INTERNATIONAL BOUNDARY AND WATER COMMISSION

UNITED STATES AND MEXICO

Minute No. 298

El Paso, Texas
December 2, 1997

RECOMMENDATIONS FOR CONSTRUCTION OF WORKS PARALLEL TO THE CITY OF TIJUANA, B.C. WASTEWATER PUMPING AND DISPOSAL SYSTEM AND REHABILITATION OF THE SAN ANTONIO DE LOS BUENOS TREATMENT PLANT

The Commission met at 1:00 p.m. in the offices of the United States Section in El Paso, Texas on December 2, 1997 to consider the proposed construction of works parallel to the City of Tijuana, Baja California wastewater pumping and disposal system and rehabilitation of the San Antonio de los Buenos Treatment Plant which was certified by the Border Environment Cooperation Commission (BECC) at the public meeting of its Board of Directors held on June 18, 1997 in Mexicali, B.C.

The Commissioners observed that these works would complement the collection and treatment works established by the United States and Mexico in IBWC No. 270, "Recommendations for the Stage I Disposal and Treatment Works for the Solution of the Border Sanitation Problem at San Diego, California and Tijuana, Baja California," of April 30, 1985. The Commissioners concluded that the San Antonio de los Buenos Treatment Plant (SABWTP) has the objective of improving the treatment capacity of that plant and that the parallel pumping and conveyance works have the main objective of providing a reliable backup system for the present Tijuana disposal system. They noted that the existing system is over loaded as the system has to handle high wastewater inflows generated by the city, which had been expected to have been handled through the International Wastewater Treatment Plant (IWTP) in 1995. The parallel works also have the objective of providing a possible avenue for return of effluent from the international treatment plant for disposal to the ocean in Mexico, during such time that the ocean outfall, currently under construction, is not in operation, or for other uses of the effluent that Mexico may make according to its wastewater standards before or after the ocean outfall is in operation.

The Commissioners also considered the responsibility of the IBWC established in Minute No. 270 to jointly observe the construction, operation and maintenance of the wastewater treatment and disposal facilities and inform the appropriate agencies of the results of the observations.

I. DESCRIPTION OF PROPOSED WORKS

The Commissioners observed that the referenced works certified by the BECC consist of four principal elements:

1. **Pumping Plant** -- The new pumping plant will be located in the sump and building of the old Tijuana Pumping Plant No. 1 adjacent to the existing Pumping Plant No. 1 (PP No. 1). Improvements will be made in the grit screening chambers and sumps of the two plants to provide for a more efficient settlement, head and movement of the sand which will reduce odors. An additional regulating tank will be installed to operate the new pumping station. The new station will have five motor pump units, four in operation and one in standby. Each unit consists of two centrifugal horizontal pumps, for pumping sewage, with a 600-horsepower motor unit, connected in series with an average daily discharge of 12.5 million gallons per day (mgd) or 550 liters per second (LPS) when operating with four units. Average total capacity will be 25 mgd (1,100 LPS) with a 2:1 peaking factor. Like the Stage I facility, the new facility will pump against a head of 427 feet (130 meters).

2. **Boundary to IWTP Connection** --The connection will consist of continuation of a 48-inch (122 cm) diameter reinforced concrete pipe extending approximately 1,000 feet (305 meters) from a 72-inch (183 cm) by 48- inch (122 cm) tee at the discharge of the IWTP. The connection will include a magnetic flow meter and motor operated control valve housed in a vault, with an associated isolation structure to facilitate maintenance.

3. **Conveyance System** -- The new system will consist of a treated water conveyance and pipeline. The conveyance from the international boundary to the PP No. 1 to handle treated wastewater from the IWTP will be in a 48-inch (122 cm) diameter polyethylene pipe extending 1066 feet (325 meters).

   The total pipeline length from PP No.1 to the ocean discharge is 11.4 miles (18,220 meters). The first section will consist of 2.9 miles (4,660 meters) of metal pressure pipe (ductile iron or similar) and the remaining length will be by gravity for 8.5 miles (13,560 meters) in a combination of siphons and conduits. Metal pipe, 54-inch (137 cm) in diameter, will be used for the siphons. Conduits will be 54-inch (137 cm) diameter high density polyethylene pipe or similar.

   - **Pressure Line Section** -- The metal 48-inch (122 cm) pressure line (ductile iron or similar) will extend from the new pumping station westerly paralleling the existing reinforced concrete 42-inch (107 cm) pressure pipeline. The first reach of this pipeline will run for 1.2 miles (1.9 kilometers) and at this point will crest the hill and feed into a surge tower. After the first surge tower, the pipeline will continue as a 48-inch (122 cm) diameter pipeline for the next 1.7 miles (2.7 kilometers), in which there will be three additional pressure control structures along the route. The total length of the 48-inch (122 cm) pipeline is 2.9 miles (4.6 kilometers).

