



Source: US Army Corps of Engineers, 2003.

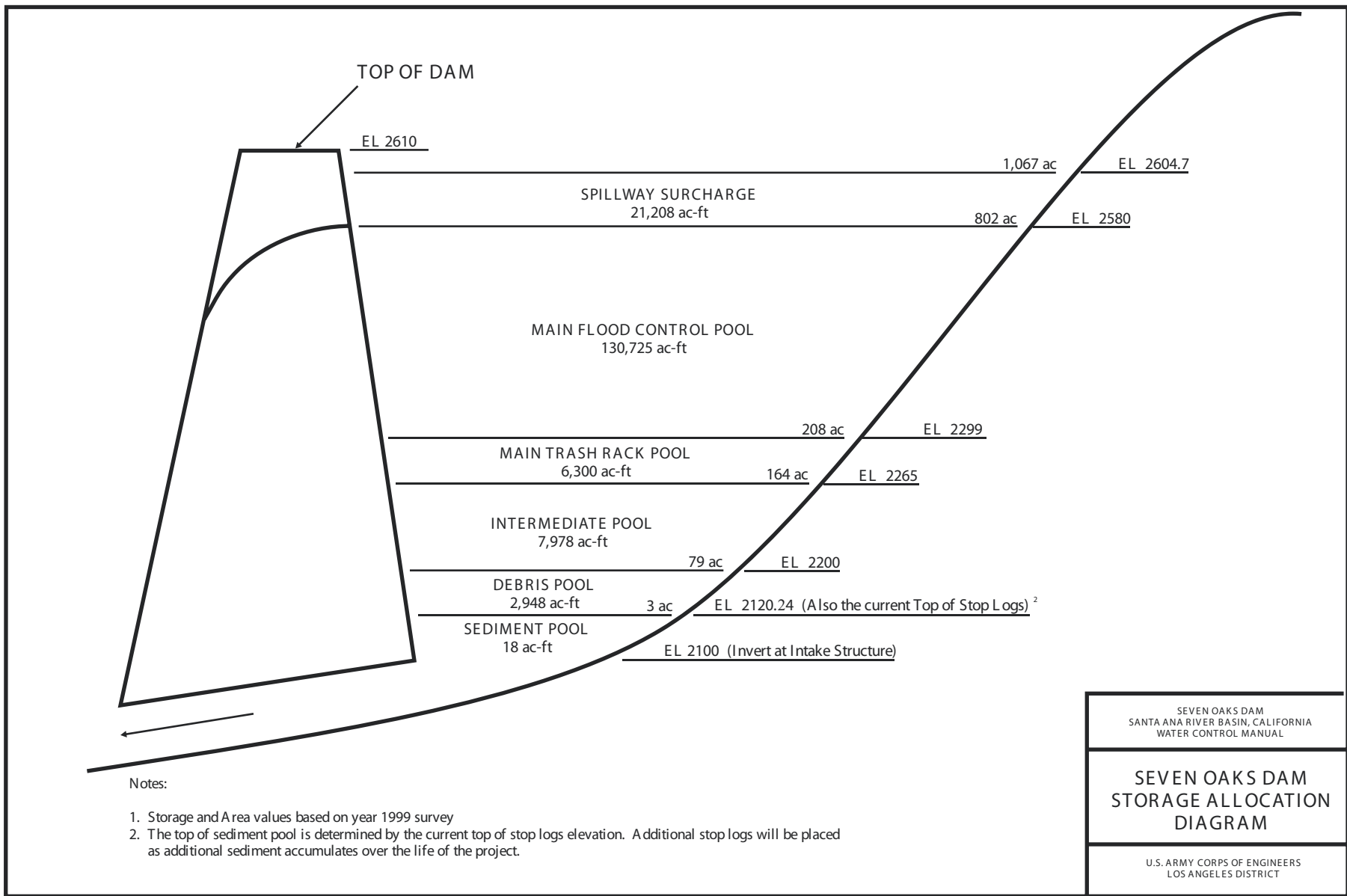


Muni/Western Ex. 9-2
Seven Oaks Dam

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D51063.01

Seven Oaks



Notes:

1. Storage and Area values based on year 1999 survey
2. The top of sediment pool is determined by the current top of stop logs elevation. Additional stop logs will be placed as additional sediment accumulates over the life of the project.

SEVEN OAKS DAM
SANTA ANA RIVER BASIN, CALIFORNIA
WATER CONTROL MANUAL

**SEVEN OAKS DAM
STORAGE ALLOCATION
DIAGRAM**

U.S. ARMY CORPS OF ENGINEERS
LOS ANGELES DISTRICT

Source: US Army Corps of Engineers, 2003.

PLATE 7-01A

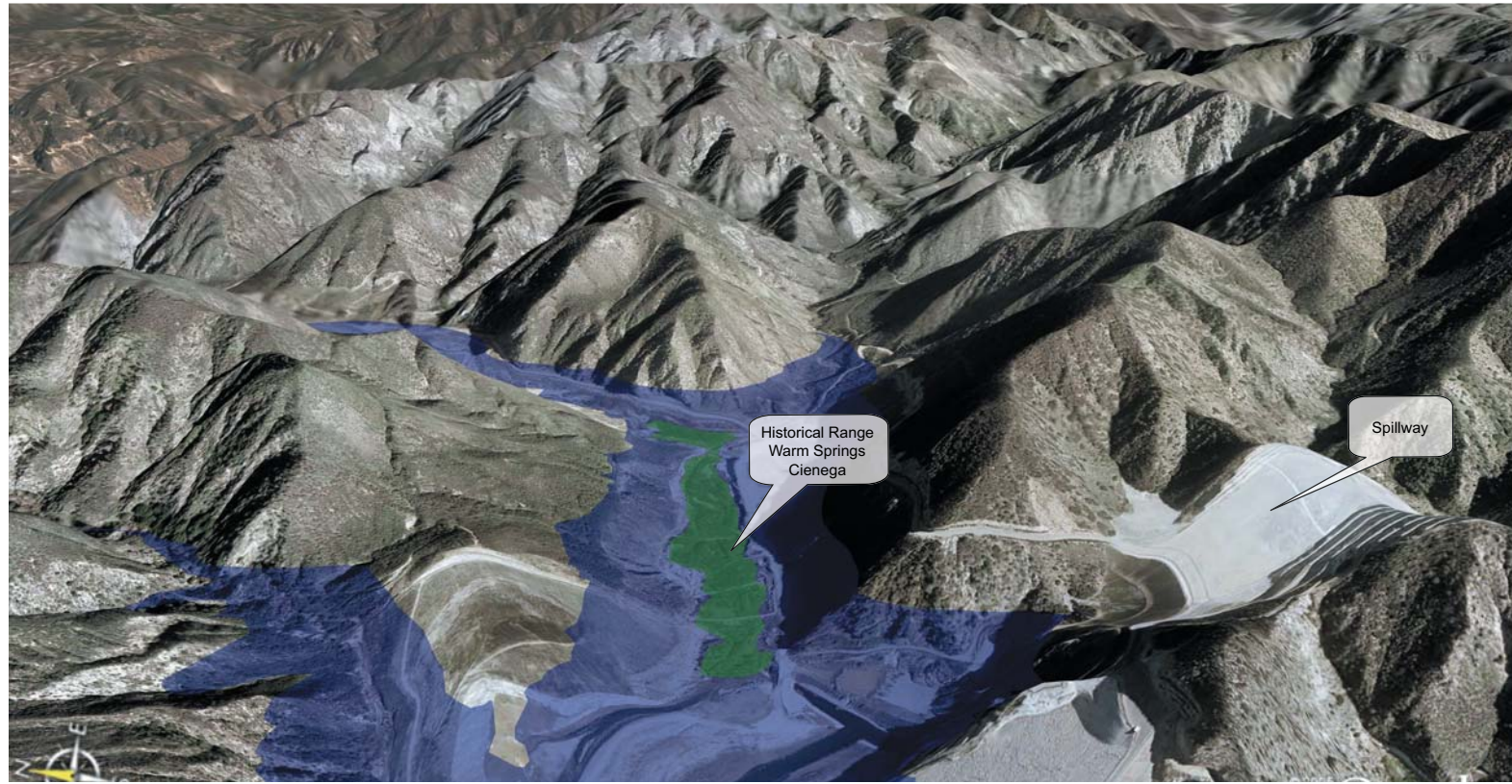


Muni/Western Ex. 9-3
Seven Oaks Dam Storage Allocation Diagram

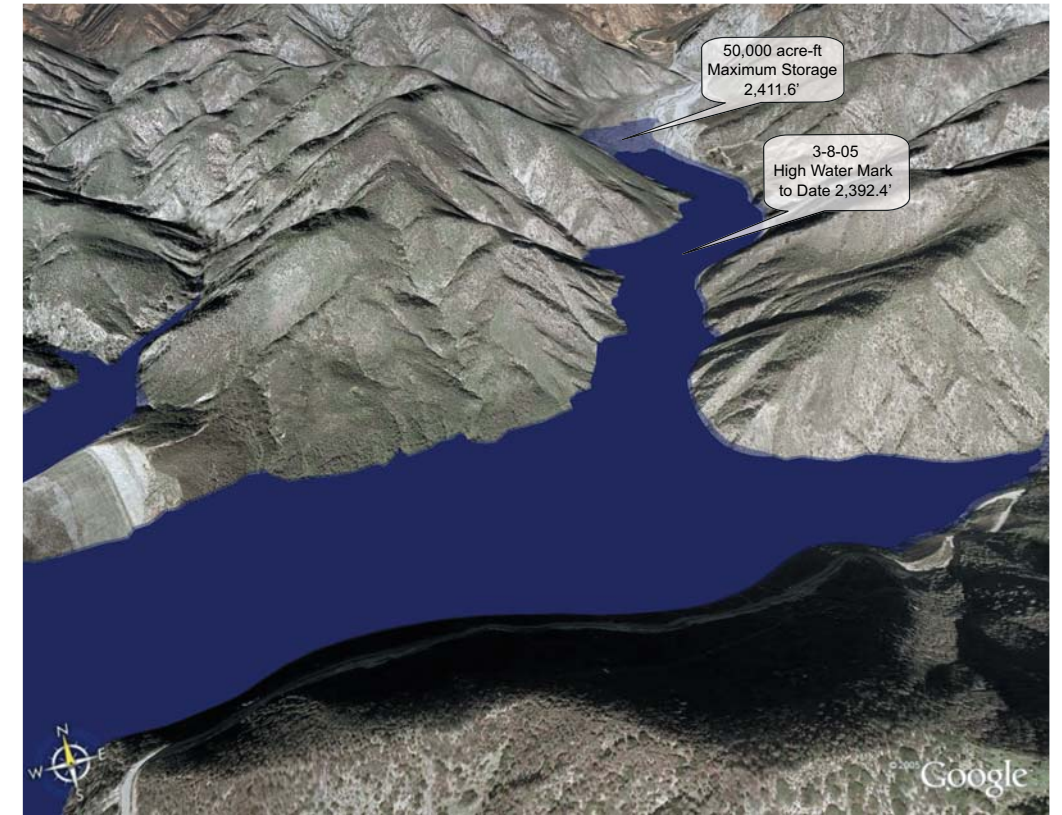
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Seven Oaks



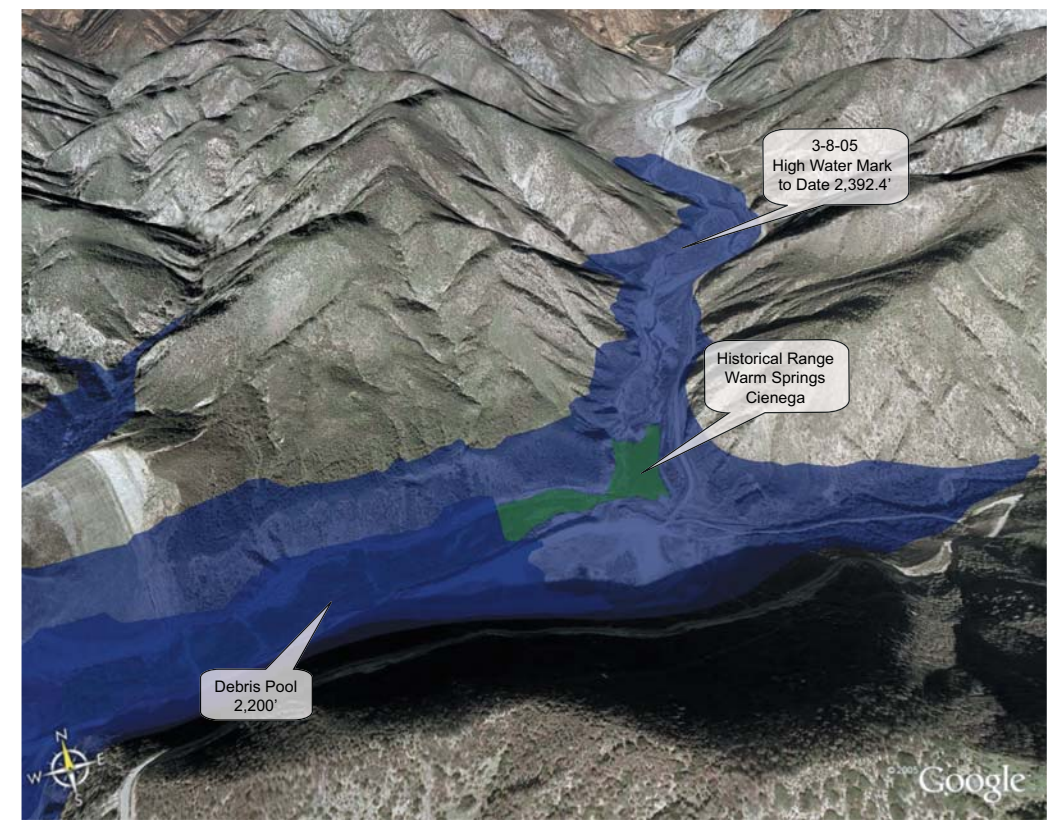
50,000 acre-ft Maximum Storage 2,411.6'



50,000 acre-ft Maximum Storage Pool and Current Maximum Pool to Date



Debris Pool 2,200'



Debris Pool and Current Maximum Pool to Date

Source: Google Earth, 2007.

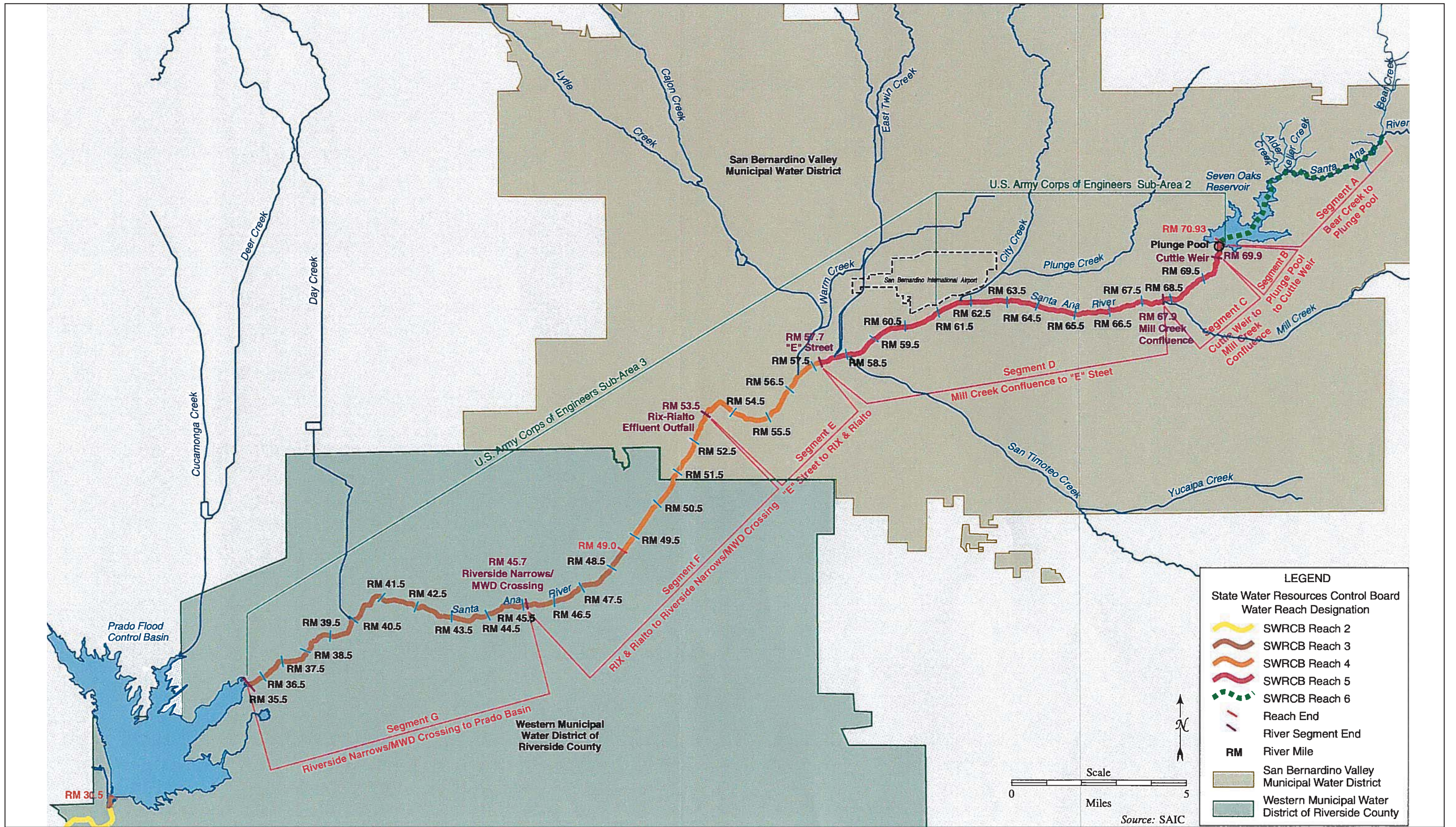


Muni/Western Ex. 9-4
Perspective Images of Habitat and Reservoir Pools

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D51063.01

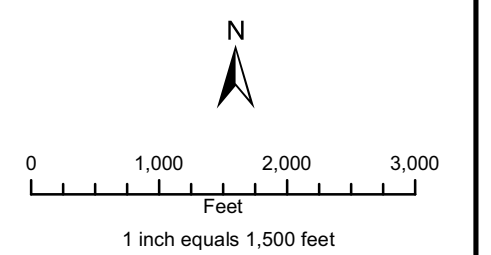
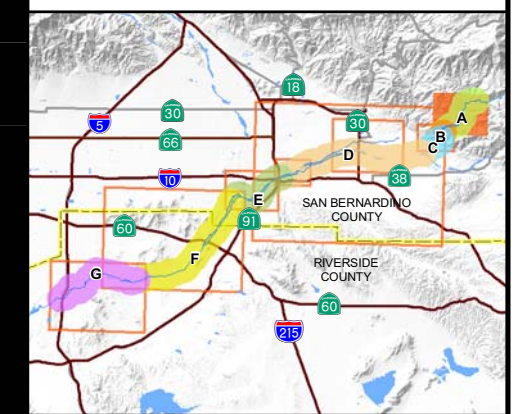
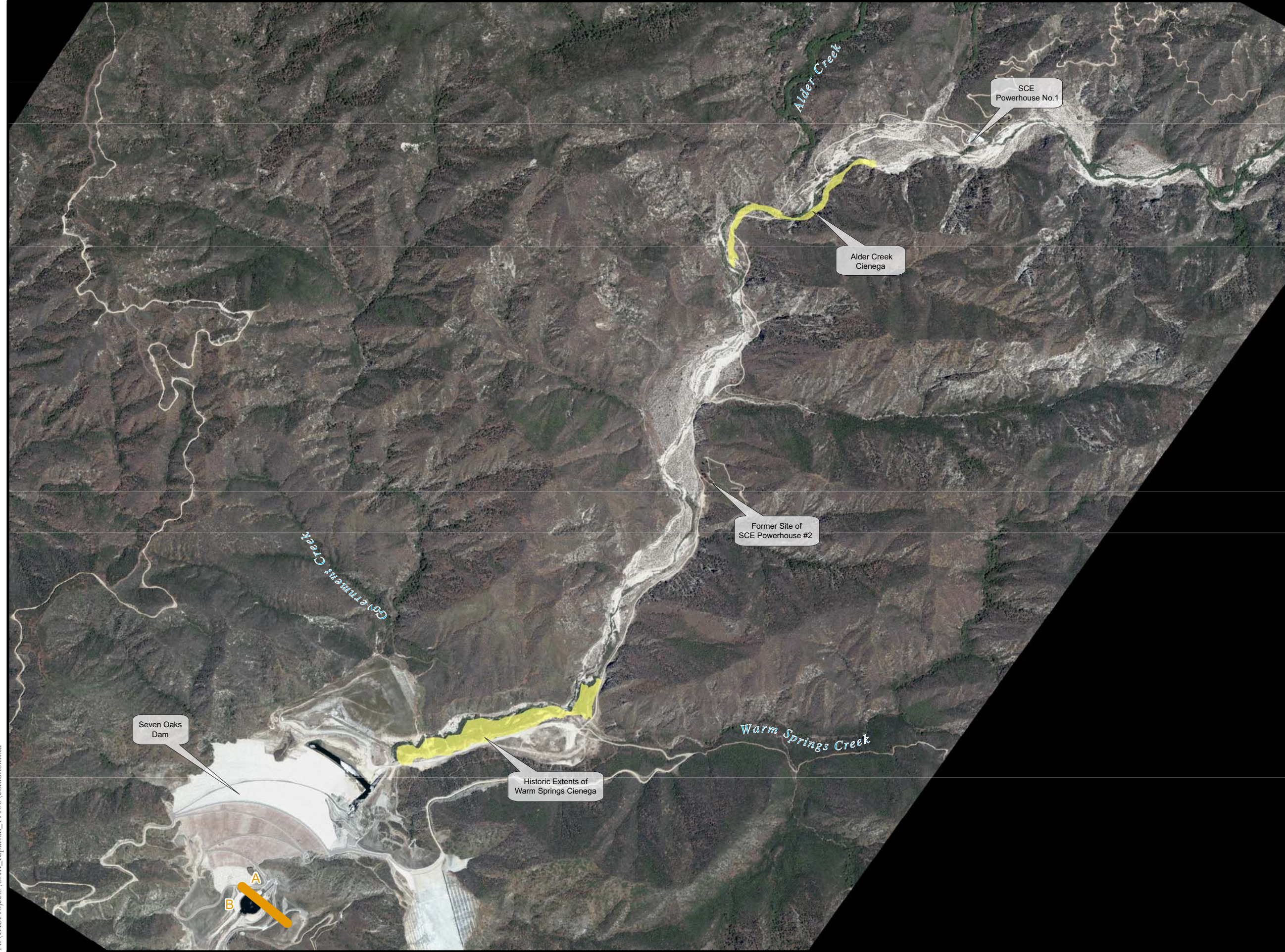
Seven Oaks



**Multi/Western Ex. 9-6
SAR Segment A with
Geographic Features Identified**

Santa Ana River
San Bernardino County, CA

-  Exhibit Outline
-  Segment Start/End
-  Cienega

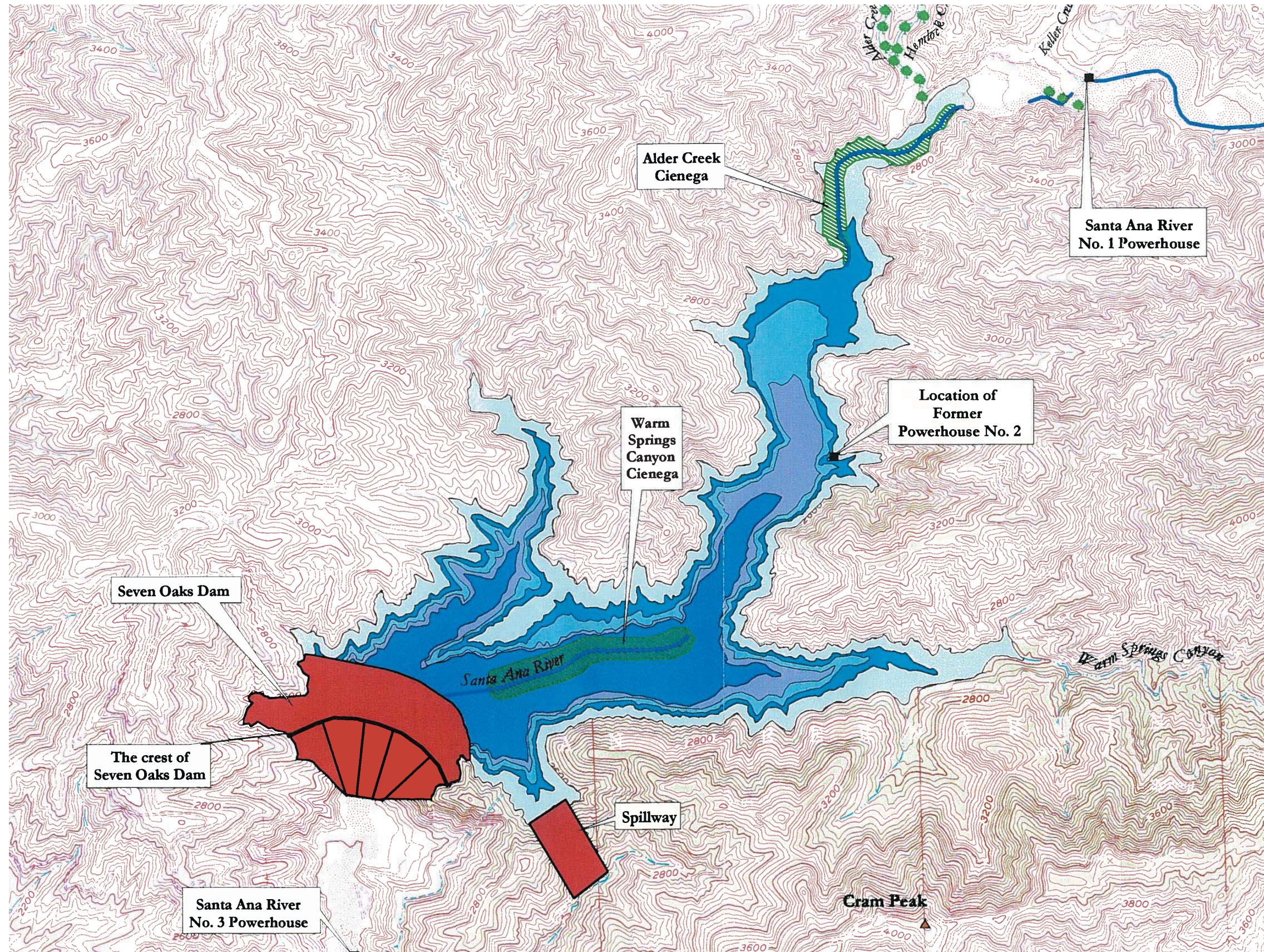


Source: USDA/FSA - Aerial Photography Field Office, 2006.



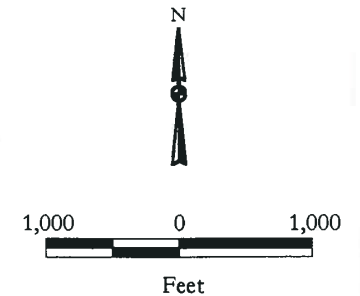
A Division of **PBSJ**

D51063.01



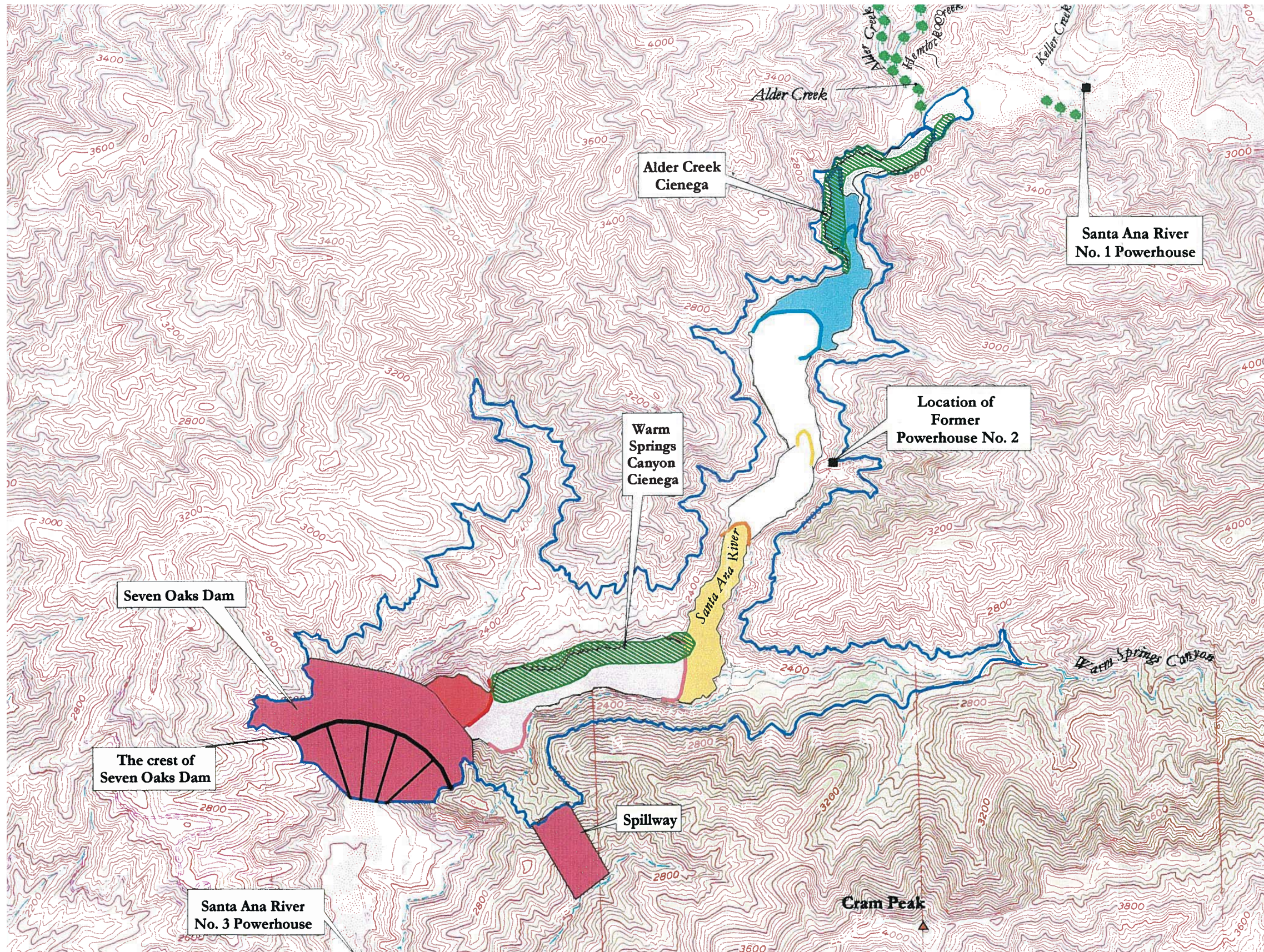
- 10 year (year 2100) (2,400 ft)
- 25 year (year 2100) (2,460 ft)
- 50 year (year 2100) (2,505 ft)
- 100 year (year 2100) (2,535 ft)
- Spillway Elevation
- Dam
- River Channel

GIS Data Projection: Teale Albers, Units Meters

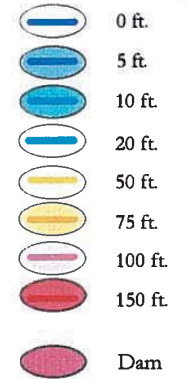


Source: U.S. Army Corps of Engineers, Santa Ana River Design Memorandum No. 1, April 1988; and EIP Associates, Digitized Inundations and GIS Program, November 15, 2001.

