DUPLICATE ORIGINAL

INTERNATIONAL BOUNDARY AND WATER COMMISSION
UNITED STATES AND MEXICO

Cd. Juarez, Chih.
March 20, 2000

JOINT REPORT OF THE PRINCIPAL ENGINEERS REGARDING THE OPERATION AND MAINTENANCE OF PUMPING PLANT, THE DIVERSION STRUCTURE, AND THE BYPASS CHANNEL, STIPULATED IN POINTS 5 AND 6 OF THE RESOLUTION IN MINUTE NO. 223.

To the Honorable Commissioners
International Boundary and Water Commission
United States and Mexico
El Paso, Texas/Ciudad Juarez, Chihuahua

Sirs:

In accordance to your instructions, we respectfully submit for your consideration this Joint Report regarding operation and maintenance of the system that controls the salinity problem in the waters of the Lower Rio Grande.

Description of System

The system consists of three components: A diversion structure near the mouth of Morillo agricultural drain to the Lower Rio Grande, a pumping plant, and a 24-mile (38.93 kilometers) diversion canal located entirely in Mexico. These works were constructed by Mexico in 1968 and 1969 at a construction cost equally divided by the United States and Mexico, pursuant to the stipulations in Minutes No. 223, entitled "Measures for the Solution of the Lower Rio Grande Salinity Problem", dated November 30, 1965, and No. 224, entitled "Recommendations Concerning the Lower Rio Grande Salinity Problem," dated January 16, 1967. The cost of their operation and maintenance is also divided equally by the two governments under the terms of these Minutes. Minutes Nos. 223 and 224 further stipulate that these works shall have capacity to divert to the Gulf of Mexico 105.9 cubic feet per second or cfs (3 cubic meters per second or cms) of highly saline waters from the Morillo Drain, to resolve the problem of salinity of the waters in the Lower Rio Grande, such that the waters can be satisfactorily used for domestic and irrigation purposes in the two countries.

The pumping plant was originally equipped with two Fairbanks Morse model XLL 6720 pumps each with a capacity of 35.3 cfs (1 cms) and two Fairbanks Morse model XLL 6717 pumps with a capacity of 17.6 cfs (0.5 cms). In November 1984, the Commission, pursuant to Minute No. 269, entitled "Replacement of Pumps at the Morillo Drain Pumping Plant," dated November 9, 1984, replaced the two 17.6 cfs (0.5 cms) pumps with two 35.3 cfs (1 cms) pumps, which increased the installed capacity from 105.9 cfs (3 cms) to 141.2 cfs (4 cms). Still later, the Commission in Minute No. 282, "Rehabilitation of the Saline Waters Disposal System for the Solution of the Salinity Problem in the

Waters of the Lower Rio Grande," dated March 26, 1990, authorized rehabilitation pumping plant, diversion structure and bypass channel and stipulated measures that should be undertaken during rehabilitation to avoid high concentrations of salt in the waters of Rio Grande downstream of Anzalduas Dam.

Operation and Maintenance Supervision

For the above, and consistent with Resolution 5 of Minute No. 282 of this Commission, we first propose the reinforcement of the maintenance program by means of the development, by stages, of the works presented in Attachment 1, which will permit the re-establishment of the operational capacity of the system, and then, we propose to maintain said capacity by means of an annual work plan. Also, that the Commission be able to authorize emergency works in case operation and maintenance problems arise, whose immediate attention is not contemplated in work stage or the annual work plan, or for which funds of one country are not available. We also propose that the Commission be able to carry out the said plan through other agencies of the Mexican government using Mexican Section personnel or by means of contracts under the terms described below.

1. That the supervision by the Commission envisioned in Point 5, 6 & 7 of the resolution in Minute No. 223 concerning the operation and maintenance of the system and be exercised under the jurisdiction of the Mexican Section of the Commission in accordance with the provisions of Articles 2, 3, 20, 24 and 25 of the 1944 Water Treaty.

2. That the Mexican Section with the approval of the Commission and in accordance with applicable laws in Mexico, directly administer the funds provided by the United States Government for the operation and maintenance of the three components of the system.

3. That the administration by the Mexican Section of United States funds include:

   a. Review and approval by the Commission of the annual operation and maintenance of the annual plan proposed for the three components of the system.

   b. Review by the engineering representatives of the Commission in Mercedes, Texas and Reynosa, Tamaulipas of the terms of the contract executed based on the annual work plan, following the guidelines in the joint report of the Principal Engineers dated June 18 1996, pertaining to contracting of private companies by Mexico and the November 21, 1997 concerning contracting and acquisition of goods and services, with the exception that contractors for services in the United States be made within 30 days following the date of Commission approval of funds for such contracting activities.

   c. Joint weekly supervision of the system's components by Commission personnel from our offices in Mercedes, Texas and Reynosa, Tamaulipas.

4. That payment by the United States for its corresponding share under the terms of Minutes Nos. 223 and 224 be applied to cover, to the extent possible, the total amount of the amount of the contract issued by an agency of the Mexican Government or directly by the Mexican Section of the Commission for the operations and maintenance of the system.

