

OPERATION AND MAINTENANCE MANUAL  
MORMON SLOUGH PROJECT  
PART NO. 2 - PUMPING PLANTS

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OPERATION AND MAINTENANCE MANUAL  
FOR MORMON SLOUGH PROJECT  
SAN JOAQUIN COUNTY, CALIFORNIA  
PART NO. 2 - PUMPING PLANTS

SECTION I

INTRODUCTION

1-01. Authorization. The Mormon Slough Project, San Joaquin County, California, was authorized by the Flood Control Act approved 23 October 1962 in Public Law 87-874, 87th Congress, Second Session, which states in part:

"The project for flood protection on Mormon Slough, Calaveras River, California, is hereby authorized substantially in accordance with the recommendations of the Chief of Engineers in House Document Numbered 576, 87th Congress, at an estimated cost of \$1,960,000."

In the report of the Chief of Engineers to the Secretary of the Army, dated 28 August 1962, the Chief of Engineers stated that he concurred in the Recommendations of the Board of Engineers for Rivers and Harbors. In paragraph 10 of House Document No. 576, the recommendations of the Board were as follows:

"Recommendations . . . Accordingly, the Board recommends improvement for flood control on Mormon Slough, the Diverting Canal, and the Calaveras River, California, consisting of channel enlargement and clearing, slope paving, levees, gated drainage structures, a pumping plant, railroad adjustments, and appurtenant works; all generally in accordance with the plan of the District Engineer and with such modifications thereof as in the discretion of the Chief of Engineers may be advisable . . . ."

1-02. Location. The Mormon Slough Flood Control Project is located in San Joaquin County and in the general vicinity north and east of the City of Stockton, California. Operation and maintenance of the levees and channels on the Mormon Slough Project is covered in Operation and Maintenance Manual, Part No. 1 - Levees and Channels. This manual covers the three pumping plants located on the right bank of the Stockton Diverting Canal and two precipitation gages. Plant No. 1 is located a short distance upstream from Wilson Way, Plant No. 2 is upstream from US Highway 99, and Plant No. 3 is located a short distance upstream from Linden Road. For location of the precipitation gages see Section VI, paragraph 6-01(d). For further location details see Exhibit B.

## SECTION II

### LOCAL COOPERATION REQUIREMENTS

2-01. Requirements of Local Cooperation. House Document No. 576 requires that, prior to construction, local interests give assurances satisfactory to the Secretary of the Army that they will, without cost to the United States:

- a. Furnish all lands, easements, and rights-of-way, including spoil-disposal areas, necessary for construction of the works.
- b. Accomplish all relocations and alterations of roads, streets, buildings, pipelines, utilities, bridges, and other structures (except railroad facilities) made necessary by the construction work.
- c. Hold and save the United States free from damages due to the construction works.
- d. Maintain and operate all the works after completion, including the lower Calaveras River, in accordance with regulations prescribed by the Secretary of the Army.
- e. Prescribe and enforce regulations designed to prevent encroachment of any type that would impair the flood-control effectiveness of the works.
- f. House Document No. 576 further requires that Federal maintenance of the existing Stockton and Mormon Channel Project (Diverting Canal) for navigation be discontinued upon completion of the improvements recommended therein.

2-02. Assurances Provided by Local Interests. The Reclamation Board of the State of California, by letter dated 13 December 1963, advised the Sacramento District Engineer that the Mormon Slough Project was authorized by the State of California by Chapter 915 of the Statutes of 1963 and that the Reclamation Board would, upon request, give the required assurances to the Corps of Engineers under Chapter 1438 of the Statutes of 1963.

2-03. Acceptance by the State Reclamation Board. Responsibility for operating and maintaining the Mormon Slough Project, Unit No. 2, was officially accepted by the Reclamation Board of the State of California by letter dated 21 October 1968, see Exhibit G. The three pumping plants covered by this manual are a part of Unit No. 2 of the project.

useful part thereof, to assist them in carrying out their obligations under this part." This manual has, therefore, been prepared to furnish local interests with information on the project works and advice as to the details of the operation and maintenance requirements applicable to this particular project, to state procedure required by the Department of the Army, and to indicate satisfactory methods of flood-fighting operations and emergency repairs. The project works are to be maintained and operated in accordance with the Flood Control Regulations referred to above and interpretations thereof contained herein.

3-04. Definitions. As used hereinafter, the term "Superintendent" shall mean the responsible State agency which provided the assurances for the project; the term "District Engineer" shall mean the District Engineer of the US Army Engineer District, Sacramento, or his authorized representative. The term "flood" shall mean any flow in Mormon Slough when the water surface reaches or exceeds the reading of 12.0 on the California Department of Water Resources Bellota gaging station located on the left bank about 1,400 feet upstream from the Escalon-Bellota Road. This gage reading corresponds to a streamflow of about 10,000 c.f.s. The term "right bank" or "left bank" shall mean the right or left bank or side, respectively, of a stream or channel when facing downstream.

3-05. General Provisions of Regulation. In addition to that quoted in paragraph 3-02 above, the general provisions of the Flood Control Regulations, contained in paragraphs 208.10(a)(2), to 208.10(a)(9), both inclusive, are quoted as follows:

- "(2) The State, political subdivision thereof, or other responsible local agency, which furnished assurance that it will maintain and operate flood control works in accordance with regulations prescribed by the Secretary of the Army, as required by law, shall appoint a permanent committee consisting of, or headed by an official hereinafter called the "Superintendent", who shall be responsible for the development and maintenance of, and directly in charge of an organization responsible for the efficient operation and maintenance of all structures and facilities during flood periods and for continuous inspection and maintenance of the project works during periods of low water, all without cost to the United States.
- (3) A reserve supply of materials needed during a flood emergency shall be kept on hand at all times.

3-06. Assistance to be Furnished by the District Engineer. The District Engineer will:

a. Furnish to the State Reclamation Board "As Constructed" drawings of the project works at the time they are transferred.

b. Make periodic inspections of the project works and notify the State Reclamation Board of any repairs or maintenance measures which the District Engineer deems necessary in addition to measures taken by the Superintendent.

c. Submit to the Office, Chief of Engineers, all cases of noncompliance with full details thereof for determination of corrective measures to be taken.

d. Make prior determination that any proposed encroachment, improvement, excavation, or construction within the right-of-way, or alteration of the project works, will not adversely affect the functioning of the protective facilities.

e. Assist local interests as may be practicable, in their duties of ascertaining storm developments having flood-producing potentialities, assembling flood-fighting forces and materials, and initiating and carrying out flood-fighting operations to the extent permitted by existing law and regulations.

3-07. Responsibilities of the Superintendent. In line with the provisions of the Flood Control Regulations, the general duties of the Superintendent include the following:

a. Training of Key Personnel. Key personnel shall be trained in order that regular maintenance work may be performed efficiently and to insure that unexpected problems related to flood control may be handled in an expeditious and orderly manner. The Superintendent should have available the names, addresses, and telephone numbers of all his key men and a reasonable number of substitutes. These key men should, in turn, have similar data on all of the men who will assist them in the discharge of their duties. The organization of key men should include the following:

(1) An assistant to act in the place of the Superintendent in case of his absence or indisposition.

(2) Sector foremen in sufficient number to lead maintenance patrol work of the levee, inspect the channel, and operate the gate structures properly during flood periods. High qualities of leadership and responsibility are necessary for their positions.

b. Files and Records. The Superintendent shall maintain a file of reports, records, and drawings concerning the project works, readily available at all times to the District Engineer.

g. Inspection.

(1) Flood Control Regulations, paragraph 208.10(b)(1), are quoted in part as follows:

"(b) (1) Maintenance . . . Periodic inspections shall be made by the superintendent to insure that . . . maintenance measures are being effectively carried out . . . Such inspections shall be made immediately prior to the beginning of the flood season, immediately following each major high water period, and otherwise at intervals not exceeding 90 days and such intermediate times as may be necessary to insure the best possible care . . . . ."

(2) For sake of uniformity, and to the extent practicable, the dates of inspection shall be as follows: 1 November, 1 May, and immediately following each floodflow in excess of a reading of 12.0 on the State Department of Water Resources gage located on the left bank of Mormon Slough about 1,400 feet upstream from the Escalon-Bellota Road.

(3) The suggested check lists and instructions shown in Exhibit I, Sheets 1 to 7 inclusive, are to be followed in each inspection to insure that no features of the protective system are overlooked. Carbon copy of the inspector's original field notes as recorded on the check list shall be transmitted to the District Engineer immediately following each inspection, and one copy included as an inclosure to the semiannual report as provided in paragraph 3-07(h)(1) of this manual.

h. Maintenance.

(1) Flood Control Regulations, paragraph 208.10(b)(1) are quoted in part as follows:

"(b)(1) Maintenance. The Superintendent shall provide at all times such maintenance as may be required to insure serviceability of the structures in time of flood. . . . . Immediate steps will be taken to correct dangerous conditions disclosed by such inspections. Regular maintenance repair measures shall be accomplished during the appropriate season as scheduled by the Superintendent."

(2) Full responsibility for making the repairs and the methods used is placed on the Superintendent, but the experience and facilities of the District Engineer will be available to him for advice and consultation.

of 1947 by the Department of Water Resources may be considered to fulfill the requirements of paragraphs 3-07 1 above provided the report complies with all provisions of that paragraph and provided the State Reclamation Board so indicates in writing to the District Engineer.

Upon completion of the fall inspection the State Department of Water Resources publishes an annual report entitled, "Status of Project Levee Maintenance" which indicates the degree of proficiency attained by each obligated local agency in providing required maintenance.

plant operation shall be kept for each station, a copy of which shall be furnished the District Engineer following each flood season."

The frequency of visits by competent operators to check pumping operations will vary greatly and schedules will have to be flexible enough to meet changing conditions, from extreme emergency flood conditions where continuous duty of operator is warranted, to visits every 4 hours, 8 hours, or 24 hours.

5-04. Operation Procedures Summary. Physical operations of the pumps and slide headgates to carry out the foregoing regulations are outlined below:

a. Pump Operations.

(1) Starting Pumps:

(a) Insure that pump suction bells are properly submerged as prescribed in paragraph 6-01(c) for pumping plants Nos. 1, 2, and 3, respectively.

(b) Make a physical check of pump, sump and trashrack structure and remove material that might interfere with operations or damage the pumps.

(c) Insure that the pumps are properly lubricated in accordance with manufacturer's recommendations. See Exhibit E. The pump bearings are lubricated by a combination manual and solenoid operated liquid oiler. All of the upper motor bearings and the lower motor bearings at pumping plant No. 2 are oil lubricated. The lower motor bearings at pumping plants No. 1 and No. 3 are grease lubricated with Jerk-type fittings.

(d) Control Sequence.

1. To start the pumps for manual operation, turn the applicable pump motor circuit breaker to the "on" position. Turn the H.O.A. switch to "H" or "hand" position. There is a short time delay (approximately 10 seconds) between the time the switch is turned on until the pump motor actually starts. There is also a 10-minute time delay before the second pump can be started after the first pump is started. If the switches to start the second pump are turned on prior to the elapse of the 10 minute delay period, the pump motor will not start until this time has passed.

2. To change from manual to automatic operations, it is necessary to stop the pump by turning the H.O.A. switch to "off" position. Then turn the H.O.A. switch to the "A" position. The pump will not start until the automatic float control setting calls for pumping

3. To stop the pumps, turn the H.O.A. switch to "off" position.

b. Slide Headgates.

(1) The slide headgates are manually operated by hand cranks which are stored in the pumphouses.

(c) Pump Operating Conditions: Two pumps are installed in each pumping plant. Provision is made for installation of a third pump in Pumping Plants No. 1 and 3, and a third and fourth pump in Pumping Plant No. 2 at some future date. One float-operated controller is installed in each plant to control the operation of the pumps in that plant. The float-operated controllers are designed to accommodate the presently installed and future pumps. The proposed initial setting of the pump controllers is as follows:

Pumping Plant No. 1

Pump No. 1 set to:  
Start at W.S. Elev. 20.0  
Stop at W.S. Elev. 18.0

Pump No. 2 set to:  
Start at W.S. Elev. 22.5  
Stop at W.S. Elev. 21.0

Pumping Plant No. 2

Pump No. 1 set to:  
Start at W.S. Elev. 23.0  
Stop at W.S. Elev. 21.5

Pump No. 2 set to:  
Start at W.S. Elev. 24.0  
Stop at W.S. Elev. 23.0

Pumping Plant No. 3

Pump No. 1 set to:  
Start at W.S. Elev. 24.0  
Stop at W.S. Elev. 23.5

Pump No. 2 set to:  
Start at W.S. Elev. 25.3  
Stop at W.S. Elev. 24.3

These settings may be changed when a need therefore is demonstrated by operation experience and after approval by the District Engineer is granted.

(d) Precipitation Gages. Two Fisher-Porter recording precipitation gages have been installed within the drainage basin of the Mormon Slough Project. One is located at Pumping Plant No. 2 and the other is located on the north side of Comstock Road one mile east of Waterloo. These gages shall be operated and maintained in accordance with the manufacturer's manuals which have been furnished the Superintendent.

(c) Inspect the anchors at the pump operating floor, and note any indication of movement of the pump units, and loose bolts.

(d) Inspect the discharge connections for signs of leakage at the couplings or vibration while the pump is operating. Check flap gates in the discharge lines, note any abnormal noise or sluggishness of movement in opening or closing. Also, check the discharge lines, including the accessible pipe connections and the air release and siphon breaker at the top of the levee.

(e) Inspect each pump drive shaft and couplings for alignment, and note any tendency for the shaft to vibrate, or any looseness in the couplings and connections. Worn shaft bearings will cause the shaft to vibrate, however, in some instances it may not be easily detected without the use of special instruments.

(f) Carefully inspect all metal work, and note any indications of rust, leakage when pump is operating, abnormal wear or other signs of deterioration.

(g) Insofar as practical, occasionally check the ability of the pump to deliver the required capacity and note any indication that the pump is in need of adjustment, suction lines restricted, or debris in the suction bell.

## (2) Motors.

(a) Carefully inspect the motor to insure that it is being properly lubricated. Check to insure that the oil is at proper level especially as pertains to the pump motors. The oil level should be between the maximum-minimum markings on the site gage. (Check instructions on motor name plate and other manufacturer's data.) Note especially any leakage at the connections. Feel the bearing housings while the motor is operating and note any indication of abnormal heating at these points. Also note any unusual noise or vibration which would indicate that the bearings require attention and/or the unit is out of balance. Any clicking noise while the motor is running may be due to a cracked ball in the bearings, or some loose part and must be immediately corrected.

(b) Note any oil leaking by the oil seals, or any oil on the outside or inside of the motor housing.

(c) Check the motor for smoothness of operation under full load and note any abnormal noise or vibration of the assembly.

(d) Inspect the motor for signs of excessive temperature rise due to an apparent overload or other causes.

(e) Check the functioning of the motor controls especially when starting up under load.

(a) Check the controls for proper functioning. Insofar as practical, inspect the inside and outside of the float wells for any indication of debris which may interfere with the operation of the float, including possible restriction of water inlets.

(b) Inspect all metal work for indications of rusting, objectionable accumulation of dust, etc.