The pressure pipeline will have inlets to receive connections from sewage lift stations at Smuggler Gulch (Mataderos) and Goat Canyon (Los Laureles) which are fed from various colonias in the area. The IBWC has arranged for connections from the international boundary to the IWTP designed to capture transboundary surface flows from Smuggler Gulch and Goat Canyon. Transition structures will be constructed at the end of the pressure lines. The new system will also include an interconnection from the Playas de Tijuana pumping plant system.

- **Gravity Section** -- At the end of the pressure line section, the system will consist of 5.8 miles (9.3) kilometers of polyethylene pipeline and five siphons and transition gravity flow reaches. The pipeline will follow an excavated route along the existing open conveyance channel to the SABWTP site. At that point, a structure will be constructed that will allow distribution of flows to the treatment plant and to a continuation of the conveyance pipeline. From this point to the ocean surf discharge, the pipeline will continue for 2.6 miles (4.2 kilometers) with four additional siphons with transition gravity flow reaches and energy dissipating structures. Metal 54-inch (137 cm) pipe will be used for the siphons and high density or similar polyethylene pipe will be used in the gravity sections.

The discharge is approximately 5.6 miles (9.0 kilometers) south of the international boundary, at the same site of the present outfall. The total length of the conveyance line will be approximately 11.3 miles (18. 1 kilometers). Construction of the pumping plant and conveyance pipeline is proposed to begin in March 1998 and is expected to be completed in June 1999.

4. **Rehabilitation of the San Antonio de los Buenos Wastewater Treatment Plant** -- The proposed new system will include the rehabilitation of the existing SABWTP's pretreatment train, replacement of the existing diffusers, installation of plastic baffles in the lagoon to improve the hydraulic movement, installation of equipment to re-circulate the biomass from the third lagoon to lagoons one and two, as well as improvements to SABTP's grit chamber. The work is expected to increase the plant's treatment capacity to 25 mgd (1,100 LPS) with an effluent that will meet the Mexican Standard NOM-001-ECOL-1996 published on January 6, 1997 in the Daily Register. The standard requires, among other parameters, that the treated effluent have a maximum permissible BOD of 75 mg/l monthly average and 150 mg/l daily average. Construction is proposed to begin in March 1998 and be completed in December 1998.

II. DISTRIBUTION OF COSTS

Regarding the construction cost for the proposed works, the Commissioners made note of the following aspects:

1. The construction cost of the parallel pumping and disposal works is estimated at $16 million, United States currency, excluding design cost, Value Added Tax (VAT) and the connection to the IWTP in the United States.

2. The construction cost of the SABWTP, excluding design cost and VAT, is estimated at $2.2 million, United States currency.

3. The estimated cost for the work to that would be performed in the United States is estimated at $1.5 million, United States currency.

4. The Government of the United States from funds available to the United States Section, originally earmarked for collectors to convey Tijuana wastewaters to the IWTP in accordance with Recommendation No. 3 of IBWC Minute No. 283, would cover the cost of the project, including design and contracting associated costs required in the United States up to an amount estimated at $1.5 million (U.S. currency). The payment of these costs will fulfill any and all outstanding obligations corresponding to the United States under Resolution No. 3 of Minute No. 283 which assigned costs associated with sewage collection works to convey sewage from the City of Tijuana, Baja California to the international sewage treatment plant that would have been treated in the Rio El Alamar treatment plant.

5. The Government of the United States from funds managed by the North American Development Bank (NADBank) in accordance with the terms of the Border Environment Infrastructure Fund (BIEF) would cover a part of the construction costs of the project in an amount not to exceed $16 million, United States currency, provided that the government of the State of Baja California, covers the costs of the project that exceed $16 million, United States currency.

6. The State of Baja California has requested a loan from the NADBank in an amount that together with other funds available to the state will cover the costs of the project in excess of $16 million, United States currency.

III. IBWC PARTICIPATION

The Commissioners then reviewed the IBWC's responsibilities for the joint attention of the border sanitation problems including joint observations and reports to the two governments and observed that this practice could also be used in potential arrangements in support of the NADBank's construction supervision of this and other projects for the solution of border sanitation problems.

IV. PROJECT EXECUTION

The Commissioners observed that the design and construction of the project should be consistent with the obligations contracted by the United States and Mexico in IBWC Minutes No. 261 and 270. To facilitate this:

1. The Government of Mexico, through the State of Baja California, will be responsible for the design and construction of all the work in Mexico.

2. Upon agreement through the IBWC, the U.S. Section will design and construct the conveyance line in the United States from the IWTP to the international boundary under the general supervision of the IBWC, once the State of Baja California has completed the financial arrangements for construction of the project in Mexico and for the rehabilitation of the SABWTP under the terms of this Minute.

3. All required right of way acquisitions for the project will be the responsibility of each country in their respective territory.

