

THE BOARD OF SUPERVISORS OF THE COUNTY OF STANISLAUS  
ACTION AGENDA SUMMARY

DEPT: **ENVIRONMENTAL RESOURCES** *KMW*

BOARD AGENDA # \*B-1

Urgent \_\_\_\_\_ Routine x

AGENDA DATE February 20, 2001

CEO Concurs with Recommendation YES prt NO \_\_\_\_\_  
(Information Attached)

4/5 Vote Required YES \_\_\_\_\_ NO \_\_\_\_\_

SUBJECT:

**APPROVAL OF A RESOLUTION FOR SUPPORT FOR STANISLAUS COUNTY  
EASTSIDE WATER DISTRICT GROUNDWATER RECHARGE PROGRAM**

STAFF  
RECOMMEN-  
DATIONS:

**APPROVAL OF A RESOLUTION FOR SUPPORT FOR STANISLAUS COUNTY  
EASTSIDE WATER DISTRICT GROUNDWATER RECHARGE PROGRAM**

FISCAL  
IMPACT: **There is no fiscal impact.**

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**BOARD ACTION**

No. 2001-116

On motion of Supervisor Caruso, Seconded by Supervisor Simon,  
and approved by the following vote,

Ayes: Supervisors: Mayfield, Blom, Simon, Caruso, and Chair Paul

Noes: Supervisors: None

Excused or Absent: Supervisors: None

Abstaining: Supervisor: None

1) X Approved as recommended

2) \_\_\_\_\_ Denied

3) \_\_\_\_\_ Approved as amended

Motion:

*Christine Ferraro*

**APPROVAL OF A RESOLUTION FOR SUPPORT FOR STANISLAUS COUNTY  
EASTSIDE WATER DISTRICT GROUNDWATER RECHARGE PROGRAM**

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If financial assistance is requested of the DER, those requests will be brought back to the Board for consideration.

**POLICY**

**ISSUE:**

If the Board approves the Resolution for support of Stanislaus County Eastside Water District Groundwater recharge program, it will be consistent with the Board's priority achieving multi-jurisdictional cooperation, and be in line with the Board's mission of creating new partnerships.

**STAFFING**

**IMPACT:**

None

## EASTSIDE WATER DISTRICT GROUNDWATER RECHARGE INVESTIGATIONS



Pilot Recharge Basin

### **BACKGROUND**

The Eastside Water District (District) is comprised of about 54,000 acres in Merced and Stanislaus Counties farming high value, non-subsidized crops that are irrigated by highly efficient methods. Most of the land within District is agricultural and is irrigated with groundwater. The only other source of supply is a very limited amount of surface water from purchases in wet years from the Turlock and Merced Irrigation District's canals lying adjacent to District and from riparian water rights along the Tuolumne and Merced Rivers. The groundwater within District apparently is declining at about two feet per year which is creating an average annual deficit of about 80,000 acre-feet.

The District was formed in 1985, after about twenty years of struggle, in recognition that if the overdraft was allowed to continue unabated there could come a time when pumping groundwater for irrigation would no longer be economic, or the quality of water pumped would not be satisfactory for irrigation. The District was formed, by election of landowners within the District, under California Law, as a legal body to address water needs of the area. The District is governed by a five person Board of Directors elected to serve alternating four year terms.

In the late 1980's the District retained the services of Boyle Engineering Corp. to conduct studies and make recommendations. An Irrigation Water Master Plan was completed in 1990. In 1994, the District completed a Groundwater Management Plan under California Assembly Bill 3030. The Plan identifies nineteen tasks to: monitor groundwater levels and quality, reduce pumping through improved conservation and further development of surface water/groundwater conjunctive use programs, and search for water supplies and methods to recharge the groundwater. In years 1995 through 1998 the District developed and funded an incentive program to encourage irrigators to use available wet year water from the Turlock and Merced Irrigation Districts.

The District has joined other agencies who pump water from the common Turlock Groundwater Basin in developing and adopting a Basin-wide Groundwater Management Plan with the objective of coordination and joint efforts to stabilize groundwater levels.

### **RECHARGE BASINS**

Most of the land within the District is underlain by highly impermeable strata which forms a barrier, making natural recharge from impoundment created on the surface impracticable.