(c) Insure that the operating mechanism is properly lubricated and sealed. At least twice a year remove the cover and inspect the mechanism located therein for proper functioning, adequate lubrication and note any indications of water, dirt, etc., which may have accumulated.

(d) Insure that the base anchor bolts are secure and that float line is in true alignment with centerline of the float. Also, note any indication of wear or other deterioration of the line assembly including connections at float and driving unit. Occasionally inspect the float for possible damage.

(e) Check electrical wiring and connections from controller unit. Inspect mercury contacts and check all terminals for tightness. Use an electrician's insulated screwdriver suitable for the service to avoid injury to person making inspection.

(f) Transfer plugs shall be periodically transposed for manual alteration of pump programming to provide even wear on all pumping units during the operating season. Test plug provided shall also be operated to permit checking of float switch circuit continuity.

(2) Main Switchboard.

(a) The main switchboard panel, switches, instruments, and appurtenances should be kept clean and free from dust. Doors of all cabinets should be kept closed, and locked. Power supply should be "ON" at all times and pumping plant set for automatic operation during the pumping season.

(b) Check the switches and controls to insure that they are mechanically and electrically operable. Note especially any indication of sluggish operation.

(c) Note any of the instruments such as meters which are not registering properly.

(d) Note especially any indication of loose connections, insulation deterioration, unusual odors or mechanical failure within or around the switchboards.

(c) Periodic inspections at least every year should be made of the entire electrical system provided for operation of the main pumping units.

(d) Reliance for power to operate the electrical facilities is placed on the Utility Company. Any conditions noted in the inspection that may affect in any way the reliability of the power supply should be especially noted and brought to the attention of the Utility Company in writing or other accepted practice without delay.

d. Miscellaneous:

(1) Painting. At least once each year carefully inspect all painted surfaces and note need for repainting or other maintenance.

(2) Hazards.

(a) Check to insure that the proper warning notices are legible and properly posted.

(b) Check all access manholes and note any covers not in place or in need of maintenance.

(c) Insure that access gates provided to exclude unauthorized persons are kept adequately locked.

(d) Note presence of any grease or oil accumulations on floor which may contribute to a fire or slipping hazard.

(e) Inspect the concrete structure for signs of abnormal cracks or other conditions requiring maintenance.

(f) Be certain no tools, rags, etc., are left on oil switches, circuit breakers, motors or any other electrical equipment before applying power.

(3) Sump:

(a) Sumps shall be given visual inspection periodically for deposits of sediment that might tend to reduce the storage capacity. Any deposits shall be removed. Design storage capacity must be maintained.

(b) The sump shall be kept clean of debris, thistles, etc., that may be blown or worked through the trashrack.

(c) The areas draining into the pump sump shall be kept clean of debris, weeds, etc., that could wash against the trashracks or otherwise prevent efficient function of the drainage system as a whole.

(b) When installing, adjusting and performing general maintenance, make full use of the "Installation and Operating Instructions" prepared by the pump manufacturer for the pumps installed.

(c) The pumps are of relatively simple, rugged design and normally will require very little maintenance except for keeping the machinery clean and properly lubricated. Lubricants of the proper type and quality shall be used in each instance. However, use of more oil than called for by the manufacturer might result in waste. Careful and frequent inspections will in most instances reveal sources of possible trouble before they have had a chance to require a major repair operation to be performed. Insure that the grease and oil applications are functioning properly and that the lubricant is reaching the bearings.

(d) When it becomes necessary to pull or disassemble the pump unit to inspect, adjust and repair, all parts put back shall be thoroughly cleaned. At this time, the bearings should also be carefully cleaned including removal of the old lubricant. The points required to be lubricated and methods provided are indicated on the approved shop drawings. Lubricating is the most important phase of pump maintenance and should be checked daily (during periods of pumping operations) but the lubricant should only be added as required. It is not enough merely to apply the lubricant at the points provided as it must also be assured that the lubricant is reaching the bearings in each instance.

(e) Note location of oil seals provided for the pump bearings to prevent leakage of lubricant from the bearings and also to prevent foreign matter from entering the bearings. Excessive lubricant consumption requires replacement of seals. Replace the seals with new ones when the pump is disassembled for servicing or more frequently if required.

(f) In tightening bolted connections, use suitable size and proper type of wrench to avoid possible undesired overstressing of the threads and/or marring the heads of the bolts and nuts. When assembling the discharge line to the pump, tighten the bolts, each a little at a time to pull the seals together evenly and exercise care to insure against the possibility of pulling the pump out of line or throwing an undesired strain on the pump unit. After completing the assembly of the pump to the discharge line, carefully recheck the alignment of the pumping unit.

(g) A flap gate is installed at the end of each discharge pipe. These flap gates must be in proper operating condition at all times and any failure of this gate to operate properly shall be carefully investigated and the necessary maintenance performed without delay. Inspect those points noted on the inspection report and perform such maintenance as required. Give particular attention to the gate hinge bearing assembly and to the seals.

(3) Trashracks.

(a) The trashracks are provided primarily to prevent debris from entering the pumping compartment that might otherwise tend to clog or damage the pumps. These racks should be kept free from debris. (Persons should not be permitted in the water in front of these trashracks when the pumps are operating.)

(b) When corrosion of the metal work occurs, it shall be thoroughly cleaned and painted.

(4) Flap Gates. Discharge pipe flap gates that have become unserviceable shall be replaced or repaired at the earliest practical date. Keep the hinges adequately lubricated as required to insure proper functioning.

(5) Pumping Plant Structure. At least once each year thoroughly inspect the entire structure and perform any required maintenance to restore to its original condition

c. Fire Protection. Refer to applicable provisions of "Recommended Good Practices of the National Board of Fire Underwriters", and applicable safety manuals. Fire extinguishers have not been provided, because their use would not be effective in preventing damage to machinery and electrical equipment by fire. Proper emphasis shall be directed to strictly enforce all fire prevention rules by frequent and careful inspections. No combustible materials shall be allowed to accumulate on or around the pumping plant. Any rags, paper, or other combustible materials containing oil, paint or cleaning fluid shall not be allowed to accumulate, not even for a period of one day. Oil and grease dripping or other undesired accumulations shall be promptly removed. During any welding operations be especially careful to remove or properly isolate any material that might ignite or be damaged by the welding procedure. Take prompt corrective action relative to any electrical equipment which shows signs of sparking. Approved fire prevention instructions and warnings shall be properly posted.

d. Electrical System.

(1) General. Give particular attention to the items listed on the inspection report and perform such maintenance required in accordance with the best standard practice for the service with due consideration of all safety precautions. Only qualified mechanics and electricians experienced in the type of equipment involved shall be allowed to perform such maintenance. Maintenance of the powerline is the responsibility of the Utility Company. A large percentage of electrical failures are due to mechanical failures. Generally, no simple device is available for locating the source of or analyzing a noise problem with the consequence that the action taken must depend primarily upon the judgment and experience of the maintenance personnel.

with a clean cloth or brush dipped in cleaning fluid. After being cleaned polish the contacts with a clean dry cloth. The brown discoloration that is found on silver and silver-plated contacts is silver oxide which is a good conductor. It should be left alone unless the contacts must be cleaned for some other reason. When corroded, contacts should be cleaned with No 0000 sandpaper. This must be done very carefully so as not to remove too much of the silver plating. After the corrosion has been removed, polish the contacts with a clean, dry cloth making certain that all abrasive particles are removed and that the shape of the contact has not been changed. Silver-plated contacts that are badly burned or pitted should be replaced. In the event no replacement is on hand at the site, the contacts may be dressed with sandpaper until the burned or pitted spots are removed. If the burns or pits can not be removed by using sandpaper, then use a burnishing tool very carefully. In only extreme emergencies will the use of a file on silver-plated contacts be permitted. In no instance shall highly abrasive materials, such as emery cloth, heavy sandpaper or carborundum paper be used for surfacing relay contacts. In adjusting the contact pressure, refer to the manufacturer's recommendations and check by the spring balance or other approved methods. In case the contact pressure is below the minimum value required, adjust or install a new spring. Low pressure should be avoided to minimize possibility of excessive heating of the contacts. On multiple pole devices, the spring tension on all poles should be approximately the same and if one is considerably lower than the others, the spring should be replaced.

2. Avoid the use of lubricant on contacts or bearings of a contactor as oil quickly collects dust and unless parts are frequently cleaned, will interfere with the operation of the contactor.

3. Maintain the contact gap in accordance with the manufacturer's instructions.

4. Failure to close may be due to one of the following:

- a. Operating coil may be open-circuited.
- b. Lead wires to operating coil may be loose or disconnected.
- c. Excessive mechanical friction.
- d. Power off or voltage below normal.

5. Failure to open may be due to one of the following:

- a. Mechanical interference or friction.
- b. Welded contacts.
- c. Broken contact spring.

b. Maintenance card or cards should be kept for each major piece of equipment for recording a summary of test results, inspection and repairs, and any pertinent comments regarding the condition of the equipment. Such cards should be kept up to date and filed at an approved location so as to be readily available to those responsible for inspection, testing and maintenance. A data card should be prepared for each piece of equipment or component thereof consistent with the maintenance program breakdown to provide a record of project equipment. The data card records should indicate all name plate data and other historic information that would indicate, at least, but not necessarily be limited to, source of manufacture, physical characteristics, date of purchase, cost of procurement and list of spare parts available.

EXHIBIT A

Federal Flood Control Regulations

EXHIBIT A

(d) **Drainage Structures -- (1) Maintenance.** Adequate measures shall be taken to insure that inlet and outlet channels are kept open and that trash, drift, or debris is not allowed to accumulate near drainage structures. Flap gates and manually operated gates and valves on drainage structures shall be examined, oiled, and trial operated at least once every 90 days. Where drainage structures are provided with stop log or other emergency closures, the condition of the equipment and its housing shall be inspected regularly and a trial installation of the emergency closure shall be made at least once each year. Periodic inspections shall be made by the Superintendent to be certain that:

(i) Pipes, gates, operating mechanism, riprap, and headwalls are in good condition;

(ii) Inlet and outlet channels are open;

(iii) Care is being exercised to prevent the accumulation of trash and debris near the structures and that no fires are being built near bituminous coated pipes;

(iv) Erosion is not occurring adjacent to the structure which might endanger its water tightness or stability.

Immediate steps will be taken to repair damage, replace missing or broken parts, or remedy adverse conditions disclosed by such inspections.

(2) **Operation.** Whenever high water conditions impend, all gates will be inspected a short time before water reaches the invert of the pipe and any object which might prevent closure of the gate shall be removed. Automatic gates shall be closely observed until it has been ascertained that they are securely closed. Manually operated gates and valves shall be closed as necessary to prevent inflow of flood water. All drainage structures in leaves shall be inspected frequently during floods to ascertain whether seepage is taking place along the lines of their contact with the subment. Immediate steps shall be taken to correct any adverse condition.

(e) **Closure Structures -- (1) Maintenance.** Closure structures for traffic openings shall be inspected by the superintendent every 90 days to be certain that:

(i) No parts are missing;

(ii) Metal parts are adequately covered with paint;

(iii) All movable parts are in satisfactory working order;

(iv) Proper closure can be made promptly when necessary;

(v) Sufficient materials are on hand for the erection of sand bag closures and that the location of such materials will be readily accessible in times of emergency.

Tools and parts shall not be removed for other use. Trial erections of one or more closure structures shall be made once each year, alternating the structures chosen so that each gate will be erected at least once in each 3-year period. Trial erection of all closure structures shall be made whenever a change is made in key operating personnel. Where railroad operation makes trial erection of a closure structure infeasible, rigorous inspection and drill of operating personnel may be substituted therefor.

Trial erection of sand bag closures is not required. Closure materials will be carefully checked prior to and following flood periods, and damaged or missing parts shall be repaired or replaced immediately.

(2) **Operation.** Erection of each movable closure shall be started in sufficient time to permit completion before flood waters reach the top of the structure sill. Information regarding the proper method of erecting each individual closure structure, together with an estimate of the time required by an experienced crew to complete its erection will be given in the Operation and Maintenance Manual which will be furnished local interests upon completion of the project. Closure structures will be inspected frequently during flood periods to ascertain that no undue leakage is occurring and that drains provided to care for ordinary leakage are functioning properly. Boats or floating plant shall not be allowed to tie up to closure structures or to discharge passengers or cargo over them.

(f) **Pumping Plants -- (1) Maintenance.** Pumping plants shall be inspected by the Superintendent at intervals not to exceed 30 days during flood seasons and 90 days during off-flood seasons to insure that all equipment is in order for instant use. At regular intervals, proper measures shall be taken to provide for cleaning plant, buildings, and equipment, repainting as necessary, and lubricating all machinery. Adequate supplies of lubricants for all types of machines, fuel for gasoline or diesel powered equipment, and flash lights or lanterns for emergency lighting shall be kept on hand at all times. Telephone service shall be maintained at pumping plants. All equipment, including switch gear, transformers, motors, pumps, valves, and gates shall be trial operated and checked at least once every 90 days. Megger tests of all insulation shall be made whenever wiring has been subjected to undue dampness and otherwise at intervals not to exceed one year. A record shall be kept showing the results of such tests. Wiring disclosed to be in an unsatisfactory condition by such tests shall be brought to a satisfactory condition or shall be promptly replaced. Diesel and gasoline engines shall be started at such intervals and allowed to run for such length of time as may be necessary to insure their serviceability in times of emergency. Only skilled electricians and mechanics shall be employed on tests and repairs. Operating personnel for the plant shall be present during tests. Any equipment removed from the station for repair or replacement shall be returned or replaced as soon as practicable and shall be trial operated after reinstallation. Repairs requiring removal of equipment from the plant shall be made during off-flood seasons insofar as practicable.

(2) **Operation.** Competent operators shall be on duty at pumping plants whenever it appears that necessity for pump operation is imminent. The operator shall thoroughly inspect, trial operate, and place in readiness all plant equipment. The operator shall be familiar with the equipment, manufacturers' instructions and drawings and with the "Operating Instructions" for each station. The equipment shall be operated in accordance with the above-mentioned "Operating Instructions" and care shall be exercised that proper lubrication is being supplied all equipment, and that no overheating, undue vibration or noise is occurring. Immediately upon final recession of flood waters, the pumping station shall be thoroughly cleaned, pump house sumps flushed, and equipment thoroughly inspected, oiled and greased. A record or log of pumping plant opera-

tion shall be kept for each station, a copy of which shall be furnished the District Engineer following each flood.

(g) **Channels and Floodways -- (1) Maintenance.** Periodic inspections of improved channels and floodways shall be made by the Superintendent to be certain that:

(i) The channel or floodway is free of debris, weeds, and wild growth;

(ii) The channel or floodway is not being restricted by the depositing of waste materials, building of unauthorized structures or other encroachments;

(iii) The capacity of the channel or floodway is not being reduced by the formation of shoals;

(iv) Banks are not being damaged by rain or wave wash, and that no sloughing of banks has occurred;

(v) Riprap sections and deflection dikes and walls are in good condition;

(vi) Approach and egress channels adjacent to the improved channel or floodway are sufficiently clear of obstructions and debris to permit proper functioning of the project works.

Such inspections shall be made prior to the beginning of the flood season and otherwise at intervals not to exceed 90 days. Immediate steps will be taken to remedy any adverse conditions disclosed by such inspections. Measures will be taken by the Superintendent to promote the growth of grass on bank slopes and scrub deflection dikes. The Superintendent shall provide for periodic repair and cleaning of debris basins, check dams, and related structures as may be necessary.

