

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
NORTHERN DISTRICT

Butte and Sutter Basins Water Data Atlas



**Department of Water Resources
Northern District**

Douglas P. Wheeler
Secretary for Resources
The Resources Agency

Pete Wilson
Governor
State of California

February 1994
David N. Kennedy
Director
Department of Water Resources

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Organization

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Pete Wilson, Governor
THE RESOURCES AGENCY
Douglas P. Wheeler, Secretary for Resources

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NORTHERN DISTRICT

Linton A. Brown District Chief
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Note: DWR's Central District monitors wells in Sutter County and provided that data for presentation in this atlas.

Printed by DWR Reprographics

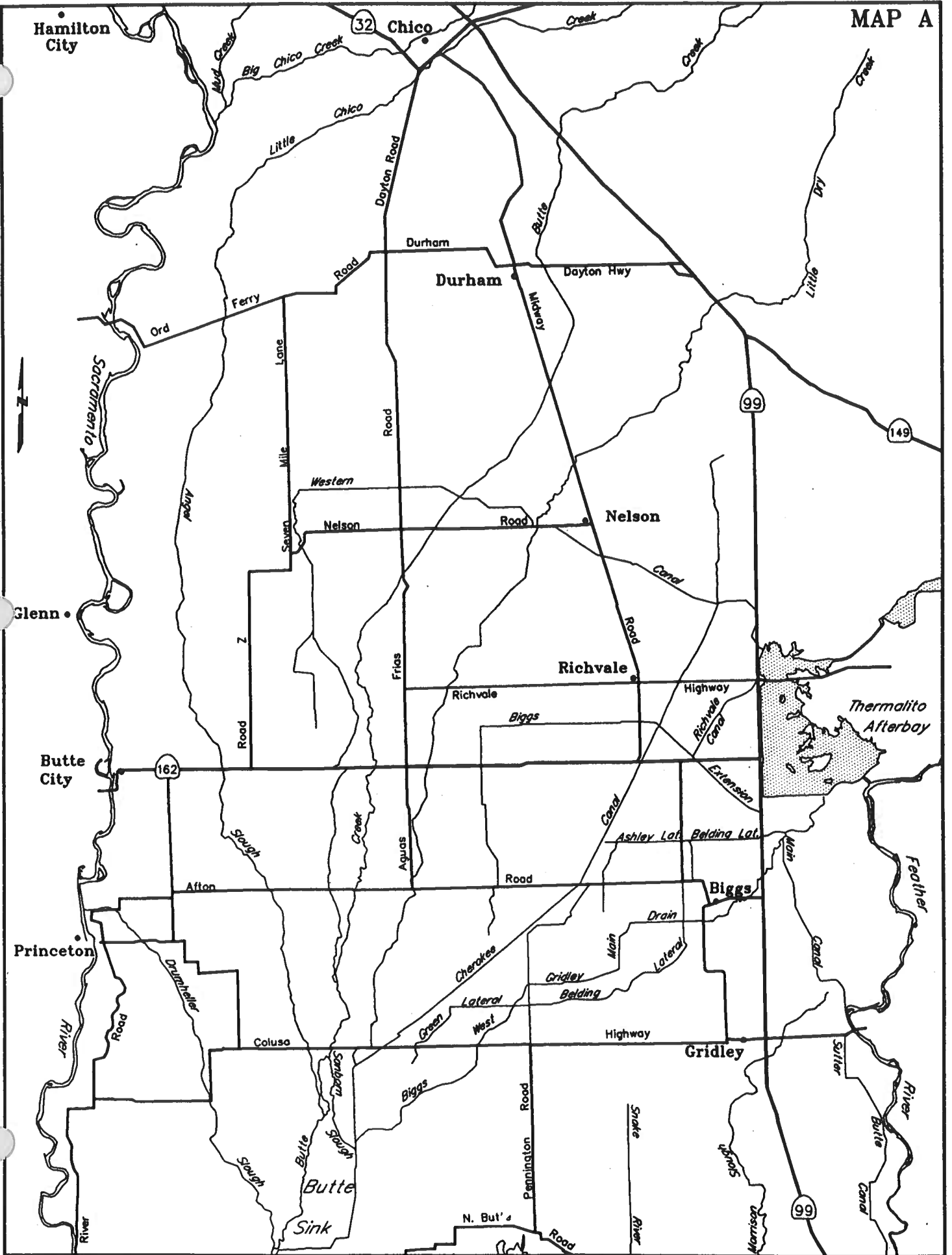
Introduction

The 1,100-square-mile Butte and Sutter Basins extend from Chico on the north to Verona (near Sacramento Metropolitan Airport) on the south and are bounded on the east and west by the Feather and Sacramento Rivers. Butte Creek and the Sutter Bypass flow through the heart of these hydrologically connected basins and the steep Sutter Buttes geographically separates them.

Because this area is bounded by two of California's major rivers, contains a large internal creek system, and has a vast ground water basin, it has a bountiful water supply. Even so, this area experienced some water-related problems during the 1987-1992 drought, which created strong local support for sound water management. Much of this area's water is presently used to irrigate a wide variety of crops headed by rice, nuts, fruit, and pasture.

With such a large mix of water supply sources, controlled by over 20 water management organizations, serving hundreds of farmers through more than a thousand miles of canals, drains, and laterals, this area's water supply system is extremely complex. Existing mapping is not adequate to accurately represent this hydrologic intricacy. Since an atlas is one of the best ways to present information in an easy-to-grasp form, DWR staff prepared this water data atlas to promote better understanding of the area's water network and its potential for optimum development. It should be useful to a wide array of people, including local water users, private consultants, and public agency staff.

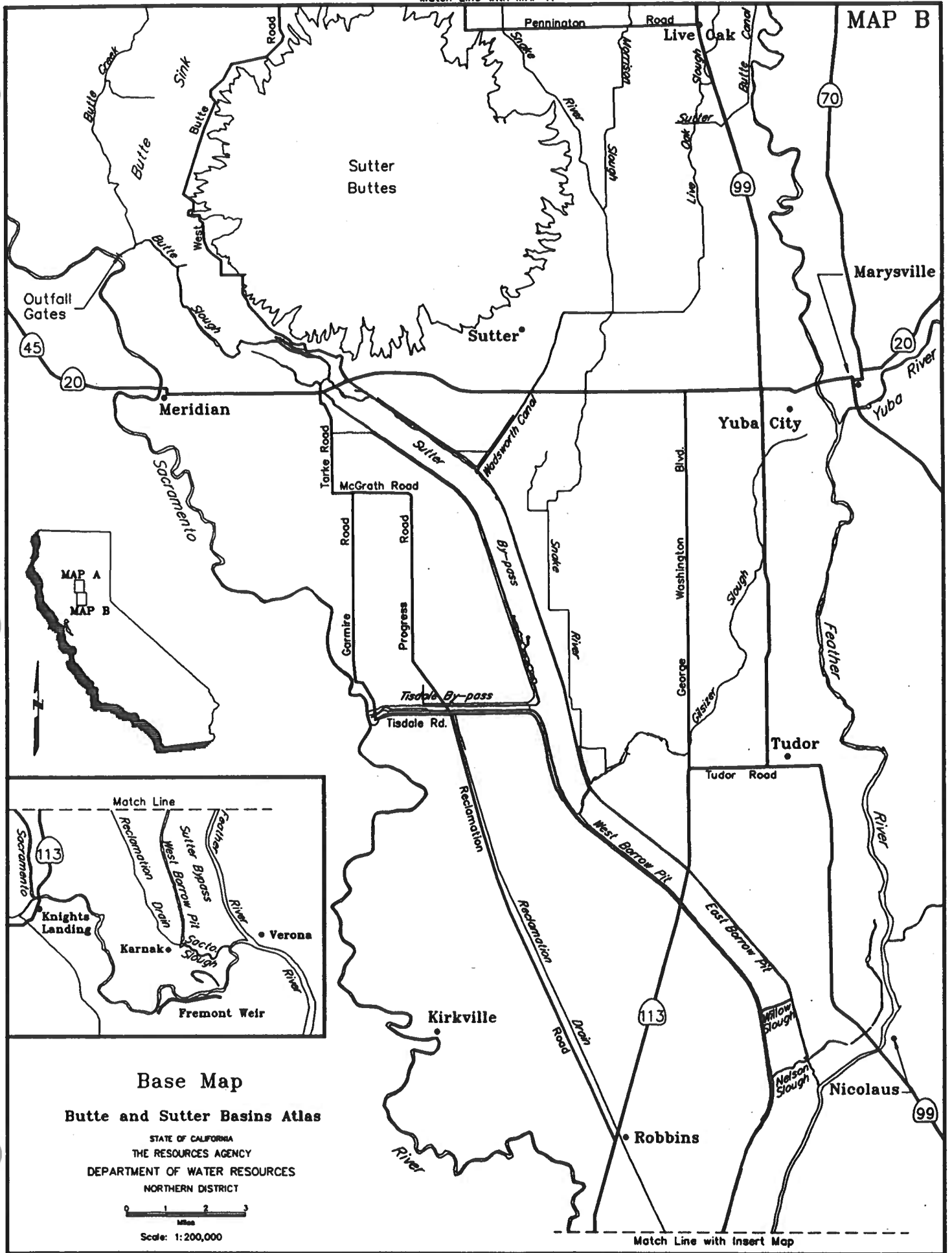
This is the first time DWR has published a series of water-related maps for the Butte and Sutter Basins. Because the maps are computer-drawn, they are easily edited and plotted at different sizes and can also be easily reproduced in color. Though care was taken to make these initial maps as accurate and complete as possible, you may find omissions and errors, which we encourage you to bring to our attention. If you have suggestions for future editions, please send them to the chief of the Water Management Branch, Department of Water Resources, 2440 Main Street, Red Bluff, California 96080.



Match line with MAP B

Match Line with MAP A

MAP B



Base Map

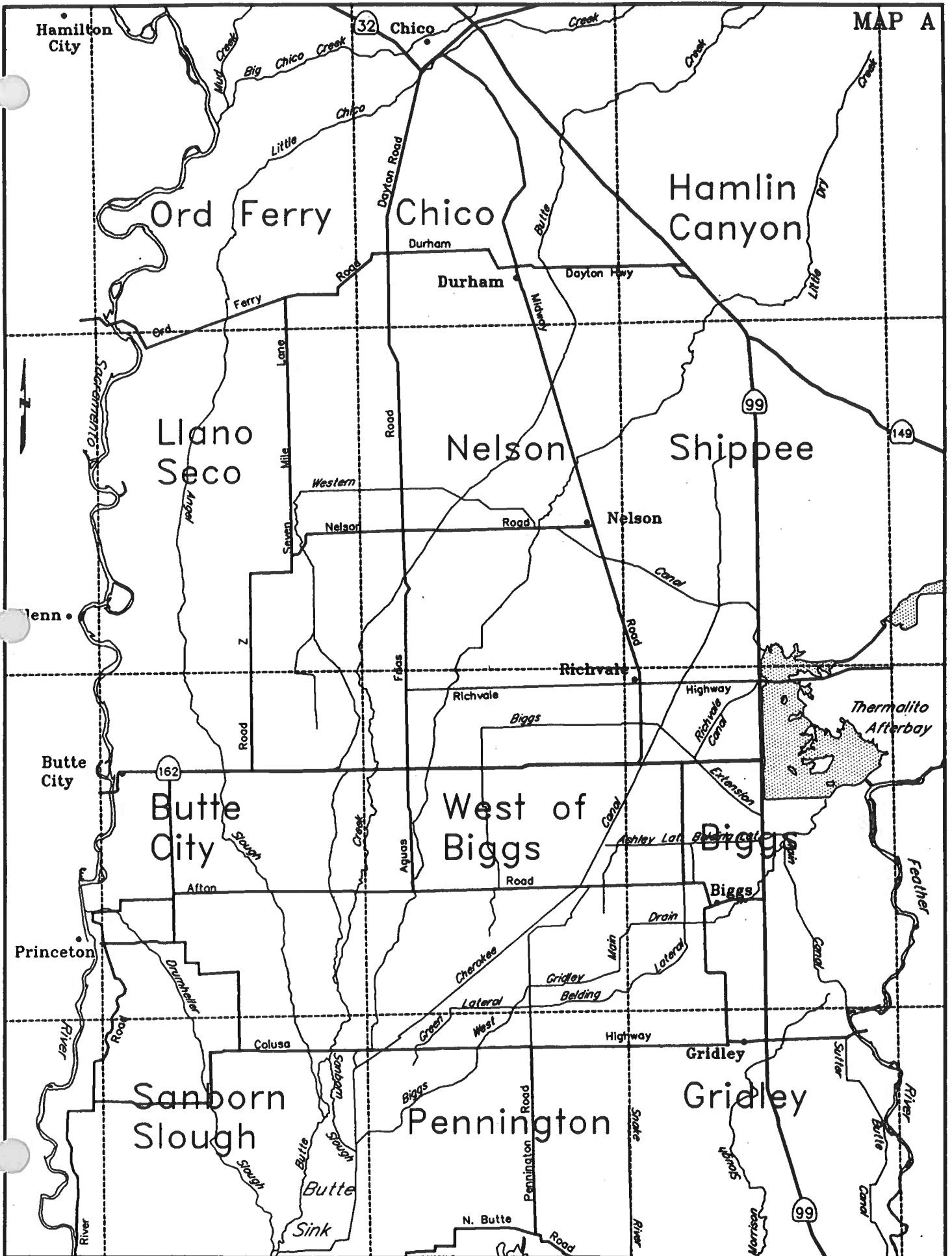
Butte and Sutter Basins Atlas

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 DEPARTMENT OF WATER RESOURCES
 NORTHERN DISTRICT



Scale: 1:200,000

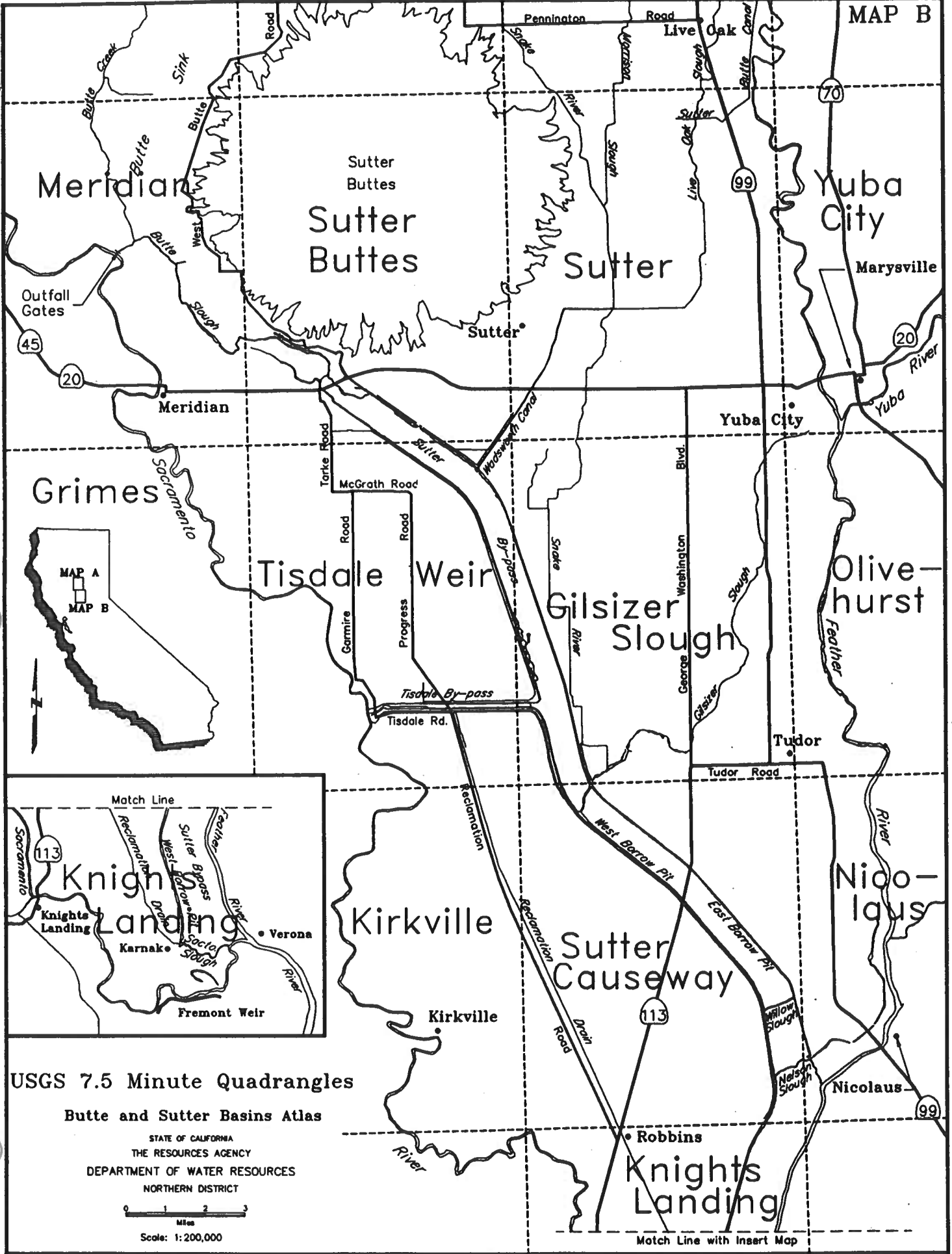
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Match line with MAP B

Match Line with MAP A

MAP B



Grimes

Meridian

Sutter Buttes

Sutter

Yuba City

Marysville

Outfall Gates

Meridian

Yuba City

Grimes

Tisdale Weir

Gilsizer Slough

Olivehurst

Knights Landing

Kirkville

Sutter Causeway

Nicolaus

Knights Landing

Knights Landing

USGS 7.5 Minute Quadrangles

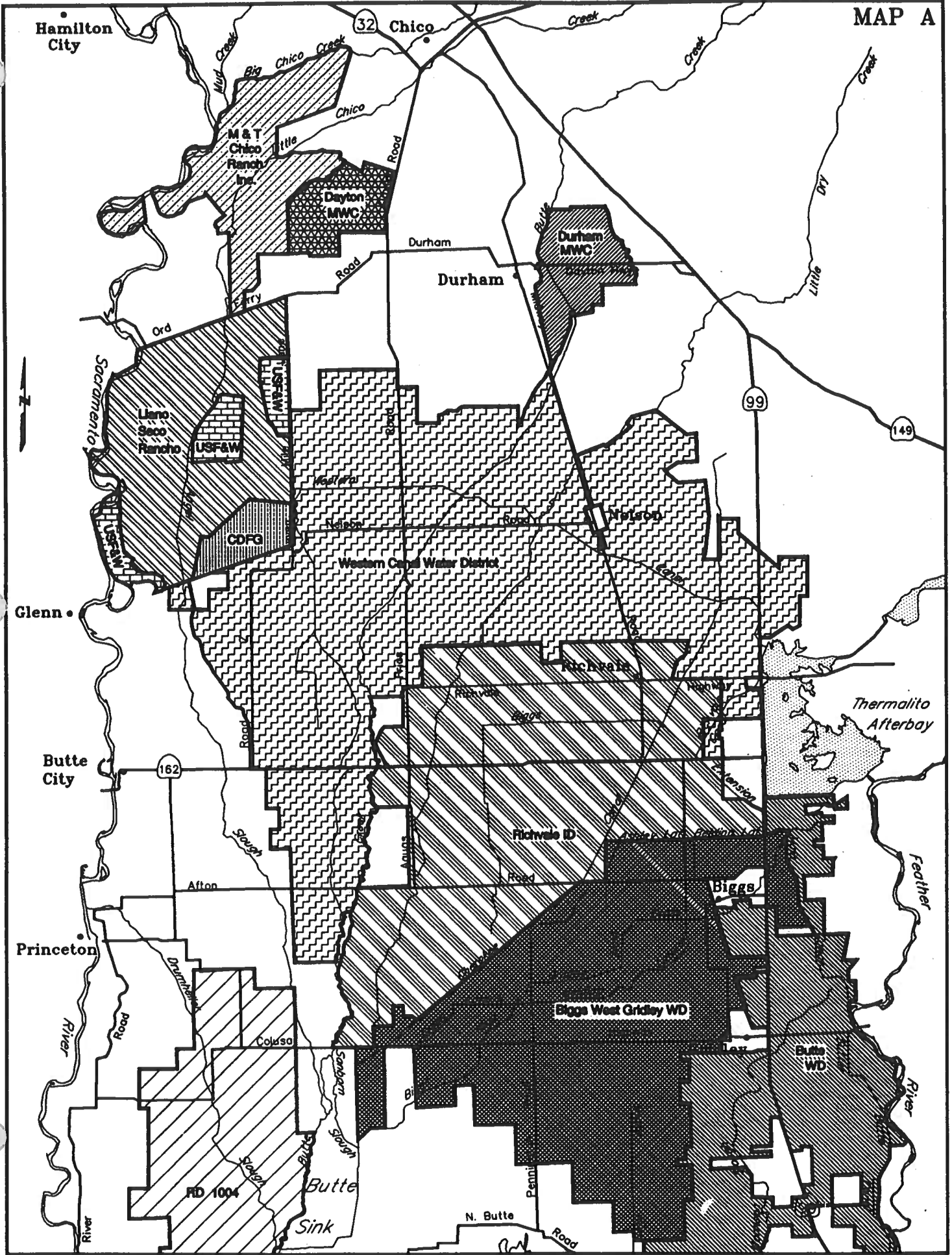
Butte and Sutter Basins Atlas

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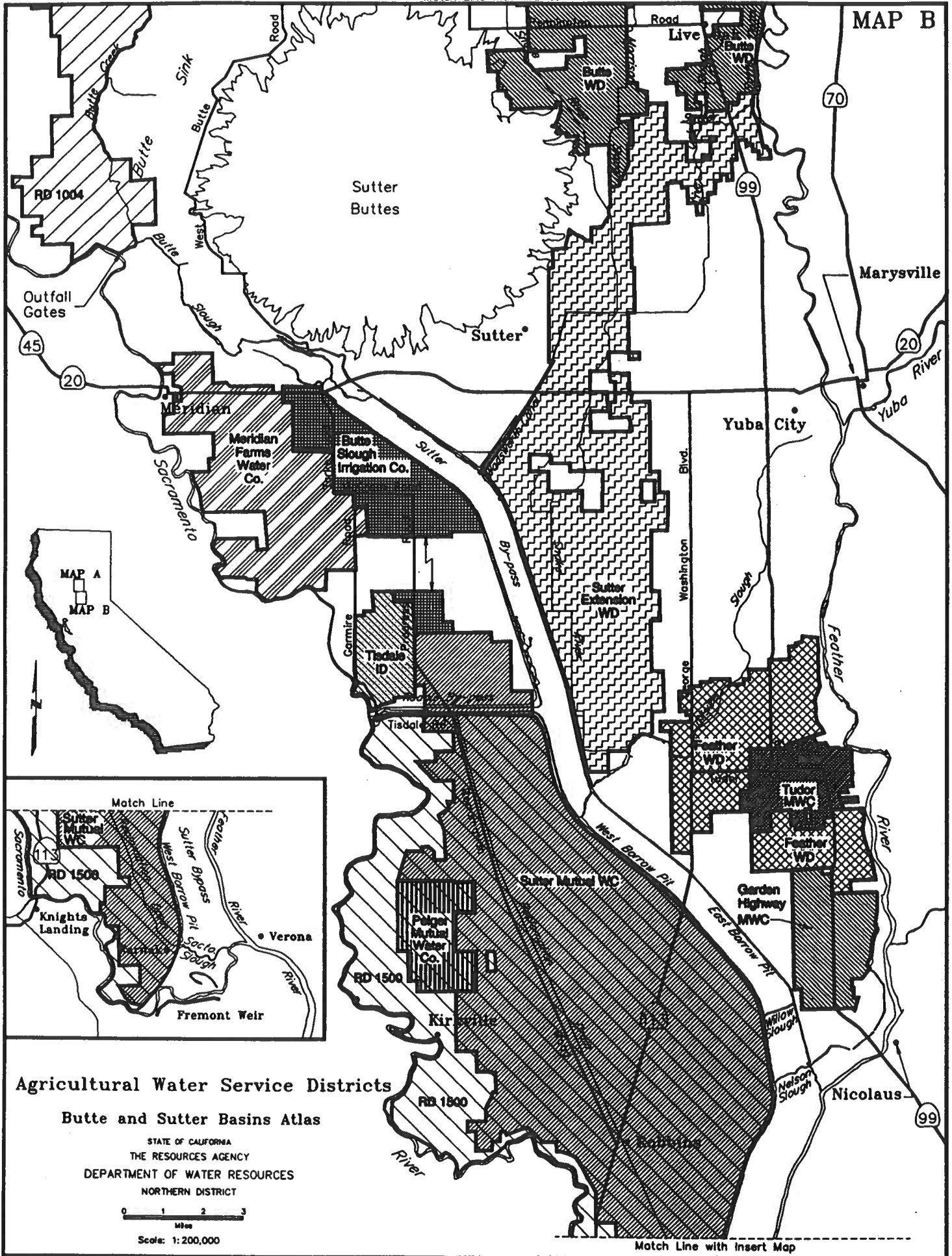
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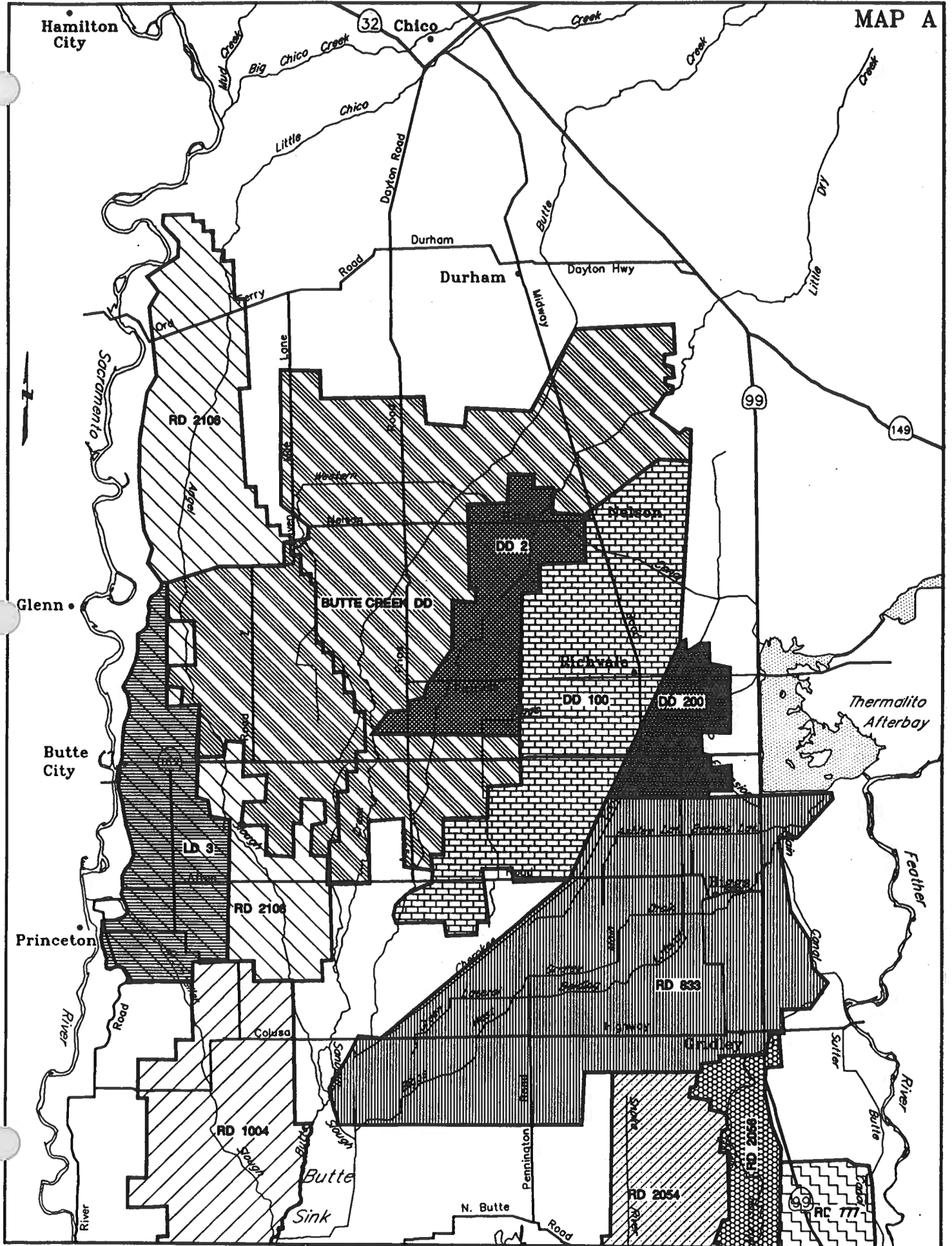
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Match Line with MAP A