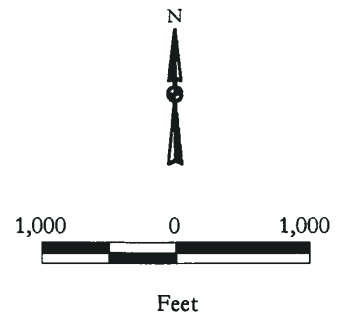
Requested by: RL Created by: SB/MT Date: 11/25/01



APPROXIMATE SEDIMENT DEPTH



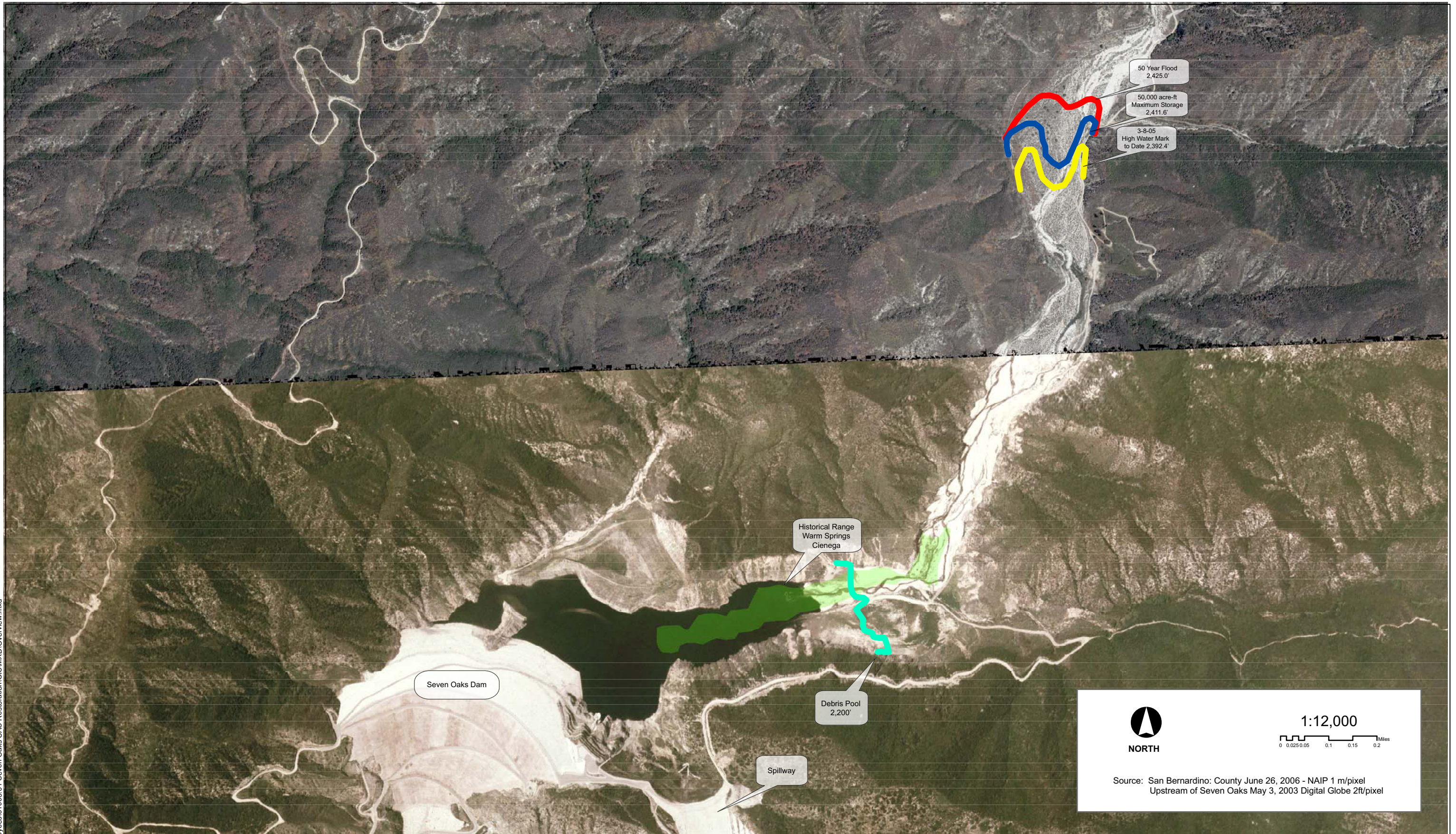
GIS Data Projection: Teale Alben, Units: Meters




Source: U.S. Army Corps of Engineers, Santa Ana River Design Memorandum No. 1, April 1988; and EIP Associates, Digitized Sedimentation Line and GIS Program, November 15, 2001.


Requested by: RL. Created by: SB/MT
Date: 11/14/01

P:\Projects - All Employees\51063.01 Seven Oaks SAS Restoration\GIS\MXD\Overview.mxd




NORTH

1:12,000


0 0.025 0.05 0.1 0.15 0.2 Miles

Source: San Bernardino: County June 26, 2006 - NAIP 1 m/pixel
Upstream of Seven Oaks May 3, 2003 Digital Globe 2ft/pixel



Source: Thomson, 2007.



Muni/Western Ex. 9-10

Debris Pool from Seven Oaks Dam on 27 March 2007, Flood Pool High Waterline Reached on 8 March 2005

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Seven Oaks



Source: Muni/Western FEIR, 2007.



Muni/Western Ex. 9-11
North View of the SAR Canyon and Warm Springs Cienega Before the 2004-2005 Flood Season

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D51063.01

Seven Oaks



Warm Springs
Cienega

Source: Muni/Western FEIR, 2007.



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Muni/Western Ex. 9-12

North View of the SAR Canyon and Warm Springs Cienega Following the 2004-2005 Flood Season

D51063.01

Seven Oaks



Source: Muni/Western FEIR, 2007.



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Muni/Western Ex. 9-13

Northeast View from Seven Oaks Dam of the Flood Pool Near Maximum Elevation During the 2004-2005 Flood Season

D51063.01

Seven Oaks



Source: Muni/Wester FEIR, 2007.



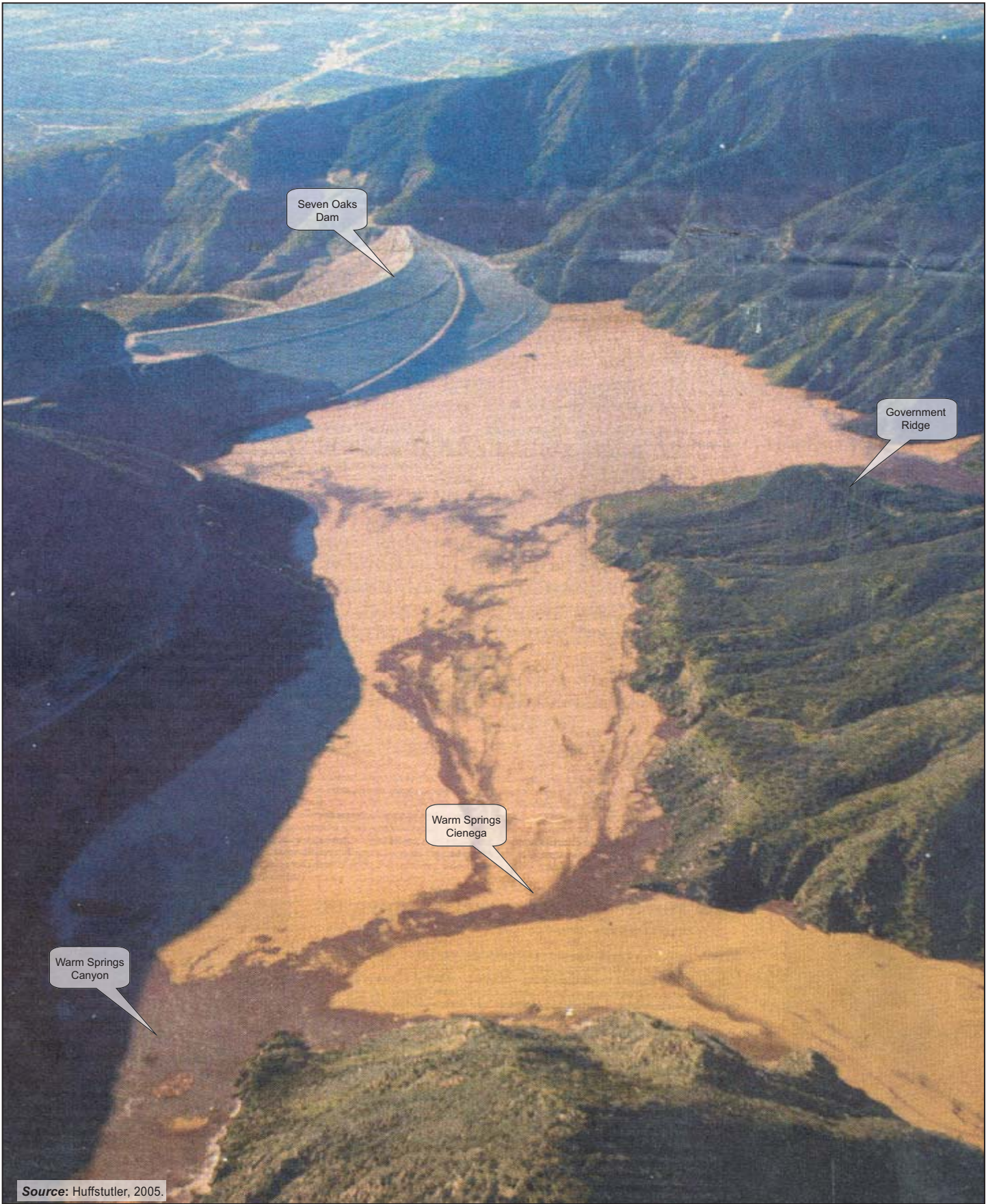
Muni/Western Ex. 9-14

Northeast View from Seven Oaks Dam of the Flood Pool after Receding in April 2005

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D51063.01

Seven Oaks



Source: Huffstutler, 2005.



Muni/Western Ex. 9-15
**Aerial View of Flood Pool Behind Seven Oaks Dam During 2004-2005
Flood Season**

A Division of **PBS**

D51063.01

Seven Oaks



Source: Huffstutler, 2005.



Muni/Western Ex. 9-16

North View of the SAR Canyon of the Seven Oaks Dam Flood Pool During the 2004-2005 Flood Season

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D51063.01

Seven Oaks



Source: Leidy, 2005.



Muni/Western Ex. 9-17
North View of the SAR Canyon Following the 2004-2005 Flood Season

A Division of **PBS&J**

D51063.01

Seven Oaks



Seven Oaks
Dam

Source: Leidy, 2005.



Muni/Western Ex. 9-18

Accumulated Sediment within the Warm Springs Cienega Following the 2004-2005 Flood Season

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D51063.01

Seven Oaks



Source: Leidy, 2005.



A Division of **PBS**

Muni/Western Ex. 9-19

Close-Up View of Fine Sediment on Dead Riparian Vegetation in the Warm Springs Cienega Following the 2004-2005 Flood Season

D51063.01

Seven Oaks



Source: Leidy, 2005.



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Muni/Western Ex. 9-20

Warm Springs Cienega Following the 2004-2005 Flood Season Showing Resprouting Willows and Dead White Alders

D51063.01

Seven Oaks



Source: Thomson, 2007.



Muni/Western Ex. 9-21

Seven Oaks Dam Debris Pool on 27 March 2007 Showing the 2005 Maximum Waterline and Dead Vegetation

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D51063.01

Seven Oaks



Source: Leidy, 2007.



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Muni/Western Ex. 9-22

Warm Springs Cienga and SAR Canyon Post 2005-2006 Flood Control Operations, April 2007

D51063.01

Seven Oaks



Source: Leidy, 2007.



Muni/Western Ex. 9-23
Warm Springs Cienega from the SAR Channel Looking Toward Seven Oaks Dam, April 2007

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D51063.01

Seven Oaks



Source: Leidy, 2007.



Muni/Western Ex. 9-24

Close-Up View of Damage to Warm Springs Cienega from 2005-2006 Flood Events, April 2007

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D51063.01

Seven Oaks



Source: Leidy, 2007.



Muni/Western Ex. 9-25

Close-Up View of Warm Springs Cienega Looking Up the SAR Canyon Showing Substantial Erosion, April 2007

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D51063.01

Seven Oaks



Original 2005
Alluvial Surface

Tree Tobacco

Source: Leidy, 2007.



Muni/Western Ex. 9-26
Close-Up of Warm Springs Cienega Showing Erosion and Exotic Plant Growth, April 2007

A Division of **PBS**

D51063.01

Seven Oaks



Source: Leidy, 2007.



Muni/Western Ex. 9-27

View from Warm Springs Cienega Toward Seven Oaks Dam Showing Substantial Erosion of Sediments Deposited in 2004-2005, April 2007

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D51063.01

Seven Oaks



Seven Oaks
Dam

Source: Leidy, 2007.

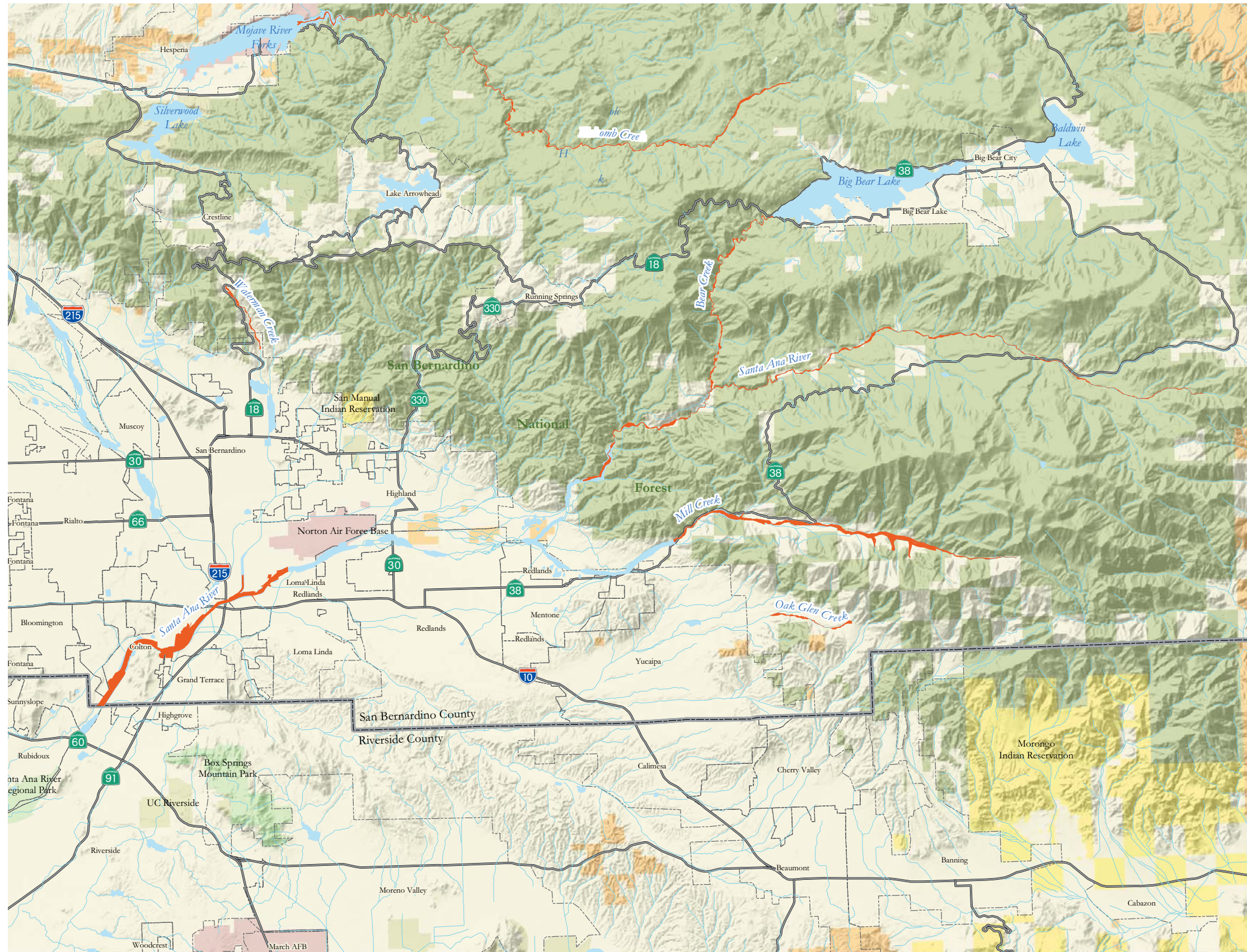


Muni/Western Ex. 9-28
Seven Oaks Dam Debris Pool at Approximately 1,500 af, April 2007

A Division of **PBS&J**

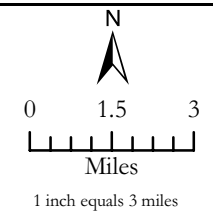
D51063.01

Seven Oaks



Santa Ana River
San Bernardino County, CA

- █ SWWF Critical Habitat
- █ Lakes and Reservoirs
- ~ Rivers, Streams, and Creeks
- Highway



Source: USFWS, Critical Habitat Designations, October, 2005; CDFG, County Boundaries, Jan. 2005; US Census Bureau, City Boundaries, July 2000; USGS, Hydrography, Dec. 1998, and EIP Associates, A Division of PBS&J, March 2007.

Muni/Western Ex. 9-30

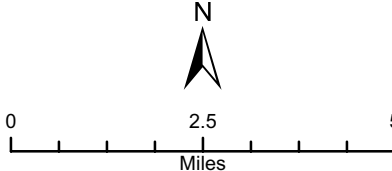
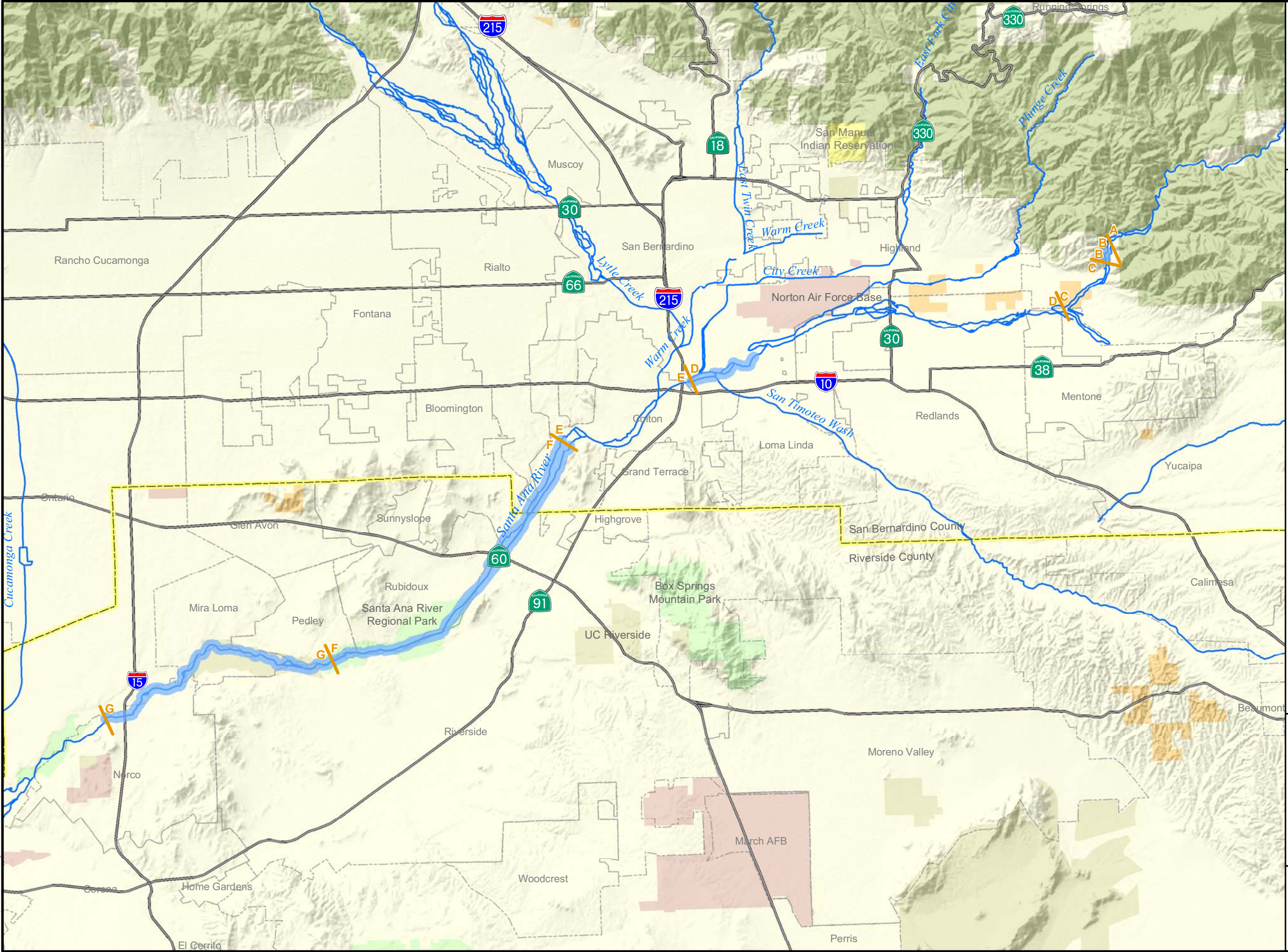
BEAR VALLEY BYPASS WATER QUALITY DATA

Date	Water Temp (oC)	Dissolved Oxygen (mg/l)	pH (units)	Salinity (%)	Conductivity (mS/cm)	Turbidity (NTU)	Sampling Time/Weather/Notes
6/1/05							
6/8/05							
6/16/05	16.6	9.22	7.80	0.00	0.211		0912 hrs
6/23/05	16.6	9.19	7.77	0.00	0.184	42.00	1005 hrs
7/1/05	16.6		7.78	0.00	0.191	23.00	0924 hrs
7/6/05	17.6		8.05	0.00	0.189	14.00	1338 hrs- hot
7/14/05	18.9	8.54	7.89	0.00	0.194	13.00	1026 hrs- very hot
7/21/05							no water
7/29/05	20.3		7.82	0.00	0.201	15.00	0900 hrs
8/5/05	20.0		7.84	0.00	0.199	31.00	0937 hrs
8/12/05	21.1		8.23	0.00	0.201	12.00	1050 hrs
8/18/05	18.5		7.72	0.00	0.224	65.00	0924 hrs
8/25/05	20.3		7.95	0.01	0.274	46.00	1020 hrs
9/2/05	18.0		8.27	0.01	0.301		0901 hrs
9/9/05	16.9		8.34	0.01	0.348		0931 hrs
9/15/05	18.0		8.08	0.01	0.302		0926 hrs
9/22/05	18.1	8.62	8.28	0.01	0.455	144.00	0940 hrs- water is really dirty
9/29/05	21.3	8.60	8.49	0.01	0.394	32.00	1245 hrs
10/6/05	16.3	9.29	8.29	0.01	0.359	12.00	0930 hrs
10/13/05	16.7	9.10	8.34	0.01	0.373	6.00	0940 hrs
10/20/05	13.7	9.85	8.20	0.00	0.221	140.00	1055 hrs- water very dirty due to thunderstorms
10/27/05	14.8	9.60	8.18	0.00	0.235	12.00	0950 hrs
11/3/05	15.7	9.75	8.26	0.01	0.308	20.00	0920 hrs
11/10/05	14.1	9.45	8.04	0.01	0.329	30.00	0825 hrs
11/18/05	12.9	10.10	8.25	0.01	0.265	32.00	1105 hrs
11/28/05	11.1	10.81	8.44	0.01	0.349	75.00	1020 hrs
12/2/05	12.5	10.32	8.15	0.01	0.341	60.00	0905 hrs
12/8/05	12.1	10.20	8.33	0.01	0.355	-	1405 hrs- turbidity unmeasurable, water very dirty
12/16/05	8.9	10.91	8.27	0.01	0.345	38.00	0920 hrs
12/23/05	12.6	10.02	8.07	0.01	0.357	19.00	0830 hrs
12/30/05	12.5	10.10	8.10	0.01	0.359	22.00	1210 hrs
1/6/06	12.3	12.80	8.29	0.00	0.234	220.00	1300 hrs- water very dirty
1/13/06	8.6	11.24	8.07	0.00	0.238	30.00	0950 hrs
1/20/06	8.9	10.92	8.10	0.00	0.245	32.00	1005 hrs
1/26/06	11.5	10.41	8.64	0.00	0.241	30.00	1335 hrs
2/3/06	13.4	10.37	8.65	0.00	0.252	10.00	1255 hrs
2/10/06	13.5	10.21	8.57	0.00	0.257	12.00	1315 hrs
2/17/06	12.0	10.53	8.67	0.00	0.260	7.00	1315 hrs
2/24/06	8.1	11.36	8.77	0.01	0.275	7.00	0920 hrs
3/2/06	10.0	10.71	8.02	0.00	0.214	370.00	0920 hrs- water very dirty due to storms
3/10/06	8.4	10.85	8.20	0.00	0.209	67.00	0850 hrs
3/17/06	7.1	9.75	8.13	0.00	0.226	52.00	1430 hrs
3/23/06	10.3	10.82	8.06	0.00	0.229	10.00	0925 hrs
3/31/06	10.4	10.05	7.99	0.00	0.226	20.00	1005 hrs
5/5/06	13.7	10.26	8.04	0.00	0.222	4.00	1100 hrs
5/11/06	16.0	9.73	8.24	0.00	0.229	7.00	0930 hrs
5/19/06	18.2	9.55	8.18	0.00	0.250	5.00	0905 hrs
5/26/06	18.2	9.04	7.93	0.01	0.263	5.00	0950 hrs
6/2/06	19.7	9.04	8.62	0.01	0.301	9.00	1020 hrs
6/9/06	20.1	9.43	8.73	0.01	0.294	5.00	1340 hrs
6/15/06	20.8	8.33	8.72	0.01	0.364	26.00	0950 hrs
6/21/06	21.1	6.54	8.36	0.01	0.422	112.00	1000 hrs- water dirty
6/29/06	23.1	7.46	8.43	0.01	0.417	19.00	1040 hrs
7/7/06	23.4	7.21	8.56	0.01	0.318	17.00	1040 hrs
7/14/06	23.2	8.07	8.29	0.01	0.316	12.00	0900 hrs
7/21/06	23.5	8.74	8.17	0.01	0.321	22.00	1315 hrs
7/28/06	22.6	7.96	8.15	0.00	0.233	63.00	0905 hrs

**Multi/Western Ex. 9-31
Locations of Perennial Surface
Water and Obligate Riparian
Vegetation Downstream of
Seven Oaks Dam to the
Prado Flood Control Basin**

Santa Ana River
San Bernardino County, CA

- Segment Boundary
- Perennial Reach
- - - City Boundary
- - - County Boundary
- River or Stream
- Highway



Source: EIP Associates, a division of
PBS&J, 2007.









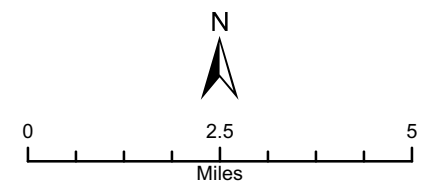
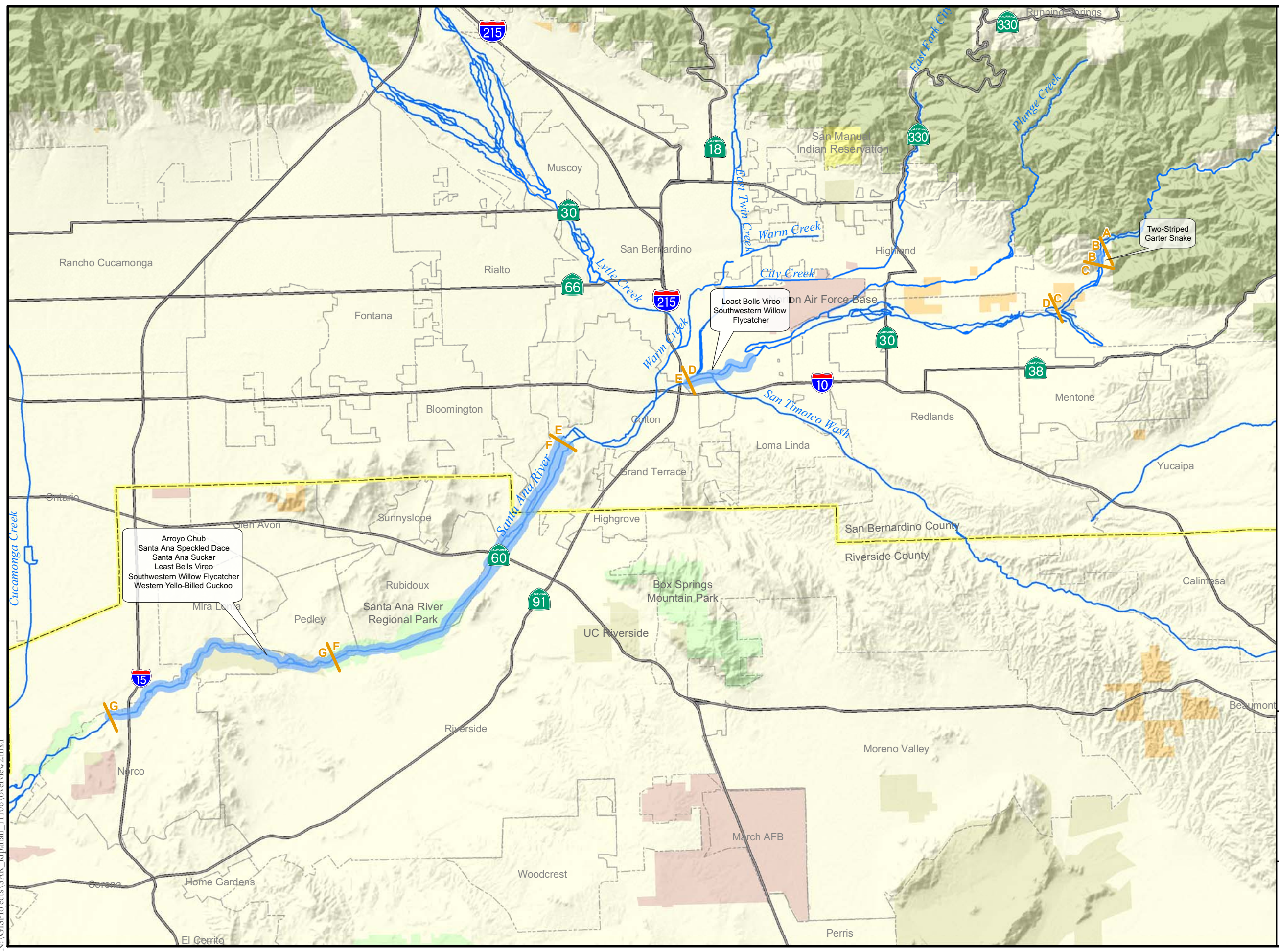
D51063.01

N:\GIS\Projects\SAR_Riparian_11106\overview2.mxd

**Multi/Western Ex. 9-32
Occurrence Locations for
Special-Status Aquatic
Species and Habitats**

Santa Ana River
San Bernardino County, CA

-  Segment Boundary
-  Perennial Reach
-  City Boundary
-  County Boundary
-  River or Stream
-  Highway



Source: EIP Associates, a division of
PBS&J, 2007.



A Division of **PBS&J**

D51063.01

N:\GIS\Projects\SAR_Riparian_11106\overview2.mxd



Source: Leidy/Thompson, 2005.



Muni/Western Ex. 9-33

Southern Cottonwood-Willow Riparian Vegetation Along the SAR Downstream of the RIX-Rialto Outfalls in Segment F

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D51063.01

Seven Oaks



Source: Leidy/Thompson, 2005.



Muni/Western Ex. 9-34

Willow Riparian Scrub Vegetation Along the SAR Downstream of the RIX-Rialto Outfalls in Segment F

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D51063.01

Seven Oaks



Source: Leidy/Thompson, 2005.



Muni/Western Ex. 9-35

Alluvial Scrub Vegetation Along the SAR Downstream of the Greenspot Road Bridge in Segment C

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D51063.01

Seven Oaks



Source: Huffstutler, 2005.



Muni/Western Ex. 9-36
Seven Oaks Dam Plunge Pool and Outlet Channel

A Division of **PBS&J**

D51063.01

Seven Oaks



Source: Leidy/Thompson, 2005.



A Division of **PBS**

Muni/Western Ex. 9-37



Segment D of the SAR Downstream of the Confluence of San Timoteo Creek, September 2005

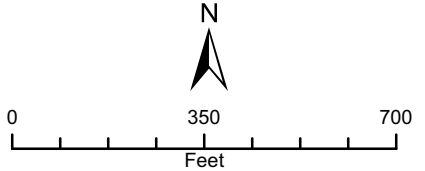
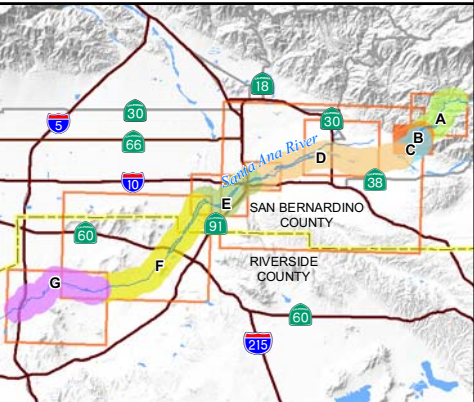
D51063.01

Seven Oaks

**Multi/Western Ex. 9-38
Aerial View of SAR Segment B**

Santa Ana River
San Bernardino County, CA

-  Exhibit Outline
-  Segment Start/End



Source: USDA/FSA - Aerial Photography Field Office, 2006.



A Division of **PBSJ**

D51063.01



Source: Huffstutler, 2005.



Muni/Western Ex. 9-39
Oblique View of Segment B from the Top of Seven Oaks Dam

A Division of **PBS&J**

D51063.01

Seven Oaks



Cuttle Weir

Source: Leidy, 2005.



Muni/Western Ex. 9-40
Segment B Riparian Woodland Vegetation Looking Downstream from Barren SAR Channel

A Division of **PBS**

D51063.01

Seven Oaks



Source: Huffstutler, 2005.



Muni/Western Ex. 9-41

Segment B Riparian Woodland Vegetation Looking Upstream from the Auxiliary River Pickup Intake

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D51063.01

Seven Oaks



Source: Leidy, 2005.



Muni/Western Ex. 9-42
Segment B Mulefat Scrub Vegetation Upstream of the Cuttle Weir

A Division of **PBS**

D51063.01

Seven Oaks



Plunge Pool
Outlet Channel

Source: Leidy, 2005.



Muni/Western Ex. 9-43

Segment B Plunge Pool Showing Absence of Riparian Vegetation

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D51063.01

Seven Oaks



Source: Lejdy, 2005.



Muni/Western Ex. 9-44
Segment B Dewatered SAR Channel Downstream of Plunge Pool

A Division of **PBS&J**

D51063.01

Seven Oaks



Source: Leidy, 2005.



Muni/Western Ex. 9-45
Segment B Cuttle Weir and SBVWCD Diversion Looking Downstream at the SAR in a Wet Year

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D51063.01

Seven Oaks



Source: Huffstutler, 2004.