(2) **Operation.** Both banks of the channel shall be patrolled during periods of high water, and measures shall be taken to protect these reaches being attacked by the current or by wave wash. Appropriate measures shall be taken to prevent the formation of jams of ice or debris. Large objects which become lodged against the bank shall be removed. The improved channel or floodway shall be thoroughly inspected immediately following each major high water period. As soon as practicable thereafter, all snag and other debris shall be removed and all damage to banks, riprap, deflection dikes and walls, drainage outlets, or other flood control structures repaired.

(h) **Miscellaneous facilities -- (1) Maintenance.** Miscellaneous structures and facilities constructed as a part of the protective works and other structures and facilities which function as a part of, or affect the efficient functioning of the protective works, shall be periodically inspected by the Superintendent and appropriate maintenance measures taken. Damaged or unserviceable parts shall be repaired or replaced without delay. Areas used for ponding in connection with pumping plants or for temporary storage of interior run-off during flood periods shall not be allowed to become filled with silt, debris, or dumped material. The Superintendent shall take proper steps to prevent restriction of bridge openings and, where practicable, shall provide for temporary raising during floods of bridges which restrict channel capacities during high flows.

(2) **Operation.** Miscellaneous facilities shall be operated to prevent or reduce flooding during periods of high water. These facilities constructed as a part of the protective works shall not be used for purposes other than flood protection without approval of the District Engineer unless designed therefor.

EXHIBIT B

Location Map

Mormon Slough Project

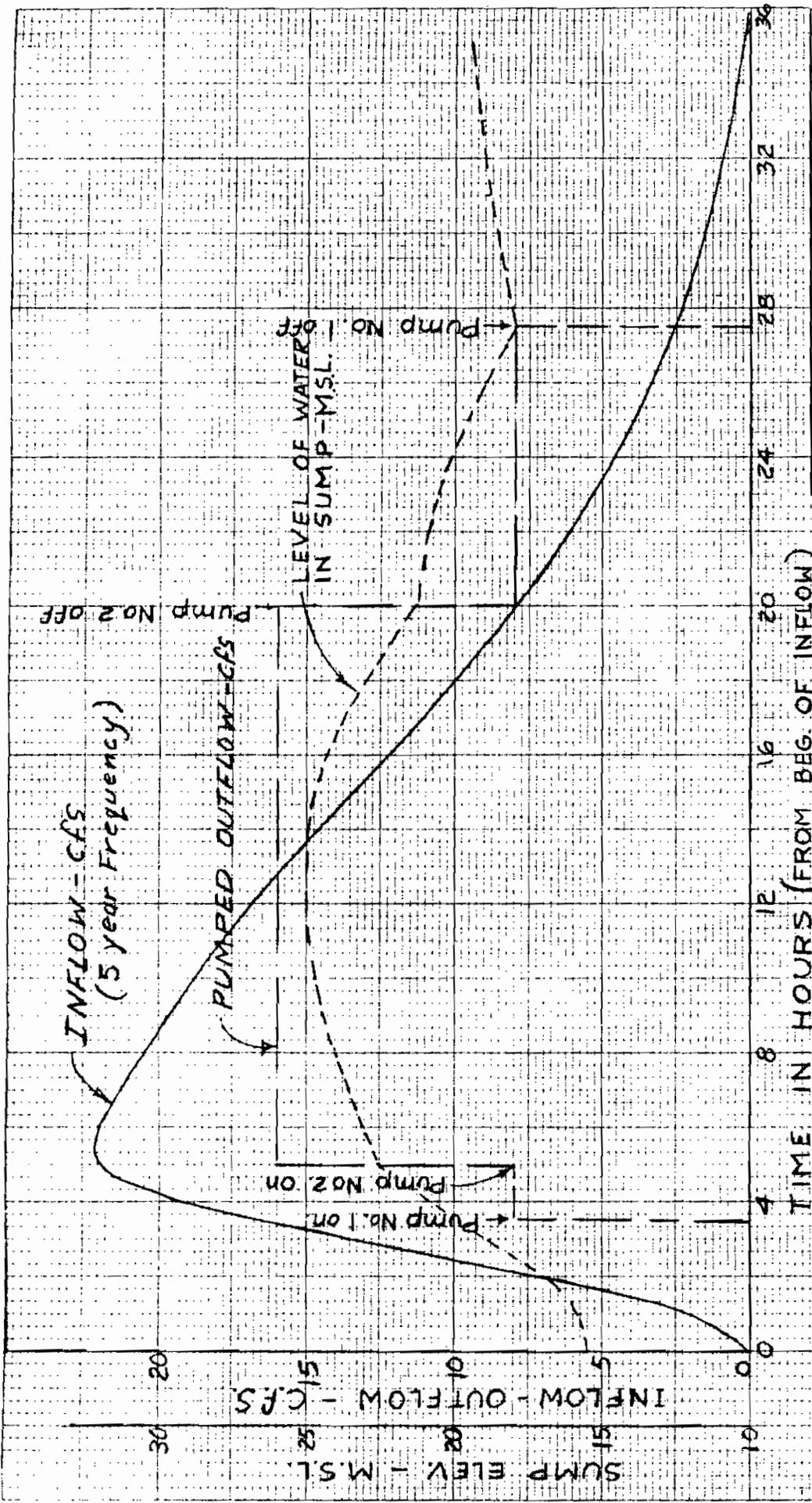
Part 2

EXHIBIT B

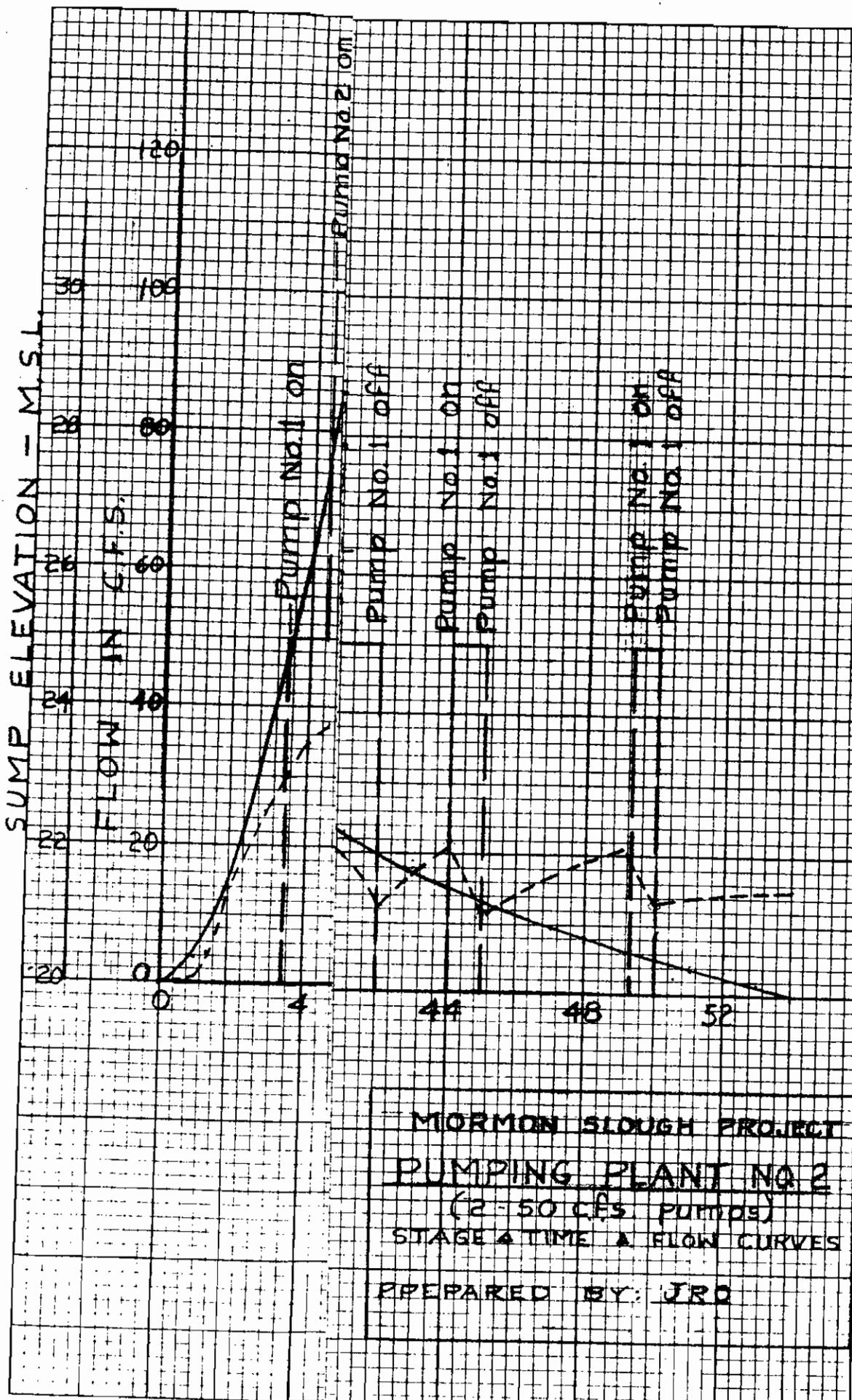
EXHIBIT C

Stage - Time - Flow Curves

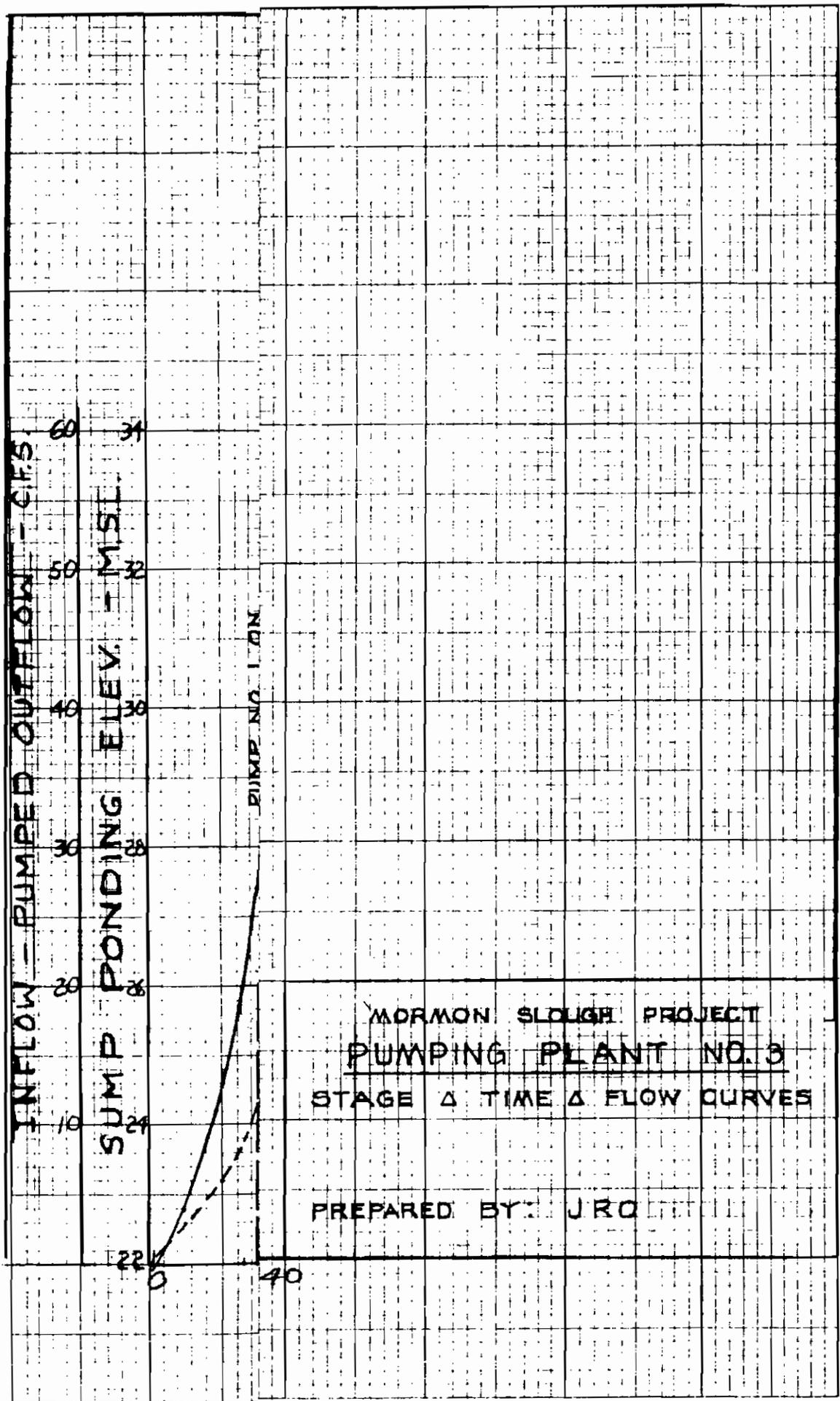
EXHIBIT C



MORMON SLOUGH PROJECT  
PUMPING PLANT No. 1  
STAGE & TIME OF FLOW CURVES  
PREPARED BY: JRO



MORMON SLOUGH PROJECT  
 PUMPING PLANT NO 2  
 (2 - 50 cfs pumps)  
 STAGE 4 TIME A FLOW CURVES  
 PREPARED BY: JRO



MORMON SLOUGH PROJECT  
PUMPING PLANT NO. 3  
STAGE Δ TIME Δ FLOW CURVES  
PREPARED BY: JRO

EXHIBIT D

"As Constructed" Drawings

EXHIBIT D

EXHIBIT D

"AS CONSTRUCTED" DRAWINGS

(See separate folder for following Contract Drawings - Specification No. 3356  
Drawing File No. 3-4-147)

<u>File No.</u>	<u>Title</u>
147/24	Pumping Plant No. 1 - General Plan
147/25	Pumping Plant No. 1 - Plan and Sections
147/26	Pumping Plant No. 1 - Floor Plan and Sections
147/27	Pumping Plant No. 1 - Reinforcement Details
147/28	Pumping Plant No. 2 - General Plan
147/29	Pumping Plant No. 2 - Plan and Sections
147/30	Pumping Plant No. 2 - Floor Plan and Sections
147/31	Pumping Plant No. 2 - Reinforcement Details
147/32	Pumping Plant No. 3 - General Plan
147/33	Pumping Plant No. 3 - Plan and Sections
147/34	Pumping Plant No. 3 - Floor Plan and Sections
147/35	Pumping Plant No. 3 - Reinforcement Details
147/36	Pumping Plant - Miscellaneous Details
147/37	Electrical Plans and Details

**EXHIBIT E**  
**Manufacturer's Data**

**EXHIBIT E**

EXHIBIT E

MANUFACTURERS DATA

(See Following Manufacturer's Data Under Separate Covers)

1. Handbook on installation and operation instructions for pumps and motors.
2. Operating instructions US Motors
3. Brochure No. 505 US Motors
4. Shop Drawings
  - a. Zinsco Elec. Prod. No. D-90245-1, Motor Control Centers
  - b. Zinsco Elec. Prod. No. D-90245-2, Wiring Diagrams Plant #1
  - c. Zinsco Elec. Prod. No. D-90245-3, Wiring Diagrams Plant #2
  - d. Zinsco Elec. Prod. No. D-90245-4, Wiring Diagrams Plant #3
  - e. Drawing, no number - Details of Lube System Layne & Bowler Pumps

