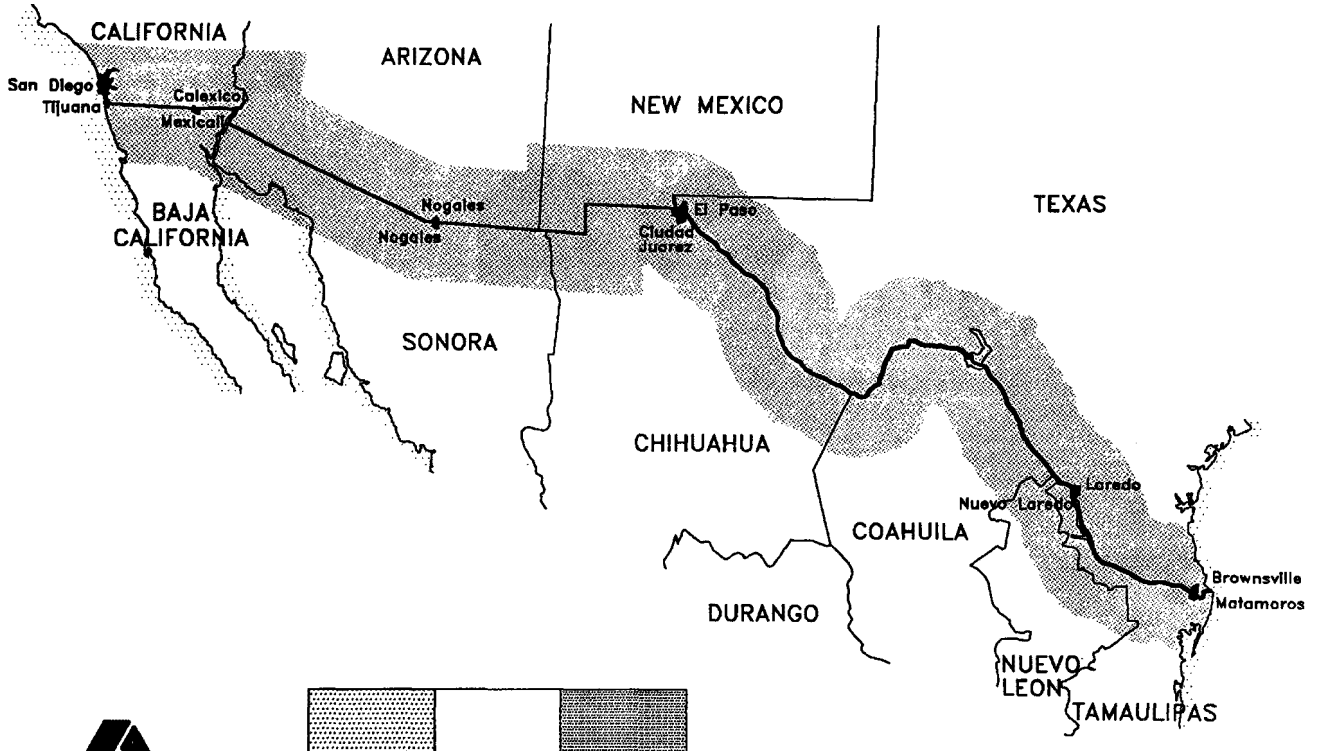
INTEGRATED ENVIRONMENTAL PLAN FOR THE MEXICO–U.S. BORDER AREA

(First Stage, 1992–1994)

U.S. ENVIRONMENTAL PROTECTION AGENCY



SEDUE

SECRETARIA DE DESARROLLO URBANO Y ECOLOGIA

WORKING DRAFT

AUGUST 1, 1991

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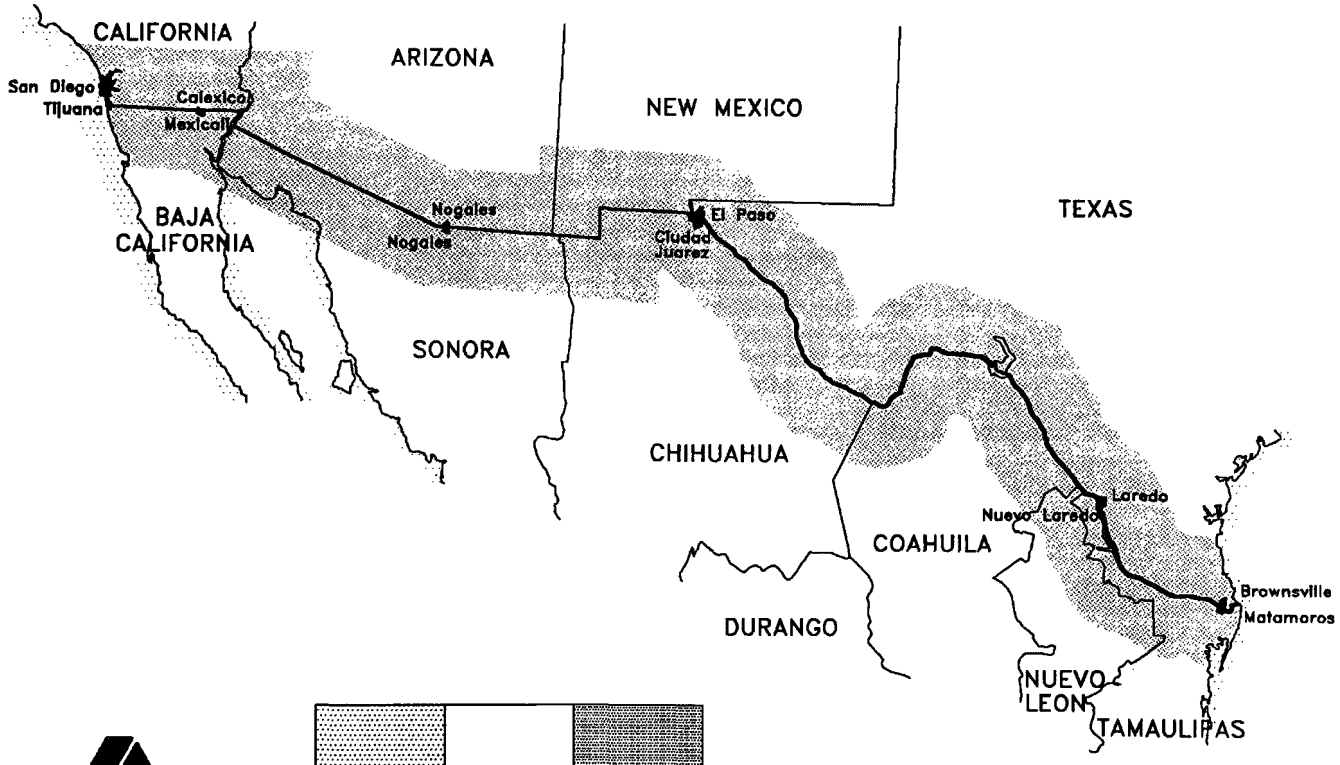

SEDUE

SECRETARIA DE DESARROLLO URBANO Y ECOLOGIA

WORKING DRAFT

AUGUST 1, 1991

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SECTION I

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WORKING DRAFT

INTEGRATED ENVIRONMENTAL PLAN FOR THE MEXICO - U.S. BORDER AREA (First Stage, 1992-1994)

SECTION I EXECUTIVE SUMMARY

A. PREPARATION OF THE BORDER ENVIRONMENTAL PLAN

On November 27, 1990, President Salinas de Gortari of Mexico and President George Bush of the United States met in Monterrey, Mexico, to discuss important issues of interest to both countries. Their joint communique "emphasized the need for ongoing cooperation in the area of environmental protection" and

> "instructed the authorities responsible for environmental affairs of their countries to prepare a comprehensive plan designed to periodically examine ways and means to reinforce border cooperation in this regard, based on the 1983 Bilateral Agreement. Such a mechanism should seek ways to improve coordination and cooperation, with a view to solving the problems of air, soil, and water quality and of hazardous wastes. State and municipal authorities of both governments and private organizations in both countries should participate in such tasks as appropriate."

The responsible environmental agency of Mexico (The Secretaria de Desarrollo Urbano y Ecologica (SEDUE)) and the U.S. Environmental Protection Agency (EPA) have been meeting since December 1990 to develop the Border Environmental Plan requested, namely one that was "comprehensive," that would have the goal of "solving" pollution problems in the Border Area, that would be reviewed periodically and which would seek the participation of both the public and private sectors. The Presidents also indicated that the plan should be based on the 1983 Border Environmental Agreement between Mexico and the United States. This means that SEDUE and EPA serve as the national coordinators responsible for shaping and coordinating the Border Environmental Plan and that the Border Area to be covered by the plan is to be an area 100 km on each side of the international boundary (this is the area referred to as the "Border Area" in the Border Environmental Plan prepared by SEDUE and EPA).

The objectives of this first stage (1992-1994) of the integrated Border Environmental Plan are as follows:

- To outline the environmental characteristics of the Border Area and describe the present status of significant environmental issues in the Border Area;

- To summarize the cooperative border environmental accomplishments achieved to date by binational, National, State and local environmental agencies;

- To articulate the commitment of all these environmental agencies, both Mexican and U.S., to work cooperatively to better understand environmental issues in the Border Area; to establish priorities and to develop mechanisms for implementing solutions;

- To set out implementation plans to mobilize the cooperative efforts of governments at all levels, and to involve the non-governmental sector as well, in seeking solutions to the Border Area's priority environmental problems; and

- To set out concluding recommendations to make the Border Environmental Plan fully effective.

Building on the experience of SEDUE and EPA under the 1983 Border Environmental Agreement and subsequent annexes, existing SEDUE/EPA working groups dealing with the principal environmental concerns relating to water quality, hazardous wastes, air quality and chemical emergencies affecting the Border Area provided the expertise on which the Plan is based. As a result of their deliberations, SEDUE and EPA have created a fifth working group on enforcement to help guide implementation of the Plan. Representatives of the International Boundary and Water Commission (IBWC) have participated in the water issues working group, and IBWC will be the binational mechanism for planning and constructing the water treatment plants needed under the Plan.

It was the intent of both Presidents that the Border Environmental Plan involve the participation of governments, businesses, academic institutions and environmental organizations in the Border Area as appropriate. The public and private sectors are being invited to submit relevant information and to comment on the Plan. Under the Plan's continuing recommendations (see Recommendations 4, 6, 7, 8, 9) these organizations and groups will play continuing roles under the Plan. Following review by the appropriate government agencies and public comment, SEDUE and EPA will publish the Border Environmental Plan, First Stage (1992-94) as adopted. The Plan will again be reviewed and revised in 1994 with a similar process of governmental and public participation. The progress of the Plan's implementation will be reviewed by SEDUE and EPA on at least an annual basis.

B. THE BORDER ENVIRONMENT: PHYSICAL SETTING, POPULATION, ECONOMY

The Border Area between Mexico and the United States extends for nearly 2500 kilometers (1550 miles) from the Pacific Ocean to the Gulf of Mexico. Dry desert conditions exist over most of the area. Six Mexican states, Baja California, Sonora, Chihuahua, Coahuila, Nuevo Leon and Tamaulipas adjoin the border. Across the border lie the U.S. states of California, Arizona, New Mexico and Texas. The population of the Border Area has grown rapidly in recent years, increasing from over three million in 1980 to approximately six million in 1990. The population is concentrated in six principal "sister cities" located across the border from each other. Population data for these sister cities are shown in Table I-1.

TABLE I-1. MAJOR MEXICAN/U.S. BORDER SISTER CITY POPULATIONS (1990 CENSUS)

Tijuana, Baja California	742,686
San Diego, California	1,737,299
Ciudad Juarez, Chihuahua	797,679
El Paso, Texas	515,342
Mexicali, Baja California	602,390
Calexico, California	18,633
Nuevo Laredo, Tamaulipas	217,912
Laredo, Texas	122,899
Matamoros, Tamaulipas	303,392
Brownsville, Texas	98,962
Nogales, Sonora	107,119
Nogales, Arizona	19,489

Economic and population growth over most of the Border Area has been vigorous in the past decade. Annual crossings of the border have approached 200 million, making it the most frequently crossed border in the world. On both sides industry has become more important. Mexican industrial growth in the Border Area in recent years has been led by the "maquiladoras," processing plants which receive raw materials and machinery from the U.S., duty free, and return the assembled products to the United States with the U.S. duty limited to the value added by processing in Mexico. There are now over 1600 such maquiladoras on the Mexican side of the Border Area, employing over 370,000 people. The maquiladora industry overall is the second largest foreign exchange earner for Mexico, following petroleum products and ahead of tourism. Industry on the U.S. side of the border consists of electronic, petroleum, plastic, chemical, food, agricultural, metal finishing, textile, and transportation equipment supplies. Based on 1988 business data the major industry employment on the U.S. side was 1,386,709.

C. THE BORDER ENVIRONMENT: STATUS OF ENVIRONMENTAL PROBLEMS

As the industrial sectors of the economy in the border cities have grown, the added economic activity and corresponding population increase have produced strain on the Border Area's infrastructure. Congestion, uncontrolled urban development, and lack of basic public health and sanitation facilities have become significant problems in many Mexican border communities. In U.S. Border Area communities, although environmental problems are not as severe, environmental pressures of growth have also been evident.

SEDUE and EPA have identified a wide variety of serious environmental problems in the Border Area with respect to the region's water and air quality, handling of wastes and response to chemical accidents. As noted, these problems exist on both sides of the border. Just as there are industrial effluent problems on the Mexican [illegible]e affecting border waters, there are also transborder air quality problems in El Paso and San Diego. The Border Area environmental system has many interrelationships and the sister cities in many cases share the air basins, cross border traffic, border surface waters, and transboundary aquifers.

Water quality in the Border Area is threatened by limited sewage treatment and collection facilities, untreated or inadequately treated industrial effluents, and improperly handled hazardous wastes. Inadequately treated wastewater flows into the Rio Bravo/Rio Grande, Colorado and other Border Area rivers, causing conditions that present a significant health risk and resulting in drinking water safety being a public concern.

Since the Water Treaty of 1944, the Mexican-U.S. International Boundary and Water Commission (IBWC) has had the lead role for water sanitation works on border waters mutually agreed to by Mexico and the U.S. This has produced projects at Nuevo Laredo/Laredo, Ciudad Juarez/El Paso, Nogales/Nogales and Tijuana/San Diego, the last of which represents an investment of several hundred million dollars. Additional border water sanitation projects are under study by the IBWC and will play an important role in reaching the Border Environmental Plan goals.

The management of hazardous wastes from industry will receive close attention under the Plan and be the subject of a cooperative enforcement program between SEDUE and EPA. One of the first steps to be taken is to ascertain the extent of the hazardous and solid waste problem in the Border Area, the volume of waste being generated by industry and how that waste is being disposed. SEDUE plans to foster the development of hazardous waste handling capacity on the Mexican side of the border.

The current status of air quality in the Border Area on the U.S. side is not well characterized, except in the largest U.S. Border cities. Among the principal U.S. sister cities along the border, both San Diego and El Paso, including the adjoining community of Sunland Park, New Mexico, fail to meet U.S. standards. Much less is known about air quality conditions on the Mexican side, although more monitoring is now underway, including a new monitoring network begun in Juarez in June 1990. Major SO_2 sources on the Mexican side of the border may be contributing to the degradation of visibility in some scenic areas along the border.

There have been a number of spills or explosions in the Border Area involving toxic chemicals indicating a need to build a strong joint response team capacity. There are also a number of environmental issues in the Border Area including maquiladoras, colonias (rural, unincorporated settlements with substandard housing, inadequate roads and drainage, and substandard or no water and sewer facilities) and pesticide use which require a multimedia approach.

D. EXISTING ENVIRONMENTAL INSTITUTIONAL FRAMEWORK

SEDUE and EPA both administer comprehensive national pollution control laws and have been building an increasingly strong cooperation under the 1983 Border Environmental Agreement and its five annexes on specific issues. Mexico's enforcement efforts have been hampered by a lack of resources. A World Bank loan to partially remedy this deficiency is under negotiation. SEDUE and EPA are exploring the possibilities to mobilize more resources for the Border Area. EPA plans to increase materially the amount and varieties of technical assistance it makes available to SEDUE.

The Mexican and U.S. Presidential commitments in November 1990 to strengthen cooperative activities between Mexico and the United States in the Border Area builds on the previous SEDUE-EPA collaboration under the 1983 Border Environmental Agreement and the IBWC's experience in handling border water projects, and therefore creates a flexible, binational mechanism for upgrading the environment of the Border Area. The Plan will draw in and coordinate the participation of the border states and cities, the private sector and the public. By approaching the Plan in stages, a continuing process of review and refinement involving all the relevant parties will be initiated.

In general, SEDUE is more centralized than EPA and a much larger portion of Mexico's environmental protection regime is currently developed and implemented by federal authorities. Mexican law and regulations contemplate an expanded role for the states but this has not yet been fully implemented. Since the Mexican General Ecology Law was enacted in early 1988, eighteen Mexican states, including Coahuila, Sonora and Nuevo Leon in the Border Area and the Federal District, have adopted environmental statutes. Mexico is currently examining how SEDUE might be "decentralized" by shifting some of the functions which it now carries on centrally to state environmental authorities.

In the United States, many pollution control standards, including those for pesticides, are set at the federal level by EPA and are usually supplemented by state plans. The states may require more stringent but not less stringent pollution control measures, with Federal authorities retaining oversight responsibility. Examples of this approach include the U.S. air and water pollution control regimes.

E. ENVIRONMENTAL PRIORITIES

Mexico and the United States both recognize that certain activities, actions or projects within their respective jurisdiction in the Border Area can potentially cause transboundary pollution. Therefore, SEDUE and EPA have established the following list of priorities for their cooperation to address the transboundary pollution problems in the various environmental media:

1. Control industrial and municipal discharges into surface waters to prevent/reduce contamination of surface and subsurface waters;

2. Monitor/track the movement and disposal of hazardous wastes to ensure environmentally sound disposal and prevent contamination of surface or subsurface waters;

3. Prevent air pollution which exceeds ambient standards by controlling stationary, area, fugitive and mobile source emissions; and

4. Develop contingency and emergency response plans for hazardous material emergencies.

With respect to the sister city areas, the top priorities were identified as follows:

Tijuana/San Diego - municipal wastewater and ozone/carbon monoxide

Mexicali/Imperial County - municipal wastewater and particulate matter

Nogales/Nogales - municipal wastewater and particulate matter

Ciudad Juarez/El Paso - ozone/carbon monoxide and particulate matter

Nuevo Laredo/Laredo - municipal wastewater

Matamoros/Brownsville - municipal wastewater and water supply sources

Environmental issues related to border industry were assigned high priority in all sister city areas. These issues include the transboundary movement and disposal of hazardous wastes, and the detection and remediation of abandoned hazardous waste sites, as well as air and water problems.

F. THE BORDER ENVIRONMENTAL PLAN (FIRST STAGE)

Actual cleanup implementation plans are discussed in the final section of the First Stage (1992-1994) of the Border Environmental Plan. In many cases, these plans involve collecting more data and Mexican-U.S. agreements about specific cleanup projects and technical assistance arrangements. Agreement about new border water treatment projects will be reached through the IBWC mechanism. SEDUE and EPA are discussing ways of mobilizing a substantial increase in the resources available for cleanup in the Border Area. The implementation plan proposed on water quality will address water supply, municipal wastewater, and control of industrial wastes in the Border Area, as well as, ground water monitoring. The implementation plan addressed to wastes covers transboundary movement of hazardous wastes, abandoned dump sites, and municipal solid waste landfills. The air quality plan focuses on studies at Ciudad Juarez/El Paso, Tijuana/San Diego and Mexicali/Calexico on how to reduce air pollutants in the Border Area air basins. There are also plans to strengthen chemical emergency preparedness and contingency response along the border, a public/private cleanup program aimed at industrial sources, including the maquiladoras, and a plan to develop a SEDUE/EPA cooperative enforcement strategy.

G. CONCLUDING RECOMMENDATIONS

The Border Environmental Plan concludes with ten recommendations jointly agreed upon by SEDUE and EPA. They cut across most of the border problems and SEDUE and EPA will seek their early implementation:

1. Cooperative Enforcement Strategy

SEDUE and EPA should establish a program to control pollution from point sources, which will focus on developing a cooperative enforcement strategy for the Border Area, recognizing the sole and sovereign responsibilities of their respective governments for law enforcement in their own territory. To help implement the enforcement program, a Work Group on Enforcement has been added to the four existing Work Groups under the 1983 Border Environmental Agreement.

2. Effective Protection of Transboundary Environmental Resources

SEDUE and EPA should take steps to assure that the environmental standards and requirements of each, and their enforcement, provide effective protection to transboundary environmental resources in the Border Area such as the border surface waters, transboundary aquifers, and the air basins of sister cities.

3. Strengthened Financing of Environmental Protection in the Border Area

SEDUE and EPA should review ways to resolve resource problems and strengthen their cooperation in mobilizing funding for pollution control facilities needed in the Border Area. Where pollution control facilities, such as those for handling hazardous wastes, are lacking or inadequate, consideration should be given to developing market incentives and use charges on pollution sources to pay for such facilities. It is recognized that external resources will be required to achieve complete implementation of this Plan.

4. Mobilizing Private Sector Support

The private sector in Mexico and the United States should be mobilized to assist in accelerating environmentally sound development in the Border Area in a variety of ways including a program of voluntary pollution reductions agreed to with major firms operating in the Border Area. This program will be similar to EPA's "33/50 initiative" and will provide technology transfer through treatment, control, and pollution prevention technology seminars and other mechanisms for the maquiladora and other Border Area industries.

5. Joint Emergency Planning and Response Capability

SEDUE and EPA should identify appropriate Federal, State and local officials on both sides of the border, who can assist in the cooperative development of emergency response capabilities; work jointly toward the development of an accident prevention program focused on facilities handling toxic substances improve cross-

border communications related to the development of emergency preparedness and response capabilities; and facilitate cross-border mobility of emergency response equipment and personnel.

6. Coordination of Environmental Programs in the Border Area

SEDUE and EPA should each coordinate their country's activities in the Border Area with those of the other major environmental agencies with jurisdiction in the area (including the IBWC). Both SEDUE and EPA should appoint Border Area Coordinators at their headquarters offices responsible for coordination and oversight of Border Environmental Plan implementation.

7. Border Area Environmental Round Table Meetings

To promote further coordination, Border Area Environmental Round Table meetings should be established at the local, State and Border Area wide levels. These Round Table meetings would serve the following purposes:

- Provide a forum for the exchange of ideas and discussions of environmental problems, including those related to land-use and public health, and their resolution throughout the Border Area;

- Build a communication network among industry, non-governmental organizations (NGOs), and State and local governments;

- Promote community relations activities and right-to-know policies;

- Promote information transfer among industry, NGOs, local, State, national and binational environmental agencies. Information to be shared would include monitoring/sampling data, treatment control and waste reduction or pollution prevention technology and identification of problem areas;

- Provide a mechanism for participation in the environmental resource development and allocation process to fund solutions for environmental issues; and

- Provide a forum to discuss the effects of proposed environmental regulations.

8. Other Programs to Promote Public Awareness and Increase Participation

To ensure effective implementation of the Border Environmental Plan, it is essential to make the public aware of the Plan and to enlist their participation in implementing it. In addition to the Environmental Round Table meetings proposed, the following are also recommended: additional public meetings, conferences, and workshops; SEDUE/EPA publication in English of Mexican environmental laws, regulations, and standards

together with guidance on their use; and Environmental Watchdog arrangements to receive public complaints and information.

In addition, SEDUE and EPA should jointly publish annual environmental indices and data on the Border Area and SEDUE should establish requirements for public availability of data on emissions and industrial discharges of pollutants. Additionally, private volunteer initiatives should be initiated to promote increased environmental awareness in the border communities and to address the specific public health and social infrastructure problems that contribute to adverse environmental conditions in the Border Area.

9. Updating of the 1983 Border Environmental Agreement and its Annexes

The 1983 Environmental Agreement between Mexico and the United States and its Annexes will be updated at a future time as appropriate to take account of new information that results from implementation of this Plan.

10. Periodic Review of the Border Environmental Plan

SEDUE and EPA will review and update the Border Environmental Plan periodically. Following review by the relevant governmental agencies and public comment, the Border Environmental Plan (First Stage) will be adopted this year. The Plan will again be reviewed and revised in 1994. At that time there will be similar opportunities for participation by the governmental, public and private sectors before the Plan's Second Stage is adopted. In the interim, SEDUE and EPA will annually conduct a review of the Plan's implementation.

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SECTION II

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SECTION II

INTRODUCTION

A. THE PRESIDENTS' COMMUNIQUE

On November 27, 1990, President Carlos Salinas de Gortari of the United Mexican States and President George Bush of the United States of America held one of their periodic meetings, this time in Monterrey, Mexico to discuss important issues of interest to both countries. The Presidents were accompanied by the heads of their respective environmental authorities and discussions took place concerning environmental conditions along the Mexico/U.S. border. The result of the meeting was a joint communique that included commitments and directives for cooperative activities in response to these issues. The Presidents agreed to direct their respective environmental authorities (The Ecological Sub-Secretariat of Secretaria de Desarrollo Urbano y Ecologica (SEDUE) of Mexico, and the U.S. Environmental Protection Agency (EPA)), to work together to develop a comprehensive border environmental plan designed to solve environmental problems in the Border Area.* The text of their joint communique on the Border Environmental Plan is as follows:

> *The Presidents emphasized the need for ongoing cooperation in the area of environmental protection. Both Presidents instructed the authorities responsible for environmental affairs of their countries to prepare a comprehensive plan designed to periodically examine ways and means to reinforce border cooperation in this regard, based on the 1983 Bilateral Agreement. Such a mechanism should seek ways to improve coordination and cooperation, with a view to solving the problems of air, soil, and water quality and of hazardous wastes. State and municipal authorities of both governments and private organizations in both countries should participate in such tasks as appropriate.*

B. OBJECTIVES

The purpose of this comprehensive Border Environmental Plan is to strengthen the base for continuing cooperation between Mexico and the United States in improving the environment of the Border Area. The Presidents specifically asked that the Plan be *comprehensive*, that it have the goal of *solving* pollution problems in the Border Area, that it be reviewed *periodically*, and that the participation of *...state and municipal authorities of both governments and private organizations of both countries...* be sought as appropriate.

In accordance with these guidelines, this Border Environmental Plan:

- Outlines the environmental characteristics of the Border Area and describes the present status of significant environmental issues in the Border Area;

*Article 4 of the 1983 U.S.-Mexico Border Environmental Agreement (often referred to as the "La Paz Agreement") defines the Border Area as an area 100 km on each side of the international boundary. "Border Area" will have the same meaning in this Plan.

- Summarizes the cooperative environmental accomplishments achieved to date in the Border Area by binational, national, state and local environmental agencies;

- Articulates the commitment of all the environmental agencies, both Mexican and U.S., to work cooperatively to better understand environmental issues in the Border Area and to establish priorities and develop mechanisms for implementing solutions;

- Sets out implementation plans to mobilize the cooperative efforts of governments at all levels, and to involve the private sector as well, in seeking solutions to the Border Area's priority environmental problems; and

- Sets out concluding recommendations to help make the Border Environmental Plan fully effective.

C. SCOPE OF PLAN

This Border Environmental Plan is organized into four sections. Section III describes the Border Area and existing environmental issues of concern. Cooperation between the governments, progress achieved to date and current needs with respect to these issues are also discussed in Section III. Section IV describes the existing institutional, regulatory and environmental policy framework applicable to these issues. Section V outlines the procedure followed for assessing environmental priorities in the Border Area. Section VI presents the first stage of the Plan through 1994 and lists ten concluding recommendations for making the Border Environmental Plan as effective as possible on both sides of the border as soon as possible.

