PCWA
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PLACER COUNTY WATER AGENCY
SINCE 1957

BOARD OF DIRECTORS
Gray Allen, District 1
Alex Ferreira, District 2
Lowell Jarvis, District 3
Mike Lee, District 4
Ben Mavy, District 5

David Breninger, General Manager
Ed Tiedemann, General Counsel

BUSINESS CENTER
144 Ferguson Road
MAIL
P.O. Box 6570
Auburn, CA 95604
PHONE
530.823.4850
800.464.0030
WWW.PCWA.NET

December 6, 2012
File No. 01030A
Electronically Filed

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, DC 20426

SUBJECT: Notice of Availability of Draft CEQA Supplement to the FERC Draft EIS for the Middle Fork American River Project (FERC Project No. 2079-069)

Dear Secretary Bose:

Notice is hereby given that the Draft California Environmental Quality Act (CEQA) Supplement for Placer County Water Agency's (PCWA) Middle Fork American River Project (MFP) is available for public review and comment. This notice is provided pursuant to requirements identified in the CEQA (Public Resources Code Sec. 21092(b)), and the CEQA Guidelines (Guidelines Sec. 15087).

BACKGROUND: The CEQA process for the MFP was initiated by PCWA with two public scoping meetings (daytime and evening) on March 4, 2008. During these scoping sessions, PCWA requested information to identify relevant issues that should be included in a CEQA document, or could be used to guide the CEQA process. On July 23, 2012, the Federal Energy Regulatory Commission (FERC or Commission) issued a Draft Environmental Impact Statement (DEIS) for the MFP for a public review period, which closed October 2, 2012. On August 10, 2012, PCWA provided public notice of its intention to rely on FERC's DEIS, in combination with a supplemental analysis, to meet the requirements of CEQA. During the review period, FERC conducted two public meetings (daytime and evening) on August 28, 2012 for the purpose of receiving verbal and/or written comments on the DEIS.

PROJECT DESCRIPTION AND LOCATION: PCWA owns and operates the MFP under a 50-year FERC license, which expires on February 28, 2013. Using FERC's Integrated Licensing Process, PCWA is seeking the renewal of its license to continue operation and maintenance of the MFP. The MFP serves as a multi-purpose water supply and hydro-generation project designed to conserve and control waters of the Middle Fork American River, the Rubicon River, and several associated tributary streams. The MFP is located on the west slope of the Sierra Nevada range primarily in Placer County, California. A small component of the MFP (a portion of Ralston Afterbay Dam) is located in El Dorado County, California. The MFP is almost entirely in the Tahoe and Eldorado National Forests, with a small portion located on PCWA-owned or private land. The MFP seasonally stores and releases water to meet consumptive demands within western Placer County and to generate power for the California electrical grid. Water for hydroelectric generation and consumptive use is diverted and stored under permits and licenses issued by the State Water Board. The MFP, which began operation in 1967, includes two major storage reservoirs (French Meadows and Hell Hole that have a combined capacity of approximately 342,000 acre-feet), five smaller regulating reservoirs and diversion pools, and five powerhouses (combined capacity of approximately 224 megawatts).

DOCUMENT AVAILABILITY: A copy of the Draft CEQA Supplement is available for review on PCWA's website at http://relicensing.pcwa.net, and at the following locations:

PCWA Business Center 144 Ferguson Road Auburn, CA 95603	Placer County Library 350 Nevada Street Auburn, CA 95603	El Dorado County Library 345 Fair Lane Drive Placerville, CA 95667

A copy of FERC's DEIS is also available at the locations identified above.

SIGNIFICANT EFFECTS: PCWA has determined that all potential impacts associated with implementation of new license conditions for the MFP are considered less than significant under CEQA.

COMMENTS: Publication of the Notice of Availability marks the beginning of a 45-day public review period. Because FERC is the NEPA lead agency and the DEIS comment period has closed, PCWA requests that reviewers limit their comments to the new information and analysis presented in the Draft CEQA Supplement. PCWA will respond to comments received on the Draft CEQA Supplement, but cannot accept comments on FERC's DEIS. Written comments should be submitted before 5 p.m., January 25, 2013 to: Mr. Benjamin Ransom, Environmental Scientist, Placer County Water Agency, P.O. Box 6570, Auburn, CA 95604, Phone: (530) 823-4889, Fax: (530) 823-4960, Email: relicensing@pcwa.net.

DISTRIBUTION: PCWA eFiled the Draft CEQA Supplement with FERC and concurrently provided courtesy copies (1 paper copy and 1 electronic copy), via courier service, to the Commission's Office of Energy Projects and Commission's Office of

General Counsel-Energy Projects. In addition, PCWA mailed a copy of the Notice of Availability to each person designated on the official service list compiled by the Secretary, and other stakeholders to the relicensing proceedings for Project No. 2079, as set forth in the distribution list. Refer to the attached Certificate of Service (Attachment 1) and Distribution List (Attachment 2).

If you have any questions regarding this filing, please contact Mr. Benjamin Ransom at (530) 823-4889 or by e-mail at bransom@pcwa.net.

Sincerely,

Benjamin Ransom
Environmental Scientist

Attachments

Attachment 1 – Certificate of Service
Attachment 2 – Distribution List

Enclosure

Draft CEQA Supplement for the Middle Fork American River Project

Attachment 1

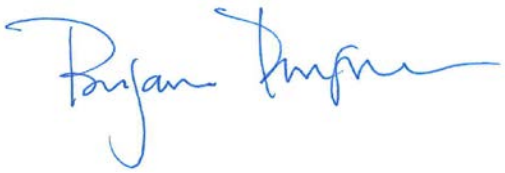
Certificate of Service

CERTIFICATE OF SERVICE

Pursuant to the provisions of 18 C.F.R. § 385.2010, I hereby certify that I have this day served the foregoing document to the Federal Energy Regulatory Commission (FERC) by eFiling and have mailed via courier service, one courtesy copy of this document to FERC's Office of Energy Projects and one courtesy copy to FERC's Office of General Counsel-Energy Projects.

In addition, I hereby certify that I have this day served a copy of the Notice of Availability to each person designated on the official service list compiled by the Secretary, and other stakeholders to the relicensing proceedings for Project No. 2079, as set forth in the attached distribution list, by hard copy mailing.

Dated at Auburn, CA this 6th day of December 2012.



Benjamin Ransom
Placer County Water Agency
Environmental Scientist

Attachment 2

Distribution List

FERC Service List

American Whitewater
Dave Steindorf
CA Stewardship Director
4 Baroni Dr
Chico, CA 95928-4314

CA Dept of Fish & Game
MaryLisa Lynch
Water Program Manager
1701 Nimbus Rd., Suite A
Rancho Cordova, CA 95670

CA Dept of Fish & Game
Sharon J Stohrer
Staff Environmental Scientist
1701 Nimbus Rd.
Rancho Cordova, CA 95670

CA Dept of Fish & Game
Nancee Murray
Senior Staff Counsel
Office of Gen Counsel
1416 Ninth St., 12th Flr
Sacramento, CA 95814

CA Dept of Water Resources
David Rose, Staff Counsel
1001 I Street
Sacramento, CA 95814

CA Dept of Water Resources
Russ J Kanz
1001 I Street
Sacramento, CA 95814

California Outdoors
Nate Rangel
P.O. Box 401
Coloma, CA 95613

California Sportfishing Protection Alliance
Christopher Shutes
1608 Francisco Street
Berkeley, CA 94703

National Park Service
Stephen M. Bowes
333 Bush St Ste 500
San Francisco, CA 94104-2828

Dept of the Interior, Office of the Solicitor
DOI Solicitor
2800 Cottage Way, E 1712
Sacramento, CA 95825

Dept of the Interior, Office of the Solicitor
Patricia Sanderson Port
Regional Environmental Officer
Office of Environmental Policy and Compliance
333 Bush St., Suite 515
San Francisco, CA 94104

Dept of the Interior, Office of the Solicitor
Luke Miller
Assistant Regional Solicitor
2800 Cottage Way, Ste E1712
Sacramento, CA 95825

Dept of the Interior, Office of the Solicitor
Kerry O'Hara
Assistant Regional Solicitor
2800 Cottage Way, Ste E1712
Sacramento, CA 95825

Dept of the Interior, Office of the Solicitor
Kevin Tanaka, Attorney
Solicitor
2800 Cottage Way, Ste E1712
Sacramento, CA 95825

Downey Brand LLP
David Aladjem
555 Capitol Mall
Sacramento, CA 95814

Downey Brand LLP
Wendy Jones
621 Capitol Mall, 18th Flr
Sacramento, CA 95814

Granite Bay Flycasters
Federation of Flyfishers
Spring Creek Guide Service
William Carnazzo
5209 Crestline Drive
Foresthill, CA 95631

Horseshoe Bar Fish & Game Preserve
Foothills Angler Coalition
Thomas Bartos, President
7430 Mornigside Dr.
Granite Bay, CA 95746

Foothills Water Network
Julie Leimbach, Coordinator
PO Box 713
Lotus, CA 95651-0713

Individual
Hilde Schweitzer
P. O. Box 852
Lotus, CA 95651

Upper American River Foundation
John Donovan
741 Commons Dr.
Sacramento, CA 95825

KMT&G – Wells Fargo Center
Janet Goldsmith
400 Capitol Mall, 27th Floor
Sacramento, CA 94814-4417

FERC Service List (continued)

Pacific Gas and Electric Company
Alyssa Koo
Attorney
77 Beale Street, #B30A
San Francisco, CA 94105

Pacific Gas and Electric Company
Paul Maben
Supervising Program Manager
1108 Murphy's Grade Road
Angels Camp, CA 95222

Pacific Gas and Electric Company
Mark Patrizio
Attorney
P.O. Box 7442
San Francisco, CA 94120

Pacific Gas and Electric Company
Jennifer Abrams
Attorney
77 Beale Street, #B30A
San Francisco, CA 94105

Placer County Water Agency
David A. Breninger
General Manager
P.O. Box 6570
Auburn, CA 95604-6570

Placer County Water Agency
Board of Directors
Chairman
P.O. Box 6570
Auburn, CA 95604

Placer County Water Agency
Jay L'Estrange
Director of Power Generation Services
P.O. Box 667
Foresthill, CA 95631-0667

Protect American River Canyons
Gary Estes, Board Member
4135 Eagles Nest
Auburn, CA 95603

Sackheim Consulting
Kelly Sackheim, Principal
5096 Cocoa Palm Way
Fair Oaks, CA 95628-5159

Spiegel & McDiarmid LLP
William Huang
1333 New Hampshire Ave., NW
Washington, DC 20036

Spiegel & McDiarmid LLP
Margaret McGoldrick
1333 New Hampshire Ave., NW
Washington, DC 20036

Trout Unlimited
Brian J. Johnson, Staff Attorney
2239 5th St.
Berkeley, CA 94710

USDA-FS, El Dorado National Forest
Beth Paulson
Hydro Coordinator
100 Forni Rd
Placerville, CA 95667

USDA-Office of the General Counsel
Joshua S. Rider
33 New Montgomery, 17th Flr
San Francisco, CA 94105

Other Interveners

US Department of Commerce
Richard Wantuck
National Oceanic and Atmospheric Administration
NMFS –Santa Rosa Area Office
777 Sonoma Avenue, Room 325
Santa Rosa, CA 95404-4731

US Department of Commerce
Kathryn Kempton, Office of General Counsel
National Oceanic and Atmospheric Administration
NMFS –SW Regional Office
501 W. Ocean Blvd., Suite 4470
Long Beach, CA 90802

Upper American River Foundation
Bill Templin
5125 Linda Lou Drive
Carmichael, CA 95608

Others

Deputy Chief
National Forest Systems, Forest Service
Washington Office (WO), Lands Staff
1621 N. Kent Street, Room No. RPC7
Rosslyn VA 22209

Federal Government/Representatives

National Marine Fisheries Service
Habitat Manager
777 Sonoma Avenue, Rm. 325
Santa Rosa, CA 95404

National Oceanic & Atmospheric Adminstration – Fisheries
Jeff McLain
Acting Central Valley Supervisor
650 Capitol Mall, Suite 8300
Sacramento, CA 95814

Federal Energy Regulatory Commission
Office of Energy Products
888 First St., NE
Room 61-02
Washington, DC 20426

Federal Energy Regulatory Commission
Office of General Counsel-Energy Projects
888 First St., NE
Room 101-56
Washington, DC 20426

Federal Energy Regulatory Commission
Dr. Frank A. Winchell
Archaeologist, 888 First St, NE
Routing Code PJ-14.6/Room 61-10
Washington, DC 20426

FERC Office of Energy Projects
Wing Lee
Acting Director
100 1st St, Suite 2300
San Francisco, CA 94103

US Bureau of Land Management
James Michael Eicher
Associate Field Manager
5152 Hillsdale Circle
El Dorado Hills, CA 95762

US Bureau of Land Management
William Haigh
Office/Field Manager
5152 Hillsdale Circle
El Dorado Hills, CA 95672|

US Bureau of Reclamation
Peggi Brooks
Chief Recreation Resources Division
Central California Area Officer
7794 Folsom Dam Road
Folsom, CA 95630-1799

US Bureau of Reclamation
Elizabeth (Beth) Dyer
Natural Resources Specialist
Central California Area Office
7794 Folsom Dam Rd
Folsom, CA 95630

US Bureau of Reclamation
Don Glaser
Regional Director, Mid-Pacific Region
2800 Cottage Way, MP-100
Sacramento, CA 95825-1846

US Bureau of Reclamation
Mike Finnegan
Central Area Office Manager
7794 Folsom Dam Road
Folsom, CA 95630

US Environmental Protection Agency
Region 9 (AZ, CA, HI, NV)
75 Hawthorne Street
San Francisco, CA 94105

USDA-FS, El Dorado National Forest
Dorit Buckley
Archeologist
Georgetown Ranger District
7600 Wentworth Springs Road
Georgetown, CA 95634

USDA-FS, El Dorado National Forest
Kathy Hardy
Forest Supervisor
100 Forni Road
Placerville, CA 95667

USDA-FS, El Dorado National Forest
Jon Jue
Resource Officer
7600 Wentworth Springs Rd
Georgetown, CA 95634

USDA-FS, El Dorado National Forest
Dawn Lipton
Wildlife Biologist
100 Forni Road
Placerville, CA 95667

USDA-FS, El Dorado National Forest
Lester Lubetkin
Recreation
100 Forni Road
Placerville, CA 95667

USDA-FS, El Dorado National Forest
Kim Morales
Hydrologist
100 Forni Road
Placerville, CA 95667

USDA-FS, El Dorado National Forest
Katy Parr
Heritage & Tribal Program Manager
100 Forni Road
Placerville, CA 95667

Federal Government/Representatives (continued)

USDA-FS, El Dorado National Forest
Patricia Trimble
District Ranger
Georgetown Ranger District
7600 Wentworth Springs Road
Georgetown, CA 95634

USDA-FS, El Dorado National Forest
Jann Williams
Biologist
100 Forni Road
Placerville, CA 95667

USDA – Natural Resources Conservation
Mike Brenner
District Conservationist
251 Auburn Ravine Road
Auburn, CA 95603

USDA-FS – Region 5 – Regional
Dennis Smith, RHAT Program Manager
Regional Hydropower Assistance Team (RHAT)
Pacific Southwest Region
1323 Club Drive
Vallejo, CA 94592

USDA-FS – Sierra Nevada Research Ctr
Amy Lind
Wildlife Biologist/Herpetologist
1731 Research Park Drive
Davis, CA 95618

USDA-FS, Tahoe National Forest
William Davis
Landscape Architect
22830 Foresthill Road
Foresthill, CA 95631

USDA-FS, Tahoe National Forest
Chris Fischer, District Ranger
American River Ranger District
22830 Foresthill Road
Foresthill, CA 95631

USDA-FS, Tahoe National Forest
Victor Lyon
Wildlife Biologist
22830 Foresthill Road
Foresthill, CA 95631

USDA-FS, Tahoe National Forest
Tom Quinn
Forest Supervisor
631 Coyote St.
Nevada City, CA 95959-2250

USDA-FS, Tahoe National Forest
Carrie Smith
Heritage Program Manager
Tribal Relations Program Manager
10811 Stockcrest Spring Dr
Truckee, CA 96161

USDA-FS, Tahoe National Forest
Nolan Smith
District Archeologist
22830 Foresthill Road
Foresthill, CA 95631

USDA-FS, Tahoe National Forest
Dan Teater
Fisheries Biologist
22830 Foresthill Road
Foresthill, CA 95631

USDA-FS, Tahoe National Forest
Mo Tebbe
Public Service Officer
22830 Foresthill Road
Foresthill, CA 95631

US Fish & Wildlife Service
Jeremiah Karuzas
Fish and Wildlife Biologist
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

US Senate
Barbara Boxer
501 I Street, Suite 7-600
Sacramento, CA 95814

US Senate
Dianne Feinstein
One Post Street, Suite 2450
San Francisco, CA 94104

US House of Representatives
Tom McClintock
508 Cannon HOB
Washington, DC 20515

State Government/Representatives

Auburn Area Recreation & Park District
Kahl Muscott
123 Recreation Drive
Auburn, CA 95603

California Department of Boating & Waterways
Sylvia Hunter
Chief, Boating & Waterways Local Assistance Program
2000 Evergreen Street, Suite 100
Sacramento, CA 95815-3888

California Department of Fish & Game
Robert Hughes
Senior Hydraulic Engineer
830 S Street
Sacramento, CA 95814

California Department of Fish & Game
Beth Lawson
Associate Hydraulic Engineer
1701 Nimbus Road
Rancho Cordova, CA 95670

California Department of Fish & Game
Sean Hoobler
Environmental Scientist
FERC Fisheries Biologist
1701 Nimbus Road, Suite A
Rancho Cordova, CA 95670

California Department of Fish & Game
Matt Myers
Environment Scientist
601 Locust Street
Redding, CA 96001

California State Parks
Bill Deitchman
California State Park Ranger
501 El Dorado St
Auburn, CA 95603

California State Parks – ASRA
Mike Lynch, Acting Superintendent
501 El Dorado St.
Auburn, CA 95603

California State Parks – Folsom State Park
Jim Micheaels
Recreation Area
7806 Folsom Auburn Road
Folsom, CA 95630

State Water Resources Control Board
Jennifer Watts
Division of Water Rights
P.O. Box 2000
Sacramento, CA 95812-2000

Department of Parks and Recreations
Carol Rowland-Nawi
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd St, Suite 100
Sacramento, CA 95816

Department of Water Resources
Ted Frink
P.O. Box 942836
Sacramento, CA 94236-0001

State of Califonia
Sharon Tapia
Department of Water Resources
Division of Safety of Dams
Chief, Design Branch
2200 X St., Suite 200
Sacramento, CA 95818

State of California
Jeff Kuhl
Department of Water Resources
Division of Safety of Dams
Design Engineering Branch
2200 X St., Suite 200
Sacramento, CA 95818

CA State Senator
Ted Gaines
State Capitol Office
Room 2068
Sacramento, CA 94248-0001

CA State Assemblywoman
Beth Gaines
1700 Eureka Road, Suite 160
Roseville, CA 95661

State Clearinghouse
1400 Tenth Street
Sacramento, CA 95814

Local Government

City of Auburn
Robert Richardson
City Manager
1225 Lincoln Way
Auburn, CA 95603

City of Colfax
Bruce Kranz
City Manager
P.O. Box 702
Colfax, CA 95713

City of Lincoln
Jim Estep
City Manager
600 6th Street
Lincoln, CA 95648

City of Roseville
Ray Kerridge
City Manager
311 Vernon Street,
Roseville, CA 95678

County of Placer
Brett Storey
County Executive Office
175 Fulweiler Ave
Auburn, CA 95603

County of Placer
Eric Waidmann
Assistant Treasurer–Tax Collector
2976 Richardson Drive
Auburn, CA 95603

El Dorado Board of Supervisors
Suzanne Allen de Sanchez
Clerk to the Board
330 Fair Ln
Placerville, CA 95667

El Dorado County Library
345 Fair Lane Drive
Placerville, CA 95667

Foresthill Municipal Advisory Council
Larry Jordan
P.O. Box 207
Foresthill, CA 95631

Placer County
Holly Heinzen
Assistance County Executive Officer
175 Fulweiler Avenue
Auburn, CA 95603

Placer County Board of Supervisors
Jocelyn Maddux, Field Rep. District 5
175 Fulweiler Avenue
Auburn, California 95603

Placer County Counsel's Office
Scott Finley
Supervising Deputy County Counsel
175 Fulweiler Avenue
Auburn, California 95603

Placer County Library
350 Nevada Street
Auburn, CA 95603

Town of Loomis
Rick Angelocci
City Manager
6140 Horseshoe Bar Road, Suite K
Loomis, CA 95650

Public Agency

El Dorado County Water Agency
Dave Eggerton
General Manager
3932 Ponderosa Road, Suite 200
Shingle Springs, CA 95682

El Dorado County Water Agency
Tracey Eden-Bishop, P.E.
Water Resources Engineer
3932 Ponderosa Road, Suite 200
Shingle Springs, CA 95682

El Dorado Irrigation District
Brian Deason
Hydroelectric Compliance Analyst
2890 Mosquito Road
Placerville, CA 95667

Foresthill Public Utility District
Tamra West
Director
P.O. Box 266
Foresthill, CA 95631

Georgetown Divide Public Utility District
Henry White
General Manager
P.O. Box 4240
Georgetown, CA 95634

Nevada Irrigation District
Timothy Crough
Interim General Manager
1036 West Main St
Grass Valley, CA 95945-1019

Placer County Resource Conservation District
Tom Wehri
Board President
251 Auburn Ravine Road, Ste 105
Auburn, CA 95603

San Juan Water District
Shauna Lorance
General Manager
9935 Auburn-Folsom Road
Granite Bay, CA 95746

Native American Tribes

Colfax–Todds Valley Consolidated Tribe
Leon Poitras
3420 Rattlesnake Rd
Newcastle, CA 95658

Colfax–Todds Valley Consolidated Tribe
Pam Cubbler
Chair
P.O. Box 4884
Auburn, CA 95604-4884

Colfax-Todds Valley Consolidated Tribe
Judy Marks, Secretary
P.O. Box 4884
Auburn, CA 95604

Nisenan Maidu
April Moore
19630 Placer Hills Rd
Colfax, CA 95713

Shingle Springs Rancheria
Nicolas Fonseca
Chair
P.O Box 1340
Shingle Springs, CA 95682

Shingle Springs Rancheria
Jeff Murray
P.O.Box 1340
Shingle Springs, CA 95682

T'Si–Akim Maidu
Donald Ryberg
Chair
1275 E Main Street
Grass Valley, CA 95945

Todds Valley Miwok-Maidu Cultural Foundation
Keith Drone
Cultural Preservation Chair
P.O. Box 1490
Foresthill, CA 95631

United Auburn Indian Community Preservation Committee
Allen Adams
10720 Indian Hill Rd
Auburn, CA 95603

United Auburn Indian Community of the Auburn Rancheria
Marcos Guerrero, M.A., RPA
Cultural Resources Specialist
10720 Indian Hill Rd
Auburn, CA 95603

United Auburn Indian Community of the Auburn Rancheria
David Keyser
Tribal Chairperson
10720 Indian Hill Rd
Auburn, CA 95603

United Auburn Indian Community of the Auburn Rancheria
Roman Porter
Tribal Administrator
10720 Indian Hill Rd
Auburn, CA 95603

United Auburn Indian Community Preservation Committee
Sande Delgado
10720 Indian Hill Rd
Auburn, CA 95603

United Auburn Indian Community Preservation Committee
John L. Williams
10720 Indian Hill Rd
Auburn, CA 95603

Washoe Tribe of Nevada & California
Marie Barry
Environmental Specialist
919 Highway 395 South
Gardnerville, NV 89410

Washoe Tribe of Nevada & California
Wanda Batchelor
Chairwoman
919 US Highway 395 South
Gardnerville, NV 89410

Washoe Tribe of Nevada & California
Darrel Cruz
CRO/THPO
919 US Highway 395 South
Gardnerville, NV 89410

Washoe Tribe of Nevada and California
Lloyd Wyatt- Vice-Chairman
919 Highway 395
Gardnerville, NV 89410

Non-Governmental Organizations

American River Recreation Association & Sierra Nevada Alliance
Bill Center
P.O. Box 623
Lotus, CA 95651

Auburn Chamber of Commerce
Bruce Cosgrove, CEO
601 Lincoln Way
Auburn, CA 95603

Auburn Chamber of Commerce
Rich Johnson
Government Affairs Committee
601 Lincoln Way
Auburn, CA 95603

Auburn Flycasters
Grant Fraser
President
P.O. Box 0756
Auburn, CA 95604

Auburn Flycasters
Granite Bay Flycasters
Larry Goodell
P.O. Box 756
Auburn, CA 95604

Audubon Society
Don Rivenes
12826 Newtown Road
Nevada City, CA 95959

California Hydropower Reform Coalition
Laura Norlander
2140 Shattuck Ave., Suite 605
Berkeley, CA 94704

California Native Plant Society
Sue Britting
P.O. Box 377
Coloma, CA 95613

Canyon Keepers
Jim Ferris
501 El Dorado St
Auburn, CA 95603

Dry Creek Conservancy
Greg Bates
P.O. Box 1311
Roseville, CA 95678

Farm Bureau, Placer County
Jim Bachman
10120 Ophir Road
Newcastle, CA 95658

Friends of the North Fork
Michael Garabedian
7143 Gardenvine Avenue
Citrus Heights, CA 95621

Friends of the River
Ron Stork
915 20th St
Sacramento, CA 95814

Granite Bay Flycasters
Heath Wakelee
4120 Douglas Blvd. #306-356
Granite Bay, CA 95746-5936

Pacific Gas & Electric
Dave Ward
343 Sacramento Street
Auburn, CA 95603

Pacific Gas & Electric
Dave Hinshaw
PG&E Account Executive
343 Sacramento Street
Auburn, CA 95603

Pacific Gas & Electric
Steve Pierano
Relicensing Project Manager
Mail Code N11E
P.O. Box 70000
San Francisco, CA 94177-0001

Protect American River Canyons
Eric Peach
P.O. Box 9312
Auburn, CA 95604

Sacramento Municipal Utility District
David Hanson
Project Manager, Hydro Relicensing
6201 S St
Sacramento, CA 95817

Sacramento Municipal Utility District
Dudley McFadden
Principal Civil Engineer
P.O. Box 15830
Sacramento, CA 95817

Non-Governmental Organizations (continued)

Sacramento Municipal Utility District
Jim Shetler
Assistant General Manager, Energy Supply
6201 S St,
Sacramento, CA 95817

Sacramento Municipal Utility District
Carol Szuch
Management Analyst
6201 S Street
Sacramento, CA 95817

Sierra Club – Mother Lode Chapter
Terry Davis
801 K Street, Suite 2700
Sacramento, CA 95814

Sierra Club – Mother Lode Chapter
Allan Eberhart
801 K Street, Suite 2700
Sacramento, CA 95814

Sierra Club – Placer Group
Marilyn Jasper
P.O. Box 7167
Auburn, CA 95604-7167

Sierra Salmon Alliance
Tyrone Gorre
1700 Meadow Vista Road
Meadow Vista, CA 95722

SARSAS
Jack Sanchez
3675 Larkin Lane
Auburn, CA 95602

Western States Endurance Run
Anthony Rossmann
Rossmann & Moore, LLP
380 Hayes Street
San Francisco, CA 94102

Western States Trail Foundation
Thomas Christofk
1216-C High Street
Auburn, CA 95603

Western States Trail Foundation
Steve Hallmark
7845 Jeannie Ct.
Loomis, CA 95650

Western States Trail Foundation
Mike Pickett
1216-C High Street
Auburn, CA 95603

West Yost
Max Colorado
1380 Lead Hill Road, Suite 201
Roseville, CA 95661

Public

Advanced Energy Strategies
Dean Tibbs
1800 Sutter Street, Suite 870
Concord, CA 94520-2540

Cramer Fish Sciences
Bradley J. Cavallo
13300 New Airport Road, Suite 102
Auburn, CA 95602

Foresthill Messenger
Jim Linsdau
P.O. Box 1024
Foresthill, CA 95631

Jones & Associates
Tom Jones
12331 Incline Drive
Auburn, CA 95603

Lone Star Timber
Larry Gonzales
Mason, Bruce, & Girard, Inc.
13620 Lincoln Way, Suite 380
Auburn, CA 95603

Sierra Pacific Industries
Tim Feller
P.O. Box 496028
Redding, CA 96049-6028

Stoel Rives, Attorney at Law
Attn: Denise Morison
770 L Street, Suite 800
Sacramento, CA 95814

Roger Canfield
7818 Olympic Way
Fair Oaks, CA 95628

Neil Cochran
5344 Crestline Drive
Foresthill, CA 95631

Anthony DeRiggi
932 46th Street
Sacramento, CA 95819

Charlie Fullerton
135 Mering Court
Sacramento, CA 95864

John Greene
P.O. Box 465
Meadow Vista, CA 95722

Donna Williams
4170 Auburn Folsom Road
Loomis, CA 95650

Canyon Raft Rentals
John Hauschild
133 Borland Avenue
Auburn, CA 95603

Dunlap Group
John Dunlap
231 Cherry Avenue, Suite 202
Auburn, CA 95603

FROG
Sherry Wicks
P.O. Box 568
Foresthill, CA 95631

Leupp & Woodall
Tim Woodall
149 Court Street
Auburn, CA 95603

Northern CA Council/Fed of Fly Fishers
Gary Flanagan
8459 Lakeland Drive
Granite Bay, CA 95746

Spiegel & McDiarmid LLP
Frances Francis
1333 New Hampshire Ave., NW
Washington, DC 20036

Troutman Sanders LLP
Clifford Sikora
401 Ninth St., NW, Suite 1000
Washington D.C. 20004-2134

Bob Center
10794 Arrow Point Place
Grass Valley, CA 95959

Dan Crandall
P.O. Box 828
Lotus, CA 95651

Craig Crouch
5307 Hawkhaven Court
Rocklin, CA 95765

Patricia Gibbs
5425 Lake Forest Dr
Loomis, CA 95650

Chris Shackleton
2359 Sonata Drive
Rancho Cordova, CA 95670

Placer County Water Agency
Middle Fork American River Project
(FERC Project No. 2079-069)

Draft CEQA Supplement

Placer County Water Agency
P.O. Box 6570
Auburn, CA 95604

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1.0 INTRODUCTION

Placer County Water Agency (PCWA) owns and operates the Middle Fork American River Project (MFP or Project). The MFP (Project No. 2079) currently operates under a 50-year license that was issued on March 13, 1963 by the Federal Power Commission, predecessor of the current Federal Energy Regulatory Commission (FERC or Commission). The existing license expires February 28, 2013 and PCWA is seeking renewal of its license to continue operation and maintenance of the MFP using FERC's Integrated Licensing Process.

On July 23, 2012, FERC issued the *Draft Environmental Impact Statement for Hydropower License, Middle Fork American River Hydroelectric Project—FERC Project No. 2079-069, California* (DEIS) (FERC 2012). The DEIS was prepared in compliance with the National Environmental Policy Act (NEPA) of 1969, as amended. Compliance with NEPA must be demonstrated prior to FERC undertaking a federal action, including issuance of a new license to PCWA for continued operation and maintenance of the MFP.

Similarly, compliance with the California Environmental Quality Act (CEQA) is necessary to support the future discretionary action of PCWA's Board of Directors to accept the new license issued by FERC. When a project action requires compliance with both CEQA and NEPA, state and local agencies are encouraged to use the NEPA document rather than preparing an independent CEQA document.[1] However, if the NEPA document does not fully meet all the requirements of CEQA, those points of analysis missing from the NEPA document must be added, supplemented, or identified.[2] Therefore, PCWA, acting as the CEQA lead agency, has prepared this Draft CEQA Supplement to augment the analysis in FERC's NEPA document. An overview of integration of the NEPA and CEQA processes for the relicensing of the MFP is provided in Figure 1.

The CEQA process was initiated by PCWA with two public scoping meetings held on March 4, 2008. On August 10, 2012, PCWA provided notice of its intention to rely on FERC's DEIS, in combination with a supplemental analysis, to meet the requirements of CEQA. This Draft CEQA Supplement was issued by PCWA for public review and comment in December 2012.

As a responsible agency to this CEQA process, the State Water Resources Control Board (State Water Board) may use the CEQA document to support issuance of a Water Quality Certification under Section 401 of the Clean Water Act for the MFP. Following distribution of the Draft CEQA Supplement, the State Water Board will issue a Draft 401 Water Quality Certification for public review and comment. FERC will incorporate conditions in the Draft 401 Certification into its NEPA analysis and address comments received on the DEIS prior to issuing a Final EIS (FEIS). After completion of the FEIS by FERC, PCWA will distribute a PCWA Board-approved Final CEQA Supplement, incorporating any necessary revisions to its supplemental analysis based

1. CEQA Guidelines, California Code of Regulations, Title 14 § 15221(a).
2. CEQA Guidelines, California Code of Regulations, Title 14 § 15221(b).

on conditions included in the Draft 401 Water Quality Certification, comments received on the Draft CEQA Supplement, and any changes in the environmental analysis incorporated into the FEIS. After issuance of the Final CEQA Supplement, PCWA's Board of Directors will issue a Notice of Determination completing the CEQA process. The State Water Board will subsequently issue its Final 401 Water Quality Certification for the MFP. FERC will incorporate the Final 401 Certification into the new license for the MFP and issue the license to PCWA.

2.0 ORGANIZATION OF DOCUMENT

The Draft CEQA Supplement is organized into the following sections:

Section 1.0 Introduction

Section 2.0 Organization of Document

Section 3.0 Project Background and Description

Section 4.0 Use of FERC's DEIS

Section 5.0 Alternatives Considered

Section 6.0 Environmental Analysis

Section 7.0 Other CEQA Considerations

Section 8.0 Summary of Level of Significance

Section 9.0 Mitigation Measures

Section 10.0 Permits

Section 11.0 Circulation of PCWA's Draft CEQA Supplement

Section 12.0 Literature Cited

3.0 PROJECT BACKGROUND AND DESCRIPTION

3.1 PROJECT BACKGROUND

Currently, PCWA operates the MFP under a 50-year license which expires on February 28, 2013. The MFP serves as a multi-purpose water supply and hydro-generation project designed to conserve and control waters of the Middle Fork American River, the Rubicon River, and several associated tributary streams. The MFP is located on the west slope of the Sierra Nevada range primarily in Placer County, California (Map 1). A small component of the MFP (a portion of Ralston Afterbay Dam) is located in El Dorado County, California. The MFP is almost entirely in the Tahoe and Eldorado National Forests, with a portion located on PCWA-owned or private land. The MFP seasonally stores and releases water to meet consumptive demands within western

Placer County and to generate power for the California electrical grid. Water for hydroelectric generation and consumptive use is diverted and stored under permits and licenses issued by the State Water Board. The MFP, which began operation in 1967, includes two major storage reservoirs (French Meadows and Hell Hole, that have a combined capacity of approximately 342,000 acre feet [AF]), five smaller regulating reservoirs and diversion pools, and five powerhouses (combined capacity of approximately 224 megawatts [MW]).

PCWA is seeking renewal of its license to continue operation and maintenance of the MFP using FERC's Integrated Licensing Process. To formally initiate the MFP relicensing process, PCWA filed its Notice of Intent (NOI) to seek a new license and Pre-Application Document with FERC on December 13, 2007. On September 28, 2010, PCWA filed its Draft License Application for the MFP. Following a 90-day review and comment period, PCWA revised the Draft License Application and filed its Final License Application on February 23, 2011. As a result of further stakeholder negotiation and additional information becoming available, PCWA submitted a Supplemental Filing on November 30, 2011.

During the relicensing process, PCWA collaborated with state and federal resource agencies, Native American Tribes, non-governmental organizations, and members of the public (relicensing participants) to develop proposed new license conditions. To date, over 280 public meetings have been conducted with relicensing participants on various resources. In addition, PCWA has conducted countless hours of data collection and analysis, and extensive modeling and research. The FERC Staff Alternative, in combination with resource agency preliminary terms and conditions, reflects the collaborative efforts and consensus reached between MFP relicensing participants.

3.2 PROJECT DESCRIPTION

Compliance with CEQA is necessary to support the future discretionary action of PCWA's Board of Directors, which is acceptance of the new license issued by FERC for the continued operation and maintenance of the MFP. The project under consideration in this Draft CEQA Supplement is PCWA's operation and maintenance of the MFP under the new license conditions identified in FERC's Staff Alternative.

The new license conditions are described in FERC's DEIS (Section 2.0, Proposed Action and Alternatives). Key components include:

- Changes in Project operations
    - Higher minimum instream flow releases in the bypass and peaking reaches
    - Spring pulse flows in the bypass reaches
    - Down ramp of spill flows from May-July below Hell Hole and French Meadows reservoirs

  - Slower ramping rates and modified winter operations at Oxbow Powerhouse in the peaking reach
  - Consultation with representatives for the Tevis Cup and Western States 100 to identify and provide flows suitable for adequate trail crossing conditions (when flows are controllable by the MFP)
  - Scheduled recreational flow releases in the peaking reach
  - Modified minimum reservoir pool requirements in Hell Hole and French Meadows reservoirs
- Construction of new or modification of existing Project facilities
  - Installation of 6-foot gates on Hell Hole Reservoir Spillway
  - Small diversion dam modifications
  - Dam outlet works upgrades
  - New gages and access trails
- Enhancement of existing Project recreation facilities and features
- Construction of new Project recreation facilities and features
- Modification of routine Project maintenance activities
  - Vegetation and noxious weed management
  - Pest management
  - Sediment and large woody debris management
  - Power pole replacement/retrofit
  - Road and trail maintenance
  - Recreation facility maintenance
- New environmental programs and measures designed to protect, maintain, or enhance environmental and cultural resources
  - Foothill Yellow-legged Frog Monitoring Plan
  - Geomorphology/Riparian Monitoring Plan
  - Sediment Management Plan

- Water Temperature Monitoring Plan
- Western Pond Turtle Monitoring Plan
- Water Quality Monitoring Plan
- Mercury Bioaccumulation Monitoring Plan
- Benthic Macroinvertebrate Monitoring Plan
- Fish Population Monitoring Plan
- Spawning Habitat Improvement below Ralston Afterbay
- Streamflow and Reservoir Elevation Gaging Plan
- Historic Properties Management Plan
- Transportation System Management Plan
- Fire Prevention and Suppression Plan
- Recreation Plan
- Visual Resource Management Plan
- Vegetation and Integrated Pest Management Plan
- Bald Eagle Management Plan

The new license conditions were developed to ensure that the Project, as licensed, in the judgment of the Commission, "be best adapted to a comprehensive plan for improving or developing the water for beneficial public purposes." The new license conditions are also consistent with the beneficial uses defined in the State Water Board's Basin Plan. Specifically, the new license conditions protect and enhance environmental, recreational, and cultural resources; maintain PCWA's current and future consumptive water supply; enhance the MFP capability and reliability; and minimize generation loss. An overview of the resulting benefits of implementation of the new license conditions is provided in Figure 2.

4.0 USE OF FERC'S DEIS

FERC distributed and noticed the availability of the DEIS for the MFP on July 23, 2012. According to the CEQA Guidelines, where the federal agency circulated the EIS as broadly as state or local law requires and gave notice that meets California requirements, the CEQA lead agency may use the EIS without recirculation.[3] Further,

3. CEQA Guidelines, California Code of Regulations, Title 14 § 15225(a).

prior to using the EIS in this situation, the lead agency shall give notice that it will use the EIS in place of an Environmental Impact Report (EIR).[4]

To ensure compliance with the CEQA Guidelines, PCWA completed the following actions:

- Solicited scoping comments and conducted public scoping meetings on March 4, 2008;
- Published a notice in the Auburn Journal and Mountain Democrat on August 15, 2012;
- Submitted a notice and copies of the DEIS to the California State Clearinghouse on August 10, 2012;
- Posted notices in the office of Placer County Clerk (August 10, 2012) and El Dorado County Clerk (August 14, 2012);
- Distributed notices to Relicensing Participants and FERC on August 10, 2012; and
- Made copies of FERC's DEIS available for public review at PCWA's Auburn office, Placer County Library, El Dorado County Library, and on PCWA's website.

Appendix A provides documentation related to the circulation of FERC's DEIS and PCWA's notice of its intention to rely on FERC's DEIS, in combination with a supplemental analysis, to meet the requirements of CEQA.

4.1 COMMENTS RECEIVED ON FERC'S DEIS

The formal public review period on FERC's DEIS ended on October 2, 2012. During the comment period, FERC conducted two public meetings (daytime and evening) on August 28, 2012 in Auburn, California for the purpose of receiving verbal and/or written comments on the DEIS. Prior to the close of the comment period, ten written comment letters were submitted to FERC on the DEIS, including one from PCWA. Commenting parties included resource agencies, non-governmental organizations, and members of the public. In addition, PCWA directly received one comment letter as a result of State Clearinghouse's distribution.

This Draft CEQA Supplement addresses comments related to the adequacy of the environmental analysis received from U.S. Environmental Protection Agency (EPA) and State Water Board. PCWA believes that FERC can easily respond to these comments by utilizing information/analysis previously filed by PCWA with FERC during the MFP relicensing proceeding and new information provided in this Draft CEQA Supplement. On November 1, 2012, PCWA filed a letter with FERC that identified the location of the information/analysis requested by commenting agencies (Appendix B). To address the

4. Ibid.

comments, PCWA recommended that FERC either directly incorporate the referenced information/analysis in Appendix B – Table 1 into the FEIS or incorporate the information/analysis by reference.

This Draft CEQA Supplement hereby incorporates by reference the additional information/analysis previously filed by PCWA with FERC (Appendix B – Table 1). The environmental analyses completed in Section 6.0 and 7.0 of this document considers this additional information/analysis when determining project impacts.

5.0 ALTERNATIVES CONSIDERED

FERC's DEIS evaluated the following alternatives: (1) No-Action Alternative; (2) PCWA's Proposed Action, as outlined in its Final License Application (PCWA 2011a); (3) PCWA's Proposed Action with FERC staff modifications (Staff Alternative); and (4) Alternative 1, as outlined in PCWA's Supplemental Filing (PCWA 2011b). The DEIS selected the Staff Alternative as the preferred option. The Draft CEQA Supplement analyzes the new license conditions included in the Staff Alternative.

Alternatives that were considered in FERC's DEIS but eliminated from detailed analysis included: (1) issuing a non-power license; (2) federal government takeover of the project; and (3) retiring the project. The alternatives analysis is described in the FERC's DEIS (Section 2.0, Proposed Action and Alternatives).

6.0 ENVIRONMENTAL ANALYSIS

Pursuant to CEQA Guidelines, the scope of the environmental analysis in this Draft CEQA Supplement is intended to augment the analysis completed in FERC's DEIS by accomplishing the following activities:

- Evaluate resource areas requiring additional analysis under CEQA (Sections 6.1 and 6.2);
- Evaluate other CEQA considerations, including growth-inducing effects, significant irreversible environmental effects, and cumulative effects considering additional information/analysis refererenced or provided in this document;
- Provide a determination of the level of significance of impacts under CEQA (Section 8.0); and
- Identify mitigation measures necessary to offset or reduce impacts to a less-than-significant level (Section 9.0).

The following provides the additional environmental analysis required under CEQA.

6.1 ADDITIONAL ENVIRONMENTAL ANALYSIS REQUIRED UNDER CEQA

The following environmental resource areas were analyzed in FERC's DEIS, but require additional analysis to satisfy CEQA:

- Aesthetics;
- Biological Resources (Aquatic and Terrestrial);
- Cultural Resources;
- Geology and Soils;
- Hazards and Hazardous Materials;
- Hydrology and Water Quality;
- Land Use and Planning;
- Noise;
- Recreation;
- Transportation and Traffic; and
- Utilities and Service Systems.

Specifically, the DEIS did not adequately evaluate Project impacts under CEQA from:

- Construction of new or modification of existing Project facilities;
- Construction or enhancement of Project recreation facilities; and
- Modification of small diversions.

A complete analysis of these impacts (sufficient to fulfill the requirements of CEQA) was previously completed by PCWA and filed with FERC as part of the MFP relicensing proceeding (Table 1). This Draft CEQA Supplement hereby incorporates by reference this analysis.

Six resource areas were not analyzed in FERC's DEIS including:

- Agriculture and Forest Resources;
- Air Quality;
- Greenhouse Gas Emissions;
- Mineral Resources;
- Population and Housing; and
- Public Services.

These resource areas are analyzed in Section 6.2.

6.2 EVALUATION OF ENVIRONMENTAL IMPACTS

The following impact assessment compares MFP operation and maintenance activities under the existing FERC license (referred to as the No-Action Alternative in FERC's DEIS) with MFP operation and maintenance activities under the new license conditions.

6.2.1 Agriculture and Forest Resources

This section describes potential impacts of implementation of new license conditions on agriculture and forest resources. The section describes the environmental setting and CEQA thresholds of significance; identifies environmental impacts; and makes a determination as to the level of significance of each impact.

Environmental Setting

Agriculture has been an integral part of Placer County for more than 150 years. A combination of favorable climate and soils, availability of water, proximity to a transcontinental transportation network, and other factors have all contributed to the importance of this sector. While the dependence on agriculture within the County has declined over time, Placer County has remained committed to maintaining agricultural land for commercial and non-commercial uses. The goal of the Placer County General Plan is to "designate adequate agricultural land and promote development of agricultural uses to support the continued viability of Placer County's agricultural economy" (Placer County 1994).

According to the Placer County General Plan, all MFP facilities are located on lands designated as "Timberland". This designation is applied to mountainous areas where the primary land uses relate to the growing and harvesting of timber and other forest products (together with limited, low-intensity public and commercial recreational uses). Necessary public utility facilities are an allowed use on lands designated as timberland.

Land use within the FERC Project boundary is focused on hydropower generation and recreation. Land use adjacent to the FERC Project boundary is managed mainly for recreation, timber harvest, grazing, natural resource protection, and to a lesser extent mining. There are no agricultural operations within, or adjacent to, the FERC Project boundary.

Surface water stored by the MFP is released for consumptive and non-consumptive uses in accordance with existing water rights and water supply agreements. The largest consumptive uses of water from the MFP include municipal and domestic water supply and irrigation for agricultural crops within western Placer County. The largest non-consumptive uses include hydroelectric power generation, recreation use, and instream flow releases for aquatic and wildlife resources.

Thresholds of Significance

According to CEQA Guidelines, Appendix G – Environmental Checklist, to determine whether impacts to agriculture and forest resources are significant environmental effects, the following questions are analyzed and evaluated:

Would the project:

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

d) Result in the loss of forest land or conversion of forest land to non-forest use?

e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

Environmental Impacts

Implementation of the new license conditions will not result in the loss or conversion of prime farmland, unique farmland, farmland of statewide importance, or forest land to another land use. Further, implementation of new license conditions will not conflict with any existing agricultural use, forest land (timberland) zoning, or a Williamson Act contract.

Level of Significance

Implementation of the new license conditions will have no impact on agriculture and forest resources.

6.2.2 Air Quality

This section describes potential impacts of implementation of new license conditions on air quality. The section describes existing air quality; CEQA thresholds of significance; and the approach used to determine air quality impacts associated with construction activities, and routine maintenance and operation of the project. In addition, this section identifies environmental impacts (short- and long-term) and makes a determination as to the level of significance of each impact.

Environmental Setting

To better manage common and local air quality problems, California is divided into 15 air basins, each of which is associated with one or more Air Pollution Control District (APCD) or Air Quality Management District (AQMD) (also called air districts). The Placer County Air Pollution Control District (PCAPCD) is one of 35 local air districts established pursuant to Section 40002 of the California Health & Safety Code (CHSC). The District is a "county" district with its jurisdiction being the County of Placer extending from Lake Tahoe in the East, over the crest of the Sierra Nevada, to the Sacramento Valley in the West.

The PCAPCD is unique in that it crosses three distinct air basins: Sacramento Valley Air Basin (SVAB), Mountain Counties Air Basin (MCAB), and the Lake Tahoe Air Basin (LTAB). The SVAB, MCAB, and LTAB vary in the types and levels of air pollution. Each air basin is impacted not only by locally generated air pollution, but also by both naturally occurring and human generated air pollution from the San Francisco Bay Area and the Central Valley.

The MFP facilities are situated in the foothills and mountainous uplands of the western slope of the central Sierra Nevada, entirely within the MCAB. The MFP facilities are in areas that are heavily forested and sparsely populated. There are no residential or commercial developments in the immediate vicinity of the MFP. The nearest population center is Foresthill located approximately four miles west-northwest of Ralston Afterbay.

Climate and Meteorology

The general climate of the vicinity of the MFP varies considerably depending on elevation and proximity to the Sierra Nevada crest. The terrain in this area makes it possible for various microclimates to exist in relatively close proximity. The pattern of mountains and hills causes a wide variation in rainfall, air temperature, and winds across the western slope. Air temperature variations have an important influence on wind flow, dispersion along mountain ridges, vertical mixing, and photochemistry.

The Sierra Nevada receives large amounts of precipitation from storms moving in from the Pacific Ocean in the winter, with lighter amounts from intermittent "monsoonal" moisture flows from the south and cumulus buildup in the summer. Precipitation levels are greatest in the highest mountain elevations, but decline rapidly toward the western portion of the basin. Winter air temperatures in the western foothills usually dip below freezing only at night and precipitation is mixed as rain or light snow. In the summer, air temperatures in the western end of the County routinely exceed 100°F (degrees Fahrenheit).

From an air quality perspective, the varying topography and meteorology of the MCAB greatly influence the concentration of emissions in the basin. Regional air flows, affected by the mountains and hills direct surface air flows causing shallow vertical mixing that hinders dispersion and results in localized concentrations of pollutants.

Inversion layers, where warm air overlays cooler air, frequently occur and trap pollutants close to the ground. In the winter, these conditions can lead to carbon monoxide (CO) "hotspots" along heavily traveled roads and at busy intersections. The longer daylight hours, stagnant air, high air temperatures, and plentiful sunshine of summer provide the conditions and energy for the photochemical reaction between volatile organic compounds (VOC) and oxides of nitrogen (NO_x) that results in the formation of ozone (O_3).

In the summer, the strong upwind valley winds flowing into the basin from the Central Valley to the west is an effective transport medium for ozone precursors and ozone generated in the San Francisco Bay Area, Sacramento Valley, and San Joaquin Valley. These transported pollutants contribute to the sources of ambient ozone levels in the MCAB and are partly responsible for the exceedances of state and federal ozone ambient air quality standards (AAQS) (EDCAPCD 2002).

Ambient Air Quality Standards

Both the United States Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) have established AAQS for common pollutants (Table 2). The AAQS for each contaminant represent safe levels that avoid specific adverse health effects. Pollutants for which air quality standards have been established are called "criteria" pollutants. Criteria pollutants include ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$).

The federal and state AAQS differ in some cases. In general, California's AAQS are more stringent, particularly for ozone and particulate matter (PM_{10} and $PM_{2.5}$), than the federal AAQS (CARB 2012).

Attainment Status

The federal Clean Air Act (CAA) and the California CAA require all areas of California to be classified as attainment, nonattainment, or unclassified as to their status with regard to the federal and/or state AAQS. The State and air districts in California monitor air pollutant levels to assure that federal and state AAQS are met and, in the event that they are not, to develop strategies to meet these standards. Depending on whether the standards are met or exceeded, the local air basin is classified as being in "attainment" or "nonattainment", respectively. Where insufficient data exists to make a determination, an area is deemed "unclassified". Where a nonattainment area has achieved attainment or where an attainment area is at risk of becoming nonattainment, it can be classified as a "maintenance" area to initiate implementation of preventive measures.

As identified on Table 3, the portion of Placer County within the MCAB is designated nonattainment for the ozone 8-hour standard, and unclassified for other federal AAQS. In addition, the area is designated nonattainment for the state AAQS for ozone and PM_{10}, and attainment or unclassified for other pollutants (CARB 2011).

Thresholds of Significance

According to CEQA Guidelines, Appendix G – Environmental Checklist, to determine whether impacts to air quality are significant environmental effects, the following questions are analyzed and evaluated:

Would the project:

a) Conflict with or obstruct implementation of the applicable air quality plan?

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors)?

d) Expose sensitive receptors to substantial pollutant concentrations?

e) Create objectionable odors affecting a substantial number of people?

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Table 4 provides the applicable federal and local significance thresholds.

Environmental Impacts

Implementation of construction activities, and routine operation and maintenance of the MFP under the new license conditions has the potential to effect air quality. The following section first describes the analytical approach used to evaluate air quality impacts, followed by a summary of results and an impact determination under CEQA.

Construction Emissions Approach

Under the new license conditions, several construction projects will be implemented to improve operations and maintenance of the MFP, enhance environmental resources, and/or meet the requirements specified in new environmental programs and measures (Table 5). The projects include modifications to existing Project facilities, installation of new stream gages, and development of new Project recreation facilities/features.

Information in Appendix C presents, for each project, the estimated construction schedule, the proposed type of construction equipment needed, estimated construction-use hours or miles per day, and the number of days of anticipated use. To further refine the analysis, all engines were categorized into on-road and off-road applications. Off-road equipment was further defined by engine brake horsepower rating and on-road vehicles defined by light duty (LD), medium duty (MD), and heavy, heavy duty (HHD)

weight class. Equipment manufacturers' databases and marketing websites were used to identify the engine size for each piece of equipment.

Using this information, project-specific emissions were calculated using CARB's Emissions Factors (EMFAC) model and OFFROAD model, based on 40 CFR 86 et seq. and 40 CFR 89, respectively, as preprocessed by the South Coast Air Quality Management District (SCAQMD). The SCAQMD emission factors were used for this assessment because: (1) PCAPCD does not publish their own emission factors; (2) the SCAQMD emission factors are widely used for both federal and state projects; and (3) these factors represent the most conservative (worst-case) conditions for emission estimates.

The emission estimations incorporate other conservative assumptions to evaluate a reasonable worst-case scenario, including the following:

- Where equipment model numbers are not specific, the largest machine for the class was selected.
- Where a specific engine size for a particular machine could not be determined due to various options, the largest engine size available was selected.
- Because the timing of construction is not specific as to the exact year (Table 5), the analysis assumed a likely worst-case timing that produces the maximum annual emissions. This approach results in a conservative assumption that six projects will be constructed in Year 2 following license issuance, five projects in Year 3, one project in Year 5, one project in Year 9, and two projects in Year 14.

To evaluate the impact of construction projects under the new license on air quality, estimated emissions were compared to significance thresholds (federal and local) identified in Table 4.

Annual construction emissions (tons per year) were estimated for the following criteria pollutants:

- Volatile Organic Compounds (VOC as CH4);
- Carbon Monoxide (CO);
- Oxides of Nitrogen (NOx as NO2);
- Sulfur Dioxide (SOx as SO2);
- Combustion Particulates (C-PM10);
- Combustion Particulates (C-PM2.5);
- Fugitive Dust (F-PM10); and
- Fugitive Dust (F-PM2.5).

Construction Impacts

Project construction has the potential to temporarily affect air quality. Impacts to air quality will result from engine exhaust and fugitive dust emissions caused by operation of off-road construction equipment and on-road vehicles. A summary of construction equipment, construction duration, and emission calculations for each construction project is provided in Appendix C.

Table 6 summarizes the estimated annual construction emissions for criteria pollutants and fugitive dust and the corresponding federal and local thresholds. The estimates assume a worst-case timing that will produce the maximum annual emissions. As depicted, annual construction emissions under the new license conditions are well below all established thresholds for criteria pollutants.

Construction emissions will be temporary and intermittent, and will cease upon completion of projects. Emissions will also be dispersed over a large area that is sparsely populated. PCWA will comply with all applicable PCAPCD rules and regulations regarding construction emissions, including permitting of portable engines greater than 50 horsepower, and compliance with District Rule 228 for fugitive dust and Rule 202 for diesel smoke from engines. In addition, standard construction air quality control measures will be included in each project construction plan. Therefore, the environmental effects on air quality associated with construction activities implemented under the new license conditions are considered less than significant.

Operation and Maintenance Emissions Approach

To determine the impact to air quality from operation and maintenance activities under the new license, PCWA: (1) identified the additional staff necessary to implement the new license conditions; and (2) assessed the annual emissions associated with activities performed by the additional staff. It should be noted that any newly constructed facilities themselves are non-emitting; therefore, PCWA has only considered emissions associated with personnel conducting maintenance activities.

Operation and Maintenance Impacts

As of October 2009, PCWA had 179 full-time employees, of which 18 were assigned to the Power Division in support of the MFP administration, engineering, operations, and maintenance. Of the 18, 16 work from PCWA's Foresthill office while two reside year-round at the operator cottages located near Hell Hole Reservoir.

PCWA's workforce will increase by three full-time employees to implement the new license conditions over the term of the new license. These employees will work from offices in either Auburn or Foresthill. Traffic trips and emissions associated with this additional workforce will result in an increase in emissions; however, this small incremental increase is considered less than significant.

Level of Significance

Overall, implementation of new license conditions will not conflict with or obstruct any air quality plan; violate air quality standards or contribute substantially to air quality violations; result in a cumulatively considerable net increase of any criteria pollutants; expose sensitive receptors to substantial pollutant concentrations; or create objectionable odors affecting a substantial number of people. Implementation of the new license conditions will result in emissions, however, impacts are considered less than significant.

6.2.3 Greenhouse Gas Emissions

This section describes potential impacts of implementation of new license conditions on greenhouse gas emissions and the resulting effect on global climate change. This section describes the environmental setting and CEQA thresholds of significance; identifies environmental impacts from construction, maintenance, and operations activities; and makes a determination as to the level of significance of each impact.

Environmental Setting

Global climate change is the common nomenclature used to describe an increase in the average temperature of the Earth's atmosphere and oceans, and its projected continuation. The causes of global change have been linked to both natural processes and human actions. According to the Intergovernmental Panel on Climate Change (IPCC), increasing greenhouse gas (GHG) concentrations resulting from human activity, such as fossil fuel combustion and deforestation without adequate revegetation, have been largely responsible for human-induced global warming (IPCC 2007). Increases in the concentrations of GHGs in the atmosphere decrease the amount of solar radiation reflected back into space, intensifying the natural "greenhouse effect" and resulting in the increase of global average temperatures. The most common GHGs are carbon dioxide (CO_2) and water vapor, but there are also several others, including methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).

The potential heat trapping ability of each GHG varies substantially. To account for these differences in warming effect, GHGs are defined by their global warming potential (GWP). The GWP value for a GHG depends on the time span over which it is calculated and on how the gas concentration decays in the atmosphere over time. For that reason, slightly different GWP values appear in scientific literature. This assessment is based on the use of the widely accepted California Climate Action Registry (CCAR) GWP values for a 100-year period. Under this methodology, the GWP of CO_2 is set to 1, the GWP of CH_4 is 21, and the GWP of N_2O is 310 (CCAR 2009). In this analysis, GHGs are reported as carbon dioxide equivalents (CO_2 eqv) to measure their relative potency. CO_2 eqv takes into account the relative potency of the non-CO_2 GHGs and converts quantities to an equivalent amount of CO_2, so that all emissions are reported as a single quantity.

Table 7 shows aggregated California emissions of CO_2 eqv for all fossil fuel combustion, respectively. In 2007 California emitted 461 million tons CO_2 eqv. The estimated United States GHG emissions from total fuel combustion in 2007 was 6,382 million tons which means California accounts for approximately 7.2% of fossil fuel CO_2 eqv emissions in the United States annually (EPA 2009a).

Thresholds of Significance

According to CEQA Guidelines, Appendix G – Environmental Checklist, to determine whether impacts to greenhouse gas emissions are significant environmental effects, the following questions are analyzed and evaluated:

Would the project:

a) Generate greenhouse gas emission, either directly or indirectly, that may have a significant impact on the environment?

