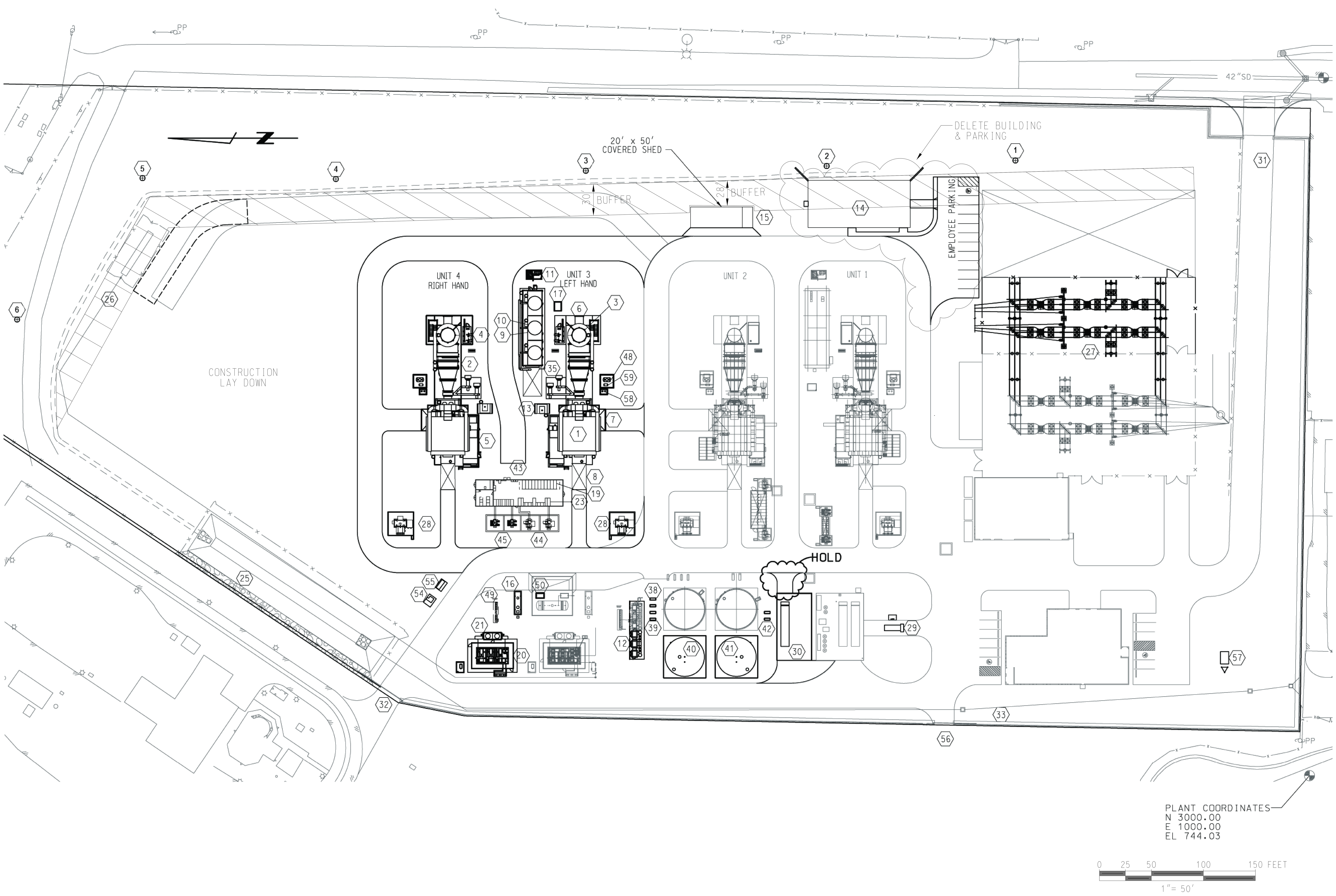
BIOLOGICAL RESOURCES ATTACHMENT 1



ITEM	DESCRIPTION	NOTES
1	GAS TURBINE GENERATOR (GTG)	
2	EMISSIONS CONTROL MODULE & MCC	
3	EXHAUST STACK	
4	AMMONIA VAPORIZATION SKID	
5	GTG AUXILIARY SKID	
6	CEMS SHELTER	
7	TURBINE REMOVAL AREA	
8	GENERATOR REMOVAL AREA	
9	CHILLER PACKAGE	
10	COOLING TOWER (CT)	
11	COOLING TOWER CHEM FEED SKID	
12	AIR COMPRESSOR/DRYER/RECEIVER SKID	
13	GTG LUBE OIL FIN FAN COOLER	
14	SCHEDULING AND DISPATCH BUILDING	
15	WATER LABORATORY	
16	OIL/WATER SEPARATOR	
17	SIDE STREAM FILTRATION SKID	
18	NOT USED	
19	GTG CONTROL HOUSE	
20	FUEL GAS COMPRESSOR SKID	W/SOUND ENCLOSURE
21	FUEL GAS COMPRESSOR BYPASS COOLER	
22	NOT USED	
23	GTG SWITCHGEAR	
24	NOT USED	
25	STORM WATER RETENTION/INFILTRATION BASIN	
26	GAS METERING STATION	
27	SWITCHYARD	
28	GSU TRANSFORMER (2)	
29	BLACK START GENERATOR	
30	ZERO LIQUID DISCHARGE (ZLD) UNIT	
31	MAIN PLANT ENTRANCE	SLIDE GATE
32	EMERGENCY PLANT ENTRANCE	SLIDE GATE
33	PLANT PERIMETER FENCE (10' HIGH)	
34	NOT USED	
35	TEMPERING AIR FANS	
36	NOT USED	
37	NOT USED	
38	COOLING TOWER MAKEUP WATER PUMPS	
39	DEMINERALIZED WATER PUMPS	
40	DEMINERALIZED WATER TANK	(300,000 gal)
41	DEMINERALIZED WATER TANK	(300,000 gal)
42	RAW WATER PUMPS	
43	POWER DISTRIBUTION CENTER (PDC)	
44	4160V AUXILIARY TRANSFORMER (2)	
45	480V AUXILIARY TRANSFORMER (2)	
46	NOT USED	
47	NOT USED	
48	WATER WASH DRAIN TANK	
49	BALANCE OF PLANT MCC	
50	AQUEOUS AMMONIA FORWARDING SKID	
51	NOT USED	
52	NOT USED	
53	NOT USED	
54	ALTERNATE POWER TRANSFORMER	BY RPU
55	ALTERNATE POWER SUPPLY POWER PANEL	BY RPU
56	EQUIPMENT/PERSONNEL ACCESS GATE	
57	COMMUNICATIONS TOWER AND SHED	BY RPU
58	GTG FINAL FUEL FILTER SKID	
59	GTG FINAL FUEL FILTER DRAINS TANK	
100	OWL HABITAT	
101	OWL HABITAT	
102	OWL HABITAT	
103	OWL HABITAT	
104	OWL HABITAT	
105	OWL HABITAT	