MORMON SLOUGH MANUAL

EXHIBIT F

PHOTOGRAPHIC PRINTS OF STRUCTURES



FIGURE NO. 1  
COLLECTING SUMP

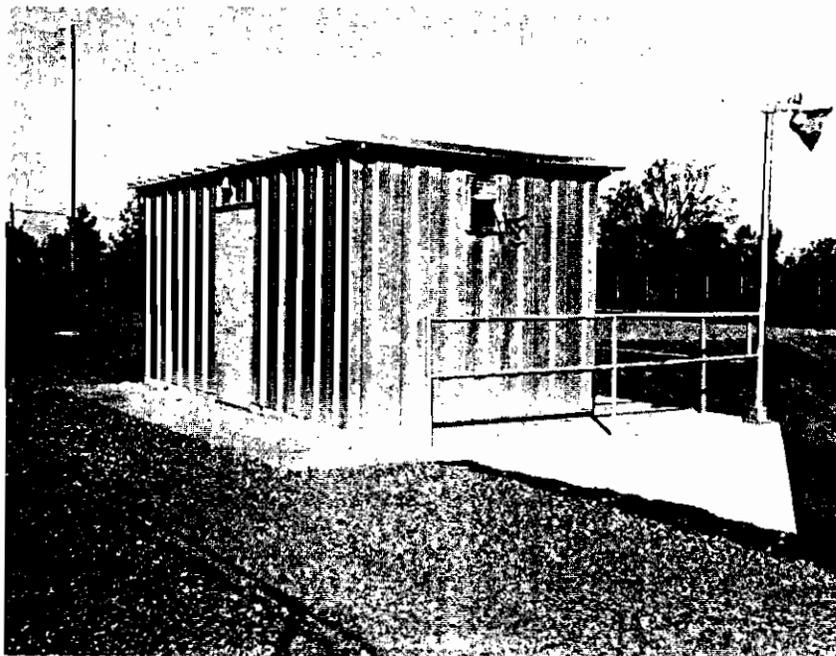


FIGURE NO. 2  
PUMP HOUSE

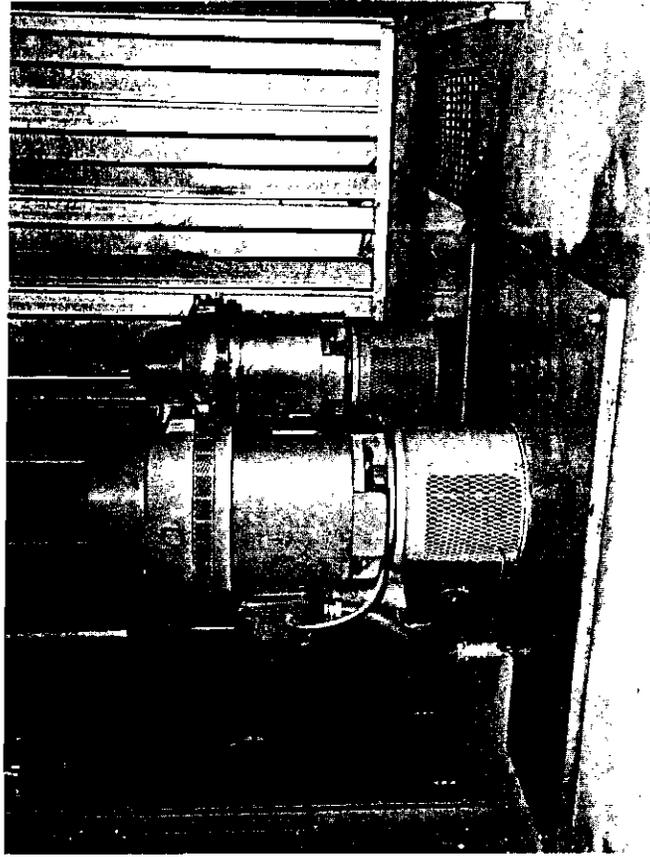


FIGURE NO. 3  
PUMPHOUSE INTERIOR

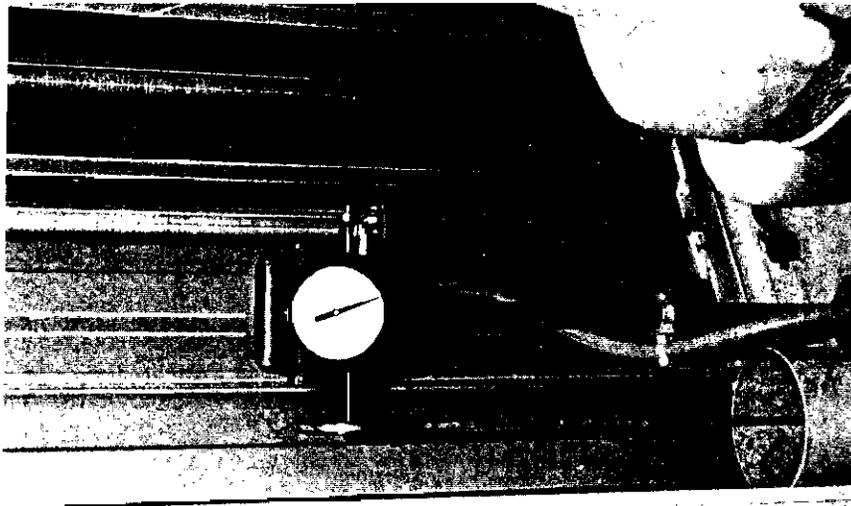
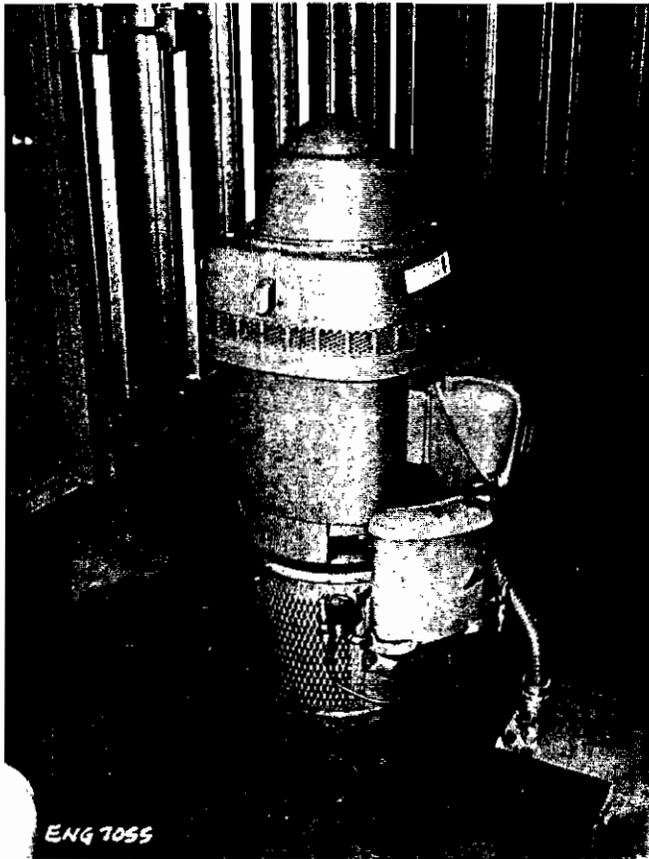


