Western Regional Dam Safety Forum

The Use of Electronic Data Management System with GIS for Enterprise Risk Management and Emergency Response

Joseph Sun
Robert White, Katie Wooddell, Scott Steinberg
PG&E
January 15, 2008

Facing the Facts …

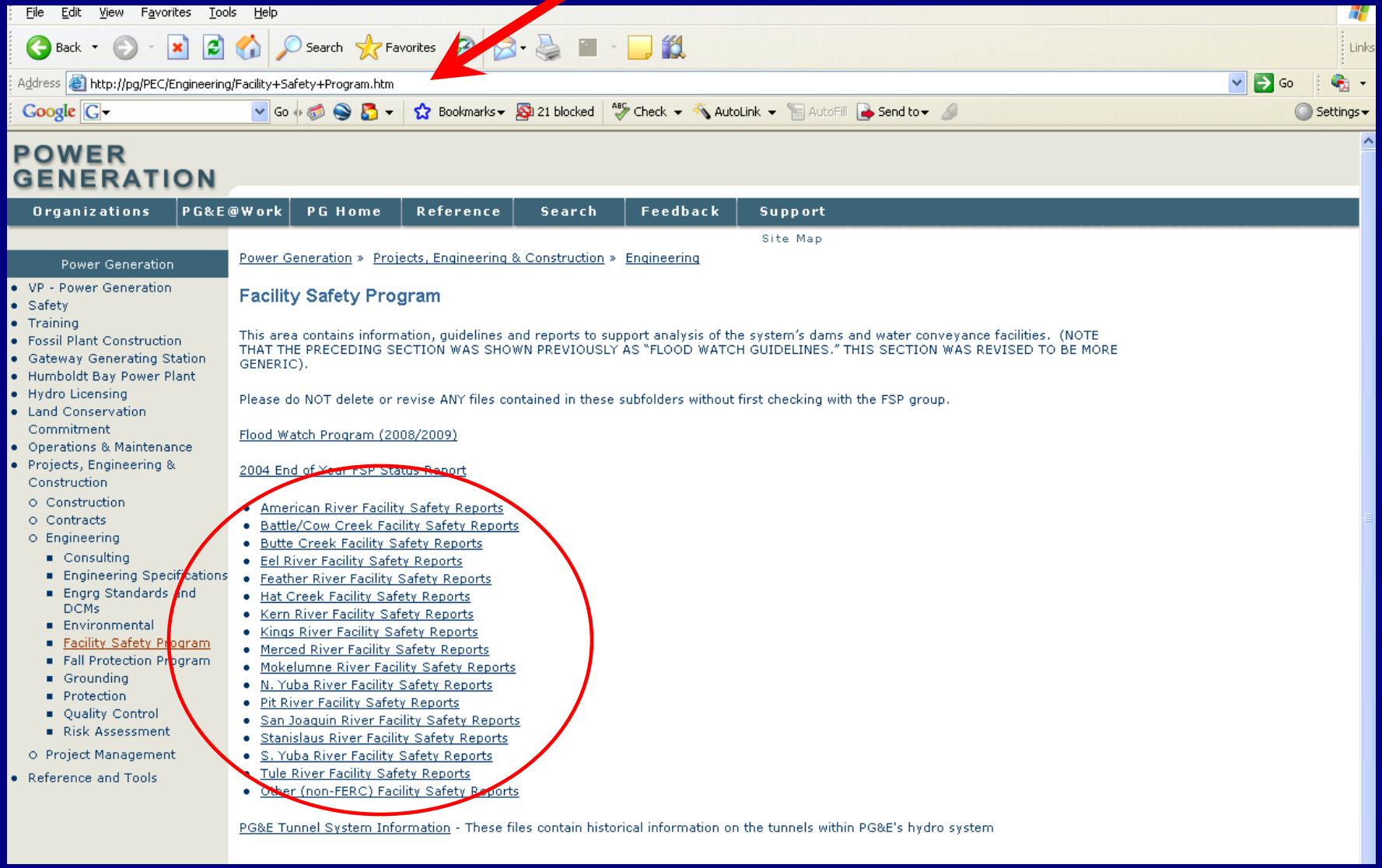
- **Aging work force**
- **Loss of institutional knowledge**
- **Misplace of documentation and paper trail**
- **Budgetary constraints**
- **Increase demand for emergency preparedness**
- **Evolution of technology**

Solution … PG&E's example

- **Embrace Technology**
  - Electronic data management
  - Integration of GIS and electronic data management
- **Establish System Integrity Model (Institutional Knowledge)**
  - Allocate limited resources to reduce the highest risk
  - Improve preparedness and prioritize emergency response
- **Improve Emergency response**
  - USGS ShakeMap (GIS format) – Post earthquake inspection
  - NOAA Precipitation Map (GIS format) – Prioritize post storm inspection
- **PG&E Examples**
  - DamInfo database and automation of earthquake reports
  - Canals risk assessment
  - Gas Pipeline Integrity Management Program

PG&E Electric Data Management System

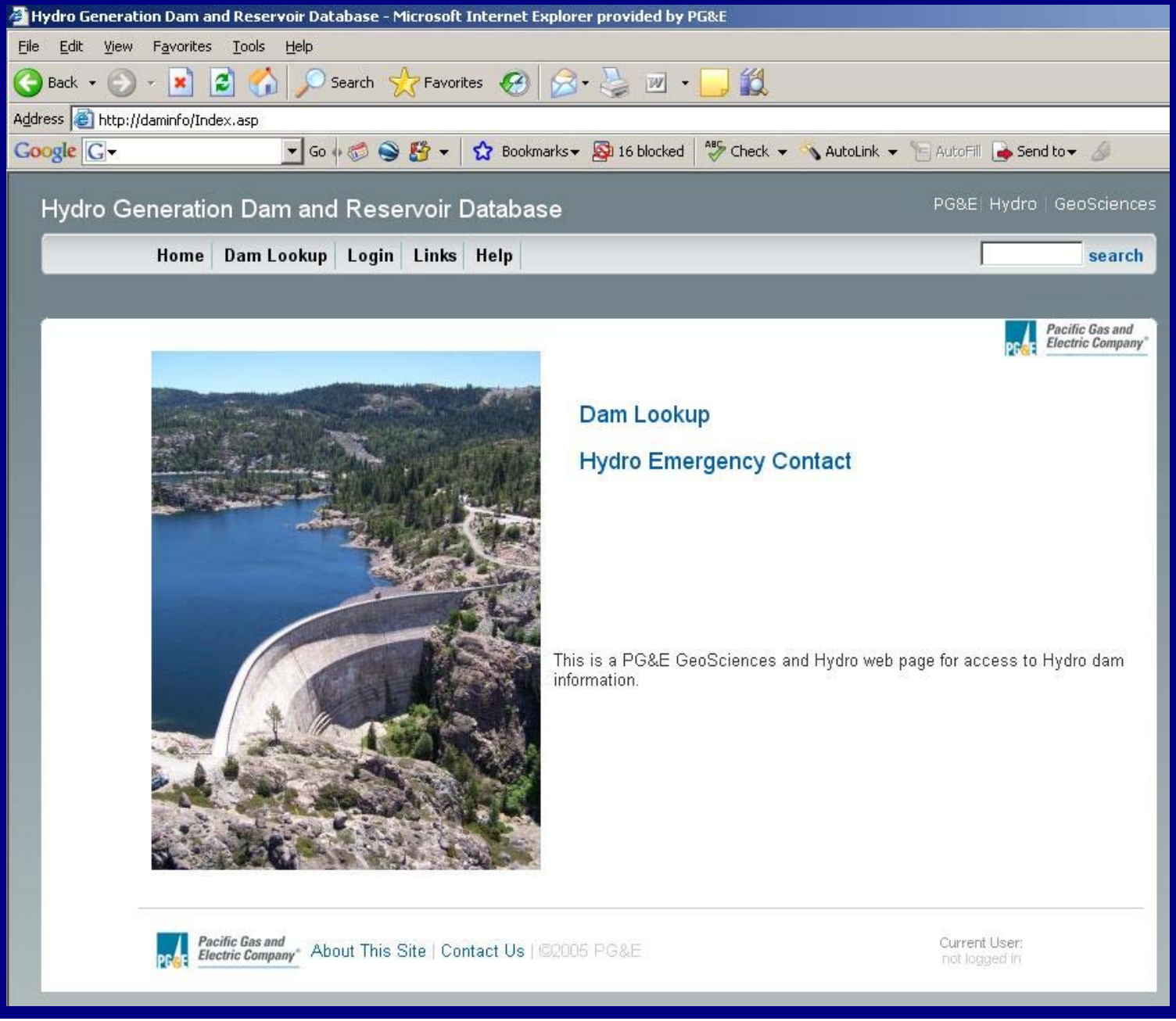
- FERC Part 12 Reports on PG&E intranet



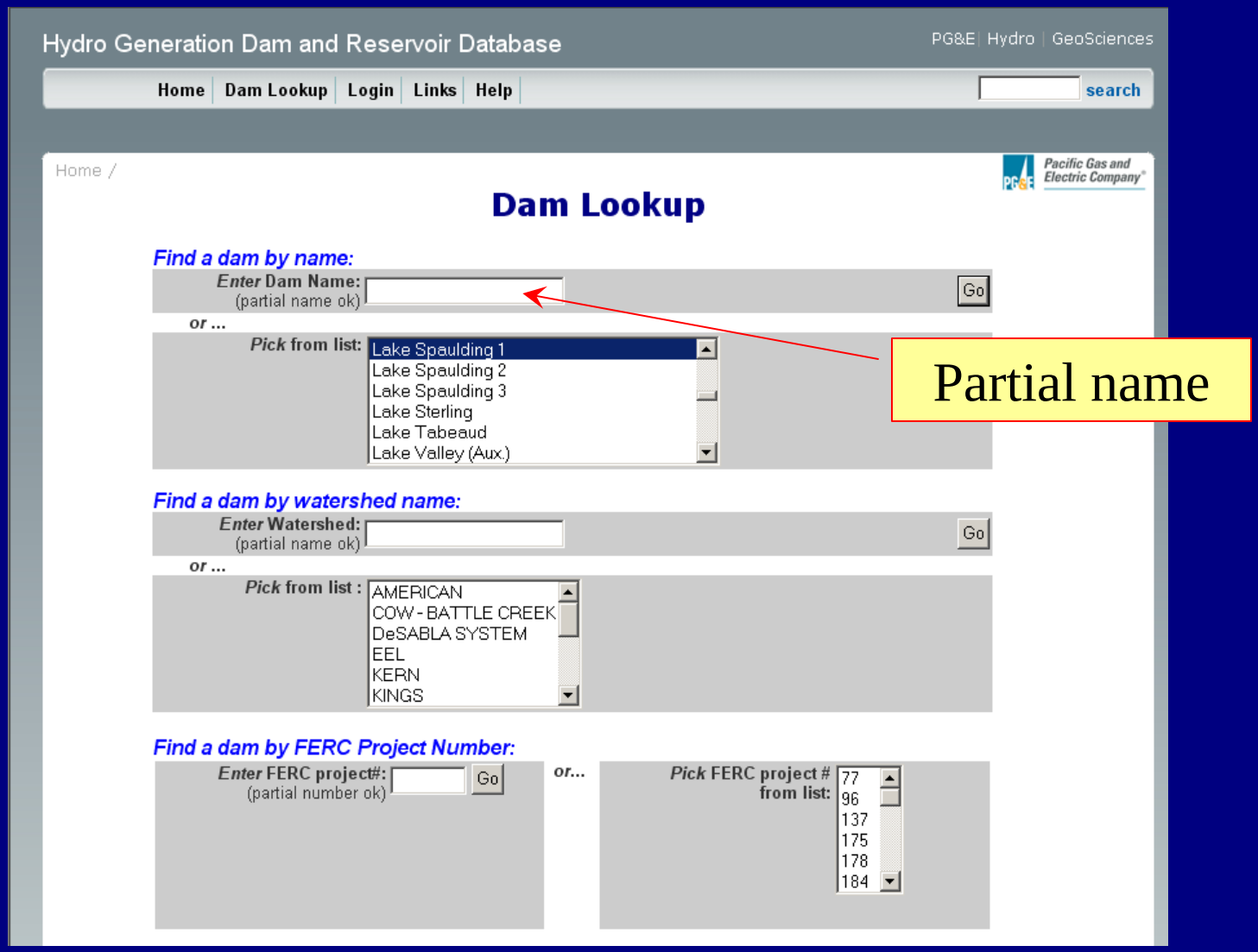
PG&E Web Based DamInfo Database

- **Compiled from the following three sources**
  - PG&E internal database
  - DSOD Bulletin 17
  - National Inventory of Dams (NID)
- **User friendly interface**
- **Key information in one place**
  - Physical data
  - Emergency contact
  - Instrumentation data
  - Photos, drawings, reports
  - Can be converted to Access data base and stored on a CD

DamInfo Database: Homepage



DamInfo Database: Dam Lookup



Partial name

DamInfo Database: General Info.

