

**WESTSIDE
WATER
DISTRICT**

**GROUNDWATER
MANAGEMENT
PLAN**

WESTSIDE WATER DISTRICT

Colusa County, California

GROUNDWATER MANAGEMENT PLAN

ADOPTED FEBRUARY 10, 2000

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FEBRUARY 10, 2000

WESTSIDE WATER DISTRICT

GROUNDWATER MANAGEMENT PLAN

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WESTSIDE WATER DISTRICT

GROUNDWATER MANAGEMENT PLAN

INTRODUCTION:

The Groundwater Management Act (AB3030), signed into law in 1992, authorizes a local agency that provides water service to adopt and implement a Groundwater Management Plan, in accordance with specified procedures.

A Groundwater Management Plan is defined by the State of California Department of Water Resources Bulletin 118-80 as "planned use of the groundwater basin yield, storage space, transmission capability, and water in storage."

Groundwater Management includes:

- (1.) Protection of natural recharge and use of intentional recharge;
- (2.) Planned variation in amount and location of pumping over time;
- (3.) Use of groundwater storage conjunctively with surface water from local and imported sources; and
- (4.) Protection and planned maintenance of groundwater quality.

On February 12, 1998, the Board of Directors of Westside Water District, following a public hearing on February 12, 1998, adopted a Resolution of Intention to Adopt a Groundwater Management Plan pursuant to Water Code Section 10753, et. seq.

PURPOSE:

The purpose of this Groundwater Management Plan is to formalize the components of a management plan to monitor, analyze, and implement effective management practices to utilize and protect our valuable groundwater resources.

WESTSIDE WATER DISTRICT

Westside Water District is located along the extreme West Side of the Central Sacramento Valley at the base of the foothills of the Coast Range. Westside Water District was part of the original service area contemplated for the Tehama-Colusa Canal of the Central Valley Project. The T-C Canal was constructed by the U.S. Bureau of Reclamation and declared complete in 1981.

In anticipation of the Tehama-Colusa Canal and the construction of the District's distribution system, water service contracts were being negotiated in the late 1950's. By March 1960 the District entered into its first contract with the United States (14-06-200-8222) to provide water from the proposed T-C Canal. This contract was amended in 1964 to provide a maximum amount of 25,000 acre-feet of water supply to Westside, reflecting the increased service area and corresponding demand for a water supply. This contract has been put to full beneficial use since the early 1980's.

In November 1975, the County of Colusa entered into a master contract with the United States (14-06-200-8310A) for 60,000 acre-feet of water service from the Tehama-Colusa Canal. With forethought, the Board of Supervisors recognized that the future growth and economic development of Colusa County would be dependent upon a reliable water supply.

Westside Water District, organized in 1954 under Division 13 of the California Water Code, consisted of 23,695 acres by February 1977. In May of 1977, the District underwent a major reorganization in preparation for construction of the delivery facilities. It was at that time that Improvement District No. 1 was organized which ultimately consisted of 8,545.5 acres that were committed to proceed with the construction of the distribution system (I.D. No. 1 Project).

Westside Water District executed a subcontract with the County of Colusa (0-07-20-W0182) on August 16, 1977, to secure an additional water supply of 40,000 acre-feet to meet the demands of the I.D. No. 1 Project as well as projected subsequent future development.

The District does not own any irrigation wells. Any groundwater used within the District is from individual landowners. Several landowners have constructed deep wells (at their own expense) to provide a conjunctive use capability in the event of surface water delivery curtailment.

Continued attempts have been made over the years to develop ground water underlying the District. Although depths to ground water are relatively shallow, especially in the northern portion of the District, the predominance of silt and clay materials which comprise the Quaternary alluvial fan deposits and underlying Tehama formation have generally prevented wells from yielding sufficient quantities of ground water for irrigation purposes. In the extreme southeastern portion of the District, wells drilled into the Cortina member of the Tehama formation have produced inconsistent yields with an average pumping lift of 200 feet.

Data remains limited, but it still holds true as in the Engineering Report in Support of a P.L. 130 Loan, "that ground water does not constitute a reliable source of water supply for District lands and full reliance must be placed on water supplies from the Tehama-Colusa Canal." Work currently underway by the State Department of Water Resources will provide additional study documentation as to groundwater supplies. The District is addressing the issue as well in its Water Conservation and Management Plan.

REGIONAL PHYSIOGRAPHY AND GEOLOGY

PHYSIOGRAPHY

The District contains a central north-south belt of low alluvial plains and alluvial fans averaging less than five miles in width. This alluvial belt area is bordered on the west by the foothills of the Coast Range and on the east by the Sacramento River flood plain. Along the westerly edge of the District is a narrow, discontinuous low ridge which rises 50 to 100 feet above the alluvial plain and constitutes the first of a series of north-south parallel ridges and intervening valleys, which comprise the easterly front of the Coast Range. Land surface elevations in the middle and northerly portions of the District range from about 110 feet at the Glenn-Colusa Canal near the easterly boundary of the District to a maximum of about 400 feet in the northwest corner of the District.

South of State Highway 20, the trend of the low foothills changes to the southeast. The westerly and southerly boundaries of the District generally coincide with the edge of the alluvial plain which is at an elevation of about 200 feet.

GEOLOGY

Geologic units that are important with respect to the District include, from oldest to youngest, and from west to east, upper Cretaceous deposits of the Chico formation, the Tehama formation and related deposits of Pliocene age, alluvial fan deposits of Quaternary age and Recent flood-basin deposits.