Muni/Western Ex. 9-46
Segment B Cuttle Weir and SBVWCD Diversion Looking Downstream at the SAR in a Dry Year




A Division of **PBS&J**

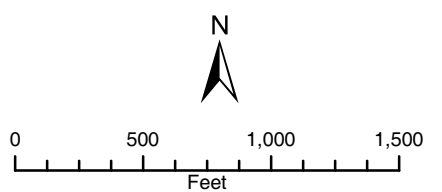
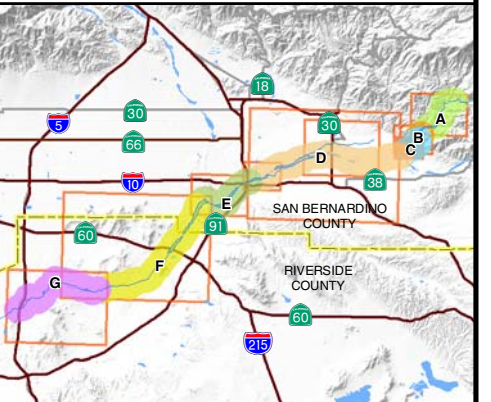
D51063.01

Seven Oaks

**Multi/Western Ex. 9-47
Aerial View of SAR Segment C**

Santa Ana River
San Bernardino County, CA

-  Exhibit Outline
-  Segment Start/End
-  County Boundary



Source: USDA/FSA - Aerial Photography Field Office, 2006.



A Division of **PBSJ**
D51063.01



Source: Leidy/Thompson, 2005.



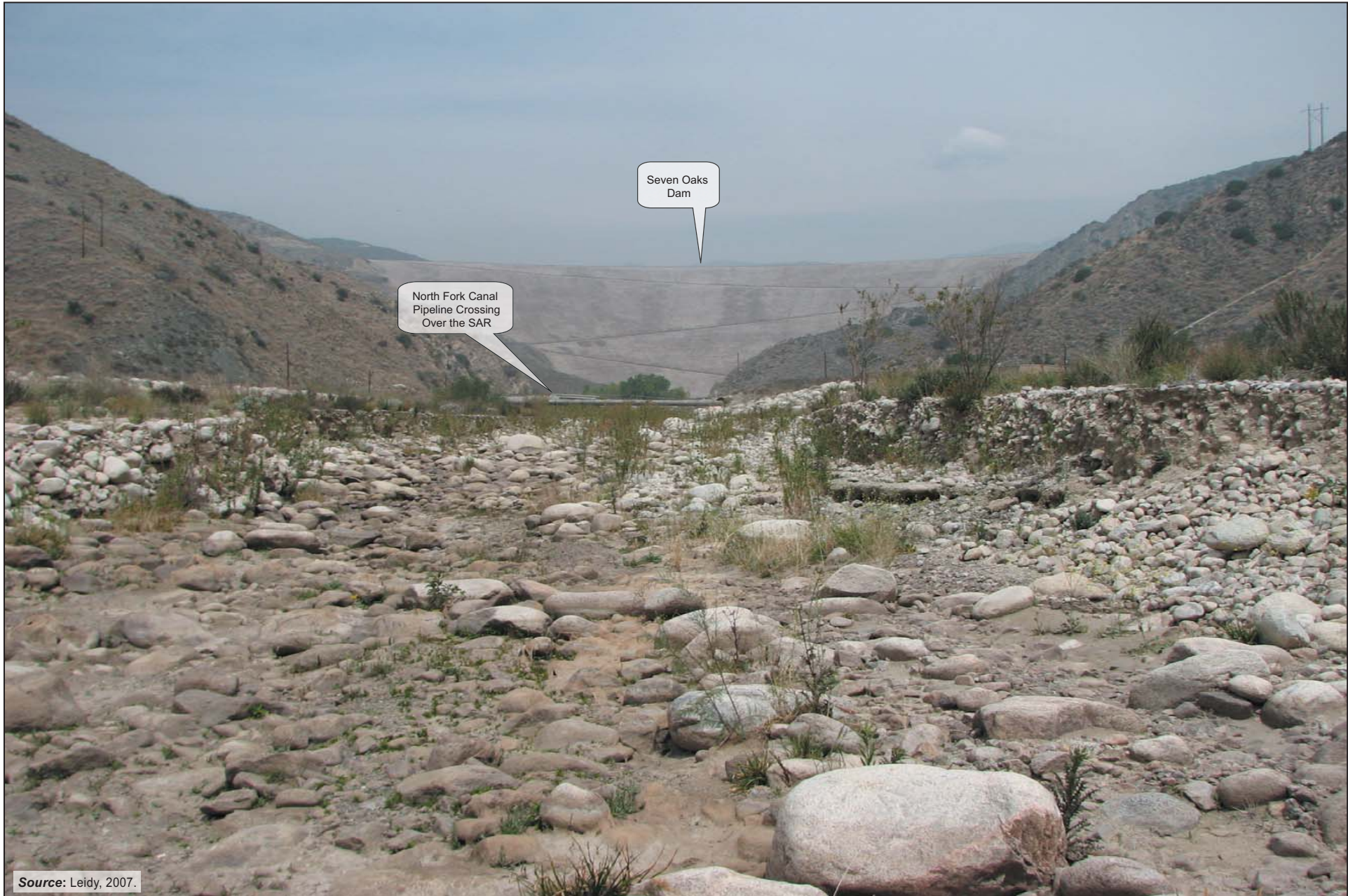
A Division of **PBS&J**

Muni/Western Ex. 9-48

Segment C View Upstream (North) Toward Seven Oaks Dam Showing SAR Channel Down-cutting and Substrate Coarsening Due to Flood Pool Releases in 2004-2005

D51063.01

Seven Oaks



Seven Oaks Dam

North Fork Canal Pipeline Crossing Over the SAR

Source: Leidy, 2007.



Muni/Western Ex. 9-49
Segment C View Upstream (North) Toward Seven Oaks Dam, Spring 2007

A Division of **PBS&J**

D51063.01

Seven Oaks



Source: Leidy/Thompson, 2005.



Muni/Western Ex. 9-50

Segment C Downstream View of SAR Channel Showing Armored Channel Bank

A Division of **PBS&J**

D51063.01

Seven Oaks



Rip-rapped
Armored Channel
Groin

Morton Canyon

Source: Leidy, 2007.



Muni/Western Ex. 9-51
Segment C Downstream View of SAR Channel in Spring 2007

A Division of **PBS&J**

D51063.01

Seven Oaks



Source: Leidy/Thompson, 2005.



Muni/Western Ex. 9-52

Segment C of the SAR Downstream of the Greenspot Road Bridge in the Summer 2005 Showing Channel Braiding and Absence of Riparian Vegetation

A Division of **PBS&J**

D51063.01

Seven Oaks



Source: Leidy, 2007.



Muni/Western Ex. 9-53

Segment C of the SAR Downstream of the Greenspot Road Bridge in the Spring 2007

A Division of **PBS&J**

D51063.01

Seven Oaks



Source: Leidy/Thompson, 2005.



Muni/Western Ex. 9-54

Segment C of the SAR a Short Distance Upstream of the Mill Creek Confluence in the Summer 2005

A Division of **PBS**

D51063.01

Seven Oaks



Source: Leidy, 2007.



Muni/Western Ex. 9-55

Segment C of the SAR a Short Distance Upstream of the Mill Creek Confluence in the Spring 2007



A Division of **PBS&J**

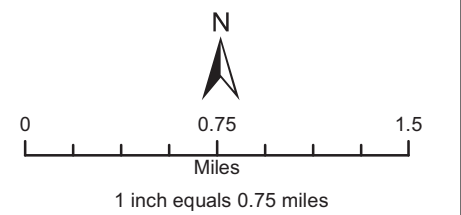
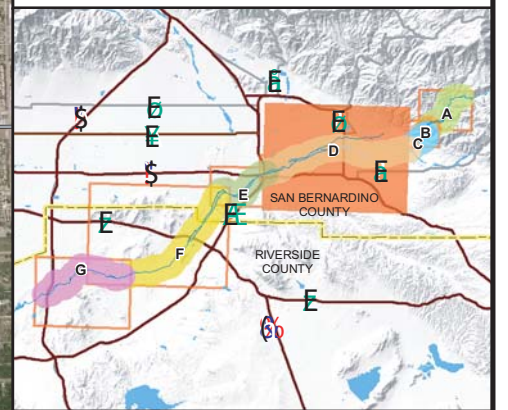
D51063.01

Seven Oaks

**Multi/Western Ex. 9-56
Aerial View of SAR Segment D**

Santa Ana River
San Bernardino County, CA

-  Exhibit Outline
-  Segment Start/End



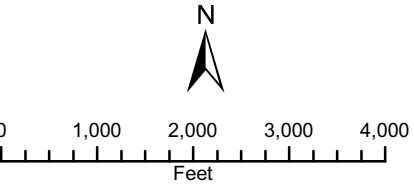
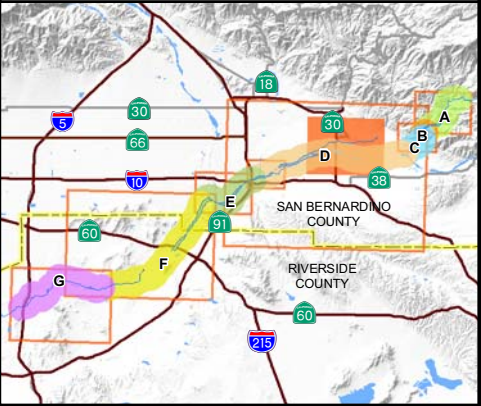
Source: USDA/FSA - Aerial Photography Field Office, 2006.



**Multi/Western Ex. 9-57
SAR Segment D
Intermittent Reach**

Santa Ana River
San Bernardino County, CA

 Exhibit Outline



Source: USDA/FSA - Aerial Photography Field Office, 2006.



A Division of **PBSJ**

D51063.01



Source: Leidy, 2005.



Muni/Western Ex. 9-58

Segment D Intermittent Reach Downstream of Orange Avenue Bridge During a Wet Water Year, 2005

A Division of **PBS**

D51063.01

Seven Oaks



Source: Leidy, 2007.



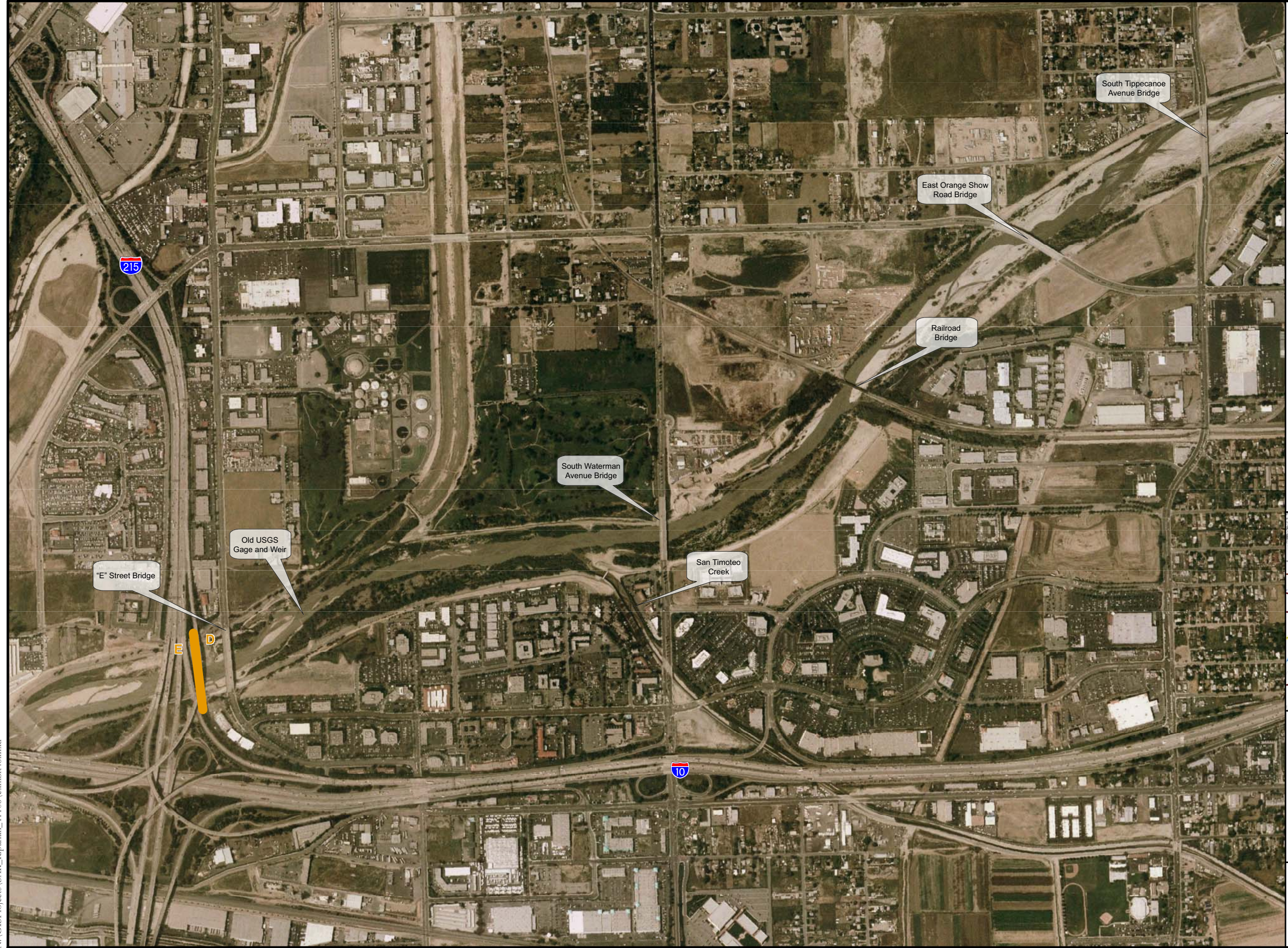
Muni/Western Ex. 9-59

Segment D Intermittent Reach Downstream of Orange Avenue Bridge During a Dry Water Year, 2007

A Division of **PBS&J**



D51063.01

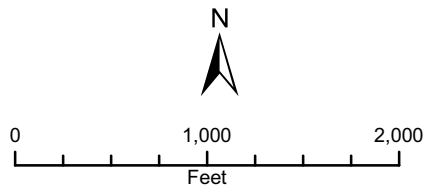
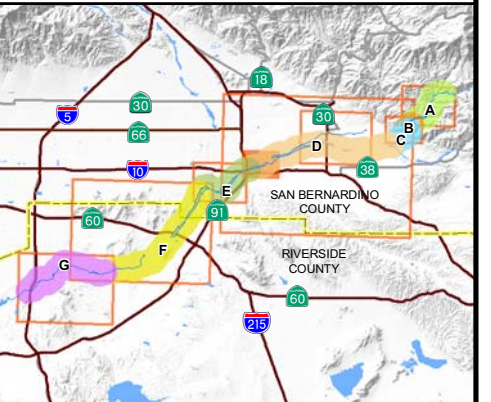
Seven Oaks



Multi/Western Ex. 9-60
Aerial View of SAR Segment D
Perennial Reach

Santa Ana River
San Bernardino County, CA

-  Exhibit Outline
-  Segment Start/End



Source: USDA/FSA - Aerial Photography Field Office, 2006.



A Division of **PBSJ**

D51063.01



Source: Leidy, 2007.



Muni/Western Ex. 9-61
Segment D San Timoteo Creek at Confluence with the SAR, April 2007

A Division of **PBS&J**

D51063.01

Seven Oaks



Source: Leidy, 2007.



Muni/Western Ex. 9-62
Segment D-Perennial Reach Cattails (*Typha* sp.)

A Division of **PBS&J**

D51063.01

Seven Oaks



Source: Leidy/Thompson, 2005.



Muni/Western Ex. 9-63

Segment D-SAR Perennial Reach Downstream of the Confluence of San Timoteo Creek in a Wet Water Year, 2005

A Division of **PBS&J**

D51063.01

Seven Oaks



Source: Leidy, 2007.



Muni/Western Ex. 9-64

Segment D-SAR Downstream of San Timoteo Creek in a Dry Water Year, April 2007, Active Channel has Moved North (to the right)

A Division of **PBS&J**

D51063.01

Seven Oaks



Southern Cottonwood
Willow Riparian Habitat

Source: Leidy, 2007.



Muni/Western Ex. 9-65

Segment D-SAR Downstream of San Timoteo Creek in a Dry Water Year, April 2007

A Division of **PBS&J**

D51063.01

Seven Oaks



Source: Leidy, 2007.



A Division of **PBS**

Muni/Western Ex. 9-66



Segment D-SAR Between the Confluence of San Timoteo Creek and "E" Street in a Dry Water Year, April 2007

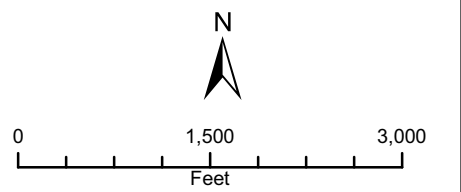
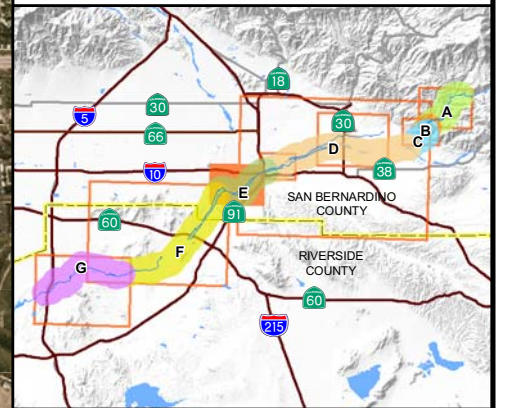
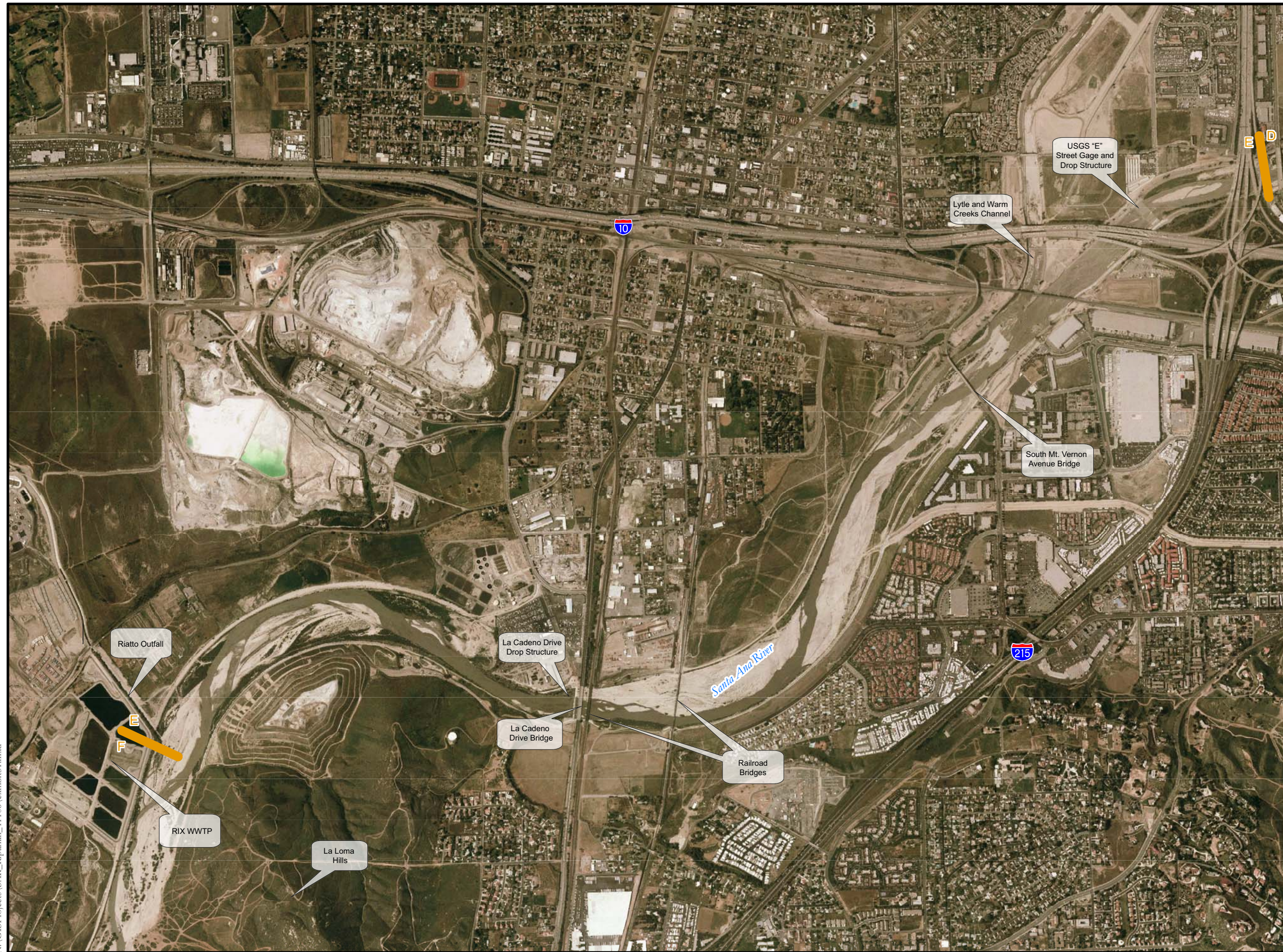
D51063.01

Seven Oaks

**Multi/Western Ex. 9-67
Aerial View of SAR Segment E**

Santa Ana River
San Bernardino County, CA

-  Exhibit Outline
-  Segment Start/End



Source: USDA/FSA - Aerial Photography Field Office, 2006.



A Division of **PBSJ**
D51063.01



La Loma
Hills

Railroad
Bridge

Stover
Mountain

Source: Leidy, 2005.



Muni/Western Ex. 9-68

SAR Segment E Upstream of La Cadena Drive Bridge in a Wet Water Year, 2005

A Division of **PBS&J**

D51063.01

Seven Oaks



Source: Leidy, 2007.



Muni/Western Ex. 9-69

SAR in Segment E Upstream of La Cadena Avenue Bridge in a Dry Water Year, 2007

A Division of **PBS&J**

D51063.01

Seven Oaks



Stover Mountain
(Riverside Cement Co.)

Source: Leidy, 2005.



Muni/Western Ex. 9-70

SAR Segment E Downstream of La Cadena Drive Bridge in a Wet Water Year, 2005

A Division of **PBS&J**

D51063.01

Seven Oaks



Stover Mountain
(Riverside Cement Co.)

Source: Leidy, 2007.



Muni/Western Ex. 9-71
SAR in Segment E Downstream of La Cadena Avenue Bridge in a Dry Water Year, April 2007

A Division of **PBS&J**

D51063.01

Seven Oaks



Source: Leidy, 2007.



Muni/Western Ex. 9-72

View of Drop Structure at Current USGS "E" Street Stream Gage

A Division of **PBS&J**

D51063.01

Seven Oaks



La Cadena
Avenue Bridge

Mulefat

Source: Leidy, 2007.



Muni/Western Ex. 9-73
Drop Structure Downstream of La Cadena Avenue Bridge

A Division of **PBS&J**

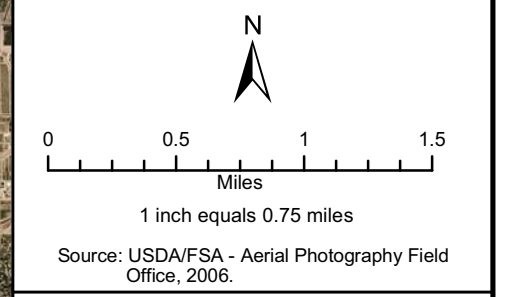
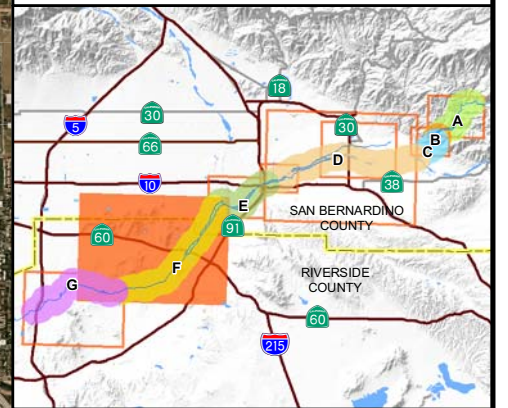
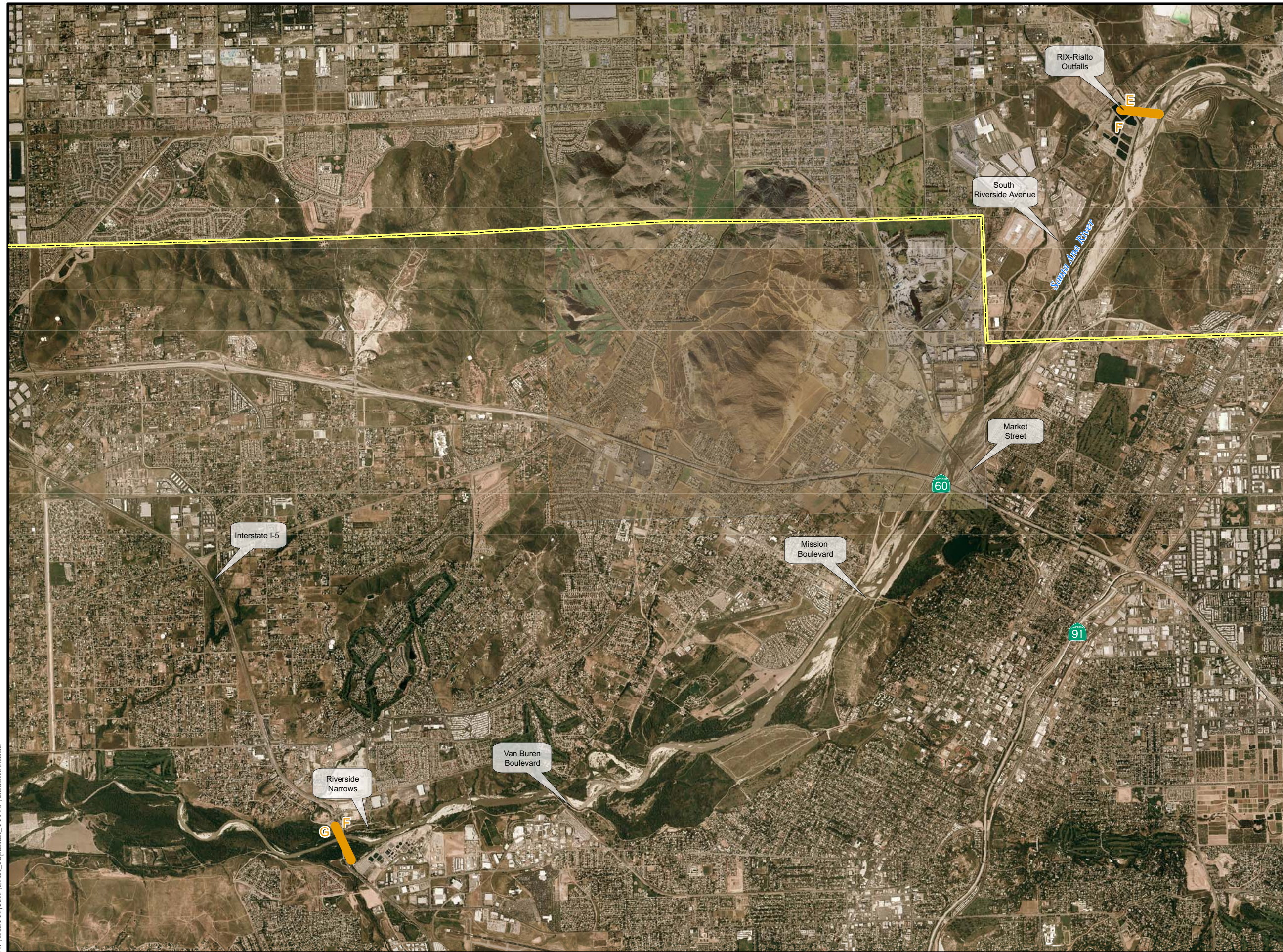
D51063.01

Seven Oaks

Multi/Western Ex. 9-74
Aerial View of SAR Segment F

Santa Ana River
San Bernardino County, CA

- Exhibit Outline
- Segment Start/End
- County Boundary





Source: Leidy, 2005.



Muni/Western Ex. 9-75

SAR Segment F Downstream of the RIX-Rialto Outfalls in a Wet Water Year, 2005

A Division of **PBS&J**

D51063.01

Seven Oaks



Source: Leidy, 2005.



Muni/Western Ex. 9-76
Rialto WWTP Just Upstream of its Confluence with the SAR

A Division of **PBS**

D51063.01

Seven Oaks



Source: Leidy/Thompson, 2005.



Muni/Western Ex. 9-77
RIX WWTP Outfall at its Confluence with the Rialto Outfall and the SAR




A Division of **PBS&J**

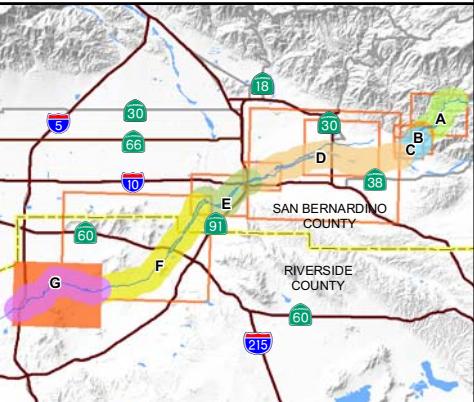
D51063.01

Seven Oaks

**Multi/Western Ex. 9-78
Aerial View of SAR Segment G**

Santa Ana River
San Bernardino County, CA

-  Exhibit Outline
-  Segment Start/End
-  County Boundary



0 500 1,000 1,500
Feet

1 inch equals 2,265 feet

Source: USDA/FSA - Aerial Photography Field Office, 2006.



A Division of **PBSJ**

D51063.01

Muni/Western Ex. 9-79

SPECIAL-STATUS AQUATIC SPECIES SUMMARY TABLE

Common Name Scientific Name	Status	Distribution and Occurrence in the Project Area
Special-Status Aquatic Plants		
Marsh Sandwort <i>Arenaria paludicola</i>	FE, SE, CNPS 1B	Low, perennial herb, often supported by surrounding vegetation, growing in bogs and fens, freshwater marshes and swamps. Presently known from only two occurrences, one in Mendocino County and one in San Luis Obispo County. The historic locations near San Bernardino areas believed to be extirpated due to urbanization. Not reported in area since 1899. Affected by widespread historic modification of its specialized aquatic habitat. Not located during botanical surveys completed for Seven Oaks Dam. No critical habitat designated by the USFWS. The USFWS issued a final Recovery Plan in 1998. Operation of Seven Oaks Dam does not affect the Recovery Plan for this species.
Gambel's Watercress <i>Rorippa gambelii</i>	FT, SE, CNPS 1B	Perennial herb, 1 to 6 feet tall, with white flowers. Restricted to freshwater or brackish marshes and swamps. In California, currently known from only four locations in Santa Barbara and San Luis Obispo counties. The historic locations near San Bernardino are believed to be extirpated. Last reported in area in 1935 from Urbita Hot Springs. Swamp was drained in 1945. Affected by widespread historic modification of its specialized aquatic habitat. Not located during botanical surveys completed for Seven Oaks Dam. No critical habitat designated by the USFWS. The USFWS issued a final Recovery Plan in 1998. Operation of Seven Oaks Dam does not affect the Recovery Plan for this species.
Special-Status Fish		
Arroyo Chub <i>Gila orcutti</i>	SSC	Arroyo chubs are small fish that were once abundant in the SAR watershed. They are typically found in slow-moving or backwater areas of warm to cool streams with mud or sand substrates. In the SAR these fish are currently only found in areas of perennial streamflow downstream of the RIX facility (RM 53.5), 17.4 miles downstream of Seven Oaks Dam. This fish is often associated with the Santa Ana sucker in the SAR. While the chub is not listed under the ESA, its status is of concern to the CDFG.
Santa Ana Speckled Dace <i>Rhinichthys osculus</i> ssp.	SSC	This subspecies of dace has yet to be described in the scientific literature. While the dace recently was known to occur in the SAR near the confluence with San Timoteo Creek, it appears to now be extirpated based on limited sampling in 2006 (Swift and Leidy, personal observations, 2006). The dace is known to occur in several tributaries to the SAR where small populations are maintained. The speckled dace requires permanent flowing streams with summer water temperatures below about 68°F. The dace inhabits shallow cobble and gravel riffles. Because the dace appears to be extirpated from the mainstem SAR, this fish is not affected by flood control operations at Seven Oaks Dam. While the dace is not listed under the ESA, its status is of concern to the CDFG.
Santa Ana Sucker <i>Catostomus santaanae</i>	FT, SSC	This small sucker occurs in streams that are subject to periodic, severe flooding that results in drastic decreases in sucker population densities. The typical habitat for this fish is small to medium-sized perennial streams. They can tolerate flows that range of slight to swift. They prefer substrates that are coarse and consist of gravel, rubble, and boulder. In the SAR these fish are currently only found in areas of perennial streamflow downstream of the RIX/Rialto facilities (RM 53.5), 17.4 miles downstream of Seven Oaks Dam. While the USFWS considered designating critical habitat along the SAR, it ultimately decline to do so. There is no USFWS Recovery Plan for the Santa Ana sucker at this time. The operation of Seven Oaks Dam does not affect critical habitat for this species.
Special-Status Amphibians		
Arroyo Southwestern Toad <i>Bufo californicus</i>	FE, SSC	Occupies sandy washes with open areas, shallow pools, and patches of riparian vegetation. Not reported historically from within the Project area or any other segment of the SAR. Habitat suitability surveys and focused surveys in recent years have confirmed the lack of suitable habitat and the lack of individuals or populations in the area. Critical habitat for this species was designated in 2005 by the USFWS; however, no designated critical habitat occurs along the SAR. Recovery Plan issued in 1999 by the USFWS. Operation of Seven Oaks Dam does not affect the Recovery Plan for this species.