Home / Dam Lookup

Pacific Gas and Electric Company

General Info: Lake Spaulding 1 Dam

- General
- Physical
- Hydraulic
- Operations
- EAP Notification
- Inspections
- Instrumentation
- Reference
- Photos
- Drawings
- Print Version

License:

Dam Name	Lake Spaulding 1	N	
Reservoir Name	(no data)		
Alternate Name	(no data)		
Watershed	YUBA - BEAR		
Mainstem Stream	SFK YUBA RIVER		
FERC Project No.	2310	D	
State Dam No.	97-029	Ti	

Location and Geospatial Data:

Latitude (deg)	39.3267
Longitude (deg)	120.6417
Topo Map Link	TopoZone
Aerial Photo Link	TerraServer
Internal GIS Link	PG&E MapGuide

Design:

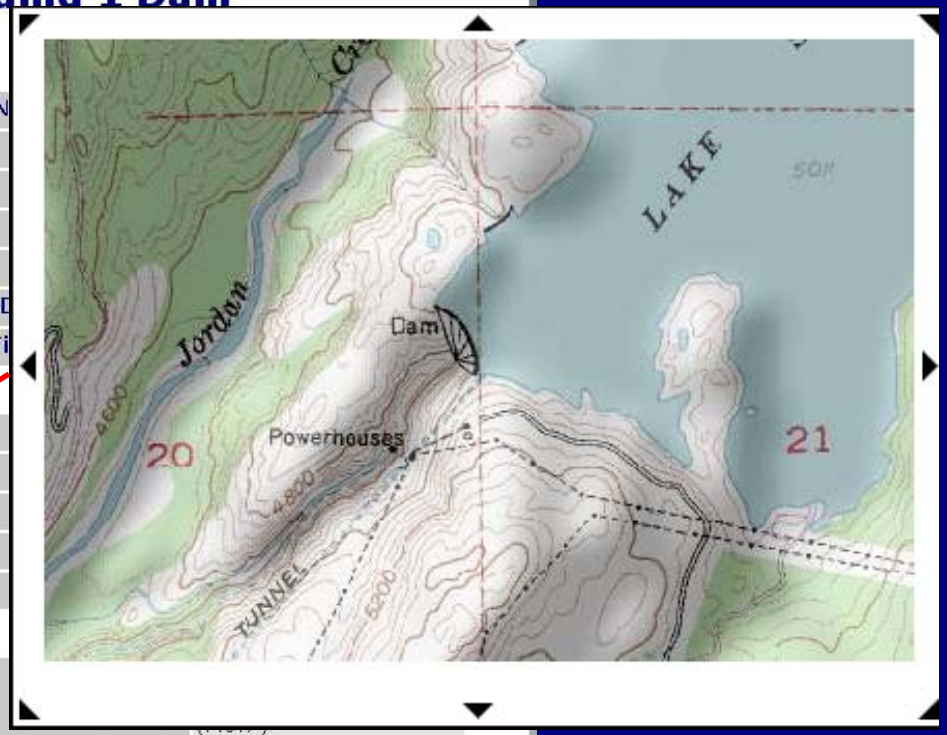
Year Built	(no data)		
Year Modified	(no data)	MCE Dist(Mi/KM)	7.5 Miles / 12.0 KM
Dam Type	Conc. Face	Earthquake PGA	(no data)

Generation:

Gen. Capacity (MW)	(no data)	No. of Tunnels	(no data)
No. of P.H.	(no data)	No. of Penstocks	(no data)
No. of Units	(no data)	No. of Canals	(no data)

Inspection Info:

Last Inspection	(no data)	Last Part 12	(no data)
Inspect. Freq.	(no data)		



(Please contact the site administrator to request changes to document directories.)

DamInfo Database: General Info.

Home / Dam Lookup

Pacific Gas and Electric Company

General Info: Lake Spaulding 1 Dam

- General
- Physical
- Hydraulic
- Operations
- EAP Notification
- Inspections
- Instrumentation
- Reference
- Photos
- Drawings
- Print Version

License:

Dam Name	Lake Spaulding 1
Reservoir Name	(no data)
Alternate Name	(no data)
Watershed	YUBA - BEAR
Mainstem Stream	SFK YUBA RIVER
FERC Project No.	2310
State Dam No.	97-029

Location and Geospatial Dat

Latitude (deg)	39.3267
Longitude (deg)	120.6417
Topo Map Link	TopoZone
Aerial Photo Link	TerraServer
Internal GIS Link	PG&E MapGuide

Design:

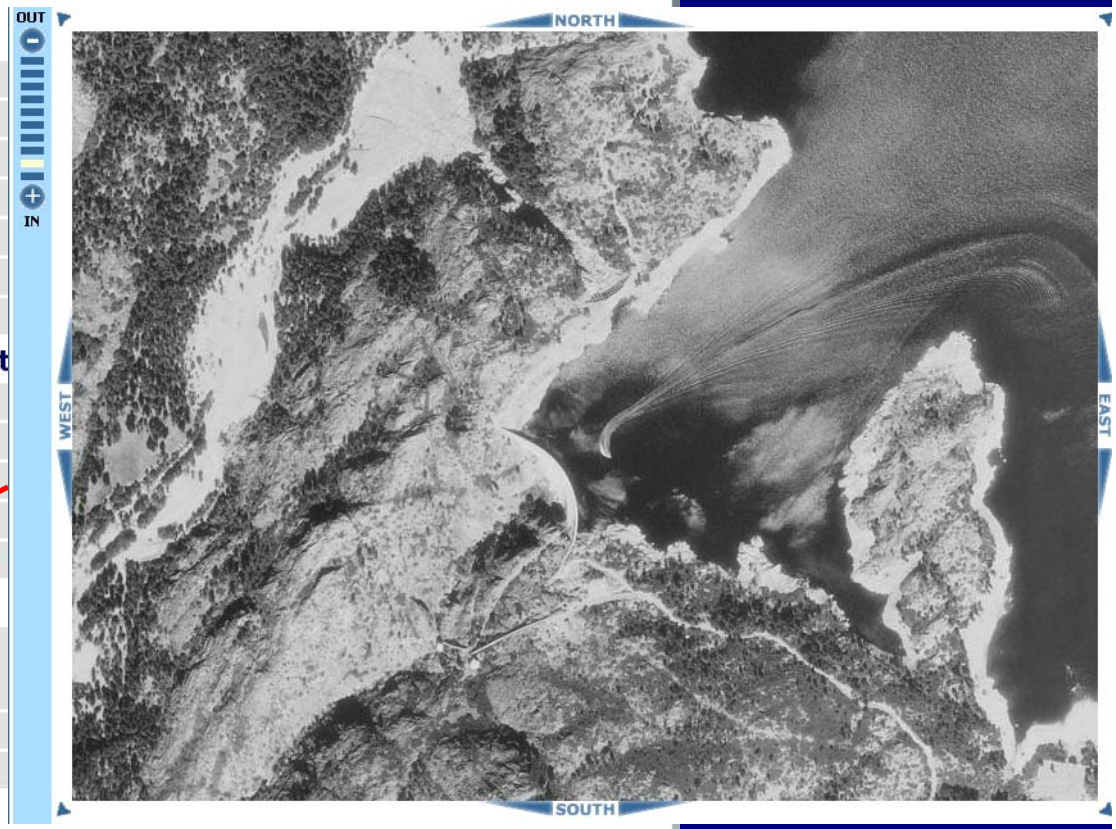
Year Built	(no data)
Year Modified	(no data)
Dam Type	Conc. Face

Generation:

Gen. Capacity (MW)	(no data)	No. of Tunnels	(no data)
No. of P.H.	(no data)	No. of Penstocks	(no data)
No. of Units	(no data)	No. of Canals	(no data)

Inspection Info:

Last Inspection	(no data)	Last Part 12	(no data)
Inspect. Freq.	(no data)		



(Please contact the site administrator to request changes to document directories.)

DamInfo Database: General Info.

Home / Dam Lookup

Pacific Gas and Electric Company

General Info: Lake Spaulding 1 Dam

- General
- Physical
- Hydraulic
- Operations
- EAP Notification
- Inspections
- Instrumentation
- Reference
- Photos
- Drawings
- Print Version

License:

Dam Name	Lake Spaulding 1	National Dam ID	CA00358
Reservoir Name	(no data)	EAP Status	No
Alternate Name	(no data)	Date of EAP	(no data)
Watershed	YUBA - BEAR	D/S Hazard	(no data)
Mainstem Stream	SFK YUBA RIVER	D/S City	(no data)
FERC Project No.	2310	Dist to D/S City	(no data)
State Dam No.	97-029	Time to D/S City	(no data)

Location and Geospatial Dat

Latitude (deg)	39.3267
Longitude (deg)	120.6417
Topo Map Link	TopoZone
Aerial Photo Link	TerraServer
Internal GIS Link	PG&E MapGuide

Design:

Year Built	(no data)
Year Modified	(no data)
Dam Type	Conc. Face

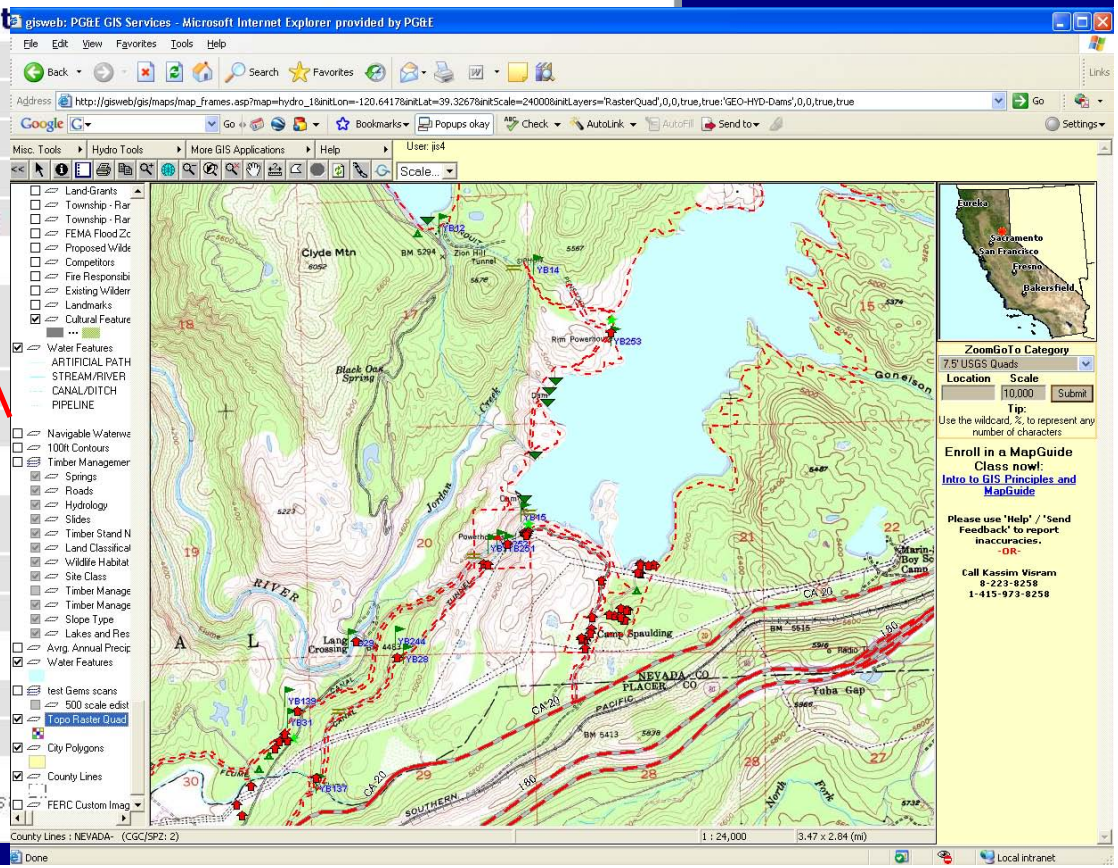
Generation:

Gen. Capacity (MW)	(no data)
No. of P.H.	(no data)
No. of Units	(no data)

Inspection Info:

Last Inspection	(no data)
Inspect. Freq.	(no data)

(Please contact the site administrator to reques



DamInfo Database: Physical Info.