The Chico formation is essentially impermeable and, as such, is considered to be non-water bearing and is further considered to constitute the bedrock unit underlying the District. The Chico formation crops out in the low hills and parallel ridges along the westerly edge of the District. Exploratory drillings performed by the U.S. Bureau of Reclamation in connection with location and design of the Tehama-Colusa Canal encountered predominately shales, siltstones and clays with lesser amounts of sandstones and sandy material of the Chico formation on the surface or at relatively shallow depths throughout Reach 6 of the Canal alignment within the District.

The Tehama formation is considered herein to include late Pliocene and Pleistocene continental deposits overlying the Chico formation. Discontinuous surface exposures of the Tehama formation and related continental deposits occur on the valley side of the low foothills along the westerly side of the District north of Highway 20 and comprise the low hills adjacent to the southerly portion of the District. The Tehama formation extends easterly beneath the alluvial fan and flood basin deposits and is a major source of ground water for irrigation in the Sacramento Valley. However, owing to the predominance of sandy silt and silty clay and only small amounts of sand and gravel in the Tehama formation underlying most of the District, it exhibits very low permeability and generally yields only small quantities of water to wells. Only in extreme southeast corner of the District does the upper portion on the Tehama formation, the Cortina member, display sandier and more permeable zones which produce significant quantities of water to wells.

Quaternary alluvial fan deposits overlie the low plain along the westerly side of the Sacramento Valley and consequently cover slightly over one-half of Westside Water District. An accurate differentiation of fan deposits from the underlying Tehama formation is difficult, but it appears that the alluvial deposits are relatively thin, probably no more than 50 to 60 feet thick. North of the vicinity of Salt Creek and Highway 20, the fan deposits are derived from the exposed shales, siltstones and sandstones of the Chico formation and, thus, are generally very fine grained. Alluvial fan deposits in the southeastern corner of the District are derived primarily from the Tehama formation exposed in the adjacent foothills and characteristically range from coarse sand and gravel to silt and clay.

Flood basin deposits consist of accumulated silt and clay materials deposited by flood waters as the flows receded. These fine-grained deposits exhibit very low permeability and grade laterally into and interfinger with the alluvial fan deposits. No flood basin deposits occur within the District; however, the boundary is indefinite and alluvial fan deposits, particularly along the easterly edges, are similar to flood basin deposits with respect to grain size and permeability.

No active faults or recorded epicenters of major earthquakes are known to exist in the area.

HYDROGEOLOGY OF THE WESTSIDE WATER DISTRICT

AQUIFER CHARACTERISTICS

Westside Water District is located over the "Stony-Colusa Sub-Basin" a portion of the Sacramento Valley Groundwater Basin. See MAP (vii). The Department of Water resources, Northern District, has reported that there is insufficient data at this time to calculate an estimated ground water storage value. Usable storage and/or safe yield are unknown.

GROUNDWATER RECHARGE

The District does not operate specific ground water recharge areas. However, there is reason to believe that application of surface water does recharge a semi-confined subsurface basin. This basin is a source of limited pumped supplies utilized by individual landowners during drought years and periods of diversion limitations resulting from Red Bluff Diversion Dam operational restrictions.

OCCURANCE OF GROUNDWATER

Groundwater elevation data has been collected from 1980 to date. When the distribution system was initially planned, there was concern that applied surface water may not drain sufficiently from the basin and create an intolerable high water table. Sixteen piezometers were installed to monitor water elevations throughout the District. See Map (viii). The data from the observation well readings is found in appendix F of the District's Water Conservation Plan.

It appears that water levels have risen since the completion of the project, but fortunately not to an extent detrimental to root zones. Therefore, it has not been necessary to implement the contingent sub-surface drainage facilities plan. The readings indicate that there was a 2.15 foot average increase in groundwater levels during April through August of 1989. Further study of the measurement data and individual groundwater extraction levels could better quantify the value of the recharge resulting from application of surface water.

COMPONENTS OF THE GROUNDWATER MANAGEMENT PLAN

THE CONTROL OF SALINE WATER INTRUSION

The District is authorized to take reasonable and feasible steps to ensure against saline water intrusion within the groundwater basin managed by the District. There are currently no known sources of saline water intrusion within the District, however, saline water has been located in areas southeast of the District boundaries, principally in the area known as the Colusa Basin. The District will establish, and maintain on a routine basis, a program of groundwater quality testing and monitoring to establish baseline quality criteria for groundwater from within the District, including saline content, and routinely test, on a periodic basis as determined by the Board, for water quality in order to determine whether or not baseline qualities are being affected and/or deteriorating as a result of saline water intrusion and/or intrusion of other components adverse to the use of such groundwater for irrigation practices within the District. The District recognizes the Colusa County standard of 2,500 parts per million of total dissolved solids as the maximum contaminate level for action to abandon a well or make appropriate corrections.

REGULATION OF MIGRATION OF CONTAMINATED GROUNDWATER

Periodic testing will be undertaken to ensure reasonable quality of water being maintained, that there is no saline intrusion, and, likewise, there is no contaminated groundwater which is moving into the District for which appropriate planning and/or mitigation is required.

CONJUNCTIVE USE OPERATIONS

A small number of individual landowners have facilitated conjunctive use of their surface and groundwater supplies in order to provide optimal water supplies available within the District as well as to provide for reduction in diversion of surface water supplies in times of need for water in other areas.

