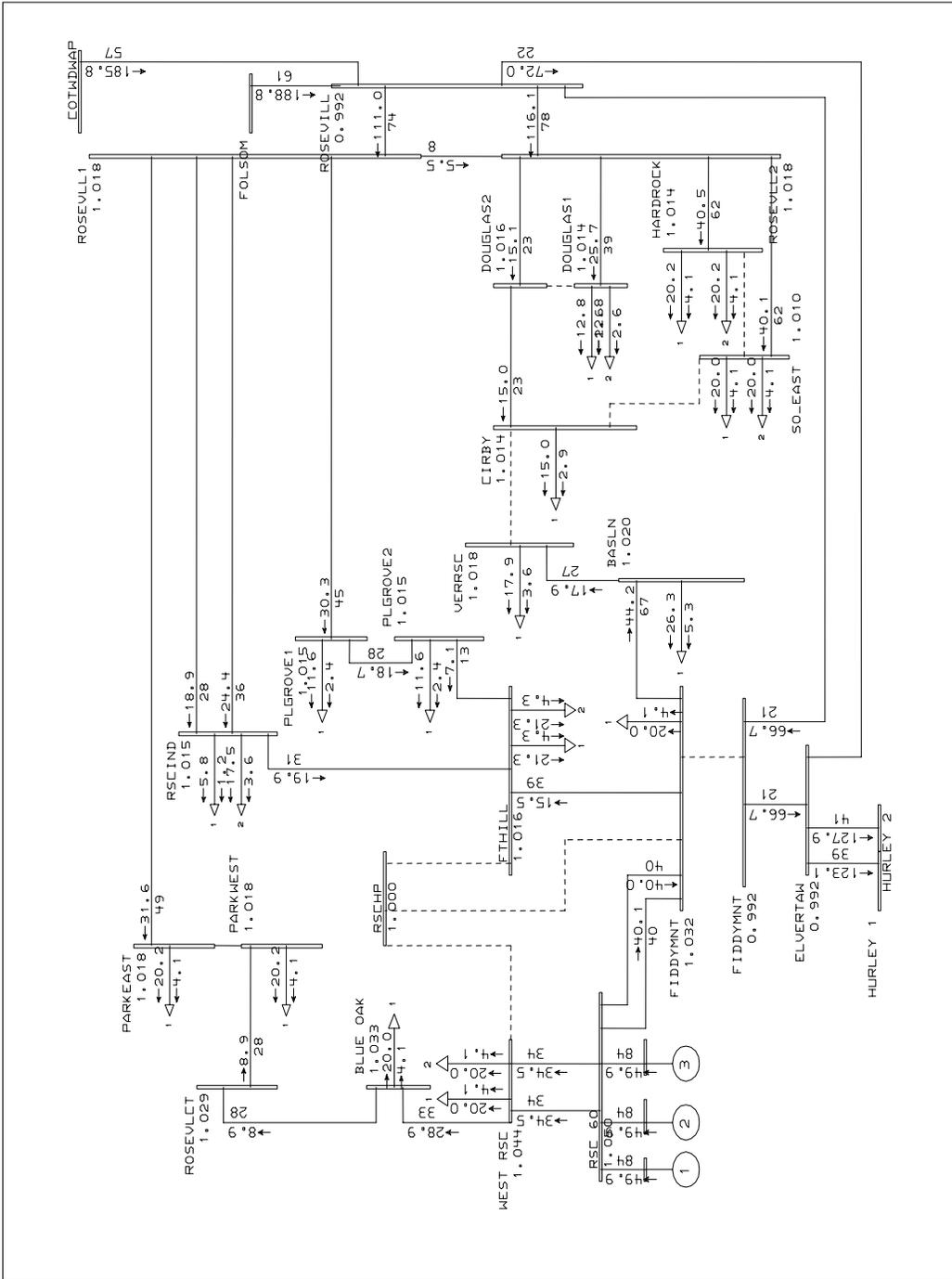


Figure 11 - Fiddymnt Transformer Out



8.1 AIR QUALITY

1. Completeness letter (Appendix B[g][8][A]):

The information necessary for the air pollution control district where the project is located to complete a Determination of Compliance.

Information required to make AFC conform with regulations:

The District is expected to issue a “Letter of Completeness” by 11/26/03.

Response—Placer County APCD has issued a “Letter of Completeness” to the California Energy Commission. The CEC Staff has indicated that they received this letter on November 26, 2003.

8.2 BIOLOGICAL RESOURCES

1. *Transmission line construction impacts (Appendix B [g][1]):*

Provide a discussion of the existing site conditions, the expected direct, indirect and cumulative impacts due to the construction, operation and maintenance of the project, the measures proposed to mitigate adverse environmental impacts of the project, the effectiveness of the proposed measures, and any monitoring plans proposed to verify the effectiveness of the mitigation.

Information required to make AFC conform with regulations:

Provide a discussion of impacts to existing biological resources that could result from construction of the project's transmission line and any proposed alternative transmission lines.

Response—Section 6.0 discusses the electrical interconnect with the REP, based on the West Roseville Specific Plan (WRSP) area being annexed to the City of Roseville. The AFC assumes that the City of Roseville will approve the WRSP and will annex the WRSP area. As part of the build-out of the WRSP, Roseville Electric will construct a 60 kV transmission line that will run along Phillip Road adjacent to the REP. The WRSP transmission line route was reviewed and will be approved as part of the WRSP infrastructure plan. This permitting process will be completed with the certification of the EIR for the WRSP, expected to take place in December 2003. The U.S. Fish and Wildlife Service has issued a Final Biological Opinion for the WRSP (November 20, 2003), as part of this permitting process, and the Roseville City Council is scheduled to consider approval of the WRSP in December 2003. The REP will connect directly to this transmission line via a short (<100-foot-long) looping connector that will be located entirely on the REP site. The REP will thus not require any new transmission line outside of the REP project site. Since no construction of a new transmission line will be necessary for the REP, no impacts to existing biological resources will occur and no mitigation is necessary.

As discussed in AFC Section 8.2.2.5, however, RE has planned for the unlikely contingency that the WRSP will not be approved or will be delayed indefinitely. In this case, RE would construct its own 60 kV transmission line. This transmission line would be supported by 65-foot-high wooden poles and would be approximately 3.3 miles long. It would run from the REP switchyard east, south, and east along the existing Phillip Road alignment to Fiddymment Road, then run south along Fiddymment Road to RE's Fiddymment Receiving Station (see AFC Figure 6.1-1). The transmission line would be placed within the northern utility easement along Phillip Road near the project. Where Phillip Road turns south, it would be placed in the western side of the road. Where Phillip Road turns east, it would be in the south side of the road. The transmission line would run in the existing utility easement west of Fiddymment Road.

Habitats within the Fiddymment and Phillip Road easements include ruderal and disturbed annual grassland. The roadway easements have been cut and graded to road slope and contain weedy species such as yellow star-thistle (*Centaurea solstitialis*), medusa head (*Taeniatherum caput-medusae*), prickly lettuce (*Lactuca serriola*), storks-bill (*Erodium cicutarium*), wild oat (*Avena fatua*), soft brome (*Bromus hordeaceus*), tarweed (*Hemizonia pungens*), and dove weed (*Eremocarpus setigerus*). Several seasonal streams and swales also cross Fiddymment Road and Phillip Road in the proposed transmission line route. Habitats within 1,000 feet of the proposed transmission line route include annual grassland, seasonal streams, vernal pools, seasonal wetlands and swales, riparian, and suburban developed land.

Since the proposed transmission line would be constructed within the utility easements of Fiddymment and Phillip Roads, no permanent direct impacts to existing biological resources are expected due to

construction. Temporary direct impacts would occur to large native trees within the transmission line alignment if the trees were to be pruned for spanning of the transmission wire. Some (1 to 4) native oak trees might have to be removed as part of the construction of the transmission line. Temporary indirect impacts could occur to seasonal streams due to sedimentation and erosion. Sedimentation and erosion would be controlled using best management practices and transmission line pole placement would be designed to avoid all seasonal streams. Please see Section 8.15.3 of the AFC for additional discussion of these practices. Indirect impacts are not expected to vernal pools or seasonal wetlands and swales since the transmission line would be installed in previously disturbed road easements with no hydrologic connectivity to nearby vernal pools and seasonal wetlands and swales. Roseville Electric will locate transmission line construction staging areas in places that avoid nearby vernal pools and seasonal wetlands and swales.