FIGURE NO. 4  
FLOAT CONTROLLER

PUMPING PLANT NO. 1

EXHIBIT F  
PLATE II



AUTOMATIC  
OILER

FIGURE NO. 5  
PUMP MOTOR

PUMPING PLANT NO. 1

EXHIBIT F  
PLATE III

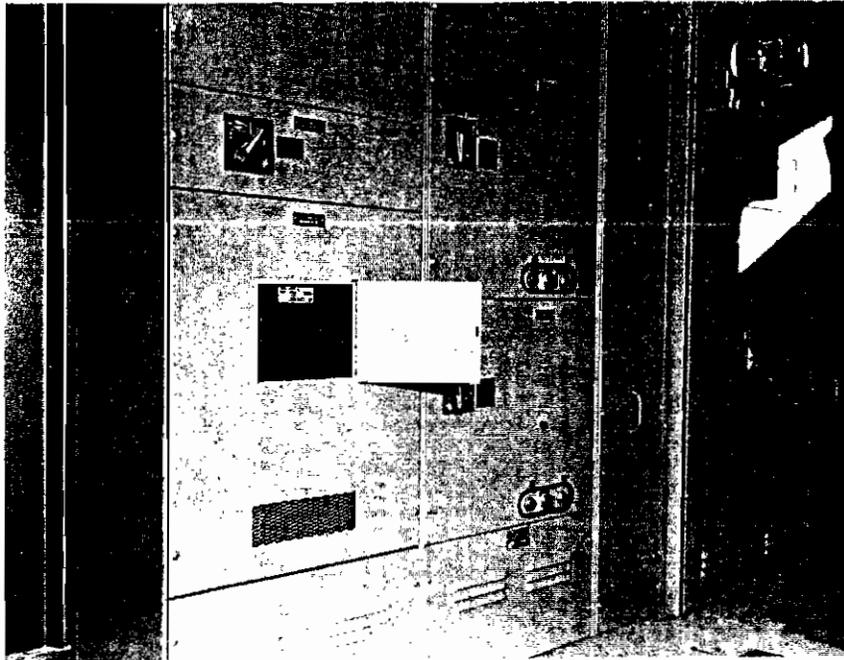


FIGURE NO. 6  
PUMP CONTROL SWITCHES

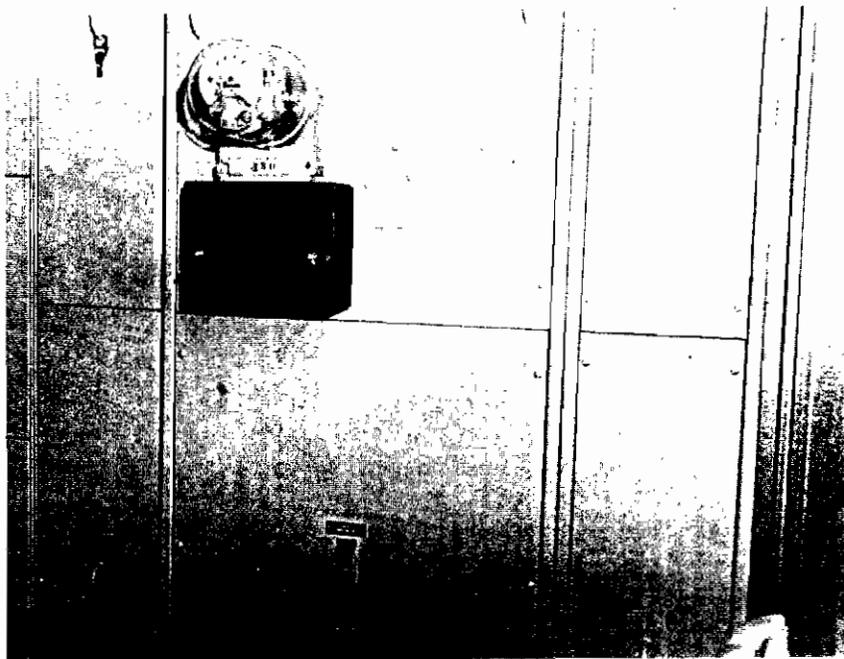


FIGURE NO. 7  
MAIN CONTROL SWITCH

PUMPING PLANT NO. 1

EXHIBIT F  
PLATE IV

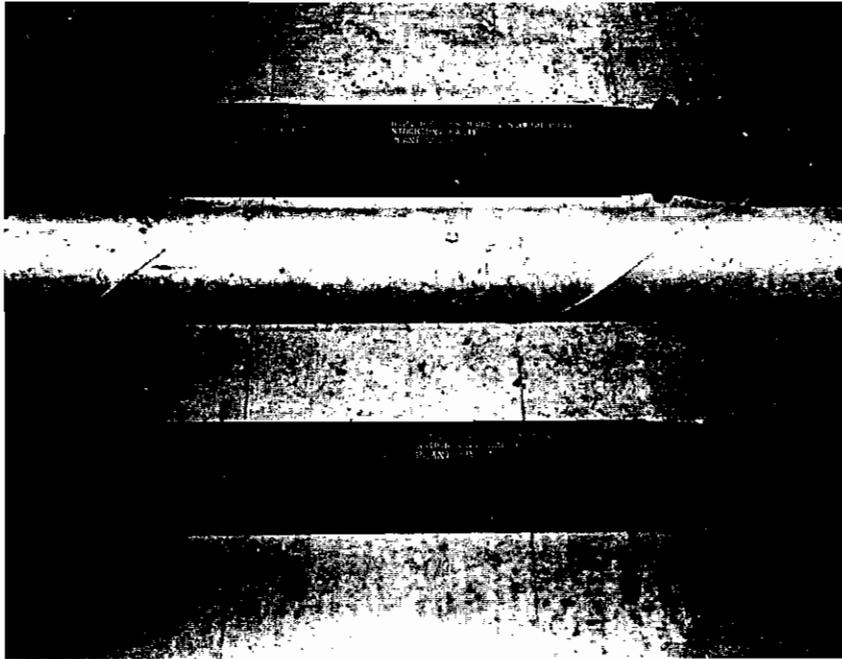


FIGURE NO. 8  
PUMP COLUMNS & FLOAT WELL

FLOATWELL



FIGURE NO. 9  
PUMP DISCHARGE FLEX CONNECTIONS

PUMPING PLANT NO. 1

EXHIBIT F  
PLATE V



FIGURE NO. 10  
SIPHON BREAKER HOUSING

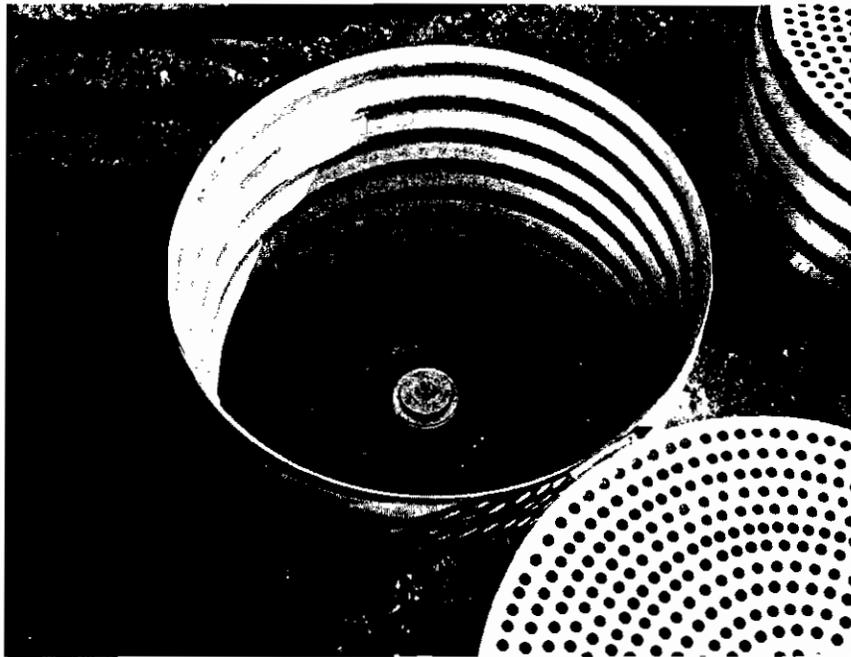


FIGURE NO. 11  
SIPHON BREAKER



FIGURE NO. 12  
SLIDE GATE-GRAVITY DRAIN



FIGURE NO. 13  
FLAP GATES-DISCHARGE LINES



FIGURE NO. 14  
COLLECTING SUMP 11-26-68



FIGURE NO. 15  
COLLECTING SUMP 1-21-69

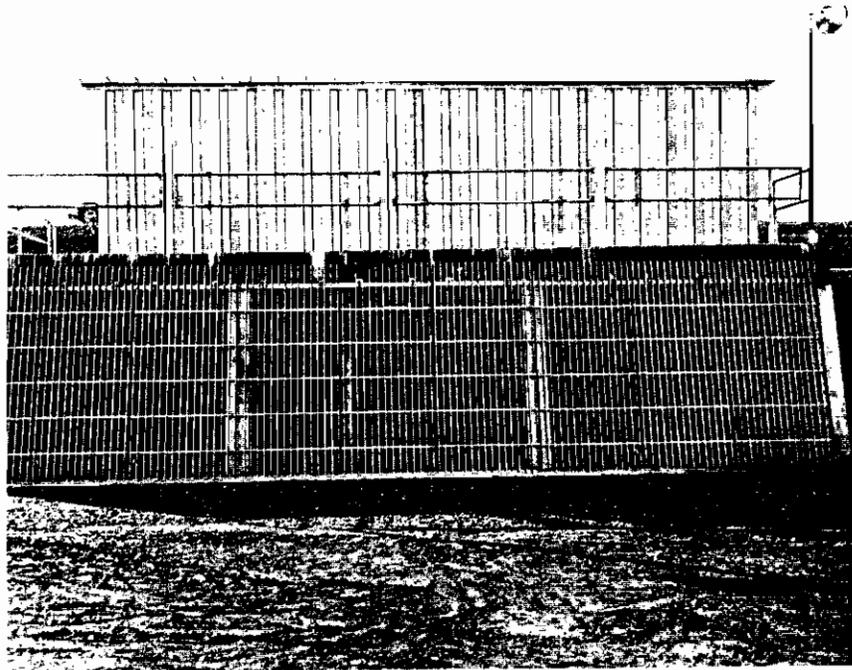


FIGURE NO. 16  
TRASHRACK

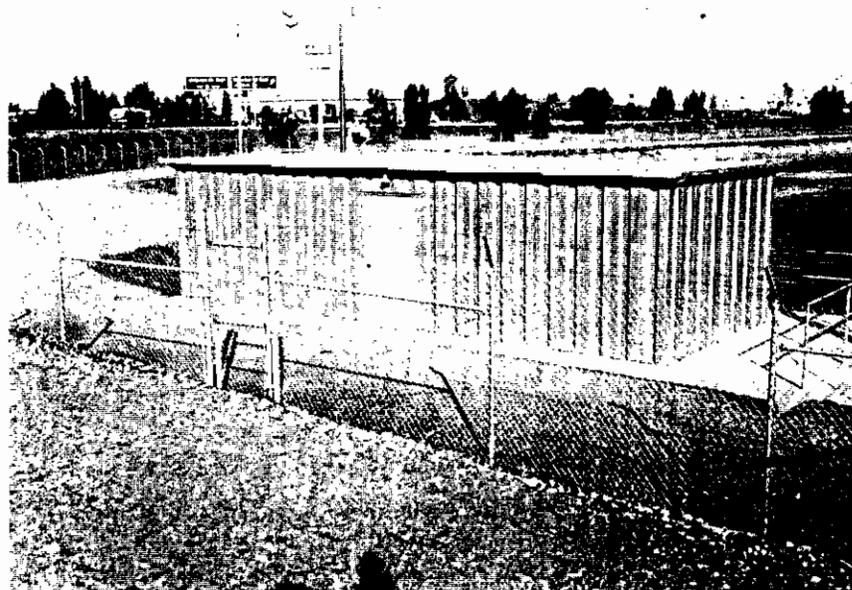


FIGURE NO. 17  
PUMPING PLANT

PUMPING PLANT NO. 2

EXHIBIT F  
PLATE IX

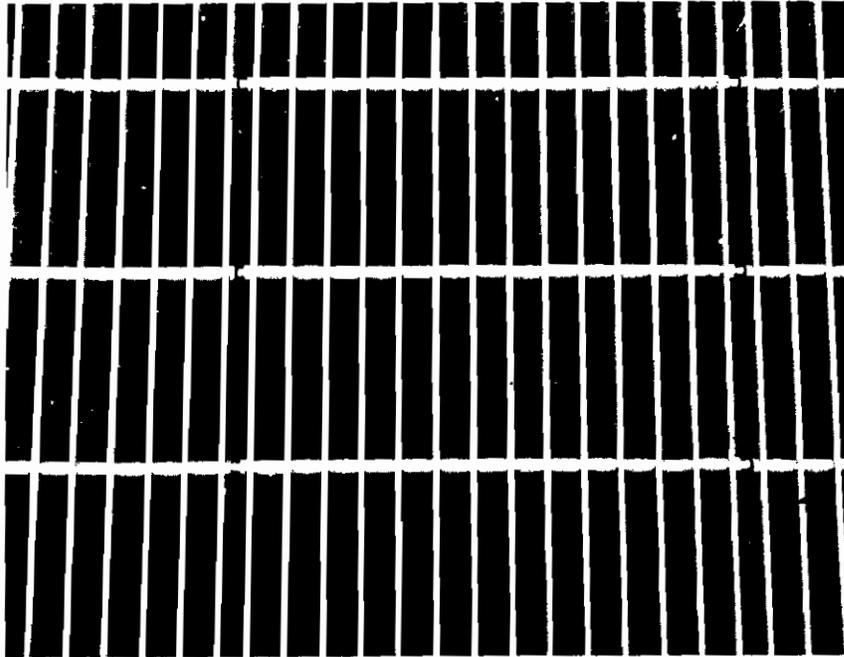


FIGURE NO. 18  
TRASH RACK