The District reserves the right to enter into agreements with landowners

within the District to utilize their deep well facilities in order to augment surface water supplies to the District and/or to alleviate shortages caused by lack of water and/or failure of facilities delivering water within the District. Landowners facing water shortages would first be encouraged to enter into private agreement with other landowners for the transfer or substitution of well water in the event they have exceeded their pro rata supply. If supplies are needed for District purposes, the District also reserves its rights to compensate for use of groundwater in those circumstances where the water shortages and/or failure or inadequate capacity of facilities causes shortages throughout a water area of the District. The terms and conditions of any reimbursement to landowners for use of deep wells would be a subject of negotiations between landowners and/or between the District and the landowners offering such deep well facilities.

Prior to undertaking any program, the District will evaluate any adverse economic or environmental impact of such program. In this way, the deep well capacity of the District can be used in a conjunctive manner with surface water supplies in order to assist other areas in need of water in addition to the landowners within the District and to the benefit of the District and its landowners, as long as such programs do not (1) exceed the safe yield of the aquifer; (2) result in the conditions of overdraft, and; (3) result in uncompensated adverse impacts on neighboring landowners affected by the program.

In connection with conjunctive use programs, the District reserves the following authority and jurisdiction in connection with the operation of privately owned deep wells:

1. The District, upon order of the District Manager, may at any time order a discontinuance of deep well operations in the event such wells are being utilized for conjunctive use purposes either through outside District water transfers or transfers within the District. The terminations in this regard will be based on its evaluation of impacts in adjoining areas and whether those impacts can be feasibly and reasonably mitigated.
2. The District will limit production of groundwater in connection with any conjunctive use program to groundwater replacing surface water otherwise used in connection with the landholdings upon which the deep well facilities are located if it is established that additional production will adversely affect neighboring wells and landowners.
3. The District will take all other necessary and appropriate action as may be determined appropriate by the Board of Directors of the District in

accordance with provisions of Section 35408 and 35409 of Water Code of the State of California, which provides as follows:

“ A district may commence, maintain, intervene in , compromise and assume the costs of any action or proceeding involving or affecting the ownership or use of waters or water rights within the district or a benefit to any land.

A district may commence, maintain, intervene in, defend and compromise actions and proceedings to prevent interference with or diminution of the natural flow of any stream or natural subterranean supply of waters which may:

- (a) Be used or be useful for any purpose of the district;
- (b) Be of common benefit to the land or its inhabitants; or
- (c) Endanger the inhabitants or land.”

DEVELOPMENT OF RELATIONSHIPS WITH STATE AND FEDERAL REGULATORY AGENCIES

The District will independently maintain a close liaison and cooperation with California Department of Water Resources, as well as appropriate State and Federal Agencies who have jurisdiction over, or interest in the groundwater resources available within the District and within Colusa County area of interest. Included within these programs will be exchange of data, development of monitoring and testing programs and contributions of labor in order to ensure a cooperative development of the optimal resource and data base available to the District. The District shall also, as part of its membership within the Association of California Water Agencies, and the Northern California Water Association, and other pertinent State and Federal advocacy and representation groups, participate in legislative and administrative regulatory programs which would facilitate the study of protection of groundwater resources available within the District. The District will cooperate with Colusa County, as well as all neighboring districts in administration of it's groundwater management plan.

LAND SUBSIDENCE

No subsidence problems regarding land use, homes, buildings or roads are known to exist within the Project area. Page 8 of the Tehama-Colusa Canal FES (72-17) and page 18 of the Supplemental FES

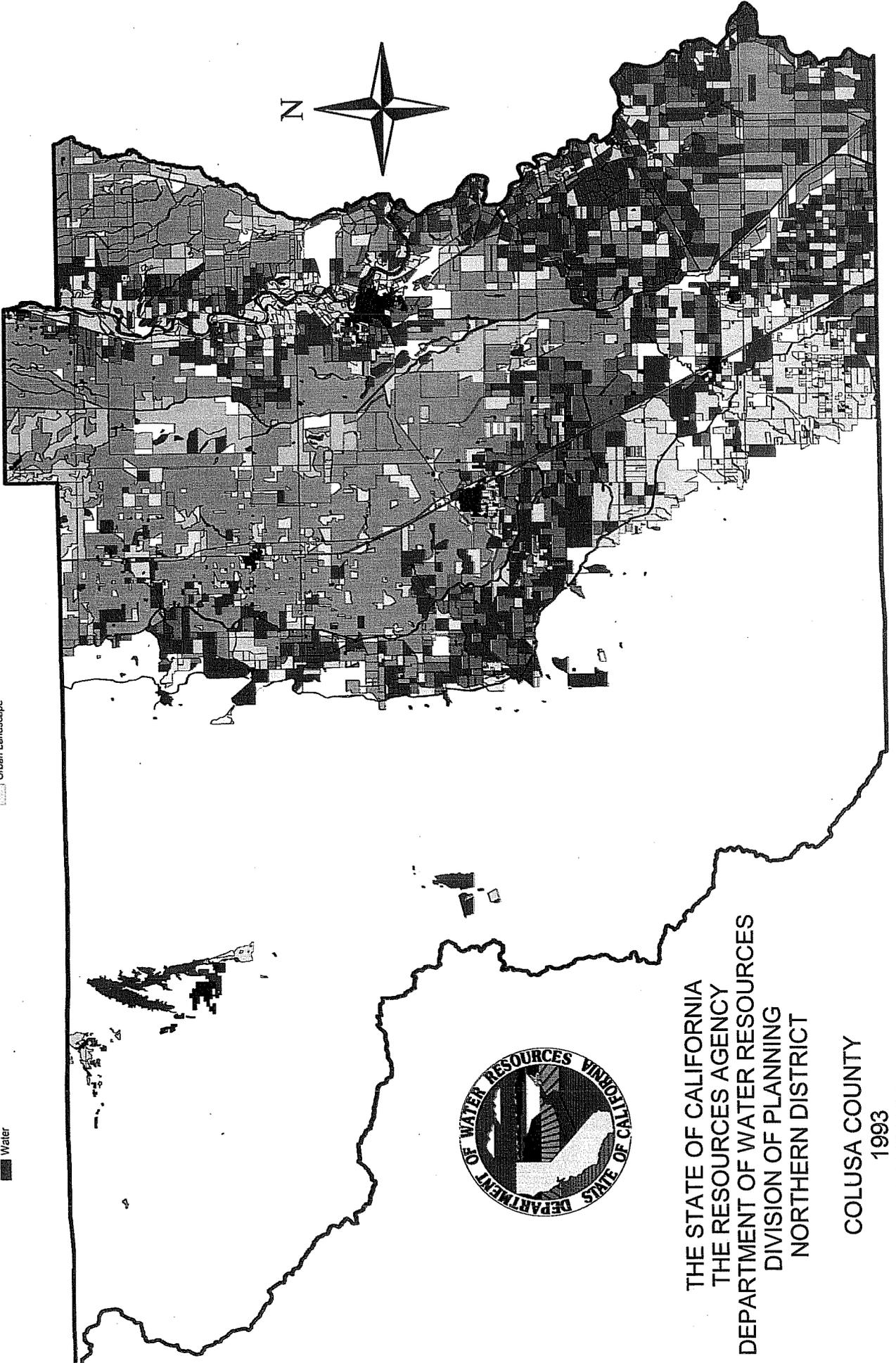
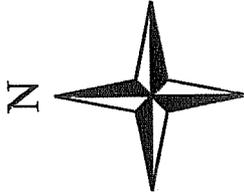
LAND USE MAPS