D. THE PLAN PROCESS

Mexico and the United States have long pursued common interests in water resources and water sanitation in the Border Area through the binational International Boundary and Water Commission (IBWC). Formal efforts between Mexico and the United States to protect and improve the environment in the Border Area began in 1983 with the adoption of the *Agreement Between the United States and the United Mexican States on Cooperation for the Protection and Improvement of the Environment in the Border Area* (1983 Border Environmental Agreement). The 1983 Border Environmental Agreement outlines the primary objectives of common border environmental cooperation; establishes a mechanism for additional agreements, annexes, and technical actions; and provides for regular high-level meetings and special technical meetings to further promote and encourage environmental cooperation between the two countries. The 1983 Border Environmental Agreement also establishes formal communication procedures and provides that both countries designate National Coordinators to coordinate and monitor the implementation of the agreement. Currently, Dr. Sergio Reyes Lujan, Undersecretary for Ecology in the Secretariat of Urban Development and Ecology (SEDUE) is serving as the Mexican National Coordinator and Timothy B. Atkeson, Assistant Administrator for International Activities of the U.S. Environmental Protection Agency (EPA), is serving as the U.S. National Coordinator. The 1983 Border Environmental Agreement appears as Appendix B to this document and is discussed in more detail in Section IV.

In response to the 1983 Border Environmental Agreement and subsequent annexes, SEDUE/EPA working groups were established and communication procedures were developed for dealing with the principal environmental concerns relating to water, hazardous wastes, air and chemical emergencies affecting the Border Area. (A representative of the IBWC participates in the water working group.) These working groups have provided the bulk of the expertise on which this Plan is based. Although the 1983 Border Environment Agreement does not currently include an annex on solid waste, SEDUE and EPA recognize that this is a significant environmental and public health concern and have therefore attempted to address this issue in the plan as well.

It was the intent of both Presidents that preparation of this Plan involve the participation of governments, business, academic institutions and environmental organizations as appropriate. The public and private sectors have been invited to submit relevant information and to comment on the Plan. Following review by the appropriate government agencies and public comment, SEDUE and EPA will publish the Border Environmental Plan, First Stage (1992-1994) as adopted. Under the Plan's Concluding Recommendations (see Recommendations 4, 6, 7, 8, 9) these organizations and groups will also play continuing roles. The Plan will again be reviewed and revised in 1994 and subjected to a similar process of governmental, private and public participation.

Perhaps former President de la Madrid of Mexico best characterized the growing support for environmental protection in the Border Area in his introduction to the far-reaching 1988 Mexican General Law of Ecological Balance and Environmental Protection (General Ecology Law) when he stated that "...the conflict between environmental protection and economic development in Mexico has now arrived at the point where the best environmental solution is also often the best economic solution." This Border Environmental Plan is based upon a general recognition today that the Border Area's growth must now be made environmentally sustainable with the participation of industry and all elements of the Border Area community.

Preparation of the Border Environmental Plan has been greatly facilitated by a spirit of close cooperation between SEDUE and EPA and a recognition that environmental problems exist on both sides of the Border and affect the other side. Just as there are unsolved waste problems of industries affecting border waters, there are air pollution problems in the Greater El Paso area (including Sunland Park, New Mexico) and San Diego affecting the air basins of their sister cities. The Border Environmental Plan is a dynamic, binational document that will be revised and expanded as new information is developed, as implementation of solutions evolves, and as further experience is gained in working together to achieve common goals. Mexico and the United States are aware of and concerned about the issues of the environment and the relationship between environmental protection and continued economic growth in the Border Area. Both governments have pledged to enhance the environment in the Border Area while maintaining economic development thereby maintaining an economically sustainable and environmentally compatible growth. This Plan lays the basis for translating that commitment into action.

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SECTION III

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SECTION III

THE BORDER ENVIRONMENT

The first part of this section describes the physical, demographic and economic characteristics of the Border Area. The materials presented are meant to provide only an overview of the conditions and recent history that have shaped the Border Area. Water quality, hazardous and solid waste, air quality, pesticides, and contingency planning and emergency response issues are discussed in subsections B, C, D and E. Environmental issues associated with industrial facilities and colonias are also discussed.

The material set forth on each of the environmental issues presents (1) information on the current situation, (2) accomplishments to date, and (3) additional information needs. Background materials used to develop this section come from the individual Work Group action plans and follow the focus of efforts during the next three years on six priority sister cities. These have been identified as Tijuana/San Diego, Mexicali/Imperial County, Ciudad Juarez/El Paso, Nuevo Laredo/Laredo, Nogales/Nogales and Matamoros/Brownsville. Identification of the interim priority placed upon these "sister cities" does not limit consideration of environmental issues in other locations within the Border Area. One of the long term purposes of the Plan is to investigate and ultimately address environmental issues throughout the Border Area.

The implementation plans set out in Section VIA draw upon available data and experience to resolve the Border Area issues. Refinement of these plans will be conducted as new information is obtained. Only in a limited number of cases will implementation await the collection of new information and these cases have been clearly identified in both Sections III and VI.

While there are industrial pollution problems on both sides of the border, the rapid growth of the maquiladora and non-maquiladora industries along with federal and national industries and the attendant public health and environmental impacts have been a major concern to both countries. There is a need for better controls on air emissions and wastewater effluents in many cases, but most public attention with respect to maquiladoras has been drawn to problems of hazardous waste management (improper storage and disposal, spills, fires, and leaking surface impoundments, landfills, open dumps and waste piles). The attendant threats to human health range from accidental contact with hazardous waste to infiltration and contamination of ground water supplies. For this reason, the discussion of Hazardous and Municipal Solid Wastes in Section IIIC refers in large part to issues relating to maquiladora industries.

A. NATURE OF THE BORDER AREA

1. Physical Setting

The border between Mexico and the United States extends for nearly 2500 kilometers (1550 miles) from the Pacific Ocean to the Gulf of Mexico. Six Mexican states and four U.S. states adjoin the border, as illustrated in Figure III-1. The Border Area is defined in Article 4 of the *1983 Border Environmental Agreement* as the area within 100 kilometers of each side of the international boundary. Figure III-1 shows the 100 kilometer-deep Border Area, it's major cities, and the six principal sister cities along the border. Protected areas in the Border Area are shown in Figure III-2. The climate, topography, hydrology, and geology along the Border Area can be divided into six physically distinct regions.[1] These regions are, (from west to east), the Baja California/California Region, the Sonora Plains/Colorado River Basin Region, The Sierra Madre Occidental/Continental Divide Region, the Northern Plateau/Great Plains Region, the Sierra Madre Oriental/Santiago Mountain Region, and the Gulf of Mexico/Gulf Coast Lowlands Region.

Physical Description

A large part of the Border Area is arid wasteland with some forest areas and irrigated farmlands. The physical characteristics of each region in the Border Area are discussed below.

The Baja California/California Region extends from the Pacific coast to the low plains along the Colorado River. The Sierra de Juarez (California Coastal Mountain Range) runs down the middle of this region. The arid coastal lands to the west of the mountains are a series of coastal terraces, mesas, and small basins with riverine deltas and restricted coastal strips. Irrigated portions of this arid region support agricultural production. The western face of the Sierra de Juarez has a gentle slope climbing up to a height of approximately 10,000 feet along the border.[2] The high peaks support forest and woodlands. The eastern face drops off sharply descending steeply down to the Colorado River Basin.

The Sonora Plains/Colorado River Basin (The Pacific Lowlands) Region extends from the base of the Sierra de Juarez to the Continental Divide. This arid low lying region has insufficient natural precipitation to support agriculture without irrigation. In its natural state it is dotted with shrubs, sparse grass, and wasteland. Irrigation in the Mexicali Valley, the Colorado Delta, and along the Magdalena River has made agriculture possible although saline waters and soil are still a problem.[3] Extensive irrigation supports crops of cotton, alfalfa, and grain. Large areas of copper deposits have been mined from this area. This region contains the cities of Calexico, Mexicali, Yuma, and San Luis Rio Colorado.

The Sierra Madre Occidental/Continental Divide Region separates the plains of the Colorado River Region from the high plateaus of Mexico and the southern United States. This mountain range serves as a natural boundary between the normal western and eastern weather systems of this arid region.[4] The mountain precipitation supports forests of oaks and pines on its peaks.

Figure III–1. Mexico/United States Border Area (showing major twin cities)

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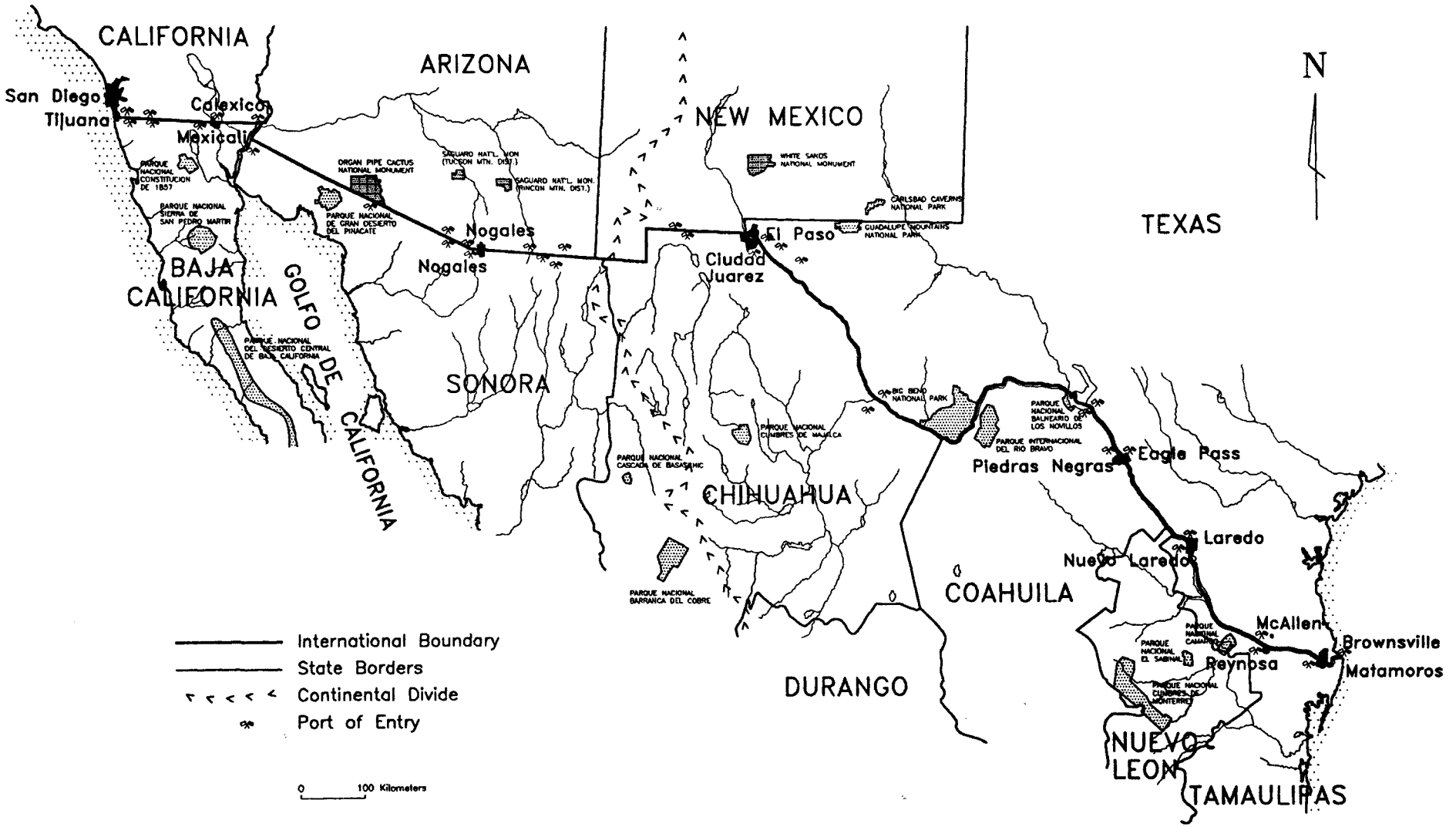

Figure III-2. Protected Areas in the Mexico/United States Border Area

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The Northern Plateau/Great Plains Region of the Border Area extends from the Sierra Madre Occidental (Western Sierra Mountains) and the Sierra Madre Oriental (Eastern Sierra Mountains) and crosses the northern portion of the Central Plateau System of Mexico. This arid and mild arid region is comprised of plateaus, or mesas with mountain ranges, valleys, and normally dry arroyos.[5] The Rio Bravo/Rio Grande forms the international border along all but the western most portion of this region. This region supports little more than shrub and sparse grass without irrigation. Extensive irrigation along the Rio Bravo/Rio Grande and the Pecos River has made agriculture possible.

The Sierra Madre Oriental/Santiago Mountain Region is a high mountain range that divides the Central Plateau and the Gulf of Mexico Coastal lands. This region is semi-arid supporting shrubs and sparse grass. Mountain precipitation supports forests along its peaks.

The Gulf of Mexico Coastal Plain/Gulf Coast Lowland Region of the Border Area follows the Rio Bravo/Rio Grande from the Sierra Madre Oriental to the Gulf of Mexico. The tropical maritime air and the extensively irrigated land support many types of crops. Irrigation and the lowlands along the coast have allowed agriculture to encompass much of the Border Area along the Rio Bravo/Rio Grande.

Climate

Dry desert conditions exist over most of the Border Area with the exception of the areas along the peaks of the Sierra de Juraves (California Coastal Range), at the mouth of the Colorado River and irrigated sections of the Sonora Plains, along the Rio Bravo/Rio Grande and along the Gulf of Mexico.[6] The climate west of the Continental Divide is strongly influenced by the semi-permanent Pacific subtropical anticyclone. This system stabilizes the off-shore circulation in the Baja California/California Region year round and is responsible for trapping air pollution.[7] The system moves south during the winter months allowing an occasional storm to reach the western Border Area. Nearly all of the Border Area between the Baja California/California Region and east to the Sierra Madre Oriental Region receive less than 10 inches of rainfall yearly. Only the mountainous areas receive enough rain to support agriculture without irrigation. The majority of the Border Areas in the Gulf of Mexico Coastal Plain receive between 12 to 20 inches (30 to 50 cm) of precipitation yearly, with the easternmost coastal area receiving up to 39 inches (100 cm) annually. Irrigation is also important to the agriculture of these regions.

Temperatures in the coastal Baja California and Gulf of Mexico area remain largely uniform year round with average yearly temperature extremes of 55 - 75°F along the Pacific Coast and 65-80°F along the Gulf of Mexico.[8] Temperatures between the Sonora Plains/Colorado River Basin and the Northern Plateau/Great Plains Region are largely dependent on elevation.[9] At elevations below 2,500 feet above sea level the mean annual temperature is 75°F. At elevations between 2,500 and 6,000 feet above sea level the mean annual temperature is 65-75°F. At elevations between 6,000 and 10,000 feet above sea level the mean annual temperature is 55-65°F. At elevations above 10,000 feet the mean annual temperature is below 30°F.

Topography

The Border Area has three mountainous zones passing through it. In the west, the Baja California/California Region is split by the Sierra de Juarez (California Coastal Mountains) with an approximate elevation of 10,000 feet above sea level. The Sonora Plains/Colorado River Basin Region is a low lying area (100-500 feet above sea level) that extends from the Baja California/California Region to the base of the Sierra Madre Occidental/Continental Divide mountain ranges (peaks of up to 7,000 feet above sea level).[10] The Northern Plateau/Great Plains Region (approximately 4,000 feet above sea level) is the northern portion of the Central Plateau System of Mexico.[11] Bordering the Plateau Region to the east is the Sierra Madre Oriental/Santiago Mountains Region with peaks up to 7,000 feet above sea level. The Gulf of Mexico Coastal Plain/Gulf Coast Lowland Region follows the Rio Grande from the Great Bend (of the Rio Bravo/Rio Grande) to the Gulf of Mexico.

Hydrology

The majority of the Border Area between the Sonora Plains/Colorado River Basin and the Sierra Madre Oriental/Central Highlands is dry arid to semi-arid with little or no ground water. Rivers and streams flowing between the Sierra de Juarez and the Sierra Madre Occidental drain toward the Colorado River Basin. The waters from many rivers and streams are used extensively for irrigation. Low humidity, high temperatures, dry ground, and heavy irrigation cause many rivers and streams to dry up before reaching the Gulf of California. The high salinity of the soil and of the river water in this area is a problem for the agricultural industry.

The area between the Sierra Madre Occidental and the Sierra Madre Oriental (Northern Plateau/Great Plains Region) within the Border Area drains internally with few permanent rivers and streams. The ground in this region is generally salt bed or salt lake floors.

The Gulf of Mexico Coastal Plain/Gulf Coast Lowland Region relies on the Rio Bravo/Rio Grande and ground water for irrigation. Insufficient supplies of ground water in the Border Area of this Region are restricting new settlement and agriculture.

Geology

Arid gray-brown desert soils cover most of the Border Area. These soils are high in lime and soluble salts. The underlying structures within each of the six regions are unique to a specific time of formation.[12] The mountains of the Baja California/California Region are a westward tilted fault block with metamorphosed and unmetamorphosed sediments. The Sonora Plains/Colorado River Basin Region is characterized by its broad basins separated by isolated hills and low mountains. The detached block ranges are aligned generally north to south. The Sierra Madre Occidental/Continental Divide has an underling strata that was deformed by folding and

faulting. Paleozoic strata overlie Ordovician and Cambrian materials in the northern portions of the Sierra Madre Oriental. The Northern Plateau/Great Plains is composed largely of folded Mesozoic strata with Cretaceous and Upper Jurassic formations predominating among exposed rocks. The Sierra Madre Oriental/Central Highlands is composed largely of folded sedimentary rock, that has been deformed by uplifting, faulting, and erosion. Exposed formations in the Gulf of Mexico Coastal Plain/Gulf Coast Lowland Region are of an older strata that roughly parallel the coast.

2. Demographics

Most of the Border Area is sparsely populated. Its inhabitants live mainly in a number of "sister cities" across the border from each other. Tijuana/San Diego have a combined population of close to two million while Ciudad Juarez/El Paso have a combined population of over one million. Four other sister cities (Calexico/Imperial County, Nogales/Nogales, Nuevo Laredo/Laredo and Matamoros/Brownsville) each have a combined population of over 200,000.

It appears that the total population of the Border Area is in excess of six million. Populations of the major sister cities for 1980 and 1990 are shown in Table III-1. These data include official Census results for Mexico and the United States for 1980, preliminary U.S. Census data for 1990, IBWC estimates and Mexican population data provided by SEDUE.

The population of major sister cities in the Border Area has grown rapidly in recent years, increasing from 3,279,369 in 1980 to 6,272,874 (IBWC data) in 1990. According to official Mexican and U.S. Census data, the smaller city in most sister city pairs experienced more relative growth from 1970 to 1980, creating severe pressures on infrastructure. Population growth in the Border Area has paralleled the expansion of the industrial base of the border cities. Table III-2 shows population figures for Mexican Border States. It is likely that actual growth rates for the Border Area in Mexico are considerably higher than shown by the available census data but the frequency of movement across the border and the actual counting process complicates any census. There are close to 200 million crossings of the border every year, making it the most frequently crossed border in the world. Table III-3 shows figures for the top Mexican/U.S. land Border Ports of Entry ranked by the numbers of persons entering the U.S.

3. Economic Base

The most notable element of the Mexican/U.S. border economy is the disparity in wealth on the two sides of the border. In 1984, the per capita income in the most affluent part of the U.S. border, the San Diego, California metropolitan area, was more than 6.5 times greater than that of the Mexican national average. Borderwide per capita incomes on the U.S. side of the border remain at least twice the Mexican average. Nevertheless, collectively, U.S. border counties rank among the poorest in the United States.

TABLE III-1. MAJOR MEXICO/U.S. SISTER CITIES POPULATIONS[a]

	1990 Census	1990 IBWC Data	1980 Census
Tijuana, Baja California	742,686	1,270,000	429,500
San Diego, California[b]	1,737,299		875,538
Ciudad Juarez, Chihuahua	797,679	1,080,000	544,496
El Paso, Texas	515,342		425,259
Mexicali, Baja California	602,390	1,050,000	341,559
Calexico, California	18,633		14,412
Nuevo Laredo, Tamaulipas	217,912	407,000	201,731
Laredo, Texas	122,899		91,449
Matamoros, Tamaulipas	303,392	414,000	188,745
Brownsville, Texas	98,962		84,997
Nogales, Sonora	107,119	166,000	66,000
Nogales, Arizona	19,489		15,683
Total	**5,283,802**	**6,272,874**	**3,279,369**
Mexican Total	**2,771,178**	**4,387,000**	**1,772,031**
U.S. Total	**2,512,624**	**1,885,874**[c]	**1,507,338**

[a]U.S. population data were taken from 1990 Preliminary Census of Population, U.S. Bureau of the Census, and from 1980 Census of Population, U.S. Bureau of the Census. Mexican population data were provided by SEDUE.
[b]Population for the San Diego Standard Metropolitan Statistical Area was 2,490,016 for 1990 and 1,861,846 for 1980.
Population for San Diego also included cities of Chula Vista, National City, Imperial Beach, Coronado, and other unincorporated localities.
[c]IBWC U.S. cities population estimate

TABLE III-2. POPULATIONS OF MEXICAN BORDER STATES

	1988	1980	Growth 1980-1988	1970	Growth 1970-1988
Baja California	1,388,500	1,177,900	17.9%	874,200	34.7%
Coahuila	1,906,100	1,557,300	22.4%	1,115,000	39.7%
Chihuahua	2,238,500	2,005,500	11.6%	1,612,500	24.4%
Nuevo Leon	3,149,200	2,513,000	25.3%	1,694,700	48.3%
Sonora	1,799,700	1,513,700	18.9%	1,098,700	37.8%
Tamaulipas	2,266,700	1,924,500	17.8%	1,456,900	32.1%
Border State Total	12,748,700	10,691,900	19.2%	7,852,000	36.2%
Mexico National Total	82,734,500	66,846,800	23.8%	48,225,200	38.6%
Border Percent of National Total	15.4%	16.0%	16.3%		

Sources: Mexico Demographico, Breviario 1988, Consejo National De Poblacion.
1980 Mexican Census of Population, Volume 1, Table 2.
1970 Mexican Census of Population, Resumen General.

TABLE III-3. TOP MEXICAN/U.S. LAND BORDER PORTS OF ENTRY RANKED BY PERSONS ENTERING U.S.

Port of Entry	Persons Entering U.S. in Millions 1986	1987	1988	1989	1990	Average Annual Growth Rate (%) 1986-1990
San Ysidro/Otay Mesa, CA	41.5	44.6	51.6	60.4	62.2	10.8
El Paso, TX	33.1	32.4	39.8	42.4	43.1	7.2
Calexico, CA	15.8	15.7	21.4	27.6	29.9	18.3
Laredo, TX	14.4	15.1	16.6	16.8	17.9	5.7
Hidalgo, TX	13.5	13.2	13.4	15.0	16.6	5.5
Brownsville, TX	14.2	13.6	12.8	14.8	15.8	3.0
Nogales, AZ	11.7	11.9	13.7	14.0	15.2	6.9
San Luis, AZ	5.2	5.5	7.1	7.3	7.9	11.3
Eagle Pass, TX	4.9	5.2	6.0	6.7	6.3	7.0
Douglas, AZ	4.3	4.2	4.4	4.6	4.9	3.3

Source: U.S. Customs Service Border Interdiction Committee.

Along the U.S. portion of the Border Area, 25 percent of all families fall below the poverty line. An additional 50 percent of all families earn less than $12,000/year. During 1991, unemployment rates across the U.S. portion of the Border Area ranged from 8.3 percent in San Diego to a high of 14 percent in Brownsville, Texas.

Of the six major U.S. cities on the Mexican/U.S. border, the San Diego economy remains the most diversified with major employers in the defense, electronic, light manufacturing and biotechnology industries. Tourism, agriculture and government are also strong mainstays of the regional economy. For the rest of the U.S. border region, however, opportunities for economic development are more limited and are mostly tied to cross-border trade with Mexico. Tables III-4 and III-5 show employment growth rates in U.S. border counties for 1970-1988 and business patterns for employment for these U.S. counties for the same period.

Across the U.S. Southwest border, communities are dominated by trade and service industries including transportation, customs brokerages, finance and warehousing. Retailing is another important border industry. Both these sectors remain Peso dependent with regional employment linked to the strength of the Mexican economy.

Although in most cases the economic growth of the U.S. portion of the border region has brought with it local, state, and Federal investment in transportation, water supply and treatment and other public works projects, there are a few well-documented problems with rural, unincorporated subdivisions (colonias) in U.S. border counties which have substandard housing, inadequate roads and drainage, and substandard or nonexistent water and sewer facilities. It is estimated that about 215,000 residents of Texas and New Mexico live in such communities. Similar settlements exist in the Mexican border states.

On the Mexican side of the border, industrialization policies since 1965 have emphasized the attraction of foreign subsidiaries to promote manufactured exports from Mexico. These firms, primarily of U.S. origin, were encouraged to use Mexican labor under special provisions granted by the Mexican and U.S. governments. Exports from Mexico's border industries rose from virtually nothing in the mid-1960s to $800 million in 1980, approximately 50 percent of which was attributable to value added in Mexico. Border industry exports accounted for two-thirds of Mexico's total gross manufactured exports for 1980.[13] These new industries, called "maquiladoras," are a dynamic component of the economy of the Border Area.

The term "maquiladora," or mill, historically referred to grain grinding mills and "maquila" was the mill owner's share of the flour received for grinding the grain. Today, the term refers to processing and assembly plants in the Border Area. The maquiladora program was initiated in 1965 by the Mexican government specifically to attract labor-intensive industries to Mexico. The program permits industries based outside Mexico to bring capital equipment, components and raw materials into Mexico without paying import duties, provided all hazardous wastes generated in Mexico through the use of these materials are returned to the country of origin or recycled in accordance with Mexican law. Finished maquiladora products are then exported to the United States or other foreign markets subject only to duty on the value added in Mexico.

Under the maquiladora program, components or materials are considered to be temporarily imported, resulting in the term "in-bond" industry. The arrangement of closely-related production facilities in Mexico and nearby in the United States has also resulted in the use of the term "twin plant" to describe this industry.

TABLE III-4. GROWTH IN EMPLOYMENT IN U.S. BORDER COUNTIES, 1970-1988

County	Total Number of Employees			Average Annual Growth Rate	
	1970	1980	1988	1970-1980	1980-1988
Yuma, AZ	10,698	16,281	22,502	5.22	3.82
Pima, AZ	76,496	149,545	209,786	9.55	4.03
Cochise, AZ	9,868	11,674	15,260	1.83	3.07
Santa Cruz, AZ	3,586	6,710	7,962	8.71	1.87
Subtotal	100,648	184,210	255,510	8.30	3.87
San Diego, CA	290,958	533,027	767,646	8.32	4.40
Imperial, CA	11,866	18,129	18,835	5.28	0.39
Subtotal	302,824	551,156	786,481	8.20	4.27
Hidalgo, NM	800	1,322	1,342	6.53	0.15
Luna, NM	1,824	2,232	2,487	2.24	1.14
Dona Ana, NM	9,932	16,174	24,754	6.28	5.30
Subtotal	12,556	19,728	28,583	5.71	4.49
El Paso, TX	81,269	130,753	152,179	6.09	1.64
Hudspeth, TX	203	140	215	-3.10	5.36
Culberson, TX	816	587	513	-2.81	-1.26
Jeff Davis, TX	46	160	195	24.78	2.19
Presido, TX	605	599	536	-0.10	-1.05
Brewster, TX	951	1,345	1,452	4.14	0.80
Terrell, TX	241	140	94	-4.19	-3.29
Val Verde, TX	3,423	5,417	5,266	5.83	-0.28
Kinney, TX	209	276	245	3.21	-1.12
Maverick, TX	2,706	4,883	4,018	8.05	-1.77
Dimmit, TX	519	1,580	1,069	20.44	-3.23
Webb, TX	12,922	24,363	26,818	8.85	1.01
Zapata, TX	227	652	706	18.72	0.83
Jim Hogg, TX	540	574	535	0.63	-0.68
Starr, TX	1,115	1,712	2,518	5.35	4.71
Hidalgo, TX	27,807	41,249	67,775	4.83	6.43
Willacy, TX	1,162	1,741	1,662	4.98	-0.45
Cameron, TX	25,270	47,866	53,621	8.94	1.20
Subtotal	160,031	264,037	319,417	6.50	2.10
Total	576,059	1,019,131	1,389,991	7.69	3.64

Source: County Business Patterns, U.S. Department of Commerce, Bureau of the Census.