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Environmental Impacts

Construction

Project construction has the potential to temporarily affect air quality. Impacts to air quality will result from engine exhaust and fugitive dust emissions caused by operation of off-road construction equipment and on-road vehicles. A summary of construction equipment, construction duration, and emission calculations for each construction project is provided in Appendix C. In addition to criteria pollutants, emissions of greenhouse gases are also estimated.

Table 8 summarizes the estimated annual GHG emissions resulting from construction activities. There are no established thresholds for GHGs. As a benchmark, California's CO_2 eqv emissions from fuel combustion activities in 2008 were estimated at 408,000,000 metric tons (CARB 2010). Short-term construction activities associated with implementation of new license conditions will minimally contribute to this state total by adding 717 metric tons for all 15 construction projects combined (0.00018% of the state's 2008 estimated CO_2 eqv emissions). Construction emissions will be temporary and intermittent, and will cease upon completion of work; therefore impacts of MFP construction activities on greenhouse gas emissions and global climate change are less than significant.

Maintenance

Project maintenance activities have the potential to temporarily affect air quality. Specifically, PCWA burns large woody debris (LWD) which accumulates behind Hell Hole Reservoir Dam on an as-needed basis (typically every 3 years). To estimate GHG emissions as a result of the periodic burning of LWD, PCWA identified the frequency of

burning, wood type, and wood characteristics (Table 9). Additional information from the EPA and other sources were used to characterize the density and heating value of the wood, and worst case emissions of GHGs during the prescribed burning. Emissions of carbon dioxide, methane, and nitrous oxide were then converted to metric tons CO_2 eqv, based on conversion factors as specified by the IPCC.

As identified on Table 9, the burning of LWD would produce an estimated 74.2 metric tons CO_2 eqv per burn event. This minimally contributes to GHG emissions in the state (0.000018% of the state's 2008 estimated CO_2 eqv emissions of 408,000,000 metric tons). PCWA does not anticipate burning more wood under the new license conditions; therefore, the burning of LWD has no additional incremental impact on GHG emissions and global climate change. In addition, PCWA will be required to prepare a LWD management plan within 1 year of license issuance that describes the existing location of LWD collection by project facilities, options for moving LWD downstream of project facilities within the river corridor, and suitable locations where LWD could be placed within the active channel to be mobilized by 2- to 5-year high-flow events. The LWD management plan will also identify alternatives to the practice of burning LWD removed from Hell Hole Reservoir that would have the benefit of reducing air emissions associated with burning.

Operations

The MFP, under existing license conditions, generates electricity via renewable, hydroelectric power. Hydroelectric power from the MFP is produced at five Project powerhouses with a total installed capacity of 223.7 MW and an annual average energy production of 1,039,078 megawatt-hours (MWh)[5] under the No-Action Alternative. PCWA owns and operates the MFP and is an independent generator (wholesaler of electricity) that sells electricity to California's electrical retailers via the California electricity grid.

Conventional hydroelectric generation is a reliable, efficient, economical, and less polluting source of energy resulting in low air emissions. Energy from the MFP is used to meet California's energy demand, renewable energy goals, and provide a source of energy with low GHG emissions. The MFP hydroelectric facilities do not produce net emissions of GHGs, rather the MFP produces an "offset" in terms of the GHGs that would otherwise be generated on the California electricity grid. Existing MFP generation results in a total offset of 342,777 metric tons (or tonnes) CO_2 eqv annually (Table 10).

Under the new license conditions, annual electric generation from the MFP will decrease by an average of 5.12% due to higher instream flow releases requirements. This equates to an annual generation loss of 53,201 MWh and results in an overall annual average energy production of 985,877 MWh.

5. Generation from French Meadows, Middle Fork, Ralston, and Oxbow powerhouses is averaged over a 40-year period of record (1967–2006). Hell Hole Powerhouse began operation in 1983; therefore, annual net generation is averaged over a 24-year period of record (1983–2006). The total average annual energy production represents the sum of the average net generation for the five Project powerhouses based on their respective period of record (PCWA 2011a).

Under the new license conditions, the reduction in generation decreases total GHG offset by 17,550 metric tons CO_2 eqv annually (from 342,777 metric tons CO_2 eqv to 325,226 metric tons CO_2 eqv) (Table 10). Appendix D provides a description of the methodology used to determine the effect of this loss in generation on GHGs. Despite this reduction, the net beneficial effect of the MFP is considerable in terms of GHGs emissions.

The slight reduction in net GHG emissions offsets under the new license conditions has a less-than-significant effect on global climate change for several reasons. PCWA is an independent generator (wholesaler of electricity) of power produced from the MFP. Electric energy retailers will have to replace the loss of generation. It is unknown what source will provide the replacement generation as this is dependent on a retailer's individual system-wide generation portfolio. However, any replacement generation acquired by the retailers must be consistent with the legislative mandates adopted by the State of California requiring reductions in statewide GHG emissions from current levels, including AB 32 and Executive Order S-3-05.

Despite the loss of generation associated with implementation of the new license conditions, the MFP will continue to produce electric energy with low GHG emissions and operation of the MFP will continue to provide a valuable offset for GHGs. The MFP's continued operation, even considering the loss of generation, helps California move toward a lower carbon future and meet the goals of AB 32 and Executive Order S-3-05. In addition, electric retailers will have to replace any loss of generation from the MFP with an alternative source that has low GHG emissions to comply with current legislative requirements. Therefore, impacts of the new license conditions on GHG emissions, and the resulting effect on global climate change, when considering other projects/actions, are considered less than significant.

Level of Significance

Overall, implementation of new license conditions will not generate greenhouse gas emissions that result in a significant environmental impact or conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing emissions of greenhouse gases. Implementation of new license conditions will result in GHG emissions, however, impacts are considered less than significant.

6.2.4 Mineral Resources

This section describes potential impacts of implementation of new license conditions on mineral resources. This section describes the environmental setting and CEQA thresholds of significance; identifies environmental impacts; and makes a determination as to the level of significance of each impact.

Environmental Setting

Gold, silver, chromium, tungsten, and aggregates are the principal mineral resources in the MFP Watershed. Most of the mineral resources mined in the Watershed are associated with the Melones Fault Zone and the accreted terranes of the Foothills

Suture Zone. The Mother Lode Gold Belt, located immediately south of the MFP, produced extensive amounts of lode-gold (CDMG 1970).

In addition to the potential for lode-gold deposits, the early Tertiary channel of the American River was once a highly productive placer gold mining area (CDMG 1970). The erosional period in the Cretaceous and the uplift and incision of the river channels during the Pleistocene resulted in the deposition of gold deposits in the streams, which are interspersed throughout the Western Metamorphic Belt (CDMG 1970). Historic mining activity in the vicinity of the MFP is concentrated around the area to the west and north of the Ralston Afterbay.

Based on a United States Geological Survey (USGS) study of the mineral resources in the North Fork American River Wilderness, the mineral resource potential for the North Fork American River in the vicinity of the MFP is highly probable, and includes gold, chromite, and silver (USGS 1982). Very little mining has been conducted along the Rubicon River. Studies in the Rubicon Roadless Area indicate a low potential for mineral resources. Only minor amounts of lead, copper, and gold were found in abandoned mines and placer deposits (USGS 1983).

Thresholds of Significance

According to CEQA Guidelines, Appendix G – Environmental Checklist, to determine whether impacts to mineral resources are significant environmental effects, the following questions are analyzed and evaluated:

Would the project:

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

Environmental Impacts

An extensive range of extractive mineral resources are found throughout Placer County, many of which have been mined since the Gold Rush era. Gold, silver, chromium, tungsten, and aggregate are the principal mineral resources in the Project vicinity. Implementation of the new license conditions will not result in the loss of any known mineral resources, nor will it impede or interfere with the establishment or continuation of existing mineral extraction operations. The Project area is not delineated as a locally important mineral recovery site. Further, implementation of the new license conditions will not result in the loss of available known mineral resources that are of value to the region or residents of the state.

Level of Significance

Implementation of the new license conditions will have no impact on mineral resources.

6.2.5 Population and Housing

This section describes potential impacts of implementation of new license conditions on population and housing. This section describes the environmental setting and CEQA thresholds of significance; identifies environmental impacts; and makes a determination as to the level of significance of each impact.

Environmental Setting

The MFP is located in a heavily forested, sparsely populated area. The Project facilities are situated on public land managed by the Tahoe and Eldorado National Forests, or private property owned by PCWA or private parties. There are no residential or commercial developments in the immediate vicinity of the Project. The nearest population center is Foresthill (population 1,791) located approximately four miles west-northwest of Ralston Afterbay.

Thresholds of Significance

According to CEQA Guidelines, Appendix G – Environmental Checklist, to determine whether impacts to population and housing are significant environmental effects, the following questions are analyzed and evaluated:

Would the project:

a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

Environmental Impacts

Implementation of the new license conditions will result in an increase of three full-time employees to PCWA's workforce over the term of the new license. These employees will work from offices in either Auburn or Foresthill, California. In addition, the workforce associated with the MFP will increase on a temporary basis to complete the required construction and modification of Project facilities and Project recreation facilities. These activities will generate short-term employment opportunities; however, the work will be temporary and occur over several years. Because of the limited number and type of jobs that will be generated and the temporary nature of those jobs, implementation of the new license conditions will have little to no effect on employment in the region.

Implementation of the new license conditions does not involve the construction of new homes or businesses, or develop new infrastructure that promotes future commercial or

residential development. The new license conditions do not involve the displacement of any existing housing, including affordable housing, nor will they result in the disruption or division of an established community, including low-income or minority communities. Project-related construction and modification projects to be implemented as part of the new license conditions will only occur at or in the immediately vicinity of existing Project facilities and Project recreation facilities. As such, no residences or business establishments will be affected by implementation of the new license conditions.

Overall, the increase in the temporary and full-time workforce necessary to implement the new license conditions will have little to no effect on population, employment, or housing.

Level of Significance

Implementation of the new license conditions will have no impact on population and housing.

6.2.6 Public Services

This section describes potential impacts of implementation of new license conditions on public services. This section describes the environmental setting and CEQA thresholds of significance; identifies environmental impacts; and makes a determination as to the level of significance of each impact.

Environmental Setting

Placer County provides government services to those residents that live in the unincorporated areas of the county. For county residents who live in incorporated cities or towns (i.e., Auburn, Colfax, Lincoln, Loomis, Rocklin, and Roseville), the county also provides many services, including public safety and public health services, in addition to the services provided by the cities. Important public services provided by Placer County include law enforcement, fire protection and other emergency services, education, solid waste disposal, and utilities.

In the Project area, police protection is provided by Placer County Sheriff and fire protection is provided by USDA-FS in conjunction with California Department of Forestry and Fire Protection (CAL FIRE).

There are no schools, parks, or other public facilities located in the Project area.

Thresholds of Significance

According to CEQA Guidelines, Appendix G – Environmental Checklist, to determine whether impacts to public services are significant environmental effects, the following questions are analyzed and evaluated:

Would the project:

a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

Fire Protection?

Police Protection?

Schools?

Parks?

Other Public Facilities?

Environmental Impacts

There will be a negligible increase in demand for public services from the three additional full-time PCWA employees, and the temporary workforce necessary to complete the construction and modification projects associated with implementation of the new license conditions. This will not result in the physical alteration or demand for new governmental facilities to maintain acceptable service ratios, response times or other performance objectives for any public service. The demand for public services including law enforcement and public safety; fire protection; emergency services/response; road maintenance and repairs; and educational facilities does not measurably increase with implementation of the new license conditions, therefore there will be no impact.

Level of Significance

Implementation of the new license conditions will have no impact on public services.

7.0 OTHER CEQA CONSIDERATIONS

7.1 GROWTH-INDUCING EFFECTS

CEQA Guidelines require that an EIR evaluate a project's potential to cause growth-inducing impacts.[6] For the purpose of this analysis, a growth-inducing effect is identified if implementation of the new license conditions encourage growth in excess of existing land use plans, growth management plans, or policies for the areas by: (1) fostering economic or population growth or additional housing; (2) removing obstacles to growth; (3) requiring new community services or facilities; or (4) encouraging other activities that cause significant environmental effects.

6. CEQA Guidelines, California Code of Regulations, Title 14 § 15126.2(d).

Economic or Population Growth, or Additional Housing

Employment and Population Growth

Under the new license conditions, the workforce associated with the MFP will increase on a temporary basis to complete the required construction and modification of Project facilities and Project recreation facilities. These activities are concentrated during the first fourteen years following license issuance and result in a very modest increase of approximately 66–142 temporary workers (total for all Project activities spread over the fourteen-year period). In addition, the Project activities only occur between the months of June through December in each year (Table 11). To the extent practical, local workforce and resources will be utilized during these activities.

PCWA's workforce will increase by three full-time employees (from 179 to 182) to implement the new license conditions over the term of the new license. These employees will work from offices in either Auburn or Foresthill, California.

Overall, the increase in the temporary and full-time workforce necessary to implement the new license conditions will have a less-than-significant impact on employment and population growth in Placer County.

Local and Regional Economy

The total average annual income of the temporary employees generated from construction and modification projects during the first fourteen years following license issuance will be approximately $228,400 (range $145,400-$311,400) (Table 11). A portion of temporary worker earnings will be spent in the local area generating both revenue for businesses and sales tax for state and local government. Similarly, a portion of the annual income of the three additional PCWA employees ($375,000 annually over the term of the new license [2010 dollars]) will generate revenue for businesses and sales tax proceeds for state and local governments. State income tax revenue will also increase based on taxes on temporary and full-time worker earnings under the new license conditions.

Although benefits to the local and regional economy will occur under the new license conditions, these benefits are relatively small in comparison to the overall economy of Placer County. In 2008, total personal income in Placer County was approximately $16 billion.

Net revenue produced from the sales of MFP electricity generated after April 30, 2013 will contribute to the local and regional economy. Currently, the generation output of the MFP is contractually obligated to Pacific Gas & Electric Company (PG&E) pursuant to the Middle Fork Project Power Purchase Contract, dated April 30, 1963. PCWA does not receive any net revenue from MFP generation provided to PG&E in accordance with the current contract. The contract expires on April 30, 2013. After that time, net revenue from MFP power sales will be split equally (50/50) by PCWA and Placer County. These revenues will be used by PCWA and Placer County during the term of the new license to fund local projects to benefit the people of Placer County.

Under the new license conditions, implementation of new instream flow and reservoir minimum pool elevation conditions reduces average annual generation by approximately 5.12% and results in a reduction in gross annual benefit from existing conditions. Similarly, implementation of new environmental measures, programs, and facilities under the new license conditions further reduce net revenue (FERC 2012). The overall reduction in net annual benefits of the new license conditions compared to existing conditions results in a corresponding decrease in the funding of local projects by PCWA and Placer County. This reduction represents a fraction of the combined annual budgets of the County of Placer and PCWA ($872 million in 2010); therefore the overall reduction to the local economy from implementation of the new license conditions is considered less than significant.

Under the new license conditions recreation facility improvements and enhancements associated with implementation of the Recreation Plan may foster some economic growth in the vicinity of the MFP. However, this economic growth is expected to be relatively small and is considered less than significant.

Housing

The workforce necessary to complete the construction and modification projects under the new license conditions will be comprised of local residents and/or temporary workers. Depending on the specific project, the temporary workers may be housed in commercial lodging in Auburn and Foresthill or at the MFP Dormitory Facility. Due to the temporary and seasonal nature of the work and the use of existing commercial lodging, housing demand in the area will be unaffected by the construction and modification projects. Similarly, the addition of three full-time workers to PCWA's workforce (currently 179) over the term of the new license will have a less than significant impact on housing demand. In both cases, the real estate/property tax base in the local communities will remain unchanged under the new license conditions.

Obstacles to Growth

Consumptive Water and Power Demands

The MFP is operated to meet PCWA's consumptive water demands and generate power to help meet California's energy demand and provide valuable support services to maintain the overall quality and reliability of the state's electrical supply system. PCWA provides water for consumptive uses from water diverted and/or stored at MFP facilities. Current water demand from the MFP is approximately 42,000 AF. However, during the term of the new license, PCWA expects to utilize its full allocation of 120,000 AF of water available annually from the MFP to meet increasing consumptive water demands.[7]

7. PCWA's water right permits 13856 and 13858 are currently under review by the State Water Board. PCWA filed petitions for extension of time to fully develop use under the consumptive water rights for these permits with the State Water Board on November 15, 2007. PCWA is currently undertaking an environmental analysis for the petition for extension of time.

Under the new license conditions, PCWA is able to meet both current and future consumptive water demand within its service area. Because the availability of water for future growth is unchanged under the new license conditions, the project action does not remove any existing significant obstacle to growth within PCWA's service area.

Construction Projects

Under the new license conditions, several construction projects will be implemented to improve operations and maintenance of the MFP, enhance environmental resources, and/or meet the requirements specified in new environmental programs and measures (Table 11).

The Hell Hole Reservoir Seasonal Storage Increase Improvement Project will seasonally increase the storage capacity of Hell Hole Reservoir. The improvement will utilize a portion of the existing flood control pool, above the present normal maximum operating water level, to store additional water during the spring and summer after the peak of the runoff period. An approximate 7,600 AF increase in seasonal storage in the reservoir will be achieved by installing 6-foot-high crest gates on the existing dam spillway. The crest gates may be raised between April 15 and October 30 to increase reservoir storage. This additional water will be used to enhance environmental resources in the Rubicon River through scheduled flow releases. The additional water will not be used for consumptive purposes and, therefore, will not contribute to future growth.

New Community Services or Facilities

The demand for public services including law enforcement and public safety; fire protection; emergency services/response; road maintenance and repairs; and educational facilities does not measurably increase under the new license conditions. The minor increase in demand for public services from the temporary workforce necessary to complete the construction and modification projects during the first fourteen years following license issuance is considered less than significant. Similarly, the addition of three full-time workers to PCWA's workforce over the term of the new license will have a less-than-significant effect on the demand for public services.

Other Activities that Cause Significant Environmental Effects

Implementation of the new license conditions will allow PCWA to continue operation and maintenance of the MFP. The conditions include new environmental programs, measures, and facilities that were specifically developed to promote resource stewardship in the Middle Fork American River Watershed. The new license conditions will not encourage or facilitate activities that cause significant negative environmental effects.

7.2 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

CEQA Guidelines require that an EIR address any significant irreversible changes to the environment possibly resulting from implementation of a project.[8] Oil, gas, and other nonrenewable resources will be consumed during construction activities identified under the new license conditions (short-term), as well as, during Project operation and maintenance activities (long-term). Therefore, an irreversible commitment of some nonrenewable resources will occur as a result of these activities.

In the short-term, construction projects included under the new license conditions will improve MFP operations and recreation user experience. Construction projects will be temporary in nature and any impacts associated with the consumption of nonrenewable resources will cease upon completion of work. Overall, the long-term benefits of construction implementation outweigh the consumption of nonrenewable resources for construction activities

In the long-term, operation and maintenance activities associated with the new license conditions will allow PCWA to continue to provide a clean, renewable energy resource (hydropower), and will assist the state in implementing goals and policies directed at moving away from reliance upon fossil fuels, and encouraging renewable energy. Overall, the long-term benefits of the Project outweigh the consumption of nonrenewable resources during operation and maintenance of the MFP.

Implementation of the new license conditions will not result in any significant irreversible environmental changes.

7.3 CUMULATIVE IMPACTS

CEQA Guidelines require cumulative impacts be evaluated.[9] A cumulative impact consists of an impact which is created as a result of the combination of the project with other past, present, or reasonably foreseeable projects causing related impacts. Section 3.3.2.3 of FERC's DEIS identified that water quantity, water temperature, and California Central Valley steelhead have the potential to be cumulatively affected by the proposed new license conditions in combination with other past, present, and foreseeable future activities. However, FERC's DEIS concluded that implementation of the new license conditions would not result in impacts to water quantity or California Central Valley steelhead, and would have a positive cumulative effect on water temperature.

8. CEQA Guidelines, California Code of Regulations, Title 14 § 15126(c).
[9] CEQA Guidelines, California Code of Regulations, Title 14 § 15130.

Section 4.0 of PCWA's Supplemental Filing (PCWA 2011b) included a cumulative analysis of those items addressed in FERC's DEIS, as well as impacts from:

- Construction of new or modification of existing Project facilities;
- Construction or enhancement of Project recreation facilities; and
- Modification of Small Diversions.

PCWA's analysis, hereby incorporated by reference, concluded that there are no significant cumulative effects from implementation of the new license conditions. In addition, the six resource areas that were not analyzed by FERC and are addressed in this Draft CEQA Supplement would not result in cumulative effects.

FERC's DEIS cumulative analysis, in conjunction with PCWA's Supplemental Filing cumulative analysis, satisfies CEQA requirements.

8.0 SUMMARY OF LEVEL OF SIGNIFICANCE

Table 12 identifies potential environmental impacts under CEQA resulting from implementation of new license conditions. The determination of the level of significance is based on the analysis completed in FERC's DEIS and additional analyses provided or referenced in this Draft CEQA Supplement.

Resource Areas Analyzed in FERC's DEIS

FERC's DEIS identified several unavoidable adverse impacts based on operation and maintenance of the MFP under the new license conditions. However, FERC's analysis determined that all of these unavoidable adverse effects would be minor. PCWA has reviewed the impact analysis in the DEIS and determined that under CEQA these unavoidable adverse impacts are considered less than significant.

In Section 6.1, PCWA incorporated by reference additional analysis completed as part of the MFP relicensing to augment the analysis in the FERC DEIS to satisfy CEQA. The additional analysis provides a full evaluation of impacts from construction, modifications, or enhancement of Project facilities and recreation facilities required under the new license. The additional analysis completed by PCWA concluded that impacts from the construction, modification, and enhancement of Project facilities are less than significant.

Overall, PCWA has determined that impacts associated with implementation of new license conditions for the MFP (including operation and maintenance activities and construction, modification, and enhancement of Project facilities) are less than significant.

Resource Areas Not Analyzed in FERC's DEIS

PCWA determined that implementation of the new license conditions will result in "no impact" to the following: Agriculture and Forestry, Mineral Resources, Population and Housing, and Public Services. PCWA determined that implementation of the new license conditions will result in a "less-than-significant impact" to the following: air quality and greenhouse gas emissions. Further, implementation of the new license conditions will result in a "less-than-significant impact" to growth, and will not result in any irreversible environmental changes or cumulative effects.

9.0 MITIGATION MEASURES

The new license conditions include new environmental programs, measures, and facilities designed to protect, maintain, or enhance environmental and cultural resources over the term of the new license. These environmental programs, measures, and facilities also include avoidance and protection measures and best management practices. Because these components are already incorporated into the Project, no additional mitigation measures are required.

10.0 PERMITS

The new license conditions for the MFP include construction and maintenance activities that require permits from other entities. PCWA will obtain all required regulatory permits, prior to undertaking these activities. The required permits may include the following:

- USACE Clean Water Act Section 404 Permit;
- USDA-FS Road Use Permit and Special Use Permits;
- State Water Board 401 Water Quality Certification;
- CDFG Section 1600 Streambed Alteration Agreement; and
- Caltrans Transportation Permit.

11.0 CIRCULATION OF PCWA'S DRAFT CEQA SUPPLEMENT

A Notice of Availability of this Draft CEQA Supplement was published in the Mountain Democrat on December 10, 2012, and in the Auburn Journal on December 11, 2012. The public notice for the Draft CEQA Supplement included: (1) a project description; (2) the deadline for submitting comments; (3) identification of significant effects; and (4) information on the documents availability for review.

In addition, the Notice of Availability of this Draft CEQA Supplement was distributed to local, state, and federal agencies; Native American Tribes; non-governmental organizations; and to other interested parties who may wish to review and comment on

the report. The distribution list included with the Notice of Availability identifies all relicensing participants that received a copy of the notice.

The Draft CEQA Supplement is also available to the public at PCWA's Business Center, 144 Ferguson Road, Auburn, CA; Placer County Library, 350 Nevada Street, Auburn, CA; El Dorado County Library, 345 Fair Lane, Placerville, CA; and PCWA's Relicensing Website at: http://relicensing.pcwa.net. Release of this Draft CEQA Supplement marks the beginning of a 45-day public review period. Written comments are due by 5:00 P.M. (PDST), Friday, January 25, 2013 and can be sent to PCWA at the following address:

Mr. Ben Ransom
Environmental Scientist
Placer County Water Agency
P.O. Box 6570
Auburn, CA 95604
Phone (530) 823-4889
Fax (530) 823-4960
bransom@pcwa.net

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____.1983. Mineral Resource Potential of the Rubicon Roadless Area, Placer and Eldorado Counties, California. Miscellaneous Field Studies Map MF-1501-B.

TABLES

Table 1. CEQA Analysis Documentation.

CEQA Analysis	Document Reference
Aesthetics	DEIS Section 3.3.7 – Aesthetic Resources Supplemental Filing Section 3.11 – Aesthetic Resources
Agriculture and Forest Resources	Draft CEQA Supplement Section 6.2.1 – Agriculture and Forest Resources
Air Quality	Draft CEQA Supplement Section 6.2.2 – Air Quality Supplemental Filing Section 3.15 – Air Quality
Biological Resources - Aquatic	DEIS Section 3.3.2 – Aquatic Resources DEIS Section 3.3.4 – Threatened and Endangered Species Supplemental Filing Section 3.5 – Fish and Aquatic Resources Supplemental Filing Section 3.8 – Riparian Resources Supplemental Filing Section 4.0 – Cumulative Effects Analysis
Biological Resources - Terrestrial	DEIS Section 3.3.3 – Terrestrial Resources DEIS Section 3.3.4 – Threatened and Endangered Species Supplemental Filing Section 3.6 – Botanical and Wildlife Resources
Cultural Resources	DEIS Section 3.3.6 – Cultural Resources Supplemental Filing Section 3.12 – Cultural Resources Supplemental Filing Section 3.13 – Tribal Resources Final License Application Section 14.8.3 – Consultation with Native American Tribes
Geology and Soils	DEIS Section 3.3.1 – Geologic and Soil Resources Supplemental Filing Section 3.2 – Geology and Soils Supplemental Filing Section 3.7 – Geomorphology
Greenhouse Gas Emissions	Draft CEQA Supplement Section 6.2.3 – Greenhouse Gas Emissions Supplemental Filing Section 4.0 – Cumulative Effects Analysis
Hazards and Hazardous Materials	DEIS Section 3.3.1 – Geologic and Soil Resources DEIS Section 3.3.2 – Aquatic Resources Supplemental Filing Section 3.2 – Geology and Soils Supplemental Filing Section 3.4 – Water Quality

Table 1. CEQA Analysis Documentation (continued).

CEQA Analysis	Document Reference
Hydrology and Water Quality	DEIS Section 3.3.2 – Aquatic Resources Supplemental Filing Section 3.3 – Water Use Supplemental Filing Section 3.4 – Water Quality Supplemental Filing Section 4.0 – Cumulative Effects Analysis
Land Use and Planning	DEIS Section 3.3.5 – Recreation and Land Use Supplemental Filing Section 3.9 – Recreation Resources Supplemental Filing Section 3.10 – Land Use
Mineral Resources	Draft CEQA Supplement Section 6.2.4 – Mineral Resources
Noise	DEIS Section 3.3.3 – Terrestrial Resources DEIS Section 3.3.4 – Threatened and Endangered Species DEIS Section 5.3 – Unavoidable Adverse Effects Supplemental Filing Section 3.6 – Botanical and Wildlife Resources Supplemental Filing Section 3.9 – Recreation Resources
Population and Housing	Draft CEQA Supplement Section 6.2.5 – Population and Housing
Public Services	Draft CEQA Supplement Section 6.2.6 – Public Services
Recreation	DEIS Section 3.3.5 – Recreation and Land Use Supplemental Filing Section 3.9 – Recreation Resources Supplemental Filing Section 4.0 – Cumulative Effects Analysis
Transportation/Traffic	DEIS Section 3.3.5 – Recreation and Land Use Supplemental Filing Section 3.9 – Recreation Resources Supplemental Filing Section 3.15 – Air Quality
Utilities and Service Systems	DEIS Section 3.3.5 – Recreation and Land Use Supplemental Filing Section 3.9 – Recreation Resources

Table 1. CEQA Analysis Documentation (continued).

CEQA Analysis	Document Reference
Cumulative Impacts	DEIS Section 3.2 – Scope of Cumulative Effects Analysis DEIS Section 3.3.2.3 – Aquatic Resources, Cumulative Effects Supplemental Filing Section 4.0 – Cumulative Effects Analysis Draft CEQA Supplement Section 7.3 – Cumulative Impacts
Growth-Inducing Effects	Draft CEQA Supplement Section 7.1 – Growth-inducing Effects
Significant Irreversible Environmental Changes	DEIS Section 5.3 – Unavoidable Adverse Effects Draft CEQA Supplement Section 7.2 – Significant Irreversible Environmental Changes

Sources:
FERC's Draft Environmental Impact Statement is available for review at: http://www.ferc.gov/docs-filing/elibrary.asp.
PCWA's Final License Application, Supplemental Filing, and Draft CEQA Supplement are available for review at: http://relicensing.pcwa.net.

Table 2. Federal and State Ambient Air Quality Standards.

Ambient Air Quality Standards						
Pollutant	**Averaging Time**	**California Standards[1]**		**National Standards[2]**		
		Concentration[3]	**Method[4]**	**Primary[3,5]**	**Secondary[3,6]**	**Method[7]**
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m^3)		0.075 ppm (147 µg/m^3)		
Respirable Particulate Matter (PM10)	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		—		
Fine Particulate Matter (PM2.5)	24 Hour	—	—	35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	15 µg/m^3		
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m^3)	—	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)	—	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	
Nitrogen Dioxide (NO_2)[8]	1 Hour	0.18 ppm (339 µg/m^3)	Gas Phase Chemiluminescence	100 ppb (188 ɜg/m^3)	—	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3		0.053 ppm (100 µg/m^3)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[9]	1 Hour	0.25 ppm (655 µg/m^3)	Ultraviolet Fluorescence	75 ppb (196 ɜg/m^3)	—	Ultraviolet Flourescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 µg/m^3)	
	24 Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (for certain areas)[9]	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas)[9]	—	
Lead[10,11]	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m^3 (for certain areas)[11]	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m^3		
Visibility Reducing Particles[12]	8 Hour	See footnote 12	Beta Attenuation and Transmittance through Filter Tape	**No National Standards**		
Sulfates	24 Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[10]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

For more information please call ARB-PIO at (916) 322-2990 **California Air Resources Board (6/7/12)**

[1]California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[2]National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.

[3]Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[4]Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

[5]National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

[6]National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[7]Reference method as described by the U.S. EPA. An “equivalent method” of measurement may be used but must have a “consistent relationship to the reference method” and must be approved by the U.S. EPA.

[8]To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

[9]On June 2, 2010, a new 1-hour SO2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

[10]The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[11]The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

[12]In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

Table 3. Attainment Status Designations for Portion of Placer County within the Mountain Counties Air Basin.

Pollutant	Federal Designation[1]	State Designation[2]
Ozone (O_3)	Nonattainment Severe	Nonattainment Severe
Carbon Monoxide (CO)	Unclassified/Attainment	Unclassified
Nitrogen Dioxide (NO_2)	Unclassified/Attainment	Attainment
Sulfur Dioxide(SO_2)	Unclassified/Attainment	Attainment
Respirable Particulate Matter (PM_{10})	Unclassified/Attainment	Nonattainment
Fine Particulate Matter ($PM_{2.5}$)	Unclassified/Attainment	Unclassified

Notes:

[1] USEPA Green Book (http://www.epa.gov/air/oaqps/greenbk).

[2] California thresholds from CARB (http://www.arb.ca.gov/desig/adm/adm.htm) with nonattainment status further defined by 40 CFR 81.305 *July 27, 2010).

Table 4. Emissions Significance Thresholds.

Criteria Pollutant	Federal Thresholds	Placer County APCD Thresholds	
	tons/yr[a,b]	tons/yr[c]	lbs/day[c]
Ozone (O_3) 8-hour (as VOC or NO_x)	25[a]	40	10
Carbon Monoxide (CO)	100[b]	100	550
Oxides of Nitrogen (NO_x as NO_2)	25[a]	40	10
Sulfur Dioxide (SO_x as SO_2)	40[b]	40	80
Particulates (PM_{10})	15[b]	15	80
Particulates ($PM_{2.5}$)	10[b]	10	80

Sources and Notes:

Assumes all 15 project sites are located in Mountain Counties Air Basin

[a]General Conformity (40 CFR 51.853)

[b]Prevention of Significant Deterioration (40 CFR 51.166)

[c]Placer County Air Pollution Control District (PCAPCD):

tons/yr: Definition of significant from Rule 502 New Source Review (as amended 2/11/10)

lbs/day: Project-level CEQA thresholds for short-term construction emissions; PM_{10} from fuel combustion only (excludes fugitive dust) per Rule 502

Table 5. Project Construction Timing and Modeling Assumptions.

Construction Project	Construction Schedule	Conservative Model Assumptions
Hell Hole Reservoir Seasonal Storage Increase Improvement		
Hell Hole Reservoir Seasonal Storage Increase Improvement	Year 3, 4, or 5	Year 3
Small Diversion Modifications		
Duncan Creek Diversion Dam Modification	Year 2 or 3	Year 2
North Fork Long Canyon Diversion Dam Modification	Year 3 or 4	Year 3
South Fork Long Canyon Diversion Dam Modification	Year 3 or 4	Year 3
Outlet Works Modifications		
French Meadows Dam Outlet Works Modification	Year 1 or 2	Year 2
Hell Hole Dam Outlet Works Modification	Year 2 or 3	Year 2
Middle Fork Interbay Dam Outlet Works Modification	Year 1 or 2	Year 2
New Gages		
North Fork Long Canyon Creek Gage Below Diversion Dam	Year 3 or 4	Year 3
South Fork Long Canyon Creek Gage Below Diversion Dam	Year 3 or 4	Year 3
Middle Fork American River Gage Below Interbay Dam	Year 1 or 2	Year 2
North Fork American River Gage Above American River Pump Station	Year 1 or 2	Year 2
New Recreation Facilities		
Ellicott Bridge Parking Area	Within 14 years of license issuance	Year 14
French Meadows Reservoir Trail	Within 14 years of license issuance	Year 14
Water Supply Replacement		
French Meadows North Shore Water Supply (Dolly Creek Water Supply)	Within 9 years of license issuance	Year 9
French Meadows South Shore Water Supply (French Meadows Campground Water Supply)	Within 5 years of license issuance	Year 5

Table 6. Estimated Annual Construction Emissions.

Criteria Pollutant	Year 2 tons/yr	Year 3 tons/yr	Year 5 tons/yr	Year 9 tons/yr	Year 14 tons/yr	Highest Year tons/yr	Project Total tons	Federal Thresholds tons/yr	Federal Thresholds Significant	Placer County APCD Thresholds tons/yr	Placer County APCD Thresholds Significant
Volatile Organic Compounds (VOC as CH4)	0.25	0.39	0.04	0.04	0.07	0.39	0.79	25	No	40	No
Carbon Monoxide (CO)	1.40	2.22	0.20	0.20	0.33	2.22	4.34	100	No	100	No
Oxides of Nitrogen (NOx as NO2)	1.32	1.93	0.23	0.23	0.42	1.93	4.13	25	No	40	No
Sulfur Dioxide (SOx as SO2)	0.003	0.004	0.000	0.000	0.001	0.004	0.008	40	No	40	No
Combustion Particulates (C-PM10)	0.09	0.13	0.02	0.02	0.03	0.13	0.28	15	No	15	No
Combustion Particulates (C-PM2.5)	0.08	0.11	0.01	0.01	0.02	0.11	0.25	10	No	10	No
Fugitive Dust (F-PM10)	0.90	1.39	0.10	0.10	0.20	1.39	2.69	n/a	n/a	n/a	n/a
Fugitive Dust (F-PM2.5)	0.17	0.25	0.03	0.03	0.04	0.25	0.51	n/a	n/a	n/a	n/a

Sources:

SCAQMD 2008, EPA 2011

Notes:

Year X (tons/yr) is the estimated annual emissions for applicable projects

Highest Year (tons/yr) is the highest estimated annual emissions for applicable projects

Project Total (tons/yr) is the estimated emissions for all projects combined (worst case)

Fugitive dust and combustion particulates determined separately (thresholds do not apply to fugitive dust)

Projects by year:

Year 2: Six Projects: Duncan Creek Diversion Dam Modification, French Meadows Outlet Works Modification, Hell Hole Dam Outlet Works Modification, Middle Fork Interbay Dam Outlet Works Modification, Middle Fork American River Gage Below Interbay Dam, North Fork American River Gage Above American River Pump Station

Year 3: Five Projects: Hell Hole Reservoir Seasonal Storage Increase Improvement, North Fork Long Canyon Diversion Dam Modification, South Fork Long Canyon Diversion Dam Modification, North Fork Long Canyon Creek Gage Below Diversion Dam, South Fork Long Canyon Creek Gage Below Diversion Dam

Year 5: One Project: French Meadows South Shore Water Supply (French Meadows Campground Water Supply)

Year 9: One Project: French Meadows North Shore Water Supply (Dolly Creek Water Supply)

Year 14: Two Projects: Ellicott Bridge Parking Area, French Meadows Reservoir Trail

Table 7. Estimated California GHG Emissions from Fuel Combustion.

Summary Year	CO_2 Equivalents
	Million Tons
2000	443
2001	456
2002	452
2003	451
2004	464
2005	454
2006	456
2007	461

Source:
CARB 2009b (2007 value extrapolated)

Table 8. Estimated Annual Construction Greenhouse Gas Emissions.

Greenhouse Gas	Year 2	Year 3	Year 5	Year 9	Year 14	Highest Year	Project Total
	tonnes/yr	tonnes/yr	tonnes/yr	tonnes/yr	tonnes/yr	tonnes/yr	tonnes
Carbon Dioxide (GHG – CO_2)	231	358	31	31	56	358	707
Methane (GHG – CH_4)	0.02	0.03	0.00	0.00	0.00	0.03	0.06
Nitrous Oxide (GHG – N_2O)	0.01	0.02	0.00	0.00	0.00	0.02	0.03
Carbon Dioxide Equivalents (CO_2 eqv)	234	363	31	31	57	363	717

Sources:

SCAQMD 2008, EPA 2011

Notes:

Units are metric tons or tonnes (1,000 kilograms or 2,204.6 pounds)

Year X (tonnes/yr) is the estimated annual emissions for applicable projects

Highest Year (tonnes/yr) is the highest estimated annual emissions for applicable projects

Project Total (tonnes/yr) is the estimated emissions for all projects combined (worst case)

Projects by year:

Year 2: Six Projects: Duncan Creek Diversion Dam Modification, French Meadows Outlet Works Modification, Hell Hole Dam Outlet Works Modification, Middle Fork Interbay Dam Outlet Works Modification, Middle Fork American River Gage Below Interbay Dam, North Fork American River Gage Above American River Pump Station

Year 3: Five Projects: Hell Hole Reservoir Seasonal Storage Increase Improvement, North Fork Long Canyon Diversion Dam Modification, South Fork Long Canyon Diversion Dam Modification, North Fork Long Canyon Creek Gage Below Diversion Dam, South Fork Long Canyon Creek Gage Below Diversion Dam

Year 5: One Project: French Meadows South Shore Water Supply (French Meadows Campground Water Supply)

Year 9: One Project: French Meadows North Shore Water Supply (Dolly Creek Water Supply)

Year 14: Two Projects: Ellicott Bridge Parking Area, French Meadows Reservoir Trail

Table 9. Estimated Greenhouse Gas Emissions Associated with the Burning of Large Woody Debris.

SCHEDULE				
Occurrence (triennial)	3			
Duration (days)	1			
WOOD CHARACTERISTIC ASSUMPTIONS				
Wood Types				
Pine	50%			
Fir	50%			
Moisture Content				
Very Dry[1]	15%			
Density (lb/cu ft)				
Pine	23.7			
Fir	28.1			
Average	25.9			
VOLUME				
Number of Pieces	100			
Min Length (ft)	10			
Max Length (ft)	30			
Ave Length (ft)	20			
Min Diameter (ft)	1			
Max Diameter (ft)	2.5			
Ave Diameter (ft)	1.75			
Ave Cross Section Area (sq ft)	2.40			
Total Wood Volume (cu ft)	4,808			
Total Dry Wood Weight (lbs)	105,851			
Heating Value (Dry wood) (btu/lb)[2]	8,000			
Burning Efficiency				
% Wood Consumed[3]	90%			
EMISSION FACTORS[2]				
Carbon Dioxide	195	lb/MMBtu	3,120.00	lb/ton dry wood
Nitrous Oxide	0.013	lb/MMBtu	0.208	lb/ton dry wood
Methane			11.1	lb/ton dry wood
EMISSIONS				
Carbon Dioxide	148,615	lbs		
Nitrous Oxide	10	lbs		
Methane	529	lbs		
GHGs[4]				
Carbon Dioxide	148,615	lbs CO2 eqv	67.40	MT CO2 eqv
Nitrous Oxide	2,933	lbs CO2 eqv	1.33	MT CO2 eqv
Methane	12,161	lbs CO2 eqv	5.52	MT CO2 eqv
TOTAL GHGs/BURN EVENT			**74.24**	**MT CO2 eqv**

Notes:

1. EPA 2002. United States Environmental Protection Agency. Development of Emissions Inventory Methods for Wildland Fire. Final Report February.

2. EPA 2012. United States Environmental Protection Agency. AP-42. Compilation of Air Pollutant Emission Factors. Fifth Edition, Volume I.

3. Hardy 1996. Guidelines for Estimating Volume, Biomass, and Smoke Production for Piled Slash. USDA Pacific Northwest Research Station.

4. IPCC 2001. IPCC Third Assessment Report 2001 - Table C.1 Comparison of GWPs from the IPCC's Second and Third Assessment Reports.

Table 10. Estimated Annual Hydroelectric Generation Offsets - Greenhouse Gas Emissions.

Greenhouse Gas Emissions (Existing)	GWP Coefficient	Emission Factors		Generation Offset		
		GHG	GWP	Generation	GHG	CO_2 eqv
		lbs/MW-hr	lbs/MW-hr	MW-hrs/yr	tonnes/yr	tonnes/yr
Carbon Dioxide (GHG - CO_2)	1	724.12	724.12	1,039,078	341,294	341,294
Methane (GHG - CH_4)	21	0.0302	0.63	1,039,078	14.23	299
Nitrous Oxide (GHG - N_2O)	310	0.0081	2.51	1,039,078	3.82	1,183
Carbon Dioxide Equivalents (CO_2 eqv)			727.27	1,039,078		**342,777**

Greenhouse Gas Emissions (With Project)	GWP Coefficient	Emission Factors		Generation Offset		
		GHG	GWP	Generation	GHG	CO_2 eqv
		lbs/MW-hr	lbs/MW-hr	MW-hrs/yr	tonnes/yr	tonnes/yr
Carbon Dioxide (GHG - CO_2)	1	724.12	724.12	985,877	323,820	323,820
Methane (GHG - CH_4)	21	0.0302	0.63	985,877	13.51	284
Nitrous Oxide (GHG - N_2O)	310	0.0081	2.51	985,877	3.62	1,123
Carbon Dioxide Equivalents (CO_2 eqv)			727.27	985,877		**325,226**

Decrease in Total GHG Offsets	**-17,550**

Source: CCAR 2009, PG&E 2011

Notes:

Global Warming Potentials (GWP) per CCAR Table C.1; IPCC Second Assessment Report (SAR) requirement

GHG Emission Factors per CCAR Table C.2

GWP factors = GWP x GHG factors (respectively)

Estimated Alternative 1 generation =	985,877	MW-hrs/yr
Less existing pre-project generation =	1,039,078	MW-hrs/yr
Estimated change in generation =	(53,201)	MW-hrs/yr

Generation offset is increase in GHG emissions elsewhere due to loss of hydroelectric generation output under Alternative 1

Offset units are metric tonnes (1,000 kilograms or 2,204.6 pounds)

Table 11. Number of Construction Personnel by Project Activity.

Activity	Construction Window	Actual Working Days	Implementation Schedule Year Following License Issuance	Total Workforce Over 14-Year Period		Total Number of Person-days Over 14-year Period		Total Wages Over 14-Year Period[1, 2]	
				Min	Max	Min	Max	Min	Max
Hell Hole Reservoir Seasonal Storage Increase Improvement	July–October	80	3, 4, or 5	10	20	800	1600	$560,000	$1,120,000
Small Diversion Modifications									
Duncan Creek Diversion Modification	July–November	80	2 or 3	6	15	480	1200	$336,000	$840,000
North Fork Long Canyon Creek Diversion Modification	July–November	80	3 or 4	6	10	480	800	$336,000	$560,000
South Fork Long Canyon Creek Diversion Modification	July–November	80	3 or 4	6	10	480	800	$336,000	$560,000
Outlet Works Modifications									
French Meadows Outlet Works Modification	June–December	20	1 or 2	2	10	40	200	$28,000	$140,000
Hell Hole Outlet Works Modification	July–November	40	2 or 3	6	20	240	800	$168,000	$560,000
Middle Fork Interbay Outlet Works Modification	June–December	20	1 or 2	2	15	40	300	$28,000	$210,000
Gages									
North Fork Long Canyon Creek Gage below Diversion Dam (NFLCC)	July–October	7	3 or 4	3	4	21	28	$14,700	$19,600
South Fork Long Canyon Creek Gage below Diversion Dam (SFLCC)	July–October	7	3 or 4	3	4	21	28	$14,700	$19,600
Middle Fork American River Gage below Interbay Dam (MFARIB)	July–October	7	1 or 2	3	4	21	28	$14,700	$19,600
North Fork American River Gage above American River Pump Station (NFARPS)	October	7	1 or 2	3	4	21	28	$14,700	$19,600
Recreation Facilities									
Ellicott Bridge Parking Area	July–November	10	Within 14 years of license issuance	4	8	40	80	$28,000	$56,000
French Meadows Reservoir Trail	July–November	14	Within 14 years of license issuance	4	6	56	84	$39,200	$58,800
Water Supply Replacements									
French Meadows North Shore Water Supply (Dolly Creek Water Supply)	June–October	21	Within 9 years of license issuance	4	6	84	126	$58,800	$88,200
French Meadows South Shore Water Supply (French Meadows Water Supply)	June–October	21	Within 5 years of license issuance	4	6	84	126	$58,800	$88,200
Total				**66**	**142**	**2908**	**6228**	**$2,035,600**	**$4,359,600**
Annual Average								**$145,400**	**$311,400**

[1]Assumes 10-hour workday.
[2]Average hourly wage is $70.

Table 12. Level of Significance Associated with Implementation of New License Conditions.

	No Impact	Less-Than-Significant Impact	Significant Unavoidable Impact
CEQA Resource Area			
Aesthetics		X	
Agriculture and Forestry Resources	X		
Air Quality		X	
Biological Resources – Aquatic		X	
Biological Resources – Terrestrial		X	
Cultural Resources		X	
Geology and Soils		X	
Greenhouse Gas Emissions		X	
Hazards and Hazardous Materials		X	
Hydrology and Water Quality		X	
Land Use and Planning		X	
Mineral Resources	X		
Noise		X	
Population and Housing	X		
Public Services	X		
Recreation		X	
Transportation/Traffic		X	
Utilities and Service Systems		X	
Other CEQA Considerations			
Growth		X	
Significant Irreversible Environmental Change	X		
Cumulative		X	

FIGURES

Figure 1. NEPA/CEQA Schedule for the Middle Fork American River Project Relicensing.

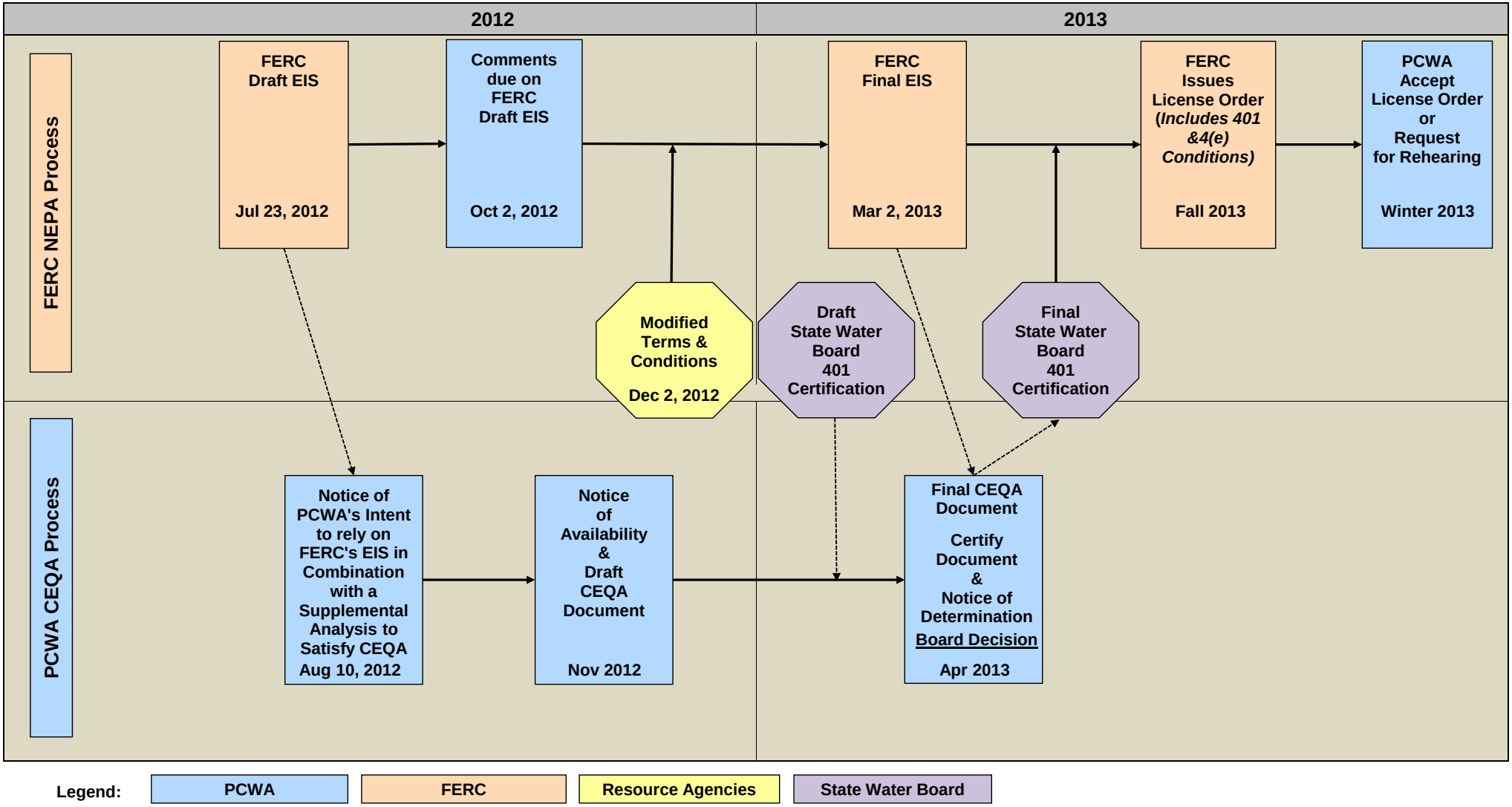


Figure 2. Overall Effects of Implementing New License Conditions.

Systems Upgrades

Hell Hole Reservoir Seasonal Storage Increase Improvement

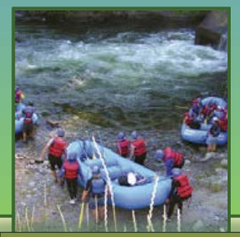
- Increases reservoir storage capacity
- Provides for down ramping of spills
- Enhances recreational boating opportunities

Small Diversion Modifications

- Reduces sediment removal activities
- Enhances natural sediment supply and transport

Outlet Works Modifications

- Provides for release and monitoring of instream flows and recreation flows



Recreation Resources

- Increases recreational boating opportunities in the bypass and peaking reaches
- Provides information that will allow recreational visitors to better utilize existing opportunities
- Improves stream-based angling experience
- Provides greater access to Project reservoirs by extending Hell Hole and French Meadows boat ramps
- Facilitates trip planning by providing publicly available real-time flow and reservoir water surface elevation information, and brochures and maps
- Enhances recreation opportunities by providing additional group camping and appropriately scaled facilities
- Relieves congestion and improves recreational experience at Indian Bar Rafter Access
- Improves dispersed recreation opportunities

Botanical & Wildlife Resources

- Enhances vegetation communities and wildlife habitats
- Establishes buffers and limited operating periods to protect special-status species
- Reduces the potential risk of raptor electrocutions
- Establishes noxious weed management program
- Provides employee training program on protection of special-status species
- Requires surveys prior to implementation of construction activities
- Specifies periodic special-status species surveys and reporting
- Increases consultation with resource agencies

Water Use Water Quality

- Protects PCWA's current and future consumptive water supply
- Maintains existing water uses and water rights
- Provides high water quality
- Maintains beneficial uses as defined by State Water Resources Control Board

Aquatic Resources

- Restores a portion of the natural hydrograph (spring high flows)
- Increases habitat year-round (in most locations and water year types) which enhances the aquatic community
- Enhances sediment supply and maintains transport in small streams and the Middle Fork American River
- Maintains healthy stream channel conditions (initiation of motion and scouring flows)
- Improves aquatic habitat and reduces fish stranding in peaking reach by increasing minimum instream flows, and reducing the magnitude and rate of flow fluctuations
- Protects special-status aquatic species (hardhead, foothill yellow-legged frog, and western pond turtle)

Cultural & Tribal

- Increases involvement of Native American Tribes
- Establishes protective buffers around sensitive resources
- Specifies measures for new resource discovery
- Provides employee resource awareness training
- Increases public education
- Requires periodic resource condition monitoring and reporting

Geomorphology and Riparian Resources

- Maintains channel forming flows (scouring flows)
- Increases riparian recruitment flows in bypass reaches
- Increases natural sediment supply and maintains transport in small bypass reaches, the Middle Fork American River, lower Rubicon River, and peaking reach
- Maintains or enhances healthy substrate conditions
- Enhances riparian resources

Land Use Socioeconomics Visual Quality Air Quality

- Maintains consistency with land use designations and comprehensive plans
- Improves the visual condition at select Project facilities and recreation facilities
- Protects air quality and continues production of clean renewable energy
- Increases expenditures that support the local economy
- Maintains recreation-based tourism in local economy

MAPS

MIDDLE FORK AMERICAN RIVER WATERSHED

Foresthill Road

Duncan Creek Diversion

Duncan Creek - Middle Fork Tunnel

FR 43

French Meadows Reservoir

French Meadows - Hell Hole Tunnel

FR 96

North Fork of Middle Fork American River

Duncan Creek

Middle Fork American River

FR 22

French Meadows Powerhouse

Hell Hole Reservoir

North Fork Long Canyon

South Fork Long Canyon

FR 2

Hell Hole Dam

Hell Hole Powerhouse

Mosquito Ridge Road

North Fork / South Fork Long Canyon Diversions

Middle Fork Interbay

Middle Fork Powerhouse

PCWA Power Headquarters

Blacksmith Flat Road

Oxbow Powerhouse

Ralston Afterbay Dam

Ralston Afterbay

Ralston Powerhouse

FR 23

Middle Fork - Ralston Tunnel

Hell Hole - Middle Fork Tunnel

Long Canyon

South Fork Rubicon River

Ellicott Bridge

Rubicon River

FR 2

Wentworth Springs Road

Project Facilities

- Powerhouse
- Dam
- Tunnel
- Penstock

Transportation

- Road

Hydrography

- Watercourse
- Water Body
- Middle Fork American River Watershed*

*Modified from Calwater Ver. 2.2 to represent drainage above high-water mark of Folsom Lake

PCWA

Placer County Water Agency
Middle Fork American River Project

Map 1

Middle Fork American River Project and Vicinity

0 0.5 1 2 Miles

Date: 8/17/10

Projection: CA State Plane, Zone 2
Datum: NAD 83

APPENDIX A

Draft EIS Circulation Documentation

PLACER COUNTY WATER AGENCY
SINCE 1957

PCWA
water • energy • stewardship

BOARD OF DIRECTORS
Gray Allen, District 1
Alex Ferreira, District 2
Lowell Jarvis, District 3
Mike Lee, District 4
Ben Mavy, District 5

David Breninger, General Manager
Ed Tiedemann, General Counsel

BUSINESS CENTER
144 Ferguson Road
MAIL
P.O. Box 6570
Auburn, CA 95604
PHONE
530.823.4850
800.464.0030
WWW.PCWA.NET

August 10, 2012
File No. 01030A
Electronically Filed

SUBJECT: **Notice of PCWA's Intent to Rely on FERC's Environmental Impact Statement, in Combination with a Supplemental Analysis prepared by PCWA, to Satisfy CEQA**

Notice of Availability of FERC's Draft Environmental Impact Statement for the Middle Fork American River Hydroelectric Project (FERC Project No. 2079-069)

Dear Relicensing Participant,

Placer County Water Agency (PCWA), a public agency, wishes to provide notice to the Middle Fork American River Project (MFP) relicensing participants of its intention to rely on the Environmental Impact Statement (EIS) prepared by the Federal Energy Regulatory Commission (FERC or Commission) for the relicensing of the MFP, in combination with a supplemental analysis to be prepared by PCWA, to meet the requirements of the California Environmental Quality Act (CEQA). Compliance with CEQA is necessary to support the future discretionary action of PCWA's Board of Directors regarding acceptance of the new license order issued by FERC for the continued operation and maintenance of the MFP. The CEQA process was initiated by PCWA with two public scoping meetings held on March 4, 2008.

PCWA is the lead agency for compliance with CEQA and, as such, will be responsible for preparing the CEQA Supplement to support acceptance of the new license order by PCWA's Board of Directors. The State Water Resources Control Board (State Water Board), also a public agency, will be a responsible agency to the CEQA process. The State Water Board may use the CEQA document to support issuance of a Water Quality Certification under Section 401 of the Clean Water Act for the MFP.

State CEQA Guidelines § 15225 provides that a lead agency (i.e., PCWA) may rely on a National Environmental Policy Act (NEPA) document (i.e., FERC's EIS) to satisfy CEQA provided that the NEPA document is circulated for public review as broadly as state law requires and its availability is noticed consistent with CEQA standards. To satisfy CEQA requirements, PCWA is hereby noticing the availability of FERC's Draft Environmental Impact Statement for the MFP to the relicensing participants (Attachments A-C).

Background

PCWA owns and operates the MFP under a 50-year FERC license, which will expire on February 28, 2013. Using FERC's Integrated Licensing Process, PCWA is seeking the renewal of its license to continue operation and maintenance of the MFP. The MFP serves as a multi-purpose water supply and hydro-generation project designed to conserve and control waters of the Middle Fork American River, the Rubicon River, and several associated tributary streams. The MFP is located on the west slope of the Sierra Nevada range primarily in Placer County, California. A small component of the MFP (a portion of Ralston Afterbay Dam) is located in El Dorado County, California. The MFP is almost entirely in the Tahoe and Eldorado National Forests, with a small portion located on PCWA-owned or private land. The MFP seasonally stores and releases water to meet consumptive demands within western Placer County and to generate power for the California electrical grid. Water for hydroelectric generation and consumptive use is diverted and stored under permits and licenses issued by the State Water Board. The MFP, which began operation in 1967, includes two major storage reservoirs (French Meadows and Hell Hole, that have a combined capacity of approximately 342,000 acre feet [AF]), five smaller regulating reservoirs and diversion pools, and five powerhouses (combined capacity of approximately 224 megawatts [MW]).

To formally initiate the MFP relicensing process, PCWA filed its Notice of Intent (NOI) to seek a new license and Pre-Application Document with FERC on December 13, 2007. Two CEQA scoping meetings followed on March 4, 2008. On September 28, 2010, PCWA filed its Draft License Application for the MFP. Following a 90-day review and comment period, PCWA revised the Draft License Application and filed its Final License Application on February 23, 2011.