Colusa County &
Westside Water District

- Subtropical
- Deciduous
- Field Crops
- Rice
- Pasture
- Grain
- Idle
- Native Barren
- Native Vegetation
- Water

- Native Riparian
- Vineyard
- Truck Crops
- SemiAg & Incidental
- Urban
- Urban Residential
- Urban Vacant
- Urban Commercial
- Urban Industrial
- Urban Landscape

2 0 2 4 6 8 Miles



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

COLUSA COUNTY
 1993
 LANDUSE

- Subtropical
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- Field Crops
- Rice
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THE STATE OF CALIFORNIA
 THE RESOURCES AGENCY
 DEPARTMENT OF WATER RESOURCES
 DIVISION OF PLANNING
 NORTHERN DISTRICT

WESTSIDE WATER DISTRICT
 1993
 LANDUSE

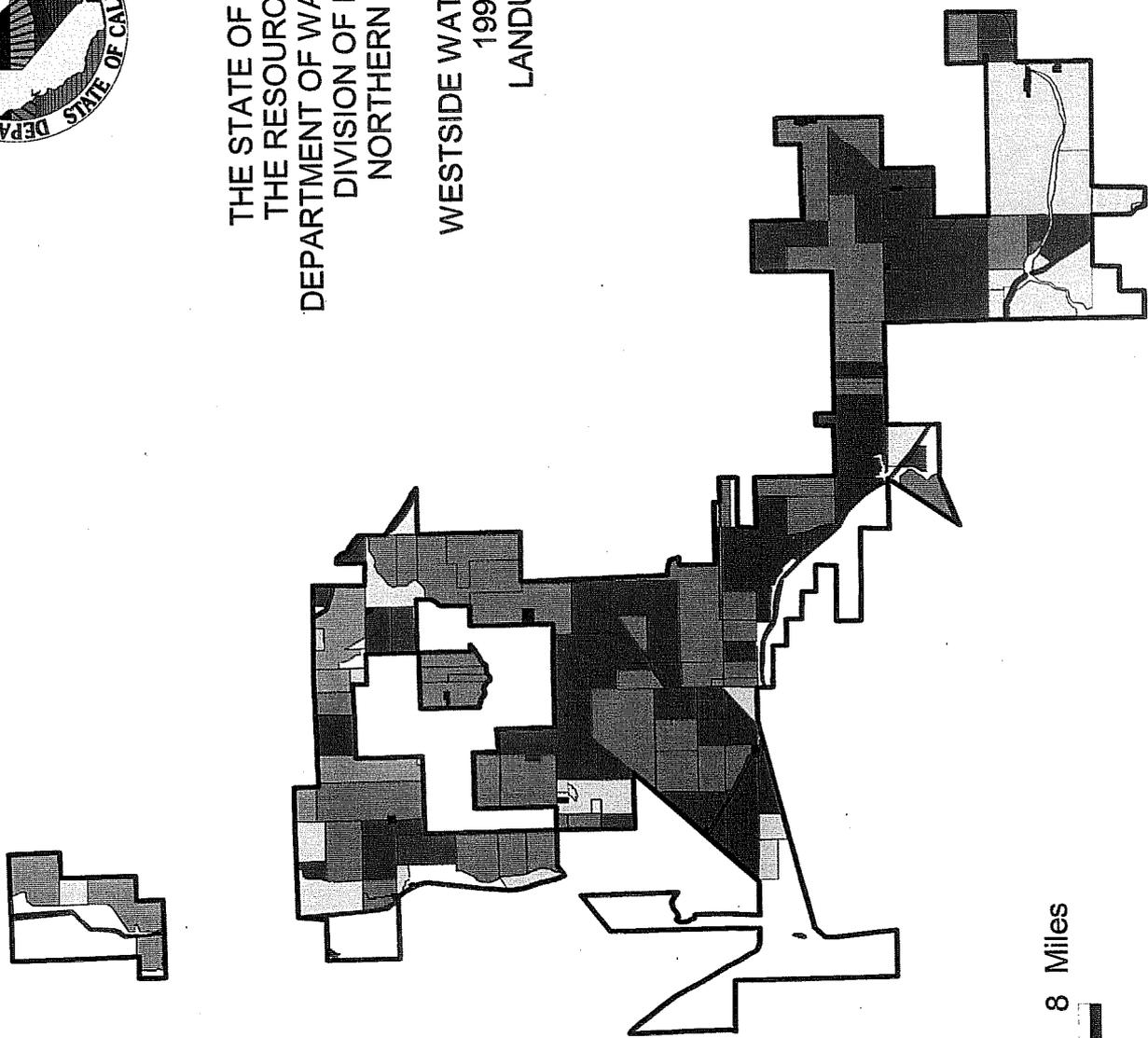
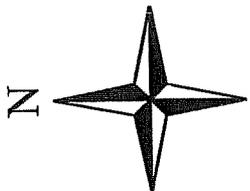
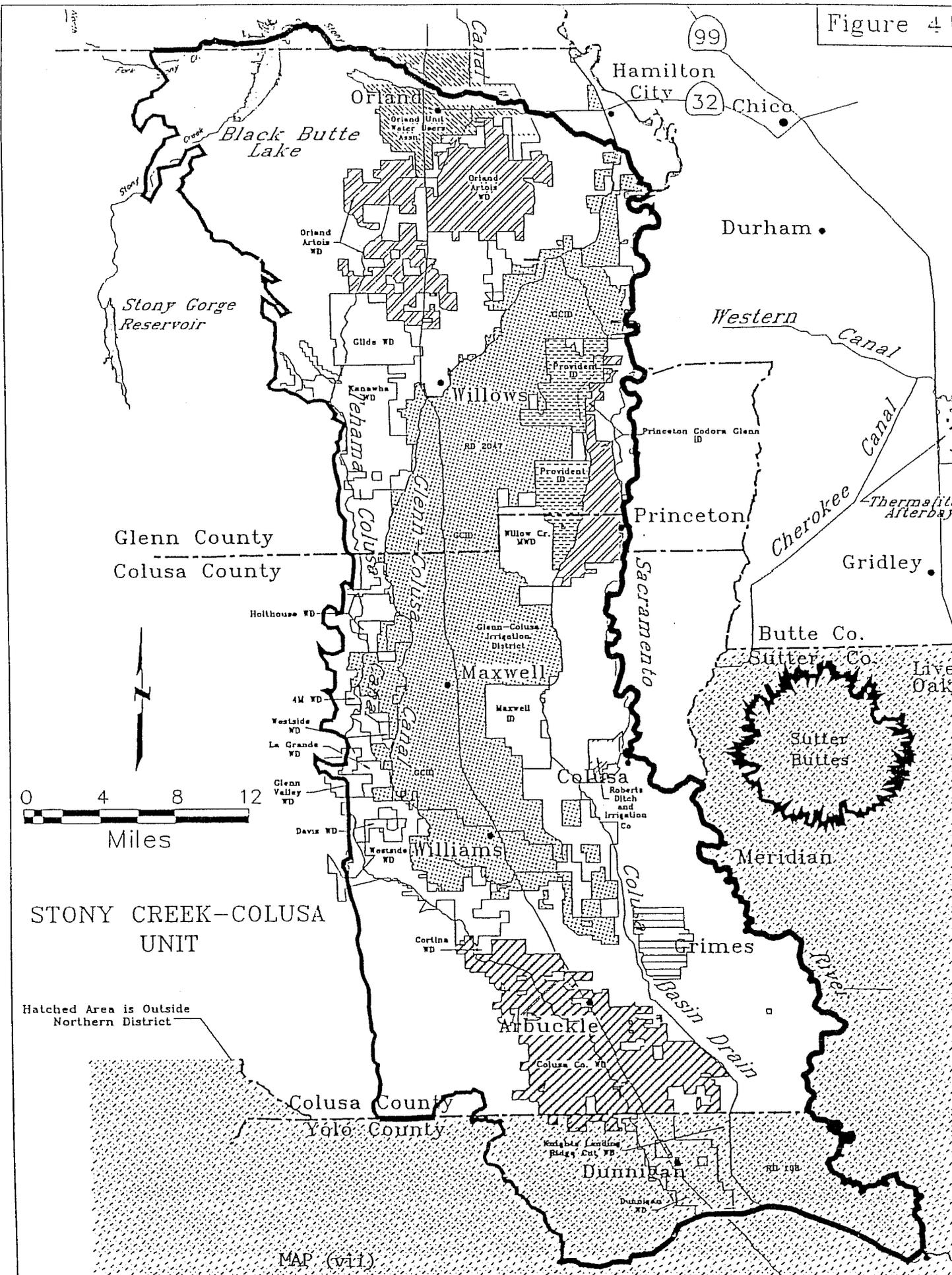