Hydro Generation Dam and Reservoir Database

PG&E | Hydro | GeoSciences

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Home / Dam Lookup

Pacific Gas and Electric Company

Physical Info: Lake Spaulding 1 Dam

- General
- Physical
- Hydraulic
- Operations
- EAP Notification
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- Instrumentation
- Reference
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- Print Version

Dam:

Height (ft)	(no data)	U/S Slope	16:100 3:100 Vert. Var.
Crest El. PG&E (ft)	4876.5	D/S Slope	Var.
Crest El. NGVD (ft)	(no data)	Parapet Type	Structural
Crest Length (ft)	(no data)	Parapet Wall (ft)	1
Crest Width (ft)	(no data)	Freeboard (ft)	21.5
Base Width (ft)	(no data)	NHWL F/B (ft)	1
Volume (cu yd)	191772		

Reservoir:

Drainage (sq mi)	118	Storage (Acre-ft)	74773

Lake Storage (Acre-ft):

Normal	(no data)	Min	5000
		Max	74773

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Current User: not logged in

DamInfo Database: Hydraulic Info.

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Pacific Gas and Electric Company

Hydraulic Info: Lake Spaulding 1 Dam

- General
- Physical
- Hydraulic
- Operations
- EAP Notification
- Inspections
- Instrumentation
- Reference
- Photos
- Drawings
- Print Version

Hydrologic:

Record Flood (cfs)	(no data)	PMF (cfs)	(no data)
Record Flood Date	(no data)	IDF (cfs)	(no data)
Req'd Fish Release (cfs)	(no data)	100-Yr Flood (cfs)	(no data)

Low Level Outlet:

Discharge Rate	(no data)		

Spillway:

Type	(no data)	Capacity (cfs)	55;000
Crest El. (ft)	(no data)	DSOD Rating (ft)	(no data)
Width (ft)	(no data)	Freeboard (ft)	0
Depth (ft)	(no data)		

Flashboards:

Flashboards	No	Top of F/B NGVD	(no data)

Gates:

No gates have been entered for Dam: Lake Spaulding 1, Structure ID: 57

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Current User:
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DamInfo Database: Operations

Home / Dam Lookup

Pacific Gas and Electric Company

Operations Info: Lake Spaulding 1 Dam

- General
- Physical
- Hydraulic
- Operations
- EAP Notification
- Inspections
- Instrumentation
- Reference
- Photos
- Drawings
- Print Version

Reservoir Storage (Acre-ft):

Normal	(no data)	Min	5000
		Max	74773

Pool Elevation:

Normal WSEL NGVD	(no data)	Min WSEL NGVD	4861.6
Dam Operation	*Limitations Doc.*	Max WSEL NGVD	5014.6

Gage:

PG&E Number	YB15

Min Pool:

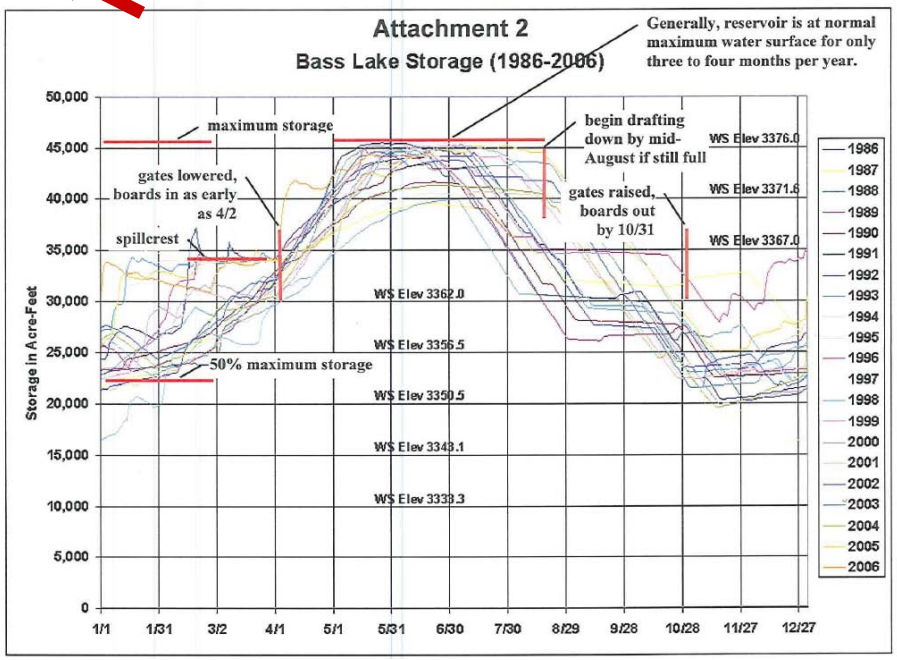
Min Req'd Level Date	(no data)
Min Pool Elevation (ft)	(no data)

Spillgate:

Open Date	11/1 - 4/1

Flashboards:

Install Date	(no data)



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DamInfo Database: EAP Notifications

Hydro Generation Dam and Reservoir Database

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PACIFIC GAS AND ELECTRIC COMPANY
FERC NO. 2310-CA, DRUM-SPAULDING PROJECT
(DRUM JURISDICTION)
NOTIFICATION FLOWCHART I-2

NOTE: Dotted line signifies advise and put on alert.

HAZARDOUS SITUATION DEVELOPING

DRUM SWITCHING CENTER
(530) 389-2551 PG&E 734-5000
PG&E 734-5001
Radio: WNQW 628-451.2 MHz Tx PL Tone 67
Radio: WNQW 628-456.2 MHz Rx PL Tone 88.5

(3) (4) (1) (2)

PG&E Electric Trading
(415) 973-5789 PG&E 223-5789

CONTACT ONE
GENERATION SUPERVISOR OR ON-CALL SUPERVISOR
BILL WILLIAMS

DAVE WARD Generation Supervisor
Office (530) 389-2205 PG&E 734-5247
Home (530) 878-1534 Pager (530) 889-4439

DAVE BARRETT Generation Supervisor
Office (530) 889-5117 PG&E 732-5117
Home (530) 272-0525 Pager (530) 224-8077
Cell (530) 906-2867

(3) (4) (1) (2)

CONTACT ONE
PG&E GOV'T & PUBLIC AFFAIRS
PAUL MORENO
Office (530) 896-4239 PG&E 751-4230
Cell (415) 823-2347 Home (530) 894-7788
JANET WALTHER
Office (530) 896-4531 PG&E 750-4535
Home (530) 343-1525 Cell (530) 518-6730

CONTACT ONE
HYDRO GENERATION/G.O.
CHARLES AHLGREN Principal Engineer
Office (415) 973-1523 PG&E 223-1523
Home (925) 672-2881 Cell (415) 350-0465
KELLY LINDBLOM Facility Safety Coordinator
Office (415) 973-1923 PG&E 223-1923
Home (925) 843-5333 Cell (415) 722-2253
KEITH WITZ Manager - Engineering
Office (415) 973-0353 PG&E 223-0353
8657 Cell 415-298-8400
JACK PURKIS Director - Hydro O&M
Office (415) 973-3142 PG&E 223- 3142
Home (805) 481-2343 Cell (805) 440-9045
Gloria Ciocarello (R. Livingston's Secretary)
Office (415) 973-658 PG&E 223-6586

CONTACT ALL
(For Drum FB Only) :
NEVADA IRRIGATION DISTRICT,
YUBA-BEAR PROJECT
(530) 273-8571 or (530) 389-8409
(For Kelly and Lake Valley Only) :
USACE - LAKE CLEMENTINE (Englebright hdqrt)
Normal Hours: (530) 432-6427
After Hours: Cell: (530) 701-2654
Home: (530) 432-0909
CALIFORNIA STATE PARKS
NORCOM Center: (916) 358-1300 (24hr)
JAY GALLAWAY - Park Superintendent, Auburn
Office: (530) 823-4173

CONTACT IF INVOLVE SECURITY THREAT :
PG&E CORPORATE SECURITY
JIM MOORE Security Representative
Office (916) 386-5244 PG&E 721-5244
or (415) 973-632 PG&E 223-6320
After hours: (415) 973-7000 PG&E 223-7000

(4) (5) (1) (2) (3)

C. P. U. C.
STAFF (24-HR)
1-800-235-1076
OR LEAVE A MESSAGE
1-800-235-7128

CONTACT ALL
STATE OES WARNING CENTER
(916) 845-8911
NATIONAL WEATHER SERVICE

CONTACT ONE
STATE P.S.O.P.

LAKE VALLEY DAM
KELLY LAKE DAM

Placer County Sheriff
ED BONNER, Sheriff:
(530) 823-4411 (emergency)

CONTACT ALL
CalTrans - Marysville
(916) 853-7900 (24-Hour)
Sky Mountain Christian Camp
(530) 389-2118 or (530) 389-2169
Snow Flower Campground
(530) 389-8241 or (530) 389-9610
USFS Dispatcher
Normal Hours: (530) 265-4531
After Hours (emerg): (530) 478-6111
Bureau of Land Management
(559) 781-5780 (24hr)
Highway Patrol
Emergency Dispatch: (916) 861-1344
Normal Dispatch: (916) 861-1300
Department of Public Works
Placer County
(530) 883-7500

WISE SWITCHING CENTER
(530) 889-3282 PG&E 732-3282

KIDD LAKE DAM
UPPER PEAK DAM
LOWER PEAK DAM

Placer County Sheriff
ED BONNER, Sheriff:
(530) 823-4411 (emergency)

CONTACT ALL
1000 Trails Campground
(530) 426-3112 or (530) 426-3362
Rainbow Lodge Emer (530) 426-3250 (24-HR)
(530) 462-3661 Mgr. (530) 426-3366
CalTrans - Marysville
(916) 853-7900 (24-Hour)
USFS Dispatcher
Normal Hours: (530) 265-4531
After Hours (emerg): (530) 478-6111
Highway Patrol
Emergency Dispatch: (916) 861-1344
Normal Dispatch: (916) 861-1300
Nevada County Sheriff/OES
KEITH ROYAL
(530) 265-1384
Dispatch : (530) 265-7880
DENNIS CASSELIA OES Coordinator
Office : (530) 265-1403
Dispatch : (530) 265-7880

WISE SWITCHING CENTER
(530) 889-3282 PG&E 732-3282

Yuba County Water Agency
(530) 692-1741 PG&E 743-3321

DRUM FOREBAY DAM

Placer County Sheriff
ED BONNER, Sheriff:
(530) 823-4411 (emergency)

CONTACT ALL S.E. DAM
CalTrans - Marysville
(916) 853-7900 (24-Hour)
Highway Patrol
Emergency Dispatch: (916) 861-1344
Normal Dispatch: (916) 861-1300
Union Pacific Dispatcher
1-800-892-1283
USFS Dispatcher
Normal Hours: (530) 265-4531
After Hours (emerg): (530) 478-6111

N.W. DAM
USFS Dispatcher
Normal Hours: (530) 265-4531
After Hours (emerg): (530) 478-6111

WISE SWITCHING CENTER
(530) 889-3282 PG&E 732-3282

BLUE LAKE DAM
RUCKER LAKE DAM
FORDYCE DAM
SPAULDING DAMS 1, 2, 3

Nevada County Sheriff/OES
(530) 265-7880 (24-hr Dispatch)
KEITH ROYAL, Sheriff:
(530) 265-1384
TOM COBURN OES Coordinator
Office (530) 273-2238
Dispatch : (530) 265-7880 (24-Hr.)