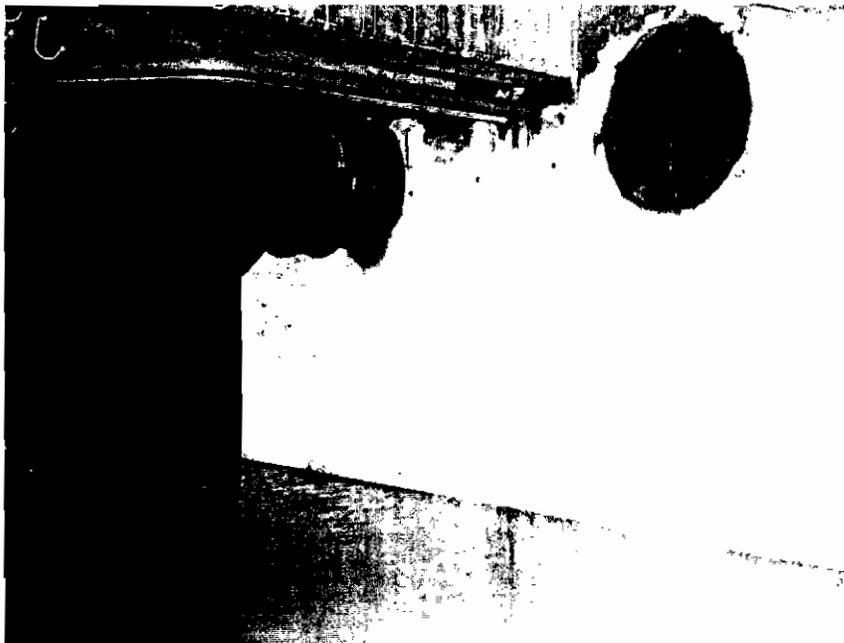


FIGURE NO. 19  
DISCHARGE COLUMN

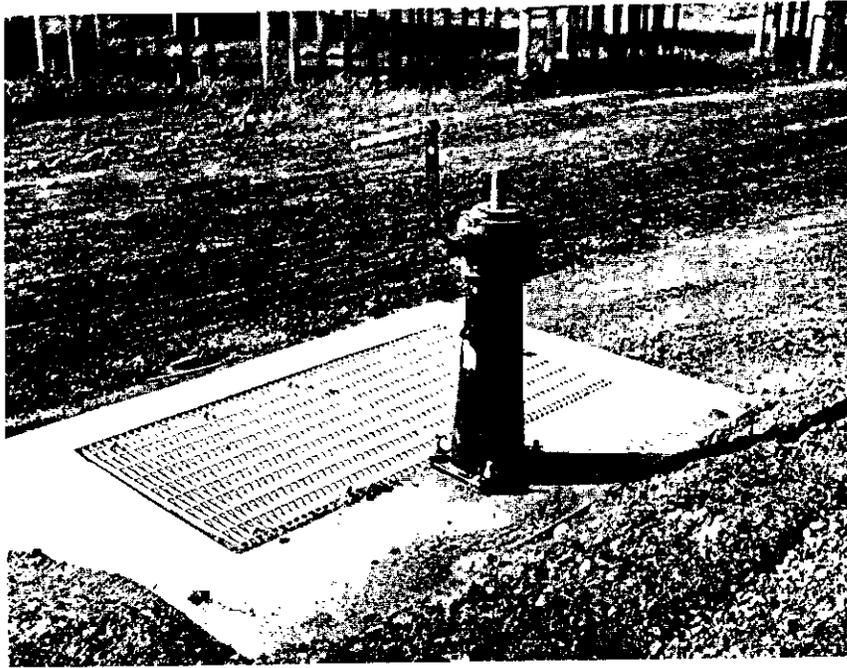


FIGURE NO. 20  
SLIDE GATE-GRAVITY DRAIN

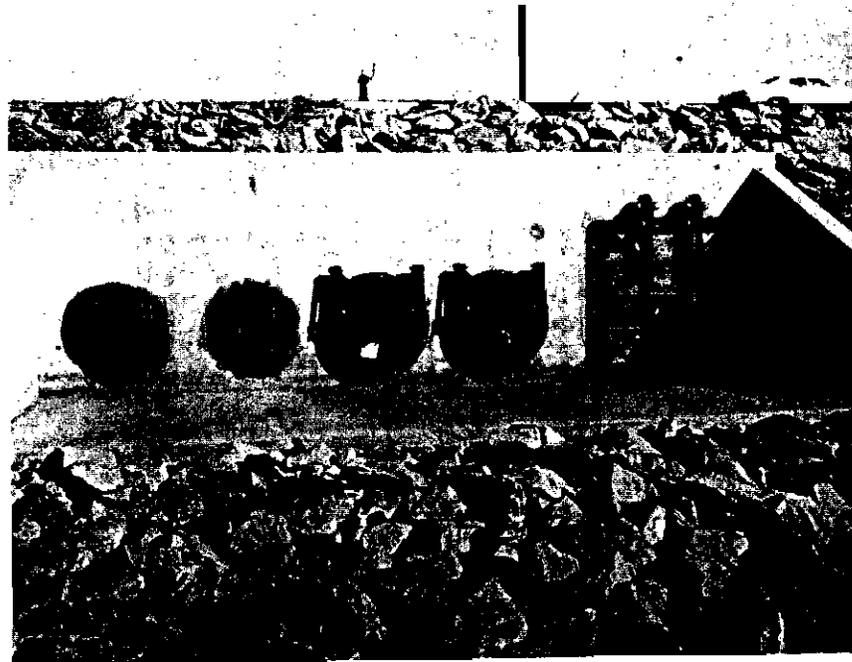


FIGURE NO. 21  
DISCHARGE FLAP GATES

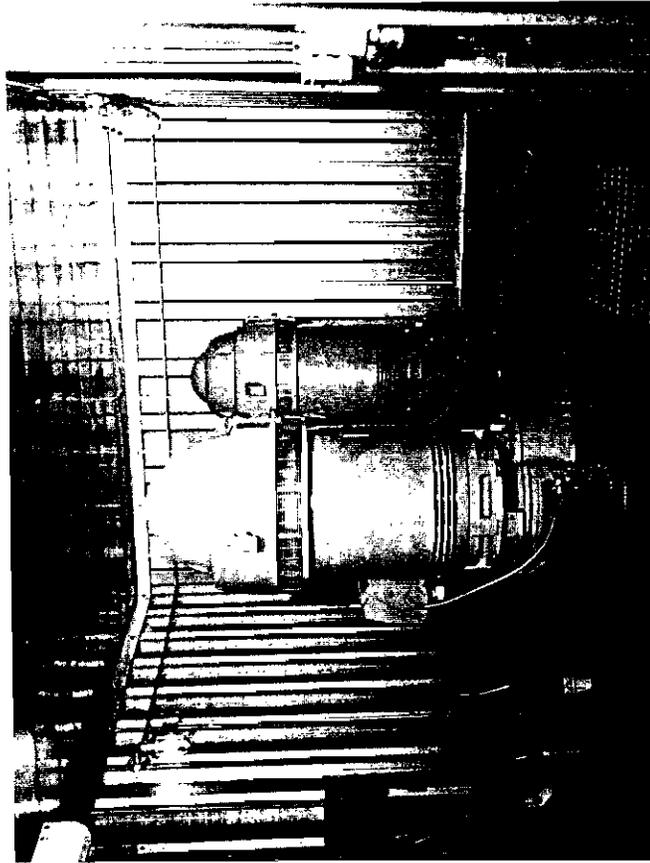


FIGURE NO. 24  
PUMPS  
AUTOMATIC  
OILER

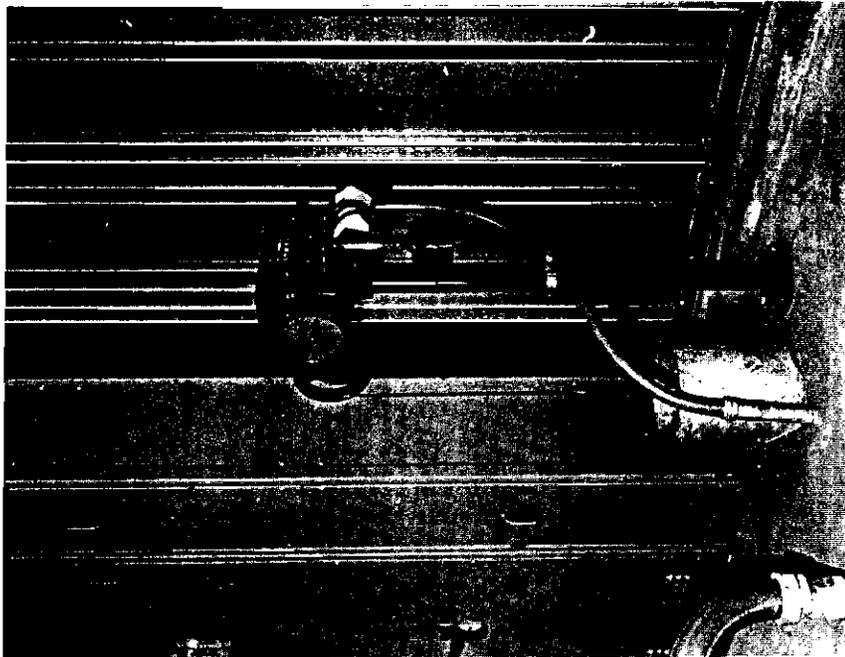


FIGURE NO. 25  
FLOAT CONTROL

PUMPING PLANT NO. 2

EXHIBIT F  
PLATE XIII

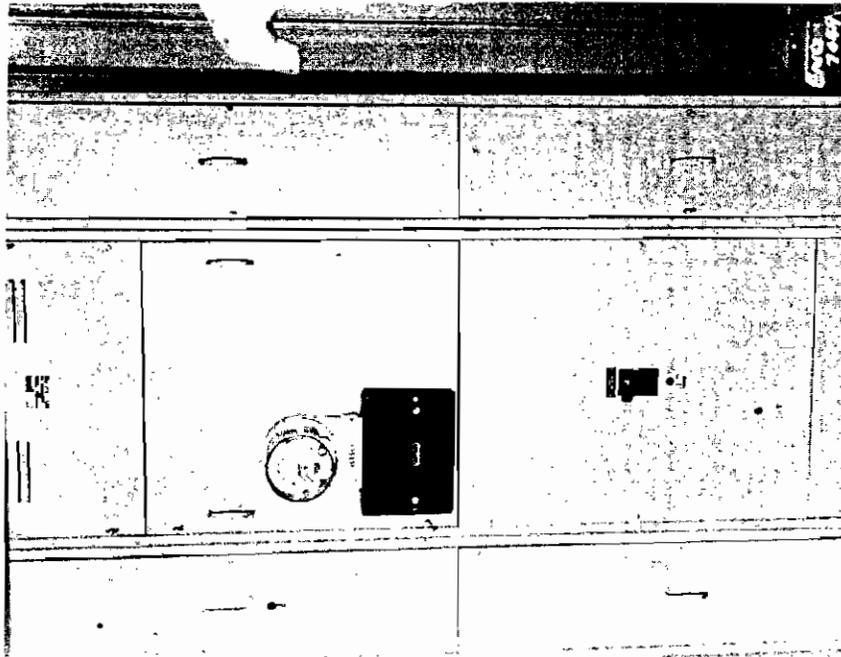


FIGURE NO. 26  
MAIN SWITCH

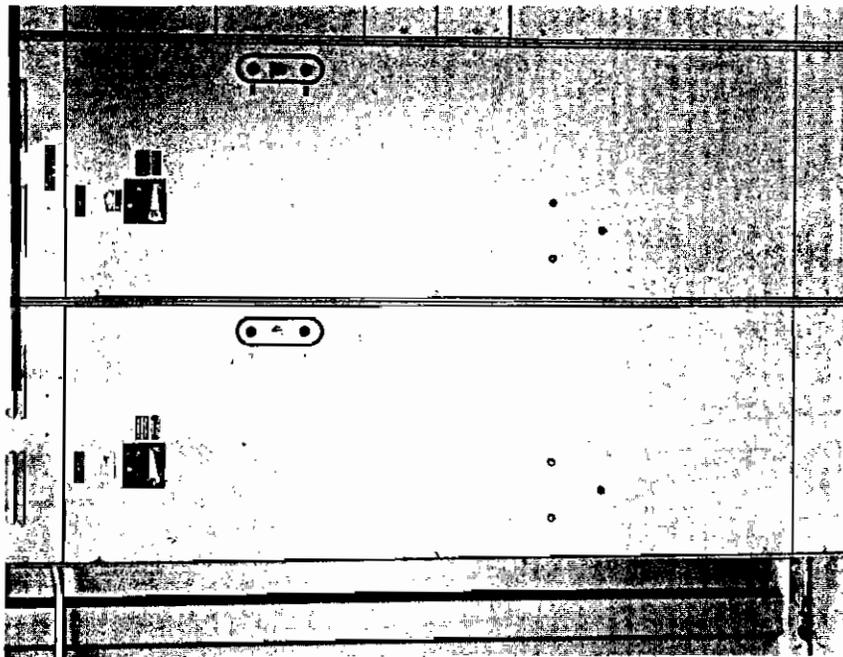


FIGURE NO. 27  
PUMP CONTROL SWITCHES

PUMPING PLANT NO. 2

EXHIBIT F  
PLATE XIV

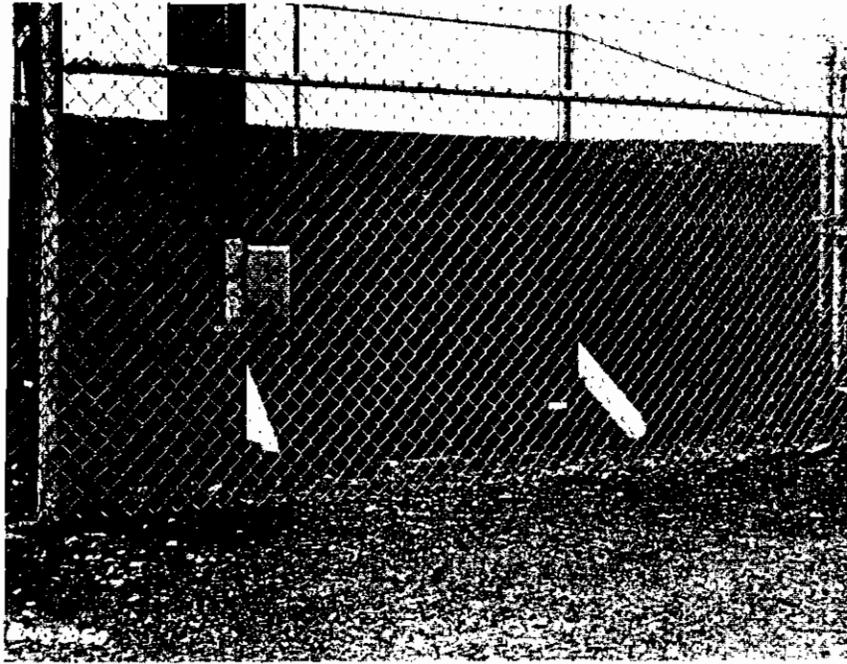


FIGURE NO. 28  
TRANSFORMER



FIGURE NO. 29  
COLLECTING SUMP



FIGURE NO. 30  
COLLECTING SUMP

PUMPING PLANT NO. 3

EXHIBIT F  
PLATE XVI

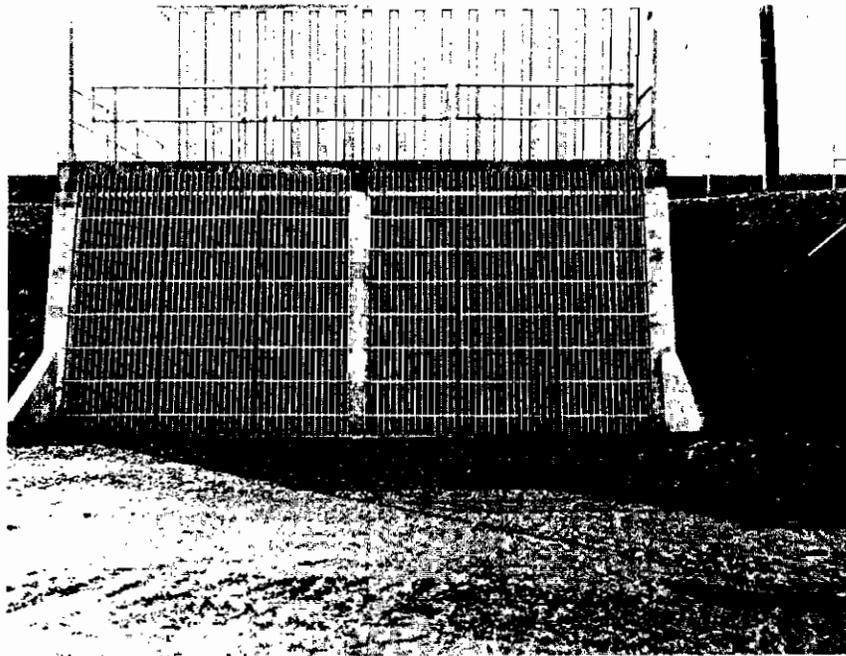


FIGURE NO. 31  
TRASHRACK

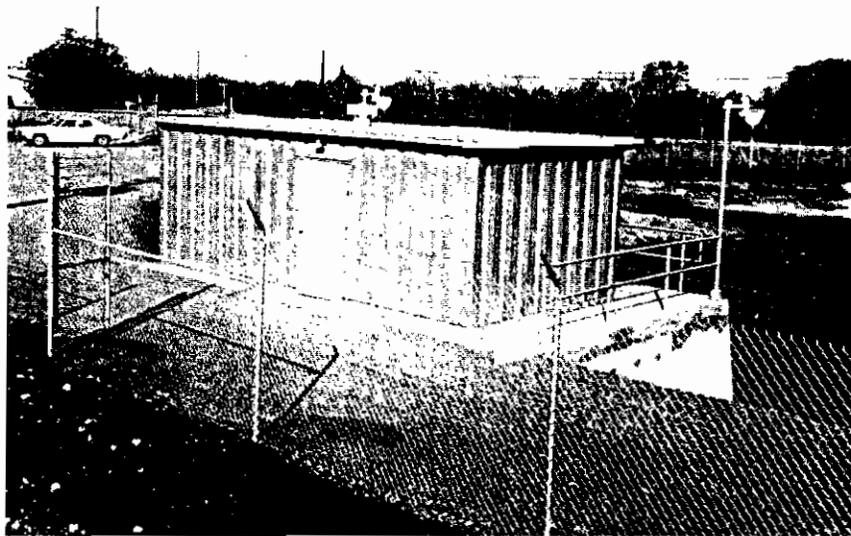


FIGURE NO. 32  
PUMPHOUSE

PUMPING PLANT NO. 3

EXHIBIT F  
PLATE XVII

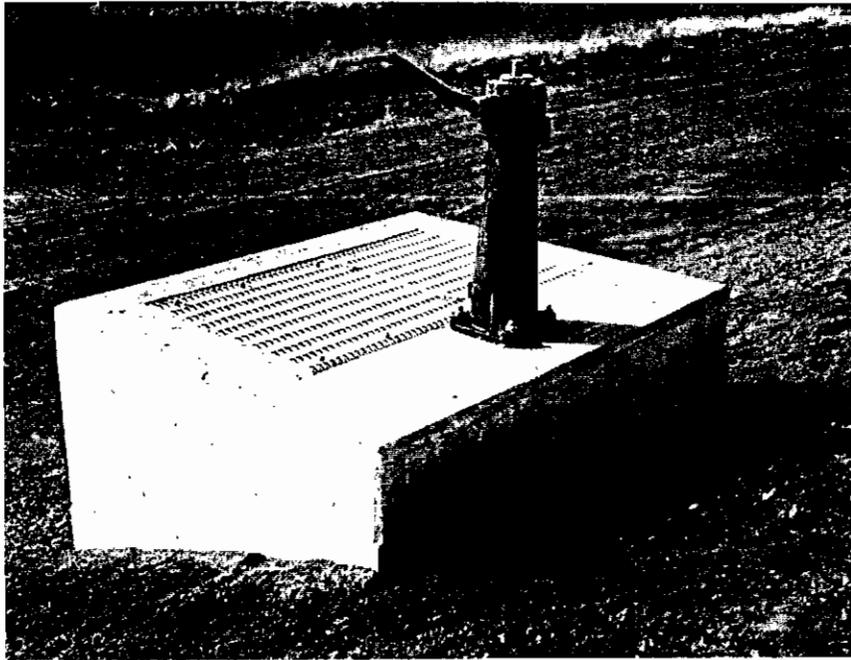
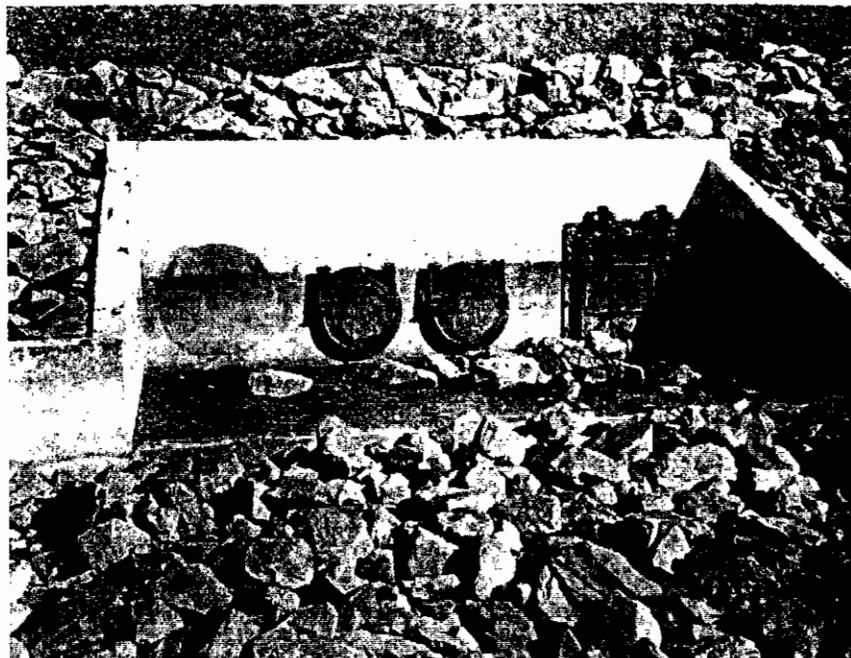