MAP B

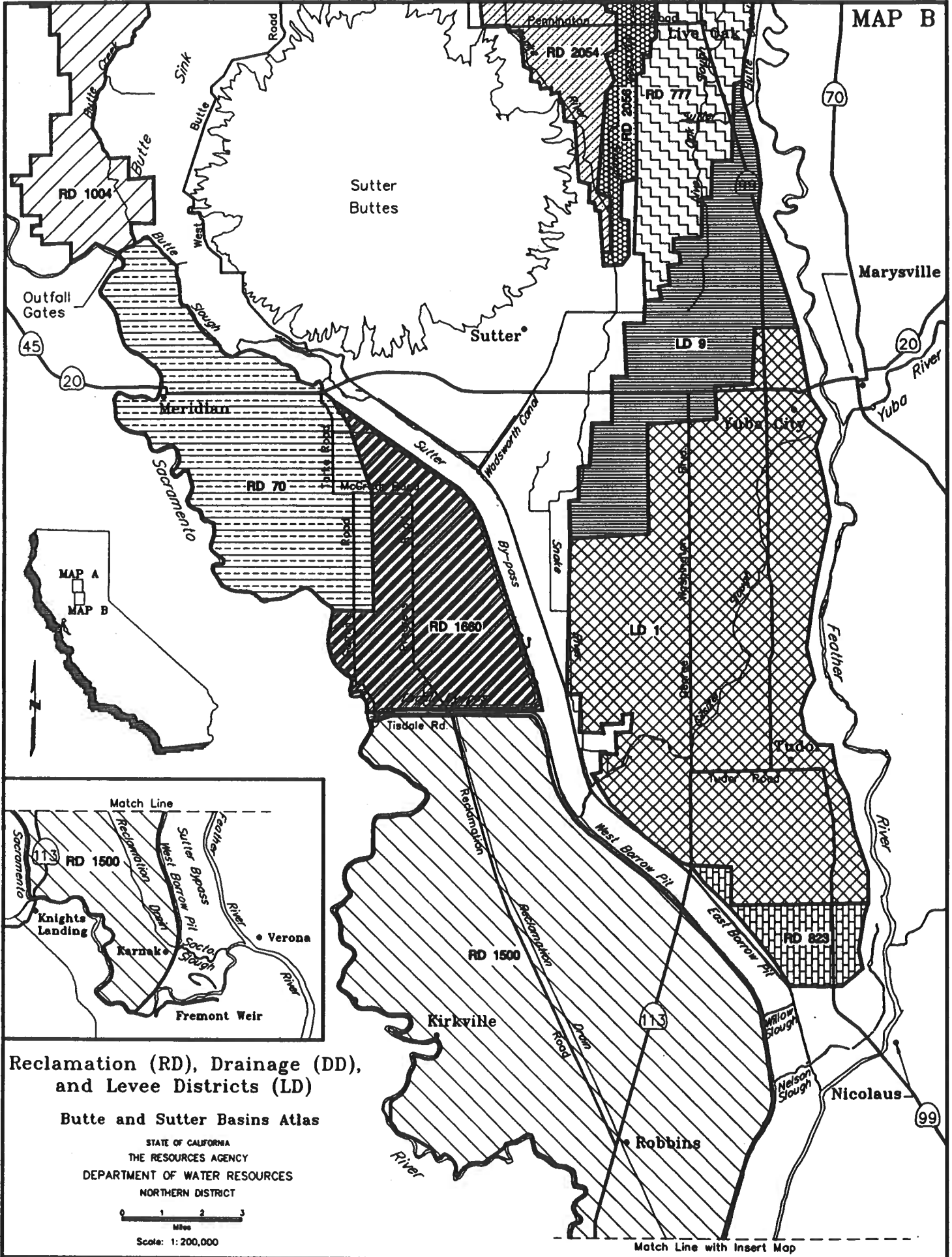


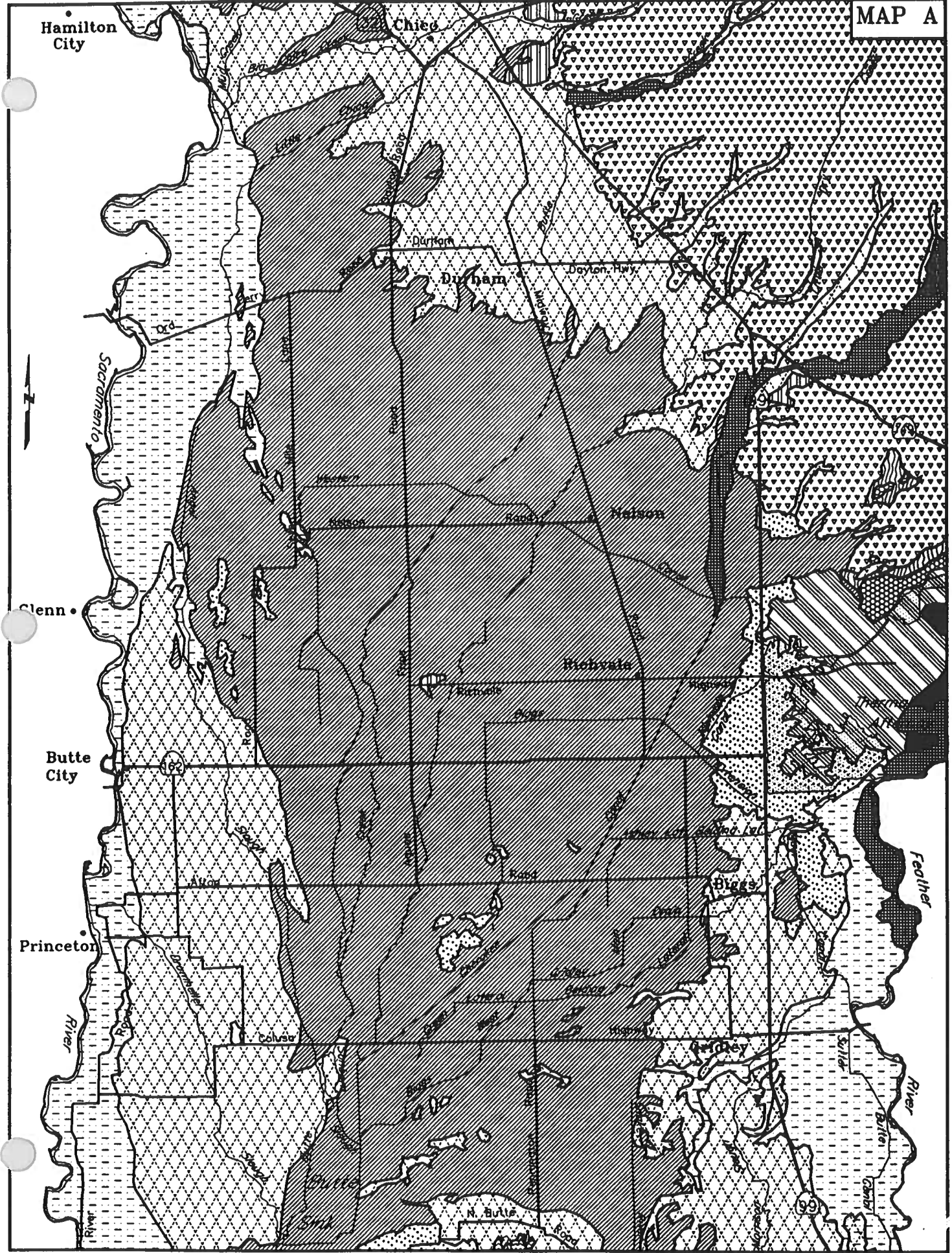


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Match Line with MAP A

MAP B























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Geology Map Legend

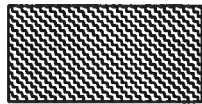
(For maps on previous two pages)

Note: Information from Division of Mines and Geology 1:250,000 maps.
Chico Quadrangle 1992, and Sacramento Quadrangle 1965

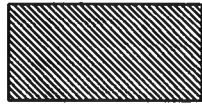
	t	Dredge or mine tailings
	Q	Alluvium
	Qa	Natural levee and channel deposits
	Qb	Basin deposits (Alluvium)
	Qls	Landslide Deposits
	Qm	Modesto Formation (Alluvium)
	Qr	Riverbank Formation (Alluvium)
	Qrb	Red Bluff Formation
	Qps,Qpl	Volcanic sediments of Sutter Buttes Volcanic lake beds
	QPv	Volcanic rocks of Sutter Buttes
	QPto	Tuffs of Oroville
	Ptu	Tuscan Formation
	MPs	Sutter Formation
	Mlb	Lovejoy Basalt
	Ec	Capay Formation
	Ei	Ione Formation
	Ku	Upper Cretaceous rocks
	Kc	Chico Formation

Generalized Crop Suitability Map Legend

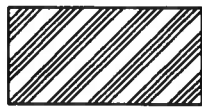
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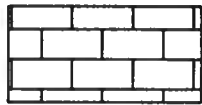
Pasture



Miscellaneous Field



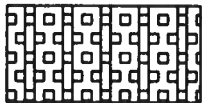
Deciduous Orchard



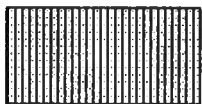
Rice



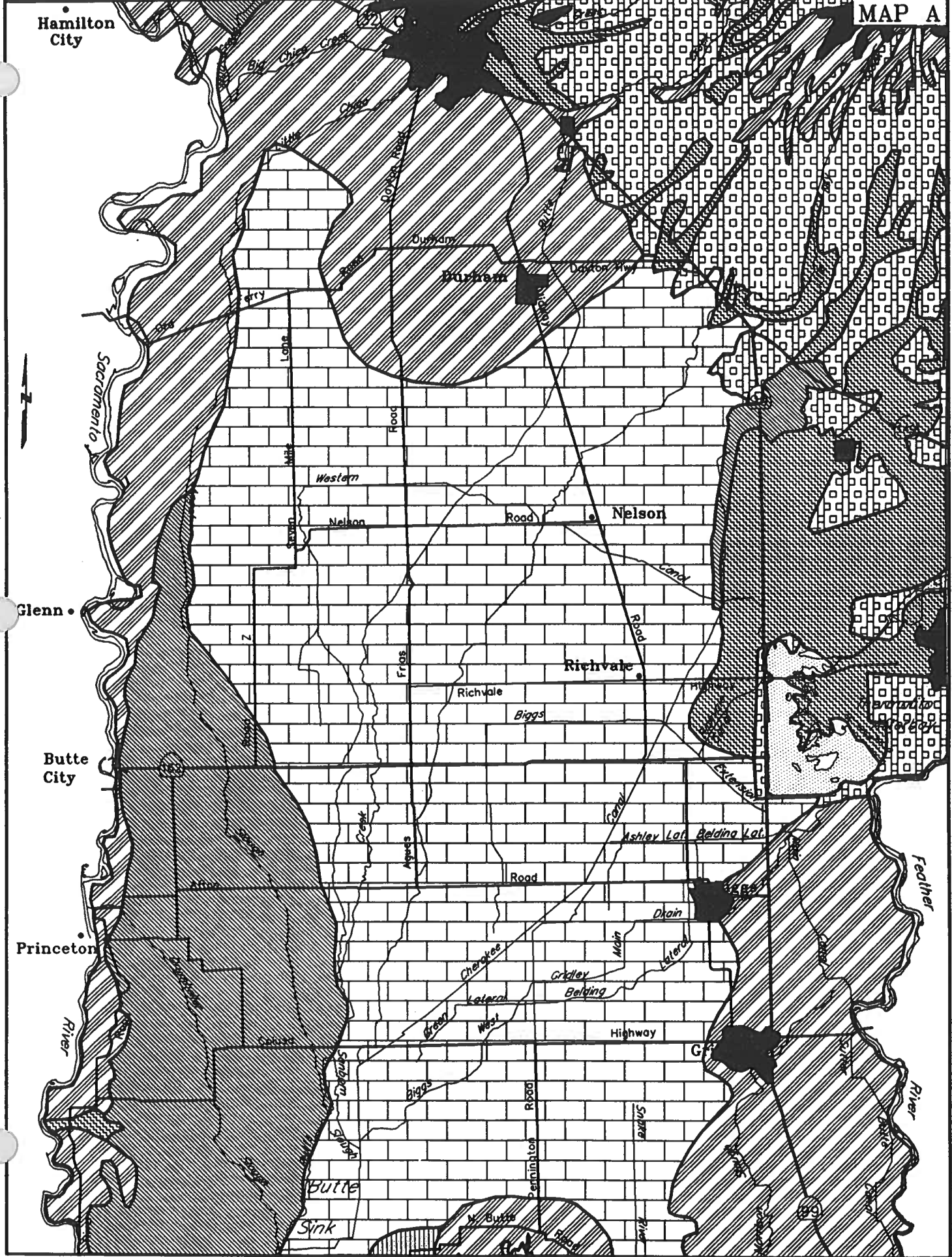
Urban



Nonirrigable



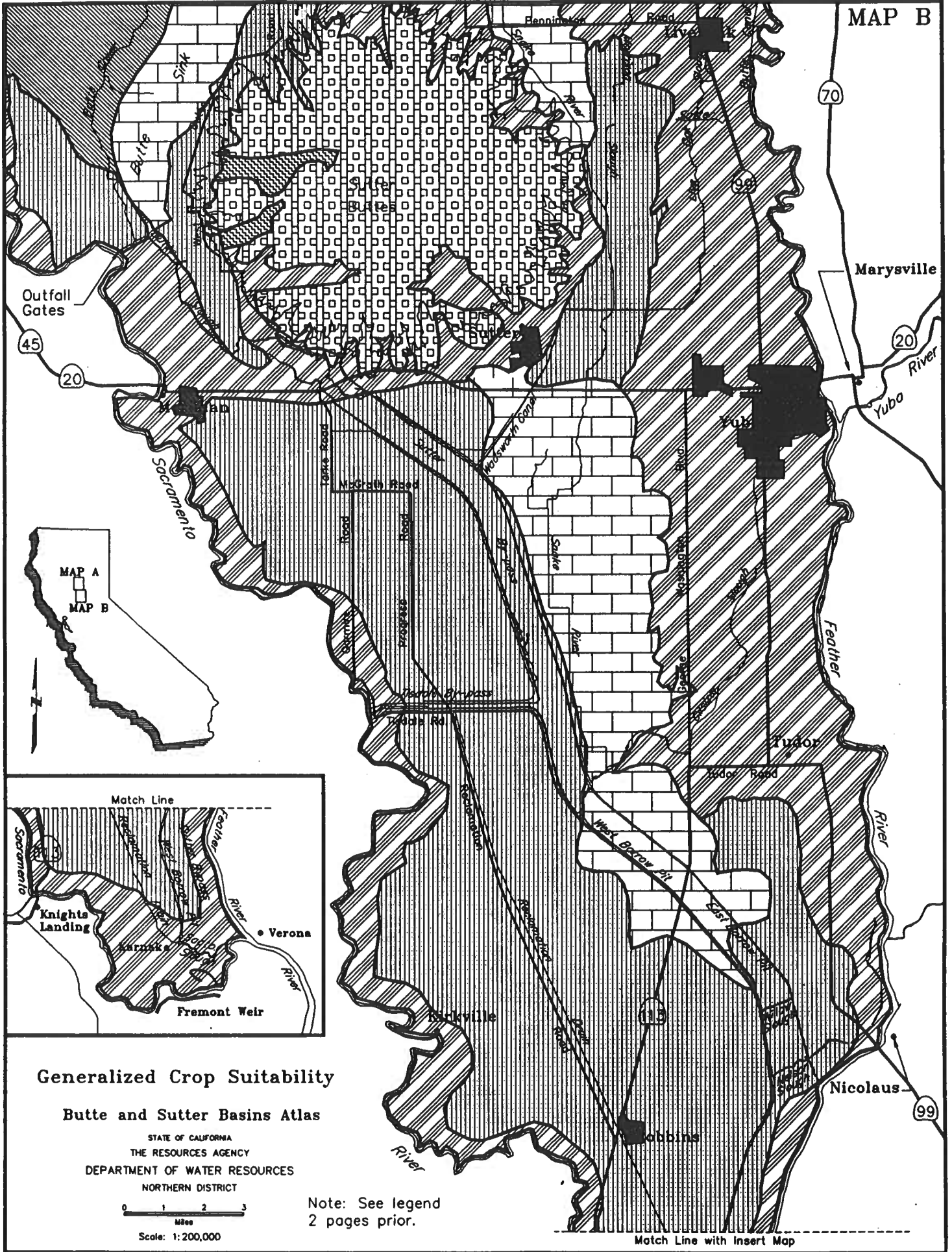
Miscellaneous Truck
and Field



Match line with MAP B

Match Line with MAP A

MAP B



Generalized Crop Suitability

Butte and Sutter Basins Atlas

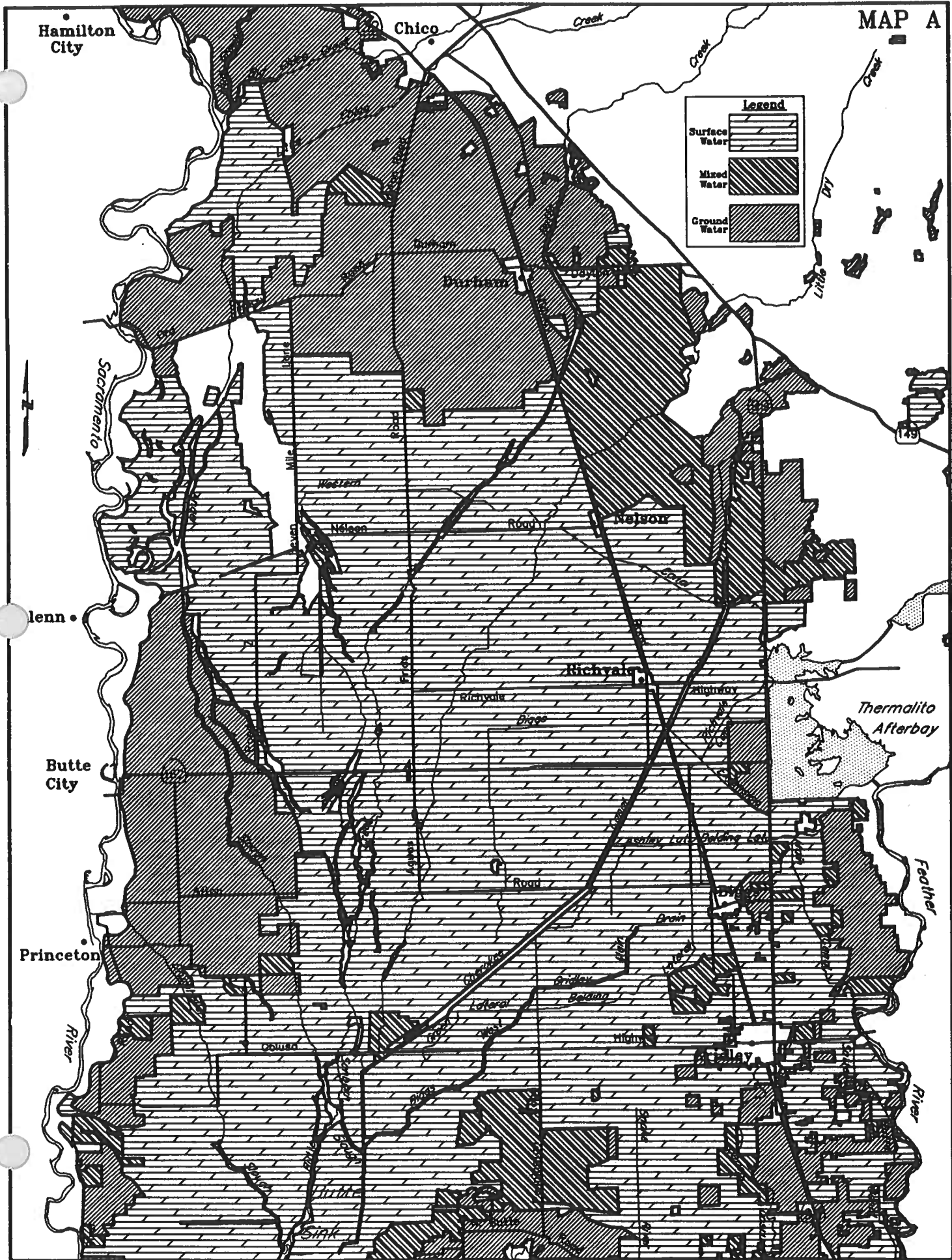
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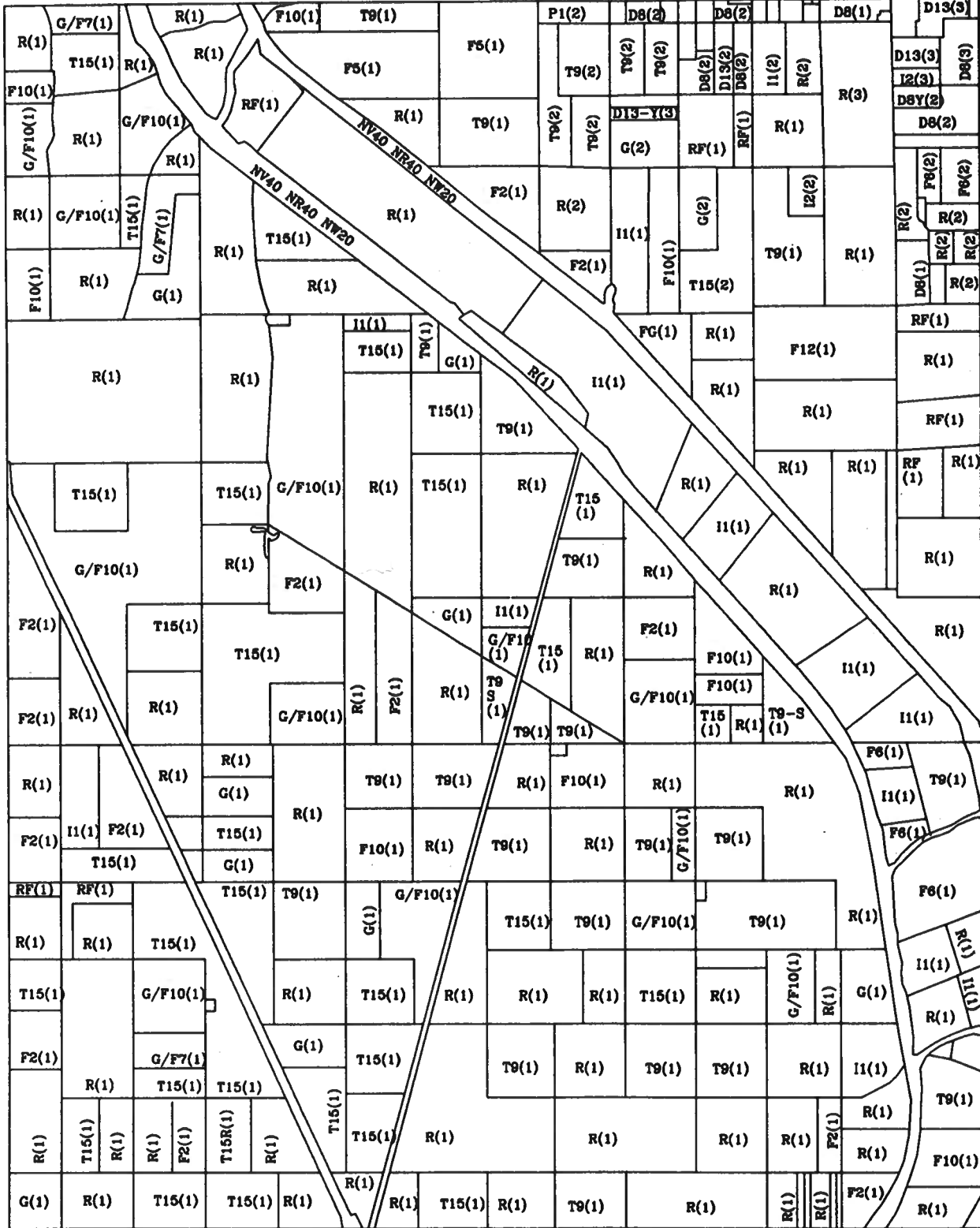


Scale: 1:200,000

Note: See legend 2 pages prior.

Match Line with Insert Map





Example of Detailed Land Use Map
Available from DWR
Butte and Sutter Basins Atlas

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NORTHERN DISTRICT



Detailed Land Use Map Legend

Butte and Sutter Basins Atlas

AGRICULTURAL CLASSES

G - GRAIN AND HAY CROPS

(subclasses not mapped unless specified)

1. Barley
2. Wheat

3. Oats
6. Miscellaneous and mixed hay and grain

R - RICE

9. Castor beans
10. Beans (dry)
11. Miscellaneous field
12. Sunflowers

F - FIELD CROPS

1. Cotton
2. Safflower
3. Flax
4. Hops

5. Sugar beets
6. Corn (field or sweet)
7. Grain sorghums
8. Sudan

P - PASTURE

1. Alfalfa and alfalfa mixture
2. Clover

3. Mixed pasture
4. Native pasture

5. Induced high water native pasture
7. Turf farms

T - TRUCK AND BERRY CROPS

1. Artichokes
2. Asparagus
3. Beans (green)
4. Cole crops
6. Carrots
7. Celery
8. Lettuce (all types)

9. Melons, squash, and cucumbers
10. Onions and garlic
11. Peas
12. Potatoes
13. Sweet potatoes
14. Spinach
15. Tomatoes
16. Flowers and nursery

18. Miscellaneous truck
19. Bushberries
20. Strawberries
21. Peppers (chili, bell, etc.)
22. Broccoli
23. Cabbage
24. Cauliflower
25. Brussels sprouts

D - DECIDUOUS FRUITS AND NUTS

1. Apples
2. Apricots
3. Cherries
5. Peaches and nectarines

6. Pears
7. Plums
8. Prunes
9. Figs

10. Miscellaneous deciduous
12. Almonds
13. Walnuts
14. Pistachios

C - SUBTROPICAL FRUITS

1. Grapefruit
2. Lemons
3. Oranges

4. Dates
5. Avocados
6. Olives

7. Miscellaneous subtropical
8. Kiwis

I - IDLE

1. Land cropped in past 3 years, but not tilled at time of survey.
2. New lands being prepared for crop production.

NATIVE CLASSES

(subclasses not mapped unless specified, -xx is percentage)

NV - NATIVE VEGETATION

1. Grass land
2. Light brush
3. Medium brush
4. Heavy brush
5. Brush and timber
6. Forest

NR - RIPARIAN VEGETATION

1. Marsh lands, tules, and sedges
2. Natural high water table meadow
3. Trees, shrubs, or other larger streamside or watercourse vegetation

4. Seasonal duck marsh, dry or only partially wet during summer
5. Permanent duck marsh, flooded during summer

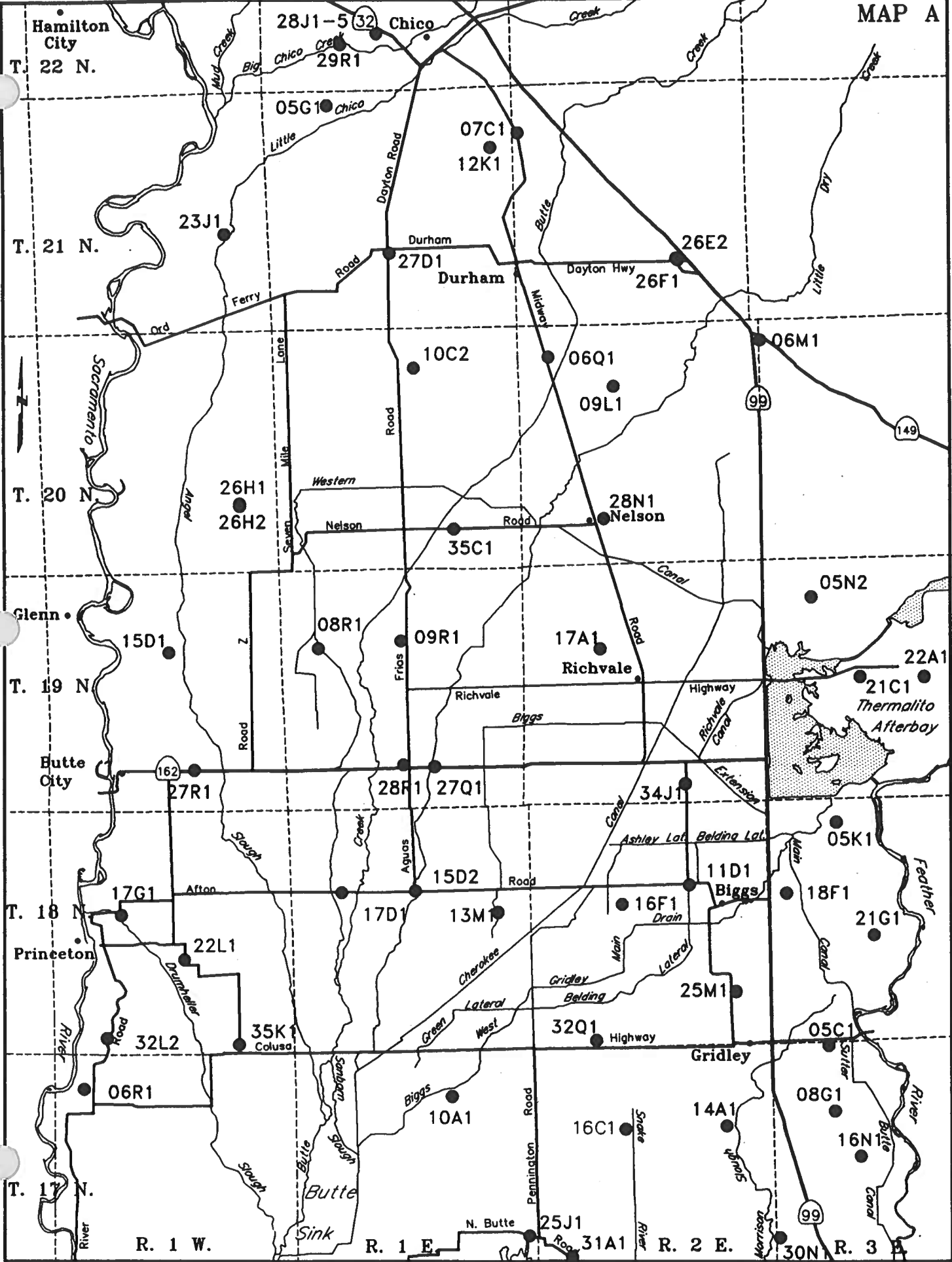
NW - NATURAL WATER - lakes, reservoirs, rivers, canals, etc.