TABLE III-5. BUSINESS EMPLOYMENT PATTERNS FOR U.S. BORDER COUNTIES

County	Number of Employees by Industry, 1970											
	Total	Agriculture Forestry and Fishing	Mining	Construction	Manufacturing	Transportation and Public Utilities	Wholesale Trade	Retail Trade	Finance, Insurance, Real Estate	Services	Unclassified Establishments	Subtotal*
Yuma, AZ	10,698	380	D	739	948	616	1,079	3,646	531	2,690	D	10,629
Pima, AZ	76,496	347	6,053	8,752	7,574	4,173	3,582	20,641	5,008	19,947	419	76,496
Cochise, AZ	9,868	7	D	D	1,681	636	327	2,648	528	1,810	D	7,637
Santa Cruz, AX	3,586	D	D	167	200	289	769	1,430	134	478	112	3,579
Subtotal*	100,648	734	6,053	9,658	10,403	5,714	5,757	28,365	6,201	24,925	531	98,341
San Diego, CA	290,958	2,145	551	19,982	73,302	19,394	13,758	74,012	19,683	66,442	1,697	290,966
Imperial, CA	11,866	540	17	566	1,288	826	1,435	4,655	561	1,948	30	11,866
Subtotal*	302,824	2,685	568	20,548	74,590	20,220	15,193	78,667	20,244	68,390	1,727	302,832
Hidalgo, NM	800		D	D	D	46	26	336	32	207		647
Luna, NM	1,824	107	D	119	251	255	33	651	117	265	D	1,798
Dona Ana, NM	9,932	71	13	823	1,425	934	337	3,388	675	2,190	76	9,932
Subtotal*	12,556	178	13	942	1,676	1,235	396	4,375	824	2,662	76	12,377
El Paso, TX	81,269	256	169	6,297	22,467	6,826	6,917	18,552	4,884	14,475	426	81,269
Hudspeth, TX	203		D	7		D	D	102	D	53		162
Culberson, TX	816		D	D	D	D	19	272	D	69		360
Jeff Davis, TX	46			D								
Presido, TX	605	D	D	27	D	56	24	299	30	88	D	524
Brewster, TX	951	D	D	33	42	112	90	339	43	280	3	942
Terrell, TX	241		D	D	D	25	D	96	D	22		143
Val Verde, TX	3,423	14	D	189	D	231	175	1,125	228	545	42	2,549
Kinney, TX	209			12		D	D	49	D	D		61
Maverick, TX	2,706	D	101	60	908	148	93	1,052	98	226	D	2,686
Dimmit, TX	519	D	105	20		19	D	242	33	85		504
Webb, TX	12,922	D	67	403	1,147	1,153	1,015	5,089	730	2,801	D	12,795
Zapata, TX	227		62	23		D	D	68	14	47		214
Jim Hogg, TX	540	D	116	49	D	D	32	171	D	46	D	414
Starr, TX	1,115	D	416	18	5	27	33	399	D	169	D	1,067
Hidalgo, TX	27,807	746	651	1,894	2,861	1,329	5,533	8,543	1,245	4,778	227	27,807
Willacy, TX	1,162	D	17	63	63	55	301	436	57	164	D	1,156
Cameron, TX	25,270	865	74	1,875	4,987	1,904	2,353	7,328	1,325	4,402	168	25,272
Subtotal*	160,031	1,881	1,778	10,970	32,471	12,275	16,585	44,189	8,687	28,250	866	157,952
Total	576,059	5,478	8,412	42,118	119,140	39,444	37,931	155,596	35,956	124,227	3,200	571,502

TABLE III-5. BUSINESS EMPLOYMENT PATTERNS FOR U.S. BORDER COUNTIES (CONTINUED)

County	Number of Employees by Industry, 1980											
	Total	Agriculture Forestry and Fishing	Mining	Construction	Manufacturing	Transportation and Public Utilities	Wholesale Trade	Retail Trade	Finance, Insurance, Real Estate	Services	Unclassified Establishments	Subtotal*
Yuma, AZ	16,281	1,069	16	1,620	1,467	866	1,426	5,590	786	3,220	221	16,281
Pima, AZ	149,545	950	6,685	17,189	20,589	7,805	7,367	37,971	9,902	39,625	1,462	149,545
Cochise, AZ	11,674	28	458	893	1,925	1,152	448	3,682	637	2,256	195	11,674
Santa Cruz, AZ	6,710	A	A	291	858	496	1,099	277	329	1,024	110	4,484
Subtotal*	184,210	2,047	7,159	19,993	24,839	10,319	10,340	47,520	11,654	46,125	1,988	181,984
San Diego, CA	533,027	4,266	658	10,293	28,547	28,219	127,219	127,681	43,846	149,387	5,477	436,027
Imperial, CA	18,129	770	B	2,120	1,302	1,783	6,219	1,230	3,142	E	17,817	
Subtotal*	551,156	5,036	658	38,904	29,849	30,002	133,900	45,076	152,529	5,477	453,844	
Hidalgo, NM	1,322		A	18	F	B	52	393	B	C	38	501
Luna, NM	2,232	B	26	127	170	227	192	839	162	344	B	2,087
Dona Ana, NM	16,174	307	B	2,111	1,843	925	705	4,999	1,088	3,824	E	15,802
Subtotal*	19,728	307	26	2,256	2,013	1,152	949	6,231	1,250	4,168	38	18,390
El Paso, TX	130,753	399	259	11,477	35,089	9,128	9,759	31,058	7,045	25,269	1,271	130,754
Hudspeth, TX	140		A	A		A	26	58	11	19	8	122
Culberson, TX	587		43	9	B	20	19	264	A	135	35	525
Jeff Davis, TX	160		B	A		A		44	A	26	A	70
Presido, TX	599	A	A	30	B	47	25	273	43	76	47	541
Brewster, TX	1,345	A	B	84	23	134	58	535	57	327	B	1,218
Terrell, TX	140		A		A	12		94	A	A	A	106
Val Verde, TX	5,417	B		446	745	327	257	2,229	388	924	B	5,316
Kinney, TX	276			50		B		45	B	B	3	98
Maverick, TX	4,883	A	168	C	G	218	293	1,860	228	392	96	3,255
Dimmit, TX	1,580	A	193	125	231	136	167	397	64	244	B	1,557
Webb, TX	24,363	104	1,136	1,615	2,183	2,878	2,008	8,982	1,201	3,821	435	24,363
Zapata, TX	652		C	48	A	A	7	189	B	93	55	392
Jim Hogg, TX	574		126	30	A	A	106	206	A	58	15	541
Starr, TX	1,712	B	97	70	A	90	65	805	69	393	46	1,635
Hidalgo, TX	41,249	635	831	4,722	7,921	2,423	8,951	15,354	2,356	7,471	585	51,249
Willacy, TX	1,741	102	160	53	323	172	116	491	85	228	11	1,741
Cameron, TX	47,866	295	88	3,343	11,960	2,988	4,209	13,298	2,696	8,602	387	47,866
Subtotal*	264,037	1,535	3,101	22,102	58,475	18,573	26,066	76,182	14,243	48,078	2,994	271,349
Total	1,019,131	8,925	10,944	83,144	97,740	59,893	67,357	263,833	72,223	250,900	10,497	925,567

TABLE III-5. BUSINESS EMPLOYMENT PATTERNS FOR U.S. BORDER COUNTIES (CONCLUDED)

County	Total	Agriculture Forestry and Fishing	Mining	Construction	Manufacturing	Transportation and Public Utilities	Wholesale Trade	Retail Trade	Finance, Insurance, Real Estate	Services	Unclassified Establishments	Subtotal*
	Number of Employees by Industry, 1988											
Yuma, AZ	22,502	1,814	B	1,482	1,725	992	1,392	7,337	969	6,541	C	22,252
Pima, AZ	209,786	1,991	1,801	18,143	31,618	9,111	8,619	52,459	12,837	71,527	1,680	209,786
Cochise, AZ	15,260	79	151	761	1,398	1,211	437	5,102	847	5,081	193	15,260
Santa Cruz, AZ	7,962	17		302	1,008	393	1,838	2,734	408	1,142	120	7,962
Subtotal*	255,510	3,901	1,952	20,688	35,749	11,707	12,286	67,632	15,061	84,291	1,993	255,260
San Diego, CA	767,646	7,135	678	58,917	124,379	33,065	42,723	184,606	64,541	243,821	7,781	767,646
Imperial, CA	18,835	1,847	E	1,170	1,634	1,215	1,799	6,196	828	3,583	C	18,272
Subtotal*	786,481	8,982	678	60,087	126,013	34,280	44,522	190,802	65,369	247,404	7,781	785,918
Hidalgo, NM	1,342		A	21	F	44	17	472	B	204	1	759
Luna, NM	2,487	B	A	92	92	119	154	975	222	760	37	2,451
Dona Ana, NM	24,754	165	61	2,496	2,585	1,360	1,136	7,181	1,759	7,623	388	24,754
Subtotal*	28,583	165	61	2,609	2,677	1,523	1,307	8,628	1,981	8,587	426	27,964
El Paso, TX	152,179	481	78	9,216	39,170	8,679	9,790	35,311	8,571	39,366	1,517	152,179
Hudspeth, TX	215		A	B		B	A	135	A	9	4	148
Culberson, TX	513	A	B	A	B	A	37	213	A	144	9	403
Jeff Davis, TX	195			24	A	A		57	A	87	2	170
Presido, TX	536	A		15	A	68	11	282	54	74	8	512
Brewster, TX	1,452	A	A	58	36	124	79	515	172	416	B	1,400
Terrell, TX	94				A	A	A	43	A	27		70
Val Verde, TX	5,266	26	B	225	475	330	418	2,115	370	1,210	B	5,169
Kinney, TX	245	A		A		B		52	16	84	10	162
Maverick, TX	4,018	16	B	50	1,028	174	209	1,534	261	621	B	3,893
Dimmit, TX	1,069	A	109	67	B	66	35	418	67	218	3	983
Webb, TX	26,818	21	476	930	1,515	4,074	1,840	9,115	1,837	6,517	493	26,818
Zapata, TX	706		127	38	A	13	A	288	B	159	12	637
Jim Hogg, TX	535		35	19	A	26	47	263	57	70	A	517
Starr, TX	2,518	B	B	48	A	143	118	1,236	158	645	56	2,404
Hidalgo, TX	67,775	935	850	3,632	10,031	2,492	9,452	20,734	3,645	14,856	1,148	67,775
Willacy, TX	1,662	74	A	41	E	128	79	582	116	302	20	1,342
Cameron, TX	53,621	315	B	2,279	9,278	2,871	3,764	15,715	3,870	14,893	F	52,985
Subtotal*	319,417	1,868	1,675	16,642	61,533	19,188	25,879	88,608	19,194	79,698	3,282	317,567
Total	1,389,991	14,916	4,366	100,026	225,972	66,698	83,994	355,670	101,605	419,980	13,482	1,386,709

* Subtotals for individual employment categories do not include data withheld to avoid disclosure.

Letters indicate figures withheld to avoid disclosing data for individual companies:

- For 1970, D denotes figures withheld to avoid disclosing data for individual companies.
- For 1980 and 1988, employment-size classes for these companies are indicated as follows: A-0 to B-20 to 99, C-100 to 249, E-250 to 499, F-500 to 999.

Source: County Business Patters, U.S. Department of Commerce, Bureau of the Census.

Incentives for U.S. investment in maquiladoras have included: comparatively lower labor costs in Mexico; flexibility in corporate structure and relaxation of Mexican foreign-ownership restrictions and tariffs; and proximity to U.S. distribution centers and markets.

Table III-6 shows the number and locations of maquiladoras in Border Area cities for 1989, 1990 and 1991. The number of employees is also shown for the current year. Within the Border Area, over 370,000 people are employed by maquiladoras, while other industries are estimated to employ over 500,000. Figure III-3 shows the locations and numbers of maquiladoras in border states. Current growth in the number of maquiladoras is estimated at 14 to 20 percent annually. Maquiladoras have become the second largest source of foreign exchange earnings for Mexico, second only to the petroleum industry and ahead of tourism. The U.S. International Trade Commission has predicted that the end of special tariff concessions and a free trade agreement will attract new maquiladora type investment south, toward Mexico's main economic centers.

As of 1991, the largest segments of the Mexican border industries were the chemical, transportation and electronics sectors as shown in Figure III-4. Figure III-5 shows the types of industry on the U.S. side of the border as of 1989.

As maquiladora industries and other sectors of the economy in the Mexican border cities have grown, the added economic activity and attendant population increases have produced substantial strain on the Border Area's infrastructure. Congestion, uncontrolled urban development, and lack of basic public health and sanitation facilities have become significant problems. On the U.S. side of the border, industrial growth has not been as dynamic, amounting to 2.0 percent in the last decade. However, there are many of the same types of industries on the U.S. side of the border as found on the Mexican side.

B. WATER QUALITY

1. Overview (For relevant implementation plan, see pages VI-3 through VI-10).

In some areas of the border, the waters that cross the boundary or that drain toward the international rivers present unsuitable sanitary conditions attributable to the disposal of wastewaters in these water courses. There is the related risk of pollution of transboundary ground waters if proper management and treatment of surface wastewaters and hazardous wastes is not carried out.

Under the terms of the Water Treaty of 1944 between Mexico and the United States, which authorizes the IBWC's program, both governments are required to take the necessary measures to ensure that the quality of the waters of international rivers and the beneficial uses of those waters are not impaired.

Since the Water Treaty of 1944, the International Boundary and Water Commission (IBWC) has had the lead role for undertaking water sanitation measures and water related works mutually agreed to by Mexico and the United States. These projects have consisted of activities such as constructing wastewater collection systems, constructing wastewater treatment plants, and conducting water quality monitoring. Important examples of IBWC achievements in solving water quality issues in the Border Area are identified in the following pages.

TABLE III-6. NUMBER AND EMPLOYMENT OF MAQUILADORAS

	June 1991 Number of Maquilas	June 1991 Number of Employees	March 1990 Number of Maquilas	March 1989 Number of Maquilas
Border Cities (within 100 km.)				
Tijuana	530	65,255	530	334
Ciudad Juarez	320	134,838	309	260
Mexicali	158	20,576	148	131
Matamoros	94	38,268	89	72
Tecate	90	4,665	86	46
Nuevo Laredo	93	21,000	67	63
Nogales	80	21,084	65	64
Reynosa	82	30,000	57	35
Piedras Negras	43	8,130	39	30
Ciudad Acuna	44	14,151	36	32
Ensenada	41	1,735	33	--
Agua Prieta	32	7,500	28	28
San Luis Rio Colorado	23	3,000	12	0
Naco	6	1,200	0	0
Palomas	5	137	0	0
TOTAL	1641	371,509	1499	1100

Source: Twin Plant News

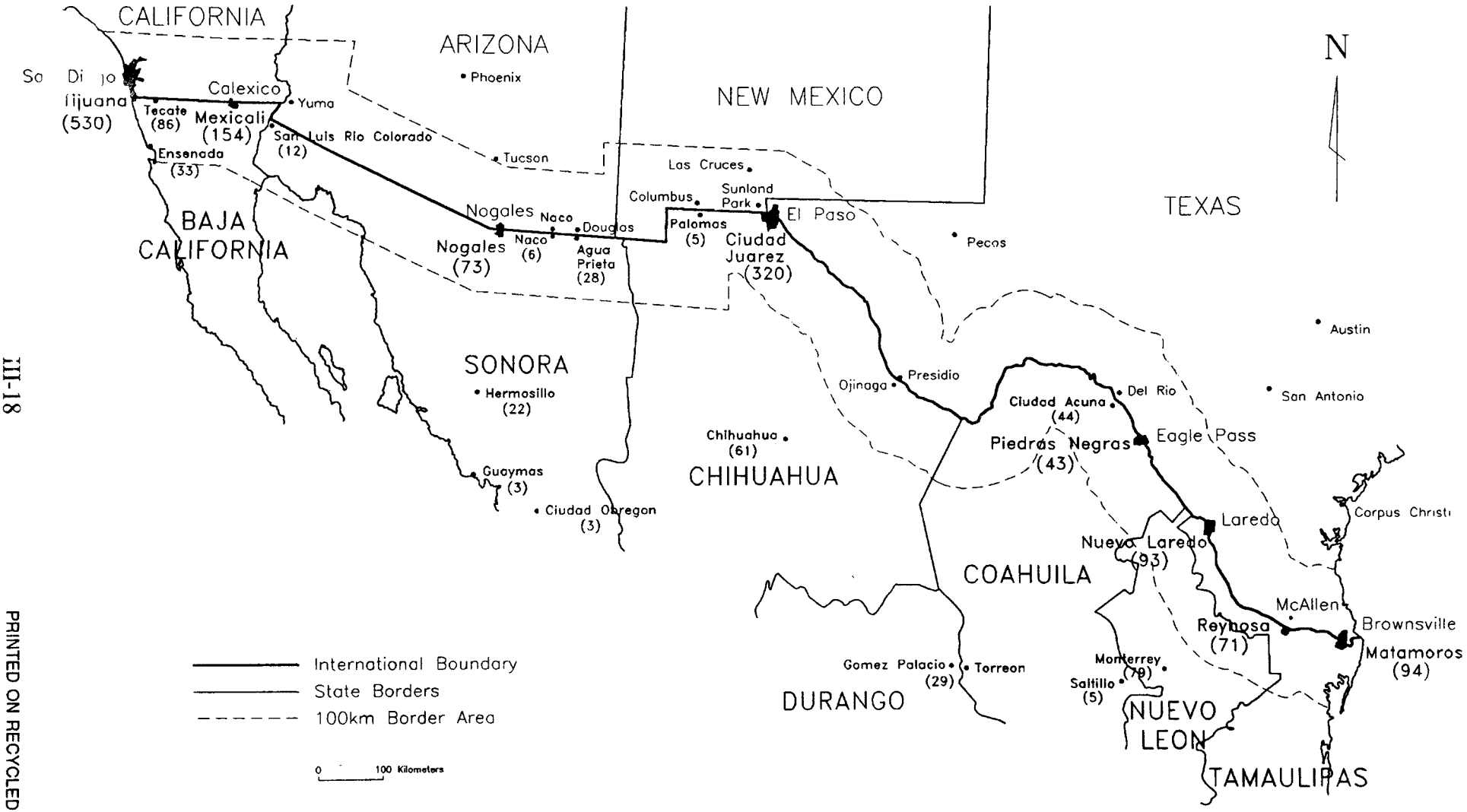

Figure III-3. Numbers of Maquiladoras in Mexican Border States

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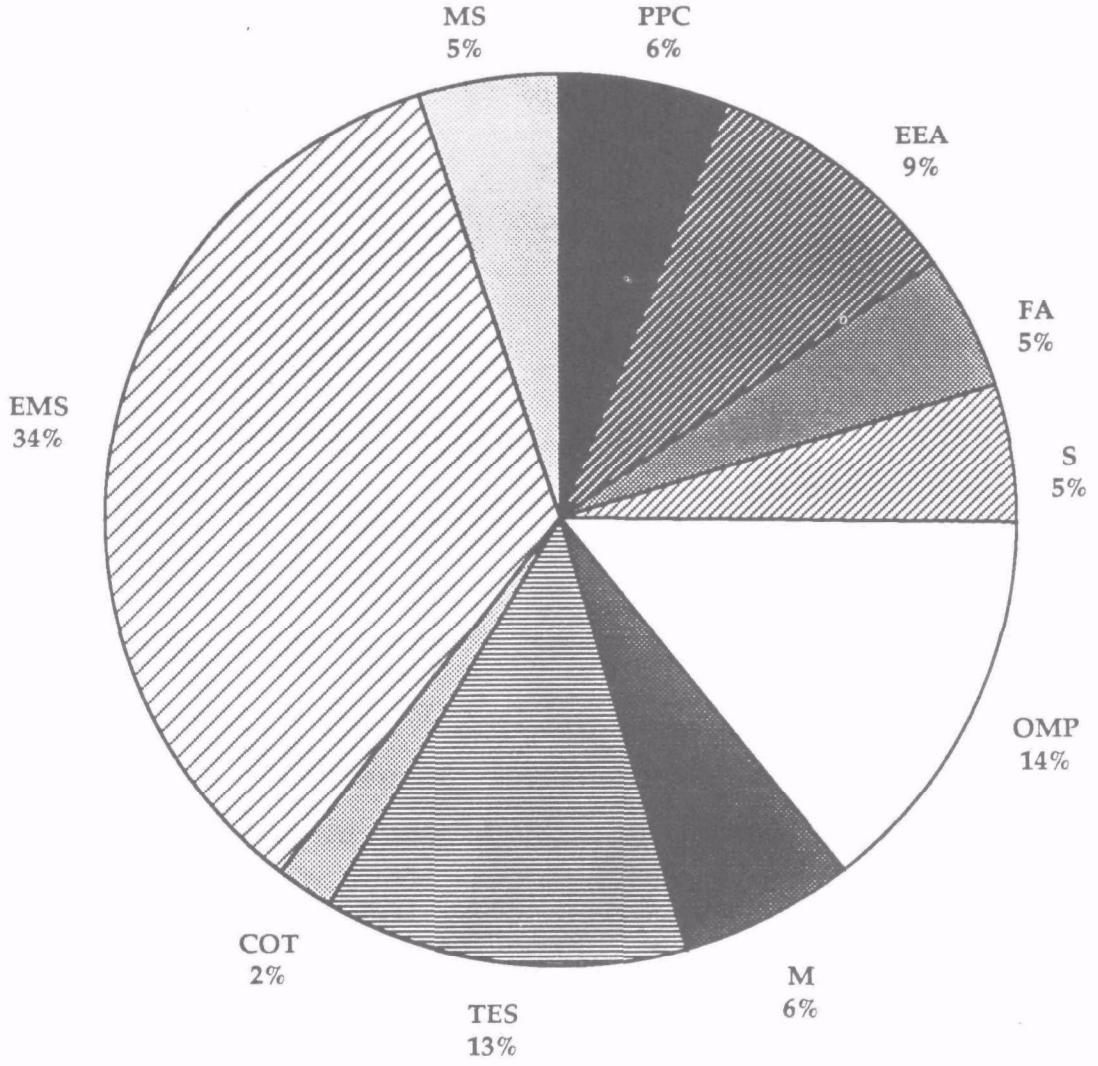
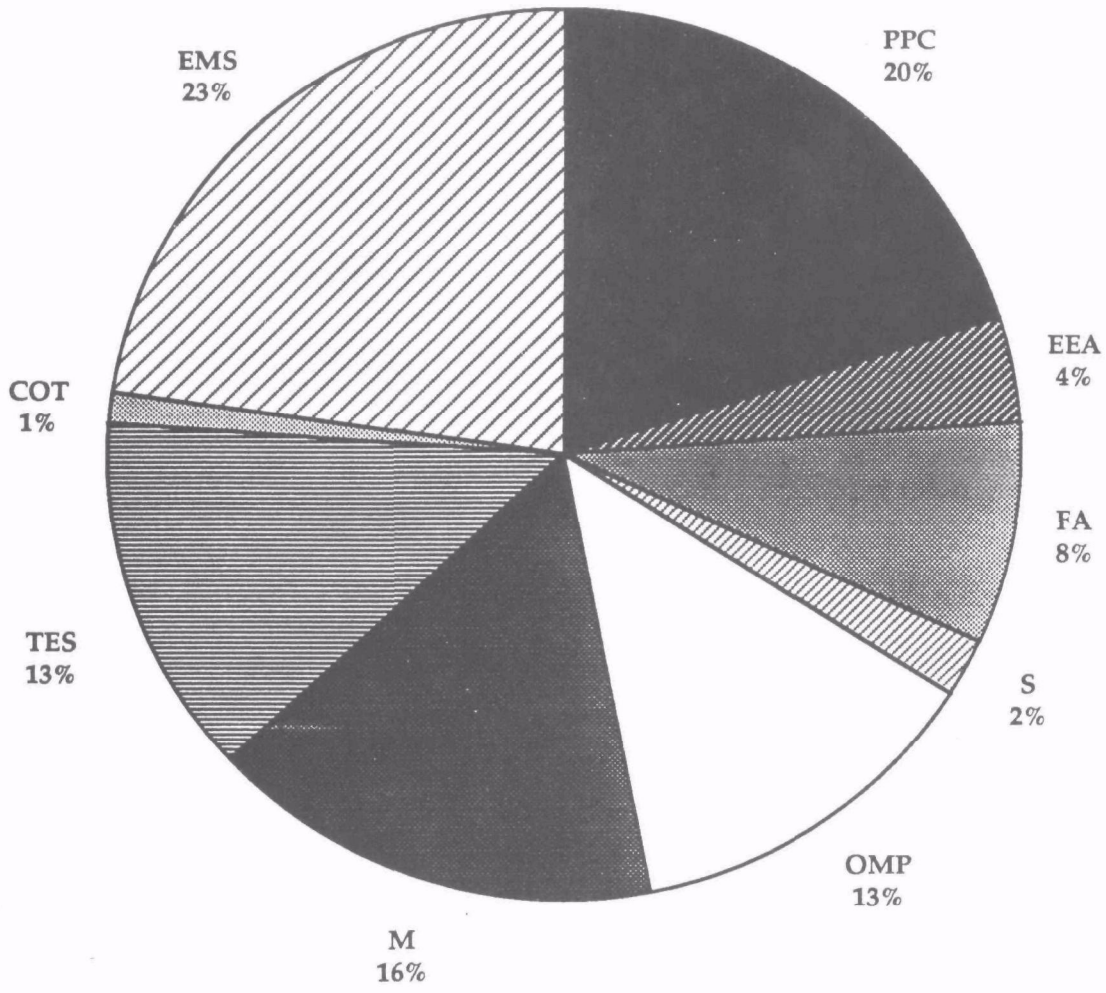


KEY

PPC	Petroleum, Petroleum Products, Plastics, Chemicals
EEA	Electronic/Electric Equipment/Apparatus
FA	Food and Agricultural
S	Services
OMP	Other Manufactured Products
M	Metal Industries
TES	Transportation Equipment & Supplies
COT	Clothing and other Textiles
EMS	Electronic/Electric Materials & Supplies
MS	Medical Supplies

Figure III-4. Products produced by Mexican Border Industries as of 1991.



KEY

PPC	Petroleum, Petroleum Products, Plastics, Chemicals	M	Metal Industries
EEA	Electronic/Electric Equipment/Apparatus	TES	Transportation Equipment & Supplies
FA	Food and Agricultural	COT	Clothing and other Textiles
S	Services	EMS	Electronic/Electric Materials & Supplies
OMP	Other Manufactured Products		

Figure III-5. Products produced by U.S. Border Industries as of 1989.

Through the IBWC, SEDUE and EPA are exchanging the water pollution control regulations and industrial wastewater pretreatment regulations of their respective countries. Other information exchanges have included documentation supporting the development of categorical effluent standards and a computer program which determines the potential treatability of industrial wastes. EPA has also provided information on effluent limitation guidelines for existing sources, performance standards for new sources, and pretreatment standards for new and existing sources of water pollution. Through the Mexican section of the IBWC, SEDUE has provided EPA with adopted water quality criteria, final effluent guidelines for several different types of industries, and proposed discharge criteria for industrial releases into treatment and collection systems. SEDUE and EPA actively support the development of cooperative action plans to implement safe drinking water and wastewater treatment projects in the Border Area.

In May 1990, EPA and the State of California conducted a two-week training seminar in San Diego for SEDUE and IBWC personnel on operations and maintenance of municipal wastewater treatment facilities. This technical assistance exemplifies the cooperative training efforts undertaken to date in the Border Area. SEDUE, EPA, and the IBWC conducted an international forum on the Microbial Rock Plant Filter at El Paso in March 1991. This forum provided for technology transfer in designing, constructing, operating and maintaining municipal wastewater treatment technology.

2. Drinking Water Supplies (For relevant implementation plan, see pages VI-3 through VI-4).

Mexico and the United States are concerned about the adverse public health and environmental impacts associated with pollution of transboundary drinking water supplies in the Border Area.

Both governments have enacted laws and created regulations for the adequate treatment of drinking water. In the United States, the application of these regulations rests with the state governments with oversight by EPA. In Mexico, responsibility rests with the Federal government but may be delegated to the states.

Communities along the Mexican/U.S. border that obtain their drinking water from the Rio Bravo/Rio Grande include Ciudad Acuna, Coahuila; Piedras Negras, Coahuila - Eagle Pass, Texas; Nuevo Laredo, Tamaulipas - Laredo, Texas; Reynosa, Tamaulipas - Mission, McAllen, Hidalgo, Texas; and Matamoros, Tamaulipas - Brownsville, Texas. Tijuana, Baja California - San Diego, California; Tecate, Baja California; and Mexicali, Baja California - Calexico, California import all or a part of their water supply from the Colorado River. Yuma, Arizona obtains water directly from the Colorado River. The other border communities obtain drinking water from both renewable and non-renewable ground water sources. Rapid growth in the border communities will continue to put pressure on the region's water resources.

