OPERATION AND MAINTENANCE GUIDELINES

FLATHEAD INDIAN IRRIGATION PROJECT
FLATHEAD AGENCY

United States Department of the Interior
Bureau of Indian Affairs
Northwest Region

OPERATION AND MAINTENANCE GUIDELINES
FLATHEAD INDIAN IRRIGATION PROJECT

United States Department of the Interior
Bureau of Indian Affairs

Prepared by:

Bureau of Indian Affairs

and

Bureau of Reclamation
Technical Service Center

Mission of the Department of the Interior

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian tribes and our commitments to island communities.

Mission of the Bureau of Indian Affairs

The Bureau of Indian Affairs' mission is to enhance the quality of life, to promote economic opportunity, and to carry out the responsibility to protect and improve the trust assets of American Indians, Indian tribes and Alaska Natives. We will accomplish this through the delivery of quality services, maintaining government-to-government relationships within the spirit of Indian self-determination.

FLATHEAD INDIAN IRRIGATION PROJECT
OPERATION AND MAINTENANCE GUIDELINES

PREFACE

Operation and Maintenance Guidelines (O&M Guidelines) for Bureau of Indian Affairs' (BIA) irrigation projects are intended to establish in one controlled document (with associated supporting documents) the current, management-oriented operating guidelines for each irrigation project and its related structures. The purpose of these O&M Guidelines is to document current operating procedures and to provide guidelines during changes in operating personnel. The O&M Guidelines also permit responsible persons who are knowledgeable in irrigation system operation, but are unfamiliar with the operations and conditions at a particular irrigation project, to operate the project during emergency situations, and at such times when the regular project manager cannot perform his/her normal duties.

This document provides BIA personnel with general information for the operation, maintenance, and administration of the Flathead Indian Irrigation Project. Information provided herein is primarily for use by management personnel located at each irrigation project and their immediate supervisors who are assigned the responsibility for the operation and maintenance of the irrigation project. These O&M Guidelines describe the responsibilities of project personnel and describe general water delivery through the project infrastructure. This document also establishes protocol for BIA communication and cooperation with other Federal, State, Tribal, and local agencies, including water users.

This document supplements existing statutes, laws, rules, regulations, handbooks, and policies that apply to BIA irrigation projects. As such, all existing statutes, laws, regulations, handbooks, and policies supersede this document.

APPROVED FOR OFFICIAL USE

The following signatures certify that the Operation and Maintenance Guidelines for the **Flathead Indian Irrigation Project** is complete and approved for official use.

Upon annual review and update of these Operation and Maintenance Guidelines, signatures and dates on this approval page shall be revised in order to reflect changes in personnel and to keep the manual officially current.

Irrigation Systems Manager
Flathead Agency

3/5/08
Date

Agency Superintendent
Flathead Agency

3/5/08
Date

ACTING
Regional Director
Northwest Region

3-5-08
Date

Chief, Branch of Irrigation, Power, and Safety of Dams
Central Office, Bureau of Indian Affairs

4/1/2008
Date

ITEMS OF SPECIAL IMPORTANCE

1. Observe weather forecasts on a daily basis. Also, obtain stream gage data and monitor snowpack conditions for the drainage basin. Hydrologic and meteorological data should continually be used in making decisions affecting the Flathead Indian Irrigation Project.

2. Review irrigation Operation and Maintenance Guidelines annually. Officially transmit updates to all copyholders.

3. Conduct meetings with the Joint Board of Control and the Confederated Salish and Kootenai Tribes on a regular basis.

4. When water is available, as determined by the Officer-in-Charge, and the available water is requested by a water user per Federal regulations, the BIA will deliver such water to the requestor as soon as practicably possible. The goal of the BIA is to delivery the water to the headgate no later than 48 hours after receipt of the water request. Circumstances beyond the control of the BIA, such as water shortages, may cause a delay in water delivery beyond 48 hours.

5. Coordinate the operation and water delivery from BIA's irrigation dams with the Confederated Salish and Kootenai Tribes and according to their Standing Operating Procedures.

DISTRIBUTION SHEET

Agency, Location, and Address	No. of Copies
Confederated Salish and Kootenai Tribes PO Box 278 Pablo, Montana 59855 Attention: Department Head: Natural Resources Department	1
Flathead Agency PO Box 40 Pablo, Montana 59855 Attention: Agency Superintendent	1
Flathead Agency Irrigation Division PO Box 666 St. Ignatius, Montana 59865 Attention: Irrigation Systems Manager	1
Flathead Joint Board of Control PO Box 639 St. Ignatius, Montana 59865-0639 Attention: President	1
BIA Northwest Regional Office 911 NE 11th Avenue Portland, Oregon 97232 Attention: Irrigation Engineer	1
BIA Central Office 3000 Youngfield, Suite 130 Lakewood, Colorado 80215 Attention: Technical Administrative Support Section	1
BIA Central Office BIA – Office of Trust Services, MS-4655-MIB 1849 C Street NW Washington, D.C. 20240 Attention: Chief, Branch of Irrigation, Power, and Dam Safety	1

The BIA is responsible for updating and keeping the O&M Guidelines current. All revisions made to this document shall be officially transmitted to all copyholders identified above.

REVISION SHEET

Revision No.	Date	Action Required
0		Issue Operation and Maintenance Guidelines

Revisions shall be officially transmitted to all copyholders by Certified Mail, Return Receipt Requested.

TABLE OF CONTENTS

Table of Contents (continued)

Table of Contents (continued)

Table of Contents (continued)

List of Figures

List of Photographs

Flathead Agency is encouraged to include photographs of key features during revisions.

List of Tables

Table of Contents (continued)

Page

APPENDIXES

GLOSSARY

Beneficial use

A use of water for the benefit of the appropriator, other persons, or the public, including but not limited to, agricultural (including stock water), domestic, fish and wildlife, industrial, irrigation, mining, municipal, power, and recreation uses.

Duty of land

A number from 1 to 3 assigned to a parcel of land based on the degree of difficulty of getting water across it. Land with a basic degree of ease of irrigation is assigned a duty of 1. As land becomes more difficult to irrigate relative to the base, it is assigned a higher duty up to 3. The duty of land is multiplied by the water quota for the project and yields the total volume of water that parcel will be allowed. For example, if the quota is 0.5 acre-foot per acre, a parcel of land with a duty of 1 would receive 0.5 acre-foot of water per acre of land in the parcel. A parcel of land with a duty of 1.75 would receive 0.875 acre-foot of water for every acre. A parcel of land with a duty of 3 would receive 1.5 acre-feet of water for every acre of land in the parcel.

EAP

Emergency Action Plan, commonly developed and utilized for emergency situations involving irrigation dams and reservoirs.

FJBC

Flathead Joint Board of Control.

Headworks

A constructed control structure at the beginning of a canal or lateral. A headworks can consist of a control structure in the bank or include a structure built across the channel to raise the elevation of the water.

Instream Flow Incremental Methodology (IFIM)

One of various methods of determining streamflow requirements for fisheries. This method allows for the incremental analysis of flow versus available fish habitat. The method models the flow regime necessary for a fish species to survive and propagate. It develops individual and composite flow regimes based on fish species and/or life stage (i.e., adult, juvenile, fry, spawning). It allows for the incremental analysis of suitable fish habitat and how the amount of habitat varies when compared to natural water supplies and other competing uses for the water such as agriculture, industry, domestic, etc.

ISO

Irrigation System Operator (ditchrider).

Irrigation water

Water used to raise cultivated crops. This water is not to be used for "nonagricultural" purposes including, but not limited to, domestic, washing aggregate, producing concrete, etc.

Minimum instream flow

A flow in a stream or river that has been determined by one of various methodologies to be the minimum needed to maintain a viable fishery.

Natural flow

For purposes of this document, natural flow is that flow that occurs above a project facility.

Natural inflow of a reservoir

The unregulated inflow into a lake or reservoir. Often measured at the main inlet channel of a lake or reservoir, it is more accurately measured by the following computation: "Natural Inflow = Change in Storage + Outflow Volume." If the lake or reservoir has a transbasin diversion into it, that transbasin diversion is subtracted from the natural or "virgin" flow.

Non-project water users

Water users with irrigation water "filings" for land not included in the Flathead Indian Irrigation Project. Non-project water users are not subject to the operation and maintenance (O&M) fees collected from project water users unless agreements have been drawn up to allow those users to use project facilities for water delivery.

Non-quota

Water above minimum instream and fishery needs that cannot be stored in project facilities may be made available for irrigation and is then not counted against an individual tract's quota.

Officer-In-Charge

The individual with ultimate decisionmaking power in the organization. In the case of the Flathead Indian Irrigation Project, that individual is the Superintendent of the Flathead Agency of the Bureau of Indian Affairs.

O&M Guidelines

Operation and Maintenance Guidelines

Project "Farm Unit"

According to 25CFR 191.4(c) Farm Units:

"For the Flathead Indian Irrigation Project, Montana: A contiguous area of land in single ownership containing not less than one forty (40) acre subdivision of the public land survey, or the original allotment as established by the Secretary of the Interior and as recorded or amended in the records of the Bureau of Land Management. In the case of leased land, it is defined as a contiguous area under a

single lease. For Bureau of Land Management regulations pertaining to Flathead Indian Irrigation Project, see 43 CFR 221 1.8, Flathead Indian Irrigation District, Montana."

Pump lands

Lands generally located above project canals and laterals that were originally believed to be not irrigable but which, with the advent of sprinklers, became irrigable and were brought into the project by designation.

Quota

The quantity of irrigation water available for delivery by the project expressed as the number of acre-feet per acre. This number is calculated by dividing the forecasted water supply by the number of acres under the project.

"Secretarial Water Right"

Filing for water rights, which pre-dates and is therefore "senior" to project water filings. Earliest recorded filings for irrigation water on the Flathead Indian Irrigation Project. These filings are, nevertheless, junior to the Tribes' "water right." (See also "Non-Project Water Wsers".) Also, refer to 25 CFR, Part 171.

SNOTEL

SNOW TELemetry sites measure precipitation, snow water equivalent, and maximum, minimum, and average temperatures at remote locations throughout the West. Sites are installed and maintained, and data is edited and archived by the Snow Survey Program of the Natural Resources Conservation Service (formerly the Soil Conservation Service).

SOP

Standing Operating Procedures, commonly developed and utilized for the operation of irrigation dams and reservoirs.

Special use permit

Project facilities have "Prescriptive" easements. Any encroachment upon that easement must have permission from the project. A "Special Use Permit": obtained from the Watermaster with jurisdiction, is the documentation for permission to encroach upon any project facility.

Stock water season

That period of time after the end of the regular irrigation season when water will be made available for "non-irrigation" livestock purposes.

Stockwater

Water delivered through project facilities for non-irrigation purposes. Generally used for livestock.

Tenant method

One of various methods of determining a minimum instream flow for fisheries. This method takes a percentage, usually 10 to 30 percent, of the mean annual flow of a stream and sets that as the minimum necessary for maintenance of the fishery. Individual fish species or life stages are considered.

Water service contract

An agreement to provide water to non-project water users adjacent to project facilities for limited purposes such as, but not limited to, watering lawns, irrigating gardens, etc., on an “if and when available” basis, after all in stream obligations have been met.

Wetted perimeter method

One of various methods of determinirg a minimum instream flow for fisheries protection. This method determines the flow necessary to maintain wetted and productive riffle areas within streams. Riffle areas are important habitats for producing aquatic insects, the food base of many stream fishes. Individual fish species or life stages are considered.

CHAPTER 1 – GENERAL AND ADMINISTRATION

A. PURPOSE OF IRRIGATION PROJECT AND LOCATION

This document contains guidance for the operation and maintenance (O&M) and administration of the Flathead Indian Irrigation Project (FIIP). Compliance with these Operation and Maintenance Guidelines (O&M Guidelines) is intended to provide fair and equitable distribution of available irrigation water to all authorized irrigators. Guidance provided in this document should also protect the Confederated Salish and Kooteni Tribes' (CS&KT or Tribes) fishery and should avoid, or minimize, the impacts associated with water shortages, regardless of cause. Changes in these O&M Guidelines shall be made officially transmitting written revisions to all copyholders by Certified Mail-Return Receipt Requested. A "Distribution Sheet" and a "Revision Sheet" are provided in the introductory section of this document.

The irrigation system delivers water to approximately 127,000 acres of irrigated land through nearly 1,300 miles of canals and laterals. There are about 10,000 structures, which include 17 dams and storage reservoirs with a combined capacity of about 160,500 acre-feet and 3 major pumping facilities that help to supplement water supplies in portions of the FIIP. Nearly all available stored water is utilized each year to meet irrigation demand and instream flow requirements. The exceptions to this are the Camas Division (Little Bitterroot), which operates most years on about a 3-year program of carryover and use, and Pablo Reservoir, where about 12,000 acre-feet of storage is carried over to begin the next season's irrigation. The annual supply of irrigation water in the Mission Valley is usually insufficient to meet the consumptive use requirements of the crops for maximum yield.

The FIIP consists of four management divisions: the Jocko Division (about 11,000 irrigated acres), the Camas Division (about 13,000 irrigated acres), the North Division (about 52,000 irrigated acres) and the South Division (about 52,000 irrigated acres). A general map of the FIIP is shown on Figure 1-1. The four areas are operated somewhat differently, except that operations in each division provide for equitable distribution of the available irrigation

water. The water supply and distribution features for each area are shown as figures in Chapter 2. An organization chart for the FIIP is provided in Figure 1-2.

Regulatory requirements under which the Flathead Agency must operate are codified as Title 25 of the Code of Federal Regulations (CFR), Part 171. Provisions that take on added importance in water-short years are discussed herein. Through compliance with these regulations, it is possible to minimize unavoidable effects of water shortage, to conserve the limited water resources, and to achieve efficient and equitable delivery of the available irrigation water.

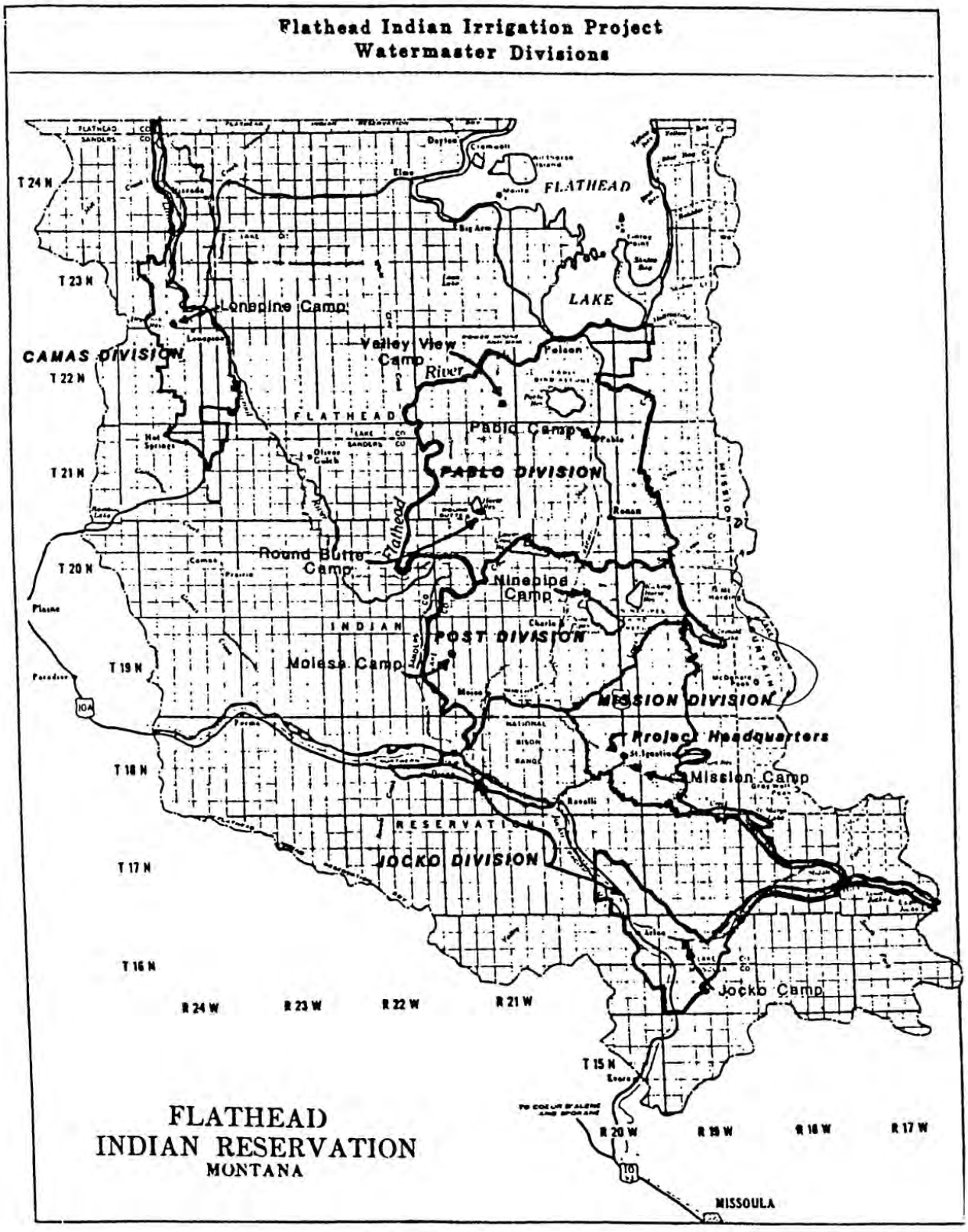


Figure 1-1. Flathead Indian Irrigation Project general map.

B. PROJECT HISTORY

The Flathead Reservation was established by the Treaty of July 16, 1855. The Act of 1904 authorized the establishment of an irrigation project for the benefit of the Indians on the Flathead Indian Reservation. The Acts of 1907 (34 Stat. 1015) and April 30, 1908 (35 Stat.83), authorized preliminary surveys, plans, and estimates for an irrigation system to irrigate allotted lands of the Flathead Reservation. Subsequent acts provided appropriations to continue construction of the irrigation and power systems. During early project construction, many difficulties were encountered because of the existence of privately owned and operated ditches previously constructed. In order to resolve some of these questions, a commission was formed to review individual cases and make recommendations. This commission determined which lands had water rights prior to the formation of the FIIP. These water rights later became known as Secretarial Water Rights (SWR). Additional historical information is provided in Appendix A-1 (Clotts' Report).

The Secretary of the Interior approved all reports submitted by the commission. The overall result was that "Secretarial Water Rights" were recognized, thus satisfying the contending landowners and allowing project construction to proceed. There are approximately 6,000 acres of Secretarial water filing within the project. These lands generally obtain water through their own private diversions and canal systems. There are instances, however, in which delivery is made from the project system.

The FIIP has about 127,000 irrigable acres, with approximately 114,700 acres non-Indian owned and 12,000 Indian owned, or about 90 percent fee and 10 percent Trust. There are approximately 5,000 tracts of land in the FIIP. The FIIP includes three irrigation districts formed under State Law: Jocko, Mission, and Flathead. In addition, land can be Trust, Non-District, and District acres for billing purposes. There are three classifications of acres: Class 1 acres are presently assessable, Class 3 acres are temporarily nonassessable (TNA), and Class 4 acres are permanently nonassessable (PNA).

C. ASSIGNMENT OF RESPONSIBILITY

The FIIP mission is to operate and maintain the FIIP currently under the responsibility of the Department of the Interior (DOI), Bureau of Indian Affairs (BIA), Flathead Agency. Operation and maintenance (O&M) of the irrigation facilities will be carried out by the Flathead Agency's Irrigation Division under Federal guidelines codified in 25 CFR, Part 171. Delivery of available irrigation water will be made in a fair and equitable manner to all acres served in accordance with the regulations; no type of delivery priority will be recognized among irrigators or assessable land.

The local BIA Agency, Northwest Regional Office, CS&KT, and the Bureau of Reclamation (Reclamation) share a variety of roles associated with monitoring the reservoirs, instream flows, and more.

The current line of authority for the FIIP is as follows:

1. Director, Bureau of Indian Affairs
2. Director, Northwest Region
3. Superintendent, Flathead Agency
4. Irrigation Systems Manager, Flathead Indian Irrigation Project

The Agency Superintendent has delegated the O&M responsibility of the FIIP to the Irrigation Systems Manager. The Flathead Agency organization chart is shown on Figure 1-2.

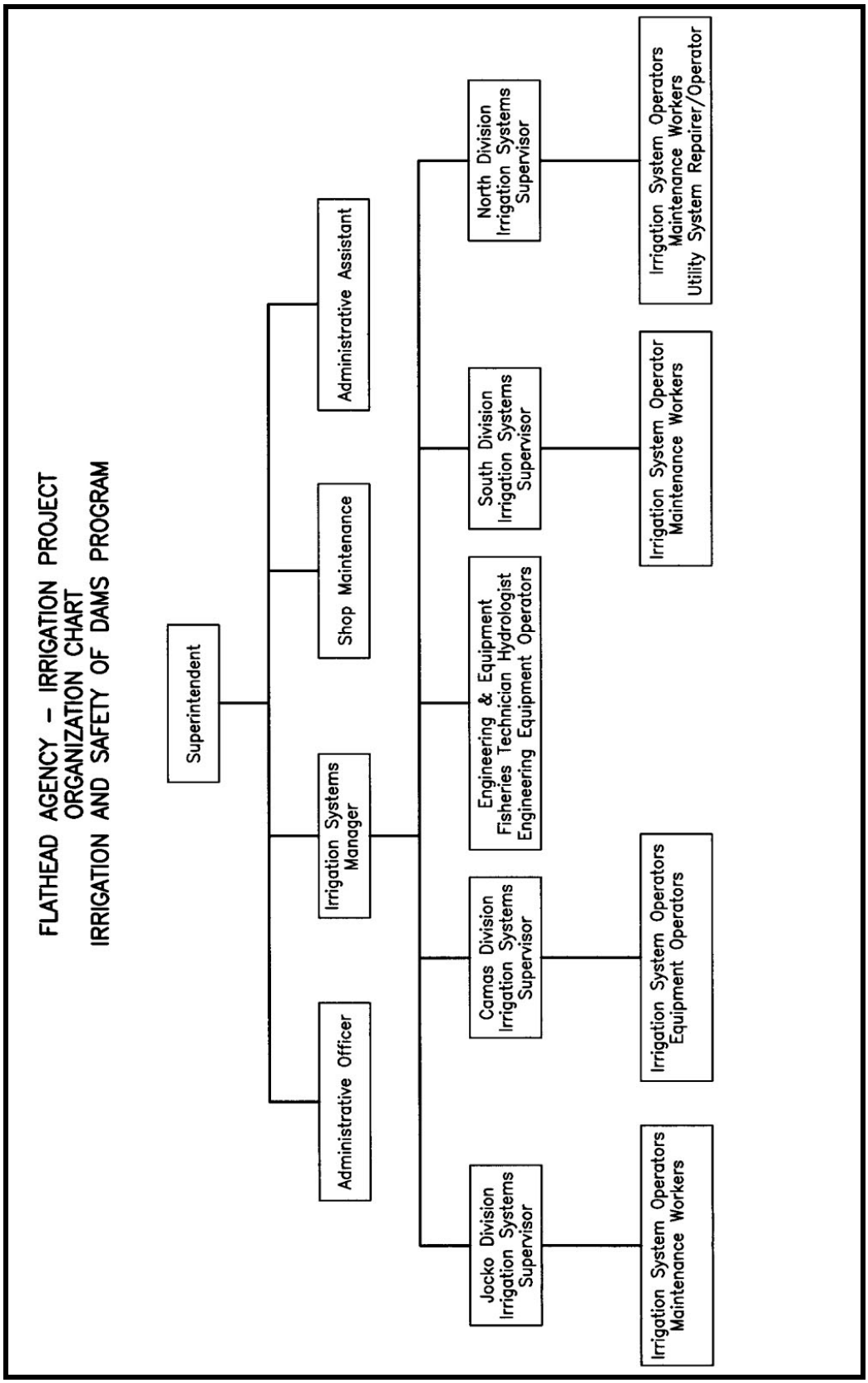


Figure 1-2. Organization Chart – Irrigation and Safety of Dams Program.

