



February

# SALTON SEA

A newsletter of the Salton Sea Restoration Project

Volume 10 Number 2002

## Crossroads Bridged

*"We are going to save the Salton Sea and we will do so with consensus."*



Bono

Filner



Wyatt and Taylor

Nichols

*"The good news is there appears to be 'affordable' options..."*



Stapleton

*"The decisions will rest on how well all the various interests can be accommodated."*

**MILVANA WEALES** — The many and sometimes conflicting challenges facing the Salton Sea were aired here January 9 and 10 during the Fourth Biennial Salton Sea Symposium.

The event, sponsored by the Salton Sea Authority, featured presentations by three members of Congress as well as a number of federal and state officials.

All of the issues were put on the table, said Authority President Roy Wilson, a member of the Riverside County Board of Supervisors.

Mary Nichols, California's Secretary for Resources and Salton Sea Congressional Task Force members Mary Bono (R-41<sup>st</sup>) and Ken Calvert (R-43<sup>rd</sup>) made it clear from their presentations that



because of the need to complete water transfers, a decision on restoration will be made this year.

The pending water transfer between the San Diego County Water Authority and the Imperial Irrigation District "is forcing us to face the issue many saw coming in the mid 1990s," Nichols said.

"The good news is that there appears to be 'affordable' options for Salton Sea Restoration. By that, I mean \$500 million or less," she said.

"The bad news is that the options with all of the background analysis and pros and cons are not getting to the public," Nichols said.

She added that while the transfer

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# O P I N I O N

## "Bridging the Crossroads"

By Roy Wilson

President,  
Salton Sea Authority Board



**A**t the recent Salton Sea Symposium, the theme was "Bridging the Crossroads."

Judging from the comments I heard at the Symposium as well as subsequent feedback, we did a pretty good job of presenting and discussing the many political, scientific, environmental and economic issues we face in bridging the crossroads and restoring the Salton Sea.

We face some heavy traffic through those crossroads in the next year. The Quantification Settlement Agreement (QSA) is scheduled for finalization by the end of the year. Because of this timing and the effect of water transfers on the Sea, a good deal of time at the Symposium was spent discussing that historic pact.

The QSA is an important agreement for California and the six other states in the Colorado River Basin as well as the members of the Salton Sea Authority.

Mary Nichols, Director of California's Resources Agency, told the symposium audience that we need to know what the implications of the transfers are for the Sea.

"There are those who say these are two different issues," she said, and she agreed that "the transfer shouldn't be held 'hostage' to the Salton Sea."

However, Nichols also said the State — and the public — wants to know the implications of the transfer on the Salton Sea.

"Can the Sea be restored? What are the options? What are the costs? We don't want to wake up Jan. 1, 2003 and discover we don't even have a reasonable option left to restore the Sea—and then also be stuck with the costs of a dying body of water," Nichols said.

The Salton Sea Authority and the Bureau of Reclamation have been working on the questions raised by Mary Nichols for some time and it is my hope that we can release the findings of that work in the very near future. It is not just Mary Nichols who is raising these points, it is also many individuals, nongovernmental organizations and public agencies.

As I said at the Symposium, the Salton Sea can be the cornerstone of the economies of the Coachella and Imperial Valleys in the future, but we must share the alternatives for the Sea's future with the public for that to occur.

If we do not do this, then our agricultural and recreation economies as well as the environment for the fish and wildlife that depend on the Sea will be put at great risk.

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## Crossroads (Continued from Page 1)

should not be held hostage to the restoration effort, the state needs to know the implications of the water transfer on the Sea.

"We don't want to wake up Jan. 1, 2003 and discover we don't even have a reasonable option left to restore the sea—and then also be stuck with the costs of a dying body of water."

Bono, who chairs the Salton Sea Congressional Task Force, told a symposium luncheon audience that the restoration effort is a legacy of her late husband, Sonny Bono.

"What an unbelievably politically challenging project this has been," Bono said. Because of the impending implementation of the Colorado River Quantification Agreement and related water transfers, "we are at a crossroads. All of these things are coming to a head."

She said plans need to be developed immediately to deal with the water needs of urban areas in conjunction with the Sea's restoration effort.

Bono said she is concerned with air quality issues that could result from a smaller Salton Sea. "We need to look at the warning signs now," she said.

The Congresswoman also told the audience that all parties need to come to an agreement about how the Sea should be saved.

"We haven't even decided on everyone's definition of what saving the Sea means," she said.

Calvert, who chairs the House Water and Power Subcommittee, noted that the water transfers in Southern California are among several pending in the western United States.

Because of burgeoning growth, water resources have become scarce commodities and the subject of conflicting demands. "We have a shrinking supply of water throughout the West," he said, adding that the upper basin states are very serious about California living within its allocations of Colorado River water.

Calvert said the river and the Salton Sea are "joined together as close as anything can be." But he also noted the Upper Basin states view flows into the Sea "as a waste of water."

"The quantification agreement was developed to help us wean ourselves from (overuse of) the Colorado River," Calvert said. "The Basin states are looking for us to meet that commitment."

Participants at the symposium also included a representative of the Pacific Institute who discussed a proposal to expand the options of restoring the Sea.

Institute Senior Research Assistant Mike Cohen has proposed a plan to allow much of the Sea to become hypersaline, because of reduced inflows, but at the same time preserve some of the fishery and bird habitat. Scientists at a full day workshop before the symposium identified several serious issues with the plan.

Other speakers told the audience that fallowing of Imperial Valley farmland might be the only viable way to maintain necessary flows to the Sea.

However, Imperial Valley farmer George Ray and El Centro Mayor Larry Grogan strongly advised that fallowing not be considered.

Ray expressed the view that the Sea should be allowed to revert back to its natural state.

California Audubon Executive Director Dan Taylor and Bureau of Reclamation Regional Director Bob Johnson said that if fallowing were even to be on the table as a means to restore the Sea, it would have to include financial and other economic incentives to keep the Imperial Valley economy whole.

Taylor was optimistic the Sea could be saved but he said the only solution to the conflicting issues facing the lake is accommodation among the various conflicting interests.

He recounted his experience earlier in his career regarding the successful restoration of another endangered body of water: Mono Lake.

"I have seen this movie before," he said. Success was achieved there because various agencies and interest groups were able to compromise and work together for a common solution.

Congressman Bob Filner told the symposium he is the "new kid on the block." Filner currently represents the San Diego area's 50th Congressional District but his district will become the 51st next January because of redistricting. It will encompass Imperial County and much of Salton Sea.

see Crossroads, Page 4

# I N A P P R E C I A T I O N

## Dr. Milt Friend Honored by Authority

*"For all his efforts and in behalf of those of us who care about the Salton Sea"*



**Dr. Milton Friend** who retired in January from his position as Chief Scientist for the Salton Sea Project, and his wife Jackie, were recognized for their service to the Salton Sea project during the January 9 Symposium Banquet.

Dr. Friend has been directly responsible for coordinating the scientific research, which has eliminated many of the damaging myths surrounding the Salton Sea.

Authority Executive Director Tom Kirk told the banquet audience Milt Friend came to the Salton Sea four years ago and during his tenure here he has made countless and significant contributions to the restoration of the Salton Sea.

Milt's contributions have come most importantly in the realm of science. By establishing rigorous and thorough scientific reviews in multiple disciplines, he placed the Restoration Project on sound and credible scientific footing.

"For all of his efforts and in behalf of those of us who care about the Salton Sea, let me say that we are sincerely grateful. Milt has also been a critical part of our restoration project team, offering sage advice and strategic insights.

"I greatly appreciate Milt's personal and professional integrity and will miss his presence as he returns to Madison to be with his wife Jackie, who for the past four years has borne the heavy burden of a "commuter marriage."

Tom Kirk  
Executive Director



Dr. Milt Friend

## Engineer, Resident, Student Recognized

An eighth grader from La Quinta's John Glenn School of International Studies joined a West Shores community leader and a representative from the Bureau of Reclamation in receiving service awards from the Salton Sea Authority.



B. Keeran/WWD

Nelson and Karlquist

The awards are the first presented by the Authority. They were presented to representatives from education as well as the public and private sectors.

"We instituted these awards as a means to recognize some of the many people who have been working so hard on behalf of the Salton Sea Restoration Project," said Authority Executive

Director Tom Kirk.

Authority board member Peter Nelson presented them during the Fourth Biennial Salton Sea Symposium. Nelson is also a member of the Coachella Valley Water District board of directors.

Recipients were Paul Weghorst, a principal hydraulic engineer with the Bureau of Reclamation, representing the public sector; Norm Niver, president of the West Shores Chamber of Commerce, representing the private sector, and eighth grader Casey Karlquist, representing education.

Nelson told the audience that

See Awards, page 4

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a major part of the Salton Sea Authority's outreach program is an effort to reach students and teach them about the importance of the Salton Sea as a resource.

Last year the Salton Sea Authority received a letter from Casey, then a seventh grader, explaining a project she was engaged in to test a method to reduce the salinity of the Sea.

The letter described a system that used, "three naturally occurring forces: gravity, pressure and the water cycle" to evaporate Sea water and return fresh water to the Sea.

"Casey has been involved in science fairs for nine years, two of which she has spent studying and experimenting with a system to clean the Sea," Nelson said. Last year, her Salton Sea project was selected to participate in the State Science Fair, where she won second place.

Casey was joined by her parents David and Robin Karquist at the awards banquet.

Niver, a Salton City resident, was selected for his activism on behalf of saving the Salton Sea.