CONTACT ALL
CalTrans - Marysville
(916) 853-7900 (24-Hour)
Washington Fire Chief
(530) 274-1372 Cell (530) 362-2267
Pine Air Campground
(530) 265-2832
River Rest Resort
(530) 265-4306
Washington Store
(530) 265-4778
Washington campround
Washington Trailer Park
Skippers Cove
(530) 432-6302
Yuba County Sheriff
(530) 743-7302 (24-hr Dispatch)
Yuba County OES
Kelly J. Purdom (530) 743-7520, M-F(8-5) o
USFS Dispatcher
Normal Hours: (530) 265-4531
After Hours (emerg): (530) 478-6111

WISE SWITCHING CENTER
(530) 889-3282 PG&E 732-3282

CONTACT ALL
Yuba County Water Agency
(530) 692-1741 PG&E 743-3321
US Army Corps - (Englebright headquarter)
Normal Hours: (530) 432-6427
After Hours: Cell: (530) 701-2654
Home: (530) 432-0909

NOTE:
EMERGENCY SERVICES AND SHERIFF

Page

DamInfo Database: Instrumentation Info.

Hydro Generation Dam and Reservoir Database

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Pacific Gas and Electric Company

Instruments Info: Lake Spaulding 1 Dam

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Instrument Links:

FSP Data *View Spreadsheet*

Generic Calculator

Instruments:

No instruments have been entered for Dam: Lake Spaulding 1, Structure ID: 57

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Current User:
not logged in

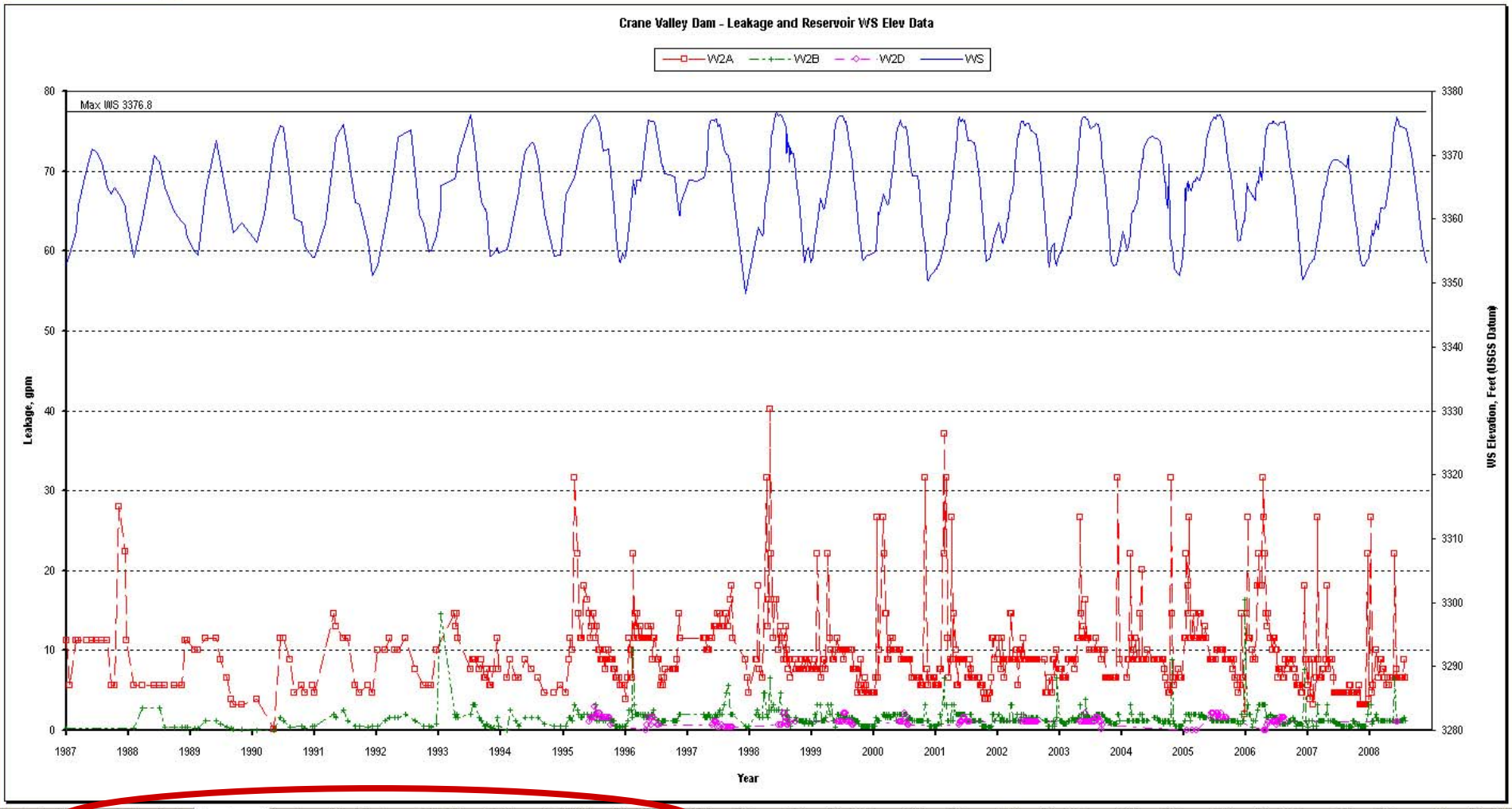
Crane Valley Dam (Hydraulic Fill & Rock Fill) **Plans**

Overall Plan

crane.xls - Microsoft Internet Explorer provided by PG&E

File Edit Favorites Help View Insert Format Tools Chart Help

Address \\go260\PG\hydro\facsafty\damsafty\damleak\crane.xls



Crane Valley Data | Leakage | Leakage (2) | Release & WS Elev | Release & WS Elev (2) | Group Piez | Group 1 Piez (2) | Group 2 Piez | Group 2 Piez (2) | Group 3 Piez | Group 3 Piez (2) | Group 4 Piez | Group 4 Piez (2)

Unknown Zone

Home / Dam Lookup

Pacific Gas and Electric Company

Reference Documents: Philbrook (Main?) Dam

- General
- Physical
- Hydraulic
- Operations
- EAP Notification
- Inspections
- Instrumentation
- Reference
- Photos
- Drawings
- Print Version

Uploaded Reference Files

(includes all file types, e.g. Generic, Photo, etc.)

View: [Full] Brief

Sort Order: [Title] Author Type IssueDate PostDate

Title	Type	File Size (KB)	Posted By	Post Date	Author	Issue Date	Doc Number	Rev Number	Rev Date
4th Five-Year Review of Safety of Philbrook Dam	Report	(no data)	jis4	5/11/2005	Thomas M. Leps Inc. and Robert B. Jensen	12/1/1984	(no data)	(no data)	(no data)
Filename:	Philbrook.4th Part12.1984.pdf								
Comments:	4th FERC Part 12 Inspection Report. 30 pages.								
5th Five-Year Review of Safety of Philbrook Dam	Report	39531	jis4	10/28/2005	T.M. Leps and R.B. Jensen	12/1/1989	(no data)	(no data)	(no data)
Filename:	Philbrook.5th Part12.1989.pdf								
Comments:	5th FERC Part 12 Inspection Report. 47 pages.								
Dam Break Analysis	Report	1976	jis4	10/28/2005	C.B. Cecilio and J.C. Tello	7/1/1981	(no data)	(no data)	(no data)
Filename:	1981 - Downstream Effects of Failure of Philbrook Dam Under PMF.pdf								
Comments:	Downstream effects of the hypothetical failure of Philbrook dam under the probable maximum flood.								
Review of Safety of Philbrook Dam - 1st Part 12	Report	(no data)	jis4	5/11/2005	A.G. Strassburger	4/1/1970	(no data)	(no data)	(no data)
Filename:	Philbrook.1st Part12.1970.pdf								
Comments:	1st Ferc Part 12 Inspectin Report. 10 Pages.								
Second Five Year Review of Safety of Philbrook Dam	Report	(no data)	jis4	5/11/2005	J. A. Jedlicka	5/1/1975	(no data)	(no data)	(no data)
Filename:	Philbrook.2nd Part12.1975.pdf								
Comments:	2nd FREC Part 12 Inspection Report. 11 pages.								
Third Five-Year Review of Safety of Philbrook Dam	Generic	(no data)	jis4	5/11/2005	Thomas M. Leps, Inc.	5/1/1980	(no data)	(no data)	(no data)
Filename:	Philbrook.3rd Part12.1980.pdf								
Comments:	3rd FERC Part 12 Inspection Report. 15 pages								

Home / Dam Lookup

Pacific Gas and Electric Company

Reference Documents: Philbrook (Main?) Dam

- General
- Physical
- Hydraulic
- Operations
- EAP Notification
- Inspections
- Instrumentation
- Reference
- Photos
- Drawings
- Print Version

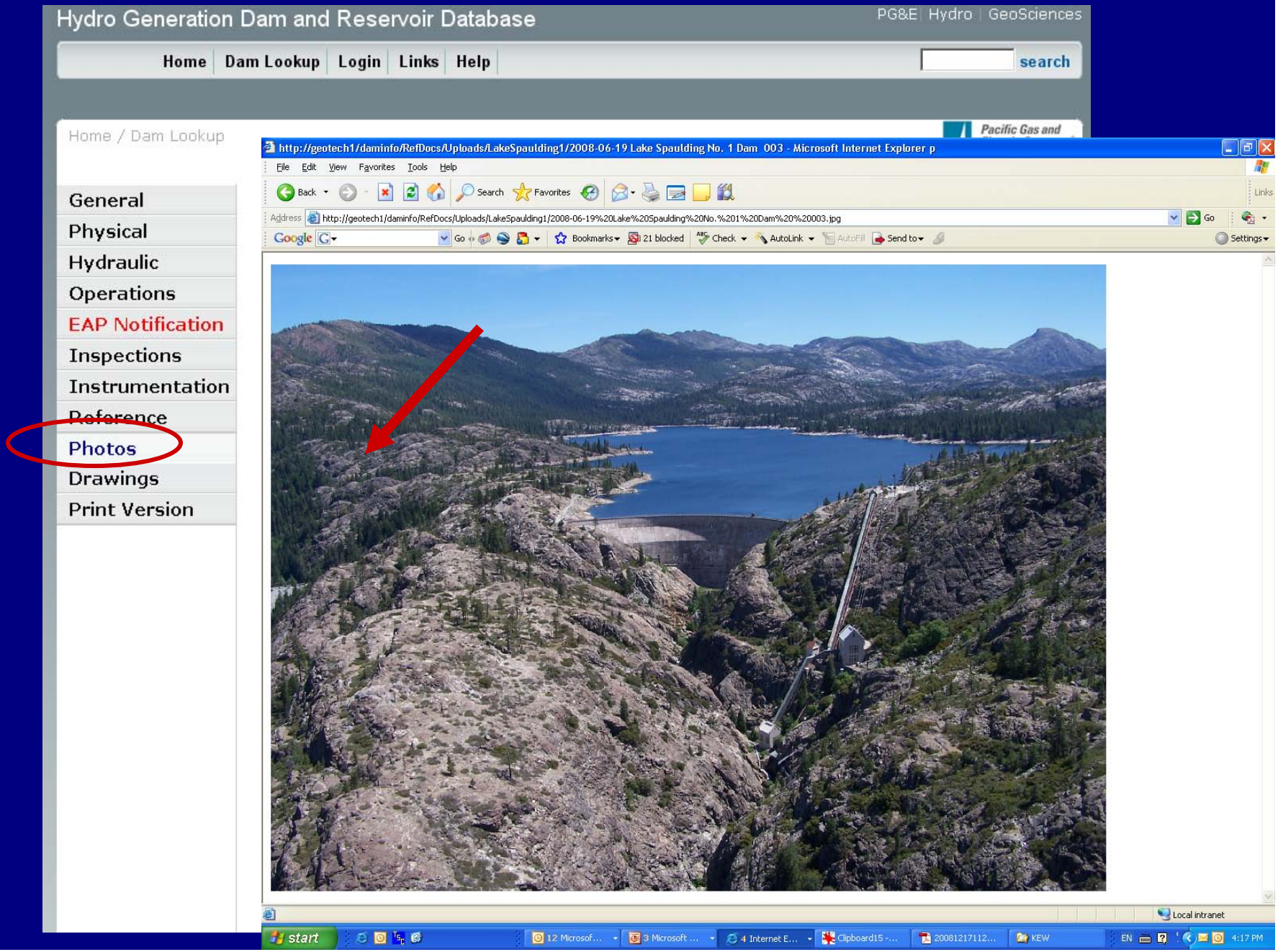
Uploaded Reference Files

View: Full [Brief]