The Flathead Irrigation Project consists of the following positions to conduct day-to-day operations:

Irrigation Systems Manager – 1 position
Hydrologist/Information Technology – 1 position
Fisheries Technicians – 2 positions
Supervisory Irrigation System Operators – 4 positions
Irrigation System Operators – 22 positions
Engineering Equipment Operators – 4 positions
Mechanics – 2 positions
Utility Systems Repairer/Operator – 1 position
Maintenance Workers – 5 positions
Administration Staff and Support – 7 positions

Descriptions for all positions and grades listed above are kept on file at the FIIP office.

1. Irrigation Systems Manager

The Irrigation Systems Manager (ISM) is responsible for the administration, operation, and maintenance of the FIIP. The ISM oversees all other irrigation staff members and directs their activities to optimize service to customers. The ISM is responsible for administering the FIIP in accordance with all statues, laws, regulations, manuals, handbooks, and this set of the O&M Guidelines.

The ISM is responsible for the operation and management of the irrigation system, including technical operations. The ISM shall establish, manage, and direct work planning and schedules; identify and define financial and manpower resource requirements; and execute actions, practices, and decisions required in the technical operation for reservoirs, canals, structures, pipelines, and pumping plants of the irrigation project. The ISM's activities are to be conducted within the framework of established or prescribed

departmental and BIA program and administrative policies and requirements. Under delegated authority, the ISM may serve as Acting Superintendent.

Personnel performance is monitored and reported on Form DI-2002/Employee Performance Plan and Results report. Performance reviews are conducted semiannually with an initial planning session at the beginning of the fiscal year and a final review at the end of the fiscal year.

2. Fisheries Protection Staff

The Fisheries Protection staff provides services in design, construction, operation, maintenance, and repair of fisheries protection structures such as, but not limited to, fish screens, fish ladders, etc. The staff provides guidance to Irrigation System Operators (ISO or Ditchriders) in the daily maintenance needs of fisheries protection structures to ensure their proper operation.

3. Hydrologist / Information Technology Services

The Hydrologist provides guidance in the storage and movement of water during the runoff period and in the movement of water to balance the water supply between and among the various diverse geographic divisions of the FIIP. The Hydrologist also provides for water recommendations, allocations, and distribution for the various irrigation divisions and maintains waterflow records. The Hydrologist is responsible for collecting and compiling hydrometeorological data, forecasting and routing annual runoff, and determining and accomplishing hydrologic studies and computer modeling.

The Hydrologist also provides information technology (IT) services that include, but are not limited to, researching, configuring, troubleshooting, repairing computers and peripherals, and making acquisition recommendations for IT settings in the Flathead Agency. The Hydrologist provides training for personnel in using computers and applications as necessary.

4. Supervisory Irrigation System Operators (Watermaster)

The Supervisory Irrigation System Operator (SISO) is responsible for the O&M of the irrigation system of dams, reservoirs, pumps, canals, and appurtenant structures that are used to transfer water to reservoirs and to ensure minimum instream flows. The ISO schedules, plans, and directs maintenance to accomplish repairs and replacement work on the irrigation system and operates pumping, conveyance, delivery, and storage systems. The irrigation system will be operated according to these O&M Guidelines.

5. Irrigation System Operators (Ditchriders)

The ISO will monitor and adjust for instream flows where established. Operational tail water into draws and wasteways will be monitored, managed, and recorded for excess flows. The main conveyance canal system will be operated and maintained according to FIIP operating procedures (Ditchrider Manual). The ISO performs all minor repairs and works with maintenance crews cleaning ditches and structures, repairing and replacing structures, building concrete forms, placing concrete, and operating handtools and a variety of transportation equipment, including small earthmoving machines. The ISO also provides assistance in weed control.

6. Engineering Equipment Operators

Engineering Equipment Operators operate and maintain heavy machinery and trucks used in constructing and maintaining irrigation system facilities used to supply water to reservoirs, and conveyance and distribution systems.

7. Utility Systems Repairer/Operator

The Utility System Repairer/Operator is responsible for the O&M of the Flathead River, Crow, Revais, and Prey Pumping Plants.

8. Maintenance Workers

Maintenance Workers operate and maintain the smaller earthmoving equipment and trucks used in constructing and maintaining irrigation facilities. Maintenance Workers operate various machines and tools. Maintenance Workers utilize knowledge in carpentry, concrete, and masonry to repair and replace irrigation structures. They also serve as the backup ISO as staffing needs dictate.

D. GENERAL DUTIES AND SCHEDULES

The annual water planning process for irrigation begins early in the calendar year with the monitoring of the water storage facilities and the preparation of the water supply forecast. Monitoring of the weather, runoff, storage, and demand for water continues through the irrigation season in order to make necessary adjustments in delivery quotas to ensure equitable distribution of available irrigation water among users.

General duties and schedules for the FIIP staff are listed below:

1. Prior to Irrigation Season (January 1 through April 15)

a. Irrigation Systems Manager (ISM)

- Reviews the past year's operations and management of the irrigation system.
- Reviews work plans with Watermasters and schedules resources to best accomplish projects.
- Assists Superintendent and Administrative Officer to identify and define financial and manpower requirements.
- Attends meetings with Flathead Joint Board of Control (FJBC), CS&KT, State, and Federal agencies.
- Updates the FIIP's weed and pest control program.
- Develops training and safety programs.

b. Hydrologist

- Performs snow surveys in cooperation with CS&KT and Natural Resource Conservation Service (NRCS).
- Evaluates streamflow forecasts and tracks water availability.
- Makes recommendations for preliminary water deliver quota to the ISM.
- Monitors streamflows and reservoir elevations to ensure compliance with court-ordered minimum levels.

- Attends meetings with water users, along with the ISM, to discuss the unfolding water availability picture.
- Deploys the updated water accounting program to the various camp computers.
- Responds for the Superintendent to letters from the CS&KT concerning inadequate instream flows.
- Works with other agencies, such as the U.S. Fish and Wildlife Service (USFWS), CS&KT Natural Resources Department (NRD), etc., on issues of reservoir filling and streamflow levels that might affect nesting birds and waterfowl, wildlife, fish spawning, etc.
- Communicates with Tribal staff and FIIP staff to rectify instances of low instream flow as soon as they are brought to his attention.

c. Fisheries Protection Staff

- Disassembles, repairs/maintains, re-assembles, and re-installs fish screens across the project area.
- Ensures that all fish screens are functioning properly and that Ditchriders are informed of their (the Ditchriders') duty to keep them clean.

d. Supervisory Irrigation System Operator (SISO)

- Rides their canals and checks for obstructions such as slides, trees, etc.
- Determines facility maintenance priorities before the upcoming irrigation season.
- Schedules maintenance crews' time to ensure that obstructions are removed well ahead of spring runoff and maintenance/repair of project infrastructure is accomplished prior to the irrigation season.

e. Irrigation System Operator (ISO)

- Attends training sessions.
- Attends staff meetings held by the SISO.
- Performs repairs and maintenance on irrigation project infrastructure as directed by the SISO.
- Meets with irrigators on her/his ride and gets to know them.

2. Irrigation Season (April 15 through September 15)

a. Irrigation Systems Manager (ISM)

- Attends meetings with water users as scheduled by the FJBC and the Superintendent.
- Attends weekly staff meetings with the Administrative Officer and the Superintendent.
- Attends meetings of the FJBC and other water user organizations as directed.
- Tracks the progress of work and water delivery over the project area.
- Monitors budgetary expenditures and makes recommendations for adjustments to the Superintendent.
- Forwards Hydrologist's recommendations to Superintendent for his review and approval.
- Ensures equitable distribution of irrigation water to irrigable lands.

b. Hydrologist

- Monitors runoff, precipitation, and water use/demand and makes recommendations to the ISM for routing of runoff water in order to meet the objective of having reservoirs as nearly full as possible by the first week of July.
- Attends meetings with the ISM to keep water user groups apprised of the unfolding water availability situation.
- Measures water delivery at head gates when questions concerning flow rates arise.
- Provides training to field office staff in the use of the water accounting program.
- Monitors the data entry process at the camps for overall quality.
- Periodically collects the camp data, downloads it to an HQ computer, and generates overall water used reports.
- Continually monitors the water availability and makes recommendations to the ISM on adjustments to the quota.
- Attends meetings of the FJBC and other water user organizations as directed.

- Responds for the Superintendent to letters from the CS&KT concerning inadequate instream flows.

- Works with other agencies, such as the USFWS, CS&KT Natural Resources Department, etc., on issues of reservoir filling and streamflow levels that might affect nesting birds and waterfowl, wildlife, fish spawning, etc.

c. Fisheries Protection Staff

- Performs high level maintenance and emergency repair of fish screens.

- Provides training/assistance to Ditchriders in the proper maintenance and cleaning of operating fish screens.

- Develops plans and designs for screens to be implemented in the future

d. Supervisory Irrigation System Operator

- Monitors delivery of water by ISOs to ensure that water is being delivered in a "fair and equitable" manner.

- Ensures that Ditchriders keep up with their record keeping on water delivery.

- Collects water delivery records from Ditchriders and enters that data into the water accounting program.

- Prints Ditchrider reports for each Ditchrider and ensures the overall quality of the data.

- Keeps ISOs informed of water quota as it changes, especially during the early part of the year.

- Schedules maintenance/repair of canals and other structures from ISO reports of problems.

e. Irrigation System Operator

- Maintains daily entries in the ISO Diaries (water delivery records or "Green Sheets").

- Carries safety kit at ALL times.

- Performs all work in a safe manner.

- Makes water deliveries based on approved water delivery procedures.

- Performs regularly scheduled maintenance on irrigation project infrastructure.
- Keeps structures free of debris and obstructions, which may impede water flow.
- Reports to the SISO instances of water flow around or beneath structures, which may cause erosion or damage/failure of the structure.
- Observes and reports areas subjected to erosion damage.
- Repairs animal burrows and carries out the rodent control program.
- Reports to the SISO locations where water deliveries are impaired and requests corrective action.
- Reports areas on rights-of-ways where road repairs are needed.
- Reports any water user who is taking water without authorization.
- Reports any water user who is fencing or damaging project structures or rights-of-way.
- Makes necessary adjustments to his/her deliveries if excess water is observed spilling at wasteways or at the end of the distribution system.
- Communicates with the SISO and other ISOs if waste is observed in other areas.
- Identifies areas that require maintenance/repair that must be scheduled for the off season and reports these, in writing, to the SISO.

3. Post Irrigation Season (September 16 through December 31)

a. Irrigation Systems Manager

- Determines maintenance/repair priorities for the post season.
- Reviews water used records provided by the Hydrologist.
- Makes recommendations to the Superintendent on maintenance/repair priorities.
- Attends water user and other meetings as directed.
- Reviews personnel training needs with the Training Officer and schedules required training.
- Advises SISOs and others of training needed by their personnel and works with them to get the training accomplished.
- Sets up construction and inspection crews for jobs determined to be of high priority.

b. Hydrologist

- Reviews camp water order databases for damage and data entry problems.
- Meets with SISOs and reviews problems that need to be corrected prior to finalizing database.
- Gathers camp water order databases and creates final database for the water year for archiving.
- Performs spot checks of instream flows and reservoir elevations for compliance with court ordered levels.
- Responds for the Superintendent to letters from the CS&KT concerning inadequate instream flows.

c. Fisheries Protection Staff

- Examines fisheries protection structures and determines priorities for refurbishment/major maintenance.
- Schedules installation of new screens, if funding is available, and assembles materials and crews through communication with the ISM.

- Removes fish screen components for major maintenance and/or repair as needed.

d. Supervisory Irrigation System Operator

- Schedules work crews for major maintenance/repair activities based on the summer's review of problems.
- Monitors work crews for **SAFETY**, effectiveness, and efficiency.
- Coordinates with the ISM on equipment and manpower needs beyond the capability of her/his camp personnel.
- Schedules personnel time off (use or lose leave) with the ISM.
- Schedules personnel training with the ISM and Administrative Officer (AO).

e. Irrigation System Operator

- Winterizes project infrastructure.
- Reports safety violations to immediate supervisor immediately.
- Identifies additional areas requiring maintenance/repair and reports them to the SISO.
- Inventories equipment issued to her/him with his/her pickup in the spring and returns all equipment to the warehouse and shop.
- Replaces worn out/broken equipment from the warehouse or shop.
- Orders replacement equipment that is not in stock so that it will be available for the following season.

4. Every 5 Years

The ISM, SISOs, and ISOs participate in a condition assessment of project infrastructure based on DOI standards (refer to the Irrigation Handbook).

The ISM, Hydrologist, and SISOs will attend Reclamation's Safety Evaluation of Existing Dams (SEED) seminar.

The ISM, Hydrologist, SISOs, and selected ISOs (those who manipulate and manage FIIP reservoirs) will attend Reclamation's "Dam Tender" training.

5. As Necessary

The ISM, Hydrologist, and SISOs will participate in functional exercises for disaster management within the boundaries of the Flathead Indian Reservation.

E. COMMUNICATION SYSTEM

1. General

The Communications Directory contains pertinent information about facilities, agencies, and personnel. Specific instructions are listed in applicable sections of these O&M Guidelines and in the dams' Emergency Action Plan (EAP).

2. Communication Facilities

a. Telephone facilities. – Telephones are considered the primary means of communication within the project area. Telephones are located at the FIIP headquarters office, camps, and the Agency Office.

b. Radio facilities. – Backup communication consists of mobile two-way radios in agency vehicles. Radio reception is considered to be good within the reservation boundary.

c. Cellular phones. – Generally, cellular phones are used because coverage is considered to be fair.

d. Refer to the Communications Directory for normal and emergency telephone numbers and methods of communication during emergency events.

e. Warning system. – **It is important to refer to the dams' EAP during emergency situations.**

F. DATA REPORTING

1. Daily Reports

a. The ISOs are required to maintain detailed daily records of water deliveries in order to account as accurately as possible for the amount of water delivered in any given time period.

b. All personnel are required to account for their daily activities in as much detail as possible for timekeeping purposes.

c. Purchase logs will be maintained every day that purchases are made.

2. Weekly Reports

The weekly summary report of items accomplished during the previous week will be completed and submitted to the AO and ISM.

3. Monthly Reports

a. The Hydrologist gathers reservoir and weather data and submits a summary report to the ISM, U.S. Geological Survey (USGS), NRCS and National Weather Service (NWS). A spreadsheet summary of water conditions on the FIIP is prepared and, upon approval by the Superintendent, is released to the public.

b. Monthly budget reports are prepared by the FIIP's Finance Technician for submission to the FJBC.

4. Annual Reports

a. Crop reports will be compiled by FIIP staff and submitted to the Superintendent.

b. O&M reports will be submitted to the Superintendent.

c. Maintenance Report

A list of all maintenance accomplished for the current fiscal year shall be submitted to the Regional Irrigation Engineer before August 1 each year. The report shall include (1) a description of maintenance activity and (2) cost estimates for each item (broken down by personnel, salary costs, equipment, and supplies).

d. Operation and Maintenance Budget

The annual O&M budget plan for the upcoming fiscal year is due to the Regional Irrigation Engineer for review before July 15 of each year. Guidelines for this report are available from the Central Office and are outlined in the Irrigation Handbook. Annual training sessions are typically held by the Central Office to assist FIIP personnel in preparing the O&M budget plans.

G. COOPERATION WITH OTHER AGENCIES

1. Confederated Salish and Kootenai Tribes

a. Natural Resources Department

The FIIP cooperates closely with the NRD through the Flathead Reservation Fisheries and Water Technical Team (FRFWTT), which was assembled in the late 1980s to open lines of communication between the BIA and the Tribes on issues concerning water and affected disciplines such as wildlife, fisheries, lands and others. This team meets on a monthly basis and discusses matters of water routing, instream flows, reservoir levels, Endangered Species Act (ESA), and more.

b. Safety of Dams (SOD) and Roads

The CS&KT have contracted with Reclamation for the operation of the SOD Program. This program has been instrumental in the ongoing repair and rehabilitation of the FIIP's 17 dams and reservoirs. It should also be mentioned that funds for the repair/rehabilitation of FIIP dams has been obtained by the CS&KT as nonreimbursable funds, therefore relieving the irrigators from having to repay the costs of these highly costly projects (repair of Pablo Dam, twice; reconstruction of McDonald Dam; repair of Black Lake Dam; repair of Tabor dam; and much, much more).

c. CS&KT Forestry Program

Cooperation is somewhat limited to the coordination of water distribution as it affects forestry timber management operations.

d. Preservation Office

All actions undertaken by FIIP are routed through the Preservation Office for review. Projects undertaken in “sensitive” areas are closely monitored by Preservation Office staff under plans carefully developed cooperatively by the CS&KT and FIIP.

e. CS&KT Division of Fire Management

The FIIP routinely makes available to the Division of Fire Management its heavy equipment and its operators during times of extreme fire danger. This places a ready pool of equipment and personnel, prepared to respond at a moments notice, at the disposal of the Fire Management Team in the event of a large “fire bust” or other fire emergency.

f. Shoreline Protection Office

FIIP personnel participate as members of the Tribal Emergency Response Committee (TERC). The FIIP also makes available to this organization its personnel and equipment to respond to emergencies requiring such resources.

g. CS&KT Tribal Council

The FIIP makes regular reports to the council, through the Superintendent, concerning FIIP activities.

2. Bureau of Reclamation

Under a dam safety technical agreement with the BIA, Reclamation is responsible for providing the Schedule for Periodic Monitoring Readings and structural behavior analysis of 15 HIGH- and SIGNIFICANT-Hazard Dams (Upper Jocko, Lower Jocko, Tabor, Mission, McDonald, Kicking Horse, Ninepipe, Crow, Hellroaring, Pablo, Twin Turtle, Little Bitterroot, Hubbart, Upper Dry Fork, and Lower Dry Fork). Reclamation conducts Comprehensive Dam Reviews and intermediate dam safety inspections for the same dams listed above.

3. Natural Resources Conservation Service

The Tribes signed a Memorandum of Understanding with the United States Department of Agriculture's Natural Resources Conservation Sservice (formerly the Soil Conservation Service) to operate snow measurement sites on reservation lands. CS&KT and FIIP personnel cooperate with NRCS personnel to monitor water content of the winter snowpack of mountain watersheds. The NRCS has developed runoff correlations for various watersheds in and around the reservation, which are used to help determine the potential water availability for the irrigators. Water supply forecasts from the NRCS's Water and Climate Center become available in January, although the estimates become more accurate later in the season. Water runoff forecasts, long-range weather forecasts, water available from storage and pumping, and regulatory, legal, and resource constraints guide the FIIP Hydrologist in forecasting the available water supply for the irrigation season. Forecasts are reassessed regularly to take into account the past month's precipitation, irrigation demand, and reservoir drawdown/filling. The defined and committed instream fisheries flows in designated intercepted streams are included in the water supply and demand analysis in order to make accurate estimates of water available for irrigation.

4. National Weather Service

The NWS is responsible for issuing flood warnings for streams on the Flathead Indian Reservation. The FIIP communicates with the NWS, especially during the spring runoff, and advises them when main feeder canal capacities become limited and water will have to be allowed to course down their natural channels, sometimes causing flooding.

5. U.S. Geological Survey

The USGS (through interagency contracts administered by the BIA's Regional Office Hydrologist in Portland) collects data and maintains selected stream gaging stations on the reservation.

6. U.S. Fish and Wildlife Service

The USFWS's primary responsibility is monitoring endangered species. Presently, the FIIP and the USFWS are in informal consultation concerning bull trout and bull trout critical habitat in waters affected by FIIP O&M activities. A programmatic biological assessment has been prepared and forwarded to the USFWS for review. The FIIP attempts to work closely with the USFWS's Bison Range staff on such issues as reservoir filling and effects on nesting birds. Whenever possible, filling rates are adjusted to reduce damage to certain nesting sites.

7. Lake County Highway Department

FIIP canals are crossed by a plethora of county roads. Most of these crossings are bridges, and many of these bridges are old and deteriorating. As the county prepares to repair/replace bridges, they coordinate with the FIIP in terms of timing in order to determine the best time of year to perform the work. Whenever possible, alternative devices, such as concrete box culverts, are evaluated as replacement structures for bridges. The FIIP's primary concern is to ensure adequate capacity without compromising the system's ability to pass obstructive devices such as trees, limbs, fence posts/rails, etc.

8. Montana Department of Transportation (MDOT)

MDOT is in the process of upgrading US Highway 93 through the Flathead Indian Reservation. FIIP canals and laterals cross the highway in numerous locations. MDOT and its consultants have been coordinating the replacement of these crossings, working closely with FIIP personnel to document and record them, and to ensure adequate capacity of replacement structures. This work is not limited to US Highway 93, but also occurs wherever MDOT has chosen to take over maintenance/repair of other roads, such as Back Road and the Round Butte Highway.

H. CONSULTATION WITH WATER USERS

Water user participation is conducted through periodic meetings with the water users. Additional meetings are held periodically as special needs arise or as emergency situations dictate.

1. Flathead Joint Board of Control (FJBC)

Regular meetings are scheduled for the second Monday of every month and are held at the FJBC Office in Saint Ignatius. These meetings are open to the public, with FIIPs participation occurring at about 12:30 p.m. The FIIP's normal participation is limited to a report on the project's water status as of the end of the previous month, the status of the budget, and the status of ongoing O&M work. It is normally attended by the Agency Superintendent, the ISM, and the FIIP Hydrologist. On occasion, other FIIP staff, such as the Administrative Officer and the Finance Technician, are directed to attend at the whim of the Superintendent. An annual meeting is scheduled by the Executive Secretary of the FJBC and is advertised through the media, generally well in advance of the meeting. This meeting is used to provide general information to the general public in the valley.

2. Camas Water Users' Association

This group of water users has an annual meeting in the spring primarily to discuss the water availability situation and to set a preliminary water quota for the area. Other issues are also discussed and decided (i.e., when water will be started into the system and what work needs to be accomplished prior to the start of the irrigation season). These meetings are scheduled by a steering committee through the Camas Division Watermaster and are generally advertised by word of mouth. This meeting is generally attended by the Superintendent, the ISM, and the FIIP Hydrologist. A follow-up meeting is generally held at the beginning of the summer to finalize a water quota for the Camas Division. This meeting is generally held around the first of July and involves the Water Users' Association Steering Committee, the Division Watermaster, and the FIIP Hydrologist.

3. Indian Water Users Association

This group is convened on an irregular basis whenever there is a perceived problem by Tribal member irrigators or when the Superintendent decides he should call such a meeting. Meetings are generally scheduled by the Chair of the association and the Superintendent. Notification is generally by word of mouth and/or by letter to selected individuals.

4. Irrigation Districts

Upon occasion, the Superintendent may call for a meeting with the water users in a particular district. These meetings are scheduled by the District Commissioner and either the Superintendent or the FIIP ISM.

5. Problem Areas

Water users who might be affected by a particular problem or activity are sometimes asked to attend special informational meetings in their areas to discuss potential impacts and mitigation measures. An example would be the series of meetings held between FIIP and SOD staff and the irrigators below Pablo Dam to discuss the piping problem at the dam, proposed repair options, and timing of repair commencement/completion.

6. State, County, and Tribal DES

Due to the potential impact of catastrophic dam failures and also the nature of certain chemicals stored at selected FIIP facilities (Acrolein at Ninepipe Camp), the FIIP is a participant in the Tribal Emergency Response Committee. Disaster drills conducted within the project area routinely include FIIP facilities and personnel. Additionally, several FIIP staff members are also members/participants of local fire departments and emergency medical services (ambulance) groups.

I. PUBLIC SAFETY AND HEALTH

The major water hazards to the public involve the dams and canal and water conveyance systems within the project boundaries.

Whenever any personnel are attending the dam, reservoir, or water conveyance systems, they should be alert for any unsafe activities by the public or any unauthorized entry into the restricted area. Contact the proper authorities **immediately** if any such violations are observed.

The FIIP monitors radio traffic. If called upon, they will respond to the emergency and/or notify proper authorities.

Refer to the Emergency Notification Contacts for names and telephone numbers for the following emergency agencies:

- BIA Headquarters
- Irrigation Systems Manager
- Superintendent

J. ENVIRONMENTAL CONCERNS

In 1985, the Tribes filed suit against the BIA to prevent the dewatering of reservation streams for irrigation. Due to this, and several subsequent lawsuits, the Tribes are now recognized as having instream flow water rights for fisheries with a priority date of "time immemorial."