5. That resources of one country applied for emergency responses be credited to that country's share of the project cost for further operation and maintenance works.

Annual Work Plan

The annual work plan will be developed by the engineering representatives of the Commission in Mercedes, Texas and Reynosa, Tamaulipas following the standards of the equipment manufacturers, those established by the National Water Commission (CNA) and following the guidelines which the Commission may establish to assure the drain can convey the design flow of 105.9 cfs (3.0 cms). This plan will take into account the weekly, monthly, quarterly, semi-annual and annual requirements of the three components of the project. Based on this, the representatives of the Commission in Mercedes and Reynosa will jointly propose to the Principal Engineers, during the month of May, the work plan for the following year, including the cost estimates. Once approved by the Principal Engineers, the engineering representatives of the Commission at Mercedes and Reynosa, respectively, will assure the contracting for the works in accordance with the governing standards and will jointly with representatives of CNA and the U.S. water users form a workgroup and will schedule periodic information meetings for the supervision of the said plan.

The plan will also establish measures that should be undertaken at times of system outages during repairs and other maintenance work in order to avoid high concentrations of salt in the waters of Rio Grande ponded behind Anzalduas Dam. For this purpose, the plan would follow, as general guidelines, the precautionary measures adopted by the Commission in Minute No. 282 in approving the "Joint Report of the Principal Engineers Regarding the Need to Rehabilitate the Saline Waters Disposal System for Control of the Salinity Problem in the Waters of the Lower Rio Grande," dated March 22, 1990.

Operation and Maintenance Criteria

To ensure that the system is always in a condition to operate at full capacity and preclude salinity exceedances at Anzalduas Dam, the annual work plan will consider the following general guidelines.

1. Discharge avoidance to the Rio Grande of all drain flows to the Morillo Drain based on flows up to 105.9 cfs (3 cms) except when surface water flows in the Rio Grande are such that drainage flows will not cause salinity problems. Drainage flows may be discharged to the Rio Grande if these flows exceed 105 cfs (3 cms) in cases when drainage discharges are increased during rain events.

2. Assurance that the system pumps are always in operating condition, except when the pumps are out of service for maintenance and periodic servicing repairs of the pumps, panels and moving parts of the pumping system.

3. Immediate start up of standby pumps in cases of stoppages of primary pumps.

4. Schedule and implement a repair or replacement of components at the pumping plant or diversion structure when necessary.

5. Removal of silt, debris and performance of general maintenance of the bypass canal as frequent as necessary to ensure canal capacity, as required and agreed to by Commission.

6. Periodic inspections of all three components of the system to detect in a timely manner any anomaly in its function and recommend corresponding repairs.

7. The Commission project engineer prepares a joint monthly report of operations of the system to the Principal Engineers and an annual report of conditions and maintenance performed during the year.

Recommendations

Based on the conditions mentioned above, we recommend:

1. That the operation and maintenance of the system be performed through an annual work plan following criteria that will ensure that the system is maintained in such a manner that discharges the design flow of 105.9 cfs (3 cms) through the channel at all times.

2. That the execution of the work in stages (Attachment 1), as well as the annual work plan be executed by contract through some agency of the Mexican government involved in this project, using Mexican Section personnel or by means of contracts through the same for the use of the United States and Mexican funds.

3. That the Commission authorize emergency work in the event of operations and/or maintenance problems, whose immediate attention may not have been in the work plan or for which the funds of one country are not immediately available to provide immediate attention.

Respectfully submitted,

Carlos Marin
Principal Engineer
United States Section

Gilberto Elizalde Hernandez
Principal Engineer
Mexican Section

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ATTACHMENT 1

MAJOR MAINTENANCE WORKS ON THE CONVEYANCE SYSTEM FOR THE EL MORILLO DRAIN WATERS

STAGE 1
YEAR 2000

1. Inspection of pumps nos. 1 and 4 to know their current condition, since in some tests they have shown problems.
2. Repairs of pumps nos. 1 and 4 as required.
3. General clean-up of siphons located from km. 0+000 to the siphon at Anhelo Drain.
4. Clearing and grubbing, and cleaning of the concrete-lined section in the reach from km. 0+000 to the closed concrete line near Reynosa, Tamaulipas.
5. Silt removal in the entire concrete-lined section in the reach from km. 0+000 to the closed concrete line near Reynosa, Tamaulipas. With these works, the number of broken slabs on both banks can be determined.

STAGE 2
YEAR 2001

1. Clean-up and desilting of the unlined section of the canal.
2. Formation of provisional stop structures using bank soil borrow material with a free haul distance of 40 meters.
3. Removal of the provisional stop structures.
4. Sealing of the cracks in the slabs and slab replacement as necessary.
5. Supply and installation of one 3 m X 3 m radial gate with rubber seals and reparation of the guides in the concrete, material and labor for the work including the stop structure for the removal and installation.
6. Fabrication and installation of the electro-mechanical mechanism to operate the radial gate. Electrical installation of the motor and its accessories.
7. Repair of the interior and exterior lighting for the building and the pumping plant.
8. General painting, interior and exterior, of the building and the pumping plant.
9. Inspection and evaluation of the operating conditions of the closed canal.