The programs of the Mexican and U.S. governments to address the data needs and water treatment requirements of the Border Area are discussed on pages VI-5 through VI-8.

Ground water quality monitoring occurs in the Border Area principally in the regions that rely upon ground water sources as a public water supply. The United States Geological Survey has a network of monitoring wells which are sampled and analyzed for water quality parameters such as hardness, pH, temperature, and Total Dissolved Solids. The Texas Department of Health monitors all public water supplies including those in areas

where the source of the public water supply is ground water. However, these areas are scattered along the Border Area with the primary concentration of ground water sources of public water supply located in El Paso County, Texas. In El Paso County, bolson deposits of both the Mesilla and Hueco aquifers are the major source of ground water for municipal and industrial needs for the City of El Paso and nearby communities. The Rio Grande alluvium is an important source of shallow ground water as a supplemental source since the Rio Grande River is not sufficient to meet the total agricultural water needs of the farmers in the Rio Grande Valley.

When aquifers in the Mesilla and Hueco bolsons are pumped heavily, significant quantities of ground water enter these aquifers as induced recharge from the Rio Grande River and from storage in the Rio Grande alluvium. The quality of the surface water in the Rio Grande River and the quality of the ground water in storage in the river alluvium can have a significant impact on the quality of the ground water in the bolsons.

Potable ground water shortages would most likely first impact the El Paso County area of West Texas, whereas, the quantity of ground water available for agricultural purposes throughout the Border Area could be adversely affected by significant industrial growth. Widespread industrial growth and associated residential development in close proximity to El Paso County could create high rates of ground water withdrawal from the bolsons and result in unacceptable ground water quality degradation that would force the City of El Paso and other large ground water users in El Paso County to import supplemental drinking water supplies from sources outside the county.

The border regions that rely on ground water sources are scattered along the Border Area with the main reliance on ground water sources of public water supply located in El Paso County in Texas, as noted above. At present, both the Mexican and U.S. governments through the IBWC are exchanging information on ground water developments along the border in accordance with IBWC Minute 242 which requires consultations with respect to development of this resource. The IBWC is giving priority to this matter in the Ciudad Juarez/El Paso area.

Salinity and sanitary data for surface water are obtained and exchanged by Mexico and the United States through the IBWC for the Rio Bravo/Rio Grande, Colorado, the New River and the Tijuana River. The IBWC administers water measuring and data collection for the two countries as provided for in the Water Treaty of 1944 for the Rio Grande and the Colorado River. The two governments, through the IBWC, exchange data on surface flow for all streams that cross the boundary.

3. Wastewater Treatment (For relevant implementation plan, see pages VI-4 through VI-10).

a. Tijuana/San Diego (See pages VI-4 through VI-5).

The Tijuana wastewater collection system cannot convey and treat all of the wastewater being generated. This has resulted in raw sewage from Tijuana flowing across the border into San Diego.[14] Since the 1960s, in accordance with IBWC Minute 222, the City of San Diego has treated the City of Tijuana's wastewater whenever necessary. In accordance with IBWC Minute 270, Mexico has carried out works in the first phase of the Integrated Plan for the Water Supply and Sewage System of Tijuana, Baja California The main components were the construction of a pumping plant, pressure line, conveyance channel and treatment plant and at the present these facilities are functioning properly.

In addition, the Government of Mexico, in order to stop the uncontrolled flows of wastewaters that were crossing the border in the canyon areas and Tijuana beaches, constructed and operates the pumping system that conveys the wastewaters to the treatment system at San Antonio de los Buenos built under the first phase.

The IBWC is constructing interim works to divert untreated wastewaters from the Tijuana River and convey them for treatment to existing facilities in both countries. These interim controls are expected to be in place by late 1991.

The international treatment plant is expected to be completed by early 1995. Section 510 of the 1987 amendments to the Clean Water Act authorizes EPA to make grants to the IBWC for its design and construction. The United States, with IBWC supervision, is designing this treatment plant. Construction of the first land outfall component began in the spring of 1991. Mexico is working on collection system modification and plans to convey Tijuana wastewaters to the new international plant. A cooperative program is being developed to control and pretreat industrial discharges into the proposed plant.

Currently, San Diego wastewater is treated to an advanced primary level, and the city and EPA are discussing upgrading treatment to a secondary level before ocean discharge, three and one-half miles from shore. Among improvement options, San Diego is considering additional treatment facilities adjacent to the proposed international plant. The additional treatment facilities are needed to increase the sewage treatment capacity and to meet treatment levels set by EPA.

b. Mexicali/Imperial County (See pages VI-5 through VI-6).

The New River, originating south of Mexicali, flows north, carrying both raw and partially treated sewage, industrial wastes and agricultural wastes into California where additional agricultural runoff enters the river.[15] The Mexicali wastewater system is insufficient for all of the wastewaters generated in that city, resulting in transboundary contaminated flows in the New River. While a large part of Mexicali's sewage is treated, the effluent is discharged into the New River without disinfection. The remaining sewage flows without treatment to the New River or drainage tributaries. Industrial wastes from several areas of Mexicali are also discharged into drains that empty into the New River.

The situation in Mexicali has improved since 1980 when the city's water quality problems were due to the existence of an inadequate collection system that discharged municipal wastewater into the New River. Other discharges into the New River included untreated industrial wastewater, waste from pigpens, and drainage from the open-air municipal solid waste dump. To resolve these problems, Mexicali has installed wastewater treatment systems in some of the factories, relocated the pigpens so that their discharge does not affect the river, relocated the municipal solid waste dump, and improved the municipal collection system.

The IBWC is developing a conceptual plan to resolve Mexicali's water sanitation problem which will be presented for consideration of both governments during the second half of 1991. On May 23, 1991, the Mexican section of the IBWC provided its U.S. counterpart with plans for long term elimination of all domestic and industrial raw wastewater discharges into the New River. These plans also include provisions for handling wastewater discharges associated with the proposed Port of Entry east of Mexicali-Calexico.

c. Nogales/Nogales (See pages VI-6 through VI-7).

Surface water assessments by the State of Arizona since the 1970s indicate that surface water in Nogales is contaminated intermittently with fecal coliform. In order to confirm the results of studies, an intensive survey is underway by ADEQ, the City of Nogales, AZ, the IBWC and responsible authorities in Mexico to characterize the contaminants. In addition, defensive measures of chlorination in Mexico and facilities for pumping of Nogales wastewater in U.S. were constructed jointly by the IBWC to control fecal coliform counts pursuant to Arizona standards.

The wastewaters of Nogales, Sonora and Nogales, Arizona are treated together in an International Treatment Plant north of the boundary which was built in 1951 and relocated and expanded in 1972. The plant is now being expanded from 8.2 mgd to 17.2 mgd capacity, and expansion is nearly complete. Uncontrolled sewage crossing the international boundary through the Nogales Wash and its tributaries should cease in 1991, the completion date for the international plant.

In Nogales, Sonora, sewer collection has increased from 44 to 85 percent and it is planned that the sewer collection network will increase coverage to 95 percent during 1991.[16] The Nogales Wash covered floodway extension in Nogales, Sonora is 35 percent complete.

d. Ciudad Juarez/El Paso (See page VI-7).

In Ciudad Juarez, untreated wastewater flows into the Rio Grande from urban areas. Small, continuous, untreated wastewater discharges from Ciudad Juarez and intermittent discharges of untreated wastewaters used for irrigation in the agricultural Juarez Valley flow into the Rio Grande.[17]

Wastewaters from Ciudad Juarez are collected and discharged to an open ditch without treatment. That ditch conveys approximately 22 million gallons per day (mgd) of Ciudad Juarez wastewaters along with irrigation waters consisting of surface water diverted from the Rio Grande and larger quantities of ground water pumped from the Juarez Valley. The mixed waters are used to irrigate field crops, which are mostly cotton. On occasion, during the non-irrigation season, some of these mixed waters have been discharged into the Rio Grande.

Effluent from El Paso's four wastewater treatment plants that discharge to the Rio Grande are treated to secondary levels with disinfection.

e. Nuevo Laredo/Laredo (See pages VI-7 through IV-8).

Nuevo Laredo has a limited sewage collection system and no wastewater treatment facilities, resulting in discharges directly into the Rio Grande. A combined flow of 27 mgd of untreated wastewaters enters the Rio Grande from more than 30 points in Nuevo Laredo.[18] All such sewage will be conveyed by an improved collection system and treated to standards agreed to by the two governments in an international treatment plant located on the Mexican side by 1994. Mexico is currently carrying out the expansion and rehabilitation of the

Nuevo Laredo wastewater sewer system and the construction of the two principal interceptors which will convey the wastewater to the international treatment plant. The design and procurement for the international treatment plant, and its associated pumping stations, are being handled through the IBWC.

Municipal wastewater in Laredo, Texas is treated by sewage treatment facilities and complies with Federal and Texas water quality regulations for total suspended solids and biochemical oxygen demand (BOD).

f. ***Bajo Rio Bravo/Lower Rio Grande*** (See pages VI-8 through VI-9).

The waters of the Rio Grande released from Falcon Dam supply drinking water to more than one million people and irrigate more than 1.2 million acres of agriculture in both countries.[19] Due to inadequate treatment and collection facilities, untreated or partially treated sewage is discharged into the Rio Grande from some communities in the international boundary area from Falcon Dam to the Gulf of Mexico.

Of all the U.S. communities along the Rio Grande, only one of the City of Brownsville's treatment plants discharges secondary treated and disinfected effluent into the Rio Grande. Other U.S. border communities discharge into interior drainage systems away from the river.

Most Mexican communities in the lower reaches of the Rio Grande River also discharge their wastewaters into interior drainage systems away from the river. The City of Reynosa, however, provides treatment to collected sewage by means of a 16-lagoon system adjacent to the Rio Grande. The effluent is discharged without disinfection into a tributary drain that empties into the river. Water quality sampling under an IBWC program has found high bacterial levels in the Rio Grande immediately downstream of these discharges.

C. HAZARDOUS MATERIALS AND HAZARDOUS/MUNICIPAL SOLID WASTES

1. Overview (For relevant implementation plan, see pages VI-10 through VI-14).

The management of hazardous waste in both Mexico and the United States is of concern to both countries due to the potential for transboundary contamination and potential public health and environmental impacts. The extent of the waste problem in the Border Area is unknown. The volume of waste being generated and how these wastes are being disposed of is also uncertain at the present time. The management of municipal solid waste is also an environmentally related issue and is discussed separately in subsection C.6.

Since environmentally sound management of waste is an issue that geographically concerns the entire Border Area, the discussion that follows attempts to characterize the nature of the problem as a whole and describes the bilateral programmatic efforts aimed at developing solutions.

Specific issues of concern include the following:

- Significant quantities of raw materials are transported across the border into Mexico where waste is generated. There is not an adequate system for tracking how the materials are used and how they are disposed.

- Illegal dumping of hazardous wastes is periodically reported. Concerns related to this issue include potential impacts to public health via direct or indirect exposure from contamination of air, water or soil.

- On both sides of the border, siting of regulated and controlled treatment, storage and disposal facilities for hazardous waste is hampered by the "Not In My Back Yard" (NIMBY) syndrome.

Many of the materials handled by border industries are hazardous, including solvents, acids, resins, paints, plastics, heavy metals, oils, varnishes, etc. The amount of toxicity of these chemicals has the potential to be reduced via pollution prevention. These materials are transported on heavily traveled roads and could present a risk to traffic and residential areas if a release occurred. The last 4 years have seen intense growth of industry within the Border Area at Reynosa, Matamoros, Ciudad Juarez, Tijuana, Nogales, Mexicali, and Nuevo Laredo.

In practice, the actual fate of wastes generated by industry and the extent of the return of such wastes to the U.S. have not been monitored. According to EPA data from Region 6, 91 parent companies have returned waste through Texas Customs ports to the U.S. from maquiladoras since 1987. These parent companies return waste from one or several maquiladoras during each shipment. According to EPA records, the number of shipments of hazardous waste through Texas has grown from 9 shipments and 189.9 tons in 1987 to 356 shipments and 2388.5 tons in 1990. It is believed that there are more illegal shipments made from Mexico to the U.S. than previously appeared to have been documented due to inconsistencies in tracking and mistakes in documentation. However, the total amount of waste produced by maquiladoras is not known and it is expected to be significantly higher than the recorded values. It is therefore likely that along with "nationalization" and legal recycling of hazardous wastes allowed under the 1983 Maquiladora Decree of Mexico, illegal storage and dumping are occurring. Improper manifesting for proper disposal in the United States is also probable. Such a flow of hazardous wastes can produce a variety of public health and environmental problems including direct personal exposure to toxic chemicals, contaminated surface and ground water, and airborne contaminants from volatilization and open-air burning.

As of 1990, seven Mexican facilities were authorized by SEDUE to recycle hazardous waste throughout Mexico. One is in the Border Area (Tijuana) and three others are in border states (two in Monterrey and one in Chihuahua). Typically, these wastes are recycled for recovery of solvents, oils, greases, and metals. There are also three authorized facilities for "controlled confinement" land disposal for stabilized hazardous wastes and metal-containing wastes. (One of these authorized facilities is in Mexicali, one is in Hermosillo, another is in San Bernabe near Monterrey). Mexican treatment, storage, and disposal facilities do not accept maquiladora waste unless it is brought into the Mexican economy with payment of duties, which is a rare occurrence. Wastes not destined for these facilities must be returned to the country of origin.

Approximately 400 facilities in the Border Areas of Texas, New Mexico, Arizona, and California have been identified as generators of hazardous waste under RCRA, the U.S. hazardous waste disposal law. A large percentage of these hazardous waste generators are small quantity generators such as dry cleaners, automobile shops and small scale painting operations, which are, for the most part, exempt in the United States under RCRA. There are similar types of hazardous waste generators in Mexico. About one percent of the total number of facilities that generate hazardous waste on the U.S. side of the Border Area are also storage facilities and have received or will receive permits. There are no commercial treatment, storage or disposal facilities within the Border Area although there are numerous facilities that perform these functions in the border and neighboring states of Texas, California, Oklahoma, Arkansas, Utah and Arizona.

Because of the increased population caused by regional industrial growth, solid waste generation in the Border Area has changed in both quantity and type, requiring changes in collection and disposal procedures as well as changes in disposal locations. (Solid waste is discussed in more detail in Section III-C.6).

The Mexican and U.S. governments are addressing data needs and hazardous and solid waste handling requirements of the Border Area (For relevant implementation plan, see pages VI-10 through VI-13). The data needs involve the following:

- Transboundary movement of hazardous wastes;
- Abandoned dump sites; and
- Municipal solid waste.

2. **Transboundary Movement of Hazardous Wastes** (For relevant implementation plan, see pages VI-10 through VI-13).

Transboundary movement of hazardous waste between Mexico and the United States poses unique challenges. A primary concern is the difficulty in tracking shipments. This is due to several factors:

- The difficulties in coordinating numerous agencies responsible for regulation of the transported wastes;
- The logistics of transboundary transport;
- The amount of hazardous waste generated by maquiladoras from U.S. raw materials is unknown; and
- The amount and type of hazardous waste transported and where it is disposed of is unknown.

Current waste tracking in Mexico relies on the Guia Ecologica (Ecological Guides), which serve as an import/export notification document (i.e., the manifest) and the information received in each company's semi-annual report. The Guia Ecologica includes a Manifest of Delivery, Transport, and Acceptance of Hazardous Residues form which is used in the transport of hazardous materials. This form must be forwarded to the

General Department of Prevention and Control of Environmental Pollution within SEDUE. Since this reporting mechanism is new and is currently being implemented, the amount of waste produced, stored and/or shipped off-site is not known.

Annual tracking of U.S. waste legally exported to Mexico is monitored by EPA. Mexico is currently accepting only the import of a steel dust from which zinc and small amounts of copper and aluminum metal is reclaimed. U.S. waste exporters are required to file with EPA an annual notice of the projected amount of waste that they will ship. EPA uses this information to request consent from SEDUE for the shipment to take place. If the consent is given, the shipment may proceed. By March 1 of every year, U.S. exporters must also provide a summary of their shipments in the past calendar year. The discovery of illegal shipments, however, is becoming more commonplace. In the past five years, SEDUE and EPA have discovered four illegal exports of waste to Mexico. The most recent case involved 84 drums of waste paint from the United States discovered outside an abandoned facility in Tijuana (see details in subsection 3 (Cooperative and Enforcement of Each Country's Environmental Regulations)). The frequency of illegal waste exports to Mexico is not known, nor is the ultimate fate of such illegal shipments. SEDUE and EPA are currently developing a mechanism to accelerate the process of returning illegal hazardous wastes to the country of origin.

Waste is tracked within the United States by State manifest and biannual waste reporting systems. Some states, such as Texas, require more frequent (monthly) reporting of waste movement. Since compliance with these requirements is relatively good, waste generation rates are known for most facilities operating in the U.S. portion of the Border Area. Current U.S. tracking of waste received from a foreign source consists of manifest and data from other reports. This information is often incomplete. In addition, U.S. treatment, storage and disposal facilities must notify EPA in advance of their first receipt of a shipment of each waste stream from a foreign source. This gives both EPA and U.S. Customs advance notice of the Mexican facility shipping the waste and the U.S. parties involved. EPA has taken enforcement actions against four companies that have violated U.S. import notification requirements.

Several training programs for U.S. Customs Inspectors have been conducted on hazardous waste, manifesting, placarding, insurance and safety issues. These programs have included EPA, the DOT, the ICC and state agencies. They were followed by "border inspection blitzes" involving all incoming and outgoing truck traffic at several points along the border.[20]

3. **Cooperative Enforcement of Hazardous Waste Regulations** (For relevant implementation plan, see pages VI-25 through VI-27).

EPA and SEDUE have undertaken a variety of activities to enhance industry compliance with hazardous waste regulations in both countries. These include:

- SEDUE and EPA personnel have together participated in over 24 cooperative training visits at Mexican and U.S. industrial facilities in sister cities along the border since 1989.[21] In addition, SEDUE and California State and county personnel have visited 16 U.S. facilities.[22]

- EPA has provided SEDUE with training and technical assistance on hazardous waste incineration and other hazardous waste treatment techniques since 1987 and in 1988 and 1989 provided permitting guidance for a hazardous waste incineration facility being constructed in Tijuana.[23] EPA is currently arranging a cooperative training visit to commercial hazardous waste management facilities for SEDUE inspectors.[24] SEDUE personnel have also attended various training courses sponsored by EPA in protection and safety of personnel, technologies for the treatment of hazardous wastes, and emergency response for incidents occurring in the handling of hazardous substances.

SEDUE and EPA have also coordinated several investigations and enforcement efforts involving the illegal disposal of hazardous waste. A recent example occurred in 1990 when hazardous material of U.S. origin was identified in Tijuana. SEDUE and EPA worked together to conduct a preliminary assessment of the materials, which appeared to be solvents, heavy metals, and off-specification paints. Following lab analyses, the drummed wastes were packed, shipped to the United States, and disposed. EPA and the Federal Bureau of Investigation are pursuing criminal enforcement actions against the U.S. source of the materials.[25]

4. **Education of the Regulated Community** (For relevant implementation plan, see page VI-13).

In order to educate the regulated community on hazardous waste requirements, SEDUE and EPA published a Maquiladora Manual on hazardous waste regulations in 1989 in both Spanish and English. The Manual set forth the relevant authorities and policies governing hazardous waste management and transportation. The Manual also focused on the hazardous waste import and export requirements of both countries. The first edition was distributed at the second annual Maquiladora Environmental Educational Conference hosted by SEDUE and EPA in 1989. Individuals from Mexican and U.S. environmental agencies, Departments of Transportation and Customs spoke at this conference, which attracted more than 500 participants. An updated Manual was released at the third annual conference which attracted over 700 participants. The fourth annual SEDUE-EPA Maquiladora Environmental Educational Conference will be held in Ciudad Juarez in November, 1991.[26]

5. **Abandoned Dump Sites** (For relevant implementation plan, see pages VI-13 through VI-14).

The presence of abandoned hazardous waste sites is a problem in both countries. These sites can affect human health and the environment as contaminants migrate through the soil and into the ground water. By their nature these sites are often secret, their number is unknown, and locating them is difficult. The extent of contamination resulting from illegal dumping is unknown. SEDUE is currently developing a program to remediate abandoned and hazardous waste disposal sites. EPA currently has in place the Superfund program to handle abandoned sites.

6. **Municipal Solid Waste** (For relevant implementation plan, see page VI-14).

The Border Area has a population in excess of six million. The Mexican side of the Border Area has a per capita waste generation rate of 0.645 kg/day. This yields a total of 3,286 metric tons per day (3,202 tons per day). The per capita waste generation rate on the U.S. side of the border is 2.2 kg/day. This results in a total of 6,446 metric tons per day (6,281 tons per day). Of the total Mexican solid waste generated, it is estimated that

only 1,511 metric tons per day are collected. This suggests that 1,775 metric tons per day (1,729 tons per day) are disposed of improperly. About 65 percent of collected garbage is disposed of in open air dumps. The proliferation of noxious odors and air pollution resulting from both intentional and unintentional burning causes additional air pollution. In the absence of adequate landfills, many communities have no way of disposing of these wastes properly. In addition, characteristics of the waste have changed in recent years from typical organic residues to ones of slower degradation (e.g., plastics).

SEDUE has contracted with private firms to design properly constructed landfills for municipal waste disposal in the following communities: Tijuana, Mexicali and Ensenada, Baja California; Nogales and San Luis Rio Colorado, Sonora; Ciudad Juarez, Chihuahua; and Nuevo Laredo, Reynosa and Matamoros, Tamaulipas.

Siting of solid waste facilities in the Border Area is an issue of importance due to its potential impact on subsurface and surface water sources, emissions of air pollutants, traffic and disease control. An example of these issues can be seen in the pending permit for a solid waste sanitary landfill, composting facility, and materials recovery facility on the U.S. side of the border near the Campo Indian reservation. The size of this facility, located in the southern portion of the reservation between Campo and Jacumba, California and between Interstate 8 and the Mexican border, is estimated to be 600 acres. The environmental impacts of this facility will need to be addressed prior to final approval.

D. AIR QUALITY

1. Overview (For relevant implementation plan, see pages VI-14 through VI-19).

The levels of U.S. criteria pollutants (ozone, CO, PM-10, NO_x, SO_2, and lead) are monitored in several of the larger U.S. Border Area communities. In addition, there are five visibility monitoring stations along the border near Douglas, Arizona with additional visibility monitors at several National Park Service areas near the Border (e.g., Big Bend, Guadelupe Mountains, and Carlsbad Caverns National Parks). U.S. border communities currently not attaining one or more U.S. National Ambient Air Quality Standards (NAAQS) are: San Diego (ozone, CO) and Imperial County, California (PM-10); El Paso County (ozone, CO, PM-10), Texas; Yuma, Pima, Santa Cruz and Cochise counties, Arizona (PM-10); and Dona Ana County, New Mexico (PM-10).[27]

There are no current sets of data sufficient to characterize air quality in the Mexican portion of the Border Area, although monitoring has recently begun in Ciudad Juarez and one station has recently been put in service in Tijuana. The new cooperative sampling/monitoring network for Ciudad Juarez and El Paso includes five sites in Ciudad Juarez with equipment to monitor PM-10, CO, ozone and meteorological parameters. Activated in June 1990, this network also includes four sites in El Paso and is part of a cooperative SEDUE-EPA air basin study program agreed to under Annex V of the 1983 Border Environmental Agreement.[28]

Emission inventories on the U.S. side for the relevant criteria pollutants have been prepared for most of the non-attainment areas cited above, and inventories for all non-attainment areas are required by the Clean Air Act Amendments of 1990. Data on emissions and characteristics of major point sources (over 100 tons per year per

facility) are reported by State or local agencies in the United States to EPA. In addition, the EPA National Air Data Branch compiles county-level inventories for area and mobile sources which were most recently updated for 1986.

Sulfur dioxide emissions from copper smelters and utilities on both sides of the border have been a concern in the past but are currently not having major impacts on ambient SO_2 levels due largely to cooperative efforts between the two governments under Annex IV to the 1983 Border Environmental Agreement. Regular exceedances of the NAAQS for SO_2 in southern Arizona ceased after 1985 when control or closure of several large smelter operations eliminated these emissions. Of the five smelters in the United States portion of the Border Area, two are shut down and the others have instituted major SO_2 and particulate controls.[29]

Visibility studies in pristine areas of the Southwest indicate that long-range transport and atmospheric transformation of emissions from these types of sources are still of concern due to their contribution to sulfate levels in areas hundreds of kilometers from the sources.

Under certain conditions, major SO_2 sources in the Border Area or even deeper in Mexico or the United States can contribute to degradation of visibility in scenic areas along the border (such as Big Bend National Park and Parque International Del Rio Bravo), as well as in areas as far away as the Grand Canyon.

Very little is known about the potential levels of hazardous or toxic air pollutants in Mexico or the U.S. Border Areas, since very little monitoring of non-criteria pollutants has been conducted in the border region. However, the U.S. Clean Air Act Amendments of 1990 establish a major new regulatory program for control of toxic air pollutants. U.S. agencies along the border will be responsible for this process as specified in the Act. Also, during the summer of 1991 cooperative EPA-SEDUE air monitoring of non-methane hydrocarbon species is occurring at one site in Ciudad Juarez and one site in El Paso. Air quality issues for each of three geographical areas needing immediate air quality monitoring are discussed in the following pages.

2. **Ciudad Juarez/El Paso, Texas - Sunland Park, New Mexico** (For relevant implementation plan, see pages VI-15 through VI-16).

Since the 1970s, El Paso and the adjoining community of Sunland Park, New Mexico have failed to meet the U.S. National Ambient Air Quality Standards (NAAQS) for ozone (O_3), inhalable particulates (now PM-10), and carbon monoxide (CO). Although the State of Texas and City of El Paso have developed regulations under EPA guidance to reduce emissions of hydrocarbons (VOC), CO, and PM-10 in El Paso County, these emission reductions have not resulted in attainment with NAAQS; in fact, ambient concentrations of O_3, CO, and PM-10 have increased over the last ten years, possibly due to continuing high emissions of these pollutants in Ciudad Juarez. Preliminary air monitoring in Ciudad Juarez indicates an ambient problem in Ciudad Juarez at least as severe as that in El Paso. Ambient concentrations in Ciudad Juarez may exceed the comparable Mexican ambient air quality goals for at least O_3, CO, and PM-10. Attainment of the NAAQS in El Paso cannot occur without close cooperation with SEDUE to quantify and mitigate the impact of Ciudad Juarez emissions on El Paso.

In Ciudad Juarez, attainment of the Mexican ambient goals cannot occur without an ambitious quantification of all Ciudad Juarez emissions and mitigating those that have a large scale impact. The ASARCO primary copper smelter in El Paso operates a supplementary control system to avoid SO_2 exceedances. It consists of a series of meteorological stations, SO_2 monitors and stack samplers. Data from this system are used to reduce smelter production when conditions indicate that an exceedance might occur. Since the use of this monitoring system is restricted to the U.S. side of the border, there is a possibility that emissions from this smelter may be impacting the Ciudad Juarez area. However, this will need to be investigated in order to make a proper impact determination.

Ciudad Juarez/El Paso is the only study area currently authorized under Annex V to the 1983 Border Environmental Agreement. Recent air monitoring efforts have included aerial and "saturation sampler" studies of PM-10 episodes in 1990, and deployment of monitors in Ciudad Juarez and El Paso since June 1990. An emission inventory program has been developed to collect information relating to releases in the Ciudad Juarez/El Paso airshed. Currently, only sources in Ciudad Juarez are included in this study. A standardized questionnaire was prepared in Spanish and was distributed to over 500 potential sources in Ciudad Juarez. A one-day workshop on questionnaire response preparation was given to over 250 firms in Ciudad Juarez in September 1990.