Figure 4



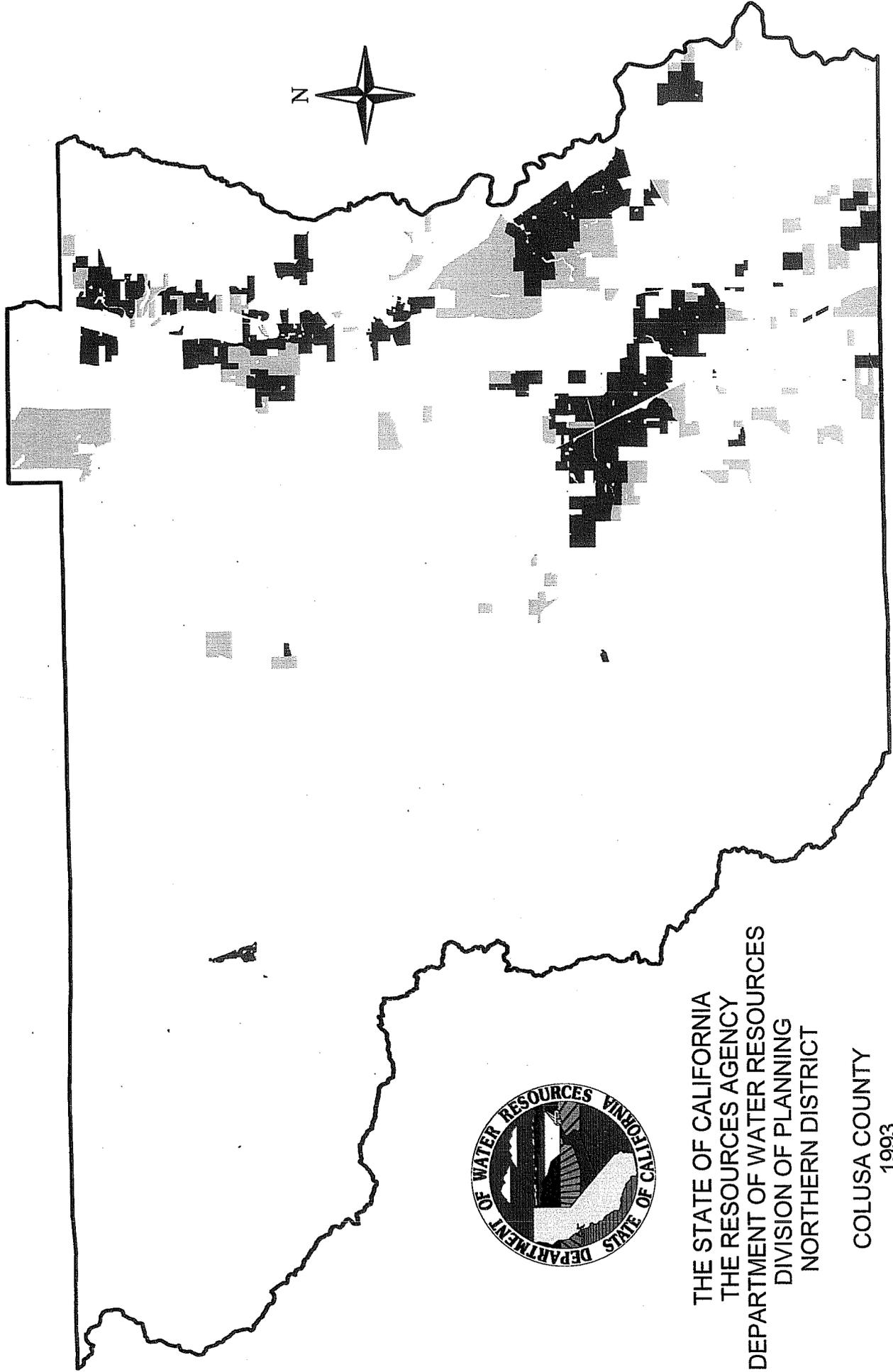
STONY CREEK-COLUSA UNIT

Hatched Area is Outside Northern District

WATER SUPPLY MAPS

Colusa County &
Westside Water District

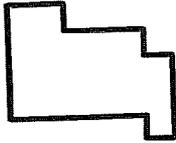
SURFACE WATER
MIXED SURFACE & GROUND WATER
GROUND WATER



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DIVISION OF PLANNING
NORTHERN DISTRICT