A concept of excavated Recharge Basins selectively sited and excavated to depths to hydrologically connect to the aquifer (through the hardpan) is currently being investigated. Initial investigations by Boyle Engineering identified areas showing promise as potential recharge sites. The District has

retained the services of Kenneth D. Schmidt and Associates, Groundwater Quality Consultants, to conduct the first phase of hydrogeologic evaluation of sites to recharge the aquifer.

Early in 1997, Schmidt and Associates identified a promising location to install a Pilot Recharge Basin. During spring and summer of 1997 the District completed investigations and prepared documents as required by the California Environmental Quality Act.

In the fall of 1997 the District constructed a Pilot Recharge Basin. The Basin is located adjacent to the Turlock Irrigation District (TID) Highline Canal just South of Monte Vista Ave. Dimensions of the Basin are:

Floor Length:	200 feet	Area of floor:	0.22 ac-ft
Width:	50 feet	Side Slopes:	1 to 1 (45°)
Average Depth:	15 feet	Pump Capacity:	500 gpm

As anticipated a clean fine grained sand was encountered at about 13 foot of depth. The District entered into an agreement with TID to purchase and pump water from the Highline Canal.

The District has operated the Basin during the 1998, 1999 and 2000 irrigation seasons. The District purchased water from TID. Water in the Basin is being maintained (with a float switch) between one and two feet of depth, the optimum depth for recharge.

Spring flooding in 1998 delayed initial startup resulting in a short 177 day operating season. The District learned in that first year that as the water warmed and algae formed in the Basin the bottom would seal and the rate of recharge would slow. It was learned as a result of an unplanned shutdown that the algae would die and the recharge rate would recover. In 1999 and 2000, as happened in 1998, when algae began to form, the rate of recharge again began to decline. In order to restore the recharge rate, the District shut the pump off to dry (kill) the algae. In each instance the recharge rate recovered when operations resumed.

Following is a table showing recharge data.

	<b>1998</b>	<b>1999</b>	<b>2000</b>
Days	177	231	223
Total recharge (acre-feet)	57.1	114.5	127.7
Total vertical feet (feet)	259	520	580
Average daily recharge (feet/day)	1.5	2.25	2.72
Increase in average daily recharge rate		50%	21%
Start up	May 4	Mar 18	Mar 26
Shut down	Oct 28	Nov 4	Oct 24

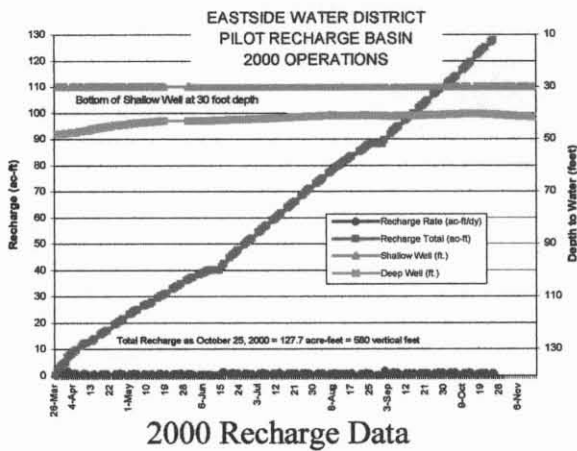


Dried Algae

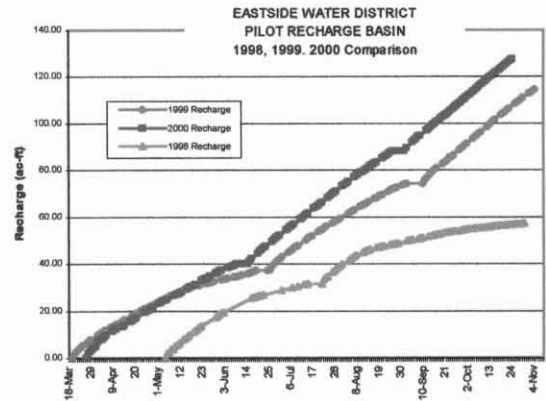


Pump in TID Highline Canal

Shown below are two charts, one showing total recharge for 2000, the other comparing total recharge for 1998, 1999 and 2000. Note the flat sections of the curves indicate the pump being shut off to dry the algae.