IRRIGATION WATER SOURCE

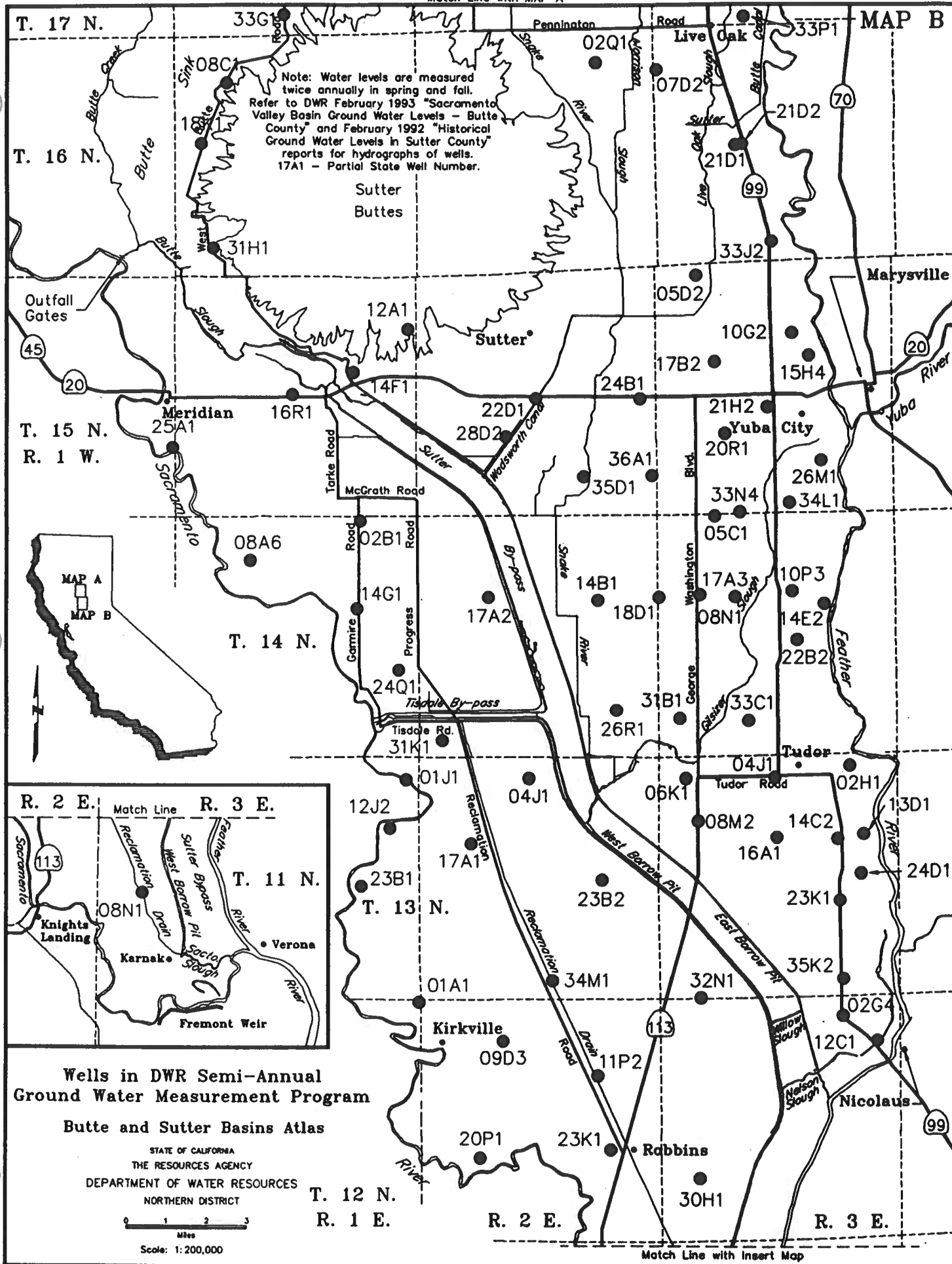
(1) Surface water

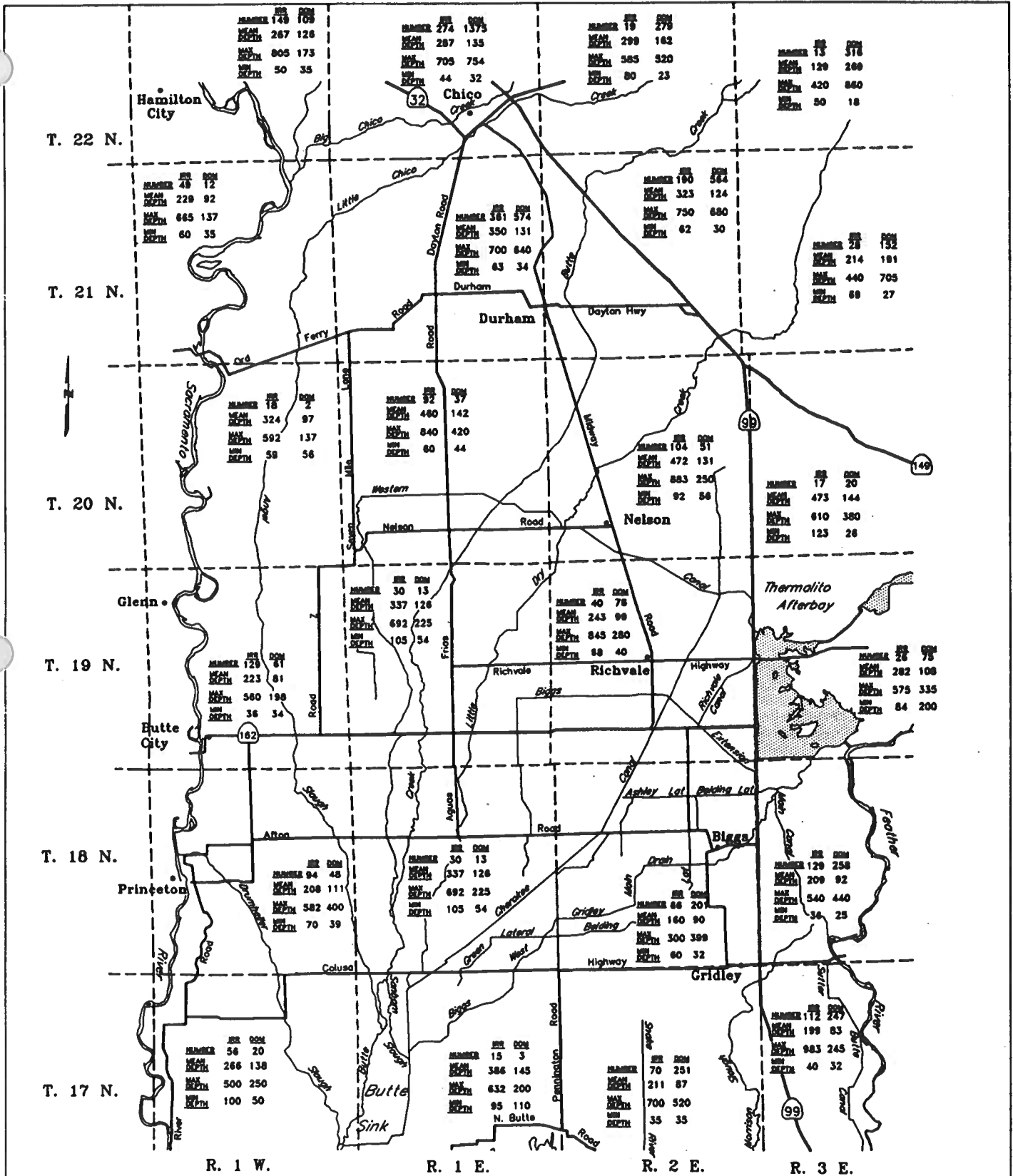
(2) Mixed water

(3) Ground water



Match line with MAP B





**Generalized Well Statistics
Within Each Township
Butte and Sutter Basins Atlas**

Note: Based on the number of Well Completion Reports in DWR files.

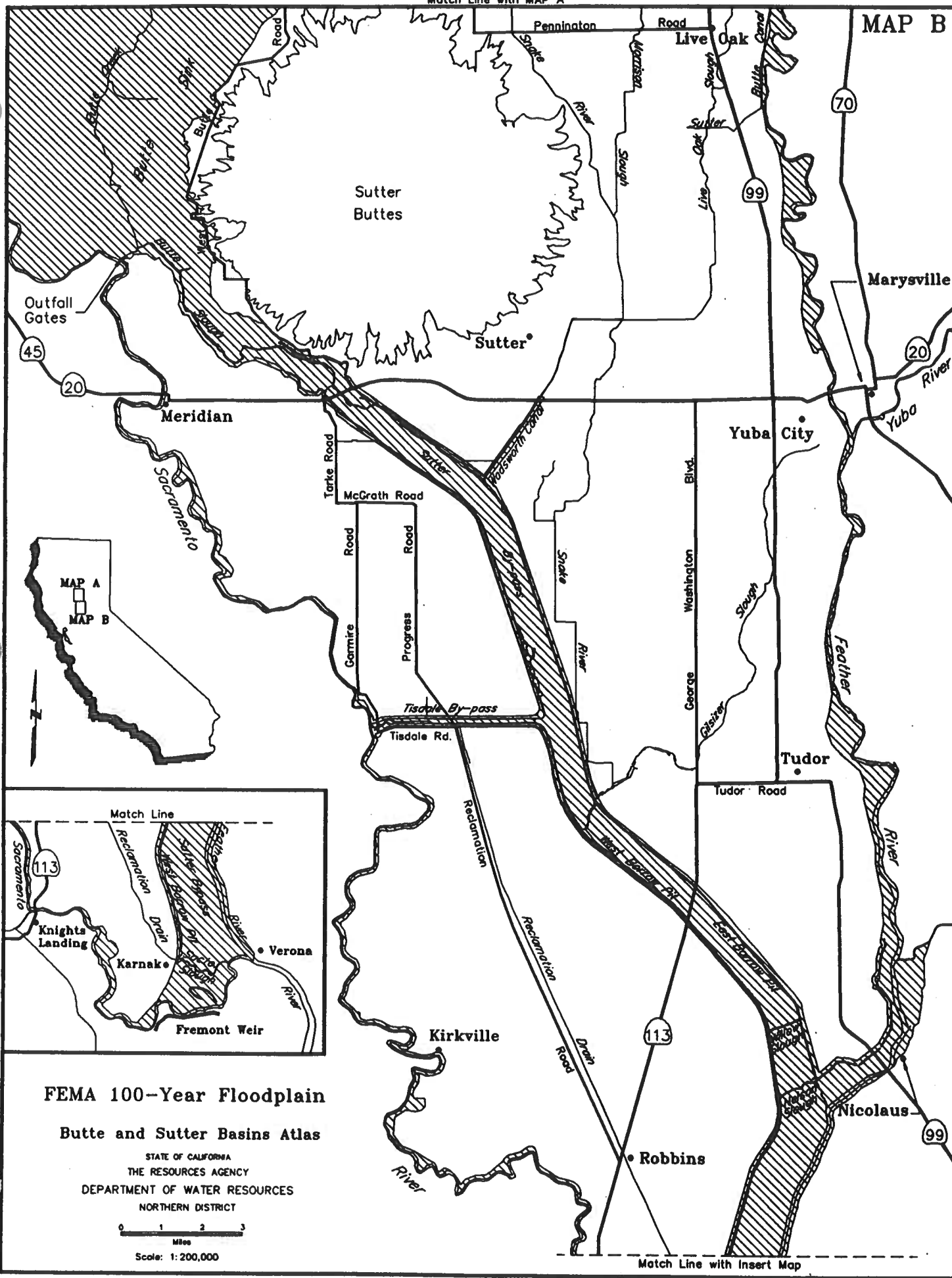
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Legend
IRR - Irrigation
DOM - Domestic
Depth values in feet.



Match Line with MAP A

MAP B



FEMA 100-Year Floodplain

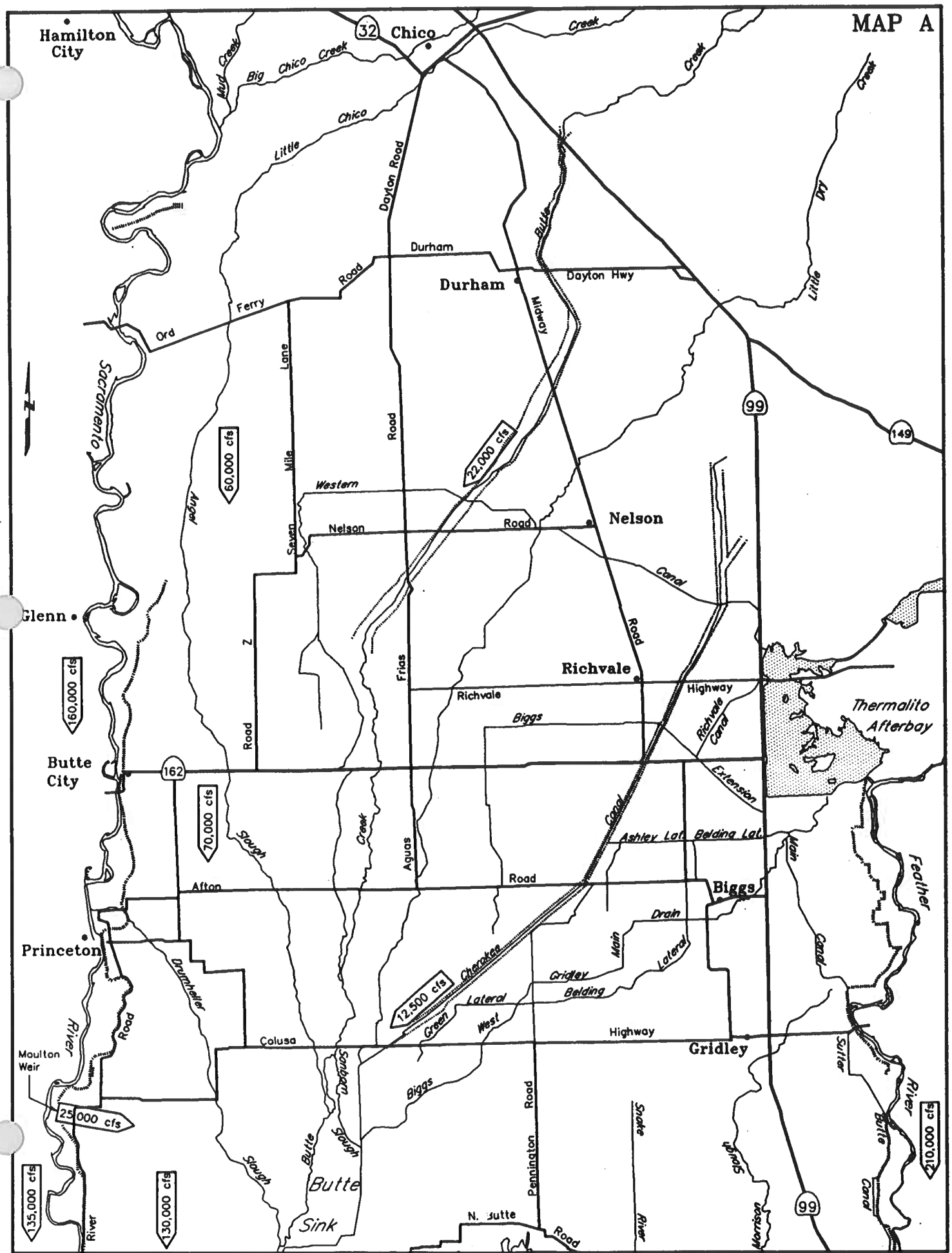
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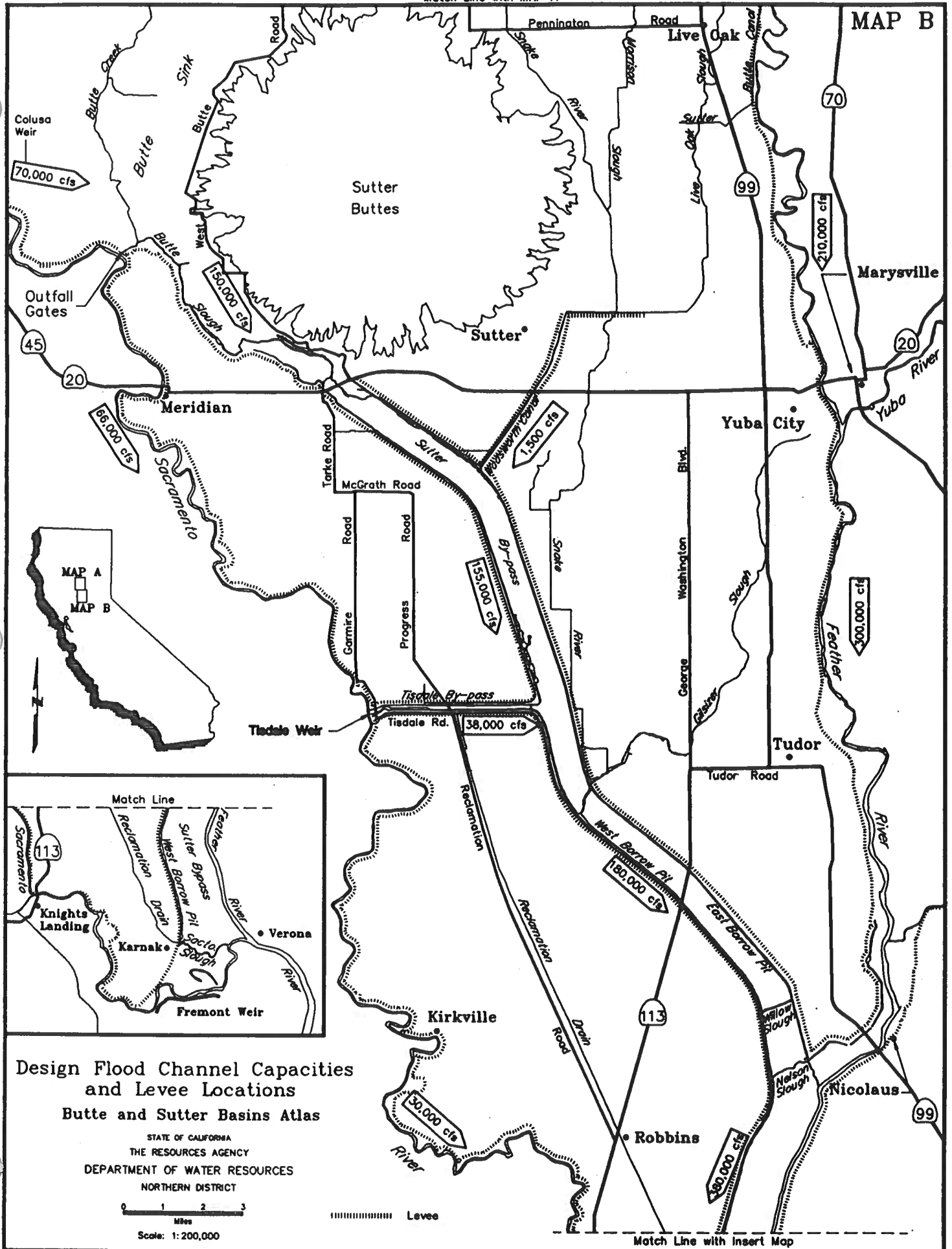


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Match Line with Insert Map



Match line with MAP B



Design Flood Channel Capacities and Levee Locations
Butte and Sutter Basins Atlas

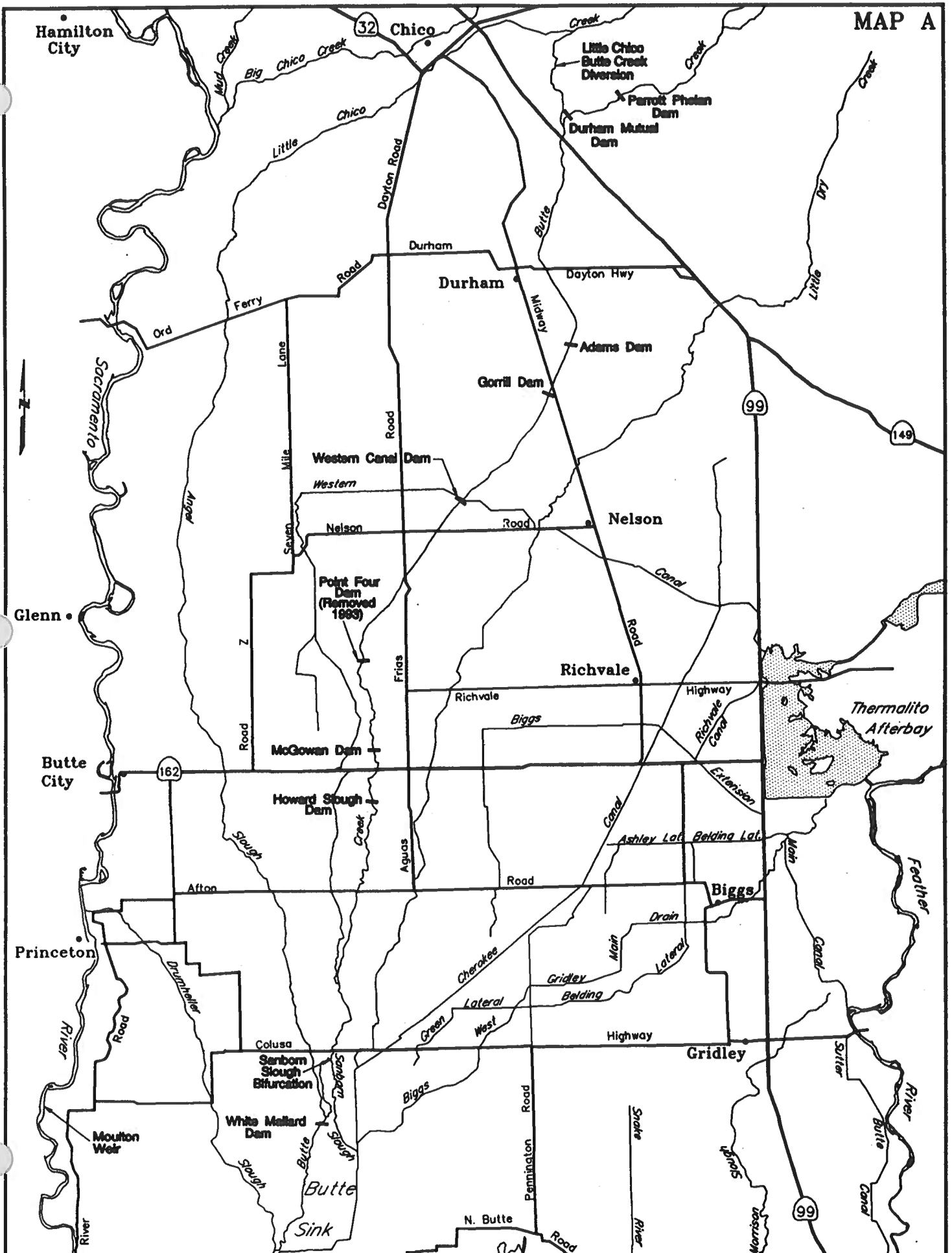
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Scale: 1:200,000

----- Levee

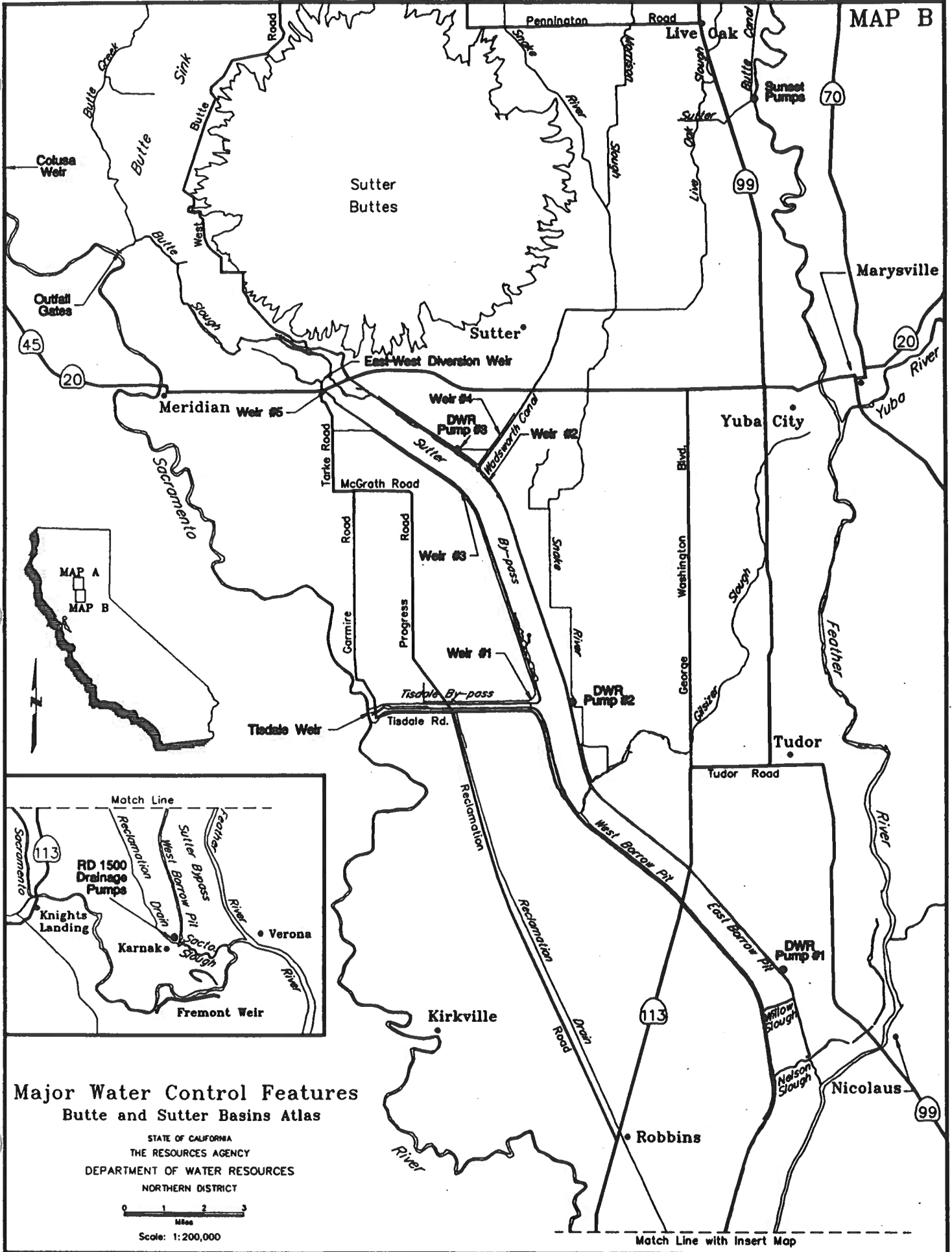
Match Line with Insert Map



Match line with MAP B

Match Line with MAP A

MAP B



**Major Water Control Features
Butte and Sutter Basins Atlas**

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NORTHERN DISTRICT



Scale: 1:200,000

**Sacramento River
at Hamilton City**
DWR A02630
1945 - present
8,973 TAF/yr
Max 19,886 TAF
Min 4,336 TAF

**Big Chico Creek
at Chico**
DWR A04260
1956 - present
50.0 TAF/yr
12.8 TAF/irr
Max 121.6 TAF
Min 7.1 TAF

**Little Chico Creek
Diversion near Chico**
DWR A04910
1959 - present
1.6 TAF/yr
0.1 TAF/irr
Max 32.5 TAF
Min 0.0 TAF

**Little Chico Creek
near Chico**
DWR A04280
1959 - present
21.0 TAF/yr
3.0 TAF/irr
Max 56.9 TAF
Min 2.9 TAF

**Butte Creek
near Chico**
USGS 11390000
1930 - present
289.7 TAF/yr
111.2 TAF/irr
Max 596.5 TAF
Min 68.1 TAF

**Butte Creek
near Durham**
DWR A04265
1959 - present
252.7 TAF/yr
64.9 TAF/irr
Max 587.2 TAF
Min 27.1 TAF

**Western Canal
at intake**
USGS 11406880
1967 - present
226.6 TAF/yr
190.3 TAF/irr
Max 291.7 TAF
Min 157.4 TAF

**Richvale Canal
at intake**
USGS 11406890
1968 - present
80.7 TAF/yr
78.0 TAF/irr
Max 105.9 TAF
Min 48.0 TAF

**PG&E Lateral
at intake**
USGS 11406900
1968 - present
3.4 TAF/yr
3.3 TAF/irr
Max 4.3 TAF
Min 2.7 TAF

**Sutter Butte Canal
at intake**
USGS 11406910
1967 - present
459.9 TAF/yr
422.3 TAF/irr
Max 555.4 TAF
Min 291.0 TAF

**Feather River
near Gridley**
USGS 11407150
1964 - present
3,595 TAF/yr
Max 8,603 TAF
Min 855.0 TAF

**Little Chico Creek
below Chico**
DWR A04270
1991 - present
11.5 TAF/yr
0.8 TAF/irr
Max 11.6 TAF
Min 11.5 TAF

**Sacramento River
at Ord Ferry**
DWR A02570
1948 - present
9,670 TAF/yr
Max 22,928 TAF
Min 4,340 TAF

**Butte Creek below
Western Canal Dam**
DWR A04158
1992 - present
149.3 TAF/yr
32.5 TAF/irr

**Sacramento River
at Butte City**
USGS 11389000
1921 - present
9,607 TAF/yr
Max 21,880 TAF
Min 4,191 TAF

**Butte Creek
near Gridley**
DWR A04150
1991 - present
51.2 TAF/irr

**Sacramento River
at Moulton Weir**
DWR A02445
1940 - present
Gage Height only

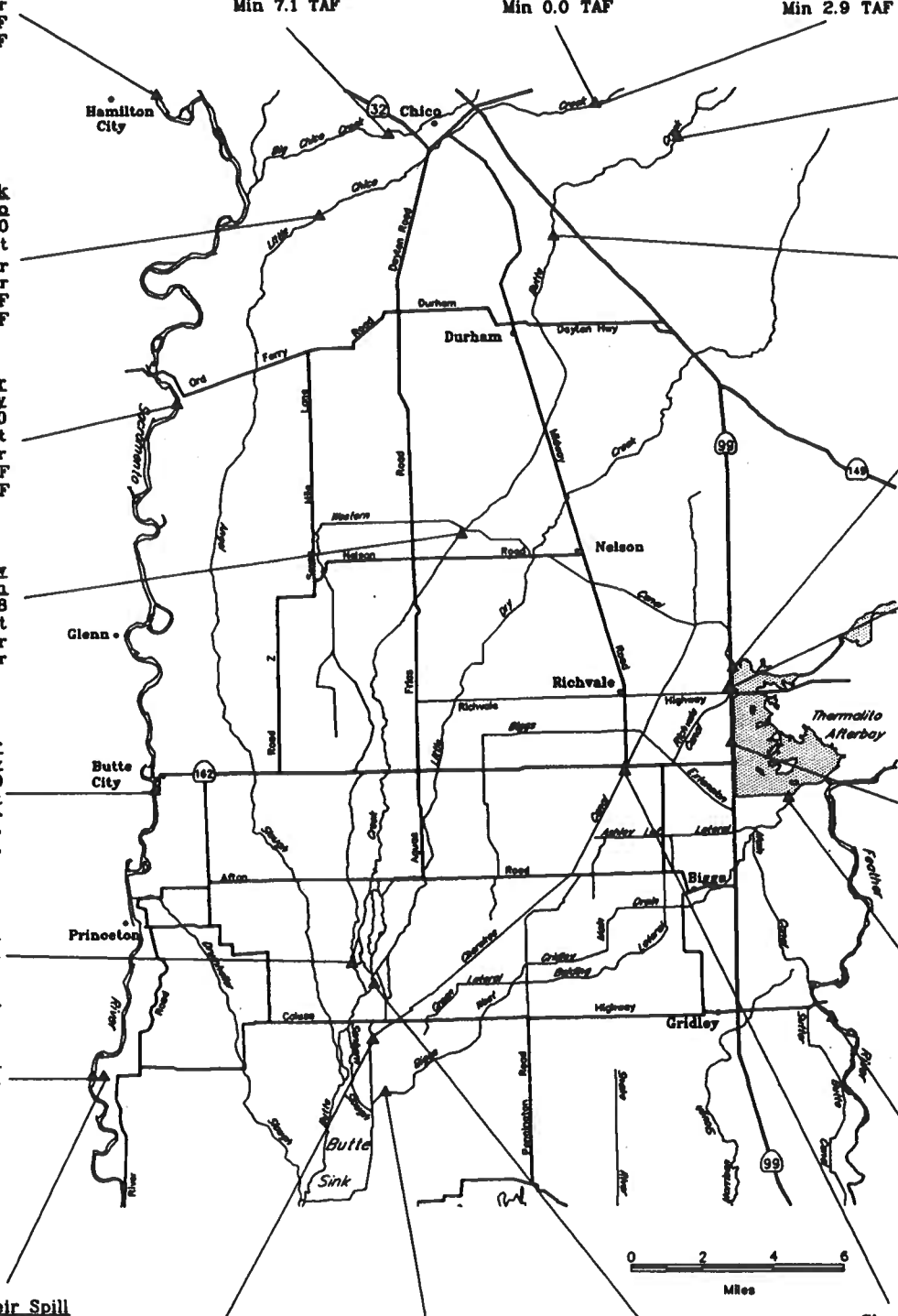
**Moulton Weir Spill
to Butte Basin**
DWR A02986
1940 - present
149.1 TAF/yr
10.9 TAF/irr
Max 993.6 TAF
Min 0.0 TAF