4. All services, such as water, telephones, electric energy, among others, required for the execution of the project will be the responsibility of the country in which the work is carried out.

V. OPERATION AND MAINTENANCE

The Commissioners concluded that in view of the obligations contracted by the United States and Mexico in IBWC Minute No. 270 and in Minutes Nos. 283 and 296 the operation and maintenance of the proposed works should be carried out as follows:

1. The new pumping plant in Mexico will be connected to the existing PP No. 1 and will be designed in a manner that the discharge of wastewaters that arrive at PP No. 1 may be diverted to the new Pumping Plant. This will facilitate conveyance to the SABWTP in the existing or new conveyance system in case of an emergency at PP No. 1 or in the existing conveyance system to the Mexican treatment plant.

2. The new conveyance system design shall be performed in a manner that the conveyance pipeline can connect to the SABWTP to convey untreated wastewater to the SABWTP or by pass for ocean discharge in case of discharge of effluent from the IWTP.

3. Once the parallel system is completed and the IWTP effluent is diverted to the parallel system Mexico will develop and execute an appropriate inspection program for PP No. 1 and the present conveyance system, diverting the Tijuana wastewater through the new system. At that time, Mexico, through the Comisión Estatal de Servicios Públicos de Tijuana, or its succeeding organization, (CESPT) will make

the necessary repairs to the present system to ensure that there is a parallel system to convey wastewaters from PP No. 1 to the Mexican treatment facilities.

4. Upon completion of the proposed project, the system in Mexico will be operated and maintained by Mexico at a cost to the CESPT. Similarly the IWTP to international boundary line will be operated and maintained by the United States at a cost to the United States. The United States will ensure the readiness of the pipeline from the IWTP to the boundary. However, in the event that the United States needs to use the system described in this Minute, for discharge of IWTP effluent pending completion of the ocean outfall, the costs of operation and maintenance of the pumping and conveyance pipeline components of the proposed system will be at a cost to the Government of the United States. Upon completion of the ocean outfall the works will form part of the Tijuana sanitation system and its operation and maintenance will be under the responsibility of the authorities in Mexico.

5. In the event that, upon the operation of the ocean outfall, Mexico requires the diversion of the effluent from the IWTP for reuse in Mexico, that country will continue to cover the costs for the operation and maintenance of the pumping and conveyance pipeline components of the new system and the costs as may be necessary in the United States to facilitate reuse of the IWTP effluent in Mexico.

6. Once the ocean outfall is in operation, the parallel pumping and disposal system will be used to reduce to design capacity to that Tijuana sewage conveyed SABWTP. Further, the wastewaters conveyed to the IWTP would be limited to an average discharge of 25 mgd (1,100 LPS) in accordance with Minute No. 283.

7. The operations and maintenance costs of the SABWTP will be at a cost to Mexico through the CESPT.

8. The State of Baja California, through the CESPT, will provide to the IBWC the operations and maintenance plans, including monitoring and supervision of the three components in, considering startup, contingencies, safety and pollution prevention. The IBWC will carry out the necessary joint observations in the operations and maintenance phases of the works and will maintain a record of those joint observations to include, recommendations for corrective measures and compliance with the transboundary impacts prevention provisions in Minute No. 270.

VI. MONITORING PROGRAM

The Commissioners noted the appropriateness for the IBWC to continue to coordinate a monitoring program in the context of Minute No. 270 that will allow monitoring for transboundary impacts of the works constructed in either country and monitor for the stipulations

in Minute No. 270, specifically Recommendation No. 4 such that the quality of the coastal receiving waters at the international boundary meet the water quality criteria established for their described use, which for primary contact recreation are: "the most probable number of coliform bacteria will be less than 1,000 organisms per 100 milliliters (ml), provided that no more than 20 % of the total of the monthly samples (at least 5) exceed 1,000 per 100 ml; and that no single sample taken during a verification period of 48 hours should exceed 10,000 per 100 ml . . . "

In this context, the Commissioners considered it appropriate that the joint monitoring program should extend to the coastal waters at the international boundary, considering a minimum of two stations located to the north and a minimum of two located south of the boundary. Under such arrangement, the United States Section and the authorities in San Diego will ensure the sampling and analyses north of the border and the state of Baja California, through the CESPT, and the Mexican Section shall ensure the sampling and analyses south of the boundary. Further, both Sections of the IBWC will ensure the sampling and analysis at a station in the area of the international boundary. Also, the IBWC will coordinate the use of the sampling and analyses of the data obtained north and south of the boundary for purposes of verification and use by the United States and Mexico as a basis for corrective measures, as appropriate in the respective countries. Finally, the IBWC will maintain a record regarding compliance with international agreements and/or execution of corrective measures.