2000 Recharge Data



Comparison of years 1998, 1999 & 2000

## ADDITIONAL STUDIES

Results from the Recharge Basin are encouraging. If the District is to be successful in identifying and implementing solutions to the declining groundwater levels, additional studies will be required. Following is a brief discussion of additional studies being contemplated:

### Monte Vista Avenue Pilot Recharge Basin-Phase II

Results from operation of the existing Pilot Recharge Basin are very promising. In order to recharge large volumes of water, basins substantially larger than the 0.22 acres of the existing basin will be required. The average daily recharge rate of up to 2.72 vertical feet per day is very good. It is anticipated however, that as larger basins are used the average recharge rate will likely be less. Consultants working for the District have recommended construction and operation of a larger basin (**Phase II Project**) to evaluate recharge rates on a larger scale operation. They propose a four-acre basin divided into one-acre cells. Operation of the four cells would allow one to be drying while others are recharging.

### Turlock Airport Recharge Basin

Lateral movement of groundwater tends to be slow. In order to recharge large volumes of water it will be necessary to use a number of recharge sites dispersed around the District. Plans are underway to construct a pilot recharge basin in the vicinity of the Turlock Airport. Soil borings will be conducted to determine the most suitable location. The Turlock Irrigation District has indicated a willingness to supply water subject to the condition of sufficient water being available.

### Recharge Master Plan

A Recharge Master Plan, covering the entire District, will be developed. The plan will identify potential sources of water for recharge, concepts for bringing the water to the District and methods for delivery of the water to recharge basins.

**THE BOARD OF SUPERVISORS OF THE COUNTY OF STANISLAUS  
STATE OF CALIFORNIA**

Date: February 20, 2001

No. 2001-116

On motion of Supervisor Caruso , Seconded by Supervisor Simon ,  
and approved by the following vote,  
Ayes: Supervisors: Mayfield, Blom, Simon, Caruso, and Chair Paul  
Noes: Supervisors: None  
Excused or Absent: Supervisors: None  
Abstaining: Supervisor: None

\*B-1

THE FOLLOWING RESOLUTION WAS ADOPTED:

**RESOLUTION OF SUPPORT FOR THE EASTSIDE WATER DISTRICT  
GROUNDWATER RECHARGE PROGRAM**

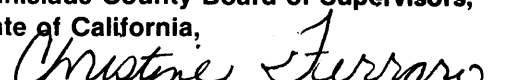
BE IT RESOLVED, that the Board of Supervisors of the County of Stanislaus, State of California, hereby finds and determines as follows:

1. The Turlock Groundwater Basin is a major source of water for the following agencies: City of Ceres, Keyes Community Services District, Denair Community Service District, City of Turlock, Hilmar County Water District, Delhi County Water District, City of Hughson, City of Modesto, Merced Irrigation District, Ballico Community Services District, County of Merced, County of Stanislaus, Eastside Water District, Ballico-Cortez Water District, and Turlock Irrigation District (the "Agencies").
2. Pursuant to AB-3030, the Agencies drafted, and most have adopted, the Turlock Groundwater Basin Management Plan.
3. The Agencies created a management committee to monitor groundwater conditions, develop solutions and coordinate actions within the Turlock Groundwater Basin.
4. Groundwater levels in the eastern areas of the Turlock Groundwater Basin have dropped dramatically during the last thirty years, and the area of overdraft lies mostly within the Eastside Water District (the "District"), which was formed in 1985 for the specific purpose of finding solutions to declining groundwater levels.
5. The District has successfully demonstrated the technical feasibility of groundwater recharge using water purchased from the Turlock Irrigation District by constructing and operating a pilot groundwater recharge basin within the Turlock Groundwater Basin; and
6. The District is developing comprehensive plans for a large scale recharge project in the Turlock Groundwater Basin to demonstrate the technical feasibility of such a project.
7. Stanislaus County is interested in developing a partnership with District to develop the large scale recharge project, and to seek funding from the California Proposition 13 grant programs for additional studies that are necessary for the groundwater recharge project.

BE IT FURTHER RESOLVED, that the Stanislaus County Board of Supervisors recognizes and congratulates the District for its successful efforts to stabilize groundwater levels in the Turlock Groundwater Basin, and encourages the District to continue its leadership in this area.

BE IT FURTHER RESOLVED that the Stanislaus County Board of Supervisors encourages the State of California to give favorable consideration to the District's grant applications for groundwater recharge projects.

ATTEST: REAGAN M. WILSON, Clerk  
Stanislaus County Board of Supervisors,  
State of California,

  
By: Deputy

File No.