USERNAME $$$$$$SYTIME$$$$$ $$$$$$$$$$$$$$DGNSPEC$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$

FILE

THIS DRAWING WAS PREPARED BY POWER ENGINEERS, INC. FOR A SPECIFIC PROJECT, TAKING INTO CONSIDERATION THE SPECIFIC AND UNIQUE REQUIREMENTS OF THE PROJECT. REUSE OF THIS DRAWING OR ANY INFORMATION CONTAINED IN THIS DRAWING FOR ANY PURPOSE IS PROHIBITED UNLESS WRITTEN PERMISSION FROM BOTH POWER AND POWER'S CLIENT IS GRANTED.

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS

DSGN
DRN
CKD
SCALE: 1"=50'
FOR 22x34 DWG ONLY

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CLIENT NAME
PROJECT DESCRIPTION
PROJECT CONSTRUCTION BUFFER AREA

JOB NUMBER 1234567-01
REV A
DRAWING NUMBER FIG. AA

BIOLOGICAL RESOURCES ATTACHMENT 2

Michael Tuma

From: Leslie MacNair [Lmacnair@dfg.ca.gov]
Sent: Tuesday, June 03, 2008 10:04 AM
To: Michael Tuma
Subject: RE: CEC data requests for RERC Units 3&4

Michael-
See CA Department of Fish and Game concurrence under each item below.

Data Request 24: To clarify, the creation of artificial burrows will not be necessary since no burrows will needed to be closed. However, if it is determined at some point that burrows need to be closed, then additional burrows will need to be created to mitigate the loss of the burrow.

Data Request 25 a & b: The Department concurs with the proposed burrow design.

Data Request 26: The Department concurs with this measure.

Data Request 28: The Department concurs with this measure.

Data Request 29: To clarify, the lighting may attract foraging by burrowing owls. The lighting should not impact the burrows as long as they are directed away from the burrows.

Thank you for your continued coordination on this matter.
Leslie MacNair
Staff Environmental Scientist
Department of Fish and Game - Region 6

>>> "Michael Tuma" <mtuma@swca.com> 6/2/2008 6:53 PM >>>
Hi Leslie,

Thank you for your response regarding establishing a 30-ft buffer around the burrowing owl mitigation area. I've attached a document that details our full responses to data requests from the CEC. For your convenience, each response is summarized below. Could you take a moment to review each response for your concurrence? I've copied your concurrence statement for Data Request 23, and have provided an area for additional concurrence statements under each of the following data requests:

Data Request 23 a & b: Location/closure of artificial burrows

Response: No burrows will be temporarily or permanently closed with the provision that a 30-ft buffer be established and maintained around the burrowing owl mitigation area during the construction phase of the project. As an additional mitigation measure, a qualified biologist will monitor construction activities within 30 feet of this established buffer to ensure that burrowing owls that may inhabit the mitigation area are not impacted.

CDFG Concurrence: I concur that the 30 foot buffer should suffice since the site is not used by owls for breeding/nesting. As discussed, if owls are found nesting, then additional avoidance and minimization measures may be necessary. I concur having the biological monitor onsite will help ensure owls are not impacted.

Data Request 24: Proposed location of new artificial burrows

Response: As stated above, the CDFG recommend that artificial burrows within the mitigation area will not need to be temporarily closed, nor would additional burrows need to be constructed because of their closure.

Data Request 25 a & b: Proposed artificial burrow design

Response: The additional artificial burrows will be installed on the north end of the mitigation area between burrows 4 and 6 (see Attachment 1). The design for the burrow construction will follow the previous design (see Attachment 2) with the following improvement: the burrow length will be increased from 6 ft to 9 ft, with a 90 degree

horizontal turn at approximately 6 ft in order to prevent sunlight from reaching the nest chamber.

Data Request 26: Permanent disturbance to burrowing owl habitat

Response: Though portions of the project area and adjacent lands were identified as supporting appropriate habitat for burrowing owl, the only portion of the project area that is known to be occupied by burrowing owls (per CDFG 1995 definition) is the burrowing owl mitigation area.
This area will remain a conservation easement in perpetuity; therefore, no occupied burrowing owl habitat will be permanently disturbed. Should it be determined during the breeding season focused surveys or pre-construction survey that other portions of the site are occupied by burrowing owls, and these portions of the site are within the footprint of the project that will be permanently disturbed, then the applicant will consult with the CDFG to determine the need for appropriate mitigation, such as the installation of additional burrows within the on-site mitigation area or dedication/acquisition of additional habitat, per MSHCP requirements.

Data Request 27: Western Riverside County MSHCP

Response: As part of mitigation for development of RERC Units 1&2, the applicant submitted MSHCP fees to the Regional Conservation Authority (RCA), the agency that oversees implementation of the MSHCP. The applicant determined, through consultation with the RCA, that payment does not need to be duplicated for the same project area; i.e., since payment for the RERC site has already been made, the RCA cannot assess additional MSHCP fees for the same project area.

CDFG Concurrence not necessary.

Data Request 28: Potential for noise impacts to wildlife

Response: Noise levels generated from construction equipment could impact nesting avian species within the RERC site. To mitigate this potential impact, a qualified biologist will monitor the RERC site - including the burrowing owl mitigation area - on a weekly basis during the early portion of the nesting season (March 1 through April 15) and every two weeks during the latter portion of the nesting season (April
16 through June 30) to determine the status of nesting avian species at the site. Should an active nest be detected, the nest will be monitored daily whenever construction activities are within 50 ft of the nest until it has been determined by the biologist that the young have fledged and successfully dispersed from the area. During this monitoring period, the biologist will retain the authority to divert construction equipment exceeding 60 dB(A) to areas outside of a 50-ft buffer of the active nest if it is the determination of the biologist that the construction noise or activities will cause the nest to fail.

Data Request 29: Potential for lighting impacts to wildlife

Response: The construction and operation of new facilities on the RERC site will not result in additional lighting. Therefore, there will be no impacts on wildlife. None of the existing lighting reaches the riparian corridor. Within the RERC site, the lights adjacent to the burrowing owl mitigation area likely attract and benefit owls that use it (Leslie MacNair, CDFG, personal communication, January 2008).

Thank you for your attention to this matter.