Beginning in 1986, minimum instream flows were mandated by court order that confirmed that the CS&KT have treaty guaranteed rights concerning, but not limited to, aquatic resources in all reservation waters. This document addresses only those areas impacted by the irrigation system. Instream flows for fisheries have the first priority use over all other water uses, including "Secretarial" diversions. The BIA, Flathead Agency, has a trust responsibility to the CS&KT to maintain the fisheries within the Flathead Reservation. In a cooperative effort, the Flathead Agency is working with the Tribes to monitor and provide stream gaging information to help maintain instream fishery flows within the irrigation service area.

Fisheries protection on the Flathead Indian Reservation was begun by the Northwest Regional Office of the BIA providing annual funding to plan, design, and construct fish screen and passage structures as part of the irrigation system. These costs were not charged to the FIIP water users. In 1992, the Flathead Agency Superintendent, with the support of the Tribes and the FJBC, implemented an assessment of $0.25 per acre on all assessable lands under the FIIP to help fund a full-time Biological Technician (Fisheries) position. Due to budget constraints at the Northwest Regional Office, beginning in 1996, the Flathead Agency has lead responsibility for fisheries protection.

1. Instream Flows/Minimum Reservoir Pools

To meet treaty fisheries obligations, minimum instream flows and minimum reservoir pool levels were implemented in 1986 for the protection of the fishery in reservation waters impacted by operation of the irrigation system. Minimum pool levels have been established to provide seasonal protection and enhancement of the native Bull Trout population in those reservoirs identified in Appendix A-3. Current flows, monitoring points, and minimum

pool levels are listed in Appendix A-3 and Table 2-1, respectively, and are used to ensure that instream flows are not adversely impacted by diversions into the irrigation system. Where necessary, FIIP canals may be used to enhance fisheries. These situations will be evaluated on a case-by-case basis by the applicable Tribal and FIIP program personnel. In some cases, minimum instream flows may be affected. The instream flows are interim in nature, pending the outcome of various legal actions and studies undertaken by various parties, and are subject to change. The flows themselves have been based on a variety of different methodologies (see Appendix A-3).

2. Fish Screen and Fish Passage Structures Construction

As funds become available from O&M and non-O&M sources, planning, design, and construction of fish screen and fish passage structures at selected sites will be undertaken. Funding from non-O&M sources may be utilized for materials, supplies, necessary contract services, and portions of the labor. The Division of Irrigation will provide equipment required for construction and portions of the labor. All ground-disturbing activity will be conducted in full compliance with applicable NEPA and Tribal regulatory controls.

3. Fish Screen and Fish Passage Structures O&M

Regular monitoring and maintenance is necessary to ensure that instream flows at fish protection facilities are met, that the screens are kept clear, and that fish passage is maintained. A list of structures and specific operating criteria is contained in Appendix A-3.

4. Fish Rescue

The Tribes will be notified of impending chemical treatment or dewatering in those canals that do not have fish screen structures, where reduced water flows leave fish trapped, or chemical treatment of aquatic vegetation will kill fish. Rescue of the fish by physical removal will be utilized during and after operational procedures as outlined in Appendix A-3. These operations wilt be carried out in close cooperation with the CS&KT Fisheries Program. The Tribes will be given verbal notification, with a written memo follow-up, 1 week (7 calendar days) in advance of any planned facility dewatering and at the earliest possible moment in an emergency dewatering.

5. Channel Maintenance Flows

Channel maintenance discharges will occur on reservation streams, early in the irrigation season, when natural and stored available water quantities are capable of supplying water to support such flows. Implementation of a channel maintenance flow will be dependant on forecasted spring and summer water supplies. To achieve maximum benefit from these flows, close coordination concerning timing, stage increments, and peak discharge will be maintained between FIIP personnel and the Tribes' Natural Resources staff.

K. OCCUPATIONAL SAFETY PROCEDURES

It is current policy for each subdivision within the irrigation organization to hold weekly "tailgate" safety sessions to discuss and document safety related issues of concern. Refer to the BIA Irrigation Handbook and the Safety and Health for Field Operations manuals for current safety procedures, policy, and training. If there is a conflict with other standards, the most stringent requirement governs. Also refer to the Flathead Agency–Irrigation Division Safety and Health Plan, the Reclamation Safety and Health Standards, and the OSHA 600 for additional guidance.

1. Confined Work Space Entry is governed by the OSHA 600 and the Reclamation Safety and Health Standards guidelines. All cases of confined space entry are pre-planned using a "Job Safety Analysis." Work/plans/hazards are discussed and documented by the entire team prior to entry.

2. Lifeline work is utilized to inspect gate shafts and appurtenances. One team performs all inspections where the lifeline team is needed. This team meets regularly and practices lifeline techniques and performs according to Reclamation's guidelines for such teams.

3. Hazardous materials are addressed in FIIPs HAZMAT Management Guidelines.

4. Use of pesticides shall meet all Federal, State, and local regulations.

L. EMERGENCY PROCEDURES

Priorities during an emergency event shall be protection of (1) life, (2) property, and (3) canal/ irrigation systems. Emergency procedures associated with the irrigation project may include events such as canal breaks, fires, drowning, etc., and should be reported **immediately**.

FIIP Headquarters (589), upon receiving a request for emergency services, will notify appropriate agencies or personnel.

In the event of an emergency at any of the BIA dams, refer to the specific EAP.

M. SUPPORTING DOCUMENTS

1. Special Agreements

There are numerous memoranda of understanding/agreement between the BIA and other organizations. These types of agreements are developed and implemented as the need arises and are of such duration as the need demands.

2. Operating Documents

Camas Division

- Hubbart Dam SOP and EAP
- Little Bitterroot Dam SOP and EAP
- Lower Dry Fork Dam SOP and EAP
- Upper Dry Fork Dam SOP and EAP

Jocko Division

- Black Lake Dam SOP and EAP
- Jocko Dam SOP and EAP

North Division

- Hellroaring Dam SOP and EAP
- Horte Dam SOP and EAP
- Pablo Dam SOP and EAP
- Twin Lake (Turtle) Dam SOP and EAP

South Division

- Crow SOP and EAP
- Hillside Dam SOP and EAP
- Kicking Horse Dam SOP and EAP
- McDonald SOP and EAP
- Mission SOP and EAP
- Ninepipe Dam SOP and EAP
- Tabor Dam (St. Mary's Lake) SOP and EAP

Flathead Atlas

- Camas Division
- Jocko Division
- North Division
- South Division

- Geographic Information Systems online applications at the Web site www.gdsc.bia.gov/ipsod/

N. REFERENCE MATERIAL

1. Bureau of Indian Affairs

- 25 Code of Federal Regulation (CFR) 171 “Operation and Maintenance”
- Indian Affairs Manual (IAM) Part 50, Chapter 1 “Irrigation”
- 43 U.S.C. 945, dated August 30, 1890
- Irrigation Handbook
- Safety of Dams Handbook
- National Irrigation Information Management System

2. Flathead Indian Irrigation Project

a. Flathead Indian Irrigation Project Operating Plan Guidelines and Pest Management Annual Consultation Process.

b. Report on Conditions Found to Exist on the Flathead Irrigation Project, Montana, Volume I, U.S. Department of the Interior, Office of Indian Affairs, Irrigation Division, Agricultural Economics Unit, Los Angeles, California, June 1946.

c. Termination of Federal Supervision of Flathead Indian Irrigation Project, Montana, prepared by Robert N. Parnell, Project Engineer, October 1957.

3. Bureau of Reclamation Publications

- Canal Systems Automation Manual
- Concrete Dam Instrumentation Manual
- Concrete Manual
- Dams and Public Safety
- Drainage Manual
- Earth Manual
  - Chapters 1, 2, and 3
  - Part 2 – Soil Testing Procedures
- Embankment Dam Instrumentation
- Groundwater Manual
- Guide to Concrete Repair
- Herbicide Manual
- Paint Manual
- Pesticide Applicators Safety Manual
- Prevention and Control of Animal Damage to Hydraulic Structures
- Reclamation Safety and Health Standards
- Review of O&M Program – Field Examination Guidelines
- Safety Evaluation of Existing Dams (SEED)
- Training for Dam Operators – Instructors Manual
- Water Measurement Manual

O. Training

1. Required Training

- Ditchrider training (annually)
- Dam Operator training (every 3 years)
- Defensive driving (every 2 years)
- First-Aid/CPR training (every 2 years)
- Snowmobile training (once, whenever new employees are identified who need this type of training)
- All-Terrain Vehicle training (once, whenever new employees are identified who need this type of training)
- Safety Evaluation of Existing Dams (SEED) seminar (every 5 years)
- Water Management Workshop (every 5 years)

2. Recommended Training

Basic safety training as they apply to the job and position. Refer to Safety and Health for Field Operations manual for recommended training.

CHAPTER 2 – PROJECT INFRASTRUCTURE

A. GENERAL DESCRIPTION

All dams and reservoirs within the irrigation project are Federal facilities that were originally planned and authorized to facilitate irrigation development; no storage capacity was designated for flood control. Incidental flood control benefits occur when the reservoirs are at less than full capacity during high runoff periods and high flows are released in a controlled manner.

Whenever the natural streamflow exceeds the instream flow requirement and storage space is available, water may be stored for irrigation use. The minimum pool elevations established for many of the storage reservoirs are provided in Table 2-1 and will be maintained for fisheries benefits. Studies necessary to determine pool storage volume changes that may have occurred as a result of sedimentation may be conducted when funding and staffing becomes available. At the end of the irrigation season, any remaining available stored water above minimum pool level may be retained or conveyed to downstream reservoirs for carryover storage.

Table 2-1. Reservoirs and Storage

Reservoir Name	Sill El. (feet)	Max. El. (feet)	Max. Water Depth (feet)	Max. Storage (Acre-Feet)	Dead Pool	Min. Storage (Acre-feet)
Upper Jocko (Black Lake)	4390	4440	50	5,200	Yes	None
Lower Jock Lake	4267	4341	74	6,497	Yes	None
Tabor Reservoir	3911.5	4026	115	23,597	Yes	2900
Mission Reservoir	3341	3409.7	69	8,341	No	763
McDonald Reservoir	3545.52	2598	52	8,225	Yes	None
Kicking Horse Reservoir	3042	3064.8	23	10,650	No	780
Ninepipe Reservoir	2985	3010.1	25	15,032	No	836
Crow Reservoir	2800	2877	77	10,352	No	803
Pablo Reservoir	3179	3211	32	28,400		410
Twin Reservoir (Turtle Lakes)	3061	3092	31	998	No	None

Table 2-1. Reservoirs and Storage

Reservoir Name	Sill El. (feet)	Max. El. (feet)	Max. Water Depth (feet)	Max. Storage (Acre-Feet)	Dead Pool	Min. Storage (Acre-feet)
Little Bitterroot Lake	3897.98	3906.48	9	26,400	Yes	None
Hubbart Reservoir	3140.4	3210	70	12,125	No	27
Upper Dry Fork	2900	2929	29	2,970	No	413
Lower Dry Fork (Lonepine Reservoir)	2830.5	2856.3	26	3,856	No	636
Horte Reservoir	3000	3040	40	1,300	No	None
Hillside Reservoir	2715	2738	23	93	No	None

The water stored in the reservoirs will mainly be utilized to serve irrigation needs. However, stored water may be released when necessary to meet instream flows for treaty fisheries needs. If the natural flow entering the reservoir is less than the fisheries instream flow requirements below, the natural flow may be supplemented by releases from reservoir storage. Reservoir storage will not be drawn down below the prescribed minimum volume for the purpose of maintaining instream flows unless the CS&KT Fisheries Program Manager determines that the benefit from such a release outweighs the problems caused by drawdown below minimum reservoir pool levels. When a given reservoir storage is at or near minimum pool, then releases will be managed to equal the natural inflow into the reservoir. Releases to maintain flows may also be provided on streams intersected by the FIIP's canals. The above situations apply to cases in which the natural hydrology (e.g., tributary flow) or channel morphology has been disrupted by FIIP facilities. If flows fall below the designated instream flow values, streams will be reviewed on a case-by-case basis by FIIP and Tribal staff to determine appropriate action.

Secretarial Water Rights and other non-project water user rights will be supplied from natural flow and will be subordinate to instream flows. Secretarial Water Rights will not have the use of project/stored water above natural flow unless they come under the project and pay O&M assessments as provided for in 25 CFR 171.17 (g), l(1). If the natural hydrology of the stream has been modified by FIIP facilities to the detriment of SWRs, the FIIP will deliver water up to a natural flow condition.

In most cases, collection and storage of the irrigation water supply begins at the end of the previous year's irrigation season. Storage continues through the beginning of the irrigation season to the extent that the natural flow exceeds instream flow, SWRs, and irrigation flow requirements. When irrigation water deliveries begin, collection continues as long as flow is sufficient to meet the added demand. Water not needed for deliveries and downstream requirements will be stored to the extent that reservoir capacities will allow. The Flathead River Pumping Plant (FRPP) will be operated as needed to augment natural runoff in accordance with storage and distribution system capacities and projected irrigation demand. Additionally, the FRPP will be used to raise the post-season elevation of Pablo Reservoir to between elevations 3201 and 3202 feet to provide about 12,000 acre-feet of carryover storage with which to begin deliveries the next irrigation season.

B. JOCKO DIVISION

The Jocko Division includes 10,718 acres of irrigated land. Water for this land is supplied by a generally productive Jocko River watershed and diversions into the basin from the Placid Creek Drainage. Two reservoirs with a combined capacity of 11,500 acre-feet[1] are committed to this service area. Figure 2-1 shows the general schematic of the facilities within the Jocko Division that are utilized for irrigation.

1. Water Supply

The Jocko Division receives a majority of its water supply from the natural flows of the Jocko River (Figure 2-1). The river provides an abundant supply during the early irrigation season.

During the spring runoff period (May and June), typical diversions of 20,000 to 40,000 acre-feet of runoff are made from the Jocko River into the Mission Valley through the Tabor Feeder Canal. This diversion of water occurs when runoff exceeds the instream flow requirement and the irrigation demand in the Jocko Division.

The natural water supply of the Jocko River drops off rapidly during mid-summer when runoff from snowpack and rainfall are depleted. This drop off period occurs near the middle of July in normal years. The extent to which the riverflow decreases depends on current year weather conditions. In dry years, decreased flow may start as early as mid-June. When irrigation and fisheries flow requirements exceed natural riverflow, diversions to the Mission Valley divisions are stopped, and water is then released from storage to meet the Jocko Division irrigation needs under a quota system. After the stored water is depleted, natural riverflows in excess of fisheries needs are diverted for irrigation under a limited delivery plan based on available supply.

[1] Note: Due to identified deficiencies at Black Lake Dam, the temporary combined usable storage is limited to 9,180 acre-feet.

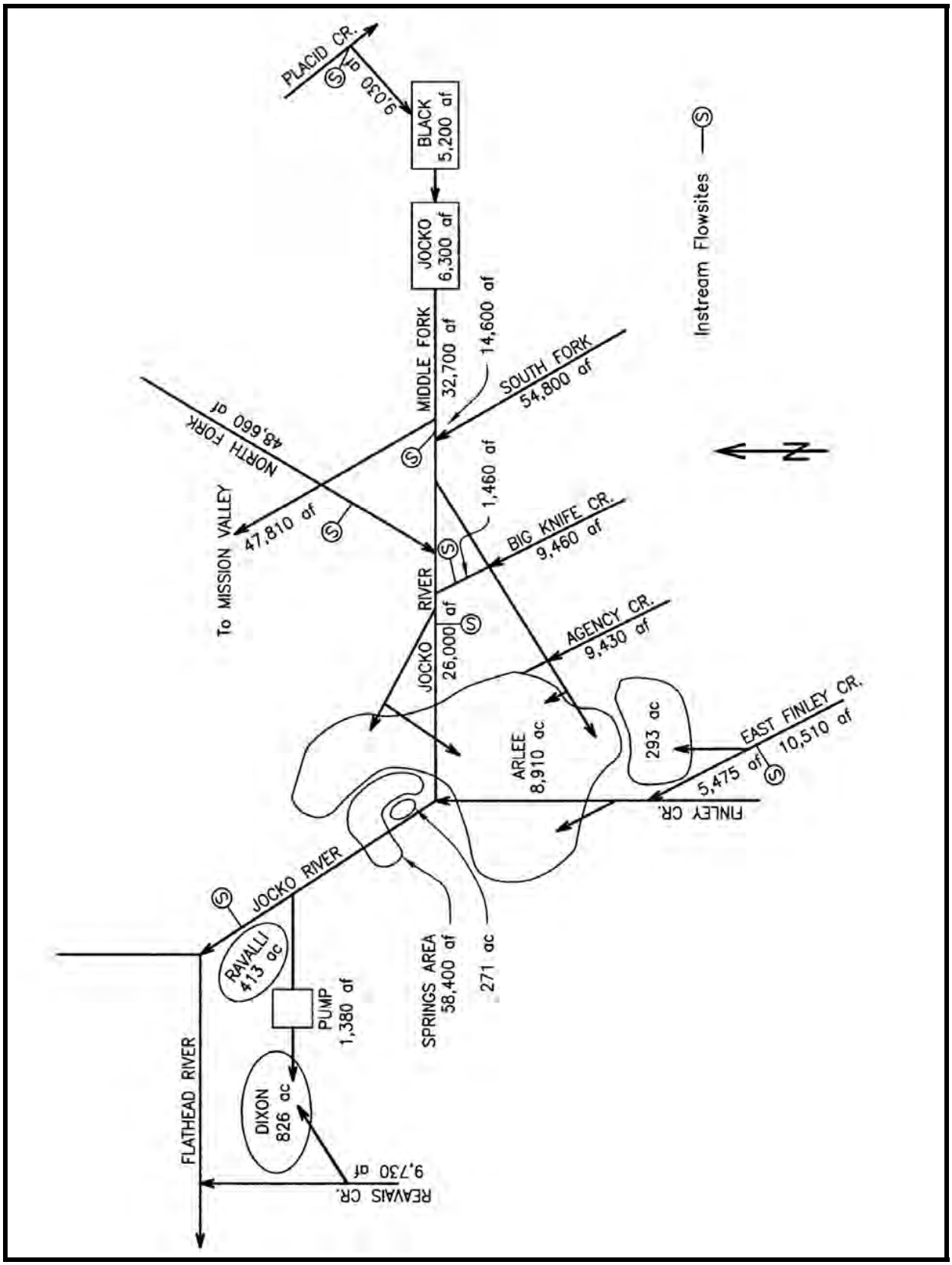


Figure 2-1. Jocko Division schematic.

An average of 8,200 acre-feet of water is also introduced into the Jocko River Basin through the Placid Creek diversion for irrigation use in the Jocko and Mission Valley divisions. This diversion is the primary supply for the Jocko Lakes.

The irrigation facilities also intercept other Jocko River Basin streams that provide an additional irrigation supply: Big Knife Creek, Agency Creek, Cold Creek, Gold Creek, Blodgett Creek, East Finley Creek, and Finley Creek. Revais Creek, which flows into the Flathead River, serves the Dixon area of the Jocko Division (Figure 2-1).

2. Storage

The two storage reservoirs that serve the Jocko Valley are Black Lake Reservoir and Lower Jocko Lake Reservoir. General information on these reservoirs is summarized in Appendix A-2. Foundation seepage from these two reservoirs varies with respect to reservoir elevations and can be as much as 80 ft^3/s from the Lower Jocko Lake Reservoir. Seepage from these reservoirs drains back into the Jocko River Basin above the irrigation diversion points. Storage is released from both reservoirs in tandem to meet irrigation demands in the Jocko Valley after the natural flow and collected seepage can no longer meet the demands for irrigation and required instream flows.

The Jocko Reservoirs are filled by a combination of basin flow and a transbasin diversion from the Placid Creek drainage during spring runoff. Placid Creek flows are historically too small for diversion before irrigation demand requires releases out of Lower Jocko Reservoir. Water is available for diversion from Placid Creek only after an approximate base flow of 10 ft^3/s is exceeded below the headworks. This base flow is established to satisfy a senior irrigation right downstream of the Placid diversion as well as to keep some water in Placid Creek.

When there is surplus water in Placid Creek and in the Jocko Division, water may be passed through the reservoirs for use in the Mission Valley divisions. Transfer of water to the Mission Valley divisions stops when Jocko Division demand exceeds water available in the Jocko River.

3. Pumping Plants

There is no storage facility in the Revais Creek drainage. After Revais Creek flows are depleted in mid-summer, the 808 acres on the Dixon Bench must be supplied by pumping from Lower "J" Canal (which diverts from the lower Jocko River). The Revais Pumping Plant (100 HP) pumps a flow of about 10.5 ft^3/s through a vertical lift of 78 feet. The pump is operated only when the water supply from Revais Creek is less than the irrigation demand. Historically, the available water is sufficient to supply the pump and the land under Lower "J" Canal without significantly impacting the Lower Jocko River.

4. Delivery

The delivery plan for the Jocko Division is different during the "run of the river" period (early season) and when stored water is released as described below:

From the beginning of the irrigation season until water is released from Jocko Lakes for irrigation in the Jock Valley, water distribution is on a demand basis subject only to canal limitations.

During dry years, it becomes apparent that some form of distribution or rotation plan is needed. Because of the shortage that occurred in 1994, the Jocko Valley areas served primary by Black and Lower Jocko Lakes were put under a quota system.

The delivery plan for the Jocko Valley provides for apportioning the natural flow available for irrigation along with stored water. The water allocation system is characterized as follows:

a. The per-acre quota is computed by dividing the total water in storage in Black and Jocko Lakes by the total number of acres served by the Upper “S” and “K” canal systems.

b. The quota is implemented when water is first released from Jocko Lakes to meet instream flow and irrigation demands.

c. All water delivered must be ordered through the Watermaster and ISO at least 48 hours in advance; requests for turning all water off must be made at least 24 hours in advance in order to plan the release of water from reservoirs and its distribution to meet these demands. Water deliveries will not be scheduled to start or stop after Saturday noon or on Sundays or holidays.

d. Water will only be released from storage if needed to meet minimum instream flows and irrigation needs in the Jocko River. When the storage is depleted, the natural flow available will first be used to meet instream flows, and remaining water will be rotated among users as long as irrigators are willing to cooperate with each other and the ISO.

e. Each water user is entitled to a proportionate “share” of the natural flow available after the minimum instream flow has been met. Water users must be willing to “turn off” their water for periods of time as requested by the ISO to allow water to proceed farther down the ditch so that neighbors at the end can get irrigation water.

f. Small tract water users will not be entitled to irrigation or to sprinkle their lawns and gardens indiscriminately with no consideration for other irrigators.

g. In areas where supply is limited by canal or pump capacity, such as Lower “S” Canal area and the Revais-Dixon area, the available flow will be “shared” among the water users when the demand exceeds the supply.

The water user’s cooperation is appreciated, and each water user is encouraged to take all possible measures to conserve water. Wasting of water reported to the ISO will be cause for investigation and possible suspension of water service to that individual.

C. MISSION VALLEY

The Mission Valley includes 103,355 acres of land under irrigation. Figures 2-2 and 2-3 show the general schematic detail of the facilities within the North and South Divisions that comprise the Mission Valley and which are utilized for collecting, storing, diverting, transferring, and delivering the water supply available for irrigation. The South (including the Moiese Area, see Figure 2-4) and North Divisions are located in the Mission Valley.