Notice of Availability

On July 23, 2012, FERC issued a Draft Environmental Impact Statement (DEIS) for the MFP which was prepared in compliance with the NEPA of 1969, as amended. Attachments A and B provide a copy of FERC's formal notice of availability of the document and intention to hold public meetings for the purpose of receiving comments on the DEIS. The formal comment period on the DEIS ends Tuesday, October 2, 2012.

In addition to the locations where FERC has made the DEIS available for public review (Attachment A), a copy of FERC's DEIS is available for review on PCWA's website at http://relicensing.pcwa.net and at the following locations:

Placer County Water Agency
Business Center
144 Ferguson Road
Auburn, California 95604

Placer County Library
350 Nevada Street
Auburn, California 95603

El Dorado County Library
345 Fair Lane Drive
Placerville, California 95667

FERC's DEIS identified unavoidable adverse impacts, based on implementation of the proposed project (new environmental measures), to the following resources areas:

- Water Quality and Aquatic Biota,
- Fish,
- Riparian,
- Special-status Plants,
- Recreation Opportunities,
- Traffic,
- Noise, and
- Visual Resources.

FERC's analysis determined that all of these unavoidable adverse effects would be minor. Based on FERC's impact conclusions in the DEIS, at this time, PCWA does not anticipate any significant environmental effects under CEQA. However, PCWA will further evaluate impacts of implementation of the proposed project under CEQA in a draft supplemental analysis which will be distributed separately to the public for review and comment in November 2012.

Following public review of PCWA's Draft CEQA Supplement, State Water Board will issue a Draft 401 Water Quality Certification for public comment. PCWA will make any necessary revisions to its supplemental analysis based on: (1) comments received on FERC's DEIS; (2) comments received on the Draft CEQA Supplement; (3) conditions contained in the Draft 401 Water Quality Certification; and (4) comments received on the Draft 401 Water Quality Certification. PCWA will then issue a Final CEQA Supplement which will be presented to PCWA's Board of Directors for approval. The State Water Board will subsequently issue its Final 401 Water Quality Certification for the MFP.

If you have any questions, please do not hesitate to contact me at (530) 823-4889.

Sincerely,

Andrew Fecko
Resource Planning Administrator

c: Placer County Clerk
El Dorado County Clerk
State Clearinghouse

Attachment A: FERC's Notice of Availability of the Draft Environmental Impact Statement for the Middle Fork American River Hydroelectric Project and Intention to Hold Public Meetings.
Attachment B: Notice of Draft Environmental Impact Statement Public Meetings.
Attachment C: Distribution List.

PCWA NOA DEIS_Letter_081012.docx

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Middle Fork American River Project Project No. 2079-069

NOTICE OF AVAILABILITY OF THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE MIDDLE FORK AMERICAN RIVER HYDROLECTRIC PROJECT AND INTENTION TO HOLD PUBLIC MEETINGS

(July 23, 2012)

In accordance with the National Environmental Policy Act of 1969 and the Federal Energy Regulatory Commission (Commission or FERC) regulations contained in the Code of Federal Regulations (CFR)(18 CFR Part 380 [FERC Order No. 486, 52 FR 47897]), the Office of Energy Projects has reviewed the application for license for the Middle Fork American River Hydroelectric Project (FERC No. 2079), located on the Middle Fork of the American and Rubicon Rivers and Duncan and North and South Fork Long Canyon Creeks in Placer and El Dorado Counties, California, and has prepared a draft environmental impact statement (EIS) for the project. The project occupies 3,268 acres of federal lands administered by the U.S. Department of Agriculture - Forest Service.

The draft EIS contains staff's analysis of the applicant's proposal and the alternatives for relicensing the Middle Fork American River Hydroelectric Project. The draft EIS documents the views of governmental agencies, non-governmental organizations, affected Indian tribes, the public, the license applicant, and Commission staff.

A copy of the draft EIS is available for review at the Commission or may be viewed on the Commission's website at http://www.ferc.gov, using the "e-Library" link. Enter the docket number, excluding the last three digits, to access the document. For assistance, contact FERC Online Support at FERCOnlineSupport@ferc.gov or toll-free at (866)208-3676, or for TTY, contact (202)502-8659.

You may also register online at http://www.ferc.gov/docs-filing/esubscription.asp to be notified via email of new filings and issuances related to this or other pending projects. For assistance, contact FERC Online Support.

All comments must be filed by **Tuesday, October 2, 2012**, and should reference Project No. 2079-069. Comments may be filed electronically via the Internet. See 18

CFR 385.2001(a)(1)(iii) and the instructions on the Commission's website (http://www.ferc.gov/docs-filing/ferconline.asp) under the "eFiling" link. For a simpler method of submitting text only comments, click on "Quick Comment." For assistance, please contact FERC Online Support. Although the Commission strongly encourages electronic filing, documents may also be paper-filed. To paper-file, mail an original and eight copies to: Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission, 888 First Street, NE, Washington, DC 20426.

Anyone may intervene in this proceeding based on this draft EIS (18 CFR § 380.10). You must file your request to intervene as specified above.[1] You do not need intervenor status to have your comments considered.

Commission staff will hold two public meetings for the purpose of receiving comments on the draft EIS. The daytime meeting will focus on resource agency, Indian tribes, and non-governmental organization comments, while the evening meeting is primarily for receiving input from the public. All interested individuals and entities will be invited to attend one or both of the public meetings. A notice detailing the exact date, time, and location of the public meetings will be forthcoming.

For further information, please contact Carolyn Templeton at (202) 502-8785 or at carolyn.templeton@ferc.gov.

Kimberly D. Bose,
Secretary.

[1] Interventions may also be filed electronically via the Internet in lieu of paper. See the previous discussion on filing comments electronically.

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Middle Fork American River Hydroelectric Project P-2079-069 – CA
Placer County Water Agency

NOTICE OF DRAFT ENVIRONMENTAL IMPACT STATEMENT
PUBLIC MEETINGS

(July 31, 2012)

a. Date and Time of Meetings: Tuesday, August 28, 2012, from 9:00 a.m. to 11:00 a.m. and from 7:00 p.m. to 9:00 p.m. (Pacific Time)

b. Location: The Holiday Inn Auburn
120 Grass Valley Highway
Auburn, California 95603
Telephone: (530) 887-8787

c. FERC Contact: Carolyn Templeton, (202) 502-8785, carolyn.templeton@ferc.gov

d. Purpose of the Meeting: Commission staff will hold two public meetings for the purpose of receiving verbal and/or written comments on the draft environmental impact statement for the Middle Fork American River Project No. 2079. The daytime meeting will focus on resource agency, Indian tribes, and non-governmental organization comments, while the evening meeting is primarily for receiving input from the public. All interested individuals and entities are invited to attend one or both of the public meetings. The meetings will be recorded by a court reporter, and all statements will become part of the Commission's public record for the project. This meeting is posted on the Commission's calendar located at http://www.ferc.gov/EventCalendar/EventsList.aspx along with other related information.

e. All local, state, and federal agencies, tribes, and interested parties, are hereby invited to participate in the meeting.

Kimberly D. Bose,
Secretary.

FERC Service List

American Whitewater
Dave Steindorf
CA Stewardship Director
4 Baroni Dr
Chico, CA 95928-4314

CA Dept of Fish & Game
MaryLisa Lynch
Water Program Manager
1701 Nimbus Rd., Suite A
Rancho Cordova, CA 95670

CA Dept of Fish & Game
Nancee Murray
Senior Staff Counsel
Office of Gen Counsel
1416 Ninth St., 12th Flr
Sacramento, CA 95814

CA Dept of Fish & Game
Sharon J. Stohrer
Staff Environmental Scientist
1701 Nimbus Rd.
Rancho Cordova, CA 95670

CA Dept of Water Resources
Russ J Kanz
1001 I St.
Sacramento, CA 95814

CA Department of Water Resources
David Rose, Staff Counsel
1001 I Street
Sacramento, CA 95814

California Outdoors
Nate Rangel
P.O. Box 401
Coloma, CA 95613

California Sportfishing Protection Alliance
Christopher Shutes
1608 Francisco Street
Berkeley, CA 94703

Dept of the Interior
Hydropower Assistance Program
Stephen M. Bowes,
National Park Service
333 Bush Street, Suite 500
San Francisco, CA 94104

Dept of the Interior
Office of the Solicitor
DOI Solicitor
2800 Cottage Way, E 1712
Sacramento, CA 95825

Dept of the Interior
Office of the Solicitor
Luke Miller
Assistant Regional Solicitor
2800 Cottage Way, Ste E1712
Sacramento, CA 95825

Dept of the Interior
Office of the Solicitor
Kerry O'Hara
Assistant Regional Solicitor
2800 Cottage Way, Ste E1712
Sacramento, CA 95825

Dept of the Interior
Office of the Solicitor
Kevin Tanaka, Attorney
Solicitor
2800 Cottage Way, Ste E1712
Sacramento, CA 95825

Downey Brand LLP
David Aladjem
555 Capitol Mall
Sacramento, CA 95814

Downey Brand LLP
Wendy Jones
621 Capitol Mall, 18th Flr
Sacramento, CA 95814

Granite Bay Flycasters
Federation of Flyfishers
Spring Creek Guide Service
William Carnazzo
5209 Crestline Drive
Foresthill, CA 95631

Horseshoe Bar Fish & Game Preserve
Foothills Angler Coalition
Thomas Bartos, President
7430 Mornigside Dr.
Granite Bay, CA 95746

Foothills Water Network
Julie Leimbach, Coordinator
PO Box 713
Lotus, CA 95651-0713

FERC Service List (continued)

Individual
Hilde Schweitzer
P. O. Box 852
Lotus, CA 95651

KMT&G – Wells Fargo Center
Janet Goldsmith
400 Capitol Mall, 27th Floor
Sacramento, CA 94814-4417

Pacific Gas and Electric Company
Paul Maben
Supervising Program Manager
1108 Murphy's Grade Road
Angels Camp, CA 95222

Pacific Gas and Electric Company
Law Department FERC Cases
77 Beale Street, Room 3120 B30A
San Francisco, CA 94105-7442

Placer County Water Agency
David A. Breninger
General Manager
P.O. Box 6570
Auburn, CA 95604-6570

Protect American River Canyons
Gary Estes, Board Member
4135 Eagles Nest
Auburn, CA 95603

Spiegel & McDiarmid LLP
William Huang
1333 New Hampshire Ave., NW
Washington, DC 20036

Trout Unlimited
Brian J. Johnson, Staff Attorney
2239 5th St.
Berkeley, CA 94710

USDA-Forest Service
Beth Paulson
Hydro Coordinator
100 Forni Rd
Placerville, CA 95667

Upper American River Foundation
John Donovan
741 Commons Dr.
Sacramento, CA 95825

Pacific Gas and Electric Company
Alyssa Koo
Attorney
77 Beale Street, #B30A
San Francisco, CA 94105

Pacific Gas and Electric Company
Mark Patrizio
Attorney
P.O. Box 7442
San Francisco, CA 94120

Placer County Water Agency
Board of Directors
Chairman
P.O. Box 6570
Auburn, CA 95604

Placer County Water Agency
Jay L'Estrange
Director of Power Generation Services
P.O. Box 667
Foresthill, CA 95631-0667

Sackheim Consulting
Kelly Sackheim, Principal
5096 Cocoa Palm Way
Fair Oaks, CA 95628-5159

Spiegel & McDiarmid LLP
Margaret McGoldrick
1333 New Hampshire Ave., NW
Washington, DC 20036

US Fish & Wildlife Service
Field Supervisor
2800 Cottage Way, Ste W2605
Sacramento, CA 95825

USDA-Office of the General Counsel
Joshua S. Rider
33 New Montgomery, 17th Flr
San Francisco, CA 94105

Other Interveners

Upper American River Foundation
Bill Templin
5125 Linda Lou Drive
Carmichael, CA 95608

US Department of Commerce
Kathryn Kempton, Office of General Counsel
National Oceanic and Atmospheric Administration
NMFS –SW Regional Office
501 W. Ocean Blvd., Suite 4470
Long Beach, CA 90802

US Department of Commerce
Richard Wantuck
National Oceanic and Atmospheric Administration
NMFS –Santa Rosa Area Office
777 Sonoma Avenue, Room 325
Santa Rosa, CA 95404-4731

OTHERS

National Forest Systems, Forest Service
Deputy Chief
Washington Office (WO), Lands Staff
Mail Stop 1124
1400 Independence Ave., S.W.
Washington, D.C. 20250-0003

Federal Government/Representatives

Federal Energy Regulatory Commission
Kimberly D. Bose, Secretary
888 First Street, N.E.
Room 61-02
Washington, DC 20426

National Marine Fisheries Service
Habitat Manager
777 Sonoma Avenue, Rm. 325
Santa Rosa, CA 95404

National Oceanic & Atmospheric Adminstration – Fisheries
Jeff McLain
Acting Central Valley Supervisor
650 Capitol Mall, Suite 8300
Sacramento, CA 95814

US Bureau of Land Management
James Michael Eicher
Associate Field Manager
5152 Hillsdale Circle
El Dorado Hills, CA 95762

US Bureau of Land Management
William Haigh
Office/Field Manager
5152 Hillsdale Circle
El Dorado Hills, CA 95672|

US Bureau of Reclamation
Peggi Brooks
Chief Recreation Resources Division
Central California Area Officer
7794 Folsom Dam Road
Folsom, CA 95630-1799

US Bureau of Reclamation
Elizabeth (Beth) Dyer
Natural Resources Specialist
Central California Area Office
7794 Folsom Dam Rd
Folsom, CA 95630

US Bureau of Reclamation
Don Glaser
Regional Director
Mid-Pacific Region
2800 Cottage Way, MP-100
Sacramento, CA 95825-1846

US Bureau of Reclamation
Mike Finnegan
Central Area Office Manager
7794 Folsom Dam Road
Folsom, CA 95630

US Environmental Protection Agency
Region 9 (AZ, CA, HI, NV)
75 Hawthorne Street
San Francisco, CA 94105

US Forest Service – El Dorado National Forest
Dorit Buckley
Archeologist
Georgetown Ranger District
7600 Wentworth Springs Road
Georgetown, CA 95634

US Forest Service – El Dorado National Forest
Susan Durham
Botanist
100 Forni Road
Placerville, CA 95667

US Forest Service – El Dorado National Forest
Jon Jue
Resource Officer
7600 Wentworth Springs Rd
Georgetown, CA 95634

US Forest Service – El Dorado National Forest
Tom Koler
Geologist
100 Forni Road
Placerville, CA 95667

US Forest Service – El Dorado National Forest
Dawn Lipton
Wildlife Biologist
100 Forni Road
Placerville, CA 95667

US Forest Service – El Dorado National Forest
Lester Lubetkin
Recreation
100 Forni Road
Placerville, CA 95667

US Forest Service – El Dorado National Forest
Kim Morales
Hydrologist
100 Forni Road
Placerville, CA 95667

US Forest Service – El Dorado National Forest
Katy Parr
Heritage & Tribal Program Manager
100 Forni Road
Placerville, CA 95667

Federal Government/Representatives (continued)

US Forest Service – El Dorado National Forest
Paul Sanders
Engineering/Roads Specialist
100 Forni Road
Placerville, CA 95667

US Forest Service – El Dorado National Forest
Kathy Hardy
Forest Supervisor
100 Forni Road
Placerville, CA 95667

US Forest Service – El Dorado National Forest
Patricia Trimble
District Ranger
Georgetown Ranger District
7600 Wentworth Springs Road
Georgetown, CA 95634

US Forest Service – El Dorado National Forest
Jann Williams
Biologist
100 Forni Road
Placerville, CA 95667

USDA – Natural Resources Conservation
Mike Brenner
District Conservationist
251 Auburn Ravine Road
Auburn, CA 95603

US Forest Service – Region 5 – Regional
Dennis Smith, RHAT Program Manager
Regional Hydropower Assistance Team (RHAT)
Pacific Southwest Region
1323 Club Drive
Vallejo, CA 94592

US Forest Service – Sierra Nevada Research Ctr
Amy Lind
Wildlife Biologist/Herpetologist
1731 Research Park Drive
Davis, CA 95618

US Forest Service – Tahoe National Forest
William Davis
Landscape Architect
22830 Foresthill Road
Foresthill, CA 95631

US Forest Service – Tahoe National Forest
Chris Fischer, District Ranger
American River Ranger District
22830 Foresthill Road
Foresthill, CA 95631

US Forest Service – Tahoe National Forest
Scott Husmann
Engineer
22830 Foresthill Road
Foresthill, CA 95631

US Forest Service – Tahoe National Forest
Victor Lyon
Wildlife Biologist
22830 Foresthill Road
Foresthill, CA 95631

US Forest Service – Tahoe National Forest
Tom Quinn
Forest Supervisor
631 Coyote St.
Nevada City, CA 95959-2250

US Forest Service – Tahoe National Forest
Carrie Smith
Heritage Program Manager
Tribal Relations Program Manager
10811 Stockcrest Spring Dr
Truckee, CA 96161

US Forest Service – Tahoe National Forest
Nolan Smith
District Archeologist
22830 Foresthill Road
Foresthill, CA 95631

US Forest Service – Tahoe National Forest
Dan Teater
Fisheries Biologist
22830 Foresthill Road
Foresthill, CA 95631

US Forest Service – Tahoe National Forest
Mo Tebbe
Public Service Officer
22830 Foresthill Road
Foresthill, CA 95631

US Fish & Wildlife Service
Jeremiah Karuzas
Fish and Wildlife Biologist
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

US House of Representatives
Tom McClintock
508 Cannon HOB
Washington, DC 20515

Federal Government/Representatives (continued)

US Senate
Barbara Boxer
501 I Street, Suite 7-600
Sacramento, CA 95814

US Senate
Dianne Feinstein
One Post Street, Suite 2450
San Francisco, CA 94104

State Government/Representatives

Auburn Area Recreation & Park District
Kahl Muscott
123 Recreation Drive
Auburn, CA 95603

California Department of Boating & Waterways
Harold Flood
2000 Evergreen Street, Suite 100
Sacramento, CA 95815-3888

California Department of Fish & Game
Robert Hughes
Senior Hydraulic Engineer
830 S Street
Sacramento, CA 95814

California Department of Fish & Game
Beth Lawson
Associate Hydraulic Engineer
1701 Nimbus Road
Rancho Cordova, CA 95670

California Department of Fish & Game
Stafford Lehr
1701 Nimbus Road
Rancho Cordova, CA 95670

California Department of Fish & Game
Matt Myers
Environment Scientist
601 Locust Street
Redding, CA 96001

California State Parks
Bill Deitchman
California State Park Ranger
501 El Dorado St
Auburn, CA 95603

California State Parks – ASRA
Mike Lynch, Acting Superintendent
501 El Dorado St.
Auburn, CA 95603

California State Parks – Folsom State Park
Jim Micheaels
Recreation Area
7806 Folsom Auburn Road
Folsom, CA 95630

State Water Resources Control Board
Jennifer Watts
Division of Water Rights
P.O. Box 2000
Sacramento, CA 95812-2000

Department of Parks and Recreations
Milford Wayne Donaldson, FAIA
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd St, Suite 100
Sacramento, CA 95816

Department of Water Resources
Ted Frink
P.O. Box 942836
Sacramento, CA 94236-0001

CA State Senator
Ted Gaines
State Capitol Office
Room 2068
Sacramento, CA 94248-0001

CA State Assemblywoman
Beth Gaines
1700 Eureka Road, Suite 160
Roseville, CA 95661

State Clearinghouse
P.O. Box 3044
Sacramento, CA 95812-3044

Local Government

City of Auburn
Robert Richardson
City Manager
1225 Lincoln Way
Auburn, CA 95603

City of Colfax
Bruce Kranz
City Manager
P.O. Box 702
Colfax, CA 95713

City of Lincoln
Jim Estep
City Manager
600 6th Street
Lincoln, CA 95648

City of Roseville
Ray Kerridge
City Manager
311 Vernon Street,
Roseville, CA 95678

County of Placer
Brett Storey
County Executive Office
175 Fulweiler Ave
Auburn, CA 95603

County of Placer
Eric Waidmann
Assistant Treasurer–Tax Collector
2976 Richardson Drive
Auburn, CA 95603

El Dorado Board of Supervisors
Suzanne Allen de Sanchez
Clerk to the Board
330 Fair Ln
Placerville, CA 95667

Foresthill Municipal Advisory Council
Larry Jordan
P.O. Box 207
Foresthill, CA 95631

Placer County
Holly Heinzen
Assistance County Executive Officer
175 Fulweiler Avenue
Auburn, CA 95603

Placer County Board of Supervisors
Jocelyn Maddux, Field Rep. District 5
175 Fulweiler Avenue
Auburn, California 95603

Placer County Counsel's Office
Scott Finley
Supervising Deputy County Counsel
175 Fulweiler Avenue
Auburn, California 95603

Town of Loomis
Rick Angelocci
City Manager
6140 Horseshoe Bar Road, Suite K
Loomis, CA 95650

Public Agency

El Dorado County Water Agency
Dave Eggerton
General Manager
3932 Ponderosa Road, Suite 200
Shingle Springs, CA 95682

El Dorado County Water Agency
Tracey Eden-Bishop, P.E.
Water Resources Engineer
3932 Ponderosa Road, Suite 200
Shingle Springs, CA 95682

El Dorado Irrigation District
Brian Deason
Hydroelectric Compliance Analyst
2890 Mosquito Road
Placerville, CA 95667

Foresthill Public Utility District
Leo Havener
General Manager.O. Box 266
Foresthill, CA 95631

Georgetown Divide Public Utility District
Henry White
General Manager
P.O. Box 4240
Georgetown, CA 95634

Nevada Irrigation District
Ron Nelson
General Manager
P.O. Box 1019
Grass Valley, CA 95945-1019

Placer County Resource Conservation District
Tom Wehri
Board President
251 Auburn Ravine Road, Ste 105
Auburn, CA 95603

San Juan Water District
Shauna Lorance
General Manager
9935 Auburn-Folsom Road
Granite Bay, CA 95746

Native American Tribes

Colfax–Todds Valley Consolidated Tribe
Leon Poitras
3420 Rattlesnake Rd
Newcastle, CA 95658

Colfax–Todds Valley Consolidated Tribe
Pam Cubbler
Chair
P.O. Box 4884
Auburn, CA 95604-4884

Colfax-Todds Valley Consolidated Tribe
Judy Marks, Secretary
P.O. Box 4884
Auburn, CA 95604

Nisenan Maidu
April Moore
19630 Placer Hills Rd
Colfax, CA 95713

Shingle Springs Rancheria
Nicolas Fonseca
Chair
P.O Box 1340
Shingle Springs, CA 95682

Shingle Springs Rancheria
Jeff Murray
P.O.Box 1340
Shingle Springs, CA 95682

T'Si–Akim Maidu
Donald Ryberg
Chair
1275 E Main Street
Grass Valley, CA 95945

Todds Valley Miwok–Maidu Cultural Foundation
John Boche, Chair
P.O. Box 1490
Foresthill, CA 95631

Todds Valley Miwok-Maidu Cultural Foundation
Keith Drone
Cultural Preservation Chair
P.O. Box 1490
Foresthill, CA 95631

United Auburn Indian Community Preservation Committee
Allen Adams
10720 Indian Hill Rd
Auburn, CA 95603

United Auburn Indian Community of the Auburn Rancheria
Roman Porter
Tribal Administrator
10720 Indian Hill Rd
Auburn, CA 95603

United Auburn Indian Community of the Auburn Rancheria
Marcos Guerrero, M.A., RPA
Cultural Resources Specialist
10720 Indian Hill Rd
Auburn, CA 95603

United Auburn Indian Community of the Auburn Rancheria
David Keyser
Tribal Chairperson
10720 Indian Hill Rd
Auburn, CA 95603

United Auburn Indian Community Preservation Committee
Sande Delgado
10720 Indian Hill Rd
Auburn, CA 95603

United Auburn Indian Community Preservation Committee
John L. Williams
10720 Indian Hill Rd
Auburn, CA 95603

Washoe Tribe of Nevada & California
Marie Barry
Environmental Specialist
919 Highway 395 South
Gardnerville, NV 89410

Washoe Tribe of Nevada & California
Wanda Batchelor
Chairwoman
919 US Highway 395 South
Gardnerville, NV 89410

Washoe Tribe of Nevada & California
Darrel Cruz
CRO/THPO
919 US Highway 395 South
Gardnerville, NV 89410

Non-Governmental Organizations

American River Recreation Association & Sierra Nevada Alliance
Bill Center
P.O. Box 623
Lotus, CA 95651

Auburn Chamber of Commerce
Bruce Cosgrove, CEO
601 Lincoln Way
Auburn, CA 95603

Auburn Chamber of Commerce
Rich Johnson
Government Affairs Committee
601 Lincoln Way
Auburn, CA 95603

Auburn Flycasters
Granite Bay Flycasters
Larry Goodell
P.O. Box 756
Auburn, CA 95604

Audubon Society
Don Rivenes
12826 Newtown Road
Nevada City, CA 95959

California Hydropower Reform Coalition
Laura Norlander
2140 Shattuck Ave., Suite 605
Berkeley, CA 94704

California Native Plant Society
Sue Britting
P.O. Box 377
Coloma, CA 95613

Canyon Keepers
Jim Ferris
501 El Dorado St
Auburn, CA 95603

Dry Creek Conservancy
Greg Bates
P.O. Box 1311
Roseville, CA 95678

Farm Bureau, Placer County
Jim Bachman
10120 Ophir Road
Newcastle, CA 95658

Friends of the North Fork
Michael Garabedian
7143 Gardenvine Avenue
Citrus Heights, CA 95621

Friends of the River
Ron Stork
915 20th St
Sacramento, CA 95814

Granite Bay Flycasters
Heath Wakelee
4120 Douglas Blvd. #306-356
Granite Bay, CA 95746-5936

Patricia Gibbs
5425 Lake Forest Dr
Loomis, CA 95650

Pacific Gas & Electric
Dave Ward
343 Sacramento Street
Auburn, CA 95603

Pacific Gas & Electric
Dave Hinshaw
PG&E Account Executive
343 Sacramento Street
Auburn, CA 95603

Pacific Gas & Electric
Steve Pierano
Relicensing Project Manager
Mail Code N11E
P.O. Box 70000
San Francisco, CA 94177-0001

Protect American River Canyons
Eric Peach
P.O. Box 9312
Auburn, CA 95604

Sacramento Municipal Utility District
David Hanson
Project Manager, Hydro Relicensing
6201 S St
Sacramento, CA 95817

Sacramento Municipal Utility District
Dudley McFadden
Principal Civil Engineer
P.O. Box 15830
Sacramento, CA 95817

Non-Governmental Organizations (continued)

Sacramento Municipal Utility District
Jim Shetler
Assistant General Manager, Energy Supply
6201 S St,
Sacramento, CA 95817

Sacramento Municipal Utility District
Carol Szuch
Management Analyst
6201 S Street
Sacramento, CA 95817

Sierra Club – Mother Lode Chapter
Terry Davis
801 K Street, Suite 2700
Sacramento, CA 95814

Sierra Club – Mother Lode Chapter
Allan Eberhart
801 K Street, Suite 2700
Sacramento, CA 95814

Sierra Club – Placer Group
Marilyn Jasper
P.O. Box 7167
Auburn, CA 95604-7167

Sierra Salmon Alliance
Tyrone Gorre
1700 Meadow Vista Road
Meadow Vista, CA 95722

SARSAS
Jack Sanchez
3675 Larkin Lane
Auburn, CA 95602

Trout Unlimited
Chuck Bonham, California Director
1808B 5th Street
Berkeley, CA 94710

Auburn Flycasters
Grant Fraser
President
P.O. Box 0756
Auburn, CA 95604

Western States Endurance Run
Anthony Rossmann
Rossmann & Moore, LLP
380 Hayes Street
San Francisco, CA 94102

Western States Trail Foundation
Thomas Christofk
1216-C High Street
Auburn, CA 95603

Western States Trail Foundation
Steve Hallmark
7845 Jeannie Ct.
Loomis, CA 95650

Western States Trail Foundation
Mike Pickett
1216-C High Street
Auburn, CA 95603

West Yost
Max Colorado
1380 Lead Hill Road, Suite 201
Roseville, CA 95661

Public

Advanced Energy Strategies
Dean Tibbs
1800 Sutter Street, Suite 870
Concord, CA 94520-2540

Canyon Raft Rentals
John Hauschild
133 Borland Avenue
Auburn, CA 95603

Cramer Fish Sciences
Bradley J. Cavallo
13300 New Airport Road, Suite 102
Auburn, CA 95602

Dunlap Group
John Dunlap
231 Cherry Avenue, Suite 202
Auburn, CA 95603

Foresthill Messenger
Jim Linsdau
P.O. Box 1024
Foresthill, CA 95631

FROG
Sherry Wicks
P.O. Box 568
Foresthill, CA 95631

Jones & Associates
Tom Jones
12331 Incline Drive
Auburn, CA 95603

Leupp & Woodall
Tim Woodall
149 Court Street
Auburn, CA 95603

Lone Star Timber
Larry Gonzales
Mason, Bruce, & Girard, Inc.
13620 Lincoln Way, Suite 380
Auburn, CA 95603

Northern CA Council/Fed of Fly Fishers
Gary Flanagan
8459 Lakeland Drive
Granite Bay, CA 95746

Sierra Pacific Industries
Tim Feller
P.O. Box 496028
Redding, CA 96049-6028

Spiegel & McDiarmid LLP
Frances Francis
1333 New Hampshire Ave., NW
Washington, DC 20036

Stoel Rives, Attorney at Law
Attn: Denise Morison
770 L Street, Suite 800
Sacramento, CA 95814

Troutman Sanders LLP
Clifford Sikora
401 Ninth St., NW, Suite 1000
Washington D.C. 20004-2134

Roger Canfield
7818 Olympic Way
Fair Oaks, CA 95628

Bob Center
10794 Arrow Point Place
Grass Valley, CA 95959

Neil Cochran
5344 Crestline Drive
Foresthill, CA 95631

Dan Crandall
P.O. Box 828
Lotus, CA 95651

Anthony DeRiggi
932 46th Street
Sacramento, CA 95819

Craig Crouch
5307 Hawkhaven Court
Rocklin, CA 95765

Charlie Fullerton
135 Mering Court
Sacramento, CA 95864

John Greene
P.O. Box 465
Meadow Vista, CA 95722

Chris Shackleton
2359 Sonata Drive
Rancho Cordova, CA 95670

Donna Williams
4170 Auburn Folsom Road
Loomis, CA 95650

PUBLIC NOTICE

SEE ATTACHED

The above space is reserved for Court/County Filed Date Stamp

PROOF OF PUBLICATION (2015.5 C.C.P.)

STATE OF CALIFORNIA
County of Placer

I am a citizen of the United States and employed by a publication in the County aforesaid. I am over the age of eighteen years, and not a party to the mentioned matter. I am the principal clerk of **The Auburn Journal**, a newspaper of general circulation, in the **City of Auburn**, which is printed and published in the **County of Placer**. This newspaper has been judged a newspaper of general circulation by the Superior Court of the State of California, in and for the **County of Placer**, on the date of May 26, 1952 (Case Number 17407). The notice, of which the attached is a printed copy (set in type not smaller than nonpareil) has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to-wit:

AUGUST 14

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

Terry Clark

Dated in Auburn, California

AUGUST 14, 2012

PROOF OF PUBLICATION
THE AUBURN JOURNAL
1030 High Street
Auburn, CA 95604-5910

PROOF OF PUBLICATION, CONT.

THE AUBURN JOURNAL
1030 High Street
AUBURN, CA 95604-5910

16467142

PUBLIC NOTICE
Placer County Water Agency
Middle Fork American River Project Relicensing
Notice of PCWA's Intent to Rely on FERC's Environmental Impact Statement, in Combination with a Supplemental Analysis Prepared by PCWA, to Satisfy CEQA.
Notice of Availability of FERC's Draft Environmental Impact Statement for the Middle Fork American River Hydroelectric Project (FERC Project No. 2079-069).

In accordance with State CEQA Guidelines §§15221 and 15225, Placer County Water Agency (PCWA), a public agency, intends to rely on the Environmental Impact Statement (EIS) prepared by the Federal Energy Regulatory Commission (FERC or Commission) for the relicensing of the Middle Fork American River Project (MFP), in combination with a supplemental analysis to be prepared by PCWA, to meet the requirements of the California Environmental Quality Act (CEQA). Compliance with CEQA is necessary to support the future discretionary action of PCWA's Board of Directors regarding acceptance of the new license order issued by FERC for the continued operation and maintenance of the MFP. The CEQA process was initiated by PCWA with two public scoping meetings held on March 4, 2008.

PROJECT DESCRIPTION AND LOCATION: PCWA owns and operates the MFP under a 50-year FERC license, which will expire on February 28, 2013. Using FERC's Integrated Licensing Process, PCWA is seeking the renewal of its license to continue operation and maintenance of the MFP. The MFP serves as a multi-purpose water supply and hydro-generation project designed to conserve and control waters of the Middle Fork American River, the Rubicon River, and several associated tributary streams. The MFP is located on the west slope of the Sierra Nevada range primarily in Placer County, California. A small component of the MFP (a portion of Ralston Afterbay Dam) is located in El Dorado County, California. The MFP is almost entirely in the Tahoe and Eldorado National Forests, with a small portion located on PCWA-owned or private land. The MFP seasonally stores and releases water to meet consumptive demands within western Placer County and to generate power for the California electrical grid. Water for hydroelectric generation and consumptive use is diverted and stored under permits and licenses issued by the State Water Board. The MFP, which began operation in 1967, includes two major storage reservoirs (French Meadows and Hell Hole that have a combined capacity of approximately 342,000 acre-feet), five smaller regulating reservoirs and diversion pools, and five powerhouses (combined capacity of approximately 224 megawatts).

COMMENT PERIOD: On July 23, 2012, FERC issued a Draft Environmental Impact Statement (DEIS) for the MFP which was prepared in compliance with the National Environmental Policy Act of 1969, as amended. The comment period on FERC's DEIS began on August 3, 2012. All comments on the DEIS must be filed by Tuesday, **October 2, 2012** and should reference Project No. 2079-069. Comments may be filed electronically via the Internet. See 18 CFR 385.2001(a)(1)(iii) and the instructions on the Commission's website **(http://www.ferc.gov/docs-filing/ferconline.asp)** under the "eFiling" link. For a simpler method of submitting text only comments, click on "Quick Comment." Although the Commission strongly encourages electronic filing, documents may also be paper-filed. To paper-file, mail an original and eight copies to: Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission, 888 First Street, NE, Washington, DC 20426.

PUBLIC MEETINGS: FERC staff will hold two public meetings for the purpose of receiving verbal and/or written comments on the DEIS for the MFP on Tuesday, August 28, 2012, from 9:00 a.m. to 11:00 a.m. and from 7:00 p.m. to 9:00 p.m. at The Holiday Inn Auburn, 120 Grass Valley Highway, Auburn, CA 95603.

SIGNIFICANT EFFECTS: FERC's DEIS identified unavoidable adverse impacts to eight resource areas, however, FERC's analysis determined that all of these unavoidable adverse effects would be minor. Based on FERC's impact conclusions in the DEIS, at this time, PCWA does not anticipate any significant environmental effects under CEQA. However, PCWA will further evaluate impacts of implementation of the proposed project under CEQA in a draft supplemental analysis which will be distributed separately to the public for review and comment in November 2012.

DOCUMENT AVAILABILITY: A copy of the DEIS is available for review at the Commission or may be viewed on the Commission's website at **http://www.ferc.gov,** using the "e-Library" link. In addition, a copy of the DEIS is available for review on PCWA's website at **http://relicensing.pcwa.net** and at the Placer County Water Agency, Business Center, 144 Ferguson Road, Auburn, California 95604; Placer County Library, 350 Nevada Street, Auburn, California 95603; El Dorado County Library, 345 Fair Lane Drive, Placerville, California 95667.

CONTACT: For questions regarding FERC's DEIS for the MFP, please contact Carolyn Templeton at (202) 502-8785 or at **carolyn.templeton@ferc.gov.** For questions or comments regarding PCWA's intent to rely on FERC's DEIS, in combination with a supplemental analysis to satisfy CEQA, please contact: Andrew Fecko, Resource Planning Administrator, Placer County Water Agency, P.O. Box 6570, Auburn, CA 95604, Phone (530) 823-4889, Fax (530) 823-4960, **afecko@pcwa.net**

PUBLISHED IN AUBURN JOURNAL: AUGUST 14, 2012

Mountain Democrat

PROOF OF PUBLICATION
(2015.5 C.C.P.)

Proof of Publication of
NOTICE OF AVAILABILITY

STATE OF CALIFORNIA
County of El Dorado

I am a citizen of the United States and a resident of the County aforesaid; I'm over the age of eighteen years, and not a party to or interested in the above-entitled matter. I am principal clerk of the printer at the Mountain Democrat, 1360 Broadway, a newspaper of general circulation, printed and published Monday, Wednesday, and Friday, in the City of Placerville, County of El Dorado, and which newspaper has been adjudged a newspaper of general circulation by the Superior Court to the County of El Dorado, State of California, under the date of March 7, 1952, Case Number 7258; that the notice, of which the annexed is a printed copy (set in type no smaller than non-pareil), has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to-wit:

08/15

All in the year 2012

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Dated at Placerville, California, this **15th** day of **AUGUST, 2012**

Kristin Mathos
Signature

NOTICE OF AVAILABILITY
Placer County Water Agency
Middle Fork American River Project Relicensing

Notice of PCWA's Intent to Rely on FERC's Environmental Impact Statement, in Combination with a Supplemental Analysis Prepared by PCWA, to Satisfy CEQA.

Notice of Availability of FERC's Draft Environmental Impact Statement for the Middle Fork American River Hydroelectric Project (FERC Project No. 2079-069).

In accordance with *State CEQA Guidelines* §§15221, and 15225, Placer County Water Agency (PCWA), a public agency, intends to rely on the Environmental Impact Statement (EIS) prepared by the Federal Energy Regulatory Commission (FERC or Commission), for the relicensing of the Middle Fork American River Project (MFP), in combination with a supplemental analysis to be prepared by PCWA, to meet the requirements of the California Environmental Quality Act (CEQA). Compliance with CEQA is necessary to support the future discretionary action of PCWA's Board of Directors regarding acceptance of the new license order issued by FERC for the continued operation and maintenance of the MFP. The CEQA process was initiated by PCWA with two public scoping meetings held on March 4, 2008.

PROJECT DESCRIPTION AND LOCATION: PCWA owns and operates the MFP under a 50-year FERC license, which will expire on February 28, 2013. Using FERC's Integrated Licensing Process, PCWA is seeking the renewal of its license to continue operation and maintenance of the MFP. The MFP serves as a multi-purpose water supply and hydro-generation project designed to conserve and control waters of the Middle Fork American River, the Rubicon River, and several associated tributary streams. The MFP is located on the west slope of the Sierra Nevada range primarily in Placer County, California. A small component of the MFP (a portion of Ralston Afterbay Dam) is located in El Dorado County, California. The MFP is almost entirely in the Tahoe and Eldorado National Forests, with a small portion located on PCWA-owned or private land. The MFP seasonally stores and releases water to meet consumptive demands within western Placer County and to generate power for the California electrical grid. Water for hydroelectric generation and consumptive use is diverted and stored under permits and licenses issued by the State Water Board. The MFP, which began operation in 1967, includes two major storage reservoirs (French Meadows and Hell Hole that have a combined capacity of approximately 342,000 acre-feet), five smaller regulating reservoirs and diversion pools, and five powerhouses (combined capacity of approximately 224 megawatts).

COMMENT PERIOD: On July 23, 2012, FERC issued a Draft Environmental Impact Statement (DEIS) for the MFP which was prepared in compliance with the National Environmental Policy Act of 1969, as amended. The comment period on FERC's DEIS began on August 3, 2012. All comments on the DEIS must be filed by **Tuesday, October 2, 2012** and should reference Project No. 2079-069. Comments may be filed electronically via the Internet. See 18 CFR 385.2001(a)(1)(iii) and the instructions on the Commission's website (http://www.ferc.gov/docs-filing/ferconline.asp) under the "eFiling" link. For a simpler method of submitting text only comments, click on "Quick Comment." Although the Commission strongly encourages electronic filing, documents may also be paper-filed. To paper-file, mail an original and eight copies to: Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission, 888 First Street, NE, Washington, DC 20426.

PUBLIC MEETINGS: FERC staff will hold two public meetings for the purpose of receiving verbal and/or written comments on the DEIS for the MFP on Tuesday, August 28, 2012, from 9:00 a.m. to 11:00 a.m. and from 7:00 p.m. to 9:00 p.m. at The Holiday Inn Auburn, 120 Grass Valley Highway, Auburn, CA 95603.

SIGNIFICANT EFFECTS: FERC's DEIS identified unavoidable adverse impacts to eight resource areas, however, FERC's analysis determined that all of these unavoidable adverse effects would be minor. Based on FERC's impact conclusions in the DEIS, at this time, PCWA does not anticipate any significant environmental effects under CEQA. However, PCWA will further evaluate impacts of implementation of the proposed project under CEQA in a draft supplemental analysis which will be distributed separately to the public for review and comment in November 2012.

DOCUMENT AVAILABILITY: A copy of the DEIS is available for review at the Commission or may be viewed on the Commission's website at http://www.ferc.gov, using the "e-Library" link. In addition, a copy of the DEIS is available for review on PCWA's website at http://relicensing.pcwa.net and at the Placer County Water Agency, Business Center, 144 Ferguson Road, Auburn, California 95604; Placer County Library, 350 Nevada Street, Auburn, California 95603; El Dorado County Library, 345 Fair Lane Drive, Placerville, California 95667.

CONTACT: For questions regarding FERC's DEIS for the MFP, please contact Carolyn Templeton at (202) 502-8785 or at carolyn.templeton@ferc.gov. For questions or comments regarding PCWA's intent to rely on FERC's DEIS, in combination with a supplemental analysis to satisfy CEQA, please contact Andrew Fecko, Resource Planning Administrator, Placer County Water Agency, P.O. Box 6570, Auburn, CA 95604, Phone (530) 823-4889, Fax (530) 823-4960, afecko@pcwa.net.

8/15 02537537

PCWA
water • energy • stewardship

PLACER COUNTY WATER AGENCY
SINCE 1957

BOARD OF DIRECTORS
Gray Allen, District 1
Alex Ferreira, District 2
Lowell Jarvis, District 3
Mike Lee, District 4
Ben Mavy, District 5

David Breninger, General Manager
Ed Tiedemann, General Counsel

BUSINESS CENTER
144 Ferguson Road
MAIL
P.O. Box 6570
Auburn, CA 95604
PHONE
530.823.4850
800.464.0030
WWW.PCWA.NET

August 10, 2012
File No. 01030A
Electronically Filed

SUBJECT: Notice of PCWA's Intent to Rely on FERC's Environmental Impact Statement, in Combination with a Supplemental Analysis prepared by PCWA, to Satisfy CEQA

Notice of Availability of FERC's Draft Environmental Impact Statement for the Middle Fork American River Hydroelectric Project (FERC Project No. 2079-069)

Dear Relicensing Participant,

Placer County Water Agency (PCWA), a public agency, wishes to provide notice to the Middle Fork American River Project (MFP) relicensing participants of its intention to rely on the Environmental Impact Statement (EIS) prepared by the Federal Energy Regulatory Commission (FERC or Commission) for the relicensing of the MFP, in combination with a supplemental analysis to be prepared by PCWA, to meet the requirements of the California Environmental Quality Act (CEQA). Compliance with CEQA is necessary to support the future discretionary action of PCWA's Board of Directors regarding acceptance of the new license order issued by FERC for the continued operation and maintenance of the MFP. The CEQA process was initiated by PCWA with two public scoping meetings held on March 4, 2008.

PCWA is the lead agency for compliance with CEQA and, as such, will be responsible for preparing the CEQA Supplement to support acceptance of the new license order by PCWA's Board of Directors. The State Water Resources Control Board (State Water Board), also a public agency, will be a responsible agency to the CEQA process. The State Water Board may use the CEQA document to support issuance of a Water Quality Certification under Section 401 of the Clean Water Act for the MFP.

State CEQA Guidelines § 15225 provides that a lead agency (i.e., PCWA) may rely on a National Environmental Policy Act (NEPA) document (i.e., FERC's EIS) to satisfy CEQA provided that the NEPA document is circulated for public review as broadly as state law requires and its availability is noticed consistent with CEQA standards. To satisfy CEQA requirements, PCWA is hereby noticing the availability of FERC's Draft Environmental Impact Statement for the MFP to the relicensing participants (Attachments A-C).

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PLACER COUNTY WATER AGENCY
SINCE 1957

BOARD OF DIRECTORS
Gray Allen, District 1
Alex Ferreira, District 2
Lowell Jarvis, District 3
Mike Lee, District 4

BUSINESS CENTER
144 Ferguson Road
MAIL
P.O. Box 6570
Auburn, CA 95604
HONE
0.823.4850
0.464.0030
WW.PCWA.NET

August 10, 2012
File No. 01030A
Electronically Filed

SUBJECT: Notice of PCWA's Intent to Rely on FERC's Environmental Impact Statement, in Combination with a Supplemental Analysis prepared by PCWA, to Satisfy CEQA

Notice of Availability of FERC's Draft Environmental Impact Statement for the Middle Fork American River Hydroelectric Project (FERC Project No. 2079-069)

Dear Relicensing Participant,

Placer County Water Agency (PCWA), a public agency, wishes to provide notice to the Middle Fork American River Project (MFP) relicensing participants of its intention to rely on the Environmental Impact Statement (EIS) prepared by the Federal Energy Regulatory Commission (FERC or Commission) for the relicensing of the MFP, in combination with a supplemental analysis to be prepared by PCWA, to meet the requirements of the California Environmental Quality Act (CEQA). Compliance with CEQA is necessary to support the future discretionary action of PCWA's Board of Directors regarding acceptance of the new license order issued by FERC for the continued operation and maintenance of the MFP. The CEQA process was initiated by PCWA with two public scoping meetings held on March 4, 2008.

PCWA is the lead agency for compliance with CEQA and, as such, will be responsible for preparing the CEQA Supplement to support acceptance of the new license order by PCWA's Board of Directors. The State Water Resources Control Board (State Water Board), also a public agency, will be a responsible agency to the CEQA process. The State Water Board may use the CEQA document to support issuance of a Water Quality Certification under Section 401 of the Clean Water Act for the MFP.

State CEQA Guidelines § 15225 provides that a lead agency (i.e., PCWA) may rely on a National Environmental Policy Act (NEPA) document (i.e., FERC's EIS) to satisfy CEQA provided that the NEPA document is circulated for public review as broadly as state law requires and its availability is noticed consistent with CEQA standards. To satisfy CEQA requirements, PCWA is hereby noticing the availability of FERC's Draft Environmental Impact Statement for the MFP to the relicensing participants (Attachments A-C).

APPENDIX B

Response to Select Comments on FERC's DEIS

November 1, 2012
File No. 01030A
Electronically Filed

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, DC 20426

SUBJECT: Placer County Water Agency's Response to Comments on the Federal Energy Regulatory Commission's Draft Environmental Impact Statement (FERC Project No. 2079-069)

Dear Secretary Bose:

Placer County Water Agency (PCWA) filed comments on the Federal Energy Regulatory Commission's (Commission or FERC) Draft Environmental Impact Statement (DEIS) for Hydropower License - Middle Fork American River Project (MFP) (FERC Project No. 2079-069) on October 1, 2012. Two agencies (U.S. Environmental Protection Agency and State Water Resources Control Board) concurrently filed comments regarding the adequacy of the environmental analysis in FERC's DEIS. PCWA has reviewed these comments and believes that FERC can easily respond to these comments by utilizing information/analysis previously filed by PCWA with FERC during the MFP relicensing proceeding and new information to be filed by PCWA in compliance with the California Environmental Quality Act (CEQA). PCWA, the lead agency for CEQA, is currently preparing a Draft CEQA Supplement that will be distributed for public review and filed with FERC in November 2012.[1]

PCWA prepared the enclosed table to assist FERC in responding to comments related to the adequacy of the environmental analysis in the DEIS. Table 1 identifies each comment, associated agency, and the document where the requested information/analysis is available. PCWA recommends that FERC either directly incorporate the referenced information/analysis in Table 1 into its Final Environmental Impact Statement (FEIS), or incorporate the information/analysis by reference to

[1]On August 10, 2012, PCWA provided notice of its intention to use FERC's Draft EIS as the Draft Environmental Impact Report (EIR) for the MFP. In order to meet the requirements of CEQA, PCWA is preparing additional analysis intended to supplement FERC's Draft EIS. The Draft EIR for the MFP will be comprised of FERC's Draft EIS and PCWA's Draft CEQA Supplement.

address comments by the U.S. Environmental Protection Agency and State Water Resources Control Board.

PCWA eFiled this document with FERC and concurrently provided courtesy copies (1 paper copy and 1 electronic copy), via courier service, to the Commission's Office of Energy Projects and Commission's Office of General Counsel-Energy Projects. In addition, PCWA provided a copy of this filing to each party designated on the attached distribution list (Attachment 1) via eService, or by mailing paper/electronic copies. The Certificate of Service is provided in Attachment 2.

Thank you for the opportunity to provide this information. If you have any questions regarding this filing, please contact me at (530) 823-4889 or by e-mail at afecko@pcwa.net.

Sincerely,

Andrew Fecko
Resource Planning Administrator

Enclosure

Table 1. PCWA's Response to Agency Comments Regarding the Adequacy of Environmental Analysis in FERC's DEIS

Attachments

Attachment 1. Distribution List
Attachment 2. Certificate of Service

Enclosure

Table 1. PCWA's Response to Agency Comments Regarding the Adequacy of Environmental Analysis in FERC's DEIS

Table 1. PCWA's Response to Agency Comments Regarding the Adequacy of Environmental Analysis in FERC's DEIS.

Comment Category	Commenting Agency[1]	Location of Analysis/Requested Information
Impacts from Construction of New or Modification of Existing Project Facilities	State Water Resources Control Board (October 2, 2012) U.S. Environmental Protection Agency (October 2, 2012)	PCWA's Supplemental Filing (November 2011), includes a comprehensive assessment of impacts associated with modification of existing and construction of new Project facilities and Project recreation facilities and features. Refer to the following sections: • Section 3.0 – Environmental Effects Analysis; identifies impacts to all resource areas from modification of existing and construction of new Project facilities and Project recreation facilities and features to be implemented under the new license conditions. • Appendix A – Modified or New Facility Construction Activities and Concept Designs; includes a description of construction activities, as well as avoidance and protection measures and best management practices to be implemented under the new license conditions. • Appendix E – Construction Air Quality Emissions Model; includes the air quality emission model output for construction projects to be implemented under the new license conditions. In addition, the Recreation Plan (July 2011) and Transportation System Management Plan (November 2011) include avoidance and protection measures and best management practices to be implemented during modification and enhancement of existing Project recreation facilities and water supplies, new Project recreation facilities, improvements to select dispersed use areas, and road and trail improvements.
Impacts from Burning of Large Woody Debris	State Water Resources Control Board (October 2, 2012)	Impacts associated with the burning of large woody debris will be evaluated in PCWA's Draft CEQA Supplement for the Middle Fork American River Project. PCWA is the lead agency for development of the CEQA Supplement with the State Water Resources Control Board as a responsible agency. The Draft CEQA Supplement for the MFP is currently being developed and is expected to be distributed for public review in November 2012.

Impacts from Reservoir Shoreline Erosion on Habitat Following Modification of Small Diversions (shift toward shallower aquatic habitat)	State Water Resources Control Board (October 2, 2012)	PCWA's Supplemental Filing (November 2011), includes a comprehensive assessment of impacts associated with the small diversion modifications. Refer to the following sections:
		
		• Section 3.0 – Environmental Effects Analysis; identifies impacts to all resource areas from modification of the small diversions (Duncan Creek Diversion Dam, North Fork Long Canyon Creek Diversion Dam, and South Fork Long Canyon Creek Diversion Dam). The following subsections address potential effects on habitat following modification of the diversions:
		  o Section 3.4 – Water Quality
		  o Section 3.5 – Fish and Aquatic Resources
		  o Section 3.6 – Botanical and Wildlife Resources
		  o Section 3.7 – Geomorphology
		  o Section 3.8 – Riparian Resources
		• Appendix A – Modified or New Facility Construction Activities and Concept Designs; includes a description of construction activities, as well as avoidance and protection measures and best management practices to be implemented under the new license conditions.
		
		In addition, the Sediment Management Plan (February 2011) includes avoidance and protection measures and best management practices to be implemented during sediment management activities to protect environmental resources, including habitat.

Table 1. PCWA's Response to Agency Comments Regarding the Adequacy of Environmental Analysis in FERC's DEIS.

Comment Category	Commenting Agency[1]	Location of Analysis/Requested Information
Impacts from Project Operation and Maintenance on Potential Future Reintroduction of Anadromous Fish	State Water Resources Control Board (October 2, 2012)	PCWA's Supplemental Filing (November 2011), Section 4.3.2 – Anadromous Fish, discusses the potential future reintroduction of anadromous fish. PCWA is committed to collaborate with the National Marine Fisheries Service (NMFS) regarding potential reintroductions into the American River Basin, including the Fish Passage Committee. If reintroduction occurs in the future, PCWA understands that this action will need to be evaluated by FERC through reopening the license.
Impacts from Implementation of the Fire Prevention and Suppression Plan on Air Quality	U.S. Environmental Protection Agency (October 2, 2012)	The objective of the Fire Prevention and Suppression Plan (September 2011) for the MFP is to outline the responsibility of PCWA and its contractor(s) for fire prevention and suppression activities; set-up reporting and attack procedures in the event of a fire in the vicinity of the MFP; and ensure that fire prevention and suppression techniques are carried out in accordance with federal, state, and local regulations. Implementation of this Plan would have no effect on air quality and therefore no analysis is necessary.
Description of Permitting Required for Implementation of the Sediment Management Plan (Dredging)	U.S. Environmental Protection Agency (October 2, 2012)	PCWA's Sediment Management Plan (February 2011), Section 5.3 – Consultation, states that PCWA will consult with resource agencies and obtain all appropriate permits prior to implementing sediment management activities, including dredging. This may include obtaining a California Department of Fish and Game (CDFG) Streambed Alteration Agreement, U.S. Army Corps of Engineers (USACE) permit under Section 404 of the Clean Water Act, Regional Water Quality Control Board (RWQCB) certification under Section 401 of the Clean Water Act, and a USDA-FS Special Use Authorization.
Cumulative Effects of Climate Change	U.S. Environmental Protection Agency (October 2, 2012)	PCWA's Supplemental Filing (November 2011), Section 4.5 – Cumulative Effects on Global Climate Change, includes a comprehensive assessment of cumulative effects of climate change as a result of implementation of new license conditions.
Measures to Protect Cultural and/or Tribal Resources and Tribal Consultation Completed	U.S. Environmental Protection Agency (October 2, 2012)	PCWA's confidential Historic Properties Management Plan (HPMP) (September 2012) was recently revised to address FERC's comments received on August 23, 2012. The HPMP describes the measures that PCWA will implement to manage the four properties located within the MFP Area of Potential Effect (APE) that have been determined to be eligible for the National Register of Historic Places (NRHP). At the FERC's request, the HPMP also describes: (1) how PCWA will manage Project activities that may affect paleontological resources (although to date, none have been identified in the Project vicinity); and (2) monitoring of cultural resources within the APE over the term of the license, regardless of NRHP-eligibility status. The HPMP also includes avoidance and protection measures and best management practices to be implemented under the new license conditions. In addition, PCWA's Vegetation and Integrated Pest Management Plan (VIPMP) (November 2011) describes measures to manage vegetation and pest management activities in the vicinity of potential traditional gathering areas. The VIPMP also includes avoidance and protection measures and best management practices to be implemented during vegetation and pest management activities. PCWA's Final License Application (February 2011), Section 14.8.3 – Consultation with Native American Tribes, includes a comprehensive discussion of tribal consultation activities completed in development of the Final License Application. PCWA's Supplemental Filing (November 2011), Section 6.0 – Consultation Documentation, describes consultation activities that were completed with the tribes following submittal of the Final License Application and in the development of the Supplemental Filing.

Table 1. PCWA's Response to Agency Comments Regarding the Adequacy of Environmental Analysis in FERC's DEIS.

Comment Category	Commenting Agency[1]	Location of Analysis/Requested Information
Impacts from Issuance of the New License on Environmental Justice	U.S. Environmental Protection Agency (October 2, 2012)	PCWA's Supplemental Filing (November 2011), Section 3.14.6 – Environmental Justice, includes a discussion of environmental justice and socioeconomic effects of implementation of new license conditions.
Cumulative Impacts	U.S. Environmental Protection Agency (October 2, 2012)	PCWA's Supplemental Filing (November 2011), Section 4.0 – Cumulative Effects Analysis, includes a comprehensive assessment of cumulative effects as a result of implementation of new license conditions.

[1]Agency providing comment on all or a portion of the comment category.

References:

PCWA. 2011. Supplemental Filing. Filed with FERC on November 30, 2011.

PCWA. 2011. Recreation Plan (dated July 2011). Included in USDA-FS Preliminary Terms and Conditions, Enclosure 3. Filed with FERC on August 5, 2011.

PCWA. 2011. Transportation System Management Plan (dated November 2011). Included in PCWA's Supplemental Filing, Attachment 1B. Filed with FERC on November 30, 2011.

PCWA. 2011. Sediment Management Plan (dated February 2011). Included in PCWA's Final License Application, Volume 3, Exhibit E, Supporting Document A, Book 4 (filed with FERC on February 23, 2011), and USDA-FS Preliminary Terms and Conditions, Enclosure 3 (filed with FERC on August 5, 2011).

PCWA. 2011. Historic Properties Management Plan (dated September 2012). Confidentially filed with FERC on September 21, 2012.

PCWA. 2011. Vegetation and Integrated Pest Management Plan (dated November 2011). Included in PCWA's Supplemental Filing, Attachment 1A. Filed with FERC on November 30, 2011.

PCWA. 2011. Final License Application. Filed with FERC on February 23, 2011.