2. Maintenance impacts (Appendix B [g][1]):

Provide a discussion of the existing site conditions, the expected direct, indirect and cumulative impacts due to the construction, operation and maintenance of the project, the measures proposed to mitigate adverse environmental impacts of the project, the effectiveness of the proposed measures, and any monitoring plans proposed to verify the effectiveness of the mitigation.

Information required to make AFC conform with regulations:

Discuss how maintenance activities associated with the proposed project (include linears) could affect biological resources in the area.

Response—All power plant maintenance activities will take place within the power plant site boundary, which will be enclosed by fencing. Maintenance of the plant site during plant operation will not affect biological resources, as no biological resources will be located on the plant site. Maintenance of the natural gas pipeline is unlikely to affect biological resources because the natural gas pipeline rights-of-way will be located entirely within public utility easements along WRSP area roadways.

The REP transmission line would consist only of a short (<100 feet) connector from the switchyard to the WRSP 60 kV transmission line. There are no sensitive biological resources located along this line. Maintenance activities might include replacing broken insulators on the two connecting towers located along Phillip Road.

In the event that the WRSP and West Roseville annexation were not approved or delayed indefinitely, RE would construct a 60 kV double-circuit transmission line between the REP site and the Fiddymont Substation. Maintenance activities associated with this transmission line would require access to the insulators and conductors from the roadway (cherry-picker) or on the wooden conductor support poles. On occasion, it would be necessary to replace broken insulators or wooden poles. These activities will not have significant effects on biological resources, however, since they would involve disturbance at the pole locations, which are in disturbed habitat adjacent to the roadway at locations selected to avoid sensitive biological resources. Since the transmission line would be placed in the road easements of Phillip and Fiddymont Roads, access to the transmission line would not involve disturbance of sensitive biological resources or habitats.

It would also be necessary to prune trees located along the right-of-way, if these trees were not removed during construction. Tree trimming or removal on behalf of a public utility is exempt from the City of Roseville's tree protection ordinance, so mitigation for the pruning or removal of the oak trees along the western side of Phillip Road adjacent to the PGWWTP would not be required.

Tree pruning in the transmission line right-of-way could involve minor disturbance of wildlife using the tree at the time of pruning. These effects would be temporary and non-significant, however, as long as surveys were conducted in advance to make certain that nesting birds were not disturbed during pruning.

Maintenance activities associated with the sanitary sewer pipeline would mostly take place at either end of the pipeline located at the REP plant site and at the City's wastewater treatment plant lift station, a paved and developed pump station located to the east of the REP site adjacent to Phillip Road. Any maintenance of the buried underground pipeline would take place in the utility easement north of and adjacent to Phillip Road and would not disturb sensitive biological habitats.

Maintenance associated with the storm water outfall would include debris and silt removal activities at either end of the storm water channel, which drains into the unnamed tributary to Pleasant Grove Creek. Some portion of the outfall at the downstream end will be open to the air and may collect debris needing periodic removal. No modification or removal of the channel banks would be expected and vegetation management would not occur to such a degree that erosion control would be necessary. Vehicular access to the outfall would be by a private road adjacent to the tributary. Significant impacts to biological resources related to maintenance of the storm water outfall are thus not expected.

3. Transmission line mitigation measures (Appendix B [g][1]):

Provide a discussion of the existing site conditions, the expected direct, indirect and cumulative impacts due to the construction, operation and maintenance of the project, the measures proposed to mitigate adverse environmental impacts of the project, the effectiveness of the proposed measures, and any monitoring plans proposed to verify the effectiveness of the mitigation.

Information required to make AFC conform with regulations:

Propose mitigation measures for construction and maintenance activities associated with the proposed project's transmission line and any proposed alternative transmission lines.

Response—As stated above in Response #1, infrastructure improvements to be constructed as part of the WRSP will include a 60 kV transmission line to serve the WRSP area. All permits required for infrastructure improvements will be included as part of the WRSP approval process. The REP will connect directly to this line on Phillip Road via a short (<100-foot) connector. Therefore, since the REP will not construct an off-site transmission line, there will be no impacts to biological resources from construction and maintenance of a transmission line.

In the unlikely event that the WRSP and annexation is not approved or is delayed indefinitely, RE would construct a 60 kV transmission line between the REP and the Fiddymont Substation. This transmission line would be located in the road easements along Phillip and Fiddymont Roads. Habitat along these road easements includes roadside ruderal and disturbed annual grassland. Although several seasonal streams do cross Fiddymont and Phillip Roads, construction of the transmission line would include best management practices for sedimentation and erosion control and pole placement would avoid seasonal drainages. Large native trees within the transmission line ROW would be avoided if possible by routing around the trees, removing the treetops (with periodic pruning) or tree removal, if necessary.

4. Biological resources along the transmission line (Appendix B [g][13][B]):

A discussion and detailed maps at a scale of 1:6,000, of the biological resources at the site of the proposed project and related facilities, and in areas adjacent to them, out to a mile from the site and 1000 feet from

the outer edge of linear facility corridors. Include a list of the species actually observed and those with a potential to occur. The discussion and maps shall address the distribution of community types, denning or nesting sites, population concentrations, migration corridors, breeding habitats, and the presence of sensitive biological resources.

Information required to make AFC conform with regulations:

Discuss biological resources along the proposed route for the project's transmission line, including any alternative transmission lines, and habitat types along gas pipeline alternative B1. Include biological resources within the proposed ROW and for a distance of 1,000 feet on each side of the proposed linear corridors.

Illustrate the proposed route of the project's transmission line on a 1:6,000 scale map. Include any proposed alternative routes. Include locations of biological resources in relation to proposed transmission line facilities. Include proposed locations for transmission towers.

Response—As described in the responses for Items #1 through 3, the project will not require construction of a transmission line, but will instead connect with a 60 kV transmission line to be constructed by Roseville Electric and permitted as part of the WRSP. This line will run along Phillip Road adjacent to the REP. The REP will connect with this line via a short (<100-foot-long) connector. In the event that the West Roseville transmission line is delayed indefinitely, RE would construct a 60 kV transmission line along Phillip and Fiddymont Roads to the Fiddymont Substation.

This transmission alternative would run from the REP along the north side of Phillip Road, turning south along with Phillip Road to run along the west side of Phillip Road, then along the south side of Phillip Road (where Phillip Road turns east). It would then run along the west side of Fiddymont Road to Roseville Electric's Fiddymont Receiving Station (total of approximately 3.3 miles). The transmission line route would be constructed entirely within the disturbed utility easements at the edges of the roadways. The only biological resource areas along this route (which is also the route of natural gas pipeline alternative B1) are crossings of intermittent drainages along Fiddymont and Phillip Roads. Biological resources within 1,000 feet of the transmission line corridor include seasonal streams, large native trees, riparian areas associated with Kaseberg and Pleasant Grove creeks, scattered seasonal wetlands and swales and scattered vernal pools.

Habitat types along natural gas pipeline alternative B1 (and 1,000-foot buffer) include annual grassland, riparian, seasonal stream, roadside ruderal, agricultural, suburban developed land, and rural developed land.

The proposed transmission line route is illustrated and labeled on Figure 8.2-S3a (at end of section). The transmission lines will be supported on wooden poles, not towers, as mentioned above. Because final design of the transmission line has not been completed, it is not possible to provide precise locations for the poles. They will be located 350 to 400 feet apart, however, and turning towers would be necessary where Phillip Road turns south, where Phillip Road turns east, and where Phillip Road intersects with Fiddymont Road. The figure has been reproduced here in 11 x 17" format, per agreement with Staff. Full-size, color reproductions at 1:6,000 will be provided directly to CEC Staff and on request.