Sort Order: [Title] Author IssueDate

Title	Author	Issue Date	File Size (KB)	Comments
4th Five-Year Review of Safety of P hilbrook Dam	Thomas M. Leps Inc. and Robert B. Jensen	12/1/1984	(no data)	4th FERC Part 12 Inspection Report. 30 pages.
5th Five-Year Review of Safety of P hilbrook Dam	T.M. Leps and R.B. Jensen	12/1/1989	39531	5th FERC Part 12 Inspection Report. 47 pages.
Dam Break Analysis	C.B. Cecilio and J.C. Tello	7/1/1981	1976	Downstream effects of the hypothetical failure of Philbrook dam under the probable maximum flood.
Review of Safety of Philbrook Dam - 1st Part 12	A.G. Strassburger	4/1/1970	(no data)	1st Ferc Part 12 Inspectin Report. 10 Pages.
Second Five Year Review of Safety o f Philbrook Dam	J. A. Jedlicka	5/1/1975	(no data)	2nd FREC Part 12 Inspection Report. 11 pages.
Third Five-Year Review of Safety of Philbrook Dam	Thomas M. Leps, Inc.	5/1/1980	(no data)	3rd FERC Part 12 Inspection Report. 15 pages

DamInfo Database: Photos



DamInfo Database: Earthquake

Home / Dam Lookup

Pacific Gas and Electric Company

Seismic: Courtright Dam

- General
- Physical
- Hydraulic
- Operations
- EAP Notification
- Earthquake
- Inspections
- Instrumentation
- Reference
- Photos
- Drawings
- Print Version
- Audit Records

EARTHQUAKE REPORT ARCHIVE:

Earthquake Report	Mag	Event Date	Date Posted	Reviewers	ShakeMap .kml
20080804-Round Valley, CA-40221570-2	3.7	8/4/2008	1/14/2009 2:31:15 PM	/	(no data)
20090114-Round Valley, CA-7943790-1	4.5	1/14/2009 2:37:00 PM	1/14/2009 2:37:02 PM	/	(no data)

EARTHQUAKE STRUCTURE LINKS:

Fault Source .klm	Hist. Seismicity .klm
(no data)	Historical

SIGNIFICANT FAULT PARAMETERS FOR COURTRIGHT:

Fault	Style of Faulting	Rupture Dist. (km)	HW/FW	Dip	Crust Thickness (km)	Max Magnitude	Avg. Med. PGA (g)
Sierra Nevada Fault System:							
Hilton Creek	NM	48.1	FW	60	12	6.7	0.05
Round Valley	NM	37.2	FW	60	12	6.8	0.08
Owens Valley	SS	59.3	FW	90	12	7.2	0.06
Independence	NM	56.8	FW	60	12	6.9	0.05
San Andreas Fault System:							
SAF 1852	SS	184.8	FW	90	12	7.7	0.03
Local Source:							
Local EQ.	NM	15	FW	(no data)	12	5.8	[0.18]
							[] denotes [84%]

Picture this …

- 1:03 am - Pager buzze
  - Magnitude a
- 1:10 am - PG&E receiv
  - GIS identifie
- 1:15 am - If PG&E has
  miles from th
  facility safety
  e-mail
- 1:16 am - Internal revi
  and redistrib
- 1:20 am - Headache sta
  Where is my
  What is the l
  qualified for

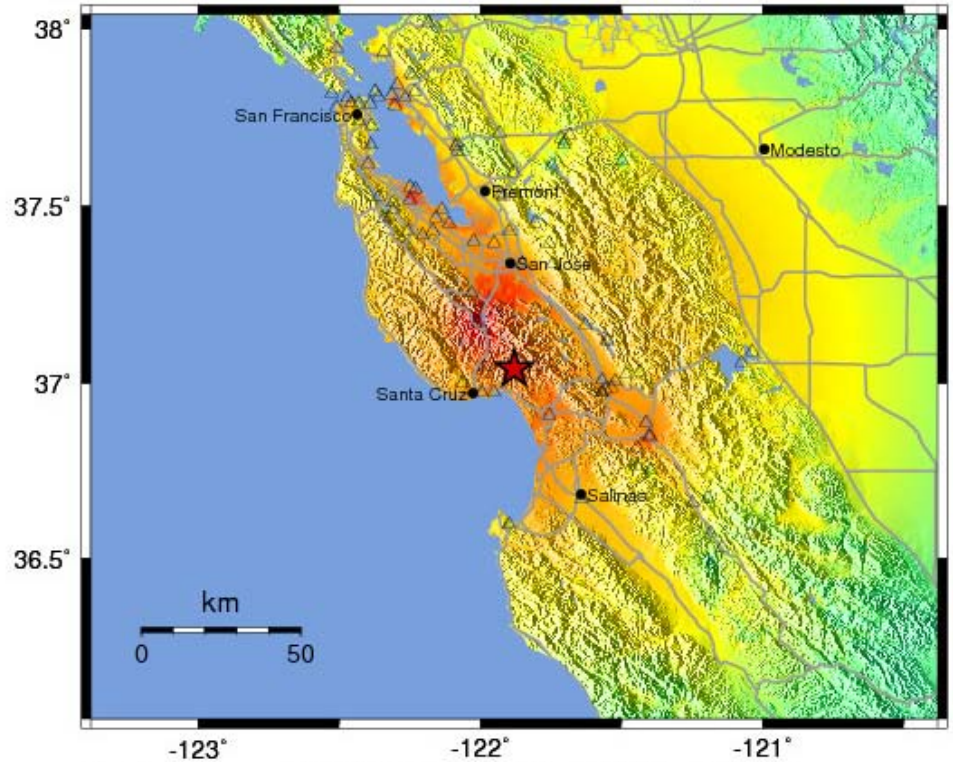
Shakemap ncLoma_Prieta

Instrumental Intensity Peak Ground Acceleration Peak Ground Velocity
Spectral Response 0.3 sec Period 1.0 sec Period 3.0 sec Period
Media Maps Decorated Bare
Downloads

Instrumental Intensity

Available Formats: JPG (168 kB) || PS (428 kB)

CISN ShakeMap for Loma Prieta Earthquake
Tue Oct 17, 1989 05:04:00 PM PDT M 6.9 N37.04 W121.88 Depth: 18.0km ID:Loma_Prieta



Map Version 3 Processed Fri Oct 13, 2006 10:12:35 AM PDT, -- NOT REVIEWED BY HUMAN

PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Moderate/Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	<.17	.17-1.4	1.4-3.9	3.9-9.2	9.2-18	18-34	34-65	65-124	>124
PEAK VEL.(cm/s)	<0.1	0.1-1.1	1.1-3.4	3.4-8.1	8.1-16	16-31	31-60	60-116	>116
INSTRUMENTAL INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+

The Present:
Automated Facility Safety Reports

EQ details pushed from USGS →

Closest PG&E Dam Calculated by GIS →

Map Showing Dams and PGA Levels Within 50 miles →

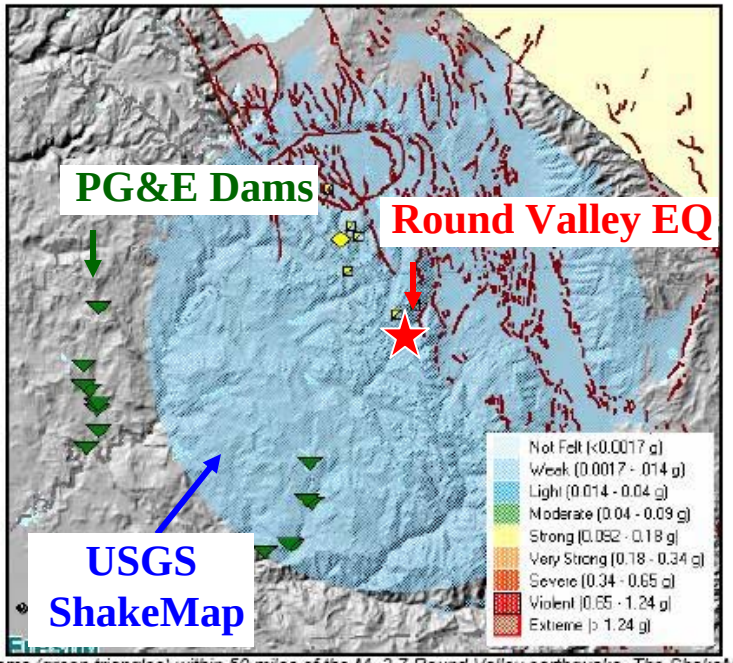
Emergency Contact Personnel (Determined by GIS) →

Report for 08/04/2008 M_L3.7 earthquake near Round Valley, CA

REPORT VERSION 02 -- THIS EVENT HAS BEEN REVIEWED BY A PG&E SEISMOLOGIST

Earthquake Details:

Magnitude:	3.7 M_L
Date-Time:	09/15/2008, 01:03 PM (PDT) 20:03:24 (UTC)
USGS Event ID:	40221570
Location Coordinates:	-118.734, 37.335
Depth:	11.9 mi (19.1 km)
Closest City:	Round Valley, CA
Closest PG&E Dam:	Courtright Dam



Hydro dams (green triangles) within 50 miles of the M_L 3.7 Round Valley earthquake. The ShakeMap shows ground motion accelerations and the brown lines represent known active faults.

Emergency Contacts:

Name	Location	LAN ID	Company Phone	Cell Phone/Pager
Charles Ahlgren	SFGO	CSA2	(415) 973-1523	(415) 350-0465
Robert White	SFGO	RKW5	(415) 973-0544	(510) 405-4137
Paul Linderman	HELMS	PDL2	(559) 865-2394	(559) 284-6113

PG&E Geosciences Department Page 1 of 2 08/04/2008 01:13 PM (PDT)

The Present:

Automated Facility Safety Reports

Information from DamInfo →

Facility Specific Earthquake Hazards based on Part 12 PFM Analysis →

Report Reviewers →

Relevant Links:

* DamInfo Database
* Google Earth .kml Files
* Etc.

→

Report for 08/04/2008 M_L3.7 earthquake near Round Valley, CA

Potential Impacts to Hydro Facilities Located within 50 miles:
(Ground Motion Exceeding 0.10 g in BOLD, Ground Motion Exceeding Design Value in RED)

Dam	Dam Type	Epicentral Dist. (mi.)	PGA (g)	Design Value (g)
Courtright	Rockfill Concrete Face with partial u/s blanket	20.6	0.0017 – 0.014	0.18
Lake Wishon	Rock Fill Conc. Face	25.4	0.0017 – 0.014	0.18
Balch Diversion	Conc. Arch	31.8	0.0017 – 0.014	0.18
Balch Afterbay	Conc. Arch	34.3	0.0017 – 0.014	0.18
Crane Valley	Earth & Rock	41.6	NO REPORT	0.18
Manzanita Lake	Conc. Arch w/Gravity Abut.	44.1	NO REPORT	0.17
Kerckhoff	Conc. Arch	45.5	NO REPORT	0.18

Identified Earthquake Related Hazards by Facility:

Dam	Earthquake PFMA	EAP Hazard Notification Link
Courtright	**PFM 5** – Significant seismic event generates a seiche wave leading to overtopping of the dam. **PFM 6** – During a major seismic event, the upstream concrete face slabs are relatively displaced leading to increased leakage, causing rockfill erosion.	CourtrightEAP
Lake Wishon	**PFM 6** – Seismic event generates a major seiche wave leading to overtopping of the parapet and dam leading to erosion in the rockfill slope. **PFM 7** – During a major seismic event, the upstream face slabs are relatively displaced leading to increased leakage, causing rockfall erosion. **PFM 8** – Earthquake induced liquifaction of foundation alluvium leads to downstream slope failure.	WishonEAP
Crane Valley	**PFM 3** – Liquefaction of old (1901) dam section at Main Dam (Sta. 3+50 - 6+07) leads to upstream slope failure.	CraneEAP

Report Reviewed By:

Name	Title	LAN ID	Company Phone	Cell Phone
Katie Wooddell	Seismologist	KXWL	(415) 973-6299	(510) 295-3099
Marcia McLaren	Sr. Seismologist	MKM2	(415) 973-0543	(415) 515-4263

Geosciences will continue to monitor the seismic activity in this area and provide updates as conditions change. If you have any specific interest in the areas affected by this earthquake, please let us know and we will provide additional information.