**Cherokee Canal
near Gridley**
DWR A00910
1991 - present
6.9 TAF/irr

**Biggs West Gridley
Main Drain at
Cherokee Canal**
DWR A02980
1991 - present
12.1 TAF/irr

**Little Dry Creek
at Butte Creek**
DWR A04120
1991 - present
6.3 TAF/irr

**Cherokee Canal
near Richvale**
DWR A02984
1960 - present
87.0 TAF/yr
15.5 TAF/irr
Max 180.3 TAF
Min 8.8 TAF



Colusa Weir Spill to Butte Basin
 DWR A02981
 1940 - present
 1,097 TAF/yr
 100.1 TAF/irr
 Max 5,949 TAF
 Min 0.0 TAF

Butte Slough at Outfall Gates
 DWR A02967
 1924 - present
 165.7 TAF/yr
 83.5 TAF/irr
 Max 369.8 TAF
 Min 10.2 TAF

Wadsworth Canal near Sutter
 DWR A05929
 1939 - present
 84.1 TAF/yr
 42.1 TAF/irr
 Max 180.2 TAF
 Min 14.5 TAF

LEGEND
 yr - Water Year
 Oct - Sep
 irr - Irrigation Season
 Apr - Sep
 Note: Max and Min are total water year discharge extremes for period of record.
 TAF - Thousands of acre feet
 RD - Reclamation District

Sacramento River at Colusa
 USGS 11389500
 1921 - present
 8,317 TAF/yr
 Max 15,770 TAF
 Min 4,106 TAF

Butte Slough at Mawson Bridge
 DWR A02971
 1939 - 1966
Butte Slough near Meridian
 DWR A02972
 1967 - present
 1,789 TAF/yr
 242.2 TAF/irr
 Max 5,496 TAF
 Min 100.1 TAF

Sacramento River at Tisdale Weir
 DWR A02301
 1940 - present
 Gage Height only

Tisdale Spill to Sutter Bypass
 DWR A02960
 1940 - present
 718.2 TAF/yr
 86.1 TAF/irr
 Max 4,195 TAF
 Min 0.0 TAF

RD 1660 Drain to Tisdale Bypass
 DWR A02983
 1955 - present
 23.9 TAF/yr
 11.6 TAF/irr
 Max 44.3 TAF
 Min 5.0 TAF

Sacramento River below Wilkins Slough near Grimes
 USGS 11390500
 1931 - present
 7,354 TAF/yr
 Max 13,020 TAF
 Min 3,699 TAF

Sacramento River at Knights Landing
 DWR A02200
 1921 - present
 Gage Height only

RD 1500 Drain to Sacramento Slough
 DWR A02926
 1929 - present
 171.7 TAF/yr
 118.1 TAF/irr
 Max 285.0 TAF
 Min 42.3 TAF

RD 70 Drain to Sacramento River
 DWR A02965
 1924 - present
 21.3 TAF/yr
 11.6 TAF/irr
 Max 50.6 TAF
 Min 3.7 TAF

RD 1660 Drain to Sutter Bypass
 DWR A05922
 1955 - present
 8.2 TAF/yr
 4.8 TAF/irr
 Max 44.1 TAF
 Min 0.8 TAF

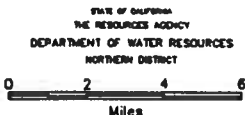
Willow Slough to West Borrow Pit
 DWR A02943
 1991 - present
 Partial Record

Sutter Bypass at RD 1500 Pumping Plant
 DWR A02927
 1915 - present
 Gage Height only

Sacramento Slough to Sacramento River
 DWR A02925
 1924 - present
 462.1 TAF/yr
 457.2 TAF/irr
 Max 720.2 TAF
 Min 277.8 TAF
 Note: Average and max are not available due to periods of bypass flooding that are not measurable.



Surface Water Discharge Measurement Stations
 Butte and Sutter Basins Atlas



STATE OF CALIFORNIA
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 NORTHERN DISTRICT



M & T Ranch
DWR A00-5223
1939 - present

Chico Experiment
Station
DWR A00-1715
1870 - 1874

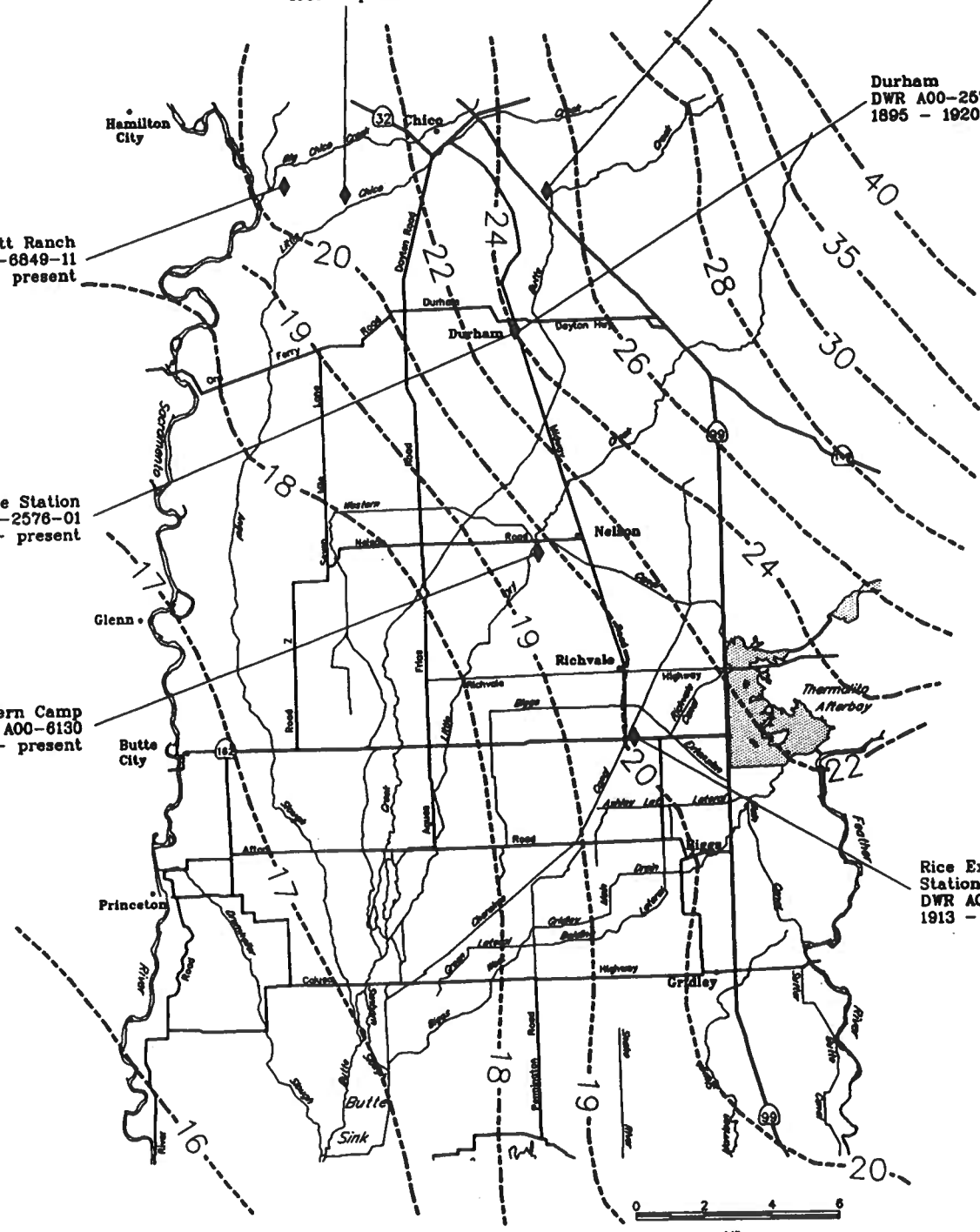
Durham
DWR A00-2576
1895 - 1920

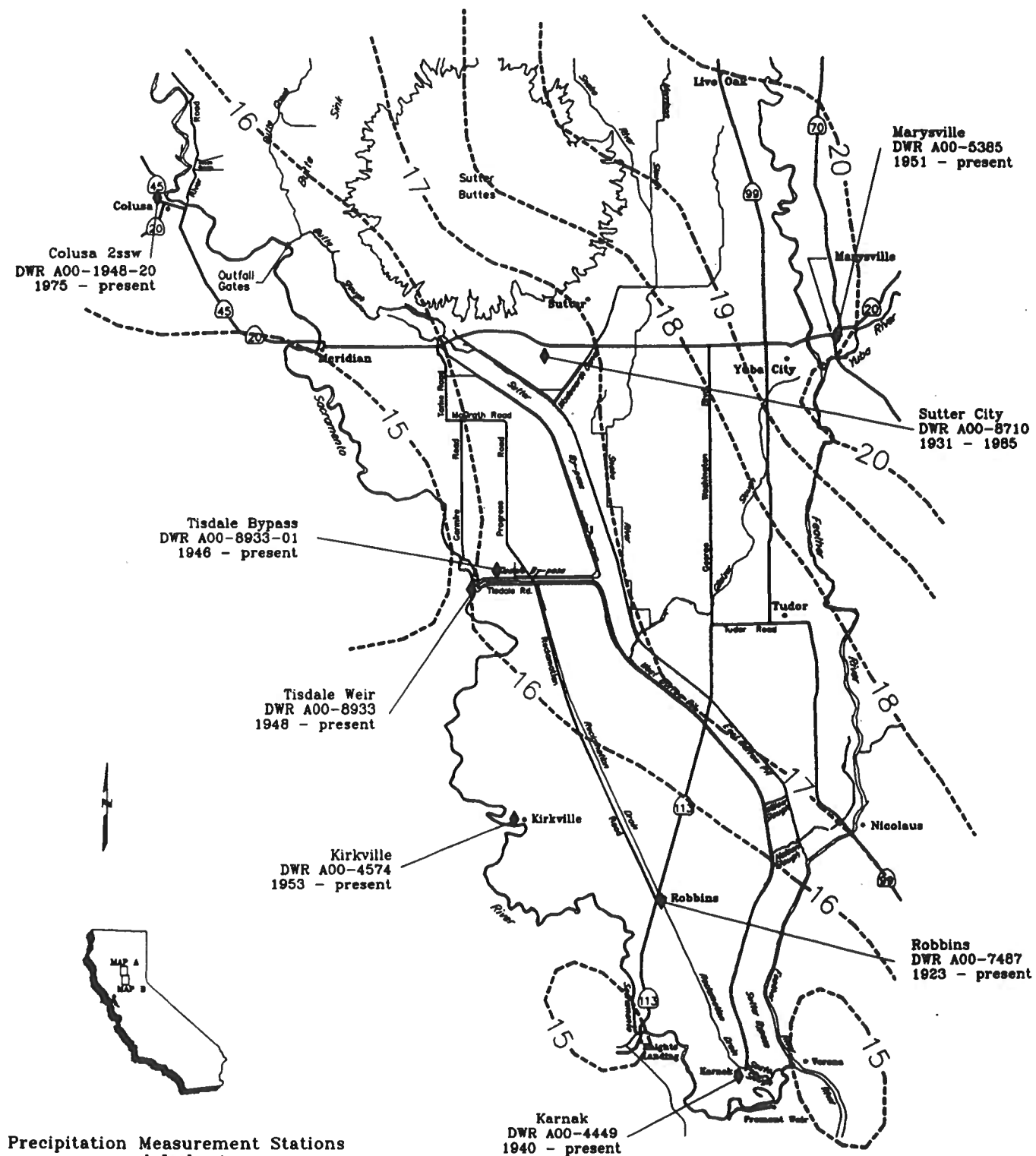
Phelan Parrott Ranch
DWR A00-8849-11
1924 - present

Durham Fire Station
DWR A00-2576-01
1964 - present

Nelson Western Camp
DWR A00-6130
1917 - present

Rice Experiment
Station
DWR A00-7390
1913 - 1961





Precipitation Measurement Stations and Isohyets
Butte and Sutter Basins Atlas

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
NORTHERN DISTRICT

0 2 4 6
Miles

-----17----- Isohyet - Line of equal precipitation (inches) for the 50 year period from 1911 to 1960.
J. D. Goodridge, 1966



Sacramento River
at Hamilton City
DWR A02630
1945 - present

Big Chico Creek
at Chico
DWR A04250
1956 - present

Butte Creek
near Chico
DWR A41110
USGS 11390000
1930 - present

Butte Creek
at Gorrill Dam
DWR A04163
1990 - present

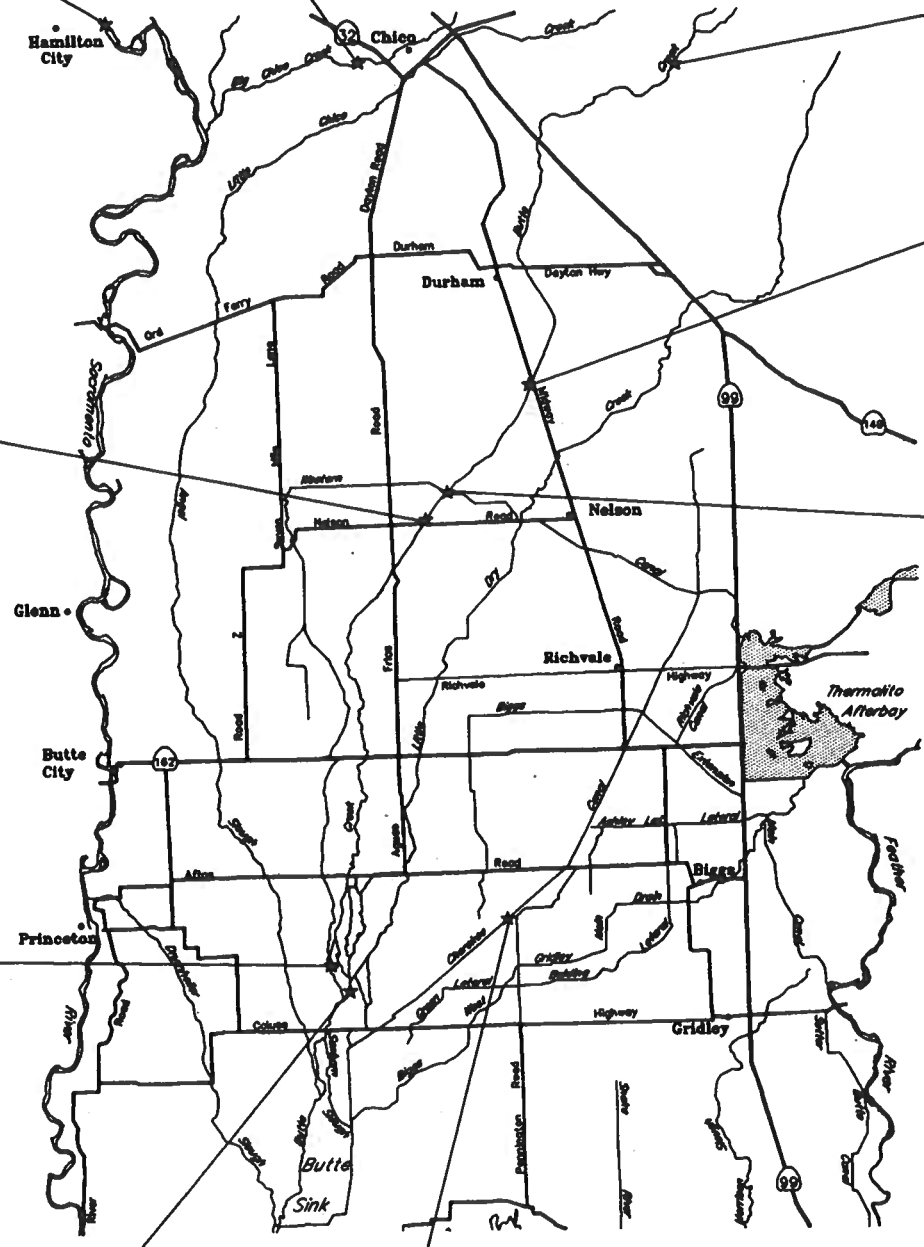
Butte Creek
below Western Canal
DWR A04160
1990 - present

Western Canal
at Butte Creek
DWR A05995
1991 - present

Butte Creek
near Gridley
DWR A04150
1990 - present

Little Dry Creek
at Butte Creek
DWR A04120
1991 - present

Cherokee Canal
below Main Drain
DWR A00808
1991 - present



Butte Slough
at Butte Creek
DWR A04105
1991 - present

Sacramento River
at Colusa
DWR A02420
USGS 11389500
1921 - present

Sutter Bypass
below Wadsworth Canal
DWR A02948
1990 - present

Sutter Bypass
below Tisdale Bypass
DWR A02947
1991 - present

Sutter Bypass
below Pumping Plant 2
DWR A02946
1990 - present

Sutter Bypass
below Pumping Plant 1
DWR A02943
1990 - present

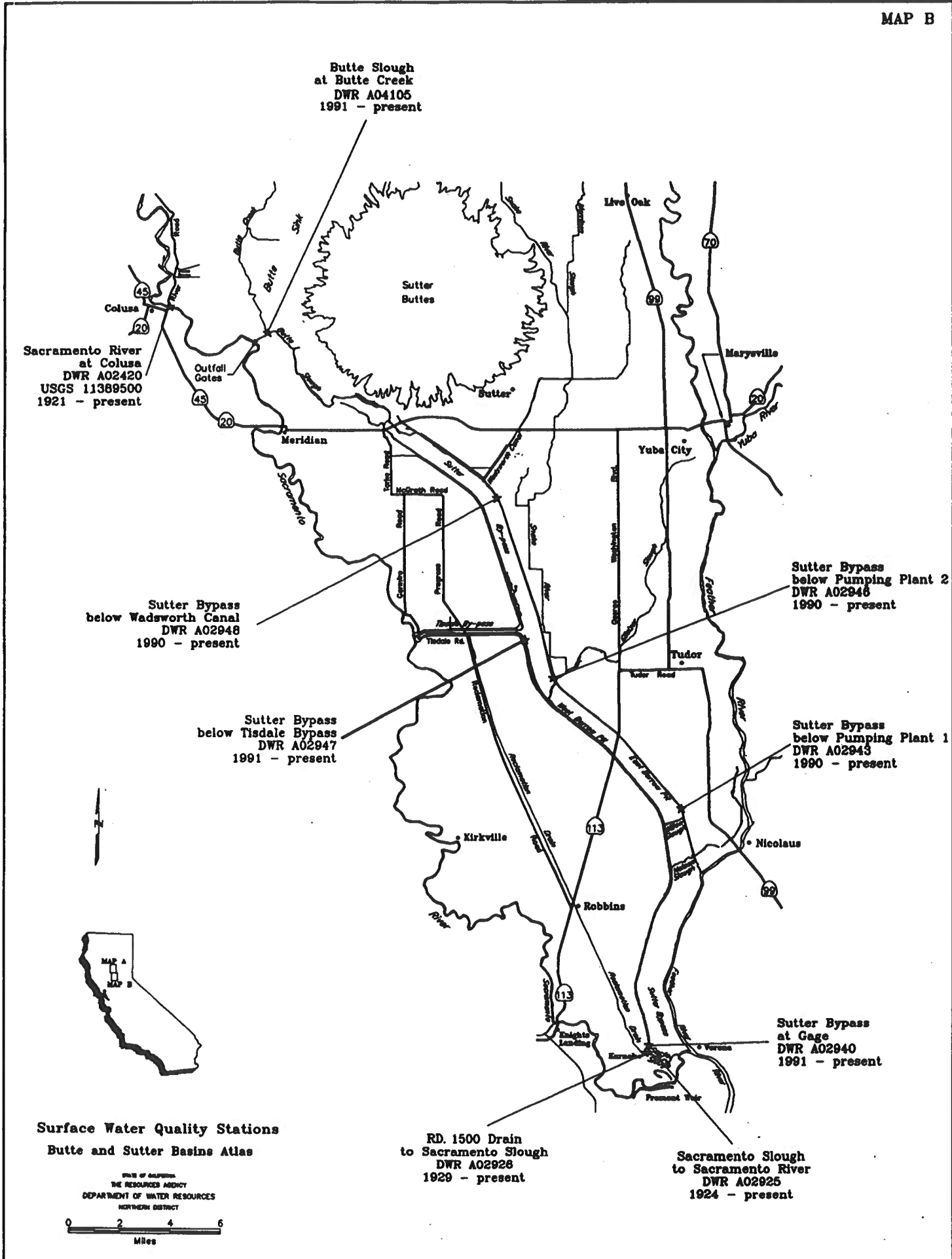
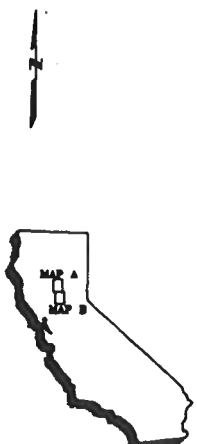
Sutter Bypass
at Gage
DWR A02940
1991 - present

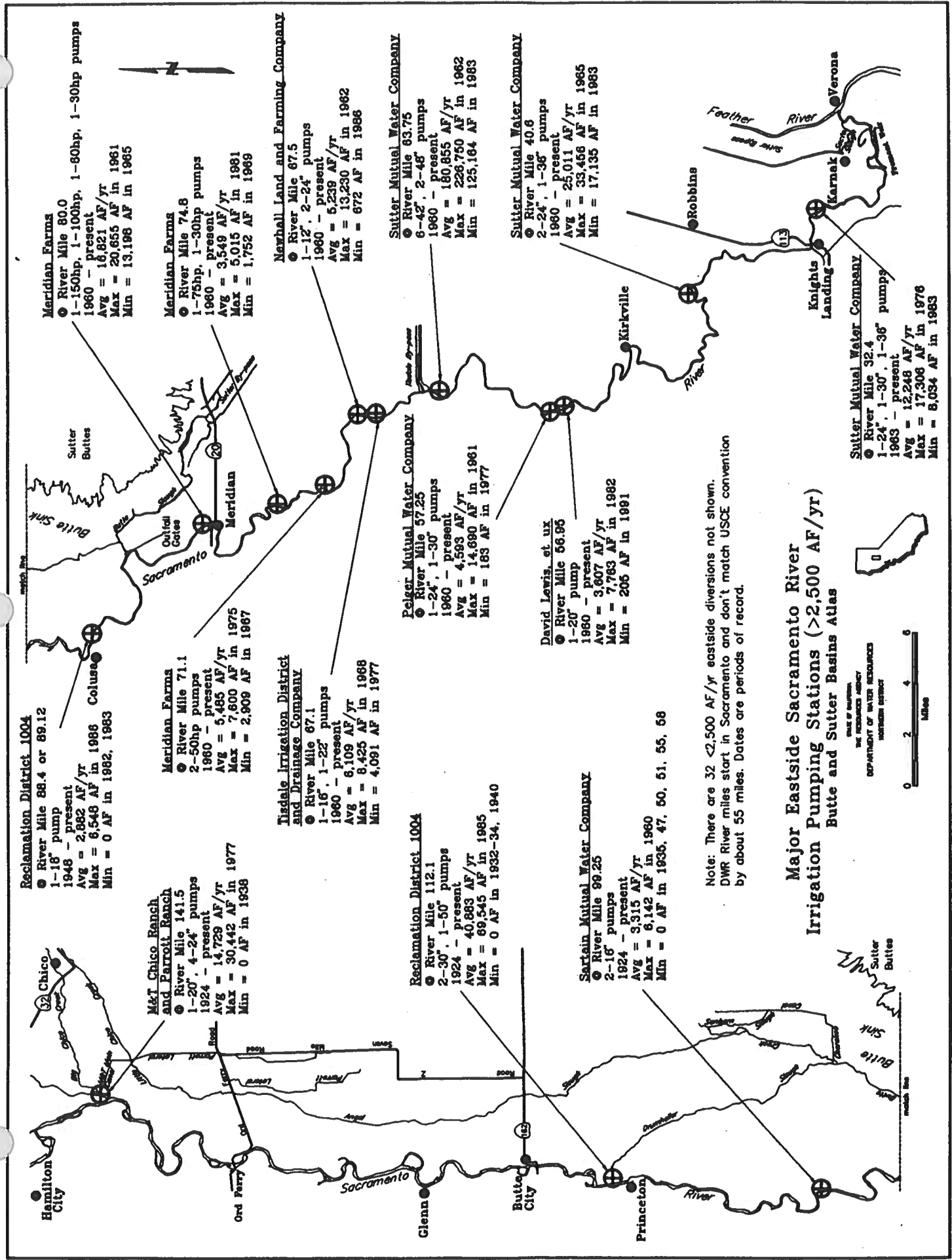
RD. 1500 Drain
to Sacramento Slough
DWR A02926
1929 - present

Sacramento Slough
to Sacramento River
DWR A02925
1924 - present

Surface Water Quality Stations
Butte and Sutter Basins Atlas

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
NORTHERN DISTRICT





Reclamation District 1004
 ● River Mile 88.4 or 89.12
 1-18" pump
 1948 - present
 Avg = 2,862 AF/yr
 Max = 6,546 AF in 1986
 Min = 0 AF in 1982, 1983

M&T Chico Ranch and Parrott Ranch
 ● River Mile 141.5
 1-20", 4-24" pumps
 1924 - present
 Avg = 14,729 AF/yr
 Max = 30,442 AF in 1977
 Min = 0 AF in 1938

Meridian Farms
 ● River Mile 71.1
 2-50hp pumps
 1960 - present
 Avg = 5,485 AF/yr
 Max = 7,600 AF in 1975
 Min = 2,909 AF in 1967

Tisdale Irrigation District and Drainage Company
 ● River Mile 67.1
 1-16", 1-22" pumps
 1960 - present
 Avg = 6,109 AF/yr
 Max = 8,425 AF in 1968
 Min = 4,091 AF in 1977

Reclamation District 1004
 ● River Mile 112.1
 2-30", 1-50" pumps
 1924 - present
 Avg = 40,863 AF/yr
 Max = 69,545 AF in 1985
 Min = 0 AF in 1932-34, 1940

Sartain Mutual Water Company
 ● River Mile 99.25
 2-16" pumps
 1924 - present
 Avg = 3,315 AF/yr
 Max = 6,142 AF in 1960
 Min = 0 AF in 1935, 47, 50, 51, 55, 58

Meridian Farms
 ● River Mile 80.0
 1-150hp, 1-100hp, 1-80hp, 1-30hp pumps
 1960 - present
 Avg = 16,821 AF/yr
 Max = 20,655 AF in 1981
 Min = 13,198 AF in 1985

Meridian Farms
 ● River Mile 74.8
 1-75hp, 1-30hp pumps
 1960 - present
 Avg = 3,549 AF/yr
 Max = 5,015 AF in 1981
 Min = 1,752 AF in 1969

Nerhall Land and Farming Company
 ● River Mile 67.5
 1-12", 2-24" pumps
 1960 - present
 Avg = 5,239 AF/yr
 Max = 13,230 AF in 1962
 Min = 672 AF in 1986

Sutter Mutual Water Company
 ● River Mile 63.75
 6-42", 2-48" pumps
 1960 - present
 Avg = 180,855 AF/yr
 Max = 226,750 AF in 1962
 Min = 125,184 AF in 1983

Sutter Mutual Water Company
 ● River Mile 40.6
 2-24", 1-36" pumps
 1960 - present
 Avg = 25,011 AF/yr
 Max = 33,456 AF in 1965
 Min = 17,135 AF in 1963

Pelker Mutual Water Company
 ● River Mile 57.25
 1-24", 1-30" pumps
 1960 - present
 Avg = 4,593 AF/yr
 Max = 14,690 AF in 1961
 Min = 163 AF in 1977

David Lewis, et. ux
 ● River Mile 56.96
 1-20" pump
 1960 - present
 Avg = 3,807 AF/yr
 Max = 7,763 AF in 1982
 Min = 266 AF in 1991

Sutter Mutual Water Company
 ● River Mile 32.4
 1-24", 1-30", 1-36" pumps
 1963 - present
 Avg = 12,248 AF/yr
 Max = 17,308 AF in 1976
 Min = 8,034 AF in 1983

Major Eastside Sacramento River Irrigation Pumping Stations (>2,500 AF/yr) Butte and Sutter Basins Atlas

Note: There are 32 <2,500 AF/yr eastside diversions not shown. DWR River miles start in Sacramento and don't match USCE convention by about 55 miles. Dates are periods of record.