In addition to being active in the West Shores Chamber of Commerce, Niver is a member of the Imperial County Planning Commission and has been a primary spokesman on behalf of the Sea.

"When it comes to the Salton Sea Stewardship award for the private sector, the selectee for this award is really a no-brainer," Nelson said.

Nelson said that Niver is a leader among those who are constantly challenging the Authority and other public agencies on behalf of the Sea.

"Norm is constantly challenging us to do better," Nelson said.

"He really cares about the Sea and it shows in his words and deeds."

Weghorst, the public sector recipient, has worked for

the Bureau of Reclamation in Denver since 1984 as a hydraulic engineer specializing in the area of water resources planning and management.

He is recognized for his expertise in databases and geographic information systems and has received numerous awards and commendations for his work in this area.

"Paul is known for his 'can do' attitude," Nelson said. "In an era when government employees are sometimes viewed as nine to fivers with little work ethic, Paul is the essence of the opposite," Nelson said. "He is a tireless worker who has spent many an evening and weekend fulfilling and exceeding his commitments to our projects," said Nelson.



Weghorst

Niver

Filner is seeking reelection to the new district.

If reelected, Filner said he would be playing a role in the Salton Sea but he admitted he has a lot to learn.

"My biggest negative feature is that I don't know anything," he said. However, he added he would bring a new, enthusiastic fresh look to the issues.

"I come with lots of optimism," he said. "We are going to save the Salton Sea and we will do so with consensus."

Filner added that economic development must be added to discussions of both the transfer and Salton Sea Restoration.

Authority President Wilson said the symposium, with its theme of "Bridging the Crossroads," achieved its goals.

"The crossroads, which may look more like a round-about, is apparent. What we may be left with, though, is the recognition that we need to make important decisions very soon and that we may need to make them with incomplete information and imperfect processes."

Wilson added that the science, engineering, and other analyses that have made up most of the work to date would help inform the decisions.

"But the decisions will rest on how well all the various interests can be accommodated."



**Meetings Schedule**

**Board of Directors Meeting**  
2/21/02 - 10 a.m.  
Brawley Elks Lodge  
161 S. Plaza, Brawley, CA

**Technical Advisory Committee Meeting**  
3/7/02 - 10:30 a.m.  
Imperial Irrigation District  
81-600 Avenue 58, La Quinta, CA

**Board of Directors Meeting**  
3/21/02 - 10 a.m.  
Imperial Irrigation District  
81-600 Avenue 58, La Quinta, CA

**SALTON SEA**



**AUTHORITY**

**Plaza La Quinta**  
**78-401 Highway 111, Suite T**  
**La Quinta, CA 92253**  
**www.saltonsea.ca.gov**



December

# SEA VOICES

A newsletter of the Salton Sea Restoration Project

## Stakeholders Convene to Map Out Sea's Future

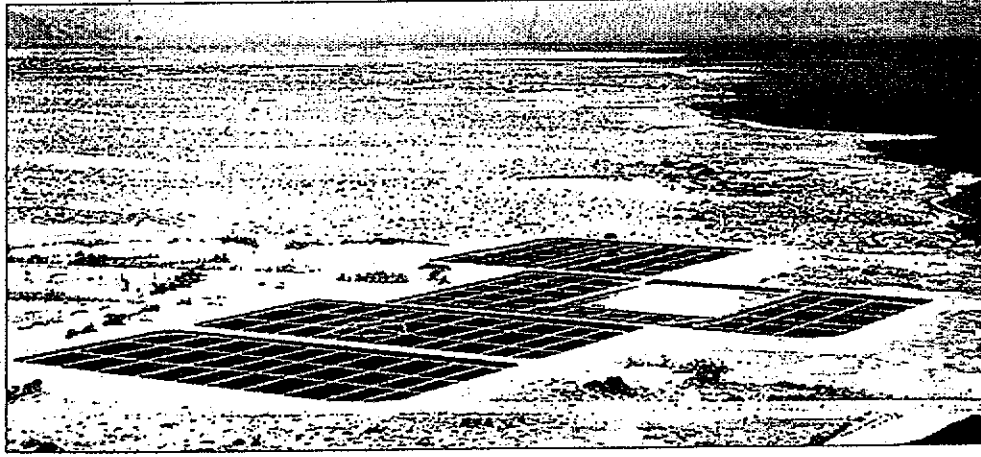
The fourth biennial symposium on the Salton Sea will be held January 9 and 10, 2002 at the Miramonte Resort, 45-000 Indian Wells Lane, Indian Wells, California. "This symposium, sponsored by the Salton Sea Authority, presents a unique opportunity for all who care about and are working to restore the Sea



to come together and share their knowledge and views," said Authority President Roy Wilson. The theme for the symposium is "Salton Sea, Bridging the Crossroads." Wilson added, "Much has happened since the 2000 Symposium and we have come to a point where major decisions will be made soon about the future of the Salton Sea." The agenda contains a review of the achievements of the  
*(See SYMPOSIUM on page 5)*

## Research Continues at Test Base

The old Navy Test Base on the West Shore of the Salton Sea made substantial contributions for nearly a half-century on weapons and parachute recovery systems that contributed both to defense of this country as well as to space exploration.



Salinity Research Facility, Salton Sea Test Base Photo courtesy of Bureau of Reclamation

Although the Navy has decommissioned the facility and it has been taken over by the Department of the Interior, the old base is still the home of very important research — tests that could help the Salton Sea survive. Enhanced evaporation systems are a technology that has been used to concentrate and remove solids from liquids.

Members of the Congressional Salton Sea Task Force expressed interest in evaluating the effectiveness of these technologies and were successful in securing federal appropriations. This dedicated funding has been used by the Authority and Bureau of Reclamation to use the former base to test Enhanced Evaporation Systems. The evaporators were run and met expectations for removing salts. This summer, research at the old base took on a different dimension. The test ponds that had been installed for the  
*(See RESEARCH on page 6)*

## Following benefit: more jobs?

By RUDY YNIGUEZ,  
Staff Writer

IMPERIAL — Following agricultural land to provide water for the transfer between the Imperial Irrigation District and the San Diego County Water Authority would result in an increase in the number of local jobs, according to a government report.

The report, generated by a Bureau of Reclamation regional economist for the lower Colorado River basin and presented to the IID's water conservation advisory board, says about 300 net jobs would be created under certain scenarios.

Overall, about 500 jobs would result, including about 100 short-term jobs from the construction of solar evaporation ponds to remove excess salt from the sea.

The report was presented by Tom Kirk, executive director of the Salton Sea Authority.

Kirk said by following flat crop ground to generate water for the pending transfer to San Diego, some of the revenues could be used to more than offset any loss of jobs. To get farmers to participate in the program, there could be incentives paid for each acre of land included as well as a certain amount for each acre-foot of water saved.

For example, farmers could be paid \$550 for each participating acre of land, and \$137 - from the sale of water to San Diego - for each acre-foot of water conserved.

The water transferred to San Diego is expected to sell for

about \$250 an acre-foot.

Subtracting \$137 for the farmer, that would leave \$25 for the IID's loss of revenues from decreased sales of water and power generation. The remaining \$88 per acre-foot could be used to the benefit of the community, according to Kirk.

That \$88, times 200,000 acre-feet transferred yearly, results in \$17.6 million yearly to the community. The money could be used any way the community decides. For example, each of the 366 workers projected to lose their jobs could be compensated with \$15,000, and additional funds could be used to retrain them for other business or industry the money could be used to attract to the Imperial Valley.

The study suggests \$5.5 million yearly could be used for training, while \$6.6 million could be used to attract new business through low-interest loans and reduced power and water rates.

Regarding the impacts of following land, Reclamation regional economist Alan Kleinman - who conducted the study - said: "If you throw enough money at it, you offset the losses."

The loss of jobs was considered under two scenarios: following 50,000 acres on which hays are grown - which is the preferred option, according to the report - and following 50,000 acres of land at random with the full cross-section of crops.

Under the hay scenario, it is estimated 450 workers would lose jobs. Under the full crop scenario,

about 1,400 jobs would be lost. The loss of jobs through the following of land upon which hays are grown would be equal to about 0.8 percent of the total county workforce.

The job loss from the following of land upon which a cross-section of crops are grown would be about 2 percent.

The job losses are categorized: direct, third-party and induced. Third party are at the farm input level while induced are considered the jobs lost from a reduction in number of times money is spent in the community.

Short of following (Salton Sea) will think the (Salton Sea) will do that would harm the local economy even more. He said a revitalized sea also would not as a recreational area, which happen with the collapse of environment.

The economic re- mates the recreational va sea results in benefits to economy of \$8.1 million. the sea were to collapse, drops to about \$2 million. revitalized sea would be \$15.5 million annually.

Finally, Kirk's es, while tough, are en Imperial Valley comm- gested the Valley tak one of its most val- Should the IID/San fail, Kirk said a fight water could result. w and only attorneys v

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article by  
Rudy Yniguez  
Nov. 9, 2001





## Authority aids in bird rehabilitation efforts

*The Salton Sea Authority is contributing \$45,000 to Sonny Bono Salton Sea National Wildlife Refuge for construction of Pelican Flight pens at cooperating rehabilitation facilities.*

The Authority's contribution comes from successful efforts by Senator Jim Battin to secure funding in the State budget for the restoration program.

This contribution is in addition to the \$30,000 the Refuge has already received for the pens from the National Fish and Wildlife Foundation as well as many in kind contributions from cooperators.