A two-week field effort was conducted in April 1991 to identify and evaluate stationary, area and fugitive emission source locations in the Ciudad Juarez study area. In addition to collecting these data, assistance was provided to facilities in the preparation of individual emission estimates required by SEDUE. Facilities evaluated ranged from simple tile/brick kilns to complex state-of-the-art component production facilities. Unpaved roads, open dumping, quarries and other open sources were also investigated. Sampling of vehicle emissions in Ciudad Juarez was performed in the Fall of 1990 to develop mobile source emission factors. A study of vehicle miles travelled in Ciudad Juarez is pending funding. A special study of PM-10 emissions and meteorology during a December 1990 episode in the air basin is scheduled for completion by September 1991.[30]

During 1985-1987, EPA Region 6 developed three air quality training courses for use by Mexican personnel covering monitoring, quality assurance, and emission inventory techniques and also sponsored attendance of SEDUE personnel at a week-long training for a variety of monitoring methods in 1989. Training also preceded SEDUE involvement in a PM-10 saturation monitoring study in December of 1989. The ongoing air quality monitoring effort in Ciudad Juarez/El Paso has included training of Mexican personnel to operate and maintain the monitoring sites in Ciudad Juarez.

3. Mexicali/Imperial County (For relevant implementation plan, see pages VI-16 through VI-17).

Ambient PM-10 concentrations exceed the annual and 24-hour PM-10 standards at the Brawley, El Centro, and Calexico sampling sites in Imperial County. In 1987, the PM-10 concentration measured at the Calexico monitor was 405 $\mu g/m^3$ for the highest 24-hour average and 140 µg/m3 for an annual average (applicable NAAQS is 50 $\mu g/m^3$) . It is likely that PM-10 concentrations currently also reach unhealthy levels in the Mexican city of Mexicali.

The California Air Resources Board has prepared a PM-10 emissions inventory for Imperial County, but little information exists about emissions in Mexicali. Therefore, an emission inventory of major PM-10 sources is needed for the City of Mexicali. Information is also needed about episodic emissions (e.g., field burning, tilling) that may affect PM-10 levels. It is suspected that a large portion of the highest PM-10 concentrations are caused by fugitive dust emissions (e.g., unpaved road dust, windblown dust, agricultural tilling, aggregate mining and handling, and construction). The precise locations and timings of these dust emissions are unknown. The chemical profiles for dusts from various activities are very similar and it is unlikely that ordinary modeling methods can distinguish between the sources. Therefore creative new approaches must be developed to identify the sources of these fugitive dust emissions.

SEDUE and EPA have agreed on bilateral participation in a Mexicali/Imperial County PM-10 study. Formal addition of this study area to Annex V of the 1983 Border Environmental Agreement has been proposed. EPA Region 9 will develop a study plan for monitoring of sources and receptors and for the application of receptor models to apportion ambient PM-10 to its sources.[31]

The Mexicali/Imperial County PM-10 action plan calls for workshops to transfer technology from the research community to local air pollution control personnel in Mexico and the United States. Workshops on measurement technology include emissions survey techniques, ambient sampler operation and maintenance, and meteorological measurement systems. Similar workshops for training in PM-10 modeling techniques are also planned. The monitoring program is scheduled to last one year and will be followed by chemical analyses, computer modeling, and report preparation.[32]

4. Tijuana/San Diego (For relevant implementation plan, see pages VI-17 through VI-19).

Tijuana and San Diego share an atmospheric basin, where the prevailing meteorological conditions in both cities are determinants in the diffusion and transport of pollutant emissions to both sides of the border. The topographic conditions, characterized by numerous canyons, and long seasons of drought, wide zones of erosion and the consequent removal of particulate material (by wind erosion), cause complex contamination patterns common to both territories. Mobile and stationary source emissions are two of the principal atmospheric problems of the Tijuana/San Diego area. Mobile sources include private automobiles, cargo transport and passenger transport vehicles, and public and private airplanes. Stationary sources include industrial manufacturing plants.

In San Diego, as in most of California, ozone is the most significant pollutant, followed by inhalable particulates (PM-10), sulfur dioxide, carbon monoxide, and nitrogen dioxide. Air quality is monitored at ten different locations in the city. San Diego has not succeeded in meeting federal standards for ozone and carbon monoxide, but has met standards for NO_2, SO_2, and inhalable particulate (PM-10). The California Clean Air Act of 1988 established general guidelines for areas in non-attainment of standards for ozone, carbon monoxide, and nitrogen dioxide. The San Diego area has been classified by the State of California as having severe air quality problems. It is doubtful that the city will succeed in meeting the state standards before the year 2000. Therefore, it is required to reduce its emissions by 5 percent annually.

In the case of Tijuana, particulate material monitoring has not been carried out on a continuous basis, resulting in inconsistency in the PM-10 data base for this area. Gaseous pollutant monitoring equipment has been installed at the Autonomous University of Baja California, but data are not currently available. In addition, the Tijuana emissions inventory is very sparse, providing only general information and principally oriented toward maquiladoras.

In Tijuana, some particulate monitoring occurred under a Total Particulate (TSP) Monitoring Network which was conducted from 1979 to 1984 and consisted of monitors in three locations. The program was conducted by the Mexican Subsecretariat for Environmental Improvement (SMA), with technical assistance provided by the San Diego Air Pollution Control District (APCD).[33] However, no recent information is available concerning ambient levels of particulate matter or other pollutants. Consequently, air quality information in these areas is needed in order to identify and evaluate emissions sources and determine their impacts.

There has been some preliminary study of potential cross-border impacts of transported ozone and ozone precursors in the Tijuana/San Diego area. When winds are from the south (i.e., flowing from Tijuana into San Diego), ozone readings only as high as 0.08 ppm have been recorded, although an upward trend has been noted under these conditions. Local officials in San Diego have expressed a desire to include an area of Mexico 30 or 40 kilometers deep in their SIP analyses but are now planning modeling and other activities with U.S. data only, due to unavailability of required information for Baja California. San Diego County studies have also indicated that ozone levels there are affected by overnight transport of emissions from Los Angeles caused by sea breezes. Due to the wind patterns involved, similar levels may be occurring in Tijuana on days in which transport from Los Angeles affects San Diego.

Attempts have been made to include the Tijuana area in air quality modeling of the San Diego basin, but the lack of Tijuana emissions data currently prevents this. However, Tijuana/San Diego has been proposed as an additional study area to be covered by Annex V to the 1983 Border Environmental Agreement. This would yield much useful data for evaluating the Tijuana/San Diego air quality and emissions impacts.

5. Other Areas

Other Border Areas also require research concerning air emissions. The sister cities of Nogales/Nogales, San Luis/Yuma and Agua Prieta/Douglas are currently exceeding the NAAQS for PM-10. Additional ambient air and meteorological monitoring and sampling is needed in Matamoros/Brownsville, Nuevo Laredo/Laredo, and Reynosa/McAllen. There is also a need to study visibility problems in Big Bend National Park, Guadalupe Mountains National Park, and Carlsbad Caverns National Park, as well as southwest New Mexico. Little information beyond routine PM-10 compliance monitoring is currently available. With the expected increase in the number of industrial facilities in the Border Area and resulting growth in population and vehicle use, baseline air quality data in the Border Area would be needed before recommendations as to control strategies can be made.

E. CONTINGENCY PLANNING/EMERGENCY RESPONSE

1. Overview (For relevant implementation plan, see pages VI-19 through VI-21).

The potential for accidental releases of hazardous materials in the Border Area requires responsible contingency planning and preparation for response to such emergencies. The Mexican/U.S. Inland Joint Response Team (JRT) was established under Annex II to the 1983 Border Environmental Agreement to coordinate hazardous emergency preparedness and response activities along the Mexican/U.S. border. Most small spills are handled by each country at the local level in coordination with the IBWC as part of the JRT response. The Inland JRT is activated in the event of a significant hazardous substances incident in the Border Area. It is chaired for Mexico by SEDUE and for the U.S. by EPA. Additionally, the JRT serves as a conduit for information about each country's hazardous substances emergency preparedness and response activities. The JRT meets regularly to address issues to improve the status of emergency preparedness and response along the border.[34]

2. Joint Response Team (JRT) Activities (For relevant implementation plan, see pages VI-19 through VI-21).

In addition to addressing policy, protocol and program development issues, the JRT participates in a number of activities including:

- *Contingency Planning*. Under the auspices of the JRT, the Joint Mexican/U.S. Contingency Plan for Accidental Releases Along the Border (JCP) was developed and presented to the Presidents of both countries in January 1988. Once the JCP was developed, emphasis shifted to developing contingency plans in the fourteen pairs of sister cities along the border. Currently, contingency plans are being developed for Mexicali/Imperial County, Tijuana/San Diego, and Matamoros/Brownsville.

- *JRT Conferences*. In April 1989, the JRT convened its first conference to initiate planning and preparedness efforts in fourteen sister cities along the border. The conference brought together representatives from the public and private sectors of both countries. A second conference focusing more specifically on the development of sister city contingency plans and response mechanisms was held in June 1990. Future conferences and workshops will build upon the efforts of these two conferences.

- *Simulation Exercises and Other Training Initiatives*. The JRT has sponsored several simulation exercises including a table-top exercise in Mexicali/Imperial County in 1989, and a full field exercise in Matamoros/Brownsville in 1990.[35]

The JRT has been involved in several exercises in the past two years in Tijuana/San Diego, Matamoros/Brownsville, and the Ciudad Juarez/El Paso areas. In December 1990, JRT members were invited by SEDUE to observe a field exercise which was planned by a maquiladora facility in Matamoros. The exercise involved a simulated emergency response to a hypothetical release that threatened the surrounding residential community in Matamoros and had the potential to threaten the downtown area of Brownsville, Texas.[36]

In the Fall of 1989, Brownsville, Texas through the Cameron County Local Emergency Planning Committee (LEPC) and Matamoros, Tamaulipas through the Local Committee on Mutual Assistance (CLAM) began working with members of the JRT to develop the first full-field exercise in the Border Area which occurred in March of 1990. This exercise represented the culmination of activities in which these two entities prepared for and responded to a border incident. The JRT, which sponsored the exercise, is encouraging and supporting the establishment of such local action committees as these to work together in developing the sister cities plans and in all emergency preparedness, prevention and response activities. The second CLAM is being formed in Ciudad Juarez to work with the El Paso LEPC in JRT activities.

The JRT also encourages the active participation of industry, particularly the maquiladoras, along the border to participate as working members of the LEPCs and CLAMs with training efforts, to participate in border exercises and training sessions, and in providing emergency equipment to enhance community efforts and response capabilities.

A two-day training workshop developed by EPA Region 6 currently is being offered to first responders to hazardous materials incidents. Training materials are being translated into Spanish to facilitate similar training of Spanish-speaking personnel and to promote consistent response to accidents involving the release or potential release of hazardous materials on both sides of the border.[37] In 1990, EPA Region 9 conducted training in San Diego and in Calexico concerning hazardous materials recognition for first responders to hazardous materials incidents. These sessions were bilingual and were conducted in collaboration with other federal agencies. Primary attendees were local emergency officials from both sides of the border.

The Mexican and U.S. governments are addressing the various data needs and coordination mechanisms necessary to enhance the contingency planning/emergency response capabilities of the Border Area. These actions are discussed on pages VI-37 through VI-41 and cover the following areas:

- Developing a joint response capability along the border;
- Improving cross-border communications;
- Facilitating the establishment of local planning and preparedness groups (LEPCs in U.S. border cities; CLAMs in Mexican border cities);
- Promoting an understanding of the laws and regulations;
- Increasing the level of preparedness, response training and technical assistance to border communities;
- Developing improvements in cross-border hazardous materials transportation policy;
- Developing an accident prevention program;
- Developing a database on accidental releases in the border area; and

- Expanding JRT membership to include appropriate planning and response officials at the federal, state and local levels.

F. OTHER MULTIMEDIA ISSUES

The Mexican and U.S. governments are addressing relevant data needs and other multimedia issues in the Border Area. The response is discussed on pages VI-43 through VI-49. The actions required involve the following areas:

- Obtaining information on industrial sources;
- Conducting training programs;
- Developing methods of transboundary technology transfer;
- Developing methods to track industrial facilities usage of hazardous materials and disposal of hazardous wastes;
- Performing risk studies;
- Performing monitoring studies;
- Conducting cooperative training visits to facilities;
- Exchanging enforcement information; and
- Developing private initiatives.

1. Colonias

According to a recent General Accounting Office (GAO) study, over 200,000 residents of Texas and New Mexico reside in colonias. Colonias are rural, unincorporated subdivisions with substandard housing, inadequate roads and drainage, and substandard or no water and sewer facilities. Seventy-six percent of the Texas colonias have water supplies, but less than 1 percent have sewage systems. There are 500 colonias in Texas with a total population of 140,000. In New Mexico, 80 percent of the colonias have water and 7 percent have sewer systems. In colonias without public water systems, residents typically use shallow wells that can be potentially contaminated from private septic systems. In colonias without sewers, residents typically use septic tanks and privies which do not meet public health standards.

Both Texas and New Mexico have funding programs for water and sewer development needs in colonias. Texas recently authorized a $100 million bond issue for water and sewer projects in economically distressed counties and in all counties adjacent to the Mexican border. While state and local efforts in New Mexico have provided public water supplies to colonias, efforts to provide sewer systems have not been as successful.

Though not as extensive as Texas and New Mexico, California also has residents residing in colonias. Within the 100 kilometer border area of San Diego County there are approximately 10,000 residents living in substandard housing and migrant worker camps without adequate water and sewage facilities. Similarly, in Calexico there are a number of colonias within the city limits.

2. Pesticides

Pesticides are important in the Border Area to the extent that their use creates health or environmental problems because of spray drift, worker exposure or contamination of air and water. There is little hard data on any of these issues in the Border Area.

There are agricultural lands on both sides of the border which are utilized for crop production, particularly the Imperial Valley of California and the Rio Grande Valley. The Arizona-Mexico border is less developed in this regard but has been increasing its agricultural production. The Rio Grande Valley on both sides of the border is a prolific producer of agricultural products, ranging from cotton in the upstream areas to fruits and vegetables in the lower Rio Grande. Both the Mexican and U.S. growers use significant quantities of pesticides in the production of these crops, particularly for fruits and vegetables. Generally, the pesticides used in both countries are the same or at least closely related. One major difference is that a few pesticides are used in Mexico on crops which do not have the same registered uses in the United States, although they are often approved for other food uses in the United States. These include Omethoate (which is not registered in the United States but is a derivative of Metabolite which is registered); Deltamethin (application for use now being reviewed in the United States); Chloidone (strictly controlled in Mexico for land use only. Mexican officials plan to phase this pesticide out); and EPN (No food uses allowed in the U.S. but there are U.S. residue tolerances for many crops. Mexican officials have noted plans to phase out EPN use).

Spray drift across the border and the potential for non-point source pollution of water bodies are the two most relevant issues. Anecdotal incidents of both have been identified although there are no good statistical data on either. Evaporation and transport of pesticides through air, sometimes for very long distances, has been hypothesized. An information system on pesticide usage in the Border Area is needed as a beginning point to controlling pesticide use and for applying existing monitoring systems. Another important issue to both countries is the illegal import/export of pesticide.

Mexican law and regulations require registration (similar to U.S. requirements) for all pesticides. However, completely effective implementation of the regulations and protection of health and environment is hampered by a number of factors. The Mexican government currently has not implemented a Good Laboratory Practices (GLP) program that would ensure quality of data for registration purposes and lacks control over potential uses. While pesticides are registered and instructions are provided on recommended uses, farmers and growers may often use pesticides contrary to directions.

SEDUE and EPA plan to oversee pesticide issues in the Border Area as part of their national pesticide regulatory programs rather than create a specific Working Group on this issue for the Border Area. They will attempt to understand the extent of pesticide-related problems and develop control mechanisms which can be mutually accepted and implemented by both countries. The water and air Working Groups will, of course, watch for signs of pesticide runoff or drift.

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SECTION IV

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SECTION IV

EXISTING ENVIRONMENTAL INSTITUTIONAL FRAMEWORK FOR THE BORDER AREA

A. OVERVIEW OF SEDUE AND MEXICAN ENVIRONMENTAL LAWS IMPACTING THE BORDER AREA

Mexican environmental laws, regulations and standards are administered and enforced by the ecological sub-secretariat of the Secretaria de Desarrollo Urbano y Ecologica (SEDUE), the Ministry of Urban Development and Ecology. Mexico's first modern environmental laws were passed in 1972, 1982 and 1984. These laws were superseded in 1988 by the "General Law of Ecological Equilibrium and Environmental Protection" (the "General Ecology Law"), a comprehensive statute covering all types of pollution as well as the protection and preservation of natural resources.

Four regulations relating to national air pollution, air pollution within the Mexico City Metropolitan Zone, environmental impact assessment and hazardous wastes have been issued under the General Law since 1988. A fifth regulation covering wastes at sea and implementing the London Ocean Dumping Convention was adopted in 1979 and will remain in force until superceded. A new regulation dealing with a range of water pollution issues has been drafted and is expected to be released shortly. As of November 1990, 54 technical ecological standards (NTE's) and ecological criteria have been issued to implement the regulations. Since November 1990, several additional NTE's involving source categories for water have been approved by the Secretary of SEDUE. Other NTE's, particularly in the air and hazardous waste pollution areas, are slated to be presented for approval later in 1991.

Mexico's environmental laws, regulations and standards are similar in many respects to those in the United States. The General Ecology Law embodies principles similar to those in U.S. laws and regulations, and the technical standards for implementing the General Ecology Law are comparable to those of the United States.

Mexico is committed to ensuring new source compliance and to "growing clean." Most new facilities or modifications to existing facilities, whether public or private, are required to file with SEDUE an environmental impact analysis and, for high risk activities, a risk assessment. SEDUE reviews these analyses and has the authority to deny authorization for a project or to impose design, construction, and operating conditions to avoid significant adverse environmental effects. Even in cases where all applicable NTE's have not yet been developed, SEDUE can impose limits and other "special conditions." Separate air, water, and waste permits are also necessary where applicable.

In accordance with the General Health Law in Mexico, the Secretariat of Health is authorized to issue water quality standards for human use and consumption, as well as those relating to treatments for water disinfection and to perform monitoring and certification of drinking water quality. A national system of monitoring and certification of water has been established and is applicable in all Mexican territories.

Likewise, the Secretariat of Health is responsible for the establishment of sanitary quality criteria of wastewaters for their treatment and use for agricultural, aquacultural, or recreational purposes. In addition, it is entitled to prohibit discharges of wastewaters in bodies of water that comprise sources of drinking water supply.

In addition, the Secretariat of Health is responsible for establishing health standards and criteria and for monitoring the health of workers and the general population for risks of exposure to toxic products and hazardous wastes. Programs are under way for establishing the normative framework as well as for training the sanitary regulation personnel to evaluate the effects on the health by exposure to hazardous wastes.

Similarly, the Secretariat of Health is the entity responsible for establishing the maximum allowable limits of pollutants in the air, as well as, evaluating the effects of air pollution on health and orienting the population toward reducing the risks.

The Secretariat of Commerce and Industrial Development (SECOFI) oversees the operations of Mexico's maquiladora industry under the August 15, 1983 "Decree for the Fostering of the Exporting Maquiladora Industry." Under the Decree, if wastes resulting from materials imported into Mexico from the United States cannot be "nationalized" by the maquiladora operator in accordance with Mexican law, it must be returned to the United States.

Since the General Ecology Law was passed, SEDUE has taken increasingly strong measures to bring existing sources into compliance and to demonstrate its commitment to enforcing the law. From March 1988 through the end of 1990, 5,405 inspections resulting in 980 partial or temporary closings and 3 permanent closings occurred. In the period January 1 through May 15, 1991, there were more than 275 plant inspections in Mexico City resulting in the temporary or partial closing of more than 102 facilities and 2 permanent closings. In March 1991, Mexican President Salinas de Gortari closed the "18th of March" Pemex oil refinery near Mexico City. The closing of this refinery, which accounted for eight percent of Pemex's total distillation capacity and involved a $500 million investment and 5,000 jobs, demonstrates Mexico's commitment to improving the environment. SEDUE has recently hired fifty new inspectors for Mexico City and is in the process of hiring fifty additional inspectors to be assigned to the Border Area.

Mexico's enforcement efforts have been hampered by a lack of resources. However, the 1991 SEDUE budget is approximately $39 million (U.S.), more than three times the 1990 budget. In addition, Mexico is currently negotiating with the World Bank for a loan in excess of $45 million (U.S.) to benefit SEDUE which, together with allocations from the central government of Mexico, is expected to provide significant additional resources for SEDUE's enforcement activities.

B. OVERVIEW OF THE EPA AND U.S. ENVIRONMENTAL LAWS IMPACTING THE BORDER AREA

Most U.S. pollution prevention laws are administered by the Environmental Protection Agency (EPA), a federal regulatory agency headed by an Administrator who is appointed by and reports to the President. Formed in 1970, EPA is responsible for pollution abatement and control programs, including air and water pollution control, water supply and radiation protection, solid and toxic waste management, emergency preparedness and contingency planning, pesticides control, and toxic chemicals regulations. Those offices within EPA having the most direct responsibility for the Border Area are the Office of International Activities, which maintains Agency contacts with SEDUE; Office of Chemical Preparedness and Prevention, which maintains contact with SEDUE on spill preparedness and response issues; and the EPA Regional Offices in Dallas (Region 6, which includes the Texas and New Mexican borders with Mexico) and San Francisco (Region 9, which includes the California and Arizona borders with Mexico), which help implement and enforce national policy and the range of EPA environmental programs. As the Border Environmental Plan is implemented, a number of other EPA offices, including the Office of Enforcement, will have increased involvement in Border Area issues.

The MARPOL Convention establishes international environmental rules on the design, construction, and operation of ships. The International Maritime Organization's Marine Environment Protection Committee (MEPC) is expected to vote on the inclusion of the Gulf of Mexico and the Wider Caribbean Region as a special area under MARPOL at the July 1991 Meeting of the MEPC. Approval is expected. The amendment would prohibit the discharge of oil, oily mixtures, and garbage from ships operating in the region.

Enforcement of the EPA administered statutes affects the border environment positively. Some U.S. anti-pollution laws impact directly upon certain maquiladora operations. For example, the return of hazardous waste materials to the United States from maquiladora facilities is regulated by both U.S. federal and state laws once those materials reach the U.S. border.

Pursuant to the Resource Conservation and Recovery Act (RCRA) which authorizes EPA to regulate hazardous wastes and develop hazardous waste management practices, EPA tracks the domestic movement of hazardous wastes from generation to final disposal. Transboundary shipments of hazardous wastes are also tracked. Through reporting and manifesting requirements, exported hazardous wastes are tracked from their generation in the United States to their final Mexican destination. For each such export, the exporter must notify EPA of its intent to export; the Mexican government must consent to receive the export; a copy of the Mexican government consent must be attached to the manifest accompanying each shipment; and each shipment must conform to the terms of the consent. Imports of hazardous waste from Mexico are tracked from the time they reach the U.S. border until they reach their final U.S. destination.

EPA and authorized States have the authority for administrative enforcement of RCRA requirements. A variety of tools exists under U.S. law to compel transporters, brokers, TSDFs (Treatment, Storage and Disposal Facilities), U.S. sister plants, other intermediaries and any other RCRA violators to come into compliance. These enforcement tools include administrative orders, civil actions, criminal actions, and special penalty actions.

Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1981 contains U.S. provisions for preparing for, preventing, and responding to extremely hazardous substance releases. Under Section 301, all U.S. states are required to establish Local Emergency Planning Committees (LEPC) that are responsible for developing local emergency plans for chemical accidents. Section 304 requires immediate notification of chemical releases above a certain threshold level. Sections 311-312 require facilities to provide information on chemicals produced, stored, and used. Section 313 requires facilities to report routine releases of certain chemicals. Finally, Section 325 sets forth penalties and enforcement criteria for failure to meet Title III requirements.

EPA has the authority on the U.S. side of the border to protect the supply of drinking water delivered through the public water systems. The Safe Drinking Water Act requires EPA to develop drinking water standards, commonly known as Maximum Contaminant Levels, which are applied to the public water systems. In addition, EPA administers a program within the Border Area to improve access to water and sewer systems. To ensure water quality within the Border Area, the Clean Water Act provides the authority for the enforcement of limitations on point sources discharging into U.S. waters. Water quality standards developed by the states and approved by EPA consist of designated uses and criteria to meet those uses.

Section 815 of the Clean Air Act Amendments of 1990 (CAAA), which remains in force until July 1, 1995, authorizes the EPA Administrator, in conjunction with the U.S. Department of State and affected border States, to agree upon a cooperative program with Mexico to monitor and improve air quality in regions within the Border Area. Section 815 provides, among other things, for establishing air quality monitoring and remediation programs and annual progress reports to Congress which are to include funding recommendations for monitoring and remediation efforts.

Monitoring components include ambient air quality monitoring programs, emissions inventory development and collection of additional monitoring data to support state-of-the-art mathematical modeling studies. The ultimate goal of these programs will be to collect and produce data projecting the level of emissions reductions necessary in both Mexico and the United States to attain both primary and secondary National Ambient Air Quality Standards (NAAQS) and other air quality goals in areas within the United States along the Mexican border. The EPA Administrator is authorized to negotiate with appropriate Mexican representatives to develop remediation measures for reducing airborne pollutant levels to achieve and maintain air quality standards and goals. This remediation program will also identify those control measures to be implemented by Mexico with the help of material or financial assistance from the United States.

Section 818 of the CAAA amends the requirements governing State implementation plans (SIPs) in international border areas. Among other things, it provides that if a State can demonstrate that the SIP would be adequate to attain and maintain the relevant NAAQS by the specified attainment date, except for emissions emanating from outside the United States, EPA should approve the SIP provided it meets all applicable requirements other than the NAAQS attainment and maintenance and/or not penalize the U.S. city in question by "bumping up" its pollution severity category.

C. APPLICABLE INTERNATIONAL AGREEMENTS AND TREATIES

1. Bilateral Agreements Between Mexico and the United States

Two major groups of bilateral agreements between Mexico and the United States relate to water resource protection and pollution control.

The first group of agreements includes the 1889 International Boundary Convention which established the binational International Boundary and Water Commission (IBWC), and the Water Treaty of 1944 which extended the IBWC's authority to address water quality, conservation, and use issues. The IBWC is made responsible for undertaking any border water sanitation measures or works mutually agreed upon by the two governments. Such agreements are expressed in the form of an IBWC minute[1] and relate to planning, construction, operation, and maintenance of joint works, cost sharing, and other aspects of joint activities. Wastewater treatment facilities are presently under construction at Nuevo Laredo and Nogales, and are being proposed for the New River at Mexicali/Calexico. Through the IBWC, Mexico and the United States have just launched their largest project to date, a new international secondary sewage treatment plant in the Tijuana/San Diego area.

The second major group of relevant bilateral agreements includes the 1983 Agreement between the United States and Mexico on Cooperation for the Protection and Improvement of the Environment in the Border Area (the "1983 Border Environmental Agreement") and its five Annexes. The 1983 Border Environmental Agreement provides a framework for cooperation between Mexican and U.S governmental authorities to prevent, reduce, and eliminate sources of air, water, and land pollution in a 100-kilometer wide zone along each side of the international boundary. The Agreement creates the general structure under which specific projects set out in technical annexes (currently five) are implemented.

Annex I signed on July 18, 1985 addresses Tijuana/San Diego wastewater treatment facilities. Activities relating to this project have been conducted by the IBWC in coordination with SEDUE/EPA.

Annex II signed on July 18, 1985 and the 1988 Joint U.S./Mexico Contingency Plan for Accidental Releases of Hazardous Substances Along the Border authorize the establishment of the Inland Joint Response Team (JRT). The JRT undertakes emergency actions to respond to accidental oil and hazardous substance spills along the 200-kilometer-wide inland Border Area defined by the 1983 Border Environmental Agreement. The JRT also coordinates international hazardous substance emergency preparedness and response activities in this area.

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[1] IBWC Minute - The 1944 Water Treaty establishes that agreements of the IBWC be expressed in the form of minutes. The minutes provide specific recommendations for the joint solution of common problems. The U.S. and Mexican Commissioners, appointed by their respective presidents to serve in this international organization, are responsible for adopting the minutes. Once signed by the Commissioners, the minutes are required to be referred to the two governments for approval, when they then become executive agreements binding compliance by both countries under the terms stipulated in each particular minute.