COLUSA COUNTY
1993
WATERUSE

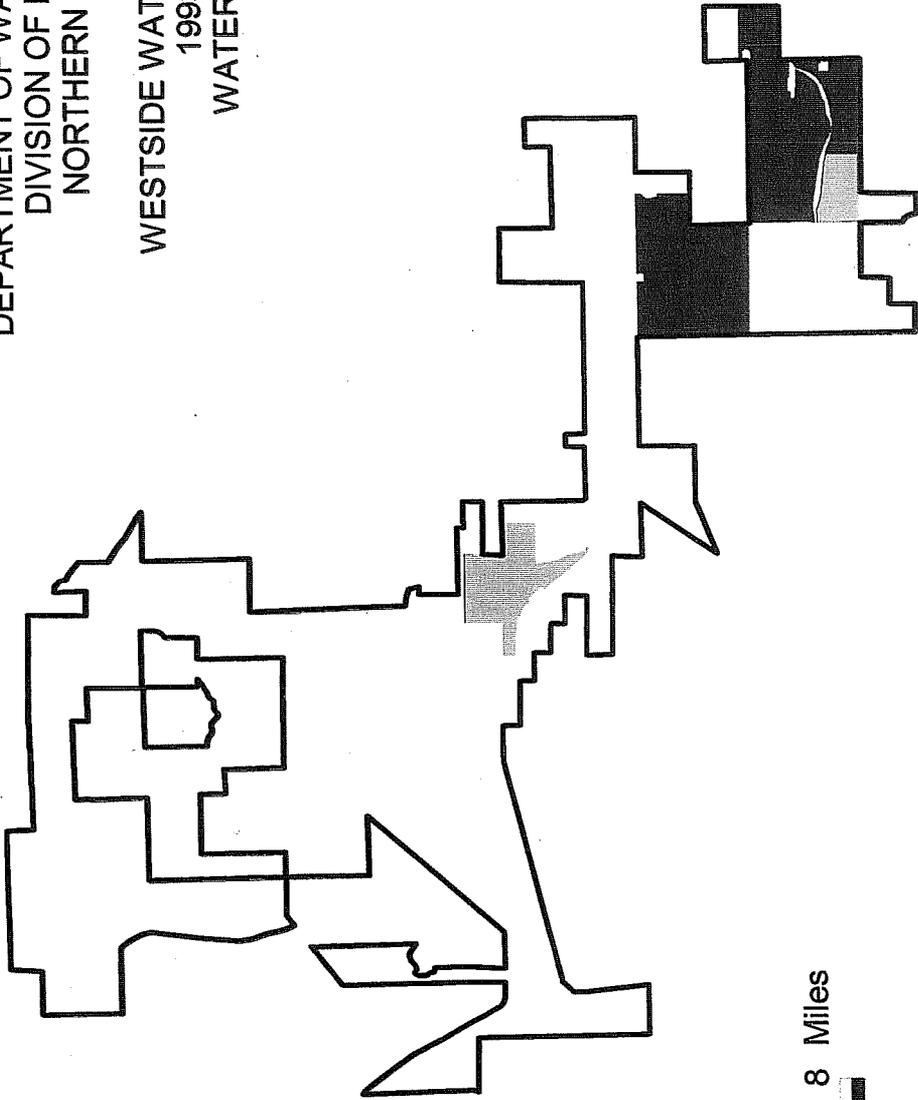
SURFACE WATER
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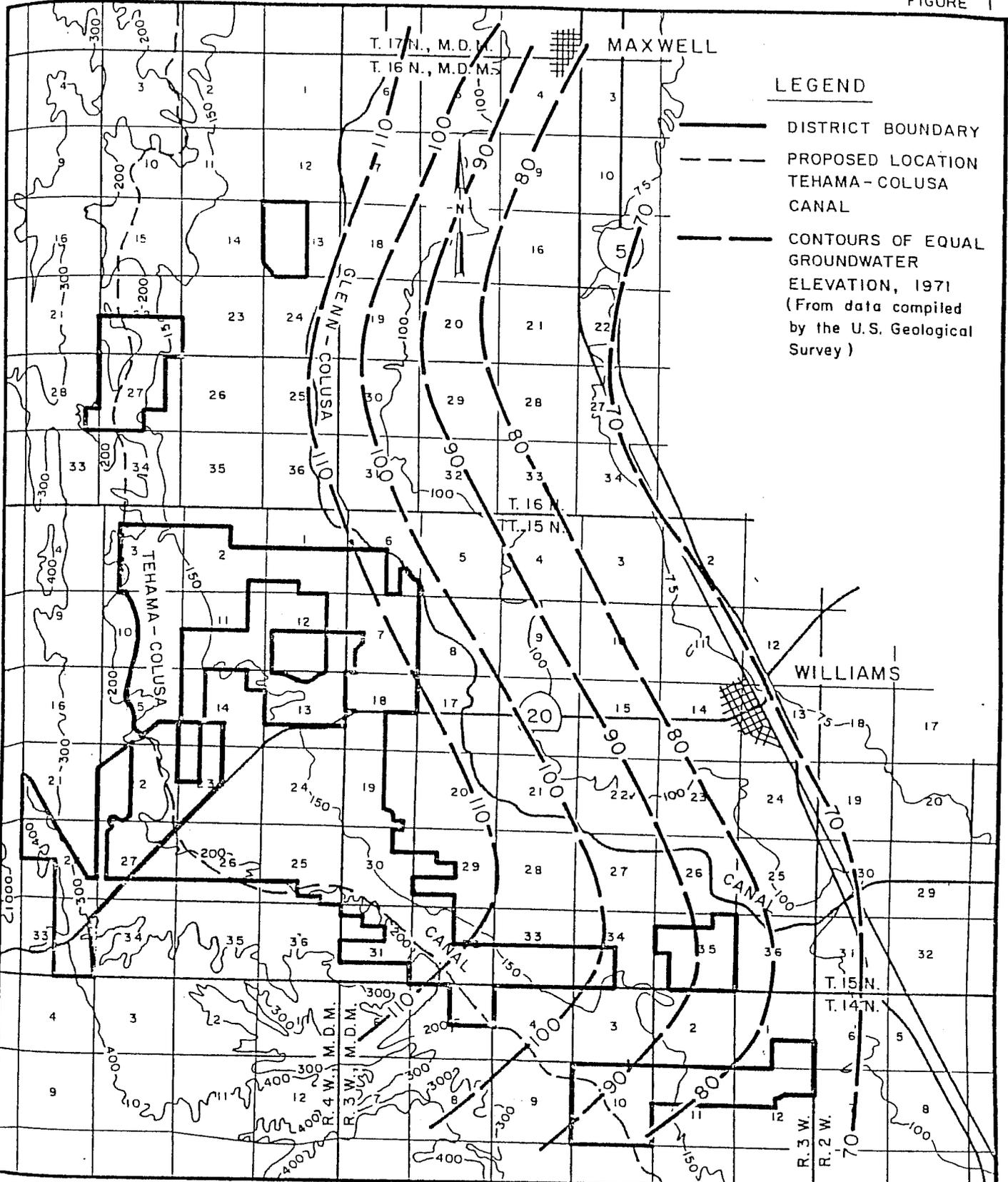
WESTSIDE WATER DISTRICT
1993
WATERUSE