Muni/Western Ex. 9-79

SPECIAL-STATUS AQUATIC SPECIES SUMMARY TABLE

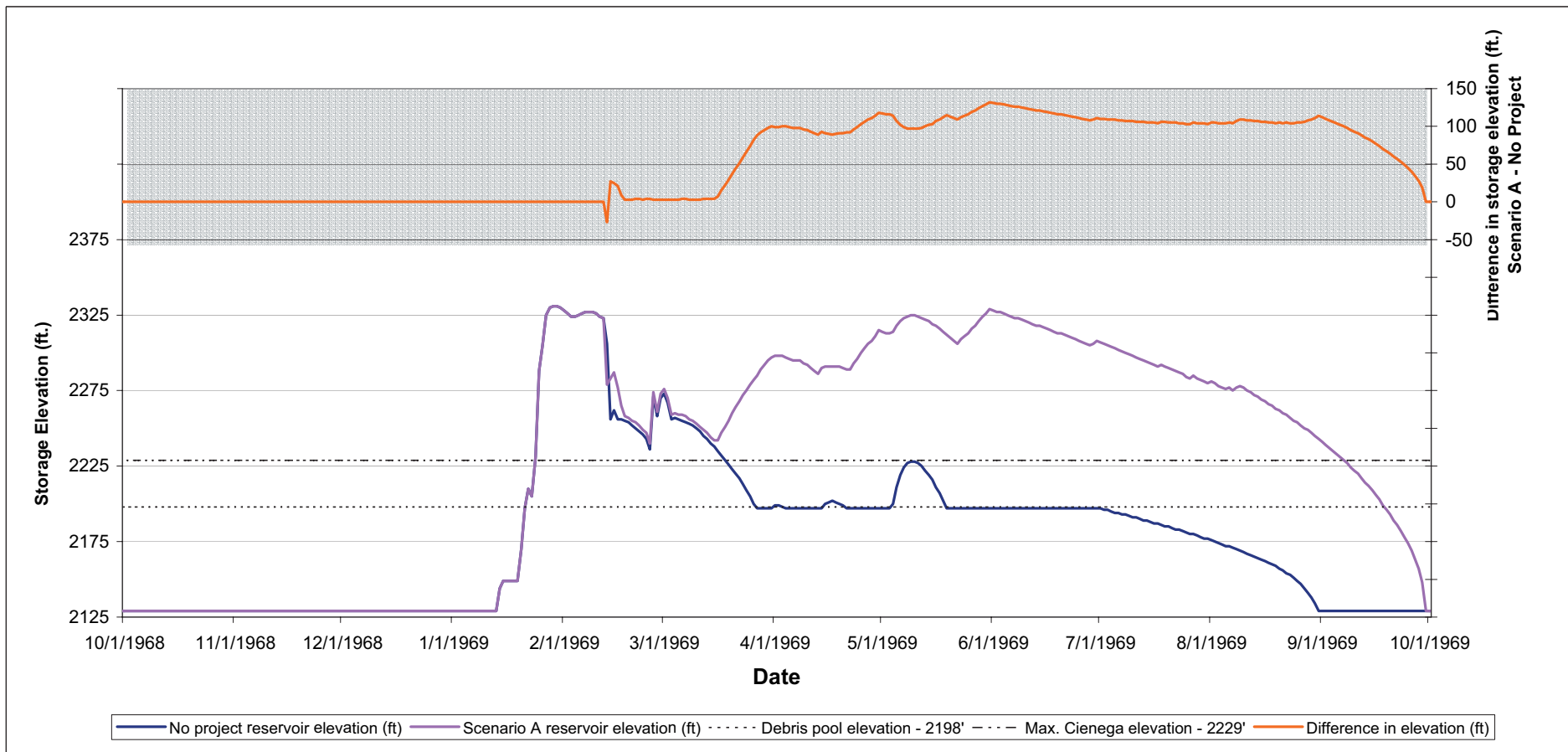
Common Name Scientific Name	Status	Distribution and Occurrence in the Project Area
California Red-legged Frog <i>Rana aurora draytonii</i>	FT, SSC	Habitat of the California red-legged frog is characterized by dense, shrubby riparian vegetation associated with deep (≥2.3 feet), still or slow-moving water. Populations probably cannot be maintained in ephemeral streams in which all surface water disappears. Habitat for this frog along the SAR is scarce and of low or marginal quality. Species not reported along the SAR in recent surveys (USACE 2000). A final Recovery Plan was issued by the USFWS in 2002 and critical habitat was designated by the USFWS in 2006. Operation of Seven Oaks Dam does not affect the Recovery Plan or critical habitat for this species.
Mountain Yellow-legged Frog <i>Rana muscosa</i>	FPE, SSC	Historically known from near Bluff Lake (1955) and Mill Creek (1951) in the San Bernardino Mountains. This frog inhabits ponds, lakes, and streams at moderate to high elevations. It appears to prefer open stream and lake margins that slope gently. Most successful in the absence of predatory fish. No frogs of this species have been observed in the San Bernardino Mountains since the 1970s. The mountain yellow-legged frog has not been observed during recent amphibian surveys in the Project area. This species is believed to be extirpated in the Project vicinity and would, therefore, not be affected by the operation of Seven Oaks Dam.
Western Spadefoot <i>Scaphiopus hammondi</i>	SSC	The western spadefoot is almost completely terrestrial, entering water only to breed. They become surface active following relatively warm rains late-winter-spring and fall. Females attach eggs to plant stems or pieces of detritus in temporary rain pools, or sometimes pools in ephemeral streamcourses. These toads require temporary rainpools for breeding that last three weeks. Such habitats must lack fishes, bullfrogs, crayfishes and other predators. There are no CNDDDB records for the Project area; however, a single adult spadefoot was found dead in an ephemeral drainage on an alluvial terrace adjacent to SAR segment C in 2005 (Leidy, personal observation, 2005). The western spadefoot occurs in the Project area.
Special-Status Aquatic Reptiles		
Southwestern Pond Turtle <i>Emys marmorata pallida</i>	SSC	This aquatic turtle only leaves the water to reproduce, to aestivate, and to overwinter. This species requires some slack- or slow-water aquatic habitat and they are uncommon in high gradient streams. Habitat quality is related to the availability of aerial and aquatic basking sites. Breeding typically occurs in late April or early May. Females may emigrate from water to an upland location for nesting a considerable distance. The CNDDDB reports that the pond turtle was reported from the Prado Basin in 1992. This turtle has the potential to occur in SAR segments F and G.
Two-striped Garter Snake <i>Thamnophis hammondi</i>	SSC	This highly aquatic garter snake typically inhabits perennial and intermittent streams having rocky beds bordered by willow thickets or other dense vegetation. If flooding removes dense riparian vegetation, this snake is infrequently found in such habitats. This species has been observed upstream of Seven Oaks Dam on the SAR by the author. One individual was observed at the upstream boundary of the Alder Creek Cienega in 2000. A second individual was found at the Warm Springs Cienega in 2005, after the flood pool have decline and the surviving Gooding's willows were resprouting. The two-striped garter snake did persist in the Project area upstream of Seven Oaks Dam following the flooding of 2004-2005. This species is also reported downstream of Seven Oaks Dam. The CNDDDB reports that this species was observed just upstream of the Cuttle Weir in 2005.
<p>Notes: FE = federally listed as endangered; PFE = proposed for federal listing as endangered; FT = federally listed as threatened; SE = state listed as endangered; SSC = state species of special concern; CNPS 1B = California Native Plant Society List 1B.</p>		

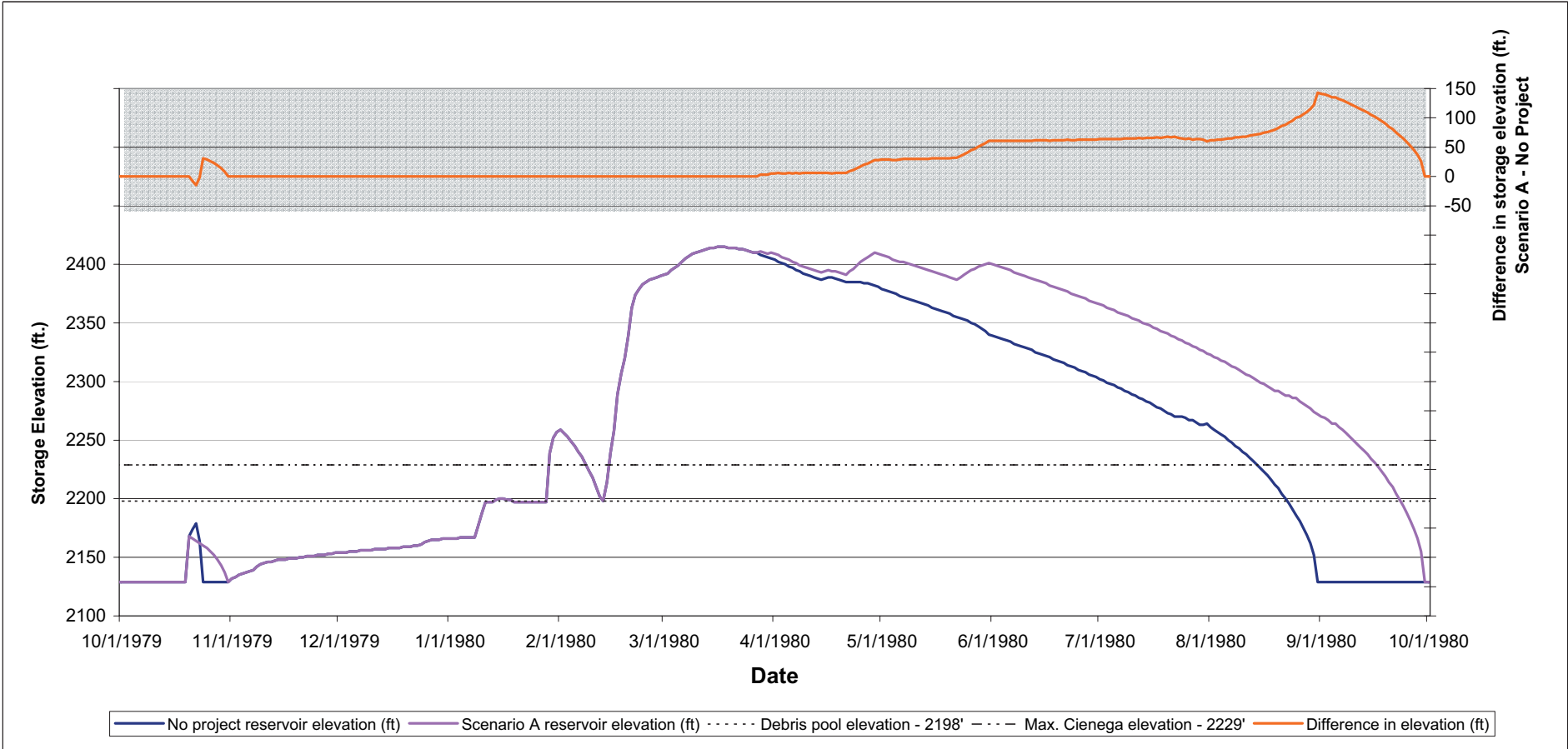
Muni/Western Ex. 9-80

**MODELED STORAGE DIFFERENCE
WHEN SCENARIO A STORAGE > DEBRIS POOL
(SCENARIO A - NO PROJECT)**

Water Year	Scenario A Storage > No Project Storage (days)	Scenario A Storage = No Project Storage (days)	No Project Storage > Scenario A Storage (days)
1962	0	0	0
1963	0	0	0
1964	0	0	0
1965	0	0	0
1966	0	15	1
1967	0	2	19
1968	0	0	0
1969	217	22	1
1970	0	0	0
1971	0	1	0
1972	0	3	0
1973	0	0	0
1974	0	0	0
1975	0	0	0
1976	0	0	0
1977	0	0	0
1978	2	19	0
1979	0	19	2
1980	180	51	13
1981	0	0	0
1982	0	1	0
1983	111	16	13
1984	0	2	0
1985	0	0	0
1986	0	0	0
1987	0	0	0
1988	0	0	0
1989	0	0	0
1990	0	0	0
1991	0	0	0
1992	0	0	0
1993	56	0	81
1994	0	0	0
1995	39	24	14
1996	0	2	0
1997	0	3	0
1998	78	23	0
1999	0	0	0
2000	0	0	0
Total	683	203	144
% of Total Days	4.8%	1.4%	1.0%

* Total days on record: 14,245



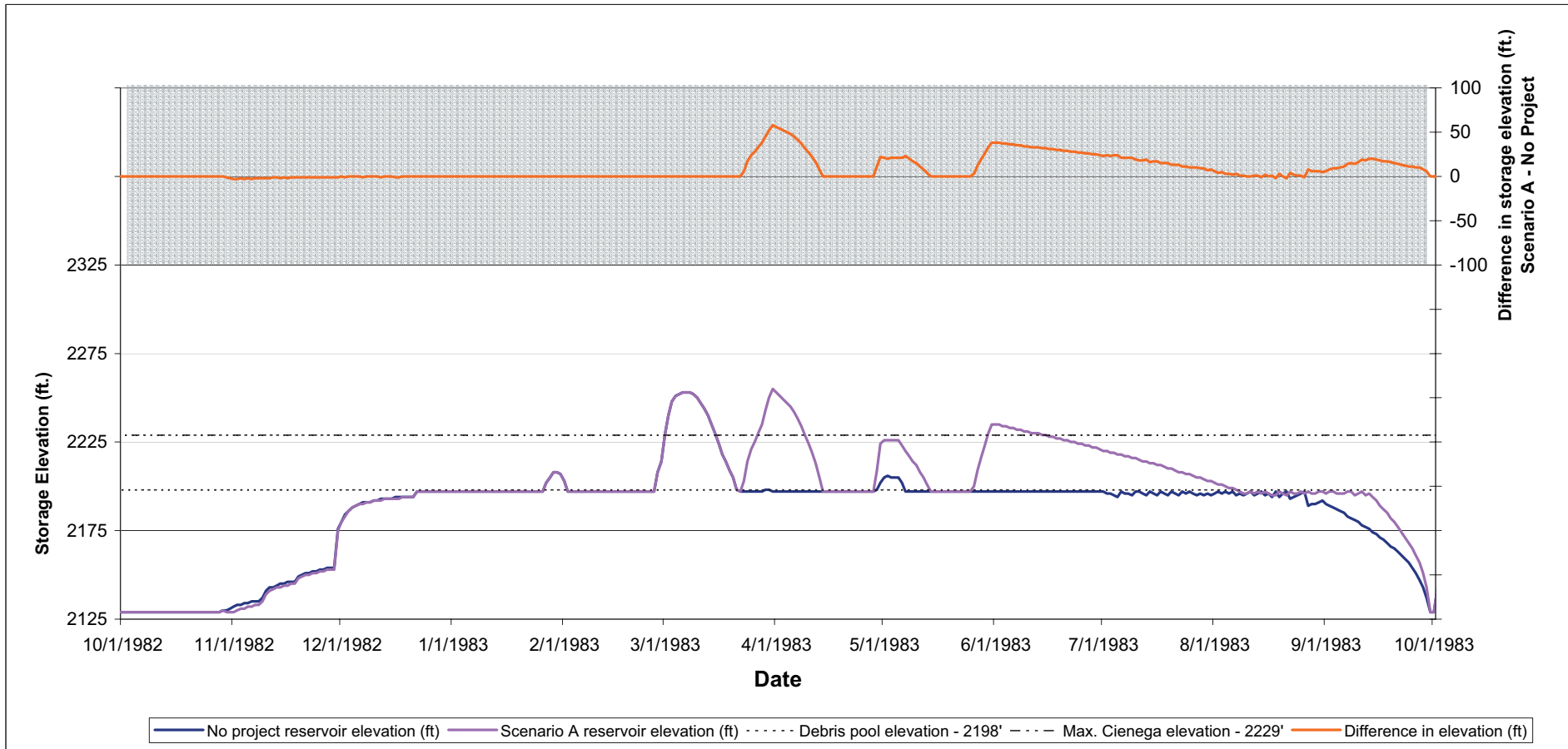


Muni/Western Ex. 9-82
Seven Oaks Reservoir Modeled Water-Surface Elevation Water Year 1980

A Division of **PBS&J**

D51063.01

Seven Oaks



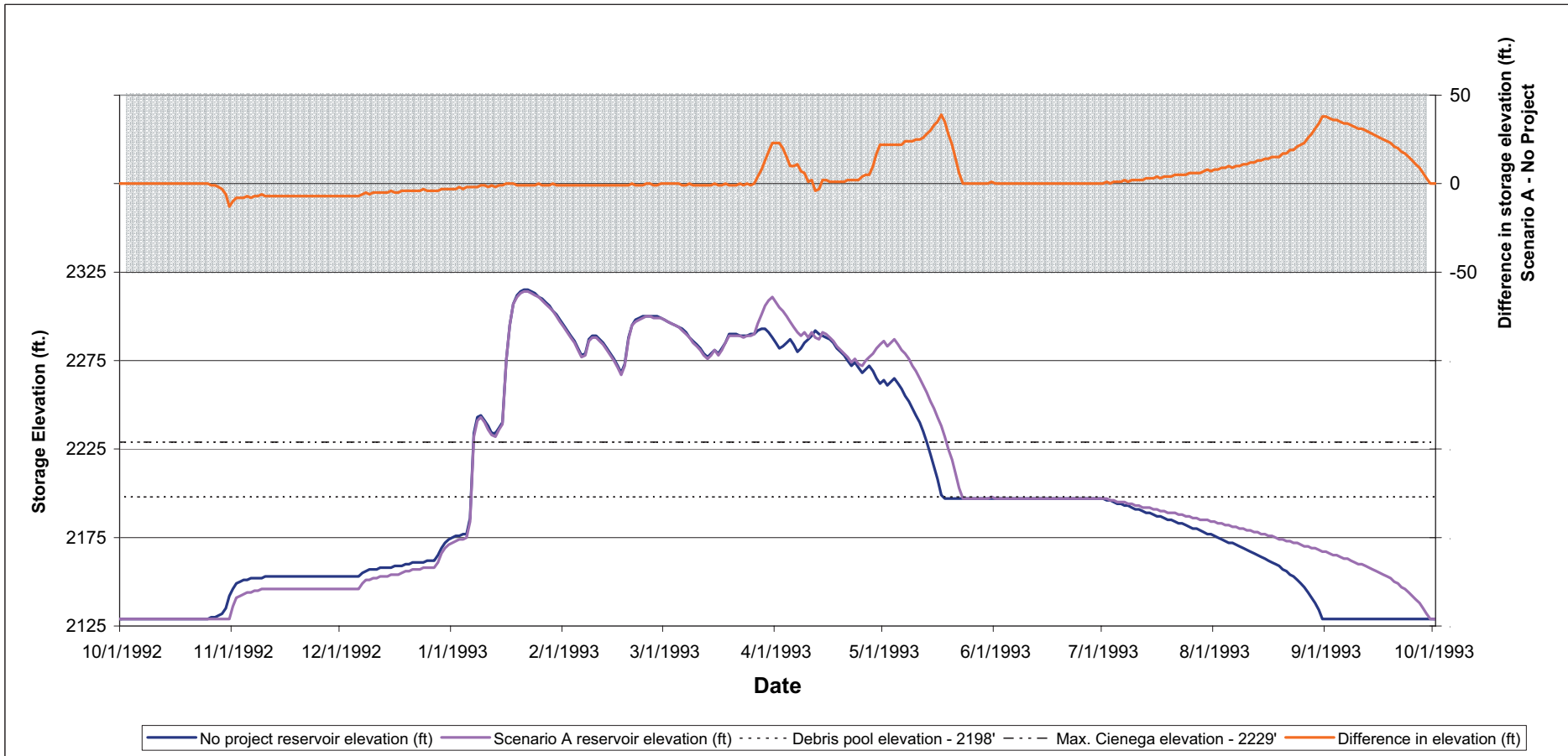
Muni/Western Ex. 9-83

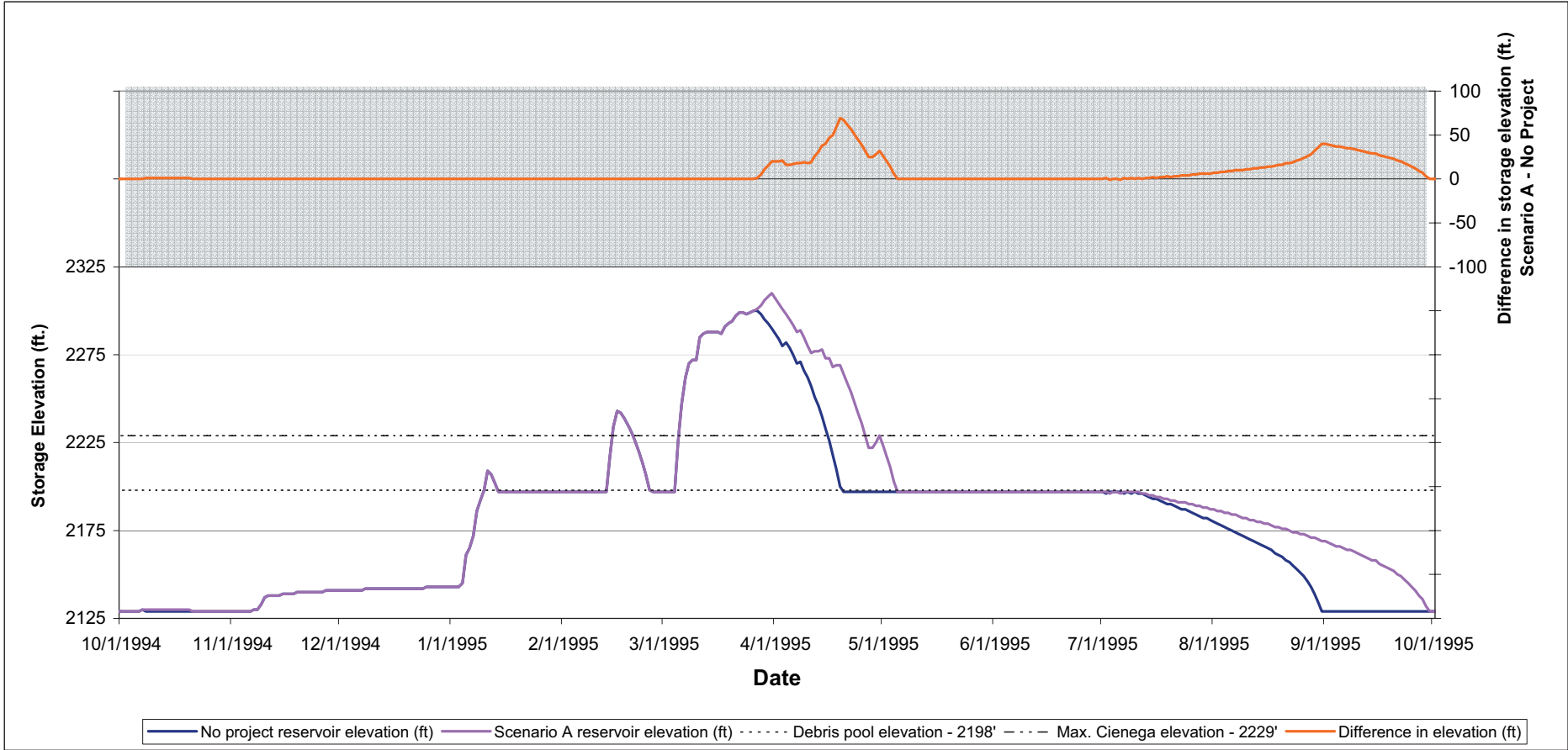
Seven Oaks Reservoir Modeled Water-Surface Elevation Water Year 1983

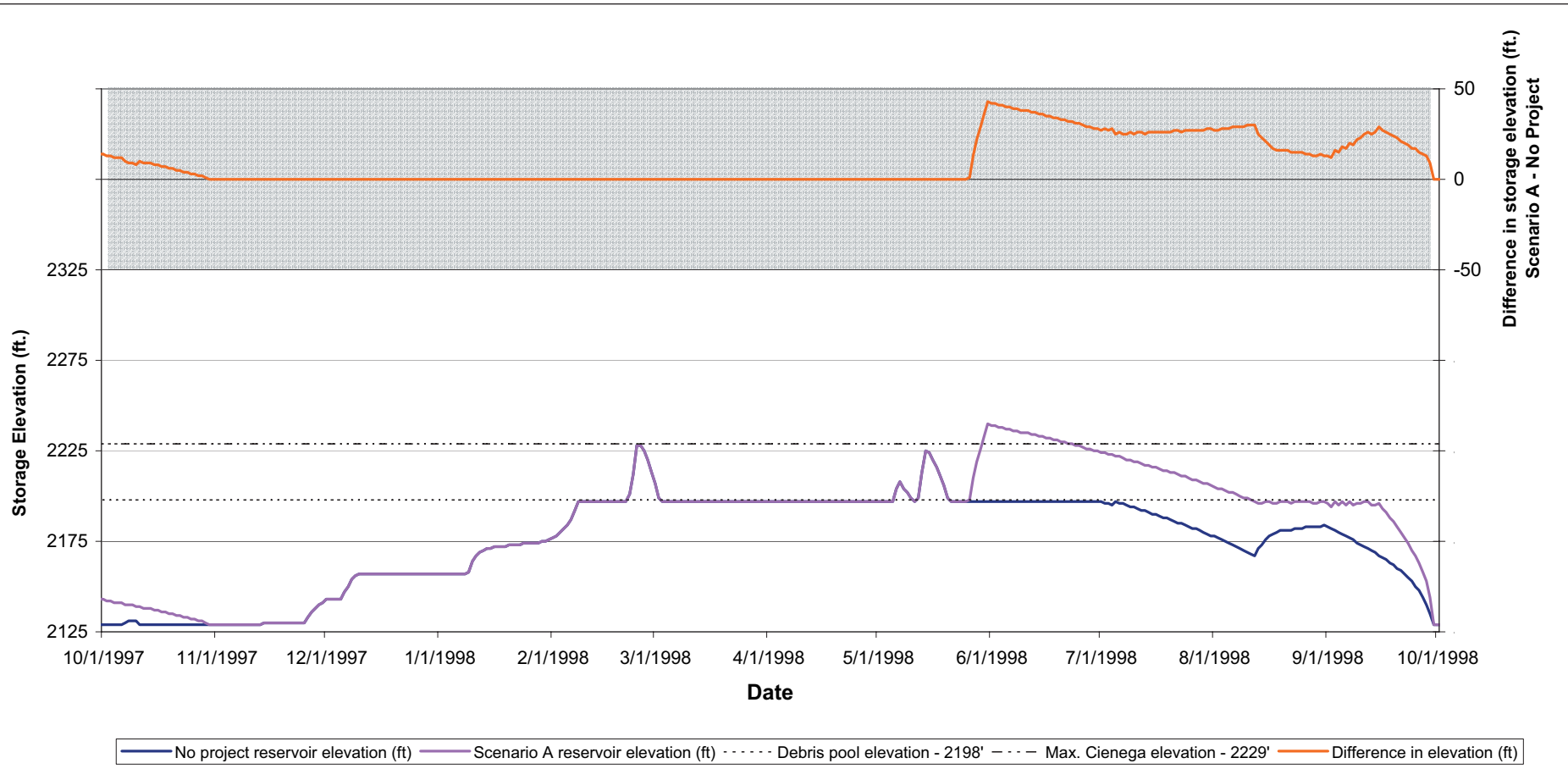
A Division of **PBS&J**

D51063.01

Seven Oaks







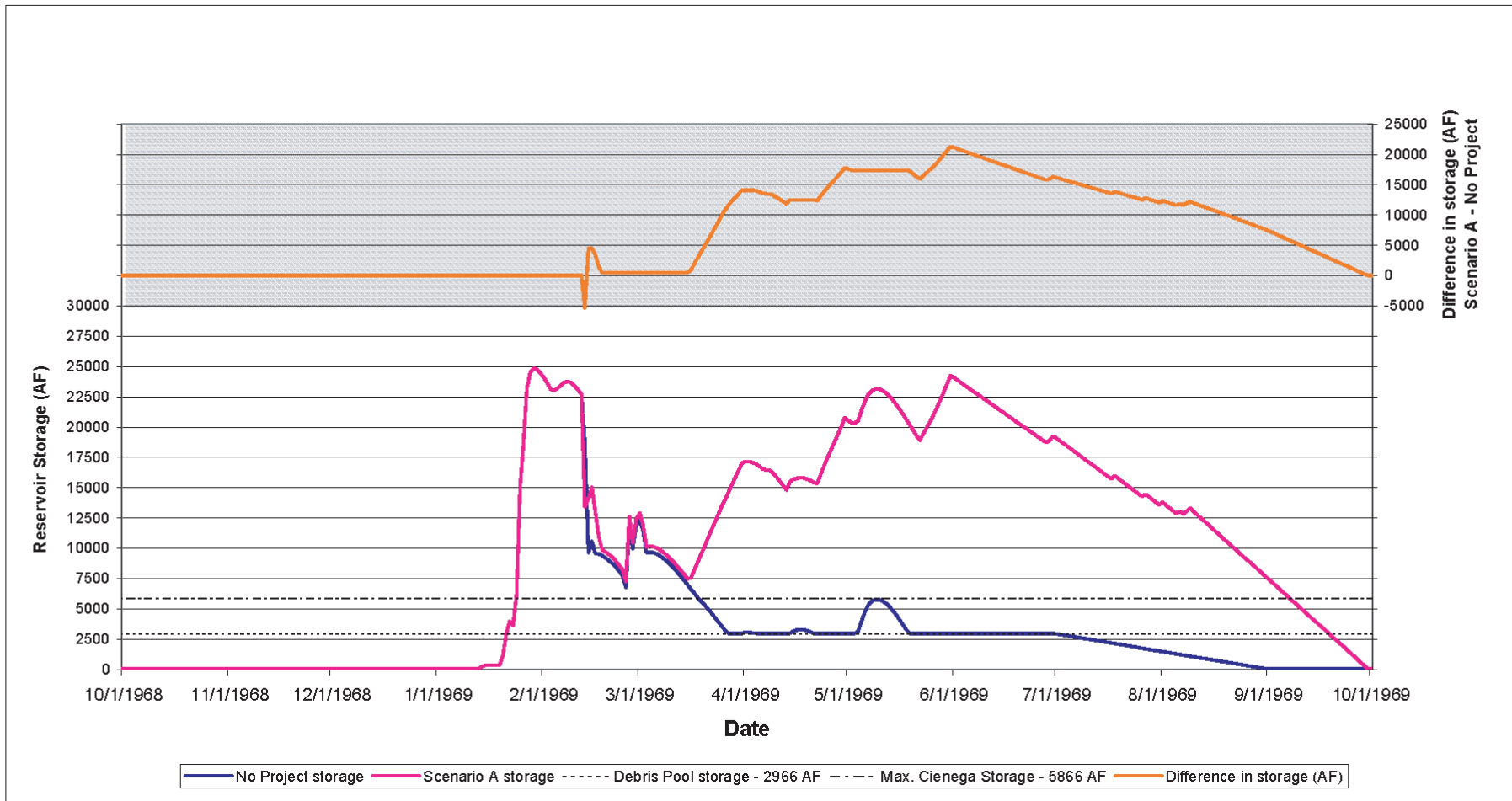
Muni/Western Ex. 9-86

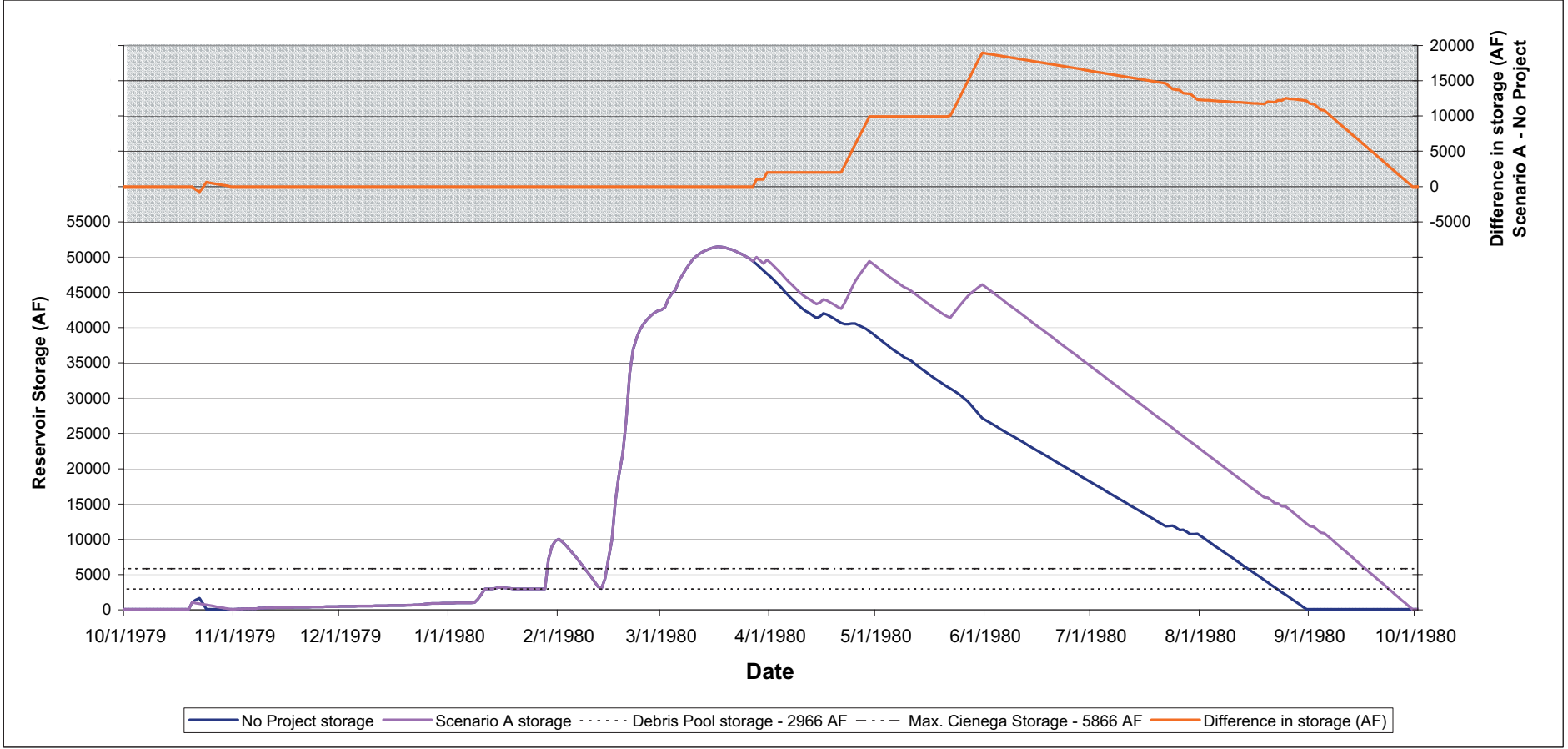
Seven Oaks Reservoir Modeled Water-Surface Elevation Water Year 1998