Establishment of the JRT supplemented the 1980 Agreement of Cooperation between Mexico and the United States regarding Pollution of the Marine Environment by Discharges of Hydrocarbons and other Hazardous Substances (implemented by the U.S. Coast Guard and the Mexican Navy), which establishes a similar mechanism for the Gulf of Mexico and Pacific Ocean regions of the Border Area.

Annex III signed on November 12, 1986 governs the transboundary shipment of hazardous wastes and hazardous substances between Mexico and the United States. It establishes notification and consent procedures which require exporters of hazardous waste to provide written notice to, and obtain consent from, the country of import prior to commencing export. The Annex further requires the country of export to readmit any shipment of hazardous waste returned for any reason by the country of import. For the United States, this means that the U.S. will allow re-entry of hazardous waste and hazardous substance shipments in compliance with domestic U.S. law where the exporter is responsible for the shipment. In addition, hazardous waste generated from raw materials admitted to either country "in-bond" for purposes of processing must be readmitted by the country from which the raw materials originated, as in the case of hazardous wastes generated in maquiladora facilities. With respect to hazardous substances, Annex III requires each party to notify the other of regulatory actions undertaken to bar or severely restrict a pesticide or chemical and to give notice of any ongoing hazardous substances export that comes to the attention of the country of export.

Annex IV signed on January 29, 1987 requires copper smelters in the border area of Arizona, New Mexico, Texas and Sonora, Mexico, operating as of January 29, 1987, to comply with certain emissions limits that are no stricter than U.S. New Source Performance Standards (NSPS). The Annex contains an annual reporting requirement and provides for the transfer of emissions and compliance monitoring data between SEDUE and EPA.

Annex V signed on October 3, 1989 provides for a quantitative appraisal of causes of, and potential remedies for, urban air pollution problems in Mexico/U.S. border cities identified as "study areas". Under Annex V, for each study area, SEDUE and EPA will compile emissions inventories (including major stationary, mobile, and area sources), estimate requirements needed to attain control levels, conduct ambient air quality monitoring, and perform air modeling analysis to evaluate air quality changes that would result from airshed-wide emissions reductions. The first study area to be identified under Annex V is Ciudad Juarez/El Paso. Tijuana/San Diego, and Mexicali/Calexico will be scheduled for study under Annex V in the near future.

Four work groups of technical experts were established prior to 1991 to implement the terms of the 1983 Border Environmental Agreement and its technical Annexes; the Water Work Group, the Hazardous Waste Work Group, the Air Work Group, and the Inland Joint Response Team (JRT). An Enforcement Cooperation Work Group was established in June 1991.

The Mexico/United States Mutual Legal Assistance Cooperation Treaty became effective in May 1991 and provides for mutual legal assistance by the parties in criminal matters. Mexico is also a recent signatory of the Hague Convention On the Taking of Evidence Abroad, to which the United States is also a party. These agreements will make it easier in criminal and civil proceedings for enforcement and judicial authorities in one country to obtain assistance from the enforcement and judicial authorities of the other.

Since 1983, the following other bilateral and trilateral cooperative agreements associated with protecting natural resources in the border area have been signed by Mexico and the United States:

- Agreement between the Directorate General of Natural Resources of SEDUE and the U.S. Fish and Wildlife Service for Cooperation in the Conservation of Wildlife (1984)

- Memorandum of Understanding among the Directorate General of Natural Resources of SEDUE and the U.S. Fish and Wildlife Service and the Canadian Wildlife Service of the Department of the Environment of Canada to Evaluate the Possibilities of Developing Strategies for Conservation of Migratory Birds and their Habitats (1988)

- Memorandum of Understanding between SEDUE and the U.S. National Park Service on Cooperation in Management and Protection of National Parks and Other Protected Natural and Cultural Heritage Sites (1988)

Discussions are currently proceeding between the U.S. Park Service and their SEDUE counterparts to develop a binational protected area on both sides of the Rio Grande River in Big Bend National Park.

2. Multilateral Environmental Agreements

Several multilateral agreements to which Mexico and the United States are parties affect the Border Area. Both Mexico and the United States are parties to the Montreal Protocol On Substances that Deplete the Ozone Layer, which entered into force in 1989. Mexico was the first country to ratify this agreement, which has as its objective the protection of the ozone layer through precautionary measures for the control of emissions that deplete it. Both Mexico and the United States have signed the Basel Convention on the Transboundary Movement of Hazardous Wastes and Their Disposal (the "Basel Convention"). Mexico has ratified the Basel Convention and President Bush has submitted it to Congress for its advice and consent to ratification. The Basel Convention will require contracting parties to provide the receiving country with advance notice of proposed shipments of waste and the prior written consent of the receiving country. It will also require that the exporting country be assured that the waste will be managed in an "environmentally sound manner" in the receiving country. Article 11 of the Convention provides that parties can enter into bilateral agreements with non-parties

and with other parties for the trans-shipment of hazardous wastes, so long as the provisions of these agreements are no less protective of the environment than the Basel Convention itself. As noted above, Mexico and the United States are parties to Annex III to the 1983 Border Environmental Agreement, signed in 1986, which covers the transboundary shipment of hazardous wastes and hazardous substances and provisions dealing with land based sources of pollution.

Both Mexico and the United States are parties to the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region and Protocol (the "Cartagena Convention") which entered into force in 1986. Article 3 of the Protocol requires parties to promote contingency plans for combatting oil pollution. The parties are now attempting to develop an Annex to the Protocol covering hazardous substances and provisions dealing with land based sources of pollution.

Several other multilateral instruments may also be relevant to the Border Area. Principle 21 of the 1972 Stockholm Conference on the Human Environment provides that States have the sovereign right to exploit their own resources pursuant to their own environmental policies and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or areas beyond their jurisdiction.

The United Nations Convention on the Law of the Sea (UNCLOS), which contains provisions on natural resources and protection of the marine environment, has been signed and ratified by Mexico and is part of the supreme law of that country. While UNCLOS has not been signed or ratified by the United States, the United States accepts and acts in accordance with the balance of interests relating to the traditional uses of the ocean set out in the non-deep seabed mining provisions of UNCLOS.

3. Mexican-U.S. Environmental Planning and Coordination Mechanisms

The Presidential commitments to strengthen cooperative environmental activities between Mexico and the United States in the Border Area with the planning goals set in the November 1990 joint Presidential communique, the SEDUE-EPA collaboration under the 1983 Border Environmental Agreement, and the experience with IBWC management of border water projects creates a flexible binational mechanism for upgrading the environment of the Border Area. The Plan will draw in and coordinate the participation of the border states and cities, the private sector and the public. By approaching the Plan in stages, a continuing process of review and refinement involving all the relevant parties will be initiated.

The Presidents of Mexico and the United States hold regularly-scheduled meetings to discuss issues of mutual concern including environmental issues and to promote continued friendly and cooperative relations. Progress reports on this Plan will be made available on such occasions.

The next level of Mexican-U.S. planning activities occurs within the framework of the Mexican-U.S. cabinet to cabinet Binational Commission, which brings together the highest levels of authority within the environmental agencies of both countries. The Secretary of SEDUE and the Administrator of the EPA meet at least annually as part of this cabinet-level Binational Commission to further discussions involving cooperative environmental agreements between the two nations.

The 1983 Border Environmental Agreement provides for an annual meeting between the National Coordinators of the Agreement. The Mexican coordinator is the Under Secretary for Ecology of SEDUE and the U.S. Coordinator is the Assistant Administrator for International Activities of EPA. The foreign affairs ministries of both countries and the IBWC also participate. Additional representatives from both countries are asked to attend these meetings to facilitate the discussion and understanding of technical and policy issues depending on the agenda for the individual meetings. The purpose of these meetings is to review the manner in which the Border Environmental Agreement is being implemented and to review other environmental cooperation between SEDUE and EPA. It is planned that representatives of the Mexican and U.S. border states join the SEDUE-EPA Coordinator's meeting in 1992 for a day of discussions.

4. Federal-State Environmental Relationships in Mexico and the United States

SEDUE is more centralized than the EPA. As compared with the United States, a much larger portion of Mexico's environmental protection regime is currently developed and implemented by federal authorities. Mexican laws and regulations provide for an expanded role for the states but this has not yet been fully implemented. For example, in its achievement of ambient air quality standards, Mexico relies on a source permitting program which is currently carried out at the federal level through SEDUE. SEDUE intends to eventually turn most permitting responsibilities over to the states as intended by Mexico's air regulation. Under Mexican water pollution law, either federal or state governments may authorize wastewater discharges into bodies of water or into the soil or subsoil.

Since the General Ecology Law was enacted in early 1988, eighteen of the Mexican states, including the States of Coahuila, Sonora and Nuevo Leon in the Border Area, plus the Federal District have adopted environmental statutes. Other states have yet to adopt such statutes, leaving to the federal government exclusive jurisdiction over most environmental matters. Those regulations and standards passed or promulgated at the state level may not be less stringent than the federal regulations or standards.

Mexico is currently examining how SEDUE might be "decentralized" by shifting some of the functions which it now carries on centrally to state environmental authorities.

In the United States, many minimum pollution control standards are set at the federal level. However, these are often implemented by state plans, which may call for more but not less stringent pollution control measures, with Federal authorities retaining oversight responsibility. Examples of this approach include the U.S. air and water pollution control regimes. Under the U.S. Clean Air Act, the states develop state implementation plans or "SIPs" which are submitted to EPA for approval. The SIPs are subject to federal oversight and must contain a number

of measures prescribed by the federal statute. Under the U.S. Clean Water Act, the EPA sets minimum technology-based guidelines for pollutant discharges into surface waters. These are implemented through a permitting program largely carried out by the states under federal oversight, except where states have chosen not to participate. Standards are developed by each state with respect to the quality of their own receiving waters which may be more but not less stringent than the federal standards. On the other hand, implementation of some U.S. Programs, including those in the pesticides area, remain highly centralized.

Both SEDUE and EPA have reviewed this Plan with their border state environmental authorities and have included in the final recommendations to this Plan (See #6) a recommendation on coordination of environmental programs in the Border Area.

D. ENVIRONMENTAL AGENCIES OF MEXICAN AND U.S. BORDER STATES AND CITIES

The following subsection briefly describes the State and city agencies involved along the Mexican/U.S. border which administer, manage, monitor, permit and enforce environmental regulations.

1. Mexico

There are six Mexican States that border the United States: Baja California, Sonora, Chihuahua, Coahuila, Nuevo Leon and Tamaulipas.

SEDUE has offices (*"delegaciones"*) in each of the border States. Three of the States, Sonora, Nuevo Leon and Coahuila, have State environmental laws, although regulations have not been promulgated pursuant to those State laws.

The principal municipal governments affected include: Tijuana and Mexicali in Baja California; Nogales in Sonora; Ciudad Juarez in Chihuahua; and Nuevo Laredo and Matamoros in Tamaulipas.

Chihuahua

Ciudad Juarez assisted SEDUE and the State of Texas in establishing a long-term air pollution monitoring network. This network, the first long-term network of its kind in a Mexican Border city, was first activated on June 10, 1990 and will continue in operation at least through August 1992. SEDUE and Ciudad Juarez are investigating the establishment of a vehicular inspection/maintenance program.

Tamaulipas

Nuevo Laredo is in the process of constructing a sewage collection and treatment system in the context of a bilateral cooperation project agreed upon by Mexico and the United States.

2. United States

The States of California, Arizona, New Mexico and Texas share a border with Mexico. The principal municipal governments affected include the following: San Diego and Calexico in California; Nogales in Arizona; and El Paso, Laredo, and Brownsville in Texas. The bulk of existing data on concentrations of metals, volatile organic compounds, and other toxic constituents (i.e., non-conventional pollutants) is a result of state monitoring programs supported by funds from the EPA under Section 106 of the Clean Water Act and the states. For example, California has been routinely monitoring conventional pollutants in border water bodies since the mid-1970s and many priority pollutants since the mid-1980s.

California

The principal environmental officer in the State of California is the Secretary of Environmental Affairs, a cabinet-level position that oversees the activities of the various pollution control boards. The boards, such as the Water Resources Control Board and the Waste Management Board, manage individual, media-specific programs. Although the Water Resources Control and Waste Management boards are independent agencies, the Secretary is responsible for ensuring that board activities are consistent with State policy. The Secretary chairs the Air Resources Board. Emergency planning is carried out by the Governor's Office of Emergency Services.

Along with CARB, the San Diego Air Pollution Control District as well as the Imperial County Air Pollution Control District have provided technical assistance and resources. It is anticipated that this assistance will increase as programs implemented under the Border Environmental Plan are begun.

Air Quality Control

The statewide custodian of air quality is the California Air Resources Board (CARB), located in Sacramento. CARB oversees regulations of California's various air quality management districts. CARB coordinates the plans prepared by the individual districts into an overall state implementation plan and has the authority to override district decisions regarding state ambient air quality standards and emission limitations. CARB also has the authority to replace district standards.

Water Quality Control

The administration of California's water quality programs is divided among nine regional water quality control boards that must report to the California Water Resources Control Board in Sacramento. The nine boards are authorized to adopt regional water quality control plans, prescribe waste discharge requirements, and perform other water quality control functions within their respective regions, subject to state-board review or approval.

The State Water Resources Control Board and two Border Area Regional Boards have provided a significant amount of technical assistance with regard to border water quality issues. California has been routinely monitoring conventional pollutants in border water bodies since the mid-1970s and many priority pollutants since the mid-1980s. The state has also apportioned $5.3 million in matching funds for the design and construction of wastewater treatment works to address the Tijuana sanitation problem.

Solid Waste Quality Control

Solid waste disposal facilities, including landfills, transfer processing stations, and waste-to-energy facilities, must obtain permits and are otherwise regulated by local enforcement agencies under the overall coordination of the California Waste Management Board. The local agencies may consist of counties or cities or both.

Hazardous Waste Quality Control

The California Department of Health Services regulates hazardous waste generators and runs the State hazardous waste program.

California law regulates all firms generating waste oil, asbestos, or polychlorinated biphenyls. Once the amount stored exceeds prescribed thresholds, Federal Resource Conservation and Recovery Act (RCRA) laws take effect, requiring that the waste be manifested within 90 days.

In California, the Department of Food and Agriculture regulates the use of pesticides, however, this responsibility may be shifted by an upcoming state government reorganization.

Emergency Response/Contingency Planning

Emergency planning is carried out by the Governor's Office of Emergency Services. There are local planning efforts as well.

Arizona

In 1987, Arizona created a new cabinet-level Department of Environmental Quality. All sources with the potential to emit significant amounts of any regulated pollutant must have installation and operating permits in Arizona. The State regulates only the major sources, i.e., those capable of individually generating more than 75 tons of air contaminants per day and those that are involved in copper smelting or in crude oil refining. Emergency planning at the state level is the responsibility of the Division of Emergency Services of the Arizona Department of Emergency and Military Affairs.

Air Quality Control

Air pollution programs are managed by the Office of Air Quality which seeks to prevent, control and abate air pollution by testing, determining standards, conducting investigations, compiling and publishing reports, and initiating and prosecuting enforcement actions.

Water Quality Control

Arizona's water quality control activities are managed by the Office of Water Quality within the Department of Environmental Quality. The state administers substantial portions of the National Pollutant Discharge Elimination System (NPDES) program, while EPA is responsible for carrying out enforcement functions. Arizona has been routinely monitoring conventional pollutants in border water bodies since the mid-1970s and many priority pollutants since the mid-1980s. ADEQ, in cooperation with the IBWC, the city of Nogales, and Santa Cruz County, recently developed a four month surface and ground water quality monitoring program for the Nogales area.

The Office of Waste and Water Quality Management approves construction of sanitary facilities; provides general construction supervision; conducts routine operation and maintenance inspections; certifies operators of treatment facilities; and administers federal construction grants through the water quality control council.

Solid/Hazardous Waste Quality Control

In Arizona, solid waste landfills are under the jurisdiction of the communities, although the Office of Waste Programs monitors those efforts. All hazardous waste and much industrial waste must be removed from the State.

In Arizona, the State Chemist regulates the use of pesticides.

Emergency Response/Contingency Planning

Emergency planning at the state level is the province of the Division of Emergency Services in the Arizona Department of Emergency and Military Affairs. There are local planning efforts as well.

New Mexico

New Mexico's environmental programs are managed by the State Environmental Department. Emergency planning is led at the state level by the Division of Emergency Services. Each county has a local Emergency Planning Committee, which implements the Emergency Planning and Community Right-to-Know Program. New Mexico has complete responsibilities, as designated by EPA, for new source review permitting for sources in the state.

Air Quality Control

New Mexico's ambient air quality standards include EPA's criteria pollutants as well as other pollutants. Any new or existing source that, without controls, would emit more than 0.25 parts per million (ppm) of the pollutant per eight-hour shift must use the best available control technology (BACT) to reduce those emissions.

Water Quality Control

New Mexico has not assumed full authority to manage any of the Federal water quality control programs. State rules specify that discharges covered by the NPDES permit programs are not subject to state regulations unless a source has not corrected a violation within 30 days of receiving notice from EPA. In such cases, State discharge regulations take effect until the violation has been rectified.

Solid/Hazardous Waste Quality Control

Solid nonhazardous waste management is under the overall jurisdiction of the Solid Waste Bureau of the New Mexico Environmental Department (NMED). The Bureau has a key role in the development and implementation of State and Federal regulations governing solid waste management. While the NMED has a role in the citing, permitting and operation of solid waste facilities in New Mexico, primary responsibility for managing solid waste disposal rests with the counties and municipalities.

Hazardous waste regulation in New Mexico is under the jurisdiction of the Hazardous and Radioactive Waste Bureau of the NMED. The NMED is authorized under the Resource Conservation and Recovery Act (RCRA) and State law to issue permits to, and enforce against, hazardous waste facilities. Thus, it has a role in the citing and operation of hazardous waste disposal facilities in New Mexico. The NMED also has a role in the transboundary movement of foreign waste through the monitoring of waste manifesting required under RCRA. In addition, the NMED administers the RCRA import/export regulations which require all hazardous waste treatment, storage and disposal facilities in New Mexico to provide notification of anticipated receipt of foreign waste. NMED has also cooperated in case development investigations related to the enforcement of RCRA import/export regulations.

In New Mexico, pesticide use falls under the jurisdiction of the Department of Agriculture.

Emergency Response/Contingency Planning

Emergency response and contingency planning activities in New Mexico are performed or coordinated by the Department of Public Safety, Emergency Management Bureau. The Bureau serves as the coordinator and repository for all hazardous materials emergency planning information and response activities for the State Emergency Response Commission (SERC).

Texas

Environmental programs in Texas are decentralized and are administered by several individual offices. Unlike California and Arizona, Texas has as yet no comprehensive cabinet level environment department.

Air Quality Control

The Texas Air Control Board has complete autonomy over all matters related to air pollution, including managing and enforcing all federally required air permit programs. The central office in Austin is responsible for enforcement, monitoring and technical support, and program development, while routine day-to-day activities are carried out by 12 regional offices. Texas has only partial delegation of the Federal new source permit program, so EPA-Region 6 signs the Prevention of Significant Deterioration (PSD) permits.

Since the signing of the Mexico-U.S. Border Environmental Agreement in 1983, the City of El Paso and the State of Texas have increased their activity in Border Area air concerns. They have attended meetings of the National Environmental Coordinators, have sponsored meetings of the local Ciudad Juarez/El Paso air quality working group with SEDUE-Ciudad Juarez which have served as technology transfer opportunities, and have assisted in providing training to Mexican and U.S. personnel working in the Border Area. Of particular assistance has been the City and State involvement in the provision of technical guidance to SEDUE-Ciudad Juarez in the set-up and operation of the long-term Ciudad Juarez PM-10, CO, O_3, and meteorology monitoring network. This network, the first long-term network of its kind in a Mexican Border city, was first activated on June 10, 1990 and will continue operation at least through August 1992.

Water Quality Control

The Texas Water Development Board (TWDB) administers the Construction Grant Program under delegation from EPA. The TWDB also administers the State Revolving Loan Fund and the Economically Distressed Areas Program (Colonias SRF) which receives funding from EPA. The TWDB provides administrative, financial, and engineering support for these programs.

The Texas Department of Health (TDH) administers the public water supply program to regulate all public water systems in Texas for drinking water quality, system design and operation and certification of operating personnel. The TDH also jointly administers the Wellhead Protection Program with the Texas Water Commission (TWC) to protect ground water quality as a source of public water supply.

Other Texas Programs Related to Water Quality

Texas Department of Health - Mexico/U.S. Border Council

The Texas legislature, in 1989, created an Office of Texas-Mexico Health and Environment within the Texas Department of Health to determine health and environmental problems along the Mexican-Texas border and

make recommendations to the legislature toward solutions to these problems. An interagency advisory council, composed of members from State and Federal agencies and universities, is in the process of preparing a report on border problems.

Mexico/Texas Border Health Association

This Association has existed for many years and has provided a forum for health and environmental officials from Mexico and Texas to discuss problems and needs.

Texas Water Development Board Economically Distressed Areas Program

In the border area along the Rio Grande, corresponding to the states of Texas in the United States and the states of Chihuahua, Coahuila, Nuevo Leon, and Tamaulipas in Mexico, there has been a history of rural subdivision development which has accelerated during the past decade. These residential subdivisions are referred to as colonias. A colonia has the following common characteristics: it is outside the corporate limits of any city or town or outside the limits of a utility district providing water and sewer service; it includes at least some substandard housing; and it is not currently served by a sewer collection line. Often the residents obtain water from a yard tap or common tap which serves several residences, and human waste is disposed of in private pits.

While colonias along the border dramatize the problem, the Texas Legislature has created a broader program than just a colonia program. Under the State legislation, the project area defined as an Economically Distressed Area must be located within an affected county. Affected counties are those where per capita income is 25 percent below the State average and unemployment is 25 percent above the State average for the last three years. Economically Distressed Areas were defined by the Legislature to be those areas that have inadequate water or wastewater systems, financial resources inadequate to meet those needs, and 80 percent of the dwellings to be served were occupied on June 1, 1989.

The FY 1990 Appropriation Act for EPA programs allocated $15 million for establishing a special revolving fund (SRF) for loans in the colonias of 12 Texas counties. This SRF will work in concert with the State program. Whereas the State program will fund water and wastewater treatment facilities, the colonias SRF will fund individual plumbing needs and connections to sewer collection systems and water mains.

Solid/Hazardous Waste Quality Control

The Texas Department of Health, Bureau of Solid Waste Management has responsibility for solid (non-hazardous) waste in Texas. The Bureau drafts and implements regulations applicable to all aspects of solid waste management to include permitting of solid waste disposal facilities and enforcement of regulations. County and municipal authorities play a major role in the implementation of the regulatory requirements. Various Councils of Governments (COGs) in Texas are developing regionalization plans for solid waste management. As these plans become final and are implemented, these COGs will be assuming greater roles in regulatory implementation.

The Texas Water Commission (TWC) has jurisdiction over hazardous waste management in Texas. The TWC issues permit to hazardous waste TSDs and enforces applicable regulations, including RCRA import notification requirements. The TWC has a role in the citing and operation of hazardous waste facilities as well as the transboundary movement of hazardous waste. The TWC recently gained authorization from some of the RCRA export regulations including the reporting requirements for hazardous waste exporters in Texas. Import/export information obtained by the TWC from the regulated community is supplied to the Regional Office as part of the implementation of their annual grant work plans.

The TWC has been active with Customs in responding to accidental chemical spills and providing assistance in the identification/classification of unknown substances crossing the border. Their activities also include Operation Exodus (spot checks of exports to Mexico).

The TWC periodically conducts informative workshops for the regulated community on import/export regulations. In addition, the TWC is planning to have an educational conference on hazardous waste management for the regulated community along the border in El Paso, Texas, in July 1991.

The TWC has participated in some of the cooperative inspections with SEDUE and Region 6. The TWC has cooperated in case development investigations related to the enforcement of RCRA import/export regulations.

In Texas, the state's Department of Agriculture controls the use of pesticides.

Emergency Response/Contingency Planning

The State Emergency Response Commission (SERC) is chaired by the Governor's Division of Emergency Management (DEM). The DEM coordinates contingency planning and preparedness activities of the county-based Local Emergency Planning Committees (LEPCs) and also becomes the lead state agency for emergency response action where a disaster has been declared. Other emergency response responsibilities are shared by the Texas Water Commission for spills of hazardous substances, the Texas Air Control Board for air releases, the Texas Railroad Commission for land based oil spills, and the General Land Office for marine oil spills. The Texas Department of Health is the repository for facility hazardous substance inventories.

The Texas SERC was awarded a $75,000 grant by the EPA in 1991 to conduct workshops in border cities to foster development of contingency plans and emergency response capabilities.

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SECTION V

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SECTION V
ENVIRONMENTAL PRIORITIES

A. GENERAL

As noted in Section IV, Article 11 of the 1983 Border Environmental Agreement authorizes SEDUE and EPA to establish technical advisory groups to address environmental issues facing the Border Area. The first annual meeting of National Coordinators was held in November 1984 to institute such groups. Following this meeting, three work groups were staffed from SEDUE, EPA, the IBWC, the Mexican Ministry of Foreign Affairs, and the U.S. Department of State to address the topics of water, air, and hazardous waste. A work group on contingency planning was added later. The topic of training was included in the agenda of each group. These work groups meet with the National Coordinators at least once a year to discuss significant issues along with past and future activities.

In December 1990, SEDUE, EPA, representatives of the foreign ministries of both countries, and the IBWC met in Washington, DC, in response to the request made by President Salinas and President Bush in Monterrey, Mexico on November 27, 1990 that an environmental plan be prepared for the Border Area. SEDUE and EPA agreed to seek a risk-based approach to prioritize environmental issues in the Border Area. It was acknowledged that a quantitative risk assessment could not be conducted at this time due to a lack of sufficient data which would have to be accumulated as the First Stage of the Border Environmental Plan is launched.

The following qualitative approach was adopted to set priorities for this First Stage of the Border Environmental Plan, with the goal of a further review of priorities in preparing the Plan's Second Stage in 1994.

In January 1991, the Work Groups met in Dallas, Texas to establish environmental priorities for the Border Environmental Plan based on a comparison of actual and potential risks. Participants at the meeting contributed their technical experience, knowledge, and professional judgment. In addition to working on setting environmental priorities, the Work Groups prepared outlines for action plans based on the results of the priority-setting exercise.

Both EPA-Region 6 and EPA-Region 9 had recently conducted comparative risk projects to identify and evaluate the human health and ecological risks posed by environmental problems in their respective regions. In this process, risks, both quantitative and qualitative, were determined, and each region developed a relative ranking of the risks associated with the particular environmental problems. The results of this experience provided the Work Group participants with useful insight into how environmental priorities for the Border Environmental Plan should be set. Participants from both SEDUE and EPA had also reviewed the EPA's Science Advisory Board's report entitled "Reducing Risk: Setting Priorities and Strategies for Environmental Protection" (EPA-SAB-EC-90-021A-C).

The evaluation of environmental priorities in the Border Area has been assisted by the recent "Project Consenso Final Report" on state and local environmental health priorities of border communities. This report, published by the U.S.-Mexico Border Health Association in April 1991, identifies Environmental Health as one of the six main health concerns of the region. At the final borderwide meeting of the Border Health Association in El Paso in March, these environmental health concerns were described as follows[1].

B. ENVIRONMENTAL HEALTH

"Environmental conditions directly affect the whole border population. Further, in terms of the environment, solutions will be effective only if issues are addressed binationally. General considerations included:

- The need to improve the urban infrastructure of services which, due to migration, is sorely lacking in water quality and disposition of solid wastes.

- Due to the emergence of the maquiladora industry, there is a need for surveillance, accountability, and disposition of hazardous wastes.

Specific areas addressed:

- Water, soil and air pollution
- Hazardous wastes
- Education and legislation"

All of these topics are addressed in this Border Environmental Plan.

Environmental priorities in this Plan have been assessed on the basis of combined impacts to public health, the environment, and public welfare. Problem areas have been identified through experience with known violations of current environmental laws. The environmental issues determined to pose the greatest risk to the Border Area were identified as water, hazardous waste, air, and chemical emergencies. Although pesticide exposures were not ranked high by the Work Groups, it was decided that pesticides should be included in the Plan for monitoring and potential action purposes.

