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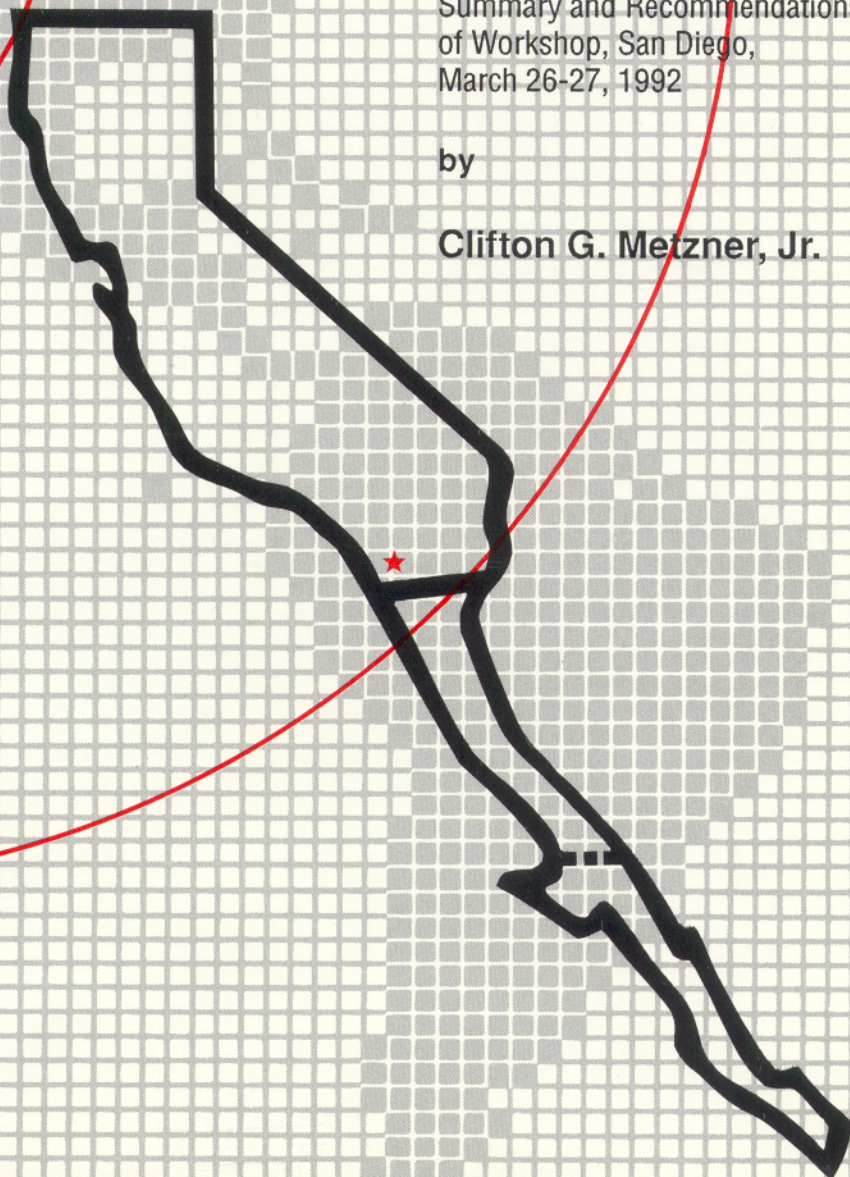
**Institute for
Regional Studies
of the Californias**

**Environmental Issues
of the
Mexican-U.S. Border Region**

Summary and Recommendations
of Workshop, San Diego,
March 26-27, 1992

by

Clifton G. Metzner, Jr.



Border Issues Series, 6

ENVIRONMENTAL ISSUES
OF THE
MEXICAN-U.S. BORDER REGION

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1992

INTRODUCTION

The inaugural workshop of the Program on Public Policy and Border Environmental Issues was held on the campus of San Diego State University on March 26-27, 1992. This workshop, titled Environmental Issues of the Mexican-U.S. Border Region, was sponsored by the Institute for Regional Studies of the Californias (IRSC) with support from the William and Flora Hewlett Foundation. It is the first in a series of working meetings on crucial border environmental issues and related topics. The workshop series will cover a broad range of environmental issues including water quality and reclamation; marine pollution and public health; natural resources; hazardous and toxic waste and public health; air pollution control; border environmental geographic information systems; and managing the border environment into the next century.