A Division of **PBS&J**

D51063.01

Seven Oaks



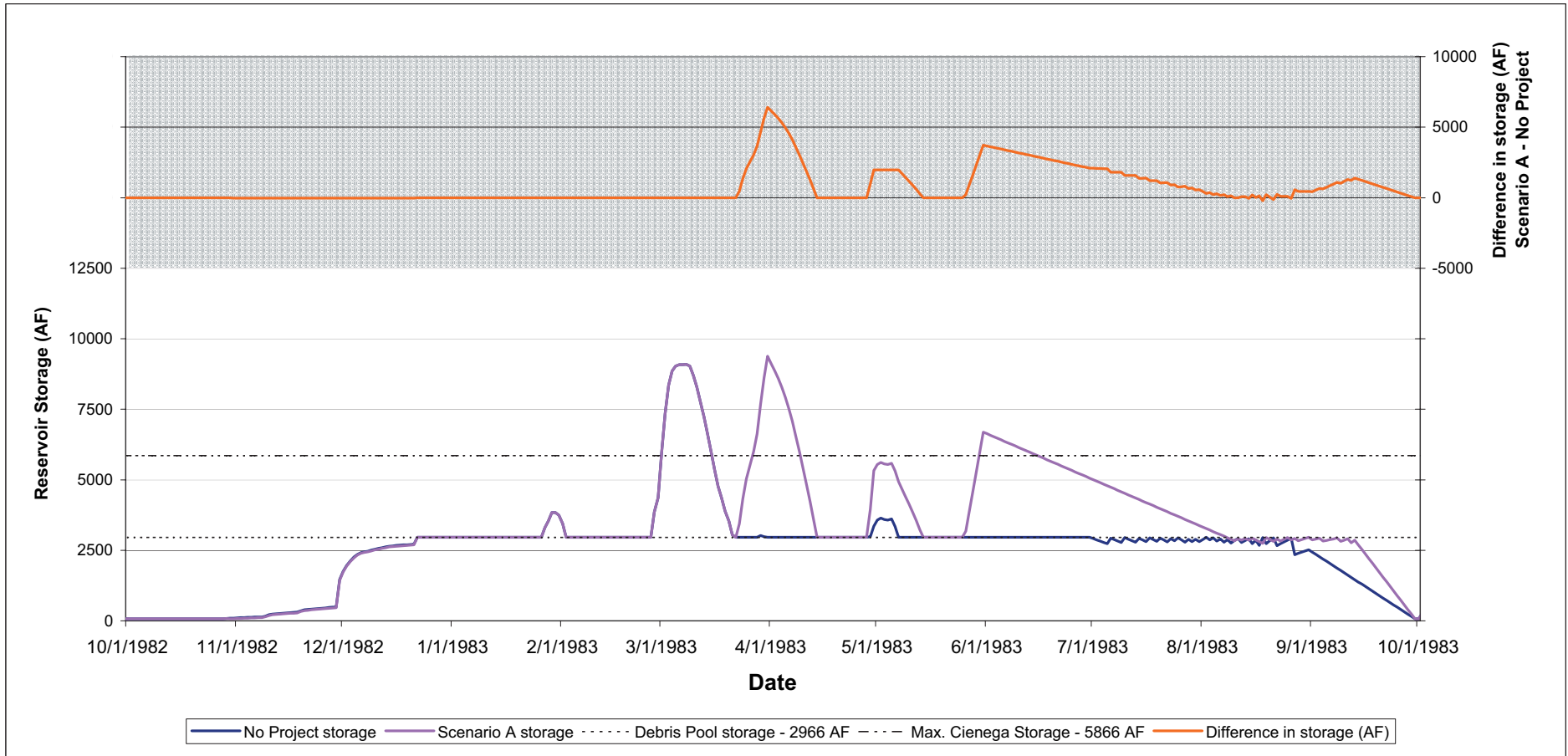


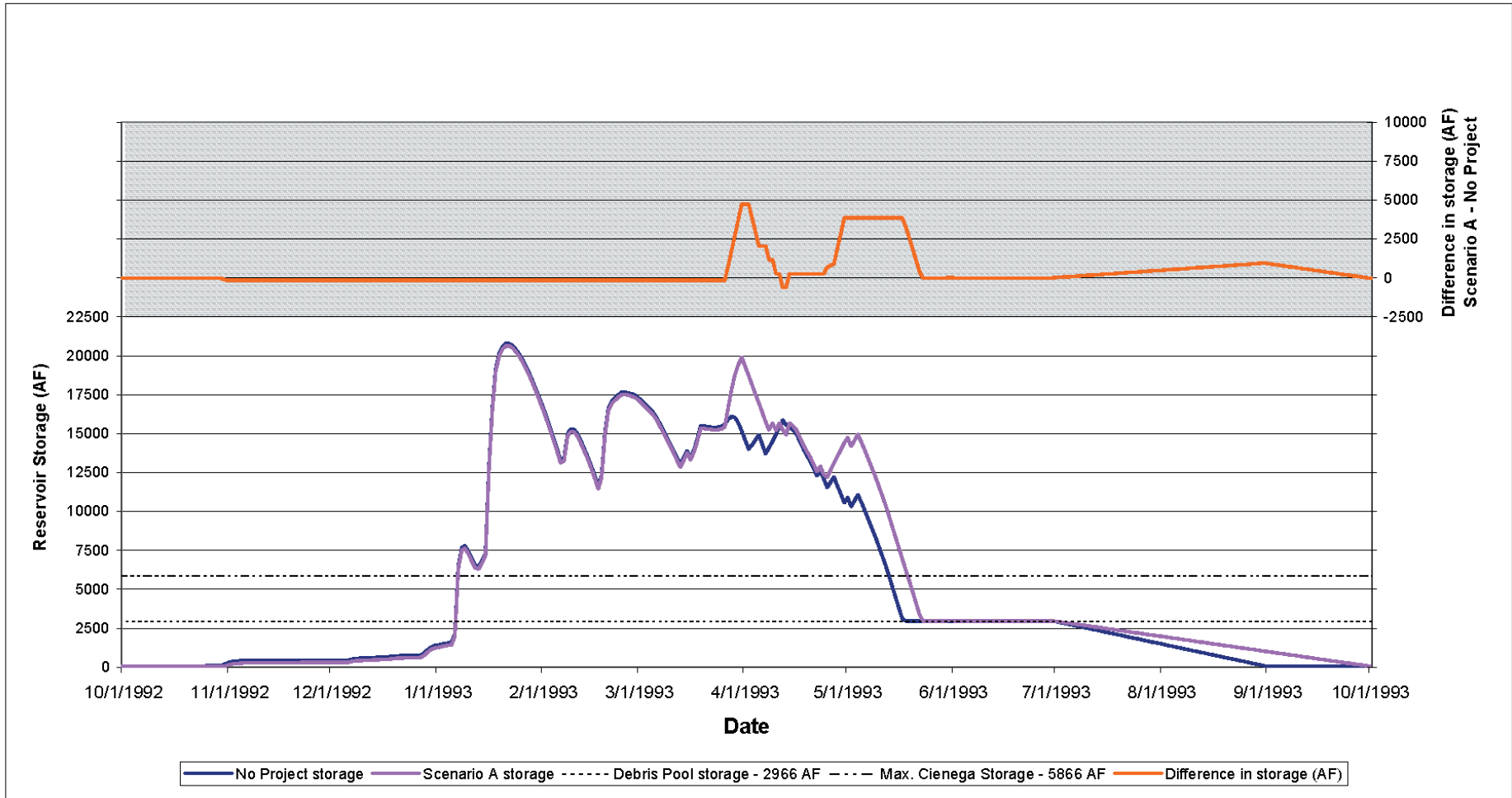
Muni/Western Ex. 9-88
Seven Oaks Reservoir Modeled Storage Water Year 1980

A Division of **PBS&J**

D51063.01

Seven Oaks



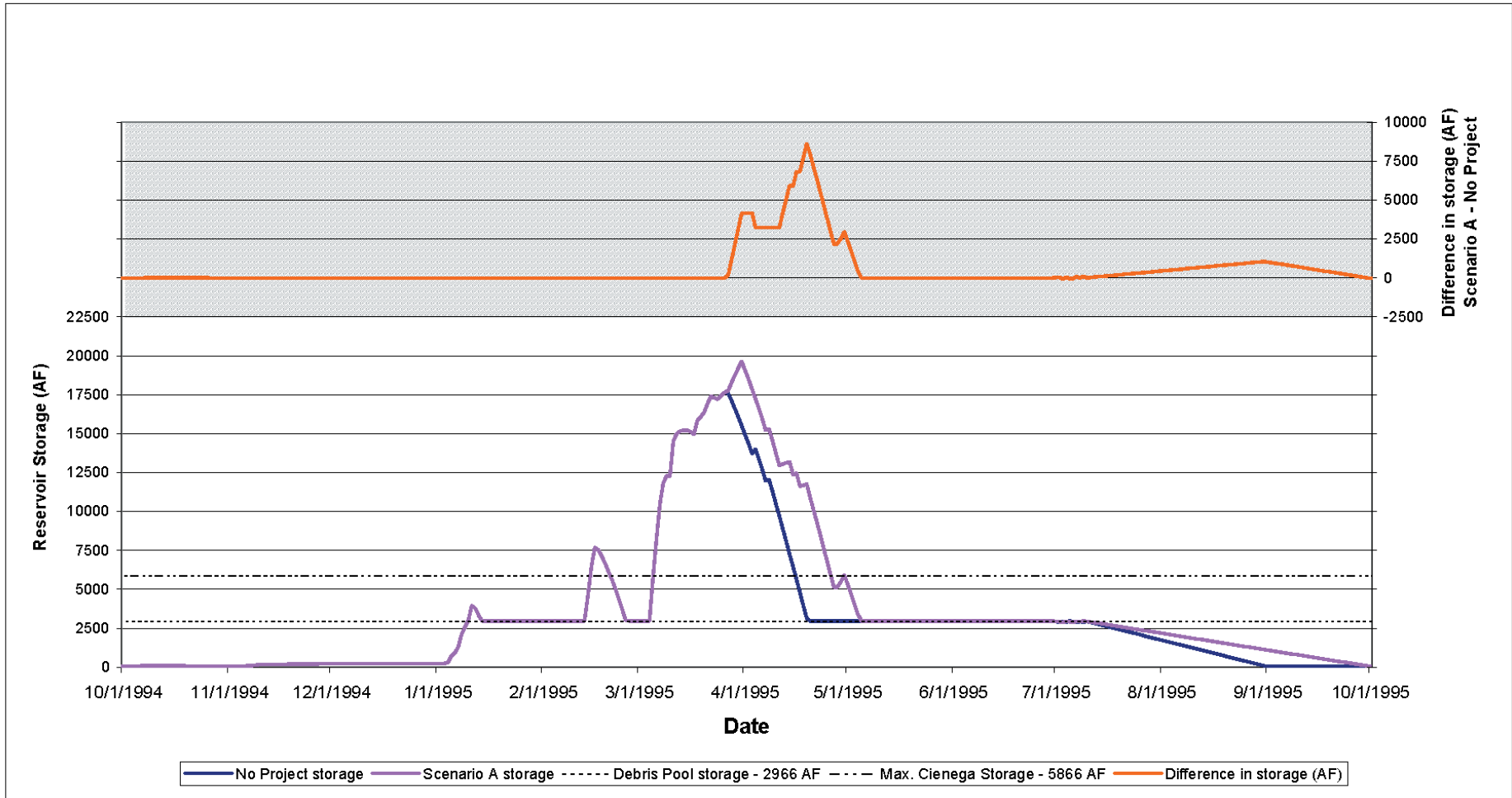


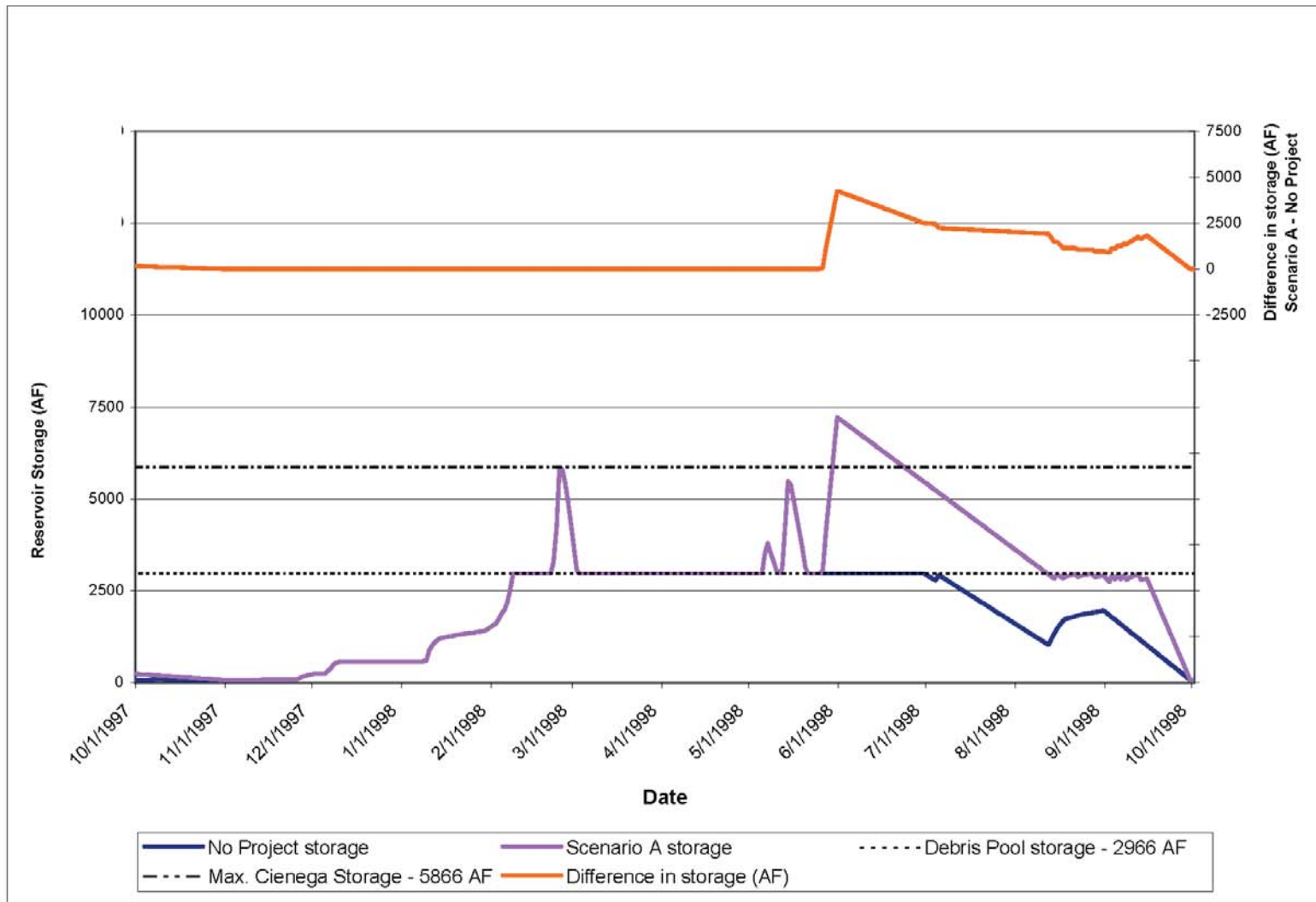
Muni/Western Ex. 9-90
Seven Oaks Reservoir Modeled Storage Water Year 1993

A Division of **PBS&J**

D51063.01

Seven Oaks

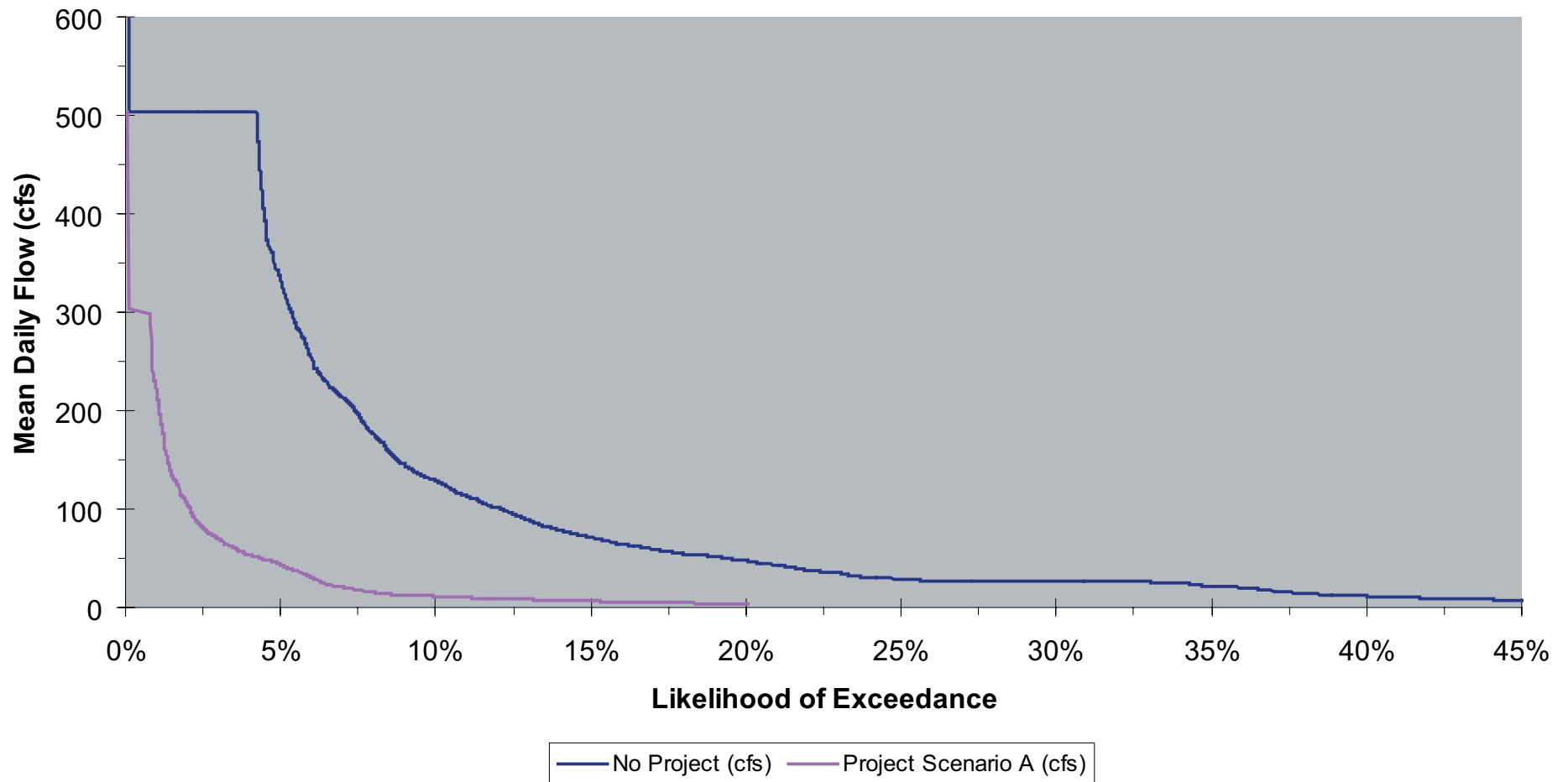




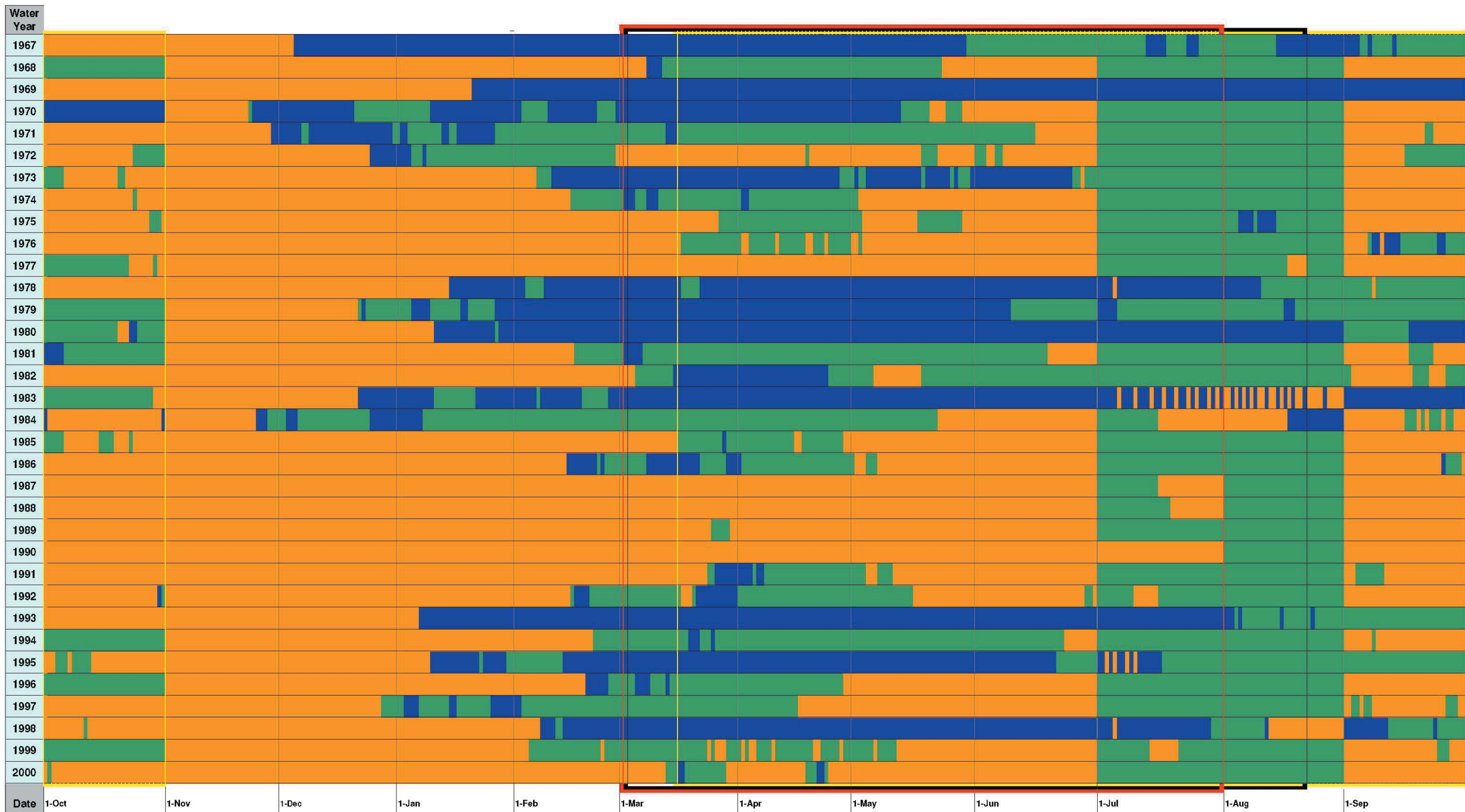
Muni/Western Ex. 9-93

**SEVEN OAKS MODELED FLOW
FLOW STATISTICS SUMMARY**

Segment B	No Project	Project Scenario A
Total days in record	12,419	12,419
Minimum required flow	3	3
Days of minimum flow	5,573	8,722
Percent of days at minimum flow	44.9%	70.2%
Average mean daily flow (cfs)	51.2	11.6
Median mean daily flow (cfs)	4.7	3.0
Segment C	No Project	Project Scenario A
Total days in record	12,419	12,419
Days of zero flow	9,249	10,121
Percent of days with zero flow	74.5%	81.5%
Days of less than 1 cfs	9,349	12,406
Percent of days with under 1 cfs	75.3%	99.9%
Average mean daily flow (cfs)	29.7	1.4
Median mean daily flow (cfs)	0.0	0.0
Segment D	No Project	Project Scenario A
Total days in record	12,053	12,053
Days of zero flow	6,783	7,609
Percent of days with zero flow	56.3%	63.1%
Days of less than 1 cfs	7,030	7,836
Percent of days with under 1 cfs	58.3%	65.0%
Average mean daily flow (cfs)	57.6	34.7
Median mean daily flow (cfs)	0.0	0.0
Segment E	No Project	Project Scenario A
Total days in record	12,419	12,419
Days of zero flow	6,703	7,014
Percent of days with zero flow	54.0%	56.5%
Days of less than 1 cfs	6,703	7,014
Percent of days with under 1 cfs	54.0%	56.5%
Average mean daily flow (cfs)	67.3	53.4
Median mean daily flow (cfs)	0.0	0.0
Segment F	No Project	Project Scenario A
Total days in record	12,419	12,419
Average mean daily flow (cfs)	141.3	130.3
Median mean daily flow (cfs)	79.0	79.0
Minimum mean daily flow	70.2	70.2
Segment G	No Project	Project Scenario A
Total days in record	11,164	11,164
Average mean daily flow (cfs)	169.7	169.0
Median mean daily flow (cfs)	106.9	106.8
Minimum mean daily flow	28.1	38.0



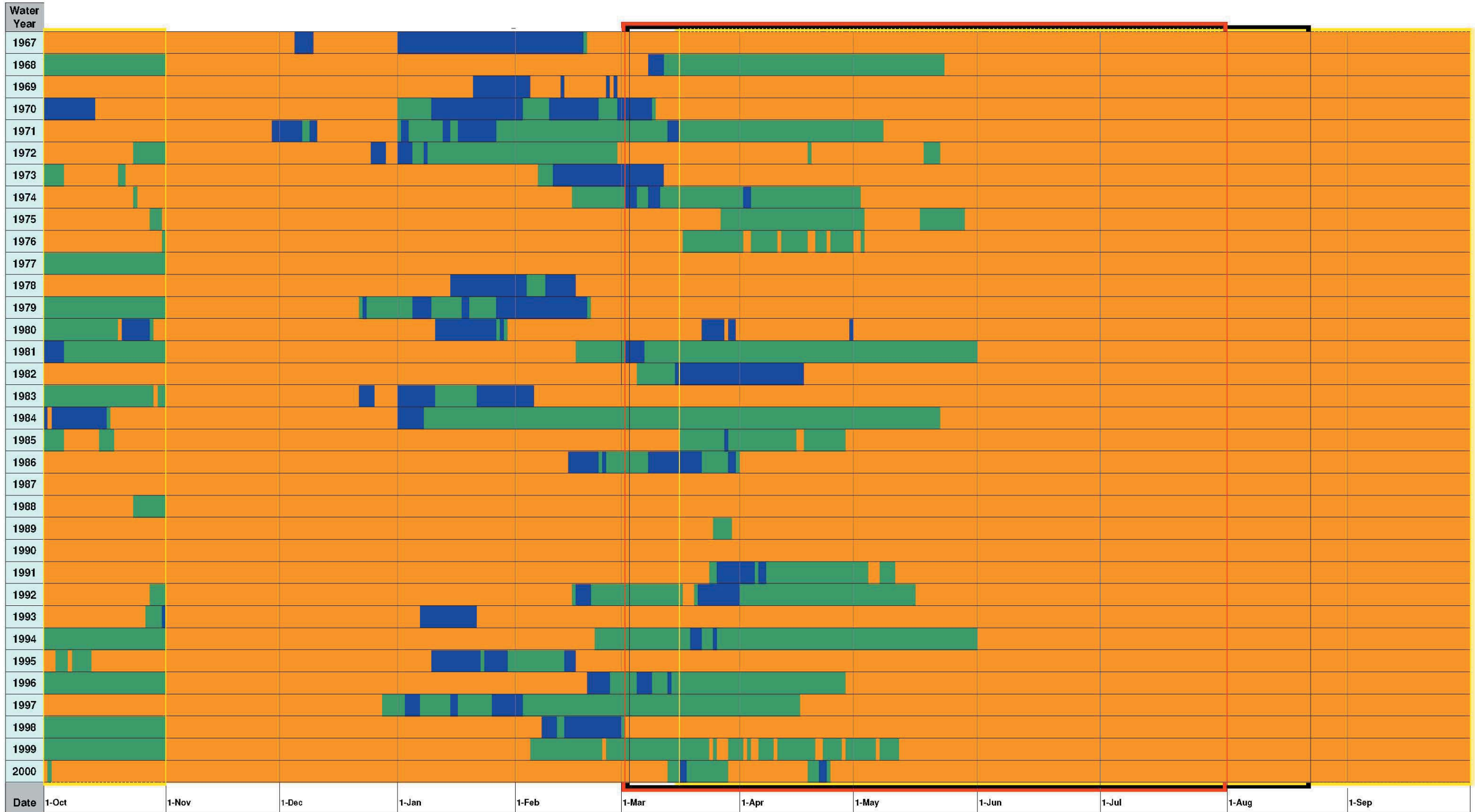
Legend: = Flow <1 CFS = 1-5 CFS = 5-50 CFS = >50 CFS Canyon treefrog breeding Canyon treefrog egg incubation Canyon treefrog larval stage