California Brown Pelicans and American White Pelicans need large flight pens during the final stages of recovery from avian diseases to strengthen their flight muscles prior to their release to the wild.

During the 2000 avian botulism outbreak, 1,100 pelicans were sent to facilities throughout Southern California for rehabilitation. The four facilities involved in the rehabilitation are the Coachella Valley Wild Bird Center in Indio, Pacific Wildlife in Irvine, Sea World in San Diego and Wetlands for Wildlife Care Center in Huntington Beach.

The flight pens at the rehabilitation centers are considered a critical element of treatment and will aid in the timely recovery of the pelicans.

The Authority, the Fish and Wildlife Service and the California Fish and Game Department have a proactive disease response program

in place at the Salton Sea that recovers sick birds in the early stages of avian botulism and avian cholera.

"These capture, treatment and release efforts have been very successful with some 60 percent of the pelicans retrieved at the Sea rehabilitated to full health. With flight pens it is expected that the rehabilitation rate will increase to 75 to 90 percent," said Fish and Wildlife Service Refuge Manager Sylvia Pelizza.



*California Brown Pelicans and American White Pelicans need large flight pens during the final stages of recovery from avian diseases to strengthen their flight muscles prior to their release to the wild.*



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## Scientific Paper Yields Clues to the Sea's Processes

*"We are attempting to limit the number of eutrophic 'houses' by taking away the 'nails.'"*

Jim Setmire  
USGS hydrologist

**C**ontrol of phosphates may be the key to eventually reducing the Salton Sea's eutrophic conditions, according to a recently published scientific paper.

The paper suggests testing a chemical that has been used for the past 50 years to control algal blooms in other lakes and reservoirs to neutralize the phosphates that flow into the Sea from municipal and agricultural runoff.

Eutrophication is a natural process where a body of water becomes rich in dissolved nutrients. For the Salton Sea, it means high fish populations, massive fish die offs as well as the noxious odors that at times permeate the lake.

While nitrogen and phosphorus are nearly always the chemical elements that act as primary nutrients to create eutrophic conditions in lakes, the scientists found that phosphorus is the main controlling factor in producing those conditions in the Salton Sea.

"Think of it as building houses," said the paper's editor, Jim Setmire, a U.S. Geological Survey hydrologist who is working with the U.S. Bureau of Reclamation.

"Even if you have an infinite amount of wood, but only enough nails for two houses, how many homes can you build? In this case, nitrates are the 'wood' and phosphates, the 'nails.' We are attempting to limit the number of eutrophic "houses" by taking away the 'nails,'" he said.

According to the scientific paper, the addition of aluminum sulfate--also known as alum--to the New and Alamo rivers may help to deal with the phosphates.

While the sheer size of the Salton Sea precludes direct treatment in the lake, the scientists state the alum treatment "may be able to be added to the tributaries to tie up the phosphorus before the water enters the Salton Sea."

The paper is entitled "Eutrophic Conditions at the Salton Sea." It stems from a workshop held last September at the University of California, Riverside.

In addition to Setmire, eight other scientists contributed to the work: Chris Holdren from the Bureau of Reclamation; U.S. Geological Survey scientists Dale Robertson, John Elder, Roy Schroeder; Chris Amrhein, a professor at the University of California, Riverside; Geoff Schladow, an associate professor at the University of California, Davis; Hank McKellar, an associate professor at the University of South Carolina; and Rick Gersberg, a professor at San Diego State University.

"These highly-qualified scientists have given us important insights into the eutrophication processes at the Salton Sea," according to Tom Kirk, Executive Director of the Salton Sea Authority.

The Salton Sea Authority recently received a \$570,000 grant from the State Water Resources Control Board to determine the most efficient and cost effective means to reduce phosphorus loading from external sources. This project will investigate alum treatment as well as the control of phosphorus containing sediments.



Nitrates and phosphates act as primary nutrients to create eutrophic conditions.

Controlling the phosphates with aluminum sulfate may be the key to reducing eutrophic conditions.



# BRIDGING THE CROSSROADS

SYMPOSIUM (Continued from Page 1)



Restoration Project, as well as discussions regarding the relationships between the Sea and the Quantification Settlement Agreement in relation to the Colorado River.

"We plan to air the views of the many Salton Sea stakeholders," Wilson said, "as well as review what we have learned from engineering and scientific perspectives."

As has been the practice in past symposiums, speakers will include policy and deci-

sion makers as well as the scientists and engineers who are engaged in the various projects at the Sea.

Tours of the pilot projects and wildlife disease control efforts are being planned as well as a birding tour of the Sea that will take place the day following the symposium at an additional charge.



## SALTON SEA SYMPOSIUM REGISTRATION FORM

January 9 and 10, 2002

Please complete the registration form below and mail it with your check or money order to:

Salton Sea Symposium  
Salton Sea Authority  
78-401 Hwy 111 Suite T  
La Quinta, CA 92253

**Note:** Make checks or money orders out to the Salton Sea Authority. No provisions for credit cards, purchase orders or billing are available and therefore cannot be accepted.

Name: \_\_\_\_\_

Affiliation: \_\_\_\_\_

Address: \_\_\_\_\_

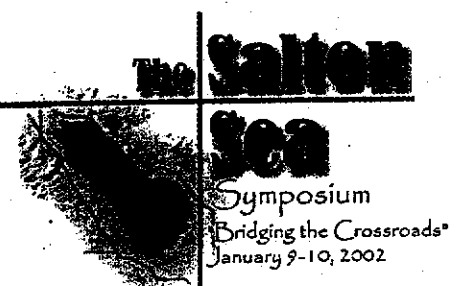
Daytime Phone: \_\_\_\_\_

Email Address: \_\_\_\_\_

Make your hotel reservations by calling the Miramonte Resort at 760 / 341 - 2200, or at [www.miramonte-resort.com](http://www.miramonte-resort.com) A block of rooms will be held until December 12, 2001.

For more information see the Authority website, [www.saltonsea.ca.gov](http://www.saltonsea.ca.gov) under Current Events, or call 760 / 564-4888.

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### REGISTRATION OPTIONS

#### CHECK ONE

Both days with Continental Breakfast (2) .....\$35

Both days with Continental Breakfast (2) and lunch (2) .....\$75

Both days with Continental Breakfast (2), lunch (2) and dinner (1) .....\$110

#### OPTIONAL (Check all that apply)

Salton Sea Restoration Pilot Projects Tour Afternoon of January 10 (no additional fee).....

Birding Trip to the Sea — January 11 6-11 a.m. (Additional fees will be assessed; call the SSA for cost).....

Pre registration deadline is December 21 After December 21 & for walk-in registration, add \$20.....

**TOTAL ENCLOSED**

Research (Continued from Page 1)

*The objective of the Disposal Research Project is to develop salt deposits that are representative of those expected in a full-scale salt removal effort.*

Enhanced Evaporation System were modified to obtain data so a full-scale salt disposal facility can be designed.

The issue of salt disposal is significant for the Restoration Project, which is currently focusing on the potential of solar evaporation ponds as a means of salt removal. It is expected that tons of salt will be generated each year from the Restoration Project.

"Given the ponds that we constructed, the secluded site and interest in learning more about extracting and storing salt at the Sea, we modified the project this summer to learn more," said the Bureau's Program Manager, Mike Walker.

"We are still running some evaporators, but we are doing it to take a lot of salt out of the Sea so we can determine how we can best deal with it," Walker said.

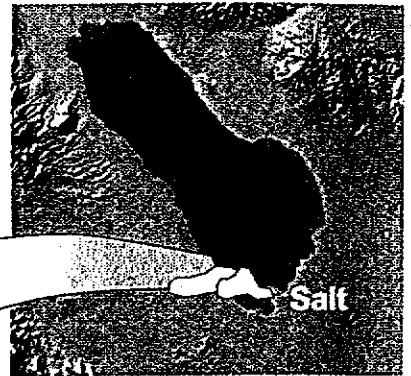
The objective of the Disposal Research Project is to develop salt deposits that are representative of those expected in a full-scale salt removal effort.

Physical and chemical analysis will be performed

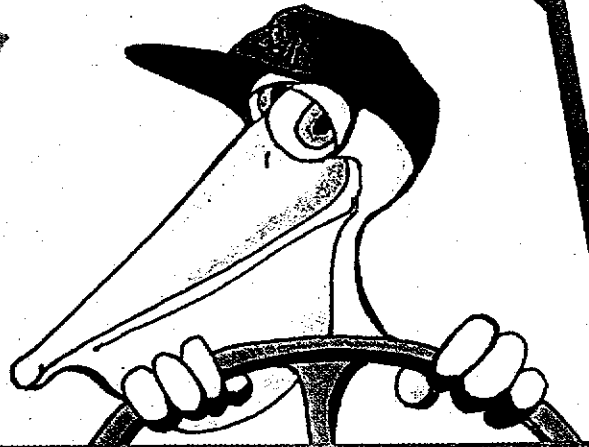
on the deposits to obtain information that is needed to design a disposal facility that will meet the heavy demands of the Restoration Project.

In addition, the preferred management technique for the salt deposits will be developed.

"This project is an important start at taking a lot of salt out and it compliments the solar evaporation pond test site on the other side of Sea. We will learn much about salt compounds and disposing of those compounds," Walker said.