Michael

Michael W. Tuma
Natural Resources Program Manager
SWCA Environmental Consultants
625 Fair Oaks Avenue, Suite 190
South Pasadena, CA 91030
626.240.0587 (office)
626.240.0607 (fax)

310.892.6042 (mobile)

SWCA Environmental Consultants
Sound Science. Creative Solutions.(r)

-----Original Message-----
From: Leslie MacNair [mailto:Lmacnair@dfg.ca.gov]
Sent: Monday, June 02, 2008 10:58 AM
To: Michael Tuma
Subject: Re: CEC data requests for RERC Units 3&4

Michael
I concur that the 30 foot buffer should suffice since the site is not used by owls for breeding/nesting. As discussed, if owls are found nesting, then additional avoidance and minimization measures may be necessary. I concur having the biological monitor onsite will help ensure owls are not impacted.
Thank you for your coordination on this matter.
Leslie MacNair
Staff Environmental Scientist
Department of Fish and Game - Region 6

>>> "Michael Tuma" <mtuma@swca.com> 5/29/2008 2:48 PM >>>
Dear Leslie,

The Riverside Public Utilities (RPU) has received comments back from the California Energy Commission (CEC) regarding constructions of Units 3&4 at the Riverside Energy Resource Center (RERC) power plant project in Riverside, California. As you know, the RERC site was originally constructed between 2004 and 2006 following the CEC's approval of the RERC Application for Small Power Plan Exemption (04-SPPE-1). Existing facilities at the 12-acre RERC site include Units 1 & 2, an administration building, a switchyard, a stormwater detention basin sized to accommodate a greater than 100 year storm event, paved roads, parking areas, and equipment storage areas located immediately north of Units 1 & 2. In addition, because of mitigation requirements that resulted from the construction of Units 1 & 2 and associated supporting structures, a burrowing owl mitigation area totaling approximately two acres was set aside within the RERC site. This mitigation area is located along the eastern and northern boundaries of the site. The entire RERC site perimeter is fenced with a combination of chain-link fencing and architectural block walls.

Riverside Public Utilities (RPU) proposes to build and operate Units 3 & 4 at RERC. These power units will be aero-derivative LM6000 PC SPRINT NxGen combustion turbine generators with Emission Control Modules (ECMs), and will have a nominal generation capacity of 96 megawatts (MW). Units 3 & 4 will be largely identical to Units 1 & 2 and will be constructed just the north of the first two units. In addition to Units 3 & 4, RPU proposes the addition of two more bays to the existing RERC switchyard, the addition of a second demineralized water storage tank to the existing make-up water system, a water quality building, and a new backup dispatch and scheduling building. During construction, equipment storage areas will be located on site. Construction-related parking will be located immediately off site and to the west of the project area in an existing gravel parking lot.

The RPU submitted their Application for Small Power Plan Exemption for Units 3 & 4 in March 2008, and received comments from the CEC in the form of data requests on May 6, 2008. Several data requests pertained to the mitigation of biological resources. For the following data requests, the CEC requested coordination with California Department of Fish and Game (CDFG) for concurrence. The data requests related to burrowing owl mitigation are outlined below:

23. a. Please provide a map showing the location of the dispatch and scheduling building in relation to the existing artificial burrows; and

b. indicate on the map which of the existing burrows would be temporarily or permanently closed.

24. Please provide a map that illustrates the preliminary proposed locations of the new artificial burrows.

25. a. Please provide a description of the design for the artificial burrows. It is assumed that they would be similar to the existing artificial burrows; and

b. submit the proposed location and design information to staff and CDFG for review and provide a record of correspondence with CDFG to the Energy Commission.

One artificial burrow was to be closed permanently following construction of the proposed backup dispatch and scheduling building. As you remember, we provided a plan that included:

Designing the building so that it 1) renders it useless as a perch for diurnal raptors, and 2) creates the "feel" of a low topographic feature, rather than a building. This would be accomplished by 1) constructing a retaining wall along the side of the building that faces the burrowing owl mitigation area, 2) filling the space between the retaining wall and the existing slope of the mitigation area with soil of an appropriate type, then shaping the area to allow for drainage, and planting it with native plant species similar to the species composition currently used in the burrowing owl mitigation area, and 3) replacing the artificial burrow that would be lost during this process with two additional burrows within the mitigation area, per CDFG requirements. This proposed design would maintain the acreage within the burrowing owl mitigation area, result in additional artificial burrows, discourage raptors from perching on and hunting from the roof of the proposed building, and maintain the openness in front of the mitigation area by incorporating the roof of the building as part of the open space in front of the mitigation area.

Additionally, we provided a plan to mitigate for burrows that would be closed during the construction phase of the project:

Artificial burrows within the burrowing owl mitigation area that are in close proximity to construction activities associated with the project (equipment storage areas, laydown areas, or parking areas) should be temporarily closed during the construction period (expected to last no more than two years) in order to eliminate construction-related impacts to burrowing owls or other wildlife that may inhabits the burrows. SWCA recommends mitigating for this temporary loss of burrows by installing additional artificial burrows (two for each that are temporarily closed) within portions of the mitigation area that are outside of construction zones. Following the conclusion of construction activities, the burrows that were temporarily closed should be re-opened.

Since receiving the CEC's data requests, the RPU has decided to relocate the backup dispatch and scheduling building to another part of the site where it will not impact the burrowing owl mitigation area. Accordingly, the artificial burrow that would have been

impacted by construction of the building and fill soils behind the building will be unaffected, and will remain open.

The CEC requested specific information regarding the temporary closure of burrows during the construction phase. To determine specific construction area limits, I met with the RPU's construction manager for the RERC project on May 13, 2008. We walked the site, during which time I gauged an appropriate offset distance from the mitigation area. It's my opinion that a buffer positioned 30-ft from the mitigation area will suffice in 1) keeping construction activities from significantly impacting the behaviors of owls that could potentially inhabit the mitigation area, and 2) providing enough space for construction to occur unimpeded. The primary construction activity in the vicinity of the 30-ft. buffers would be equipment storage. Additional activities would include grading, trenching, and construction of a water lab and associated storage rack - each of which would occur over short periods (i.e., 1-2 weeks for each activity). Other activities that are more significant in terms of noise, movement, and duration would occur a greater distance - an estimated 50-75 feet - from the 30-ft. buffer.
There is one area where the 30-ft. buffer could not be maintained: the location of the water lab and associated storage rack. This small building and metal rack will be placed on a small concrete pad at a distance of approximately 28 feet from the mitigation area. The RPU indicated that they could maintain a 28-ft. buffer during the construction of the pad, lab, and rack - a feature that is located roughly between two artificial burrows (burrows 2 and 3 - see attached
figure) within the mitigation area.