WATER SUPPLY IN ACRE FEET

Ground Water Extractions	442,200
Surface Diversion	1,194,800
Tributary Streams	68,800
River Spills	0
Total	1,703,800




MEASURED OUTFLOW IN ACRE FEET

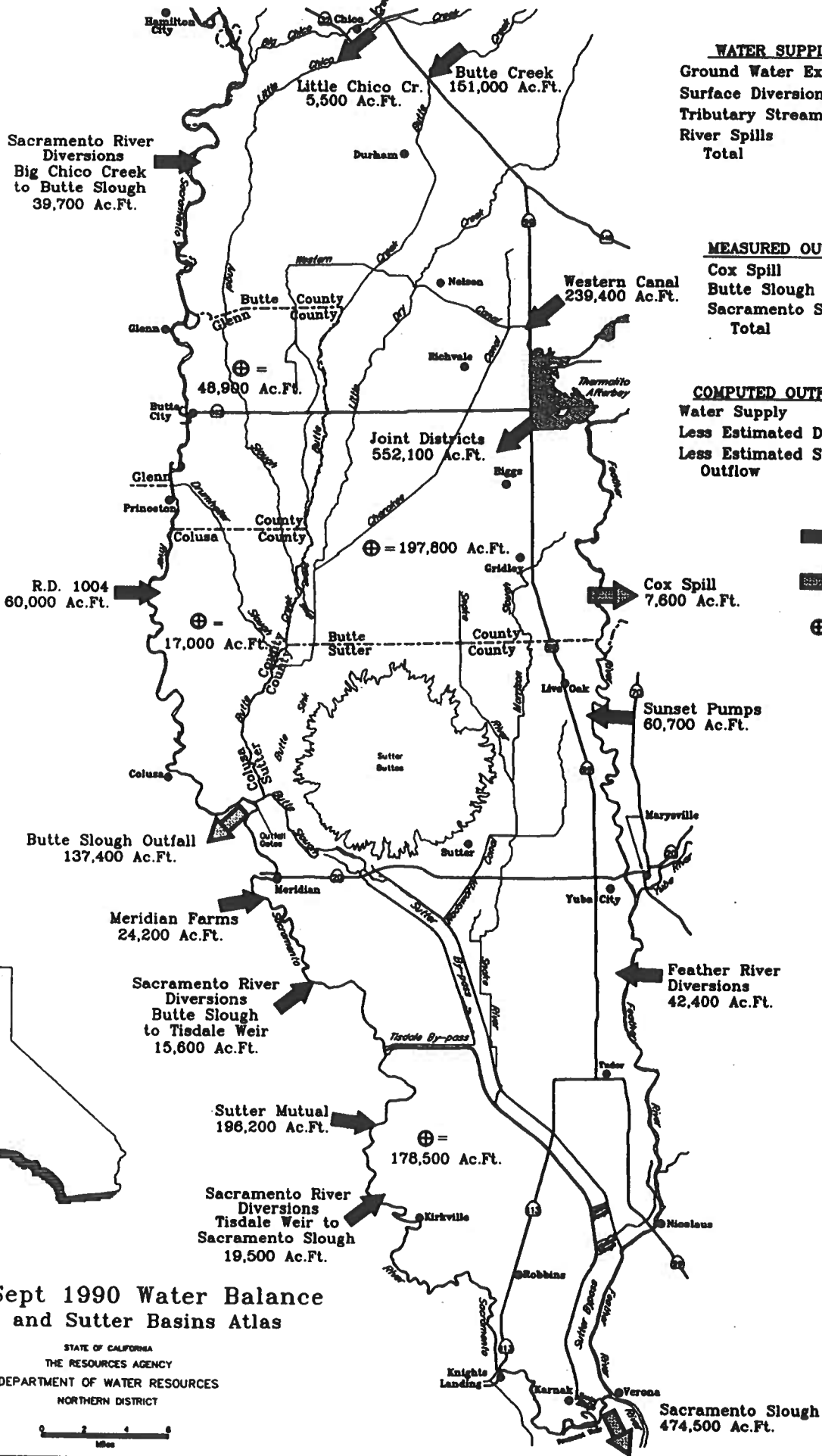
Cox Spill	7,0600
Butte Slough	29,700
Sacramento Slough	278,900
Total	315,600

COMPUTED OUTFLOW IN ACRE FEET

Water Supply	1,703,800
Less Estimated Depletions	1,380,300
Less Estimated Storage	7,700
Outflow	315,800

LEGEND

-  Inflow to Basin
-  Outflow from Basin
-  Indicates total ground water pumped within each county's portion of the study area



Sacramento River Diversions
Big Chico Creek to Butte Slough
39,700 Ac.Ft.

Little Chico Cr.
5,500 Ac.Ft.

Butte Creek
151,000 Ac.Ft.

⊕ =
48,900 Ac.Ft.

Joint Districts
552,100 Ac.Ft.

⊕ =
197,800 Ac.Ft.

R.D. 1004
60,000 Ac.Ft.

⊕ =
17,000 Ac.Ft.

Cox Spill
7,600 Ac.Ft.

Sunset Pumps
80,700 Ac.Ft.

Butte Slough Outfall
137,400 Ac.Ft.

Meridian Farms
24,200 Ac.Ft.

Sacramento River Diversions
Butte Slough to Tisdale Weir
15,600 Ac.Ft.

Sutter Mutual
196,200 Ac.Ft.

⊕ =
178,500 Ac.Ft.

Sacramento River Diversions
Tisdale Weir to Sacramento Slough
19,500 Ac.Ft.

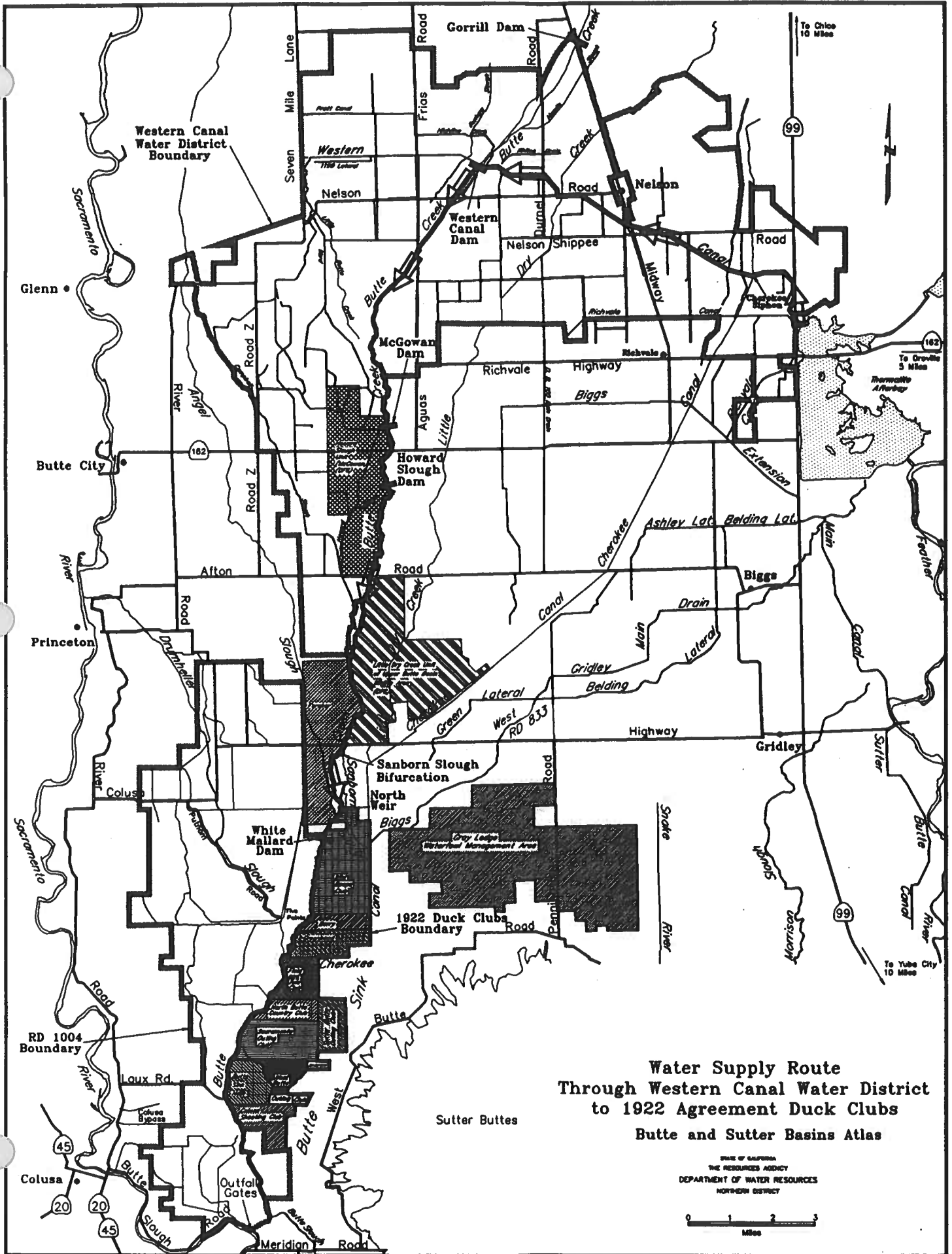
Feather River Diversions
42,400 Ac.Ft.

Sacramento Slough
474,500 Ac.Ft.

**Apr - Sept 1990 Water Balance
Butte and Sutter Basins Atlas**

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
NORTHERN DISTRICT

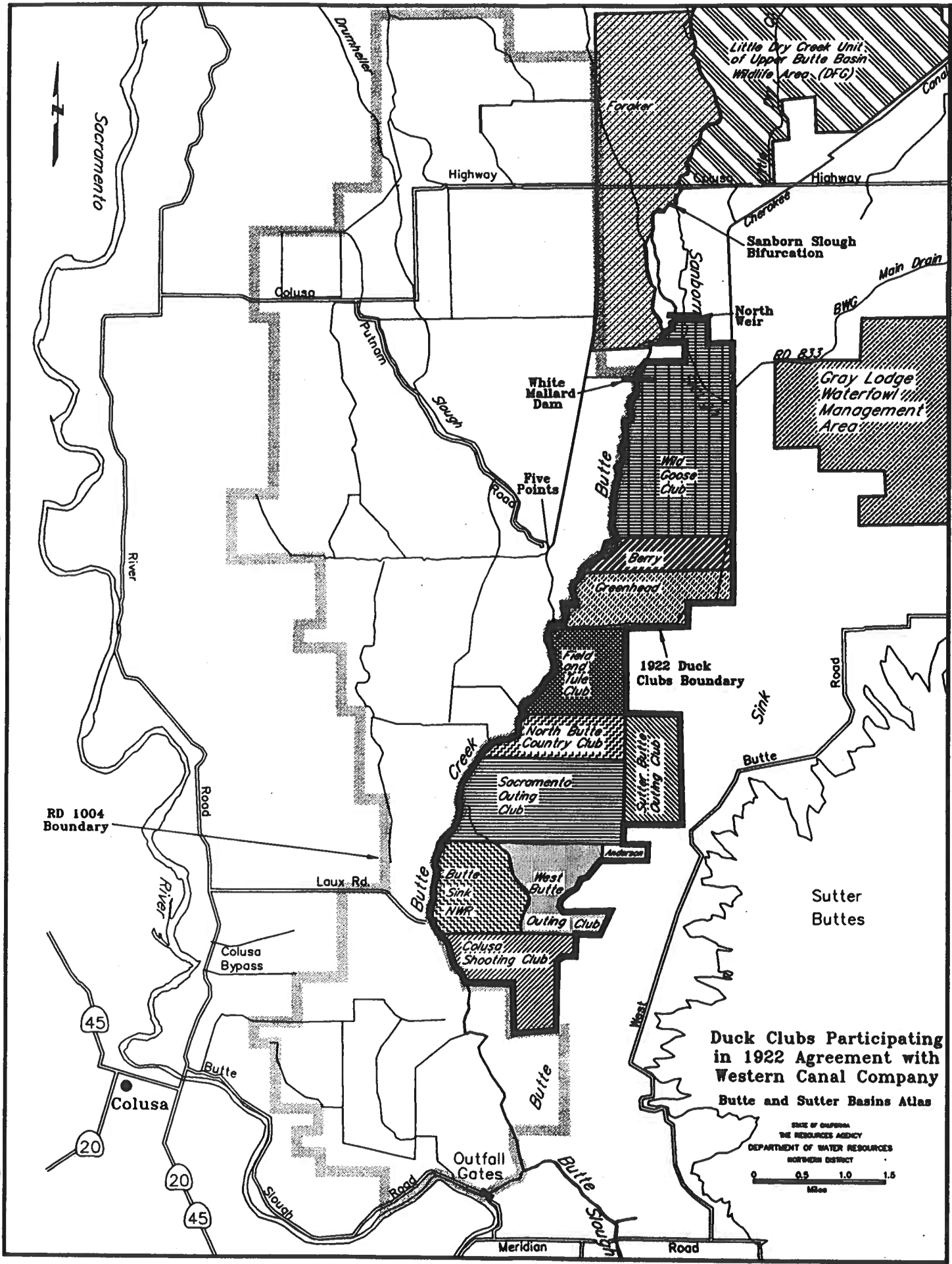




**Water Supply Route
Through Western Canal Water District
to 1922 Agreement Duck Clubs
Butte and Sutter Basins Atlas**

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
NORTHERN DISTRICT

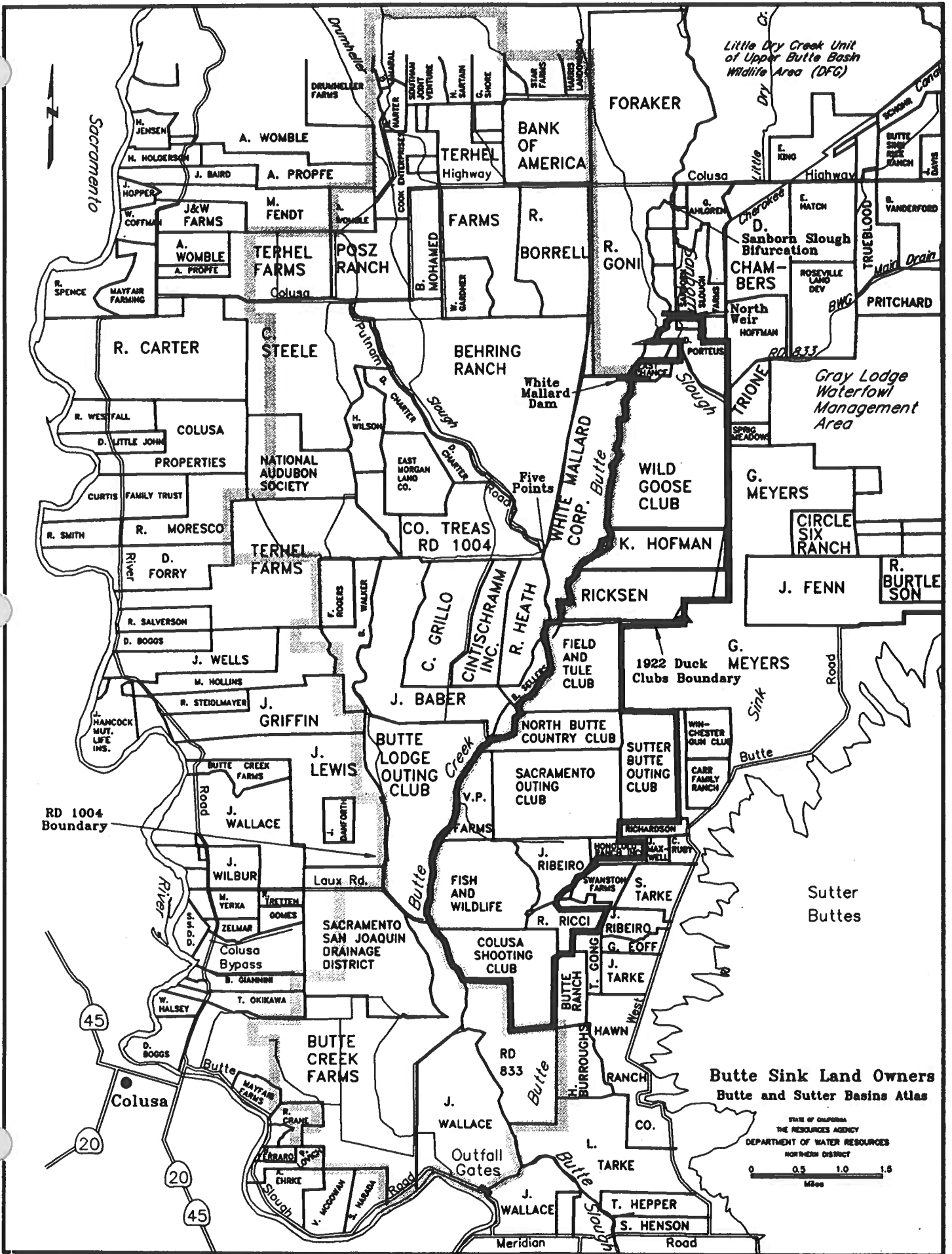




Duck Clubs Participating in 1922 Agreement with Western Canal Company
Butte and Sutter Basins Atlas

STATE OF CALIFORNIA
 THE RESOURCES AGENCY
 DEPARTMENT OF WATER RESOURCES
 NORTHERN DISTRICT

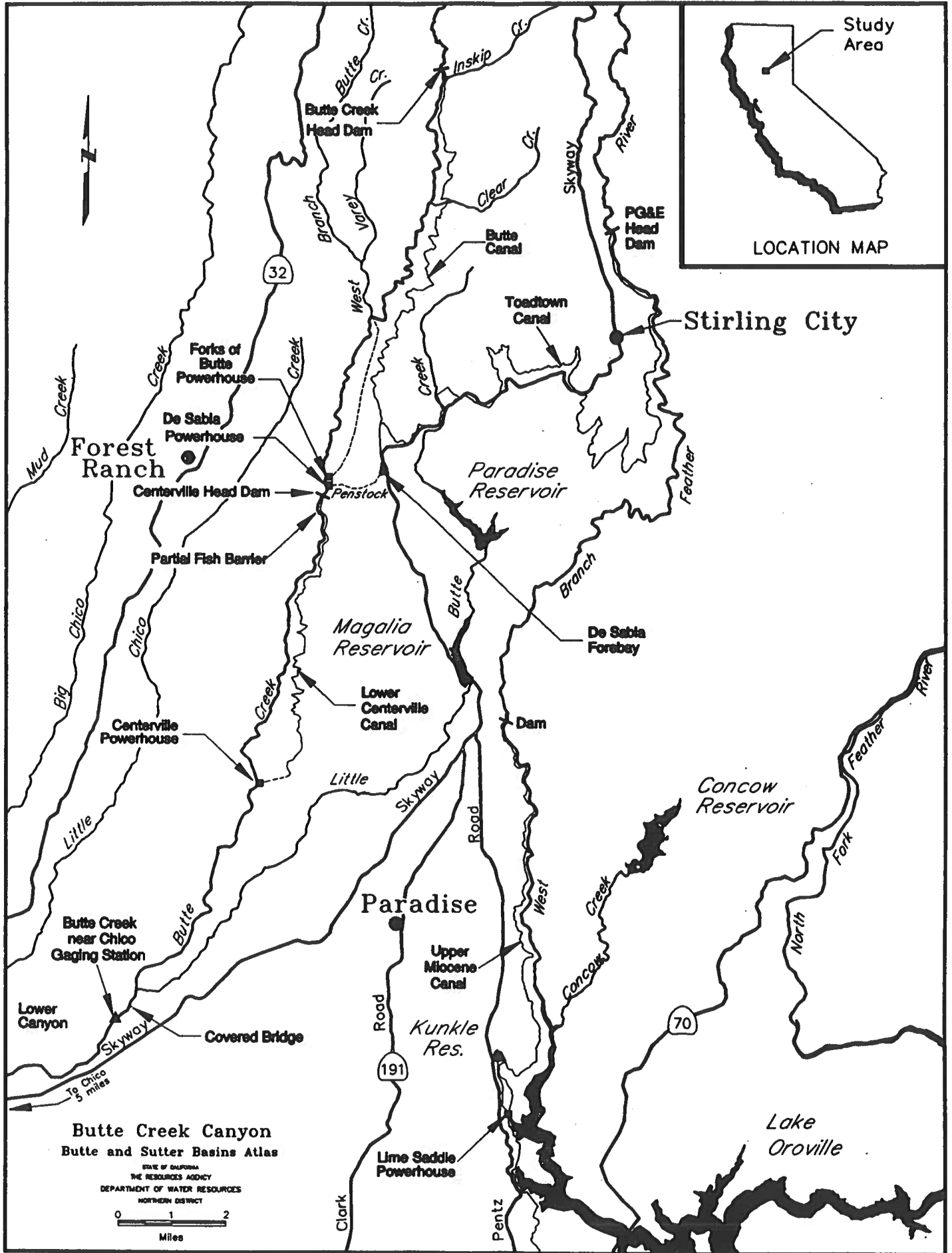
0 0.5 1.0 1.5
 Miles

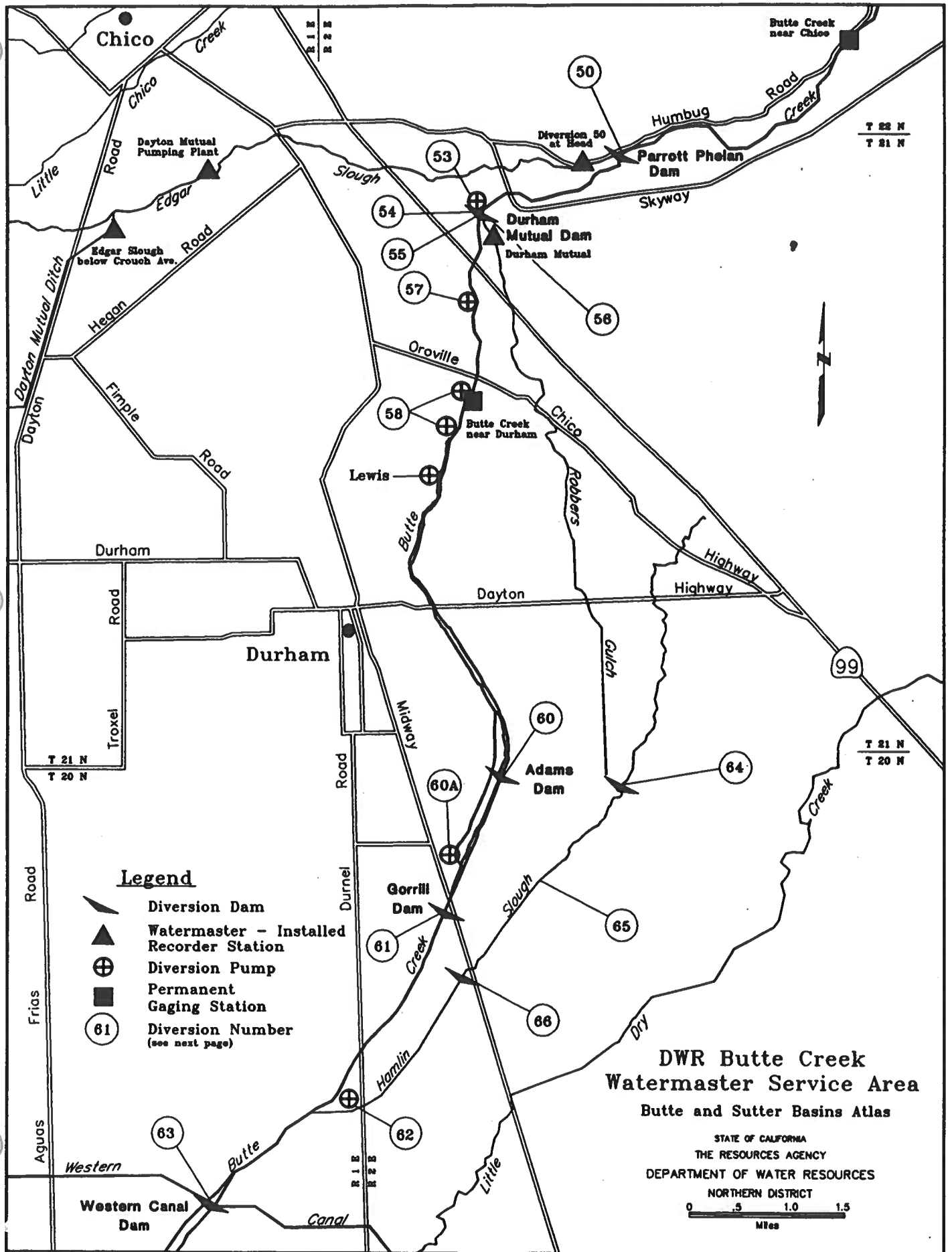


**Butte Sink Land Owners
Butte and Sutter Basins Atlas**






STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
NORTHERN DISTRICT

0 0.5 1.0 1.5
Miles





Legend

-  Diversion Dam
-  Watermaster - Installed Recorder Station
-  Diversion Pump
-  Permanent Gaging Station
-  Diversion Number (see next page)