VII. HANDLING OF FUTURE WASTEWATER FLOWS

Regarding the handling of future wastewaters from the City of Tijuana, the Commissioners considered the following actions to be appropriate:

1. The parallel system works will be operated such that the average daily pumping does not exceed the design of 25 mgd (1,100 LPS).

2. The IBWC will begin consultations regarding the handling of future wastewaters 60 days after the approval of this Minute with the goal of determining the feasibility of a second 25 mgd (1,100 LPS) module at the international plant and if so, Mexico participation is such module.

3. An effort will be made to seek support for the City of Tijuana for development of an integrated plan with a planning horizon to 2010 and 2020.

RECOMMENDATIONS

Based on the foregoing, we present the following recommendations for the approval of the two Governments:

1. That the two governments proceed under the terms of this Minute with the construction of the works parallel to the Tijuana, B.C. wastewater pumping and disposal system works and the rehabilitation of the treatment plant at San Antonio

de los Buenos, certified by the BECC at the public meeting of its Board of Directors held on June 18, 1997 in Mexicali, B.C.

2. That to cover the cost of the works, the Government of the United States from funds managed by the North American Development Bank (NADBank) under the terms of the Border Environment Infrastructure Fund (BEIF) will cover a part of the construction costs of the project in an amount of $16 million, United States currency, with the understanding that the State of Baja California has requested a loan from the NADBank in an amount that together with other funds available to the state, will assure that the costs of the project in Mexico that exceed $16 million United States currency are fully covered to ensure conclusion of the project in the manner described in this Minute.

3. The Government of the United States from funds available to the United States Section, originally earmarked for collectors to convey Tijuana wastewaters to the IWTP in accordance with Recommendation No. 3 of IBWC Minute No. 283, will cover the cost of the project, including design and contracting associated costs required in the United States up to an amount estimated at $1.5 million (U.S. Currency). The payment of these costs will fulfill any and all outstanding obligations corresponding to the United States under Resolution No. 3 of Minute No. 283 which assigned costs associated with sewage collection works to convey sewage from the City of Tijuana, Baja California to the international sewage treatment plant that would have been treated in the Rio El Alamar treatment plant. Upon agreement of the IBWC, the United States Section of the IBWC, under the general supervision of the IBWC, will design and construct the line from the IWTP to the international boundary.

4. The IBWC, based on the responsibility conferred to the two Governments for the joint attention to the border sanitation problem including joint observations and reports to the two governments may utilize this practice in potential arrangements in support of the NADBank's construction supervision of this and other projects for the solution of border sanitation problems.

5. The Government of Mexico, through the State of Baja California, will be responsible for the design and construction of all the work in Mexico. The United States Government, through the U.S. Section of the IBWC, will be responsible for the complete design of the conveyance pipeline and any other structure required in the United States will be prepared by the United States and in agreement with Mexico so that the complete line from the IWTP to PP No. 1 will fulfill its function.

6. Once the work is completed, the Government of Mexico, through the Comisión Estatal de Servicios Públicos de Tijuana or its succeeding organization (CESPT) in the manner described in this Minute, will operate and maintain the pumping and

conveyance system at its cost with the understanding that the cost for the pumping and disposal works will be charged to the United States in the event that the United States used the system to discharge IWTP effluent pending completion of the ocean outfall. Once the ocean outfall is in operation, such costs would be chargeable to Mexico in the event that Mexico requests diversion of the IWTP effluent for reuse in Mexico.

7. The IBWC will coordinate a joint monitoring program of the coastal waters at the international boundary and through a minimum of two stations north of the border and a minimum of two south of the border. The United States Section will ensure the sampling and analyses north of the border in cooperation with the San Diego area authorities and the Mexican Section will ensure the monitoring and analyses south of the border in cooperation with the authorities of Baja California, through the CESPT. Both IBWC Sections will ensure the sampling and analyses at a station in the areas of the international boundary. The IBWC will establish a program of coordination, verification and record keeping regarding compliance with the international agreements or execution of corrective actions.

8. The IBWC will begin consultations regarding handling of future wastewater flows 60 days after the approval of this Minute with the goal of determining the feasibility and appropriateness of a second 25 mgd (1,100 LPS) at the international plant and, if so, the terms of Mexico's participation.

9. An effort will be made to support the City of Tijuana through a technical assistance program to develop an integrated plan that contemplates planning horizons of 2010 and 2020.

10. All activities carried out pursuant to this Minute will be subject to the availability of appropriated funds, resources and personnel and applicable laws and regulations of each country.

11. This Minute shall enter into force when the Government of the United States of America and the Government of the United Mexican States have each provided written notification through their Section of IBWC of its approval.

The meeting was adjourned.

John M. Bernal
United States Commissioner

J. Arturo Herrera Solís
Mexican Commissioner

Manuel R. Ybarra
United States Section Secretary

José de Jesús Luévano Grano
Mexican Section Secretary