I recommend that if the 30-ft. buffer is maintained during the construction phase of the project, the artificial burrows within the mitigation area will not need to be temporarily closed, nor would additional burrows need to be constructed because of their closure. Additionally, the RPU proposes to have a biological monitor on site for construction activities associated with construction of the pad, lab, and rack, as well as for grading or trenching that would occur within close proximity to the 30-ft buffer. However, should CDFG determine that the 30-ft. buffer is insufficient for mitigating potential construction-related impacts to burrowing owls that may inhabit the burrowing owl mitigation area, RPU proposes to close the artificial burrows located closest to active construction areas. The burrows subject to closure would be determined through consultation with CDFG.
For every burrow that is temporarily closed, two additional artificial burrows will be installed into the existing on-site burrowing owl mitigation area. The additional artificial burrows will be installed on the north end of the mitigation area between burrows 4 and 6 (see attached drawing). The design for the burrow construction will follow our previous design (see attached burrow plan) with the following
improvement: the burrow length will be increased from 6 ft to 9 ft, with a 90 degree horizontal turn at approximately 6 ft following Collins and Landry (1977), Belthoff (2003), and Alexander et al. (2005) in order to prevent sunlight from reaching the nest chamber.

Please let me know if you concur that a 30-ft. buffer from the burrowing owl mitigation area would sufficiently mitigate potential construction-related impacts to burrowing owls that have the potential to inhabit the site. If you feel that a site visit would help you to reach a decision regarding the 30-ft. buffer, I can schedule an on-site meeting. I'd also be interested in hearing your comments regarding other mitigation alternatives (construction monitoring, closure and placement of artificial burrows, and burrow design).

Thank you,

Michael

Michael W. Tuma
Natural Resources Program Manager
SWCA Environmental Consultants
625 Fair Oaks Avenue, Suite 190
South Pasadena, CA 91030
626.240.0587 (office)
626.240.0607 (fax)
310.892.6042 (mobile)

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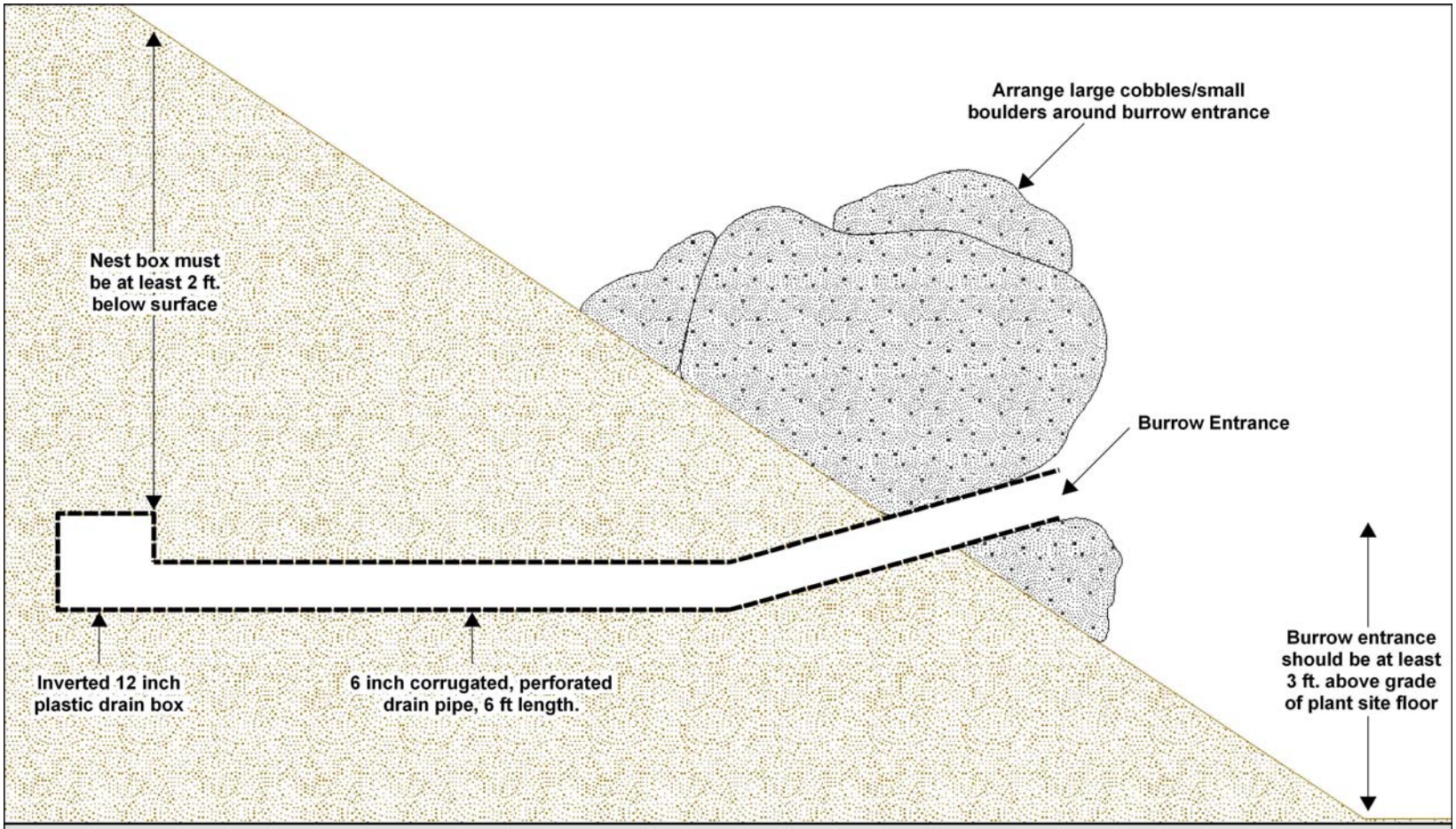
BIOLOGICAL RESOURCES ATTACHMENT 3



Pipe

Soil

Large cobbles/small boulders

Burrowing Owl Artificial Burrow Design
RERC Plant Site

Drawing not to Scale

SWCA ENVIRONMENTAL CONSULTANTS

BIOLOGICAL RESOURCES ATTACHMENT 4

Western Riverside County Regional Conservation Authority

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General Manager

Rick Bishop
Executive Director

March 3, 2005

Ms. Donna Stone
c/o California Energy Commission
1516 Ninth Street, MS 2000
Sacramento, CA 95814

Subject: Payment of Mitigation Funds
City of Riverside – Riverside Energy Resource Project

Dear Ms. Stone:

This is to confirm that the Western Riverside County Regional Conservation Authority has received payment of Multiple Species Habitat Conservation Plan (MSHCP) Fees applicable to the Riverside Energy Resource Project conditions of approval and CEC permit.