**DWR Butte Creek
Watermaster Service Area
Butte and Sutter Basins Atlas**

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
NORTHERN DISTRICT



Water Rights in DWR Butte Creek Watermaster Service Area

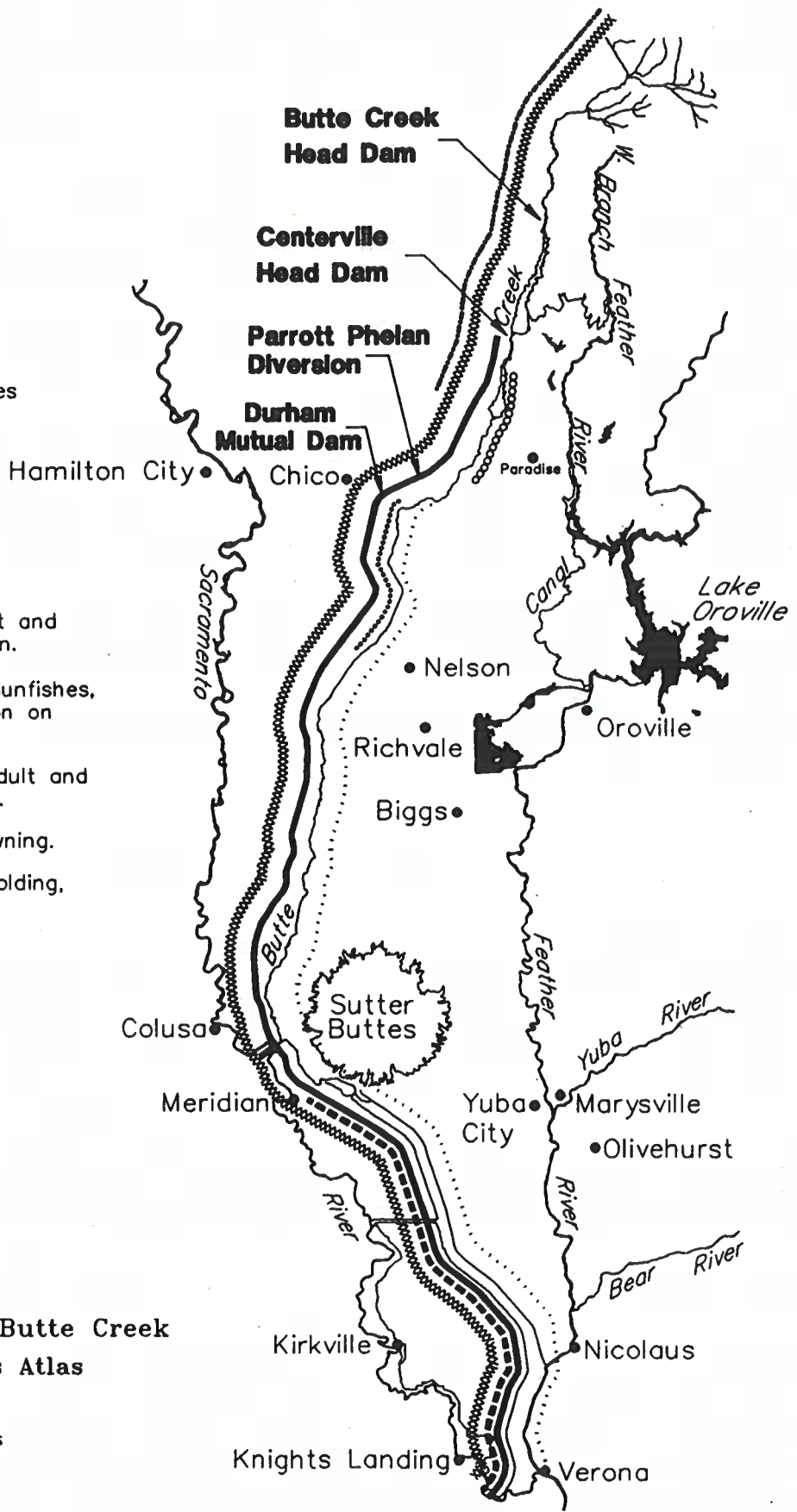
Diversion Number	Water Right Owner	Import (a) (cfs)	Priority			Priority						SWRCS Appropriative (j) (cfs)		
			1st (cfs)	2nd (cfs)	3rd (cfs)	1st (b) (cfs)	2nd (c) (cfs)	3rd (d) (cfs)	4th (e) (cfs)	5th (f) (cfs)	6th (g) (cfs)		7th (h) (cfs)	8th (i) (cfs)
Butte Creek			(Schedule 7, Decree 18917)			(Paragraphs 80 through 87, Decree 18917. Note: Inferior to Schedule 7)								
60	M&T Chico Ranch, Inc.	53.333												
	Perrott Ranch Company	53.333												
	Dayton Mutual Water Co.	3.334	18.00											
	Perrott and M&T		0.170											
	John McAnis		0.120											
	John Drake		0.100											
	Tom Griffin		0.050											
	Raynor Gimbal		0.115											
	Frank Solinsky		0.185											
	D. B. Hall		0.180											
	Tim Hutzler		0.040											
	J. W. Holt		0.040											
	Robert Shepard		0.040											
	Terry Arthur		0.040											
	Barbara Allen		0.250											
	Patrick Conroy		0.880											
	M. Leen		0.820											
63 (pump)	U.S. Dept. of Agriculture		2.00											
64	Hester Patrick		3.15											5.04 (k)
	J. R. Kennedy		1.88											2.98 (k)
65	J. E. Camenzind		0.78											0.59 (l)
	A. Karl Garrett		0.54											0.40 (l)
	Michael Brown		0.43											0.32 (l)
	Kenneth Houser		0.49											0.37 (l)
	Clifford Johnson		0.87											0.65 (l)
66	Durham Mutual Water Co.		44.70											
	Butte Creek Country Club		2.00											
	Carolyn Geiger		0.48											
	Dixon Family Trust		0.39											
	Norman Dornon		0.87											
	Kevin Lemos		0.01											
	Stephen Vermoga		1.447											
	P. J. Koryn		0.02											
	Doris Picchl		0.02											
	Raniko Babich		0.448											
	Dorothy Humphreys		0.447											
	Durham House Preservation		0.28											
	(pump) Sam G. Lewis		2.00											
67 (pump)	William H. Coats		3.89											
68 (pump)	M. Wakefield		0.43											
	(pump) Norman Dornon		0.18											
68A	C. M. Hansen											2.50		
60	Rancho Esquon Partners		0.39	6.00	0.75		13.25	8.00						68.00 (m)
60A (pump)	M. J. Keeney		0.68											
61 (w)	Gornil R Ranch				1.00	14.00		15.00						25.00 (n)
62	Erna J. Ryon				0.57					4.29				
	Skinner Brothers				0.12					0.86				
	Edo McAlister				0.31					4.58				
63 (o)	Western Canal												33.33	
Hamlin Slough			(Paragraphs 71 through 78, Decree 18917)											
64,65	Rancho Esquon Partners		3.82 (p)											
64,65	Rancho Esquon Partners		4.58 (q)		3.22 (s)									
64,65	Rancho Esquon Partners		3.60 (r)		1.38 (t)									
68 (w)	Gornil R Ranch			15.00 (u)	6.70 (v)									
Notes:														
(e) This water is imported from the West Branch Feather River to Butte Creek by PG&E via Toadown Canal, De Sable Power Plant, and Centerville Power Plant. The import water is measured by a 10-foot parshall flume designated by PG&E as BW-12. Five percent is subtracted from the water measured at the parshall flume as conveyance loss between the flume and Diversion 60. See paragraph 37.														
(b) July 1 to September 30. Total decreed diversions from Butte Creek and Hamlin Slough not to exceed 21.7 cfs. See paragraph 80.														
(c) April 1 to September 30. See paragraph 81.														
(d) April 1 to June 15. See paragraph 82.														
(e) 15.00 cfs from April 1 to June 30 and 6.70 cfs from July 1 to September 30. Total decreed diversions from Butte Creek and Hamlin Slough not to exceed 21.7 cfs. See Paragraph 83.														
(f) April 1 to September 30. See paragraph 84.														
(g) 25.00 cfs from April 1 to October 15 and 8.00 cfs from October 16 to March 31. See paragraph 85.														
(h) Entire year. See paragraph 86.														
(i) April 1 to June 15. See paragraph 87.														
(j) All SWRCS Appropriative water rights are inferior to the adjudicated water rights defined in Decree 18917 and 60 cfs for fish flows. See License Nos. 11046 and 11044 for details.														
(k) Application No. 22534, License No. 10432 March 1 to June 15.														
(l) Application No. 22564, License No. 10433 March 1 to June 15.														
(m) Application No. 22039, License No. 11046 April 1 to June 15.														
(n) Application No. 22321, License No. 11044 April 1 to June 15.														
(o) Western Canal is not included in watermaster service area.														
(p) 0.82 cfs for the entire year plus 3.00 cfs from May 1 to October 1. See paragraph 71.														
(q) 1.00 cfs for the entire year plus 3.58 cfs from May 1 to October 1. See paragraph 71.														
(r) 0.60 cfs for the entire year plus 3.00 cfs from May 1 to October 1. See paragraph 72.														
(s) April 1 to September 15. See paragraph 74.														
(t) April 1 to September 15. See paragraph 75.														
(u) 1.00 cfs for the entire year plus 14.00 cfs from April 15 to June 30. See paragraph 73.														
(v) 6.70 cfs from April 1 to June 30 and 21.70 cfs from July 1 to September 15. See paragraph 76.														
(w) Total decreed diversions from Butte Creek and Hamlin Slough not to exceed 21.7 cfs. See paragraphs 73, 80, and 83.														



Reference: Brown, C. J. 1992
 "A Review of Butte Creek Fisheries Issues." California Department of Fish and Game.

Legend

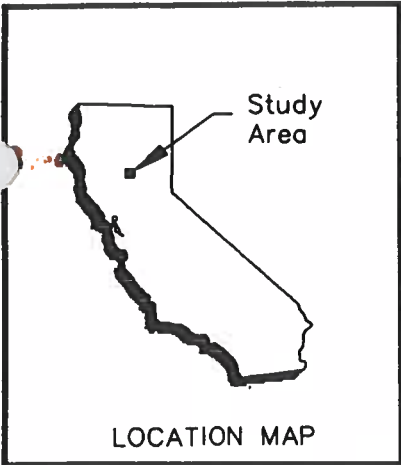
- : Fall-run Chinook Salmon Adult and Juvenile Rearing and Migration.
- - - - - : Habitat of Minnows, Catfish, Sunfishes, and Principal Area of Predation on Juvenile Salmonids.
- : Spring-run Chinook Salmon Adult and Juvenile Rearing and Migration.
- : Fall-run Chinook Salmon Spawning.
- oooooo : Spring-run Chinook Salmon Holding, Spawning and Rearing.
- xxxxxxx : Trout Habitat in Winter.
- - - - - : Trout Habitat in Summer.



**Location of Fish Habitat in Butte Creek
 Butte and Sutter Basins Atlas**

STATE OF CALIFORNIA
 THE RESOURCES AGENCY
 DEPARTMENT OF WATER RESOURCES
 NORTHERN DISTRICT

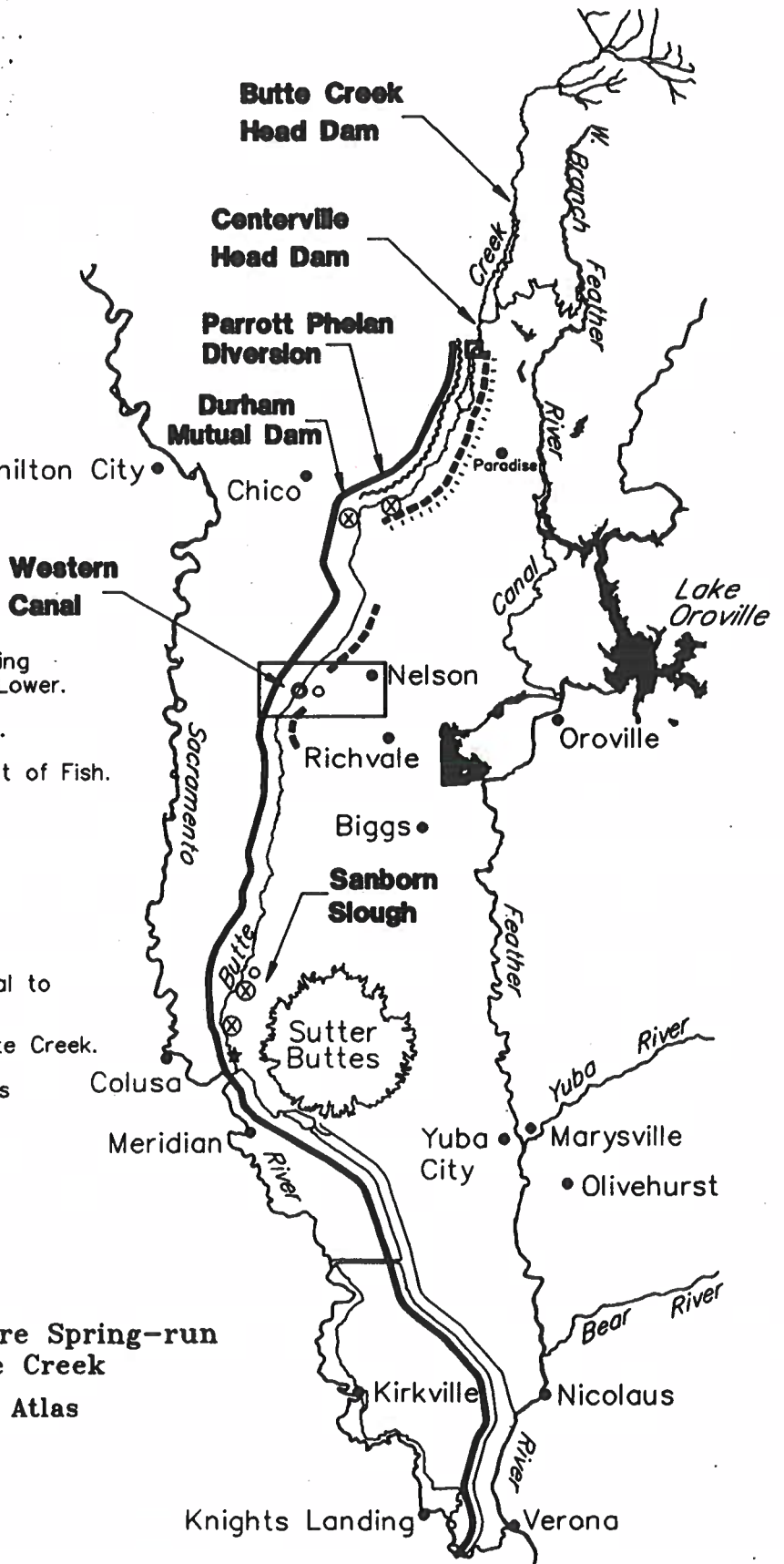




Reference: Brown, C. J. 1992
 "A Review of Butte Creek Fisheries
 Issues." California Department of
 Fish and Game.

Legend

- :Release enough Water to Cool Spring-run Chinook Salmon Holding and Spawning Areas to 57F or Lower.
- :Place Spawning Gravel in Stream.
- :Control Poaching and Harassment of Fish.
- :Screen Major Diversions.
- :Close Butte Creek to Spring-run Chinook Salmon Fishing.
- :Modify Low Flow Barrier.
- :Build Laterals from Western Canal to Eliminate Pumping from Creek.
- :Siphon Western Canal under Butte Creek.
- :Place Grates on Canal Discharges to Prevent Fish Entering Canal.
- :Modify Water Releases at Five Points.



**Suggested Actions to Help Restore Spring-run
 Chinook Salmon in Butte Creek**
Butte and Sutter Basins Atlas

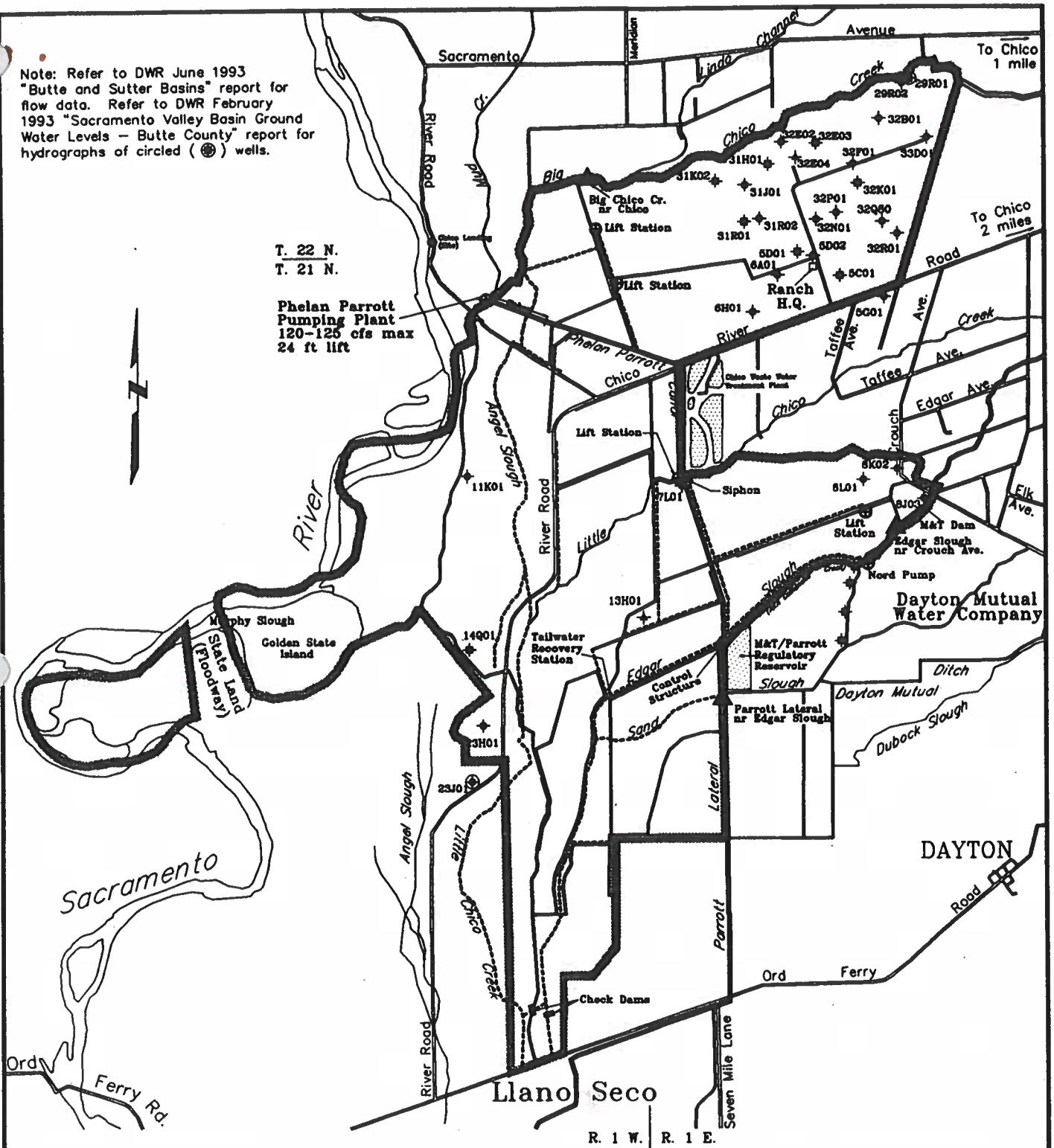
STATE OF CALIFORNIA
 THE RESOURCES AGENCY
 DEPARTMENT OF WATER RESOURCES
 NORTHERN DISTRICT



Note: Refer to DWR June 1993 "Butte and Sutter Basins" report for flow data. Refer to DWR February 1993 "Sacramento Valley Basin Ground Water Levels - Butte County" report for hydrographs of circled (⊕) wells.

T. 22 N.
T. 21 N.

Phelan Parrott Pumping Plant
120-125 cfs max
24 ft lift



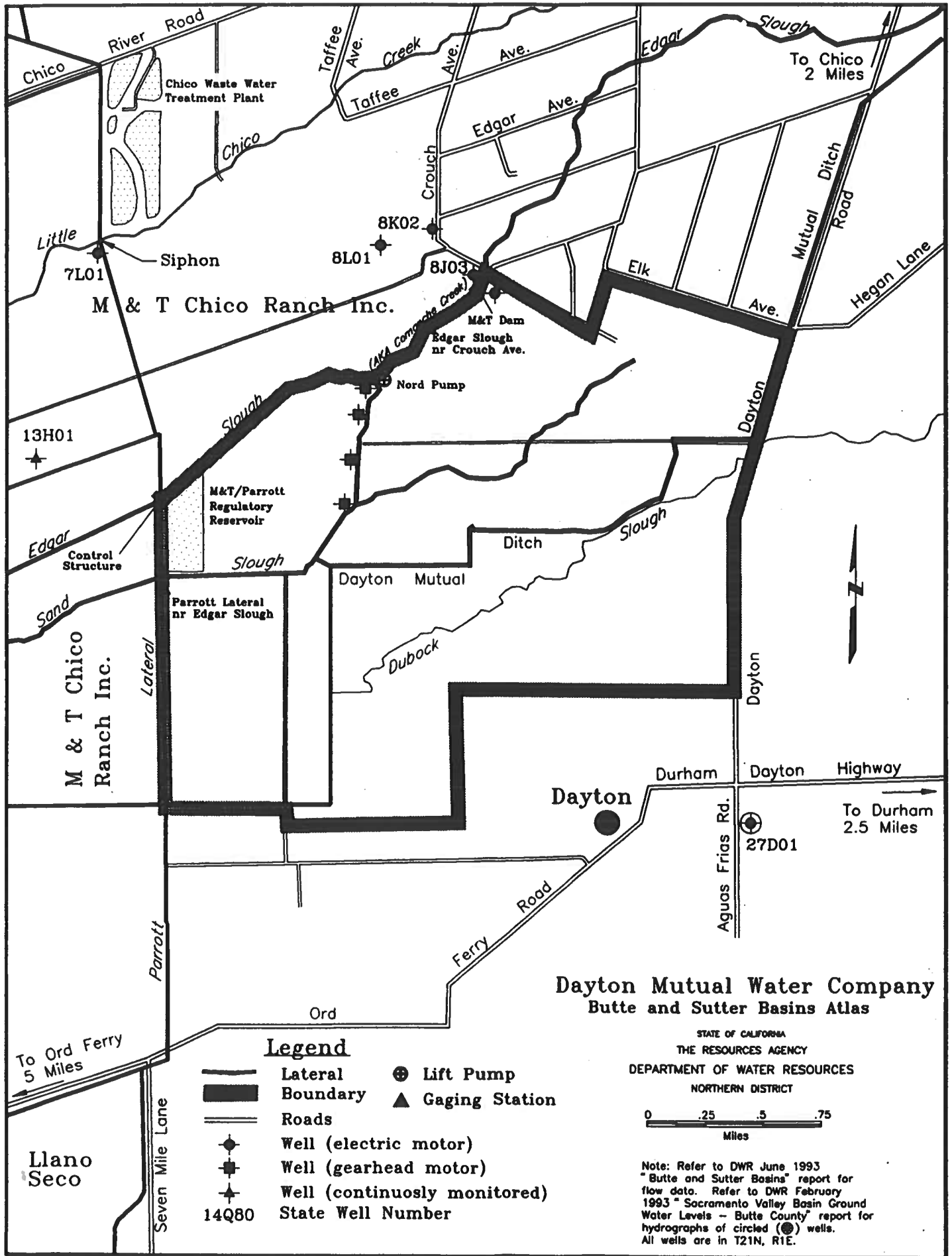
LEGEND

- ◆ Well (electric motor)
- ◆ Well (gearhead motor)
- ⊕ Well (continuously monitored)
- 14Q80 - Partial State Well Number
- ⊕ Pumps, Lift Stations
- ▲ Gaging Station
- Main Canals
- - - Laterals
- - - Main Drains
- Roads
- Property Boundary

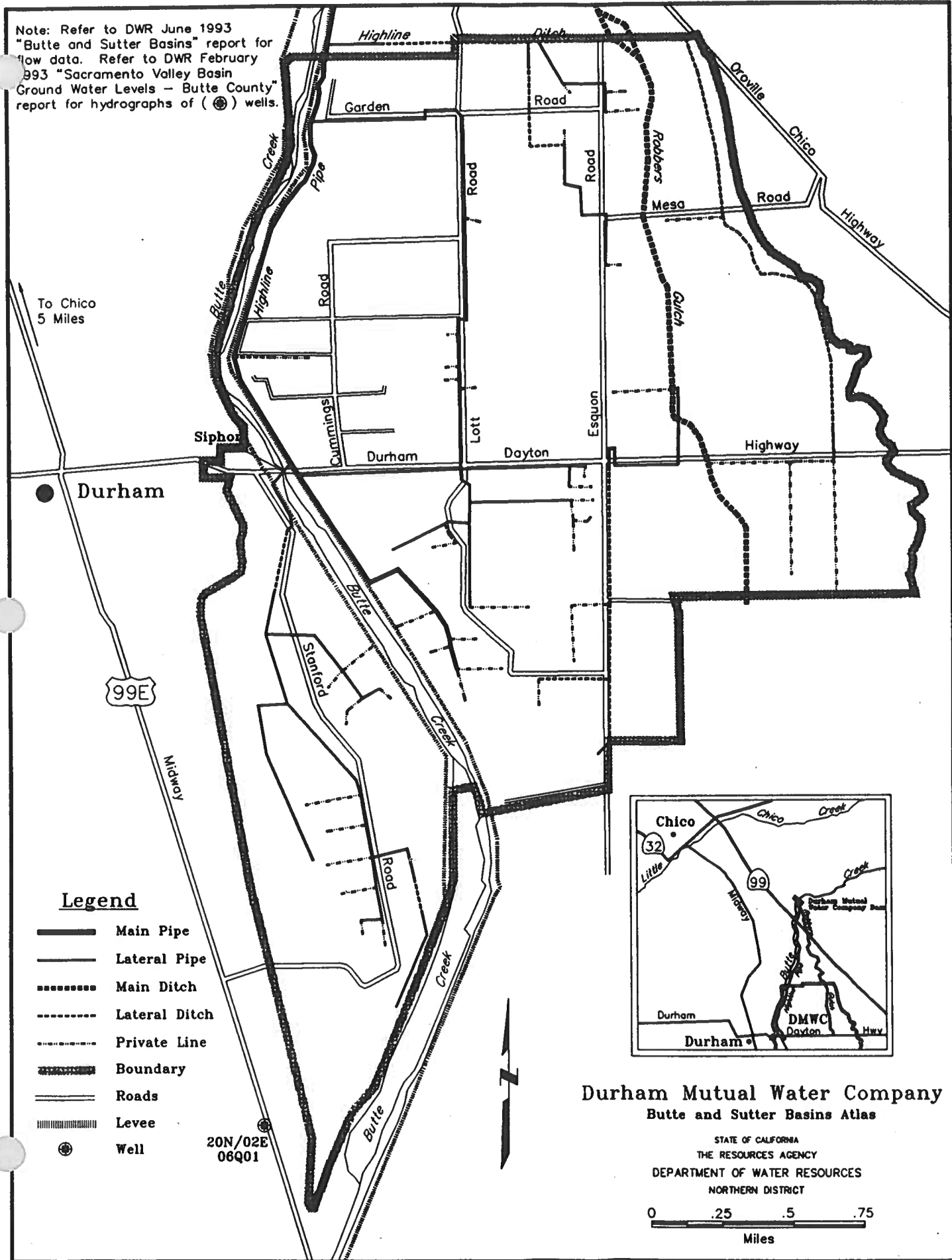
**M & T Chico Ranch Inc.
Butte and Sutter Basins Atlas**

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
NORTHERN DISTRICT





Note: Refer to DWR June 1993 "Butte and Sutter Basins" report for flow data. Refer to DWR February 1993 "Sacramento Valley Basin Ground Water Levels - Butte County" report for hydrographs of (●) wells.



To Chico
5 Miles

● Durham

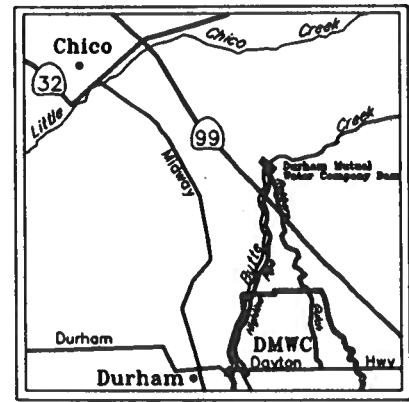
99E

Highway

Legend

- Main Pipe
- Lateral Pipe
- Main Ditch
- Lateral Ditch
- - - - - Private Line
- ▬▬▬▬▬ Boundary
- == Roads
- ▬▬▬▬▬ Levee
- Well

20N/02E
06Q01



**Durham Mutual Water Company
Butte and Sutter Basins Atlas**

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
NORTHERN DISTRICT



Note: Refer to DWR June 1993 "Butte and Sutter Basins" report for flow data. Refer to DWR February 1993 "Sacramento Valley Basin Ground Water Levels - Butte County" report for hydrographs of (⊕) wells.

To Chico
6 miles

T. 21 N.
T. 20 N.

Ord Ferry

Sacramento

USFWS
Riparian
Easement








USFWS
Riparian
Sanctuary

River

The Nature
Conservancy
Easement

Lake

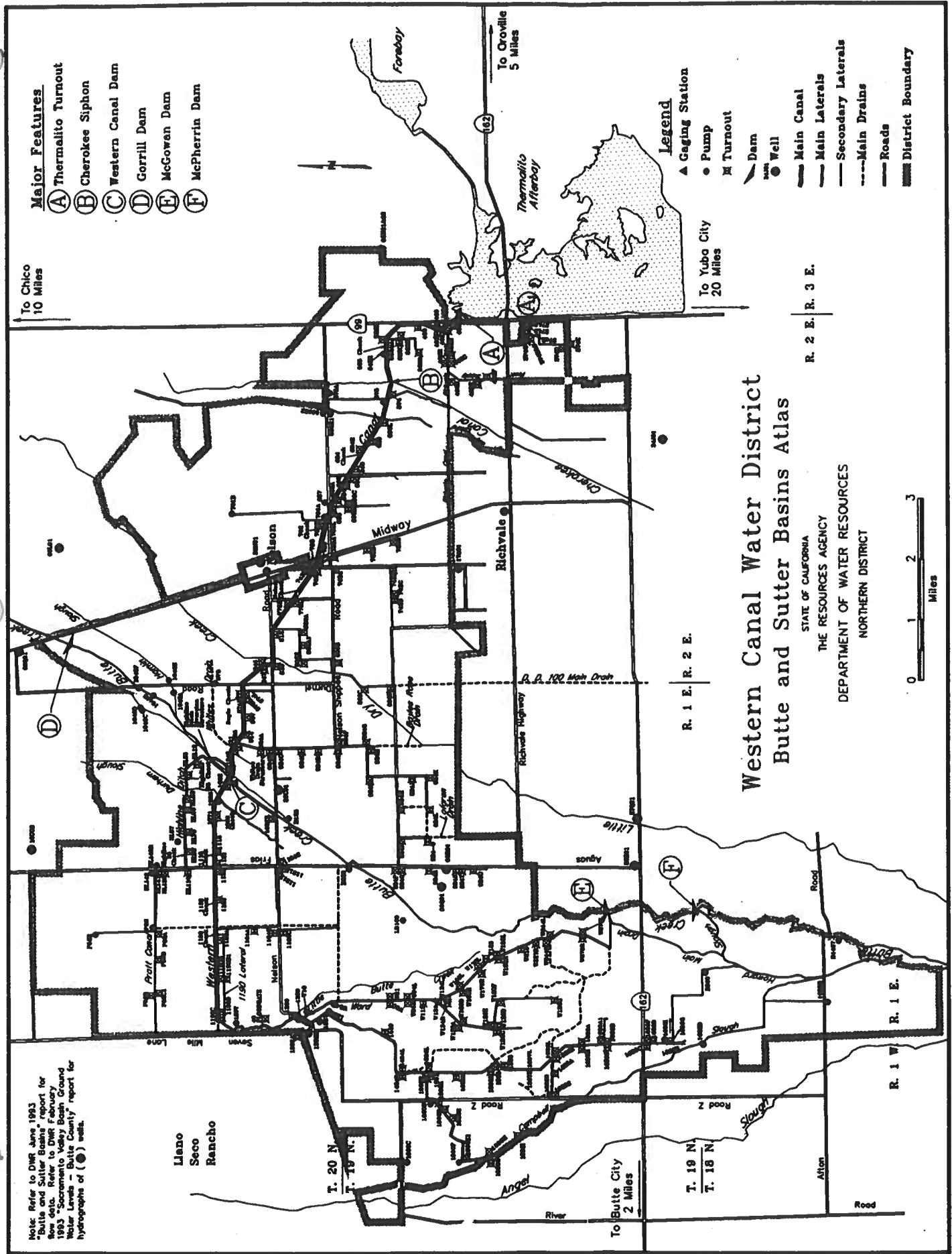
Legend

- | | | | |
|---|------------|---|-------------------|
|  | Main Canal |  | Boundary |
|  | Laterals |  | Internal Boundary |
|  | Roads | | |
|  | Pumps | | |
|  | Wells | | |

Llano Seco Rancho
Butte and Sutter Basins Atlas

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
NORTHERN DISTRICT





- Major Features**
- (A) Thermalito Turnout
 - (B) Cherokee Siphon
 - (C) Western Canal Dam
 - (D) Gorrill Dam
 - (E) McGowan Dam
 - (F) McPherrin Dam

- Legend**
- ▲ Gaging Station
 - Pump
 - ⊞ Turnout
 - ▾ Dam
 - Well
 - Main Canal
 - Main Laterals
 - Secondary Laterals
 - - - Main Drains
 - Roads
 - ▬ District Boundary

To Chico
10 Miles

To Croville
5 Miles

To Yuba City
20 Miles

Western Canal Water District Butte and Sutter Basins Atlas

R. 2 E. R. 3 E.

R. 1 E. R. 2 E.

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
NORTHERN DISTRICT



Note: Refer to DWR June 1983 "Butte and Sutter Basins" report for flow data. Refer to DWR February 1983 "Sacramento Valley Basin Ground Water Levels - Butte County" report for hydrographs of (●) wells.