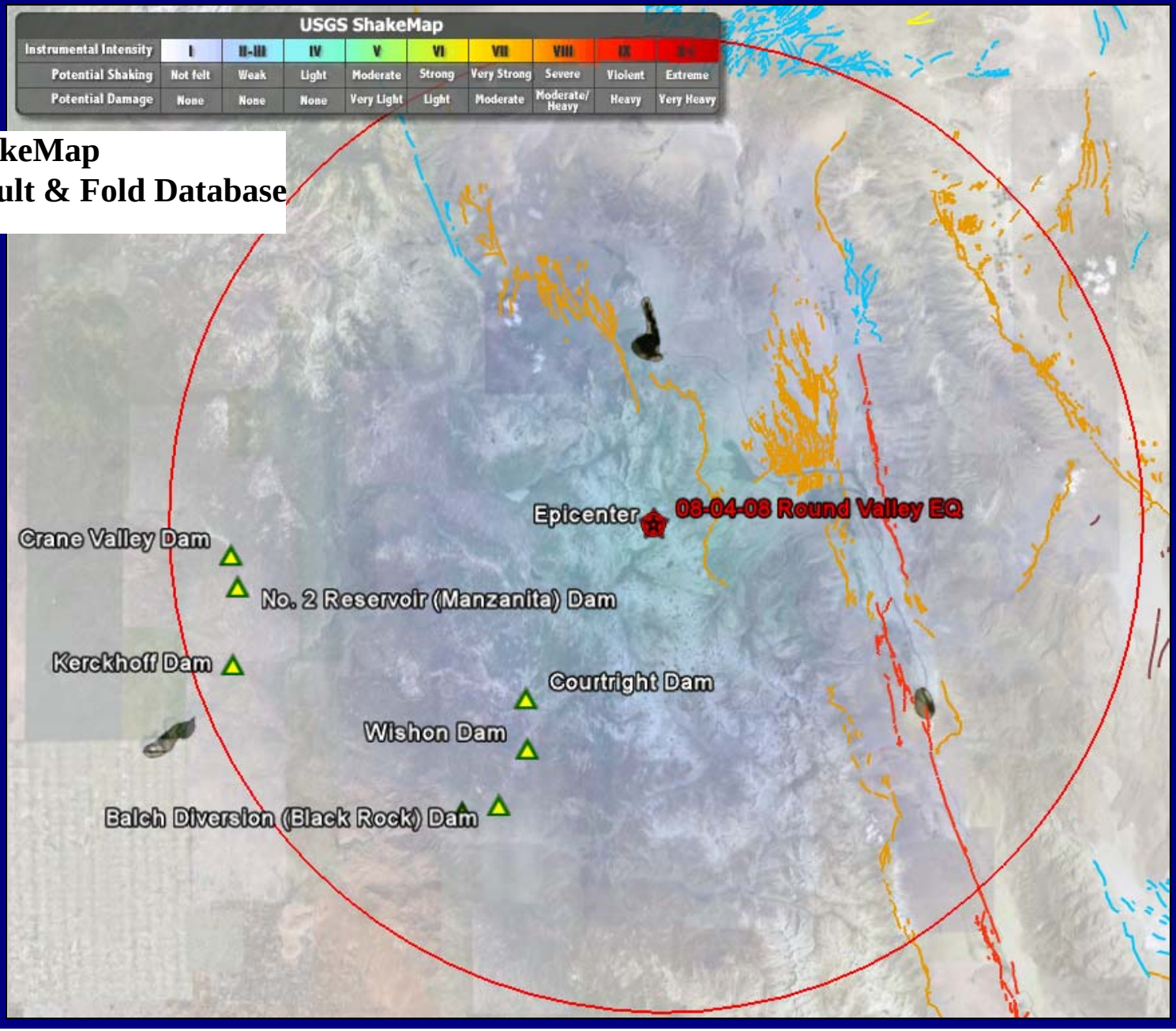
Additional Links:

Dam Info: http://daminfo/
Geosciences: http://geosciences/
MapGuide: GeosciencesMapGuide
Google Earth: http://www.earthquake.usgs.gov/eqcenter/shakemap/nc/shake/40221570/#download
*Click on the KML link under the "GIS Files" header.
*This file will open in Google Earth on your computer or in Google Maps on your Blackberry.

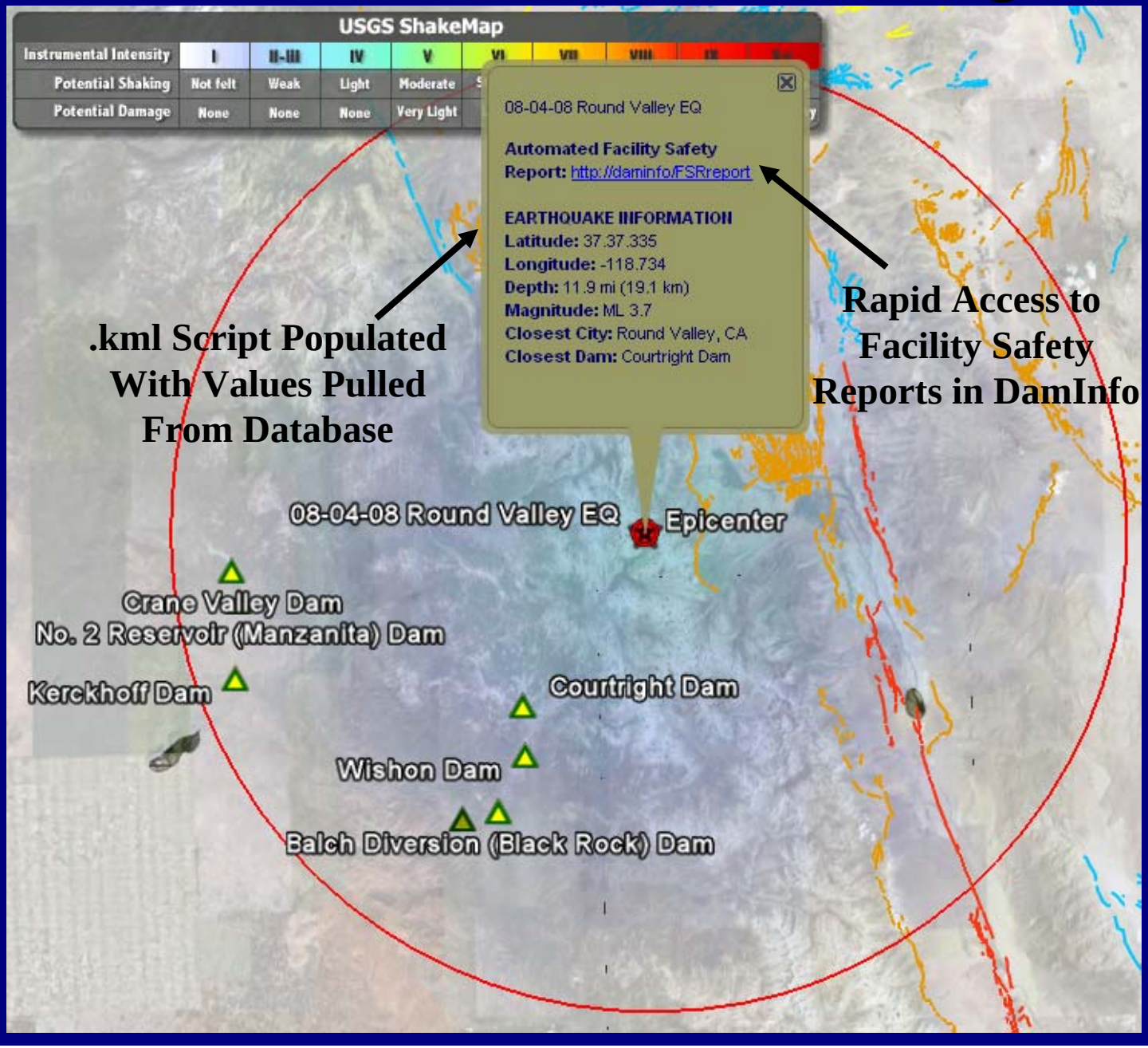
PG&E Geosciences Department Page 2 of 2 08/04/2008 01:13 PM (PDT)

The Future: DamInfo & GIS Integration

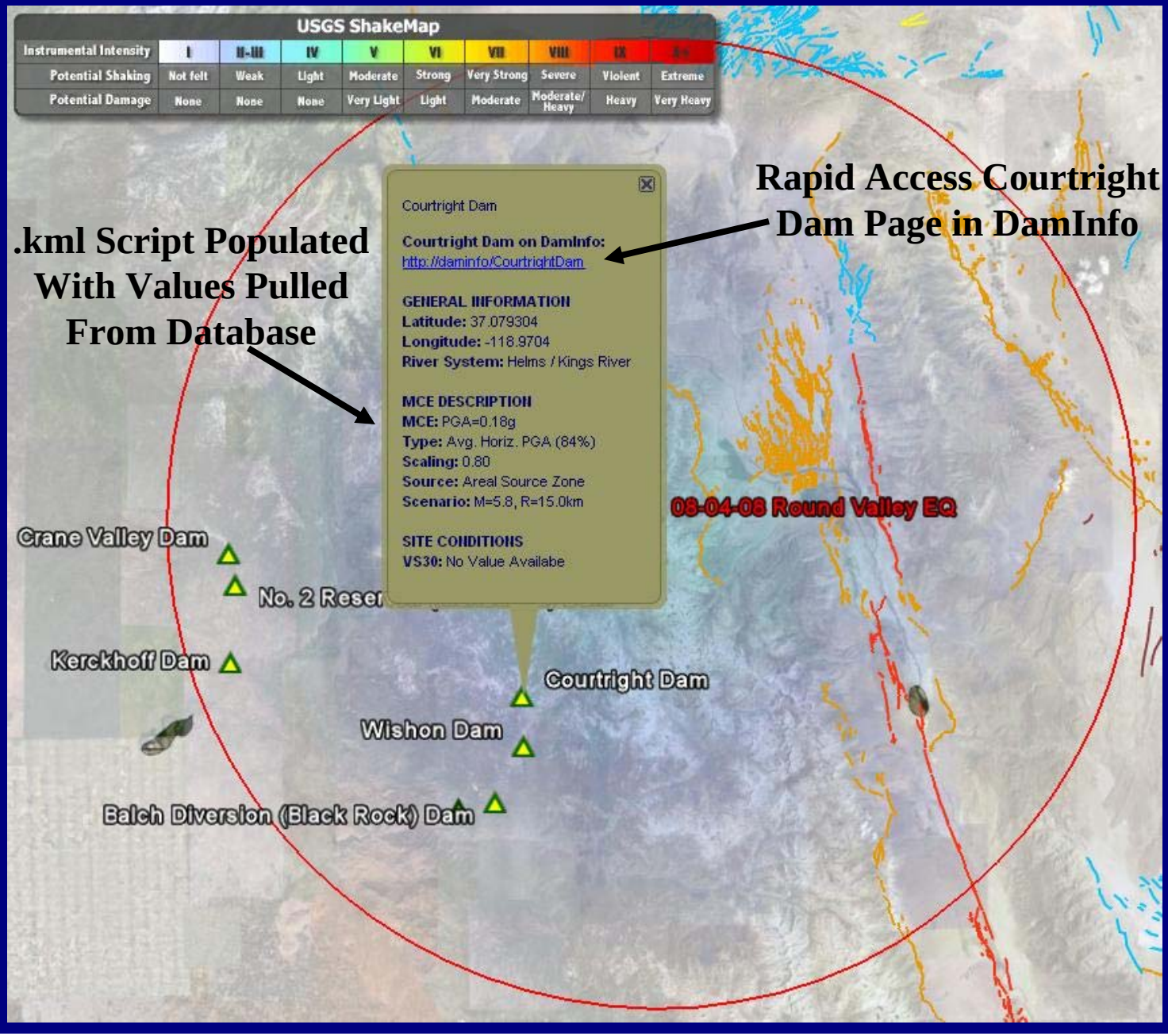
- **PGA – USGS ShakeMap**
- **Faults - USGS Fault & Fold Database**