SEDUE and EPA agreed that action plans to deal with the four major environmental problem areas dealt with by the Work Groups should be incorporated into the Border Environmental Plan as follows:

1. **Media specific issues** including municipal wastewater, water supply sources, and air (i.e., ozone and particulate matter);

2. **Source control issues** including industrial wastewater, hazardous and municipal solid waste, air toxics, and accidental releases;

3. **Hazardous and municipal waste issues** including import/export of hazardous waste, abandoned hazardous waste sites, and municipal solid waste sites along with the collection and transportation of municipal solid waste; and

4. **Emergency response/contingency planning** including the development and coordination of all affected agencies to prepare, train and respond to potential/actual accidental releases.

The Work Groups also agreed to target environmental priorities geographically, concentrating on the six largest sister city areas along the border which were determined to have the highest risks from environmental contamination based on the severity of the problems and population density. While the Work Groups agreed that these six geographic target areas should receive first priority in the Plan (see Subsection B), it was also agreed that other less populated areas and their related environmental issues should be included in the Plan, along with other non-geographic environmental issues facing the Border Area (see Subsection C). These other areas and issues considered at the January meeting would be addressed as the Plan progressed. As the Plan evolves and is reviewed, environmental priorities will be evaluated and revised or modified as appropriate.

C. GEOGRAPHIC RANKING OF RISKS

The initial six priority geographic target areas identified by the Work Groups are; Tijuana/San Diego, Mexicali/Imperial County, Nogales/Nogales, Ciudad Juarez/El Paso, Nuevo Laredo/Laredo, and Lower Rio Grande/Rio Bravo. The groups evaluated the environmental issues that both Mexico and the United States had ranked high for each of these six areas. An effort was made not to prioritize environmental media for the whole Border Area but rather to rank those media of concern with respect to each geographic target. The Work Groups emphasized that though these areas were initially targeted, other areas will be evaluated as experience is gained, when implementation plans are instituted, or as better data on public health and ecological risks become available.

It was agreed that the following media-specific initiatives should be geographically targeted as follows:

Tijuana/San Diego - municipal wastewater and ozone/carbon monoxide
Mexicali/Imperial County - municipal wastewater and particulate matter
Nogales/Nogales - municipal wastewater and particulate matter
Ciudad Juarez/El Paso - ozone/carbon monoxide and particulate matter
Nuevo Laredo/Laredo - municipal wastewater
Rio Bravo/Lower Rio Grande (Matamoros/Brownsville) - municipal wastewater and water supply sources

The group agreed that control of industrial sources should initially be focused in Tijuana/San Diego and Ciudad Juarez/El Paso and spread to the other sister cities. Industrial source controls are process-oriented and involve multimedia responses. The Work Groups recommended that solutions to this problem be pursued through a combination of government and private initiatives.

It was recommended that the problem of import/export of hazardous waste should initially be focused in the Tijuana/San Diego, Ciudad Juarez/El Paso, and Matamoros/Brownsville areas with the goal of developing a hazardous waste treatment capacity on the Mexican side of the Border Area. The relevant Work Group recommended that emergency response/contingency planning should be scheduled for all sister cities (and that information gained should be shared with all interested parties).

D. NON-GEOGRAPHIC RANKING OF RISKS

Several environmental issues were identified that do not have specific geographic focuses but need to be addressed borderwide. In particular, the maquiladora issue introduces multimedia source problems throughout the Border Area. This issue will be addressed in all the implementation plans. Other border-wide issues include import/export of hazardous waste, abandoned hazardous waste sites, and municipal waste sites. Numerous shipments of hazardous waste occur each year, but the lack of a standardized paperwork tracking system precludes the determination of the magnitude of this issue.

SECTION VI

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SECTION VI
IMPLEMENTATION OF THE BORDER ENVIRONMENTAL PLAN
(First Stage, 1992-1994)

This section describes specific actions that SEDUE, EPA and the other relevant environmental agencies intend to implement during the First Stage of the Plan (1992 - 1994). The action items have been prepared by SEDUE/EPA Work Groups and reviewed by the relevant participants.

SEDUE and EPA will be primarily responsible, pursuant to the 1983 Border Environmental Agreement, for ensuring full coordination and implementation of activities under this Border Environmental Plan. Other Federal, State, and local agencies, as well as industrial and non-governmental organizations and the IBWC, are each expected to play an integral part in carrying out activities under this Border Environmental Plan.

While media-specific implementation plans are set out in this section, it is expected that cooperation will occur through coordination of data collection tasks, technology transfer of multimedia pollution prevention information and through cross-over benefits of reducing toxic and hazardous materials in the work place. Implementation of the hazardous waste plan, for example, will serve the goals of several implementation plans by eliminating potential sources of surface and ground water contamination, reducing emissions of toxic substances into the air and lowering the risks of accidental releases or spills. In this fashion, activities within the IBWC, Federal, State and local agencies and between governments can be guided to ensure that the maximum benefit to the Border Area is realized.

A. SPECIFIC IMPLEMENTATION PLANS

The specific implementation plans set out below collectively constitute the first stage, 1992-1994, of a continuing process of assessing and responding to the Border Area's environmental needs.

The Border Environmental Plan envisions an integrated approach to implementation of numerous environmental solutions. Specifically, it seeks to do four things.

- Continue media-specific and multimedia monitoring and pollution control activities in the Border Area.

- Strengthen present environmental regulatory activities as appropriate in the Border Area through new SEDUE-EPA cooperative programs and supplement the 1983 Border Environmental Agreement with new cooperative programs.

- Mobilize additional resources for pollution control in the Border Area.

- Supplement present pollution control programs through pollution prevention and voluntary action programs.

Examples of cooperative multimedia activities include: development of a uniform data base to be used for risk based management; inspections of industrial facilities generating hazardous waste, wastewater discharges, and air emissions; inspections of municipal facilities receiving industrial wastewater; sponsorship of industrial conferences focusing on water, hazardous waste, air and emergency response/contingency planning and compliance issues; and promotion of waste minimization, source reduction and other facets of pollution prevention programs. Private sector pollution prevention initiatives include voluntary reporting of wastes generated or emitted, industrial waste minimization, source reduction, recycling and reuse. The significance of the slightly different definitions of hazardous waste in the two countries must also be evaluated and addressed.

Implementation topics are discussed in the following order:

- water quality
  - water supply, including ground water monitoring
  - municipal wastewater and control of multimedia industrial wastes

- wastes
  - transboundary movement of hazardous wastes
  - abandoned dump sites
  - solid waste

- air quality
- contingency planning/emergency response
- multimedia industrial source control requiring government and private initiatives

A sixth topic, a SEDUE/EPA cooperative enforcement strategy, sets out cooperative approaches meant to obtain maximum impact from enforcement actions.

Although the majority of the Plan focuses on the six pairs of sister cities in the Border Area having the highest populations, this is not meant to exclude environmental activities at other locations. The six sister city pairs serve as models for addressing environmental issues across the entire Border Area. Scheduled environmental projects in sister cities will be completed as planned and additional environmental projects will be funded as resources become available.

1. Water Quality (For current status, see pages III-16 through III-25).

Water quality implementation plans are discussed in terms of water supply, municipal wastewater, and control of industrial wastes affecting water quality in the Border Area.

a. Surface Drinking Water Supplies (For current status, see pages III-21 through III-22).

The objective is to identify the sources and ensure the quality of the drinking water supplies of Mexican and U.S. Border Area communities that are supplied from transboundary sources (i.e., border rivers, lakes, and reservoirs).

Surface water supplies are apportioned by the IBWC under the Water Treaty of 1944 for the Rio Bravo/Rio Grande, Colorado and Tijuana Rivers. Specifically for the Rio Bravo/Rio Grande and Colorado River, the surface water is delivered to each country under the supervision of the IBWC pursuant to the Treaty. For the Rio Bravo/Rio Grande, the U.S. Section of the IBWC makes deliveries at American Dam at El Paso, Texas and subsequent delivery points at the request of the Rio Grande Water Master for the State of Texas under U.S. law. It is the responsibility of the State of Texas to apportion water under Texas water laws to the U.S. cities and other entities on the Texas side of the Rio Grande.

For the Colorado River, the IBWC in cooperation with Bureau of Reclamation delivers apportioned Treaty waters to Mexico at Morelos Dam near Yuma, Arizona. Other surface waters of the Colorado River in the United States are under the Colorado River Compact of the States of Colorado, New Mexico, Wyoming, Utah, Nevada, Arizona and California, delivered under Compact rules by the Secretary of the Interior.

On the Mexican side, the apportioned surface waters from the Colorado River and Rio Bravo are delivered by the IBWC to the Mexican National Water Commission (SARH) for distribution to Mexican users.

The implementation plan for surface drinking water supplies is presented at the end of the following section on Border Ground Water Supplies.

b. Border Ground Water Supplies (For current status, see pages III-21 through III-22).

The Governments of the United States and Mexico are concerned about adverse impacts on public health and the environment in border areas where transboundary ground waters may be contaminated or are threatened with contamination. The two Governments utilize the IBWC as the vehicle for exchange of information and consultations regarding border ground waters pursuant to the Water Treaty of 1944 and IBWC Minute No. 242. In the United States, EPA and the four U.S. border states share jurisdiction over border ground water quality matters within their respective boundaries. In Mexico, SEDUE and the National Water Commission (CNA) have corresponding jurisdiction. There is a need to identify border ground water aquifers that may be contaminated or are threatened with contamination. With such aquifers as a first priority, a cooperative Mexican-U.S. ground water quality monitoring program and database need to be developed through the IBWC, with the cooperation of

responsible agencies of both countries. This process will require some time for its implementation. It can be initiated with data gathering in 1992 and identification of problem areas in 1993, along with the development of criteria for remediation. Among remediation alternatives could be enforcement actions by the proper agencies in each country, international construction projects, and other cooperative solutions and preventative measures.

Implementation Plan for Surface Drinking Water and Ground Water Supplies

- Based on data obtained from appropriate authorities in each country, SEDUE-CNA (Mexico's National Commission of Water)/EPA/IBWC will develop an inventory of the source, quality, and treatment processes of the existing drinking water facilities of the sister communities by the 1992 meeting of the National Coordinators. In addition, each government will determine the priority needs for water supply treatment and distribution systems for existing and future development in the sister communities.

- SEDUE-CNA/EPA/IBWC will identify any areas where any drinking water source common to both countries is contaminated or there is an identifiable threat of contamination (1992).

- SEDUE-CNA/EPA/IBWC will develop cooperative programs for solving identified problems under existing Mexican/U.S. agreements (1993).

c. ***Wastewater Treatment*** (For current status, see pages III-22 through III-25).

Implementation plans are set out separately for six geographic areas: Tijuana/San Diego Mexicali/Imperial County, Nogales/Nogales, Ciudad Juarez/El Paso, Nuevo Laredo/Laredo, and the Lower Rio Grande/Bajo Rio Bravo.

(1) Tijuana/San Diego (For current status, see pages III-22 through III-23).

The objectives for this location are to:

- eliminate all uncontrolled Tijuana wastewater flows and treat them in existing facilities in 1991 through interim IBWC works;

- provide adequate treatment at the new international treatment plant to be completed in 1995 for domestic Tijuana sewage that is presently treated at the Tijuana plant; and

- begin an industrial pretreatment program in early 1992.

The Government of Mexico is participating in the financing of an international wastewater treatment plant in San Diego County near the international boundary with Mexico that would handle about one half of the projected sewage load from Tijuana to the year 2010. The international wastewater treatment plant would be one of several components of an international solution to the Tijuana border sanitation problem.

Three major components would make up the international solution works:

- construction of sewage works in Tijuana;
- construction of a land and ocean outfall in San Diego County near the international boundary; and
- construction of a 25 mgd secondary treatment plant in San Diego County near the international boundary.

Implementation Plan for Tijuana/San Diego Wastewater

- Start construction of the first land outfall component (June 1991).
- Construct an interim treatment works in 1991.
- The IBWC, EPA, and SEDUE will open talks on industrial pre-treatment cooperative program (July 1991).
- Construct an international treatment plant under IBWC supervision (1992-1995).

(2) Mexicali/Imperial County (For current status, see page III-23).

The objectives are to eliminate discharge of all raw Mexicali domestic and industrial wastewaters into the New River and to prevent pollution of the Alamo River.

The IBWC has sought an interim solution to the New River border sanitation problem at Calexico, California, and Mexicali, Baja California. Under the IBWC agreement in Minute No. 264, water quality standards are established for the New River at the international boundary, and Mexico has undertaken a number of corrective measures as its expense designed to meet those quality standards. For a long term solution, Minute No. 264 envisions the disposal of Mexicali's sewage away from the border.

The IBWC opened talks on May 23, 1991 for a long term solution, and the Mexican Section has provided Mexico's views for a conceptual plan to correct pollution in the New River at Mexicali/Calexico.

Among components under consideration for such a conceptual plan are:

- efficient operation of existing wastewater treatment lagoons;
- complete construction of new treatment facilities in southeast Mexicali to handle domestic and industrial wastewaters from this industrial area of Mexicali;
- reduce all discharges of untreated domestic and industrial wastewaters through expansion of the sewage collection system;
- install additional pumping capacity to existing pumping stations including standby equipment;
- incorporate into the sanitary system called Mexicali II the waste waters of new urban development that will be generated as a result of the construction of new Mexicali/Calexico Port of Entry; and
- reduce wastewater discharges into the New River by utilizing the effluent totally in Mexico.

Implementation Plan for Mexicali/Imperial County Wastewater

- The IBWC will recommend a concept for a long term solution for border sanitation problems on the New River at Mexicali/Calexico (1991).
- The IBWC will review Mexican and U.S. plans for wastewater controls associated with the proposed new port-of-entry east of Mexicali/Imperial County (1991).
- Implementation of the IBWC recommendations (1992-1995).

(3) Nogales/Nogales (For current status, see page III-24).

The objectives in Nogales/Nogales are to ensure elimination of all uncontrolled wastewater flows and to begin an industrial wastewater pretreatment program.

In September 1988, the IBWC recommended, and the two Governments approved, a new expansion to the Nogales International Wastewater Treatment Plant as stipulated in Minute No. 276 of July 26, 1988. This expansion is for the treatment of generated volumes, from both Nogales, Arizona, and Nogales, Sonora, up to the year 2000. Expansion of the plant will be completed in October 1991. Capacity will increase from 8.2 mgd to 17.2 mgd of which Mexico's share would increase from 4.85 to 9.9 mgd. Mexico in turn is rehabilitating its sewer collection system to stop uncontrolled sewage flows across the border. The two countries are required to provide pre-treatment to industrial wastes before discharge to the international plant.

Implementation Plan for Nogales/Nogales Wastewater

- The IBWC, EPA, and SEDUE will open talks on an industrial pretreatment cooperative program (September 1991).
- The IBWC will begin expanded treatment plant operation (November 1991).
- Sonora will complete wastewater collection works and covered first stage of Nogales Wash Floodway (November 1991).
- The IBWC will explore solutions to renegade transboundary sewage flows that may occur from the Nogales Canyon area.
- The IBWC will open talks on planning for future flows in excess of the expanded international treatment plant capacity in 1991.

(4) Ciudad Juarez/El Paso (For current status, see page III-24).

The objective is to eliminate discharges of untreated wastewater into the Rio Bravo/Rio Grande as specified in IBWC Minute No. 261.

Ciudad Juarez needs to make improvements to its wastewater collection system to eliminate existing discharges into the Rio Bravo/Rio Grande. Also, treatment facilities need to be constructed with a capacity to treat estimated flows by the year 2010. The effluent could still be used for irrigation, but, if any of it reached the Rio Grande, its potential for causing pollution would be lower than that of the present discharges into the river.

Implementation Plan for Ciudad Juarez/El Paso Wastewater

- The IBWC will develop a plan to control/treat wastewater discharges into this reach of the Rio Bravo/Rio Grande (1991).
- The IBWC will recommend a solution for wastewater discharge into the Rio Bravo/Rio Grande (1992).

(5) Nuevo Laredo/Laredo (For current status, see pages III-24 through III-25).

The objectives are to eliminate untreated wastewater discharges into the Rio Grande for Nuevo Laredo and to begin an industrial pretreatment program.

IBWC has agreed on "Joint Measures to Improve the Quality of the Waters of the Rio Grande at Laredo, Texas/Nuevo Laredo, Tamaulipas" in a Minute which provides for a sanitation project for the city of Nuevo Laredo, Tamaulipas, to be jointly funded by the Mexican and U.S. Governments. The works recommended by the Commission, and approved by the two Governments, consist of six principal elements to be completed by 1994:

- construction of the Riverside Collector;
- construction of the Coyote I Collector as an extension of the Riverside Collector;
- expansion of the sewage collection system to collect and convey to the Riverside and Coyote II Collectors sewage generated in areas not currently served and which presently discharge into the Rio Grande;
- rehabilitation of the sewage collection system at specific points to intercept and convey to the Riverside and Coyote I Collectors those uncontrolled sewage flows that presently discharge into the Rio Grande through existing storm drains;
- construction of a pumping plant that would convey the sewage from the Riverside Collector to a treatment plant; and
- construction of a secondary treatment plant with an estimated capacity of 31 mgd located seven miles downstream of the Juarez/Lincoln International Bridge.

Implementation Plan for Nuevo Laredo/Laredo Wastewater

- The IBWC will open talks on industrial pretreatment cooperative program, on surface water standards for this reach of Rio Grande, and on operation and maintenance details (1991).
- The IBWC will complete expansion and rehabilitation of the wastewater collection system and construction of the pumping station and interceptor (1992).
- The IBWC will complete wastewater treatment plant construction (1994).

(6) Bajo Rio Bravo/Lower Rio Grande (For current status, see page III-25).

The objective is to eliminate discharges of untreated or partially treated wastewaters into the Rio Bravo/Rio Grande in the segment from the Falcon Dam to the Gulf of Mexico.

- IBWC will recommend a solution for the sewage discharges into the Rio Grande (1992).

(7) Other Sister Cities

The IBWC, in accordance with the Water Treaty of 1944 and its Minute 261, will assess water quality at the source of supply and will assess wastewater management options. The studies of the IBWC will include:

- potential population growth;
- water supply needs; and
- wastewater collection, treatment and disposal needs.

In 1992 the IBWC studies will be focused in the following cities:

Acuna/Del Rio
Tecate/Tecate
Piedras Negras/Eagle Pass
Agua Prieta/Douglas
Ojinaga/Presidio

d. Characterization of Wastewater Flows to Protect International Treatment Plants

In cases where unsuitable and untreated wastewater, which at times may include industrial wastewater, enters or threatens to enter transboundary water courses or where there are jointly financed international waste water treatment facilities, each country recognizes the mutual obligation to ensure that pretreatment procedures will be implemented for industrial wastestreams before the flows are delivered to the international treatment plants or the transboundary water course.

Both governments under the Water Treaty of 1944 and IBWC Minutes 261, 264, 279, and 283 have given the responsibility to the IBWC to coordinate the domestic industrial control programs of EPA and SEDUE in order to ensure proper performance of the international treatment facilities and to avoid any degradation of transboundary water sources which may adversely impair stream water quality and beneficial uses. This coordination with EPA, SEDUE, and other domestic agencies will include:

- characterization of influent flows to international treatment facilities;

- definition of substances that would adversely impact and impair the efficiency of treatment facilities, and specification of permissible levels for such substances entering the sewerage collection system;

- definition of substances that, despite standard pretreatment requirements, would adversely affect receiving water quality and/or beneficial uses (i.e., by pass-through mechanisms). For such substances, specification of permissible discharge levels, including any necessary prohibitions on discharge;

- development of industrial inventories by EPA and SEDUE to identify potential sources and contaminants, consistent with the industrial multimedia source control initiative outlined in this section;

- determination, by means of the industrial inventories developed by EPA and SEDUE in their respective countries, the source of any substance undesirable in treatment facilities and control of such substances in accordance with the respective laws of each country; and

- consultation once per year by EPA, SEDUE and the IBWC with other responsible agencies in each country to review the results of this cooperative industrial control program.

2. Hazardous Materials and Hazardous Wastes (For current status, see pages III-25 through III-30).

Implementation plans considering waste *per se* are grouped in this subsection under: transboundary movement of hazardous wastes and abandoned dump sites. The related topics of waste generation, hazardous materials mass balances, pollution prevention and waste minimization are also considered in subsection VI.A.5, Industrial Source Control Requiring Government and Private Initiatives.

a. Transboundary Movement of Hazardous Wastes (For current status, see pages III-27 through III-28).

Goals have been developed for: waste tracking, surveillance/enforcement, education of the regulated community, and transportation issues.

The primary waste tracking objective is to determine the amount of waste generated in the Border Area and the ultimate fate of this waste (treatment, storage, or disposal in Mexico or the United States or illegal disposal in either country). A secondary objective is to develop a cooperative Mexican/U.S. system for tracking hazardous waste transported between the two countries. Enforcement objectives include: a cooperative border intercept program, cooperative Mexican and U.S. Customs training, high visibility deterrent enforcement, the development of a Mexican/U.S. border surveillance system to monitor hazardous waste shipments; increased enforcement of notification and reporting requirements for hazardous waste shipments between the two countries; and increasing the number of cooperative enforcement actions against maquiladoras and their parent companies where this is appropriate. The regulated community must be educated in Mexican and U.S. environmental laws and regulations through training conferences. Environmental regulations should be printed in Spanish and English.

A hotline for tips on illegal movement of waste should be established. Transportation objectives are to increase coordination between both SEDUE and the Mexican Secretariat of Transportation (SCT) and EPA and the Department of Transportation (DOT) and to assess the threat of transboundary movement of hazardous wastes to the population in the Border Area.

Implementation Plan for Transboundary Movement of Hazardous Waste

Implementation of the proposed activities would occur across the Border Area but with concentrated efforts occurring in the following high priority city-pairs: Tijuana/San Diego, Ciudad Juarez/El Paso, and Matamoros/Brownsville. Overall, the implementation plan is based on a shared data base, training, regular border checks, a continuous presence at the border, routine/regular personnel exchanges, and coordination with state/local/other federal entities in Mexico and the United States. Mexico has a future goal of increasing the hazardous waste treatment capacity for Mexican wastes in the above three cities through private initiative, with either domestic or foreign investment.

(1) Hazardous Waste Tracking

Binational Inventory of Wastes Produced in the Border Area

- Information on waste generation rates of Mexican and U.S. facilities in the Border Area will be collected. SEDUE will provide the information from semi-annual industrial reports and EPA will, if possible, collect this information through inspections and review of U.S. manifest data (1992).

- EPA will attempt to collect information regarding amounts of raw materials being sent to maquiladora facilities from the U.S.

- A mass balance methodology will be investigated to permit calculations of waste and by-products generated for each industrial process. SEDUE and EPA will require industries to provide the information for a mass balance at each plant in their respective territories (1993).

- Manifests and associated paperwork on shipments of waste will be exchanged by Mexico and the United States. The exchange of transportation data including manifests and Guia Ecologica is currently limited by the absence of a central binational computer tracking system addressing this data. SEDUE and EPA, with the assistance of the state environmental agencies, will develop and provide such a computer system (1993).

- Facility visits and inspections will be conducted to determine the amount and types of hazardous waste produced in the Border Area (1992).

Mexican/U.S. Database

- Initiate a regular data exchange of manifests and other transportation paperwork (1992).
- Develop training for SEDUE and EPA inspectors in issues related to the transboundary movement of hazardous waste (1992).
- Initiate an inspectors sub-work group to discuss common problems including manifest and database issues.
- SEDUE/EPA will review U.S. Customs paperless tracking system (1992).

(2) Cooperative Enforcement Strategy

Customs Initiative

- Explore opportunities to enhance the environmental enforcement capabilities at key border crossings, including the ability to discover illegal shipments of hazardous waste.
- Institutionalize program with Mexican Aduana and U.S. Customs so that data is exchanged regularly (1992).
- Conduct additional inspections by SEDUE and Mexican Aduana and by EPA and U.S. Customs to find illegal shipments of hazardous waste in their respective countries along with increased training visits (1992-1994).

Enforcement Initiative

- Consult concerning priorities for Mexican and U.S. respective enforcement activities.
- Increase cooperation among Mexican Aduana, U.S. Customs, and State/local enforcement entities (1992). Information relevant to transboundary pollution and related enforcement activities will be exchanged on at least an annual basis (1992).
- Investigate Mexican and U.S. municipal disposal sites as possible points of illegal disposal of exported/imported hazardous wastes (1992).
- Develop a program to increase cooperative enforcement activities against companies that cannot verify ultimate fate of wastes they have generated (1993).

(3) Education of Regulated Community

- Evaluate border industry informational and educational needs (1992).
- Identify cities that should be targeted for additional education and input (1992).
- Analyze the above information to determine the most effective means of transferring information regarding regulations to the affected companies (1992).
- Publish a cooperative document covering environmental and transportation requirements for the transboundary movement of hazardous wastes (1993).

(4) Transportation Issues

- Perform an environmental evaluation of increased traffic carrying hazardous wastes in the Border Area with recommendations for reducing risks (1993).
- Obtain training for SEDUE and EPA personnel from respective transportation agencies in waste transportation requirements (1993).

b. Abandoned Dump Sites (For current status, see page III-29).

Goals have been developed for two topics: site identification and education. For site identification, the goal is to devise a strategy for locating abandoned hazardous waste dump sites in the Border Area. For education, the goals are to develop deterrents to illegal dumping and to heighten the environmental awareness of the regulated community and government officials.

Implementation Plan for Abandoned Dump Sites

Initially, site identification would be conducted borderwide.

Site Identification

- Devise a strategy to locate abandoned hazardous waste sites in the Border Area (1992).
- Implement a strategy to locate sites (1993).

Education

- Devise a SEDUE/EPA educational program for the regulated community, state and local officials regarding proper waste disposal (1992).

- Develop a referral system for citizen's reports of illegal dump sites (1994).

- Present education programs through conferences, meetings and publicity, with one of the education goals to inform the public in the use of the referral system (hotline) (1993).

3. **Municipal Solid Waste** (For current status, see pages III-29 through III-30).

Goals have been developed for two topics: assessment and public outreach. The assessment should determine the infrastructure, regulations, and numbers/locations/types of landfills needed in the Border Area to mitigate public health/environmental threats associated with municipal solid waste disposal. The public outreach goal is to involve the general public in the prevention of illegal dumping and to foster pollution, prevention, waste minimization and recycling.

Implementation Plan for Municipal Solid Waste

Assessment

- Assess the public health/environmental threat associated with municipal waste disposal in the Border Area (1992).

- Determine the infrastructure and regulatory needs for municipal waste handling and disposal (1992).

- Determine the number, location, and types of landfills needed (1993).

Public Outreach

- Provide training regarding site selection (1992).

- Provide training regarding facility management (1992).

- Develop educational campaign on the detrimental effects of illegal dumping and on alternatives to illegal dumping (1992).

- Organize border recycling workshops (1993).

4. **Air Quality** (For current status, see pages III-30 through III-34).

The air quality action plans are based on the premise that monitoring, modeling, and emission inventory development form the fundamental basis for a cost-effective emissions reduction strategy.

a. ***Ciudad Juarez/El Paso, Texas - Sunland Park, New Mexico*** (For current status, see pages III-31 through III-32).

The primary objective of the Ciudad Juarez/El Paso air quality studies is to reduce ambient concentrations of air pollutants to mutually acceptable levels throughout the airshed.

New requirements of the 1990 Clean Air Act (CAA) may influence implementation of the action plan in the United States. Under the CAA, El Paso must accomplish the following three major tasks. First, as a serious ozone non-attainment area, El Paso must implement VOC and/or nitrogen oxides reduction strategies to attain the NAAQS by November 15, 1999. These requirements include obtaining reductions of 15 percent in VOC by 1996 and 3 percent every year thereafter until attainment, implementing an enhanced I/M program, implementing a new source permitting program, implementing additional stationary source Control Technology Guidelines (CTGs) and vapor recovery controls for gasoline fueling, participating in EPA's fleet vehicle "Clean Fuels Program," and completing a major air modeling effort by 1994. Second, for CO, El Paso must implement an alternative vehicular fuels program to be used during winter months. Third, for PM-10, El Paso must implement additional "Reasonably Available Control Measures" (RACM) for existing affected stationary and area sources.

In addition, major stationary sources in El Paso will be subject to new requirements for control of toxic air pollutants and new requirements for operator permits.