Liano
Seco
Rancho

T. 20 N.
T. 19 N.

T. 19 N.
T. 18 N.

To Butte City
2 Miles

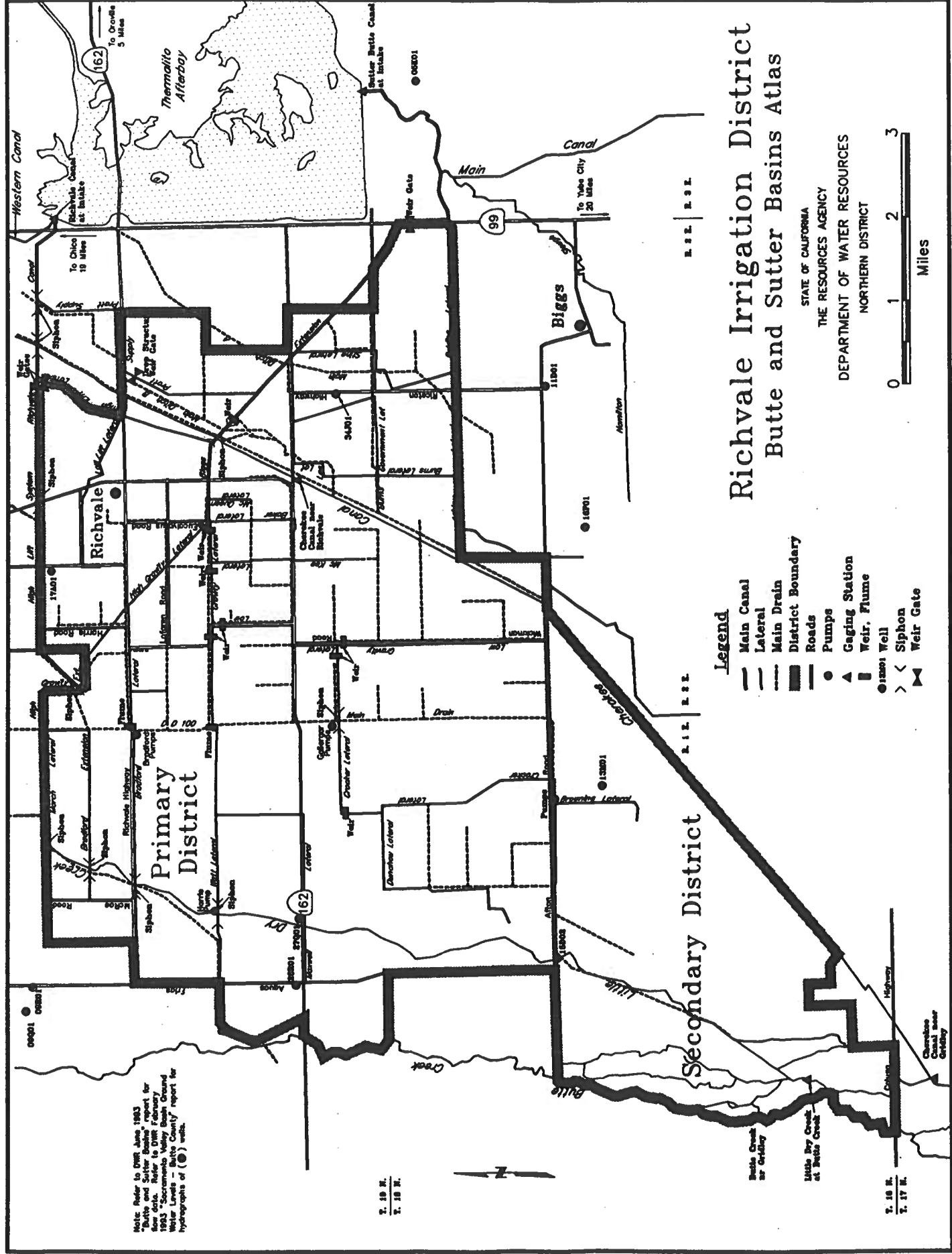
R. 1 W.
R. 1 E.

Richvale Irrigation District Butte and Sutter Basins Atlas

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THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
NORTHERN DISTRICT



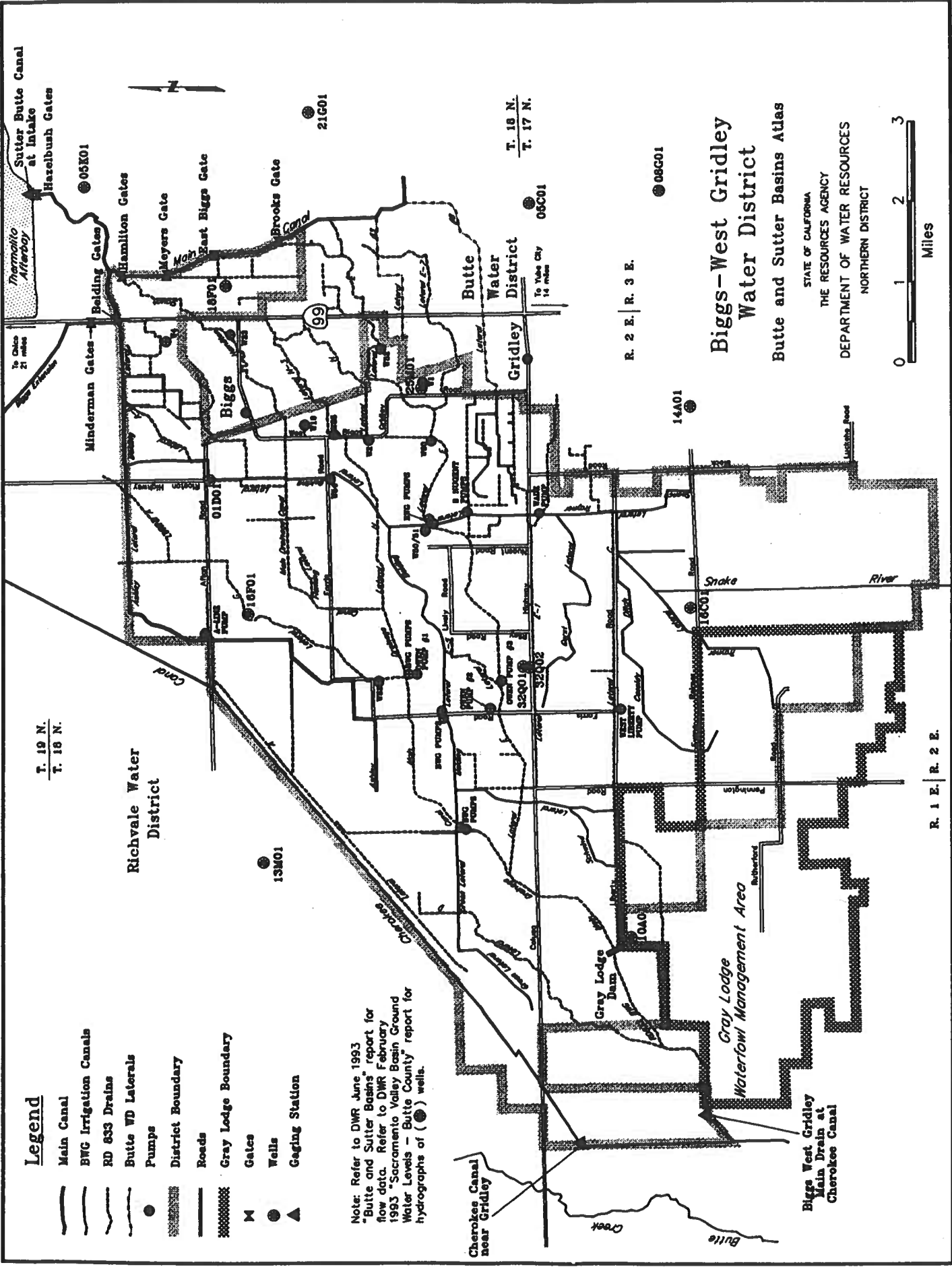
- Legend**
- Main Canal
 - - - Lateral
 - - - Main Drain
 - ▬ District Boundary
 - Roads
 - Pumps
 - ▲ Gaging Station
 - ▬ Weir, Flume
 - Siphon
 - > < Siphon
 - ⋈ Weir Gate



Note: Refer to DWR, June, 1983
Butte and Sutter Basins Report for
1983 Sacramento Valley Basin Ground
Water Levels - Butte County report for
hydrographs of (●) wells.

T. 19 N.
R. 18 W.

T. 19 N.
R. 17 W.



Legend

- Main Canal
- BWG Irrigation Canals
- RD 833 Drains
- Butte WD Laterals
- Pumps
- District Boundary
- Roads
- Gray Lodge Boundary
- Gates
- Wells
- Gaging Station

Note: Refer to DWR June 1993 "Butte and Sutter Basins" report for flow data. Refer to DWR February 1993 "Sacramento Valley Basin Ground Water Levels - Butte County" report for hydrographs of (●) wells.

Biggs-West Gridley Water District
Butte and Sutter Basins Atlas

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
NORTHERN DISTRICT



T. 19 N.
T. 18 N.

T. 18 N.
T. 17 N.

R. 2 E. | R. 3 E.

R. 1 E. | R. 2 E.

21G01

05K01

18P01

08C01

08C01

14A01

13M01

10A01

16C01

M

●

▲

To Yuba City
14 miles

Sutter Butte Canal
at Intake
Hazelbush Gates

To Chico
21 miles

Richvale Water District

Cherokee Canal
near Gridley

Butte
Creek

Gray Lodge
Dam

Gray Lodge
Waterfowl Management Area

Biggs West Gridley
Main Drain at
Cherokee Canal

Luckie's Road

Snake River

Perkinston

Butterfield

W. 1st St.

W. 2nd St.

W. 3rd St.

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W. 221st St.

W. 222nd St.

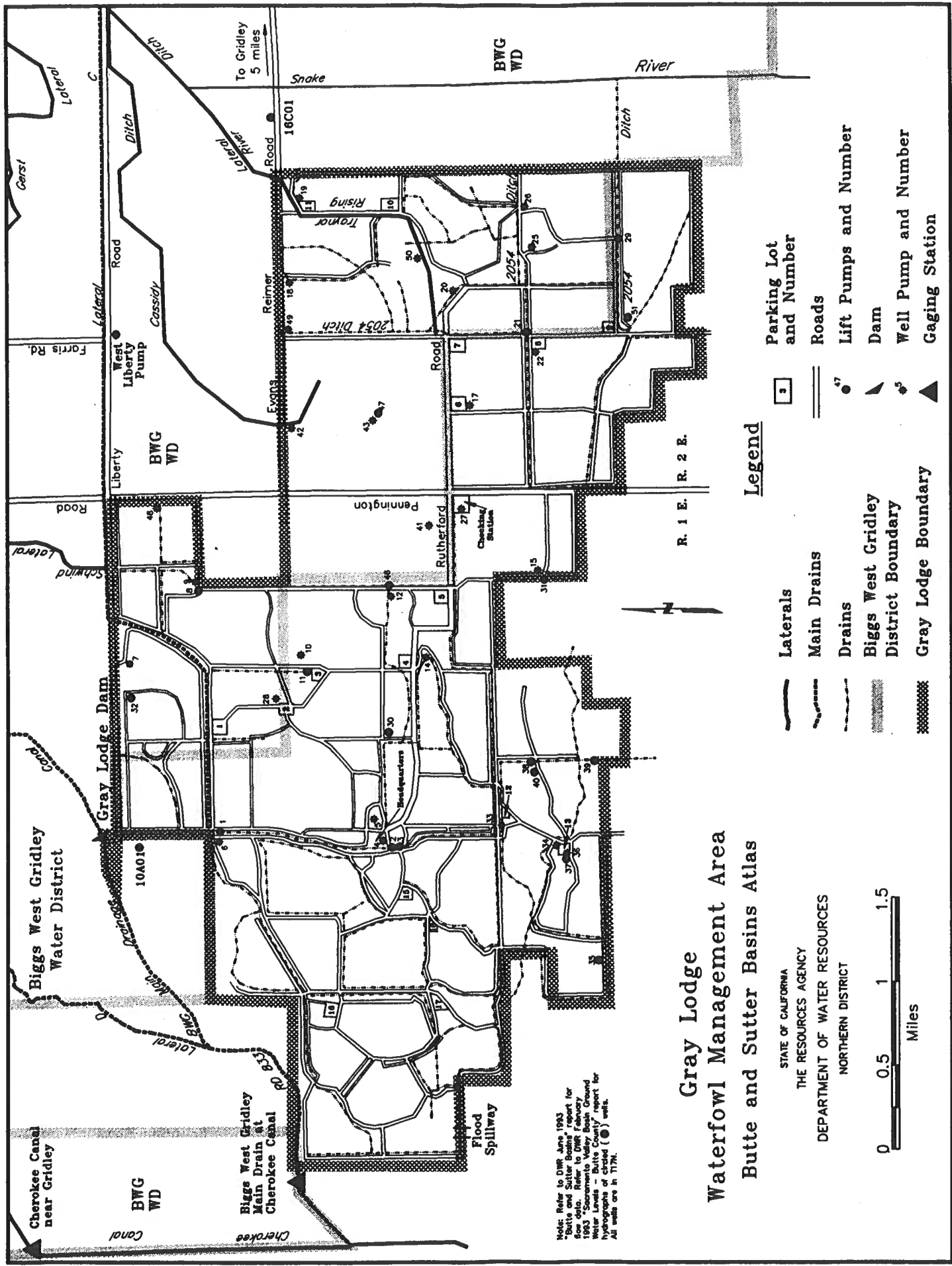
W. 223rd St.

W. 224th St.

W. 225th St.

W. 226th St.

W. 227th St.



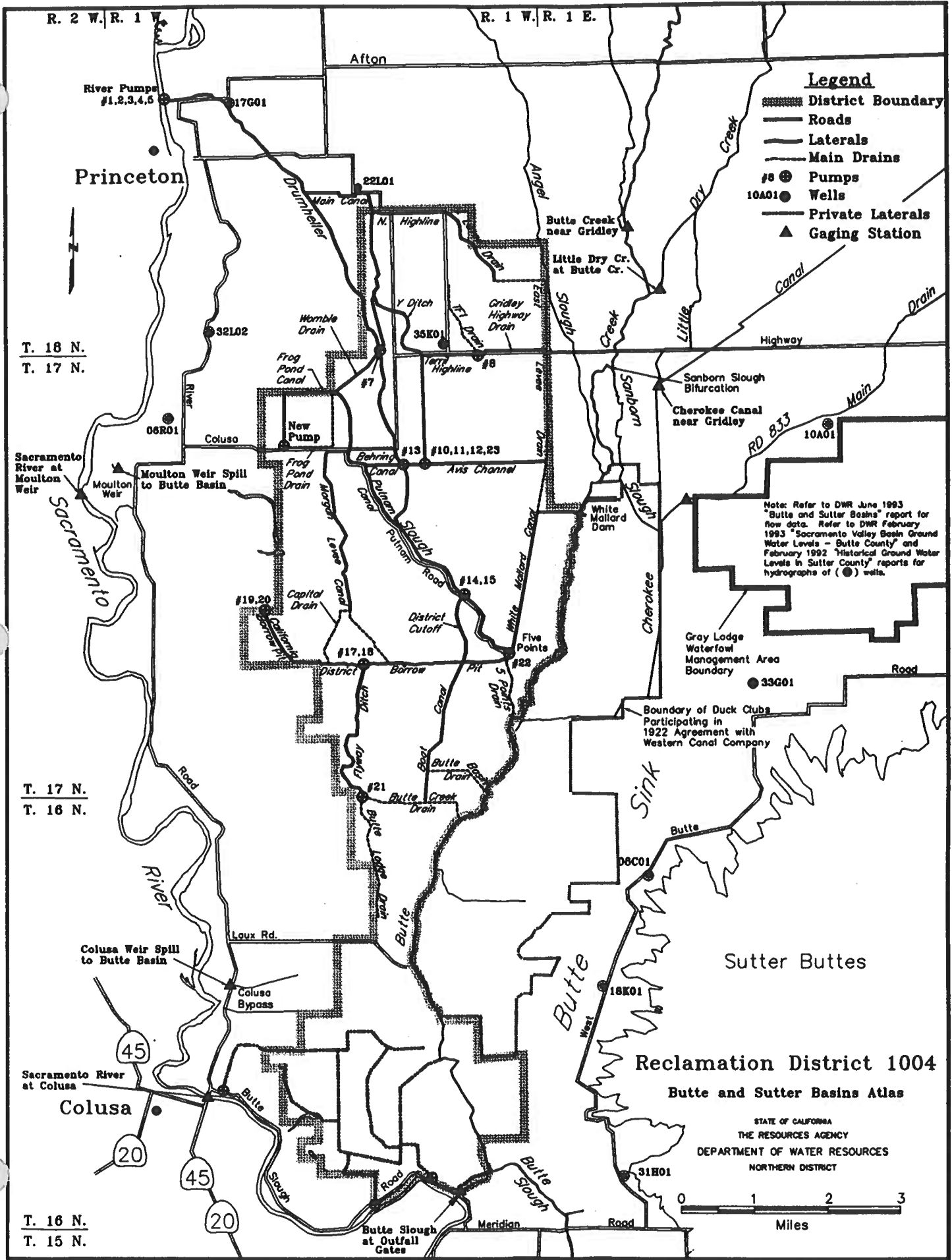
Note: Refer to DWR June 1983 "Butte and Sutter Basins" report for flow data. Refer to DWR February 1983 "Sacramento Valley Basin Ground Water Levels - Butte County" report for hydrographs of created (●) wells. All wells are in 117N.

Gray Lodge Waterfowl Management Area Butte and Sutter Basins Atlas

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
NORTHERN DISTRICT

0 0.5 1 1.5
Miles

- Legend**
- Laterals
 - Main Drains
 - Drains
 - Biggs West Gridley District Boundary
 - Gray Lodge Boundary
 - Parking Lot and Number
 - Roads
 - Lift Pumps and Number
 - ▲ Dam
 - Well Pump and Number
 - ▲ Gaging Station



Legend

- District Boundary
- Roads
- Laterals
- Main Drains
- #8 Pumps
- 10A01 Wells
- Private Laterals
- Gaging Station

Note: Refer to DWR June 1993 "Butte and Sutter Basins" report for flow data. Refer to DWR February 1993 "Sacramento Valley Basin Ground Water Levels - Butte County" and February 1992 "Historical Ground Water Levels in Sutter County" reports for hydrographs of (●) wells.

Gray Lodge Waterfowl Management Area Boundary ● 33G01

Boundary of Duck Clubs Participating in 1922 Agreement with Western Canal Company

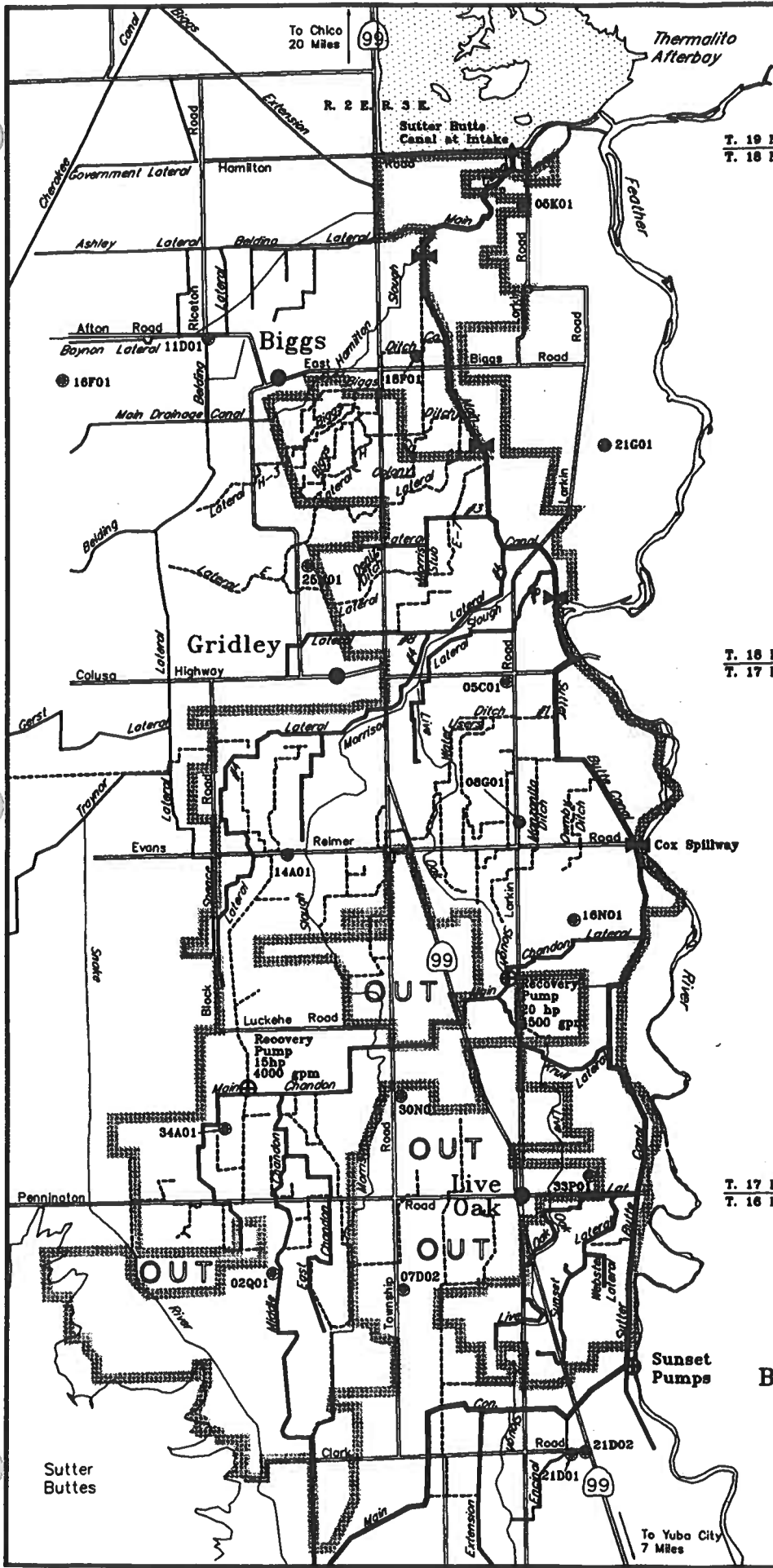
Sutter Buttes

Reclamation District 1004

Butte and Sutter Basins Atlas

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
NORTHERN DISTRICT





Note: Refer to DWR June 1993 "Butte and Sutter Basins" report for flow data. Refer to DWR February 1993 "Sacramento Valley Basin Ground Water Levels - Butte County" and February 1992 "Historical Ground Water Levels in Sutter County" reports for hydrographs of (●) wells.

Legend

- Main Canal
- Lateral
- Private Lateral
- District Boundary
- Roads
- Pumps
- Automatic Level Control Gate
- Gaging Station
- Well

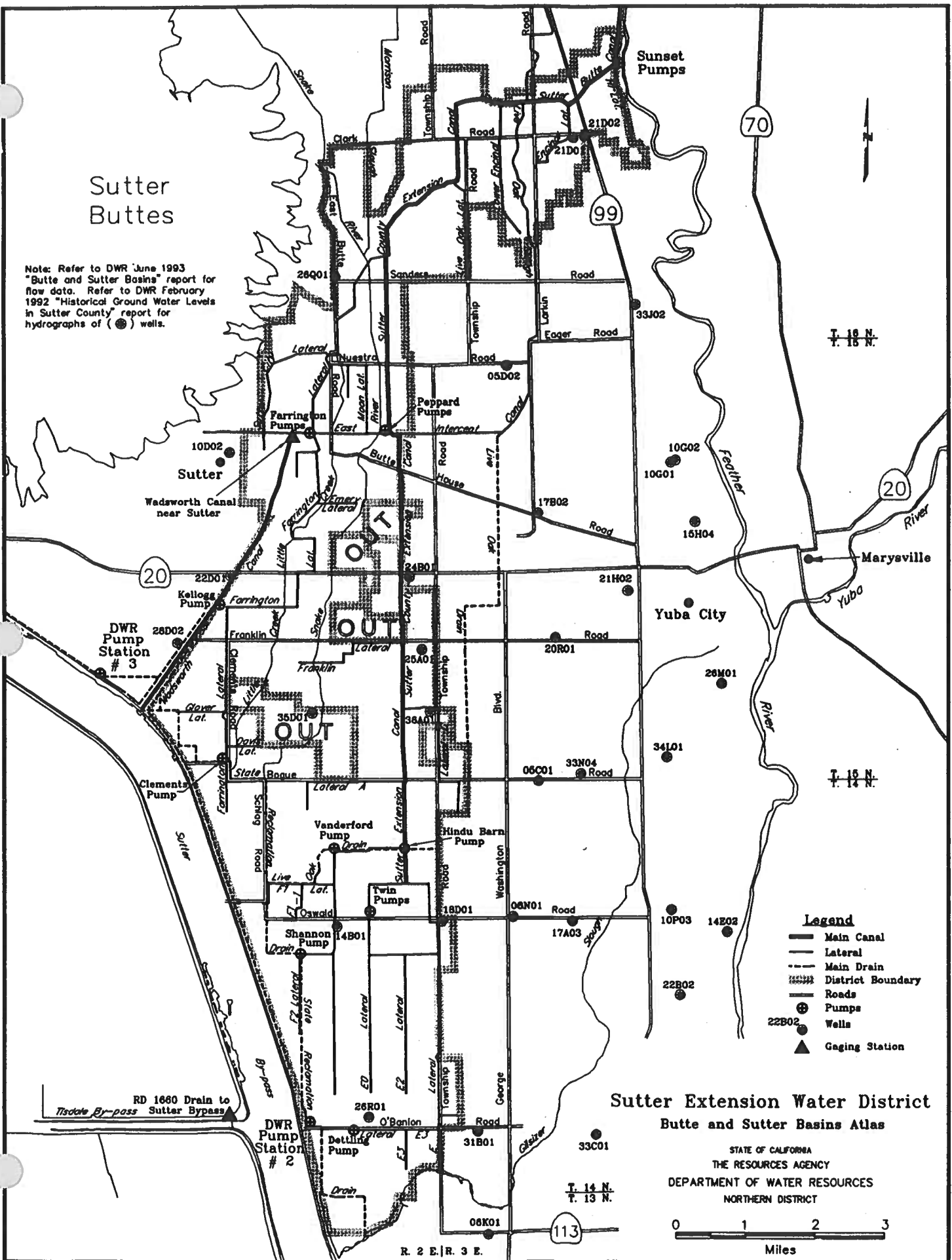
**Butte Water District
Butte and Sutter Basins Atlas**

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
NORTHERN DISTRICT



Sutter Buttes

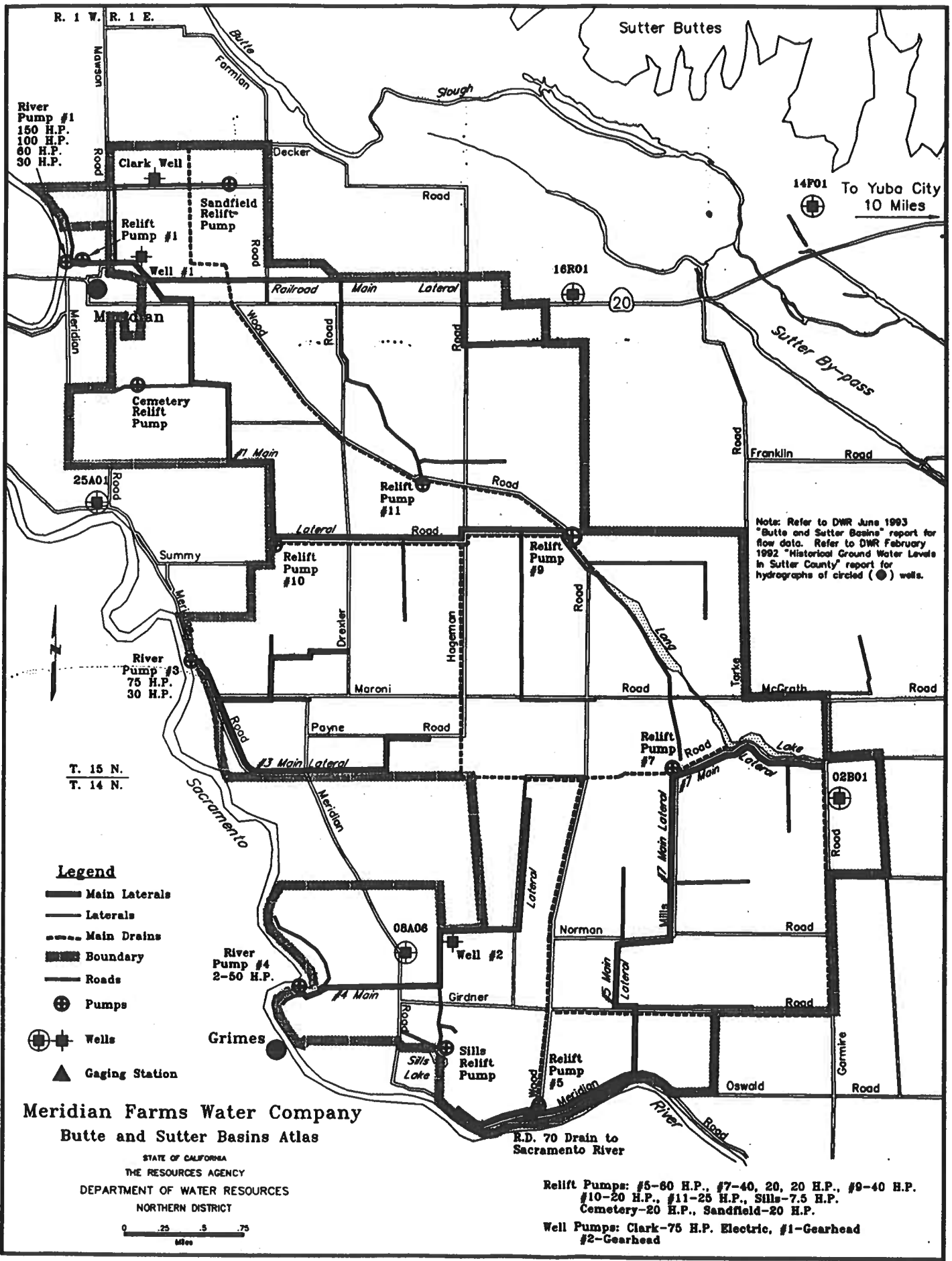
Note: Refer to DWR June 1993 "Butte and Sutter Basins" report for flow data. Refer to DWR February 1992 "Historical Ground Water Levels in Sutter County" report for hydrographs of (●) wells.