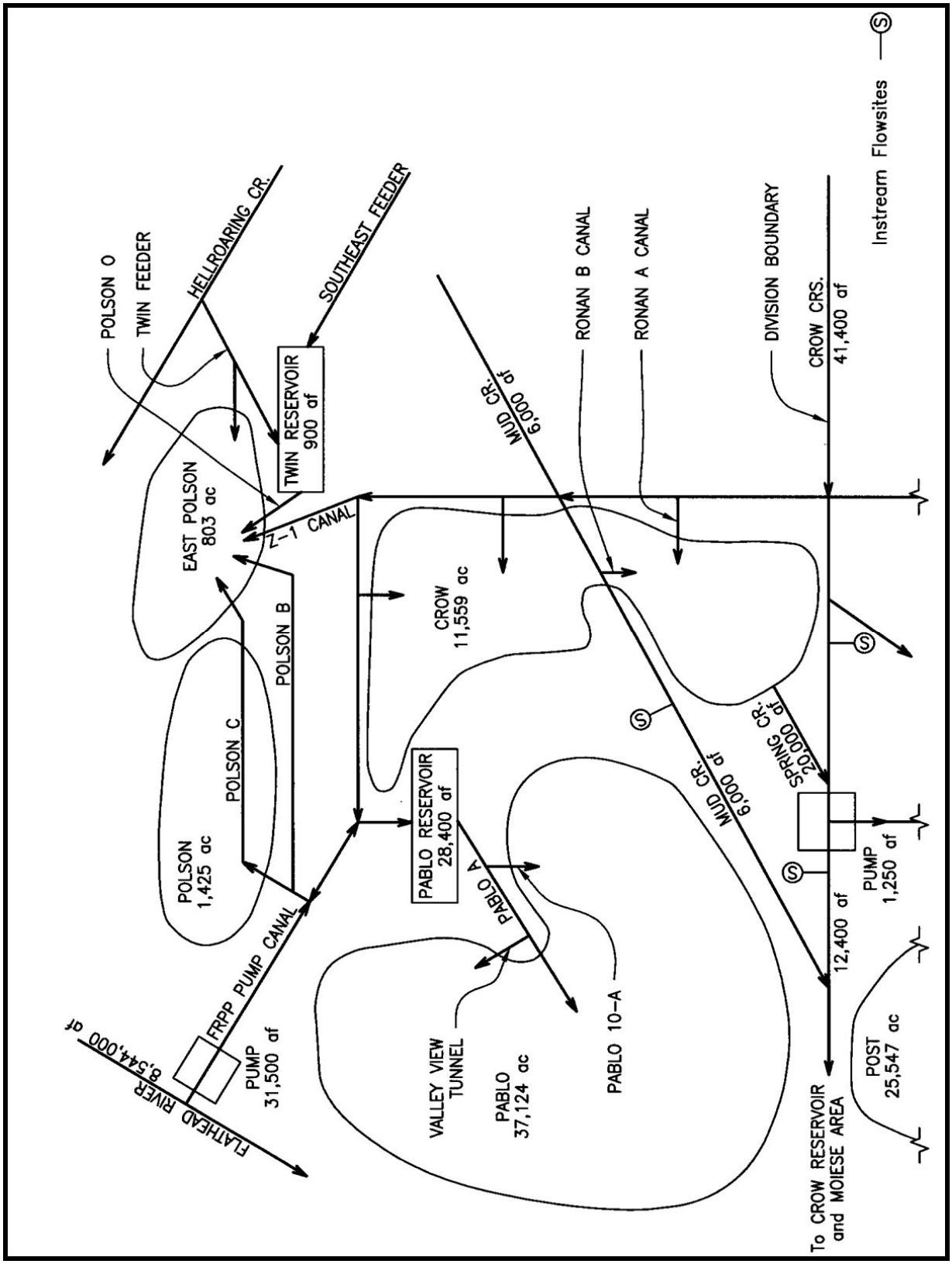


Figure 2-2. North Division schematic.

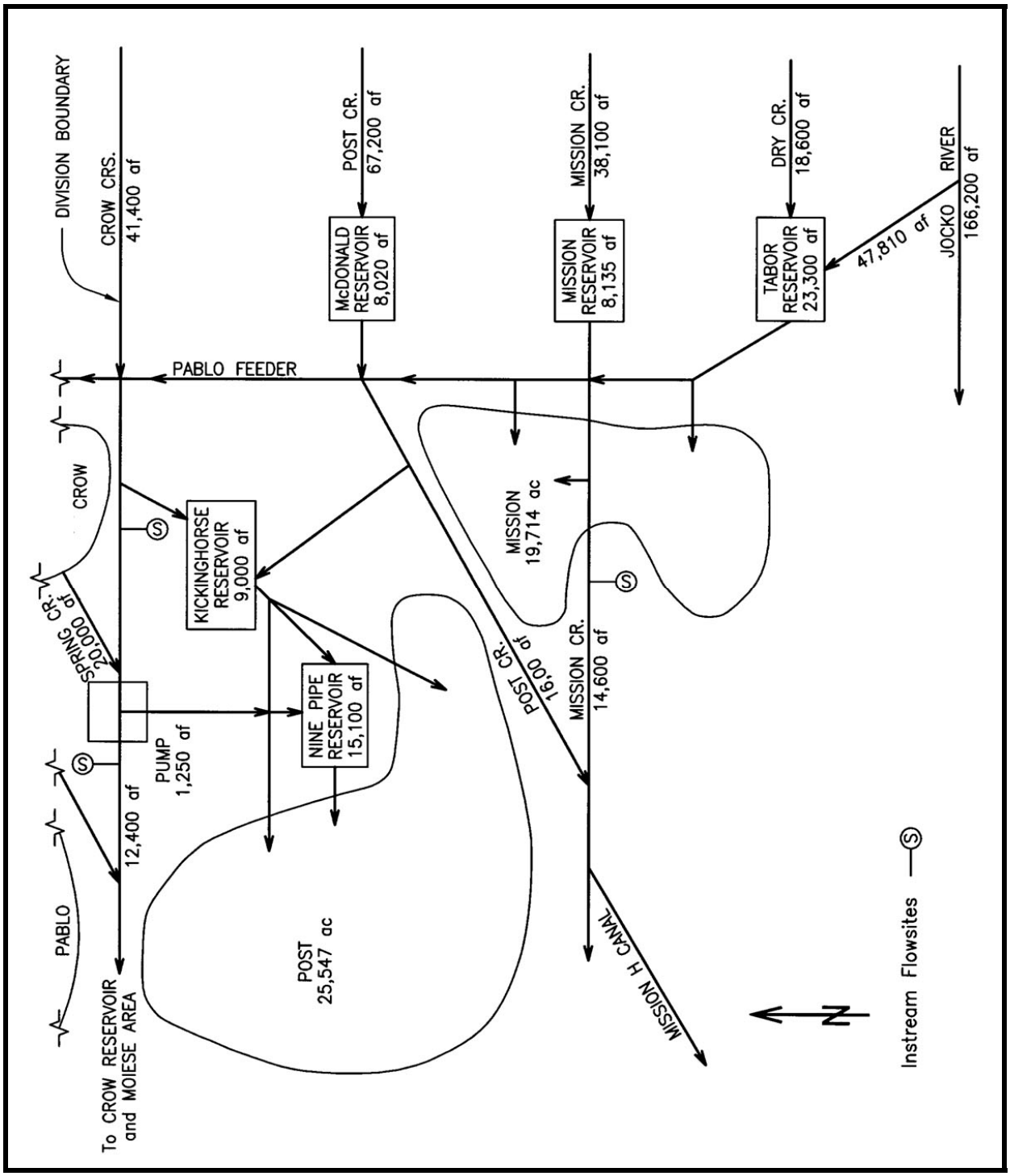


Figure 2-3. South Division schematic.

1. Water Supply

The Mission Valley diverts water from numerous streams. The major streams intercepted and integrated into a water management unit are listed below:

a. Jocko River via Tabor Feeder Canal

- Feeds into St. Mary's Lake/Tabor Reservoir.
- Must be partly conveyed from Tabor and dispersed for use or transferred to other reservoirs for storage.
- With a maximum capacity of 450 ft^3/s, the canal conveys an average of 16 percent of the total supply available to the Mission Valley.
- Average annual diversion is 36,000 acre-feet.
- Amount transported is determined by both the availability of water in the Jocko River and the need for and capacity to handle extra water in the Mission Valley.

b. Dry Creek

- Feeds St. Mary's Lake/Tabor Reservoir.
- Produces approximately 8 percent of runoff into Mission Valley divisions.
- Average runoff per year: 18,248 acre-feet.
- Average runoff April - October: 16,654 acre-feet.
- Provides an average of 65 percent of Tabor Reservoir capacity.
- The Dry Creek Canal, a.k.a. “DC” liner or “DC” Canal, originates at Tabor Reservoir. This canal flows into the “DC” Pool, which is the beginning of the Mission “A” Canal, a.k.a. Pablo Feeder Canal.

c. Mission Creek

- Feeds Mission Reservoir.
- Intercepted by Mission “A” Canal at outlet of Mission Dam.
- Is also diverted into Mission “B,” “C,” “6-C,” and Mission “H” Canals.

- Produces approximately 17 percent of runoff into Mission Valley.
- Average runoff per year: 37,103 acre-feet.
- Average runoff April - October: 33,608 acre-feet.

d. Post Creek

- Feeds McDonald Reservoir.
- Intercepted by Pablo Feeder Canal downstream of McDonald Dam.
- Is also diverted into Kicking Horse Feeder Canal for storage in Kicking Horse and Ninepipe Reservoirs, and into Post "F" Canal.
- Produces approximately 29 percent of runoff into Mission Valley.
- Average runoff per year: 61,447 acre-feet.
- Average runoff April - October: 52,696 acre-feet.

e. LaRose Creek, Marsh Creek, and other small creeks north of Post Creek

- Intercepted by Pablo Feeder Canal.
- Produce approximately 4 percent of runoff into Mission Valley.

f. South Crow Creek

- Naturally drains to Lower Crow Reservoir.
- Intercepted by Pablo Feeder Canal for delivery to lands above Pablo Reservoir and for storage in the Pablo Reservoir.
- Can be diverted into Kicking Horse and Ninepipe Reservoirs.
- Crow Creek pump is located below the confluence of Crow Creek with Spring Creek.
- Moiese "A" Canal takes diverts from Crow Creek below Crow Reservoir.
- Average runoff per year: 17,080 acre-feet.
- Average runoff April - October: 14,438 acre-feet.
- Produces approximately 8 percent of runoff into Mission Valley.

g. Middle Crow Creek

- Naturally drains to Lower Crow Reservoir.
- Intercepted by Pablo Feeder Canal.
- Produces approximately 4 percent of runoff into Mission Valley.
- Average runoff per year: 9,317 acre-feet.
- Average runoff April - October: 7,773 acre-feet.
- Source of water for city of Ronan.

h. North Crow Creek

- Naturally drains to Lower Crow Reservoir.
- Intercepted by Pablo Feeder Canal.
- Produces approximately 9 percent of total runoff for Mission Valley divisions.
- Average runoff per year: 20,598 acre-feet.
- Average runoff April - October: 17,715 acre-feet.

i. Mud, Ashley, and Pouirier Creeks

- All intercepted by Pablo Feeder Canal.
- All feed into Crow Creek/Lower Crow Reservoir.
- Produce approximately 3 percent of runoff for Mission Valley divisions.

j. Hell Roaring Creek

- Feeds through Hell Roaring Power Plant into Twin Feeder Canal.
- Serves land east of Polson.
- Alternate source of water for city of Polson.
- Watershed basin drains into Flathead Lake.

- Cannot be diverted into Pablo Feeder Canal.
- Significant source of water for Twin Reservoir.

There are other small streams that are intercepted and absorbed by the project. These streams provide approximately 2 percent of the runoff for the Mission Valley. Spring Creek, West Miller Coulee, and Lower Mud Creek are spring fed creeks that contribute a significant quantity of water to the Lower Crow Reservoir, which serves the Moiese Valley. These creeks also collect return flows and have individual private pumps that apply water to FIIP lands under special delivery agreements. Many other unmentioned streams contribute to the Mission Valley irrigation supply.

2. Storage

The Mission Valley utilizes eight major storage reservoirs to serve the land under irrigation. Six of these reservoirs (Tabor, Mission, McDonald, Kicking Horse, Ninepipe, and Pablo) are managed together to best utilize the available water received from the watersheds that feed them. The other two storage reservoirs, Lower Crow and Twin (Turtle Lake), are managed separately. Two smaller reservoirs, Horte and Hillside, have small capacities and are used for re-regulation of irrigation deliveries in the long delivery systems. Hell Roaring Reservoir is a small reservoir, about 40 to 50 acre-feet, that provides water for power generation through the Hell Roaring Power Plant. This power plant is operated by Mission Valley Power. The reservoir itself does not provide storage for the FIIP. General information on the reservoirs is summarized in Appendix A-2.

Storage in the major reservoirs is usually depleted by the end of the irrigation season. In most years, the irrigation demand, reflecting the consumptive use requirements of the crops, equals or exceeds the available supply. Collection for subsequent irrigation years may begin as soon as the minimum instream flows are exceeded.

3. Pumping Plants

The Mission Valley utilizes three pump facilities to serve the land under irrigation. These pump facilities are described below.

One small pump installation near Polson, the Pray station, serves a small tract of land. The Pray station pumps from the FRPP pump canal.

The FRPP consists of three pumps of 3,000 HP each, which has a maximum combined capacity of 210 ft^3/s, and lift water 339 feet from the Flathead River to the Pablo Feeder Canal. Although the plant was completed in 1939, use had not been extensive. Deterioration over the years has led to a major refurbishment. Additional electrical and mechanical improvements are scheduled for the next several years.

The FRPP is used to maximize the quota in the Mission Valley by allowing water to be held in upstream reservoirs and replacing it with water pumped through the FRPP to Pablo Reservoir.

General criteria used for operating the pumps are outlined below:

a. The Flathead pumps can be operated, with acknowledged risk to the impellers, when the lake/forebay elevation is not less than 2881.5 feet. The pump manufacturer recommends the pumps not be operated if the forebay elevation is less than 2883.0 feet. Because of high releases in advance of spring runoff and for power generation at Kerr Dam, elevation 2883 feet or higher is usually not attained until sometime in May.

b. The FIIP can operate the pumping plant at the same times the Pablo Feeder Canal is flowing at maximum below the North Pablo Drop. The canal capacity below this confluence is 650 ft^3/s. The Pablo Feeder Canal transports excess natural runoff from other drainage basins in the Mission Valley to the Pablo Reservoir (Figure 2-2).

The canal also serves as a means to distribute and utilize storage water from the upper reservoirs. Typically, the canal is at or near full capacity in May and June.

c. The pumping plant will be operated, if necessary, between the end of each irrigation season and October 31 in order to provide carryover storage in Pablo Reservoir for the next irrigation season. The target carryover storage will be about 12,000 acre-feet.

d. The monthly demand rates encourage pump operation for full month periods whenever possible.

The Crow Pumping Plant consists of one 150 HP pump unit that can pump a maximum of 24 ft^3/s through and a lift of 42.5 feet from Crow Creek, below its confluence with Spring Creek, to supply Ninepipe Reservoir and the Post Distribution System (Figures 2-2 and 2-3). The pump is operated to supplement Ninepipe Reservoir when there is not an adequate supply available. However, consideration must be given to ensure that operating the pump does not unduly restrict the Moiese water supply nor jeopardize the minimum fisheries instream flow. When the pump is not in service, the radial gate will be opened, allowing the flow of Crow Creek to pass through the diversion structure and eliminate the fish passage barrier.

4. Distribution and Delivery

The numerous streams and storage reservoirs in the Mission Valley will be utilized to provide a reliable and evenly distributed supply of water to all the land served for irrigation. Early in the irrigation season, while reservoirs are full or are expected to fill, water may be made available and used for channel maintenance flows and/or provided to irrigators as non-quota water. Once the stored water serving an area begins to be drawn upon, a quota system will be established to deliver an equitable distribution of the remaining water to each water user. This quota will be established based on the available water in storage, estimated runoff, and projected pumped supply factors, transportation losses, minimum reservoir pools, and instream flow requirements. Computer modeling of these variables will be conducted by FIIP staff to help set the quota and manage the reservoir releases and distribution of water. This program is flexible to provide for the implementation of current instream flows and minimum reservoir pools.

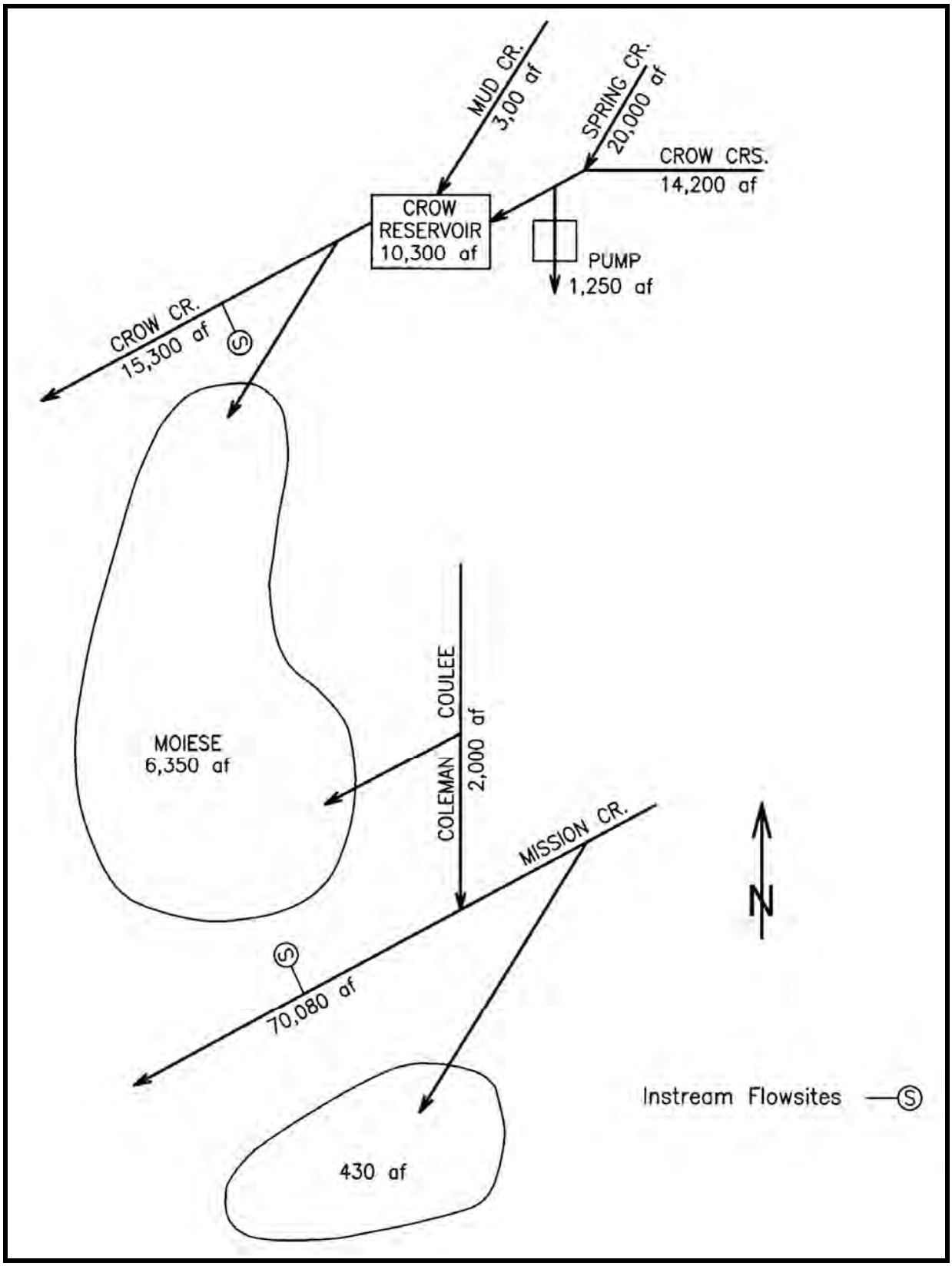


Figure 2-4. Moiese Valley schematic.

D. CAMAS DIVISION (LITTLE BITTERROOT VALLEY)

The Camas Division includes 13,162 irrigated acres. This land is served by four storage reservoirs, which are supplied by low yield watersheds, much of which is outside the Flathead Indian Reservation. There are four transbasin water diversions. The watersheds are of relatively low elevation, making them somewhat unreliable for a consistent annual water supply. Watershed yield from year to year is more variable than that from the Mission and Jocko watersheds. Figure 2-5 shows the general schematic detail of the facilities within the Camas Division that are utilized for irrigation.

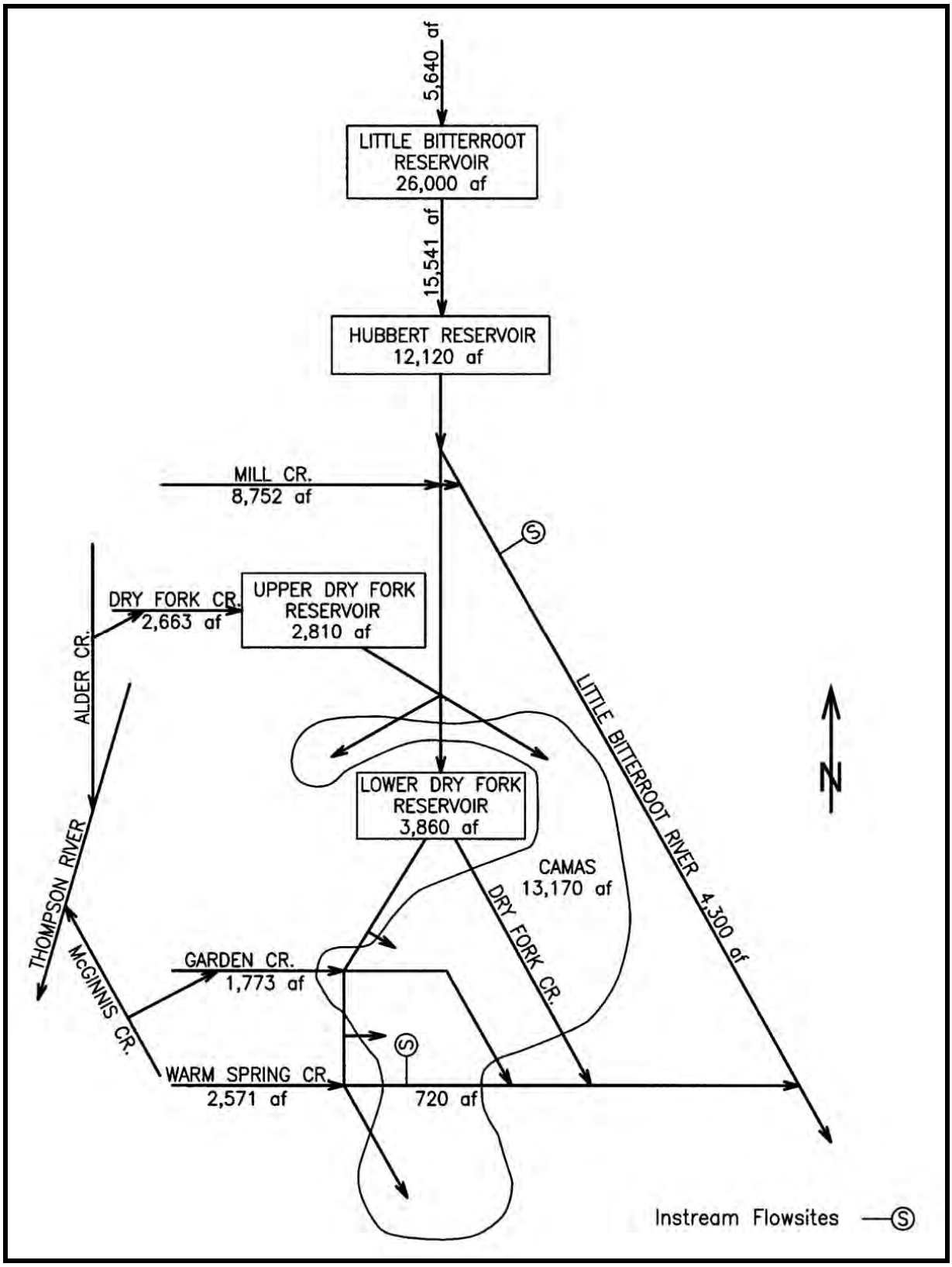


Figure 2-5. Camas Valley schematic.