Attachment 1

Distribution List

FERC Service List

American Whitewater
Dave Steindorf
CA Stewardship Director
4 Baroni Dr
Chico, CA 95928-4314

CA Dept of Fish & Game
MaryLisa Lynch
Water Program Manager
1701 Nimbus Rd., Suite A
Rancho Cordova, CA 95670

CA Dept of Fish & Game
Nancee Murray
Senior Staff Counsel
Office of Gen Counsel
1416 Ninth St., 12th Flr
Sacramento, CA 95814

CA Dept of Fish & Game
Sharon J. Stohrer
Staff Environmental Scientist
1701 Nimbus Rd.
Rancho Cordova, CA 95670

CA Dept of Water Resources
David Rose, Staff Counsel
1001 I Street
Sacramento, CA 95814

California Outdoors
Nate Rangel
P.O. Box 401
Coloma, CA 95613

California Sportfishing Protection Alliance
Christopher Shutes
1608 Francisco Street
Berkeley, CA 94703

National Park Service
Stephen M. Bowes
333 Bush St Ste 500
San Francisco, CA 94104-2828

Dept of the Interior, Office of the Solicitor
DOI Solicitor
2800 Cottage Way, E 1712
Sacramento, CA 95825

Dept of the Interior, Office of the Solicitor
Patricia Sanderson Port
Regional Environmental Officer
Office of Environmental Policy and Compliance
US Dept of the Interior
333 Bush St., Suite 515
San Francisco, CA 94104

Dept of the Interior, Office of the Solicitor
Luke Miller
Assistant Regional Solicitor
2800 Cottage Way, Ste E1712
Sacramento, CA 95825

Dept of the Interior, Office of the Solicitor
Kerry O'Hara
Assistant Regional Solicitor
2800 Cottage Way, Ste E1712
Sacramento, CA 95825

Dept of the Interior, Office of the Solicitor
Kevin Tanaka, Attorney
Solicitor
2800 Cottage Way, Ste E1712
Sacramento, CA 95825

Downey Brand LLP
David Aladjem
555 Capitol Mall
Sacramento, CA 95814

Downey Brand LLP
Wendy Jones
621 Capitol Mall, 18th Flr
Sacramento, CA 95814

Granite Bay Flycasters
Federation of Flyfishers
Spring Creek Guide Service
William Carnazzo
5209 Crestline Drive
Foresthill, CA 95631

Horseshoe Bar Fish & Game Preserve
Foothills Angler Coalition
Thomas Bartos, President
7430 Mornigside Dr.
Granite Bay, CA 95746

Foothills Water Network
Julie Leimbach, Coordinator
PO Box 713
Lotus, CA 95651-0713

FERC Service List (continued)

Individual
Hilde Schweitzer
P. O. Box 852
Lotus, CA 95651

KMT&G – Wells Fargo Center
Janet Goldsmith
400 Capitol Mall, 27th Floor
Sacramento, CA 94814-4417

Pacific Gas and Electric Company
Paul Maben
Supervising Program Manager
1108 Murphy's Grade Road
Angels Camp, CA 95222

Pacific Gas and Electric Company
Jennifer Abrams
Attorney
77 Beale Street, #B30A
San Francisco, CA 94105

Placer County Water Agency
Board of Directors
Chairman
P.O. Box 6570
Auburn, CA 95604

Protect American River Canyons
Gary Estes, Board Member
4135 Eagles Nest
Auburn, CA 95603

Spiegel & McDiarmid LLP
William Huang
1333 New Hampshire Ave., NW
Washington, DC 20036

Trout Unlimited
Brian J. Johnson, Staff Attorney
2239 5th St.
Berkeley, CA 94710

USDA-Office of the General Counsel
Joshua S. Rider
33 New Montgomery, 17th Flr
San Francisco, CA 94105

Upper American River Foundation
John Donovan
741 Commons Dr.
Sacramento, CA 95825

Pacific Gas and Electric Company
Alyssa Koo
Attorney
77 Beale Street, #B30A
San Francisco, CA 94105

Pacific Gas and Electric Company
Mark Patrizio
Attorney
P.O. Box 7442
San Francisco, CA 94120

Placer County Water Agency
David A. Breninger
General Manager
P.O. Box 6570
Auburn, CA 95604-6570

Placer County Water Agency
Jay L'Estrange
Director of Power Generation Services
P.O. Box 667
Foresthill, CA 95631-0667

Sackheim Consulting
Kelly Sackheim, Principal
5096 Cocoa Palm Way
Fair Oaks, CA 95628-5159

Spiegel & McDiarmid LLP
Margaret McGoldrick
1333 New Hampshire Ave., NW
Washington, DC 20036

USDA-FS, El Dorado National Forest
Beth Paulson
Hydro Coordinator
100 Forni Rd
Placerville, CA 95667

Other Interveners

Upper American River Foundation
Bill Templin
5125 Linda Lou Drive
Carmichael, CA 95608

US Department of Commerce
Kathryn Kempton, Office of General Counsel
National Oceanic and Atmospheric Administration
NMFS –SW Regional Office
501 W. Ocean Blvd., Suite 4470
Long Beach, CA 90802

US Department of Commerce
Richard Wantuck
National Oceanic and Atmospheric Administration
NMFS –Santa Rosa Area Office
777 Sonoma Avenue, Room 325
Santa Rosa, CA 95404-4731

OTHERS

Deputy Chief
National Forest Systems, Forest Service
Washington Office (WO), Lands Staff
Mail Stop 1124
1400 Independence Ave., S.W.
Washington, D.C. 20250-0003

Federal Government/Representatives

National Marine Fisheries Service
Habitat Manager
777 Sonoma Avenue, Rm. 325
Santa Rosa, CA 95404

National Oceanic & Atmospheric Adminstration – Fisheries
Jeff McLain
Acting Central Valley Supervisor
650 Capitol Mall, Suite 8300
Sacramento, CA 95814

Federal Energy Regulatory Commission
Office of Energy Products
888 First St., NE
Room 61-02
Washington, DC 20426

Federal Energy Regulatory Commission
Office of General Counsel-Energy Projects
888 First St., NE
Room 101-56
Washington, DC 20426

Federal Energy Regulatory Commission
Dr. Frank A. Winchell
Archaeologist, 888 First St, NE
Routing Code PJ-14.6/Room 61-10
Washington, DC 20426

FERC Office of Energy Projects
Wing Lee
Acting Director
901 Market St, Suite 350
San Francisco, CA 94103

US Bureau of Land Management
James Michael Eicher
Associate Field Manager
5152 Hillsdale Circle
El Dorado Hills, CA 95762

US Bureau of Land Management
William Haigh
Office/Field Manager
5152 Hillsdale Circle
El Dorado Hills, CA 95672|

US Bureau of Reclamation
Peggi Brooks
Chief Recreation Resources Division
Central California Area Officer
7794 Folsom Dam Road
Folsom, CA 95630-1799

US Bureau of Reclamation
Elizabeth (Beth) Dyer
Natural Resources Specialist
Central California Area Office
7794 Folsom Dam Rd
Folsom, CA 95630

US Bureau of Reclamation
Don Glaser
Regional Director
Mid-Pacific Region
2800 Cottage Way, MP-100
Sacramento, CA 95825-1846

US Bureau of Reclamation
Mike Finnegan
Central Area Office Manager
7794 Folsom Dam Road
Folsom, CA 95630

US Environmental Protection Agency
Region 9 (AZ, CA, HI, NV)
75 Hawthorne Street
San Francisco, CA 94105

USDA-FS, El Dorado National Forest
Dorit Buckley
Archeologist
Georgetown Ranger District
7600 Wentworth Springs Road
Georgetown, CA 95634

USDA-FS, El Dorado National Forest
Jon Jue
Resource Officer
7600 Wentworth Springs Rd
Georgetown, CA 95634

USDA-FS, El Dorado National Forest
Dawn Lipton
Wildlife Biologist
100 Forni Road
Placerville, CA 95667

Federal Government/Representatives (continued)

USDA-FS, El Dorado National Forest
Lester Lubetkin
Recreation
100 Forni Road
Placerville, CA 95667

USDA-FS, El Dorado National Forest
Kim Morales
Hydrologist
100 Forni Road
Placerville, CA 95667

USDA-FS, El Dorado National Forest
Katy Parr
Heritage & Tribal Program Manager
100 Forni Road
Placerville, CA 95667

USDA-FS, El Dorado National Forest
Kathy Hardy
Forest Supervisor
100 Forni Road
Placerville, CA 95667

USDA-FS, El Dorado National Forest
Patricia Trimble
District Ranger
Georgetown Ranger District
7600 Wentworth Springs Road
Georgetown, CA 95634

USDA-FS, El Dorado National Forest
Jann Williams
Biologist
100 Forni Road
Placerville, CA 95667

USDA – Natural Resources Conservation
Mike Brenner
District Conservationist
251 Auburn Ravine Road
Auburn, CA 95603

USDA-FS – Region 5 – Regional
Dennis Smith, RHAT Program Manager
Regional Hydropower Assistance Team (RHAT)
Pacific Southwest Region
1323 Club Drive
Vallejo, CA 94592

USDA-FS – Sierra Nevada Research Ctr
Amy Lind
Wildlife Biologist/Herpetologist
1731 Research Park Drive
Davis, CA 95618

USDA-FS, Tahoe National Forest
William Davis
Landscape Architect
22830 Foresthill Road
Foresthill, CA 95631

USDA-FS, Tahoe National Forest
Chris Fischer, District Ranger
American River Ranger District
22830 Foresthill Road
Foresthill, CA 95631

USDA-FS, Tahoe National Forest
Victor Lyon
Wildlife Biologist
22830 Foresthill Road
Foresthill, CA 95631

USDA-FS, Tahoe National Forest
Tom Quinn
Forest Supervisor
631 Coyote St.
Nevada City, CA 95959-2250

USDA-FS, Tahoe National Forest
Carrie Smith
Heritage Program Manager
Tribal Relations Program Manager
10811 Stockcrest Spring Dr
Truckee, CA 96161

USDA-FS, Tahoe National Forest
Nolan Smith
District Archeologist
22830 Foresthill Road
Foresthill, CA 95631

USDA-FS, Tahoe National Forest
Dan Teater
Fisheries Biologist
22830 Foresthill Road
Foresthill, CA 95631

Federal Government/Representatives (continued)

USDA-FS, Tahoe National Forest
Mo Tebbe
Public Service Officer
22830 Foresthill Road
Foresthill, CA 95631

US Fish & Wildlife Service
Jeremiah Karuzas
Fish and Wildlife Biologist
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

US Senate
Barbara Boxer
501 I Street, Suite 7-600
Sacramento, CA 95814

US Senate
Dianne Feinstein
One Post Street, Suite 2450
San Francisco, CA 94104

US House of Representatives
Tom McClintock
508 Cannon HOB
Washington, DC 20515

State Government/Representatives

Auburn Area Recreation & Park District
Kahl Muscott
123 Recreation Drive
Auburn, CA 95603

California Department of Boating & Waterways
Sylvia Hunter
Chief, Boating & Waterways Local Assistance Program
2000 Evergreen Street, Suite 100
Sacramento, CA 95815-3888

California Department of Fish & Game
Robert Hughes
Senior Hydraulic Engineer
830 S Street
Sacramento, CA 95814

California Department of Fish & Game
Beth Lawson
Associate Hydraulic Engineer
1701 Nimbus Road
Rancho Cordova, CA 95670

California Department of Fish & Game
Sean Hoobler
Environmental Scientist
FERC Fisheries Biologist
1701 Nimbus Road, Suite A
Rancho Cordova, CA 95670

California Department of Fish & Game
Matt Myers
Environment Scientist
601 Locust Street
Redding, CA 96001

California State Parks
Bill Deitchman
California State Park Ranger
501 El Dorado St
Auburn, CA 95603

California State Parks – ASRA
Mike Lynch, Acting Superintendent
501 El Dorado St.
Auburn, CA 95603

California State Parks – Folsom State Park
Jim Micheaels
Recreation Area
7806 Folsom Auburn Road
Folsom, CA 95630

State Water Resources Control Board
Jennifer Watts
Division of Water Rights
P.O. Box 2000
Sacramento, CA 95812-2000

Department of Parks and Recreations
Milford Wayne Donaldson, FAIA
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd St, Suite 100
Sacramento, CA 95816

Department of Water Resources
Ted Frink
P.O. Box 942836
Sacramento, CA 94236-0001

State of Califonia
Department of Water Resources
Division of Safety of Dams
Sharon Tapia
Chief, Design Branch
2200 X St., Suite 200
P.O. Box 942836
Sacramento, CA 95818

State of California
Department of Water Resources
Division of Safety of Dams
Jeff Kuhl
Design Engineering Branch
2200 X St., Suite 200
P.O. Box 942836
Sacramento, CA 95818

CA State Senator
Ted Gaines
State Capitol Office
Room 2068
Sacramento, CA 94248-0001

CA State Assemblywoman
Beth Gaines
1700 Eureka Road, Suite 160
Roseville, CA 95661

State Clearinghouse
P.O. Box 3044
Sacramento, CA 95812-3044

Local Government

City of Auburn
Robert Richardson
City Manager
1225 Lincoln Way
Auburn, CA 95603

City of Colfax
Bruce Kranz
City Manager
P.O. Box 702
Colfax, CA 95713

City of Lincoln
Jim Estep
City Manager
600 6th Street
Lincoln, CA 95648

City of Roseville
Ray Kerridge
City Manager
311 Vernon Street,
Roseville, CA 95678

County of Placer
Brett Storey
County Executive Office
175 Fulweiler Ave
Auburn, CA 95603

County of Placer
Eric Waidmann
Assistant Treasurer–Tax Collector
2976 Richardson Drive
Auburn, CA 95603

El Dorado Board of Supervisors
Suzanne Allen de Sanchez
Clerk to the Board
330 Fair Ln
Placerville, CA 95667

Foresthill Municipal Advisory Council
Larry Jordan
P.O. Box 207
Foresthill, CA 95631

Placer County
Holly Heinzen
Assistance County Executive Officer
175 Fulweiler Avenue
Auburn, CA 95603

Placer County Board of Supervisors
Jocelyn Maddux, Field Rep. District 5
175 Fulweiler Avenue
Auburn, California 95603

Placer County Counsel's Office
Scott Finley
Supervising Deputy County Counsel
175 Fulweiler Avenue
Auburn, California 95603

Town of Loomis
Rick Angelocci
City Manager
6140 Horseshoe Bar Road, Suite K
Loomis, CA 95650

Public Agency

El Dorado County Water Agency
Dave Eggerton
General Manager
3932 Ponderosa Road, Suite 200
Shingle Springs, CA 95682

El Dorado County Water Agency
Tracey Eden-Bishop, P.E.
Water Resources Engineer
3932 Ponderosa Road, Suite 200
Shingle Springs, CA 95682

El Dorado Irrigation District
Brian Deason
Hydroelectric Compliance Analyst
2890 Mosquito Road
Placerville, CA 95667

Foresthill Public Utility District
Tamra West
Director
P.O. Box 266
Foresthill, CA 95631

Georgetown Divide Public Utility District
Henry White
General Manager
P.O. Box 4240
Georgetown, CA 95634

Nevada Irrigation District
Timothy Crough
Interim General Manager
1036 West Main St
Grass Valley, CA 95945-1019

Placer County Resource Conservation District
Tom Wehri
Board President
251 Auburn Ravine Road, Ste 105
Auburn, CA 95603

San Juan Water District
Shauna Lorance
General Manager
9935 Auburn-Folsom Road
Granite Bay, CA 95746

Native American Tribes

Colfax–Todds Valley Consolidated Tribe
Leon Poitras
3420 Rattlesnake Rd
Newcastle, CA 95658

Colfax–Todds Valley Consolidated Tribe
Pam Cubbler
Chair
P.O. Box 4884
Auburn, CA 95604-4884

Colfax-Todds Valley Consolidated Tribe
Judy Marks, Secretary
P.O. Box 4884
Auburn, CA 95604

Nisenan Maidu
April Moore
19630 Placer Hills Rd
Colfax, CA 95713

Shingle Springs Rancheria
Nicolas Fonseca
Chair
P.O Box 1340
Shingle Springs, CA 95682

Shingle Springs Rancheria
Jeff Murray
P.O.Box 1340
Shingle Springs, CA 95682

T'Si–Akim Maidu
Donald Ryberg
Chair
1275 E Main Street
Grass Valley, CA 95945

Todds Valley Miwok-Maidu Cultural Foundation
Keith Drone
Cultural Preservation Chair
P.O. Box 1490
Foresthill, CA 95631

United Auburn Indian Community Preservation Committee
Allen Adams
10720 Indian Hill Rd
Auburn, CA 95603

United Auburn Indian Community of the Auburn Rancheria
Marcos Guerrero, M.A., RPA
Cultural Resources Specialist
10720 Indian Hill Rd
Auburn, CA 95603

United Auburn Indian Community of the Auburn Rancheria
David Keyser
Tribal Chairperson
10720 Indian Hill Rd
Auburn, CA 95603

United Auburn Indian Community of the Auburn Rancheria
Roman Porter
Tribal Administrator
10720 Indian Hill Rd
Auburn, CA 95603

United Auburn Indian Community Preservation Committee
Sande Delgado
10720 Indian Hill Rd
Auburn, CA 95603

United Auburn Indian Community Preservation Committee
John L. Williams
10720 Indian Hill Rd
Auburn, CA 95603

Washoe Tribe of Nevada & California
Marie Barry
Environmental Specialist
919 Highway 395 South
Gardnerville, NV 89410

Washoe Tribe of Nevada & California
Wanda Batchelor
Chairwoman
919 US Highway 395 South
Gardnerville, NV 89410

Washoe Tribe of Nevada & California
Darrel Cruz
CRO/THPO
919 US Highway 395 South
Gardnerville, NV 89410

Washoe Tribe of Nevada and California
Lloyd Wyatt- Vice-Chairman
919 Highway 395
Gardnerville, NV 89410

Non-Governmental Organizations

American River Recreation Association & Sierra Nevada Alliance
Bill Center
P.O. Box 623
Lotus, CA 95651

Auburn Chamber of Commerce
Bruce Cosgrove, CEO
601 Lincoln Way
Auburn, CA 95603

Auburn Chamber of Commerce
Rich Johnson
Government Affairs Committee
601 Lincoln Way
Auburn, CA 95603

Auburn Flycasters
Grant Fraser
President
P.O. Box 0756
Auburn, CA 95604

Auburn Flycasters
Granite Bay Flycasters
Larry Goodell
P.O. Box 756
Auburn, CA 95604

Audubon Society
Don Rivenes
12826 Newtown Road
Nevada City, CA 95959

California Hydropower Reform Coalition
Laura Norlander
2140 Shattuck Ave., Suite 605
Berkeley, CA 94704

California Native Plant Society
Sue Britting
P.O. Box 377
Coloma, CA 95613

Canyon Keepers
Jim Ferris
501 El Dorado St
Auburn, CA 95603

Dry Creek Conservancy
Greg Bates
P.O. Box 1311
Roseville, CA 95678

Farm Bureau, Placer County
Jim Bachman
10120 Ophir Road
Newcastle, CA 95658

Friends of the North Fork
Michael Garabedian
7143 Gardenvine Avenue
Citrus Heights, CA 95621

Friends of the River
Ron Stork
915 20th St
Sacramento, CA 95814

Granite Bay Flycasters
Heath Wakelee
4120 Douglas Blvd. #306-356
Granite Bay, CA 95746-5936

Pacific Gas & Electric
Dave Ward
343 Sacramento Street
Auburn, CA 95603

Pacific Gas & Electric
Dave Hinshaw
PG&E Account Executive
343 Sacramento Street
Auburn, CA 95603

Pacific Gas & Electric
Steve Pierano
Relicensing Project Manager
Mail Code N11E
P.O. Box 70000
San Francisco, CA 94177-0001

Protect American River Canyons
Eric Peach
P.O. Box 9312
Auburn, CA 95604

Sacramento Municipal Utility District
David Hanson
Project Manager, Hydro Relicensing
6201 S St
Sacramento, CA 95817

Sacramento Municipal Utility District
Dudley McFadden
Principal Civil Engineer
P.O. Box 15830
Sacramento, CA 95817

Non-Governmental Organizations (continued)

Sacramento Municipal Utility District
Jim Shetler
Assistant General Manager, Energy Supply
6201 S St,
Sacramento, CA 95817

Sacramento Municipal Utility District
Carol Szuch
Management Analyst
6201 S Street
Sacramento, CA 95817

Sierra Club – Mother Lode Chapter
Terry Davis
801 K Street, Suite 2700
Sacramento, CA 95814

Sierra Club – Mother Lode Chapter
Allan Eberhart
801 K Street, Suite 2700
Sacramento, CA 95814

Sierra Club – Placer Group
Marilyn Jasper
P.O. Box 7167
Auburn, CA 95604-7167

Sierra Salmon Alliance
Tyrone Gorre
1700 Meadow Vista Road
Meadow Vista, CA 95722

SARSAS
Jack Sanchez
3675 Larkin Lane
Auburn, CA 95602

Western States Endurance Run
Anthony Rossmann
Rossmann & Moore, LLP
380 Hayes Street
San Francisco, CA 94102

Western States Trail Foundation
Thomas Christofk
1216-C High Street
Auburn, CA 95603

Western States Trail Foundation
Steve Hallmark
7845 Jeannie Ct.
Loomis, CA 95650

Western States Trail Foundation
Mike Pickett
1216-C High Street
Auburn, CA 95603

West Yost
Max Colorado
1380 Lead Hill Road, Suite 201
Roseville, CA 95661

Public

Advanced Energy Strategies
Dean Tibbs
1800 Sutter Street, Suite 870
Concord, CA 94520-2540

Cramer Fish Sciences
Bradley J. Cavallo
13300 New Airport Road, Suite 102
Auburn, CA 95602

Foresthill Messenger
Jim Linsdau
P.O. Box 1024
Foresthill, CA 95631

Jones & Associates
Tom Jones
12331 Incline Drive
Auburn, CA 95603

Lone Star Timber
Larry Gonzales
Mason, Bruce, & Girard, Inc.
13620 Lincoln Way, Suite 380
Auburn, CA 95603

Sierra Pacific Industries
Tim Feller
P.O. Box 496028
Redding, CA 96049-6028

Stoel Rives, Attorney at Law
Attn: Denise Morison
770 L Street, Suite 800
Sacramento, CA 95814

Roger Canfield
7818 Olympic Way
Fair Oaks, CA 95628

Neil Cochran
5344 Crestline Drive
Foresthill, CA 95631

Anthony DeRiggi
932 46th Street
Sacramento, CA 95819

Charlie Fullerton
135 Mering Court
Sacramento, CA 95864

John Greene
P.O. Box 465
Meadow Vista, CA 95722

Donna Williams
4170 Auburn Folsom Road
Loomis, CA 95650

Canyon Raft Rentals
John Hauschild
133 Borland Avenue
Auburn, CA 95603

Dunlap Group
John Dunlap
231 Cherry Avenue, Suite 202
Auburn, CA 95603

FROG
Sherry Wicks
P.O. Box 568
Foresthill, CA 95631

Leupp & Woodall
Tim Woodall
149 Court Street
Auburn, CA 95603

Northern CA Council/Fed of Fly Fishers
Gary Flanagan
8459 Lakeland Drive
Granite Bay, CA 95746

Spiegel & McDiarmid LLP
Frances Francis
1333 New Hampshire Ave., NW
Washington, DC 20036

Troutman Sanders LLP
Clifford Sikora
401 Ninth St., NW, Suite 1000
Washington D.C. 20004-2134

Bob Center
10794 Arrow Point Place
Grass Valley, CA 95959

Dan Crandall
P.O. Box 828
Lotus, CA 95651

Craig Crouch
5307 Hawkhaven Court
Rocklin, CA 95765

Patricia Gibbs
5425 Lake Forest Dr
Loomis, CA 95650

Chris Shackleton
2359 Sonata Drive
Rancho Cordova, CA 95670

Attachment 2

Certificate of Service

CERTIFICATE OF SERVICE

Pursuant to the provisions of 18 C.F.R. § 385.2010, I hereby certify that I have this day served the foregoing document to the Federal Energy Regulatory Commission (FERC), each person designated on the official service list compiled by the Secretary, and other stakeholders to the relicensing proceedings for Project No. 2079, as set forth in the attached distribution list, by eFiling and eService (upon receipt of FERC's Acceptance for Filing email). For those parties unable to receive emails, one paper copy of the foregoing documents were provided via courier service. In addition, I have mailed via courier service, one courtesy copy of this document to FERC's Office of Energy Projects and one courtesy copy to FERC's Office of General Counsel-Energy Projects.

Dated at Auburn, CA this 1st day of November 2012.

Andrew Fecko
Resource Planning Administrator

APPENDIX C

Construction Air Quality Emissions Model

Table 1 Estimated Peak Daily Construction Emissions Summary

Criteria Emissions	Year 2	Year 3	Year 5	Year 9	Year 14	Highest Day	Threshold	Significant	Worst Case
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day		lbs/day
Volatile Organic Compounds (VOC as CH_4)	8.8	8.8	3.7	3.7	6.1	8.8	10	No	24.3
Carbon Monoxide (CO)	41.1	41.1	18.7	18.7	29.7	41.1	550	No	117.9
Oxides of Nitrogen (NO_X as NO_2)	66.6	66.6	21.8	21.8	39.0	66.6	10	Yes	171.1
Sulfur Dioxide (SO_X as SO_2)	0.1	0.1	0.0	0.0	0.1	0.1	80	No	0.3
Combustion Particulates (C-PM_{10})	4.0	4.0	1.5	1.5	2.5	4.0	80	No	10.5
Combustion Particulates (C-$PM_{2.5}$)	3.5	3.5	1.4	1.4	2.3	3.5	80	No	9.3
Fugitive Dust (F-PM_{10})	46.6	46.6	11.0	11.0	18.6	46.6	n/a	n/a	133.7
Fugitive Dust (F-$PM_{2.5}$)	9.2	9.2	3.0	3.0	4.0	9.2	n/a	n/a	23.6

Sources: SCAQMD 2008, EPA 2011

Notes:

Year X (lbs/day) is the estimated peak daily emissions for applicable phases independently

Highest Day (lbs/day) is the highest estimated peak daily emissions for applicable phases independently

Worst Case (lbs/day) assumes concurrent (simultaneous) applicable phases to generate maximum hypothetical composite emissions (unlikely)

Fugitive dust and combustion particulates determined separately (thresholds do not apply to fugitive dust)

Table 2 Estimated Annual Construction Emissions Summary

Criteria Emissions	Year 2	Year 3	Year 5	Year 9	Year 14	Highest Year	Threshold	Significant	Project Total
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr		tons
Volatile Organic Compounds (VOC as CH_4)	0.25	0.39	0.04	0.04	0.07	0.39	25	No	0.79
Carbon Monoxide (CO)	1.40	2.22	0.20	0.20	0.33	2.22	100	No	4.34
Oxides of Nitrogen (NO_X as NO_2)	1.32	1.93	0.23	0.23	0.42	1.93	25	No	4.13
Sulfur Dioxide (SO_X as SO_2)	0.003	0.004	0.000	0.000	0.001	0.004	40	No	0.008
Combustion Particulates (C-PM_{10})	0.09	0.13	0.02	0.02	0.03	0.13	15	No	0.28
Combustion Particulates (C-$PM_{2.5}$)	0.08	0.11	0.01	0.01	0.02	0.11	10	No	0.25
Fugitive Dust (F-PM_{10})	0.90	1.39	0.10	0.10	0.20	1.39	n/a	n/a	2.69
Fugitive Dust (F-$PM_{2.5}$)	0.17	0.25	0.03	0.03	0.04	0.25	n/a	n/a	0.51

Sources: SCAQMD 2008, EPA 2011

Notes:

Year X (tons/yr) is the estimated annual emissions for applicable phases

Highest Year (tons/yr) is the highest estimated annual emissions for applicable phases

Project Total (tons/yr) is the estimated emissions for all phases combined

Fugitive dust and combustion particulates determined separately (thresholds do not apply to fugitive dust)

Table 3 Estimated Fugitive Dust Emissions Summary

Fugitive Dust Emissions	Year 2	Year 3	Year 5	Year 9	Year 14	Highest Day	Worst Case	Highest Year	Project Total
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	tons/yr	tons
Fugitive Dust (F-PM_{10}) - Equipment (offroad)	5.1	5.1	3.5	3.5	6.4	6.4	12.0	0.19	0.46
Fugitive Dust (F-PM_{10}) - Vehicles (unpaved)	19.9	19.9	4.3	4.3	6.7	19.9	69.5	0.72	1.31
Fugitive Dust (F-PM_{10}) - Vehicles (paved)	21.7	21.7	3.1	3.1	5.4	21.7	52.2	0.48	0.92
Fugitive Dust (F-PM_{10}) - Combined	46.6	46.6	11.0	11.0	18.6	46.6	133.7	1.39	2.69
Fugitive Dust (F-$PM_{2.5}$) - Equipment (offroad)	1.9	1.9	1.8	1.8	2.0	2.0	3.8	0.06	0.15
Fugitive Dust (F-$PM_{2.5}$) - Vehicles (unpaved)	2.0	2.0	0.4	0.4	0.7	2.0	6.9	0.07	0.13
Fugitive Dust (F-$PM_{2.5}$) - Vehicles (paved)	5.3	5.3	0.8	0.8	1.3	5.3	12.8	0.12	0.22
Fugitive Dust (F-$PM_{2.5}$) - Combined	9.2	9.2	3.0	3.0	4.0	9.2	23.6	0.25	0.51

Notes:
Year X (lbs/day) is the estimated peak daily emissions for applicable phases independently
Highest Day (lbs/day) is the highest estimated peak daily emissions for applicable phases independently
Worst Case (lbs/day) assumes concurrent (simultaneous) applicable phases to generate maximum hypothetical composite emissions (unlikely)
Fugitive dust and combustion particulates determined separately (thresholds do not apply to fugitive dust)

Table 4 Estimated Annual Construction Greenhouse Gas Emissions

Greenhouse Gas Emissions	Year 2	Year 3	Year 5	Year 9	Year 14	Highest Year	Project Total
	tonnes/yr	tonnes/yr	tonnes/yr	tonnes/yr	tonnes/yr	tonnes/yr	tonnes
Carbon Dioxide (GHG - CO_2)	231	358	31	31	56	358	707
Methane (GHG - CH_4)	0.02	0.03	0.00	0.00	0.00	0.03	0.06
Nitrous Oxide (GHG - N_2O)	0.01	0.02	0.00	0.00	0.00	0.02	0.03
Carbon Dioxide Equivalents (CO_2 eqv)	234	363	31	31	57	363	717

Sources: SCAQMD 2008, EPA 2011
Notes:
Units are metric tonnes (1,000 kilograms or 2,204.6 pounds)
Year X (tonnes/yr) is the estimated annual emissions for applicable phases
Highest Year (tonnes/yr) is the highest estimated annual emissions for applicable phases
Project Total (tonnes/yr) is the estimated emissions for all phases combined

Table 5 Attainment Status and Emissions Significance Thresholds

Criteria Emissions	Federal		Placer County		
	Status[a]	tons/yr[b,c]	Status[d]	tons/yr[e]	lbs/day[e]
Ozone (O_3) 1-hour (as VOC or NO_X)	*Standard Revoked June 15, 2005*		Nonattainment	40	10
Ozone (O_3) 8-hour (as VOC or NO_X)	Nonattainment - Severe 15[f]	25[b]	Nonattainment		
Carbon Monoxide (CO)	Unclassified[g]	100[c]	Unclassified	100	550
Oxides of Nitrogen (NO_X as NO_2)	Unclassified/Attainment	25[b]	Attainment	40	10
Sulfur Dioxide (SO_X as SO_2)	Unclassified	40[c]	Attainment	40	80
Particulates (PM_{10})	Unclassified	15[c]	Nonattainment	15	80
Particulates ($PM_{2.5}$)	Nonattainment	10[c]	Unclassified	10	80
Lead (Pb)	Attainment	0.6[c]	Attainment	0.6	3.3

Sources & Notes:

Assumes all 15 project sites are located in Mountain Counties Air Basin

a EPA Green Book (http:www.epa.gov/air/oaqps/greenbk)

b General Conformity (40 CFR 51.853)

c Prevention of Significant Deterioration (40 CFR 51.166)

d Placer County status per CARB (http://www.arb.ca.gov/desig/adm/adm.htm) with nonattainment further defined by 40 CFR 81.305 (July 27, 2010)

e Placer County Air Pollution Control District (PCAPCD):

tons/yr: Definition of significant from Rule 502 New Source Review (as amended 2/11/10)

lbs/day: Project-level CEQA thresholds for short-term construction emissions; PM_{10} from fuel combustion only (excludes fugitive dust) per Rule 502

f applies for Sacramento Metro area

g applies for Lake Tahoe North Shore area

Estimated Construction Schedule

Equipment and Vehicles		Rating	Planned	Activity Schedule		
Type	Category	BHP	quantity	days	hrs/day	mi/day
RESERVOIR - Hell Hole Reservoir Seasonal Storage Increase Improvement - YEAR 3						
Backhoe (John Deere 410 J)	offroad	98	1	35	6	
Bulldozer (John Deere Model 700 J)	offroad	115				
Compressor (Sullair 375 H-AF trailer mounted)	offroad	130	1	21	6	
Concrete pumper (Schwing SP 260)	offroad	68	1	8	4	
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD		1	8		150
Electrical boom type line truck (Ford F650 XL)	onroad MD		1	10		150
Electrical boom type truck-mounted aerial lift	offroad	50	1	10	6	
Excavator (John Deere 160 D LC)	offroad	121				
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		1	66		150
Forklift (Case 586G Series 3)	offroad	80	1	42	4	
Front loader (John Deere 444 K)	offroad	117	1	21	6	
Generator (Magnum MMG25 23 KVA diesel)	offroad	40	1	80	10	
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		1	10		150
Mobile crane (Link-Belt RTC-8030 Series II)	offroad	164	1	21	6	
Oversize load tractor trailer (5 axles or more)	onroad HHD		1	3		120
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		10	80		120
Welder genset (Hobart Champion Elite)	offroad	23				
DIVERSIONS - Duncan Creek Diversion Dam Modification - YEAR 2						
Backhoe (John Deere 410 J)	offroad	98	1	15	4	
Bulldozer (John Deere Model 700 J)	offroad	115	1	30	6	
Compressor (Sullair 375 H-AF trailer mounted)	offroad	130	1	20	6	
Concrete pumper (Schwing SP 260)	offroad	68	1	14	4	
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD		8	14		150
Electrical boom type line truck (Ford F650 XL)	onroad MD					
Electrical boom type truck-mounted aerial lift	offroad	50				
Excavator (John Deere 160 D LC)	offroad	121	1	38	6	
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		1	66		150
Forklift (Case 586G Series 3)	offroad	80	1	32	4	
Front loader (John Deere 444 K)	offroad	117				
Generator (Magnum MMG25 23 KVA diesel)	offroad	40	1	80	10	
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		1	10		150
Mobile crane (Link-Belt RTC-8030 Series II)	offroad	164	1	21	5	
Oversize load tractor trailer (5 axles or more)	onroad HHD		1	3		120
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		10	80		120
Welder genset (Hobart Champion Elite)	offroad	23				

Equipment and Vehicles		Rating	Planned	Activity Schedule		
Type	Category	BHP	quantity	days	hrs/day	mi/day
DIVERSIONS - North Fork Long Canyon Diversion Dam Modification - YEAR 3						
Backhoe (John Deere 410 J)	offroad	98	1	15	4	
Bulldozer (John Deere Model 700 J)	offroad	115	1	30	6	
Compressor (Sullair 375 H-AF trailer mounted)	offroad	130	1	20	6	
Concrete pumper (Schwing SP 260)	offroad	68	1	14	4	
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD		8	14		150
Electrical boom type line truck (Ford F650 XL)	onroad MD					
Electrical boom type truck-mounted aerial lift	offroad	50				
Excavator (John Deere 160 D LC)	offroad	121	1	38	6	
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		1	66		150
Forklift (Case 586G Series 3)	offroad	80	1	32	4	
Front loader (John Deere 444 K)	offroad	117				
Generator (Magnum MMG25 23 KVA diesel)	offroad	40	1	80	10	
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		1	10		150
Mobile crane (Link-Belt RTC-8030 Series II)	offroad	164	1	21	5	
Oversize load tractor trailer (5 axles or more)	onroad HHD		1	3		120
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		10	80		120
Welder genset (Hobart Champion Elite)	offroad	23				
DIVERSIONS - South Fork Long Canyon Diversion Dam Modification - YEAR 3						
Backhoe (John Deere 410 J)	offroad	98	1	15	4	
Bulldozer (John Deere Model 700 J)	offroad	115	1	30	6	
Compressor (Sullair 375 H-AF trailer mounted)	offroad	130	1	20	6	
Concrete pumper (Schwing SP 260)	offroad	68	1	14	4	
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD		8	14		150
Electrical boom type line truck (Ford F650 XL)	onroad MD					
Electrical boom type truck-mounted aerial lift	offroad	50				
Excavator (John Deere 160 D LC)	offroad	121	1	38	6	
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		1	66		150
Forklift (Case 586G Series 3)	offroad	80	1	32	4	
Front loader (John Deere 444 K)	offroad	117				
Generator (Magnum MMG25 23 KVA diesel)	offroad	40	1	80	10	
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		1	10		150
Mobile crane (Link-Belt RTC-8030 Series II)	offroad	164	1	21	5	
Oversize load tractor trailer (5 axles or more)	onroad HHD		1	3		120
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		10	80		120
Welder genset (Hobart Champion Elite)	offroad	23				

Equipment and Vehicles		Rating	Planned	Activity Schedule		
Type	Category	BHP	quantity	days	hrs/day	mi/day
OUTLETS - French Meadows Dam Outlet Works Modification - YEAR 2						
Backhoe (John Deere 410 J)	offroad	98	1	3	4	
Bulldozer (John Deere Model 700 J)	offroad	115				
Compressor (Sullair 375 H-AF trailer mounted)	offroad	130				
Concrete pumper (Schwing SP 260)	offroad	68	1	1	4	
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD		1	1		150
Electrical boom type line truck (Ford F650 XL)	onroad MD					
Electrical boom type truck-mounted aerial lift	offroad	50				
Excavator (John Deere 160 D LC)	offroad	121				
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		1	20		150
Forklift (Case 586G Series 3)	offroad	80				
Front loader (John Deere 444 K)	offroad	117				
Generator (Magnum MMG25 23 KVA diesel)	offroad	40	1	20	8	
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		1	3		150
Mobile crane (Link-Belt RTC-8030 Series II)	offroad	164	1	2	4	
Oversize load tractor trailer (5 axles or more)	onroad HHD		1	3		120
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		4	20		120
Welder genset (Hobart Champion Elite)	offroad	23	1	4	4	
OUTLETS - Hell Hole Dam Outlet Works Modification - YEAR 2						
Backhoe (John Deere 410 J)	offroad	98	1	35	4	
Bulldozer (John Deere Model 700 J)	offroad	115	1	14	6	
Compressor (Sullair 375 H-AF trailer mounted)	offroad	130	1	20	6	
Concrete pumper (Schwing SP 260)	offroad	68	1	7	4	
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD		1	7		150
Electrical boom type line truck (Ford F650 XL)	onroad MD					
Electrical boom type truck-mounted aerial lift	offroad	50				
Excavator (John Deere 160 D LC)	offroad	121	1	38	6	
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		1	40		150
Forklift (Case 586G Series 3)	offroad	80	1	33	4	
Front loader (John Deere 444 K)	offroad	117				
Generator (Magnum MMG25 23 KVA diesel)	offroad	40				
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		1	40		150
Mobile crane (Link-Belt RTC-8030 Series II)	offroad	164	1	32	5	
Oversize load tractor trailer (5 axles or more)	onroad HHD					
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		10	40		120
Welder genset (Hobart Champion Elite)	offroad	23				
OUTLETS - Middle Fork Interbay Dam Outlet Works Modification - YEAR 2						
Backhoe (John Deere 410 J)	offroad	98	1	5	4	
Bulldozer (John Deere Model 700 J)	offroad	115				
Compressor (Sullair 375 H-AF trailer mounted)	offroad	130				
Concrete pumper (Schwing SP 260)	offroad	68	1	5	4	
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD		1	5		150
Electrical boom type line truck (Ford F650 XL)	onroad MD					
Electrical boom type truck-mounted aerial lift	offroad	50				
Excavator (John Deere 160 D LC)	offroad	121				
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		1	20		150
Forklift (Case 586G Series 3)	offroad	80				
Front loader (John Deere 444 K)	offroad	117				
Generator (Magnum MMG25 23 KVA diesel)	offroad	40	1	20	8	
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		1	5		150
Mobile crane (Link-Belt RTC-8030 Series II)	offroad	164	1	10	4	
Oversize load tractor trailer (5 axles or more)	onroad HHD		1	3		120
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		4	20		120
Welder genset (Hobart Champion Elite)	offroad	23	1	20	5	

Equipment and Vehicles		Rating	Planned	Activity Schedule		
Type	Category	BHP	quantity	days	hrs/day	mi/day
GAGES - North Fork Long Canyon Creek Gage Below Diversion Dam - YEAR 3						
Chainsaw (2-stroke, professional grade)	offroad	4	1	2	5	
Generator (2.2 KVA)	offroad	5	1	7	10	
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		2	7		120
GAGES - South Fork Long Canyon Creek Gage Below Diversion Dam - YEAR 3						
Chainsaw (2-stroke, professional grade)	offroad	4	1	2	5	
Generator (2.2 KVA)	offroad	5	1	7	10	
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		2	7		120
GAGES - Middle Fork American River Gage Below Interbay Dam - YEAR 2						
Chainsaw (2-stroke, professional grade)	offroad	4	1	2	5	
Generator (2.2 KVA)	offroad	5	1	7	10	
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		2	7		120
GAGES - North Fork American River Gage Above American River Pump Station - YEAR 2						
Chainsaw (2-stroke, professional grade)	offroad	4	1	2	5	
Generator (2.2 KVA)	offroad	5	1	7	10	
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		2	7		120
RECREATION - Ellicott Bridge Parking Area - YEAR 14						
Asphalt paver (Caterpillar AP500E)	offroad	142	1	10	6	
Asphalt roller (Caterpillar CB54)	offroad	137	1	10	6	
Backhoe (John Deere 410 J)	offroad	98	1	10	4	
Compressor (Sullair 375 H-AF trailer mounted)	offroad	130	1	10	6	
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD		1	10		150
Drilling rig (mid-size)	offroad	120	1	10	6	
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		1	10		150
Forklift (Case 586G Series 3)	offroad	80	1	10	4	
Generator (30 KVA diesel)	offroad	50	1	10	10	
Grader (John Deere 670G/GP)	offroad	195	1	10	4	
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		1	10		150
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		6	10		120
RECREATION - French Meadows Reservoir Trail - YEAR 14						
Backhoe (John Deere 410 J)	offroad	98	1	14	4	
Bulldozer (John Deere Model 700 J)	offroad	115	1	14	6	
Chainsaw (2-stroke, professional grade)	offroad	4	2	14	8	
Chipper (Vermeer BC1500)	offroad	125	1	14	8	
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		1	14		150
Forest Machine (Caterpillar 324D FM)	offroad	188	1	14	8	
Generator (30 KVA diesel)	offroad	50	1	14	10	
Log transport truck (Mack or Oshkosh as typical)	onroad HHD		1	14		150
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		1	14		150
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		6	14		120
SUPPLY - French Meadows North Shore Water Supply - YEAR 9						
Backhoe (John Deere 410 J)	offroad	98	1	21	4	
Bulldozer (John Deere Model 700 J)	offroad	115	1	21	6	
Compressor (Sullair 375 H-AF trailer mounted)	offroad	130	1	21	6	
Drilling rig (mid-size)	offroad	120	1	21	6	
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		1	21		150
Generator (30 KVA diesel)	offroad	50	1	21	10	
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		1	21		150
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		4	21		120

Equipment and Vehicles		Rating	Planned	Activity Schedule		
Type	Category	BHP	quantity	days	hrs/day	mi/day
SUPPLY - French Meadows South Shore Water Supply - YEAR 5						
Backhoe (John Deere 410 J)	offroad	98	1	21	4	
Bulldozer (John Deere Model 700 J)	offroad	115	1	21	6	
Compressor (Sullair 375 H-AF trailer mounted)	offroad	130	1	21	6	
Drilling rig (mid-size)	offroad	120	1	21	6	
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		1	21		150
Generator (30 KVA diesel)	offroad	50	1	21	10	
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		1	21		150
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		4	21		120

Source: Christensen Associates 2010, -11

Notes:

LD = light duty; MD = medium duty, HHD = heavy heavy duty, BHP = brake horsepower

Contractor will generally work 5 x 10-hr days per week (50 hrs/wk onsite time)

Estimated daily equipment operating hours account for downtime related to staging, breaks, lunch, maintenance, repairs, etc.

Not all equipments used on all 7 phases of RESERVOIR, DIVERSIONS, or OUTLETS (standard list used for simplicity)

Estimated Construction Activity						
Equipment and Vehicles		Rating	Daily Max		Project Total	
Type	Category	BHP	hours	VMT	hours	VMT
RESERVOIR - Hell Hole Reservoir Seasonal Storage Increase Improvement - YEAR 3						
Backhoe (John Deere 410 J)	offroad	98	6		210	
Bulldozer (John Deere Model 700 J)	offroad	115	0		0	
Compressor (Sullair 375 H-AF trailer mounted)	offroad	130	6		126	
Concrete pumper (Schwing SP 260)	offroad	68	4		32	
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD			150		1200
Electrical boom type line truck (Ford F650 XL)	onroad MD			150		1500
Electrical boom type truck-mounted aerial lift	offroad	50	6		60	
Excavator (John Deere 160 D LC)	offroad	121	0		0	
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD			150		9900
Forklift (Case 586G Series 3)	offroad	80	4		168	
Front loader (John Deere 444 K)	offroad	117	6		126	
Generator (Magnum MMG25 23 KVA diesel)	offroad	40	10		800	
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD			150		1500
Mobile crane (Link-Belt RTC-8030 Series II)	offroad	164	6		126	
Oversize load tractor trailer (5 axles or more)	onroad HHD			120		360
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD			1200		96000
Welder genset (Hobart Champion Elite)	offroad	23	0		0	
DIVERSIONS - Duncan Creek Diversion Dam Modification - YEAR 2						
Backhoe (John Deere 410 J)	offroad	98	4		60	
Bulldozer (John Deere Model 700 J)	offroad	115	6		180	
Compressor (Sullair 375 H-AF trailer mounted)	offroad	130	6		120	
Concrete pumper (Schwing SP 260)	offroad	68	4		56	
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD			1200		16800
Electrical boom type line truck (Ford F650 XL)	onroad MD			0		0
Electrical boom type truck-mounted aerial lift	offroad	50	0		0	
Excavator (John Deere 160 D LC)	offroad	121	6		228	
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD			150		9900
Forklift (Case 586G Series 3)	offroad	80	4		128	
Front loader (John Deere 444 K)	offroad	117	0		0	
Generator (Magnum MMG25 23 KVA diesel)	offroad	40	10		800	
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD			150		1500
Mobile crane (Link-Belt RTC-8030 Series II)	offroad	164	5		105	
Oversize load tractor trailer (5 axles or more)	onroad HHD			120		360
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD			1200		96000
Welder genset (Hobart Champion Elite)	offroad	23	0		0	
DIVERSIONS - North Fork Long Canyon Diversion Dam Modification - YEAR 3						
Backhoe (John Deere 410 J)	offroad	98	4		60	
Bulldozer (John Deere Model 700 J)	offroad	115	6		180	
Compressor (Sullair 375 H-AF trailer mounted)	offroad	130	6		120	
Concrete pumper (Schwing SP 260)	offroad	68	4		56	
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD			1200		16800
Electrical boom type line truck (Ford F650 XL)	onroad MD			0		0
Electrical boom type truck-mounted aerial lift	offroad	50	0		0	
Excavator (John Deere 160 D LC)	offroad	121	6		228	
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD			150		9900
Forklift (Case 586G Series 3)	offroad	80	4		128	
Front loader (John Deere 444 K)	offroad	117	0		0	
Generator (Magnum MMG25 23 KVA diesel)	offroad	40	10		800	
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD			150		1500
Mobile crane (Link-Belt RTC-8030 Series II)	offroad	164	5		105	
Oversize load tractor trailer (5 axles or more)	onroad HHD			120		360
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD			1200		96000
Welder genset (Hobart Champion Elite)	offroad	23	0		0	

Equipment and Vehicles		Rating	Daily Max		Project Total	
Type	Category	BHP	hours	VMT	hours	VMT
DIVERSIONS - South Fork Long Canyon Diversion Dam Modification - YEAR 3						
Backhoe (John Deere 410 J)	offroad	98	4		60	
Bulldozer (John Deere Model 700 J)	offroad	115	6		180	
Compressor (Sullair 375 H-AF trailer mounted)	offroad	130	6		120	
Concrete pumper (Schwing SP 260)	offroad	68	4		56	
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD			1200		16800
Electrical boom type line truck (Ford F650 XL)	onroad MD			0		0
Electrical boom type truck-mounted aerial lift	offroad	50	0		0	
Excavator (John Deere 160 D LC)	offroad	121	6		228	
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD			150		9900
Forklift (Case 586G Series 3)	offroad	80	4		128	
Front loader (John Deere 444 K)	offroad	117	0		0	
Generator (Magnum MMG25 23 KVA diesel)	offroad	40	10		800	
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD			150		1500
Mobile crane (Link-Belt RTC-8030 Series II)	offroad	164	5		105	
Oversize load tractor trailer (5 axles or more)	onroad HHD			120		360
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD			1200		96000
Welder genset (Hobart Champion Elite)	offroad	23	0		0	
OUTLETS - French Meadows Dam Outlet Works Modification - YEAR 2						
Backhoe (John Deere 410 J)	offroad	98	4		12	
Bulldozer (John Deere Model 700 J)	offroad	115	0		0	
Compressor (Sullair 375 H-AF trailer mounted)	offroad	130	0		0	
Concrete pumper (Schwing SP 260)	offroad	68	4		4	
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD			150		150
Electrical boom type line truck (Ford F650 XL)	onroad MD			0		0
Electrical boom type truck-mounted aerial lift	offroad	50	0		0	
Excavator (John Deere 160 D LC)	offroad	121	0		0	
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD			150		3000
Forklift (Case 586G Series 3)	offroad	80	0		0	
Front loader (John Deere 444 K)	offroad	117	0		0	
Generator (Magnum MMG25 23 KVA diesel)	offroad	40	8		160	
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD			150		450
Mobile crane (Link-Belt RTC-8030 Series II)	offroad	164	4		8	
Oversize load tractor trailer (5 axles or more)	onroad HHD			120		360
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD			480		9600
Welder genset (Hobart Champion Elite)	offroad	23	4		16	
OUTLETS - Hell Hole Dam Outlet Works Modification - YEAR 2						
Backhoe (John Deere 410 J)	offroad	98	4		140	
Bulldozer (John Deere Model 700 J)	offroad	115	6		84	
Compressor (Sullair 375 H-AF trailer mounted)	offroad	130	6		120	
Concrete pumper (Schwing SP 260)	offroad	68	4		28	
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD			150		1050
Electrical boom type line truck (Ford F650 XL)	onroad MD			0		0
Electrical boom type truck-mounted aerial lift	offroad	50	0		0	
Excavator (John Deere 160 D LC)	offroad	121	6		228	
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD			150		6000
Forklift (Case 586G Series 3)	offroad	80	4		132	
Front loader (John Deere 444 K)	offroad	117	0		0	
Generator (Magnum MMG25 23 KVA diesel)	offroad	40	0		0	
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD			150		6000
Mobile crane (Link-Belt RTC-8030 Series II)	offroad	164	5		160	
Oversize load tractor trailer (5 axles or more)	onroad HHD			0		0
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD			1200		48000
Welder genset (Hobart Champion Elite)	offroad	23	0		0	

Equipment and Vehicles		Rating	Daily Max		Project Total	
Type	Category	BHP	hours	VMT	hours	VMT
OUTLETS - Middle Fork Interbay Dam Outlet Works Modification - YEAR 2						
Backhoe (John Deere 410 J)	offroad	98	4		20	
Bulldozer (John Deere Model 700 J)	offroad	115	0		0	
Compressor (Sullair 375 H-AF trailer mounted)	offroad	130	0		0	
Concrete pumper (Schwing SP 260)	offroad	68	4		20	
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD			150		750
Electrical boom type line truck (Ford F650 XL)	onroad MD			0		0
Electrical boom type truck-mounted aerial lift	offroad	50	0		0	
Excavator (John Deere 160 D LC)	offroad	121	0		0	
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD			150		3000
Forklift (Case 586G Series 3)	offroad	80	0		0	
Front loader (John Deere 444 K)	offroad	117	0		0	
Generator (Magnum MMG25 23 KVA diesel)	offroad	40	8		160	
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD			150		750
Mobile crane (Link-Belt RTC-8030 Series II)	offroad	164	4		40	
Oversize load tractor trailer (5 axles or more)	onroad HHD			120		360
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD			480		9600
Welder genset (Hobart Champion Elite)	offroad	23	5		100	
GAGES - North Fork Long Canyon Creek Gage Below Diversion Dam - YEAR 3						
Chainsaw (2-stroke, professional grade)	offroad	4	5		10	
Generator (2.2 KVA)	offroad	5	10		70	
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD			240		1680
GAGES - South Fork Long Canyon Creek Gage Below Diversion Dam - YEAR 3						
Chainsaw (2-stroke, professional grade)	offroad	4	5		10	
Generator (2.2 KVA)	offroad	5	10		70	
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD			240		1680
GAGES - Middle Fork American River Gage Below Interbay Dam - YEAR 2						
Chainsaw (2-stroke, professional grade)	offroad	4	5		10	
Generator (2.2 KVA)	offroad	5	10		70	
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD			240		1680
GAGES - North Fork American River Gage Above American River Pump Station - YEAR 2						
Chainsaw (2-stroke, professional grade)	offroad	4	5		10	
Generator (2.2 KVA)	offroad	5	10		70	
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD			240		1680
RECREATION - Ellicott Bridge Parking Area - YEAR 14						
Asphalt paver (Caterpillar AP500E)	offroad	142	6		60	
Asphalt roller (Caterpillar CB54)	offroad	137	6		60	
Backhoe (John Deere 410 J)	offroad	98	4		40	
Compressor (Sullair 375 H-AF trailer mounted)	offroad	130	6		60	
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD			150		1500
Drilling rig (mid-size)	offroad	120	6		60	
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD			150		1500
Forklift (Case 586G Series 3)	offroad	80	4		40	
Generator (30 KVA diesel)	offroad	50	10		100	
Grader (John Deere 670G/GP)	offroad	195	4		40	
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD			150		1500
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD			720		7200
RECREATION - French Meadows Reservoir Trail - YEAR 14						
Backhoe (John Deere 410 J)	offroad	98	4		56	
Bulldozer (John Deere Model 700 J)	offroad	115	6		84	
Chainsaw (2-stroke, professional grade)	offroad	4	16		224	
Chipper (Vermeer BC1500)	offroad	125	8		112	
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD			150		2100
Forest Machine (Caterpillar 324D FM)	offroad	188	8		112	
Generator (30 KVA diesel)	offroad	50	10		140	
Log transport truck (Mack or Oshkosh as typical)	onroad HHD			150		2100
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD			150		2100
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD			720		10080

Equipment and Vehicles		Rating	Daily Max		Project Total	
Type	Category	BHP	hours	VMT	hours	VMT
SUPPLY - French Meadows North Shore Water Supply - YEAR 9						
Backhoe (John Deere 410 J)	offroad	98	4		84	
Bulldozer (John Deere Model 700 J)	offroad	115	6		126	
Compressor (Sullair 375 H-AF trailer mounted)	offroad	130	6		126	
Drilling rig (mid-size)	offroad	120	6		126	
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD			150		3150
Generator (30 KVA diesel)	offroad	50	10		210	
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD			150		3150
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD			480		10080
SUPPLY - French Meadows South Shore Water Supply - YEAR 5						
Backhoe (John Deere 410 J)	offroad	98	4		84	
Bulldozer (John Deere Model 700 J)	offroad	115	6		126	
Compressor (Sullair 375 H-AF trailer mounted)	offroad	130	6		126	
Drilling rig (mid-size)	offroad	120	6		126	
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD			150		3150
Generator (30 KVA diesel)	offroad	50	10		210	
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD			150		3150
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD			480		10080
Source: Christensen Associates 2010, -11						
Notes:						
LD = light duty; MD = medium duty, HHD = heavy heavy duty, BHP = brake horsepower						
Contractor will generally work 5 x 10-hr days per week (50 hrs/wk onsite time)						
Estimated daily equipment operating hours account for downtime related to staging, breaks, lunch, maintenance, repairs, etc.						
Not all equipments used on all 7 phases of RESERVOIR, DIVERSIONS, or OUTLETS (standard list used for simplicity)						
CHECKSUM1				**18990**		**640770**

Equipment and Vehicles		Rating	Daily Max		Project Total	
Type	Category	BHP	hours	VMT	hours	VMT
Onroad Fugitive Dust Calculations Inputs	Onroad Category			Daily VMT		Project VMT
RESERVOIR - Hell Hole Reservoir Seasonal Storage Increase Improvement - YEAR 3 (PHASE 1)						
Tractor Trailer (materials/hauling)	onroad HHD					
Tractor Trailer (equipment/supplies)	onroad HHD			270		1860
Cement Truck (concrete/pumping)	onroad HHD			150		1200
Dump Truck (soil/sand/gravel transport)	onroad HHD					
Water Truck (dust control)	onroad HHD					
Work Truck (all trades)	onroad MD			300		11400
Pickup/SUV (managers/engineers)	onroad LD					
Pickup/SUV (supervisors/foremen)	onroad LD					
Pickup/SUV (operators/drivers)	onroad LD					
Pickup/SUV (tradesmen/laborers)	onroad LD			1200		96000
DIVERSIONS - Duncan Creek Diversion Dam Modification - YEAR 2 (PHASE 2)						
Tractor Trailer (materials/hauling)	onroad HHD					
Tractor Trailer (equipment/supplies)	onroad HHD			270		1860
Cement Truck (concrete/pumping)	onroad HHD			1200		16800
Dump Truck (soil/sand/gravel transport)	onroad HHD					
Water Truck (dust control)	onroad HHD					
Work Truck (all trades)	onroad MD			150		9900
Pickup/SUV (managers/engineers)	onroad LD					
Pickup/SUV (supervisors/foremen)	onroad LD					
Pickup/SUV (operators/drivers)	onroad LD					
Pickup/SUV (tradesmen/laborers)	onroad LD			1200		96000
DIVERSIONS - North Fork Long Canyon Diversion Dam Modification - YEAR 3 (PHASE 3)						
Tractor Trailer (materials/hauling)	onroad HHD					
Tractor Trailer (equipment/supplies)	onroad HHD			270		1860
Cement Truck (concrete/pumping)	onroad HHD			1200		16800
Dump Truck (soil/sand/gravel transport)	onroad HHD					
Water Truck (dust control)	onroad HHD					
Work Truck (all trades)	onroad MD			150		9900
Pickup/SUV (managers/engineers)	onroad LD					
Pickup/SUV (supervisors/foremen)	onroad LD					
Pickup/SUV (operators/drivers)	onroad LD					
Pickup/SUV (tradesmen/laborers)	onroad LD			1200		96000
DIVERSIONS - South Fork Long Canyon Diversion Dam Modification - YEAR 3 (PHASE 4)						
Tractor Trailer (materials/hauling)	onroad HHD					
Tractor Trailer (equipment/supplies)	onroad HHD			270		1860
Cement Truck (concrete/pumping)	onroad HHD			1200		16800
Dump Truck (soil/sand/gravel transport)	onroad HHD					
Water Truck (dust control)	onroad HHD					
Work Truck (all trades)	onroad MD			150		9900
Pickup/SUV (managers/engineers)	onroad LD					
Pickup/SUV (supervisors/foremen)	onroad LD					
Pickup/SUV (operators/drivers)	onroad LD					
Pickup/SUV (tradesmen/laborers)	onroad LD			1200		96000
OUTLETS - French Meadows Dam Outlet Works Modification - YEAR 2 (PHASE 5)						
Tractor Trailer (materials/hauling)	onroad HHD					
Tractor Trailer (equipment/supplies)	onroad HHD			270		810
Cement Truck (concrete/pumping)	onroad HHD			150		150
Dump Truck (soil/sand/gravel transport)	onroad HHD					
Water Truck (dust control)	onroad HHD					
Work Truck (all trades)	onroad MD			150		3000
Pickup/SUV (managers/engineers)	onroad LD					
Pickup/SUV (supervisors/foremen)	onroad LD					
Pickup/SUV (operators/drivers)	onroad LD					
Pickup/SUV (tradesmen/laborers)	onroad LD			480		9600