FIGURE NO. 33  
SLIDE GATE-GRAVITY DRAIN



GRAVITY  
DRAIN

FIGURE NO. 34  
FLAP GATES-DISCHARGE LINES



FIGURE NO. 35  
SIPHON BREAKER HOUSING

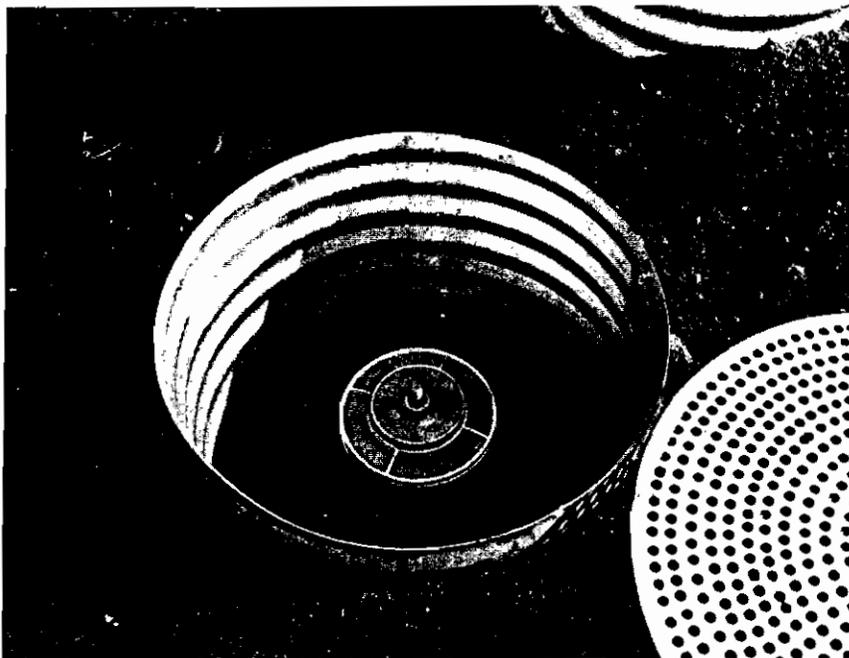


FIGURE NO. 36  
SIPHON BREAKER

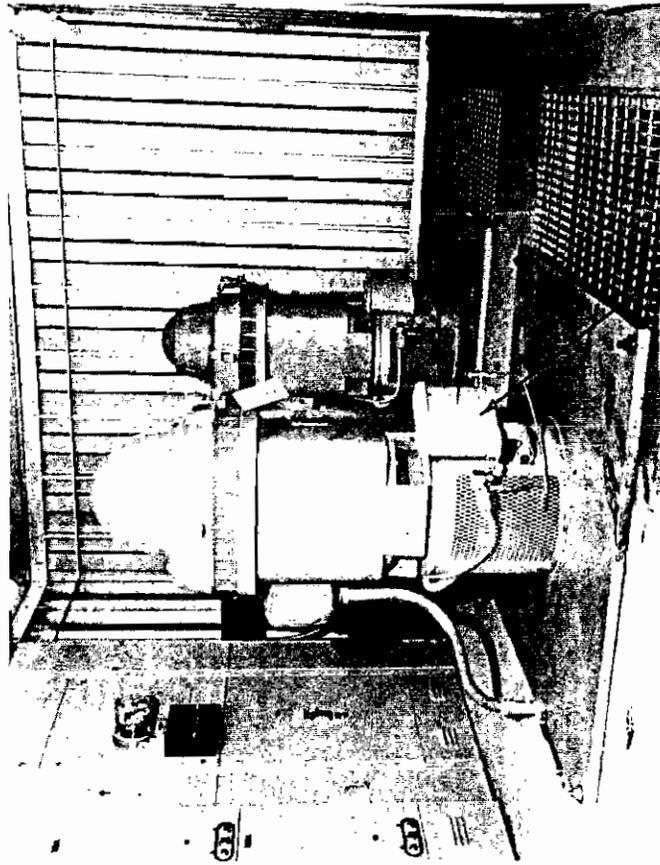


FIGURE NO. 37  
PUMPS

AUTOMATIC  
OILER

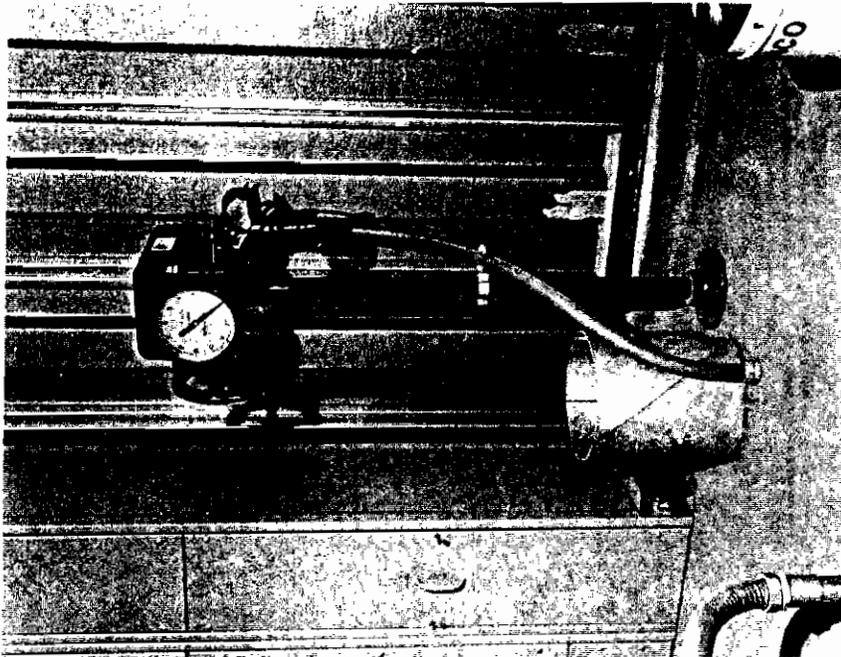


FIGURE NO. 38  
PUMP FLOAT CONTROL

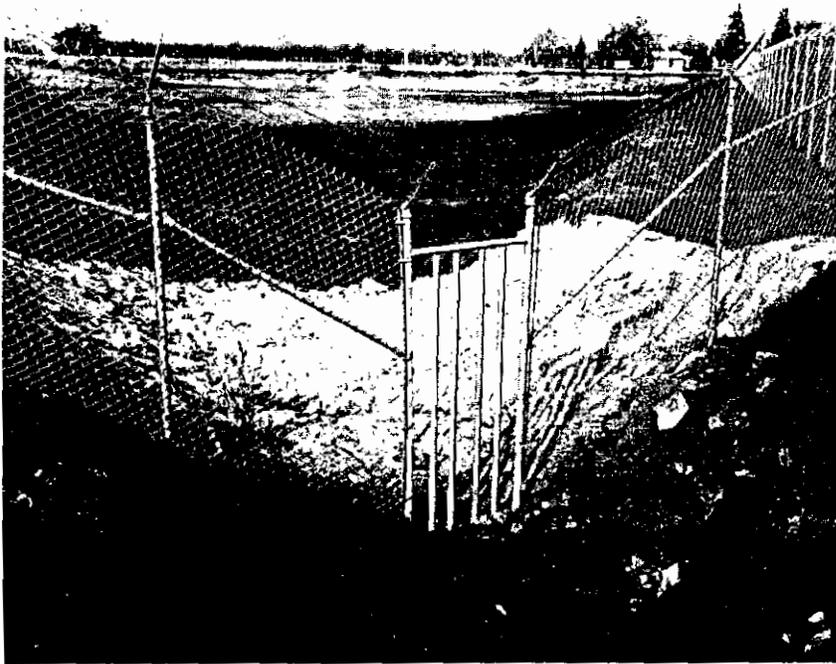


FIGURE NO. 41  
TRASHRACK  
ENTRANCE TO SUMP



FIGURE NO. 42  
PUMP DISCHARGE COLUMNS

EXHIBIT G

Letter of Acceptance by  
State Reclamation Board

EXHIBIT G

C  
O  
P  
Y

The Reclamation Board  
State of California

C  
O  
P  
Y

OCT 21 1968  
4130.50.102

District Engineer  
Corps of Engineers  
U. S. Army  
650 Capitol Mall  
Sacramento, California 95814

Dear Sir:

Reference is made to your letter of August 19, 1968 concerning transfer to the State of California of the Mormon Slough Flood Control Project, Unit No. 2 (mouth of Diverting Canal to Jack Tone Road) for maintenance and operation.

This work was constructed in accordance with Specification No. 3356, Contract No. DACW05-68-C-0020, Drawing No. 3-4-147.

The Reclamation Board, at its meeting of September 6, 1968, formally accepted the above referred to work for operation and maintenance.

Sincerely yours,

/s/ A. E. McCOLLAM  
A. E. McCOLLAM  
Chief Engineer and  
General Manager

EXHIBIT G

EXHIBIT H

Mechanical - Electrical Equipment

Lubrication Schedule

EXHIBIT H

EXHIBIT H

Mechanical-Electrical Equipment

Lubrication Schedule

PROJECT: Mormon Slough Pumping Plants Nos. 1, 2 & 3

<u>ITEM</u>	<u>LUBRICANT</u>	<u>PERIOD EVERY</u> (During pumping Operations)
-------------	------------------	--

1. Pumping Plant

Note: (Use manufacturers recommendations if different from that indicated below-See Name Plate Data)

a. \*Pumps

(1) Drainage Pumps

Pump bearings

Chevron Duralith  
EP-1

Check twice daily;  
add as required.

b. \*Main Pump Motor

Chevron OC-Turbine  
Oil No. 9  
(See name plate  
data)

Check daily; add as  
required. Change oil  
at least twice yearly.

For oil use only oxidation corrosion inhibited turbine oil having a viscosity of 150 SSU at 100 degrees F and 45 SSU at 210 degrees F with motor standstill.

c. Flap Gates

Hinge

Waterproof Grease  
W.P. No. 1

Apply to pin when  
assembling and coat  
outside after assembly.

Miscellaneous

Rust preventative  
lubricant NO-OX-ID  
type E

As required.

d. Water Surface Recorder Manufacturers  
Recommendations

Note: (Use manufacturers recom-  
mendations if different from  
that indicated below)

\*Check equipment and lubricant manufacturers recommendations.

<u>Item</u>	<u>Lubricant</u>	<u>Period Every</u> (During pumping Operations)
<u>2. Electrical Equipment-General</u>		
Note: (Use manufacturers recommendations if different from that indicated below)		
a. Switches	General Electric Co. Trancil oil	3 months
b. Switch hinge pins	Trancil oil with graphite	6 months
c. Relays	General Electric Special relay oil	6 months
d. Pushbutton stations	Petrolatum as required	6 months
e. <u>Motors</u>		
(1) Anti-friction bearings	Oil: Turbine oil No. 11 Grease: Chevron Duraplex Med	6 months Check when operating
(2) Ring bearings	Turbine Oil No. 15	6 months Check when operating
(3) Anti-friction	Bearings that are packed on 6 months or longer basis recommend Chevron Industrial grease Medium or equivalent	
f. Instrumentation	Manufacturers Recommendations	Manufacturers Recommendations
g. Cleaning solvent	"Stoddard" solvent or a mixture of car- bon tetrachloride and petroleum	6 months

(Note: When cleaning any part of electrical equipment, use ample precaution to prevent explosions and fires.)

### 3. General Notes

a. The above lubrication schedule is prepared as a general guide. It should be revised and expanded as experience is gained in the operation of the particular units of equipment. Refer to catalog data and manuals supplied with equipment for location of lubrication points and pertinent data.

b. When contracting for lubricants recommend using U. S. Government Military, Federal and AGMA specifications when available. Any reputable supplier of suitable lubricants can advise as to what specifications corresponds to branded products listed or recommended for a particular application, or if none, approved brands of other manufacturer. The brand names indicated are to facilitate identification only as to type and grade of lubricant recommended for a particular application, and is not intended to limit the procurement of lubricants to any one particular supplier.

c. Manufacture of lubricants specified above.

- (1) UNO - Union Oil Co.
- (2) NO-~~OX~~-ID - Dearborn Chemical Co.
- (3) Chevron - Standard Oil Co. of California
- (4) Tranoil - General Electric Co.  
Special oil for electrical equipment.
- (5) RPM - Standard Oil Co. of California
- (6) "Stop-Rust" - The Delta Mfg. Co., Milwaukee, Wisconsin
- (7) Stoddard Solvent - Described in U. S. Bureau of Standards as "Commercial Standard GS-3-28"

d. Electrical equipment shall be lubricated only when recommended by the equipment manufacturers or in accordance with best accepted practice for the service. Where lubrication is required, lubricate adequately but sparingly, wiping off any excess lubricant, as oily surfaces collect dust and may result in an arc between live parts.

e. The above schedule is provided as a general guide in the absence of specific recommendations from the manufacturer of the respective items of equipment. Use only the best grades of lubricants and of the type and in accordance with the manufacturer's recommendation where available. When in doubt, consult with one of the manufacturers of lubricants suitable for the service.

f. Daily checks pertain to actual operating periods. Check should also be made periodically during any extended periods when equipment is not operated.

g. Lubricant storage and handling. Lubricant reserves should be kept in closed containers and stored in a clean, well-ventilated, dry place. Lubricants shall be kept free from grit or other foreign material, at all times. When applying lubricant with a pressure grease gun, the fittings shall be wiped clean just before and just after the application.

EXHIBIT I

Mechanical-Electrical Equipment  
Inspection Check List

EXHIBIT I

Mechanical-Electrical Equipment

Inspection Check List

PROJECT: Mormon Slough Pumping Plants Nos. 1, 2 & 3

INSPECTOR: \_\_\_\_\_ DATE: \_\_\_\_\_

<u>ITEM</u>	<u>PERIOD</u>	<u>REMARKS</u>
1. <u>Pumping Plant</u>		
a. <u>Pumps</u>		
(1) <u>Lubrication</u>	Monthly-Daily when operating	
Adequacy		
Functioning of oiling system.		
Condition of lubrica- tion lines fittings; pipes, anchors; feed oiler; oil reservoir; oil level.		
Adequacy of supply of lubricant on hand.		
(2) <u>Functioning of Pump</u>		
Smoothness of operation unusual vibration and/or noise.	8 hours*	
Pump RPM		
Capacity		
Drive shaft vibration when running	Daily	
Bearing wear	Annually	

\*During periods of pumping operations

<u>ITEM</u>	<u>PERIOD</u>	<u>REMARKS</u>
(3) <u>Adjustment</u>	Yearly	
Check Adjustment (See Pump Manual)		
Miscellaneous		
(4) <u>Condition of Pump</u>	Yearly	
Bearings		
Drive shaft		
Drive shaft connections		
Grease packing rings		
(5) <u>Pump anchorage</u>	Weekly*	
(6) Debris in pumping pit around pump suction	Daily*	
(7) <u>Discharge line</u>	6 months	
Discharge pipes		
Pipe couplings		
Flap gates		
Air reliefs		
(8) <u>Condition of metal work</u>	6 months	
(9) <u>Miscellaneous</u>		
b. <u>Pump Motors</u>		
(1) <u>Lubrication</u>		
Adequacy	Daily*	
Bearing temp., noise, vibration.	Daily*	
Functioning of bearing	8 hours*	
Lubricant piping, fittings	8 hours*	
Note signs of oil leak- age at any point	8 hours*	

\*During periods of pumping operations.

<u>ITEM</u>	<u>PERIOD</u>	<u>REMARKS</u>
(2) <u>Motor Operation</u>		
Note any indication of excessive temperature rise under load	Daily*	
Abnormal vibration and/or noise	Daily*	
Check function of motor controls	Daily*	
Note any failure of motor to pull in throughout the load range	Daily*	
Inspect for moisture inside the motor housing	3 months	
Motor base anchorage	3 months	
(3) <u>Drive shaft &amp; coupling</u>		
Inspect for functioning and condition	Monthly	
(4) Note accumulations of oil on or around the motor	Daily*	
(5) <u>Metal Work</u>		
Note rust spots wear & condition of paints	6 months	
(6) <u>Spare Parts</u>		
Adequacy of supply	6 months	
c. <u>Floatwells and house</u>		
Floatwells	Month	
House and appurtenances	Month	
Pump controller	Month	

\*During periods of pumping operations.

<u>ITEM</u>	<u>PERIOD</u>	<u>REMARKS</u>
d. <u>Trashracks</u>		
Condition of metal work	Annually	
Anchorage	Annually	
Note debris in rack & pool that should be removed	Daily*	
e. <u>Flap Gates</u>		
Condition of seals	6 months	
Condition of metal work	6 months	
Functioning during operation	Daily	
Note any indication of leakage when closed	Daily*	
Miscellaneous		
f. <u>Pump Discharge Pipes</u>		
Air release pipes	6 months	
Miscellaneous	6 months	
2. <u>Electrical Systems</u>		
a. <u>Main Switch Board</u>		
(1) Inspect all equipment and note need for cleaning	Monthly	
(2) Check switches and controls to insure that they are mechanically operable	Monthly	
(Note indications of sluggish operation or sparking)		
(3) Report any failure of the controls to control the operation of the units for which they are intended	Daily*	
*During periods of pumping operations.		