1. Water Supply

The Camas Division receives its water supply from several areas, as follows:

a. Little Bitterroot River

- Runoff from the upper drainage basin feeds Little Bitterroot Lake and Hubbart Reservoir, which are off the Flathead Indian Reservation.
- Runoff from the middle drainage basin and released water from Hubbart Reservoir is diverted (at Little Bitterroot Diversion Dam) into the Camas "A" Canal which supplies the Lower Dry Fork Reservoir and the distribution system (Figure 2-5).
- Release rates from Little Bitterroot Lake are limited because of flooding of agricultural ground immediately below the dam. Irrigation and storage needs are forecasted in advance, and Little Bitterroot releases are planned well in advance of need and coordinated carefully with Hubbart Reservoir, which receives water from Little Bitterroot Lake.

b. Briggs Creek and Redmond Creek

Runoff collected in these creeks can be diverted through Briggs Creek Feeder Canal to supply Hubbart Reservoir (Figure 2-5).

c. Mill Creek

- Intercepted by Camas "A" Canal and can be diverted for storage in Lower Dry Fork Dry Reservoir or used directly in the distribution system.
- Releases are necessary to satisfy minimum fisheries instream flows and SWRs in the lower Little Bitterroot River Drainage Basin.

d. Dry Fork Creek

Runoff is impounded directly in Upper Dry Fork Reservoir. This drainage basin is the major source of water for that reservoir.

e. Alder Creek

- Part of the Little Thompson River Drainage Basin.
- Flows can be diverted into the Dry Fork Creek Drainage Basin through the Alder Ditch. The water can be stored in either Upper or Lower Dry Fork Reservoirs or used in the distribution system.

f. McGinnis Creek

- Part of the Little Thompson River Drainage Basin.
- Flows can be diverted through McGinnis Ditch into Garden Creek and then separated for distribution to FIIP lands on the Quilligan Ranch and under the Camas "C" Canal.
- When not needed for irrigation distribution, the water will be allowed to continue in its natural course.

g. Garden Creek

- This is the sole source of water to supply SWR above and below FIIP facilities.
- Garden Creek below Camas "C" Canal will not be used as a distribution channel or wasteway for water from outside the Garden Creek Basin.

h. Hot Springs Creek

Intercepted by and can be diverted into Camas "C" Canal.

Runoff from streams during the irrigation season provides an average of about 25 percent of the delivered irrigation water. Transbasin water transfer from Little Thompson River through Alder Ditch and McGinnis Ditch is an integral part of the irrigation water supply. Water will not be imported from outside the Little Bitterroot Basin unless it can be used in the storage or distribution system.

2. Storage

The Camas area is served by four reservoirs: Little Bitterroot, Lake Hubbart Reservoir, Upper Dry Fork Reservoir, and Lower Dry Fork Reservoir (also known as Lonepine Reservoir). Little Bitterroot Lake and Hubbart Reservoir are not within the exterior boundaries of the Flathead Indian Reservation. Detailed information for these reservoirs is found in Appendix A-2.

3. Distribution and Delivery

A quota is set in the Camas Division early in the irrigation season after consultation with the water users and consideration of the amount of water in storage, the estimated runoff (using input from snow surveys and past records), and the delivery losses. The reservoir capacities are sized to enable the carryover of water from relatively abundant water years. A 3-year carryover is considered in planning. Water will be made available on a non-quota basis only if the runoff cannot be contained.

The Camas distribution system consists of four main canals, laterals with sublaterals, and turnouts to convey water to all delivery points. The Camas "A" Canal is primarily a transportation canal to move water into the main body of irrigated land, but it also serves a small amount of irrigable land along its course. The Camas "B" and Camas "D" Canal headworks is in the Camas "A" Canal. The Camas "B" Canal served the eastern portion of the division, and Camas "D" Canal serves the western portion of the division above the Camas "C" canal. The headworks for the Camas "C" Canal are at the outlet of Lower Dry Fork Reservoir. Camas "C" Canal contours around the west and south portions of the division south of Lower Dry Fork Reservoir.

Natural inflow into Camas "A" Canal during the months of June, July, and August amounts to an average of 4,350 acre-feet per year. The remaining runoff contributes directly to the storage facilities and is considered a part of the total storage available. The average volume of water drawn from storage for the entire Camas Division is about 17,880 acre-feet per year. The total average water diversion for the Camas Division is 22,230 acre-feet per year. The capacity of Camas "A" Canal is not adequate to meet the irrigation demand during peak use. Therefore, in preparing for seasonal demands, water is moved from the upper reservoirs to Lower Dry Fork Reservoir. Transfer of water is coordinated with the runoff to ensure maximum storage in Lower Dry Fork Reservoir at the beginning of the heavy irrigation season. Water may also be transferred from Little Bitterroot Lake to Hubbart Reservoir subject to the limited channel capacity between these two reservoirs. Once the seasonal delivery of water has been implemented, water from natural runoff will

be supplemented by releases of stored water to provide the total water allocated to the irrigated lands.

The Camas “C” Canal intercepts Garden Creek, Hot Springs Creek, and other intermittent streams to supplement releases from the Lower Dry Fork Reservoir. Garden Creek/“C” Canal intercepts the McGinnis Diversion flow at a point above the Garden Creek Canal intersection. Garden Creek will not be used as an irrigation system carriage facility below its intersection with “C” Canal except to provide SWR water to the Pablo Ranch.

Only runoff from the garden Creek basin drainage may be released into Garden Creek below “C” Canal at any time during the year. Water from areas outside the Garden Creek drainage, including the McGinnis Diversion, will not be spilled below the Garden Creek/“C” Canal intersection during the months of June through September unless requested by the Pablo Ranch. Garden Creek flows will not be diverted in any manner during the non-irrigation season, October through March.

A structure modification was completed for the Garden Creek/“C” Canal intersection to facilitate water management on Garden Creek. Under terms of a permanent settlement of litigation agreement, water up to the full Camas Division quota will be released from “C” Canal into Garden Creek during the irrigation season for delivery to the Pablo Ranch to meet its SWR on Allotments 2110 and 2117. Irrigation water so requested by the Pablo Ranch is to be supplied within 48 hours of receipt of the water order.

E. AREAS OF CONCERN

FIIP management has tried to acquire other sources of funding for rehabilitation and betterment (R&B) projects identified in the 1985 Comprehensive Review Report. Since no other sources of funding were available, the O&M assessments have been used as the primary funding source. There are some concerns that apply to all divisions. These mostly fall into the maintenance category and mostly have to do with cleaning of major canals and repair/replacement of major water control structures along FIIPs extensive water gathering and distribution system. Another area of concern project-wide is the installation of flow instrumentation in order to be able to monitor canal/streamflows remotely. The SOD Early Warning System has gone a long way to provide this information. However, more is needed. Still, another area of concern project-wide is the implementation of accurate water measurement devices/methods for all major canals/laterals and for all farm turnouts. Perhaps the most important concern, which affects the mitigation of the above listed concerns, is the lack of funding.

1. Jocko Division

The Jocko "K" Canal concrete lining from the headworks in the Jocko River past the "R" siphon is in poor condition. The concrete lining needs replacement. This canal conveys up to 250 ft^3/s for water delivery to over 6,000 acres in the Jocko Valley. The project would replace approximately 7,000 feet of concrete lining and approximately 2,500 feet of earth section.

2. North Division

The FRPP itself is in good condition; however, the slope behind the discharge pipes needs to be stabilized. The Pablo Feeder Canal north dike needs replacement. This reach of canal is approximately 3,000 feet long and has a capacity of 650 ft^3/s. The concrete lined canal from the FRPP needs replacement. This canal was constructed in 1939 and carries 210 ft^3/s to the confluence of the Pablo Feeder Canal north dike.

3. South Division

The Dry Creek lining that conveys 260 ft^3/s out of Tabor Reservoir is approximately 5 miles long. It was constructed in the 1940s and is a vital system for the Mission Valley.

4. Camas Division

Camas "A" diversion in the Little Bitterroot River needs work. This structure was built in 1924, and water is seeping around and through it.

5. Fish Screens

Several sites for fish screens and ladders have been identified by the Fish Water Technical Team.

CHAPTER 3 – PROJECT OPERATIONS

A. GENERAL DESCRIPTION

Non-project water users may be provided with irrigation water for limited use purposes, such as watering lawns and gardens, on an “if and when available” basis. A fee will be assessed and a “Water Service Contract for Non-Assessable Lands” will be issued for the purpose of administering the limited supply of water. The scope and limits of the “non-project” users contract program will be determined after the March 1 snow survey and discussions with the CS&KT as well as the FJBC. The public will be advised of the FIIP’s decision, including the fee schedule, by May 1. The Water Service Contract for Non-Assessable Land is displayed in Appendix B-3.

B. PROCEDURAL SEQUENCE OF EVENTS

1. Pre-Season Planning

The ISM shall be responsible for performing the following activities in the months (September through April) for the next irrigation season:

- Developing staffing requirements
- Preparing equipment and supply requisitions as needed
- Determining training needs for staff
- Reviewing previous year's maintenance logs
- Scheduling maintenance planning meetings
- Conducting regular meetings with staff
- Conducting meetings with water users

2. Pre-Season Maintenance

The ISM shall review maintenance needed (September through April) on equipment and facilities so that the irrigation system will be ready and water deliveries can be met according to schedule.

3. Notifications to Public

Public notices shall be provided to the local media (newspapers, radio stations, public, and government offices) in the spring of each year indicating when water deliveries are expected to be made to the FIIP.

4. Operation and Maintenance Billing

Once each year, the O&M billing package is reviewed by April 15. Mailing of the O&M billing package is sent to all water users by May 1 each year. This function is the responsibility of the Administration Office.

5. Verification of Operation and Maintenance Payment

Verification of O&M payments will be made before May 30 of each year. The ISM will inform the ISO(s) as to which water users have paid their fees or are otherwise eligible to receive water deliveries.

6. Water Orders

Begin receiving water orders from water user customers in April. Water orders are sent in on the card entitled “Water Orders” provided in Appendix B-2. Water orders are tracked on the “Green Sheet” form, which is provided in Appendix B-1. This data is entered into the water accounts program.

7. Processing Water Delivery Requests

The goal of the BIA is to deliver water to the headgate no later than 48 hours after receipt of the water request. Circumstances beyond the control of the BIA, such as water shortages, may cause a delay in water delivery beyond 48 hours.

8. Special Requests

Excess irrigation water may be available to customers and other water users at the end of the irrigation season, or before, depending on water availability (for example stockwater). When water flows exceed the FIIP’s ability to transport and store irrigation water, it can be made available as “non-quota” water.

C. WATER DELIVERY

1. Canal Filling Requirements

Filling of canals should be limited to no more than 50 percent of the canal capacity (ft^3/s) in some reaches to prevent blowouts.

2. Canal Drawdown Requirements

Drawdown for fisheries protection is provided in Appendix A-3. During shutdown, stage the drawdown in 50 percent increments so that fish have a chance to move into secure places.

Schedule fish rescue with CS&KT Fisheries Department to salvage fish.

D. OPERATING GUIDELINES

The operating guidelines for the irrigation season will be based on the following conditions:

1. 25 CFR, Part 171, of which key sections are provided in Appendix A-6.
2. Water availability forecasts based on snowpack surveys.
3. Weather conditions.
4. Preliminary quota set (calculation recommendations made by the FIIP Hydrologist to the ISM).
5. Begin delivery of water in early to mid-April (in some areas, depending on runoff).
6. Coordinate Flathead River Pumping Plant with Mission Valley Power.

E. STOCKWATER POLICY

As provided for in 25 CFR 171.3: "...stock water will not be carried in the Project's or unit's irrigation system when, in the judgment of the Officer-in-Charge, such practice will:

1. Interfere with the operation and maintenance of the system;
2. Be detrimental to or endanger the canal, lateral system and/or related Interfere with the operation and maintenance of the system, structures;
3. Adversely affect the stored water supply for irrigation."

lnstream flows for fisheries have the first priority over all other water uses on the Flathead Indian Reservation.

The following procedures shall apply in administering this policy:

- Normally stock water deliveries will only be made in the Jock Division and from the Pablo Feeder above Ashely Creek in the Mission Division.
- Irrigation system water will not be delivered for household use because it is considered unsafe for such use.
- Stock water will be delivered, provided it is available, from the end of the irrigation season until freeze up prevents such delivery.
- Those canals which freeze up will be shut off immediately when loss of control occurs.
- No provisions for stock water deliveries will be made on canals that are receiving maintenance.
- Stock water deliveries in the Camas Division will adversely affect the stored water supply for irrigation and, therefore, will not be permitted.
- After winter freeze up occurs, approximately December 1, all water that naturally enters into the irrigation distribution system shall be passed through the system and released in the nearest natural drainage channel.
- Waste water from Secretarial water users will not be allowed to enter irrigation distribution facilities during the winter season.

- Stock water released from an irrigation reservoir and transferred to another drainage area within the FIIP will primarily be used for stock water. A portion of the transferred water may be used to supplement the instream flow in the receiving drainage.

- During the irrigation season, April 15 to September 15, if stock water is demanded on a distribution system where irrigation water is not being delivered to other downstream users, the total amount of water, including system losses, shall be charged against the ordering water user's basic quota.

- Stock water that is delivered prior to or after the designated irrigation season, March 1 through April 15 and September 15 through freeze up, is also subject to being charged against the water user's quota during the years in which no spill or non-quota water is available.

- Watermasters and the ISO shall keep records of all stock water deliveries.

- Landowners will be responsible for all costs incurred by the FIIP for repairing any structures, canals, or lateral banks that are damaged due to cattle or livestock tromping and winter stockwater deliveries. Landowners will be billed for all costs incurred in completing these repairs.

F. HISTORICAL FLOW AND DELIVERY DATA

Crop report summaries are on file in the FIIP basement west vault.

CHAPTER 4 – MAINTENANCE MANAGEMENT SYSTEM

A. GENERAL

The apparatus, structures, mechanical equipment, etc., which are part of water storage, conveyance, and distribution systems must be maintained in a satisfactory operating condition at all times. Following an established maintenance program will result in the best service to water users, fewer emergency repairs, better working conditions for maintenance personnel, lower maintenance costs, and conservation of available water.

B. PREVENTIVE MAINTENANCE

A continuous program of preventive maintenance, combined with equipment overhaul when required, will best suit the needs of FIIP. This method consists of continually performing routine maintenance and adjustment work to the critical items of a structure or facility in a scheduled and organized manner so as to make special inspection and heavy repairs less necessary. Maintenance is applied more specifically to the parts that are known to need repairs or replacement most often. Experience shows that proper lubrication, adjustment, and small repairs, applied often enough to critical parts, will make it less necessary to undertake complete overhaul. The success of preventive maintenance will depend largely on the alertness of the personnel who work around the equipment.

C. SAFETY

All work should be conducted in a safe manner. A Work Order and Job Safety Analysis (JSA) should be completed for each job and reviewed with all involved personnel prior to undertaking the work. The original JSA is filed with the Work Order for future review and use in upcoming jobs.

D. WORK SCHEDULES

Maintenance work is scheduled so as to make the best use of available personnel to coincide with favorable weather so far as possible and to coincide with periods when outages of the equipment can best be tolerated. In following the preventive maintenance method, the work to be done is spread out over the entire year. Maintenance work will be divided into the group which can be done at any time and that which can be done only at times when the equipment can be taken out of service. Every spring, the Watermasters, ISM, and Superintendent hold an annual meeting to review past maintenance activities, review the budget, and schedule the upcoming year's O&M activities. This meeting is scheduled in advance of the FJBC annual meeting so a report can be provided to the water users.

E. WORK ORDERS

A Work Order can be turned in by anyone involved in FIIP O&M. The Watermaster is responsible for reviewing and inspecting the requested work, preparing the NEPA document, JSA, Shoreline Permit, Cultural Clearance, Best Management Practice, and prioritizing the Work Orders within his area of operation and responsibility. The Work Order is then sent to the ISM, who will provide a Work Order number from the Excel spreadsheet maintained in the office. The NEPA and JSA documents are also sent to the Environmental Coordinator and Safety Officer for review and signature. All Work Orders are coordinated with the other divisions for manpower, equipment, and budget. The Watermaster is responsible for monitoring the progress of the Work Orders submitted and making the necessary adjustments for the completion of scheduled work and maintenance. Upon completion of the work, the Work Order will be returned to the ISM for final entry into the computer Work Order register. This register is maintained on a yearly basis and closed out at the end of the year and a new calendar year started.

CHAPTER 5 – FINANCIAL MANAGEMENT

A. BUDGET

The budget is currently completed using the online budget template, the Irrigation Financial Plan (FPP). To access the FPP module, go to website www.gdsc.bia.gov/ipsod/ and click on "FPP." Separate guidelines for developing the O&M budget is available on the online application at www.gdsc.bia.gov/ipsod/ and clicking on "Documents."

A copy of the current year's approved budget is provided in Appendix D.

B. PROJECT ACCOUNTING

The Irrigation Handbook contains an indepth section on financial management. Refer to this document for additional information on financial questions.

The National Irrigation Information Management System (NIIMS) is the computerized accounting system for all irrigation projects. It has its own user's manual that should be referred to for answers to questions regarding that system and should be kept on file at each agency irrigation office.

APPENDIX A
SUPPORTING DOCUMENTS

RESERVATION - FLATHEAD; PROJECT - FLATHEAD

HISTORY OF RESERVATION:

Written records of the Flathead country begin about the time the Society of Jesus founded the Mission at St. Ignatius in 1854.

A traveling Iroquois Indian had told the Flathead Indians about the "black robes" and they became so interested that they sent four different expeditions to St. Louis to ask the Jesuit missionaries to come to the Flathead country. The first expedition went in 1831. It was not until 1840 that their wishes were gratified, when Father De Smet set out and reached the tribe the same year. After remaining with them a few weeks he went back, promising to return. The following year a number of priests made the trip and arrived in the Bitter Root Valley in the fall, and there established St. Mary's Mission, the first among the Flatheads, in 1841.

The Flathead Reservation was first established as a result of the treaty concluded at Hell Gate, in the Bitter Root Valley, July 16, 1855, ratified Mar. 8, 1859, proclaimed Apr. 18, 1859 (12 Stat. 975). By the terms of this treaty the confederated tribes of the Flathead, Kootenay and Upper Pend d'Oreilles ceded and conveyed to the United States all right, title and interest in the country occupied or claimed by them, bounded and described as follows: "Commencing on the main ridge of the Rocky Mountains at the 49th parallel of latitude, thence westwardly on that parallel to the divide between the Flat-bow or Kootenay River and Clarke's Fork; thence southerly and southeasterly along said divide to the 115th degree of longitude, thence in a southwesterly direction to the divide between the sources of the St. Regis Borgia and the Coeur d'Alene Rivers, thence southeasterly and southerly along the main ridge of the Bitter Root Mountains to the divide between the head waters of the Koos-koos-kee River and of the southwestern fork of the Bitter Root River, thence easterly along the divide separating the waters of the several tributaries of the Bitter Root River from the waters flowing into the Salmon and Snake Rivers to the main ridge of the Rocky Mountains, and thence northerly along said main ridge to the place of beginning."

There was reserved from the above ceded area, for use and occupation by the said confederated tribes and as a general reservation upon which other friendly tribes could be placed, a tract of land included within the following described boundaries: "Commencing at the source of the main branch of the Jocko River; thence along the divide separating the waters flowing into the Bitter Root River from those flowing into the Jocko to a point on Clarke's Fork between the Camash and Horse prairies; thence northerly to and along the divide bounding on the west the Flathead River, to a point due west from the point half way in latitude between the northern and southern extremities of the Flathead Lake; thence on a due east course to the divide whence the Crow, the Prune, the Se-ni-el-em and the Jocko Rivers take their rise, and thence southerly along said divide to the place of beginning."

In consideration of the above cession the United States agreed to pay to the confederated tribes the sum of $120,000, payable over a period of 20 years.

The treaty also provided, among other things, that the Bitter Root Valley above Lee-le Fork should be carefully surveyed and examined, and if, in the

judgment of the President, it was found to be better adapted to the wants of the tribe than the general reservation provided for in the treaty, then such portions would be set apart as a separate reservation for the said tribe.

The Executive Order of Nov. 14, 1871, states that the Bitter Root Valley above the Lee-le Fork, after survey, was not found to be better adapted to the wants of the Flathead tribe than the general reservation provided for in the treaty of 1855 and ordered all Indians residing in said Bitter Root Valley removed to the general reservation.

The Act of June 5, 1872 (17 Stat. 226), provided that after a public land survey of the lands in the Bitter Root Valley above Lee-le Fork, said lands shall be opened for settlement and sold to settlers, and from the first moneys so secured the sum of $50,000 be reserved and set apart for use of said Indians, to be expended by the President in annual installments not to exceed $5,000 in any one year.

An agreement between James A. Garfield, special commissioner, and the chiefs of the Flathead tribe to carry out the Act of June 5, 1872, was made Aug. 27, 1872, providing that the United States should erect houses, furnish flour, enclose and plough certain tracts of land, pay the $5,000 appropriated for the removal of the Indians, make further payment to the tribe of $50,000 in 10 annual installments, and that the Indians should thereafter occupy the Jocko Reservation as their permanent home.

This agreement was signed by Arlee, second chief, and Adolph, third chief, but Charlot, first chief, refused to sign, and records show that he never did. He did not move to the reservation until 1891.

The Act of Mar. 3, 1891 (26 Stat. 1091), granted a right-of-way to the Missoula and Northern Railroad Co. across the Flathead Indian Reservation.

The Act of Apr. 23, 1904 (33 Stat. 302), provided for the survey and allotment in severalty of lands within the reservation to the Indians as authorized by the general allotment act of Feb. 8, 1887 (24 Stat. 388). The act also provided that the lands remaining after allotment should be opened for settlement and entry by proclamation of the President prescribing the time and manner in which the lands could be settled upon.
Under Sec 12. of the act, 960 acres were reserved for the use of the Catholic mission schools.

The Act of Mar. 3, 1905, Sec. 12 (33 Stat. 1080), amended Sec. 12 of the Apr. 23, 1904, act whereby there were reserved for the use of the Catholic mission schools not to exceed 1,280 acres; for the University of Montana biological station 160 acres; for tribal use as a fuel supply not to exceed 5,000 acres.

The Act of June 21, 1906 (34 Stat. 354), authorized and directed the Secretary of the Interior to reserve for townsite purposes not less than 40 acres of land at each of the settlements of Arlee, Dayton, Ravalli, Dixon and Ronan, and not less than 80 acres at St. Ignatius, and not less than 80 acres at Polson, and 160 acres surrounding the Camas Hot Springs.

The Act of May 23, 1908 (35 Stat. 267), appropriated $30,000 to pay to the tribe for the purchase by the Department of Agriculture of land within the

Flathead Reservation, not to exceed 12,800 acres, for a permanent national bison range for the herd of bison to be presented by the American Bison Society. The Act also appropriated $10,000 for the fencing of the land and for necessary buildings.

The Act of Mar. 3, 1909 (35 Stat. 795), authorized the Secretary of the Interior to reserve from location, entry, sale or other appropriations all lands within the Flathead Indian Reservation chiefly valuable for power or reservoir sites.

The Act of Mar. 4, 1909 (35 Stat. 1051), authorized the enlargement of the Bison Range to include not more than 20,000 acres.
Records show that a total of 18,523.85 acres was reserved, for which the Indians received $1.50 per acre.

A proclamation issued by the President May 22, 1909 (36 Stat. 2494), opened the non-reserved lands within the Flathead Reservation for entry under the provisions of the homestead laws of the United States.

The Act of Apr. 12, 1910 (36 Stat. 296), amended the Act of Apr. 23, 1904, whereby unallotted lands fronting Flathead Lake could be subdivided into lots of from two to five acres and sold. The Act also authorized an Indian to sell 60 acres of his allotment, provided such allotment was or might become irrigable, and also provided for the allotment to Indians of additional lands to replace allotments coming under the reserves for power and reservoir sites.

The Act of June 25, 1910, Sec. 29 (36 Stat. 863), authorized the Secretary of the Interior to classify and appraise all vacant and unallotted lands within the reservation and dispose of all lands classified as "barren," "burned over" and "containing small timber," under certain rules and regulations.

Executive Order of Jan. 14, 1913, withdrew the SE¼ SW¼, Sec. 9, T 18 N, R 21 W, for administrative purposes.

The Act of Feb. 25, 1920 (41 Stat. 452), authorized the Secretary of the Interior to make allotments on the Flathead Reservation to all enrolled, unallotted children, from unreserved, unsold and unallotted lands, and that 40 acres of each allotment so made under this Act shall be designated as a homestead which shall be inalienable and non-taxable during the minority of the allottee.

By an Order of Feb. 13, 1936, the Secretary of the Interior, by virtue of authority granted him under Secs. 3 and 7 of the Indian Reorganization Act of June 18, 1934 (48 Stat. 984), restored to tribal ownership 192,424 acres of lands on the reservation previously opened to white settlers but which had remained unsold.

Also, under the Indian Reorganization Act approximately 1,200 acres of land have been purchased, and uncompleted options on approximately 1,600 acres have been taken recently on lands on the reservation for restoration to tribal ownership.

HISTORY OF IRRIGATION:

(Irrigation System)

Shortly after the mission was founded at St. Ignatius in 1854, water was taken from Mission Creek by the Jesuit priests for irrigation of lands along the creek. This is the first irrigation on record on the reservation.