Implementation Plan for Ciudad Juarez/El Paso Air Quality

Technical Aspects

- Continue long-term air and meteorological monitoring throughout Ciudad Juarez/El Paso (1991-1994).
- Perform additional short-term field studies as required (including summer 1991 Ciudad Juarez hydrocarbon monitoring) (1991-1993).
- Identify air modeling techniques and wind models to be used (1992).
- Complete a refined air emission inventory for Ciudad Juarez, including stationary, area, and mobile sources, facilitated by a study of Ciudad Juarez VMT (1993).
- Develop realistic control strategy scenarios for evaluation, based upon refined emissions estimates (1992-1994).
- SEDUE, with assistance from EPA, will establish a vehicular inspection/maintenance program in Ciudad Juarez (1991).

- Execute computer modeling to evaluate the selected control scenarios (1994).

- Disseminate the project's technical results to Mexican and U.S. policy-makers at the local, State, and Federal levels (1994).

Administrative Aspects

- Compile a report comparing and contrasting the current responsibilities, operational procedures, and funding mechanisms/levels of the Mexican and U.S. air pollution control agencies that play a role in regulating air quality in Ciudad Juarez/El Paso (1993).

- Prepare a report detailing the principal organizations (including non-governmental organizations) and individuals involved in making public policy in Ciudad Juarez and El Paso as well as the social and political framework within which these groups and individuals operate (1993).

- Hold follow-up meetings (arranged during the bilateral discussions by the Ciudad Juarez/El Paso policy-makers) to encourage harmonization of the air regulatory programs throughout Ciudad Juarez/El Paso (1993).

b. Mexicali/Imperial County (For current status, see pages III-32 through III-33).

The long-term air quality goal in the Mexicali/Imperial County area is to develop a cooperative relationship between Mexican and U.S. air pollution control organizations to define the PM-10 problem in Imperial Valley and to develop effective emissions reduction strategies which are beneficial to the populations of Mexicali and Imperial County.

Implementation Plan for Mexicali/Imperial County Air Quality

- When the proposed study has been approved, convene a study team composed of representatives from air pollution agencies in Mexico and the United States to refine a recently developed study plan and identify resources for the proposed study and appoint a principal investigator to coordinate various aspects of the study (1991).

- Estimate the spatial and temporal distribution of PM-10 concentrations in Mexicali and Imperial County (1992).

- Apportion PM-10 concentrations to source emissions (1993).

- Estimate cross-border fluxes of PM-10 (1993).

- Finalize a control strategy (1993-1994).

- Begin the implementation of the control strategy (1994).

c. ***Tijuana/San Diego*** (For current status, see pages III-33 through III-34).

Tijuana and San Diego share an atmospheric basin where the prevailing meteorological conditions in both cities are determinants in the diffusion and transport of pollutant emissions to both sides of the border. The primary objective of the proposed Tijuana/San Diego study is to reduce ambient concentrations of air pollutants to mutually acceptable levels throughout the airshed.

For Tijuana, objectives include: (1) identification of the factors that determine the transborder interchange of pollutants and its impact on air quality and potential health risks; (2) development of a method to determine the potential emission sources and to determine the reduction that would be feasible for the sources that are identified; and (3) establishment of the terms under which the reduced levels that are set (as goals) should be reached, and at the same time the goals for air quality at a regional level be reached. San Diego objectives include: (1) attainment of the ambient air quality standard for ozone (0.12 parts per million) by November 2005; (2) attainment of the ambient air quality standard for carbon monoxide (9.0 parts per million) by November 1995; (3) installation of maximum achievable control technology (MACT) on plants that are major sources of air toxics; (4) attainment of California standards for ozone, carbon monoxide, nitrogen dioxide and inhalable particulates (PM-10) as soon as practical; and (5) reduction of non-attainment pollutants or their precursors by 5 percent or more per year.

Implementation Plan for Tijuana/San Diego Air Quality

Tijuana

- When the proposed study has been approved, create the infrastructure required to evaluate air quality in the City of Tijuana, complementing the information provided by the station at Mesa de Otay, which is operated by the San Diego Air Pollution Control District (1991-1994).

- Establish a local working group whose sole responsibility would be the task of evaluating air quality in Tijuana (1991).

- Establish a similar working group for the cooperative enforcement and control of emission sources (to work in coordination with its U.S. counterparts (1991)).

- Establish a program for training a SEDUE working group in different aspects of the program (1991).

- Identify and implement approaches to reduce vehicular emissions at border crossings (1992).

- Develop and promote a phased approach I/M Program (1991).

- Implement Phase I of the I/M Program (1992).

- Implement Phase II of the I/M Program (1992-1995).

San Diego

Major Requirements under the Federal Clean Air Act are listed below:

- As part of the ozone control strategy, achieve annual VOC emissions reductions of 3 percent per year after the first six years, with compliance measured every three years;

- Install reasonably available control technology on existing stationary sources emitting in excess of 25 tons per year of VOCs and nitrogen oxides;

- Implement a construction permit program for new stationary sources of VOCs and NO_x requiring the lowest achievable emission rate and offsetting emissions reductions from other sources by a ratio of 1.3 to 1; implement an operating permits program for these new stationary sources (1993);

- Implement control measures such as hose and nozzle controls on gas pumps to capture fuel vapors, enhanced motor vehicle inspection and maintenance programs, tighter tailpipe controls (1994), clean fuel fleet program (1994);

- Develop transportation control measures, such as carpooling programs, driving restrictions, and high occupancy vehicle lanes, if they are needed (1993);

- Establish an oxygenated fuels program (1993);

- Require maximum achievable control technology (MACT) on plants that are major sources of air toxics (plants with the potential to emit at least 10 tons per year of any one of the 189 toxic air pollutants listed in the Clean Air Act Amendments of 1990) (1994);

- Require preparation and implementation of risk management plans by facilities where a regulated substance is present in more than a threshold quantity; the plan is to provide for prevention and detection of releases and emergency response (1993); and

- Apply EPA's New Source Performance Standards to control air emissions from municipal, hospital, and other commercial and industrial incinerators (1991).

Major Requirements Under the California Clean Air Act are listed below:

- Ensure that there are no net increases in emissions from new or modified sources (1992);
- Require the installation of best available retrofit technology (1993-1994);
- Control heavy-duty truck traffic during commuting hours (1992-1993); and
- Comply with the following statewide emission control measures: clean fuels and low-emission vehicles; reformulated gasoline; heavy duty diesel smoke enforcement program; and emissions reductions from construction and farm equipment, locomotives, marine vessels, off-road motorcycles, off-highway vehicles, and utility engines (1992-1994).

d. Air Pollution at Ports of Entry

The Binational Committee on Bridge and Border Crossing is working cooperatively to promote improvements in infrastructure, procedures and staffing which would facilitate legal border crossings and, as a consequence, help reduce the problem of air pollution which may exist at certain high volume traffic areas.

5. **Contingency Planning/Emergency Response** (For current status, see pages III-35 through III-37).

In its efforts to strengthen chemical emergency preparedness and response along the border, the Inland Joint Response Team (JRT) has identified several important areas to be addressed in the coming years:

- Clarify legal authorities of both countries; promote understanding of and compliance with laws and regulations;
- Increase the level of preparedness and response training and technical assistance to border communities;
- Create the appropriate mechanism for addressing political, legal, and financial concerns for cross-border transport of response equipment and personnel;
- Establish a formal notification system between governments to ensure timely response and awareness of releases affecting border areas;
- Encourage participation from industry along the border concerning preparedness, prevention and response activities; and
- Develop an accident prevention program focused on facilities with acutely toxic substances.

Implementation Plan for Contingency Planning/Emergency Response

For the initial implementation stages of this Border Environmental Plan, contingency plans in the three original areas (Matamoros/Brownsville; Mexicali/Imperial County; and Tijuana/San Diego) should be improved and tested. Three other geographic areas have been targeted for specific projects: Ciudad Juarez/El Paso, Nogales/Nogales, and Nuevo Laredo/Laredo. These three additional areas were chosen because of their potential rate of industrial development and the corresponding threat to large or growing population centers should an accident occur.

The agenda in these areas follows:

- Establish a working relationship with each Sister City pair focused on contingency planning, preventing and responding to hazardous substances incidents from fixed facilities or transportation-related releases (1992).

- Establish additional local groups such as the Matamoros/Brownsville Local Committee on Mutual Assistance (CLAM)/Local Emergency Planning Committee (LEPC) organization for coordination of planning, prevention, and response activities. Membership in CLAM/LEPC should include broad-based representation from each community including: local planning, emergency and environmental officials, elected and other public officials, representatives from industry and businesses, representatives from non-governmental organizations concerned with border issues, and state representatives where possible (1992).

- Establish a formal 24-hour notification system in Sister Cities that includes both sides (1992).

- Improve the existing hazardous material release notification systems (1992).

- Establish protocols to facilitate cross-border mobility of emergency response equipment and personnel (1992).

- Begin the development of contingency plans for each sister city pair (1992-1993).

- Conduct a simulation exercise to test parts of the system (1992-1993).

- Initiate the establishment of an information exchange system on chemical facilities, transportation routes of major concern, and response capabilities (1992-1994).

- Establish a database of hazardous substances releases in the Sister Cities (1992-1993).

- Test the established 24-hour cross-border notification system for accidents (1992).

- Sponsor a workshop/conference on border activities (1993).

- Finalize the Sister City contingency plans (1993-1994).
- Conduct a simulation exercise to test the full system thoroughly (1993).
- Revise contingency plans where necessary (1994).
- Continue to update/exchange database information on releases.
- Conduct annual reviews of the Sister Cities plans.

While these activities will be the focus of the three geographic areas mentioned above for initial implementation of the Plan, these activities will be repeated for each Sister City pair, until the entire Inland Border is covered and a regular process of reviewing, updating, and testing is established and maintained. Although initial focus will be in these three areas, the JRT is encouraging and supporting all Sister Cities to have their contingency plans developed by 1994.

6. Industrial Multimedia Source Control Requiring Government and Private Initiatives

The goals of industrial multimedia source control are: to minimize the degradation of water, air and land resources and to minimize the environmental and public health threats by minimizing the use and discharge of hazardous substances into the environment. This is achieved through: (1) an assessment of industrial sources and risk, (2) regulatory review, (3) enforcement of regulations, and (4) private initiatives including pollution prevention.

Assessment of industrial sources and risks involves the identification of the locations of industries in the Border Area and the nature of their actual and potential discharges and releases of hazardous substances into the environment. This is followed by an assessment of the potential human health and environmental risks associated with these discharges and accidental releases.

SEDUE and EPA will develop and implement a cooperative enforcement program to assure compliance with all applicable regulations in their respective jurisdictions in order to minimize pollution from industrial sources in the Border Area. Subsection A.7 discusses the SEDUE/EPA cooperative enforcement strategy planned.

The private pollution control initiative consists of voluntary programs, established by industry and NGOs, to minimize waste and prevent pollution. In addition, voluntary programs could be established for items not specifically covered under the regulations of each country such as the reporting of wastes generated or emitted. Typical examples of private initiatives are listed below:

- pollution prevention - changing chemical use or processes so that fewer toxic waste streams are produced;

- waste minimization - minimization of waste and releases through source reduction, the use of less toxic chemicals, or the recycling of the waste;

- voluntary emission reductions - voluntary reduction of pollutants;

- chemical safety audits - a review of facility management practices which might be applied to reduce the possibility of a significant, accidental release of hazardous materials from the facility; and

- corporate ethics.

Implementation Plan for Industrial Multimedia Source Control

Ongoing activities will continue throughout 1991 and many of the tasks will be incorporated into the overall integrated plan. Some parts of the Plan may be accomplished ahead of schedule or in a different time frame than the one proposed here. Formal Plan implementation will begin in 1992 following adoption of the Integrated Border Environmental Plan. This plan will be implemented initially in Ciudad Juarez/El Paso and Tijuana/San Diego and expanded to the other sister cities in the near future. A brief description of the relevant activities follows.

Quantitative objectives presented below are meant to be taken as potential targets for each year. Experience gained in 1991 and 1992 may result in new approaches or unexpected challenges which could expedite or delay the schedule estimates for plan implementation.

Assessment

Identification of Facilities with Water, Air or Hazardous Waste Discharges

- Track industrial facilities' usage of hazardous materials and disposal of hazardous waste as a means of identifying potential illegal disposal activities for enforcement follow-up, develop estimates of waste quantities a generator is expected to produce, checked against documented quantities shipped domestically and internationally and/or reuse or storage on-site (1992).

- Identify the border industrial facilities in key sister city areas including the location, owner, type of operation, type of waste produced, and release and discharge history; develop information on U.S. corporate affiliations with maquiladora plants (1992).

- Develop a shared computer system to store facility information, compliance history, and other data (1993).

Study of Risk

- Begin collection of the discharge and release data necessary for the development of an initial comparative risk study (1992).

- Continue to collect the discharge and releases data necessary for completing the comparative risk study (1993).

- Collect discharge and release data until completed (1994).

Monitoring

- Begin ambient air, water, and ground water monitoring to assess the impact of the industrial sources in the Border Area (1992).

- Continue to monitor the impact of industrial sources (1993).

- Complete a substantial portion of the monitoring to assess the impact of industrial sources (1994).

Regulatory Review

- Exchange the full spectrum of applicable Federal and State statutes, regulations, policies, procedures and their development; translate the documents (1992).

Cooperative Visits to Facilities

- Conduct an increasing number of cooperative training visits to facilities in pairs of border cities in which officials of the environmental authority of one country participate as observers at the invitation of the environmental authority of the other country.

Regulatory Program Implementation

Training

- As an expansion of existing efforts, develop and implement a training plan for SEDUE and EPA inspectors, regulation writers, and enforcement personnel working in the Border Area; training should include direct experience of selected personnel with facility visits (1992).

- Institutionalize the training sessions (1993).

Communication with Regulated Community

- Develop methods regarding transboundary technology transfer and dissemination of information to industry on pollution prevention, waste minimization, and waste recycling (1992).

- Begin preparations for the First Annual SEDUE/EPA Multimedia Environmental Educational Conference (1992).

- SEDUE and EPA will attend Fourth Annual Maquiladora Conference (1992).

- Hold Third Annual Joint Response Team Conference (1992).

- Hold the First Annual SEDUE/EPA Multimedia Environmental Educational Conference (1993).

- Continue to hold annual conferences on multimedia issues to enhance industry compliance (1994).

Enforcement Information Exchange and Publicity

- SEDUE and EPA will exchange enforcement information on Border Area facilities, including administrative and civil enforcement actions brought against Border Area facilities and a listing of facilities shut down due to compliance problems (1992).

- Initiate a "hot-line" complaint system and institute follow-up procedures (1992).

- Draft and implement cooperative enforcement strategies, e.g., simultaneous initiation of enforcement actions in the case of transboundary episodes (1992).

- Improve access to laboratory facilities and information by EPA personnel in Mexico and SEDUE personnel in the United States (1992).

- Implement cooperative enforcement activities relating to industrial multimedia source control (1993).

Private Initiatives

Technology Transfer

- Initiate cooperative efforts on data software to enable the agencies to share data easily (1992).

- Develop mechanisms for SEDUE/EPA technology transfer, e.g., data/compliance information software, transfer of pollution control technology to regulators or regulated entities, demonstration projects (1992).

- Hold a three-day technology transfer conference regarding pollution prevention, waste minimization, and pollution control for the maquiladora industry in three border cities (1993).

Voluntary Reductions

- Identify trade associations, citizen groups and other NGOs and begin meeting with these groups to receive input on voluntary industrial waste reductions (1992).

- EPA Administrator and Regional Administrators from Regions 6 and 9 to meet with a number of chief executive officers of U.S. companies in the Border Area with the goal of having them consider a voluntary reduction program (33% in 1992 and 50% by 1994). Additionally, a strong effort will be made to encourage Border facilities to voluntarily make 90% (95% for particulates) reduction in air toxics as called for under the U.S. 1990 Clean Air Act Amendments, Title III; Hazardous Air Pollutants, early reduction provision.

7. **SEDUE/EPA Cooperative Enforcement Strategy** (For current status, see pages III-28 through III-29).

While recognizing the sole and sovereign responsibilities of each government for law enforcement in their respective jurisdictions and territories, Mexico and the United States recognize that damage to human health and the environment in the Border Area may be reduced through increased cooperation, and that enforcement activity is necessary to promote compliance and ensure the integrity of environmental laws and requirements. They further agree that, because the problems of the border are common to both countries, a cooperative enforcement strategy between the two governments can achieve and convey a more effective message of deterrence. They recognize that compliance can also be fostered by addressing infrastructural needs and public attitudes by assuring that technological development and human and financial resources are such that compliance by the regulated community is feasible. To this end, the Mexican government has recently executed a training and technology compact with key elements of the Mexican industrial community and a number of universities that should help assure the availability of pollution control equipment and technical expertise to Mexican industry.

The SEDUE and EPA cooperative enforcement strategy will include the following operational elements:

- Targeting Violations -- Enforcement should be "targeted" so that initiatives focus enforcement action by each government against priority targets, such as industries with poor compliance histories, specific pollutants, and sensitive geographic areas of mutual interest and concern;

- Preventative Solutions -- Pollution prevention/waste minimization is a principal goal of enforcement. Pollution prevention strategies will focus on either the medium in which the original violation occurred or require within the scope of the regulations reductions in other media in order to leverage the scope and impact of compliance agreements; and

- Communications -- Enforcement should cast a broad shadow of deterrence which dissuades violation of the laws. SEDUE and EPA will use the stigma of unfavorable publicity to encourage industries to realize that noncompliance involves serious risks. The two agencies will cooperate in developing an enforcement communications capability to ensure that the public and the regulated community is informed about industry's record of environmental compliance and SEDUE's and EPA's enforcement accomplishments in the Border Area.

a. Cooperative Enforcement Strategy Working Group

SEDUE and EPA recently established a Cooperative Enforcement Strategy Working Group which, in the spirit of Article II of the 1983 Border Environmental Agreement, will meet regularly (no less than annually) and will:

(1) Consult concerning priorities for the parties' respective enforcement activities.

(2) Discuss opportunities for increasing cooperative efforts to enhance the effectiveness of each government's enforcement activities and develop implementation plans and communications strategies when such opportunities are identified.

(3) Submit to the National Coordinators, on an annual basis, a report on the activities and discussions of the work group.

(4) Exchange information relevant to transboundary pollution and related enforcement activities on at least an annual basis under the respective statutory or regulatory requirements of both countries. The work group will in this respect explore the development of compatible computer software to facilitate prompt and meaningful exchange of such information.

(5) Explore opportunities to enhance the environmental enforcement capabilities at key border crossings, including the ability to discover illegal shipments of hazardous waste and other prohibited materials, and to enhance law enforcement. SEDUE and EPA will carry out high visibility border stops on their respective sides of the border, working to enhance their impact and facilitate cross-border cooperation.

(6) Explore opportunities to enhance existing training efforts for inspectors and other enforcement personnel. Efforts will focus on methodologies for compliance evaluation and related environmental enforcement training presented in workshops, seminars, and practical applications. EPA will, to the extent practicable, seek to make available for use by SEDUE its U.S. laboratory facilities relevant to enforcement (ex.: a LIDAR unit from NEIC).

(7) Facilitate personnel exchanges, where appropriate, as a means of sharing enforcement experiences and techniques.

(8) Facilitate technology transfer and technical cooperation between the governments regarding computerized data systems and laboratory analytical techniques.

b. Leadership Roles

SEDUE and EPA will encourage senior officials of companies of their respective country operating plants in the Border Area to fully comply with the environmental laws and requirements of the regulatory jurisdiction in which they are operating. SEDUE and EPA agree to focus on this *Leadership Function* as a highly visible general policy and to share, when appropriate, information relating to the environmental conduct of transnational companies.

c. Evidence Sharing

SEDUE and EPA will assist one another in accordance with the Mutual Legal Assistance Treaty and the Hague Convention for criminal and civil proceedings involving enforcement.

d. Visits and Observer Participation

Officials of each agency will, subject to mutual agreement, participate as observers in visits to facilities located within the other country's Border Area. Efforts will be made to expand cooperative interaction of SEDUE and EPA personnel through such visits and to implement a communications strategy to maximize their public impact by publicizing the environmental enforcement record of companies operating facilities in the Border Area.

B. CONCLUDING RECOMMENDATIONS

In planning for an environmentally sound Border Area, SEDUE and EPA have developed the following concluding recommendations as an integral part of the Border Environmental Plan. Most cut across many of the border problems, and all merit early implementation.

1. Cooperative Enforcement Strategy

SEDUE and EPA should develop a program to control pollution from point sources, which would focus on developing a cooperative enforcement strategy for the Border Area, recognizing the sole and sovereign responsibilities of their respective governments for law enforcement in their own territory. The strategy would include information exchange, plant visits in which officials of the environmental authority of one country participate as observers at the invitation of the environmental authority of the other country, and information exchange of each country's enforcement priorities for specific compliance problems, including:

- an accelerated program for identifying all significant pollution sources in the Border Area;
- discharge/emission monitoring programs for all significant polluting sources;
- improved identification of violations involving the most significant environmental and health risks;
- case screening to choose the most appropriate response to violations; and
- innovative settlements, which correct specific violations, address underlying causes, and apply appropriate sanctions to promote broader deterrence.

This cooperative enforcement strategy should develop collaborative border enforcement initiatives to resolve particular environmental compliance problems, protect sensitive ecological areas, and address transborder pollution episodes.

To help mobilize this cooperative monitoring and enforcement program, a Work Group on Enforcement has been added to the four existing Work Groups under the 1983 Border Environmental Agreement.

2. Effective Protection of Transboundary Environmental Resources

SEDUE and EPA should take steps to assure that the environmental standards and requirements of each agency, and their enforcement, provide effective protection to transboundary environmental resources in the Border Area such as the border surface waters, transboundary aquifers, and air basins of sister cities.

3. Strengthened Financing of Environmental Protection in the Border Area

SEDUE and EPA should review ways to resolve resource problems and strengthen their cooperation in mobilizing funding for pollution control facilities needed in the Border Area. Where pollution control facilities, such as those for handling hazardous wastes, are lacking or inadequate, consideration should be given to developing market incentives and use charges on pollution sources to pay for such facilities. SEDUE and EPA should periodically review the need for technical assistance in developing such market incentives and use charges, as well as, for preparing proposals for loan financing of pollution control facilities in appropriate cases. It is recognized that external resources will be required to achieve complete implementation of the Plan.

4. Mobilizing Private Sector Support

The private sector in Mexico and the United States should be mobilized to assist in accelerating environmentally sound development in the Border Area in at least the following two important ways:

- a program of voluntary pollution reductions agreed to with major firms operating in the Border Area similar to EPA's "33/50 Initiative"; and

- technology transfer through treatment, control, and pollution prevention technology seminars and other mechanisms for all Border Area industries to speed the transfer of environmental technology.

5. Joint Emergency Planning and Response Capability

SEDUE and EPA should:

- identify appropriate Federal, State and local officials on both sides of the border, who can assist in the cooperative development of emergency response capabilities;

- establish appropriate mechanisms to address financial, political, and operational issues pertaining to cross-border movement of emergency equipment and personnel in the event of an incident;

- work jointly toward the development of an accident prevention program focused on facilities handling toxic substances;

- improve cross-border communications related to the development of emergency preparedness and response capabilities and facilitate cross-border movement of emergency response equipment and personnel;

- identify appropriate future JRT activities such as training and technical assistance for existing emergency planning and response entities such as the Cameron County Local Emergency Planning Committee in Brownsville and the Local Mutual Aid Committee in Matamoros to assist in promoting awareness of preparedness and response activities on both sides of the border; and

- identify the need for written materials and provide Spanish and English versions of such materials.

6. Coordination of Environmental Programs in the Border Area

SEDUE and EPA should each coordinate their country's activities in the Border Area with the other major environmental agencies active in the area. These include the IBWC and the environmental agencies of the Mexican states of Tamaulipas, Nuevo Leon, Coahuila, Chihuahua, Sonora and Baja California and the U.S. states of California, Arizona, New Mexico, and Texas. Border sister city environmental authorities should also be consulted where their particular interests are involved (e.g., for the Ciudad Juarez/El Paso air basin study).

Intergovernmental coordination and consultation should include the following elements:

- regular exchange of data on the number of plants operating in the border region, ownership of the plants, the amount and type of wastes generated, pollution control measures adopted, and enforcement actions taken;
- identification of the principal environmental technologies and information that will be of interest to Mexico;
- exchange of budget and staffing data by SEDUE, EPA and the IBWC;
- cooperative environmental monitoring in the Border Area; and
- periodic meeting of the relevant authorities to facilitate exchange of data, consult on environmental problems arising in the Border Area, increase the efficiency of pollution control efforts, encourage full implementation of the Border Environmental Plan, and suggest future directions for the Plan.

Finally, both SEDUE and EPA should appoint a Mexican and a U.S. Border Area Coordinator at their respective headquarters who will be responsible for coordination and oversight of the implementation of this Plan. These Coordinators would ensure that regional, State and local environmental agencies, the IBWC and relevant private sector groups are made aware of each agency's recommendations and actions. The Border Area Coordinators should discuss matters on at least a monthly basis in addition to attending all Border Area environmental meetings. They should also ensure the coordination of resource requirements and generally resolve conflicts between their agencies, commissions and work groups. At the end of each year, the Border Area Coordinators should prepare a progress report documenting the environmental progress achieved in the Border Area and make recommendations concerning the activities for the following year.

7. Border Area Environmental Round Table Meetings

To promote further coordination, Border Area Environmental Round Table meetings should be established at the local, State and Border Area wide levels. These Round Table meetings would serve the following purposes:

- provide a forum for the exchange of ideas and discussion of environmental problems, including public health and land use issues, and their resolution throughout the Border Area;

- build a communications network among industry, non-governmental organizations (NGOs), and State and local governments;

- promote community relations activities and right-to-know policies;

- promote information and technology transfer among industry, NGOs, local, State, national and binational environmental agencies (Information to be shared would include monitoring/sampling data, treatment control technology and identification of problem areas.);

- provide a mechanism for participation in the environmental resource development and allocation process to fund solutions for environmental issues; and

- provide a forum to discuss the effects of proposed environmental regulations.

8. Other Programs to Promote Public Awareness and Increase Public Participation

To ensure effective implementation of the Border Environmental Plan, it is essential to make the public aware of the Plan and to enlist their participation in implementing it. In addition to the Environmental Round Table meetings proposed, the following additional activities are recommended:

- Public Meetings, Conferences and Workshops. SEDUE and EPA should develop educational and information programs about the Border Environmental Plan, targeted at Mexican and U.S. industries, governmental agencies, academic entities and the general public in the Border Area. Programs should address both technical and policy issues, and focus on opportunities for the private sector and for technology transfer.

- SEDUE/EPA Translation of Environmental Laws, Regulations, Standards and Guidance. SEDUE and EPA should publish a SEDUE/EPA-approved English language translation of the 1988 Mexican comprehensive General Ecology Law, the regulations and technical norms or standards developed to implement the law, and such other Mexican and U.S. laws, regulations, standards and guidance as SEDUE and EPA deem appropriate. The relevant U.S. laws, regulations, standards and guidance would be translated into Spanish. These publications should be regularly updated.

- Public Information on Environmental Conditions in the Border Area. SEDUE and EPA should publish annual environmental indices and data on the Border Area. SEDUE should establish requirements for public availability of data on emissions and effluents of pollutants.

- Environmental Watchdog Arrangements to Receive Public Complaints and Information. SEDUE and EPA should establish a mechanism for receiving complaints and information from the public about environmental conditions in the Border Area. It is important for citizens living in the Border Area to have a role in implementing the Border Environmental Plan.

- Private Volunteer Initiatives. Promote increased environmental awareness in the border communities through private initiatives to address the specific public health and social infrastructural problems that contribute to adverse environmental conditions in the Border Area.

9. Updating of the 1983 Border Environmental Agreement and its Annexes

The 1983 Border Environmental Agreement between Mexico and the United States and its Annexes may be updated at a future time, as appropriate, to take account of new information that may result from implementation of this Plan.

10. Periodic Review of the Border Environmental Plan

SEDUE and EPA should review and update this Border Environmental Plan periodically. Following review by the relevant governmental agencies and public comment, the Border Environmental Plan (First Stage) will be adopted this year. The Plan will again be reviewed and revised in 1994. At that time there will be similar opportunities for participation by the governmental, public and private sectors before the Plan's Second Stage is adopted. In the interim, SEDUE and EPA will conduct an annual review of the Plan's implementation.