2 0 2 4 6 8 Miles



FIGURE 1

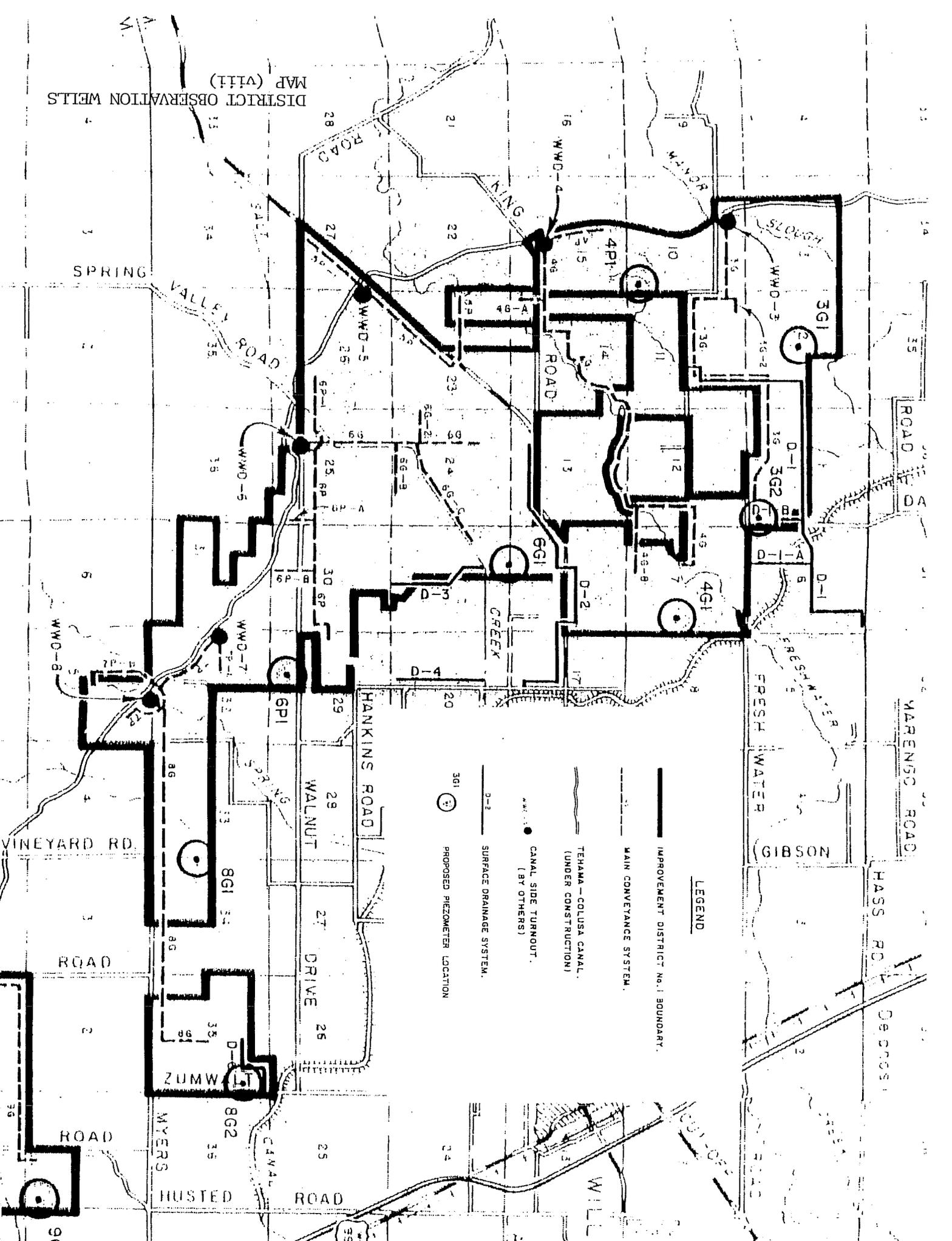


- LEGEND**
- DISTRICT BOUNDARY
 - - - PROPOSED LOCATION
TEHAMA-COLUSA
CANAL
 - - - CONTOURS OF EQUAL
GROUNDWATER
ELEVATION, 1971
(From data compiled
by the U.S. Geological
Survey)

IMPROVEMENT DISTRICT No.1
OF
WESTSIDE WATER DISTRICT

CONTOURS OF EQUAL GROUNDWATER ELEVATION

DISTRICT OBSERVATION WELLS
MAP (VIII)



LEGEND

- IMPROVEMENT DISTRICT NO. 1 BOUNDARY.
- MAIN CONVEYANCE SYSTEM.
- TEMAMA-COLUSA CANAL.
(UNDER CONSTRUCTION)
- CANAL SIDE TURNOUT.
(BY OTHERS)
- SURFACE DRAINAGE SYSTEM.
- PROPOSED PIEZOMETER LOCATION.

DISTRICT OBSERVATION WELLS
MAP (VIII)