5. Site preparation impacts (Appendix B [g][13][D]):

A discussion of all permanent and temporary impacts to biological resources from site preparation, construction activities, and plant operation. Discussion of impacts must consider impacts from cooling tower drift, and from the use and discharge of water during construction and operation. For facilities which

use once-through cooling or take or discharge water directly from or to natural sources, discuss impacts resulting from entrainment, impingement, thermal discharge, effluent chemicals, type of pump (if applicable), temperature, volume and rate of flow at intake and discharge location, and plume configuration in receiving water.

Information required to make AFC conform with regulations:

Provide a discussion of potential impacts to biological resources caused from site preparation activities (site mobilization, erosion control measures, etc.).

Response—Site preparation activities such as mobilization, equipment and supplies delivery and storage, erosion control measures, and removal of refuse will take place at the 50-acre construction zone, which includes the power plant site as well as construction laydown and worker parking areas located adjacent to the plant site. All areas within the construction zone will experience some biological resources impacts during mobilization and during construction, though the areas lying outside of the 12-acre project fenceline will recover to some extent after construction is completed. As described in the AFC, RE has quantified potential impacts to biological resources within the 50-acre construction zone and is proposing mitigation measures to take these impacts into consideration. Please see Section 8.2.4 for further discussion of the mitigation measures proposed. These include both temporary and permanent disturbance of annual grassland habitat, and direct impact to 0.42-acres of seasonal wetlands. Other mobilization activities (movement of heavy equipment to the construction site, etc.) are not expected to have significant impacts on biological resources outside of the 50-acre construction zone.

6. Mitigation measures for transmission line effects (Appendix B [g][13][E][i]):

All measures proposed to avoid and/or reduce any adverse impacts.

Information required to make AFC conform with regulations:

Propose measures to avoid and/or reduce potential adverse impacts to existing biological resources associated with construction and maintenance of the project's transmission line and any proposed alternative transmission lines.

Response—As mentioned in the responses to Items #1 through 4, the REP will not require a conventional transmission line, but will connect directly with the planned West Roseville 60 kV transmission line that will run along Phillip Road, adjacent to the REP switchyard. This connection will be through two conductor support towers and a short connecting line (<100 feet) from the switchyard to these towers. The 60 kV West Roseville line will thus loop through the REP switchyard.

In the unlikely event that the WRSP is not approved or is delayed indefinitely, RE will construct a 60 kV line between the REP and the Fiddymont Substation. Construction of this transmission alternative will take place within disturbed easements of Fiddymont and Phillip Roads. The REP will avoid and/or reduce potential adverse impacts to biological resources by implementing the following:

- Use of best management practices for sedimentation and erosion control around seasonal streams.
- During conductor installation, lead ropes will be hand-carried over seasonal streams and vegetation in the seasonal streams will not be removed or adversely disturbed.
- Power pole placement will avoid drainage channels or banks.

- Where possible, the conductors will avoid or span native trees (Phillip Road east of the PGWWTP) that are located within the right-of-way. The trees will be surveyed for active nests before pruning or removal takes place.

7. Compliance and monitoring programs (Appendix B [g][13][F]):

A discussion of compliance and monitoring programs proposed to ensure the effectiveness of mitigation measures incorporated into the project.

Information required to make AFC conform with regulations:

Discuss any proposals for compliance and monitoring programs designed to ensure the effectiveness of mitigation measures that would be incorporated into the project.

Response—Compliance monitoring of project construction will be done by qualified biological monitors. The monitors will ensure the implementation of the mitigation measures and conditions of certification required for protection of biological resources for the project. Monitoring duties would include inspection of construction activities and heavy equipment movement to ensure no disturbance of biological resources outside of the construction zone. The biological monitors would also be responsible for pre-construction flagging or fencing of biological resources, pre-construction surveys for raptor and migratory bird nests along Pleasant Grove Creek, and monitoring of sedimentation and erosion control measures. Additionally, biological monitors would be present to inspect construction and installation of linear facilities.



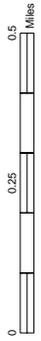
Figure 8.2-S3a

Biological Resources
Roseville Energy Park





- - - - - REP Parcel
- Power Plant Site
- Alternative 60 KV Connection (without WRSP)
- ~ Seasonal Streams/Tributaries to Major Creeks
- Biological Resources
- Native Trees
- Ponds
- Riparian
- Seasonal Wetland
- Woodcreek Oaks Mitigation Area
- Natural Gas Pipeline Alternative A
- Natural Gas Pipeline Alternative B
- Natural Gas Pipeline Alternative B1
- Natural Gas Pipeline Alternative C



Source: AirPhoto USA - Curtis Aerial Photography
November 2002

Figure 8.2-S3b
Biological Resources
Roseville Energy Park



8.3 CULTURAL RESOURCES

1. Cultural resources survey reports (Appendix B [g][2][B]):

A description of all literature searches and field surveys used to provide information about known cultural resources in the project vicinity. If survey records of the area potentially physically affected by the project are not available, and the area has the potential for containing significant cultural resources, the applicant shall submit a new or revised survey for any portion of the area lacking comprehensive survey data. A discussion of the dates of the surveys, methods used in completing the surveys, and the identification and qualification of the individuals conducting the surveys shall be included.

Information required to make AFC conform with regulations:

Please provide a cultural resource survey report for the project area.

Response—Several reports of cultural resource surveys previously done in the project area of potential effects were submitted at the time of AFC filing under a request for confidentiality, as Appendices 8.3-C, 8.3-D, and 8.3-E. Per recent discussions with Staff, copies of additional reports cited in the AFC have been submitted more recently under a request for confidentiality. The cultural resources section of the AFC has been reformatted as a technical report and submitted under a request for confidentiality (this is a report of the Applicant’s survey along Baseline Road and small, previously unsurveyed portions of the natural gas pipeline routes along Fiddymont Road and Pleasant Grove Boulevard). Figure 8.3-S1 (attached) is an updated map showing areas covered in various archaeological surveys. This map includes new coverage by Tetra Tech FW staff of areas previously surveyed for which survey coverage was older than 5 years.

2. Technical reports (Appendix B [g][2][C]):

A discussion of the sensitivity of the project area described in subsection (g)(2)(A) and the presence and significance of any known archeological sites and other cultural resources that may be affected by the project. Information on the specific location of archeological resources shall be included in a separate appendix to the application and submitted to the Commission under a request for confidentiality pursuant to Title 20, California Code of Regulations, § 2501 et seq.

Information required to make AFC conform with regulations:

Please provide Appendix 8.3-C, 8.3-D, and 8.3-E. (Information and technical reports should be submitted under confidential cover.)

Response—Appendices 8.3-C, 8.3-D, and 8.3-E were submitted separately from the AFC under a request for confidentiality.

3. Native American response (Appendix B [g][2][D]):

A summary of contacts and communications with, and responses from, Native American representatives who may have an interest in heritage lands and/or resources potentially affected by the proposed project.

Information required to make AFC conform with regulations:

Please provide a summary of the response or lack of response from Native American representatives.

Response—The Native American Heritage Commission (NAHC) was contacted on October 1, 2003, to request information regarding traditional cultural properties. On October 10, 2003, the NAHC responded that there are no known sacred lands within the project vicinity. The NAHC also forwarded a list of Native American groups or individuals that may have knowledge regarding traditional cultural properties and sacred places and or concerns regarding the project. A letter was sent out to each of these parties on October 16, 2003 requesting information about such properties or concerns. No responses have been received to date.

4. Construction worker training program (Appendix B [g][2][E]):

In the discussion on mitigation and monitoring prepared pursuant to subsection (g)(1), a discussion of any educational programs proposed to enhance awareness of potential impacts to archeological resources by employees and contractors, measures proposed for mitigation of impacts to known cultural resources, and a set of contingency measures for mitigation of potential impacts to previously unknown cultural resources.

Information required to make AFC conform with regulations:

Please provide a summary of proposed educational training to enhance awareness among employees and contractors. Furthermore, please provide a summary of proposed educational training of specific types of archaeological resources that may be encountered during construction at this particular project location.