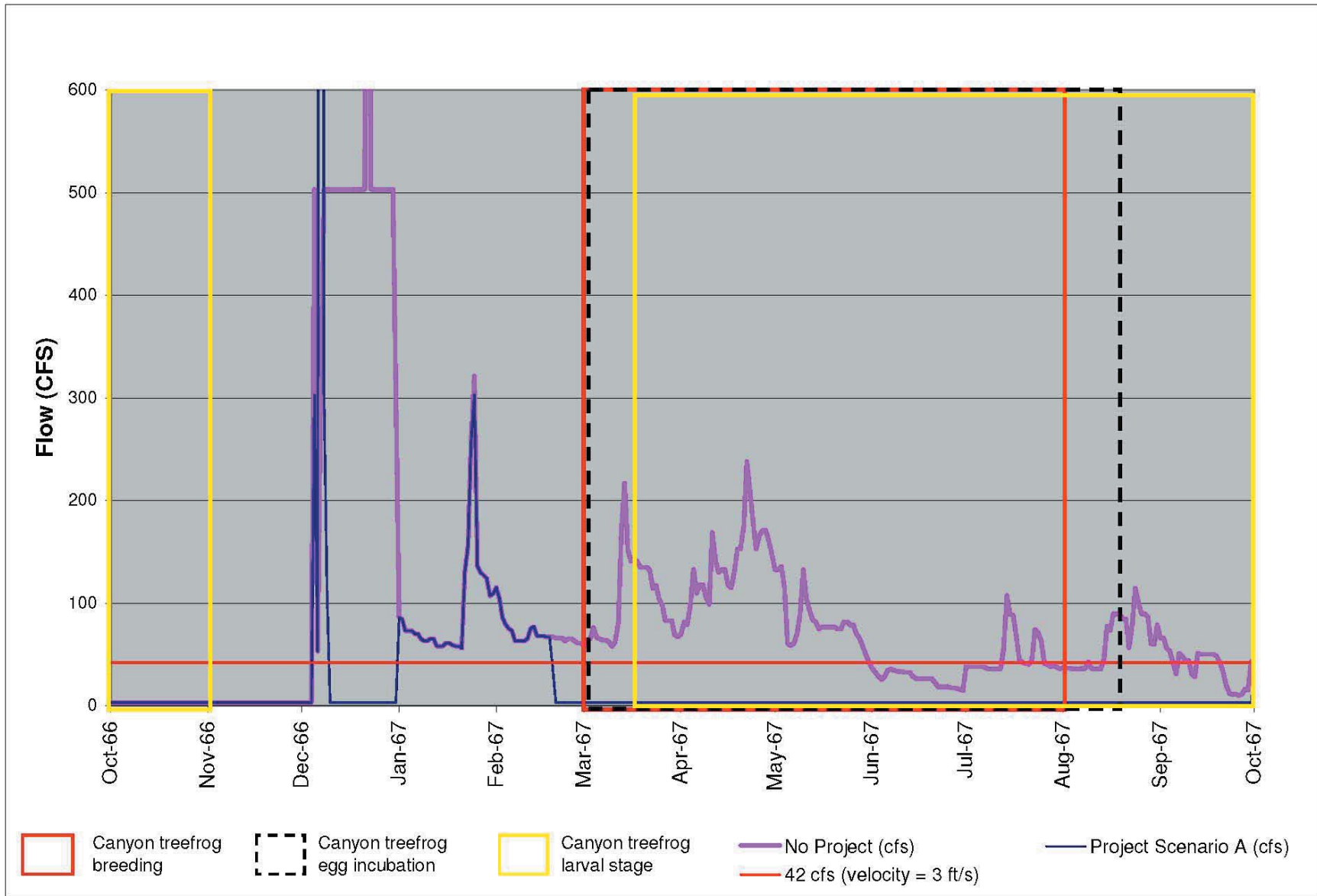


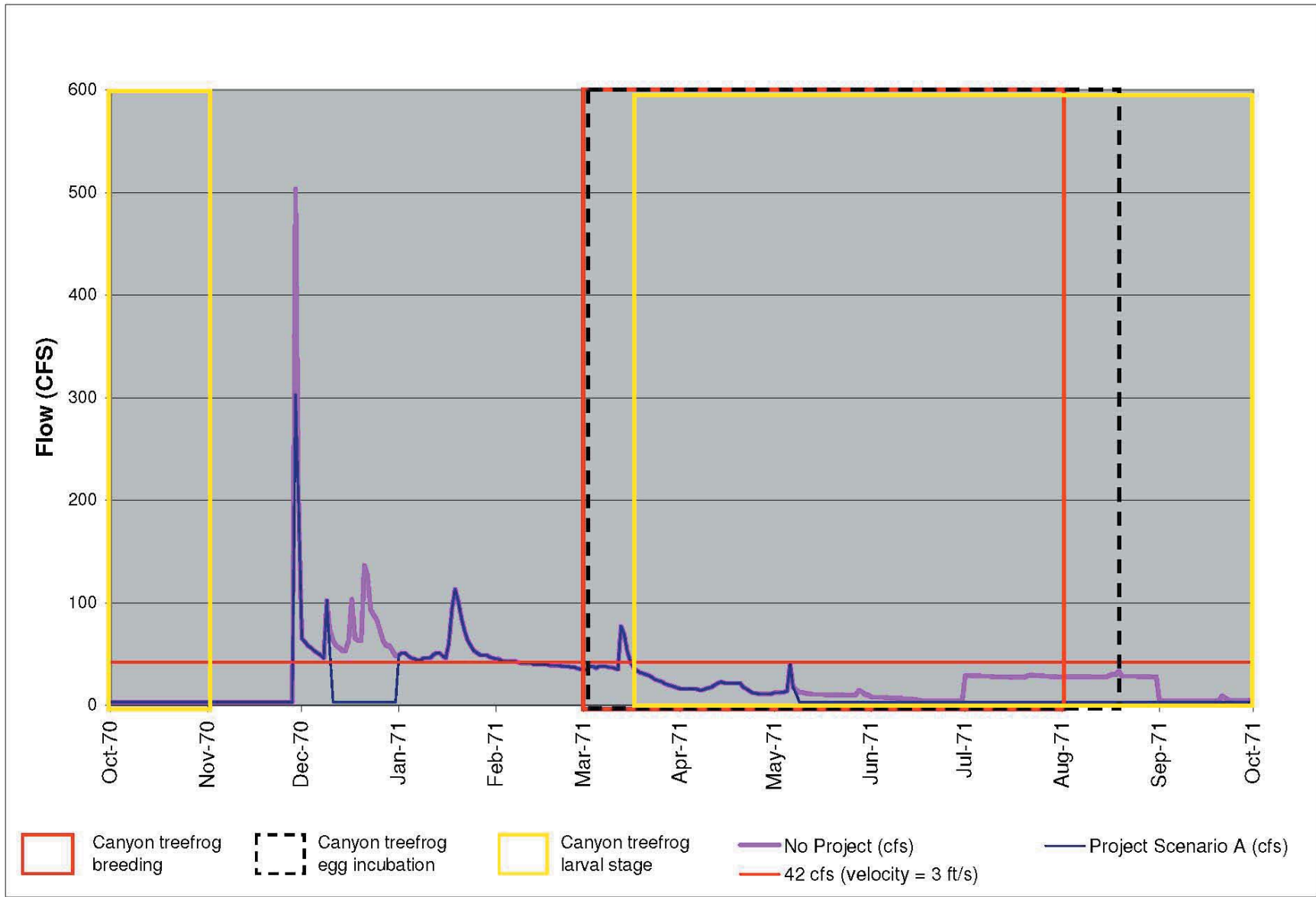
Muni/Western Ex. 9-95
Flow Ranges in Segment B Under "No Project"

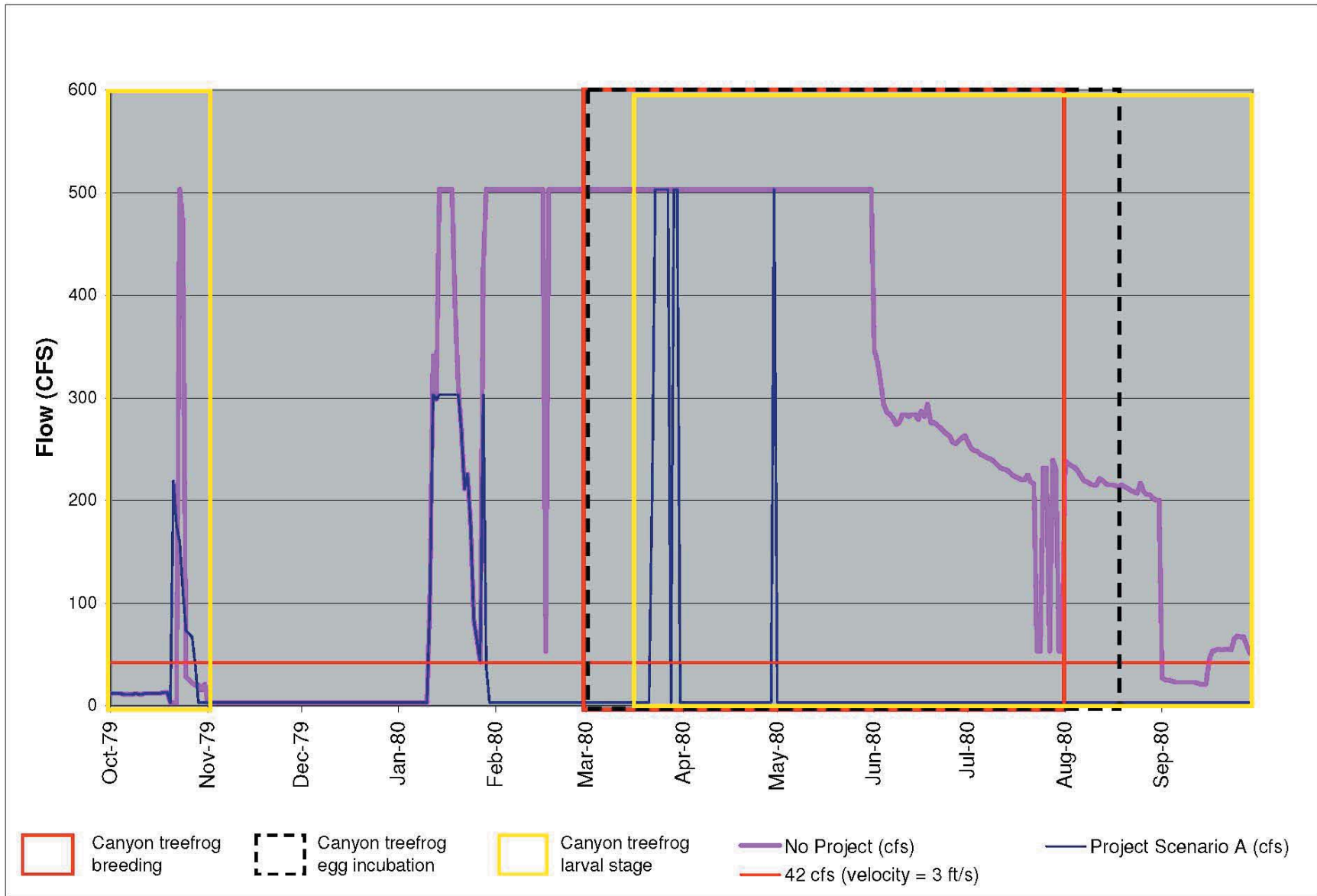
D51063.01

Legend: = Flow <1 CFS = 1-5 CFS = 5-50 CFS = >50 CFS Canyon treefrog breeding Canyon treefrog egg incubation Canyon treefrog larval stage









Muni/Western Ex. 9-100

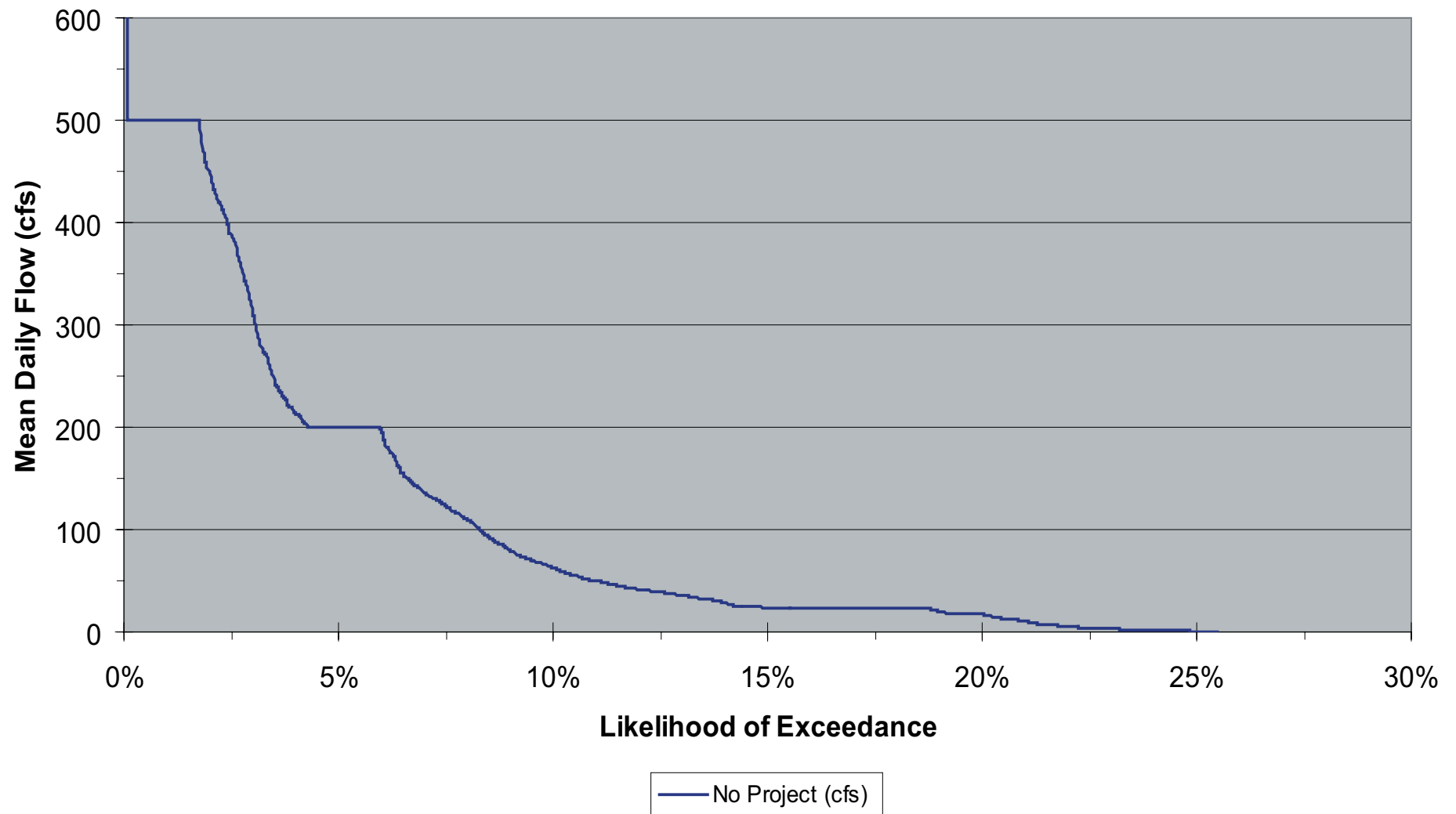
PLUNGE POOL WATER QUALITY DATA

Date	Water Temp (oC)	Dissolved Oxygen (mg/l)	pH (units)	Salinity (%)	Conductivity (mS/cm)	Turbidity (NTU)	Sampling Time/Weather/Notes
6/1/05	15.5	9.80	8.50	0.00	0.220	137.00	0915/hazy and warm/ water sampled where energy dissipater structure enters plunge pool.
6/8/05	15.7	9.60	7.90	0.00	0.218	550.00	1402 hrs no flow in rectangular channel, plunge pool bypass channel flowing. Discharge perceptibly dirtier than 6/1, 6/3 visits.
6/16/05	21.6	9.50	8.62	0.00	0.233		0900 water clean light haze/stagnant water no flow
6/23/05	16.9	9.98	8.21	0.00	0.184	31.00	0955 hrs
7/1/05	16.7		8.03	0.00	0.191	29.00	0919 hrs
7/6/05	18.1		8.42	0.00	0.188	15.00	1329 hrs- hot
7/14/05	19.1		7.93	0.00	0.194	16.00	1019 hrs- very hot
7/21/05	22.0		8.12	0.00	0.198	22.00	1322 hrs- stagnant water
7/29/05	21.0		8.09	0.00	0.202	16.00	0853 hrs
8/5/05	20.0		8.21	0.00	0.202	39.00	0930 hrs
8/12/05	21.3		8.71	0.00	0.204	12.00	1044 hrs
8/18/05	18.9		7.94	0.00	0.244	66.00	0912 hrs
8/25/05	20.4		8.00	0.01	0.285	48.00	1015 hrs
9/2/05	19.8	6.70	8.83	0.01	0.287		0854 hrs
9/9/05	19.0		8.56	0.01	0.341		0924 hrs
9/15/05	17.9		7.93	0.01	0.294		0918 hrs
9/22/05	17.8	7.11	7.84	0.01	0.460	155.00	0933 hrs- water is really dirty
9/29/05	19.3	7.96	7.21	0.01	0.398	77.00	1240 hrs
10/6/05	16.4	7.20	7.94	0.01	0.362	15.00	0925 hrs
10/13/05	16.7	7.51	7.97	0.01	0.376	11.00	0930 hrs
10/20/05	14.1	9.80	8.15	0.00	0.221	130.00	1050 hrs- water very dirty due to thunderstorms
10/27/05	15.0	8.61	7.64	0.00	0.239	19.00	0940 hrs
11/3/05	15.6	8.92	7.52	0.01	0.326	26.00	0915 hrs
11/10/05	14.4	7.80	7.42	0.01	0.344	40.00	0810 hrs
11/18/05	12.4	9.11	7.18	0.01	0.287	36.00	1055 hrs
11/28/05	10.9	9.40	7.40	0.01	0.375	80.00	1010 hrs
12/2/05	12.9	8.19	7.13	0.01	0.362	75.00	0855 hrs
12/8/05	12.5	8.26	7.61	0.01	0.382	-	1355 hrs- turbidity unmeasurable, water very dirty
12/16/05	10.0	7.90	7.29	0.01	0.346	26.00	0915 hrs
12/23/05	13.5	8.30	7.40	0.01	0.363	19.00	0825 hrs
12/30/05	13.3	8.55	7.55	0.01	0.364	21.00	1200 hrs
1/13/06	8.9	9.71	7.10	0.00	0.238	32.00	0940 hrs
1/20/06	9.1	10.01	8.20	0.00	0.250	39.00	0955 hrs
1/26/06	9.5	10.93	8.38	0.00	0.253	15.00	1325 hrs
2/3/06	10.0	10.72	8.32	0.00	0.258	12.00	1245 hrs
2/10/06	10.1	10.46	8.38	0.00	0.262	7.00	1305 hrs
2/17/06	9.7	9.36	8.38	0.00	0.259	4.00	1305 hrs
2/24/06	8.9	9.46	8.38	0.01	0.297	10.00	0910 hrs
3/2/06	10.0	10.88	7.90	0.00	0.214	360.00	0910 hrs- water very dirty due to storms
3/10/06	9.2	8.60	7.45	0.00	0.230	71.00	0840 hrs
3/17/06	8.3	8.54	7.69	0.00	0.219	64.00	1420 hrs
3/23/06	10.1	11.28	7.98	0.00	0.228	18.00	0915 hrs
3/31/06	10.3	10.12	7.95	0.00	0.224	18.00	0955 hrs
5/5/06	13.6	10.60	7.95	0.00	0.221	5.00	1050 hrs
5/11/06	16.1	10.23	8.09	0.00	0.229	4.00	0920 hrs
5/19/06	18.7	12.19	8.71	0.00	0.244	13.00	0855 hrs
5/26/06	18.1	9.00	7.88	0.01	0.271	5.00	0940 hrs
6/2/06	20.1	12.24	8.84	0.01	0.297	6.00	1010 hrs
6/9/06	21.4	12.65	8.52	0.01	0.272	7.00	1330 hrs
6/15/06	22.5	12.25	9.10	0.01	0.394	61.00	0940 hrs
6/21/06	20.8	8.30	8.05	0.01	0.431	80.00	0950 hrs- water dirty
6/29/06	21.6	8.48	8.09	0.01	0.414	105.00	1030 hrs- water dirty
7/7/06	21.4	7.32	8.64	0.01	0.316	62.00	1030 hrs- water dirty
7/14/06	23.1	7.45	8.15	0.01	0.320	25.00	0850 hrs
7/21/06	23.3	8.62	8.31	0.01	0.314	37.00	1305 hrs
7/28/06	22.4	7.84	7.08	0.00	0.230	60.00	0855 hrs

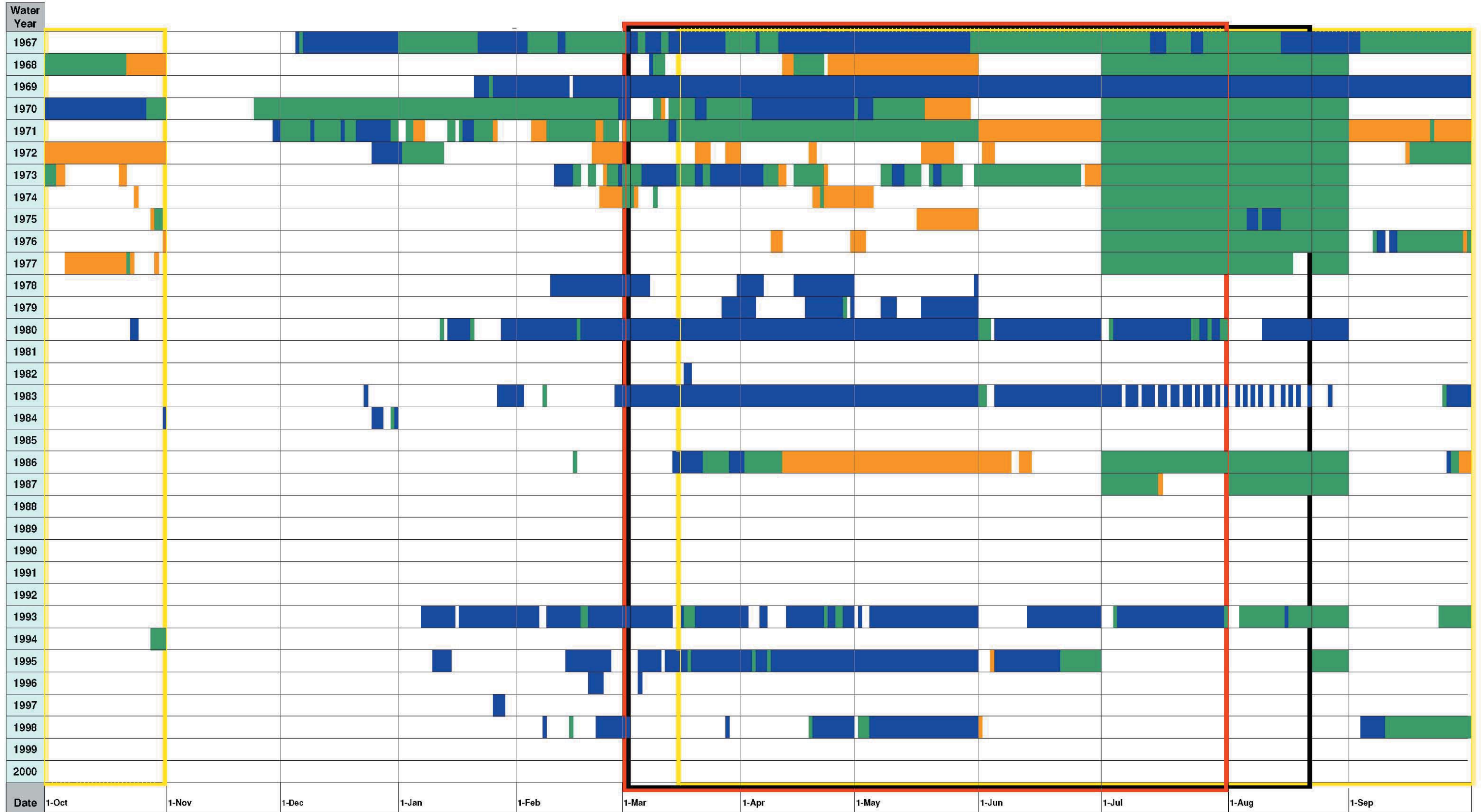
Muni/Western Ex. 9-101

UPSTREAM OF CUTTLE WEIR WATER QUALITY DATA

Date	Water Temp (oC)	Dissolved Oxygen (mg/l)	pH (units)	Salinity (%)	Conductivity (mS/cm)	Turbidity (NTU)	Sampling Time/Weather/Notes
6/1/05	16.1	9.60	8.30	0.00	0.230	150.00	0950/hazy and warm/water being diverted at time of sampling/water sampled at weir on road side.
6/8/05	17.2	8.97	8.00	0.00	0.220	475.00	1350 hrs water perceptibly dirtier than on 6/1, 6/3 visits
6/16/05	16.9	9.12	7.94	0.00	0.211		0936 water clean light haze
6/23/05	16.6	9.20	7.75	0.00	0.190	39.00	0940 hrs
7/1/05	17.1		7.98	0.00	0.192	23.00	0911 hrs
7/6/05	19.0		8.22	0.00	0.191	15.00	1322 hrs- Hot
7/14/05	19.6		8.06	0.00	0.195	37.00	1013 hrs- very Hot
7/21/05							no water
7/29/05	20.5		7.86	0.00	0.201	16.00	0905 hrs
8/5/05	20.2		7.90	0.00	0.200	33.00	0940 hrs
8/12/05	21.1		8.54	0.00	0.202	13.00	1055 hrs
8/18/05	18.6		7.83	0.00	0.225	78.00	0928 hrs
8/25/05	20.3		7.98	0.01	0.281	47.00	1027 hrs
9/2/05	18.1	7.74	8.32	0.01	0.302		0905 hrs
9/9/05	17.1		8.49	0.01	0.351		0936 hrs
9/15/05	18.0		8.13	0.01	0.298		0932 hrs
9/22/05	17.6	7.42	8.34	0.01	0.454	121.00	0947 hrs- water is really dirty
9/29/05	21.9	6.70	8.56	0.01	0.392	53.00	1250 hrs
10/6/05	15.9	7.05	8.32	0.01	0.358	8.00	0935 hrs
10/13/05	16.6	8.65	8.34	0.01	0.378	5.00	0945 hrs
10/20/05	14.0	8.68	8.20	0.00	0.223	126.00	1100 hrs- water very dirty due to thunderstorms
10/27/05	14.9	8.39	8.21	0.00	0.236	12.00	1000 hrs
11/3/05	15.7	10.05	8.26	0.01	0.309	18.00	0930 hrs
11/10/05	14.1	9.23	8.12	0.01	0.330	37.00	0830 hrs
11/18/05	13.2	10.06	8.36	0.01	0.268	30.00	1115 hrs
11/28/05	11.1	10.36	8.51	0.01	0.353	50.00	1030 hrs
12/2/05	12.4	9.85	8.19	0.01	0.344	65.00	0915 hrs
12/8/05	12.0	9.95	8.39	0.01	0.358	-	1415 hrs- turbidity unmeasurable, water very dirty
12/16/05	8.5	11.18	8.37	0.01	0.349	36.00	0925 hrs
12/23/05	12.5	9.41	8.13	0.01	0.362	32.00	0840 hrs
12/30/05	12.4	9.80	8.20	0.01	0.363	29.00	1220 hrs
1/6/06	12.6	10.35	8.14	0.00	0.240	245.00	1310 hrs- water very dirty
1/13/06	8.7	10.29	8.17	0.00	0.240	31.00	1000 hrs
1/20/06	8.9	10.40	8.14	0.00	0.242	36.00	1015 hrs
1/26/06	12.2	9.59	8.66	0.00	0.239	21.00	1345 hrs
2/3/06	14.1	6.99	8.68	0.00	0.252	18.00	1305 hrs
2/10/06	14.4	7.96	8.61	0.00	0.250	20.00	1325 hrs
2/17/06	12.3	9.12	8.69	0.00	0.260	9.00	1325 hrs
2/24/06	7.7	10.75	8.69	0.01	0.274	22.00	0930 hrs
3/2/06	10.0	9.84	8.05	0.00	0.215	390.00	0930 hrs- water very dirty due to storms
3/10/06	8.2	10.83	8.09	0.00	0.216	63.00	0855 hrs
3/17/06	7.2	9.86	8.02	0.00	0.232	41.00	1440 hrs
3/23/06	10.4	10.77	8.10	0.00	0.230	10.00	0935 hrs
3/31/06	10.4	10.03	7.97	0.00	0.226	21.00	1015 hrs
5/5/06	13.7	10.27	8.03	0.00	0.221	4.00	1110 hrs
5/11/06	16.0	9.55	8.25	0.00	0.229	3.00	0940 hrs
5/19/06	18.2	8.90	8.14	0.00	0.251	6.00	0915 hrs
5/26/06	18.2	9.03	7.96	0.01	0.264	4.00	1000 hrs
6/2/06	19.7	9.02	8.63	0.01	0.306	7.00	1030 hrs
6/9/06	20.1	9.47	8.62	0.01	0.289	4.00	1350 hrs
6/15/06	20.8	8.10	8.63	0.01	0.382	31.00	1000 hrs
6/21/06	21.0	6.32	8.23	0.01	0.426	130.00	1010 hrs- water dirty
6/29/06	23.7	7.20	8.45	0.01	0.416	21.00	1050 hrs
7/7/06	23.8	7.15	8.49	0.01	0.318	20.00	1050 hrs
7/14/06	23.2	8.04	8.34	0.01	0.318	15.00	0910 hrs
7/21/06	23.5	8.82	8.12	0.01	0.323	25.00	1325 hrs
7/28/06	22.7	8.14	8.01	0.00	0.234	70.00	0915 hrs



Legend: = Flow <1 CFS = 1-5 CFS = 5-50 CFS = >50 CFS Canyon treefrog breeding Canyon treefrog egg incubation Canyon treefrog larval stage



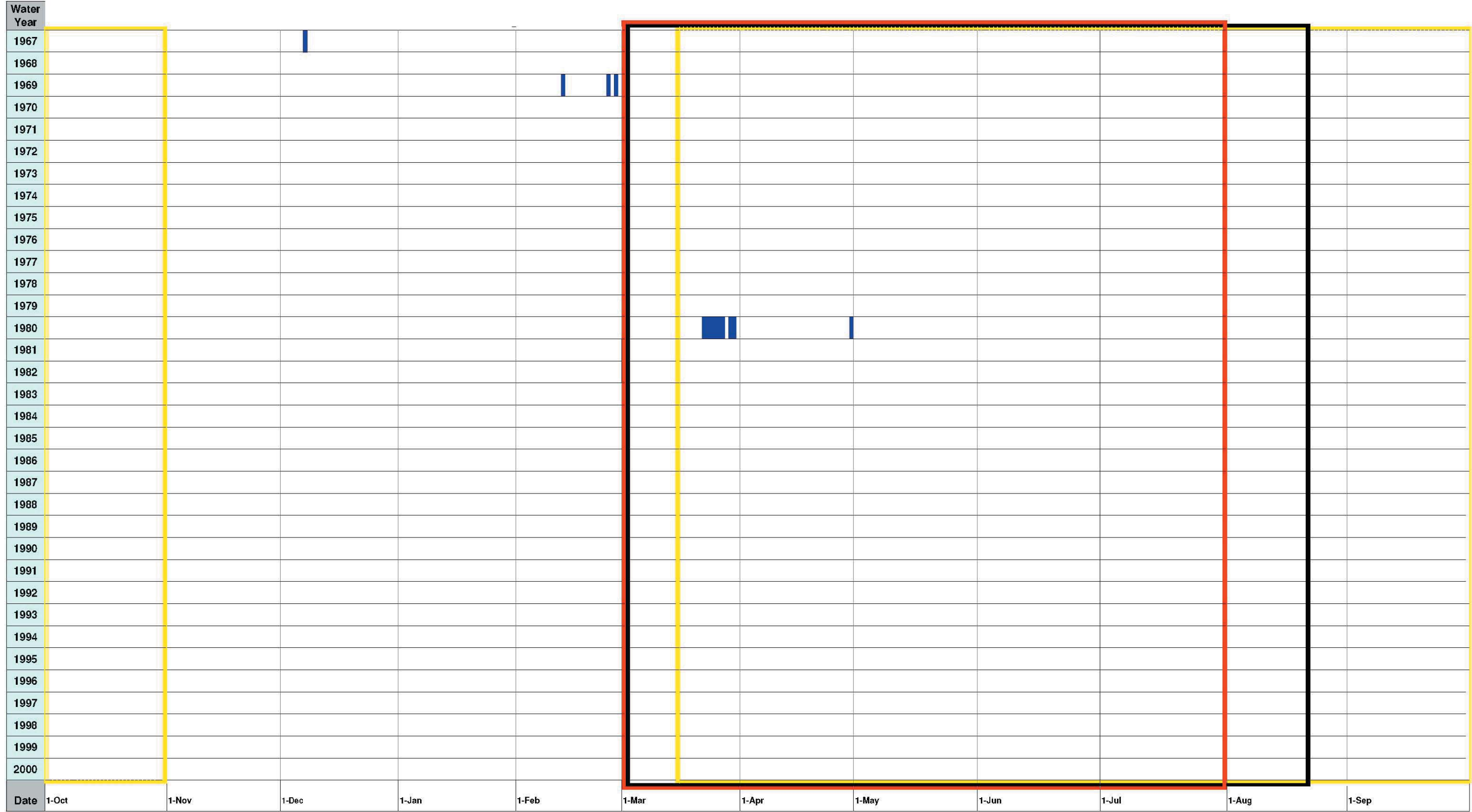
Muni/Western Ex. 9-103
Flow Ranges in Segment C Under "No Project"