During 1992, the Institute will initiate additional environmental projects through support from the United States Environmental Protection Agency to the Southwest Center for Environmental Research and Policy (SCERP) that SDSU joined as a full member in January 1992. SCERP is a consortium of five U.S. universities and, at present, two Mexican universities. SCERP has a mandate from the U.S. Congress to carry out research and policy projects concerning U.S. and Mexican border environmental issues with funding appropriated through the U.S. Environmental Protection Agency. The topics covered within the framework of the comprehensive workshop series of IRSC will relate to the Integrated Environmental Plan for the Mexican-U.S. Border Area, drafted by the United States Environmental Protection Agency and the Mexican Secretaría de Desarrollo Urbano y Ecología (SEDUE--now SEDESOL, Secretaría de Desarrollo Social), and released early in 1992.

When President Bush presented the Integrated Environmental Plan at a press conference in Los Angeles in February 1992, he stated that SDSU will be the California institution to carry out the research and policy efforts of the Plan. The President indicated that SDSU will act as a "think tank" for studying these problems and issues. At that time, he also mentioned that the U.S. Administrations' budget request for FY 1993, beginning October 1992, calls for \$241 million for border environmental projects and cleanup. The government of Mexico has also committed \$460 million over the next three years for joint projects and environmental protection in a number of border cities. Consequently, this is an excellent time for the workshop series to utilize experts from both Mexico and the United States to evaluate and assess the problems and issues, develop a compendium of thoughts and ideas on these subjects that will assist the two governments in making the appropriate (and long range) decisions over the next few years to solve these crucial problems, and to establish a lasting organization to handle the border challenges into the 21st century.

This introductory workshop was conducted as a roundtable forum. The participants were able to express themselves in an informal academic setting that led to a free and open discussion of the topics. The free-flowing dialogue produced a range of ideas

and concepts that has been formed into a number of proposals and recommendations for our series of workshops that will be conducted over the next two years. The subject areas for these workshops include:

1. Water Quality and Reclamation; Tijuana/San Diego and Mexicali/Imperial Valley

There was a great deal of concern expressed by participants regarding the management of transboundary water resources. The water in the Colorado River has been fully allotted, yet officials expect continued border growth, with or without the Free Trade Agreement, which can only increase water needs in the region. In light of possible future droughts and global warming, the management of the Colorado River Basin must be reexamined with the objective of more efficient use of the existing resources.

In addition to surface water problems, transboundary aquifers need to be studied, and any problems found must be resolved. The quality of groundwater is deteriorating in some areas with human usage such as agricultural runoff, leaking storage tanks, unlined solid waste disposal sites, and overdrafting of aquifers with invasion by saline or other unusable waters. There is no treaty between the two countries concerning groundwater distribution because each of the U.S. states has a different body of groundwater laws. The U.S. government cannot simply override these laws. There is, however, a constant exchange of information between the U.S. and Mexican sections of the International Boundary and Water Commission (IBWC) on the use and quality of the groundwaters existing in aquifers shared by the two countries, with a view to reaching such agreements as may be needed.

The subject of the U.S. proposal for lining the All-American Canal in Imperial County, California, was discussed primarily by the U.S. and Mexican IBWC Commissioners. The U.S. Congress passed the All-American Canal Lining Act in 1988 that upon implementation will cause a reduction in the waters that have seeped from the canal and have been used in Mexico for irrigation through pumping from a well field. An Environmental Impact Statement (EIS) for this project was prepared by the U.S. Department of Interior. The U.S. IBWC has shared a copy of this EIS with the Mexican Section and consultations are being held between the Commissioners pursuant to the Commission's Minute 242. Hopefully some accommodation can be made through diplomatic channels. However, some observers have cautioned that the water in question is allocated to California and the U.S. government has no authority to determine the disposition of California water. Mexico contends that the water rights of California are not the issue, that Mexico has a right to the seepage waters it has used over and above the treaty-guaranteed 1.5 million acre feet allotted. The U.S. position is that the 1944 Treaty specifically states that Mexico shall acquire no right to waters of the Colorado River in excess of 1.5 million acre feet. Needless to say, emotions are very high on both sides of this issue but consultations will be continuing.