Equipment and Vehicles		Rating	Daily Max		Project Total	
Type	Category	BHP	hours	VMT	hours	VMT
OUTLETS - Hell Hole Dam Outlet Works Modification - YEAR 2 (PHASE 6)						
Tractor Trailer (materials/hauling)	onroad HHD					
Tractor Trailer (equipment/supplies)	onroad HHD			150		6000
Cement Truck (concrete/pumping)	onroad HHD			150		1050
Dump Truck (soil/sand/gravel transport)	onroad HHD					
Water Truck (dust control)	onroad HHD					
Work Truck (all trades)	onroad MD			150		6000
Pickup/SUV (managers/engineers)	onroad LD					
Pickup/SUV (supervisors/foremen)	onroad LD					
Pickup/SUV (operators/drivers)	onroad LD					
Pickup/SUV (tradesmen/laborers)	onroad LD			1200		48000
OUTLETS - Middle Fork Interbay Dam Outlet Works Modification - YEAR 2 (PHASE 7)						
Tractor Trailer (materials/hauling)	onroad HHD					
Tractor Trailer (equipment/supplies)	onroad HHD			270		1110
Cement Truck (concrete/pumping)	onroad HHD			150		750
Dump Truck (soil/sand/gravel transport)	onroad HHD					
Water Truck (dust control)	onroad HHD					
Work Truck (all trades)	onroad MD			150		3000
Pickup/SUV (managers/engineers)	onroad LD					
Pickup/SUV (supervisors/foremen)	onroad LD					
Pickup/SUV (operators/drivers)	onroad LD					
Pickup/SUV (tradesmen/laborers)	onroad LD			480		9600
GAGES - North Fork Long Canyon Creek Gage Below Diversion Dam - YEAR 3 (PHASE 8)						
Tractor Trailer (materials/hauling)	onroad HHD					
Tractor Trailer (equipment/supplies)	onroad HHD					
Cement Truck (concrete/pumping)	onroad HHD					
Dump Truck (soil/sand/gravel transport)	onroad HHD					
Water Truck (dust control)	onroad HHD					
Work Truck (all trades)	onroad MD					
Pickup/SUV (managers/engineers)	onroad LD					
Pickup/SUV (supervisors/foremen)	onroad LD					
Pickup/SUV (operators/drivers)	onroad LD					
Pickup/SUV (tradesmen/laborers)	onroad LD			240		1680
GAGES - South Fork Long Canyon Creek Gage Below Diversion Dam - YEAR 3 (PHASE 9)						
Tractor Trailer (materials/hauling)	onroad HHD					
Tractor Trailer (equipment/supplies)	onroad HHD					
Cement Truck (concrete/pumping)	onroad HHD					
Dump Truck (soil/sand/gravel transport)	onroad HHD					
Water Truck (dust control)	onroad HHD					
Work Truck (all trades)	onroad MD					
Pickup/SUV (managers/engineers)	onroad LD					
Pickup/SUV (supervisors/foremen)	onroad LD					
Pickup/SUV (operators/drivers)	onroad LD					
Pickup/SUV (tradesmen/laborers)	onroad LD			240		1680
GAGES - Middle Fork American River Gage Below Interbay Dam - YEAR 2 (PHASE 10)						
Tractor Trailer (materials/hauling)	onroad HHD					
Tractor Trailer (equipment/supplies)	onroad HHD					
Cement Truck (concrete/pumping)	onroad HHD					
Dump Truck (soil/sand/gravel transport)	onroad HHD					
Water Truck (dust control)	onroad HHD					
Work Truck (all trades)	onroad MD					
Pickup/SUV (managers/engineers)	onroad LD					
Pickup/SUV (supervisors/foremen)	onroad LD					
Pickup/SUV (operators/drivers)	onroad LD					
Pickup/SUV (tradesmen/laborers)	onroad LD			240		1680

Equipment and Vehicles		Rating	Daily Max		Project Total	
Type	Category	BHP	hours	VMT	hours	VMT
GAGES - North Fork American River Gage Above American River Pump Station - YEAR 2 (PHASE 11)						
Tractor Trailer (materials/hauling)	onroad HHD					
Tractor Trailer (equipment/supplies)	onroad HHD					
Cement Truck (concrete/pumping)	onroad HHD					
Dump Truck (soil/sand/gravel transport)	onroad HHD					
Water Truck (dust control)	onroad HHD					
Work Truck (all trades)	onroad MD					
Pickup/SUV (managers/engineers)	onroad LD					
Pickup/SUV (supervisors/foremen)	onroad LD					
Pickup/SUV (operators/drivers)	onroad LD					
Pickup/SUV (tradesmen/laborers)	onroad LD			240		1680
RECREATION - Ellicott Bridge Parking Area - YEAR 14 (PHASE 12)						
Tractor Trailer (materials/hauling)	onroad HHD					
Tractor Trailer (equipment/supplies)	onroad HHD			150		1500
Cement Truck (concrete/pumping)	onroad HHD			150		1500
Dump Truck (soil/sand/gravel transport)	onroad HHD					
Water Truck (dust control)	onroad HHD					
Work Truck (all trades)	onroad MD			150		1500
Pickup/SUV (managers/engineers)	onroad LD					
Pickup/SUV (supervisors/foremen)	onroad LD					
Pickup/SUV (operators/drivers)	onroad LD					
Pickup/SUV (tradesmen/laborers)	onroad LD			720		7200
RECREATION - French Meadows Reservoir Trail - YEAR 14 (PHASE 13)						
Tractor Trailer (materials/hauling)	onroad HHD			150		2100
Tractor Trailer (equipment/supplies)	onroad HHD			150		2100
Cement Truck (concrete/pumping)	onroad HHD					
Dump Truck (soil/sand/gravel transport)	onroad HHD					
Water Truck (dust control)	onroad HHD					
Work Truck (all trades)	onroad MD			150		2100
Pickup/SUV (managers/engineers)	onroad LD					
Pickup/SUV (supervisors/foremen)	onroad LD					
Pickup/SUV (operators/drivers)	onroad LD					
Pickup/SUV (tradesmen/laborers)	onroad LD			720		10080
SUPPLY - French Meadows North Shore Water Supply - YEAR 9 (PHASE 14)						
Tractor Trailer (materials/hauling)	onroad HHD					
Tractor Trailer (equipment/supplies)	onroad HHD			150		3150
Cement Truck (concrete/pumping)	onroad HHD					
Dump Truck (soil/sand/gravel transport)	onroad HHD					
Water Truck (dust control)	onroad HHD					
Work Truck (all trades)	onroad MD			150		3150
Pickup/SUV (managers/engineers)	onroad LD					
Pickup/SUV (supervisors/foremen)	onroad LD					
Pickup/SUV (operators/drivers)	onroad LD					
Pickup/SUV (tradesmen/laborers)	onroad LD			480		10080
SUPPLY - French Meadows South Shore Water Supply - YEAR 5 (PHASE 15)						
Tractor Trailer (materials/hauling)	onroad HHD					
Tractor Trailer (equipment/supplies)	onroad HHD			150		3150
Cement Truck (concrete/pumping)	onroad HHD					
Dump Truck (soil/sand/gravel transport)	onroad HHD					
Water Truck (dust control)	onroad HHD					
Work Truck (all trades)	onroad MD			150		3150
Pickup/SUV (managers/engineers)	onroad LD					
Pickup/SUV (supervisors/foremen)	onroad LD					
Pickup/SUV (operators/drivers)	onroad LD					
Pickup/SUV (tradesmen/laborers)	onroad LD			480		10080
CHECKSUM2				**18990**		**640770**

Equipment and Vehicles		Rating	Daily Max		Project Total	
Type	Category	BHP	hours	VMT	hours	VMT
Offroad Fugitive Dust Calculations Inputs	Offroad Category		Daily hours		Project hours	
RESERVOIR - Hell Hole Reservoir Seasonal Storage Increase Improvement - YEAR 3 (PHASE 1)						
Asphalt roller (Caterpillar CB54)	offroad					
Backhoe (John Deere 410 J)	offroad		6		210	
Bulldozer (John Deere Model 700 J)	offroad		0		0	
Drilling rig (mid-size)	offroad					
Excavator (John Deere 160 D LC)	offroad		0		0	
Forest Machine (Caterpillar 324D FM)	offroad					
Forklift (Case 586G Series 3)	offroad		4		168	
Front loader (John Deere 444 K)	offroad		6		126	
Grader (John Deere 670G/GP)	offroad					
Mobile crane (Link-Belt RTC-8030 Series II)	offroad		6		126	
DIVERSIONS - Duncan Creek Diversion Dam Modification - YEAR 2 (PHASE 2)						
Asphalt roller (Caterpillar CB54)	offroad					
Backhoe (John Deere 410 J)	offroad		4		60	
Bulldozer (John Deere Model 700 J)	offroad		6		180	
Drilling rig (mid-size)	offroad					
Excavator (John Deere 160 D LC)	offroad		6		228	
Forest Machine (Caterpillar 324D FM)	offroad					
Forklift (Case 586G Series 3)	offroad		4		128	
Front loader (John Deere 444 K)	offroad		0		0	
Grader (John Deere 670G/GP)	offroad					
Mobile crane (Link-Belt RTC-8030 Series II)	offroad		5		105	
DIVERSIONS - North Fork Long Canyon Diversion Dam Modification - YEAR 3 (PHASE 3)						
Asphalt roller (Caterpillar CB54)	offroad					
Backhoe (John Deere 410 J)	offroad		4		60	
Bulldozer (John Deere Model 700 J)	offroad		6		180	
Drilling rig (mid-size)	offroad					
Excavator (John Deere 160 D LC)	offroad		6		228	
Forest Machine (Caterpillar 324D FM)	offroad					
Forklift (Case 586G Series 3)	offroad		4		128	
Front loader (John Deere 444 K)	offroad		0		0	
Grader (John Deere 670G/GP)	offroad					
Mobile crane (Link-Belt RTC-8030 Series II)	offroad		5		105	
DIVERSIONS - South Fork Long Canyon Diversion Dam Modification - YEAR 3 (PHASE 4)						
Asphalt roller (Caterpillar CB54)	offroad					
Backhoe (John Deere 410 J)	offroad		4		60	
Bulldozer (John Deere Model 700 J)	offroad		6		180	
Drilling rig (mid-size)	offroad					
Excavator (John Deere 160 D LC)	offroad		6		228	
Forest Machine (Caterpillar 324D FM)	offroad					
Forklift (Case 586G Series 3)	offroad		4		128	
Front loader (John Deere 444 K)	offroad		0		0	
Grader (John Deere 670G/GP)	offroad					
Mobile crane (Link-Belt RTC-8030 Series II)	offroad		5		105	
OUTLETS - French Meadows Dam Outlet Works Modification - YEAR 2 (PHASE 5)						
Asphalt roller (Caterpillar CB54)	offroad					
Backhoe (John Deere 410 J)	offroad		4		12	
Bulldozer (John Deere Model 700 J)	offroad		0		0	
Drilling rig (mid-size)	offroad					
Excavator (John Deere 160 D LC)	offroad		0		0	
Forest Machine (Caterpillar 324D FM)	offroad					
Forklift (Case 586G Series 3)	offroad		0		0	
Front loader (John Deere 444 K)	offroad		0		0	
Grader (John Deere 670G/GP)	offroad					
Mobile crane (Link-Belt RTC-8030 Series II)	offroad		4		8	

Equipment and Vehicles		Rating	Daily Max		Project Total	
Type	Category	BHP	hours	VMT	hours	VMT
OUTLETS - Hell Hole Dam Outlet Works Modification - YEAR 2 (PHASE 6)						
Asphalt roller (Caterpillar CB54)	offroad					
Backhoe (John Deere 410 J)	offroad		4		140	
Bulldozer (John Deere Model 700 J)	offroad		6		84	
Drilling rig (mid-size)	offroad					
Excavator (John Deere 160 D LC)	offroad		6		228	
Forest Machine (Caterpillar 324D FM)	offroad					
Forklift (Case 586G Series 3)	offroad		4		132	
Front loader (John Deere 444 K)	offroad		0		0	
Grader (John Deere 670G/GP)	offroad					
Mobile crane (Link-Belt RTC-8030 Series II)	offroad		5		160	
OUTLETS - Middle Fork Interbay Dam Outlet Works Modification - YEAR 2 (PHASE 7)						
Asphalt roller (Caterpillar CB54)	offroad					
Backhoe (John Deere 410 J)	offroad		4		20	
Bulldozer (John Deere Model 700 J)	offroad		0		0	
Drilling rig (mid-size)	offroad					
Excavator (John Deere 160 D LC)	offroad		0		0	
Forest Machine (Caterpillar 324D FM)	offroad					
Forklift (Case 586G Series 3)	offroad		0		0	
Front loader (John Deere 444 K)	offroad		0		0	
Grader (John Deere 670G/GP)	offroad					
Mobile crane (Link-Belt RTC-8030 Series II)	offroad		4		40	
GAGES - North Fork Long Canyon Creek Gage Below Diversion Dam - YEAR 3 (PHASE 8)						
Asphalt roller (Caterpillar CB54)	offroad					
Backhoe (John Deere 410 J)	offroad					
Bulldozer (John Deere Model 700 J)	offroad					
Drilling rig (mid-size)	offroad					
Excavator (John Deere 160 D LC)	offroad					
Forest Machine (Caterpillar 324D FM)	offroad					
Forklift (Case 586G Series 3)	offroad					
Front loader (John Deere 444 K)	offroad					
Grader (John Deere 670G/GP)	offroad					
Mobile crane (Link-Belt RTC-8030 Series II)	offroad					
GAGES - South Fork Long Canyon Creek Gage Below Diversion Dam - YEAR 3 (PHASE 9)						
Asphalt roller (Caterpillar CB54)	offroad					
Backhoe (John Deere 410 J)	offroad					
Bulldozer (John Deere Model 700 J)	offroad					
Drilling rig (mid-size)	offroad					
Excavator (John Deere 160 D LC)	offroad					
Forest Machine (Caterpillar 324D FM)	offroad					
Forklift (Case 586G Series 3)	offroad					
Front loader (John Deere 444 K)	offroad					
Grader (John Deere 670G/GP)	offroad					
Mobile crane (Link-Belt RTC-8030 Series II)	offroad					
GAGES - Middle Fork American River Gage Below Interbay Dam - YEAR 2 (PHASE 10)						
Asphalt roller (Caterpillar CB54)	offroad					
Backhoe (John Deere 410 J)	offroad					
Bulldozer (John Deere Model 700 J)	offroad					
Drilling rig (mid-size)	offroad					
Excavator (John Deere 160 D LC)	offroad					
Forest Machine (Caterpillar 324D FM)	offroad					
Forklift (Case 586G Series 3)	offroad					
Front loader (John Deere 444 K)	offroad					
Grader (John Deere 670G/GP)	offroad					
Mobile crane (Link-Belt RTC-8030 Series II)	offroad					

Equipment and Vehicles		Rating	Daily Max		Project Total	
Type	Category	BHP	hours	VMT	hours	VMT
GAGES - North Fork American River Gage Above American River Pump Station - YEAR 2 (PHASE 11)						
Asphalt roller (Caterpillar CB54)	offroad					
Backhoe (John Deere 410 J)	offroad					
Bulldozer (John Deere Model 700 J)	offroad					
Drilling rig (mid-size)	offroad					
Excavator (John Deere 160 D LC)	offroad					
Forest Machine (Caterpillar 324D FM)	offroad					
Forklift (Case 586G Series 3)	offroad					
Front loader (John Deere 444 K)	offroad					
Grader (John Deere 670G/GP)	offroad					
Mobile crane (Link-Belt RTC-8030 Series II)	offroad					
RECREATION - Ellicott Bridge Parking Area - YEAR 14 (PHASE 12)						
Asphalt roller (Caterpillar CB54)	offroad		6		60	
Backhoe (John Deere 410 J)	offroad		4		40	
Bulldozer (John Deere Model 700 J)	offroad					
Drilling rig (mid-size)	offroad		6		60	
Excavator (John Deere 160 D LC)	offroad					
Forest Machine (Caterpillar 324D FM)	offroad					
Forklift (Case 586G Series 3)	offroad		4		40	
Front loader (John Deere 444 K)	offroad					
Grader (John Deere 670G/GP)	offroad		4		40	
Mobile crane (Link-Belt RTC-8030 Series II)	offroad					
RECREATION - French Meadows Reservoir Trail - YEAR 14 (PHASE 13)						
Asphalt roller (Caterpillar CB54)	offroad					
Backhoe (John Deere 410 J)	offroad		4		56	
Bulldozer (John Deere Model 700 J)	offroad		6		84	
Drilling rig (mid-size)	offroad					
Excavator (John Deere 160 D LC)	offroad					
Forest Machine (Caterpillar 324D FM)	offroad		8		112	
Forklift (Case 586G Series 3)	offroad					
Front loader (John Deere 444 K)	offroad					
Grader (John Deere 670G/GP)	offroad					
Mobile crane (Link-Belt RTC-8030 Series II)	offroad					
SUPPLY - French Meadows North Shore Water Supply - YEAR 9 (PHASE 14)						
Asphalt roller (Caterpillar CB54)	offroad					
Backhoe (John Deere 410 J)	offroad		4		84	
Bulldozer (John Deere Model 700 J)	offroad		6		126	
Drilling rig (mid-size)	offroad		6		126	
Excavator (John Deere 160 D LC)	offroad					
Forest Machine (Caterpillar 324D FM)	offroad					
Forklift (Case 586G Series 3)	offroad					
Front loader (John Deere 444 K)	offroad					
Grader (John Deere 670G/GP)	offroad					
Mobile crane (Link-Belt RTC-8030 Series II)	offroad					
SUPPLY - French Meadows South Shore Water Supply - YEAR 5 (PHASE 15)						
Asphalt roller (Caterpillar CB54)	offroad					
Backhoe (John Deere 410 J)	offroad		4		84	
Bulldozer (John Deere Model 700 J)	offroad		6		126	
Drilling rig (mid-size)	offroad		6		126	
Excavator (John Deere 160 D LC)	offroad					
Forest Machine (Caterpillar 324D FM)	offroad					
Forklift (Case 586G Series 3)	offroad					
Front loader (John Deere 444 K)	offroad					
Grader (John Deere 670G/GP)	offroad					
Mobile crane (Link-Belt RTC-8030 Series II)	offroad					

Emission Estimation Factors for Construction (fuel combustion)												
Equipment and Vehicles		Rating	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_20	CO_2 eqv
Type	Category	BHP	lbs/unit	lbs/unit	lbs/unit	lbs/unit	lbs/unit	lbs/unit	lbs/unit	lbs/unit	lbs/unit	lbs/unit
RESERVOIR - Hell Hole Reservoir Seasonal Storage Increase Improvement - YEAR 3												
Backhoe (John Deere 410 J)	offroad	98	0.07569	0.34249	0.40395	0.00054	0.03375	0.03105	45.00830	0.00683	0.00304	46.09267
Bulldozer (John Deere Model 700 J)	offroad	115	0.12848	0.47424	0.73250	0.00074	0.06482	0.05963	62.88692	0.01159	0.00515	64.72751
Compressor (Sullair 375 H-AF trailer mounted)	offroad	130	0.08672	0.35787	0.56081	0.00063	0.04586	0.04219	54.50167	0.00782	0.00348	55.74400
Concrete pumper (Schwing SP 260)	offroad	68	0.10768	0.35963	0.43798	0.00056	0.03630	0.03339	45.55003	0.00972	0.00432	47.09268
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD		0.00226	0.00932	0.02743	0.00004	0.00134	0.00115	4.21519	0.00010	0.00010	4.24784
Electrical boom type line truck (Ford F650 XL)	onroad MD		0.00206	0.01408	0.01577	0.00003	0.00060	0.00050	2.78163	0.00010	0.00015	2.83046
Electrical boom type truck-mounted aerial lift	offroad	50	0.05916	0.17575	0.18396	0.00025	0.01555	0.01431	19.61276	0.00534	0.00237	20.46025
Excavator (John Deere 160 D LC)	offroad	121	0.10886	0.52037	0.68302	0.00087	0.05850	0.05382	74.32485	0.00982	0.00437	75.88438
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		0.00206	0.01408	0.01577	0.00003	0.00060	0.00050	2.78163	0.00010	0.00015	2.83046
Forklift (Case 586G Series 3)	offroad	80	0.10843	0.40129	0.44643	0.00056	0.03985	0.03666	46.11183	0.00978	0.00435	47.66522
Front loader (John Deere 444 K)	offroad	117	0.07029	0.35145	0.44931	0.00060	0.03767	0.03466	50.81169	0.00634	0.00282	51.81862
Generator (Magnum MMG25 23 KVA diesel)	offroad	40	0.06295	0.19464	0.23455	0.00033	0.01766	0.01625	25.42636	0.00568	0.00252	26.32818
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		0.00226	0.00932	0.02743	0.00004	0.00134	0.00115	4.21519	0.00010	0.00010	4.24784
Mobile crane (Link-Belt RTC-8030 Series II)	offroad	164	0.10089	0.45804	0.73166	0.00084	0.04547	0.04183	74.30525	0.00910	0.00405	75.75059
Oversize load tractor trailer (5 axles or more)	onroad HHD		0.00226	0.00932	0.02743	0.00004	0.00134	0.00115	4.21519	0.00010	0.00010	4.24784
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		0.00075	0.00709	0.00071	0.00001	0.00009	0.00006	1.10087	0.00007	0.00003	1.11070
Welder genset (Hobart Champion Elite)	offroad	23	0.01870	0.05481	0.09418	0.00013	0.00587	0.00540	10.27036	0.00169	0.00075	10.53831
DIVERSIONS - Duncan Creek Diversion Dam Modification - YEAR 2												
Backhoe (John Deere 410 J)	offroad	98	0.07569	0.34249	0.40395	0.00054	0.03375	0.03105	45.00830	0.00683	0.00304	46.09267
Bulldozer (John Deere Model 700 J)	offroad	115	0.12848	0.47424	0.73250	0.00074	0.06482	0.05963	62.88692	0.01159	0.00515	64.72751
Compressor (Sullair 375 H-AF trailer mounted)	offroad	130	0.08672	0.35787	0.56081	0.00063	0.04586	0.04219	54.50167	0.00782	0.00348	55.74400
Concrete pumper (Schwing SP 260)	offroad	68	0.10768	0.35963	0.43798	0.00056	0.03630	0.03339	45.55003	0.00972	0.00432	47.09268
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD		0.00226	0.00932	0.02743	0.00004	0.00134	0.00115	4.21519	0.00010	0.00010	4.24784
Electrical boom type line truck (Ford F650 XL)	onroad MD		0.00206	0.01408	0.01577	0.00003	0.00060	0.00050	2.78163	0.00010	0.00015	2.83046
Electrical boom type truck-mounted aerial lift	offroad	50	0.05916	0.17575	0.18396	0.00025	0.01555	0.01431	19.61276	0.00534	0.00237	20.46025
Excavator (John Deere 160 D LC)	offroad	121	0.10886	0.52037	0.68302	0.00087	0.05850	0.05382	74.32485	0.00982	0.00437	75.88438
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		0.00206	0.01408	0.01577	0.00003	0.00060	0.00050	2.78163	0.00010	0.00015	2.83046
Forklift (Case 586G Series 3)	offroad	80	0.10843	0.40129	0.44643	0.00056	0.03985	0.03666	46.11183	0.00978	0.00435	47.66522
Front loader (John Deere 444 K)	offroad	117	0.07029	0.35145	0.44931	0.00060	0.03767	0.03466	50.81169	0.00634	0.00282	51.81862
Generator (Magnum MMG25 23 KVA diesel)	offroad	40	0.06295	0.19464	0.23455	0.00033	0.01766	0.01625	25.42636	0.00568	0.00252	26.32818
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		0.00226	0.00932	0.02743	0.00004	0.00134	0.00115	4.21519	0.00010	0.00010	4.24784
Mobile crane (Link-Belt RTC-8030 Series II)	offroad	164	0.10089	0.45804	0.73166	0.00084	0.04547	0.04183	74.30525	0.00910	0.00405	75.75059
Oversize load tractor trailer (5 axles or more)	onroad HHD		0.00226	0.00932	0.02743	0.00004	0.00134	0.00115	4.21519	0.00010	0.00010	4.24784
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		0.00075	0.00709	0.00071	0.00001	0.00009	0.00006	1.10087	0.00007	0.00003	1.11070
Welder genset (Hobart Champion Elite)	offroad	23	0.01870	0.05481	0.09418	0.00013	0.00587	0.00540	10.27036	0.00169	0.00075	10.53831

Equipment and Vehicles		Rating	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_20	CO_2 eqv
Type	Category	BHP	lbs/unit	lbs/unit	lbs/unit	lbs/unit	lbs/unit	lbs/unit	lbs/unit	lbs/unit	lbs/unit	lbs/unit
DIVERSIONS - North Fork Long Canyon Diversion Dam Modification - YEAR 3												
Backhoe (John Deere 410 J)	offroad	98	0.07569	0.34249	0.40395	0.00054	0.03375	0.03105	45.00830	0.00683	0.00304	46.09267
Bulldozer (John Deere Model 700 J)	offroad	115	0.12848	0.47424	0.73250	0.00074	0.06482	0.05963	62.88692	0.01159	0.00515	64.72751
Compressor (Sullair 375 H-AF trailer mounted)	offroad	130	0.08672	0.35787	0.56081	0.00063	0.04586	0.04219	54.50167	0.00782	0.00348	55.74400
Concrete pumper (Schwing SP 260)	offroad	68	0.10768	0.35963	0.43798	0.00056	0.03630	0.03339	45.55003	0.00972	0.00432	47.09268
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD		0.00226	0.00932	0.02743	0.00004	0.00134	0.00115	4.21519	0.00010	0.00010	4.24784
Electrical boom type line truck (Ford F650 XL)	onroad MD		0.00206	0.01408	0.01577	0.00003	0.00060	0.00050	2.78163	0.00010	0.00015	2.83046
Electrical boom type truck-mounted aerial lift	offroad	50	0.05916	0.17575	0.18396	0.00025	0.01555	0.01431	19.61276	0.00534	0.00237	20.46025
Excavator (John Deere 160 D LC)	offroad	121	0.10886	0.52037	0.68302	0.00087	0.05850	0.05382	74.32485	0.00982	0.00437	75.88438
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		0.00206	0.01408	0.01577	0.00003	0.00060	0.00050	2.78163	0.00010	0.00015	2.83046
Forklift (Case 586G Series 3)	offroad	80	0.10843	0.40129	0.44643	0.00056	0.03985	0.03666	46.11183	0.00978	0.00435	47.66522
Front loader (John Deere 444 K)	offroad	117	0.07029	0.35145	0.44931	0.00060	0.03767	0.03466	50.81169	0.00634	0.00282	51.81862
Generator (Magnum MMG25 23 KVA diesel)	offroad	40	0.06295	0.19464	0.23455	0.00033	0.01766	0.01625	25.42636	0.00568	0.00252	26.32818
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		0.00226	0.00932	0.02743	0.00004	0.00134	0.00115	4.21519	0.00010	0.00010	4.24784
Mobile crane (Link-Belt RTC-8030 Series II)	offroad	164	0.10089	0.45804	0.73166	0.00084	0.04547	0.04183	74.30525	0.00910	0.00405	75.75059
Oversize load tractor trailer (5 axles or more)	onroad HHD		0.00226	0.00932	0.02743	0.00004	0.00134	0.00115	4.21519	0.00010	0.00010	4.24784
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		0.00075	0.00709	0.00071	0.00001	0.00009	0.00006	1.10087	0.00007	0.00003	1.11070
Welder genset (Hobart Champion Elite)	offroad	23	0.01870	0.05481	0.09418	0.00013	0.00587	0.00540	10.27036	0.00169	0.00075	10.53831
DIVERSIONS - South Fork Long Canyon Diversion Dam Modification - YEAR 3												
Backhoe (John Deere 410 J)	offroad	98	0.07569	0.34249	0.40395	0.00054	0.03375	0.03105	45.00830	0.00683	0.00304	46.09267
Bulldozer (John Deere Model 700 J)	offroad	115	0.12848	0.47424	0.73250	0.00074	0.06482	0.05963	62.88692	0.01159	0.00515	64.72751
Compressor (Sullair 375 H-AF trailer mounted)	offroad	130	0.08672	0.35787	0.56081	0.00063	0.04586	0.04219	54.50167	0.00782	0.00348	55.74400
Concrete pumper (Schwing SP 260)	offroad	68	0.10768	0.35963	0.43798	0.00056	0.03630	0.03339	45.55003	0.00972	0.00432	47.09268
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD		0.00226	0.00932	0.02743	0.00004	0.00134	0.00115	4.21519	0.00010	0.00010	4.24784
Electrical boom type line truck (Ford F650 XL)	onroad MD		0.00206	0.01408	0.01577	0.00003	0.00060	0.00050	2.78163	0.00010	0.00015	2.83046
Electrical boom type truck-mounted aerial lift	offroad	50	0.05916	0.17575	0.18396	0.00025	0.01555	0.01431	19.61276	0.00534	0.00237	20.46025
Excavator (John Deere 160 D LC)	offroad	121	0.10886	0.52037	0.68302	0.00087	0.05850	0.05382	74.32485	0.00982	0.00437	75.88438
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		0.00206	0.01408	0.01577	0.00003	0.00060	0.00050	2.78163	0.00010	0.00015	2.83046
Forklift (Case 586G Series 3)	offroad	80	0.10843	0.40129	0.44643	0.00056	0.03985	0.03666	46.11183	0.00978	0.00435	47.66522
Front loader (John Deere 444 K)	offroad	117	0.07029	0.35145	0.44931	0.00060	0.03767	0.03466	50.81169	0.00634	0.00282	51.81862
Generator (Magnum MMG25 23 KVA diesel)	offroad	40	0.06295	0.19464	0.23455	0.00033	0.01766	0.01625	25.42636	0.00568	0.00252	26.32818
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		0.00226	0.00932	0.02743	0.00004	0.00134	0.00115	4.21519	0.00010	0.00010	4.24784
Mobile crane (Link-Belt RTC-8030 Series II)	offroad	164	0.10089	0.45804	0.73166	0.00084	0.04547	0.04183	74.30525	0.00910	0.00405	75.75059
Oversize load tractor trailer (5 axles or more)	onroad HHD		0.00226	0.00932	0.02743	0.00004	0.00134	0.00115	4.21519	0.00010	0.00010	4.24784
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		0.00075	0.00709	0.00071	0.00001	0.00009	0.00006	1.10087	0.00007	0.00003	1.11070
Welder genset (Hobart Champion Elite)	offroad	23	0.01870	0.05481	0.09418	0.00013	0.00587	0.00540	10.27036	0.00169	0.00075	10.53831

Equipment and Vehicles		Rating	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_20	CO_2 eqv
Type	Category	BHP	lbs/unit	lbs/unit	lbs/unit	lbs/unit	lbs/unit	lbs/unit	lbs/unit	lbs/unit	lbs/unit	lbs/unit
OUTLETS - French Meadows Dam Outlet Works Modification - YEAR 2												
Backhoe (John Deere 410 J)	offroad	98	0.07569	0.34249	0.40395	0.00054	0.03375	0.03105	45.00830	0.00683	0.00304	46.09267
Bulldozer (John Deere Model 700 J)	offroad	115	0.12848	0.47424	0.73250	0.00074	0.06482	0.05963	62.88692	0.01159	0.00515	64.72751
Compressor (Sullair 375 H-AF trailer mounted)	offroad	130	0.08672	0.35787	0.56081	0.00063	0.04586	0.04219	54.50167	0.00782	0.00348	55.74400
Concrete pumper (Schwing SP 260)	offroad	68	0.10768	0.35963	0.43798	0.00056	0.03630	0.03339	45.55003	0.00972	0.00432	47.09268
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD		0.00226	0.00932	0.02743	0.00004	0.00134	0.00115	4.21519	0.00010	0.00010	4.24784
Electrical boom type line truck (Ford F650 XL)	onroad MD		0.00206	0.01408	0.01577	0.00003	0.00060	0.00050	2.78163	0.00010	0.00015	2.83046
Electrical boom type truck-mounted aerial lift	offroad	50	0.05916	0.17575	0.18396	0.00025	0.01555	0.01431	19.61276	0.00534	0.00237	20.46025
Excavator (John Deere 160 D LC)	offroad	121	0.10886	0.52037	0.68302	0.00087	0.05850	0.05382	74.32485	0.00982	0.00437	75.88438
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		0.00206	0.01408	0.01577	0.00003	0.00060	0.00050	2.78163	0.00010	0.00015	2.83046
Forklift (Case 586G Series 3)	offroad	80	0.10843	0.40129	0.44643	0.00056	0.03985	0.03666	46.11183	0.00978	0.00435	47.66522
Front loader (John Deere 444 K)	offroad	117	0.07029	0.35145	0.44931	0.00060	0.03767	0.03466	50.81169	0.00634	0.00282	51.81862
Generator (Magnum MMG25 23 KVA diesel)	offroad	40	0.06295	0.19464	0.23455	0.00033	0.01766	0.01625	25.42636	0.00568	0.00252	26.32818
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		0.00226	0.00932	0.02743	0.00004	0.00134	0.00115	4.21519	0.00010	0.00010	4.24784
Mobile crane (Link-Belt RTC-8030 Series II)	offroad	164	0.10089	0.45804	0.73166	0.00084	0.04547	0.04183	74.30525	0.00910	0.00405	75.75059
Oversize load tractor trailer (5 axles or more)	onroad HHD		0.00226	0.00932	0.02743	0.00004	0.00134	0.00115	4.21519	0.00010	0.00010	4.24784
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		0.00075	0.00709	0.00071	0.00001	0.00009	0.00006	1.10087	0.00007	0.00003	1.11070
Welder genset (Hobart Champion Elite)	offroad	23	0.01870	0.05481	0.09418	0.00013	0.00587	0.00540	10.27036	0.00169	0.00075	10.53831
OUTLETS - Hell Hole Dam Outlet Works Modification - YEAR 2												
Backhoe (John Deere 410 J)	offroad	98	0.07569	0.34249	0.40395	0.00054	0.03375	0.03105	45.00830	0.00683	0.00304	46.09267
Bulldozer (John Deere Model 700 J)	offroad	115	0.12848	0.47424	0.73250	0.00074	0.06482	0.05963	62.88692	0.01159	0.00515	64.72751
Compressor (Sullair 375 H-AF trailer mounted)	offroad	130	0.08672	0.35787	0.56081	0.00063	0.04586	0.04219	54.50167	0.00782	0.00348	55.74400
Concrete pumper (Schwing SP 260)	offroad	68	0.10768	0.35963	0.43798	0.00056	0.03630	0.03339	45.55003	0.00972	0.00432	47.09268
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD		0.00226	0.00932	0.02743	0.00004	0.00134	0.00115	4.21519	0.00010	0.00010	4.24784
Electrical boom type line truck (Ford F650 XL)	onroad MD		0.00206	0.01408	0.01577	0.00003	0.00060	0.00050	2.78163	0.00010	0.00015	2.83046
Electrical boom type truck-mounted aerial lift	offroad	50	0.05916	0.17575	0.18396	0.00025	0.01555	0.01431	19.61276	0.00534	0.00237	20.46025
Excavator (John Deere 160 D LC)	offroad	121	0.10886	0.52037	0.68302	0.00087	0.05850	0.05382	74.32485	0.00982	0.00437	75.88438
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		0.00206	0.01408	0.01577	0.00003	0.00060	0.00050	2.78163	0.00010	0.00015	2.83046
Forklift (Case 586G Series 3)	offroad	80	0.10843	0.40129	0.44643	0.00056	0.03985	0.03666	46.11183	0.00978	0.00435	47.66522
Front loader (John Deere 444 K)	offroad	117	0.07029	0.35145	0.44931	0.00060	0.03767	0.03466	50.81169	0.00634	0.00282	51.81862
Generator (Magnum MMG25 23 KVA diesel)	offroad	40	0.06295	0.19464	0.23455	0.00033	0.01766	0.01625	25.42636	0.00568	0.00252	26.32818
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		0.00226	0.00932	0.02743	0.00004	0.00134	0.00115	4.21519	0.00010	0.00010	4.24784
Mobile crane (Link-Belt RTC-8030 Series II)	offroad	164	0.10089	0.45804	0.73166	0.00084	0.04547	0.04183	74.30525	0.00910	0.00405	75.75059
Oversize load tractor trailer (5 axles or more)	onroad HHD		0.00226	0.00932	0.02743	0.00004	0.00134	0.00115	4.21519	0.00010	0.00010	4.24784
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		0.00075	0.00709	0.00071	0.00001	0.00009	0.00006	1.10087	0.00007	0.00003	1.11070
Welder genset (Hobart Champion Elite)	offroad	23	0.01870	0.05481	0.09418	0.00013	0.00587	0.00540	10.27036	0.00169	0.00075	10.53831

Equipment and Vehicles		Rating	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_20	CO_2 eqv
Type	Category	BHP	lbs/unit	lbs/unit	lbs/unit	lbs/unit	lbs/unit	lbs/unit	lbs/unit	lbs/unit	lbs/unit	lbs/unit
OUTLETS - Middle Fork Interbay Dam Outlet Works Modification - YEAR 2												
Backhoe (John Deere 410 J)	offroad	98	0.07569	0.34249	0.40395	0.00054	0.03375	0.03105	45.00830	0.00683	0.00304	46.09267
Bulldozer (John Deere Model 700 J)	offroad	115	0.12848	0.47424	0.73250	0.00074	0.06482	0.05963	62.88692	0.01159	0.00515	64.72751
Compressor (Sullair 375 H-AF trailer mounted)	offroad	130	0.08672	0.35787	0.56081	0.00063	0.04586	0.04219	54.50167	0.00782	0.00348	55.74400
Concrete pumper (Schwing SP 260)	offroad	68	0.10768	0.35963	0.43798	0.00056	0.03630	0.03339	45.55003	0.00972	0.00432	47.09268
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD		0.00226	0.00932	0.02743	0.00004	0.00134	0.00115	4.21519	0.00010	0.00010	4.24784
Electrical boom type line truck (Ford F650 XL)	onroad MD		0.00206	0.01408	0.01577	0.00003	0.00060	0.00050	2.78163	0.00010	0.00015	2.83046
Electrical boom type truck-mounted aerial lift	offroad	50	0.05916	0.17575	0.18396	0.00025	0.01555	0.01431	19.61276	0.00534	0.00237	20.46025
Excavator (John Deere 160 D LC)	offroad	121	0.10886	0.52037	0.68302	0.00087	0.05850	0.05382	74.32485	0.00982	0.00437	75.88438
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		0.00206	0.01408	0.01577	0.00003	0.00060	0.00050	2.78163	0.00010	0.00015	2.83046
Forklift (Case 586G Series 3)	offroad	80	0.10843	0.40129	0.44643	0.00056	0.03985	0.03666	46.11183	0.00978	0.00435	47.66522
Front loader (John Deere 444 K)	offroad	117	0.07029	0.35145	0.44931	0.00060	0.03767	0.03466	50.81169	0.00634	0.00282	51.81862
Generator (Magnum MMG25 23 KVA diesel)	offroad	40	0.06295	0.19464	0.23455	0.00033	0.01766	0.01625	25.42636	0.00568	0.00252	26.32818
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		0.00226	0.00932	0.02743	0.00004	0.00134	0.00115	4.21519	0.00010	0.00010	4.24784
Mobile crane (Link-Belt RTC-8030 Series II)	offroad	164	0.10089	0.45804	0.73166	0.00084	0.04547	0.04183	74.30525	0.00910	0.00405	75.75059
Oversize load tractor trailer (5 axles or more)	onroad HHD		0.00226	0.00932	0.02743	0.00004	0.00134	0.00115	4.21519	0.00010	0.00010	4.24784
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		0.00075	0.00709	0.00071	0.00001	0.00009	0.00006	1.10087	0.00007	0.00003	1.11070
Welder genset (Hobart Champion Elite)	offroad	23	0.01870	0.05481	0.09418	0.00013	0.00587	0.00540	10.27036	0.00169	0.00075	10.53831
GAGES - North Fork Long Canyon Creek Gage Below Diversion Dam - YEAR 3												
Chainsaw (2-stroke, professional grade)	offroad	4	0.00314	0.01646	0.01965	0.00004	0.00076	0.00070	2.69529	0.00028	0.00013	2.74024
Generator (2.2 KVA)	offroad	5	0.00392	0.02057	0.02456	0.00005	0.00095	0.00088	3.36911	0.00035	0.00016	3.42530
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		0.00075	0.00709	0.00071	0.00001	0.00009	0.00006	1.10087	0.00007	0.00003	1.11070
GAGES - South Fork Long Canyon Creek Gage Below Diversion Dam - YEAR 3												
Chainsaw (2-stroke, professional grade)	offroad	4	0.00314	0.01646	0.01965	0.00004	0.00076	0.00070	2.69529	0.00028	0.00013	2.74024
Generator (2.2 KVA)	offroad	5	0.00392	0.02057	0.02456	0.00005	0.00095	0.00088	3.36911	0.00035	0.00016	3.42530
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		0.00075	0.00709	0.00071	0.00001	0.00009	0.00006	1.10087	0.00007	0.00003	1.11070
GAGES - Middle Fork American River Gage Below Interbay Dam - YEAR 2												
Chainsaw (2-stroke, professional grade)	offroad	4	0.00314	0.01646	0.01965	0.00004	0.00076	0.00070	2.69529	0.00028	0.00013	2.74024
Generator (2.2 KVA)	offroad	5	0.00392	0.02057	0.02456	0.00005	0.00095	0.00088	3.36911	0.00035	0.00016	3.42530
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		0.00075	0.00709	0.00071	0.00001	0.00009	0.00006	1.10087	0.00007	0.00003	1.11070
GAGES - North Fork American River Gage Above American River Pump Station - YEAR 2												
Chainsaw (2-stroke, professional grade)	offroad	4	0.00314	0.01646	0.01965	0.00004	0.00076	0.00070	2.69529	0.00028	0.00013	2.74024
Generator (2.2 KVA)	offroad	5	0.00392	0.02057	0.02456	0.00005	0.00095	0.00088	3.36911	0.00035	0.00016	3.42530
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		0.00075	0.00709	0.00071	0.00001	0.00009	0.00006	1.10087	0.00007	0.00003	1.11070
RECREATION - Ellicott Bridge Parking Area - YEAR 14												
Asphalt paver (Caterpillar AP500E)	offroad	142	0.15432	0.61476	1.05219	0.00106	0.07450	0.06854	92.83203	0.01392	0.00619	95.04281
Asphalt roller (Caterpillar CB54)	offroad	137	0.10667	0.47234	0.74467	0.00085	0.05387	0.04956	74.18283	0.00962	0.00428	75.71102
Backhoe (John Deere 410 J)	offroad	98	0.07569	0.34249	0.40395	0.00054	0.03375	0.03105	45.00830	0.00683	0.00304	46.09267
Compressor (Sullair 375 H-AF trailer mounted)	offroad	130	0.08672	0.35787	0.56081	0.00063	0.04586	0.04219	54.50167	0.00782	0.00348	55.74400
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD		0.00226	0.00932	0.02743	0.00004	0.00134	0.00115	4.21519	0.00010	0.00010	4.24784
Drilling rig (mid-size)	offroad	120	0.04466	0.46978	0.45832	0.00090	0.02572	0.02366	77.12177	0.00403	0.00179	77.76160
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		0.00206	0.01408	0.01577	0.00003	0.00060	0.00050	2.78163	0.00010	0.00015	2.83046
Forklift (Case 586G Series 3)	offroad	80	0.10843	0.40129	0.44643	0.00056	0.03985	0.03666	46.11183	0.00978	0.00435	47.66522
Generator (30 KVA diesel)	offroad	50	0.08719	0.26386	0.28468	0.00040	0.02340	0.02152	30.62299	0.00787	0.00350	31.87212
Grader (John Deere 670G/GP)	offroad	195	0.14736	0.65415	1.19910	0.00154	0.05947	0.05471	136.77266	0.01330	0.00591	138.88379
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		0.00226	0.00932	0.02743	0.00004	0.00134	0.00115	4.21519	0.00010	0.00010	4.24784
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		0.00075	0.00709	0.00071	0.00001	0.00009	0.00006	1.10087	0.00007	0.00003	1.11070

Equipment and Vehicles		Rating	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_20	CO_2 eqv
Type	Category	BHP	lbs/unit	lbs/unit	lbs/unit	lbs/unit	lbs/unit	lbs/unit	lbs/unit	lbs/unit	lbs/unit	lbs/unit
RECREATION - French Meadows Reservoir Trail - YEAR 14												
Backhoe (John Deere 410 J)	offroad	98	0.07569	0.34249	0.40395	0.00054	0.03375	0.03105	45.00830	0.00683	0.00304	46.09267
Bulldozer (John Deere Model 700 J)	offroad	115	0.12848	0.47424	0.73250	0.00074	0.06482	0.05963	62.88692	0.01159	0.00515	64.72751
Chainsaw (2-stroke, professional grade)	offroad	4	0.00314	0.01646	0.01965	0.00004	0.00076	0.00070	2.69529	0.00028	0.00013	2.74024
Chipper (Vermeer BC1500)	offroad	125	0.09994	0.53310	0.71147	0.00097	0.05537	0.05094	83.19121	0.00902	0.00401	84.62294
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		0.00206	0.01408	0.01577	0.00003	0.00060	0.00050	2.78163	0.00010	0.00015	2.83046
Forest Machine (Caterpillar 324D FM)	offroad	188	0.09559	0.58472	0.82977	0.00125	0.04227	0.03889	112.42474	0.00862	0.00383	113.79415
Generator (30 KVA diesel)	offroad	50	0.08719	0.26386	0.28468	0.00040	0.02340	0.02152	30.62299	0.00787	0.00350	31.87212
Log transport truck (Mack or Oshkosh as typical)	onroad HHD		0.00226	0.00932	0.02743	0.00004	0.00134	0.00115	4.21519	0.00010	0.00010	4.24784
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		0.00226	0.00932	0.02743	0.00004	0.00134	0.00115	4.21519	0.00010	0.00010	4.24784
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		0.00075	0.00709	0.00071	0.00001	0.00009	0.00006	1.10087	0.00007	0.00003	1.11070
SUPPLY - French Meadows North Shore Water Supply - YEAR 9												
Backhoe (John Deere 410 J)	offroad	98	0.07569	0.34249	0.40395	0.00054	0.03375	0.03105	45.00830	0.00683	0.00304	46.09267
Bulldozer (John Deere Model 700 J)	offroad	115	0.12848	0.47424	0.73250	0.00074	0.06482	0.05963	62.88692	0.01159	0.00515	64.72751
Compressor (Sullair 375 H-AF trailer mounted)	offroad	130	0.08672	0.35787	0.56081	0.00063	0.04586	0.04219	54.50167	0.00782	0.00348	55.74400
Drilling rig (mid-size)	offroad	120	0.04466	0.46978	0.45832	0.00090	0.02572	0.02366	77.12177	0.00403	0.00179	77.76160
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		0.00206	0.01408	0.01577	0.00003	0.00060	0.00050	2.78163	0.00010	0.00015	2.83046
Generator (30 KVA diesel)	offroad	50	0.08719	0.26386	0.28468	0.00040	0.02340	0.02152	30.62299	0.00787	0.00350	31.87212
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		0.00226	0.00932	0.02743	0.00004	0.00134	0.00115	4.21519	0.00010	0.00010	4.24784
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		0.00075	0.00709	0.00071	0.00001	0.00009	0.00006	1.10087	0.00007	0.00003	1.11070
SUPPLY - French Meadows South Shore Water Supply - YEAR 5												
Backhoe (John Deere 410 J)	offroad	98	0.07569	0.34249	0.40395	0.00054	0.03375	0.03105	45.00830	0.00683	0.00304	46.09267
Bulldozer (John Deere Model 700 J)	offroad	115	0.12848	0.47424	0.73250	0.00074	0.06482	0.05963	62.88692	0.01159	0.00515	64.72751
Compressor (Sullair 375 H-AF trailer mounted)	offroad	130	0.08672	0.35787	0.56081	0.00063	0.04586	0.04219	54.50167	0.00782	0.00348	55.74400
Drilling rig (mid-size)	offroad	120	0.04466	0.46978	0.45832	0.00090	0.02572	0.02366	77.12177	0.00403	0.00179	77.76160
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		0.00206	0.01408	0.01577	0.00003	0.00060	0.00050	2.78163	0.00010	0.00015	2.83046
Generator (30 KVA diesel)	offroad	50	0.08719	0.26386	0.28468	0.00040	0.02340	0.02152	30.62299	0.00787	0.00350	31.87212
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		0.00226	0.00932	0.02743	0.00004	0.00134	0.00115	4.21519	0.00010	0.00010	4.24784
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		0.00075	0.00709	0.00071	0.00001	0.00009	0.00006	1.10087	0.00007	0.00003	1.11070

Sources: SCAQMD 2008, EPA 2011

Notes:

LD = light duty; MD = medium duty, HHD = heavy heavy duty, BHP = brake horsepower
offroad units are lbs/hour, onroad units are lbs/mile

Estimated Daily Emissions From Construction (Fuel combustion)													
Equipment and Vehicles		Daily Activity		ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_20	CO_2 eqv
Type	Category	hours	VMT	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs
RESERVOIR - Hell Hole Reservoir Seasonal Storage Increase Improvement - YEAR 3													
Backhoe (John Deere 410 J)	offroad	6		0.45415	2.05493	2.42370	0.00324	0.20249	0.18629	270.0	0.04098	0.01821	276.6
Bulldozer (John Deere Model 700 J)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Compressor (Sullair 375 H-AF trailer mounted)	offroad	6		0.52030	2.14725	3.36486	0.00379	0.27517	0.25315	327.0	0.04695	0.02086	334.5
Concrete pumper (Schwing SP 260)	offroad	4		0.43072	1.43852	1.75191	0.00226	0.14518	0.13357	182.2	0.03886	0.01727	188.4
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD		150	0.33946	1.39768	4.11440	0.00613	0.20054	0.17194	632.3	0.01566	0.01474	637.2
Electrical boom type line truck (Ford F650 XL)	onroad MD		150	0.30944	2.11167	2.36597	0.00402	0.08993	0.07526	417.2	0.01456	0.02264	424.6
Electrical boom type truck-mounted aerial lift	offroad	6		0.35494	1.05447	1.10376	0.00152	0.09332	0.08585	117.7	0.03203	0.01423	122.8
Excavator (John Deere 160 D LC)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		150	0.30944	2.11167	2.36597	0.00402	0.08993	0.07526	417.2	0.01456	0.02264	424.6
Forklift (Case 586G Series 3)	offroad	4		0.43372	1.60515	1.78573	0.00226	0.15940	0.14665	184.4	0.03913	0.01739	190.7
Front loader (John Deere 444 K)	offroad	6		0.42172	2.10869	2.69588	0.00359	0.22605	0.20796	304.9	0.03805	0.01691	310.9
Generator (Magnum MMG25 23 KVA diesel)	offroad	10		0.62948	1.94635	2.34550	0.00327	0.17663	0.16250	254.3	0.05680	0.02524	263.3
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		150	0.33946	1.39768	4.11440	0.00613	0.20054	0.17194	632.3	0.01566	0.01474	637.2
Mobile crane (Link-Belt RTC-8030 Series II)	offroad	6		0.60532	2.74824	4.38994	0.00505	0.27282	0.25099	445.8	0.05462	0.02427	454.5
Oversize load tractor trailer (5 axles or more)	onroad HHD		120	0.27157	1.11815	3.29152	0.00490	0.16044	0.13756	505.8	0.01253	0.01179	509.7
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		1200	0.89480	8.51074	0.85389	0.01286	0.10880	0.07001	1321.0	0.08049	0.03259	1332.8
Welder genset (Hobart Champion Elite)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
DIVERSIONS - Duncan Creek Diversion Dam Modification - YEAR 2													
Backhoe (John Deere 410 J)	offroad	4		0.30276	1.36996	1.61580	0.00216	0.13499	0.12419	180.0	0.02732	0.01214	184.4
Bulldozer (John Deere Model 700 J)	offroad	6		0.77086	2.84546	4.39502	0.00444	0.38890	0.35778	377.3	0.06955	0.03091	388.4
Compressor (Sullair 375 H-AF trailer mounted)	offroad	6		0.52030	2.14725	3.36486	0.00379	0.27517	0.25315	327.0	0.04695	0.02086	334.5
Concrete pumper (Schwing SP 260)	offroad	4		0.43072	1.43852	1.75191	0.00226	0.14518	0.13357	182.2	0.03886	0.01727	188.4
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD		1200	2.71570	11.18148	32.91522	0.04903	1.60436	1.37555	5058.2	0.12530	0.11793	5097.4
Electrical boom type line truck (Ford F650 XL)	onroad MD		0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Electrical boom type truck-mounted aerial lift	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Excavator (John Deere 160 D LC)	offroad	6		0.65315	3.12224	4.09812	0.00523	0.35099	0.32291	445.9	0.05893	0.02619	455.3
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		150	0.30944	2.11167	2.36597	0.00402	0.08993	0.07526	417.2	0.01456	0.02264	424.6
Forklift (Case 586G Series 3)	offroad	4		0.43372	1.60515	1.78573	0.00226	0.15940	0.14665	184.4	0.03913	0.01739	190.7
Front loader (John Deere 444 K)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Generator (Magnum MMG25 23 KVA diesel)	offroad	10		0.62948	1.94635	2.34550	0.00327	0.17663	0.16250	254.3	0.05680	0.02524	263.3
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		150	0.33946	1.39768	4.11440	0.00613	0.20054	0.17194	632.3	0.01566	0.01474	637.2
Mobile crane (Link-Belt RTC-8030 Series II)	offroad	5		0.50444	2.29020	3.65828	0.00420	0.22735	0.20916	371.5	0.04551	0.02023	378.8
Oversize load tractor trailer (5 axles or more)	onroad HHD		120	0.27157	1.11815	3.29152	0.00490	0.16044	0.13756	505.8	0.01253	0.01179	509.7
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		1200	0.89480	8.51074	0.85389	0.01286	0.10880	0.07001	1321.0	0.08049	0.03259	1332.8
Welder genset (Hobart Champion Elite)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
DIVERSIONS - North Fork Long Canyon Diversion Dam Modification - YEAR 3													
Backhoe (John Deere 410 J)	offroad	4		0.30276	1.36996	1.61580	0.00216	0.13499	0.12419	180.0	0.02732	0.01214	184.4
Bulldozer (John Deere Model 700 J)	offroad	6		0.77086	2.84546	4.39502	0.00444	0.38890	0.35778	377.3	0.06955	0.03091	388.4
Compressor (Sullair 375 H-AF trailer mounted)	offroad	6		0.52030	2.14725	3.36486	0.00379	0.27517	0.25315	327.0	0.04695	0.02086	334.5
Concrete pumper (Schwing SP 260)	offroad	4		0.43072	1.43852	1.75191	0.00226	0.14518	0.13357	182.2	0.03886	0.01727	188.4
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD		1200	2.71570	11.18148	32.91522	0.04903	1.60436	1.37555	5058.2	0.12530	0.11793	5097.4
Electrical boom type line truck (Ford F650 XL)	onroad MD		0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Electrical boom type truck-mounted aerial lift	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Excavator (John Deere 160 D LC)	offroad	6		0.65315	3.12224	4.09812	0.00523	0.35099	0.32291	445.9	0.05893	0.02619	455.3
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		150	0.30944	2.11167	2.36597	0.00402	0.08993	0.07526	417.2	0.01456	0.02264	424.6
Forklift (Case 586G Series 3)	offroad	4		0.43372	1.60515	1.78573	0.00226	0.15940	0.14665	184.4	0.03913	0.01739	190.7
Front loader (John Deere 444 K)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Generator (Magnum MMG25 23 KVA diesel)	offroad	10		0.62948	1.94635	2.34550	0.00327	0.17663	0.16250	254.3	0.05680	0.02524	263.3
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		150	0.33946	1.39768	4.11440	0.00613	0.20054	0.17194	632.3	0.01566	0.01474	637.2
Mobile crane (Link-Belt RTC-8030 Series II)	offroad	5		0.50444	2.29020	3.65828	0.00420	0.22735	0.20916	371.5	0.04551	0.02023	378.8
Oversize load tractor trailer (5 axles or more)	onroad HHD		120	0.27157	1.11815	3.29152	0.00490	0.16044	0.13756	505.8	0.01253	0.01179	509.7
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		1200	0.89480	8.51074	0.85389	0.01286	0.10880	0.07001	1321.0	0.08049	0.03259	1332.8
Welder genset (Hobart Champion Elite)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0

Equipment and Vehicles		Daily Activity		ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_20	CO_2 eqv
Type	Category	hours	VMT	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs
DIVERSIONS - South Fork Long Canyon Diversion Dam Modification - YEAR 3													
Backhoe (John Deere 410 J)	offroad	4		0.30276	1.36996	1.61580	0.00216	0.13499	0.12419	180.0	0.02732	0.01214	184.4
Bulldozer (John Deere Model 700 J)	offroad	6		0.77086	2.84546	4.39502	0.00444	0.38890	0.35778	377.3	0.06955	0.03091	388.4
Compressor (Sullair 375 H-AF trailer mounted)	offroad	6		0.52030	2.14725	3.36486	0.00379	0.27517	0.25315	327.0	0.04695	0.02086	334.5
Concrete pumper (Schwing SP 260)	offroad	4		0.43072	1.43852	1.75191	0.00226	0.14518	0.13357	182.2	0.03886	0.01727	188.4
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD		1200	2.71570	11.18148	32.91522	0.04903	1.60436	1.37555	5058.2	0.12530	0.11793	5097.4
Electrical boom type line truck (Ford F650 XL)	onroad MD		0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Electrical boom type truck-mounted aerial lift	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Excavator (John Deere 160 D LC)	offroad	6		0.65315	3.12224	4.09812	0.00523	0.35099	0.32291	445.9	0.05893	0.02619	455.3
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		150	0.30944	2.11167	2.36597	0.00402	0.08993	0.07526	417.2	0.01456	0.02264	424.6
Forklift (Case 586G Series 3)	offroad	4		0.43372	1.60515	1.78573	0.00226	0.15940	0.14665	184.4	0.03913	0.01739	190.7
Front loader (John Deere 444 K)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Generator (Magnum MMG25 23 KVA diesel)	offroad	10		0.62948	1.94635	2.34550	0.00327	0.17663	0.16250	254.3	0.05680	0.02524	263.3
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		150	0.33946	1.39768	4.11440	0.00613	0.20054	0.17194	632.3	0.01566	0.01474	637.2
Mobile crane (Link-Belt RTC-8030 Series II)	offroad	5		0.50444	2.29020	3.65828	0.00420	0.22735	0.20916	371.5	0.04551	0.02023	378.8
Oversize load tractor trailer (5 axles or more)	onroad HHD		120	0.27157	1.11815	3.29152	0.00490	0.16044	0.13756	505.8	0.01253	0.01179	509.7
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		1200	0.89480	8.51074	0.85389	0.01286	0.10880	0.07001	1321.0	0.08049	0.03259	1332.8
Welder genset (Hobart Champion Elite)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
OUTLETS - French Meadows Dam Outlet Works Modification - YEAR 2													
Backhoe (John Deere 410 J)	offroad	4		0.30276	1.36996	1.61580	0.00216	0.13499	0.12419	180.0	0.02732	0.01214	184.4
Bulldozer (John Deere Model 700 J)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Compressor (Sullair 375 H-AF trailer mounted)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Concrete pumper (Schwing SP 260)	offroad	4		0.43072	1.43852	1.75191	0.00226	0.14518	0.13357	182.2	0.03886	0.01727	188.4
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD		150	0.33946	1.39768	4.11440	0.00613	0.20054	0.17194	632.3	0.01566	0.01474	637.2
Electrical boom type line truck (Ford F650 XL)	onroad MD		0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Electrical boom type truck-mounted aerial lift	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Excavator (John Deere 160 D LC)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		150	0.30944	2.11167	2.36597	0.00402	0.08993	0.07526	417.2	0.01456	0.02264	424.6
Forklift (Case 586G Series 3)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Front loader (John Deere 444 K)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Generator (Magnum MMG25 23 KVA diesel)	offroad	8		0.50359	1.55708	1.87640	0.00262	0.14130	0.13000	203.4	0.04544	0.02019	210.6
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		150	0.33946	1.39768	4.11440	0.00613	0.20054	0.17194	632.3	0.01566	0.01474	637.2
Mobile crane (Link-Belt RTC-8030 Series II)	offroad	4		0.40355	1.83216	2.92662	0.00336	0.18188	0.16733	297.2	0.03641	0.01618	303.0
Oversize load tractor trailer (5 axles or more)	onroad HHD		120	0.27157	1.11815	3.29152	0.00490	0.16044	0.13756	505.8	0.01253	0.01179	509.7
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		480	0.35792	3.40430	0.34156	0.00514	0.04352	0.02801	528.4	0.03220	0.01304	533.1
Welder genset (Hobart Champion Elite)	offroad	4		0.07482	0.21926	0.37674	0.00054	0.02349	0.02161	41.1	0.00675	0.00300	42.2
OUTLETS - Hell Hole Dam Outlet Works Modification - YEAR 2													
Backhoe (John Deere 410 J)	offroad	4		0.30276	1.36996	1.61580	0.00216	0.13499	0.12419	180.0	0.02732	0.01214	184.4
Bulldozer (John Deere Model 700 J)	offroad	6		0.77086	2.84546	4.39502	0.00444	0.38890	0.35778	377.3	0.06955	0.03091	388.4
Compressor (Sullair 375 H-AF trailer mounted)	offroad	6		0.52030	2.14725	3.36486	0.00379	0.27517	0.25315	327.0	0.04695	0.02086	334.5
Concrete pumper (Schwing SP 260)	offroad	4		0.43072	1.43852	1.75191	0.00226	0.14518	0.13357	182.2	0.03886	0.01727	188.4
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD		150	0.33946	1.39768	4.11440	0.00613	0.20054	0.17194	632.3	0.01566	0.01474	637.2
Electrical boom type line truck (Ford F650 XL)	onroad MD		0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Electrical boom type truck-mounted aerial lift	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Excavator (John Deere 160 D LC)	offroad	6		0.65315	3.12224	4.09812	0.00523	0.35099	0.32291	445.9	0.05893	0.02619	455.3
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		150	0.30944	2.11167	2.36597	0.00402	0.08993	0.07526	417.2	0.01456	0.02264	424.6
Forklift (Case 586G Series 3)	offroad	4		0.43372	1.60515	1.78573	0.00226	0.15940	0.14665	184.4	0.03913	0.01739	190.7
Front loader (John Deere 444 K)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Generator (Magnum MMG25 23 KVA diesel)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		150	0.33946	1.39768	4.11440	0.00613	0.20054	0.17194	632.3	0.01566	0.01474	637.2
Mobile crane (Link-Belt RTC-8030 Series II)	offroad	5		0.50444	2.29020	3.65828	0.00420	0.22735	0.20916	371.5	0.04551	0.02023	378.8
Oversize load tractor trailer (5 axles or more)	onroad HHD		0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		1200	0.89480	8.51074	0.85389	0.01286	0.10880	0.07001	1321.0	0.08049	0.03259	1332.8
Welder genset (Hobart Champion Elite)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0