**DRIVEN**  
to  
**SAVE THE SEA!**  
**The Salton Sea**



**Meetings Schedule**

Imperial Irrigation District  
81400 Avenue 98  
La Quinta, CA

Board of Directors Meeting  
12/15/01  
2:00 pm

Regional Advisory  
Committee Meeting  
12/19/01  
10:30 am

Board of Directors Meeting  
01/17/02  
10:30 am

**SALTON SEA**



Plaza La Quinta  
78-401 Highway 111, Suite T  
La Quinta, CA 92253  
[www.salttonsea.ca.gov](http://www.salttonsea.ca.gov)





August  
2001  
Reprint

# SEA NOTES

A newsletter of the Salton Sea Restoration Project

Newspapers and news broadcasts in recent months have been filled with stories about decisions regarding water and wildlife in the West. However, listening to the news, it is not always obvious how these decisions are intertwined. Further, many misperceptions exist.

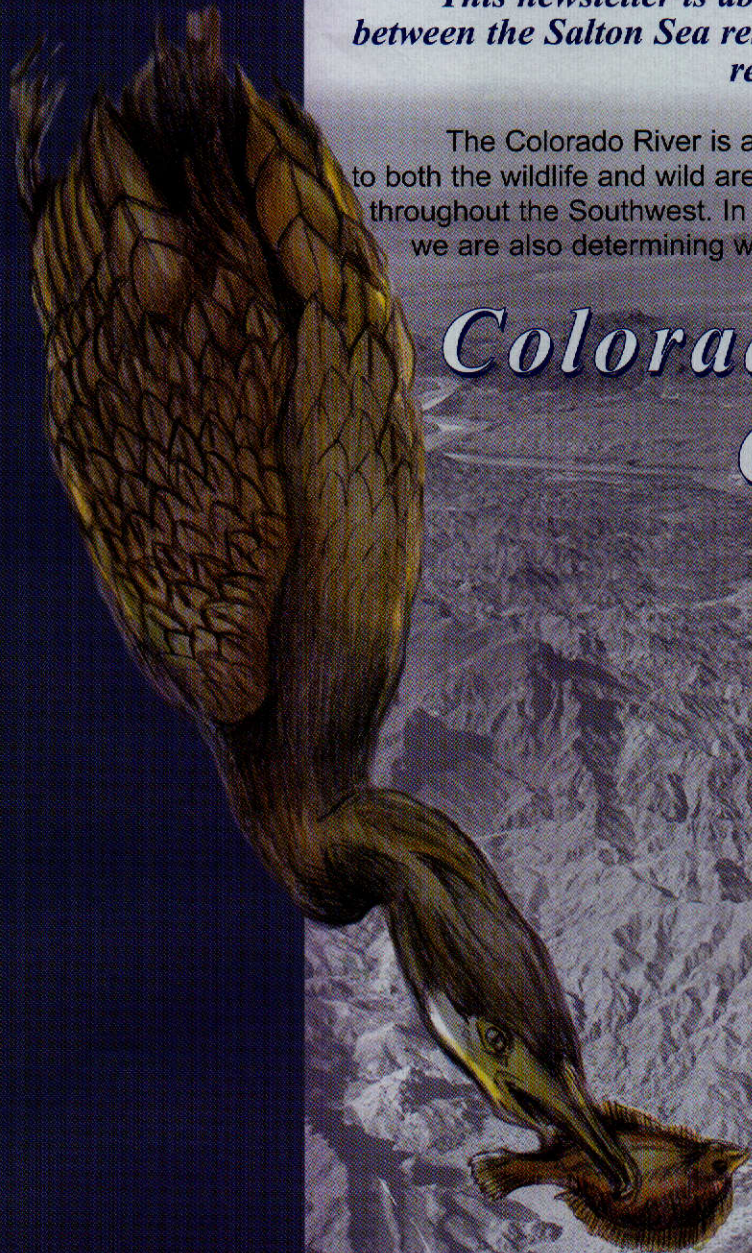
*This newsletter is about the connections – and differences – between the Salton Sea restoration and the Colorado River Delta restoration in Mexico.*

The Colorado River is an oversubscribed river that is essential to both the wildlife and wild areas as well as the agricultural and urban areas throughout the Southwest. In making the choices of how to use this water, we are also determining what is to survive and what isn't to survive.

## *Colorado River Delta Connections—*

### **a Brief Water History**

*The Lower Colorado River has always been a meandering river. It has also been a river that carried large loads of sediment, collected as it drained from the mountains of Colorado and Wyoming through the canyons of Utah and Arizona to the Gulf of California.*





Millions of years ago, the Gulf extended through the Salton basin to present day Indio. The river intersected the Gulf near what is now Yuma (Figure 1). As deposits of sediment built up in the former delta, a low 10 -mile wide berm was created which extended 30 miles from Yuma to the Cocopah Mountains on the west side of the valley (Figure 2).

Eventually, the berm divided the north and south sides of the Gulf. The lake left to the north dried up. The Gulf to the south was pushed further and further south as sediments continued to be deposited (Figure 3).

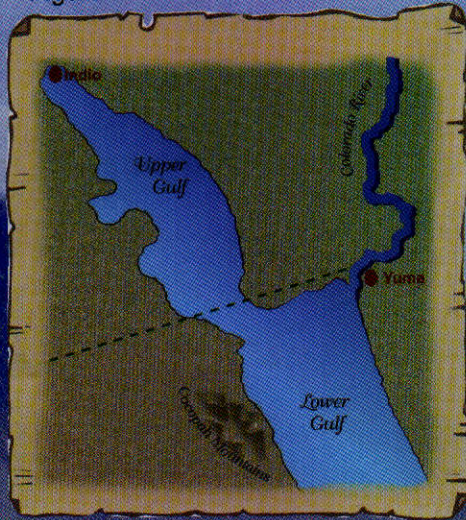
The river itself was fickle in where it flowed. Depending upon its sediment deposits, it would change

course, flowing sometimes south around the large berm to the Gulf and sometimes north to the Salton basin (Figures 4 and 5). Today's New and Alamo rivers flow in former Colorado River water courses. For roughly the last three million years, the river has changed course, leaving sediments on both sides of the berm and freshwater lakes behind in the Salton Sink.

In a December 2000 report, entitled "An Inventory and Evaluation of Lake Cahuilla Cultural Resources along Imperial Irrigation District's SA-Line," authors Jerry Schaefer, Ph.D., RPA and Ken Moslak, Associate Archaeologist, note that, "One of the most dynamic and dramatic aspects of the Colorado Desert paleoenvironment to effect human occupa-

# Chronology for the Colorado River Delta

Figure 1



The Gulf, millions of years ago...

Figure 2



Splitting of the Gulf...

Figure 3



The lake to the north dries up...

Figure 4



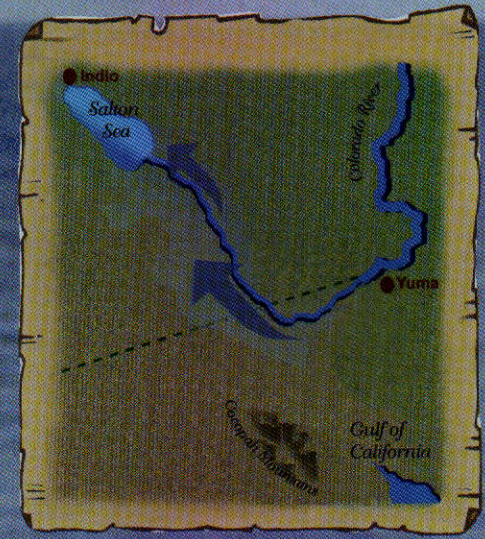
At times, the river flowed north to the Salton Basin...

Figure 5



At times, it flowed south to the Gulf...

Figure 6



Formation of the Salton Sea, 1905







## Redlands Database to deal with Whole Historic Delta

The Salton Sea Database Program at the University of Redlands is developing information on the historic and pre-historic flows of the Colorado River.

The Redlands team is working on integrating historical hydrological data, geomorphological evidence, and lacustrine evidence of Lake Cahuilla to tell the story of the greater Colorado River Delta which includes the Salton Trough.

"The purpose of this work is to provide better information to decision-makers, the public and stakeholders about the 'natural' flows of the Colorado River and the resulting distribution of water across the entire Delta," according to Dr. Tim Krantz, Professor of Environmental Studies and Salton Sea Database Program Manager at Redlands.

The project is expected to be completed in September.

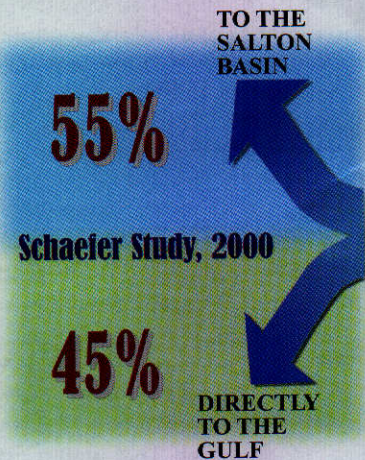
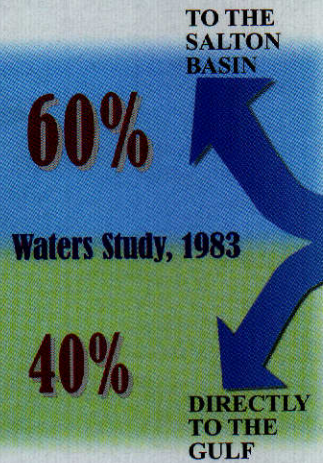
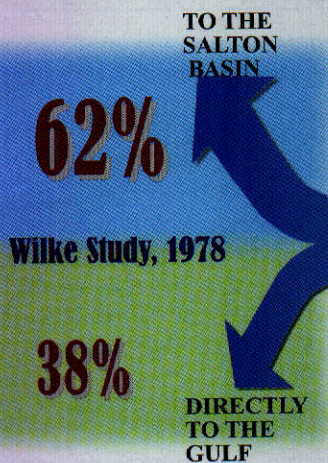


Aerial view of Salton Sea and surrounding agricultural areas. (Bureau of Reclamation photo)

## Where did the Colorado River "naturally" flow?

Three scientists give surprisingly similar estimates for the past 2000 years.