The Mexican-U.S. binational wastewater treatment plant that is under construction in San Diego adjacent to the border is now on schedule. The land outfall pipe is near completion. In 1992, \$69 million will be available for beginning construction of the twenty-five million-gallon-per-day (MGD) treatment plant that is scheduled to come on-line in 1994.

In addition, the government of Mexico has allocated over \$50 million for improvements in the Mexicali sewage system and the cleanup of the New River, as well as the Tijuana area. These are certainly milestones in the Mexican-U.S. environmental cooperation along the border.

2. Water Reuse and Reclamation

Significant difference of opinion exists regarding the feasibility of water reuse projects that have been proposed by environmentalists and local government agencies to be part of larger sewage projects in the border region. There seems to be agreement that reclamation projects will eventually be required to supplement the overall water resources in the region. However, at this point, there is disagreement on how much demand for reclaimed water exists in San Diego County and in Northern Baja California. According to some analysts, there does not appear to be a large market at this time. Another issue requiring study is the quality and cost of the reclaimed water. There were also some questions in the workshop about the potential costs of construction and operation of such facilities and the ability of such projects to financially justify the installation of extensive reclamation projects. Much more research is required on this issue and should include a survey of potential users of reclaimed water to determine the market demand. This will permit developing a schedule of future requirements for reclaimed water in each of the potential problem areas.

Other options discussed in the workshop included desalination projects and the potential costs and high use of energy for these projects. Forms of energy mentioned were nuclear and solar, as well as the San Diego Gas and Electric (SDG&E) proposal to extend a natural gas transmission line into Baja California in order to have a "clean" fuel for desalination purposes. These options will require further assessment.

Finally, some workshop participants expressed the urgent need for conservation in agricultural uses that could free up enormous amounts of water to meet the increasing urban needs. It was estimated that 25-30% of agricultural waters could be conserved without reduction of crops in many areas. Other gains are possible through abandonment of low value crops (alfalfa, some cotton). Efficiency gains on existing cropland are possible, but not to the level of 25-30%.

3. Marine Pollution and Public Health

Marine pollution should be a topic for an entirely separate workshop since it incorporates so many factors. There needs to be a strong effort made for binational coordination and the establishment of a regional program of collection of data on marine pollution. Data collection should be accompanied by joint research programs between universities such as SDSU and the Universidad Autónoma de Baja California (UABC) and its Marine Research Institute in Ensenada, to provide a basis for establishment of standards.

Efforts should be made to expedite ocean research vessel clearances issued by the government of Mexico. At present, about six months are required to obtain a permit, significantly increasing the cost of scientific research. More Mexican ocean scientists should be working together with U.S. scientists on oceanographic vessels. Mexican research vessels should operate in U.S. waters. Mexican research thus would be fairly easy to do, as there is currently no permit requirement for non-U.S. oceanographic vessels to operate in U.S. coastal waters.

Public health issues relating to sewage and other types of runoff from the Tijuana and San Diego areas and the effects on marine life were briefly discussed. Specifically mentioned was the serious break in the San Diego-Point Loma sewage treatment plant's ocean outfall pipe in February 1992. This break allowed 180 mgd of treated sewage to escape about one half mile off the San Diego Coast. Beaches along the coast were quarantined for over a month before repairs could be made.

The workshop participants briefly discussed infectious diseases in the border region. Cholera and tuberculosis are of particular concern to health authorities. Tuberculosis is especially dangerous as a new drug-resistant form is now spreading.

4. Border Database and Geographic Information Systems (GIS)

All participants affirmed the need for a border environmental database and a Geographic Information System (GIS). It is necessary to determine what databases already exist and how they may be accessed. Also, a way must be found to generate comparable data on both sides of the border. The systems on both sides must be linked together where feasible so that information can be integrated and shared.