Equipment and Vehicles		Daily Activity		ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_20	CO_2 eqv
Type	Category	hours	VMT	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs
OUTLETS - Middle Fork Interbay Dam Outlet Works Modification - YEAR 2													
Backhoe (John Deere 410 J)	offroad	4		0.30276	1.36996	1.61580	0.00216	0.13499	0.12419	180.0	0.02732	0.01214	184.4
Bulldozer (John Deere Model 700 J)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Compressor (Sullair 375 H-AF trailer mounted)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Concrete pumper (Schwing SP 260)	offroad	4		0.43072	1.43852	1.75191	0.00226	0.14518	0.13357	182.2	0.03886	0.01727	188.4
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD		150	0.33946	1.39768	4.11440	0.00613	0.20054	0.17194	632.3	0.01566	0.01474	637.2
Electrical boom type line truck (Ford F650 XL)	onroad MD		0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Electrical boom type truck-mounted aerial lift	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Excavator (John Deere 160 D LC)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		150	0.30944	2.11167	2.36597	0.00402	0.08993	0.07526	417.2	0.01456	0.02264	424.6
Forklift (Case 586G Series 3)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Front loader (John Deere 444 K)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Generator (Magnum MMG25 23 KVA diesel)	offroad	8		0.50359	1.55708	1.87640	0.00262	0.14130	0.13000	203.4	0.04544	0.02019	210.6
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		150	0.33946	1.39768	4.11440	0.00613	0.20054	0.17194	632.3	0.01566	0.01474	637.2
Mobile crane (Link-Belt RTC-8030 Series II)	offroad	4		0.40355	1.83216	2.92662	0.00336	0.18188	0.16733	297.2	0.03641	0.01618	303.0
Oversize load tractor trailer (5 axles or more)	onroad HHD		120	0.27157	1.11815	3.29152	0.00490	0.16044	0.13756	505.8	0.01253	0.01179	509.7
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		480	0.35792	3.40430	0.34156	0.00514	0.04352	0.02801	528.4	0.03220	0.01304	533.1
Welder genset (Hobart Champion Elite)	offroad	5		0.09352	0.27407	0.47092	0.00067	0.02936	0.02701	51.4	0.00844	0.00375	52.7
GAGES - North Fork Long Canyon Creek Gage Below Diversion Dam - YEAR 3													
Chainsaw (2-stroke, professional grade)	offroad	5		0.01569	0.08229	0.09824	0.00021	0.00381	0.00351	13.5	0.00142	0.00063	13.7
Generator (2.2 KVA)	offroad	10		0.03922	0.20572	0.24560	0.00052	0.00953	0.00877	33.7	0.00354	0.00157	34.3
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		240	0.17896	1.70215	0.17078	0.00257	0.02176	0.01400	264.2	0.01610	0.00652	266.6
GAGES - South Fork Long Canyon Creek Gage Below Diversion Dam - YEAR 3													
Chainsaw (2-stroke, professional grade)	offroad	5		0.01569	0.08229	0.09824	0.00021	0.00381	0.00351	13.5	0.00142	0.00063	13.7
Generator (2.2 KVA)	offroad	10		0.03922	0.20572	0.24560	0.00052	0.00953	0.00877	33.7	0.00354	0.00157	34.3
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		240	0.17896	1.70215	0.17078	0.00257	0.02176	0.01400	264.2	0.01610	0.00652	266.6
GAGES - Middle Fork American River Gage Below Interbay Dam - YEAR 2													
Chainsaw (2-stroke, professional grade)	offroad	5		0.01569	0.08229	0.09824	0.00021	0.00381	0.00351	13.5	0.00142	0.00063	13.7
Generator (2.2 KVA)	offroad	10		0.03922	0.20572	0.24560	0.00052	0.00953	0.00877	33.7	0.00354	0.00157	34.3
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		240	0.17896	1.70215	0.17078	0.00257	0.02176	0.01400	264.2	0.01610	0.00652	266.6
GAGES - North Fork American River Gage Above American River Pump Station - YEAR 2													
Chainsaw (2-stroke, professional grade)	offroad	5		0.01569	0.08229	0.09824	0.00021	0.00381	0.00351	13.5	0.00142	0.00063	13.7
Generator (2.2 KVA)	offroad	10		0.03922	0.20572	0.24560	0.00052	0.00953	0.00877	33.7	0.00354	0.00157	34.3
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		240	0.17896	1.70215	0.17078	0.00257	0.02176	0.01400	264.2	0.01610	0.00652	266.6
RECREATION - Ellicott Bridge Parking Area - YEAR 14													
Asphalt paver (Caterpillar AP500E)	offroad	6		0.92590	3.68856	6.31315	0.00639	0.44697	0.41122	557.0	0.08354	0.03713	570.3
Asphalt roller (Caterpillar CB54)	offroad	6		0.64002	2.83403	4.46799	0.00513	0.32320	0.29734	445.1	0.05775	0.02567	454.3
Backhoe (John Deere 410 J)	offroad	4		0.30276	1.36996	1.61580	0.00216	0.13499	0.12419	180.0	0.02732	0.01214	184.4
Compressor (Sullair 375 H-AF trailer mounted)	offroad	6		0.52030	2.14725	3.36486	0.00379	0.27517	0.25315	327.0	0.04695	0.02086	334.5
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD		150	0.33946	1.39768	4.11440	0.00613	0.20054	0.17194	632.3	0.01566	0.01474	637.2
Drilling rig (mid-size)	offroad	6		0.26797	2.81869	2.74994	0.00543	0.15429	0.14195	462.7	0.02418	0.01075	466.6
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		150	0.30944	2.11167	2.36597	0.00402	0.08993	0.07526	417.2	0.01456	0.02264	424.6
Forklift (Case 586G Series 3)	offroad	4		0.43372	1.60515	1.78573	0.00226	0.15940	0.14665	184.4	0.03913	0.01739	190.7
Generator (30 KVA diesel)	offroad	10		0.87192	2.63860	2.84677	0.00396	0.23396	0.21525	306.2	0.07867	0.03497	318.7
Grader (John Deere 670G/GP)	offroad	4		0.58944	2.61660	4.79640	0.00616	0.23789	0.21886	547.1	0.05318	0.02364	555.5
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		150	0.33946	1.39768	4.11440	0.00613	0.20054	0.17194	632.3	0.01566	0.01474	637.2
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		720	0.53688	5.10644	0.51234	0.00772	0.06528	0.04201	792.6	0.04829	0.01955	799.7

Equipment and Vehicles		Daily Activity		ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_20	CO_2 eqv
Type	Category	hours	VMT	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs
RECREATION - French Meadows Reservoir Trail - YEAR 14													
Backhoe (John Deere 410 J)	offroad	4		0.30276	1.36996	1.61580	0.00216	0.13499	0.12419	180.0	0.02732	0.01214	184.4
Bulldozer (John Deere Model 700 J)	offroad	6		0.77086	2.84546	4.39502	0.00444	0.38890	0.35778	377.3	0.06955	0.03091	388.4
Chainsaw (2-stroke, professional grade)	offroad	16		0.05020	0.26332	0.31437	0.00067	0.01220	0.01122	43.1	0.00453	0.00201	43.8
Chipper (Vermeer BC1500)	offroad	8		0.79950	4.26479	5.69174	0.00777	0.44296	0.40752	665.5	0.07214	0.03206	677.0
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		150	0.30944	2.11167	2.36597	0.00402	0.08993	0.07526	417.2	0.01456	0.02264	424.6
Forest Machine (Caterpillar 324D FM)	offroad	8		0.76470	4.67775	6.63813	0.01000	0.33815	0.31110	899.4	0.06900	0.03067	910.4
Generator (30 KVA diesel)	offroad	10		0.87192	2.63860	2.84677	0.00396	0.23396	0.21525	306.2	0.07867	0.03497	318.7
Log transport truck (Mack or Oshkosh as typical)	onroad HHD		150	0.33946	1.39768	4.11440	0.00613	0.20054	0.17194	632.3	0.01566	0.01474	637.2
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		150	0.33946	1.39768	4.11440	0.00613	0.20054	0.17194	632.3	0.01566	0.01474	637.2
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		720	0.53688	5.10644	0.51234	0.00772	0.06528	0.04201	792.6	0.04829	0.01955	799.7
SUPPLY - French Meadows North Shore Water Supply - YEAR 9													
Backhoe (John Deere 410 J)	offroad	4		0.30276	1.36996	1.61580	0.00216	0.13499	0.12419	180.0	0.02732	0.01214	184.4
Bulldozer (John Deere Model 700 J)	offroad	6		0.77086	2.84546	4.39502	0.00444	0.38890	0.35778	377.3	0.06955	0.03091	388.4
Compressor (Sullair 375 H-AF trailer mounted)	offroad	6		0.52030	2.14725	3.36486	0.00379	0.27517	0.25315	327.0	0.04695	0.02086	334.5
Drilling rig (mid-size)	offroad	6		0.26797	2.81869	2.74994	0.00543	0.15429	0.14195	462.7	0.02418	0.01075	466.6
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		150	0.30944	2.11167	2.36597	0.00402	0.08993	0.07526	417.2	0.01456	0.02264	424.6
Generator (30 KVA diesel)	offroad	10		0.87192	2.63860	2.84677	0.00396	0.23396	0.21525	306.2	0.07867	0.03497	318.7
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		150	0.33946	1.39768	4.11440	0.00613	0.20054	0.17194	632.3	0.01566	0.01474	637.2
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		480	0.35792	3.40430	0.34156	0.00514	0.04352	0.02801	528.4	0.03220	0.01304	533.1
SUPPLY - French Meadows South Shore Water Supply - YEAR 5													
Backhoe (John Deere 410 J)	offroad	4		0.30276	1.36996	1.61580	0.00216	0.13499	0.12419	180.0	0.02732	0.01214	184.4
Bulldozer (John Deere Model 700 J)	offroad	6		0.77086	2.84546	4.39502	0.00444	0.38890	0.35778	377.3	0.06955	0.03091	388.4
Compressor (Sullair 375 H-AF trailer mounted)	offroad	6		0.52030	2.14725	3.36486	0.00379	0.27517	0.25315	327.0	0.04695	0.02086	334.5
Drilling rig (mid-size)	offroad	6		0.26797	2.81869	2.74994	0.00543	0.15429	0.14195	462.7	0.02418	0.01075	466.6
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		150	0.30944	2.11167	2.36597	0.00402	0.08993	0.07526	417.2	0.01456	0.02264	424.6
Generator (30 KVA diesel)	offroad	10		0.87192	2.63860	2.84677	0.00396	0.23396	0.21525	306.2	0.07867	0.03497	318.7
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		150	0.33946	1.39768	4.11440	0.00613	0.20054	0.17194	632.3	0.01566	0.01474	637.2
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		480	0.35792	3.40430	0.34156	0.00514	0.04352	0.02801	528.4	0.03220	0.01304	533.1

Sources: SCAQMD 2008, EPA 2011

Notes:

LD = light duty; MD = medium duty, HHD = heavy heavy duty, BHP = brake horsepower

Equipment and Vehicles		Daily Activity		ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_20	CO_2 eqv
Type	Category	hours	VMT	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs
Project Phase		Project Year	CE Year	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_20	CO_2 eqv
				lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs
Hell Hole Reservoir Seasonal Storage Increase Improvement		3	2014	6.31	31.75	36.97	0.06	2.40	2.13	6012	0.50	0.27	6108
Duncan Creek Diversion Dam Modification		2	2013	8.78	41.08	66.56	0.10	4.02	3.54	10257	0.63	0.37	10385
North Fork Long Canyon Diversion Dam Modification		3	2014	8.78	41.08	66.56	0.10	4.02	3.54	10257	0.63	0.37	10385
South Fork Long Canyon Diversion Dam Modification		3	2014	8.78	41.08	66.56	0.10	4.02	3.54	10257	0.63	0.37	10385
French Meadows Dam Outlet Works Modification		2	2013	3.33	15.85	22.78	0.04	1.32	1.16	3620	0.25	0.15	3670
Hell Hole Dam Outlet Works Modification		2	2013	5.50	28.24	32.12	0.05	2.28	2.04	5071	0.45	0.23	5152
Middle Fork Interbay Dam Outlet Works Modification		2	2013	3.35	15.90	22.87	0.04	1.33	1.17	3630	0.25	0.15	3681
North Fork Long Canyon Creek Gage Below Diversion Dam		3	2014	0.23	1.99	0.51	0.00	0.04	0.03	311	0.02	0.01	315
South Fork Long Canyon Creek Gage Below Diversion Dam		3	2014	0.23	1.99	0.51	0.00	0.04	0.03	311	0.02	0.01	315
Middle Fork American River Gage Below Interbay Dam		2	2013	0.23	1.99	0.51	0.00	0.04	0.03	311	0.02	0.01	315
North Fork American River Gage Above American River Pump Station		2	2013	0.23	1.99	0.51	0.00	0.04	0.03	311	0.02	0.01	315
Ellicott Bridge Parking Area		14	2025	6.08	29.73	39.05	0.06	2.52	2.27	5484	0.50	0.25	5573
French Meadows Reservoir Trail		14	2025	5.09	26.07	32.61	0.05	2.11	1.89	4946	0.42	0.21	5021
French Meadows North Shore Water Supply		9	2020	3.74	18.73	21.79	0.04	1.52	1.37	3231	0.31	0.16	3287
French Meadows South Shore Water Supply		5	2016	3.74	18.73	21.79	0.04	1.52	1.37	3231	0.31	0.16	3287
CHECKSUM1				**64.41**	**316.22**	**431.70**	**0.70**	**27.21**	**24.11**	**67244**	**4.96**	**2.73**	**68194**
CHECKSUM2				**64.41**	**316.22**	**431.70**	**0.70**	**27.21**	**24.11**	**67244**	**4.96**	**2.73**	**68194**
Peak Daily Emissions, lbs (fuel combustion)		2	2013	8.78	41.08	66.56	0.10	4.02	3.54	10257	0.63	0.37	10385
Peak Daily Emissions, lbs (fuel combustion)		3	2014	8.78	41.08	66.56	0.10	4.02	3.54	10257	0.63	0.37	10385
Peak Daily Emissions, lbs (fuel combustion)		5	2016	3.74	18.73	21.79	0.04	1.52	1.37	3231	0.31	0.16	3287
Peak Daily Emissions, lbs (fuel combustion)		9	2020	3.74	18.73	21.79	0.04	1.52	1.37	3231	0.31	0.16	3287
Peak Daily Emissions, lbs (fuel combustion)		14	2025	6.08	29.73	39.05	0.06	2.52	2.27	5484	0.50	0.25	5573
Highest Peak Daily Emissions, lbs (fuel combustion)				**8.78**	**41.08**	**66.56**	**0.10**	**4.02**	**3.54**	**10257**	**0.63**	**0.37**	**10385**
Worst Case Daily Emissions, lbs (fuel combustion)		2	2013	21.43	105.05	145.35	0.24	9.02	7.96	23202	1.62	0.91	23518
Worst Case Daily Emissions, lbs (fuel combustion)		3	2014	24.34	117.90	171.11	0.28	10.52	9.26	27150	1.81	1.03	27507
Worst Case Daily Emissions, lbs (fuel combustion)		5	2016	3.74	18.73	21.79	0.04	1.52	1.37	3231	0.31	0.16	3287
Worst Case Daily Emissions, lbs (fuel combustion)		9	2020	3.74	18.73	21.79	0.04	1.52	1.37	3231	0.31	0.16	3287
Worst Case Daily Emissions, lbs (fuel combustion)		14	2025	11.16	55.81	71.66	0.11	4.63	4.16	10430	0.92	0.47	10595
Highest Worst Case Daily Emissions, lbs (fuel combustion)				**24.34**	**117.90**	**171.11**	**0.28**	**10.52**	**9.26**	**27150**	**1.81**	**1.03**	**27507**
CHECKSUM3				**64.41**	**316.22**	**431.70**	**0.70**	**27.21**	**24.11**	**67244**	**4.96**	**2.73**	**68194**

Estimated Annual Emissions from Construction (fuel combustion)													
Equipment and Vehicles		Project Activity		ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_20	CO_2 eqv
Type	Category	hours	VMT	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs
RESERVOIR - Hell Hole Reservoir Seasonal Storage Increase Improvement - YEAR 3													
Backhoe (John Deere 410 J)	offroad	210		15.89510	71.92266	84.82935	0.11327	7.08718	6.52021	9451.7	1.43419	0.63742	9679.5
Bulldozer (John Deere Model 700 J)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Compressor (Sullair 375 H-AF trailer mounted)	offroad	126		10.92632	45.09216	70.66209	0.07959	5.77849	5.31621	6867.2	0.98586	0.43816	7023.7
Concrete pumper (Schwing SP 260)	offroad	32		3.44574	11.50817	14.01524	0.01808	1.16145	1.06854	1457.6	0.31090	0.13818	1507.0
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD		1200	2.71570	11.18148	32.91522	0.04903	1.60436	1.37555	5058.2	0.12530	0.11793	5097.4
Electrical boom type line truck (Ford F650 XL)	onroad MD		1500	3.09443	21.11668	23.65967	0.04023	0.89934	0.75260	4172.5	0.14555	0.22641	4245.7
Electrical boom type truck-mounted aerial lift	offroad	60		3.54938	10.54472	11.03755	0.01521	0.93320	0.85855	1176.8	0.32025	0.14234	1227.6
Excavator (John Deere 160 D LC)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		9900	20.42324	139.37007	156.15383	0.26554	5.93563	4.96718	27538.2	0.96063	1.49432	28021.6
Forklift (Case 586G Series 3)	offroad	168		18.21613	67.41613	75.00053	0.09476	6.69488	6.15929	7746.8	1.64361	0.73049	8007.8
Front loader (John Deere 444 K)	offroad	126		8.85602	44.28250	56.61355	0.07530	4.74698	4.36722	6402.3	0.79906	0.35514	6529.1
Generator (Magnum MMG25 23 KVA diesel)	offroad	800		50.35863	155.70814	187.64001	0.26161	14.13048	13.00005	20341.1	4.54378	2.01946	21062.5
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		1500	3.39462	13.97685	41.14402	0.06129	2.00545	1.71944	6322.8	0.15662	0.14741	6371.8
Mobile crane (Link-Belt RTC-8030 Series II)	offroad	126		12.71181	57.71295	92.18868	0.10595	5.72917	5.27084	9362.5	1.14697	0.50976	9544.6
Oversize load tractor trailer (5 axles or more)	onroad HHD		360	0.81471	3.35444	9.87457	0.01471	0.48131	0.41267	1517.5	0.03759	0.03538	1529.2
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		96000	71.58396	680.85915	68.31134	1.02899	8.70401	5.60112	105683.9	6.43916	2.60727	106627.4
Welder genset (Hobart Champion Elite)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
DIVERSIONS - Duncan Creek Diversion Dam Modification - YEAR 2													
Backhoe (John Deere 410 J)	offroad	60		4.54146	20.54933	24.23696	0.03236	2.02491	1.86292	2700.5	0.40977	0.18212	2765.6
Bulldozer (John Deere Model 700 J)	offroad	180		23.12574	85.36372	131.85049	0.13317	11.66686	10.73351	11319.6	2.08660	0.92738	11651.0
Compressor (Sullair 375 H-AF trailer mounted)	offroad	120		10.40602	42.94491	67.29723	0.07580	5.50333	5.06306	6540.2	0.93892	0.41730	6689.3
Concrete pumper (Schwing SP 260)	offroad	56		6.03005	20.13930	24.52668	0.03163	2.03254	1.86994	2550.8	0.54408	0.24181	2637.2
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD		16800	38.01975	156.54069	460.81307	0.68641	22.46101	19.25775	70815.1	1.75417	1.65098	71363.8
Electrical boom type line truck (Ford F650 XL)	onroad MD		0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Electrical boom type truck-mounted aerial lift	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Excavator (John Deere 160 D LC)	offroad	228		24.81954	118.64510	155.72846	0.19856	13.33750	12.27050	16946.1	2.23943	0.99530	17301.6
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		9900	20.42324	139.37007	156.15383	0.26554	5.93563	4.96718	27538.2	0.96063	1.49432	28021.6
Forklift (Case 586G Series 3)	offroad	128		13.87895	51.36467	57.14326	0.07220	5.10086	4.69279	5902.3	1.25228	0.55657	6101.1
Front loader (John Deere 444 K)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Generator (Magnum MMG25 23 KVA diesel)	offroad	800		50.35863	155.70814	187.64001	0.26161	14.13048	13.00005	20341.1	4.54378	2.01946	21062.5
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		1500	3.39462	13.97685	41.14402	0.06129	2.00545	1.71944	6322.8	0.15662	0.14741	6371.8
Mobile crane (Link-Belt RTC-8030 Series II)	offroad	105		10.59317	48.09413	76.82390	0.08829	4.77431	4.39237	7802.1	0.95580	0.42480	7953.8
Oversize load tractor trailer (5 axles or more)	onroad HHD		360	0.81471	3.35444	9.87457	0.01471	0.48131	0.41267	1517.5	0.03759	0.03538	1529.2
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		96000	71.58396	680.85915	68.31134	1.02899	8.70401	5.60112	105683.9	6.43916	2.60727	106627.4
Welder genset (Hobart Champion Elite)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
DIVERSIONS - North Fork Long Canyon Diversion Dam Modification - YEAR 3													
Backhoe (John Deere 410 J)	offroad	60		4.54146	20.54933	24.23696	0.03236	2.02491	1.86292	2700.5	0.40977	0.18212	2765.6
Bulldozer (John Deere Model 700 J)	offroad	180		23.12574	85.36372	131.85049	0.13317	11.66686	10.73351	11319.6	2.08660	0.92738	11651.0
Compressor (Sullair 375 H-AF trailer mounted)	offroad	120		10.40602	42.94491	67.29723	0.07580	5.50333	5.06306	6540.2	0.93892	0.41730	6689.3
Concrete pumper (Schwing SP 260)	offroad	56		6.03005	20.13930	24.52668	0.03163	2.03254	1.86994	2550.8	0.54408	0.24181	2637.2
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD		16800	38.01975	156.54069	460.81307	0.68641	22.46101	19.25775	70815.1	1.75417	1.65098	71363.8
Electrical boom type line truck (Ford F650 XL)	onroad MD		0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Electrical boom type truck-mounted aerial lift	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Excavator (John Deere 160 D LC)	offroad	228		24.81954	118.64510	155.72846	0.19856	13.33750	12.27050	16946.1	2.23943	0.99530	17301.6
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		9900	20.42324	139.37007	156.15383	0.26554	5.93563	4.96718	27538.2	0.96063	1.49432	28021.6
Forklift (Case 586G Series 3)	offroad	128		13.87895	51.36467	57.14326	0.07220	5.10086	4.69279	5902.3	1.25228	0.55657	6101.1
Front loader (John Deere 444 K)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Generator (Magnum MMG25 23 KVA diesel)	offroad	800		50.35863	155.70814	187.64001	0.26161	14.13048	13.00005	20341.1	4.54378	2.01946	21062.5
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		1500	3.39462	13.97685	41.14402	0.06129	2.00545	1.71944	6322.8	0.15662	0.14741	6371.8
Mobile crane (Link-Belt RTC-8030 Series II)	offroad	105		10.59317	48.09413	76.82390	0.08829	4.77431	4.39237	7802.1	0.95580	0.42480	7953.8
Oversize load tractor trailer (5 axles or more)	onroad HHD		360	0.81471	3.35444	9.87457	0.01471	0.48131	0.41267	1517.5	0.03759	0.03538	1529.2
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		96000	71.58396	680.85915	68.31134	1.02899	8.70401	5.60112	105683.9	6.43916	2.60727	106627.4
Welder genset (Hobart Champion Elite)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0

Equipment and Vehicles		Project Activity		ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_20	CO_2 eqv
Type	Category	hours	VMT	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs
DIVERSIONS - South Fork Long Canyon Diversion Dam Modification - YEAR 3													
Backhoe (John Deere 410 J)	offroad	60		4.54146	20.54933	24.23696	0.03236	2.02491	1.86292	2700.5	0.40977	0.18212	2765.6
Bulldozer (John Deere Model 700 J)	offroad	180		23.12574	85.36372	131.85049	0.13317	11.66686	10.73351	11319.6	2.08660	0.92738	11651.0
Compressor (Sullair 375 H-AF trailer mounted)	offroad	120		10.40602	42.94491	67.29723	0.07580	5.50333	5.06306	6540.2	0.93892	0.41730	6689.3
Concrete pumper (Schwing SP 260)	offroad	56		6.03005	20.13930	24.52668	0.03163	2.03254	1.86994	2550.8	0.54408	0.24181	2637.2
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD		16800	38.01975	156.54069	460.81307	0.68641	22.46101	19.25775	70815.1	1.75417	1.65098	71363.8
Electrical boom type line truck (Ford F650 XL)	onroad MD		0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Electrical boom type truck-mounted aerial lift	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Excavator (John Deere 160 D LC)	offroad	228		24.81954	118.64510	155.72846	0.19856	13.33750	12.27050	16946.1	2.23943	0.99530	17301.6
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		9900	20.42324	139.37007	156.15383	0.26554	5.93563	4.96718	27538.2	0.96063	1.49432	28021.6
Forklift (Case 586G Series 3)	offroad	128		13.87895	51.36467	57.14326	0.07220	5.10086	4.69279	5902.3	1.25228	0.55657	6101.1
Front loader (John Deere 444 K)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Generator (Magnum MMG25 23 KVA diesel)	offroad	800		50.35863	155.70814	187.64001	0.26161	14.13048	13.00005	20341.1	4.54378	2.01946	21062.5
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		1500	3.39462	13.97685	41.14402	0.06129	2.00545	1.71944	6322.8	0.15662	0.14741	6371.8
Mobile crane (Link-Belt RTC-8030 Series II)	offroad	105		10.59317	48.09413	76.82390	0.08829	4.77431	4.39237	7802.1	0.95580	0.42480	7953.8
Oversize load tractor trailer (5 axles or more)	onroad HHD		360	0.81471	3.35444	9.87457	0.01471	0.48131	0.41267	1517.5	0.03759	0.03538	1529.2
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		96000	71.58396	680.85915	68.31134	1.02899	8.70401	5.60112	105683.9	6.43916	2.60727	106627.4
Welder genset (Hobart Champion Elite)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
OUTLETS - French Meadows Dam Outlet Works Modification - YEAR 2													
Backhoe (John Deere 410 J)	offroad	12		0.90829	4.10987	4.84739	0.00647	0.40498	0.37258	540.1	0.08195	0.03642	553.1
Bulldozer (John Deere Model 700 J)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Compressor (Sullair 375 H-AF trailer mounted)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Concrete pumper (Schwing SP 260)	offroad	4		0.43072	1.43852	1.75191	0.00226	0.14518	0.13357	182.2	0.03886	0.01727	188.4
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD		150	0.33946	1.39768	4.11440	0.00613	0.20054	0.17194	632.3	0.01566	0.01474	637.2
Electrical boom type line truck (Ford F650 XL)	onroad MD		0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Electrical boom type truck-mounted aerial lift	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Excavator (John Deere 160 D LC)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		3000	6.18886	42.23335	47.31934	0.08047	1.79867	1.50521	8344.9	0.29110	0.45282	8491.4
Forklift (Case 586G Series 3)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Front loader (John Deere 444 K)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Generator (Magnum MMG25 23 KVA diesel)	offroad	160		10.07173	31.14163	37.52800	0.05232	2.82610	2.60001	4068.2	0.90876	0.40389	4212.5
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		450	1.01839	4.19305	12.34321	0.01839	0.60163	0.51583	1896.8	0.04699	0.04422	1911.5
Mobile crane (Link-Belt RTC-8030 Series II)	offroad	8		0.80710	3.66431	5.85325	0.00673	0.36376	0.33466	594.4	0.07282	0.03237	606.0
Oversize load tractor trailer (5 axles or more)	onroad HHD		360	0.81471	3.35444	9.87457	0.01471	0.48131	0.41267	1517.5	0.03759	0.03538	1529.2
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		9600	7.15840	68.08592	6.83113	0.10290	0.87040	0.56011	10568.4	0.64392	0.26073	10662.7
Welder genset (Hobart Champion Elite)	offroad	16		0.29926	0.87702	1.50696	0.00214	0.09395	0.08644	164.3	0.02700	0.01200	168.6
OUTLETS - Hell Hole Dam Outlet Works Modification - YEAR 2													
Backhoe (John Deere 410 J)	offroad	140		10.59673	47.94844	56.55290	0.07551	4.72479	4.34680	6301.2	0.95613	0.42495	6453.0
Bulldozer (John Deere Model 700 J)	offroad	84		10.79201	39.83640	61.53023	0.06215	5.44454	5.00897	5282.5	0.97375	0.43278	5437.1
Compressor (Sullair 375 H-AF trailer mounted)	offroad	120		10.40602	42.94491	67.29723	0.07580	5.50333	5.06306	6540.2	0.93892	0.41730	6689.3
Concrete pumper (Schwing SP 260)	offroad	28		3.01503	10.06965	12.26334	0.01582	1.01627	0.93497	1275.4	0.27204	0.12091	1318.6
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD		1050	2.37623	9.78379	28.80082	0.04290	1.40381	1.20361	4425.9	0.10964	0.10319	4460.2
Electrical boom type line truck (Ford F650 XL)	onroad MD		0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Electrical boom type truck-mounted aerial lift	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Excavator (John Deere 160 D LC)	offroad	228		24.81954	118.64510	155.72846	0.19856	13.33750	12.27050	16946.1	2.23943	0.99530	17301.6
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		6000	12.37772	84.46671	94.63869	0.16093	3.59735	3.01041	16689.8	0.58220	0.90565	16982.8
Forklift (Case 586G Series 3)	offroad	132		14.31267	52.96982	58.92899	0.07446	5.26027	4.83944	6086.8	1.29141	0.57396	6291.8
Front loader (John Deere 444 K)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Generator (Magnum MMG25 23 KVA diesel)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		6000	13.57848	55.90739	164.57610	0.24515	8.02179	6.87777	25291.1	0.62649	0.58964	25487.1
Mobile crane (Link-Belt RTC-8030 Series II)	offroad	160		16.14197	73.28629	117.06499	0.13454	7.27514	6.69313	11888.8	1.45646	0.64732	12120.1
Oversize load tractor trailer (5 axles or more)	onroad HHD		0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		48000	35.79198	340.42958	34.15567	0.51450	4.35200	2.80056	52842.0	3.21958	1.30363	53313.7
Welder genset (Hobart Champion Elite)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0

Equipment and Vehicles		Project Activity		ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_20	CO_2 eqv
Type	Category	hours	VMT	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs
OUTLETS - Middle Fork Interbay Dam Outlet Works Modification - YEAR 2													
Backhoe (John Deere 410 J)	offroad	20		1.51382	6.84978	8.07899	0.01079	0.67497	0.62097	900.2	0.13659	0.06071	921.9
Bulldozer (John Deere Model 700 J)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Compressor (Sullair 375 H-AF trailer mounted)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Concrete pumper (Schwing SP 260)	offroad	20		2.15359	7.19261	8.75953	0.01130	0.72591	0.66784	911.0	0.19431	0.08636	941.9
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD		750	1.69731	6.98842	20.57201	0.03064	1.00272	0.85972	3161.4	0.07831	0.07370	3185.9
Electrical boom type line truck (Ford F650 XL)	onroad MD		0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Electrical boom type truck-mounted aerial lift	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Excavator (John Deere 160 D LC)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		3000	6.18886	42.23335	47.31934	0.08047	1.79867	1.50521	8344.9	0.29110	0.45282	8491.4
Forklift (Case 586G Series 3)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Front loader (John Deere 444 K)	offroad	0		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.00000	0.0
Generator (Magnum MMG25 23 KVA diesel)	offroad	160		10.07173	31.14163	37.52800	0.05232	2.82610	2.60001	4068.2	0.90876	0.40389	4212.5
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		750	1.69731	6.98842	20.57201	0.03064	1.00272	0.85972	3161.4	0.07831	0.07370	3185.9
Mobile crane (Link-Belt RTC-8030 Series II)	offroad	40		4.03549	18.32157	29.26625	0.03363	1.81878	1.67328	2972.2	0.36412	0.16183	3030.0
Oversize load tractor trailer (5 axles or more)	onroad HHD		360	0.81471	3.35444	9.87457	0.01471	0.48131	0.41267	1517.5	0.03759	0.03538	1529.2
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		9600	7.15840	68.08592	6.83113	0.10290	0.87040	0.56011	10568.4	0.64392	0.26073	10662.7
Welder genset (Hobart Champion Elite)	offroad	100		1.87038	5.48140	9.41850	0.01339	0.58721	0.54023	1027.0	0.16876	0.07500	1053.8
GAGES - North Fork Long Canyon Creek Gage Below Diversion Dam - YEAR 3													
Chainsaw (2-stroke, professional grade)	offroad	10		0.03137	0.16457	0.19648	0.00042	0.00762	0.00701	27.0	0.00283	0.00126	27.4
Generator (2.2 KVA)	offroad	70		0.27453	1.44001	1.71920	0.00367	0.06670	0.06136	235.8	0.02477	0.01101	239.8
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		1680	1.25272	11.91504	1.19545	0.01801	0.15232	0.09802	1849.5	0.11269	0.04563	1866.0
GAGES - South Fork Long Canyon Creek Gage Below Diversion Dam - YEAR 3													
Chainsaw (2-stroke, professional grade)	offroad	10		0.03137	0.16457	0.19648	0.00042	0.00762	0.00701	27.0	0.00283	0.00126	27.4
Generator (2.2 KVA)	offroad	70		0.27453	1.44001	1.71920	0.00367	0.06670	0.06136	235.8	0.02477	0.01101	239.8
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		1680	1.25272	11.91504	1.19545	0.01801	0.15232	0.09802	1849.5	0.11269	0.04563	1866.0
GAGES - Middle Fork American River Gage Below Interbay Dam - YEAR 2													
Chainsaw (2-stroke, professional grade)	offroad	10		0.03137	0.16457	0.19648	0.00042	0.00762	0.00701	27.0	0.00283	0.00126	27.4
Generator (2.2 KVA)	offroad	70		0.27453	1.44001	1.71920	0.00367	0.06670	0.06136	235.8	0.02477	0.01101	239.8
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		1680	1.25272	11.91504	1.19545	0.01801	0.15232	0.09802	1849.5	0.11269	0.04563	1866.0
GAGES - North Fork American River Gage Above American River Pump Station - YEAR 2													
Chainsaw (2-stroke, professional grade)	offroad	10		0.03137	0.16457	0.19648	0.00042	0.00762	0.00701	27.0	0.00283	0.00126	27.4
Generator (2.2 KVA)	offroad	70		0.27453	1.44001	1.71920	0.00367	0.06670	0.06136	235.8	0.02477	0.01101	239.8
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		1680	1.25272	11.91504	1.19545	0.01801	0.15232	0.09802	1849.5	0.11269	0.04563	1866.0
RECREATION - Ellicott Bridge Parking Area - YEAR 14													
Asphalt paver (Caterpillar AP500E)	offroad	60		9.25897	36.88562	63.13145	0.06386	4.46974	4.11216	5569.9	0.83542	0.37130	5702.6
Asphalt roller (Caterpillar CB54)	offroad	60		6.40024	28.34026	44.67990	0.05125	3.23198	2.97342	4451.0	0.57748	0.25666	4542.7
Backhoe (John Deere 410 J)	offroad	40		3.02764	13.69955	16.15797	0.02158	1.34994	1.24194	1800.3	0.27318	0.12141	1843.7
Compressor (Sullair 375 H-AF trailer mounted)	offroad	60		5.20301	21.47246	33.64861	0.03790	2.75166	2.53153	3270.1	0.46946	0.20865	3344.6
Concrete transport truck (Mack or Oshkosh as typical)	onroad HHD		1500	3.39462	13.97685	41.14402	0.06129	2.00545	1.71944	6322.8	0.15662	0.14741	6371.8
Drilling rig (mid-size)	offroad	60		2.67967	28.18687	27.49940	0.05428	1.54292	1.41949	4627.3	0.24178	0.10746	4665.7
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		1500	3.09443	21.11668	23.65967	0.04023	0.89934	0.75260	4172.5	0.14555	0.22641	4245.7
Forklift (Case 586G Series 3)	offroad	40		4.33717	16.05146	17.85727	0.02256	1.59402	1.46650	1844.5	0.39134	0.17393	1906.6
Generator (30 KVA diesel)	offroad	100		8.71916	26.38603	28.46772	0.03959	2.33962	2.15245	3062.3	0.78672	0.34965	3187.2
Grader (John Deere 670G/GP)	offroad	40		5.89444	26.16597	47.96396	0.06156	2.37888	2.18857	5470.9	0.53185	0.23638	5555.4
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		1500	3.39462	13.97685	41.14402	0.06129	2.00545	1.71944	6322.8	0.15662	0.14741	6371.8
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		7200	5.36880	51.06444	5.12335	0.07717	0.65280	0.42008	7926.3	0.48294	0.19555	7997.1

Equipment and Vehicles		Project Activity		ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_20	CO_2 eqv
Type	Category	hours	VMT	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs
RECREATION - French Meadows Reservoir Trail - YEAR 14													
Backhoe (John Deere 410 J)	offroad	56		4.23869	19.17938	22.62116	0.03021	1.88992	1.73872	2520.5	0.38245	0.16998	2581.2
Bulldozer (John Deere Model 700 J)	offroad	84		10.79201	39.83640	61.53023	0.06215	5.44454	5.00897	5282.5	0.97375	0.43278	5437.1
Chainsaw (2-stroke, professional grade)	offroad	224		0.70279	3.68643	4.40115	0.00939	0.17075	0.15709	603.7	0.06341	0.02818	613.8
Chipper (Vermeer BC1500)	offroad	112		11.19298	59.70708	79.68432	0.10878	6.20142	5.70530	9317.4	1.00992	0.44886	9477.8
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		2100	4.33220	29.56335	33.12354	0.05633	1.25907	1.05364	5841.4	0.20377	0.31698	5944.0
Forest Machine (Caterpillar 324D FM)	offroad	112		10.70580	65.48845	92.93383	0.14004	4.73411	4.35538	12591.6	0.96597	0.42932	12744.9
Generator (30 KVA diesel)	offroad	140		12.20682	36.94044	39.85480	0.05542	3.27547	3.01343	4287.2	1.10140	0.48951	4462.1
Log transport truck (Mack or Oshkosh as typical)	onroad HHD		2100	4.75247	19.56759	57.60163	0.08580	2.80763	2.40722	8851.9	0.21927	0.20637	8920.5
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		2100	4.75247	19.56759	57.60163	0.08580	2.80763	2.40722	8851.9	0.21927	0.20637	8920.5
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		10080	7.51632	71.49021	7.17269	0.10804	0.91392	0.58812	11096.8	0.67611	0.27376	11195.9
SUPPLY - French Meadows North Shore Water Supply - YEAR 9													
Backhoe (John Deere 410 J)	offroad	84		6.35804	28.76906	33.93174	0.04531	2.83487	2.60808	3780.7	0.57368	0.25497	3871.8
Bulldozer (John Deere Model 700 J)	offroad	126		16.18802	59.75460	92.29534	0.09322	8.16680	7.51346	7923.8	1.46062	0.64916	8155.7
Compressor (Sullair 375 H-AF trailer mounted)	offroad	126		10.92632	45.09216	70.66209	0.07959	5.77849	5.31621	6867.2	0.98586	0.43816	7023.7
Drilling rig (mid-size)	offroad	126		5.62730	59.19243	57.74874	0.11399	3.24013	2.98092	9717.3	0.50774	0.22566	9798.0
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		3150	6.49830	44.34502	49.68531	0.08449	1.88861	1.58047	8762.1	0.30566	0.47547	8916.0
Generator (30 KVA diesel)	offroad	210		18.31023	55.41066	59.78220	0.08313	4.91320	4.52015	6430.8	1.65210	0.73427	6693.1
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		3150	7.12870	29.35138	86.40245	0.12870	4.21144	3.61083	13277.8	0.32891	0.30956	13380.7
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		10080	7.51632	71.49021	7.17269	0.10804	0.91392	0.58812	11096.8	0.67611	0.27376	11195.9
SUPPLY - French Meadows South Shore Water Supply - YEAR 5													
Backhoe (John Deere 410 J)	offroad	84		6.35804	28.76906	33.93174	0.04531	2.83487	2.60808	3780.7	0.57368	0.25497	3871.8
Bulldozer (John Deere Model 700 J)	offroad	126		16.18802	59.75460	92.29534	0.09322	8.16680	7.51346	7923.8	1.46062	0.64916	8155.7
Compressor (Sullair 375 H-AF trailer mounted)	offroad	126		10.92632	45.09216	70.66209	0.07959	5.77849	5.31621	6867.2	0.98586	0.43816	7023.7
Drilling rig (mid-size)	offroad	126		5.62730	59.19243	57.74874	0.11399	3.24013	2.98092	9717.3	0.50774	0.22566	9798.0
Flatbed utility truck or dump truck (Ford F650 XL)	onroad MD		3150	6.49830	44.34502	49.68531	0.08449	1.88861	1.58047	8762.1	0.30566	0.47547	8916.0
Generator (30 KVA diesel)	offroad	210		18.31023	55.41066	59.78220	0.08313	4.91320	4.52015	6430.8	1.65210	0.73427	6693.1
Lowboy tractor and trailer (International Paystar 5900 FSA)	onroad HHD		3150	7.12870	29.35138	86.40245	0.12870	4.21144	3.61083	13277.8	0.32891	0.30956	13380.7
Pickup trucks for workers (Ford, Chevrolet, GMC, Dodge)	onroad LD		10080	7.51632	71.49021	7.17269	0.10804	0.91392	0.58812	11096.8	0.67611	0.27376	11195.9

Sources: SCAQMD 2008, EPA 2011

Notes:

LD = light duty; MD = medium duty, HHD = heavy heavy duty, BHP = brake horsepower

Equipment and Vehicles		Project Activity		ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_20	CO_2 eqv
Type	Category	hours	VMT	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs
Project Phase		Project Year	CE Year	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_20	CO_2 eqv
				lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs
Hell Hole Reservoir Seasonal Storage Increase Improvement		3	2014	225.99	1334.05	924.05	2.22	65.89	57.39	213099	19.05	9.60	216475
Duncan Creek Diversion Dam Modification		2	2013	277.99	1536.91	1461.54	2.95	98.16	85.84	285980	22.32	11.70	290076
North Fork Long Canyon Diversion Dam Modification		3	2014	277.99	1536.91	1461.54	2.95	98.16	85.84	285980	22.32	11.70	290076
South Fork Long Canyon Diversion Dam Modification		3	2014	277.99	1536.91	1461.54	2.95	98.16	85.84	285980	22.32	11.70	290076
French Meadows Dam Outlet Works Modification		2	2013	28.04	160.50	131.97	0.29	7.79	6.69	28509	2.16	1.31	28961
Hell Hole Dam Outlet Works Modification		2	2013	154.21	876.29	851.54	1.60	59.94	53.05	153570	12.67	6.51	155855
Middle Fork Interbay Dam Outlet Works Modification		2	2013	37.20	196.64	198.22	0.38	11.79	10.30	36632	2.90	1.68	37215
North Fork Long Canyon Creek Gage Below Diversion Dam		3	2014	1.56	13.52	3.11	0.02	0.23	0.17	2112	0.14	0.06	2133
South Fork Long Canyon Creek Gage Below Diversion Dam		3	2014	1.56	13.52	3.11	0.02	0.23	0.17	2112	0.14	0.06	2133
Middle Fork American River Gage Below Interbay Dam		2	2013	1.56	13.52	3.11	0.02	0.23	0.17	2112	0.14	0.06	2133
North Fork American River Gage Above American River Pump Station		2	2013	1.56	13.52	3.11	0.02	0.23	0.17	2112	0.14	0.06	2133
Ellicott Bridge Parking Area		14	2025	60.77	297.32	390.48	0.59	25.22	22.70	54841	5.05	2.54	55735
French Meadows Reservoir Trail		14	2025	71.19	365.03	456.52	0.74	29.50	26.44	69245	5.82	3.00	70298
French Meadows North Shore Water Supply		9	2020	78.55	393.41	457.68	0.74	31.95	28.72	67857	6.49	3.36	69035
French Meadows South Shore Water Supply		5	2016	78.55	393.41	457.68	0.74	31.95	28.72	67857	6.49	3.36	69035
CHECKSUM1				1574.71	8681.44	8265.21	16.24	559.41	492.20	1557998	128.15	66.71	1581368
CHECKSUM2				1574.71	8681.44	8265.21	16.24	559.41	492.20	1557998	128.15	66.71	1581368
Total Annual Emissions, tons (fuel combustion)		2	2013	0.250	1.399	1.325	0.003	0.089	0.078	254.5	0.020	0.011	258.2
Total Annual Emissions, tons (fuel combustion)		3	2014	0.393	2.217	1.927	0.004	0.131	0.115	394.6	0.032	0.017	400.4
Total Annual Emissions, tons (fuel combustion)		5	2016	0.039	0.197	0.229	0.000	0.016	0.014	33.9	0.003	0.002	34.5
Total Annual Emissions, tons (fuel combustion)		9	2020	0.039	0.197	0.229	0.000	0.016	0.014	33.9	0.003	0.002	34.5
Total Annual Emissions, tons (fuel combustion)		14	2025	0.066	0.331	0.424	0.001	0.027	0.025	62.0	0.005	0.003	63.0
Highest Annual Total Emissions, tons (fuel combustion)				**0.393**	**2.217**	**1.927**	**0.004**	**0.131**	**0.115**	**394.6**	**0.032**	**0.017**	**400.4**
Project Total Emissions, tons (fuel combustion)				**0.787**	**4.341**	**4.133**	**0.008**	**0.280**	**0.246**	**779.0**	**0.064**	**0.033**	**790.7**
CHECKSUM3				1574.71	8681.44	8265.21	16.24	559.41	492.20	1557998	128.15	66.71	1581368

Estimated Offroad Fugitive Dust Emissions

Earthmoving	Activity		Required Variables								Uncontrolled		Controlled Emissions				
	Pk. Daily	Project	EET	Moist (M)	Silt (s)	Drop (d)	Speed (S)	Wind (U)	Den (D)	Rate (V)	PM_{10}	$PM_{2.5}$	Control	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
	hours	hours	code	percent	percent	feet	mph	mph	ton/cy	cy/hr	lb/hr	lb/hr	%	lb/day	lb/day	lbs	lbs
RESERVOIR - Hell Hole Reservoir Seasonal Storage Increase Improvement - YEAR 3 (PHASE 1)																	
Asphalt roller (Caterpillar CB54)	0	0	C	7			2				0.24800	0.01358	56%	0.00	0.00	0.00	0.00
Backhoe (John Deere 410 J)	6	210	D	7				7.0	1.5	20	0.00885	0.00137	56%	0.02	0.00	0.81	0.13
Bulldozer (John Deere Model 700 J)	0	0	A	7	9						1.32827	0.66775	56%	0.00	0.00	0.00	0.00
Drilling rig (mid-size)	0	0	D	7				7.0	1.5	10	0.00442	0.00068	56%	0.00	0.00	0.00	0.00
Excavator (John Deere 160 D LC)	0	0	D	7				7.0	1.5	60	0.02654	0.00410	56%	0.00	0.00	0.00	0.00
Forest Machine (Caterpillar 324D FM)	0	0	C	7			3				0.83700	0.05612	56%	0.00	0.00	0.00	0.00
Forklift (Case 586G Series 3)	4	168	C	7			3				0.83700	0.05612	56%	1.46	0.10	61.52	4.12
Front loader (John Deere 444 K)	6	126	D	7				7.0	1.5	30	0.01327	0.00205	56%	0.03	0.01	0.73	0.11
Grader (John Deere 670G/GP)	0	0	C	7			4				1.98400	0.15360	56%	0.00	0.00	0.00	0.00
Mobile crane (Link-Belt RTC-8030 Series II)	6	126	C	7			1				0.03100	0.00120	56%	0.08	0.00	1.71	0.07
DIVERSIONS - Duncan Creek Diversion Dam Modification - YEAR 2 (PHASE 2)																	
Asphalt roller (Caterpillar CB54)	0	0	C	7			2				0.24800	0.01358	56%	0.00	0.00	0.00	0.00
Backhoe (John Deere 410 J)	4	60	D	7				7.0	1.5	20	0.00885	0.00137	56%	0.02	0.00	0.23	0.04
Bulldozer (John Deere Model 700 J)	6	180	A	7	9						1.32827	0.66775	56%	3.49	1.75	104.60	52.59
Drilling rig (mid-size)	0	0	D	7				7.0	1.5	10	0.00442	0.00068	56%	0.00	0.00	0.00	0.00
Excavator (John Deere 160 D LC)	6	228	D	7				7.0	1.5	60	0.02654	0.00410	56%	0.07	0.01	2.65	0.41
Forest Machine (Caterpillar 324D FM)	0	0	C	7			3				0.83700	0.05612	56%	0.00	0.00	0.00	0.00
Forklift (Case 586G Series 3)	4	128	C	7			3				0.83700	0.05612	56%	1.46	0.10	46.87	3.14
Front loader (John Deere 444 K)	0	0	D	7				7.0	1.5	30	0.01327	0.00205	56%	0.00	0.00	0.00	0.00
Grader (John Deere 670G/GP)	0	0	C	7			4				1.98400	0.15360	56%	0.00	0.00	0.00	0.00
Mobile crane (Link-Belt RTC-8030 Series II)	5	105	C	7			1				0.03100	0.00120	56%	0.07	0.00	1.42	0.06
DIVERSIONS - North Fork Long Canyon Diversion Dam Modification - YEAR 3 (PHASE 3)																	
Asphalt roller (Caterpillar CB54)	0	0	C	7			2				0.24800	0.01358	56%	0.00	0.00	0.00	0.00
Backhoe (John Deere 410 J)	4	60	D	7				7.0	1.5	20	0.00885	0.00137	56%	0.02	0.00	0.23	0.04
Bulldozer (John Deere Model 700 J)	6	180	A	7	9						1.32827	0.66775	56%	3.49	1.75	104.60	52.59
Drilling rig (mid-size)	0	0	D	7				7.0	1.5	10	0.00442	0.00068	56%	0.00	0.00	0.00	0.00
Excavator (John Deere 160 D LC)	6	228	D	7				7.0	1.5	60	0.02654	0.00410	56%	0.07	0.01	2.65	0.41
Forest Machine (Caterpillar 324D FM)	0	0	C	7			3				0.83700	0.05612	56%	0.00	0.00	0.00	0.00
Forklift (Case 586G Series 3)	4	128	C	7			3				0.83700	0.05612	56%	1.46	0.10	46.87	3.14
Front loader (John Deere 444 K)	0	0	D	7				7.0	1.5	30	0.01327	0.00205	56%	0.00	0.00	0.00	0.00
Grader (John Deere 670G/GP)	0	0	C	7			4				1.98400	0.15360	56%	0.00	0.00	0.00	0.00
Mobile crane (Link-Belt RTC-8030 Series II)	5	105	C	7			1				0.03100	0.00120	56%	0.07	0.00	1.42	0.06
DIVERSIONS - South Fork Long Canyon Diversion Dam Modification - YEAR 3 (PHASE 4)																	
Asphalt roller (Caterpillar CB54)	0	0	C	7			2				0.24800	0.01358	56%	0.00	0.00	0.00	0.00
Backhoe (John Deere 410 J)	4	60	D	7				7.0	1.5	20	0.00885	0.00137	56%	0.02	0.00	0.23	0.04
Bulldozer (John Deere Model 700 J)	6	180	A	7	9						1.32827	0.66775	56%	3.49	1.75	104.60	52.59
Drilling rig (mid-size)	0	0	D	7				7.0	1.5	10	0.00442	0.00068	56%	0.00	0.00	0.00	0.00
Excavator (John Deere 160 D LC)	6	228	D	7				7.0	1.5	60	0.02654	0.00410	56%	0.07	0.01	2.65	0.41
Forest Machine (Caterpillar 324D FM)	0	0	C	7			3				0.83700	0.05612	56%	0.00	0.00	0.00	0.00
Forklift (Case 586G Series 3)	4	128	C	7			3				0.83700	0.05612	56%	1.46	0.10	46.87	3.14
Front loader (John Deere 444 K)	0	0	D	7				7.0	1.5	30	0.01327	0.00205	56%	0.00	0.00	0.00	0.00
Grader (John Deere 670G/GP)	0	0	C	7			4				1.98400	0.15360	56%	0.00	0.00	0.00	0.00
Mobile crane (Link-Belt RTC-8030 Series II)	5	105	C	7			1				0.03100	0.00120	56%	0.07	0.00	1.42	0.06

OUTLETS - French Meadows Dam Outlet Works Modification - YEAR 2 (PHASE 5)																	
Asphalt roller (Caterpillar CB54)	0	0	C	7			2				0.24800	0.01358	56%	0.00	0.00	0.00	0.00
Backhoe (John Deere 410 J)	4	12	D	7				7.0	1.5	20	0.00885	0.00137	56%	0.02	0.00	0.05	0.01
Bulldozer (John Deere Model 700 J)	0	0	A	7	9						1.32827	0.66775	56%	0.00	0.00	0.00	0.00
Drilling rig (mid-size)	0	0	D	7				7.0	1.5	10	0.00442	0.00068	56%	0.00	0.00	0.00	0.00
Excavator (John Deere 160 D LC)	0	0	D	7				7.0	1.5	60	0.02654	0.00410	56%	0.00	0.00	0.00	0.00
Forest Machine (Caterpillar 324D FM)	0	0	C	7			3				0.83700	0.05612	56%	0.00	0.00	0.00	0.00
Forklift (Case 586G Series 3)	0	0	C	7			3				0.83700	0.05612	56%	0.00	0.00	0.00	0.00
Front loader (John Deere 444 K)	0	0	D	7				7.0	1.5	30	0.01327	0.00205	56%	0.00	0.00	0.00	0.00
Grader (John Deere 670G/GP)	0	0	C	7			4				1.98400	0.15360	56%	0.00	0.00	0.00	0.00
Mobile crane (Link-Belt RTC-8030 Series II)	4	8	C	7			1				0.03100	0.00120	56%	0.05	0.00	0.11	0.00
OUTLETS - Hell Hole Dam Outlet Works Modification - YEAR 2 (PHASE 6)																	
Asphalt roller (Caterpillar CB54)	0	0	C	7			2				0.24800	0.01358	56%	0.00	0.00	0.00	0.00
Backhoe (John Deere 410 J)	4	140	D	7				7.0	1.5	20	0.00885	0.00137	56%	0.02	0.00	0.54	0.08
Bulldozer (John Deere Model 700 J)	6	84	A	7	9						1.32827	0.66775	56%	3.49	1.75	48.81	24.54
Drilling rig (mid-size)	0	0	D	7				7.0	1.5	10	0.00442	0.00068	56%	0.00	0.00	0.00	0.00
Excavator (John Deere 160 D LC)	6	228	D	7				7.0	1.5	60	0.02654	0.00410	56%	0.07	0.01	2.65	0.41
Forest Machine (Caterpillar 324D FM)	0	0	C	7			3				0.83700	0.05612	56%	0.00	0.00	0.00	0.00
Forklift (Case 586G Series 3)	4	132	C	7			3				0.83700	0.05612	56%	1.46	0.10	48.34	3.24
Front loader (John Deere 444 K)	0	0	D	7				7.0	1.5	30	0.01327	0.00205	56%	0.00	0.00	0.00	0.00
Grader (John Deere 670G/GP)	0	0	C	7			4				1.98400	0.15360	56%	0.00	0.00	0.00	0.00
Mobile crane (Link-Belt RTC-8030 Series II)	5	160	C	7			1				0.03100	0.00120	56%	0.07	0.00	2.17	0.08
OUTLETS - Middle Fork Interbay Dam Outlet Works Modification - YEAR 2 (PHASE 7)																	
Asphalt roller (Caterpillar CB54)	0	0	C	7			2				0.24800	0.01358	56%	0.00	0.00	0.00	0.00
Backhoe (John Deere 410 J)	4	20	D	7				7.0	1.5	20	0.00885	0.00137	56%	0.02	0.00	0.08	0.01
Bulldozer (John Deere Model 700 J)	0	0	A	7	9						1.32827	0.66775	56%	0.00	0.00	0.00	0.00
Drilling rig (mid-size)	0	0	D	7				7.0	1.5	10	0.00442	0.00068	56%	0.00	0.00	0.00	0.00
Excavator (John Deere 160 D LC)	0	0	D	7				7.0	1.5	60	0.02654	0.00410	56%	0.00	0.00	0.00	0.00
Forest Machine (Caterpillar 324D FM)	0	0	C	7			3				0.83700	0.05612	56%	0.00	0.00	0.00	0.00
Forklift (Case 586G Series 3)	0	0	C	7			3				0.83700	0.05612	56%	0.00	0.00	0.00	0.00
Front loader (John Deere 444 K)	0	0	D	7				7.0	1.5	30	0.01327	0.00205	56%	0.00	0.00	0.00	0.00
Grader (John Deere 670G/GP)	0	0	C	7			4				1.98400	0.15360	56%	0.00	0.00	0.00	0.00
Mobile crane (Link-Belt RTC-8030 Series II)	4	40	C	7			1				0.03100	0.00120	56%	0.05	0.00	0.54	0.02
GAGES - North Fork Long Canyon Creek Gage Below Diversion Dam - YEAR 3 (PHASE 8)																	
Asphalt roller (Caterpillar CB54)	0	0	C	7			2				0.24800	0.01358	56%	0.00	0.00	0.00	0.00
Backhoe (John Deere 410 J)	0	0	D	7				7.0	1.5	20	0.00885	0.00137	56%	0.00	0.00	0.00	0.00
Bulldozer (John Deere Model 700 J)	0	0	A	7	9						1.32827	0.66775	56%	0.00	0.00	0.00	0.00
Drilling rig (mid-size)	0	0	D	7				7.0	1.5	10	0.00442	0.00068	56%	0.00	0.00	0.00	0.00
Excavator (John Deere 160 D LC)	0	0	D	7				7.0	1.5	60	0.02654	0.00410	56%	0.00	0.00	0.00	0.00
Forest Machine (Caterpillar 324D FM)	0	0	C	7			3				0.83700	0.05612	56%	0.00	0.00	0.00	0.00
Forklift (Case 586G Series 3)	0	0	C	7			3				0.83700	0.05612	56%	0.00	0.00	0.00	0.00
Front loader (John Deere 444 K)	0	0	D	7				7.0	1.5	30	0.01327	0.00205	56%	0.00	0.00	0.00	0.00
Grader (John Deere 670G/GP)	0	0	C	7			4				1.98400	0.15360	56%	0.00	0.00	0.00	0.00
Mobile crane (Link-Belt RTC-8030 Series II)	0	0	C	7			1				0.03100	0.00120	56%	0.00	0.00	0.00	0.00