Prior to the authorization of the irrigation project, many Indians, and whites on behalf of Indians, constructed ditches from the principal streams of the reservation and practiced irrigation on their lands.

The Act of Apr. 23, 1904 (33 Stat. 302), authorized a preliminary survey to determine whether or not an irrigation project was feasible. The irrigation scheme being reported favorably, the Act of Mar. 3, 1909 (35 Stat. 795), provided the first appropriation for beginning construction. Subsequent Acts provided appropriations for continuing the irrigation work. Prior to 1916, appropriations for the irrigation project were reimbursable from the sale of land and timber belonging to the Flathead tribes. The Act of May 18, 1916 (39 Stat. 141), provided that all funds used for the irrigation project out of tribal funds should be returned and that payments for the irrigation work should be made by the land benefited. It also provided for the assessment of construction charges against the lands of Indians, while former legislation had provided that Indian lands would not be required to pay construction charges.

An arrangement was made between the Office of Indian Affars and the Reclamation Service in 1907 whereby the Reclamation Service furnished the engineering organization to make surveys and carry on the construction work. Survey work was begun July 8, 1907. Preliminary lines were run, reservoir sites selected and surveyed, topographic surveys made of all lands considered irrigable, investigation made of the power possibilities on the Flathead River, and stream gauging begun on all the principal streams of the project.

The following brief chronological summary outlines the principal phases of construction:

1909 - Jocko and Mission Division laterals started, preparatory work done on Newell Tunnel.

1910 - Work at Newell Tunnel continued, work begun on Ninepipe Dam, Pablo Feeder Canal in Pablo Division and Pablo "A" lateral system.

1911 - Preliminary work done at Tabor Reservoir site, controlling works built at St. Pablo Dam, work continued on Newell Tunnel and Pablo Division laterals.

1912 - Construction started on North and South Pablo Dams, Pablo Feeder excavation continued, miscellaneous structures placed on Pablo, Mission and Jocko Divisions.

1913 - Construction started on Moiese "MA" Canal, work continued on Pablo Dams and Pablo "A" lateral.

1914 - Paving done on South Pablo Dam, work continued on "MA" Canal and Pablo lateral systems.

1915 - Drainage system built in town of Polson, Horte Reservoir built, work continued on Pablo laterals and structures, including Valley View and Round Butte systems, construction of Mission "H" Canal begun.

1916 - Extension and completion of existing lateral systems, Camas Division construction begun, including Little Bitter Root River diversion, camps established at Tabor and McDonald Reservoir sites, Mission "H" Canal completed.

1917 - Construction at Tabor and McDonald Reservoirs principal features, work continued on Camas "A" diversion and distributary system.

1918 - Tabor Reservoir completed, enlargement of South Pablo Dam started, excavation of Pablo Feeder Canal continued.

1919 - Embankment at McDonald Reservoir, Little Bitter Root Lake Reservoir and enlargement of So. Pablo Dam completed, enlargement of by-pass canal begun.

1920 - McDonald Reservoir spillway completed, Polson "A" and Pablo and Mission Division laterals completed, work begun on Dry Fork Reservoir, Dry Creek Canal lining started.

1921 - Pablo Feeder Canal enlargement begun, Dry Fork Dam completed.

1922 - Construction begun at Hubbart Dam, enlargement Ninepipe Dam completed, enlargement Pablo Feeder Canal begun, work begun on Tabor Feed Canal.

1923 - Hubbart Dam completed, Ninepipe Reservoir enlargement completed, Big Creek Feeder Canal constructed, Revais Creek, Lower Jocko "J" and Mission "F" systems built.

1924 - Tabor Feed Canal completed, Ronan "A" lateral system started, project taken over by Indian Irrigation Service in April, 1924.

1925 - Ronan "A" lateral system completed.

1926 - No construction; study of power and pumping program by E. L. Rose.

1929 - Work resumed on Pablo Feed Canal enlargement, work started on Kickinghorse Reservoir, Tabor Reservoir enlargement, and extension of Dry Creek Canal lining, soil survey and classification made, and land classification begun. (For outline of soil survey and land classification see OTHER INFORMATION).

1930 - Kickinghorse Reservoir, Tabor Reservoir enlargement and Dry Creek Canal lining completed, construction started on Ronan "B" lateral system, Pablo "A" Canal enlarged, and land classification completed.

1931 - Ronan "B" system completed, controlling works and feed canal built for Twin Reservoir and work started on Lower Crow Dam and Pablo Reservoir enlargement.

1932 - Construction of Lower Crow Dam and Pablo Reservoir enlargement in progress and embankment built at Twin Reservoir.

1933 - Lower Crow Reservoir completed, work started on Mission Reservoir, excavation Alder Creek Canal and enlargement Dry Fork Dam begun.

1934 - Work continued at Mission Reservoir, enlargement Pablo Reservoir and Dry Fork Dam completed and Lost Creek Canal built.

1935 - Mission Reservoir and Alder Creek completed, Jocko "K" Canal enlargement and gunite lining started and land reclassification made.

1936 - Jocko "K" completed, work begun at Jocko Lakes, Placid Creek Canal built, Crow Creek Pumping Plant and Canal built, Falls Creek crossing on Tabor Feed Canal enlarged and Camas "A" Canal betterment begun.

1937 - Jocko Lake development completed, work begun on substructure for Flathead River Pumping Plant, Revais Pumping Plant built, Tabor Feed Canal enlargement begun and Pablo Feed Canal enlargement completed.

1938 - Pumping Plant substructure and Tabor Feed Canal enlargement completed, construction of Pump Canal and lining almost completed and Camas "A" Canal betterment finished.

(Power System)

The original plans for the Flathead Project contemplated power development on Flathead River to furnish power for pumping to supplement the gravity water supply. The Newell Tunnel was driven during the years 1909 to 1911 to be used for diverting the river during construction of the power plant.

For many years no more work was done on the power development, as the small acreage irrigated could be supplied by gravity water. Later, when the irrigable acreage had reached a point where pumping became necessary, the proposal for project construction of a power plant was revived. The Act of May 19, 1926 (44 Stat. 458), provided $395,000 for continuing construction of a power plant, and Assistant Engineer E. L. Rose was sent to the project to make a study of the power and pumping situation. His report covering this study was transmitted to the Commissioner of Indian Affairs on Feb. 2, 1927.

After the revival of the power proposition, action toward approval of actual construction was delayed for several reasons. All construction appropriations were subject to the formation of irrigation districts and the execution of repayment contracts by the districts. This was finally accomplished for the major part of the project by the execution of the repayment contract by the Flathead Irrigation District on May 12, 1928.

By letter of May 6, 1926, to the Commissioner of Indian Affairs, the Rocky Mountain Power Co. proposed a major development at the Newell site, as an alternate to the construction of a small plant by the project, and offered to sell power to the project at prices which made the development of a small plant uneconomical. This proposal was argued for some time and finally, on May 23, 1930, the proposal for a major development was approved, and the site leased to the Rocky Mountain Power Co. Reference is made to memorandum prepared by Assistant Commissioner J. H. Scattergood Dec. 30, 1929, on Flathead Power Development, printed in Senate Document No. 153, 71st Congress, 2nd Session.

Construction began on May 23, 1930. Because of depressed business conditions, the power company obtained permission to suspend work, and the job was closed down on June 1, 1931. Work was resumed on July 17, 1936, and the project completed June 1, 1938. Dedication ceremonies were held Aug. 6 and 7, 1938, at which the project was designated as Kerr Dam.

The ultimate capacity of the project will be 154,000 HP. One unit of 77,000 HP is now installed. The height of the concrete arch dam is 204 ft; length on top is 800 ft.; bottom width is 42 ft., and top width is 17 ft. The lake level is regulated by 14 gates, and water is carried from the lake to the power-house through 800 ft. of 28-ft. diameter concrete-lined tunnels

The terms of the license granted the Rocky Mountain Power Co. provided that the Flathead Irrigation Project should have the right to purchase electrical energy from the licensee, as follows: 5,000 HP for pumping purposes at the rate of one mill per KWH; an additional 5,000 HP at one mill per KWH which may be sold or used for any purpose; and 5,000 HP at 2-1/2 mills, which also may be sold or used for any purpose.

Approval for the construction of project transmission lines was obtained late in 1930. Early in 1931 the project constructed transmission lines to supply towns and farm homes of the Camas Division. Ownership and control of all power lines on the reservation was acquired on Aug. 25, 1931, by purchase of the holdings of the Public Utilities Consolidated Corporation, then in receivership, for $160,000.

The property acquired by the purchase consisted of a small power plant on Big Creek; 38 miles of 16,500-volt lines from Big Creek to Polson, including connecting lines to Ronan, Charlo and St. Ignatius; substations at Polson, Ronan and St. Ignatius; and distribution systems in each of the towns. There were 945 customers, of whom very few were rural. The entire system was in such condition that it was necessary to spend approximately $40,000 for extraordinary maintenance within the first two years of operation.

The following brief chronological summary outlines the principal phases in the development of the project power system:

1930 - Authority received for construction of project power system, work started on Camas Division.

1931 - Camas Division completed, lines built to Valley View and Round Butte districts and to Crow Dam, Public Utilities Consolidated Corporation holdings purchased from Receiver.

1932 - Rebuilt distribution systems at Polson and Pablo, lines built to Finley Point and to Flathead Agency.

1933 - Rebuilt distribution system at Ronan, extended line from Agency to Dixon, built distribution system at Dixon, and extended 3-phase line from Crow Dam to D'Aste.

1934 - Extended lines west of Pablo, Charlo substation equipment moved to Ninepipe, extended lines to Moiese Valley and North Crow Creek districts. New rate schedule approved Sep. 6.

1935 - Work started on line to Arlee and lines extended to Leon district.

1936 - Line to Arlee and distribution system completed.

1937 - 5,000 KVA transformer installed at Kerr Dam by Montana Power Co. to serve project system, lines from Kerr Dam to Polson and Round Butte raised to 33,000 volts, substation built at Round Butte; contract to sell power to

Mountain States Power Co. at Kalispell approved, and 33,000-volt line constructed from Polson to reservation line by Mountain States Power Co. under project supervision.

1938 - Constructed warehouse at Polson and rebuilt main line from Post Creek to St. Ignatius. Rocky Mountain Power Co. plant completed to 77,000 HP June 1.

WATER SUPPLY AND WATER RIGHTS:

The water supply for the Flathead Project comes from a large number of streams by gravity flow, with a supplemental supply to be obtained by pumping.

Filings under State laws were made first in 1908. Other filings were made at later dates until all the streams on the reservation had been filed on for project use.

Private water rights were adjudicated by order of the Secretary of the Interior under date of June 27, 1912. Water rights in the amount of 2 ac. ft. per acre were granted all lands that had been irrigated prior to the authorization of the irrigation project.

The water supplies for the three divisions of the project are largely independent of each other.

Camas Division- The water supply for the Camas Division is obtained from the Little Bitter Root River and its tributaries, Mill, Dry Fork, Garden and Warm Springs Creeks. A supplemental supply is obtained from Alder Creek. The mean flow amounts to 28,000 ac. ft., but there are years of very low runoff, so that hold-over storage is required. Filings were made on these streams in 1909 and at later dates. The first diversion for use was made in 1918.

Jocko Division- The water supply for the Jocko Division comes from the Jocko River and tributaries and Revais Creek. A supplemental supply is obtained from Placid Creek. Jocko River has a mean runoff of 144,000 ac. ft. per annum. The runoff of Finley, East Finley, Agency and Bigknife Creeks totals 35,000 ac. ft., and Revais Creek has a mean runoff of 14,000 ac. ft. All these streams reach their peak runoff in June and recede rapidly to low stages in the latter part of the irrigation season.

First use of water through project ditches was made from the Jocko River in 1910, and from Revais Creek in 1924.

Mission Valley Division- The water supply for the Mission Valley Division comes from the Jocko River, Dry, Mission, Post, Crow, Mud and Big Creeks, with a supplemental supply obtainable from the Flathead River by pumping. The normal runoff from gravity flow totals 175,000 ac. ft. per annum.

First use of the waters of Mission Creek was made in 1910, Post Creek in 1912, Crow and Mud Creeks in 1913, Dry Creek in 1918, Big Creek in 1921, and the Jocko River in 1924.

In addition to the direct gravity flow, use is made of return flow by diverting at lower points. The following table shows principal filings and pertinent data, no allowance being made for private rights:

No.	Date	Sec. Ft.	Name of Stream	Drainage Basin Area Sq. M.	Drainage Basin Ave. Elev.	Average Runoff Ac. Ft.
2	10-17-09	5,000	Little Bitterroot River	180	4,500	22,276
3	10-12-09	1,000	Mill Creek	34	4,500	4,000
5	10- 9-09	2,000	Dry Fork Creek	19	3,800	2,000
7	10- 9-09	1,000	Garden Creek	34	3,800	*
8	10-10-09	1,000	Warm Springs Creek	34	3,600	*
18	10-11-09	200	Boulder Creek	6	6,000	*
19	10-11-09	100	Six Mile Creek	6	6,000	*
20	10-16-09	1,000	Big Creek	6	6,000	4,076
21	10-19-09	500	Hell Roaring Creek	5	6,000	3,400
22	10-15-09	200	Station Creek	6	6,000	*
23	10-11-09	200	Blue Bay Creek	6	5,500	*
24	10-11-09	200	Four Mile Creek	6	6,000	*
25	10-11-09	100	Five Mile Creek	6	6,000	*
26	10-19-09	50	Meadow Creek	4	4,500	*
31	1- 6-10	500	Marsh Creek	9	3,500	*
32	1- 5-10	5,000	Post Creek	25	6,000	46,512
38	1-12-10	3,000	Mission Creek	12	6,000	35,610
39	1-12-10	500	Ashley Creek	5	5,000	*
40	1-10-10	2,000	Dry Creek	27	6,500	10,475
41	1-12-10	20	Mike's Creek	8	4,000	*
43	1-10-12	200	Revais Creek	22	3,400	14,644
52	12-27-09	200	Mud Creek	6	5,500	2,271
57	1- 7-10	40	Spring Creek	15	3,000	*
66	1-17-10	1,000	So. Crow Creek	6	5,500	12,102
72	2- 2-10	500	Finley Creek	28	3,600	13,418
78	3-29-10	100,000	Flathead River	7,610	6,000	8,347,212
84	4- 2-10	5,000	Jocko River	180	5,500	148,862#
85	4- 2-10	500	East Finley Creek	5	4,000	7,683
87	4- 2-10	100	Big Knife Creek	5	4,500	7,504
93	4- 2-10	100	Agency Creek	6	3,500	8,384
94	7-27-11	100	S-14 Creek	3	6,000	*
95	7-27-11	200	Falls Creek	5	6,000	8,050
96	7-27-11	400	No. Fork Jocko River	12	6,500	37,204
99	11-23-11	100	Mid. Fork Jocko River	12	6,000	18,770
100	11-23-11	200	So. Fork Jocko River	47	6,000	73,601
161	4- 4-12	2,000	No. Crow Creek	12	5,500	13,960
234	2- 8-18	50	Sabine Creek	8	3,200	*
256	5- 9-31	200	Placid Creek	10	6,500	7,860
257	7-19-32	75	Alder Creek	7	4,750	3,000

* No data available. # This is a duplication of the whole Jocko runoff, as the various branches are listed separately.

PROJECT WORKS:

(Irrigation System)

The irrigation system of the Flathead Project consists of three principal divisions - the Camas, Jocko, and Mission Valley. Each is a geographically distinct unit.

The Camas Division is entirely in Sanders County. The Jocko Division is largely in Lake County, with small parts in Missoula and Sanders Counties. The Mission Valley Division is entirely in Lake County.

Camas Division- The irrigation system for the Camas Division begins with Little Bitterroot Lake at the head of the Little Bitterroot River. Water released from this reservoir flows down the river to Hubbart Reservoir, which impounds the runoff originating below Little Bitterroot Lake. Water released from Hubbart Reservoir is diverted a few miles below the dam into the Camas "A" Canal, which delivers the water to the lateral system and to Dry Fork Reservoir. This reservoir is used to store water rising below Hubbart Dam and that obtained from the Alder Creek Canal. It serves only a part of the lateral system. Laterals for the remainder of the system divert from Camas "A" Canal above Dry Fork Reservoir.

There are three storage reservoirs on this division, as follows: Little Bitterroot Lake, Hubbart Reservoir and Dry Fork Reservoir.

Little Bitterroot Lake Reservoir is a natural lake at the headwaters of the Little Bitterroot River. The capacity is increased by an earth-fill across the outlet.

Hubbart Reservoir is on the Little Bitterroot River about 9 miles below Little Bitterroot Lake and 7-1/2 miles above the head of Camas "A" Canal. It is formed by a concrete, variable radius arch dam across a rocky gorge. It is the only concrete dam on the project.

Dry Fork Reservoir is formed by an earthen embankment across Dry Fork Creek. Water from this reservoir is available only to the lands under the Camas "C" lateral.

Camas "A" Canal diverts from the Little Bitterroot River about 7-1/2 miles below Hubbart Dam and 10-1/2 miles above the lateral system. The rock masonry diversion dam has a top length of 145 ft., a maximum height of 26 ft., and contains 442 cu. yds. of masonry. Diversion is directly into a 5' x 6-1/2' masonry lined tunnel, 1,018 ft. in length. A concrete flume begins at Mile 1 and has a length of 4,900 ft., a bottom width of 6-1/2 ft., vertical sides, and is 4'-8" deep. The canal has a capacity of 200 sec. ft. and is 10-1/2 miles in length.

The Alder Creek Canal diverts from the headwaters of the Little Thompson River, outside the reservation, and carries the waters across the divide to Dry Fork Creek, where they flow into Dry Fork Reservoir or directly into the lateral system. It has a capacity of 65 sec. ft. and is 4-1/2 miles long.

There are two principal lateral systems serving the Camas Division. Lateral "B" diverts from Camas "A" Canal above the Dry Fork Reservoir, so that at present the only stored waters available to these lands are those in Hubbart and Little Bitterroot Lake Reservoirs. Lateral "C" takes out of Dry Fork Reservoir. Lateral "D" is a minor but independent lateral that diverts from Camas "A" Canal above Dry Fork Reservoir and serves land lying above Camas "C" lateral.

Jocko Division- The Jocko Division is located along the south side of the project and principally in the Jocko River valley. About 700 acres of land near Dixon, although geographically separate, are included in this division.

The Lower Jocko Lake Reservoir is the only storage available for the Jocko Division. A capacity of 7,600 ac. ft. has been developed at this site by building a concrete-lined tunnel through the natural dam at the foot of this

lake, and blanketing the upstream slope with selected material. An earth dike, 20' high and 300' long, was built across the top of the natural barrier to permit raising the water surface.

The outlet works consist of a reinforced concrete, horse-shoe section tunnel, 5' in diameter and 1,150' long, controlled by a 48" pivot-type, butterfly gate valve, operated through a reinforced concrete tower 93' high, extending to the top of the dam. A 48" gate valve, located just ahead of the butterfly valve, provides emergency control. A trash rack is located at the intake of a reinforced concrete conduit, 135' in length, upstream from the gate tower.

The natural flow to this reservoir is supplemented by the Placid Creek Canal, 2-3/2 miles in length, with a capacity of 125 sec. ft., which diverts the flood waters of the North Fork of Placid Creek, which lies outside the reservation.

Water from the Lower Jocko Lake Reservoir flows down the Middle Fork of the Jocko River for several miles before being diverted into the lateral systems of the Jocko Division. Surplus waters from these sources may be diverted also through the Tabor Feed Canal for use in the Mission Valley Division.

Jocko "K" is the largest of the lateral systems of the Jocko Division and diverts on the north side of the Jocko River. It has a capacity at the head of 235 sec. ft., and is concrete lined for the first 1-1/2 miles of its length. A 42" inverted siphon of wood-stave pipe, with a capacity of 65 sec. ft., crosses the Jocko River to supply lands on the south side of the river. Another lateral system intercepts the waters of East Finley, Finley, Agency and Bigknife Creeks for lands on the south side of the river that cannot be reached from the siphon. Lateral systems in this part of the division total 75 miles in length and include 568 structures.

The Lower Jocko "J" lateral diverts from the Jocko River near Ravalli to supply about 400 acres of land lying along the Jocko River west of Ravalli. The canal has a capacity of 25 sec. ft. and is 5-1/2 miles long. There are 38 structures on this system.

The Revais lateral system takes water from Revais Creek, a tributary of the Flathead River, to supply about 700 acres near the town of Dixon. The principal lateral is Revais "R", which has a capacity of 26 sec. ft. and is 4 miles long. The water supply for this system is supplemented by the Revais Pumping Plant (see data sheet), which pumps from the Lower Jocko "J" lateral into the lower end of the Revais system. Laterals of this system total 10 miles in length and include 105 structures, exclusive of the pumping plant.

Mission Valley Division- The Mission Valley Division is the largest of the project divisions. It lies east of Flathead River and south of Flathead Lake, and is bounded on the east by the Mission Range. It is divided into three principal subdivisions - Mission, Post and Pablo. The Mission subdivision includes all the lands lying south of Post Creek; the Post subdivision includes all the lands lying between Post Creek and Crow Creek; and the Pablo subdivision includes all lands lying north of Crow Creek, extending to Flathead Lake. These subdivisions have separate and distinct lateral systems, but are inter-connected as to reservoir and feeder canal systems.

The Mission Valley Division is served by 9 storage reservoirs (see data sheet), in addition to which surplus waters from the Lower Jocko Lake Reser-

voir may be diverted into Tabor Reservoir for delivery to any part of the Mission Valley Division.

Tabor Reservoir is formed by tunneling into St. Mary's Lake, a natural lake on Dry Creek, to obtain sub-surface storage, and by damming the natural outlet with an earth embankment to obtain additional capacity. It is supplied by Dry Creek and the Tabor Feed Canal. Water from this reservoir is carried through the Dry Creek Canal for delivery into the canal system.

Mission Reservoir is formed by an earthen embankment across Mission Creek. It lies above the Pablo Feed Canal and is supplied only by Mission Creek. Water from this reservoir may be delivered to any part of the Mission Valley except a few hundred acres in the extreme south end of the Mission subdivision.

McDonald Lake Reservoir is located on Post Creek and is formed by damming the outlet of McDonald Lake with an earth embankment. It is located above the Pablo Feed Canal and receives water only from Post Creek. Deliveries can be made from this reservoir to any part of the Post and Pablo subdivisions.

Kickinghorse Reservoir is formed by placing an earth embankment across a broad coulee. This reservoir receives the flood waters of Post and South Crow Creeks through feeder canals. It is below the Pablo Feed Canal and is available only to the Post subdivision.

Ninepipe Reservoir is formed by placing an earth embankment across and around a broad coulee. It is supplied from South Crow and Post Creeks through Kickinghorse Reservoir. A supplemental supply has been obtained through the Crow Creek Pumping Plant. This reservoir lies below Kickinghorse Reservoir and is available only for lands of the Post subdivision.

Lower Crow Reservoir is located on Crow Creek and is formed by constructing an earth embankment across the creek valley. It is supplied by Crow, Mud and Spring Creeks, and winter and return flow fills the reservoir to capacity. It is used entirely for the Moiese part of the Post subdivision.

Pablo Reservoir is formed by damming a broad coulee with an earthen embankment. This reservoir is located near the north end of the Mission Valley and at the end of the Pablo Feed Canal. It is supplied by the Pablo Feed Canal, which will be supplemented by the Flathead River Pumping Plant. This reservoir supplies the greater part of the Pablo subdivision, including the Valley View and Round Butte areas.

Twin Reservoir is formed by cutting an outlet from a natural depression and building dikes at low spots around the rim to increase the capacity. It is supplied from Big and Hell Roaring Creeks through the Twin Reservoir Feed Canal. Its present capacity of 600 ac. ft. can be increased to 1,200 ac. ft. by the construction of additional embankment. It supplies only the Polson "A" lateral system, east of Polson.

Horte Reservoir is more in the nature of an equalizing reservoir than a storage reservoir. It is located in the Round Butte part of the Pablo subdivision and is formed by constructing a small earthen embankment across a coulee. It receives water from the large lateral out of Pablo Reservoir and empties into a smaller lateral system below the dam.

There are two pumping plants on the Mission Valley Division - Crow Creek and Flathead River.

The Crow Creek Pumping Plant picks up surplus return flow from Crow and Spring Creeks and delivers it into a canal, through which it flows by gravity a distance of approximately 3 miles to Ninepipe Reservoir. The plant is fully automatic and except for daily oiling, etc., it does not require the continuous services of an attendant.