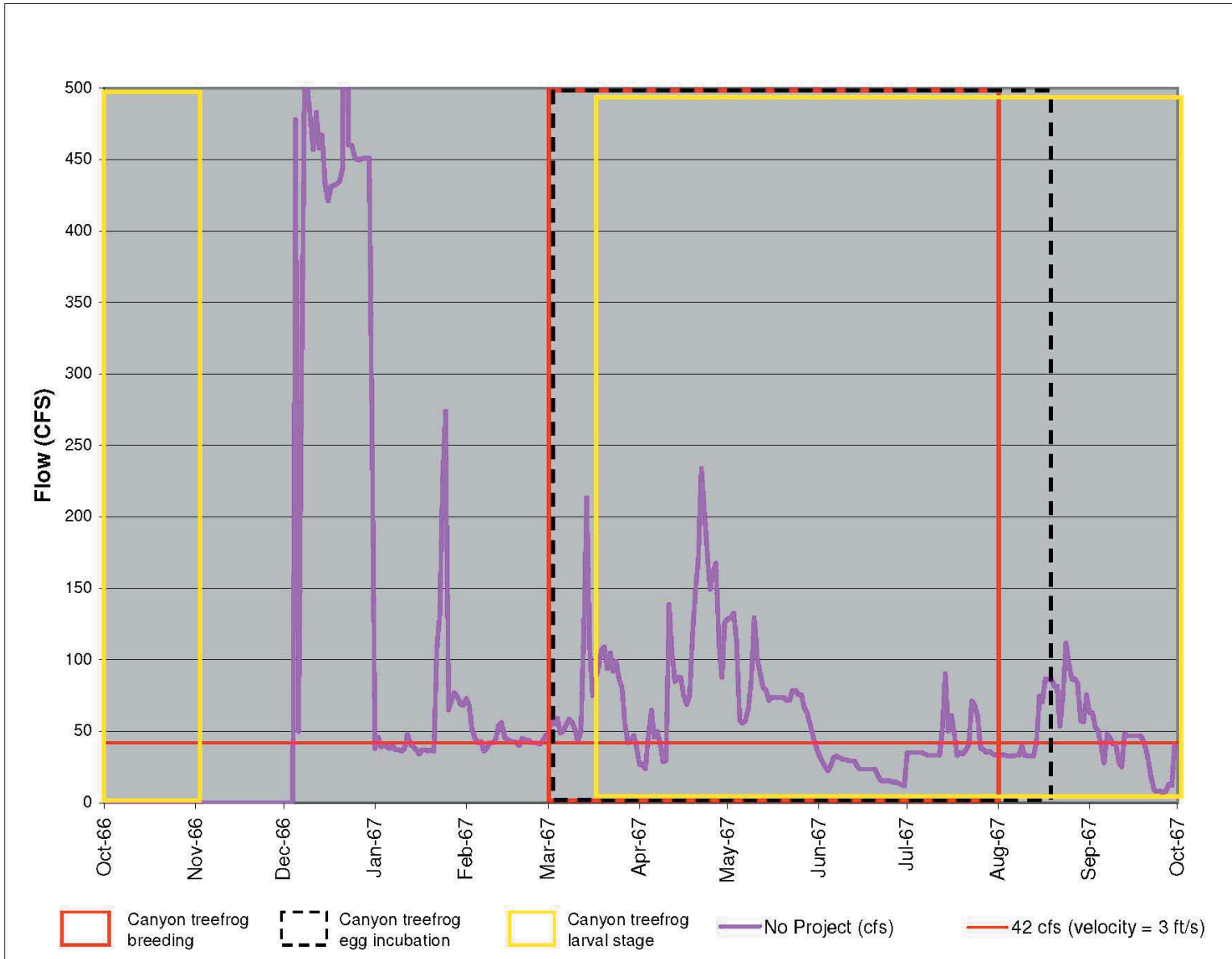
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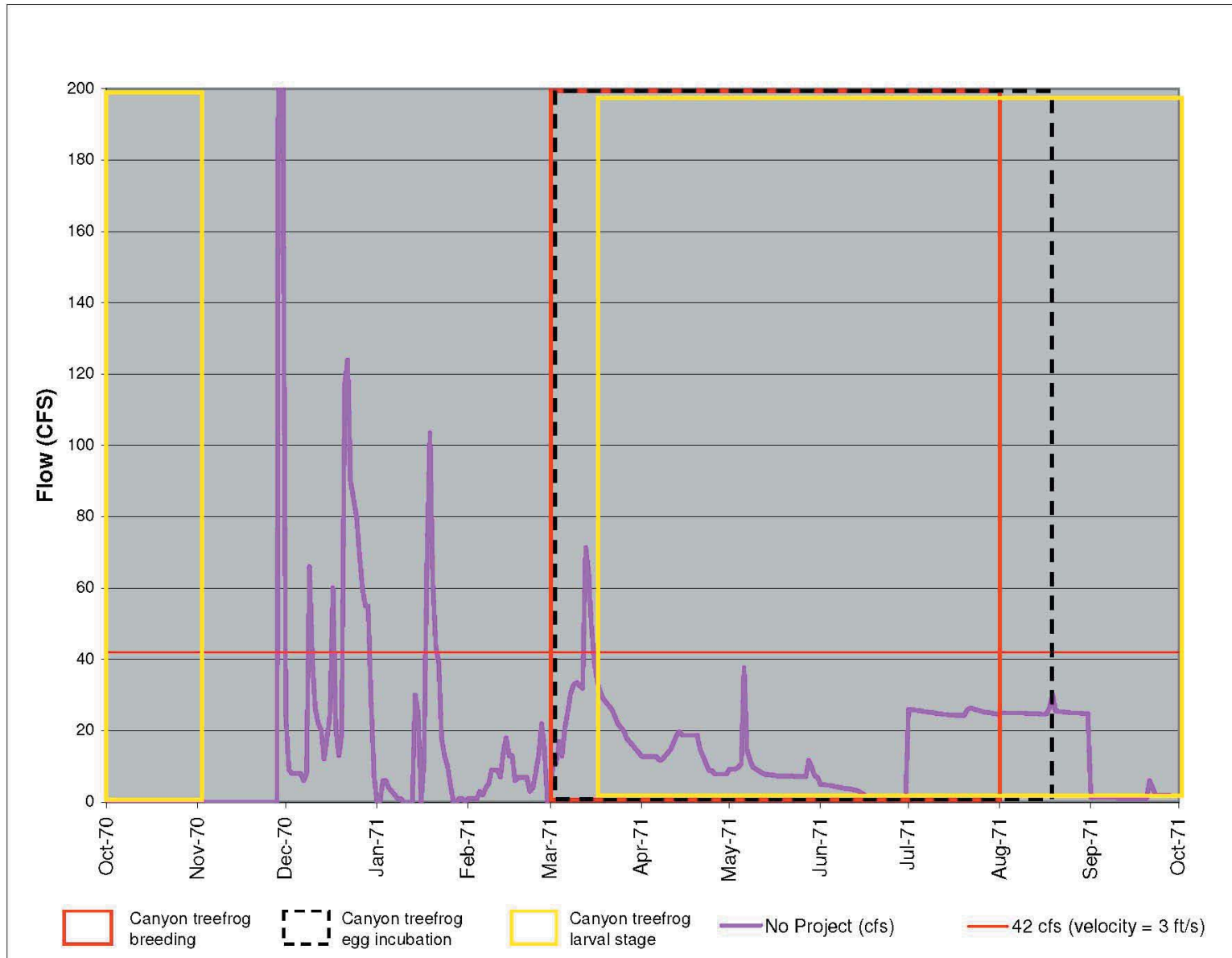
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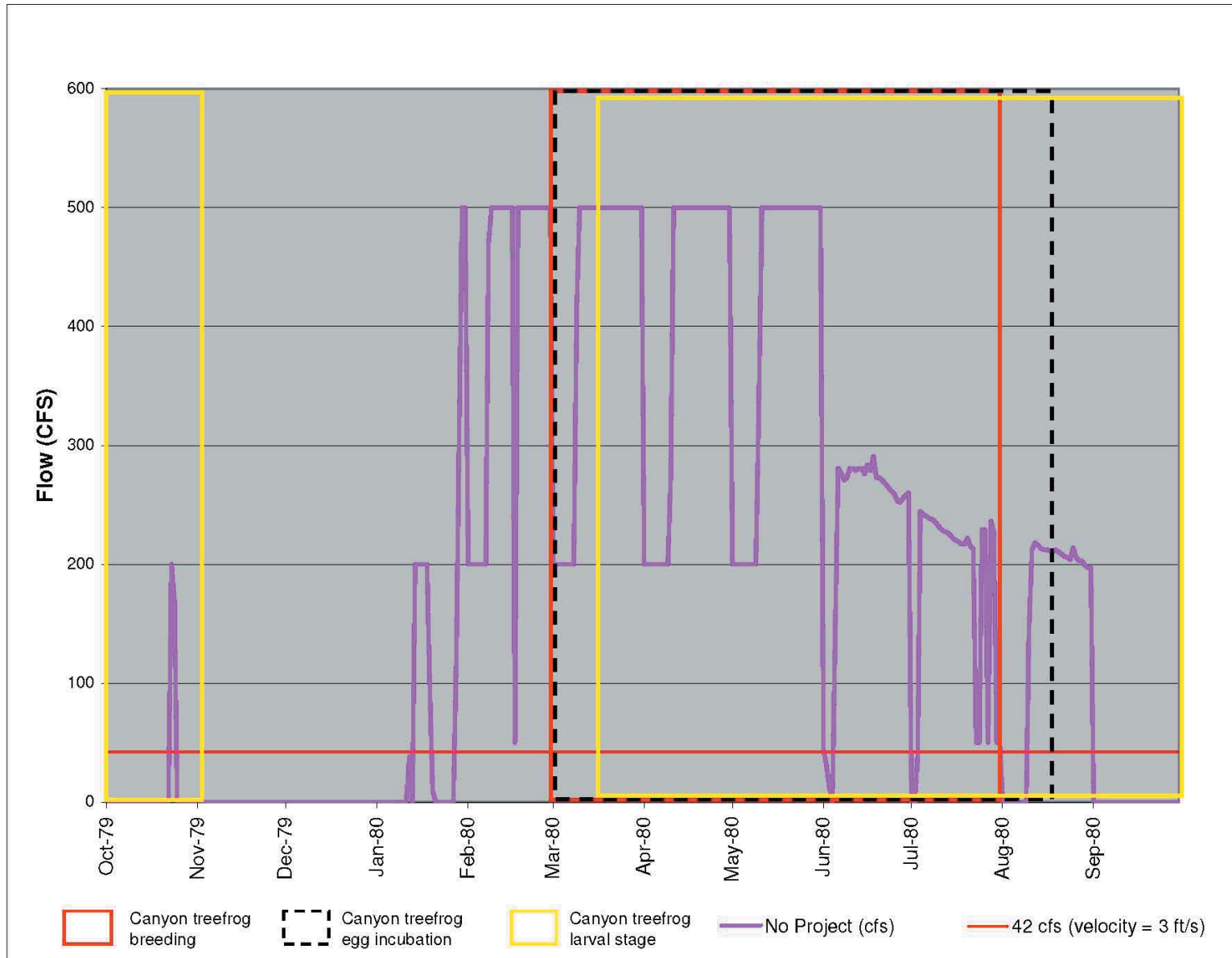
Seven Oaks

Legend: = Flow <1 CFS = 1-5 CFS = 5-50 CFS = >50 CFS Canyon treefrog breeding Canyon treefrog egg incubation Canyon treefrog larval stage





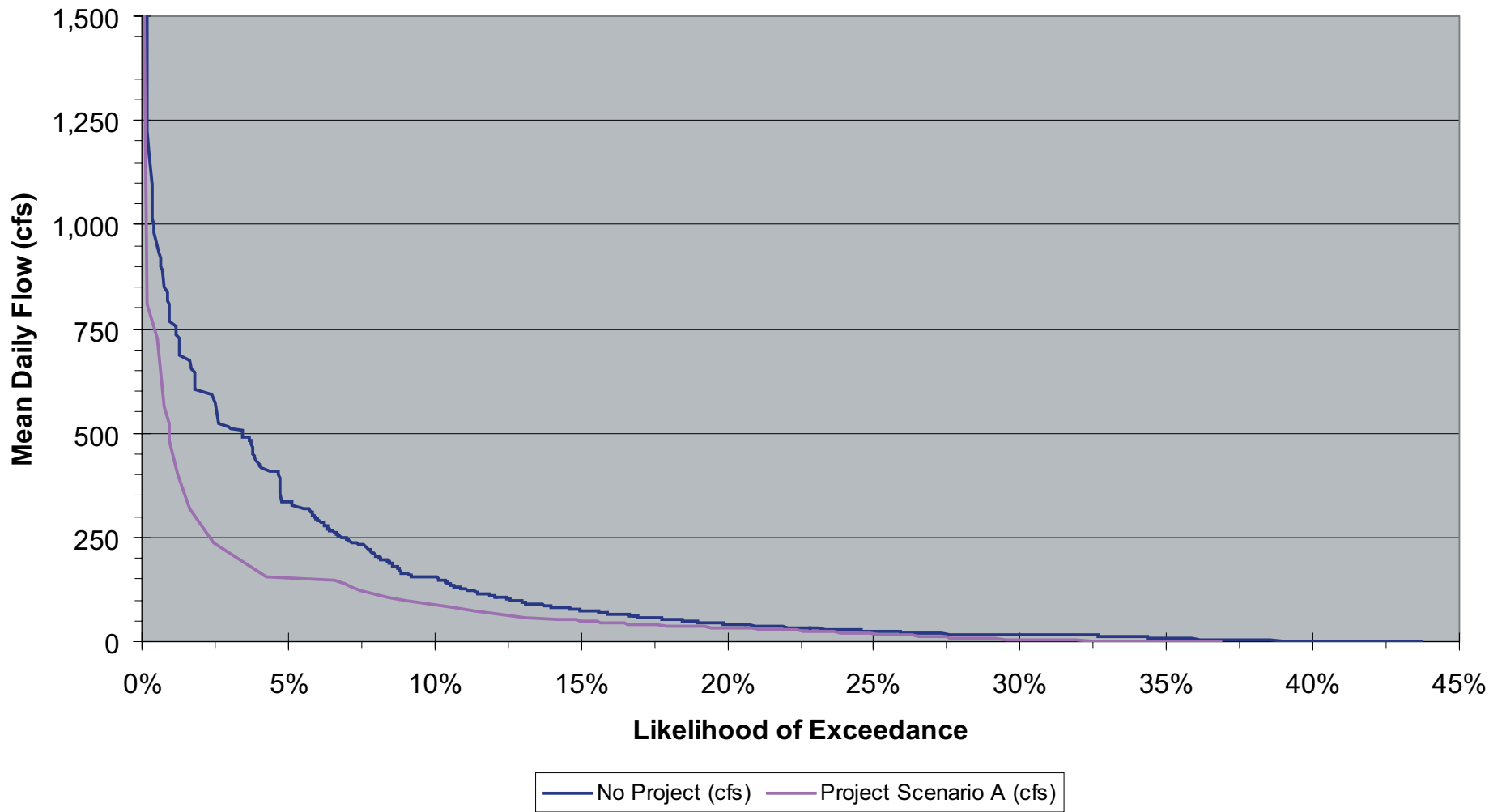




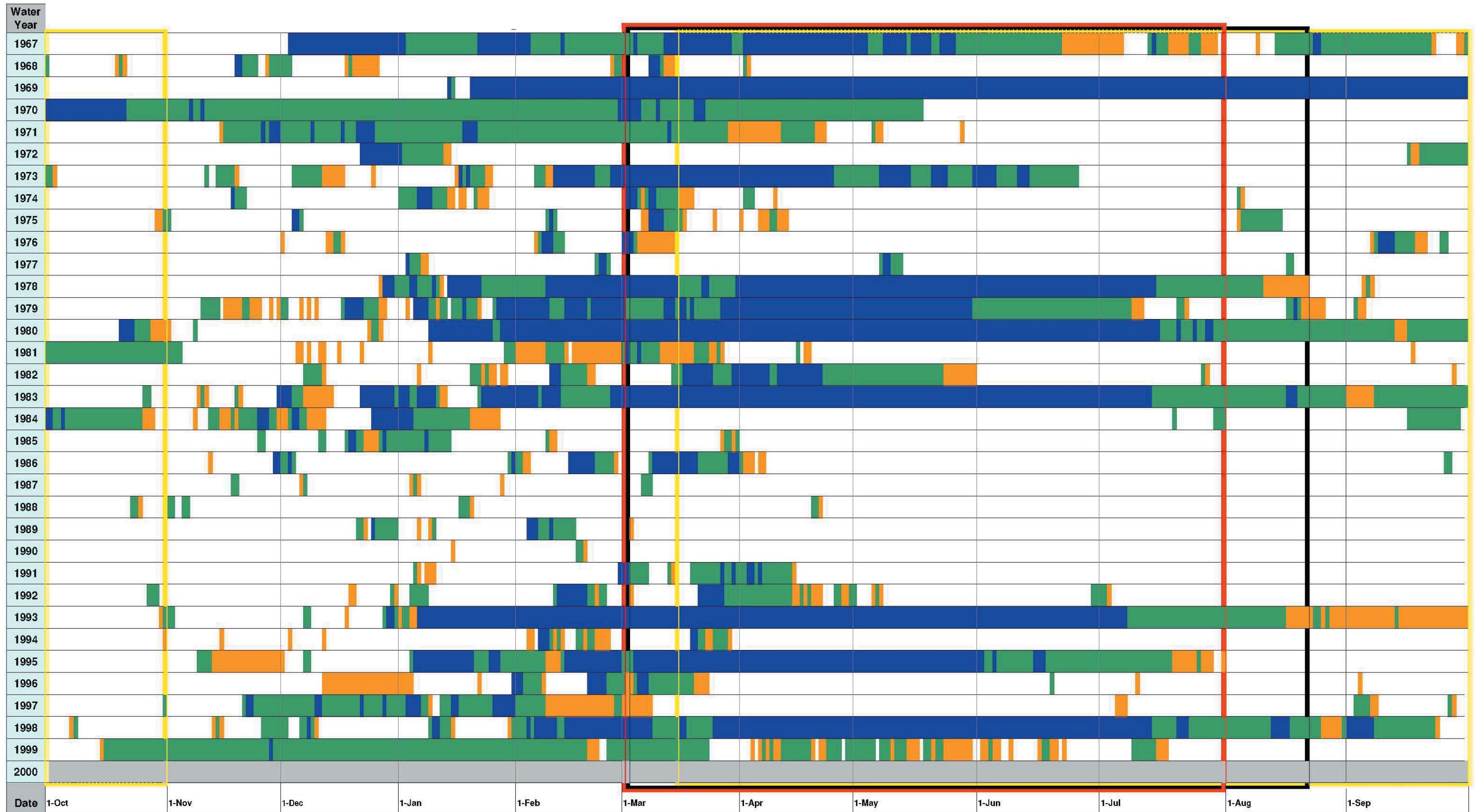
Muni/Western Ex. 9-108

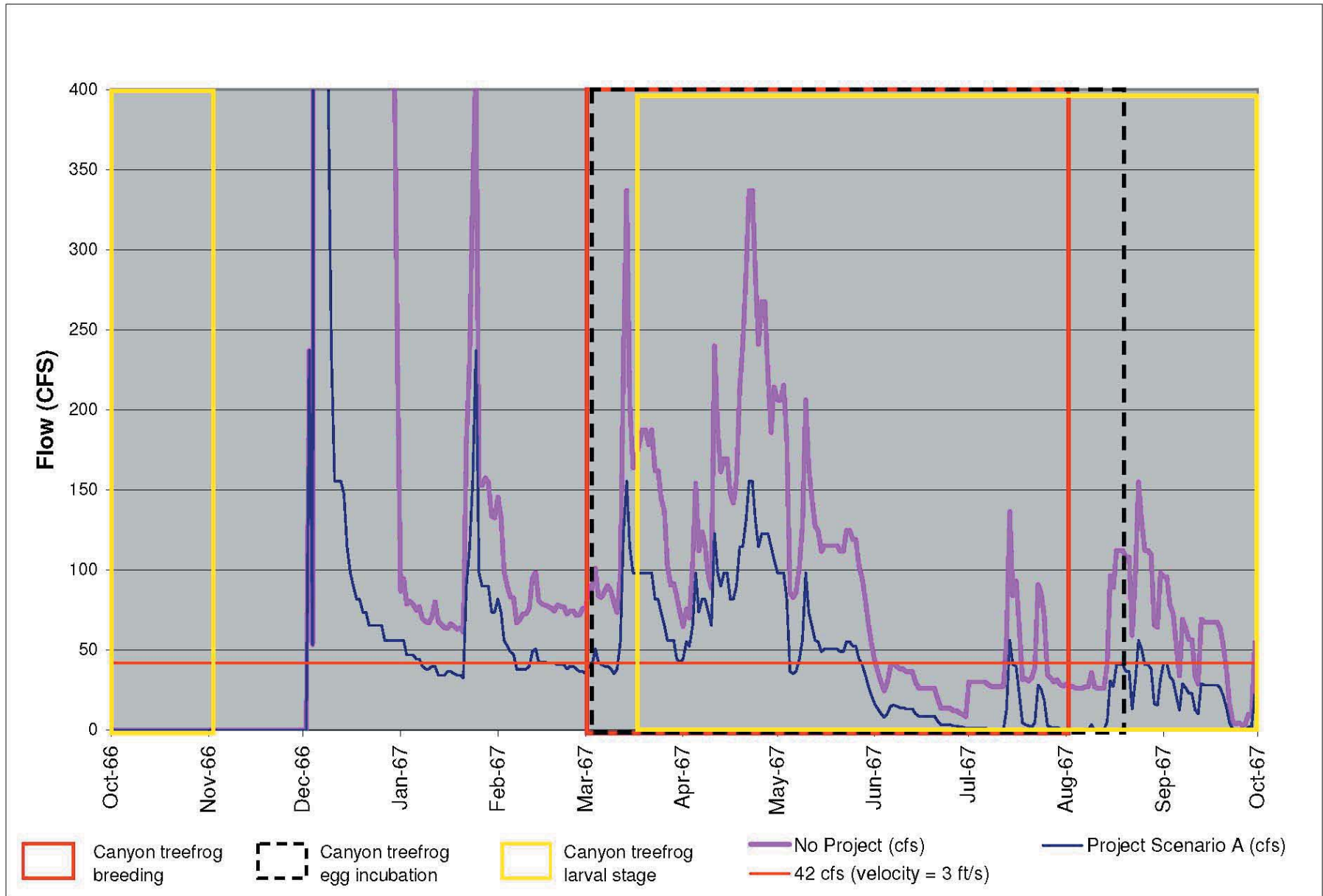
DOWNSTREAM OF GREENSPOT ROAD BRIDGE WATER QUALITY DATA

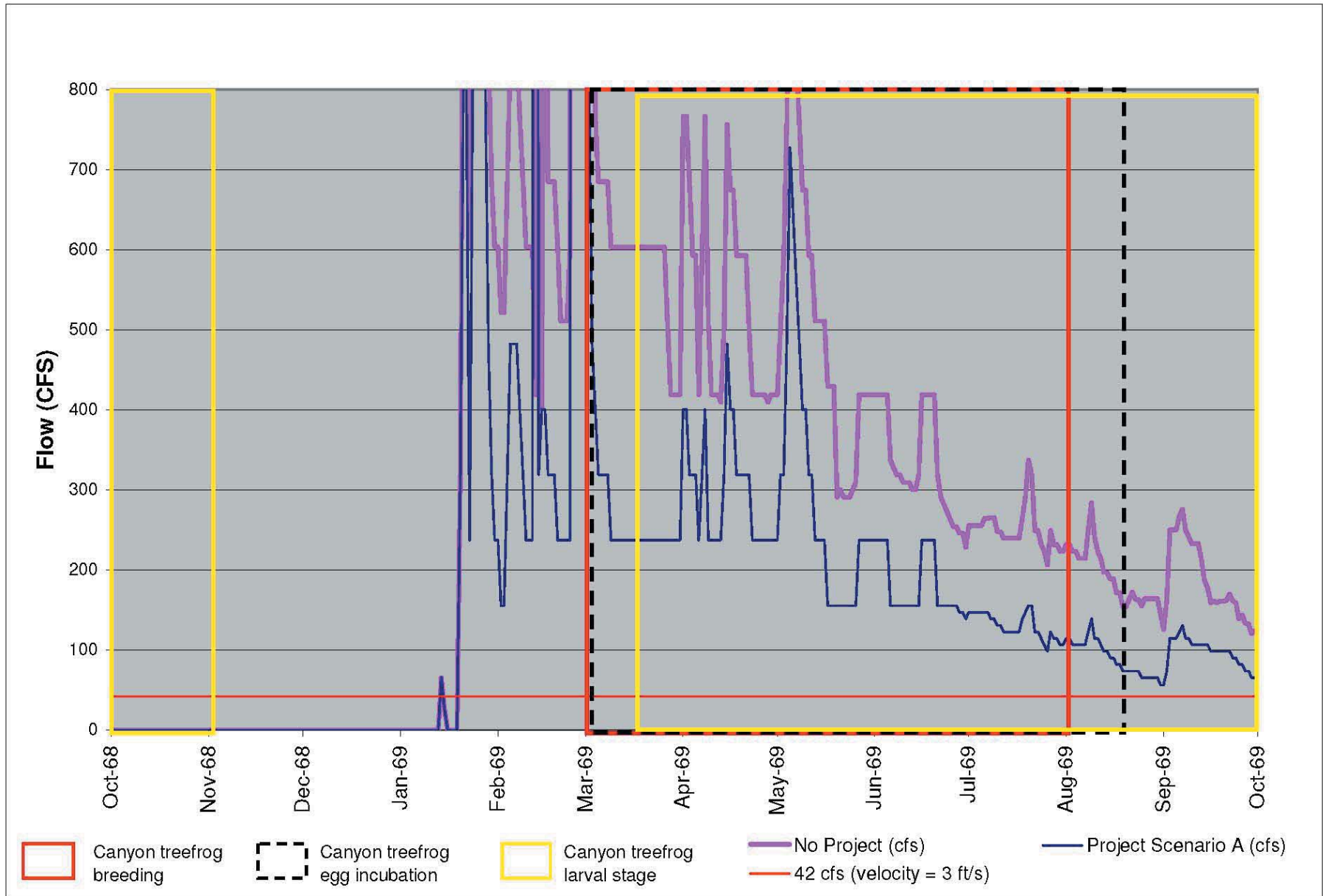
Date	Water Temp (oC)	Dissolved Oxygen (mg/l)	pH (units)	Salinity (%)	Conductivity (mS/cm)	Turbidity (NTU)	Sampling Time/Weather/Notes
6/1/05	17.5	9.20	8.20	0.00	0.230	164.00	1050/clear and warm
6/8/05	17.9	9.43	8.07	0.00	0.215	350.00	1335 hrs water perceptibly dirtier than on 6/1, 6/3 visits
6/16/05	17.5	8.80	8.19	0.00	0.213		0920 water clean light haze
6/23/05	16.0	9.25	8.00	0.00	0.215	27.00	0925 hrs
7/1/05	17.4		8.12	0.00	0.193	23.00	0900 hrs
7/14/05	21.1	8.35	8.13	0.00	0.194	10.00	1035 hrs- very hot
7/21/05							no water
7/29/05	20.6		7.99	0.00	0.214	60.00	0912 hrs
8/5/05	20.7		8.13	0.00	0.201	30.00	0947 hrs
8/12/05	20.9		8.27	0.00	0.200	15.00	1103 hrs
8/18/05	19.0		8.12	0.00	0.224	60.00	0938 hrs
8/25/05	20.4		7.94	0.01	0.277	43.00	1035 hrs
9/2/05	17.2	9.12	8.76	0.01	0.264		0914 hrs
9/9/05	16.0		8.78	0.01	0.299		0944 hrs
9/15/05	16.6		8.29	0.01	0.275		0944 hrs
9/22/05	14.3	9.62	8.50	0.01	0.267	45.00	0957 hrs- water cloudy
9/29/05	19.2	8.71	8.46	0.01	0.281	14.00	1230 hrs
10/6/05	13.3	9.78	8.38	0.01	0.279	6.00	0950 hrs
10/13/05	14.0	9.34	8.44	0.01	0.310	11.00	0955 hrs
10/20/05	14.4	9.56	8.02	0.00	0.223	122.00	1040 hrs- water very dirty due to thunderstorms
10/27/05							0920 hrs- no water to measure
11/3/05							0950 hrs- no water to measure
11/10/05							0840 hrs- no water to measure
11/18/05							1125 hrs- no water to measure
11/28/05							1040 hrs- no water to measure
12/2/05							0845 hrs- no water to measure
12/8/05							1420 hrs- no water to measure
12/16/05							0855 hrs- no water to measure
12/23/05							0850 hrs- no water to measure
12/30/05							1230 hrs- no water to measure
1/6/06							1320 hrs- not enough water to measure
1/13/06							0930 hrs- no water to measure
1/20/06							1025 hrs- no water to measure
1/26/06							1355 hrs- no water to measure
2/3/06							1315 hrs- no water to measure
2/10/06							1335 hrs- no water to measure
2/17/06							1335 hrs- no water to measure
2/24/06							0940 hrs- no water to measure
3/2/06	10.0	10.20	8.17	0.00	0.217	410.00	0940 hrs- water very dirty due to storms
3/10/06							0915 hrs- no water to measure
3/17/06							1450 hrs- no water to measure
3/23/06							0945 hrs- no water to measure
3/31/06	10.6	9.93	8.00	0.00	0.230	27.00	0945 hrs
5/5/06	12.3	10.79	8.10	0.00	0.207	10.00	1040 hrs
5/11/06	15.3	9.44	8.26	0.00	0.214	5.00	0950 hrs
5/19/06	18.2	9.11	8.16	0.00	0.251	6.00	0955 hrs
5/26/06	17.9	8.93	8.04	0.00	0.253	8.00	1010 hrs
6/2/06							1040 hrs- no water to measure
6/9/06							1400 hrs- no water to measure
6/15/06							1010 hrs- no water to measure
6/21/06							1020 hrs- no water to measure
6/29/06							1100 hrs- no water to measure
7/7/06							1100 hrs- no water to measure
7/14/06							0920 hrs- no water to measure
7/21/06							1335 hrs- no water to measure
7/28/06							0925 hrs- no water to measure

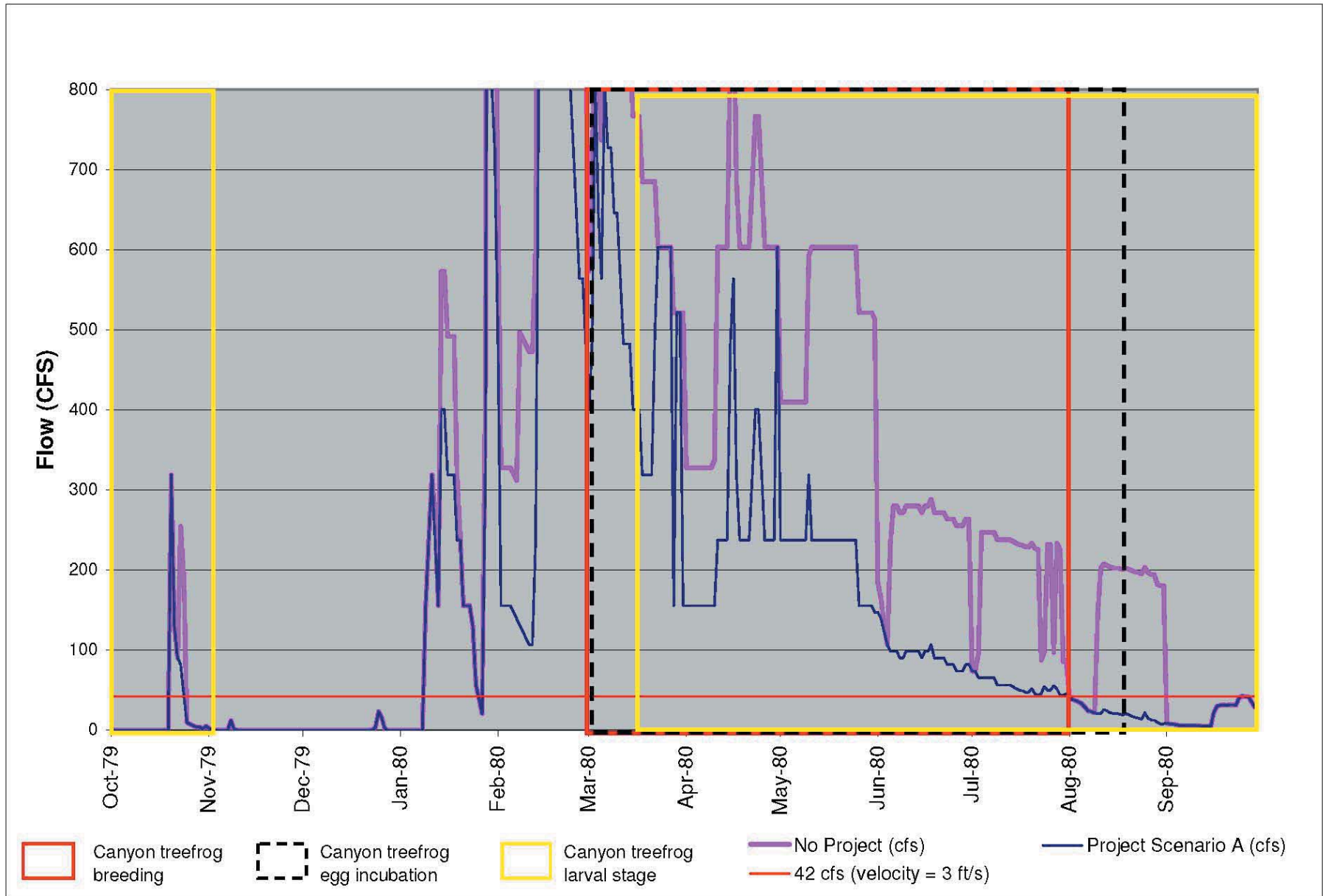


Legend: = Flow <1 CFS = 1-5 CFS = 5-50 CFS = >50 CFS = No data Canyon treefrog breeding Canyon treefrog egg incubation Canyon treefrog larval stage









Muni/Western Ex. 9-114
Segment D. Water Year 1980. Flows in Relationship to Canyon Treefrog Life History.