GAGES - South Fork Long Canyon Creek Gage Below Diversion Dam - YEAR 3 (PHASE 9)																	
Asphalt roller (Caterpillar CB54)	0	0	C	7			2				0.24800	0.01358	56%	0.00	0.00	0.00	0.00
Backhoe (John Deere 410 J)	0	0	D	7				7.0	1.5	20	0.00885	0.00137	56%	0.00	0.00	0.00	0.00
Bulldozer (John Deere Model 700 J)	0	0	A	7	9						1.32827	0.66775	56%	0.00	0.00	0.00	0.00
Drilling rig (mid-size)	0	0	D	7				7.0	1.5	10	0.00442	0.00068	56%	0.00	0.00	0.00	0.00
Excavator (John Deere 160 D LC)	0	0	D	7				7.0	1.5	60	0.02654	0.00410	56%	0.00	0.00	0.00	0.00
Forest Machine (Caterpillar 324D FM)	0	0	C	7			3				0.83700	0.05612	56%	0.00	0.00	0.00	0.00
Forklift (Case 586G Series 3)	0	0	C	7			3				0.83700	0.05612	56%	0.00	0.00	0.00	0.00
Front loader (John Deere 444 K)	0	0	D	7				7.0	1.5	30	0.01327	0.00205	56%	0.00	0.00	0.00	0.00
Grader (John Deere 670G/GP)	0	0	C	7			4				1.98400	0.15360	56%	0.00	0.00	0.00	0.00
Mobile crane (Link-Belt RTC-8030 Series II)	0	0	C	7			1				0.03100	0.00120	56%	0.00	0.00	0.00	0.00
GAGES - Middle Fork American River Gage Below Interbay Dam - YEAR 2 (PHASE 10)																	
Asphalt roller (Caterpillar CB54)	0	0	C	7			2				0.24800	0.01358	56%	0.00	0.00	0.00	0.00
Backhoe (John Deere 410 J)	0	0	D	7				7.0	1.5	20	0.00885	0.00137	56%	0.00	0.00	0.00	0.00
Bulldozer (John Deere Model 700 J)	0	0	A	7	9						1.32827	0.66775	56%	0.00	0.00	0.00	0.00
Drilling rig (mid-size)	0	0	D	7				7.0	1.5	10	0.00442	0.00068	56%	0.00	0.00	0.00	0.00
Excavator (John Deere 160 D LC)	0	0	D	7				7.0	1.5	60	0.02654	0.00410	56%	0.00	0.00	0.00	0.00
Forest Machine (Caterpillar 324D FM)	0	0	C	7			3				0.83700	0.05612	56%	0.00	0.00	0.00	0.00
Forklift (Case 586G Series 3)	0	0	C	7			3				0.83700	0.05612	56%	0.00	0.00	0.00	0.00
Front loader (John Deere 444 K)	0	0	D	7				7.0	1.5	30	0.01327	0.00205	56%	0.00	0.00	0.00	0.00
Grader (John Deere 670G/GP)	0	0	C	7			4				1.98400	0.15360	56%	0.00	0.00	0.00	0.00
Mobile crane (Link-Belt RTC-8030 Series II)	0	0	C	7			1				0.03100	0.00120	56%	0.00	0.00	0.00	0.00
GAGES - North Fork American River Gage Above American River Pump Station - YEAR 2 (PHASE 11)																	
Asphalt roller (Caterpillar CB54)	0	0	C	7			2				0.24800	0.01358	56%	0.00	0.00	0.00	0.00
Backhoe (John Deere 410 J)	0	0	D	7				7.0	1.5	20	0.00885	0.00137	56%	0.00	0.00	0.00	0.00
Bulldozer (John Deere Model 700 J)	0	0	A	7	9						1.32827	0.66775	56%	0.00	0.00	0.00	0.00
Drilling rig (mid-size)	0	0	D	7				7.0	1.5	10	0.00442	0.00068	56%	0.00	0.00	0.00	0.00
Excavator (John Deere 160 D LC)	0	0	D	7				7.0	1.5	60	0.02654	0.00410	56%	0.00	0.00	0.00	0.00
Forest Machine (Caterpillar 324D FM)	0	0	C	7			3				0.83700	0.05612	56%	0.00	0.00	0.00	0.00
Forklift (Case 586G Series 3)	0	0	C	7			3				0.83700	0.05612	56%	0.00	0.00	0.00	0.00
Front loader (John Deere 444 K)	0	0	D	7				7.0	1.5	30	0.01327	0.00205	56%	0.00	0.00	0.00	0.00
Grader (John Deere 670G/GP)	0	0	C	7			4				1.98400	0.15360	56%	0.00	0.00	0.00	0.00
Mobile crane (Link-Belt RTC-8030 Series II)	0	0	C	7			1				0.03100	0.00120	56%	0.00	0.00	0.00	0.00
RECREATION - Ellicott Bridge Parking Area - YEAR 14 (PHASE 12)																	
Asphalt roller (Caterpillar CB54)	6	60	C	7			2				0.24800	0.01358	56%	0.65	0.04	6.51	0.36
Backhoe (John Deere 410 J)	4	40	D	7				7.0	1.5	20	0.00885	0.00137	56%	0.02	0.00	0.15	0.02
Bulldozer (John Deere Model 700 J)	0	0	A	7	9						1.32827	0.66775	56%	0.00	0.00	0.00	0.00
Drilling rig (mid-size)	6	60	D	7				7.0	1.5	10	0.00442	0.00068	56%	0.01	0.00	0.12	0.02
Excavator (John Deere 160 D LC)	0	0	D	7				7.0	1.5	60	0.02654	0.00410	56%	0.00	0.00	0.00	0.00
Forest Machine (Caterpillar 324D FM)	0	0	C	7			3				0.83700	0.05612	56%	0.00	0.00	0.00	0.00
Forklift (Case 586G Series 3)	4	40	C	7			3				0.83700	0.05612	56%	1.46	0.10	14.65	0.98
Front loader (John Deere 444 K)	0	0	D	7				7.0	1.5	30	0.01327	0.00205	56%	0.00	0.00	0.00	0.00
Grader (John Deere 670G/GP)	4	40	C	7			4				1.98400	0.15360	56%	3.47	0.27	34.72	2.69
Mobile crane (Link-Belt RTC-8030 Series II)	0	0	C	7			1				0.03100	0.00120	56%	0.00	0.00	0.00	0.00

RECREATION - French Meadows Reservoir Trail - YEAR 14 (PHASE 13)																	
Asphalt roller (Caterpillar CB54)	0	0	C	7			2				0.24800	0.01358	56%	0.00	0.00	0.00	0.00
Backhoe (John Deere 410 J)	4	56	D	7				7.0	1.5	20	0.00885	0.00137	56%	0.02	0.00	0.22	0.03
Bulldozer (John Deere Model 700 J)	6	84	A	7	9						1.32827	0.66775	56%	3.49	1.75	48.81	24.54
Drilling rig (mid-size)	0	0	D	7				7.0	1.5	10	0.00442	0.00068	56%	0.00	0.00	0.00	0.00
Excavator (John Deere 160 D LC)	0	0	D	7				7.0	1.5	60	0.02654	0.00410	56%	0.00	0.00	0.00	0.00
Forest Machine (Caterpillar 324D FM)	8	112	C	7			3				0.83700	0.05612	56%	2.93	0.20	41.01	2.75
Forklift (Case 586G Series 3)	0	0	C	7			3				0.83700	0.05612	56%	0.00	0.00	0.00	0.00
Front loader (John Deere 444 K)	0	0	D	7				7.0	1.5	30	0.01327	0.00205	56%	0.00	0.00	0.00	0.00
Grader (John Deere 670G/GP)	0	0	C	7			4				1.98400	0.15360	56%	0.00	0.00	0.00	0.00
Mobile crane (Link-Belt RTC-8030 Series II)	0	0	C	7			1				0.03100	0.00120	56%	0.00	0.00	0.00	0.00
SUPPLY - French Meadows North Shore Water Supply - YEAR 9 (PHASE 14)																	
Asphalt roller (Caterpillar CB54)	0	0	C	7			2				0.24800	0.01358	56%	0.00	0.00	0.00	0.00
Backhoe (John Deere 410 J)	4	84	D	7				7.0	1.5	20	0.00885	0.00137	56%	0.02	0.00	0.33	0.05
Bulldozer (John Deere Model 700 J)	6	126	A	7	9						1.32827	0.66775	56%	3.49	1.75	73.22	36.81
Drilling rig (mid-size)	6	126	D	7				7.0	1.5	10	0.00442	0.00068	56%	0.01	0.00	0.24	0.04
Excavator (John Deere 160 D LC)	0	0	D	7				7.0	1.5	60	0.02654	0.00410	56%	0.00	0.00	0.00	0.00
Forest Machine (Caterpillar 324D FM)	0	0	C	7			3				0.83700	0.05612	56%	0.00	0.00	0.00	0.00
Forklift (Case 586G Series 3)	0	0	C	7			3				0.83700	0.05612	56%	0.00	0.00	0.00	0.00
Front loader (John Deere 444 K)	0	0	D	7				7.0	1.5	30	0.01327	0.00205	56%	0.00	0.00	0.00	0.00
Grader (John Deere 670G/GP)	0	0	C	7			4				1.98400	0.15360	56%	0.00	0.00	0.00	0.00
Mobile crane (Link-Belt RTC-8030 Series II)	0	0	C	7			1				0.03100	0.00120	56%	0.00	0.00	0.00	0.00
SUPPLY - French Meadows South Shore Water Supply - YEAR 5 (PHASE 15)																	
Asphalt roller (Caterpillar CB54)	0	0	C	7			2				0.24800	0.01358	56%	0.00	0.00	0.00	0.00
Backhoe (John Deere 410 J)	4	84	D	7				7.0	1.5	20	0.00885	0.00137	56%	0.02	0.00	0.33	0.05
Bulldozer (John Deere Model 700 J)	6	126	A	7	9						1.32827	0.66775	56%	3.49	1.75	73.22	36.81
Drilling rig (mid-size)	6	126	D	7				7.0	1.5	10	0.00442	0.00068	56%	0.01	0.00	0.24	0.04
Excavator (John Deere 160 D LC)	0	0	D	7				7.0	1.5	60	0.02654	0.00410	56%	0.00	0.00	0.00	0.00
Forest Machine (Caterpillar 324D FM)	0	0	C	7			3				0.83700	0.05612	56%	0.00	0.00	0.00	0.00
Forklift (Case 586G Series 3)	0	0	C	7			3				0.83700	0.05612	56%	0.00	0.00	0.00	0.00
Front loader (John Deere 444 K)	0	0	D	7				7.0	1.5	30	0.01327	0.00205	56%	0.00	0.00	0.00	0.00
Grader (John Deere 670G/GP)	0	0	C	7			4				1.98400	0.15360	56%	0.00	0.00	0.00	0.00
Mobile crane (Link-Belt RTC-8030 Series II)	0	0	C	7			1				0.03100	0.00120	56%	0.00	0.00	0.00	0.00
												CHECKSUM1		**41.24**	**13.46**	**0.46**	**0.15**

Onsite		lbs/day	lbs/day	tons	tons
PHASE	1	1.60	0.11	0.03	0.00
PHASE	2	5.10	1.87	0.08	0.03
PHASE	3	5.10	1.87	0.08	0.03
PHASE	4	5.10	1.87	0.08	0.03
PHASE	5	0.07	0.00	0.00	0.00
PHASE	6	5.10	1.87	0.05	0.01
PHASE	7	0.07	0.00	0.00	0.00
PHASE	8	-	-	0.00	0.00
PHASE	9	-	-	0.00	0.00
PHASE	10	-	-	0.00	0.00
PHASE	11	-	-	0.00	0.00
PHASE	12	5.61	0.41	0.03	0.00
PHASE	13	6.43	1.95	0.05	0.01
PHASE	14	3.51	1.76	0.04	0.02
PHASE	15	3.51	1.76	0.04	0.02
CHECKSUM2		41.24	13.46	0.46	0.15

Peak		lbs/day	lbs/day	tons	tons
YEAR	2	5.10	1.87	0.13	0.04
YEAR	3	5.10	1.87	0.19	0.06
YEAR	5	3.51	1.76	0.04	0.02
YEAR	9	3.51	1.76	0.04	0.02
YEAR	14	6.43	1.95	0.07	0.02
HIGHEST		**6.43**	**1.95**	**0.19**	**0.06**
TOTAL				**0.46**	**0.15**

Worst Case		lbs/day	lbs/day	tons	tons
YEAR	2	10.35	3.74	0.13	0.04
YEAR	3	11.81	3.84	0.19	0.06
YEAR	5	3.51	1.76	0.04	0.02
YEAR	9	3.51	1.76	0.04	0.02
YEAR	14	12.05	2.36	0.07	0.02
HIGHEST		**12.05**	**3.84**	**0.19**	**0.06**
TOTAL				**0.46**	**0.15**
CHECKSUM3		41.24	13.46	0.46	0.15

Construction Earthmoving	Activity		Required Variables								Uncontrolled		Controlled Emissions				
	Pk. Daily	Project	EET	Moist (M)	Silt (s)	Drop (d)	Speed (S)	Wind (U)	Den (D)	Rate (V)	PM_{10}	$PM_{2.5}$	Control	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
	hours	hours	code	percent	percent	feet	mph	mph	ton/cy	cy/hr	lb/hr	lb/hr	%	lb/day	lb/day	lbs	lbs
Bulldozer (tracked)			A	7	9						1.32827	0.66775	56%	0.00	0.00	0.00	0.00
Bulldozer (wheeled)			A	7	9						0.99621	0.50081	56%	0.00	0.00	0.00	0.00
Scraper			B+C	7		3	5			30	0.89477	0.15562	56%	0.00	0.00	0.00	0.00
Dump Truck/ADT			B	7		6				30	0.09385	0.00432	56%	0.00	0.00	0.00	0.00
Clamshell Derrick			B	7		9				30	0.12465	0.00675	56%	0.00	0.00	0.00	0.00
Dragline (small)			B	7		12				60	0.30491	0.01854	56%	0.00	0.00	0.00	0.00
Grader			C	7			4				1.98400	0.15360	56%	0.00	0.00	0.00	0.00
Tractor			C	7			3				0.83700	0.05612	56%	0.00	0.00	0.00	0.00
Compactor			C	7			2				0.24800	0.01358	56%	0.00	0.00	0.00	0.00
Crane			C	7			1				0.03100	0.00120	56%	0.00	0.00	0.00	0.00
Backhoe			D	7				7.0	1.5	20	0.00885	0.00137	56%	0.00	0.00	0.00	0.00
Bobcat			D	7				7.0	1.5	10	0.00442	0.00068	56%	0.00	0.00	0.00	0.00
Drill auger			D	7				7.0	1.5	10	0.00442	0.00068	56%	0.00	0.00	0.00	0.00
Excavator			D	7				7.0	1.5	60	0.02654	0.00410	56%	0.00	0.00	0.00	0.00
Front end loader			D	7				7.0	1.5	30	0.01327	0.00205	56%	0.00	0.00	0.00	0.00
Concrete grinder			E	10					1.9	40	0.18240	0.03040	78%	0.00	0.00	0.00	0.00
Screener (coarse)			F	18					1.9	40	0.66120	0.04560	92%	0.00	0.00	0.00	0.00

EET Code A

AP-42 Chapter 11.9 for bulldozer, tractor dozer (Tables 11.9-1):

$E = 0.75 * 1.0 * (s)^{1.5} / (M)^{1.4}$ for PM_{10}

$E = 0.105 * 5.7 * (s)^{1.2} / (M)^{1.3}$ for $PM_{2.5}$

Simplifies to $E = 0.75 * (s)^{1.5} / (M)^{1.4}$ for PM_{10}

Simplifies to $E = 0.60 * (s)^{1.2} / (M)^{1.3}$ for $PM_{2.5}$

E = lb/hr fugitive
s = silt content, percent
M = moisture content, percent

EET Code B

AP-42 Chapter 11.9 for small dragline, clamshell, dumping, scraper (Table 11.9-1):

$E = 0.75 * 0.0021 * (d)^{0.7} / (M)^{0.3}$ for PM_{10}

$E = 0.017 * 0.0021 * (d)^{1.1} / (M)^{0.3}$ for $PM_{2.5}$

Simplifies to $E = 1.6e\text{-}3 * (d)^{0.7} / (M)^{0.3}$ for PM_{10}

Simplifies to $E = 3.6e\text{-}5 * (d)^{1.1} / (M)^{0.3}$ for $PM_{2.5}$

E = lb/cy * cy/hr = lb/hr fugitive
M = moisture content, percent
d = drop distance = 12 feet (small dragline)
d = drop distance = 9 feet (clamshell)
d = drop distance = 6 feet (dump truck/ADT)
d = drop distance = 3 feet (scraper)

EET Code C

AP-42 Chapter 11.9 for scraper, grader, tractor, compactor, crane (Table 11.9-1) :

$E = S * 0.60 * 0.051 \times (S)^{2.0}$ for PM_{10}

$E = S * 0.031 * 0.040 \times (S)^{2.5}$ for $PM_{2.5}$

Simplifies to $E = 0.031 \times (S)^{3.0}$ for PM_{10}

Simplifies to $E = 0.0012 \times (S)^{3.5}$ for $PM_{2.5}$

E = lb/VMT * VMT/hr = lb/hr fugitive
S = Mean Vehicle Speed = 5 mph (scrapers)
S = Mean Vehicle Speed = 4 mph (graders)
S = Mean Vehicle Speed = 3 mph (tractors)
S = Mean Vehicle Speed = 2 mph (compactors)
S = Mean Vehicle Speed = 1 mph (cranes)

EET Code D

AP-42 Chapter 13.2.4 Loading/Handling (backhoe, Bobcat, drill auger, excavator, backhoe, front end loader):

$E = V * D * 0.35 * 0.0032 * (U/5)^{1.3} / (M/2)^{1.4}$ for PM_{10}

$E = V * D * 0.053 * 0.0032 * (U/5)^{1.3} / (M/2)^{1.4}$ for $PM_{2.5}$

Simplifies to $E = V * D * 1.1e\text{-}3 * (U/5)^{1.3} / (M/2)^{1.4}$ for PM_{10}

Simplifies to $E = V * D * 1.7e\text{-}4 * (U/5)^{1.3} / (M/2)^{1.4}$ for $PM_{2.5}$

V = cy/hr
M = moisture content, percent
E = lb/ton * tons/cy * cy/hr = lb/hr fugitive
D = 1.3 tons/cy for sand or cinder concrete
D = 1.5 tons/cy for soil (typical)
D = 1.9 tons/cy for sandstone or stone concrete
D = 2.1 tons/cy for granite rock
U = wind speed = 1 m/s or 2.2 mi/hr (light air)
U = wind speed = 2 m/s or 4.5 mi/hr (light breeze)
U = wind speed = 3 m/s or 6.7 mi/hr (light breeze)
U = wind speed = 4 m/s or 8.9 mi/hr (gentle breeze)
U = wind speed = 5 m/s or 11.2 mi/hr (gentle breeze)
U = wind speed = 6 m/s or 13.4 mi/hr (moderate breeze)
U = wind speed = 7 m/s or 15.7 mi/hr (moderate breeze)

EET Code E

AP-42 Chapter 11.19.2 Coarse Tertiary Crushing

E = 0.0024 lb/ton uncontrolled PM_{10}

E = 0.0004 lb/ton uncontrolled $PM_{2.5}$

E = D * V * 0.0024 lb/hr uncontrolled PM10
E = D * V* 0.0004 lb/hr uncontrolled PM2.5
V = cy/hr
E = lb/ton * tons/cy * cy/hr = lb/hr fugitive
D = 1.3 tons/cy for sand or cinder concrete
D = 1.9 tons/cy for sandstone or stone concrete
D = 2.1 tons/cy for granite rock
Control efficiency = 78% where applicable (water spray)

EET Code F

AP-42 Chapter 11.19.2 Coarse Screening

E = 0.0087 lb/ton uncontrolled PM_{10}

E = 0.0006 lb/ton uncontrolled $PM_{2.5}$

E = D * V * 0.0087 lb/hr uncontrolled PM10

E = D * V * 0.0006 lb/hr uncontrolled PM2.5

V = cy/hr

E = lb/ton * tons/cy * cy/hr = lb/hr fugitive

D = 1.3 tons/cy for sand or cinder concrete

D = 1.9 tons/cy for sandstone or stone concrete

D = 2.1 tons/cy for granite rock

Control efficiency = 92% where applicable (water spray)

AP-42	Silt Content, percent			Moisture Content, percent		
Table	lower	upper	g-mean	lower	upper	g-mean
11.9-3	3.8	15.1	6.9	2.2	16.8	7.9
11.9-3	7.2	25.2	16.4	0.2	16.3	3.2
11.9-3	1.2	19.2	4.3	0.3	20.1	2.4
13.2.2-1	2.4	16.0	10.0			
13.2.2-1	5.0	15.0	8.3			
13.2.2-1	2.8	18.0	8.4			
13.2.2-1	0.6	23.0	8.5			
13.2.2-1	2.2	21.0	6.4			
13.2.4-1	3.8	15.0	7.5	2.8	20.0	6.9
13.2.4-1	5.1	21.0	15.0	0.8	6.4	3.4
13.2.4-1	5.0	16.0	9.0	8.9	16.0	12.0
13.2.4-1	4.5	7.4	6.0	8.9	11.0	10.0
Averages (rounded)	**4**	**18**	**9**	**3**	**15**	**7**
EET application as:	**coarse**	**fine**	**typical**	**dry**	**moist**	**typical**

AP-42 Figure 13.2.2-2		
Moisture (M)		Control
percent	ratio	%
0	0.00	0.00%
1	0.25	0.00%
2	0.50	0.00%
3	0.75	0.00%
4	1.00	0.00%
5	1.25	18.75%
6	1.50	37.50%
7	1.75	56.25%
8	2.00	75.00%
9	2.25	76.67%
10	2.50	78.33%
11	2.75	80.00%
12	3.00	81.67%
13	3.25	83.33%
14	3.50	85.00%
15	3.75	86.67%
16	4.00	88.34%
17	4.25	90.00%
18	4.50	91.67%
19	4.75	93.34%
20	5.00	95.00%
21	5.25	96.67%
22	5.50	98.34%
23	5.75	100.00%

Estimated Onroad Fugitive Dust Emissions

All Roads Travelled	Vehicle Category	Activity		Usage	
		Pk. Daily VMT	Project VMT	Unpaved %	Paved %
RESERVOIR - HH Res Seasonal Storage Increase Imp - YEAR 3 (PHASE 1)					
Tractor Trailer (materials/hauling)	onroad HHD				
Tractor Trailer (equipment/supplies)	onroad HHD	270	1,860	10%	90%
Cement Truck (concrete/pumping)	onroad HHD	150	1,200	10%	90%
Dump Truck (soil/sand/gravel transport)	onroad HHD				
Water Truck (dust control)	onroad HHD				
Work Truck (all trades)	onroad MD	300	11,400	10%	90%
Pickup/SUV (managers/engineers)	onroad LD				
Pickup/SUV (supervisors/foremen)	onroad LD				
Pickup/SUV (operators/drivers)	onroad LD				
Pickup/SUV (tradesmen/laborers)	onroad LD	1,200	96,000	10%	90%
DIVERSIONS - Duncan Creek Diversion Dam Modification - YEAR 2 (PHASE 2)					
Tractor Trailer (materials/hauling)	onroad HHD				
Tractor Trailer (equipment/supplies)	onroad HHD	270	1,860	10%	90%
Cement Truck (concrete/pumping)	onroad HHD	1,200	16,800	10%	90%
Dump Truck (soil/sand/gravel transport)	onroad HHD				
Water Truck (dust control)	onroad HHD				
Work Truck (all trades)	onroad MD	150	9,900	10%	90%
Pickup/SUV (managers/engineers)	onroad LD				
Pickup/SUV (supervisors/foremen)	onroad LD				
Pickup/SUV (operators/drivers)	onroad LD				
Pickup/SUV (tradesmen/laborers)	onroad LD	1,200	96,000	10%	90%
DIVERSIONS - NFLC Diversion Dam Modification - YEAR 3 (PHASE 3)					
Tractor Trailer (materials/hauling)	onroad HHD				
Tractor Trailer (equipment/supplies)	onroad HHD	270	1,860	10%	90%
Cement Truck (concrete/pumping)	onroad HHD	1,200	16,800	10%	90%
Dump Truck (soil/sand/gravel transport)	onroad HHD				
Water Truck (dust control)	onroad HHD				
Work Truck (all trades)	onroad MD	150	9,900	10%	90%
Pickup/SUV (managers/engineers)	onroad LD				
Pickup/SUV (supervisors/foremen)	onroad LD				
Pickup/SUV (operators/drivers)	onroad LD				
Pickup/SUV (tradesmen/laborers)	onroad LD	1,200	96,000	10%	90%
DIVERSIONS - SFLC Diversion Dam Modification - YEAR 3 (PHASE 4)					
Tractor Trailer (materials/hauling)	onroad HHD				
Tractor Trailer (equipment/supplies)	onroad HHD	270	1,860	10%	90%
Cement Truck (concrete/pumping)	onroad HHD	1,200	16,800	10%	90%
Dump Truck (soil/sand/gravel transport)	onroad HHD				
Water Truck (dust control)	onroad HHD				
Work Truck (all trades)	onroad MD	150	9,900	10%	90%
Pickup/SUV (managers/engineers)	onroad LD				
Pickup/SUV (supervisors/foremen)	onroad LD				
Pickup/SUV (operators/drivers)	onroad LD				
Pickup/SUV (tradesmen/laborers)	onroad LD	1,200	96,000	10%	90%

OUTLETS - FM Dam Outlet Works Modification - YEAR 2 (PHASE 5)					
Tractor Trailer (materials/hauling)	onroad HHD				
Tractor Trailer (equipment/supplies)	onroad HHD	270	810	10%	90%
Cement Truck (concrete/pumping)	onroad HHD	150	150	10%	90%
Dump Truck (soil/sand/gravel transport)	onroad HHD				
Water Truck (dust control)	onroad HHD				
Work Truck (all trades)	onroad MD	150	3,000	10%	90%
Pickup/SUV (managers/engineers)	onroad LD				
Pickup/SUV (supervisors/foremen)	onroad LD				
Pickup/SUV (operators/drivers)	onroad LD				
Pickup/SUV (tradesmen/laborers)	onroad LD	480	9,600	10%	90%
OUTLETS - Hell Hole Dam Outlet Works Modification - YEAR 2 (PHASE 6)					
Tractor Trailer (materials/hauling)	onroad HHD				
Tractor Trailer (equipment/supplies)	onroad HHD	150	6,000	10%	90%
Cement Truck (concrete/pumping)	onroad HHD	150	1,050	10%	90%
Dump Truck (soil/sand/gravel transport)	onroad HHD				
Water Truck (dust control)	onroad HHD				
Work Truck (all trades)	onroad MD	150	6,000	10%	90%
Pickup/SUV (managers/engineers)	onroad LD				
Pickup/SUV (supervisors/foremen)	onroad LD				
Pickup/SUV (operators/drivers)	onroad LD				
Pickup/SUV (tradesmen/laborers)	onroad LD	1,200	48,000	10%	90%
OUTLETS - MFIB Dam Outlet Works Modification - YEAR 2 (PHASE 7)					
Tractor Trailer (materials/hauling)	onroad HHD				
Tractor Trailer (equipment/supplies)	onroad HHD	270	1,110	10%	90%
Cement Truck (concrete/pumping)	onroad HHD	150	750	10%	90%
Dump Truck (soil/sand/gravel transport)	onroad HHD				
Water Truck (dust control)	onroad HHD				
Work Truck (all trades)	onroad MD	150	3,000	10%	90%
Pickup/SUV (managers/engineers)	onroad LD				
Pickup/SUV (supervisors/foremen)	onroad LD				
Pickup/SUV (operators/drivers)	onroad LD				
Pickup/SUV (tradesmen/laborers)	onroad LD	480	9,600	10%	90%
GAGES - NFLC Creek Gage Below Diversion Dam - YEAR 3 (PHASE 8)					
Tractor Trailer (materials/hauling)	onroad HHD				
Tractor Trailer (equipment/supplies)	onroad HHD				
Cement Truck (concrete/pumping)	onroad HHD				
Dump Truck (soil/sand/gravel transport)	onroad HHD				
Water Truck (dust control)	onroad HHD				
Work Truck (all trades)	onroad MD				
Pickup/SUV (managers/engineers)	onroad LD				
Pickup/SUV (supervisors/foremen)	onroad LD				
Pickup/SUV (operators/drivers)	onroad LD				
Pickup/SUV (tradesmen/laborers)	onroad LD	240	1,680	10%	90%

GAGES - SFLC Creek Gage Below Diversion Dam - YEAR 3 (PHASE 9)					
Tractor Trailer (materials/hauling)	onroad HHD				
Tractor Trailer (equipment/supplies)	onroad HHD				
Cement Truck (concrete/pumping)	onroad HHD				
Dump Truck (soil/sand/gravel transport)	onroad HHD				
Water Truck (dust control)	onroad HHD				
Work Truck (all trades)	onroad MD				
Pickup/SUV (managers/engineers)	onroad LD				
Pickup/SUV (supervisors/foremen)	onroad LD				
Pickup/SUV (operators/drivers)	onroad LD				
Pickup/SUV (tradesmen/laborers)	onroad LD	240	1,680	10%	90%
GAGES - MFAR Gage Below Interbay Dam - YEAR 2 (PHASE 10)					
Tractor Trailer (materials/hauling)	onroad HHD				
Tractor Trailer (equipment/supplies)	onroad HHD				
Cement Truck (concrete/pumping)	onroad HHD				
Dump Truck (soil/sand/gravel transport)	onroad HHD				
Water Truck (dust control)	onroad HHD				
Work Truck (all trades)	onroad MD				
Pickup/SUV (managers/engineers)	onroad LD				
Pickup/SUV (supervisors/foremen)	onroad LD				
Pickup/SUV (operators/drivers)	onroad LD				
Pickup/SUV (tradesmen/laborers)	onroad LD	240	1,680	10%	90%
GAGES - NFAR Gage Above AR Pump Station - YEAR 2 (PHASE 11)					
Tractor Trailer (materials/hauling)	onroad HHD				
Tractor Trailer (equipment/supplies)	onroad HHD				
Cement Truck (concrete/pumping)	onroad HHD				
Dump Truck (soil/sand/gravel transport)	onroad HHD				
Water Truck (dust control)	onroad HHD				
Work Truck (all trades)	onroad MD				
Pickup/SUV (managers/engineers)	onroad LD				
Pickup/SUV (supervisors/foremen)	onroad LD				
Pickup/SUV (operators/drivers)	onroad LD				
Pickup/SUV (tradesmen/laborers)	onroad LD	240	1,680	10%	90%
RECREATION - Ellicott Bridge Parking Area - YEAR 14 (PHASE 12)					
Tractor Trailer (materials/hauling)	onroad HHD				
Tractor Trailer (equipment/supplies)	onroad HHD	150	1,500	10%	90%
Cement Truck (concrete/pumping)	onroad HHD	150	1,500	10%	90%
Dump Truck (soil/sand/gravel transport)	onroad HHD				
Water Truck (dust control)	onroad HHD				
Work Truck (all trades)	onroad MD	150	1,500	10%	90%
Pickup/SUV (managers/engineers)	onroad LD				
Pickup/SUV (supervisors/foremen)	onroad LD				
Pickup/SUV (operators/drivers)	onroad LD				
Pickup/SUV (tradesmen/laborers)	onroad LD	720	7,200	10%	90%
RECREATION - French Meadows Reservoir Trail - YEAR 14 (PHASE 13)					
Tractor Trailer (materials/hauling)	onroad HHD	150	2,100	10%	90%
Tractor Trailer (equipment/supplies)	onroad HHD	150	2,100	10%	90%
Cement Truck (concrete/pumping)	onroad HHD				
Dump Truck (soil/sand/gravel transport)	onroad HHD				
Water Truck (dust control)	onroad HHD				
Work Truck (all trades)	onroad MD	150	2,100	10%	90%
Pickup/SUV (managers/engineers)	onroad LD				
Pickup/SUV (supervisors/foremen)	onroad LD				
Pickup/SUV (operators/drivers)	onroad LD				
Pickup/SUV (tradesmen/laborers)	onroad LD	720	10,080	10%	90%

SUPPLY - French Meadows North Shore Water Supply - YEAR 9 (PHASE 14)					
Tractor Trailer (materials/hauling)	onroad HHD				
Tractor Trailer (equipment/supplies)	onroad HHD	150	3,150	10%	90%
Cement Truck (concrete/pumping)	onroad HHD				
Dump Truck (soil/sand/gravel transport)	onroad HHD				
Water Truck (dust control)	onroad HHD				
Work Truck (all trades)	onroad MD	150	3,150	10%	90%
Pickup/SUV (managers/engineers)	onroad LD				
Pickup/SUV (supervisors/foremen)	onroad LD				
Pickup/SUV (operators/drivers)	onroad LD				
Pickup/SUV (tradesmen/laborers)	onroad LD	480	10,080	10%	90%
SUPPLY - French Meadows South Shore Water Supply - YEAR 5 (PHASE 15)					
Tractor Trailer (materials/hauling)	onroad HHD				
Tractor Trailer (equipment/supplies)	onroad HHD	150	3,150	10%	90%
Cement Truck (concrete/pumping)	onroad HHD				
Dump Truck (soil/sand/gravel transport)	onroad HHD				
Water Truck (dust control)	onroad HHD				
Work Truck (all trades)	onroad MD	150	3,150	10%	90%
Pickup/SUV (managers/engineers)	onroad LD				
Pickup/SUV (supervisors/foremen)	onroad LD				
Pickup/SUV (operators/drivers)	onroad LD				
Pickup/SUV (tradesmen/laborers)	onroad LD	480	10,080	10%	90%

Unpaved Road Dust	Vehicle Category	Activity		Required Variables						Uncontrolled		Controlled Emissions				
		Pk. Daily	Project	EET	Moist (M)	Silt (s)	Weight (W)	Speed (S)	Precip (P)	PM_{10}	$PM_{2.5}$	Control	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
		VMT	VMT	code	percent	percent	tons	mph	days/yr	lb/VMT	lb/VMT	%	lb/day	lb/day	lbs	lbs
RESERVOIR - Hell Hole Reservoir Seasonal Storage Increase Improvement - YEAR 3 (PHASE 1)																
Tractor Trailer (materials/hauling)	onroad HHD			G	20	9	30	20	90	1.89491	0.18933	95%				
Tractor Trailer (equipment/supplies)	onroad HHD	27	186	G	20	9	30	20	90	1.89491	0.18933	95%	2.6	0.3	13.3	1.3
Cement Truck (concrete/pumping)	onroad HHD	15	120	G	20	9	30	20	90	1.89491	0.18933	95%	1.4	0.1	8.6	0.9
Dump Truck (soil/sand/gravel transport)	onroad HHD			G	20	9	30	20	90	1.89491	0.18933	95%				
Water Truck (dust control)	onroad HHD			G	20	9	30	5	90	1.76315	0.17616	95%				
Work Truck (all trades)	onroad MD	30	1,140	G	20	9	8	20	90	1.16343	0.11619	95%	1.7	0.2	50.0	5.0
Pickup/SUV (managers/engineers)	onroad LD			G	20	9	3	20	90	0.84222	0.08407	95%				
Pickup/SUV (supervisors/foremen)	onroad LD			G	20	9	3	20	90	0.84222	0.08407	95%				
Pickup/SUV (operators/drivers)	onroad LD			G	20	9	3	20	90	0.84222	0.08407	95%				
Pickup/SUV (tradesmen/laborers)	onroad LD	120	9,600	G	20	9	3	20	90	0.84222	0.08407	95%	5.1	0.5	304.6	30.4
DIVERSIONS - Duncan Creek Diversion Dam Modification - YEAR 2 (PHASE 2)																
Tractor Trailer (materials/hauling)	onroad HHD			G	20	9	30	20	90	1.89491	0.18933	95%				
Tractor Trailer (equipment/supplies)	onroad HHD	27	186	G	20	9	30	20	90	1.89491	0.18933	95%	2.6	0.3	13.3	1.3
Cement Truck (concrete/pumping)	onroad HHD	120	1,680	G	20	9	30	20	90	1.89491	0.18933	95%	11.4	1.1	119.9	12.0
Dump Truck (soil/sand/gravel transport)	onroad HHD			G	20	9	30	20	90	1.89491	0.18933	95%				
Water Truck (dust control)	onroad HHD			G	20	9	30	5	90	1.76315	0.17616	95%				
Work Truck (all trades)	onroad MD	15	990	G	20	9	8	20	90	1.16343	0.11619	95%	0.9	0.1	43.4	4.3
Pickup/SUV (managers/engineers)	onroad LD			G	20	9	3	20	90	0.84222	0.08407	95%				
Pickup/SUV (supervisors/foremen)	onroad LD			G	20	9	3	20	90	0.84222	0.08407	95%				
Pickup/SUV (operators/drivers)	onroad LD			G	20	9	3	20	90	0.84222	0.08407	95%				
Pickup/SUV (tradesmen/laborers)	onroad LD	120	9,600	G	20	9	3	20	90	0.84222	0.08407	95%	5.1	0.5	304.6	30.4

DIVERSIONS - North Fork Long Canyon Diversion Dam Modification - YEAR 3 (PHASE 3)																
Tractor Trailer (materials/hauling)	onroad HHD			G	20	9	30	20	90	1.89491	0.18933	95%				
Tractor Trailer (equipment/supplies)	onroad HHD	27	186	G	20	9	30	20	90	1.89491	0.18933	95%	2.6	0.3	13.3	1.3
Cement Truck (concrete/pumping)	onroad HHD	120	1,680	G	20	9	30	20	90	1.89491	0.18933	95%	11.4	1.1	119.9	12.0
Dump Truck (soil/sand/gravel transport)	onroad HHD			G	20	9	30	20	90	1.89491	0.18933	95%				
Water Truck (dust control)	onroad HHD			G	20	9	30	5	90	1.76315	0.17616	95%				
Work Truck (all trades)	onroad MD	15	990	G	20	9	8	20	90	1.16343	0.11619	95%	0.9	0.1	43.4	4.3
Pickup/SUV (managers/engineers)	onroad LD			G	20	9	3	20	90	0.84222	0.08407	95%				
Pickup/SUV (supervisors/foremen)	onroad LD			G	20	9	3	20	90	0.84222	0.08407	95%				
Pickup/SUV (operators/drivers)	onroad LD			G	20	9	3	20	90	0.84222	0.08407	95%				
Pickup/SUV (tradesmen/laborers)	onroad LD	120	9,600	G	20	9	3	20	90	0.84222	0.08407	95%	5.1	0.5	304.6	30.4
DIVERSIONS - South Fork Long Canyon Diversion Dam Modification - YEAR 3 (PHASE 4)																
Tractor Trailer (materials/hauling)	onroad HHD			G	20	9	30	20	90	1.89491	0.18933	95%				
Tractor Trailer (equipment/supplies)	onroad HHD	27	186	G	20	9	30	20	90	1.89491	0.18933	95%	2.6	0.3	13.3	1.3
Cement Truck (concrete/pumping)	onroad HHD	120	1,680	G	20	9	30	20	90	1.89491	0.18933	95%	11.4	1.1	119.9	12.0
Dump Truck (soil/sand/gravel transport)	onroad HHD			G	20	9	30	20	90	1.89491	0.18933	95%				
Water Truck (dust control)	onroad HHD			G	20	9	30	5	90	1.76315	0.17616	95%				
Work Truck (all trades)	onroad MD	15	990	G	20	9	8	20	90	1.16343	0.11619	95%	0.9	0.1	43.4	4.3
Pickup/SUV (managers/engineers)	onroad LD			G	20	9	3	20	90	0.84222	0.08407	95%				
Pickup/SUV (supervisors/foremen)	onroad LD			G	20	9	3	20	90	0.84222	0.08407	95%				
Pickup/SUV (operators/drivers)	onroad LD			G	20	9	3	20	90	0.84222	0.08407	95%				
Pickup/SUV (tradesmen/laborers)	onroad LD	120	9,600	G	20	9	3	20	90	0.84222	0.08407	95%	5.1	0.5	304.6	30.4
OUTLETS - French Meadows Dam Outlet Works Modification - YEAR 2 (PHASE 5)																
Tractor Trailer (materials/hauling)	onroad HHD			G	20	9	30	20	90	1.89491	0.18933	95%				
Tractor Trailer (equipment/supplies)	onroad HHD	27	81	G	20	9	30	20	90	1.89491	0.18933	95%	2.6	0.3	5.8	0.6
Cement Truck (concrete/pumping)	onroad HHD	15	15	G	20	9	30	20	90	1.89491	0.18933	95%	1.4	0.1	1.1	0.1
Dump Truck (soil/sand/gravel transport)	onroad HHD			G	20	9	30	20	90	1.89491	0.18933	95%				
Water Truck (dust control)	onroad HHD			G	20	9	30	5	90	1.76315	0.17616	95%				
Work Truck (all trades)	onroad MD	15	300	G	20	9	8	20	90	1.16343	0.11619	95%	0.9	0.1	13.1	1.3
Pickup/SUV (managers/engineers)	onroad LD			G	20	9	3	20	90	0.84222	0.08407	95%				
Pickup/SUV (supervisors/foremen)	onroad LD			G	20	9	3	20	90	0.84222	0.08407	95%				
Pickup/SUV (operators/drivers)	onroad LD			G	20	9	3	20	90	0.84222	0.08407	95%				
Pickup/SUV (tradesmen/laborers)	onroad LD	48	960	G	20	9	3	20	90	0.84222	0.08407	95%	2.0	0.2	30.5	3.0
OUTLETS - Hell Hole Dam Outlet Works Modification - YEAR 2 (PHASE 6)																
Tractor Trailer (materials/hauling)	onroad HHD			G	20	9	30	20	90	1.89491	0.18933	95%				
Tractor Trailer (equipment/supplies)	onroad HHD	15	600	G	20	9	30	20	90	1.89491	0.18933	95%	1.4	0.1	42.8	4.3
Cement Truck (concrete/pumping)	onroad HHD	15	105	G	20	9	30	20	90	1.89491	0.18933	95%	1.4	0.1	7.5	0.7
Dump Truck (soil/sand/gravel transport)	onroad HHD			G	20	9	30	20	90	1.89491	0.18933	95%				
Water Truck (dust control)	onroad HHD			G	20	9	30	5	90	1.76315	0.17616	95%				
Work Truck (all trades)	onroad MD	15	600	G	20	9	8	20	90	1.16343	0.11619	95%	0.9	0.1	26.3	2.6
Pickup/SUV (managers/engineers)	onroad LD			G	20	9	3	20	90	0.84222	0.08407	95%				
Pickup/SUV (supervisors/foremen)	onroad LD			G	20	9	3	20	90	0.84222	0.08407	95%				
Pickup/SUV (operators/drivers)	onroad LD			G	20	9	3	20	90	0.84222	0.08407	95%				
Pickup/SUV (tradesmen/laborers)	onroad LD	120	4,800	G	20	9	3	20	90	0.84222	0.08407	95%	5.1	0.5	152.3	15.2
OUTLETS - Middle Fork Interbay Dam Outlet Works Modification - YEAR 2 (PHASE 7)																
Tractor Trailer (materials/hauling)	onroad HHD			G	20	9	30	20	90	1.89491	0.18933	95%				
Tractor Trailer (equipment/supplies)	onroad HHD	27	111	G	20	9	30	20	90	1.89491	0.18933	95%	2.6	0.3	7.9	0.8
Cement Truck (concrete/pumping)	onroad HHD	15	75	G	20	9	30	20	90	1.89491	0.18933	95%	1.4	0.1	5.4	0.5
Dump Truck (soil/sand/gravel transport)	onroad HHD			G	20	9	30	20	90	1.89491	0.18933	95%				
Water Truck (dust control)	onroad HHD			G	20	9	30	5	90	1.76315	0.17616	95%				
Work Truck (all trades)	onroad MD	15	300	G	20	9	8	20	90	1.16343	0.11619	95%	0.9	0.1	13.1	1.3
Pickup/SUV (managers/engineers)	onroad LD			G	20	9	3	20	90	0.84222	0.08407	95%				
Pickup/SUV (supervisors/foremen)	onroad LD			G	20	9	3	20	90	0.84222	0.08407	95%				
Pickup/SUV (operators/drivers)	onroad LD			G	20	9	3	20	90	0.84222	0.08407	95%				
Pickup/SUV (tradesmen/laborers)	onroad LD	48	960	G	20	9	3	20	90	0.84222	0.08407	95%	2.0	0.2	30.5	3.0

GAGES - North Fork Long Canyon Creek Gage Below Diversion Dam - YEAR 3 (PHASE 8)																
Tractor Trailer (materials/hauling)	onroad HHD			G	7	9	30	20	90	1.95649	0.19549	56%				
Tractor Trailer (equipment/supplies)	onroad HHD			G	7	9	30	20	90	1.95649	0.19549	56%				
Cement Truck (concrete/pumping)	onroad HHD			G	7	9	30	20	90	1.95649	0.19549	56%				
Dump Truck (soil/sand/gravel transport)	onroad HHD			G	7	9	30	20	90	1.95649	0.19549	56%				
Water Truck (dust control)	onroad HHD			G	7	9	30	5	90	1.79393	0.17924	56%				
Work Truck (all trades)	onroad MD			G	7	9	8	20	90	1.22500	0.12234	56%				
Pickup/SUV (managers/engineers)	onroad LD			G	7	9	3	20	90	0.90379	0.09022	56%				
Pickup/SUV (supervisors/foremen)	onroad LD			G	7	9	3	20	90	0.90379	0.09022	56%				
Pickup/SUV (operators/drivers)	onroad LD			G	7	9	3	20	90	0.90379	0.09022	56%				
Pickup/SUV (tradesmen/laborers)	onroad LD	24	168	G	7	9	3	20	90	0.90379	0.09022	56%	9.5	0.9	50.0	5.0
GAGES - South Fork Long Canyon Creek Gage Below Diversion Dam - YEAR 3 (PHASE 9)																
Tractor Trailer (materials/hauling)	onroad HHD			G	7	9	30	20	90	1.95649	0.19549	56%				
Tractor Trailer (equipment/supplies)	onroad HHD			G	7	9	30	20	90	1.95649	0.19549	56%				
Cement Truck (concrete/pumping)	onroad HHD			G	7	9	30	20	90	1.95649	0.19549	56%				
Dump Truck (soil/sand/gravel transport)	onroad HHD			G	7	9	30	20	90	1.95649	0.19549	56%				
Water Truck (dust control)	onroad HHD			G	7	9	30	5	90	1.79393	0.17924	56%				
Work Truck (all trades)	onroad MD			G	7	9	8	20	90	1.22500	0.12234	56%				
Pickup/SUV (managers/engineers)	onroad LD			G	7	9	3	20	90	0.90379	0.09022	56%				
Pickup/SUV (supervisors/foremen)	onroad LD			G	7	9	3	20	90	0.90379	0.09022	56%				
Pickup/SUV (operators/drivers)	onroad LD			G	7	9	3	20	90	0.90379	0.09022	56%				
Pickup/SUV (tradesmen/laborers)	onroad LD	24	168	G	7	9	3	20	90	0.90379	0.09022	56%	9.5	0.9	50.0	5.0
GAGES - Middle Fork American River Gage Below Interbay Dam - YEAR 2 (PHASE 10)																
Tractor Trailer (materials/hauling)	onroad HHD			G	7	9	30	20	90	1.95649	0.19549	56%				
Tractor Trailer (equipment/supplies)	onroad HHD			G	7	9	30	20	90	1.95649	0.19549	56%				
Cement Truck (concrete/pumping)	onroad HHD			G	7	9	30	20	90	1.95649	0.19549	56%				
Dump Truck (soil/sand/gravel transport)	onroad HHD			G	7	9	30	20	90	1.95649	0.19549	56%				
Water Truck (dust control)	onroad HHD			G	7	9	30	5	90	1.79393	0.17924	56%				
Work Truck (all trades)	onroad MD			G	7	9	8	20	90	1.22500	0.12234	56%				
Pickup/SUV (managers/engineers)	onroad LD			G	7	9	3	20	90	0.90379	0.09022	56%				
Pickup/SUV (supervisors/foremen)	onroad LD			G	7	9	3	20	90	0.90379	0.09022	56%				
Pickup/SUV (operators/drivers)	onroad LD			G	7	9	3	20	90	0.90379	0.09022	56%				
Pickup/SUV (tradesmen/laborers)	onroad LD	24	168	G	7	9	3	20	90	0.90379	0.09022	56%	9.5	0.9	50.0	5.0
GAGES - North Fork American River Gage Above American River Pump Station - YEAR 2 (PHASE 11)																
Tractor Trailer (materials/hauling)	onroad HHD			G	7	9	30	20	90	1.95649	0.19549	56%				
Tractor Trailer (equipment/supplies)	onroad HHD			G	7	9	30	20	90	1.95649	0.19549	56%				
Cement Truck (concrete/pumping)	onroad HHD			G	7	9	30	20	90	1.95649	0.19549	56%				
Dump Truck (soil/sand/gravel transport)	onroad HHD			G	7	9	30	20	90	1.95649	0.19549	56%				
Water Truck (dust control)	onroad HHD			G	7	9	30	5	90	1.79393	0.17924	56%				
Work Truck (all trades)	onroad MD			G	7	9	8	20	90	1.22500	0.12234	56%				
Pickup/SUV (managers/engineers)	onroad LD			G	7	9	3	20	90	0.90379	0.09022	56%				
Pickup/SUV (supervisors/foremen)	onroad LD			G	7	9	3	20	90	0.90379	0.09022	56%				
Pickup/SUV (operators/drivers)	onroad LD			G	7	9	3	20	90	0.90379	0.09022	56%				
Pickup/SUV (tradesmen/laborers)	onroad LD	24	168	G	7	9	3	20	90	0.90379	0.09022	56%	9.5	0.9	50.0	5.0
RECREATION - Ellicott Bridge Parking Area - YEAR 14 (PHASE 12)																
Tractor Trailer (materials/hauling)	onroad HHD			G	20	9	30	20	90	1.89491	0.18933	95%				
Tractor Trailer (equipment/supplies)	onroad HHD	15	150	G	20	9	30	20	90	1.89491	0.18933	95%	1.4	0.1	10.7	1.1
Cement Truck (concrete/pumping)	onroad HHD	15	150	G	20	9	30	20	90	1.89491	0.18933	95%	1.4	0.1	10.7	1.1
Dump Truck (soil/sand/gravel transport)	onroad HHD			G	20	9	30	20	90	1.89491	0.18933	95%				
Water Truck (dust control)	onroad HHD			G	20	9	30	5	90	1.76315	0.17616	95%				
Work Truck (all trades)	onroad MD	15	150	G	20	9	8	20	90	1.16343	0.11619	95%	0.9	0.1	6.6	0.7
Pickup/SUV (managers/engineers)	onroad LD			G	20	9	3	20	90	0.84222	0.08407	95%				
Pickup/SUV (supervisors/foremen)	onroad LD			G	20	9	3	20	90	0.84222	0.08407	95%				
Pickup/SUV (operators/drivers)	onroad LD			G	20	9	3	20	90	0.84222	0.08407	95%				
Pickup/SUV (tradesmen/laborers)	onroad LD	72	720	G	20	9	3	20	90	0.84222	0.08407	95%	3.0	0.3	22.8	2.3

RECREATION - French Meadows Reservoir Trail - YEAR 14 (PHASE 13)																
Tractor Trailer (materials/hauling)	onroad HHD	15	210	G	20	9	30	20	90	1.89491	0.18933	95%	1.4	0.1	15.0	1.5
Tractor Trailer (equipment/supplies)	onroad HHD	15	210	G	20	9	30	20	90	1.89491	0.18933	95%	1.4	0.1	15.0	1.5
Cement Truck (concrete/pumping)	onroad HHD			G	20	9	30	20	90	1.89491	0.18933	95%				
Dump Truck (soil/sand/gravel transport)	onroad HHD			G	20	9	30	20	90	1.89491	0.18933	95%				
Water Truck (dust control)	onroad HHD			G	20	9	30	5	90	1.76315	0.17616	95%				
Work Truck (all trades)	onroad MD	15	210	G	20	9	8	20	90	1.16343	0.11619	95%	0.9	0.1	9.2	0.9
Pickup/SUV (managers/engineers)	onroad LD			G	20	9	3	20	90	0.84222	0.08407	95%				
Pickup/SUV (supervisors/foremen)	onroad LD			G	20	9	3	20	90	0.84222	0.08407	95%				
Pickup/SUV (operators/drivers)	onroad LD			G	20	9	3	20	90	0.84222	0.08407	95%				
Pickup/SUV (tradesmen/laborers)	onroad LD	72	1,008	G	20	9	3	20	90	0.84222	0.08407	95%	3.0	0.3	32.0	3.2
SUPPLY - French Meadows North Shore Water Supply - YEAR 9 (PHASE 14)																
Tractor Trailer (materials/hauling)	onroad HHD			G	20	9	30	20	90	1.89491	0.18933	95%				
Tractor Trailer (equipment/supplies)	onroad HHD	15	315	G	20	9	30	20	90	1.89491	0.18933	95%	1.4	0.1	22.5	2.2
Cement Truck (concrete/pumping)	onroad HHD			G	20	9	30	20	90	1.89491	0.18933	95%				
Dump Truck (soil/sand/gravel transport)	onroad HHD			G	20	9	30	20	90	1.89491	0.18933	95%				
Water Truck (dust control)	onroad HHD			G	20	9	30	5	90	1.76315	0.17616	95%				
Work Truck (all trades)	onroad MD	15	315	G	20	9	8	20	90	1.16343	0.11619	95%	0.9	0.1	13.8	1.4
Pickup/SUV (managers/engineers)	onroad LD			G	20	9	3	20	90	0.84222	0.08407	95%				
Pickup/SUV (supervisors/foremen)	onroad LD			G	20	9	3	20	90	0.84222	0.08407	95%				
Pickup/SUV (operators/drivers)	onroad LD			G	20	9	3	20	90	0.84222	0.08407	95%				
Pickup/SUV (tradesmen/laborers)	onroad LD	48	1,008	G	20	9	3	20	90	0.84222	0.08407	95%	2.0	0.2	32.0	3.2
SUPPLY - French Meadows South Shore Water Supply - YEAR 5 (PHASE 15)																
Tractor Trailer (materials/hauling)	onroad HHD			G	20	9	30	20	90	1.89491	0.18933	95%				
Tractor Trailer (equipment/supplies)	onroad HHD	15	315	G	20	9	30	20	90	1.89491	0.18933	95%	1.4	0.1	22.5	2.2
Cement Truck (concrete/pumping)	onroad HHD			G	20	9	30	20	90	1.89491	0.18933	95%				
Dump Truck (soil/sand/gravel transport)	onroad HHD			G	20	9	30	20	90	1.89491	0.18933	95%				
Water Truck (dust control)	onroad HHD			G	20	9	30	5	90	1.76315	0.17616	95%				
Work Truck (all trades)	onroad MD	15	315	G	20	9	8	20	90	1.16343	0.11619	95%	0.9	0.1	13.8	1.4
Pickup/SUV (managers/engineers)	onroad LD			G	20	9	3	20	90	0.84222	0.08407	95%				
Pickup/SUV (supervisors/foremen)	onroad LD			G	20	9	3	20	90	0.84222	0.08407	95%				
Pickup/SUV (operators/drivers)	onroad LD			G	20	9	3	20	90	0.84222	0.08407	95%				
Pickup/SUV (tradesmen/laborers)	onroad LD	48	1,008	G	20	9	3	20	90	0.84222	0.08407	95%	2.0	0.2	32.0	3.2
											CHECKSUM1		152.94	15.27	1.31	0.13

Unpaved Roads		lbs/day	lbs/day	tons	tons
PHASE	1	10.78	1.08	0.19	0.02
PHASE	2	19.85	1.98	0.24	0.02
PHASE	3	19.85	1.98	0.24	0.02
PHASE	4	19.85	1.98	0.24	0.02
PHASE	5	6.87	0.69	0.03	0.00
PHASE	6	8.77	0.88	0.11	0.01
PHASE	7	6.87	0.69	0.03	0.00
PHASE	8	9.49	0.95	0.03	0.00
PHASE	9	9.49	0.95	0.03	0.00
PHASE	10	9.49	0.95	0.03	0.00
PHASE	11	9.49	0.95	0.03	0.00
PHASE	12	6.75	0.67	0.03	0.00
PHASE	13	6.75	0.67	0.04	0.00
PHASE	14	4.32	0.43	0.03	0.00
PHASE	15	4.32	0.43	0.03	0.00
CHECKSUM2		152.94	15.27	1.31	0.13

Peak		lbs/day	lbs/day	tons	tons
YEAR	2	19.85	1.98	0.46	0.05
YEAR	3	19.85	1.98	0.72	0.07
YEAR	5	4.32	0.43	0.03	0.00
YEAR	9	4.32	0.43	0.03	0.00
YEAR	14	6.75	0.67	0.06	0.01
HIGHEST		**19.85**	**1.98**	**0.72**	**0.07**
TOTAL				**1.31**	**0.13**

Worst Case		lbs/day	lbs/day	tons	tons
YEAR	2	61.35	6.13	0.46	0.05
YEAR	3	69.46	6.94	0.72	0.07
YEAR	5	4.32	0.43	0.03	0.00
YEAR	9	4.32	0.43	0.03	0.00
YEAR	14	13.49	1.35	0.06	0.01
HIGHEST		**69.46**	**6.94**	**0.72**	**0.07**
TOTAL				**1.31**	**0.13**
CHECKSUM3		152.94	15.27	1.31	0.13