<u>ITEM</u>	<u>PERIOD</u>	<u>REMARKS</u>
(4) Inspect relays, etc., making full use of manufacturers descriptive data	6 months	
(5) <u>Circuit Breakers</u>	6 months	
(a) Condition of oil		
(b) Condition of contacts		
(c) Functioning of the operating mechanism		
(d) Lubrication of pins and bushings		
(e) Tightness of bolts, nuts, cotters, etc.		
(f) Evidence of heating		
(g) Condition of bushings		
(h) Miscellaneous		
(6) <u>Starters</u>	6 months	
(a) Check all connections		
(b) Check to insure that all moving parts move freely		
(c) Check adjustment and condition of contact tips		
(d) Check functioning of start and stop buttons & overload relay		
(e) Miscellaneous		

<u>ITEM</u>	<u>PERIOD</u>	<u>REMARKS</u>
(7) <u>Contactors</u>	6 Months	
(a) Check for proper functioning, including opening and closing operation		
(b) Inspect contacts		
(c) Check adjustment of contact gap		
(d) Check contact pressure		
(e) Miscellaneous		
b. <u>Miscellaneous</u>	6 Months	
(1) <u>Lighting System</u>		
(a) Check light fixtures and controls for proper functioning		
(b) Check adjustment of floodlight	Every month	
(c) Inspect circuit breakers	Every month	
(d) Check supply of fuses and light bulbs on hand	Every month	
(2) <u>Pump Motor Controls</u>		
Check the entire electric system provided for operating the main pumping units	Yearly	
(3) <u>Power Supply</u>		
Generally inspect the Power Co.'s transmission line installations in the vicinity of the pumping plant	Monthly	

<u>ITEM</u>	<u>PERIOD</u>	<u>REMARKS</u>
(4) <u>Miscellaneous</u>		
(a) <u>Fire Protection Equipment</u>		
Note any possible fire hazards in and around the pumping plant and other installations		
(b) <u>Pumping Plant Structure</u>		
Note need for policing the area around the pumping plant and other installations	Monthly	
Painting: Check all metal work and note rust spots need for painting or other maintenance	Annually	
Hazards: Check all covers to insure that they are in place	Monthly	
Miscellaneous		

NOTE:

1. The period indicated is to serve as a general guide. (More frequent inspections shall be made if operating experience and type of service for a particular period justifies.)
2. Under "Remarks" briefly indicate maintenance, adjustment, required and other pertinent remarks.
3. When required maintenance has been completed, indicate date and initial.
4. Daily inspections are applicable only to periods of pumping operations; and when pumps are operating continuously during flood conditions should be made at least once every 8-hour shift.

EXHIBIT J

Sample Log Form, Recording and  
Reporting Operation of Pumping  
Plant During Flood Period

SAMPLE LOG FORM FOR RECORDING AND REPORTING  
OPERATION OF PUMPING PLANT DURING EXTREME EMERGENCY FLOOD CONDITIONS

DATE: \_\_\_\_\_ PLANT: \_\_\_\_\_ SUPERINTENDENT: \_\_\_\_\_

Pump No.	Start		Time	Stop		Remarks*
	Sump	Water Level River		Sump	Water Level River	

\*Brief note under Remarks with reference to more detailed comments on an attached sheet.  
 Service interruptions, if any: abnormal high temperature of motor; abnormal noise;  
 improper functioning of automatic controls and appurtenances, including time duration  
 and cause. This form should be used only when operators are on duty continuously.

SAMPLE LOG FORM FOR RECORDING AND REPORTING  
OPERATION OF PUMPING PLANT DURING PERIODIC VISITS

DATE: \_\_\_\_\_ PLANT: \_\_\_\_\_ SUPERINTENDENT: \_\_\_\_\_

Pump No.	Time	Pump Operating (yes - no)	Water Level		Remarks*
			Sump	River	

\*Brief note under Remarks with reference to more detailed comments on attached sheet describing any unusual or abnormal conditions observed.

OPERATION OF AUXILIARY EQUIPMENT AND MISCELLANEOUS  
PLANT FACILITIES DURING PERIODIC VISITS

DATE: \_\_\_\_\_ PLANT: \_\_\_\_\_ SUPERINTENDENT \_\_\_\_\_

Item No.	Description	Time	Remarks*
1.	Pump controller and indicator		
2.	Main switchboard		
3.	Flapgates in pump discharge lines		
4.	Trashracks		
5.	Slide gates in discharge conduits		
6.	Power supply		
7.	Lighting		
8.	Miscellaneous		

\*Brief note under Remarks and reference to more detailed comments on an attached sheet with appropriate cross references. See EXHIBITS for a guide as to breakdown of the respective items checked. Note in particular any abnormal noise, malfunctioning of equipment or any condition that develops that may or does impair the operation of the plant or unit thereof. This form should also be used for recording applicable comments on unusual occurrences when operators are on duty continuously.

(Attachment for Sheet 1 of EXHIBIT J)  
OPERATION OF PUMPING PLANT DURING EXTREME EMERGENCY FLOOD CONDITIONS

DATE: \_\_\_\_\_ PLANT: \_\_\_\_\_ SUPERINTENDENT: \_\_\_\_\_

Pump No.	Time	Remarks (Reference Sheet 1 of Exhibit J)

(Attachment for Sheet 2 or 3 of EXHIBIT J)  
OPERATION OF PLANT DURING PERIODIC VISITS

DATE: \_\_\_\_\_ PLANT: \_\_\_\_\_ SUPERINTENDENT: \_\_\_\_\_

Item No.	Time	Remarks (Reference Sheet 2 or 3 of Exhibit J)

MEMORANDUM OPINION OF ASSURANCES

Mormon Slough Project, Calaveras River, California

Public Law 87-874, approved 23 October 1962, authorized a project for flood protection on Mormon Slough, Calaveras River, California, substantially in accordance with the recommendations of the Chief of Engineers in House Document numbered 576, 87th Congress, Second Session.

The Chief of Engineers, in said House Document numbered 576, recommended construction of the project at an estimated total cost of \$3,460,000 of which \$1,960,000 would be the federal cost of construction, and \$1,500,000 non-federal costs for lands, easements, rights-of-way and relocations, provided that prior to construction local interests give assurances satisfactory to the Secretary of the Army and that they would, without cost to the United States:

- a. furnish all lands, easements, and rights-of-way, including spoil disposal areas, necessary for construction of the works;
- b. accomplish all relocations and alterations of roads, streets, buildings, pipelines, utilities, bridges, and other structures (except railroad facilities) made necessary by the construction work;
- c. hold and save the United States free from damages due to the construction works;
- d. maintain and operate all the works after completion, including the lower Calaveras River, in accordance with regulations prescribed by the Secretary of the Army; and
- e. prescribe and enforce regulations designed to prevent encroachment of any type that would impair the flood control effectiveness of the works.

By Act of the California Legislature, Chapter 915 of the Statutes of 1963 (California Water Code Section 12648.6), the Mormon Slough Channel Improvement Project was adopted and authorized substantially in accordance with the recommendations of the Chief of Engineers in House Document No. 576, 87th Congress, at the estimated State cost of \$2,260,000.

The following items have been included in Budget Acts enacted by the California Legislature:

- a. Item 396 (f), Chapter 2 of 1964 Budget Act (authorized \$65,000)
- b. Item 308 (e), Chapter 757 of 1965 Budget Act (authorized \$1,230,395)
- c. Item 353 (e), Chapter 2 of 1966 Budget Act (authorized \$1,999,817)

By Act of California Legislature, Chapter 1438 of the Statutes of 1963 (California Water Code Section 12657), the Reclamation Board is authorized to give assurances satisfactory to the Secretary of the Army that the local cooperation required by Section 3 of the Act of Congress, approved December 22, 1944 (Public Law 534, 78th Congress, Second Session), and Section 2 of the Act of Congress, approved August 18, 1941 (Public Law 228, 77th Congress, First Session), will be furnished by the State in connection with the Mormon Slough Project.

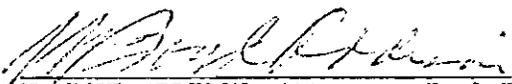
Section 3 of Public Law 534 and Section 2 of Public Law 228 provide that the authorization for any flood control project requiring local cooperation shall expire five years from the date on which local interests are notified in writing by the War Department of the requirements of local cooperation, unless said interests shall, within said time, furnish assurances satisfactory to the Secretary of War that the required cooperation will be furnished. The Reclamation Board was notified by the District Engineer, Sacramento District, by letter dated 25 March 1966 of the requirements of local cooperation.

By Resolution adopted by the State Reclamation Board at its meeting of 7 July 1966, the General Manager of the Reclamation Board was authorized to furnish the required assurances to the Corps of Engineers in accordance with the requirements in House Document No. 576 as set forth above in accordance with this authorization.

Mr. A. E. McCollam, General Manager of the Reclamation Board, by letter dated 7 July 1966, has furnished the required assurances. A review of the assurances discloses that they comply with the requirements of the authorizing act and with the recommendations of the Chief of Engineers.

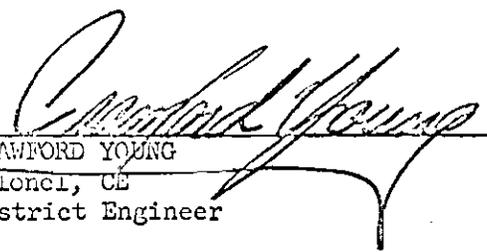
In view of the foregoing facts, it is concluded that: (1) the Reclamation Board has been authorized by the Legislature to give the assurances; (2) the Legislature has provided adequate funds and has authorized the project; and (3) the Reclamation Board has, in accordance with Public Law 534, furnished the assurances within five years of the date of notification by the Secretary of the Army of the requirements of local cooperation. The assurances, as given, are therefore considered legally and financially adequate.

Dated 9 August 1966

  
H. BOYD ADDISON, Attorney, Real Estate Division  
U. S. Army Engineer District, Sacramento  
Corps of Engineers

I hereby accept said assurances.

Dated 15 August 1966

  
CRAWFORD YOUNG  
Colonel, CE  
District Engineer

## THE RECLAMATION BOARD

RESOURCES BUILDING, 1416 9TH STREET • SACRAMENTO 95814



STANLEY W. KRONICK, *President*  
J. J. MADIGAN, *Vice President*  
WALLACE McCORMACK, *Secretary*  
GEORGE W. NICKEL, JR.  
HAROLD J. O'BANION  
H. TERRILL SARTAIN  
DONALD L. WEILER  
COL. A. E. McCOLLAM, *General Manager*

July 7, 1966

Refer to:

District Engineer  
Sacramento District  
U. S. Corps of Engineers  
650 Capitol Mall  
Sacramento, California

Dear Sir:

Reference is made to the authorized Mormon Slough-Calaveras River Project, California, and to your letter of 25 March 1966 requesting that the State Reclamation Board furnish you the assurances of local cooperation as required by Federal law.

This will inform you that the Reclamation Board, at its meeting on July 7, authorized the General Manager to furnish you with the required assurances for the project. The Reclamation Board, for the State of California, under the authority granted it under Chapter 1438 of the Statutes of 1963, hereby furnishes the following assurances to you with respect to the Mormon Slough-Calaveras River Project.

The Board will, without cost to the United States:

- a) Furnish all lands, easements and rights of way, including spoil-disposal areas, necessary for construction of the works;
- b) Accomplish all relocations and alterations of roads, streets, buildings, pipelines, utilities, bridges and other structures, (except railroad facilities) made necessary by the construction work;
- c) Hold and save the United States free from damages due to the construction works;
- d) Maintain and operate all the works after completion, including the lower Calaveras River, in accordance with regulations prescribed by the Secretary of the Army;

U. S. Corps of Engineers

-2-

July 7, 1966

e) Prescribe and enforce regulations designed to prevent encroachment of any type that would impair the flood-control effectiveness of the work.

Attached to this letter you will find a certified copy of the Board's resolution which authorizes the General Manager to to furnish to you the required assurances.

Very truly yours,

*A. E. McCollam*

A. E. McCOLLAM  
General Manager

ENC.

RESOLUTION ADOPTED BY THE STATE RECLAMATION BOARD  
AT ITS MEETING OF JULY 7, 1966

WHEREAS, the Mormon Slough, Calaveras River Project was authorized by the Flood Control Act of 1962 substantially in accordance with the recommendations of the Chief of Engineers as outlined in House Document No. 576, 87th Congress, Second Session; and

WHEREAS, House Document No. 576, the authorizing document, requires that prior to construction local interests give assurances satisfactory to the Secretary of the Army that they will without cost to the United States:

a) Furnish all lands, easements and rights of way, including spoil-disposal areas, necessary for construction of the works;

b) Accomplish all relocations and alterations of roads, streets, buildings, pipelines, utilities, bridges and other structures (except railroad facilities) made necessary by the construction work;

c) Hold and save the United States free from damages due to the construction works;

d) Maintain and operate all the works after completion, including the lower Calaveras River, in accordance with regulations prescribed by the Secretary of the Army;

e) Prescribe and enforce regulations designed to prevent encroachment of any type that would impair the flood-control effectiveness of the work; and

WHEREAS, the Legislature of the State of California authorized the Mormon Slough Channel Improvement Project on the Calaveras River substantially in accordance with the recommendations contained in House Document No. 576 by the enactment of Chapter 935 of the

WHEREAS, the Legislature of the State of California authorized the Reclamation Board of the State of California to give the required assurances to the Corps of Engineers under Chapter 1438 of the Statutes of 1963;

NOW, THEREFORE BE IT RESOLVED that the Reclamation Board of the State of California shall furnish the necessary assurances to the Corps of Engineers on the Mormon Slough Calaveras River Project and will without cost to the United States:

- a) Furnish all lands, easements and rights of way, including spoil-disposal areas, necessary for construction of the works;
- b) Accomplish all relocations and alterations of roads, streets, buildings, pipelines, utilities, bridges and other structures (except railroad facilities) made necessary by the construction work;
- c) Hold and save the United States free from damages due to the construction works;
- d) Maintain and operate all the works after completion, including the lower Calaveras River, in accordance with regulations prescribed by the Secretary of the Army;
- e) Prescribe and enforce regulations designed to prevent encroachment of any type that would impair the flood-control effectiveness of the work; and

BE IT FURTHER RESOLVED that the General Manager of the Reclamation Board of the State of California is authorized to furnish the required assurances to the Corps of Engineers in accordance with the requirements set forth in House Document No.

STATE OF CALIFORNIA )  
COUNTY OF SACRAMENTO ) ss.  
Office of The Reclamation Board )

I, P. H. SERVEN, Chief, Administrative Services of The Reclamation Board, do hereby certify that the foregoing is a true and correct copy of a resolution adopted by the Reclamation Board at the meeting of said Board held on July 7, 1966.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official seal of The Reclamation Board this 7th day of July, 1966.

(SEAL)

  
\_\_\_\_\_  
P. H. SERVEN  
Chief, Administrative Services  
The Reclamation Board