Adapted from  
An Inventory and  
Evaluation of  
Lake Cahuilla  
Cultural  
Resources  
along Imperial  
Irrigation District's  
SA-Line,  
San Diego and  
Imperial Counties,  
California,  
ASM Affiliates,  
Inc., December,  
2000.



*In the fifty years* before the well-known "man-made accident" of the Colorado River floods of 1905 into the Salton trough, the Colorado River **NATURALLY** flowed into the trough several times in the 1800's.

1840 1842

1852 1853

1859

1867

1891



## Connections (Continued from Page 3)

When not flowing into the Salton Sink, the Colorado River continued on its path to the Mexican Delta we think of today. As recently as 50 years ago, that region was a very large marshy area with multiple channels, rich wetlands, and abundant wildlife.

Over the last century, the Colorado River has been harnessed for farms and cities along its entire course. The economic value of the river has far exceeded anything even its earliest visionaries ever imagined. But the cost has been changes to the river's natural world.

A river that once carried nutrients and sediments from upper basin mountains and canyons in Utah and Arizona all the way to the Gulf is now a working river. The water is used and reused over its course. It flows through numerous agricultural fields and then is held behind large reservoirs that regulate its flows. Solids are concentrated as water evaporates and sediments drop out behind dams. The water diversions and the underground aquifers they have created sustain a vast agriculture industry, some of the largest cities in the West, the U.S. portion of the Delta -- including the Salton Sea -- as well as the Mexican portion of the Delta.

Under the existing flow regimes on the Colorado River, the Salton Sea is in balance - inflows of 1.3 million acre feet match evaporation of 1.3 million acre feet. But salinity is increasing. The Mexican portion of the delta has lost the majority of its inland wetlands, but the combination of guaranteed flows under the treaty between the U.S. and Mexico, groundwater recharge, and supplemental releases on the Colorado into Mexico over the last 20 years provide the potential for sustained restoration of wetland habitat. The Mexican portion of the Delta is also helped by agricultural wastewater from the Welton-Mohawk district in the U.S. that sustains the Cienega de La Santa Clara (pictured on this page). Both the Cienega and the Salton Sea rely on wastewater to support wildlife.

### The Ecologic Connection - Wildlife

Both the U.S. and Mexican portions of the Colorado River Delta are critical to wildlife. Over 90 percent of inland lakes and wetlands in both the U.S. and Mexican Californias have disappeared due to development.

The Sea is the second most important bird area in the U.S. Over 400 species are found there. But it is espe-



cially important to water birds - there are millions at certain times - equaling the San Francisco Bay and Great Salt Lake in importance. The combination of fish in the Sea, deep and shallow feeding areas, and nearby agricultural fields provides what is needed for both local and migratory species.

While the bird populations at the Salton Sea and in the Mexican portion of the delta differ in many ways, the river's lower delta in

Mexico provides critical habitat for migrating shorebirds, neotropicals, and local endangered species such as the Yuma Clapper Rail.

Fisheries, too, are important in both areas. The Salton Sea, while having no native fish other than the endangered pupfish, is considered one of the most productive fisheries in the world - a positive result of the nutrients flowing into the Sea from farm fields. The lower delta, especially in intertidal areas and the estuaries where the Colorado flows into the Gulf of California, has supported very rich fisheries. Today, with river flows unlikely to reach the Gulf, those fisheries are declining, and species like the Vaquita porpoise and totoaba have become endangered.

Riparian corridors along the Colorado, New, and Alamo rivers and desert corridors through the Cocopah and Coyote Mountains allow birds and other animals to travel throughout the greater Delta.

### What does this mean?

Some dismiss the importance of restoring the Sea because of their erroneous conclusion that it is an "accident."

The reality is that neither the Colorado River nor the U.S. portion of the Delta, the Salton Sea nor the Mexican Delta remain in their historic "natural" states. As far as the wetlands are concerned in both regions, that may be fortunate.

If, somehow, the river would be allowed to resume its historical meandering flow, that would mean a resumption of decades of drought, alternating between the upper and lower deltas.

Such a "natural state" is something our fragile wetlands could not stand.

Rather than judging an ecological resource by its natural "purity" or trying to restore it to an earlier condition that is no longer attainable, existing resources have to be assessed for their current and future value to wildlife that must survive in a permanently changed landscape.







## A Scientist's Viewpoint

By Milton Friend

### The Salton Sea — To Be Or Not To Be — A Matter of Choices.

The Salton Sea is the latest within a series of waterbodies to occupy the Salton Trough over several thousands of years. However, unlike the waterbodies of the past, the Salton Sea is a contemporary water issue, and as such, it is also a contemporary biodiversity issue.

This relationship lies in the fact that the Salton Sea has become an important habitat for migratory birds. That importance is largely due to the loss of more than 90 percent of the interior wetlands within the State of California, wetland losses elsewhere, the dependable food base within the Sea and surrounding agricultural fields and other factors.

At the time of formation of the Salton Sea, water dependent birds had many alternatives to provide the breeding, migratory stopover, wintering and feeding requirements needed to provide for population maintenance and enhancement. That is no longer the case. Also, at the times of earlier "Salton Seas," major fluctuations in wildlife populations were a part of nature, mostly unobserved by humans.

Modern society has chosen to manage wildlife populations both as stewards of those resources for future human generations and to sustain wildlife populations at levels that serve current human values, including economic returns associated with consumptive and non-consumptive uses of those resources.

The environmental quality of the Sea needs to be improved and is the focus for the development of a restoration effort. Nevertheless, millions of birds are annually using the Sea, and the variety of bird species that have been recorded within the geographic area of the Sea and its surrounding exceeds 400 species.

Thus, the Salton Sea has become one of the premier

areas for avian biodiversity. The salient points are that the Salton Sea has far greater importance for migratory birds today than that provided by the past waterbodies of the Salton Trough. If the Sea can be sustained at a salinity level close to present conditions, it will likely be of even greater future importance for migratory bird populations as development continues to consume additional areas of habitat.

As always, choices will need to be made to provide sufficient water of suitable quality to sustain bird populations. However, a unique aspect of the Salton Sea is that wastewater provides the foundation for life sustained by the Sea. Wastewater also provides the economic benefits associated with the vibrant fish and avian communities of the Sea.

Wastewater is, by necessity, becoming an increasingly important water source for sustaining free-ranging wildlife populations. The well-being of wetland-dependent wildlife will be greatly affected by our ability, or inability, to obtain and properly manage wastewater for the creation and maintenance of wetlands.

Will we make the choice to do so?

### "The Bottom Line"

The Salton Sea has important implications for sustaining global biodiversity. The Sea is a "classroom" where we can learn to address the contemporary issue of water for wildlife vs. water for people. We can have both to a far greater degree than our current course is likely to provide.

This place called the Salton Sea is a "proving ground" that tests our resolve and ingenuity in resolving water management issues both on behalf of society and for the conservation of biological resources. The Salton Sea presents a unique opportunity to apply on a large scale, our ingenuity and technology in a manner that reuses irrigation water from agriculture in a manner to provide an array of major benefits.

We can ill afford not to do so.

Those waters should be considered to be part of global water resources and should be managed accordingly rather than dismissed as waste.

It is time to get on with the task of demonstrating how to do so.

#### Meetings Schedule

Imperial Irrigation District  
81-600 Avenue 58  
La Quinta, CA

\*August Recess

Technical Advisory  
Committee:  
09/06/01 10:30 a.m.

Board of Directors:  
09/13/01 10:00 a.m.

Technical Advisory  
Committee:  
10/04/01 10:30 a.m.

Board of Directors:  
10/18/01 10:00 a.m.



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[www.saltosea.ca.gov](http://www.saltosea.ca.gov)





April/May

# SEA NOTES

A newsletter of the Salton Sea Restoration Project

## Let the sun shine!

### Construction Begins on Solar Pond Pilot Project

An aerial photograph shows the makeup of the solar ponds under construction near Niland.

**A**gerlan Research and Management Company of Bishop, CA has been selected by the Authority to design, construct, operate and evaluate Salton Sea's Solar Evaporation Pond Pilot Project.

Construction began on the 6-acre project March 1. The project, located on the shore of the Sea between Niland and Bombay Beach in Imperial County, will be in full operation by May 1.

The series of 10 evaporation ponds will operate until May 2002, and will serve as a source of data collection regarding the efficient removal of salt from the sea water in order to provide a long-term solution to the rising salinity of the Sea.

The entire project cost, including design, construction, operation, laboratory analysis, data analysis, results reporting and development of preliminary design criteria for future phases, is \$775,000.

Meanwhile, on the other side of the lake, the Bureau of Reclamation took the lead in completing a 700-hour pilot test of the Enhanced Evaporation System at the former Salton Sea Navy Test Base. A six-month demonstration test of the system is now being planned.