A copy of Cashier's Check Number 0166700786, drawn on Wells Fargo Bank, N.A., Hailey, Idaho, in the amount of $67,740.00 to be applied for MSHCIP mitigation under Section 13.2 of the MSHCP Implementation Agreement is attached.

Confirmation of this payment is being sent to you at the request of Mike Tatterson, Power Engineers, 3940 Glenbrook Drive, Hailey, Idaho, 83333, in order to verify payment for the CEC to allow them to proceed with the project.

If you have any questions or concerns, please feel free to call us at (951) 955-9700.

Sincerely,

Honey Bernas

Honey Bernas
Administrative Services Officer

Enclosure

cc: Mike Tatterson, Power Engineers, Inc.
Ken Gutierrez, Planning Director, City of Riverside

4080 Lemon Street, 12th Floor, Riverside, California, 92501 • P.O. Box 1605, Riverside, California 92502-1605
Phone: (951) 955-9700 • Fax: (951) 955-8873 • www.wrc-rca.org

01667 — Office AU #
11-24 — 1210(8)

CASHIER'S CHECK

SERIAL #: 0166700786
ACCOUNT#: 4861-505808

Purchaser: **POWER ENGINEERS INC**
Purchaser Account: **5130000366**
Operator I.D.: **idho0629** **idho0512**

March 01, 2005

PAY TO THE ORDER OF ***WESTERN RIVERSIDE COUNTY REGIONAL CONSERVATI***
ON AUTHORITY

****Sixty-seven thousand seven hundred forty dollars and no cents**** ****$67,740.00****

WELLS FARGO BANK, N.A.
100 S MAIN ST
HAILEY, ID 83333
FOR INQUIRIES CALL (480) 394-3122

NOTICE TO PURCHASER -- IF THIS INSTRUMENT IS LOST, STOLEN OR DESTROYED, YOU MAY REQUEST CANCELLATION AND REISSUANCE. AS A CONDITION TO CANCELLATION AND REISSUANCE, WELLS FARGO BANK MAY IMPOSE A FEE AND REQUIRE AN INDEMNITY AGREEMENT AND BOND.

VOID IF OVER US $ 67,740.00

NON-NEGOTIABLE

Purchaser Copy

FB004

01667 — Office AU #
11-24 — 1210(8)

CASHIER'S CHECK

0166700786

Operator I.D.: **idho0629** **idho0512**

March 01, 2005

PAY TO THE ORDER OF ***WESTERN RIVERSIDE COUNTY REGIONAL CONSERVATI***
ON AUTHORITY

****Sixty-seven thousand seven hundred forty dollars and no cents**** ****$67,740.00****

WELLS FARGO BANK, N.A.
100 S MAIN ST
HAILEY, ID 83333
FOR INQUIRIES CALL (480) 394-3122

Funds for City of Riverside
RERC Project MSHCP mitigation
Section 13.2 of Implementation
Agreement.

VOID IF OVER US $ 67,740.00

AUTHORIZED SIGNATURE

⑈0166700786⑈ ⑆121000248⑆4861 505808⑈

RECEIVED
MAR 02 2005
Western Riverside County
Regional Conservation Authority

RIVERSIDE ENERGY RESOURCE CENTER PROJECT
04-SPPE-01 CONDITION OF EXEMPTION BIO-2

Habitat Compensation Funds Use Description

Habitat compensation funds will be used by the Regional Conservation Authority (RCA) to help achieve the goals and objectives set out in the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). Goals specified in the MSHCP include:

* Biological Goal: In the MSHCP Plan Area, conserve Covered Species and their habitats.

* Economic Goal: Improve the future economic development in the County by providing an efficient, streamlined regulatory process through which development can proceed in an efficient way. The MHSCP and the General Plan will provide the County with a clearly articulated blueprint describing where future development should and should not occur.

* Social Goal: Provide for permanent open space, community edges, and recreational opportunities, which contribute to maintaining the community character of western Riverside County.

Habitat compensation funds from the RERC project would more specifically apply to the Local Funding Program described in the MSHCP. The Local Funding Program will fund the local portion of activities including:

* Land acquisition
* Management
* Monitoring
* Adaptive Management
* Plan administration

BIOLOGICAL RESOURCES ATTACHMENT 5

From: Richards, Joe [JRICHARD@rctlma.org]
Sent: Friday, December 21, 2007 9:09 AM
To: Michael Tuma
Cc: GRAFF, KEN
Subject: RE: Burrowing Owl Relocation

Michael,
Unless I'm missing something in the translation here, if they paid the full freight the first time around (i.e. in advance of construction) then there is no need to pay again. In other words, if they paid the MSHCP industrial/commercial acreage fee for the 2 parcels then they have fulfilled the obligation.
(The subject line references burrowing owls - has that been resolved?)
Joe

>>> Michael Tuma 12/19/2007 11:34 AM >>>
Hi Joe,

I have a client in Riverside (Riverside Public Utilities) who is planning to construct two power generating units in Riverside next year. They're building on an existing facility that was developed just as the MSHCP was about to be approved. As part of the mitigation for construction of the original project, RPU paid MSHCP fees to the RCA for the full 2 parcels that were developed.

My question is this: would the RPU need to pay MSHCP fees for the second phase (or any future phases) of the project built on the same two parcels? The new phases would require discretionary permits, but I'm not sure if MSHCP fees can be collected from the same parcel more than once.

Thanks for any insight you can provide.

Michael

Michael W. Tuma
Natural Resources Program Manager, Southern California
SWCA Environmental Consultants
625 Fair Oaks Avenue, Suite 190
South Pasadena, CA 91030
626.240.0587 (office)
626.240.0607 (fax)
310.892.6042 (mobile)

BIOLOGICAL RESOURCES ATTACHMENT 6

Table Const-4. Analysis of Estimated Overall Construction Noise Level in February