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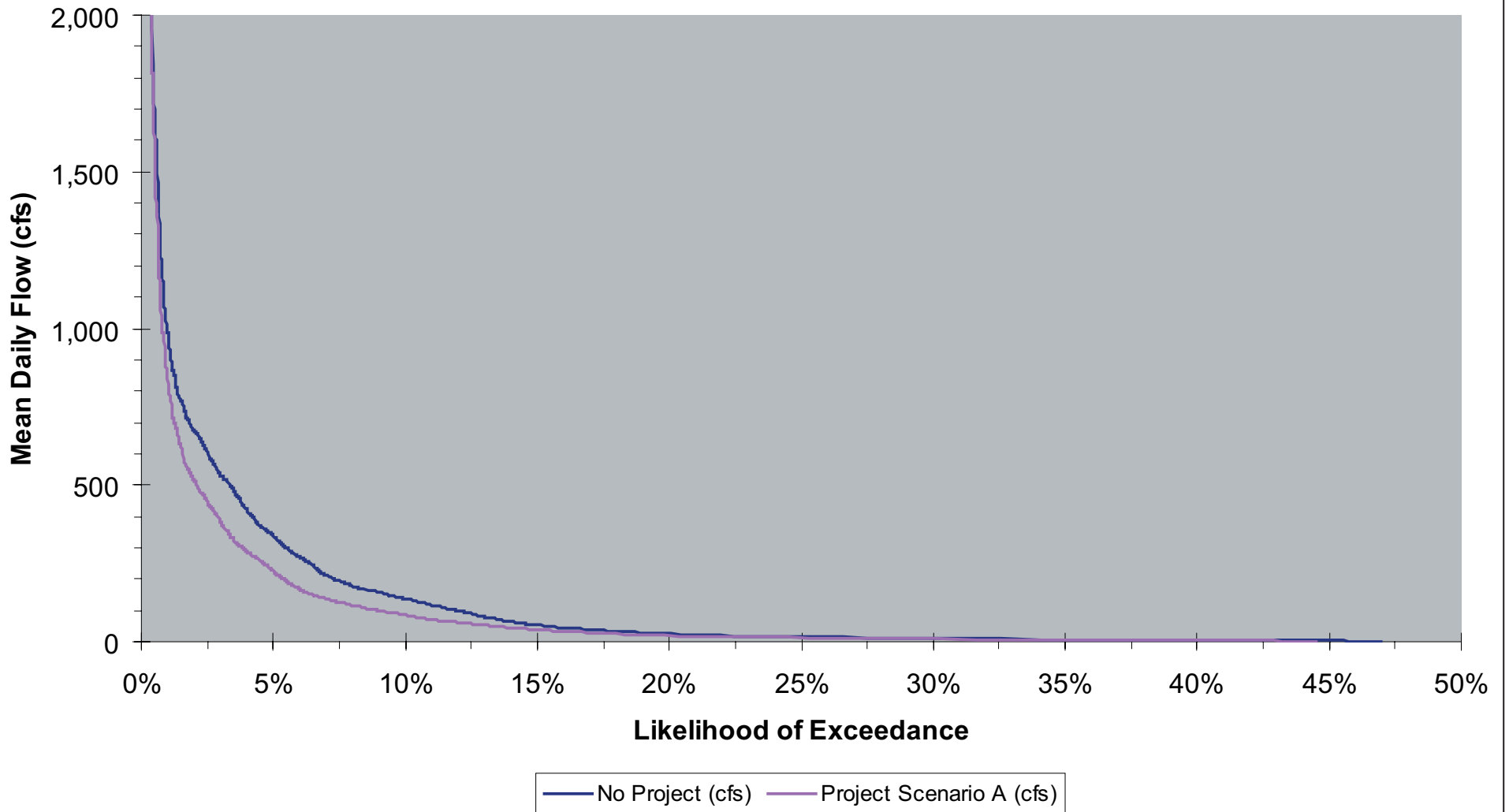
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Seven Oaks

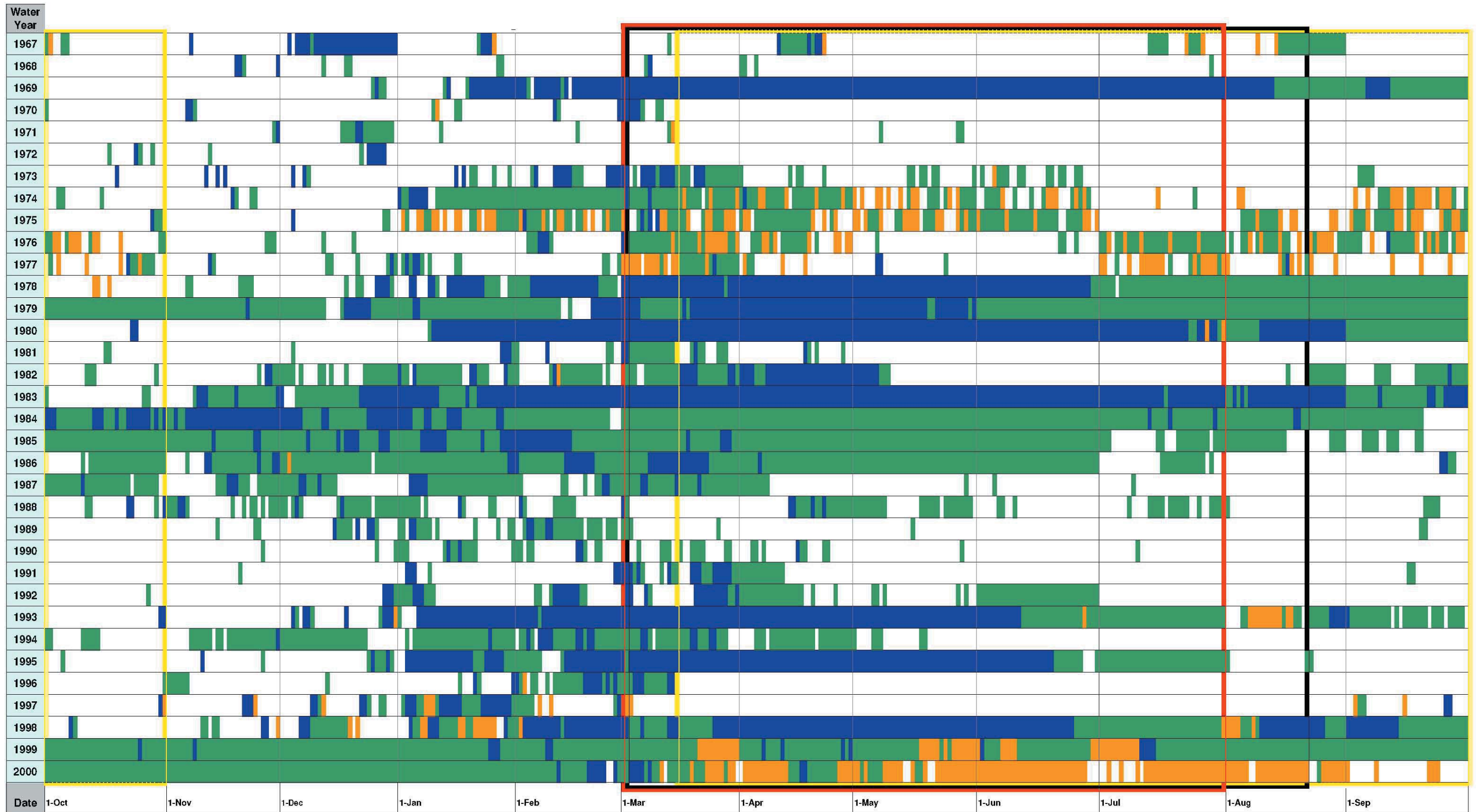
Muni/Western Ex. 9-115

DOWNSTREAM OF ORANGE AVENUE WATER QUALITY DATA

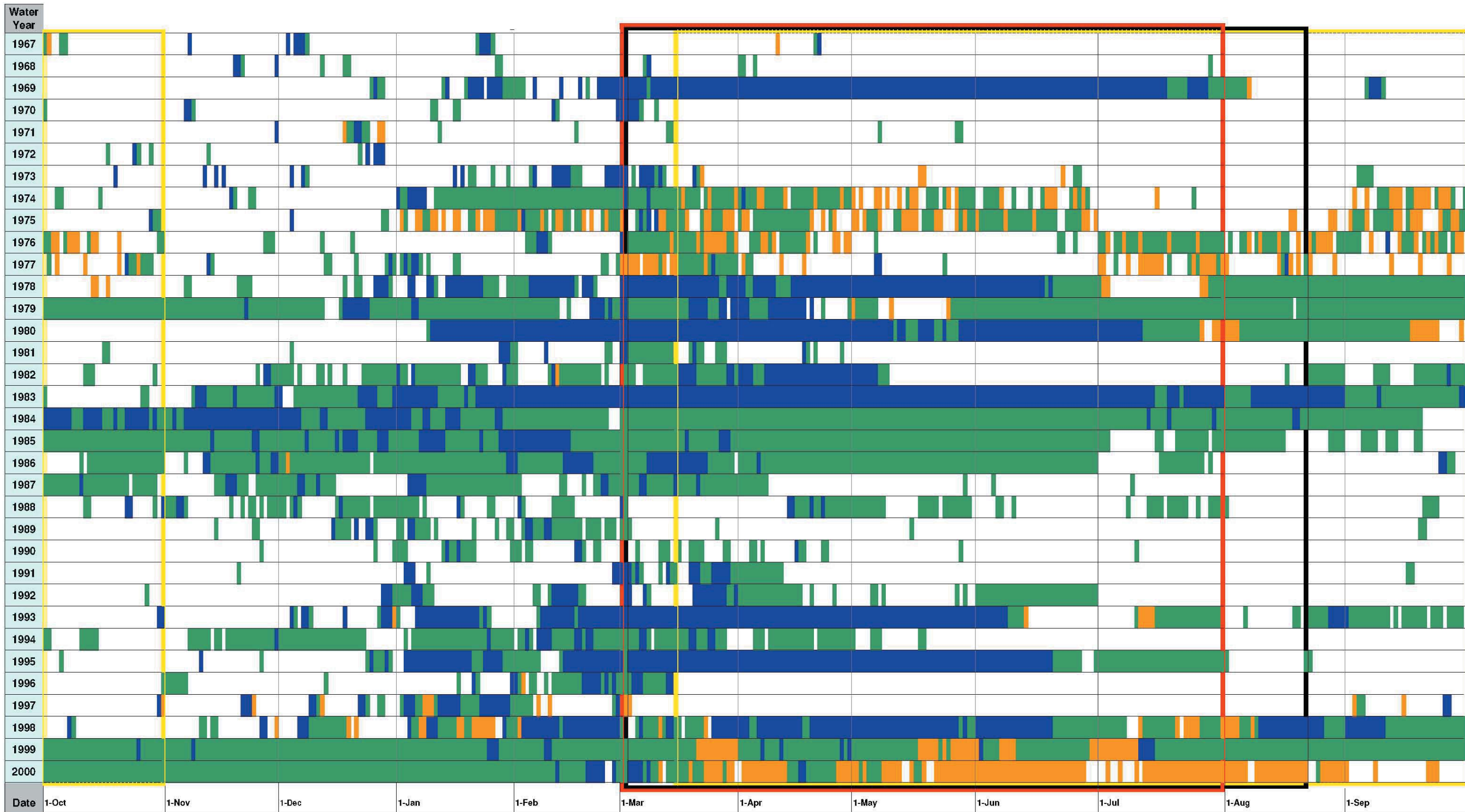
Date	Water Temp (oC)	Dissolved Oxygen (mg/l)	pH (units)	Salinity (%)	Conductivity (mS/cm)	Turbidity (NTU)	Sampling Time/Weather/Notes
6/1/05	18.2	9.34	8.35	0.00	0.212	110.00	1110/ clear and warm/mill creek flowing 120-130 cfs
6/8/05	20.7	9.03	8.26	0.00	0.231	115.00	1315 hrs. light haze in air warm 80F
6/16/05	17.8	9.34	7.92	0.00	0.234		0830 water clean light haze
6/23/05	16.2	9.55	7.99	0.00	0.221	25.00	0910 hrs
7/1/05	16.2		7.81	0.00	0.255	18.00	0827 hrs
7/6/05	26.3	5.46	8.43	0.00	0.208	6.00	1303 hrs- hot
7/14/05	22.6		8.33	0.00	0.203	5.00	0956 hrs- very hot
7/21/05	30.0		9.15	0.00	0.217	6.00	1256 hrs
7/29/05	19.7		8.20	0.00	0.250	21.00	0822 hrs
8/5/05	20.2		7.96	0.00	0.233	106.00	0913 hrs
8/12/05	20.9		8.04	0.00	0.234	513.00	1025 hrs
8/18/05	18.4		7.89	0.00	0.237	78.00	0837 hrs
8/25/05	20.2		7.82	0.01	0.296	40.00	0950 hrs
9/2/05	15.1	10.20	8.22	0.01	0.279		0823 hrs
9/9/05	15.2	11.42	8.67	0.01	0.322		0848 hrs
9/15/05	13.8		8.48	0.01	0.277		0859 hrs
9/22/05	14.3	10.40	8.71	0.01	0.282	30.00	0915 hrs
9/29/05	22.2	9.13	9.20	0.01	0.278	13.00	1305 hrs
10/6/05	11.7	11.13	8.27	0.01	0.294	8.00	0910 hrs
10/13/05	12.4	10.54	8.40	0.01	0.294	4.00	0900 hrs
10/20/05	15.3	9.64	8.37	0.00	0.222	370.00	1115 hrs- water very dirty due to thunderstorms
10/27/05							1015 hrs- no water to measure
11/3/05							0900 hrs- no water to measure
11/10/05							0900 hrs- no water to measure
11/18/05							1140 hrs- no water to measure
11/28/05							1055 hrs- no water to measure
12/2/05							0830 hrs- no water to measure
12/8/05							1340 hrs- no water to measure
12/16/05							0935 hrs- no water to measure
12/23/05							0805 hrs- no water to measure
12/30/05							1140 hrs- no water to measure
1/6/06							1340 hrs- not enough water to measure
1/13/06							1020 hrs- no water to measure
1/20/06							1045 hrs- no water to measure
1/26/06							1415 hrs- no water to measure
2/3/06							1335 hrs- no water to measure
2/10/06							1355 hrs- no water to measure
2/17/06							1350 hrs- no water to measure
2/24/06							0955 hrs- no water to measure
3/2/06	9.6	10.85	8.22	0.00	0.207	700.00	0835 hrs- water very dirty due to storms
3/10/06							0815 hrs- no water to measure
3/17/06							1345 hrs- no water to measure
3/23/06							1015 hrs- no water to measure
3/31/06	10.8	10.21	8.05	0.00	0.232	31.00	1035 hrs
5/5/06	12.7	11.24	8.18	0.00	0.218	143.00	1135 hrs- Water dirty
5/11/06	14.9	9.20	8.17	0.00	0.224	51.00	0855 hrs
5/19/06	16.0	9.75	8.18	0.00	0.243	12.00	0830 hrs
5/26/06	15.8	8.17	7.00	0.00	0.197	7.00	0850 hrs
6/2/06							0930 hrs- no water to measure
6/9/06							1300 hrs- no water to measure
6/15/06							1035 hrs- no water to measure
6/21/06							0930 hrs- no water to measure
6/29/06							1000 hrs- no water to measure
7/7/06							1000 hrs- no water to measure
7/14/06							1000 hrs- no water to measure
7/21/06							1430 hrs- no water to measure
7/28/06							1000 hrs- no water to measure

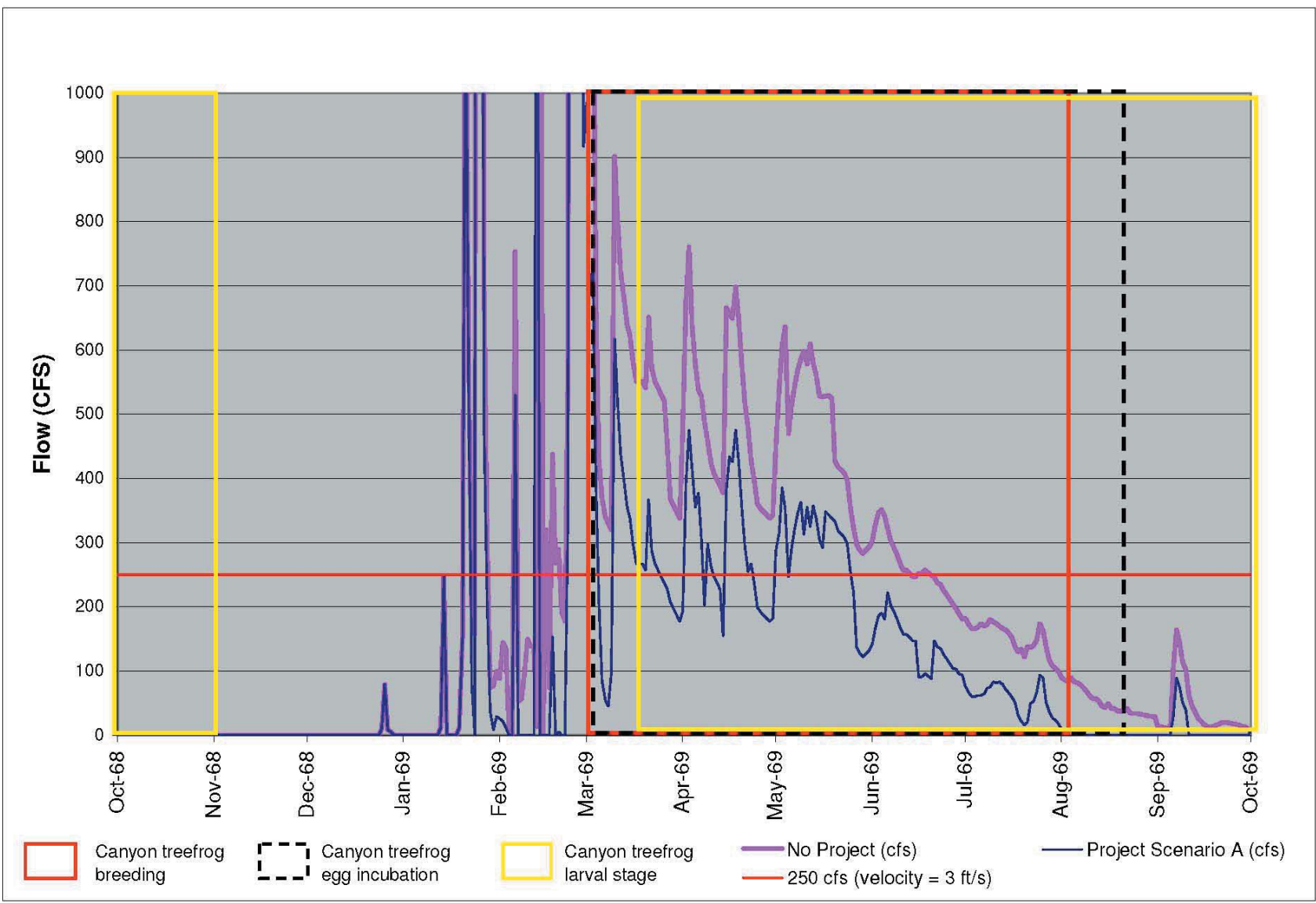


Legend: = Flow <1 CFS = 1-5 CFS = 5-50 CFS = >50 CFS Canyon treefrog breeding Canyon treefrog egg incubation Canyon treefrog larval stage



Legend: = Flow <1 CFS = 1-5 CFS = 5-50 CFS = >50 CFS Canyon treefrog breeding Canyon treefrog egg incubation Canyon treefrog larval stage



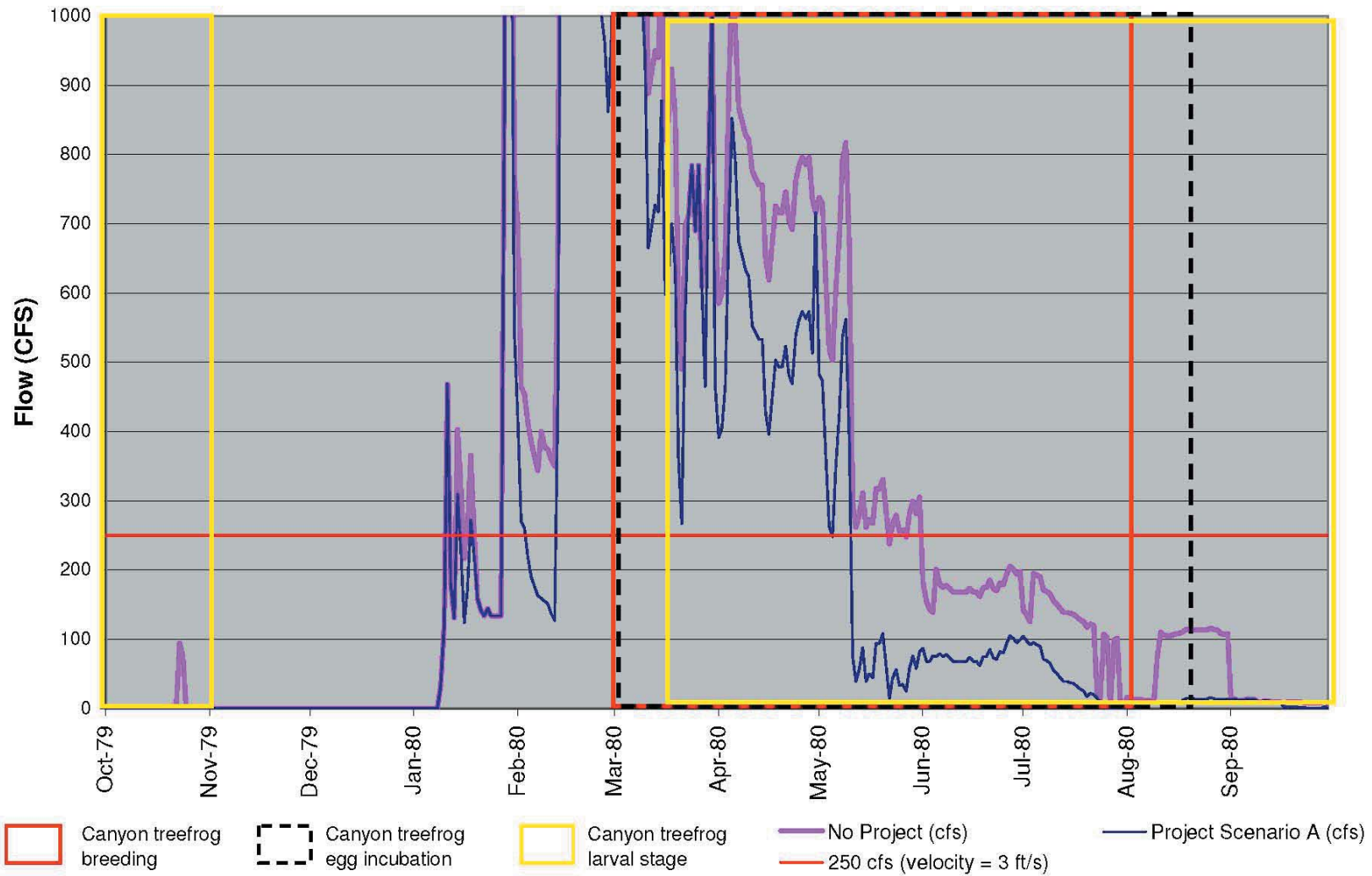


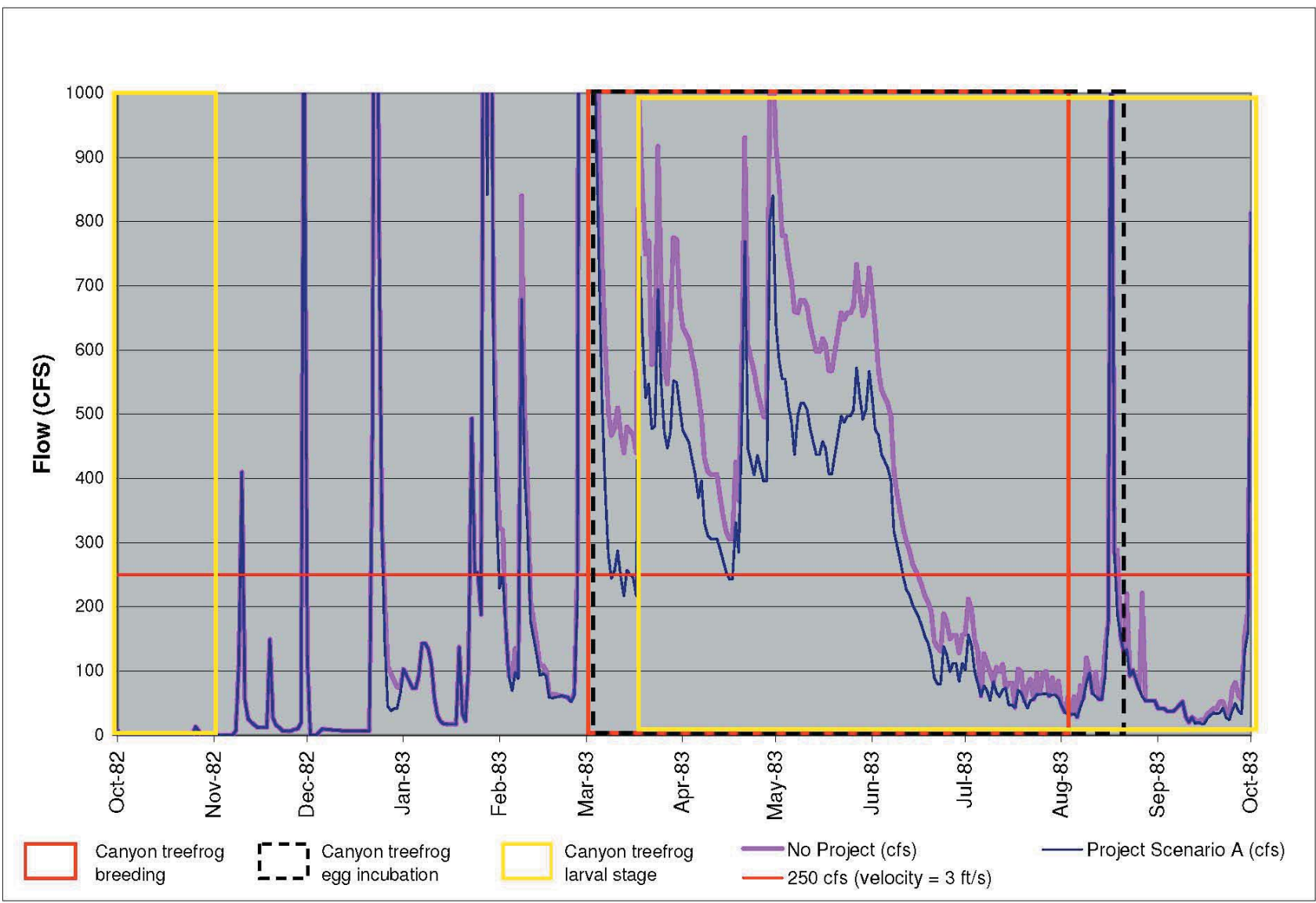
Muni/Western Ex. 9-119
Segment E. Water Year 1969. Flows in Relationship to the Pacific Chorus Frog Life History.

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Seven Oaks



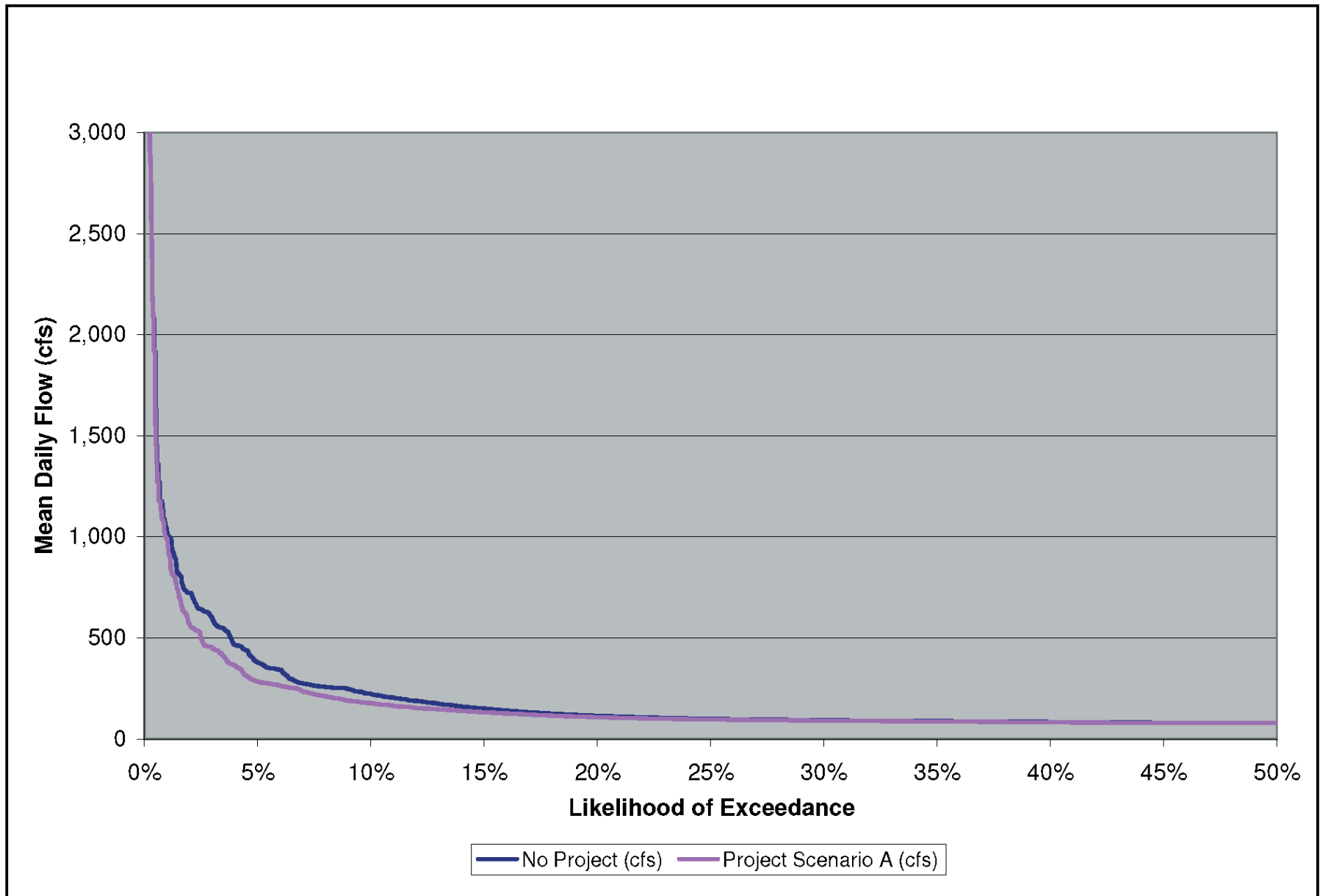


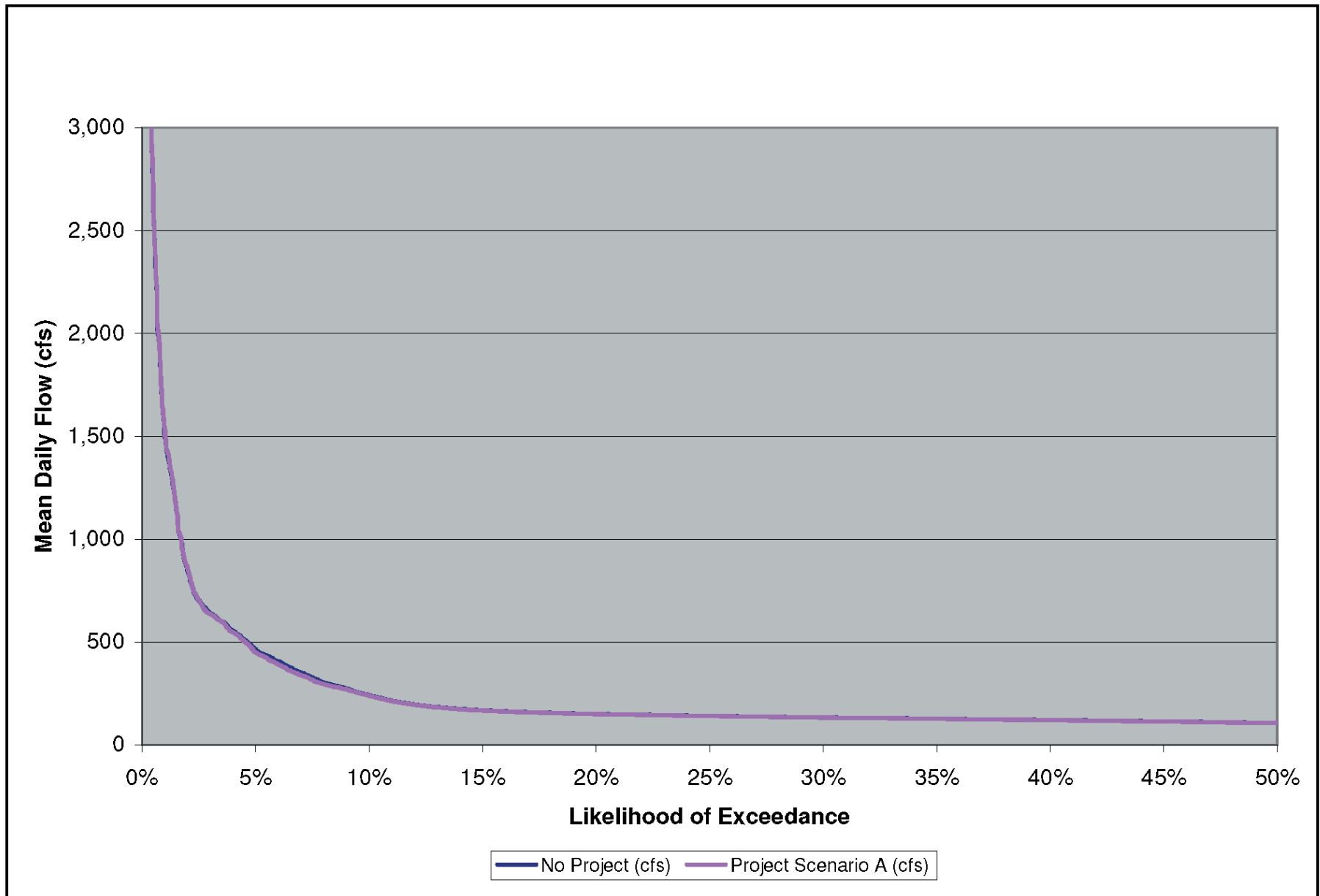
Muni/Western Ex. 9-121
Segment E. Water Year 1983. Flows in Relationship to the Pacific Chorus Frog Life History.

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D51063.01

Seven Oaks





Muni-Western Ex. 9-124

SPECIAL-STATUS SPECIES

COMMON NAME	SEGMENT						
	A	B	C	D	E	F	G
PLANTS							
Gambel's Water Cress							
Marsh Sandwort							
FISH							
Arroyo Chub							
Santa Ana Speckled Dace							
Santa Ana Sucker							
AMPHIBIANS AND REPTILES							
Arroyo Toad							
California Red-Legged Frog							
Mountain Yellow-Legged Frog							
Southwestern Pond Turtle							
Two-Striped Garter Snake							
Western Spadefoot Toad							
SPECIAL-STATUS HABITATS							
Southern Cottonwood-Willow Riparian Forest							
Southern Willow Scrub	*						
Notes: * Impact to the Warm Springs Cienega only due to Corps. flood control operations, not the Project. Mitigated by Corps.							

Color Key	
Not Present	
No Impact	
Less than Significant Impact	
Less than Significant After Mitigation	
Significant and Unavoidable Impact	