The problem of facilitating access to databases and GIS for users in both countries was discussed. Numerous independent systems and institutions now exist along the border that are involved in GIS and database activities. EPA also has a database system. All of these will have to be considered in order to determine the most efficient way of linking and sharing of data. The Institute will hold a workshop on a Border Environmental Geographic Information System in late August 1992.

5. Binational Biospheres and Ecosystems

A number of participants decried the lack of regional integrated planning and action for establishing and administering transborder regional biosphere reserves and protected ecosystems. It was suggested that an international biosphere reserve project be developed for the entire binational Tijuana River Basin. Another suggestion was to identify the South San Diego Bay region as the South Bay National Wildlife Refuge to become a part of The Ramsar Convention since it is globally important. Other possible opportunities exist for biosphere reserves such as the Coastal Salt Marsh Ecosystem, the Sierra de San Pedro Mártir-Sierra de Juárez-Laguna Mountain Park Ecosystem, and the Pinacate-Organ Pipe Sonoran Desert Park Ecosystem.

The Tijuana Estuary Reserve Center is now in full operation and is an excellent resource for research and education on wetlands. The Center encourages binational education and research cooperation. A GIS on the Tijuana Estuary is partially completed.

6. Education and Training

There was a great deal of discussion and interest among the participants concerning education and training in all of the fields related to border environmental issues. Training is a high priority for EPA as indicated in the Border Plan.

There is need for environmental training and education at all levels, including bachelors and master's as well as doctoral programs. Long- and short-term training is needed at the working level for supervisors, workers, technicians, operators, and others. Vocational training is important in most environmental fields. The California State Water Control Board has been conducting training in wastewater reuse for Mexican technicians for a number of years. Training must be done on a binational level and must be planned jointly by U.S. and Mexican agencies and institutions.

One example of this kind of joint effort is being carried out by the Institute for Regional Studies of the Californias and the Graduate School of Public Health at SDSU. They are developing a training program for the maquiladora industry in Tijuana and elsewhere along the border that will cover occupational health as well as public health and safety. This will mostly be short-term training of supervisors, technicians, operators, and assembly line workers.

Also, UCLA's School of Public Health has been collaborating with SEDESOL in the training of SEDESOL inspectors in enforcement procedures and will coordinate with SDSU in further training programs in the maquila industry. Another place where training can be conducted successfully is within joint research projects between the United States and Mexican universities. In such projects, training would be a major

objective. In order to develop effective training programs on aspects of the border environment, a needs assessment is required. A database of border training programs would be a necessary component of the needs assessment for establishing training programs.

7. Hazardous and Toxic Waste

Tracking of hazardous and toxic waste in the border region was a major area of concern of the workshop participants. Over 2,000 maquiladoras operate in the border region with at least 1,000 generating hazardous waste. This has made tracking of substances into Mexico and the ultimate disposal of waste a critical concern to both the United States and Mexico. Much of the legislation on tracking is not clear, and the monitoring of hazardous waste as it returns to the United States is difficult. A major portion of the waste is not moved at all and remains in inadequate and temporary storage at the maquila sites. Many maquila managers say it is just too expensive to transport the waste or are unsure how to legally transport and dispose of the material.

Many of the workshop participants felt that the manifest system presently used in Mexico is an inadequate tracking mechanism. A useful tool would be a binational database for hazardous waste that could be utilized for all elements of the tracking, storage, and handling processes.

As with tracking, the problem of ultimate placement and disposal of hazardous waste is a very critical issue. If much of the hazardous waste to be returned to the United States comes to San Diego, how will it be disposed, and who will be responsible? Many believe that the North American Free Trade Agreement (NAFTA) will bring more Mexican industry to the border area, along with the generation of more hazardous waste. Such growth would require further regulations and methods of tracking and disposal.

In most of the areas related above, stronger enforcement by the Mexican government is required to carry out the regulations already on the books. Also, improved binational coordination between Mexican and U.S agencies is essential, particularly under NAFTA, as it may bring increased industrialization to the border region.

The possibilities of new technical methods for surveillance of toxic waste generators and sites were discussed. Methods could be arranged using remote sensing, robotics and data image processing, and an array of high tech instruments connected to a control site. These features could include transfer of certain technologies to Mexico under an international agreement.