Equipment	Number of Units[1]	Hrs/Day Per Unit[1]	Number of Days of Use/ Month[1]	Usage Factor[2]	Typical Level @ 50', dBA[3]	Correction for Number of Units[4]	Correction for Hrs/Day[5]	Correction for No. of Days of Use in Month[6]	Correction for Usage Factor[7]	Estimated Leq @ 50', dBA[8]
Truck Crane - Greater than 300 ton	1	5	15	0.16	85	0	-2	-2	-8	73
Truck Crane - Greater than 200 ton	1	6	8	0.16	85	0	-1	-4	-8	71
Crane - Mobile 65 ton	2	4	20	0.16	85	3	-3	0	-8	77
Cranes - Mobile 45 ton	1	4	5	0.16	85	0	-3	-6	-8	68
Cranes - Mobile 35 ton	3	4	10	0.16	85	5	-3	-3	-8	75
Bulldozer D10R	1	1	0	0.4	88					
Excavator - Trencher (CAT320)	2	6	10	0.4	85	3	-1	-3	-4	79
Excavator - Earth Scraper CAT 623	1	4	0	0.4	89					
Excavator - Motor Grader (CAT140H)	1	4	0	0.08	86					
Excavator - Backhoe/loader* Days per unit	3	4	15	0.4	83	5	-3	-2	-4	79
Excavator - loader	2	4	0	0.4	79					
Vibratory Roller	1	4	0	4	85					
Portable Compaction Roller	1	4	0	0.4	87					
Truck - Water	2	5	22	0.4	87	3	-2	0	-4	84
Forklift	5	5	22	0.4	87	7	-2	0	-4	88
Dump Truck	1	1	5	0.4	87	0	-9	-6	-4	68
Service Truck - 1 ton	2	0.5	22	0.4	87	3	-12	0	-4	74
Truck - Fuel/Lube	2	2	22	0.4	87	3	-6	0	-4	80
Concrete Pumper Truck	2	6	3	0.4	82	3	-1	-9	-4	71
Tractor Truck 5th Wheel	1	3	10	0.4	87	0	-4	-3	-4	75
Trucks - Pickup 3/4 ton	6	0.5	22	0.4	87	8	-12	0	-4	79
Trucks - 3 ton (vendors)	2	0.5	10	0.4	87	3	-12	-3	-4	71
Diesel Powered Welder	3	4	22	0.4	87	5	-3	0	-4	85
Light Plants	4	3	10	1	73	6	-4	-3	0	71
Portable Compaction - Vibratory Plate	1	3	5	0.4	76	0	-4	-6	-4	61
Portable Compaction - Vibratory Ram	1	3	0	0.4	76					
Articulating Boom Platform	6	4	22	0.4	83	8	-3	0	-4	84
Air Compressor 185 CFM	1	6	22	1	81	0	-1	0	0	80
Concrete Trowel Machine	1	2	3	0.4	76	0	-6	-9	-4	57
Portable Power Generators	3	8	22	1	78	5	0	0	0	83
									Estimated Combined Leq @ 50':	94

Notes:

1. Obtained from TIC.
2. Percentage of time equipment is operating at noisiest mode in most used phase on site. Obtained or estimated from "Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances;" BBN; December 31, 1971.
3. Obtained or estimated from "Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances;" BBN; December 31, 1971.
4. Calculated as 10*Log(Column B).
5. Calculated as 10*Log(Column C / 8).
6. Calculated as 10*Log(Column D / 22).
7. Calculated as 10*Log(Column E).
8. Calculated as arithmetic sum of Columns F through J.

Table Const-5. Analysis of Estimated Overall Construction Noise Level in March

Equipment	Number of Units[1]	Hrs/Day Per Unit[1]	Number of Days of Use/ Month[1]	Usage Factor[2]	Typical Level @ 50', dBA[3]	Correction for Number of Units[4]	Correction for Hrs/Day[5]	Correction for No. of Days of Use in Month[6]	Correction for Usage Factor[7]	Estimated Leq @ 50', dBA[8]
Truck Crane - Greater than 300 ton	1	5	10	0.16	85	0	-2	-3	-8	72
Truck Crane - Greater than 200 ton	1	6	15	0.16	85	0	-1	-2	-8	74
Crane - Mobile 65 ton	2	4	15	0.16	85	3	-3	-2	-8	75
Cranes - Mobile 45 ton	1	4	5	0.16	85	0	-3	-6	-8	68
Cranes - Mobile 35 ton	3	4	10	0.16	85	5	-3	-3	-8	75
Bulldozer D10R	1	1	0	0.4	88					
Excavator - Trencher (CAT320)	2	6	5	0.4	85	3	-1	-6	-4	76
Excavator - Earth Scraper CAT 623	1	4	0	0.4	89					
Excavator - Motor Grader (CAT140H)	1	4	0	0.08	86					
Excavator - Backhoe/loader* Days per unit	3	4	10	0.4	83	5	-3	-3	-4	77
Excavator - loader	2	4	0	0.4	79					
Vibratory Roller	1	4	0	4	85					
Portable Compaction Roller	1	4	0	0.4	87					
Truck - Water	2	5	22	0.4	87	3	-2	0	-4	84
Forklift	5	5	22	0.4	87	7	-2	0	-4	88
Dump Truck	1	1	5	0.4	87	0	-9	-6	-4	68
Service Truck - 1 ton	2	0.5	10	0.4	87	3	-12	-3	-4	71
Truck - Fuel/Lube	2	2	22	0.4	87	3	-6	0	-4	80
Concrete Pumper Truck	2	6	0	0.4	82					
Tractor Truck 5th Wheel	1	3	10	0.4	87	0	-4	-3	-4	75
Trucks - Pickup 3/4 ton	6	0.5	22	0.4	87	8	-12	0	-4	79
Trucks - 3 ton (vendors)	2	0.5	10	0.4	87	3	-12	-3	-4	71
Diesel Powered Welder	3	4	22	0.4	87	5	-3	0	-4	85
Light Plants	4	3	5	1	73	6	-4	-6	0	68
Portable Compaction - Vibratory Plate	1	3	5	0.4	76	0	-4	-6	-4	61
Portable Compaction - Vibratory Ram	1	3	0	0.4	76					
Articulating Boom Platform	6	4	22	0.4	83	8	-3	0	-4	84
Air Compressor 185 CFM	1	6	15	1	81	0	-1	-2	0	78
Concrete Trowel Machine	1	2	0	0.4	76					
Portable Power Generators	3	8	22	1	78	5	0	0	0	83
									Estimated Combined Leq @ 50':	93

Notes:

1. Obtained from TIC.
2. Percentage of time equipment is operating at noisiest mode in most used phase on site. Obtained or estimated from "Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances;" BBN; December 31, 1971.
3. Obtained or estimated from "Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances;" BBN; December 31, 1971.
4. Calculated as 10*Log(Column B).
5. Calculated as 10*Log(Column C / 8).
6. Calculated as 10*Log(Column D / 22).
7. Calculated as 10*Log(Column E).
8. Calculated as arithmetic sum of Columns F through J.