Response—An educational training program designed to enhance construction worker awareness of potential construction impacts to archaeological resources will be developed in the form of an educational video and pamphlet. Viewing of the video will be required of all construction personnel at the time they begin work. The educational video and educational pamphlet will include an introduction, a brief overview of laws concerning cultural resources, a definition of cultural resources and the types of resources (prehistoric, protohistoric, and historic) that may be encountered within the REP project area and cultural indicators of those resources (such as discolored soil or soil with ash and charcoal, concentrations of rocks, animal or human bones, or historic trash dumps or structure foundations). The educational video and pamphlet will also identify the roles of Cultural Resource and Native American Monitor(s) and the necessary steps employees or contractors need to take if they or the cultural resources monitors discover cultural resources during project construction. The educational training program will continue during the entire construction period.

5. Permitting agencies (Appendix B [h][1][B]):

Tables which identify each agency with jurisdiction to issue applicable permits and approvals or to enforce identified laws, regulations, standards, and adopted local, regional, state and federal land use plans, and agencies which would have permit approval or enforcement authority, but for the exclusive authority of the commission to certify sites and related facilities..

Information required to make AFC conform with regulations:

Please indicate whether an individual Corp of Engineers 404 permit would be required and if so, provide a table that identifies each agency with permit approval jurisdiction.

Response—The project will require a permit under Section 404 of the Clean Water Act for the dredging or filling of wetlands. The responsible agencies are identified in Table 8.3-S1 as follows:

Table 8.3-S1. Permitting agencies associated with Clean Water Act Section 404 permit.

Permit/Approval Required	Agency	Schedule
Clean Water Act, Section 404, Individual Project Permit to fill jurisdictional wetlands, outfall	U.S. Army Corps of Engineers, Sacramento District	Application concurrent with AFC filing and approximately four-month review
Clean Water Act, Section 401, Water Quality Certification (for filling jurisdictional wetlands)	Regional Water Quality Control Board	Application concurrent with AFC filing, data adequacy, and approximately four-month review

6. Agency contact (Appendix B [h][3]):

The name, title, phone number, and address, if known, of an official within each agency who will serve as a contact person for the agency.

Information required to make AFC conform with regulations:

If an individual Corp of Engineers 404 permit would be required, please provide official contact person information.

Response— If an individual Corp of Engineers 404 permit is required, the official contact person is:

Mr. Will Ness
US Army Corp of Engineers
Sacramento District
1325 J Street
Sacramento, CA 95814
916-557-5268

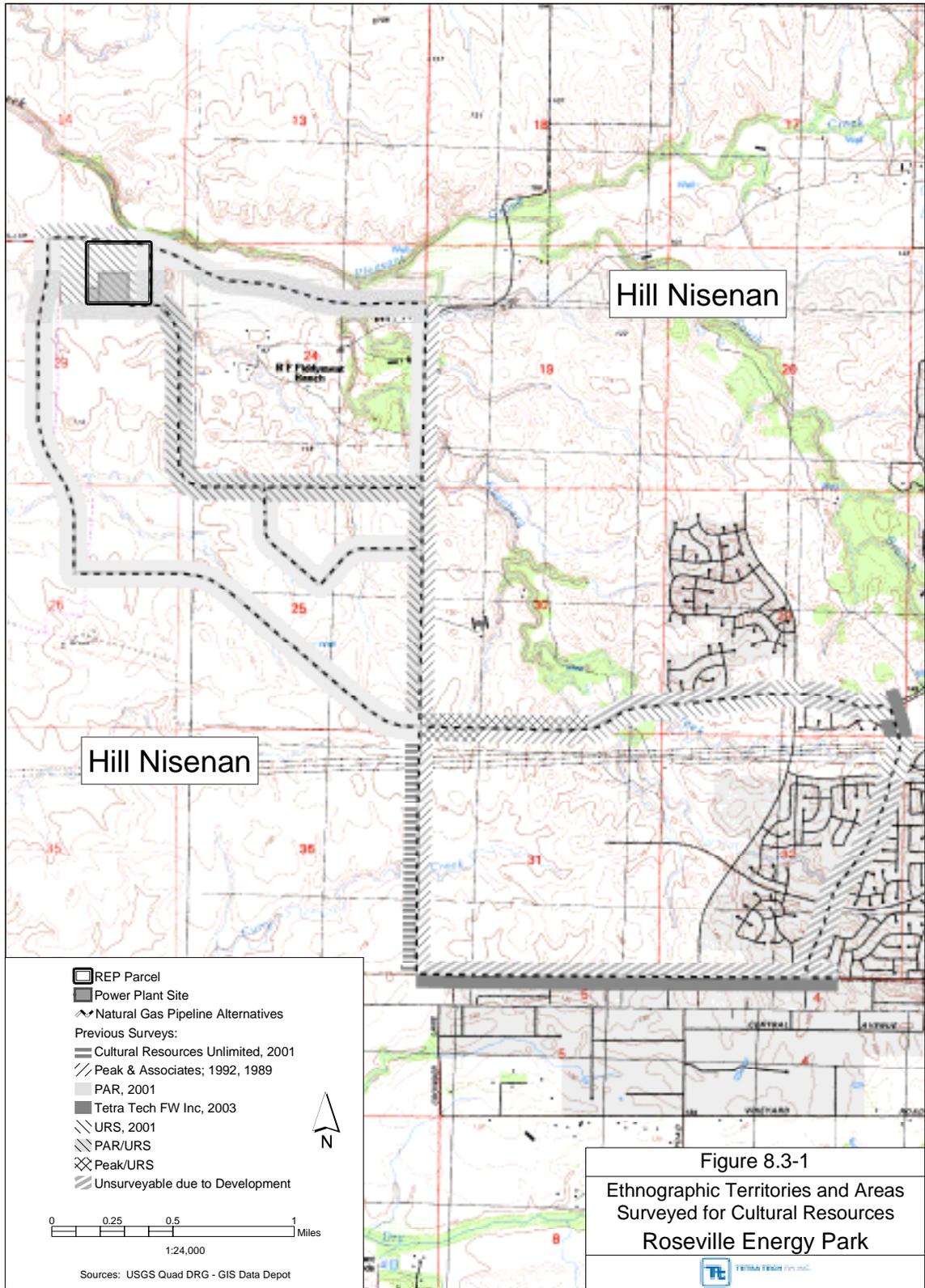
7. Permit approval information (Appendix B [h][4]):

A schedule indicating when permits outside the authority of the commission will be obtained and the steps the applicant has taken or plans to take to obtain such permits.

Information required to make AFC conform with regulations:

If an individual Corp of Engineers 404 permit would be required, please provide permit approval information from U.S. Army Corps of Engineers.

Response—Roseville Electric has begun consultation with the US Army Corps of Engineers regarding the need to obtain a Clean Water Act Section 404 permit for the REP. The consultation has included a pre-application meeting with the Corps of Engineers and U.S. Fish and Wildlife Service present, and the submittal of a wetland delineation report to the Corps of Engineers. Verification of the wetland delineations by the Corps of Engineers is schedule to take place in December 2003. A formal permit application will be submitted once the verification is complete.



8.8 PALEONTOLOGICAL RESOURCES

1. Paleontological resources map and records (Appendix B [g][16][D]):

Information on the specific location of known paleontologic resources, survey reports, locality records, and maps at a scale of 1:24,000, shall be included in a separate appendix to the Application and submitted to the Commission under a request for confidentiality, pursuant to Title 20, California Code of Regulations, § 2501 et seq.

Information required to make AFC conform with regulations:

Please provide under confidential cover, a paleontological resources map at a scale of 1:24,000 and any available surveys for paleontologic resources.

Response—The paleontological resources map and survey reports were provided under confidential cover at the time of AFC filing.

8.10 SOCIOECONOMICS

1. Planned projects (Appendix B [g][1]):

Provide a discussion of cumulative impacts due to the construction, operation and maintenance of the project.

Information required to make AFC conform with regulations:

Please provide information on other major projects planned nearby the power plant site or associated pipelines (water, natural gas, and sewer) or transmission lines, as well as any construction overlap with other power plant projects in the study area (e.g. Cosumnes Power Project). This would include data for the construction workforce by month.