The Flathead River Pumping Plant, two of the three units of which will be completed in fiscal year 1939, will provide a supplemental supply of 200 sec. ft., available to the lands adjacent to Polson and those under Pablo Reservoir.

Canal systems of the Mission Valley Division are principally feeder canals which pick up water from the streams along the Mission Range and convey it to the several reservoirs.

The Tabor Feed Canal is 10 miles in length. It begins with a capacity of 150 sec. ft. at the Middle Fork of the Jocko River and increases to 500 sec. ft. at the North Fork. It takes the several branches of the Jocko River, with the exception of the South Fork, into Tabor Reservoir.

Dry Creek Canal begins at the outlet of Tabor Reservoir and runs down the canyon of Dry Creek 5.1 miles to the upper end of the Pablo Feed Canal. It has a capacity of 300 sec. ft. and is concrete lined for its entire length.

The Pablo Feed Canal begins at the end of the Dry Creek Lining, southeast of St. Ignatius, and runs northerly along the lower slopes of the Mission Range to the Pablo Reservoir. It intercepts all the principal streams rising in the Mission Range. It is 38.6 miles long. The capacity from Dry Creek to Mission Creek is 300 sec. ft., and from Mission Creek to Pablo Reservoir it is 400 sec. ft.

The Kickinghorse Feed Canal diverts from Post Creek below the Pablo Feed Canal and runs 3 miles to Kickinghorse Reservoir. This canal has a capacity of 300 sec. ft.

The Crow Creek Feed Canal diverts water from South Crow Creek into Kickinghorse Reservoir. It is below the Pablo Feed Canal. It has a capacity of 400 sec. ft. and is 3,300 ft. long.

The Twin Reservoir Feed Canal diverts the waters of Big Creek into Twin Reservoir. This canal is 5 miles long and has a capacity of 20 sec. ft. The Big Creek Feeder, with a capacity of 10 sec. ft., diverts water from Hell Roaring Creek into Big Creek, above the point of diversion for the Twin Reservoir Feed Canal.

The Flathead Pump Canal will carry the water from the Flathead River Pumping Plant to the Pablo Feed Canal, for delivery to Pablo Reservoir. Provision is made for turning water directly into the Polson lateral system. It will be concrete lined for its entire length of 2.1 miles and will have a capacity of 225 sec. ft.

The lateral systems for the three subdivisions of the Mission Valley Division are separate and distinct, due to the topography of the valley.

On the Mission subdivision there are 4 main lateral systems, and a fifth to be constructed. Three of these divert from Mission Creek, one from Dry Creek, and the one to be constructed will probably divert from Post Creek. Constructed systems total 163 miles in length and include 1,316 structures.

On the Post subdivision there are 8 principal lateral systems, of which two are supplied from Kickinghorse Reservoir, four from Ninepipe Reservoir, one by diversion from Post Creek, and one by diversion from Crow Creek. They total 258 miles in length and include 2,933 structures.

On the Pablo subdivision there are 7 principal lateral systems, of which three divert from the Pablo Feed Canal, one from Big Creek and Twin Reservoir, and three from Pablo Reservoir. They total 354 miles in length and include 3,323 structures.

The only drainage system on the project is in the vicinity of Polson. It was constructed for the relief of additions to that city which were badly affected by seepage which came through the Polson ridge, either from the Pablo Feed Canal or the North Pablo Reservoir, which are about 300 ft. higher in elevation and on the south side of the ridge. This seepage began in 1914 soon after the canal and reservoir had been put into use. To relieve the condition the Government constructed a covered-drain system in 1915 and 1916. The drains total about 2-1/2 miles in length. To further relieve the condition, 9 wells were drilled to the water-bearing gravel strata and tapped into the drains. Conditions improved immediately after the wells were completed.

Costs to Dec. 31, 1938, for irrigation on the entire project amounted to $7,519,119.74, of which $1,073,179 was from Public Works funds.

(Power System)

The power system of the Flathead Irrigation Project comprises a transmission and distribution system consisting of 372 miles of lines, exclusive of distribution facilities within town limits. Energy is supplied to this network from three sources, as follows:

Big Creek Hydro-electric Generating Station, having a capacity of 320 kilowatts, located 6 miles east of Polson, Montana.

Montana Power Company substation of 10,000 KVA capacity, located at Kerr Dam.

Camas-Hot Springs substation of 300 KVA capacity, connected with the Montana Power Co. system about 4 miles southwest of Hot Springs, Montana.

The Big Creek plant is used primarily for standby and emergency service. Water for the plant is taken from Big Creek about 6,000 ft. upstream and carried through wood-stave and steel pipe to the plant, with a total head at the plant of 585 ft. Energy is generated at 2,300 volts and stepped up through a bank of two 200 KVA General Electric 3-phase transformers to 16,500 volts for transmission to Polson and other substations, where the line is connected through similar transformers to the remainder of the system.

Shortage of water permits only part-time operation of the plant, except during flood stages of the creek. Energy is generated with one regular operator in charge, except during May, June and July, when the creek carries sufficient water to justify the employment of an additional operator.

Although the rated capacity is only 320 kilowatts, the generators and turbines are of sufficient size to deliver 500 kilowatts over periods of several hours. It is this ability to supply 500 kilowatts for peak requirements that makes the Big Creek plant of sufficient value to warrant continuing its operation.

The transformer station of 10,000 KVA capacity, located at Kerr Dam, is provided by the Montana Power Co. to step down the voltage from their 110,000-volt line to 34,500 volts, which has been adopted as standard for the project transmission system. Energy at 34,500 volts is carried over suitable lines to a substation located at Polson, and a second substation located at Round Butte, 14 miles southwest of Kerr Dam, and 7 miles west of Ronan. At Round Butte a bank of three 200 KVA transformers steps down the voltage from 34,500 to 6900/11,950 for distribution among farm users, and transmission to Ronan, St. Ignatius, Charlo, Dixon and Arlee. Duplicate service is provided over a 16,500-volt line from Polson to Ninepipe, where the voltage is likewise reduced to 6900/11,950 volts. A tap is taken off this line at Ronan to supply duplicate service at that point.

The substation of 300 KVA capacity is located 4 miles southwest of Hot Springs and connects with the 50,000-volt line of the Montana Power Co. The voltage is stepped down from 50,000 to 6900/11,950 and transmitted at this voltage to towns and rural users throughout the valley.

The transmission and distribution system comprises 42 miles of 33,000-volt lines, 30 miles of 16,500-volt line, and 300 miles of 6900/11,950-volt lines, in addition to distribution lines within town limits.

Energy is sold at retail to more than 2,500 customers, of whom 960 are farm users, 450 are business establishments, and over 1,100 are town residences, at rates well below those in effect any place else in Montana, and which compare very favorably with rates established by the Tennessee Valley Authority. Residential rates are as follows: First 25 kwhrs. @ 6¢ per kwhr. next 100 kwhrs. @ 2¢ per kwhr.; remainder @ 1¢ per kwhr; minimum bill, $1.50.

Almost every year since the beginning of project operation of the power system, extensions have been built to supply additional customers until, at the close of calendar year 1938, the power system has reached an investment of $510,613.41, and more than $620,000 has been earned in gross revenue.

A separate office for the power system is maintained at Polson, Montana, which handles maintenance and operation, billing, collections, etc. Purchases, cost keeping, etc., are handled through the project office at St. Ignatius.

Costs to Dec. 31, 1938, for the Power System amounted to $630,038.61, of which $136,196.21 was from Public Works funds. In addition, $29,660.98 Public Works money was spent for P.W. administration on both Irrigation and Power construction.

WORKS NEEDED TO COMPLETE:

Works needed to complete the project include completion of the Flathead River Pumping Plant, construction of the Post "F" Pumping Plant, purchase of Private Water Rights, enlargement of Tabor Reservoir, construction of Upper Dry Fork and Hillside Reservoirs, enlargement of Dry Creek Canal, New Laterals, Lateral Extensions and Betterments, Power System Extensions,

Drainage, Surveys and Investigations, Hydrography, Buildings and Purchase of Reservoir Sites.

Flathead River Pumping Plant- Installation of two of the three 67 sec. ft. pumping units at the Flathead River Pumping Plant, and the construction of transmission line, pump house, pipe lines and canal will be completed during fiscal year 1939. The third unit remains to be installed; contracts have been awarded for the purchase of this unit, and for motors and transformers for all three units. Installation should follow without interruption.

Post "F" Pumping Plant- The Post "F" Pumping Plant will be located at Post Creek. The installation as planned will pump 25 sec. ft. through 2,700 ft. of 30" pipe, against a head of approximately 75 ft., and will require 500 HP for operation. It will provide a supplemental supply to approximately 1,800 acres of land under the Post "F" Canal and may also be used to supplement the supply to the proposed Hillside Reservoir. The pumping plant will be supplied by return flow in Post Creek that cannot be utilized in the gravity system.

Purchase of Private Water Rights- It is desirable from the standpoint of project operation, and to conserve the project's water supply, to purchase some 300 tracts of private land amounting to approximately 8,000 acres. These lands were partially irrigated by Indians prior to the inception of the Flathead Project, and when the reservation was opened to settlement some of these allotments were sold to whites. There has been much conflict over the use of water and considerable water is being wasted, which is a distinct loss to the project.

Tabor Reservoir Enlargement- Enlargement of Tabor Reservoir to a capacity of 25,000 ac. ft. will be accomplished by raising the existing dam and dike and the natural barrier by means of earthen embankments. Raising of the concrete outlet control tower and construction of a concrete spillway also will be required. The embankment will be of standard design, and no unusual or difficult engineering problems are involved. Total yardage of embankment will be approximately 115,000 cu. yds.

Upper Dry Fork Reservoir- This reservoir will be formed by the construction of an earth embankment across the channel of Dry Fork Creek about 2 miles above the present Dry Fork Reservoir. The reservoir will have a capacity of 2,700 ac. ft. and will be supplied by the Alder Creek Feed Canal and the early runoff of Dry Creek. The dam will be of the usual, rolled earth-fill construction, with 3:1 upstream and 2:1 downstream slopes, and will contain about 160,000 cu. yds. The maximum height of fill will not exceed 40 ft. Control will be effected by a 30" slide headgate discharging through a corrugated iron or concrete pipe placed beneath the base of the dam. No spillway will be necessary except possibly a natural overflow. Waters from this reservoir will be available to any part of the Camas Division lateral system. Preliminary surveys have been made and a report submitted.

Hillside Reservoir- The Hillside Reservoir will be formed at the head of the Hillside Ditch. About 20,000 cu. yds. of embankment will be required. The reservoir will have a capacity of 80 ac. ft. and will be utilized as an equalizing reservoir for the Hillside Ditch. It will be supplied by waste water from the Post "F" lateral and other small laterals of the Post subdivision. A supplemental supply will be available from the proposed Post "F" pumping plant.

Dry Creek Canal Enlargement- Enlargement and betterment of the Dry Creek Canal will consist of repairing and raising the existing lining to provide a capacity of 375 sec. ft.

New Laterals- The principal new laterals required include the Jocko South Side Canal, the Mission "D" and "E" systems, and the extension of the Mission "F" system.

The Jocko South Side Canal will provide a supplemental supply to 2,000 acres of class 1 and 2 land which at present cannot be reached from the Jocko River and are dependent on small creeks whose runoff is gone by midseason. The proposed canal will head in the Jocko River below the Middle Fork so that it can make use of the storage in Lower Jocko Lake Reservoir. It will be 11.5 miles in length. Its capacity will be 50 sec. ft. at the head, tapering off as demands diminish to a capacity of 15 sec. ft. A diversion structure and crossing for several creeks will be the only structures required.

The Mission "D" and "E" systems will bring under irrigation about 2,300 acres lying northwest of St. Ignatius and north of Mission Creek. These lands have been long considered a part of the ultimate irrigable area of the project. They will be supplied by return flow from Mission or Post Creeks, which may be supplemented by water from McDonald, Mission or Tabor Reservoirs.

The Mission "F" extension will supply water to about 1,000 acres lying west of St. Ignatius and south of Mission Creek. This land also has been included in the ultimate irrigable area of the project. Water supply will be secured from Tabor Reservoir through the Dry Creek Canal.

Numerous other small extensions will be made from year to year as the demand for water increases.

Lateral Extensions and Betterments- This item includes installation of measuring weirs, enlargement and extension of existing laterals, replacing temporary structures with permanent ones, enlargement of the Moiese "A" and Mission "H" canals, etc.

Power System Extensions- This item includes the conversion of certain 16,500-volt lines to 34,500-volts, installation of voltage regulators, extension of service to new customers, etc.

Drainage- The drainage program as outlined at present contemplates the building of principal drains in the more badly seeped areas of the project, to which individual drains can be led.

Surveys and Investigations- The project must necessarily continue to make surveys and investigations for new sources of water supply, supplemental storage and other miscellaneous surveys which are not properly chargeable to regular construction features, and a fund should be available for this purpose.

Hydrography- Records of stream flow and diversions were maintained from 1908 to 1923, when they were discontinued because of lack of funds, and have not been resumed except for a single season in 1932. It is very important that this work be resumed so that proper records and information may be available for project use at all times.

Buildings- It is planned to erect an office building for the Power System at Polson to replace the present rented quarters, which are now inadequate.

Purchase of Reservoir Sites- The project's reservoirs have been constructed from time to time upon Indian lands, and to date no settlement has been made for them. It is necessary, for completion of the project, that the title to reservoir sites be secured so that the project will have complete control over them and its water supply.

ESTIMATED COST TO COMPLETE:

Item		
1	Flathead River Pumping Plant	$ 55,000
2	Post "F" Pumping Plant	32,650
3	Purchase of Private Water Rights	80,000
4	Tabor Reservoir Enlargement	112,000
5	Upper Dry Fork Reservoir	90,000
6	Hillside Reservoir	10,000
7	Dry Creek Canal Enlargement	57,800
8	New Laterals	189,000
9	Lateral Extensions and Betterments	342,240
10	Power System Extensions	187,000
11	Drainage	50,000
12	Surveys and Investigations	4,000
13	Hydrography	8,000
14	Buildings	16,000
15	Purchase of Reservoir Sites	60,000
	Total	$ 1,294,690

Justifications:

1. Flathead River Pumping Plant- Contracts have been awarded for the purchase of three pumps and appurtenant motors, transformers and pipe lines. It is anticipated that the installation of two of the units, the transmission lines, pump house and the concrete-lined canal leading to Pablo Reservoir, will be completed in fiscal year 1939. The amount requested will be required to pay for the additional unit and complete its installation in fiscal year 1940.

2. Post "F" Pumping Plant- There is considerable water in Post Creek, approximately 2-1/2 miles below the headworks for Post "F" Canal, from return flow, springs and swampy ground. The amount varies, but during the irrigation season, when needed, is from 25 to 40 sec. ft. It is proposed to construct a pumping plant on Post Creek near the center of Sec. 23, T 19 N, R 20 W, to provide a 25 sec. ft. supplemental supply for about 1,800 acres lying under the Post "F" system and to supplement the supply for the proposed Hillside Reservoir.

3. Purchase of Private Water Rights- Certain lands were irrigated partially by Indians prior to the inception of the Flathead Irrigation Project. When the reservation was thrown open some of these allotments which had been partially irrigated were sold to whites, and an attempt was made also to transfer the water rights. Under the authority of the Secretary of the Interior, commissions were appointed, whose studies led to the recognition of water rights on approximately 300 tracts. These tracts comprise 8,000 acres of land adversely affecting the water supply of the Flathead Irrigation Project.

Owing to conflict of the Secretary's rulings with State laws, many of the private landowners have refused to be governed by the decreed rights, and a long-standing controversy over the use of water has arisen. In many cases diversions to private lands have amounted from 4 to 6 ac. ft. per acre in a single year, while neighboring water-users under the project are limited to 1.0 to 1.5 ac. ft. because of the shortage of water. Lacking legal enforcement authority, a suggested solution of this problem is that a commission be appointed to appraise such private water rights as adversely affect the water supply of the project, and, after the fair value of each water-right claim has been determined, to pay for it by giving the claimant a paid-up construction water right for certain acreages within the district, and in instances where this paid-up right is not sufficiently valuable to compensate for the right, to pay such additional sums as the commission herein provided for shall find to be just and equitable. When these rights have been purchased, the claimant is to deed his water right to the United States, and the lands which have been granted a paid-up construction charge are to be governed by the same rules and to pay O. and M. charges the same as any other land in the project.

It is possible that this method proposed is the quickest, most satisfactory and cheapest way of ending this long-standing controversy. A resort to the courts always contains the contingency that the United States may not be upheld in all the principles at issue. The suit might take years in court before finally being settled, and if the private water-right claimants lose they will always feel bitter toward, and disinclined to cooperate with, the project management, and lastly, the court's final findings would for all time have to be enforced through proper officers and with proper equipment and appliances. If the water rights can be bought the matter will be quickly and amicably settled for all time, the cooperation of the claimant can be counted on, and the water supply can be distributed through a unified control.

While it is difficult at this time to arrive at the amount of money that will be required to make these purchases, it is hoped that an average value of $10.00 per acre for the acreage involved will be sufficient.

4. Tabor Reservoir Enlargement- Tabor Reservoir is an important part of the general storage plan of the Mission Valley Division, as its waters can be delivered to any part of the irrigable lands of the division.

In 1930 the dam was raised and the capacity of the reservoir increased from 12,700 ac. ft. to 17,300 ac. ft. Operation of the reservoir since that date has indicated the safety and desirability of further development, and it is proposed to increase the capacity to 25,000 ac. ft. This increase in capacity will be accomplished by raising the embankment to permit a rise in water surface of 22 ft. With the ever-increasing demands for water and the completion of the enlargement of the Tabor Feed Canal to a capacity of 500 sec. ft., increased storage capacity in Tabor Reservoir becomes essential.

5. Upper Dry Fork Reservoir- Construction of this reservoir will provide supplemental storage for 12,192 acres of irrigable land lying under Camas "B", "C" and "D" canals. Of this acreage, approximately 10,500 acres are included in classes 1 and 2. Water supply for the Upper Dry Fork Reservoir will be obtained entirely from Dry Fork Creek and the Alder Creek Feed Canal.

Dry Fork Creek has a drainage basin above the reservoir site of approximately 10 square miles. The basin is comparatively low in elevation and has steep sides. Snowfall in this basin goes off early. No record of the runoff

is available, but in past years it has contributed materially to the filling of the existing 4,000 ac. ft. Dry Fork Reservoir.

Alder Creek has a drainage area above the diversion of approximately 7 square miles and is higher and thickly wooded. Records indicate an average annual runoff of 3,000 ac. ft., most of which occurs during the months of May and June. It appears that it may be safely assumed that these two sources of supply will more than fill a reservoir of 2,700 ac. ft. capacity.

It is proposed to develop this site by the construction of a rolled earth-fill dam of conventional design.

6. Hillside Reservoir- The Hillside Ditch, which supplies 1,700 acres in the Moiese Valley that cannot be reached from Lower Crow Reservoir, has its source of supply from the end of Post "F" lateral and one or two other small laterals. Because of the fluctuating demands of these laterals, it is impossible to maintain a uniform flow in the Hillside Ditch, with consequent distress to the water-users. A natural reservoir site exists at the head of the Hillside Ditch, where it is entirely feasible to develop storage of 80 ac. ft. at small expense. This amount of storage will make it possible to maintain a uniform flow in the Hillside Ditch and will avoid wasting from the other laterals.

7. Dry Creek Canal Enlargement- With the completion of the enlargement of Tabor Feed Canal and the proposed enlargement of Tabor Reservoir, enlargement of the Dry Creek Canal becomes increasingly necessary and urgent. This canal follows the channel of Dry Creek very closely, and due to the gravelly, pervious character of the soil, the water-bearing perimeter for the entire length of the canal was lined with concrete. A part of this lining was placed during the years 1920-21 and the remainder in 1929. Owing largely to frost action during the winter months, the lining is badly broken, and this, with the high velocities maintained in the canal, is the cause of many breaks and a state of bad repair. A situation of this sort is a serious menace to a feeder canal, as a bad break during an irrigation peak may result in serious crop damage. This work has been put off from year to year because of lack of funds, but must be done at an early date before a bad break results in great crop damage.

8. New Laterals- It is expected that the Jocko Valley Irrigation District will sign a supplemental repayment contract which will call for the immediate construction of a canal to divert water from the South Fork of the Jocko River to lands now irrigated solely from Big Knife, Agency, Finley and other small creeks. This canal is urgently needed. These lands lie above, and cannot be reached by the Jocko "K" system and the siphon over the Jocko River. No feasible storage possibilities exist on any of the above creeks, and the runoff is gone by midseason. Construction of this canal will make available the more consistent and later runoff of the South Fork of the Jocko River and will go a long way toward providing this part of the Jocko Division with a stable and adequate water supply.

There are approximately 3,700 acres of irrigable land in the Mission Valley Division, lying west and north of the town of St. Ignatius, for which no lateral system has ever been constructed. An adequate water supply is available for these lands and they have always been included in the ultimate irrigable area of the project.

In addition to these new lateral systems there are numerous places on the project where it will be necessary to extend existing laterals in order to more completely cover the land as the demand for placing additional acreage under irrigation becomes more insistent.

9. Lateral Extensions and Betterments- This item is for continuing the improvement of existing distribution systems. A large part of the work will be the replacement of decayed wooden structures with others of permanent material and the placing of additional structures where lands are coming into use for the first time along the old system. Other work under this feature will include enlargement and betterment of main laterals, concrete lining of canals to prevent loss of water and damage to lands, repair and replacement of flumes, installation of weirs, etc.

10. Power System Extensions- This item is for continuing the betterment of the power system to care for the constantly increasing loads and for continuing extensions to reach new customers. The number of applications for service far exceeds the ability of the project to extend its lines, and it is proposed to carry work ahead on this feature as rapidly as funds become available.

11. Drainage- The project has now been in operation for more than 20 years, and as a consequence hundreds of acres of low-lying lands have become water-logged and swampy, a condition that develops sooner or later on most irrigation projects. For a number of years isolated drains have been provided where conditions were most acute. These have afforded temporary relief, but a condition is now approaching where organized planning must be done in order to care for drainage needs over the project as a whole. Outfalls, or larger drains, should be provided which will be accessible from the more badly seeped lands. This problem will require a thorough study in order to locate the drains to the best advantage.

12. Surveys and Investigations- This item is for the purpose of making surveys and investigations into new sources of water supply and supplemental storage and other miscellaneous surveys not properly chargeable to regular construction features.

13. Hydrography- Records of stream flow and diversions were maintained from 1908 to 1923, when they were discontinued because of lack of funds. The work was resumed in 1932 and again discontinued after a single season. The records obtained are invaluable when problems of division of water, supplemental storage, additional water supply, wild-life conservation, etc., arise. It is planned to resume this work and maintain complete records of water supply and diversions to irrigation use.

14. Buildings- This item is for building power-system offices at Polson.

Offices are maintained here because Polson has the largest number of retail customers and because the Big Creek Hydro-electric Plant is located adjacent to Polson. The offices have been housed in rented quarters since the purchase of the system by the project. These quarters are very inadequate. It is proposed to build a modern fireproof building to house the power-system offices on a lot purchased for this purpose several years ago.

15. Purchase of Reservoir Sites- This item has been provided for the purchase of the various project reservoir sites from the Flathead tribes and is

contingent upon an agreement being reached on this question. It is essential that the reservoirs be owned and controlled by the project in order that the water supply will not be encumbered, and the owners of the land should be recompensed.

ECONOMIC PROGRAM FOR COMPLETION:

Feature	1940	1941	1942	1943	1944	1945	Total
1	$ 55,000						55,000
2			32,650				32,650
3			80,000				80,000
4	112,000						112,000
5	90,000						90,000
6	10,000						10,000
7	25,000	32,800					57,800
8	70,000	59,000	60,000				189,000
9	68,500	150,000	124,740				343,240
10	50,000	87,000	50,000				187,000
11	5,000	20,000	25,000				50,000
12	1,000	1,500	1,500				4,000
13	2,500	2,500	3,000				8,000
14	11,000	5,000					16,000
15			60,000				60,000
Total	$ 500,000	357,800	436,890				1,294,690

PUBLIC NOTICES:

The Act of May 18, 1916 (39 Stat. 139), provided for the repayment of the construction cost on a 20-year plan following the issuance of a public notice of the construction cost by the Secretary of the Interior.