Table Const-6. Analysis of Estimated Overall Construction Noise Level in April

Equipment	Number of Units[1]	Hrs/Day Per Unit[1]	Number of Days of Use/ Month[1]	Usage Factor[2]	Typical Level @ 50', dBA[3]	Correction for Number of Units[4]	Correction for Hrs/Day[5]	Correction for No. of Days of Use in Month[6]	Correction for Usage Factor[7]	Estimated Leq @ 50', dBA[8]
Truck Crane - Greater than 300 ton	1	5	5	0.16	85	0	-2	-6	-8	69
Truck Crane - Greater than 200 ton	1	6	15	0.16	85	0	-1	-2	-8	74
Crane - Mobile 65 ton	2	4	10	0.16	85	3	-3	-3	-8	74
Cranes - Mobile 45 ton	1	4	5	0.16	85	0	-3	-6	-8	68
Cranes - Mobile 35 ton	3	4	10	0.16	85	5	-3	-3	-8	75
Bulldozer D10R	1	1	0	0.4	88					
Excavator - Trencher (CAT320)	2	6	5	0.4	85	3	-1	-6	-4	76
Excavator - Earth Scraper CAT 623	1	4	0	0.4	89					
Excavator - Motor Grader (CAT140H)	1	4	0	0.08	86					
Excavator - Backhoe/loader* Days per unit	3	4	10	0.4	83	5	-3	-3	-4	77
Excavator - loader	2	4	0	0.4	79					
Vibratory Roller	1	4	0	4	85					
Portable Compaction Roller	1	4	0	0.4	87					
Truck - Water	2	5	22	0.4	87	3	-2	0	-4	84
Forklift	5	5	22	0.4	87	7	-2	0	-4	88
Dump Truck	1	1	0	0.4	87					
Service Truck - 1 ton	2	0.5	10	0.4	87	3	-12	-3	-4	71
Truck - Fuel/Lube	2	2	22	0.4	87	3	-6	0	-4	80
Concrete Pumper Truck	2	6	0	0.4	82					
Tractor Truck 5th Wheel	1	3	10	0.4	87	0	-4	-3	-4	75
Trucks - Pickup 3/4 ton	6	0.5	22	0.4	87	8	-12	0	-4	79
Trucks - 3 ton (vendors)	2	0.5	0	0.4	87					
Diesel Powered Welder	3	4	22	0.4	87	5	-3	0	-4	85
Light Plants	4	3	0	1	73					
Portable Compaction - Vibratory Plate	1	3	5	0.4	76	0	-4	-6	-4	61
Portable Compaction - Vibratory Ram	1	3	0	0.4	76					
Articulating Boom Platform	6	4	0	0.4	83					
Air Compressor 185 CFM	1	6	15	1	81	0	-1	-2	0	78
Concrete Trowel Machine	1	2	0	0.4	76					
Portable Power Generators	3	8	22	1	78	5	0	0	0	83
									Estimated Combined Leq @ 50':	93

Notes:

1. Obtained from TIC.
2. Percentage of time equipment is operating at noisiest mode in most used phase on site. Obtained or estimated from "Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances;" BBN; December 31, 1971.
3. Obtained or estimated from "Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances;" BBN; December 31, 1971.
4. Calculated as 10*Log(Column B).
5. Calculated as 10*Log(Column C / 8).
6. Calculated as 10*Log(Column D / 22).
7. Calculated as 10*Log(Column E).
8. Calculated as arithmetic sum of Columns F through J.

Table Const-7. Analysis of Estimated Overall Construction Noise Level in May

Equipment	Number of Units[1]	Hrs/Day Per Unit[1]	Number of Days of Use/ Month[1]	Usage Factor[2]	Typical Level @ 50', dBA[3]	Correction for Number of Units[4]	Correction for Hrs/Day[5]	Correction for No. of Days of Use in Month[6]	Correction for Usage Factor[7]	Estimated Leq @ 50', dBA[8]
Truck Crane - Greater than 300 ton	1	5	0	0.16	85					
Truck Crane - Greater than 200 ton	1	6	5	0.16	85	0	-1	-6	-8	69
Crane - Mobile 65 ton	2	4	5	0.16	85	3	-3	-6	-8	71
Cranes - Mobile 45 ton	1	4	0	0.16	85					
Cranes - Mobile 35 ton	3	4	10	0.16	85	5	-3	-3	-8	75
Bulldozer D10R	1	1	0	0.4	88					
Excavator - Trencher (CAT320)	2	6	5	0.4	85	3	-1	-6	-4	76
Excavator - Earth Scraper CAT 623	1	4	0	0.4	89					
Excavator - Motor Grader (CAT140H)	1	4	10	0.08	86	0	-3	-3	-11	69
Excavator - Backhoe/loader* Days per unit	3	4	5	0.4	83	5	-3	-6	-4	74
Excavator - loader	2	4	0	0.4	79					
Vibratory Roller	1	4	0	4	85					
Portable Compaction Roller	1	4	10	0.4	87	0	-3	-3	-4	77
Truck - Water	2	5	22	0.4	87	3	-2	0	-4	84
Forklift	5	5	22	0.4	87	7	-2	0	-4	88
Dump Truck	1	1	0	0.4	87					
Service Truck - 1 ton	2	0.5	0	0.4	87					
Truck - Fuel/Lube	2	2	22	0.4	87	3	-6	0	-4	80
Concrete Pumper Truck	2	6	0	0.4	82					
Tractor Truck 5th Wheel	1	3	0	0.4	87					
Trucks - Pickup 3/4 ton	6	0.5	22	0.4	87	8	-12	0	-4	79
Trucks - 3 ton (vendors)	2	0.5	10	0.4	87	3	-12	-3	-4	71
Diesel Powered Welder	3	4	0	0.4	87					
Light Plants	4	3	0	1	73					
Portable Compaction - Vibratory Plate	1	3	10	0.4	76	0	-4	-3	-4	64
Portable Compaction - Vibratory Ram	1	3	0	0.4	76					
Articulating Boom Platform	6	4	0	0.4	83					
Air Compressor 185 CFM	1	6	15	1	81	0	-1	-2	0	78
Concrete Trowel Machine	1	2	0	0.4	76					
Portable Power Generators	3	8	22	1	78	5	0	0	0	83
									Estimated Combined Leq @ 50':	92

Notes:

1. Obtained from TIC.
2. Percentage of time equipment is operating at noisiest mode in most used phase on site. Obtained or estimated from "Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances;" BBN; December 31, 1971.
3. Obtained or estimated from "Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances;" BBN; December 31, 1971.
4. Calculated as 10*Log(Column B).
5. Calculated as 10*Log(Column C / 8).
6. Calculated as 10*Log(Column D / 22).
7. Calculated as 10*Log(Column E).
8. Calculated as arithmetic sum of Columns F through J.