Response—Major projects planned within the REP area that are likely to enter construction soon include the developments belonging to West Roseville under the West Roseville Specific Plan (WRSP). West Roseville will comprise 3,162-acres that will be located to the east, south, and west of the REP. West Roseville consists of two major planned developments: 1) the 1,483-acre Westpark development, and 2) the 1,679-acre Fiddymment Ranch development. When completed, West Roseville will contain 8,430 dwelling units on 1,754 acres; 685 acres set aside in open space; 270 acres dedicated to parks; 148 acres of public/quasi-public uses; 49 acres of community commercial; 20 acres of business professional uses; 109 acres of light industrial uses; and 128 acres of roadway right-of-way (EIP 2003). Construction of West Roseville will take place in four phases of development with construction anticipated to last 10-15 years. The most likely start of construction for the first phase would be in Spring of 2004, after the WRSP is approved and the annexation is completed. Actual start of construction will depend on whether or not the annexation of West Roseville and approval of the WRSP take place on schedule. The rate at which the build-out of the WRSP occurs may depend on economic conditions, but will likely proceed as planned. Construction of the REP is scheduled to begin as early as Spring of 2005. Hence, there will be some overlap in the period of construction between the REP and West Roseville. Because West Roseville is mostly a residential and commercial development project, the demand of the two projects for construction labor and skills would be somewhat different. For example, REP construction will involve a relatively high demand for pipefitters, electricians, boilermakers, iron workers, laborers, millwrights, and carpenters, in that order. Residential development in West Roseville would involve much less demand for most these crafts, but would involve demand for electricians and carpenters in particular. The EIR for West Roseville does not provide construction workforce estimates.

The only other power plant under construction or soon to be under construction within the project area is the Sacramento Municipal Utility District's Cosumnes Power Plant (CPP). Phase 1 of CPP construction, which began in October 2003, is expected to take 24 months. Phase 2 has yet to be permitted and does not currently have a well-defined construction schedule. Construction of the REP is anticipated to take 19-20 months and is anticipated to begin in early 2005.

Based on the current construction schedules, there may be some overlap between the two projects in demand for construction workforce. Table 8.10-S1 compares expected workforce requirements for the CPP and REP, by month, for the 9 overlapping months (months 1-9 for REP and months 16-24 for CPP). Because work on the CPP would be winding down as the work on the REP begins, the combined

demands on power plant work force would not be excessive. In addition, the table assumes that REP construction would begin in January of 2005, and this is the earliest possible start for the project.

In addition, competition between the two projects for construction workers would be reduced by the fact that the projects are located 34 miles apart, and at opposite ends of the Sacramento metropolitan area. Workers for the CPP would be likely to come from a labor pool based out of south Sacramento County and northern San Joaquin County (Stockton area), whereas labor pool for the REP will be based out of north Sacramento County and Placer, Sutter, and Yuba counties.

Table 8.10-S1. Combined workforce demand of CPP and REP, overlapping construction period.

Month of overlap	Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05	Jul-05	Aug-05	Sep-05
I. Cosumnes Phase 1 (Started 2003)									
	Months After Notice to Proceed								
Construction Month	16	17	18	19	20	21	22	23	24
Total Craft	205	205	158	158	125	125	68	22	14
Total Non-Manual	30	30	24	24	18	18	12	6	4
Linear Total	51	51	51	51	30	0	0	0	0
Total	286	286	233	233	173	143	80	28	18
II. Roseville Energy Park									
	Months After Notice To Proceed								
Construction Month	1	2	3	4	5	6	7	8	9
Total Craft	45	45	45	132	132	132	132	132	132
Total Non-Manual	5	5	5	18	18	18	18	18	18
Linear Total	0	0	0	0	0	0	0	0	0
Total	50	50	50	150	150	150	150	150	150
Projects Combined									
Total Craft	250	250	203	290	257	257	200	154	146
Total Non-Manual	35	35	29	42	36	36	30	24	22
Linear Total	51	51	51	51	30	0	0	0	0
Total	336	336	283	383	323	293	230	178	168

2. Unemployment Rates (Appendix B [g][7][A][iii]):

Existing and projected unemployment rates.

Information required to make AFC conform with regulations:

Please provide estimates of projected unemployment rates in the project area.

Response—There are two departments of California state government that provide data on unemployment rates per county: 1) Employment Development Department, and 2) Bureau of Labor Statistics. Neither of these agencies develop predictive or forecasting statistics for unemployment at the county level (Personal Communication, David Lyons, Labor Market Information Division Employment Development Department, November 20, 2003).

The forecasted unemployment rate for the State of California in 2004 is between 6.2 and 6.6%, based on Department of Finance statistics (Summary of California Budget January 2003) and based on the UCLA Anderson Forecast (UCLA Anderson Forecast, Forecast Conference Summary June 5, 2003).

Unemployment for Placer County may be somewhat lower than the state average, given that economic activity and job growth rates are higher in Placer County than in for the state as a whole.

3. Motel and hotel vacancy (Appendix B [g][7][A][v]):

Availability of temporary and permanent housing.

Information required to make AFC conform with regulations:

Please provide the vacancy rate for the City of Roseville's nine motels and hotels with approximately 1,112 rooms.

Response—Vacancy rates for motels and hotels in the City of Roseville during October 2003 were as follows, based on a telephone survey of these motels and hotels: Oxford Suites, 10 percent; Best Western, 0 percent; Heritage Inn, 20 percent; Extended Stay America, 30 percent; Courtyard Inn by Marriott, 0 percent; Fairfield Inn by Marriott, 15 percent; Residence Inn, 0 percent; Hilton Garden Inn, 20 percent; and Larkspur Landing Inn, 4 percent. The average vacancy rate among these motels was 11 percent.

4. Percentage of commuting workers (Appendix B [g][7][B][ii]):

An estimate of the number and percentage of workers who will commute daily, commute weekly, or relocate in order to work on the project.

Information required to make AFC conform with regulations:

Please provide a numerical estimate and economic rationale for the number of non-local construction and operations workers and the analysis/assumptions on how they and their families (if appropriate) will be distributed to the affected local communities and counties in the study area.

Response—As described in AFC Sections 8.10.1.3 and 8.10.2.3, permanent relocation of workers for this project is not expected, because there is a sufficient supply of construction workers in the greater Sacramento metropolitan area. However, a small percentage of the workforce may choose temporary relocation on a work-week basis. Generally speaking, most of the construction workers will commute daily up to one hour's distance each way to the job site. It is also possible that some of the project's construction contracts could be won by contractors that are based outside of the Sacramento metropolitan area. Under these circumstances, some workers who are closely associated with these contractors may choose to commute to the project area or to temporarily relocate.

Generally speaking, it is estimated that 90 percent of the workforce will consist of daily commuters traveling up to one hour's distance, approximately 50 miles. The remaining 10 percent of the workforce is expected to be comprised of weekly commuters from within the greater Sacramento area or from the Golden Sierra Consortium or North Central Consortium.

5. Locally purchased materials (Appendix B [g][7][B][viii]):

An estimate of the expenditures for locally purchased materials for the construction and operation phases of the project.

Information required to make AFC conform with regulations:

Please provide a numerical estimate for locally purchased materials (and supplies) for the operation of the project.

Response—Based on experience with similar projects, costs for locally purchased materials and supplies for project operation will amount to approximately \$450,000 per year.

6. Capital costs and tax revenues (Appendix B [g][7][B][ix]):

An estimate of the capital cost of the project and the potential impacts on tax revenues from construction and operation of the project.

Information required to make AFC conform with regulations:

Please provide an estimate of the capital costs (plant and equipment) of the REP Project. Also, provide (sales and use) tax revenues from the operation of the project.

Response—As mentioned in Section 8.10.2.3 Construction Impacts on Fiscal Resources, the estimate of the capital costs of the REP is between \$100 and \$130 million. Sales tax revenues from the operation of the project, at 7.25 percent times the costs of locally purchased materials, would be approximately \$32,625.