Paved Road Dust	Vehicle Category	Activity		Required Variables						Uncontrolled		Controlled Emissions				
		Pk. Daily	Project	EET	Moist (M)	Silt (sL)	Weight (W)	Speed (S)	Precip (P)	PM_{10}	$PM_{2.5}$	Control	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
		VMT	VMT	code	percent	g/m^2	tons	mph	days/yr	lb/VMT	lb/VMT	%	lb/day	lb/day	lbs	lbs
RESERVOIR - Hell Hole Reservoir Seasonal Storage Increase Improvement - YEAR 3 (PHASE 1)																
Tractor Trailer (materials/hauling)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Tractor Trailer (equipment/supplies)	onroad HHD	243	1,674	H	--	0.18	30	--	90	0.01484	0.00364	--	3.6	0.9	23.3	5.7
Cement Truck (concrete/pumping)	onroad HHD	135	1,080	H	--	0.18	30	--	90	0.01484	0.00364	--	2.0	0.5	15.0	3.7
Dump Truck (soil/sand/gravel transport)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Water Truck (dust control)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Work Truck (all trades)	onroad MD	270	10,260	H	--	0.18	8	--	90	0.00385	0.00095	--	1.0	0.3	37.1	9.1
Pickup/SUV (managers/engineers)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (supervisors/foremen)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (operators/drivers)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (tradesmen/laborers)	onroad LD	1,080	86,400	H	--	0.18	3	--	90	0.00142	0.00035	--	1.5	0.4	114.9	28.2
DIVERSIONS - Duncan Creek Diversion Dam Modification - YEAR 2 (PHASE 2)																
Tractor Trailer (materials/hauling)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Tractor Trailer (equipment/supplies)	onroad HHD	243	1,674	H	--	0.18	30	--	90	0.01484	0.00364	--	3.6	0.9	23.3	5.7
Cement Truck (concrete/pumping)	onroad HHD	1,080	15,120	H	--	0.18	30	--	90	0.01484	0.00364	--	16.0	3.9	210.5	51.7
Dump Truck (soil/sand/gravel transport)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Water Truck (dust control)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Work Truck (all trades)	onroad MD	135	8,910	H	--	0.18	8	--	90	0.00385	0.00095	--	0.5	0.1	32.2	7.9
Pickup/SUV (managers/engineers)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (supervisors/foremen)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (operators/drivers)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (tradesmen/laborers)	onroad LD	1,080	86,400	H	--	0.18	3	--	90	0.00142	0.00035	--	1.5	0.4	114.9	28.2
DIVERSIONS - North Fork Long Canyon Diversion Dam Modification - YEAR 3 (PHASE 3)																
Tractor Trailer (materials/hauling)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Tractor Trailer (equipment/supplies)	onroad HHD	243	1,674	H	--	0.18	30	--	90	0.01484	0.00364	--	3.6	0.9	23.3	5.7
Cement Truck (concrete/pumping)	onroad HHD	1,080	15,120	H	--	0.18	30	--	90	0.01484	0.00364	--	16.0	3.9	210.5	51.7
Dump Truck (soil/sand/gravel transport)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Water Truck (dust control)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Work Truck (all trades)	onroad MD	135	8,910	H	--	0.18	8	--	90	0.00385	0.00095	--	0.5	0.1	32.2	7.9
Pickup/SUV (managers/engineers)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (supervisors/foremen)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (operators/drivers)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (tradesmen/laborers)	onroad LD	1,080	86,400	H	--	0.18	3	--	90	0.00142	0.00035	--	1.5	0.4	114.9	28.2
DIVERSIONS - South Fork Long Canyon Diversion Dam Modification - YEAR 3 (PHASE 4)																
Tractor Trailer (materials/hauling)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Tractor Trailer (equipment/supplies)	onroad HHD	243	1,674	H	--	0.18	30	--	90	0.01484	0.00364	--	3.6	0.9	23.3	5.7
Cement Truck (concrete/pumping)	onroad HHD	1,080	15,120	H	--	0.18	30	--	90	0.01484	0.00364	--	16.0	3.9	210.5	51.7
Dump Truck (soil/sand/gravel transport)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Water Truck (dust control)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Work Truck (all trades)	onroad MD	135	8,910	H	--	0.18	8	--	90	0.00385	0.00095	--	0.5	0.1	32.2	7.9
Pickup/SUV (managers/engineers)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (supervisors/foremen)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (operators/drivers)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (tradesmen/laborers)	onroad LD	1,080	86,400	H	--	0.18	3	--	90	0.00142	0.00035	--	1.5	0.4	114.9	28.2

OUTLETS - French Meadows Dam Outlet Works Modification - YEAR 2 (PHASE 5)																
Tractor Trailer (materials/hauling)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Tractor Trailer (equipment/supplies)	onroad HHD	243	729	H	--	0.18	30	--	90	0.01484	0.00364	--	3.6	0.9	10.2	2.5
Cement Truck (concrete/pumping)	onroad HHD	135	135	H	--	0.18	30	--	90	0.01484	0.00364	--	2.0	0.5	1.9	0.5
Dump Truck (soil/sand/gravel transport)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Water Truck (dust control)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Work Truck (all trades)	onroad MD	135	2,700	H	--	0.18	8	--	90	0.00385	0.00095	--	0.5	0.1	9.8	2.4
Pickup/SUV (managers/engineers)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (supervisors/foremen)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (operators/drivers)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (tradesmen/laborers)	onroad LD	432	8,640	H	--	0.18	3	--	90	0.00142	0.00035	--	0.6	0.2	11.5	2.8
OUTLETS - Hell Hole Dam Outlet Works Modification - YEAR 2 (PHASE 6)																
Tractor Trailer (materials/hauling)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Tractor Trailer (equipment/supplies)	onroad HHD	135	5,400	H	--	0.18	30	--	90	0.01484	0.00364	--	2.0	0.5	75.2	18.5
Cement Truck (concrete/pumping)	onroad HHD	135	945	H	--	0.18	30	--	90	0.01484	0.00364	--	2.0	0.5	13.2	3.2
Dump Truck (soil/sand/gravel transport)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Water Truck (dust control)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Work Truck (all trades)	onroad MD	135	5,400	H	--	0.18	8	--	90	0.00385	0.00095	--	0.5	0.1	19.5	4.8
Pickup/SUV (managers/engineers)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (supervisors/foremen)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (operators/drivers)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (tradesmen/laborers)	onroad LD	1,080	43,200	H	--	0.18	3	--	90	0.00142	0.00035	--	1.5	0.4	57.4	14.1
OUTLETS - Middle Fork Interbay Dam Outlet Works Modification - YEAR 2 (PHASE 7)																
Tractor Trailer (materials/hauling)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Tractor Trailer (equipment/supplies)	onroad HHD	243	999	H	--	0.18	30	--	90	0.01484	0.00364	--	3.6	0.9	13.9	3.4
Cement Truck (concrete/pumping)	onroad HHD	135	675	H	--	0.18	30	--	90	0.01484	0.00364	--	2.0	0.5	9.4	2.3
Dump Truck (soil/sand/gravel transport)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Water Truck (dust control)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Work Truck (all trades)	onroad MD	135	2,700	H	--	0.18	8	--	90	0.00385	0.00095	--	0.5	0.1	9.8	2.4
Pickup/SUV (managers/engineers)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (supervisors/foremen)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (operators/drivers)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (tradesmen/laborers)	onroad LD	432	8,640	H	--	0.18	3	--	90	0.00142	0.00035	--	0.6	0.2	11.5	2.8
GAGES - North Fork Long Canyon Creek Gage Below Diversion Dam - YEAR 3 (PHASE 8)																
Tractor Trailer (materials/hauling)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Tractor Trailer (equipment/supplies)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Cement Truck (concrete/pumping)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Dump Truck (soil/sand/gravel transport)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Water Truck (dust control)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Work Truck (all trades)	onroad MD			H	--	0.18	8	--	90	0.00385	0.00095	--				
Pickup/SUV (managers/engineers)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (supervisors/foremen)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (operators/drivers)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (tradesmen/laborers)	onroad LD	216	1,512	H	--	0.18	3	--	90	0.00142	0.00035	--	0.3	0.1	2.0	0.5
GAGES - South Fork Long Canyon Creek Gage Below Diversion Dam - YEAR 3 (PHASE 9)																
Tractor Trailer (materials/hauling)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Tractor Trailer (equipment/supplies)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Cement Truck (concrete/pumping)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Dump Truck (soil/sand/gravel transport)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Water Truck (dust control)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Work Truck (all trades)	onroad MD			H	--	0.18	8	--	90	0.00385	0.00095	--				
Pickup/SUV (managers/engineers)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (supervisors/foremen)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (operators/drivers)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (tradesmen/laborers)	onroad LD	216	1,512	H	--	0.18	3	--	90	0.00142	0.00035	--	0.3	0.1	2.0	0.5

GAGES - Middle Fork American River Gage Below Interbay Dam - YEAR 2 (PHASE 10)																
Tractor Trailer (materials/hauling)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Tractor Trailer (equipment/supplies)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Cement Truck (concrete/pumping)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Dump Truck (soil/sand/gravel transport)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Water Truck (dust control)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Work Truck (all trades)	onroad MD			H	--	0.18	8	--	90	0.00385	0.00095	--				
Pickup/SUV (managers/engineers)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (supervisors/foremen)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (operators/drivers)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (tradesmen/laborers)	onroad LD	216	1,512	H	--	0.18	3	--	90	0.00142	0.00035	--	0.3	0.1	2.0	0.5
GAGES - North Fork American River Gage Above American River Pump Station - YEAR 2 (PHASE 11)																
Tractor Trailer (materials/hauling)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Tractor Trailer (equipment/supplies)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Cement Truck (concrete/pumping)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Dump Truck (soil/sand/gravel transport)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Water Truck (dust control)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Work Truck (all trades)	onroad MD			H	--	0.18	8	--	90	0.00385	0.00095	--				
Pickup/SUV (managers/engineers)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (supervisors/foremen)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (operators/drivers)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (tradesmen/laborers)	onroad LD	216	1,512	H	--	0.18	3	--	90	0.00142	0.00035	--	0.3	0.1	2.0	0.5
RECREATION - Ellicott Bridge Parking Area - YEAR 14 (PHASE 12)																
Tractor Trailer (materials/hauling)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Tractor Trailer (equipment/supplies)	onroad HHD	135	1,350	H	--	0.18	30	--	90	0.01484	0.00364	--	2.0	0.5	18.8	4.6
Cement Truck (concrete/pumping)	onroad HHD	135	1,350	H	--	0.18	30	--	90	0.01484	0.00364	--	2.0	0.5	18.8	4.6
Dump Truck (soil/sand/gravel transport)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Water Truck (dust control)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Work Truck (all trades)	onroad MD	135	1,350	H	--	0.18	8	--	90	0.00385	0.00095	--	0.5	0.1	4.9	1.2
Pickup/SUV (managers/engineers)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (supervisors/foremen)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (operators/drivers)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (tradesmen/laborers)	onroad LD	648	6,480	H	--	0.18	3	--	90	0.00142	0.00035	--	0.9	0.2	8.6	2.1
RECREATION - French Meadows Reservoir Trail - YEAR 14 (PHASE 13)																
Tractor Trailer (materials/hauling)	onroad HHD	135	1,890	H	--	0.18	30	--	90	0.01484	0.00364	--	2.0	0.5	26.3	6.5
Tractor Trailer (equipment/supplies)	onroad HHD	135	1,890	H	--	0.18	30	--	90	0.01484	0.00364	--	2.0	0.5	26.3	6.5
Cement Truck (concrete/pumping)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Dump Truck (soil/sand/gravel transport)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Water Truck (dust control)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Work Truck (all trades)	onroad MD	135	1,890	H	--	0.18	8	--	90	0.00385	0.00095	--	0.5	0.1	6.8	1.7
Pickup/SUV (managers/engineers)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (supervisors/foremen)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (operators/drivers)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (tradesmen/laborers)	onroad LD	648	9,072	H	--	0.18	3	--	90	0.00142	0.00035	--	0.9	0.2	12.1	3.0
SUPPLY - French Meadows North Shore Water Supply - YEAR 9 (PHASE 14)																
Tractor Trailer (materials/hauling)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Tractor Trailer (equipment/supplies)	onroad HHD	135	2,835	H	--	0.18	30	--	90	0.01484	0.00364	--	2.0	0.5	39.5	9.7
Cement Truck (concrete/pumping)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Dump Truck (soil/sand/gravel transport)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Water Truck (dust control)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Work Truck (all trades)	onroad MD	135	2,835	H	--	0.18	8	--	90	0.00385	0.00095	--	0.5	0.1	10.3	2.5
Pickup/SUV (managers/engineers)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (supervisors/foremen)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (operators/drivers)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (tradesmen/laborers)	onroad LD	432	9,072	H	--	0.18	3	--	90	0.00142	0.00035	--	0.6	0.2	12.1	3.0

SUPPLY - French Meadows South Shore Water Supply - YEAR 5 (PHASE 15)																
Tractor Trailer (materials/hauling)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Tractor Trailer (equipment/supplies)	onroad HHD	135	2,835	H	--	0.18	30	--	90	0.01484	0.00364	--	2.0	0.5	39.5	9.7
Cement Truck (concrete/pumping)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Dump Truck (soil/sand/gravel transport)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Water Truck (dust control)	onroad HHD			H	--	0.18	30	--	90	0.01484	0.00364	--				
Work Truck (all trades)	onroad MD	135	2,835	H	--	0.18	8	--	90	0.00385	0.00095	--	0.5	0.1	10.3	2.5
Pickup/SUV (managers/engineers)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (supervisors/foremen)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (operators/drivers)	onroad LD			H	--	0.18	3	--	90	0.00142	0.00035	--				
Pickup/SUV (tradesmen/laborers)	onroad LD	432	9,072	H	--	0.18	3	--	90	0.00142	0.00035	--	0.6	0.2	12.1	3.0
											CHECKSUM4		111.1	27.3	0.9	0.2

Paved Roads		lbs/day	lbs/day	tons	tons
PHASE	1	8.18	2.01	0.10	0.02
PHASE	2	21.68	5.32	0.19	0.05
PHASE	3	21.68	5.32	0.19	0.05
PHASE	4	21.68	5.32	0.19	0.05
PHASE	5	6.74	1.65	0.02	0.00
PHASE	6	6.06	1.49	0.08	0.02
PHASE	7	6.74	1.65	0.02	0.01
PHASE	8	0.31	0.08	0.00	0.00
PHASE	9	0.31	0.08	0.00	0.00
PHASE	10	0.31	0.08	0.00	0.00
PHASE	11	0.31	0.08	0.00	0.00
PHASE	12	5.44	1.34	0.03	0.01
PHASE	13	5.44	1.34	0.04	0.01
PHASE	14	3.14	0.77	0.03	0.01
PHASE	15	3.14	0.77	0.03	0.01
CHECKSUM5		111.15	27.28	0.92	0.22

Peak		lbs/day	lbs/day	tons	tons
YEAR	2	21.68	5.32	0.31	0.08
YEAR	3	21.68	5.32	0.48	0.12
YEAR	5	3.14	0.77	0.03	0.01
YEAR	9	3.14	0.77	0.03	0.01
YEAR	14	5.44	1.34	0.06	0.02
HIGHEST		**21.68**	**5.32**	**0.48**	**0.12**
TOTAL				**0.92**	**0.22**

Worst Case		lbs/day	lbs/day	tons	tons
YEAR	2	41.83	10.27	0.31	0.08
YEAR	3	52.16	12.80	0.48	0.12
YEAR	5	3.14	0.77	0.03	0.01
YEAR	9	3.14	0.77	0.03	0.01
YEAR	14	10.89	2.67	0.06	0.02
HIGHEST		**52.16**	**12.80**	**0.48**	**0.12**
TOTAL				**0.92**	**0.22**
CHECKSUM6		111.15	27.28	0.92	0.22

EET Code G

Unpaved Road Dust (AP-42 Section 13.2.2):

$E = [1.5 *(s/12)^{0.9} * (W/3)^{0.45}] * P_C * (1\text{-}CE)$ for PM_{10}

$E = [1.8 *(s/12)^{1.0} * (S/30)^{0.5} / (M/0.5)^{0.2} - 0.00047] * P_C * (1\text{-}CE)$ for PM_{10}

$E = [0.15 *(s/12)^{0.9} * (W/3)^{0.45}] * P_C * (1\text{-}CE)$ for $PM_{2.5}$

$E = [0.18 *(s/12)^{1.0} * (S/30)^{0.5} / (M/0.5)^{0.2} - 0.00036] * P_C * (1\text{-}CE)$ for $PM_{2.5}$

Equation pairs calculated for average factoring of both vehicle weight and speed

s = silt content, percent

W = average vehicle weight (see below)

M = moisture content, percent

S = mean vehicle speed = 5-10 mph for watering trucks

S = mean vehicle speed = 15 mph for haul roads (general mitigation measure)

S = mean vehicle speed = 20 mph for graded dirt/gravel roads

E = lb/VMT fugitive

$P_C = (365\text{-}P)/365$

P = Number of wet days over 0.01 in precipitation for averaging period (from AP-42 Figure 13.2.1-2)

Note: precipitation correction not used ($P_C = 1$) for worst case day calculations

CE = control efficiency for watering (moisture content)

Light Duty = 3 tons average (loaded)

Medium Duty = 8 tons average (loaded)

Heavy Heavy Duty = 30 tons average (loaded 40 tons, unloaded 20 tons)

EET Code H

Paved Road Dust (New AP-42 Section 13.2.1):

$E = 0.0022 * (sL)^{0.91} * (W)^{1.02} * P_C$ for PM_{10}

$E = 0.00054 * (sL)^{0.91} * (W)^{1.02} * P_C$ for $PM_{2.5}$

E = lb/VMT fugitive

sL = Silt Loading from Table 13.2.1-2

W = Average weight of vehicles in tons (below)

$P_C = (1\text{-}P/4N)$

P = Number of wet days over 0.01 in precipitation for averaging period (from AP-42 Figure 13.2.1-2)

N = days of period = 365 days (4N = 1460)

Note: precipitation correction not used ($P_C = 1$) for worst case day calculations

Light Duty = 3 tons average (loaded)

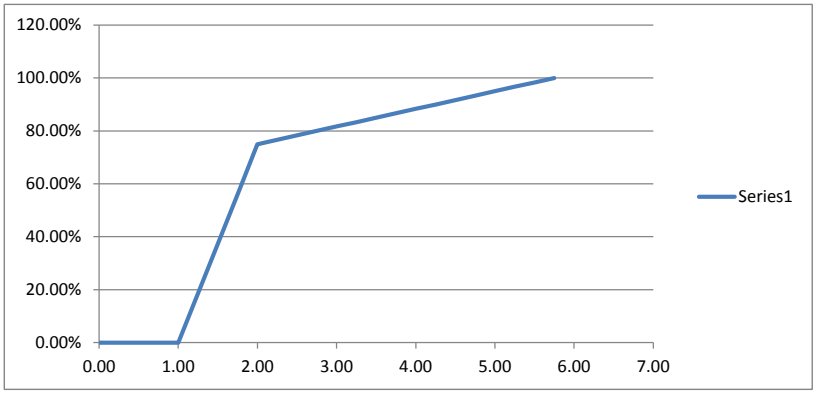
Medium Duty = 8 tons average (loaded)

Heavy Heavy Duty = 30 tons average (loaded 40 tons, unloaded 20 tons)

AP-42 Figure 13.2.1-2 (California)	
Values for Precipitation (P)	**days/yr**
Low Deserts	20
High Deserts & Inland SoCal	30
South/Central Coast/Valley & Mountains	40
Mid/Northern Central Valley	50
Bay & Delta Areas	60
Wine Country & Sierras	90
North Coast	120

AP-42 Table 13.2.1-2 (US)	
Values for Silt Loading (sL)	**g/m^3**
< 500 average daily traffic (ADT) count	0.6
500 - 5,000 ADT	0.2
5,000 - 10,000 ADT	0.06
> 10,000 ADT (surface streets)	0.03
> 10,000 ADT (limited access)	0.015
Average Rural	0.4
Average Mid-Range	0.13
Average Urban	0.023
Average for All Roads	0.18

AP-42 Figure 13.2.2-2		
Moisture (M)		**Control**
percent	**ratio**	**%**
0	0.00	0.00%
1	0.25	0.00%
2	0.50	0.00%
3	0.75	0.00%
4	1.00	0.00%
5	1.25	18.75%
6	1.50	37.50%
7	1.75	56.25%
8	2.00	75.00%
9	2.25	76.67%
10	2.50	78.33%
11	2.75	80.00%
12	3.00	81.67%
13	3.25	83.33%
14	3.50	85.00%
15	3.75	86.67%
16	4.00	88.34%
17	4.25	90.00%
18	4.50	91.67%
19	4.75	93.34%
20	5.00	95.00%
21	5.25	96.67%
22	5.50	98.34%
23	5.75	100.00%



SCAB Fleet Average Emission Factors (Diesel)

Offroad 2013

Air Basin	SC

Extrapolation (down)
Interpolation
Extrapolation (up)

Equipment	MaxHP	(lb/hr) ROG	(lb/hr) CO	(lb/hr) NOX	(lb/hr) SOX	(lb/hr) PM10	(lb/hr) PM2.5	(lb/hr) CO2	(lb/hr) CH4	(lb/hr) N2O	(lb/hr) CO2 eqv
Aerial Lifts	10	0.0068	0.0352	0.0424	0.0001	0.0018	0.0017	5.8	0.0006	0.0003	5.9
	15	0.0101	0.0528	0.0637	0.0001	0.0027	0.0025	8.7	0.0009	0.0004	8.8
	25	0.0166	0.0503	0.0937	0.0001	0.0051	0.0047	11.0	0.0015	0.0007	11.2
	50	0.0592	0.1757	0.1840	0.0003	0.0156	0.0143	19.6	0.0053	0.0024	20.5
	85	0.0575	0.2091	0.2799	0.0004	0.0227	0.0209	28.8	0.0052	0.0023	29.7
	120	0.0558	0.2425	0.3758	0.0004	0.0299	0.0275	38.1	0.0050	0.0022	38.9
	175	0.0650	0.2750	0.5430	0.0007	0.0320	0.0295	63.4	0.0059	0.0026	64.3
	500	0.1191	0.4671	1.5310	0.0021	0.0448	0.0413	213	0.0107	0.0048	214.6
	750	0.2221	0.8443	2.8534	0.0039	0.0825	0.0759	385	0.0200	0.0089	387.9
	800	0.2369	0.9006	3.0436	0.0041	0.0880	0.0810	410.4	0.0214	0.0095	413.8
Aerial Lifts Composite		0.0529	0.1925	0.3059	0.0004	0.0202	0.0186	34.7	0.0048	0.0021	35.5
Air Compressors	15	0.0122	0.0484	0.0732	0.0001	0.0048	0.0044	7.2	0.0011	0.0005	7.4
	25	0.0266	0.0744	0.1306	0.0002	0.0081	0.0074	14.4	0.0024	0.0011	14.8
	50	0.0921	0.2546	0.2221	0.0003	0.0220	0.0203	22.3	0.0083	0.0037	23.6
	120	0.0825	0.3251	0.4991	0.0006	0.0456	0.0419	47.0	0.0074	0.0033	48.1
	130	0.0867	0.3579	0.5608	0.0006	0.0459	0.0422	54.5	0.0078	0.0035	55.7
	175	0.1059	0.5054	0.8385	0.0010	0.0472	0.0434	88.5	0.0096	0.0042	90.0
	250	0.1007	0.2955	1.1320	0.0015	0.0347	0.0319	131	0.0091	0.0040	132.7
	500	0.1626	0.5399	1.7639	0.0023	0.0570	0.0525	232	0.0147	0.0065	234.1
	750	0.2547	0.8344	2.8139	0.0036	0.0898	0.0826	358	0.0230	0.0102	361.8
	1000	0.4190	1.4213	5.0841	0.0049	0.1474	0.1356	486	0.0378	0.0168	492.4
Air Compressors Composite		0.0913	0.3376	0.6065	0.0007	0.0434	0.0399	63.6	0.0082	0.0037	64.9
Bore/Drill Rigs	15	0.0120	0.0632	0.0754	0.0002	0.0029	0.0027	10.3	0.0011	0.0005	10.5
	25	0.0193	0.0658	0.1226	0.0002	0.0049	0.0045	16.0	0.0017	0.0008	16.3
	50	0.0289	0.2282	0.2568	0.0004	0.0120	0.0110	31.0	0.0026	0.0012	31.5
	120	0.0447	0.4698	0.4583	0.0009	0.0257	0.0237	77.1	0.0040	0.0018	77.8
	175	0.0704	0.7538	0.6931	0.0016	0.0302	0.0277	141	0.0063	0.0028	142.1
	250	0.0795	0.3429	0.7632	0.0021	0.0221	0.0203	188	0.0072	0.0032	189.2
	300	0.0895	0.3846	0.8449	0.0023	0.0249	0.0229	212.7	0.0081	0.0036	214.0
	500	0.1295	0.5517	1.1717	0.0031	0.0361	0.0332	311	0.0117	0.0052	313.2
	750	0.2565	1.0899	2.3376	0.0062	0.0715	0.0658	615	0.0231	0.0103	618.8
	1000	0.4163	1.6675	5.9553	0.0093	0.1544	0.1420	928	0.0376	0.0167	934.2
Bore/Drill Rigs Composite		0.0786	0.5044	0.8125	0.0017	0.0302	0.0278	165	0.0071	0.0032	166.1
Cement and Mortar Mixers	15	0.0074	0.0386	0.0470	0.0001	0.0021	0.0020	6.3	0.0007	0.0003	6.4
	25	0.0270	0.0813	0.1510	0.0002	0.0083	0.0076	17.6	0.0024	0.0011	17.9
Cement and Mortar Mixers Composite		0.0091	0.0421	0.0556	0.0001	0.0026	0.0024	7.2	0.0008	0.0004	7.4
Concrete/Industrial Saws	25	0.0199	0.0678	0.1257	0.0002	0.0049	0.0045	16.5	0.0018	0.0008	16.8
	50	0.0955	0.2918	0.2858	0.0004	0.0247	0.0227	30.2	0.0086	0.0038	31.6
	120	0.1065	0.4836	0.7154	0.0009	0.0589	0.0542	74.1	0.0096	0.0043	75.7
	175	0.1569	0.8701	1.3612	0.0018	0.0706	0.0649	160	0.0142	0.0063	162.4

		(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
Equipment	**MaxHP**	**ROG**	**CO**	**NOX**	**SOX**	**PM10**	**PM2.5**	**CO2**	**CH4**	**N2O**	**CO2 eqv**
Concrete/Industrial Saws Composite		0.1002	0.4088	0.5572	0.0007	0.0452	0.0416	58.5	0.0090	0.0040	59.9
Cranes	50	0.1015	0.2892	0.2394	0.0003	0.0239	0.0220	23.2	0.0092	0.0041	24.6
	120	0.0919	0.3618	0.5508	0.0006	0.0493	0.0453	50.1	0.0083	0.0037	51.5
	164	0.1009	0.4580	0.7317	0.0008	0.0455	0.0418	74.3	0.0091	0.0040	75.8
	175	0.1031	0.4821	0.7769	0.0009	0.0445	0.0410	80.3	0.0093	0.0041	81.8
	250	0.1040	0.2948	0.9948	0.0013	0.0351	0.0323	112	0.0094	0.0042	113.6
	350	0.1245	0.3886	1.1661	0.0015	0.0418	0.0384	139.3	0.0112	0.0050	141.1
	500	0.1551	0.5292	1.4230	0.0018	0.0518	0.0477	180	0.0140	0.0062	182.3
	750	0.2625	0.8887	2.4614	0.0030	0.0885	0.0814	303	0.0237	0.0105	306.8
	1000	0.9491	3.3249	10.3665	0.0098	0.3189	0.2934	971	0.0856	0.0381	984.2
Cranes Composite		0.1348	0.4737	1.1934	0.0014	0.0508	0.0468	129	0.0122	0.0054	130.6
Crawler Tractors	50	0.1176	0.3246	0.2627	0.0003	0.0270	0.0248	24.9	0.0106	0.0047	26.6
	115	0.1285	0.4742	0.7325	0.0007	0.0648	0.0596	62.9	0.0116	0.0052	64.7
	120	0.1293	0.4858	0.7686	0.0008	0.0677	0.0623	65.8	0.0117	0.0052	67.7
	125	0.1328	0.5093	0.8127	0.0008	0.0681	0.0626	70.8	0.0120	0.0053	72.7
	175	0.1674	0.7448	1.2529	0.0014	0.0713	0.0656	121	0.0151	0.0067	123.6
	250	0.1764	0.5000	1.5945	0.0019	0.0613	0.0564	166	0.0159	0.0071	168.7
	300	0.1920	0.5901	1.7234	0.0020	0.0664	0.0611	184.8	0.0173	0.0077	187.5
	500	0.2542	0.9504	2.2389	0.0025	0.0868	0.0799	259	0.0229	0.0102	262.9
	750	0.4574	1.6983	4.1042	0.0047	0.1573	0.1447	465	0.0413	0.0183	471.2
	1000	0.6901	2.6950	7.3731	0.0066	0.2361	0.2172	658	0.0623	0.0277	668.0
Crawler Tractors Composite		0.1584	0.5900	1.1593	0.0013	0.0697	0.0641	114	0.0143	0.0064	116.3
Crushing/Proc. Equipment	50	0.1741	0.5009	0.4359	0.0006	0.0422	0.0389	44.0	0.0157	0.0070	46.5
	100	0.1499	0.5548	0.7354	0.0009	0.0677	0.0623	72.0	0.0135	0.0060	74.1
	120	0.1402	0.5764	0.8552	0.0010	0.0779	0.0717	83.1	0.0127	0.0056	85.2
	175	0.1942	0.9615	1.5237	0.0019	0.0864	0.0795	167	0.0175	0.0078	170.0
	250	0.1848	0.5425	2.0202	0.0028	0.0620	0.0571	245	0.0167	0.0074	247.2
	500	0.2608	0.8480	2.7097	0.0037	0.0884	0.0813	374	0.0235	0.0105	377.4
	750	0.4147	1.3191	4.4498	0.0059	0.1418	0.1305	589	0.0374	0.0166	594.8
	1000	1.1270	3.6752	13.3218	0.0131	0.3880	0.3569	1,308	0.1017	0.0452	1323.9
Crushing/Proc. Equipment Composite		0.1733	0.6773	1.1752	0.0015	0.0748	0.0688	132	0.0156	0.0070	134.8
Dumpers/Tenders	25	0.0097	0.0320	0.0601	0.0001	0.0029	0.0027	7.6	0.0009	0.0004	7.8
Dumpers/Tenders Composite		0.0097	0.0320	0.0601	0.0001	0.0029	0.0027	7.6	0.0009	0.0004	7.8
Excavators	25	0.0198	0.0677	0.1253	0.0002	0.0047	0.0043	16.4	0.0018	0.0008	16.7
	50	0.0816	0.2841	0.2458	0.0003	0.0212	0.0195	25.0	0.0074	0.0033	26.2
	120	0.1086	0.5177	0.6791	0.0009	0.0586	0.0539	73.6	0.0098	0.0044	75.2
	121	0.1089	0.5204	0.6830	0.0009	0.0585	0.0538	74.3	0.0098	0.0044	75.9
	175	0.1208	0.6668	0.8932	0.0013	0.0512	0.0471	112	0.0109	0.0048	114.0
	200	0.1220	0.5626	0.9741	0.0014	0.0466	0.0428	127.7	0.0110	0.0049	129.5
	250	0.1242	0.3541	1.1360	0.0018	0.0372	0.0343	159	0.0112	0.0050	160.5
	300	0.1341	0.3887	1.2041	0.0019	0.0401	0.0369	173.7	0.0121	0.0054	175.6
	500	0.1735	0.5271	1.4763	0.0023	0.0516	0.0475	234	0.0157	0.0070	236.2
	750	0.2895	0.8731	2.5290	0.0039	0.0871	0.0802	387	0.0261	0.0116	391.6
Excavators Composite		0.1220	0.5338	0.9071	0.0013	0.0481	0.0442	120	0.0110	0.0049	121.3
Forklifts	50	0.0445	0.1623	0.1431	0.0002	0.0121	0.0111	14.7	0.0040	0.0018	15.3
	80	0.0442	0.1860	0.2013	0.0003	0.0173	0.0159	21.8	0.0040	0.0018	22.4
	120	0.0438	0.2176	0.2788	0.0004	0.0241	0.0222	31.2	0.0040	0.0018	31.9
	175	0.0572	0.3307	0.4261	0.0006	0.0246	0.0226	56.1	0.0052	0.0023	56.9
	250	0.0570	0.1614	0.5281	0.0009	0.0168	0.0154	77.1	0.0051	0.0023	77.9
	500	0.0781	0.2208	0.6592	0.0011	0.0228	0.0210	111	0.0070	0.0031	112.1

		(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
Equipment	**MaxHP**	**ROG**	**CO**	**NOX**	**SOX**	**PM10**	**PM2.5**	**CO2**	**CH4**	**N2O**	**CO2 eqv**
Forklifts Composite		0.0541	0.2235	0.3950	0.0006	0.0204	0.0188	54.4	0.0049	0.0022	55.2
Generator Sets	15	0.0149	0.0684	0.1016	0.0002	0.0058	0.0053	10.2	0.0013	0.0006	10.4
	25	0.0266	0.0908	0.1594	0.0002	0.0091	0.0083	17.6	0.0024	0.0011	18.0
	40	0.0629	0.1946	0.2346	0.0003	0.0177	0.0163	25.4	0.0057	0.0025	26.3
	50	0.0872	0.2639	0.2847	0.0004	0.0234	0.0215	30.6	0.0079	0.0035	31.9
	120	0.1106	0.4905	0.7587	0.0009	0.0590	0.0543	77.9	0.0100	0.0044	79.5
	175	0.1347	0.7388	1.2314	0.0016	0.0592	0.0544	142	0.0122	0.0054	143.9
	250	0.1277	0.4365	1.6763	0.0024	0.0464	0.0427	213	0.0115	0.0051	214.3
	500	0.1818	0.7230	2.3955	0.0033	0.0690	0.0635	337	0.0164	0.0073	339.5
	750	0.3035	1.1671	3.9863	0.0055	0.1134	0.1044	544	0.0274	0.0122	548.1
	1000	0.7957	2.8065	10.2314	0.0105	0.2844	0.2616	1,049	0.0718	0.0319	1060.0
Generator Sets Composite		0.0767	0.3045	0.5430	0.0007	0.0324	0.0298	61.0	0.0069	0.0031	62.1
Graders	50	0.1080	0.3263	0.2772	0.0004	0.0262	0.0241	27.5	0.0097	0.0043	29.1
	120	0.1254	0.5310	0.7729	0.0009	0.0676	0.0622	75.0	0.0113	0.0050	76.8
	140	0.1331	0.6050	0.8989	0.0011	0.0660	0.0607	92.8	0.0120	0.0053	94.7
	175	0.1467	0.7345	1.1193	0.0014	0.0631	0.0581	124	0.0132	0.0059	126.0
	195	0.1474	0.6541	1.1991	0.0015	0.0595	0.0547	136.8	0.0133	0.0059	138.9
	250	0.1492	0.4331	1.4184	0.0019	0.0494	0.0454	172	0.0135	0.0060	174.3
	300	0.1565	0.4723	1.4716	0.0020	0.0517	0.0475	183.6	0.0141	0.0063	185.8
	500	0.1855	0.6289	1.6842	0.0023	0.0608	0.0559	229	0.0167	0.0074	232.1
	750	0.3952	1.3289	3.6674	0.0049	0.1306	0.1202	486	0.0357	0.0158	491.4
Graders Composite		0.1446	0.6053	1.1663	0.0015	0.0593	0.0546	133	0.0130	0.0058	134.8
Off-Highway Tractors	120	0.2113	0.7191	1.2368	0.0011	0.1078	0.0992	93.7	0.0191	0.0085	96.8
	175	0.2045	0.8335	1.5337	0.0015	0.0871	0.0801	130	0.0185	0.0082	133.3
	250	0.1641	0.4691	1.4453	0.0015	0.0601	0.0553	130	0.0148	0.0066	132.8
	750	0.6538	2.8815	5.8130	0.0057	0.2353	0.2165	568	0.0590	0.0262	577.5
	1000	0.9818	4.4978	10.0554	0.0082	0.3436	0.3161	814	0.0886	0.0394	828.4
Off-Highway Tractors Composite		0.2077	0.7649	1.7062	0.0017	0.0818	0.0753	151	0.0187	0.0083	154.4
Off-Highway Trucks	175	0.1441	0.7580	1.0305	0.0014	0.0602	0.0554	125	0.0130	0.0058	127.2
	250	0.1400	0.3837	1.2373	0.0019	0.0412	0.0379	167	0.0126	0.0056	168.6
	300	0.1554	0.4342	1.3471	0.0020	0.0457	0.0420	187.7	0.0140	0.0062	189.9
	500	0.2170	0.6362	1.7865	0.0027	0.0634	0.0583	272	0.0196	0.0087	275.4
	750	0.3542	1.0311	2.9938	0.0044	0.1046	0.0962	442	0.0320	0.0142	446.8
	1000	0.5484	1.6691	5.9808	0.0063	0.1796	0.1652	625	0.0495	0.0220	632.6
Off-Highway Trucks Composite		0.2141	0.6361	1.8543	0.0027	0.0644	0.0593	260	0.0193	0.0086	263.1
Other Construction Equipment	4	0.0031	0.0165	0.0196	0.0000	0.0008	0.0007	2.7	0.0003	0.0001	2.7
	15	0.0118	0.0617	0.0737	0.0002	0.0029	0.0026	10.1	0.0011	0.0005	10.3
	25	0.0160	0.0544	0.1013	0.0002	0.0041	0.0037	13.2	0.0014	0.0006	13.4
	50	0.0753	0.2653	0.2585	0.0004	0.0205	0.0189	28.0	0.0068	0.0030	29.1
	120	0.1006	0.5277	0.7025	0.0009	0.0567	0.0522	80.9	0.0091	0.0040	82.3
	125	0.0999	0.5331	0.7115	0.0010	0.0554	0.0509	83.2	0.0090	0.0040	84.6
	175	0.0935	0.5873	0.8011	0.0012	0.0420	0.0386	107	0.0084	0.0038	107.9
	188	0.0956	0.5847	0.8298	0.0013	0.0423	0.0389	112.4	0.0086	0.0038	113.8
	500	0.1452	0.5234	1.5187	0.0025	0.0491	0.0452	254	0.0131	0.0058	256.3

		(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
Equipment	**MaxHP**	**ROG**	**CO**	**NOX**	**SOX**	**PM10**	**PM2.5**	**CO2**	**CH4**	**N2O**	**CO2 eqv**
Other Construction Equipment Composite		0.0872	0.3765	0.7938	0.0013	0.0330	0.0304	123	0.0079	0.0035	123.9
Other General Industrial Equipmen	15	0.0066	0.0391	0.0466	0.0001	0.0018	0.0017	6.4	0.0006	0.0003	6.5
	25	0.0185	0.0632	0.1170	0.0002	0.0044	0.0040	15.3	0.0017	0.0007	15.6
	50	0.0980	0.2738	0.2243	0.0003	0.0232	0.0214	21.7	0.0088	0.0039	23.1
	100	0.1121	0.3987	0.5490	0.0006	0.0526	0.0484	50.5	0.0101	0.0045	52.1
	120	0.1177	0.4487	0.6789	0.0007	0.0644	0.0593	62.0	0.0106	0.0047	63.7
	175	0.1261	0.5728	0.9333	0.0011	0.0549	0.0505	95.9	0.0114	0.0051	97.7
	250	0.1174	0.3177	1.2013	0.0015	0.0380	0.0350	136	0.0106	0.0047	137.3
	300	0.1366	0.3818	1.3739	0.0017	0.0443	0.0407	161.5	0.0123	0.0055	163.5
	500	0.2135	0.6384	2.0642	0.0026	0.0693	0.0638	265	0.0193	0.0086	268.5
	750	0.3546	1.0522	3.5146	0.0044	0.1165	0.1072	437	0.0320	0.0142	442.5
	1000	0.5246	1.6793	6.0067	0.0056	0.1805	0.1660	560	0.0473	0.0210	567.1
Other General Industrial Equipmen Composite		0.1542	0.5159	1.3484	0.0016	0.0580	0.0533	152	0.0139	0.0062	154.4
Other Material Handling Equipment	50	0.1361	0.3789	0.3119	0.0004	0.0323	0.0297	30.3	0.0123	0.0055	32.3
	120	0.1144	0.4370	0.6628	0.0007	0.0628	0.0578	60.7	0.0103	0.0046	62.3
	175	0.1591	0.7257	1.1860	0.0014	0.0696	0.0640	122	0.0144	0.0064	124.4
	200	0.1474	0.5966	1.2183	0.0015	0.0599	0.0551	129.7	0.0133	0.0059	131.8
	250	0.1241	0.3385	1.2829	0.0016	0.0405	0.0372	145	0.0112	0.0050	146.8
	300	0.1297	0.3627	1.3240	0.0017	0.0423	0.0390	154.3	0.0117	0.0052	156.2
	500	0.1521	0.4596	1.4883	0.0019	0.0498	0.0458	192	0.0137	0.0061	193.8
	1000	0.7021	2.2197	7.9424	0.0073	0.2379	0.2188	741	0.0634	0.0282	751.4
Other Material Handling Equipment Composite		0.1473	0.4951	1.3132	0.0015	0.0562	0.0517	141	0.0133	0.0059	143.3
Pavers	25	0.0247	0.0799	0.1500	0.0002	0.0075	0.0069	18.7	0.0022	0.0010	19.0
	50	0.1366	0.3592	0.2948	0.0004	0.0308	0.0283	28.0	0.0123	0.0055	29.9
	120	0.1387	0.5057	0.8357	0.0008	0.0729	0.0671	69.2	0.0125	0.0056	71.2
	142	0.1543	0.6148	1.0522	0.0011	0.0745	0.0685	92.8	0.0139	0.0062	95.0
	175	0.1777	0.7784	1.3769	0.0014	0.0769	0.0707	128	0.0160	0.0071	130.8
	250	0.2072	0.6081	1.9469	0.0022	0.0756	0.0695	194	0.0187	0.0083	197.3
	500	0.2275	0.9254	2.1080	0.0023	0.0818	0.0752	233	0.0205	0.0091	236.5
Pavers Composite		0.1511	0.5357	0.8542	0.0009	0.0603	0.0555	77.9	0.0136	0.0061	80.1
Paving Equipment	25	0.0153	0.0520	0.0968	0.0002	0.0039	0.0036	12.6	0.0014	0.0006	12.8
	50	0.1166	0.3049	0.2514	0.0003	0.0263	0.0242	23.9	0.0105	0.0047	25.6
	120	0.1087	0.3958	0.6561	0.0006	0.0574	0.0528	54.5	0.0098	0.0044	56.1
	175	0.1387	0.6079	1.0816	0.0011	0.0602	0.0554	101	0.0125	0.0056	103.0
	250	0.1277	0.3763	1.2206	0.0014	0.0467	0.0430	122	0.0115	0.0051	124.1
Paving Equipment Composite		0.1142	0.4316	0.7709	0.0008	0.0536	0.0493	68.9	0.0103	0.0046	70.6
Plate Compactors	15	0.0050	0.0263	0.0314	0.0001	0.0012	0.0011	4.3	0.0005	0.0002	4.4
Plate Compactors Composite		0.0050	0.0263	0.0314	0.0001	0.0012	0.0011	4.3	0.0005	0.0002	4.4
Pressure Washers	15	0.0071	0.0328	0.0487	0.0001	0.0028	0.0025	4.9	0.0006	0.0003	5.0
	25	0.0108	0.0368	0.0646	0.0001	0.0037	0.0034	7.1	0.0010	0.0004	7.3
	50	0.0315	0.1037	0.1284	0.0002	0.0094	0.0086	14.3	0.0028	0.0013	14.7
	120	0.0302	0.1443	0.2235	0.0003	0.0157	0.0145	24.1	0.0027	0.0012	24.5
Pressure Washers Composite		0.0159	0.0619	0.0878	0.0001	0.0058	0.0053	9.4	0.0014	0.0006	9.6
Pumps	15	0.0125	0.0497	0.0752	0.0001	0.0049	0.0046	7.4	0.0011	0.0005	7.6
	25	0.0359	0.1004	0.1761	0.0002	0.0109	0.0100	19.5	0.0032	0.0014	20.0
	50	0.1052	0.3116	0.3228	0.0004	0.0275	0.0253	34.3	0.0095	0.0042	35.8
	68	0.1077	0.3596	0.4380	0.0006	0.0363	0.0334	45.6	0.0097	0.0043	47.1
	120	0.1149	0.4984	0.7706	0.0009	0.0617	0.0568	77.9	0.0104	0.0046	79.6
	175	0.1385	0.7405	1.2344	0.0016	0.0611	0.0562	140	0.0125	0.0056	142.1
	250	0.1266	0.4210	1.6140	0.0023	0.0457	0.0421	201	0.0114	0.0051	203.2
	500	0.1952	0.7595	2.4849	0.0034	0.0734	0.0675	345	0.0176	0.0078	348.0
	750	0.3326	1.2556	4.2353	0.0057	0.1235	0.1136	571	0.0300	0.0133	575.5
	1000	1.0536	3.7127	13.3750	0.0136	0.3744	0.3444	1,355	0.0951	0.0423	1369.9

		(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
Equipment	**MaxHP**	**ROG**	**CO**	**NOX**	**SOX**	**PM10**	**PM2.5**	**CO2**	**CH4**	**N2O**	**CO2 eqv**
Pumps Composite		0.0748	0.2926	0.4705	0.0006	0.0323	0.0297	49.6	0.0067	0.0030	50.7
Rollers	15	0.0074	0.0386	0.0461	0.0001	0.0018	0.0016	6.3	0.0007	0.0003	6.4
	25	0.0161	0.0549	0.1023	0.0002	0.0041	0.0038	13.3	0.0015	0.0006	13.6
	50	0.1025	0.2911	0.2583	0.0003	0.0245	0.0225	26.0	0.0092	0.0041	27.5
	100	0.0997	0.3734	0.5204	0.0006	0.0451	0.0415	49.6	0.0090	0.0040	51.0
	120	0.0986	0.4063	0.6253	0.0007	0.0534	0.0491	59.0	0.0089	0.0040	60.4
	137	0.1067	0.4723	0.7447	0.0009	0.0539	0.0496	74.2	0.0096	0.0043	75.7
	175	0.1247	0.6199	1.0114	0.0012	0.0550	0.0506	108	0.0113	0.0050	109.9
	250	0.1262	0.3887	1.3124	0.0017	0.0451	0.0415	153	0.0114	0.0051	154.9
	500	0.1654	0.6313	1.6820	0.0022	0.0593	0.0545	219	0.0149	0.0066	221.5
Rollers Composite		0.0973	0.4060	0.6546	0.0008	0.0453	0.0417	67.1	0.0088	0.0039	68.4
Rough Terrain Forklifts	50	0.1181	0.3778	0.3316	0.0004	0.0300	0.0276	33.9	0.0107	0.0047	35.6
	80	0.1084	0.4013	0.4464	0.0006	0.0399	0.0367	46.1	0.0098	0.0043	47.7
	120	0.0955	0.4327	0.5995	0.0007	0.0529	0.0487	62.4	0.0086	0.0038	63.8
	175	0.1352	0.7256	1.0448	0.0014	0.0592	0.0545	125	0.0122	0.0054	126.8
	250	0.1294	0.3798	1.2955	0.0019	0.0416	0.0382	171	0.0117	0.0052	172.7
	500	0.1824	0.5717	1.7096	0.0025	0.0584	0.0537	257	0.0165	0.0073	259.2
Rough Terrain Forklifts Composite		0.1009	0.4642	0.6526	0.0008	0.0532	0.0489	70.3	0.0091	0.0040	71.7
Rubber Tired Dozers	175	0.2119	0.8457	1.5561	0.0015	0.0893	0.0821	129	0.0191	0.0085	132.5
	250	0.2435	0.6833	2.0817	0.0021	0.0881	0.0810	183	0.0220	0.0098	187.0
	500	0.3211	1.4228	2.7305	0.0026	0.1133	0.1043	265	0.0290	0.0129	269.5
	750	0.4843	2.1329	4.1797	0.0040	0.1716	0.1579	399	0.0437	0.0194	405.7
	1000	0.7496	3.4322	7.4509	0.0060	0.2591	0.2384	592	0.0676	0.0301	602.6
Rubber Tired Dozers Composite		0.2986	1.1749	2.5452	0.0025	0.1064	0.0979	239	0.0269	0.0120	243.4
Rubber Tired Loaders	25	0.0204	0.0697	0.1292	0.0002	0.0050	0.0046	16.9	0.0018	0.0008	17.2
	50	0.1200	0.3641	0.3118	0.0004	0.0292	0.0269	31.1	0.0108	0.0048	32.9
	120	0.0971	0.4152	0.6015	0.0007	0.0525	0.0483	58.9	0.0088	0.0039	60.3
	175	0.1238	0.6274	0.9501	0.0012	0.0535	0.0492	106	0.0112	0.0050	108.1
	250	0.1259	0.3685	1.2125	0.0017	0.0417	0.0384	149	0.0114	0.0050	150.8
	500	0.1867	0.6397	1.7158	0.0023	0.0613	0.0564	237	0.0168	0.0075	239.7
	750	0.3850	1.3084	3.6184	0.0049	0.1276	0.1174	486	0.0347	0.0154	491.0
	1000	0.5190	1.8389	5.9660	0.0060	0.1795	0.1651	594	0.0468	0.0208	601.3
Rubber Tired Loaders Composite		0.1195	0.4763	0.9346	0.0012	0.0508	0.0467	109	0.0108	0.0048	110.3
Scrapers	120	0.1877	0.6943	1.1141	0.0011	0.0983	0.0904	93.9	0.0169	0.0075	96.6
	175	0.2070	0.9107	1.5564	0.0017	0.0884	0.0813	148	0.0187	0.0083	151.0
	250	0.2252	0.6408	2.0481	0.0024	0.0791	0.0727	209	0.0203	0.0090	212.7
	400	0.2813	0.9831	2.5165	0.0028	0.0976	0.0898	276.6	0.0254	0.0113	280.7
	500	0.3186	1.2113	2.8288	0.0032	0.1099	0.1011	321	0.0287	0.0128	326.0
	750	0.5525	2.0861	4.9949	0.0056	0.1918	0.1764	555	0.0499	0.0222	563.2
Scrapers Composite		0.2783	1.0395	2.4118	0.0027	0.1005	0.0925	262	0.0251	0.0112	266.5
Signal Boards	15	0.0072	0.0377	0.0450	0.0001	0.0018	0.0016	6.2	0.0006	0.0003	6.3
	50	0.1151	0.3456	0.3415	0.0005	0.0296	0.0272	36.2	0.0104	0.0046	37.8
	120	0.1176	0.5214	0.7807	0.0009	0.0644	0.0593	80.2	0.0106	0.0047	81.9
	175	0.1535	0.8341	1.3333	0.0017	0.0685	0.0630	155	0.0139	0.0062	156.7
	250	0.1632	0.5350	1.9963	0.0029	0.0580	0.0534	255	0.0147	0.0065	257.6
Signal Boards Composite		0.0192	0.0934	0.1399	0.0002	0.0077	0.0071	16.7	0.0017	0.0008	17.0
Skid Steer Loaders	25	0.0202	0.0620	0.1166	0.0002	0.0063	0.0058	13.8	0.0018	0.0008	14.1
	50	0.0517	0.2263	0.2279	0.0003	0.0157	0.0144	25.5	0.0047	0.0021	26.3
	120	0.0429	0.2748	0.3267	0.0005	0.0245	0.0225	42.8	0.0039	0.0017	43.4

		(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
Equipment	**MaxHP**	**ROG**	**CO**	**NOX**	**SOX**	**PM10**	**PM2.5**	**CO2**	**CH4**	**N2O**	**CO2 eqv**
Skid Steer Loaders Composite		0.0468	0.2309	0.2522	0.0004	0.0179	0.0165	30.3	0.0042	0.0019	30.9
Surfacing Equipment	50	0.0477	0.1403	0.1359	0.0002	0.0119	0.0109	14.1	0.0043	0.0019	14.8
	120	0.0970	0.4215	0.6523	0.0007	0.0517	0.0475	63.8	0.0088	0.0039	65.2
	175	0.0894	0.4730	0.7742	0.0010	0.0392	0.0360	85.8	0.0081	0.0036	87.1
	250	0.1025	0.3374	1.1177	0.0015	0.0376	0.0346	135	0.0092	0.0041	136.3
	500	0.1532	0.6418	1.6597	0.0022	0.0567	0.0522	221	0.0138	0.0061	223.4
	750	0.2443	1.0046	2.6697	0.0035	0.0900	0.0828	347	0.0220	0.0098	350.5
Surfacing Equipment Composite		0.1277	0.5182	1.2760	0.0017	0.0468	0.0431	166	0.0115	0.0051	167.8
Sweepers/Scrubbers	15	0.0124	0.0729	0.0870	0.0002	0.0034	0.0031	11.9	0.0011	0.0005	12.1
	25	0.0237	0.0808	0.1496	0.0002	0.0058	0.0054	19.6	0.0021	0.0009	20.0
	50	0.1048	0.3425	0.3055	0.0004	0.0271	0.0249	31.6	0.0095	0.0042	33.1
	120	0.1107	0.5147	0.6989	0.0009	0.0622	0.0573	75.0	0.0100	0.0044	76.6
	175	0.1439	0.7997	1.1204	0.0016	0.0637	0.0586	139	0.0130	0.0058	141.1
	250	0.1146	0.3382	1.1784	0.0018	0.0362	0.0333	162	0.0103	0.0046	163.7
Sweepers/Scrubbers Composite		0.1148	0.5145	0.6862	0.0009	0.0510	0.0469	78.5	0.0104	0.0046	80.2
Tractors/Loaders/Backhoes	25	0.0195	0.0657	0.1237	0.0002	0.0056	0.0052	15.9	0.0018	0.0008	16.1
	50	0.0893	0.3199	0.2893	0.0004	0.0238	0.0219	30.3	0.0081	0.0036	31.6
	98	0.0757	0.3425	0.4039	0.0005	0.0337	0.0310	45.0	0.0068	0.0030	46.1
	120	0.0694	0.3529	0.4565	0.0006	0.0383	0.0352	51.7	0.0063	0.0028	52.7
	175	0.0988	0.5861	0.7696	0.0011	0.0428	0.0394	101	0.0089	0.0040	102.8
	250	0.1204	0.3666	1.1658	0.0019	0.0370	0.0340	172	0.0109	0.0048	173.5
	300	0.1421	0.4421	1.3459	0.0023	0.0436	0.0401	206.4	0.0128	0.0057	208.4
	500	0.2290	0.7443	2.0659	0.0039	0.0701	0.0645	345	0.0207	0.0092	348.1
	750	0.3462	1.1159	3.2041	0.0058	0.1072	0.0986	517	0.0312	0.0139	522.2
Tractors/Loaders/Backhoes Composite		0.0792	0.3782	0.5392	0.0008	0.0387	0.0356	66.8	0.0071	0.0032	67.9
Trenchers	15	0.0099	0.0517	0.0617	0.0001	0.0024	0.0022	8.5	0.0009	0.0004	8.6
	25	0.0397	0.1355	0.2511	0.0004	0.0097	0.0090	32.9	0.0036	0.0016	33.5
	50	0.1566	0.4082	0.3432	0.0004	0.0353	0.0325	32.9	0.0141	0.0063	35.2
	120	0.1281	0.4684	0.7862	0.0008	0.0669	0.0615	64.9	0.0116	0.0051	66.7
	175	0.1955	0.8632	1.5520	0.0016	0.0849	0.0781	144	0.0176	0.0078	146.7
	250	0.2354	0.7089	2.2485	0.0025	0.0880	0.0810	223	0.0212	0.0094	226.3
	500	0.2985	1.3011	2.8470	0.0031	0.1105	0.1016	311	0.0269	0.0120	315.6
	750	0.5663	2.4440	5.4715	0.0059	0.2099	0.1931	587	0.0511	0.0227	595.0
Trenchers Composite		0.1427	0.4675	0.6684	0.0007	0.0549	0.0505	58.7	0.0129	0.0057	60.8
Welders	15	0.0104	0.0416	0.0629	0.0001	0.0041	0.0038	6.2	0.0009	0.0004	6.4
	23	0.0187	0.0548	0.0942	0.0001	0.0059	0.0054	10.3	0.0017	0.0008	10.5
	25	0.0208	0.0581	0.1020	0.0001	0.0063	0.0058	11.3	0.0019	0.0008	11.6
	50	0.0979	0.2753	0.2535	0.0003	0.0240	0.0221	26.0	0.0088	0.0039	27.4
	120	0.0654	0.2659	0.4099	0.0005	0.0358	0.0330	39.5	0.0059	0.0026	40.4
	175	0.1101	0.5455	0.9083	0.0011	0.0490	0.0451	98.2	0.0099	0.0044	99.8
	250	0.0855	0.2618	1.0026	0.0013	0.0301	0.0277	119	0.0077	0.0034	120.3
	500	0.1092	0.3838	1.2526	0.0016	0.0394	0.0363	168	0.0098	0.0044	169.2
Welders Composite		0.0646	0.2096	0.2564	0.0003	0.0225	0.0207	25.6	0.0058	0.0026	26.5

Notes:

SCAQMD emission factors for 2013 (SCAQMD 2008)

Offroad diesel exhaust $PM_{2.5}$ = 92% of PM_{10} per EMFAC 2007 version 2.3 (SCAQMD 2008)

Offroad N_2O per Annex 3, Table A-103 (EPA 2011)

Non-matching application-specific values interpolated or extrapolated

EPA GWPs for CO_2 eqv (1, 21, 310)

SCAB Fleet Average Emission Factors

Onroad 2013

Air Basin	SC

	(lb/mi)	(lb/mi)	(lb/mi)	(lb/mi)	(lb/mi)	(lb/mi)	(lb/mi)	(lb/mi)	(lb/mi)	(lb/mi)
Vehicle Type	**ROG**	**CO**	**NOX**	**SOX**	**PM10**	**PM2.5**	**CO2**	**CH4**	**N2O**	**CO2 eqv**
Light Duty (pickup trucks)	0.00075	0.00709	0.00071	0.00001	0.00009	0.00006	1.10087	0.00007	0.00003	1.11070
Medium Duty (work trucks)	0.00206	0.01408	0.01577	0.00003	0.00060	0.00050	2.78163	0.00010	0.00015	2.83046
Heavy Heavy Duty (tractor/trailers)	0.00226	0.00932	0.02743	0.00004	0.00134	0.00115	4.21519	0.00010	0.00010	4.24784

Notes:
SCAQMD emission factors for 2013 (SCAQMD 2008)
HHD includes tire & brake wear
Onroad N_2O per Annex 3, Table A-101 (EPA 2011)
EPA GWPs for CO_2 eqv (1, 21, 310)

APPENDIX D

Methodology to Determine Effect of Loss of Generation on Greenhouse Gases

The following describes the methodology used to determine the effect of this loss in generation on GHGs. A loss of generation capacity would have to be made up for by other electric energy retailers (i.e., purchased on the market) to meet demand. Electricity purchased on the California grid could include a variety of generation sources, including non-renewable (fossil fuel) sources, which generate GHGs, as well as renewable sources with negligible GHG emissions. To estimate the equivalent amount of GHGs produced by replacement electric generation, the methodology presented in the California Climate Action Registry (CCAR 2009) was used. This methodology is based on a database for GHGs associated with electric production (Emissions and Generation Resource Integrated Database, or eGRID) developed for the United States Environmental Protection Agency (EPA). The eGRID database is a globally recognized source of emissions data for electric power generated in the United States. eGRID is widely used for many other applications, such as EPA's Power Profiler and Carbon Footprint Tools, indirect emissions under the World Resources Institute, the Climate Registry, California Climate Action Registry, EPA Climate Leaders protocols, and many non-governmental organization tools and methodologies.

The eGrid divides the United States into regions and sub-regions. The region for California (CAMX) is a sub-region within the Western Electricity Coordination Council (WECC) area. The eGrid contains the most recent emissions operating data for California from all electricity providers, including coal and gas-fired power plants, cogeneration, biomass, solar, geothermal, nuclear, wind, hydroelectric, and other sources. Emissions are reported for three GHGs: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O). The eGRID provides total output emission rates, as pounds per megawatt hour (lb/MWh), for CO_2, CH_4, and N_2O. The total output emission rates are the appropriate value to use for carbon foot printing and to assign an emissions value from the consumption of purchased electricity (EPA 2011). These output emissions rates were then converted to carbon dioxide equivalents, using the global warming potential (GWP) factors presented in CCAR (2009) and as described previously.

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