*(See SOLAR PONDS on page 2)*

# Salton Sea





## Science Office Engaged in Multiple Tasks

While it may be a new addition to the Salton Sea Authority's headquarters in La Quinta, CA, the interim Salton Sea Science Office has already become immersed in multiple projects.

Dr. Doug Barnum of the Salton Sea Science Office gave the Authority board a glimpse of some of the office's most recent work during the board's March meeting.

The interim office was established earlier this year as a successor to the Salton Sea Science Subcommittee that was disbanded in January 2000. Its purpose is to evaluate scientific information, communicate with project leaders and staff, develop and evaluate requests for proposals, conduct peer reviews and provide management support. It will not conduct its own scientific investigations.

"The Salton Sea Science Office has been engaged in a number of activities focusing on the scientific aspect of the Sea's restoration efforts," Barnum said.

Some of the projects include:

- Work with the Bureau of Reclamation and the Authority's contractors on biological monitoring and analysis at the Enhanced Evaporation System site at the former Navy Test base and the Solar Ponds.

- Development of a white paper, on eutrophication in the Salton Sea, that is presently undergoing final revisions prior to public release;

- A workshop on salt precipitation in the Salton Sea that will result in a white paper;

- Formation of a Science Advisory Committee composed of scientists from a wide range of disciplines;

- PM 10 monitoring around the Sea to provide a baseline of data on blowing dust, which could become an issue if sediments from the Sea are exposed or disturbed;

Barnum is staffing the office full time as science coordinator. He is a biologist with extensive experience in the San Joaquin Valley that involved projects of this type. Assisting him is Bonita Roper, administrative assistant, as well as others with temporary assignments to the office.

Dr. Milt Friend is Chief Scientist for the office. He is spending about 50 percent of his time in the La Quinta office and the remainder at his Wisconsin office where he will also be working on Salton Sea project activities. Dr. John Elder continues to provide part-time assistance from Wisconsin through his oversight on various project activities.

2 Establishment of a full-scale science office is awaiting an approved and funded long-term restoration project.

## Solar Ponds (Continued from Page 1)

"The solar pond and enhanced evaporation pilot projects are hard evidence that we are moving ahead on the restoration of the Salton Sea. The Authority continues to work closely with federal, state, regional and local officials to develop and implement projects in a timely and efficient manner," said Authority Board President Roy Wilson, a member of the Riverside County Board of Supervisors.

The Solar Evaporation Pond Pilot Project is designed to develop data regarding the efficient removal of salt from Salton Sea water and a possible long-term solution to the Sea's rising salinity and elevation.

In the absence of an outlet, the Sea's salinity increases because salts from in-flowing water remain even as that water evaporates.

This project would provide an "outlet" to the Sea by pumping Sea water into a series of solar ponds.

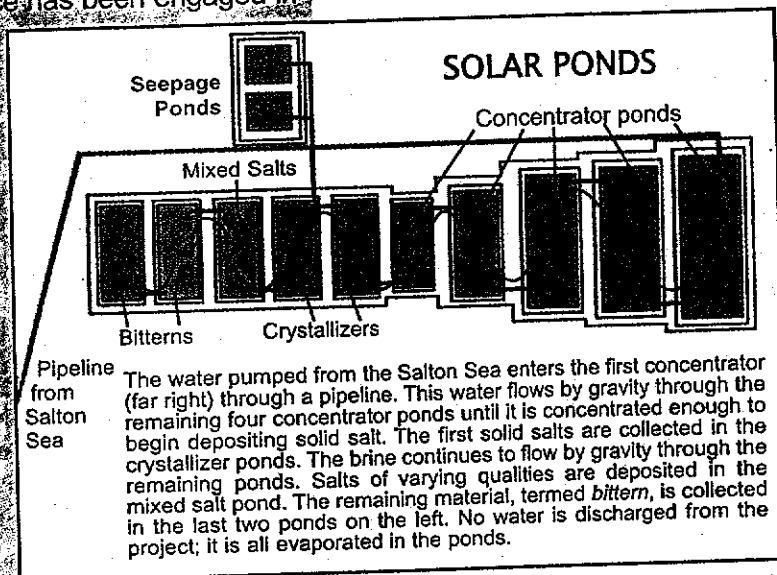
"Solar salt pond technology is well developed, and is used around the world to produce commercial salt. Each brine source is unique, however, and in order to develop an efficient solar salt project, data must be gathered directly from that brine source," Wilson said.

In other regions, solar evaporation ponds are integral parts of wildlife refuges.

The Authority's solar evaporation pond pilot project is a research scale model project that will create a series of evaporation ponds designed to learn the specific composition and precipitation characteristics of the Salton Sea brine.

All the water for the project will be pumped directly from the Salton Sea using a portable diesel pump, and no water will be discharged back to the Sea. The site will generate no waste water. The only energy usage anticipated is for the diesel fuel to pump the Sea water to the project.

The remaining water movement between ponds are accomplished by gravity.



The water pumped from the Salton Sea enters the first concentrator (far right) through a pipeline. This water flows by gravity through the remaining four concentrator ponds until it is concentrated enough to begin depositing solid salt. The first solid salts are collected in the crystallizer ponds. The brine continues to flow by gravity through the remaining ponds. Salts of varying qualities are deposited in the mixed salt pond. The remaining material, termed *bittern*, is collected in the last two ponds on the left. No water is discharged from the project; it is all evaporated in the ponds.

# Chambers Enjoy Time on the Sea



On Monday, Feb. 19, 2001--Presidents' Day--a group of Chamber of Commerce executives and other officials from the Coachella and Imperial valleys were

taken on an extensive boat tour of the Salton Sea.

Coachella Valley representatives were invited by Salton Sea Authority Board President and Riverside County Supervisor Roy Wilson. Imperial Valley representatives were invited by SSA board member and IID board president Andy Horne.

The Authority, the West Shores Chamber of Commerce and the Salton Sea State Recreation area jointly sponsored the tour. It was held on the final day of the Salton Sea International Bird Festival.

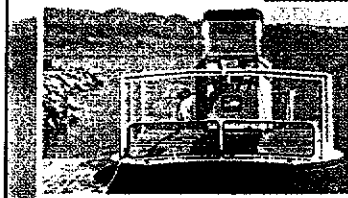
Its purpose was to give participants a first hand look at the sea, the restoration efforts and the economic potential of the Sea.

Chambers participating included Thermal, West Shores, Brawley, El Centro, Desert Hot Springs, Borrego Springs, Imperial Valley Joint Chambers, Cathedral City and Holtville.

A number of other officials participated including Lee Vasquez, Mayor, City of Calipatria; Dr. Gilbert Dominguez, President, Imperial Valley College and Dr. Khosrow Fatemi, Dean, San Diego State University, Imperial Valley Campus. Authority board members participating were Andy Horne, president of the Imperial Irrigation District Board of Directors and Gary Wyatt, a member of the Imperial County Board of Supervisors.

*"The boat tour is an excellent way to 'show off' the lake and attack misperceptions by allowing people to experience the Sea first hand."*

ANDY HORNE, SSA Board Member



The tour was narrated by Steve Horvitz, Superintendent, Salton Sea State Recreation Area; Tom Kirk, Executive Director, Salton Sea Authority and Norm Niver, President, West Shores Chamber of Commerce.

Issues discussed included the economic potential of the sea--in particular fish harvesting efforts--as well as tourism issues and restoration alternatives.

The tour began at the State Recreation Area and included visits to areas off North Shore and the Torres Martinez Indian Reservation, Salton City and the former Salton Sea Navy Test Base and the location of the Enhanced Evaporation System Pilot Project.

"The boat tour is an excellent way to 'show off' the lake and attack misperceptions by allowing people to experience the Sea first hand," said Horne.

Similar tours are being planned for elected officials, educators and other key constituencies.



## Residents, Agencies Revisit Topics

Representatives from the Bureau of Reclamation and Salton Sea Authority are meeting with residents of the Sea communities April 18 in a continuing outreach effort to involve local citizens in the restoration process.

The main topics of discussion are salinity of the Sea and control options. A new presentation on salinity has been prepared by the University of Redlands, the Bureau of Reclamation and the Authority.

This meeting is a follow-up to one held on January 18th at the West Shores Chamber of Commerce. The January meeting was a general review of restoration activities.

Topics included a report on fish clean-up, findings regarding costs for on-water fish recovery, prospects for fish harvesting, pelicans recovered as part of the wildlife disease program and upcoming tests of solar ponds and enhanced evaporation systems.

Residents suggested topics for additional meetings.

Salinity was the number one priority.

Organizations in Southern California area that would like presentations on Salton Sea restoration activities should contact the Authority office.



# Tour of the Sea and the Delta



The Salton Sea Authority and Pacific Institute sponsored a boat and vehicle tour of the Salton Sea and Colorado River Delta Feb. 16 and 17 to demonstrate similarities and differences of the two regions.

Attendees included representatives from the Defenders of Wildlife, Environmental Defense, Glen Canyon Action Network, Living Rivers, National Audubon Society, Sierra Club, Southern California Watershed Alliance, Southwest Rivers, University of Arizona, Wetlands Action Network, and Center of Environmental Law and Economic Integration of the South, Mexico.

The Salton Sea and Colorado River Delta offer different kinds of habitat, and together comprise a broad area with a rich mosaic of habitats. Some of the birds use both areas, and both are important for a number of species under threat.

Both the Salton Sea and the Cienega share a common heritage: they both resulted from man's manipulation of the environment, have flows that lack water rights and are sustained by agricultural return flows in otherwise arid desert conditions.