8.11 SOILS AND AGRICULTURE

1. Soil-vegetation systems (Appendix B [g][15][C][iii]):

The effect of power plant emissions on surrounding soil-vegetation systems.

Information required to make AFC conform with regulations:

Please provide an assessment of power plant emissions on surrounding soil-vegetation systems.

Response—Emissions from the HRSG stacks and cooling tower drift will not significantly affect vegetation and soils surrounding the REP project area. The following paragraphs present the results of an analysis of the HRSG stack and cooling tower emissions for the REP project.

The purpose of this analysis is to evaluate the potential detrimental effects that the projected HRSG stack and cooling tower emissions from the REP plant site will have on surrounding vegetation. Potential pollutant stack emissions included in this analysis include carbon monoxide (CO), inhalable particulates (PM₁₀), and oxides of nitrogen and sulfur (NO_x and SO₂). No pollutant emissions are predicted to result in concentrations exceeding the U.S. Environmental Protection Agency (USEPA) prevention of significant deterioration (PSD) significant impact levels, for either short-term or annual averaging periods for CO, PM₁₀, NO_x, and SO₂. Table 8.11-S1 presents the total maximum impact concentrations for the REP project, as discussed in AFC Section 8.1 (Air Quality).

Table 8.11-S1. REP operational effects from HRSG stack and cooling tower emissions.

Pollutant	Averaging Period	Maximum Project Concentration (µG/M)	Ambient Air Quality Standards (µG/M)
CO	1-hour	5646.92	23,000
	8-hour	3684.46	10,000
NO _x	1-hour	437.57	470
	Annual	33.04	100
SO ₂	1-hour	99.68	650
	3-hour	440.70	1,300
	24-hour	31.13	109
	Annual	5.93	80
PM ₁₀	24-hour	109.68	50
	Annual	25.48	30

µg/m³ = micrograms per cubic meter

Carbon Monoxide

Plants metabolize and produce carbon monoxide (CO). Few studies on thresholds for detrimental effects on vegetation have been conducted. Most available studies use very high CO concentrations (above 100 parts per million [ppm]). Soil microorganisms probably acts as a buffering system and sink for CO. There are no known detrimental effects on plants due to CO concentrations of 10,000 to 230,000 µg/m³ (USEPA 1979).

Zimmerman et al. (1989) exposed a variety of plant species to CO at concentrations of 115,000 $\mu\text{g}/\text{m}^3$ to 11,500,000 $\mu\text{g}/\text{m}^3$ from 4 to 23 days. While practically no growth retardation was noted in plants exposed at the lower level, retarded stem elongation and leaf deformation were observed at the higher concentrations. Pea and bean seedlings also exhibited abnormal leaf formation after exposure to CO at 27,000 $\mu\text{g}/\text{m}^3$ for several days (USEPA 1979).

Comparatively low levels of CO in the soil have been shown to inhibit nitrogen fixation. Concentrations of 113,000 $\mu\text{g}/\text{m}^3$ have been shown to reduce nitrogen fixation, while 572,000 to 1,142,000 $\mu\text{g}/\text{m}^3$ result in nearly complete inhibition (USEPA 1979).

Maximum predicted 1-hour and 8-hour CO emissions have been calculated from the REP HRSG exhaust stack. The maximum 1-hour CO concentration is 377.12 $\mu\text{g}/\text{m}^3$. Adding this impact to the maximum 1-hour CO background concentration of 5269.8 $\mu\text{g}/\text{m}^3$, measured at the monitoring station results in a total predicted 1-hour CO concentration of 5646.92 $\mu\text{g}/\text{m}^3$. This figure is significantly less than the CO concentration of 115,000 $\mu\text{g}/\text{m}^3$ determined to result in minimal growth retardation in plants, as well as the 113,000 $\mu\text{g}/\text{m}^3$ concentration found to result in slight reduction of nitrogen fixation. Therefore, predicted CO emission levels from the REP are not expected to result in adverse effects on vegetation.

Sulfur Dioxide and Nitrogen Oxides

SO₂ and NO_x are the major airborne pollutants of concern for the REP project. The extent of their effect on soils and vegetation would be directly related to a variety of factors, including wind speed, direction and frequency, air temperature, humidity, the geomorphology of the area, and the location of the proposed project in relation to sensitive plant communities in the zone of impact.

Sulfur dioxide tends to convert to sulfite and sulfate during chemical transformation in soils. Interpretation of the results of investigations published to date has engendered considerable controversy due to the complexity of terrestrial ecosystems. However, the effects of acidified precipitation containing sulfate (SO₄) on terrestrial ecosystems have been investigated with respect to alteration of soil chemistry as it relates to vegetation health. High levels of SO₄ may reduce soil pH, thereby decreasing the availability of certain essential nutrients and increasing the concentrations of soluble aluminum, which reduces plant growth.

In soils where nitrate-nitrogen is not limiting plant growth, excess nitrate may percolate through the soil column, carrying base cations and exerting an acidifying effect. Increased atmospheric contributions of nitrate may influence vegetation in a species-specific way, with some species taking advantage of its fertilizing characteristics while others (such as those occurring in nitrogen-limited soils) are adversely affected.

The pH levels of the soils prior to site operation are an important factor in determining the chemical changes that would take place during plant operation. The soil types that occur on the project site include the Cometa-Ramona sandy loams and xerofluvents with hardpan substratum. Published pH values for these soil series range between 5.6 and 7.3, suggesting that the levels of SO₂ and NO_x predicted for this project would not significantly affect the pH levels of soils.

Sulfur is a major plant nutrient and can be directly absorbed into the soil. Therefore, an increase in SO₂ in the soil (particularly at levels below threshold limits) would not have an adverse effect on vegetation.

SO₂ can affect vegetation directly (as a gas) or indirectly by means of its principal reaction product, SO₄ (e.g., acidification of soils). In addition, a third mechanism of impact is the formation of acid mist.

Direct effects of injury can be manifested as foliar necrosis, decreased rates of growth or yield, predisposition to disease, and reduced reproductive capacity.

Environmental factors, such as temperature, light, humidity, and wind speed, influence both the rate of gas absorption and the plant physiological response to absorbed quantities. The higher the humidity, the higher the absorption of gases. Exposure duration and frequency are also important factors that determine the extent of injuries.

Guidelines for air emission impact assessment provided in the technical literature are diverse and threshold dosages required to cause injury are extremely variable. This is due to the variety of factors affecting plant responses to phytotoxic gases. Consequently, in cases where emissions are below lower threshold limits, decreased yields can result in the absence of visible injury (Sprugel et al. 1980) and long-term impacts should be addressed.

Among the different published attempts to define SO₂ thresholds for vegetation effects, two represent worst-case situations. Loucks et al. (1980) presented threshold ranges between 131 µg/m³ and 262 µg/m³ SO₂, and McLaughlin (1981) suggested values of 1310 µg/m³ SO₂ for the 1-hour average and 786 µg/m³ for the 3-hour average.

According to the dose-injury curve for SO₂-sensitive plant species provided by the USFWS (1978), the lowest 3-hour concentration expected to cause injury to plants is approximately 390 µg/m³, which is significantly higher than the projected concentration from the REP. However, these predicted values are applicable only when plants are growing under the most sensitive environmental conditions and stage of maturity. Thresholds for chronic plant injury by SO₂ have been estimated at about 130 µg/m³ on an annual average (USFWS 1978). The maximum annual average concentration modeled for this project (0.73 µg/m³) is far below the USFWS threshold for chronic exposure, and the worst-case projected 3-hour maximum of about 9.3 µg/m³ is substantially below the McLaughlin protection level of 786 µg/m³. Consequently, the projected concentration of SO₂ is not expected to cause visible foliar injury or significant adverse chronic effects.