8. Air Pollution

With the opportunity provided by NAFTA, air pollution control agencies on both sides of the border will have a unique opportunity to develop joint programs. The San Diego Air Pollution Control District is a local agency on the U.S. side that has some experience and should continue to participate actively with Mexican agencies. Presently, an intermediary U.S.-Mexico Air Pollution Working Group is being formed to interact with the specific project groups established between EPA and SEDESOL under the 1983 Border Environmental Agreement. The new working group will review the air pollution projects in the Border Plan.

The San Diego Air Pollution Control District is interested in the following projects:

- Ambient air quality monitoring in Tijuana;
- A vehicular inspection/maintenance pilot program in Tijuana;
- Technical training courses in air quality for SEDESOL staff;
- Industrial emissions inventory in Tijuana;
- Enforcement of air pollution control requirements;
- Development of cross border air pollution prevention programs;
- Information exchange relating to air quality rules and standards.

There is now an air pollution monitoring station on Otay Mesa to track air pollution transport between San Diego and Tijuana. There is also a proposal from SDG&E to purchase equipment for a second monitoring station in Tijuana that will be operated by a Mexican educational institution.

It is hoped that adequate economic resources can be developed under the NAFTA to allow extensive joint air pollution projects in the binational San Diego-Tijuana border region.

RECOMMENDATIONS AND PROPOSALS

The following are a number of recommendations and proposals formed by the workshop participants that will be included over the next two years in a series of special policy and technical workshops. These workshops will develop a compendium of ideas, recommendations, and policy alternatives on critical border environmental problems. Such a compendium will assist the two governments in making appropriate and long range decisions to solve the crucial problems. Most of these recommendations and proposals relate directly to the objectives of the EPA/SEDUE [SEDESOL] Integrated Environmental Plan for the Mexican-U.S. Border Area (First Stage 1992-1994).

1. Binational Training and Educational Projects in Border Environmental Issues

- A. Training and education must be carried out in a comprehensive manner at all levels, including vocational training of workers, and training of supervisors at the bachelor's, master's, and doctorate training levels on a long-term basis.
- B. Training should also be carried out on a practical level. This includes short-term in-house training of workers on the basics of job safety and occupational health.
- C. Training and educational priorities must be established through a needs assessment. In this respect, an international database and GIS network would be helpful.
- D. A subcommittee of the Institute Advisory Committee (set up to oversee the activities carried out by IRSC under the Hewlett Foundation project), should be established with participants from U.S. and Mexican government agencies, industry, and the academic community to assess and recommend training activities for border organizations.
- E. The subcommittee could also coordinate the gathering of training course materials that are available, and have these critical documents printed in both English and Spanish for training and educational purposes.

2. Managing Transboundary Water Resources

- A. Water management in the Colorado Basin must be reexamined. There may be ways to improve the quality and reliability of the water supply for domestic and agricultural purposes for users on both sides of the border. Various trade-offs could be proposed. For example, efforts could be made to attract industries and businesses in which water usage is either small or nonexistent.
- B. The transboundary aquifers need to be studied, any problem areas defined, and accommodations made for solutions. Since it would be difficult, if not impossible, to negotiate a treaty on this problem, perhaps legislation could be developed to enable the United States to compensate its own users along the border in exchange for their consent to include their water rights in an agreement with Mexico. Other incentives such as water and land swaps might also be utilized to secure an agreement on binational groundwater arrangements.
- C. The lining of the All-American Canal is a very sensitive subject for both

countries. There are many legal, social, technical, and political questions involved. Both countries need to work together to solve these problems. Perhaps some of the answers rest in the ways and means of compensation relating to the groundwater issues mentioned above.