Sutter Extension Water District Butte and Sutter Basins Atlas

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
NORTHERN DISTRICT





River Pump #1
150 H.P.
100 H.P.
60 H.P.
30 H.P.

R. 1 W. R. 1 E.

Sutter Buttes

14F01 To Yuba City
10 Miles

16R01

Note: Refer to DWR June 1993
"Butte and Sutter Basins" report for
flow data. Refer to DWR February
1992 "Historical Ground Water Levels
in Sutter County" report for
hydrographs of circled (●) wells.

T. 15 N.
T. 14 N.

- Legend**
- Main Laterals
 - Laterals
 - Main Drains
 - ▭ Boundary
 - Roads
 - ⊕ Pumps
 - ⊕ Wells
 - ▲ Gaging Station

Meridian Farms Water Company
Butte and Sutter Basins Atlas

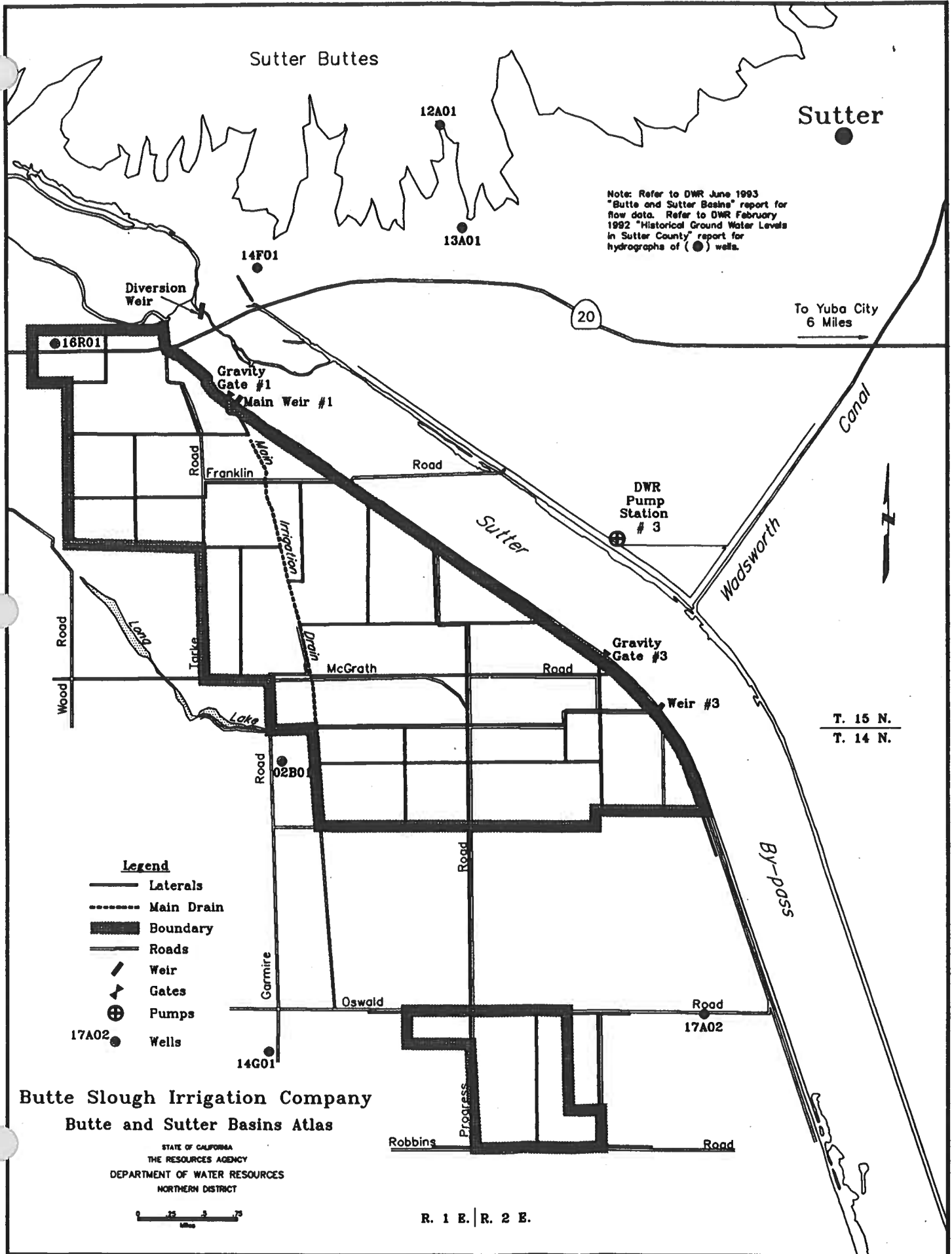
STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
NORTHERN DISTRICT

0 .25 .5 .75
Miles

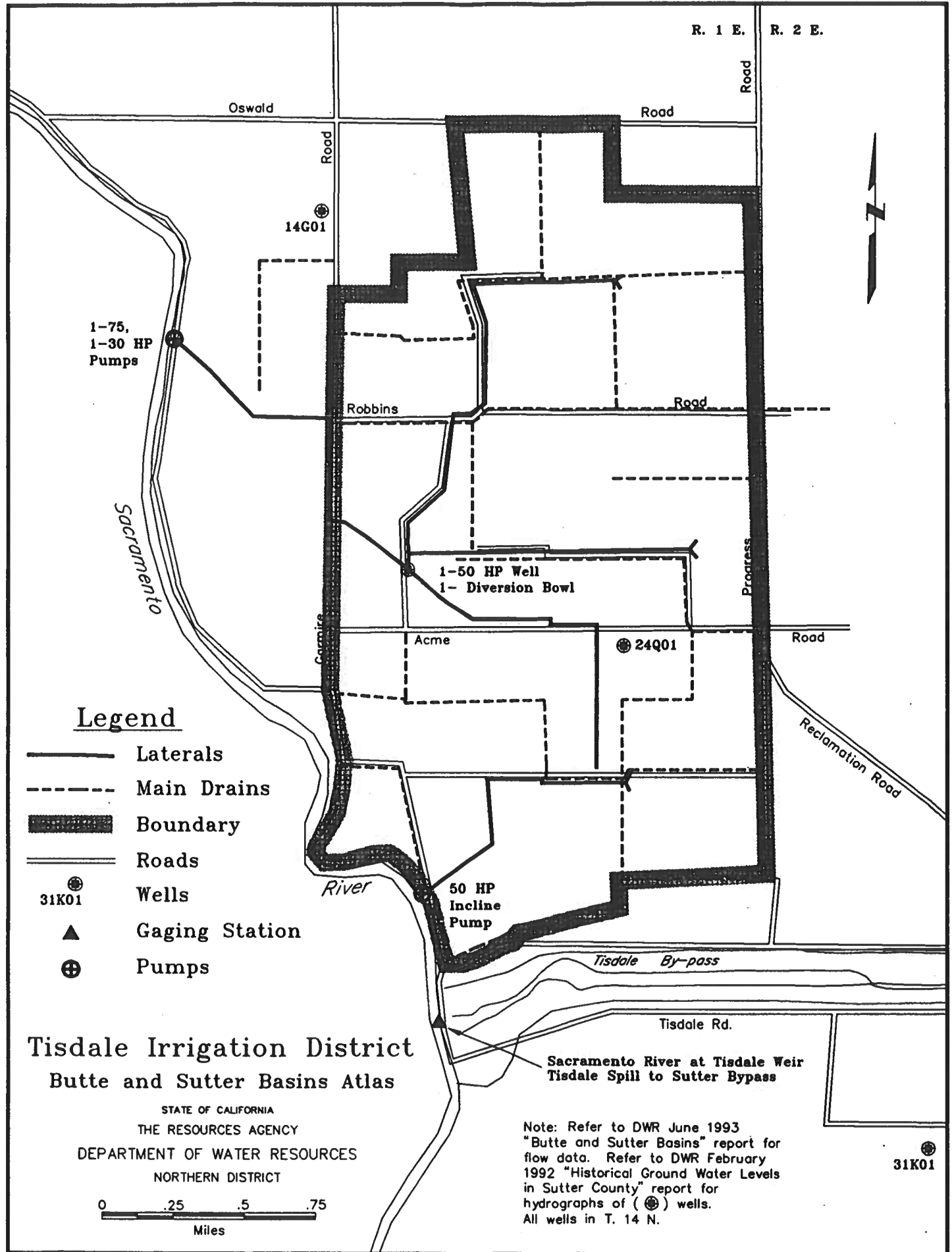
E.D. 70 Drain to
Sacramento River

Relift Pumps: #5-60 H.P., #7-40, 20, 20 H.P., #9-40 H.P.
#10-20 H.P., #11-25 H.P., Sills-7.5 H.P.
Cemetery-20 H.P., Sandfield-20 H.P.

Well Pumps: Clark-75 H.P. Electric, #1-Gearhead
#2-Gearhead



R. 1 E. R. 2 E.



Legend

- Laterals
- - - Main Drains
- █ Boundary
- == Roads
- ⊙ Wells
- ▲ Gaging Station
- ⊕ Pumps

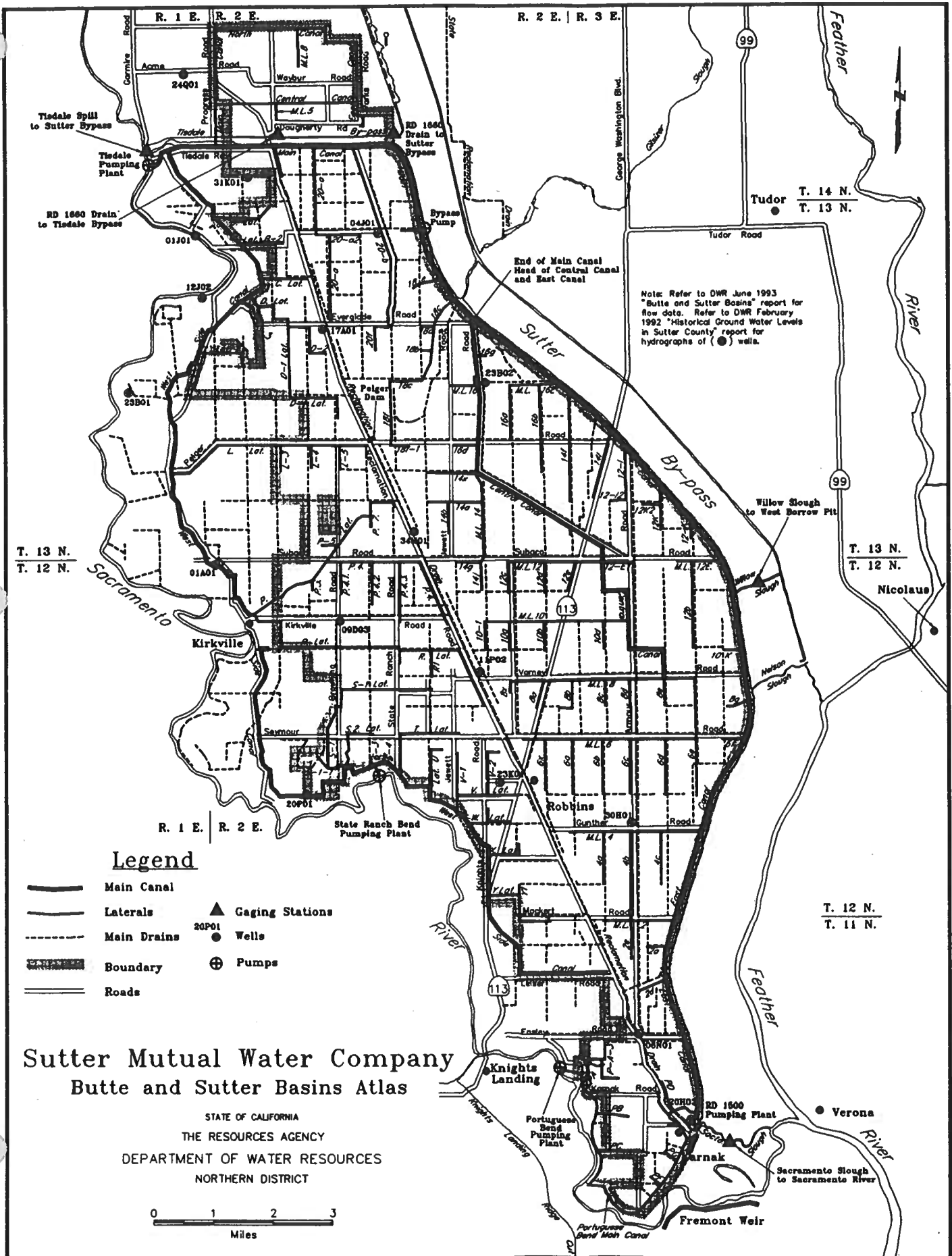
**Tisdale Irrigation District
Butte and Sutter Basins Atlas**

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
NORTHERN DISTRICT



Note: Refer to DWR June 1993 "Butte and Sutter Basins" report for flow data. Refer to DWR February 1992 "Historical Ground Water Levels in Sutter County" report for hydrographs of (⊙) wells. All wells in T. 14 N.

31K01



Sutter Mutual Water Company Butte and Sutter Basins Atlas

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
NORTHERN DISTRICT



Note: Refer to DWR June 1993 "Butte and Sutter Basins" report for flow data. Refer to DWR February 1992 "Historical Ground Water Levels in Sutter County" report for hydrographs of (●) wells.

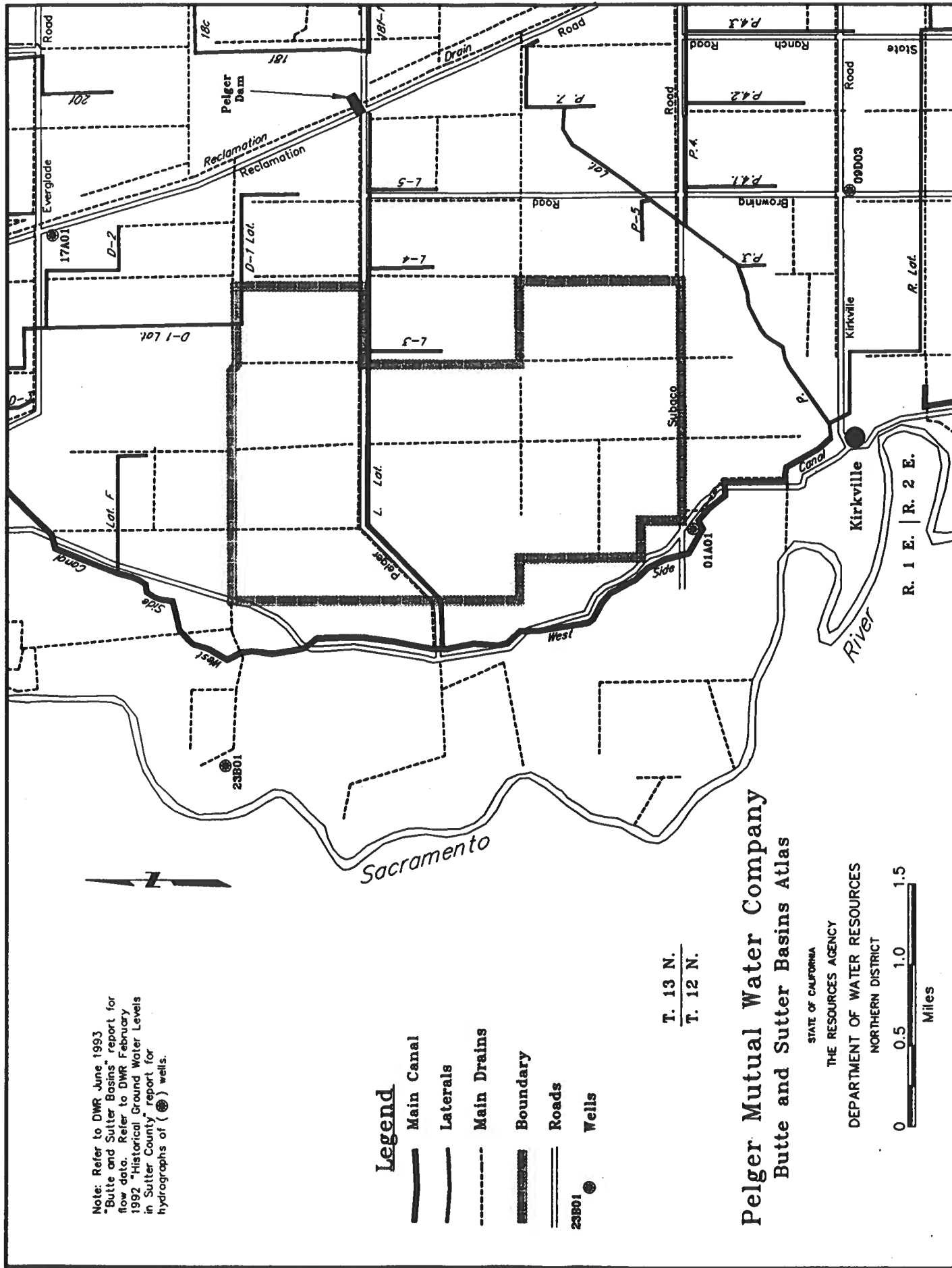
Legend

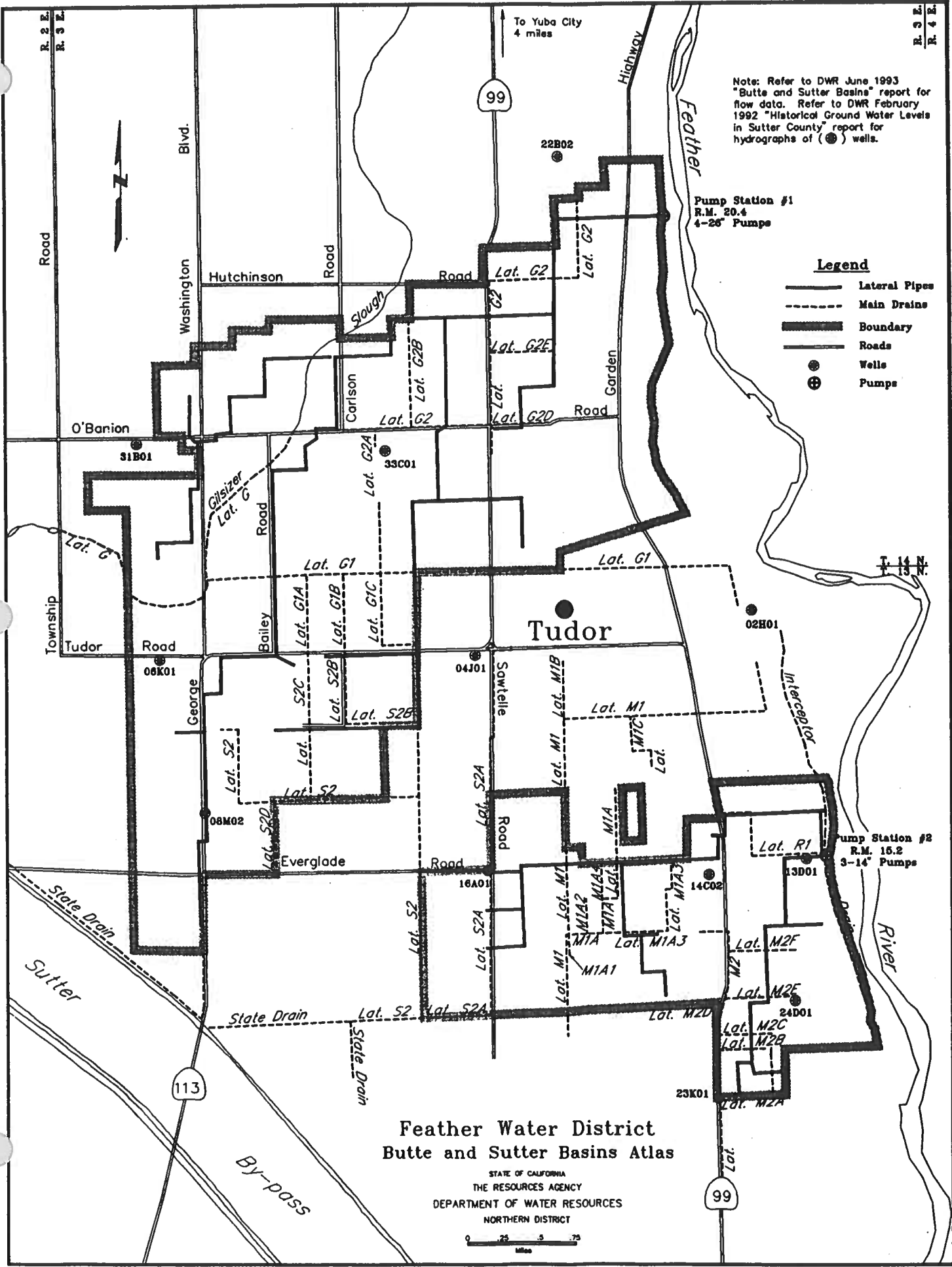
- Main Canal
- Laterals
- - - Main Drains
- ▬ Boundary
- == Roads
- Wells

T. 13 N.
T. 12 N.

**Pelger Mutual Water Company
Butte and Sutter Basins Atlas**

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
NORTHERN DISTRICT





Note: Refer to DWR June 1993 "Butte and Sutter Basins" report for flow data. Refer to DWR February 1992 "Historical Ground Water Levels in Sutter County" report for hydrographs of (●) wells.

Pump Station #1
R.M. 20.4
4-25" Pumps

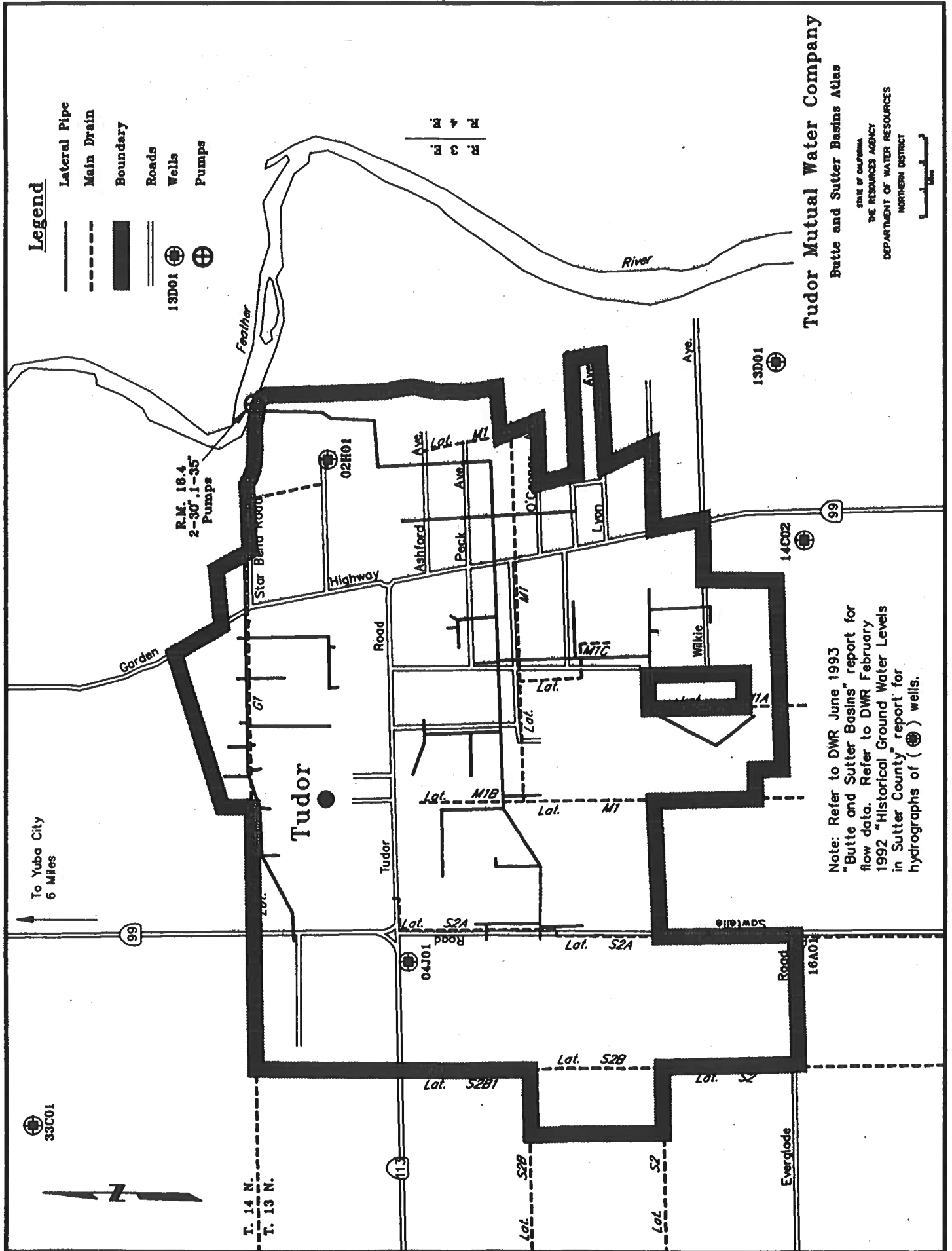
Legend

- Lateral Pipes
- - - Main Drains
- ▬ Boundary
- ▬ Roads
- Wells
- ⊕ Pumps

**Feather Water District
Butte and Sutter Basins Atlas**

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
NORTHERN DISTRICT





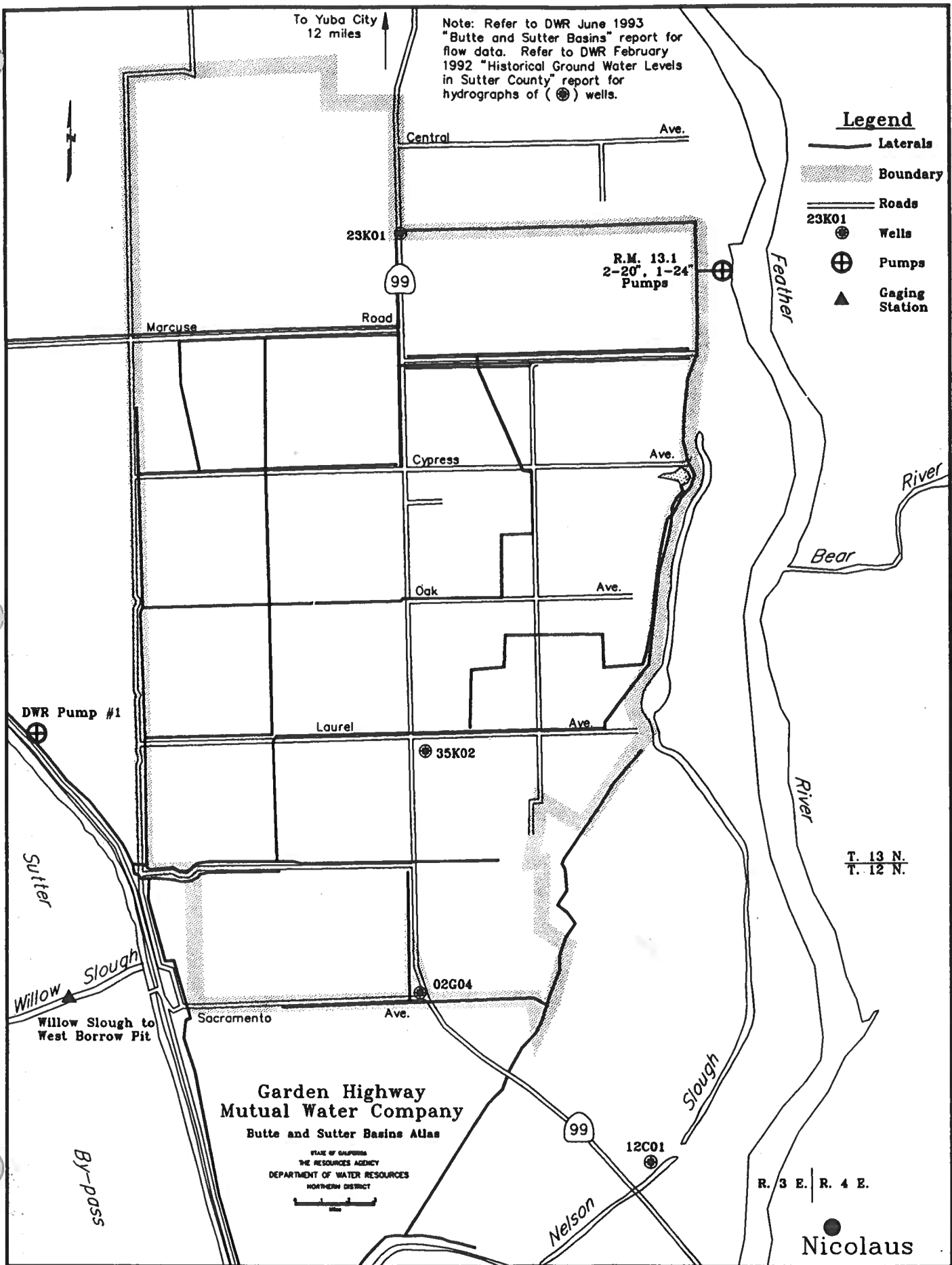
Legend

- Lateral Pipe
- Main Drain
- Boundary
- Roads
- Wells
- Pumps

Tudor Mutual Water Company
 Butte and Sutter Basins Atlas

STATE OF CALIFORNIA
 THE RESOURCES AGENCY
 DEPARTMENT OF WATER RESOURCES
 NORTHERN DISTRICT

Note: Refer to DWR June 1993 "Butte and Sutter Basins" report for flow data. Refer to DWR February 1992 "Historical Ground Water Levels in Sutter County" report for hydrographs of (⊕) wells.



Note: Refer to DWR June 1993 "Butte and Sutter Basins" report for flow data. Refer to DWR February 1992 "Historical Ground Water Levels in Sutter County" report for hydrographs of (⊙) wells.

- Legend**
- Laterals
 - ▨ Boundary
 - == Roads
 - ⊙ 23K01 Wells
 - ⊕ Pumps
 - ▲ Gaging Station

Garden Highway Mutual Water Company
Butte and Sutter Basins Atlas

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
NORTHERN DISTRICT

R. 3 E. | R. 4 E.

Nicolaus