Nitrogen dioxide is potentially phytotoxic, but generally at exposures considerably higher than those resulting from most industrial emissions. Exposures for several weeks at concentrations of 280 to 490 µg/m³ can cause decreases in dry weight and leaf area, but 1-hour exposures of at least 18,000 µg/m³ are required to cause leaf damage. The modeled maximum REP emissions of NO₂ impacts of 1.0 µg/m³ are far below these threshold limits (219.0 µg/m³ or 0.1169 ppm). In addition, the total predicted maximum 1-hour NO₂ concentrations of 275.8 µg/m³ would be significantly smaller than the 1-hour threshold (7,500 µg/m³) for 5 percent foliar injury to sensitive vegetation (USEPA 1991). This indicates that NO_x emissions from the REP, when considered in the absence of other air pollutants, would not adversely affect vegetation.

Airborne Particulates

Particulate emissions will be controlled by inlet air filtration and use of natural gas. The deposition of airborne particulates (PM₁₀) can affect vegetation through either physical or chemical mechanisms. Physical mechanisms include the blocking of stomata so that normal gas exchange is impaired, as well as potential effects on leaf adsorption and reflectance of solar radiation. Information on physical effects is scarce, presumably in part because such effects are slight or not obvious except under extreme situations (Lodge et al. 1981). Studies performed by Lerman and Darley (1975) found that particulate deposition

rates of 365 g/m²/year caused damage to fir trees, but rates of 274 g/m²/year and 400-600 g/m²/year did not damage vegetation at other sites.

The maximum annual predicted concentration for PM₁₀ from the REP is 0.48 µg/m³. Assuming a deposition velocity of 2 cm/sec (worst-case deposition velocity, as recommended by the California Air Resources Board [CARB]), this concentration converts to an annual deposition rate of 0.302 g/m²/year, which is several orders of magnitude below that which is expected to result in injury to vegetation (i.e., 365 g/m²/year). The addition of the maximum predicted annual particulate deposition rate for the REP to the maximum background concentration of 25 µg/m³, measured at the nearest monitoring station yields a total estimated particulate deposition rate of 16.07 g/m²/year, utilizing the 2 cm/sec factor. This total is still approximately one order of magnitude less than levels expected to result in plant injury.

The primary chemical mechanism for airborne particulates to cause injury to vegetation is by trace element toxicity. Many factors may influence the effects of trace elements on vegetation, including temperature, precipitation, soil type, and plant species (USFWS 1978). Trace elements adsorbed to particulates emitted from power plant emissions reach the soil through direct deposition, the washing of plant surfaces by rainfall, and the decomposition of leaf litter. Ultimately, the potential toxicity of trace elements that reach the root zone through leaching will be dependent on whether the element is in a form readily available to plants. This availability is controlled in part by the soil cation exchange capacity, which is determined by soil texture, organic matter content, and kind of clay present.

Perhaps the most important consideration in determining toxicity of trace elements to plants relates to existing concentrations in the soil. Several studies have been conducted relating endogenous trace element concentrations to the effects on biota of emissions from model power plants (Dvorak et al. 1977, Dvorak and Pentecost et al. 1977, Vaughan et al. 1975). These studies revealed that the predicted levels of particulate deposition for the area surrounding the model plant resulted in additions of trace elements to the soil over the operating life of the plant which were, in most cases, less than 10 percent of the total existing levels. Therefore, uptake by vegetation could not increase dramatically unless the forms of deposited trace elements were considerably more available than normal elements present in the soil.

Cooling Tower Discharges

The mechanical cooling tower is a 4-cell unit used to disperse waste heat from the REP steam cycle. Cooling tower drift is the mist of water droplets that is emitted into the atmosphere with the warm, moist air that results from the power plant cooling process. The total circulating water flow over the cooling tower will be approximately 54,000 gallons per minute, and the cooling tower drift rate will be guaranteed not to exceed 0.0005% of the circulating water flow rate. Therefore, the cooling tower drift rate will be less than 0.27 gallons per minute. Most of the drift mass is expected to land immediately adjacent to the tower on the site (Wistrom and Ovard 1973). Consequently, only a small fraction of the REP cooling tower drift will extend off-site and will probably not affect vegetation or habitats.

PM₁₀ emissions from the HRSG stacks and cooling towers were calculated for the REP. The maximum annual deposition rate for the REP of 0.3042 g/m²/year is several magnitudes below that which is expected to result in mechanical injury to vegetation (i.e., 365 g/m²/year; see previous discussion on airborne particulates; Lerman and Darley 1975).

The relatively low levels of salts in the cooling water are not expected to result in injury to the surrounding environment. Pahwa and Shipley (1979) exposed vegetation (corn, tobacco, and soybeans) to varying salt deposition rates to simulate drift from cooling towers that use saltwater (20-25 parts per

thousand) circulation. Salt stress symptoms on the most sensitive crop plants (soybeans) were barely perceptible at a deposition rate of 0.3048 g/m²/year (Pawha and Shipley 1979). Using an assumption that 100 percent of the airborne particulates from the REP emissions produce salts in the cooling tower drift, the calculated deposition rate of 0.3048 g/m²/year (which includes HRSG stack emissions) is more than one order of magnitude below the deposition rate that was shown to cause barely perceptible vegetation stress from salt mist. This highly conservative estimate of deposition and the fact that the REP cooling towers will use fresh water makes this evaluation much overstated. Therefore, cooling tower drift is not expected to have any impact on vegetation in surrounding habitats within the maximum impact radius for the REP cooling tower drift and further.

References Cited

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8.12 TRAFFIC AND TRANSPORTATION

1. Passenger vehicle/truck percentages (Appendix B [g][5][B][v]):

Estimated percentage of current traffic flows for passenger vehicles and trucks.

Information required to make AFC conform with regulations:

Please provide estimated percentage of current traffic flows for passenger vehicles and trucks.

Response—The Placer County Department of Public Works reports that no traffic studies have been done within the last 10 years detailing the percentage of passenger vehicle traffic versus truck traffic in the county. County staff estimate that truck traffic on surface streets within the Placer County portion of the project area will comprise 1 to 2 percent of all vehicle traffic (Personal Communication, Bill Moore, Placer County Public Works, November 20, 2003).

In the City of Roseville, Baseline Road, Fiddymont Road, and Blue Oaks Boulevard are all designated truck routes. Traffic studies conducted by the City of Roseville Public Works Department did not note the percentages of passenger vehicle and truck traffic. The City of Roseville, however, estimates truck traffic at 2 to 3 percent of all vehicle traffic along these designated truck routes (Personal Communication, Jason Shykowski, City of Roseville Public Works Department, November 25, 2003).

8.13 VISUAL RESOURCES

1. Cumulative impacts (Appendix B [g][1]):

Provide a discussion of the existing site conditions, the expected direct, indirect and cumulative impacts due to the construction, operation and maintenance of the project, the measures proposed to mitigate adverse environmental impacts of the project, the effectiveness of the proposed measures, and any monitoring plans proposed to verify the effectiveness of the mitigation.

Information required to make AFC conform with regulations:

Without substantiating the statement, the AFC on page 8.13-15 concludes: "Though the REP and PGWWTP increases the industrial character of the area, the two do not cause impacts that are individually less than significant but cumulatively significant." Please discuss why the REP, in combination with existing projects, would not cause significant cumulative visual impacts.

Response—As described in the AFC's visual resources assessment, the project area does not contain sensitive, scenic, or protected scenery or viewsheds and there are few sensitive viewers located nearby. Though the PGWWTP is a facility with industrial purpose, it is not particularly visible because of its low profile design and surrounding berms. Most buildings and structures at the facility are relatively low in profile, and embankments along the PGWWTP's eastern and northern edges help to screen views from these directions. These embankments have recently been planted densely with shrubs and trees, some of which are evergreen conifers, which will form a year-around visual screen. For these reasons, the PGWWTP will have little or no adverse effect on the project area visual resources.

The REP will be more visible than the PGWWTP because it includes larger structures that have greater potential for creating a large mass that could interfere with a sensitive or scenic view. As stated above, however, the project area does not contain scenic, sensitive, or protected views. Though there are sensitive viewers nearby (three rural residences), the potential impact is not considered significant because of the low number of such viewers and the relatively low viewshed quality. Given the low profile and extensive landscaping and screening of the PGWWTP, there would be no combinatory, or cumulative effect of the PGWWTP with the REP to create a significant adverse effect.