Table Const-8. Analysis of Estimated Overall Construction Noise Level in June

Equipment	Number of Units[1]	Hrs/Day Per Unit[1]	Number of Days of Use/ Month[1]	Usage Factor[2]	Typical Level @ 50', dBA[3]	Correction for Number of Units[4]	Correction for Hrs/Day[5]	Correction for No. of Days of Use in Month[6]	Correction for Usage Factor[7]	Estimated Leq @ 50', dBA[8]
Truck Crane - Greater than 300 ton	1	5	0	0.16	85					
Truck Crane - Greater than 200 ton	1	6	0	0.16	85					
Crane - Mobile 65 ton	2	4	5	0.16	85	3	-3	-6	-8	71
Cranes - Mobile 45 ton	1	4	0	0.16	85					
Cranes - Mobile 35 ton	3	4	5	0.16	85	5	-3	-6	-8	72
Bulldozer D10R	1	1	0	0.4	88					
Excavator - Trencher (CAT320)	2	6	5	0.4	85	3	-1	-6	-4	76
Excavator - Earth Scraper CAT 623	1	4	0	0.4	89					
Excavator - Motor Grader (CAT140H)	1	4	0	0.08	86					
Excavator - Backhoe/loader* Days per unit	3	4	5	0.4	83	5	-3	-6	-4	74
Excavator - loader	2	4	0	0.4	79					
Vibratory Roller	1	4	0	4	85					
Portable Compaction Roller	1	4	10	0.4	87	0	-3	-3	-4	77
Truck - Water	2	5	10	0.4	87	3	-2	-3	-4	81
Forklift	5	5	10	0.4	87	7	-2	-3	-4	85
Dump Truck	1	1	0	0.4	87					
Service Truck - 1 ton	2	0.5	0	0.4	87					
Truck - Fuel/Lube	2	2	0	0.4	87					
Concrete Pumper Truck	2	6	0	0.4	82					
Tractor Truck 5th Wheel	1	3	0	0.4	87					
Trucks - Pickup 3/4 ton	6	0.5	10	0.4	87	8	-12	-3	-4	75
Trucks - 3 ton (vendors)	2	0.5	10	0.4	87	3	-12	-3	-4	71
Diesel Powered Welder	3	4	0	0.4	87					
Light Plants	4	3	0	1	73					
Portable Compaction - Vibratory Plate	1	3	10	0.4	76	0	-4	-3	-4	64
Portable Compaction - Vibratory Ram	1	3	0	0.4	76					
Articulating Boom Platform	6	4	0	0.4	83					
Air Compressor 185 CFM	1	6	0	1	81					
Concrete Trowel Machine	1	2	0	0.4	76					
Portable Power Generators	3	8	10	1	78	5	0	-3	0	79
									Estimated Combined Leq @ 50':	88

Notes:

1. Obtained from TIC.
2. Percentage of time equipment is operating at noisiest mode in most used phase on site. Obtained or estimated from "Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances;" BBN; December 31, 1971.
3. Obtained or estimated from "Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances;" BBN; December 31, 1971.
4. Calculated as 10*Log(Column B).
5. Calculated as 10*Log(Column C / 8).
6. Calculated as 10*Log(Column D / 22).
7. Calculated as 10*Log(Column E).
8. Calculated as arithmetic sum of Columns F through J.

Table Const-9. Analysis of Estimated Overall Construction Noise Level in July

Equipment	Number of Units[1]	Hrs/Day Per Unit[1]	Number of Days of Use/ Month[1]	Usage Factor[2]	Typical Level @ 50', dBA[3]	Correction for Number of Units[4]	Correction for Hrs/Day[5]	Correction for No. of Days of Use in Month[6]	Correction for Usage Factor[7]	Estimated Leq @ 50', dBA[8]
Truck Crane - Greater than 300 ton	1	5	0	0.16	85					
Truck Crane - Greater than 200 ton	1	6	0	0.16	85					
Crane - Mobile 65 ton	2	4	5	0.16	85	3	-3	-6	-8	71
Cranes - Mobile 45 ton	1	4	0	0.16	85					
Cranes - Mobile 35 ton	3	4	5	0.16	85	5	-3	-6	-8	72
Bulldozer D10R	1	1	0	0.4	88					
Excavator - Trencher (CAT320)	2	6	5	0.4	85	3	-1	-6	-4	76
Excavator - Earth Scraper CAT 623	1	4	0	0.4	89					
Excavator - Motor Grader (CAT140H)	1	4	0	0.08	86					
Excavator - Backhoe/loader* Days per unit	3	4	5	0.4	83	5	-3	-6	-4	74
Excavator - loader	2	4	0	0.4	79					
Vibratory Roller	1	4	0	4	85					
Portable Compaction Roller	1	4	0	0.4	87					
Truck - Water	2	5	10	0.4	87	3	-2	-3	-4	81
Forklift	5	5	10	0.4	87	7	-2	-3	-4	85
Dump Truck	1	1	5	0.4	87	0	-9	-6	-4	68
Service Truck - 1 ton	2	0.5	0	0.4	87					
Truck - Fuel/Lube	2	2	0	0.4	87					
Concrete Pumper Truck	2	6	0	0.4	82					
Tractor Truck 5th Wheel	1	3	0	0.4	87					
Trucks - Pickup 3/4 ton	6	0.5	10	0.4	87	8	-12	-3	-4	75
Trucks - 3 ton (vendors)	2	0.5	10	0.4	87	3	-12	-3	-4	71
Diesel Powered Welder	3	4	0	0.4	87					
Light Plants	4	3	0	1	73					
Portable Compaction - Vibratory Plate	1	3	0	0.4	76					
Portable Compaction - Vibratory Ram	1	3	0	0.4	76					
Articulating Boom Platform	6	4	0	0.4	83					
Air Compressor 185 CFM	1	6	0	1	81					
Concrete Trowel Machine	1	2	0	0.4	76					
Portable Power Generators	3	8	10	1	78	5	0	-3	0	79
									Estimated Combined Leq @ 50':	88

Notes:

1. Obtained from TIC.
2. Percentage of time equipment is operating at noisiest mode in most used phase on site. Obtained or estimated from "Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances;" BBN; December 31, 1971.
3. Obtained or estimated from "Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances;" BBN; December 31, 1971.
4. Calculated as 10*Log(Column B).
5. Calculated as 10*Log(Column C / 8).
6. Calculated as 10*Log(Column D / 22).
7. Calculated as 10*Log(Column E).
8. Calculated as arithmetic sum of Columns F through J.