Yet both have become of major importance as inland wetlands on the Pacific Flyway. Both present similar challenges to water quality, human use, and ecological balance and integrity.

"The restoration of the Salton Sea and the Colorado River delta are not mutually exclusive," said

Pacific Institute Research Associate Michael Cohen. "The challenge is to ensure that restoration truly preserves and enhances the health of the ecosystem, and that this enhanced ecosystem health is sustainable over the long term."

"Together, the Sea and the Delta offer an exciting laboratory for determining how best to manage important resources in the midst of rapid population growth and declining ecosystems," said Salton Sea Authority Executive Director Tom Kirk. "Whether the end result is considered 'natural' or not, it is important to remember that the birds don't care," he said.

The itinerary in the U.S. included Sonny Bono Salton Sea National Wildlife Refuge, jet boat tours of Alamo and New River deltas and Mullet Island, Wister state wildlife refuge, Bombay Beach, the solar pond test site near Niland, and the New River constructed wetlands.

On the Mexican side of the border, the group stopped along the Colorado River at spots considered prime for restoration: the area around the San Felipe Bridge, the confluence with the Rio Hardy, and the Cienega de Santa Clara/Upper Gulf of California and Colorado River Delta International Biosphere Reserve. The stop at the Cienega included a canoe ride through the marshes.



*Jose Campoy, the Director of the Upper Gulf of California and Colorado River Delta Biosphere Reserve, discusses the Reserve and the Delta with the group at the Cienega.*

## Meetings Schedule

Imperial Irrigation District  
81-600 Avenue 58  
La Quinta, CA

Board of Directors  
04/19/01 10:00 a.m.

Technical Advisory  
Committee  
05/03/01 10:30 a.m.

Board of Directors  
05/17/01 10:00 a.m.

4  
Technical Advisory  
Committee  
06/07/01 10:30 a.m.



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November/December

# SALTON SEA NEWS

A newsletter of the Salton Sea Restoration Project

## Restoration efforts at the Salton Sea are **Taking flight**

### Enhanced Evaporation Tests to Begin Before Year's End

The Authority Board approved a contract in October to develop an enhanced evaporation system pilot project on the western shore of the Salton Sea.

"We are ready to turn dirt," said Board President Tom Veysey, a member of the Imperial County Board of Supervisors.

The system will be located at the former U.S. Navy Salton Sea Test Base, which has been turned over to the U.S. Department of Interior.

The Bureau of Reclamation has taken the lead on conceptual design and will manage construction and operation. Depending upon permitting, the project will start with a month-long pretest before the end of the year.

Snow Machines Inc. of Midland, MI has been awarded a \$1.43 million contract to prepare the site for the system, including pond building and lining, installa-

(See ENHANCED on page2)

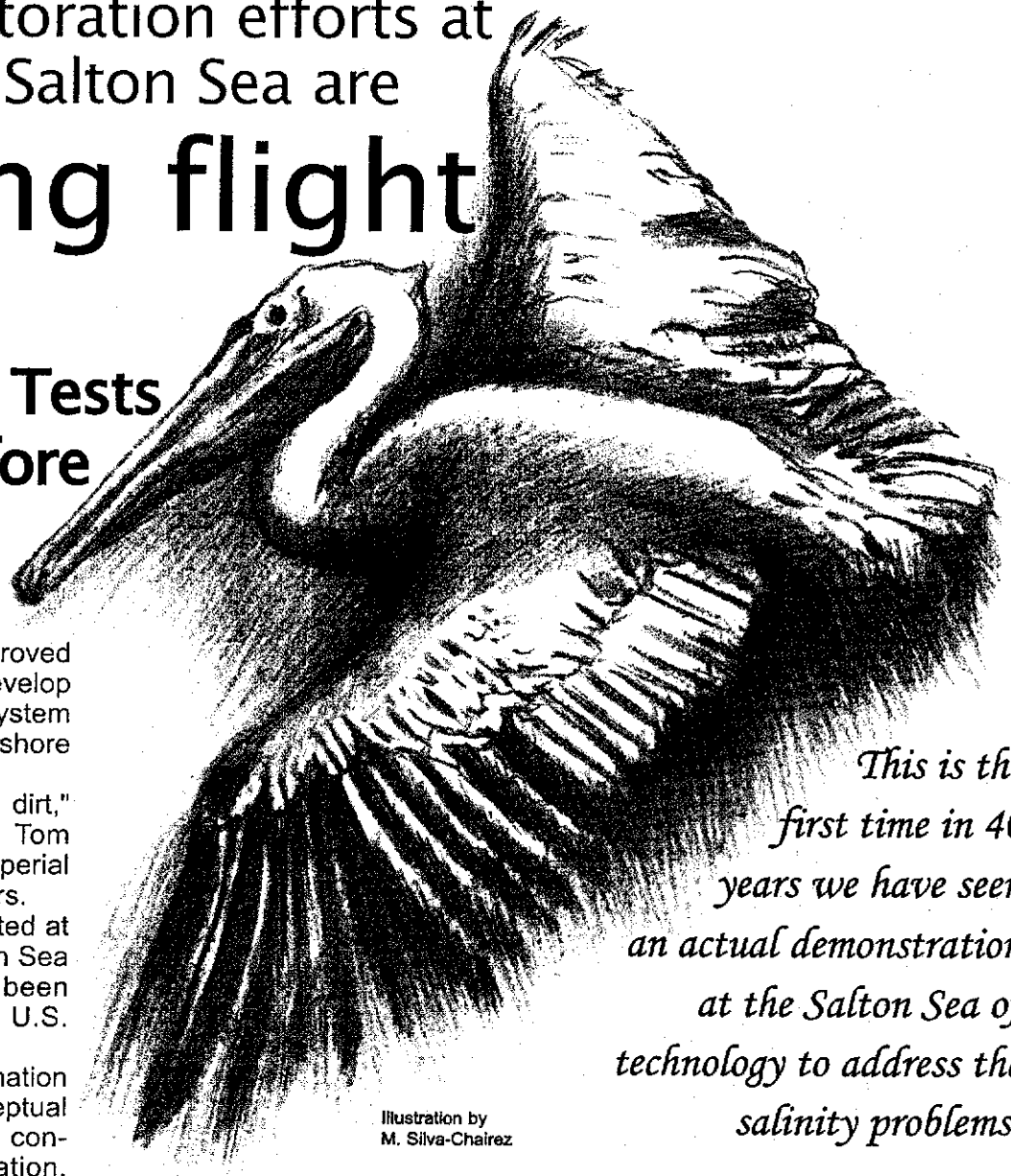


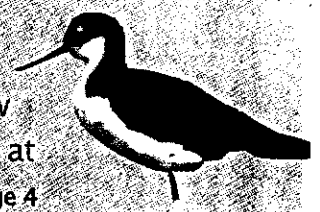
Illustration by M. Silva-Chairez

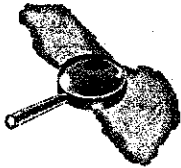
*This is the first time in 40 years we have seen an actual demonstration at the Salton Sea of technology to address the salinity problems.*

## Surfing at the Sea?

No, but if you surf the Net you can now find the Salton Sea Authority web page at [www.saltonsea.ca.gov](http://www.saltonsea.ca.gov)

See Page 4





## Interim Science Office Established

An interim Salton Sea Science Office has been established as a replacement for the Salton Sea Science Subcommittee that was disbanded last January.

The office will evaluate scientific information, communicate with project leaders and staff, develop and evaluate requests for proposals, conduct peer reviews and will provide management support. It will not conduct its own scientific investigations.

"The office will be physically located in the same building with the Salton Sea Authority. This will facilitate communication, cooperation and coordination of effort," said Dr. Milton Friend, the office Chief Scientist.

Staffing the office full time will be Dr. Douglas Barnum, science coordinator. He is a biologist with extensive experience in the San Joaquin Valley that involved projects of this type. Assisting him will be Bonita Roper, administrative assistant and others with temporary assignments to the office.

Dr. Friend will spend 50 percent of his time at the interim science office and the remainder at his Wisconsin office where he will also be working on Salton Sea project activities. Dr. John Elder will continue to provide part-time assistance from Wisconsin through his oversight on various project activities.

Establishment of a full-scale science office is awaiting an approved and funded long-term restoration project.

## Solar Ponds Eyed as Potential Alternative

A series of small solar evaporation ponds will be constructed and operated during 2001 in order to evaluate their potential in reducing salinity of the Salton Sea.

Design/Build/Operate proposals were reviewed in late October and a contractor is expected to be on board soon.

The ponds will be constructed on Imperial Irrigation District property along the east shore of the lake near the Imperial County community of Niland. The project will operate for at least a year.

Solar ponds have been recommended for full scale restoration. Similar ponds are used in the salt manufacturing industry.

The onshore solar ponds were proposed as an alternative to the in-sea evaporation pond alternatives presented in the original environmental review.

The Authority retained Parsons Engineering in March to conduct an independent fatal flaw analysis of the restoration alternatives contained in the draft.

"While Parsons didn't find any 'fatal flaws' in any of our alternatives, they did agree that we should explore the potential of solar ponds as a potential preferred alternative," said Authority President Tom Veysey.

"Construction of the test ponds will allow us to evaluate whether these can be used on a larger scale," said Veysey.

According to Tom Kirk, Authority executive director, solar ponds have been used for years by the salt industry. "This is part of our continuing efforts to tap the expertise of private industry," he said. "Solar ponds are a proven technology-why not try them on the Salton Sea?"