2. Map scale and labels (Appendix B [g][6][A][ii]):

Topographic maps at a scale of 1:24,000 of the areas from which the project may be seen, identification of the view areas most sensitive to the potential visual impacts of the project, and the locations where photographs were taken for (g)(6)(E).

Information required to make AFC conform with regulations:

Please rescale Figure 8.13-1 at a scale of 1:24,000 (one inch equals 2,000 feet). Please also add to the legend what is meant by the undesignated (no hatch marks) areas within the "site buffer" zones on the Project Visibility map.

Response—Figure 8.13-S1 is a revised version of AFC Figure 8.13-1, at a scale of 1:24,000 and with the "project not visible" area labeled in the legend.

3. Cooling tower plume (Appendix B [g][6][F]):

An assessment of the visual impacts of the project, including light and glare, and visible plumes.

Information required to make AFC conform with regulations:

Without supporting documentation, the AFC claims: “It is likely that visible plumes will not be seen emanating from REP cooling towers under most circumstances.” Staff will perform computer modeling to predict the frequency and size of the plumes from cooling tower and exhaust stacks.

The discussion does not state what the visual impact would be of the anticipated plumes. Please discuss the visual impacts of the project’s plumes on the existing setting. As part of the impact discussion, please discuss whether there are existing sources of plumes in the project viewshed area.

Response—Under certain atmospheric conditions, visible plumes will be seen emanating from the plant’s HRSG stacks and cooling tower. Conditions of relatively low temperatures and high humidity will produce visible plumes. These conditions are most likely to occur at night and in the early morning hours when they are least likely to be visible. Out of the five years of McClellan Air Force Base meteorological data used in the air quality modeling analysis (43,800 hours), only 324 hours (0.74 percent) were associated with the air temperatures conducive to plume formation (less than 34 °F) if humidity is also high. Most of these lower temperatures occurred during the late night and early morning hours when plumes would not be visible or would be less visible than during the daytime. During nighttime hours, an observer could see the plume only if there were sufficient natural or artificial light. Because of the measures that will be taken to reduce lighting at the plant, plumes that are created will not be highly visible during the nighttime hours.

Conditions conducive to plume formation are thus most likely in the winter months when temperatures are low and humidity may be high. During the winter, radiation-based fog (tule fog) may also be present in the nighttime and early morning hours when humidity is high, but can persist throughout the day under some atmospheric circumstances. If fog is present, plumes may form, though they will blend into the fog and will not be very visible. Because of the low frequency of occurrence, plume formation will not cause a significant adverse impact to visual resources.

There are no other plume sources in the project viewshed.

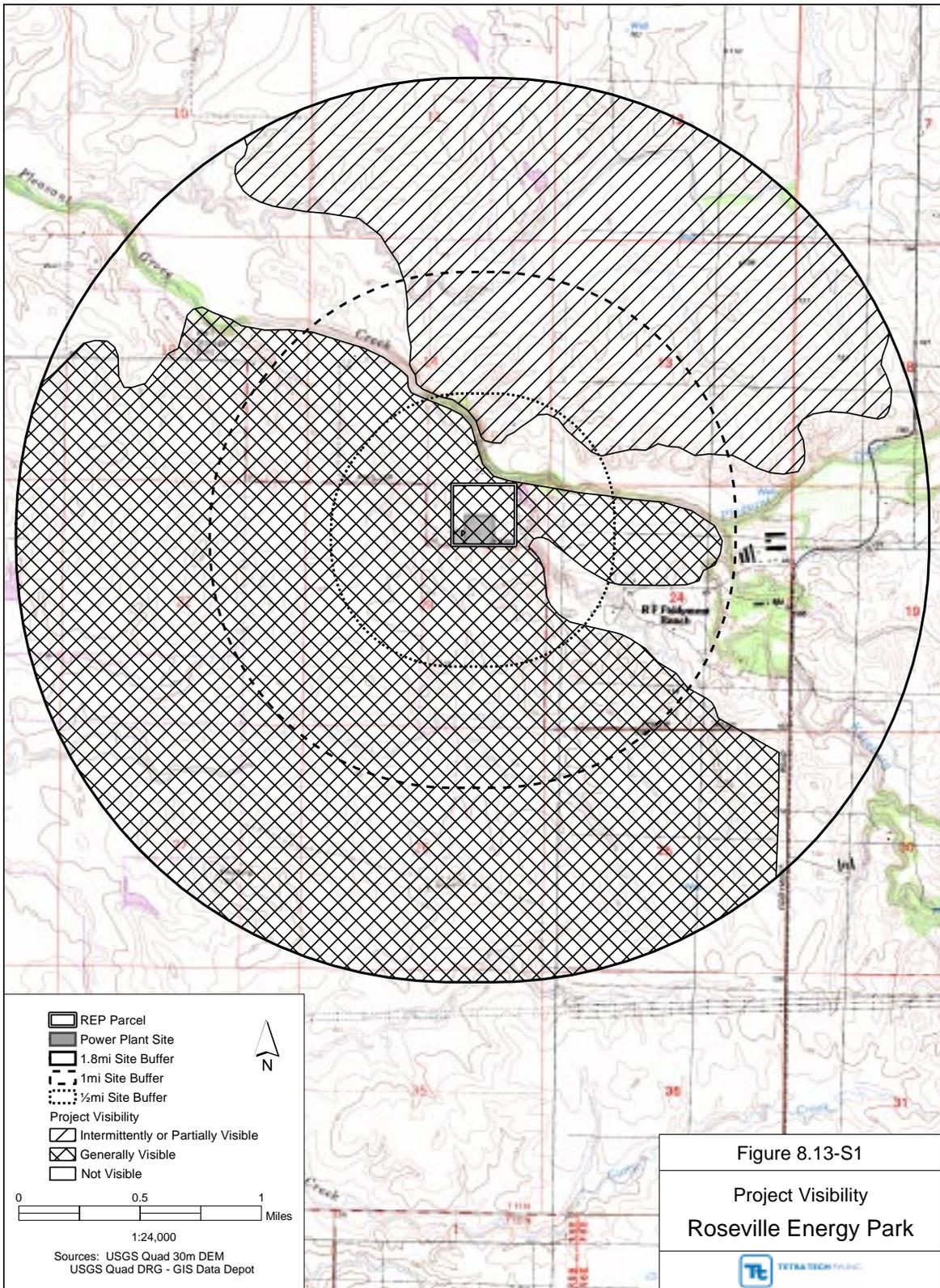


Figure 8.13-S1

Project Visibility
Roseville Energy Park



- REP Parcel
- Power Plant Site
- 1.8mi Site Buffer
- 1mi Site Buffer
- 1/2mi Site Buffer
- Project Visibility
 - Intermittently or Partially Visible
 - Generally Visible
 - Not Visible



0 0.5 1 Miles

1:24,000

Sources: USGS Quad 30m DEM
USGS Quad DRG - GIS Data Depot

8.15 WATER RESOURCES

1. Topography before and after construction (Appendix B [g][14][A][ii]):

All information required by the Regional Water Quality Control Board in the region where project will be located to apply for a National Pollutant Discharge Elimination System Permit.

Information required to make AFC conform with regulations:

Please provide a site map showing general topography before and after construction and the location of all pipelines, transmission line and the outfall location of the discharge line.

Response—Figures 8.15-S1 and -S2 show the project site topography before and after construction and the locations of the pipelines, transmission line, and outfall.

2. Construction water demand (Appendix B [g][14][C][iii]):

Average and maximum daily and annual water demand and waste water discharge for both the construction and operation phases of the project.

Information required to make AFC conform with regulations:

Please provide information in tabular format on the maximum daily use (gpd/mgy) for construction of all REP elements including the natural gas lines and transmission lines.

Response—Table 8.15-S1 shows the maximum use of water for construction of the REP elements.

Table 8.15-S1. Maximum use of construction water for the REP.

Project Component	Peak Daily Consumption (gpd)	Annual Consumption (mgy)
Power Plant	1,400,000	9.1
Natural Gas Pipeline	110,000	1.4
Transmission Line	15,000	0.5