The Future: DamInfo & GIS Integration



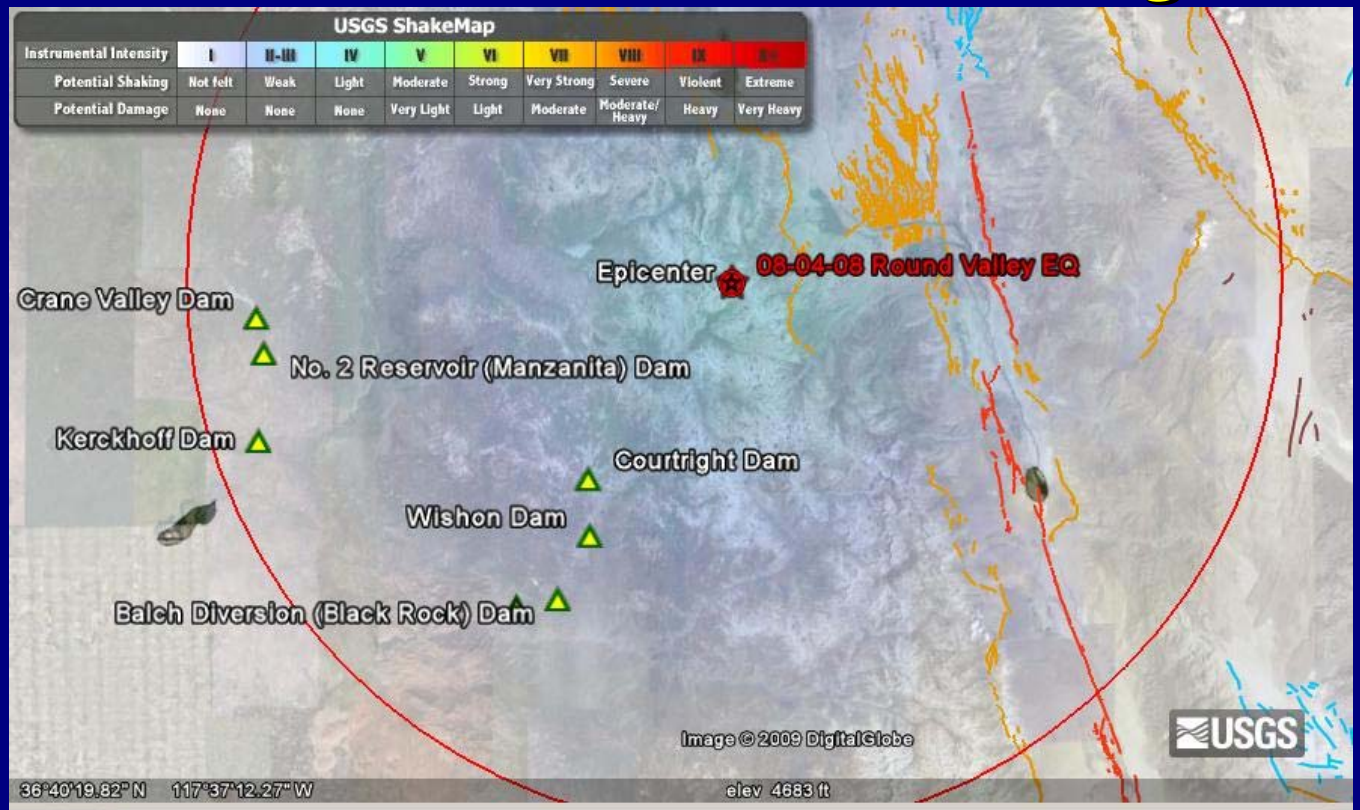
The Future: DamInfo & GIS Integration



Rapid Access Courtright Dam Page in DamInfo

.kml Script Populated With Values Pulled From Database

The Future: DamInfo & GIS Integration



http://daminfo/ReportGeneral.asp?StructureID=110

Home / Dam Lookup

Pacific Gas and Electric Company

General Info: Courtright Dam

- General
- Physical
- Hydraulic
- Operations
- EAP Notification
- Inspections
- Instrumentation
- Reference

License:

Dam Name	Courtright	National Dam ID	CA00412
Reservoir Name	(no data)	EAP Status	No
Alternate Name	(no data)	Date of EAP	(no data)
Watershed	KINGS	D/S Hazard	(no data)
Mainstem Stream	HELMS CREEK	D/S City	(no data)
FERC Project No.	1988	Dist to D/S City	(no data)
State Dam No.	97-119	Time to D/S City	(no data)

Canal Risk = Hazard × Consequence

Hazard:

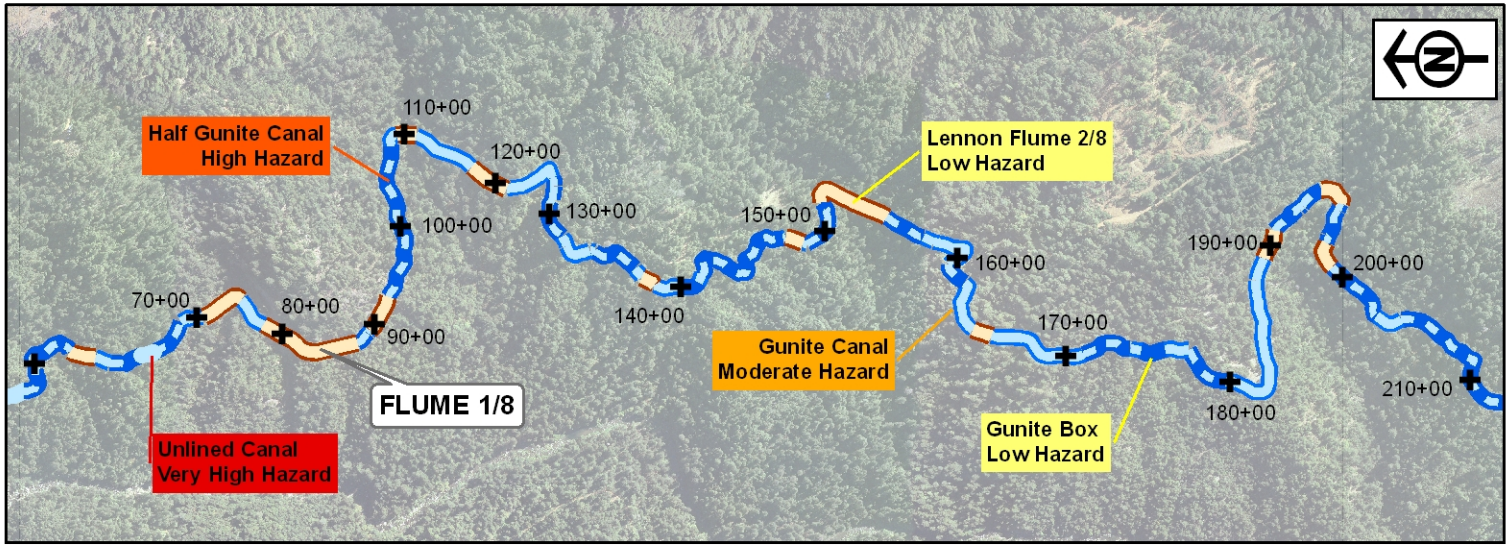
- Canal type
- Structural Integrity
- Geology
- Trees / Vegetation

Consequence:

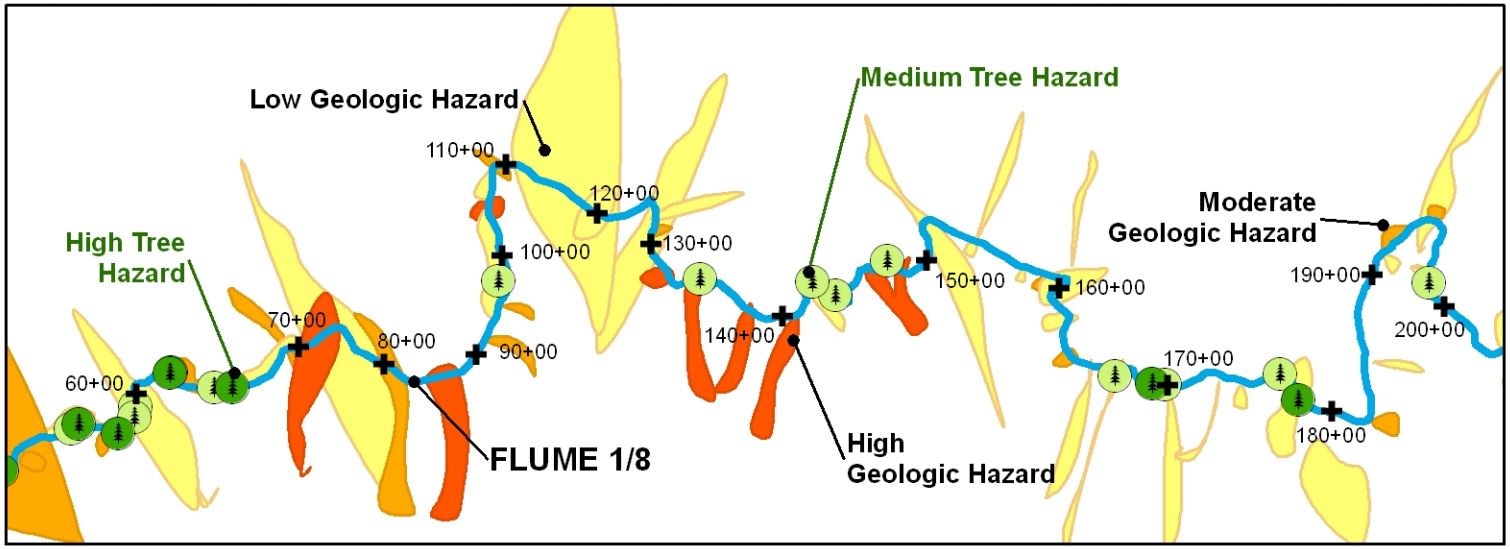
- Transportation
- Housing
- Utilities
- Erosion potential

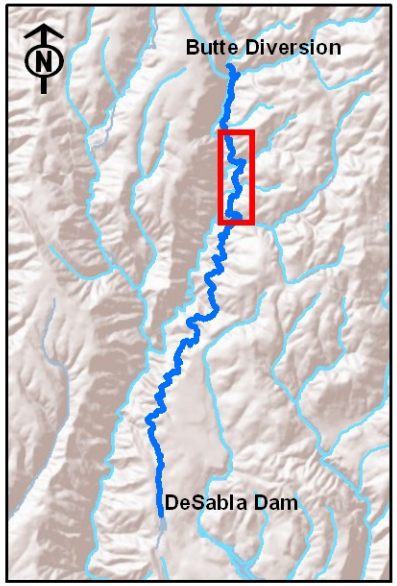
2006 BUTTE CANAL RISK ASSESSMENT STATION 6000 - 22,000