## Enhanced

(Continued from Page 1)

tion of a water supply system and tower and weather station foundation work.

Once the site is prepared, the Bureau will evaluate three competing enhanced evaporation technologies. SMI will compete with Agam Energy Systems and Slimline Manufacturing in the evaluation process that is expected to last at least six months.

In March, the Authority and the Bureau of Reclamation completed 20 hours of tests over a five-day period on an enhanced evaporation system.

"This was the first time in 40 years that we have seen an actual demonstration at the Salton Sea of technology to address the salinity problems," said Congressman Duncan Hunter, a member of the Salton Sea Congressional Task Force.

Enhanced evaporation systems consist of mechanical equipment that create and disperse a fine mist of water into the atmosphere.

Once airborne, droplets of water evaporate while the salt falls into a containment area. The microscopic droplets greatly increase the surface area of water exposed to the air, thus enhancing evaporation rates.

# Caring for Fish and Fowl...

## Wildlife Disease Program Already Showing Promise

Investments by the Salton Sea Authority and other agencies into wildlife disease management on the Salton Sea paid dividends this summer and fall in the form of early detection and care of birds that suffered from avian botulism.

The Authority has been working on this project in partnership with the U.S. Fish and Wildlife Service, National Wildlife Health Center, California Fish and Game and many volunteers.

Through this partnership, teams were able to rescue and treat sick birds—mostly endangered California brown pelicans—in the early stages of their illness. As a result, a major avian botulism outbreak that surfaced in June did not result in catastrophic losses.

According to Fish and Wildlife Service figures through September 28, 1,294 pelicans were involved in this year's outbreak. Of those, 1,021 were picked up alive on the Salton Sea and 899 were sent to rehabilitation centers. If not for the program now in place, a large percentage of the pelicans saved would have died and added to the nearly 500 pelicans that have died through September.

The total loss could easily have reached or exceeded the 1,000 brown pelicans that died in the summer of 1996 when the lake became the focus of national attention.

More than 14,000 birds including 1,000 brown pelicans

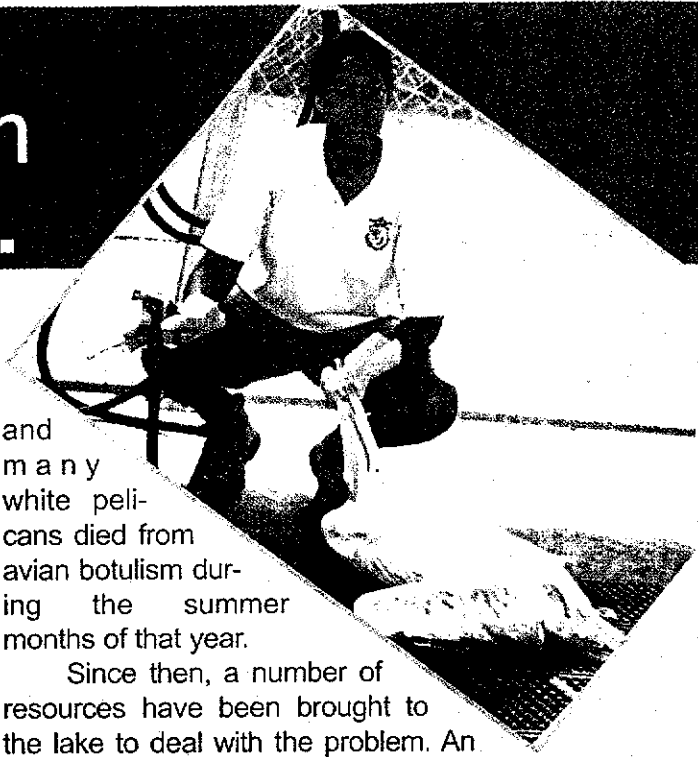
and many white pelicans died from avian botulism during the summer months of that year.

Since then, a number of resources have been brought to the lake to deal with the problem. An "emergency room" to treat sick birds was established by the U.S. Fish and Wildlife Service in 1997 at the Sonny Bono refuge.

After being stabilized at the refuge, the birds are sent to one of three recovery facilities in Southern California: the Pacific Wildlife Project in Irvine, Sea World or the Coachella Valley Wild Bird Center.

Since last year, the Authority has funded a full time wildlife technician to assist with monitoring and recovery of sick birds at the Salton Sea.

"This proactive approach helps us minimize losses from this disease," said Dr. Milton Friend, Chief Scientist for the Salton Sea Science Office. That office oversees and coordinates the restoration project science activities at the Sea.



## *At the shoreline*

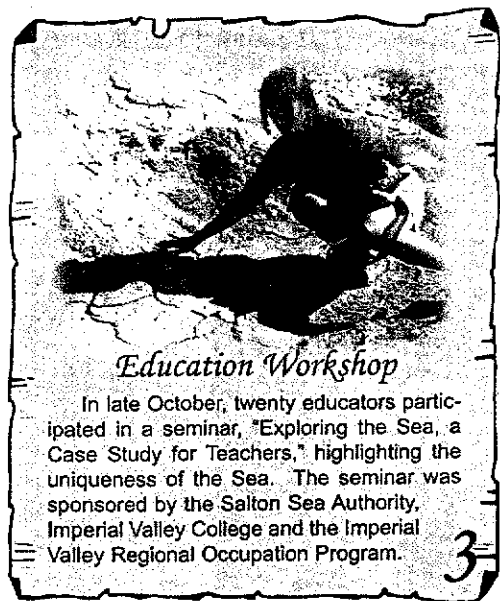
### Cleanup Efforts Begin

The Salton Sea Authority is contracting with the Salton Community Services District in a one-year pilot project that has resulted in the first coordinated effort to clean fish from high-use shoreline areas.

The Authority is funding up to \$100,000 for the one-year contract with the Services District. The District uses its personnel and equipment to do the work.

"Meanwhile, we will continue to seek leadership from the Department of Fish and Game on this issue," said Authority President Tom Veysey.

In addition to contributing to a cleaner environment and creating more appealing public shoreline areas, the Authority is gaining data on the volume and type of fish collected.



#### *Education Workshop*

In late October, twenty educators participated in a seminar, "Exploring the Sea, a Case Study for Teachers," highlighting the uniqueness of the Sea. The seminar was sponsored by the Salton Sea Authority, Imperial Valley College and the Imperial Valley Regional Occupation Program.

# www.saltonseaca.gov Joins Outreach Effort

The Salton Sea Authority launched its own website in mid October.

The site ([www.saltonseaca.gov](http://www.saltonseaca.gov)) is designed to provide a wide range of information dealing with factual and historical information about the Sea, recreational and educational opportunities as well as restoration issues and frequently asked questions.

One key feature is a "Talk to Us" section that is designed to solicit inquiries for information and develop feedback about the Salton Sea.

The site was designed by Clark Consulting Inc., a team of five public affairs experts that the Salton Sea Authority retained in March. The site developer was KGWebWorks, based in El Centro, Ca.

The site will supplement project and technical information already found at the Bureau of Reclamation site at [www.lc.usbr.gov](http://www.lc.usbr.gov).

In other public outreach efforts, the Authority will be partnering this year with organizers of the Salton Sea International Bird Festival, an event that annually draws hundreds of bird enthusiasts to the region.

"The International Bird Festival is the premier birding event at the Salton Sea each year," said Authority board member Andy Horne, who is also a member of the Imperial Irrigation District Board of Directors. "It's a natural fit for us as we seek to get the truth out about opportunities at the Salton Sea."

The Authority has participated in the event as an exhibitor and has provided a guest speaker the past two years.

## Possibilities — add tilapia catfood to the list

Private industry may offer answers to a number of problems afflicting the Salton Sea.

Solar ponds, used by the salt industry for the past 1000 years could provide a solution to salinity issues (See story page 2).

The Authority and others are also looking to private industry for potential solutions to the lake's abundant tilapia population.

Harvesting some of the rapidly reproducing fish would assist in nutrient removal from the lake's overly rich ecosystem. Another potential benefit from a harvest would be healthier fish stock that likely would be subject to less dramatic die-off events.

The Authority has hired Alan Ismond of Aqua-Terra Consultants, an expert in tilapia, fish markets and processing meth-

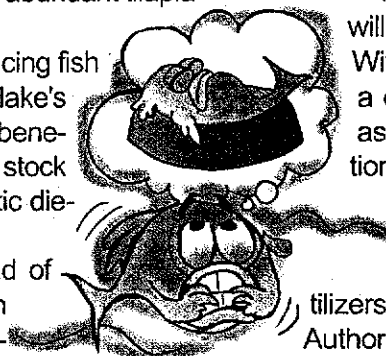
ods who has worked with many of the major processors along the West Coast.

"My industry contacts are very interested in the potential for this project," Ismond said. "They are requesting more information on the characteristics of the tilapia in order to proceed further."

To answer industry questions, a series of tests will be conducted over the coming months.

With a strong market potential, the economics of a commercial fishery would then be examined as the next step along with continued consultation with California Department of Fish and Game.

"We are exploring all possible uses for Salton Sea tilapia including composting, fertilizers, fish meal and pet food," said Rob Renke, an Authority consultant who is managing the project.



### Meetings Schedule

#### Board of Directors

December 6, 2000

2:30 p.m.

Imperial Irrigation District

La Quinta

January 18, 2001

10 a.m.

Imperial Irrigation District

La Quinta

#### Technical Advisory

#### Committee

January 18, 2001

8:30 a.m.

Imperial Irrigation District

La Quinta



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