3. Water Reuse and Reclamation in the Border Region

- A. There is great urgency for the development of cooperative U.S. and Mexican wastewater reclamation projects. With the expected population, commercial, and industrial growth along the border, the availability of water is increasingly becoming a serious problem. This would be especially true in the Tijuana-San Diego and Mexicali-Imperial Valley regions as a result of the NAFTA. Studies need to be made to develop the economic feasibility and timing of increasing the quality of water available through reclamation and reuse in each of several problem and potential problem areas.
- B. There is no question that reclamation of wastewater will be required in the future, but presently there needs to be additional study on available and potential markets for reclaimed water. Determination of when the demand for reused water will be adequate to justify large project costs will have to be on an area-by-area basis.
- C. Additional study is needed on storage reservoirs for treated wastewater and the associated costs.
- D. Joint planning between the United States and Mexico for reclamation projects along the border is essential, particularly the planning for reuse of treated wastewater from the binational plant under construction in San Diego.
- E. Other options for increasing water supply must be analyzed. Desalination is the most likely alternative, but because it is energy intensive it will also be necessary to consider alternative energy sources such as nuclear or solar power.
- F. Conservation of agricultural water resources is an important option to consider. Certain studies show that in many areas 25 to 30% of agricultural water could be conserved for other uses without reduction of crop output. The waters conserved would go far to meet the increasing urban needs.

4. Marine Pollution

- A. It was suggested that marine pollution be included as an important element for consideration by both countries under the Integrated Border Plan.
- B. Interdisciplinary studies of marine pollution should be conducted on a regional binational basis in the ocean areas adjacent to the border region. These studies should include the effects of ocean outfalls from sewage treatment plants in the region.
- C. For ocean outfall studies as well as with other research efforts, the Mexican government should review the possibility of reducing the time taken to conduct clearances for U.S. research vessels visiting Mexican waters.
- D. It was suggested that a need exists for Mexico to monitor and conduct research in some of the U.S. ocean waters.

5. Border Database and Geographic Information Systems

- A. An assessment needs to be made about the kind and type of databases that currently exist along both sides of the border.
- B. It must be determined what additional information needs to be acquired in all areas of concern, and how comparable data can be generated on both sides of the border.
- C. A review of the EPA and other GIS networks in the border region needs to be accomplished.
- D. GIS networks are extremely important as baseline data for research, planning, and policy efforts along the border.
- E. Two projects from Mexico have already been suggested for collaboration with SDSU on Geographic Information Systems along the border. These include information for studies such as environmental impact assessments, regional and urban planning, and land use plans and policies.
- F. The Institute for Regional Studies of the Californias at SDSU will conduct a workshop on Border Environmental Geographic Information Systems in late August 1992.

6. Binational Biosphere Reserves and Park Ecosystems

- A. The development of a binational biosphere reserve for the Tijuana River Basin should be pursued as a joint project. To begin, graduate students could be hired to develop a project proposal that could be submitted to Man and the Biosphere (MAB) and other sources for funding.
- B. A second project proposal should be developed for a wetland reserve in the South San Diego Bay region.

7. Hazardous and Toxic Waste

- A. The subcommittee, set up under the IRSC Advisory Committee, could work with EPA and SEDESOL to develop a database on hazardous waste materials for the purpose of tracking the waste from provider to generator and to disposal.
- B. There is a critical need for a risk assessment of hazardous substances and waste associated with industry in the border region. The communities have a right to know regarding the possible risks from industry in their area. This is also necessary from the standpoint of planning emergency response actions and related programs for the border areas.
- C. Strict enforcement of the rules and regulations established by SEDESOL for border industry is critical for the success of the environmental programs and the Border Environmental Plan.
- D. Emphasis was given to the importance of a workshop on agricultural and pesticide issues.

8. Air Pollution

- A. It was suggested that a great deal more effort must be concentrated in the Mexicali/Imperial Valley area for air quality monitoring. An air quality station should be established in this area similar to the Otay Mesa station to track air pollution transportation across the border on both sides.
- B. An air pollution working group should be established for the Mexicali/Imperial Valley area, like that which has been created for the Tijuana/San Diego region, to follow up on the recommendations of the Border Environmental Plan.

9. Outreach and Hazard Perception

There is a critical need to inform and educate the public along the border concerning the environmental impacts and the programs that are under way or planned for solving environmental problems and for pollution prevention. This can be accomplished in a number of ways, including public meetings, workshops, and forums in border communities; publication of an information bulletin on border environmental issues; and working through schools and businesses to promote public awareness. These public outreach programs can be initiated through EPA and SEDESOL as well as academic institutions and businesses.

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