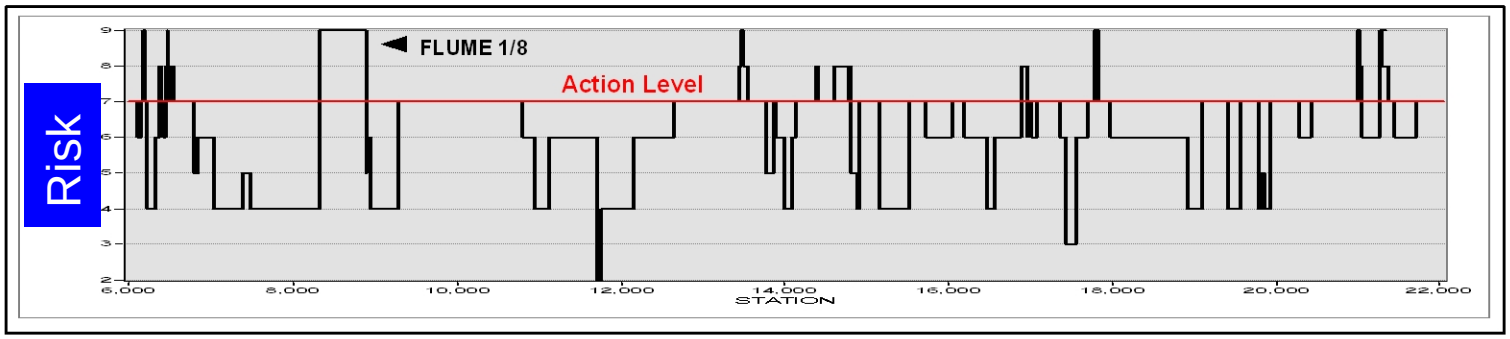
Structural Hazard →

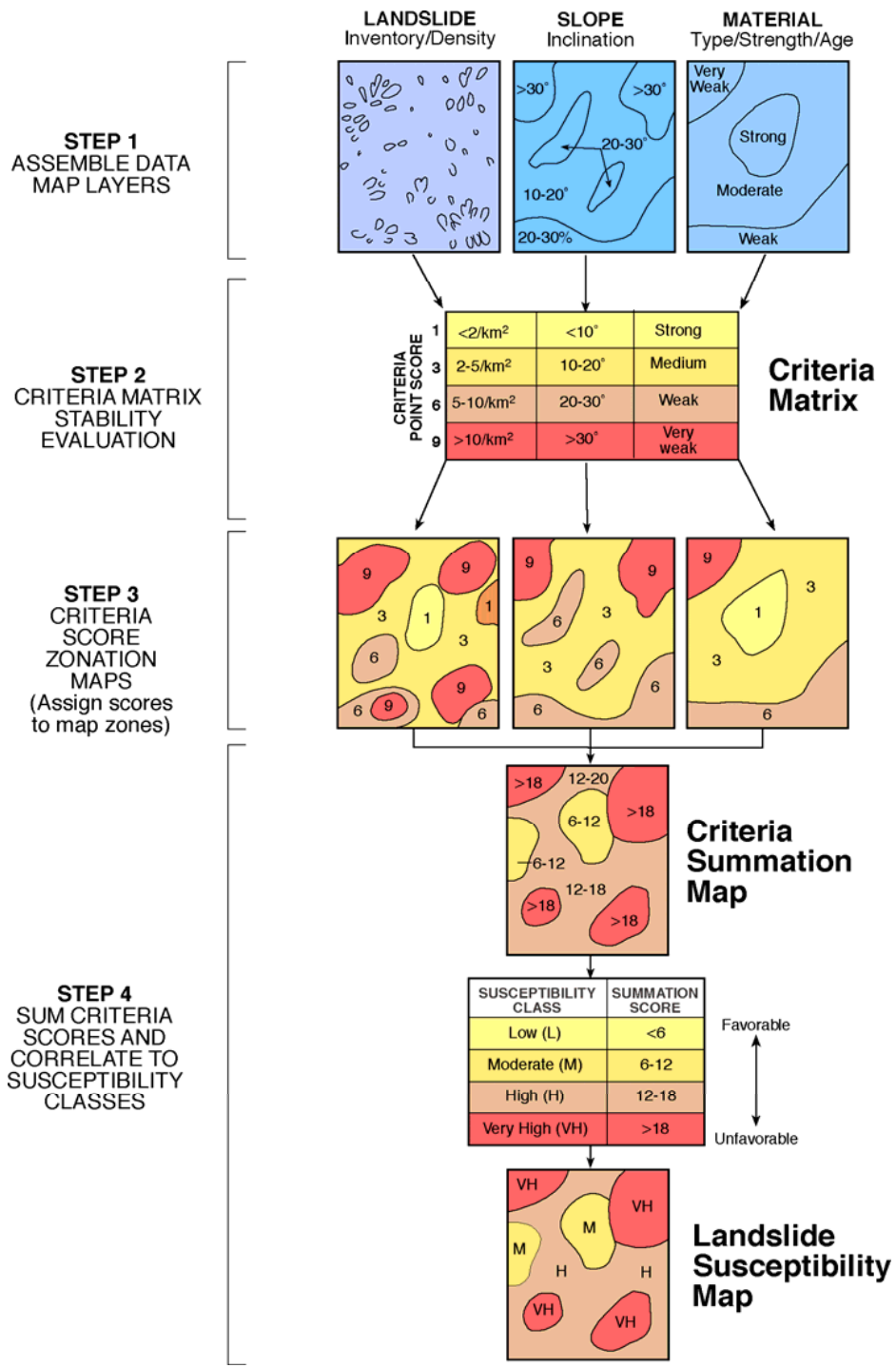


Geologic and Tree Hazard →

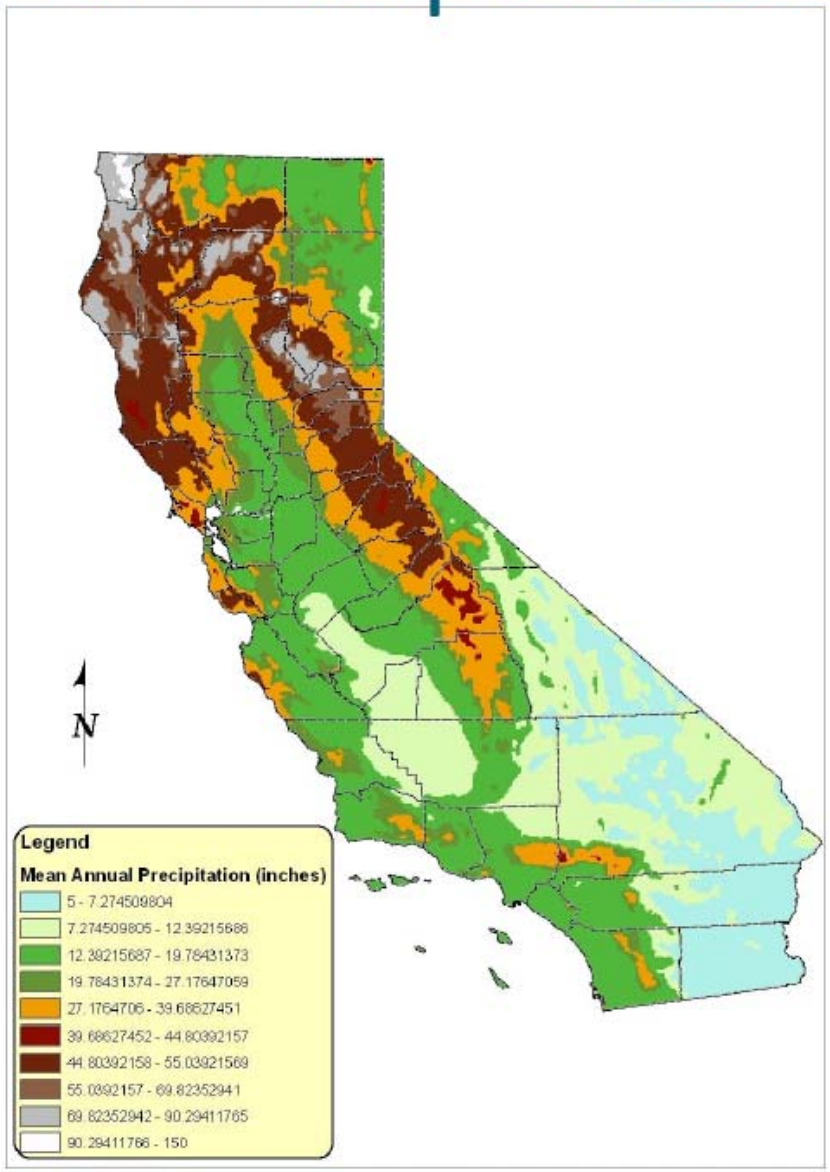







LANDSLIDE
Inventory/Density
SLOPE
Inclination
MATERIAL
Type/Strength/Age
STEP 1
ASSEMBLE DATA
MAP LAYERS
>30°
>30°
20-30°
10-20°
20-30%
Very Weak
Strong
Moderate
Weak
STEP 2
CRITERIA MATRIX
STABILITY
EVALUATION
CRITERIA POINT SCORE
1 <2/km² <10° Strong
3 2-5/km² 10-20° Medium
6 5-10/km² 20-30° Weak
9 >10/km² >30° Very weak
Criteria Matrix
STEP 3
CRITERIA
SCORE
ZONATION
MAPS
(Assign scores
to map zones)
>18
12-20
6-12
>18
6-12
12-18
>18
>18
Criteria Summation Map
STEP 4
SUM CRITERIA
SCORES AND
CORRELATE TO
SUSCEPTIBILITY
CLASSES
SUSCEPTIBILITY CLASS
SUMMATION SCORE
Low (L) <6
Moderate (M) 6-12
High (H) 12-18
Very High (VH) >18
Favorable
Unfavorable
VH
M
H
Landslide Susceptibility Map

Mean Annual Precipitation

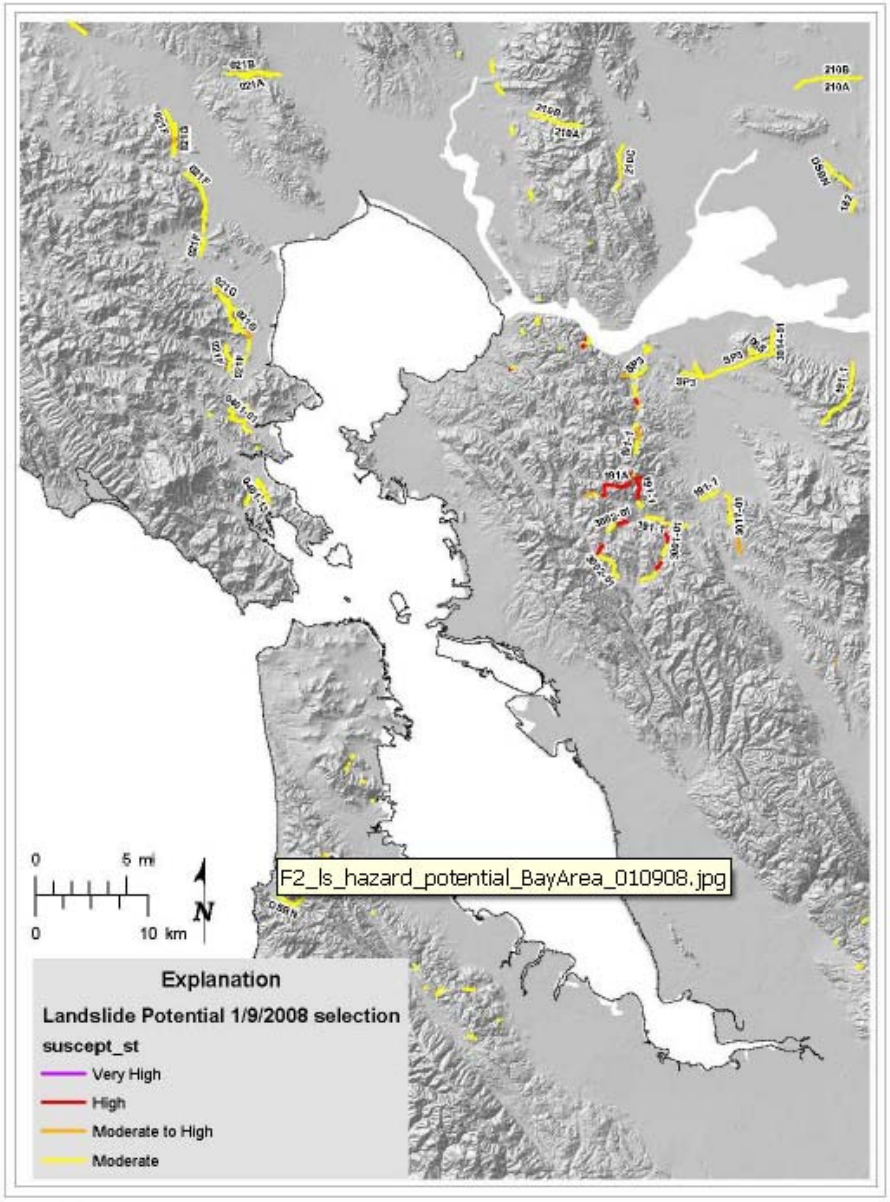


CGT System Susceptibility Matrix

- Landslides induced from precipitation accumulation can range from quick precip bursts to accumulation over a season.
- Use map ranking to incorporate threat from storm intensity and season accumulation

Season				
> 100%	>= 75%	>= 50%	>= 25%	< 25%
5	4	3	2	1
Storm				
> 200% RDN	<= 200% RDN	<= 100% RDN	<= 75% RDN	<= 50% RDN
5	4	3	2	1

1/9/08 Landslide Potential



WLA CGT system landslide hazard potential ending Wednesday 1/9/08 10 AM PST

PG&E Figure 2

F2_LS_HAZARD_POTENTIAL_BAYAREA_010908.MXD

09 JAN 08, DLS

Thank you!