The Act of February 14, 1920 (41 Stat. 409), required the Secretary of the Interior to begin collection of a partial reimbursement of the construction charges where reimbursement is required by law at such times and in such amounts as might be considered best by the Secretary. Under this Act the Secretary of the Interior issued a public notice affecting the Flathead Project under date of Dec. 7, 1921, fixing an annual payment of 50¢ per acre for the land irrigable from constructed works, payments beginning with the year 1921.

Assessments under this plan to June 30, 1931, amounted to $479,971.64 and collections to $90,647.85.

The Act of May 10, 1926 (44 Stat. 458), in specifying what should be provided for in the repayment contracts, states as follows: " . . . which contract, among other things, shall require repayment of all construction costs heretofore or hereafter incurred on behalf of such lands, with provision that the total construction cost on the Camas Division in excess of the amount it would be if based on the per-acre construction cost of the Mission Valley Division of the project, shall be held and treated as a deferred obligation to be liquidated as hereinafter provided. Such contract shall require that the net revenue derived from the operation of the power plant herein appropriated for shall be used to reimburse the United States in the following order: First, to liquidate the cost of the power development; second, to liquidate payment of the deferred obligation on the Camas Division; third, to liquidate construction cost on an equal per-acre basis on each acre of irrig-

able land within the entire project; and fourth, to liquidate operation and maintenance costs within the entire project."

The basis of the annual construction assessment is defined in the same Act as follows: "Provided further, That pending the issuance of public notice the construction assessment shall be at the same rate heretofore fixed by the Secretary of the Interior, but upon issuance of public notice the assessment rate shall be 2-1/2 per cent per acre, payable annually, in addition to the net revenues derived from operations of the power plant, as hereinbefore provided, of the total unpaid construction costs at the date of said public notice: Provided further, That the public notice above referred to shall be issued by the Secretary of the Interior upon completion of the construction of the power plant."

The Act of Mar. 7, 1928 (45 Stat. 213), fixed the date of the public notice and other matters by the following words: "Provided further, That the public notice provided for in the Act of January 12, 1927, shall be issued by the Secretary of the Interior upon the first day of November, 1930: Provided further, That in his discretion the Secretary of the Interior may provide in such repayment contracts for covering into construction costs the operation and maintenance charges for the irrigation season of 1928 and all undistributed operation and maintenance cost, and may extend the time for payment of operation and maintenance charges now due and unpaid for such period as in his judgment may be necessary, the charges now due so extended to bear interest payable annually at the rate of 6 per centum per annum until paid, and to contract for the payment of the construction charges now due and unpaid within such terms of years as the Secretary may find to be necessary with interest payable annually at the rate of 6 per centum per annum until paid."

However, the matter of payment of delinquent construction assessments, made according to the Public Notice of Dec. 7, 1921, was revised in the Second Deficiency Act of the year 1929 by the following provision: "Provided further, That the Secretary of the Interior, in lieu of collecting past-due and unpaid construction charges with interest as provided in the Act of March 7, 1928 (45 Stat. p.213), shall, in determining the construction costs to be fixed in the public notice specified in said Act and in the repayment contract, include the amounts due on account of said past-due construction charges in the construction costs chargeable against the respective units or legal subdivisions upon which the same are now a lien:" This eliminated all delinquency in construction assessments for the entire project made in accordance with the Act of Feb. 14, 1920 (41 Stat. 408). Payments made of such assessments became a credit to the farm on which such payments were made to be applied in the reduction of future construction charge assessments.

Public notice was issued by the Secretary of the Interior on Nov. 1, 1930. The construction costs of the three divisions of the project, including undistributed O. and M. costs and, exclusive of the cost of the Newell tunnel, $101,685.11, which later was paid into the Treasury by the Rocky Mountain Power Co., were as follows: Jocko Division, $263,432.18; Mission Valley Division, $4,446,700.10; Camas Division, $1,110,763.36. This cost was distributed to the total area ultimately irrigable under each of the irrigation systems, which area for the Jocko Division was estimated to be 13,500 acres; for the Mission Valley Division, 100,000 acres; and for the Camas Division, 11,000 acres. This made the per-acre construction cost for the Jocko Division, $19.51: for the Mission Valley Division, $44.47; and for the Camas Division, $100.98.

The annual per-acre assessment, based on the provision of the Act of May 10, 1926, of 2-1/2% of the construction cost at the date of public notice, was set at $0.50 per acre for the Jocko Division; $1.12 for the Mission Valley Division; and by the provisions of the same Act $1.12 for the Camas Division.

According to the public notice, the first annual assessment of the rates announced would be made for the year 1931 and the first semi-annual installment would be due and payable on Feb. 1, 1932, and the balance on Aug. 1, 1932. On account of the agricultural depression, the Commissioners of the Flathead Irrigation District sent representatives to Washington, D.C., who appeared before the Department and the Sub-Committee on Appropriations for the Interior Department and obtained an extension of time for beginning of assessment construction charges, which extension and terms can be best explained by quoting from the Act of Feb. 14, 1931 (46 Stat. 1127), as follows: "Provided further, That in any district in this project, which has or may hereafter execute a repayment contract in pursuance of existing law, the first payment of construction charges may in the discretion of the Secretary of the Interior be required in the calendar year 1935, but in any event the total repayment of such construction charges shall be required in not more than forty years from the date of public notice heretofore given."

The Mission Irrigation District executed the repayment contract on Mar. 7, 1931, and this action made the extension of time and the terms of the public notice effective for the entire Mission Valley and Camas Divisions.

The Jocko Valley Irrigation District signed the repayment contract on Nov. 13 1934, which action brought all of the project under the terms of the public notice.

The public notice provides for refusal of water for non-payment of charges as follows:

"No water for irrigation purposes shall be delivered to any irrigation district or individually owned tract of land within said Flathead Irrigation Project for which assessments of construction charges remain unpaid one year or more after said charges become due and payable in accordance with this public notice except trust patented Indian land irrigated by the Indian allottee, and then only upon written authorization by the Superintendent of the reservation to the Project Engineer or other proper representative. Each such authorization shall contain a full statement of the reasons why such payments cannot be made, and a copy thereof shall be forwarded to the Commissioner of Indian Affairs. The Secretary of the Interior may suspend charges against lands determined by him to be temporarily non-productive if he be so authorized by law."

OPERATION AND MAINTENANCE:

(Irrigation System)

The Flathead Project is operated and maintained entirely by the U.S. Indian Irrigation Service. Three irrigation districts are organized and include practically all the white-owned land of the project, approximately 100,000 acres, or 80% of the project irrigable area. These districts have not yet contracted to take over any part of the operation and maintenance.

The project is divided into five divisions for operation and maintenance administration, each with a Watermaster in charge reporting to the Project Engineer, as follows:

Camas Division, with headquarters at Lonepine Camp, about 1-1/2 miles from Lonepine townsite and 8 miles north of the town of Hot Springs, and 56 miles from the project headquarters at St. Ignatius.

Jocko Division, with headquarters at Jocko Camp, about 3-1/2 miles east of Arlee, and 20 miles from project headquarters.

Mission Subdivision, with headquarters at project headquarters at St. Ignatius. This subdivision includes that part of the Mission Valley Division south of Post Creek.

Post Subdivision, with headquarters at Ninepipe Camp on the Ninepipe Reservoir site, about 3 miles from Charlo and 12 miles from project headquarters. This subdivision includes that part of the Mission Valley Division between Post and Crow Creeks. It is divided into two parts, the land near Charlo and the Moiese Valley, for which a separate camp is maintained, reporting to the Watermaster at Ninepipe Camp.

Pablo Subdivision, with headquarters at the town of Pablo, 22 miles from project headquarters. This subdivision includes that part of the Mission Valley Division extending north from Crow Creek to Flathead Lake. It includes the Valley View and Round Butte areas, for each of which separate camps are maintained, reporting to the Watermaster at Pablo Camp.

Quarters for watermasters and ditchriders are provided at each of the eight O. and M. camps. Office quarters are provided at all except the Jocko and Valley View Camps. The necessary stables, storehouses, garages, etc., are also provided. All the camps are connected with the project telephone system, and all except the Jocko Camp are connected with the project power system.

Water deliveries are made on demand except when shortage of water or lack of carrying capacity of ditches makes a rotation system of delivery necessary. Water is delivered to each farm by Service employees and all project ditches are maintained to the farms. All water delivered is measured at the point of delivery. Ditchriders are hired from Civil Service eligible registers, preference being given to local applicants in establishing the register. Ditchriders use either cars or horses. Cars are used where it is of advantage to the Service on account of the larger territory that may be covered. Ditchriders are generally employed as such only during the irrigation season, or such part thereof as they are used in the actual delivery of water. This amounts to a 5 to 8 month period, except for certain ditchriders in more responsible charge. An attempt is made to provide the ditchriders with work as laborers on maintenance and construction work as much as possible before and after the irrigation season.

The duty of water is set at 1-1/2 ac. ft. per acre for land with a clay subsoil, and from 2 to 4 ac. ft. per acre for land with sandy and gravelly subsoil This amount of water is generally provided for the minimum O. and M. charge and an additional charge made for water delivered in excess of such amounts. The irrigation season usually begins in the latter part of April for parts of the project at greatest distances away from the Mission Range. The areas near the foot of the mountains are generally favored with more rainfall and snowfall and do not begin to irrigate as early in the season. The irrigation season ends in September, although water is sometimes delivered in October when the season is exceptionally dry. Runs of water to fill stock-ponds are made before and after the irrigation season, and occasional stock-water runs are

made at favorable times during the winter season, when a serious shortage of stock-water exists on account of a lack of precipitation during the winter period.

The O. and M. costs on the several project units for the calendar year 1938 were as follows:

	Division			
	Jocko	Camas	Mission Val.	Total
O. and M. costs	$ 7,906	$ 16,363	$ 78,955	$ 103,224
Assessable area, acres	8,482	10,391	85,617	104,490
O. and M. cost per acre	$ 0.93	$ 1.53	$ 0.92	

The O. and M. assessments by Districts for the calendar year 1938 were as follows:

	District			
	Jocko	Mission	Flathead	Total
O. and M. costs	$ 7,906	$ 17,673	$ 77,645	$ 103,044
Area assessed, acres	4,695	11,499	67,923	84,117
Total min. assessment	$ 3,500	$ 9,000	$ 60,000	$ 72,500
Total assmt. inc. interest	$ 3,592	$ 9,377	$ 61,569	$ 74,538
Payments by districts	$ 1,520	$ 5,670	$ 57,980	$ 65,080
Assessment rate	$ 1.00	$ 0.85	$ 0.97	
" " Admin.	0.05	0.15	0.03	
Total assessment rate	$ 1.05	$ 1.00	$ 1.00	

(Power System)

Operation and maintenance of the Power System is handled by the project organization at St. Ignatius. However, a power office is maintained at Polson in charge of the Power Superintendent, who has direct supervision of construction as well as O. and M., including meter reading, billing and collecting.

WATER USERS' ORGANIZATIONS:

The Flathead Project is organized into three irrigation districts - the Flathead Irrigation District, the Mission Irrigation District and the Jocko Valley Irrigation District. These districts were formed under court decree issued on Aug. 26, 1926.

The Flathead Project Water Users' Association is a separate organization of water users that meets quarterly to discuss matters of interest to the water users. Any questions of policy arising from these discussions are taken before the Boards of Commissioners of the respective Irrigation Districts.

The Flathead Irrigation District includes all the Camas Division and all that part of the Mission Valley Division lying north of Post Creek. The repayment contract was signed by officials of the District on May 12, 1928, which action was affirmed by court order on July 11, 1928. Supplemental contracts were executed on Feb. 26, 1929, Mar. 28, 1934, and Aug. 26, 1936.

The Mission Irrigation District includes all that part of the Mission Valley Division lying south of Post Creek. The repayment contract was signed by the Commissioners of this District on Mar. 7, 1931, and approved by the Secretary

of the Interior on Apr. 21, 1931. Supplemental contracts were entered into on June 2, 1934, and Aug. 26, 1936.

The Jocko Valley Irrigation District includes all of the Jocko Division of the project. The repayment contract was signed by the Commissioners of this District on Nov. 13, 1934, and approved by the Secretary of the Interior on Feb. 26, 1935. A supplemental contract was executed on Aug. 26, 1936.

OTHER INFORMATION:

A soil survey of the irrigable lands of the project was made in 1929 by representatives of the Bureau of Soils, Department of Agriculture, and by an agronomist from Montana Experiment Station. The lands were divided into six classes, according to the character of the soil and topography. Following the soil survey a land classification was made by a soil expert from the Montana Experiment Station, an engineer from the Indian Irrigation Service, and a farmer and landowner, who was chosen by the Commissioners to represent each of the three Irrigation Districts separately.

In 1935 the classification was reviewed by a supplemental board which went over all lands on which a review of classification had been applied for.

A report of the soil survey and land classification was made to the Commissioner of Indian Affairs under date of Oct. 7, 1930.

The Bureau of Soils placed the land in six classes, the first four of which are suitable, in several degrees, for irrigation. Class 5 is temporarily non-irrigable, and class 6 is permanently non-irrigable.

The land classification was made in four groups:

Class 1, of the best quality, capable of paying both construction and O. and M. charges.

Class 2, which cannot produce maximum returns without considerable improvement. The lands are not at present in a sufficiently productive state to enable them to support repayment of construction charges for a period of 5 or more years, but they will necessarily pay O. and M. charges.

Class 3 includes lands which may be reclaimed at some future time and which should be exempt from payment of construction and O. and M. charges for a period of 5 or more years.

Class 4 includes lands which will be always non-irrigable and which should be eliminated from the project and bear no construction charges.

The reclassification was governed by a set of rules set forth in a letter from the Commissioner dated Mar. 9, 1935, and was limited to investigation of requests filed by bona-fide landowners for change in classification.

Summaries of revised land classification by ownership and by Divisions follow:

Summary of Revised Land Classification by Ownership

	Class 1	Class 2	Class 3	Total
Flathead Irrig. Dist.	30,913.68	31,757.68	17,323.14	79,994.50
Mission " "	3,256.93	7,001.67	2,920.03	13,178.63
Jocko Val. " "	1,185.84	3,330.84	1,818.22	6,334.28
Indian Lands	6,275.29	12,740.22	9,485.31	28,500.82
Tribal Lands	2.10	1.38	0.00	3.48
White-owned, not in Dists.	1,191.25	1,796.01	1,873.50	4,860.76
U.S.I.I.S. Lands	109.75	70.10	50.14	229.99
Agency Reserves	49.54	78.57	50.53	178.64
Power "	92.94	570.81	596.50	1,260.25
State Lands	609.07	2,060.71	1,194.94	3,864.72
Lake County Lands	0.20	4.35	0.00	4.55
Inclusions	0.00	241.58	143.38	384.96
Total	43,686.59	59,653.30	35,455.69	138,795.58

Summary of Revised Land Classification by Divisions

	Class 1	Class 2	Class 3	Total
Camas Division:				
Flathead Irrig. Dist.	3,270.27	6,455.80	2,716.27	12,422.34
Indian Lands	8.82	131.02	119.03	258.87
White-owned, not in Dist.	0.00	0.00	46.36	46.36
U.S.I.I.S. Lands	33.42	2.50	1.43	37.35
State Lands	125.27	205.90	17.73	348.90
Inclusions	0.00	184.28	81.16	265.44
Total	3,437.78	6,979.50	2,981.98	13,399.26
Jocko Division:				
Jocko Valley Irrig. Dist.	1,185.84	3,330.22	1,818.22	6,334.28
Indian Lands	439.05	2,873.13	2,412.60	5,724.78
White-owned, not in Dist.	364.15	405.15	216.30	985.60
U.S.I.I.S. Lands	23.30	0.00	10.54	33.84
Jocko Sub-Agency	0.00	53.57	22.16	75.73
Tribal Lands	2.10	1.38	0.00	3.48
State Lands	0.00	100.41	111.99	212.40
Total	2,014.44	6,763.86	4,591.81	13,370.11
Mission Valley Divis.:				
Flathead Irrig. Dist.	27,643.41	25,301.88	14,606.87	67,552.16
Mission " "	3,256.93	7,001.67	2,920.03	13,178.63
Indian Lands	5,827.42	9,736.07	6,953.68	22,517.17
White-owned, not in Dist.	827.10	1,390.86	1,610.84	3,828.80
Power Reserves	92.94	570.81	596.50	1,260.25
Agency "	49.54	25.00	28.37	102.91
U.S.I.I.S. Lands	53.03	67.60	38.17	158.80
State Lands	483.80	1,754.40	1,065.22	3,303.42
Lake County Lands	0.20	4.35	0.00	4.55
Inclusions	0.00	57.30	62.22	119.52
Total	38,234.37	45,909.94	27,881.90	112,026.21
Grand Total	43,686.59	59,653.30	35,455.69	138,795.58

PROJECT DATA

State, Montana; Project, Flathead; Counties, Missoula, Sanders, Lake; Resn. Flathead

Twp, 15-25N; Range 17-25W; Merid. Montana; Area Resn., acres, 1,243,969; Pop. Resn. Ind. 3,142

Ave. Elev. Irrig. Area, 3050 ft.; Ave. Precip. 16; Max. Temp. 103; Min. Temp. -36

Agency Hdqtrs., Dixon, Mont.; Irrigation Hdqtrs., St. Ignatius, Mont.
Power Hdqtrs., Polson, Mont.

LAND DATA

Unit	Ultimate Irrigable Area			Area Under Constructed Works			No. Farm Units		
	Indian Owned	White Owned	Total	Indian Owned	White Owned	Total	Ind.	White	Total
Jocko	5,800	7,500	13,300	3,117	5,365	8,482	125	160	285
Camas	258	12,842	13,100	120	10,271	10,391	6	270	276
Mission Valley	22,000	89,600	111,600	14,883	70,734	85,617	330	1,760	2,090
Total	28,058	109,942	138,000	18,120	86,370	104,490	461	2,190	2,651

IRRIGATION DATA - 1938

Unit	No. Acres Irrigated				No. Fams. Benefited	Total Crop Value	Ave. Crop Value per Ac.	O & M Cost per Acre
	By Indians	Ind. Land Leased	White Owned	Total				
Jocko	400	1,632	4,291	6,323	82	$ 98,760.77	$15.62	$0.93
Camas	0	215	7,850	8,065	6	123,201.71	15.28	1.53
Mission Valley	1,261	6,326	54,027	61,614	328	1,006,363.71	16.33	0.92
Total	1,661	8,173	66,168	76,002	416	$1,228,326.19	$16.16	

Principal Crops: Alfalfa hay, grain, sugar beets, clover hay, alfalfa seed and clover seed.

COST DATA

Unit	Constr. Cost to 6/30/38	1939 Funds		Amount Required to Complete	Total Cost Completed Project
		Appropriation	Public Works		
Jocko	$ 573,897.51				
Camas	1,213,194.29				
Mission Valley	5,611,085.35				
Sub-Total	$ 7,398,177.15	435,000	92,000	1,097,690	9,022,867.15
Power System	511,326.55	16,623	8,000	197,000	732,949.55
Total	$ 7,909,503.70	$451,623	$100,000	$1,294,690	$9,755,816.70

WATER SUPPLY (IRRIGATION)

Unit	Source	Ave. Ac. Ft. per Annum	Type of Development
Jocko	Jocko River	148,862	Storage, Div. & Pumping
	Placid Creek	7,860	Diversion
	Finley "	21,101	"
	Bigknife "	7,504	"
	Agency "	8,384	"
	Revais "	21,947	"
	Total	215,658	
Camas	Little Bitterroot River	19,876	Storage
	Mill Creek	3,000[2]	Diversion
	Alder Creek	3,000[2]	"
	Dry Fork "	2,000[2]	Storage
	Total	27,876	
Mission Val.	Jocko River	48,000	Diversion
	Dry Creek	3,545	Storage
	Mission Creek	15,930	"
	Post "	38,832	"
	Crow "	36,402[3]	Storage, Div. & Pumping
	Mud "	1,140	Diversion & Storage
	Big "	4,076	Diversion
	Hellroaring Creek	3,400	"
	Flathead River	96,000[4]	Pumping
	Total	247,325	
	Grand Total	490,859	

1. Includes East Finley and Finley Creeks. 2. Amounts estimated.
3. Includes all three branches of Crow Creek. 4. Assumes 8 months' pumping at full capacity; available upon completion of Flathead River Pumping Plant.

Private water rights deducted in all cases. "Storage" indicates dam and reservoir directly across stream. Diversions for direct use or subsequent storage through feeder canals listed as "Diversions."

STORAGE DAMS (IRRIGATION)

Unit	Name	Stream	Elevation: Top of Dam	Spillway Crest	Outlet Sill	Stream Bed	Lowest Found.
Jocko	Lower Jocko Lake	Middle Fork Jocko River	4,360	None	4,267	Natural No vis.	dam outlet
Camas	Little Bitterroot Lake	Little Bitterroot River	3,905	None	3,892	3,891	3,890
	Hubbart	do.	3,226	3,219	3,137	3,135	3,088
	Dry Fork	Dry Fork Ck.	2,861½	2,855	2,830	2,825	2,825
Mission Val.	Tabor	Dry Ck.	4,011	4,001	3,906	3,981	3,981
	Mission	Mission Ck.	3,419	3,406	3,340	3,340	3,290
	McDonald	Post Ck.	3,604	3,592	3,545	3,580	3,580
	Kickinghorse	None #	3,068	3,062	3,039	3,036	3,036
	Ninepipe	" #	3,018	None	2,985	2,985	2,985
	Lower Crow	Crow Ck.	2,882½	2,875	2,791	2,792	2,796
	Pablo	None #	3,209	None	3,178	3,178	3,178
	Twin	" #	3,100	"	3,061		3,085
	Horte	" #	3,040	"	3,024	3,023	3,023

Reservoirs fed entirely by canals.

STORAGE DAMS (IRRIGATION) Contd.

Unit	Date Completed	Principal Material	Volume cu.yds.	Total Cost	Capacity ac. ft.	Ave. An. Draft ac. ft.
Jocko	1937	Earth	14,480	$259,225	7,600	15,000
Camas	1918	"	8,000	29,100	18,000	4,000
	1923	Concrete	17,000	370,900	12,125	13,905
	1934	Earth	137,800	111,610	4,000	6,000
Mission Valley	1930	"	26,500	195,400	17,300*	39,714
	1935	"	380,260	381,200	7,250	26,092
	1920	"	82,000	234,100	8,225	45,350
	1930	"	151,350	130,600	8,350	6,277
	1923	"	195,000	166,600	14,870	17,874
	1933	"	566,600	280,200	10,350	19,819
	1934	"	834,200	529,600	25,000	34,510
	1932	"	9,000	29,000	600x	1,686
	1915	"	3,700	5,500	260	1,925
Total			2,425,890	2,723,035	133,930	

* Can be increased to 25,000 ac. ft. x Can be increased to 1,200 ac. ft.

DISTRIBUTION SYSTEM

Unit	No. Diversions	Main Canals No.	Main Canals Miles	Main Canals No. Structures	Laterals Miles	Laterals No. Structures	Feeder Canals Sec. Ft.	Feeder Canals Miles	Drainage Canals Miles	Dikes, Levees Miles
Jocko	8	1	10	48	70.5	663	125	2.5	None	None
Camas	4	1	10.5	10	68	886	100	7	"	"
Mission Val.	20	3	28	86	747	7,486	*	57	2.5 #	"
Total	32	5	48.5	144	905.5	9,035		66.5		

* 300 to 500 sec. ft. # and 9 wells near Polson.

POWER PLANTS

Name, Big Creek; location, 6 miles east of Polson, Mont.
Turbines: No., 2; type, Tangential; mfgr., Pelton Water Wheel Co.
Date installed, 1916; total capacity, 700 HP; speed, 514 RPM
Max. head, 560 ft.; quantity, 8 sec. ft.
Penstock: kind, steel and wood; size, 18 to 24 ins.; length, 6,127 ft.
Generators: No., 2; mfgr., General Electric Co.
Voltage, 2,300; cycles, 60; total capy., 400 KVA; 320 KW
Governors: No., 2; type, Pelton; mfgr., Pelton Water Wheel Co.
Transformers, step up: No., 2; total capy., 400 KVA
Voltage, primary, Delta 2,300; secondary, Delta 16,500
Building, size: 20 x 33; material, concrete block
Purchased from P.U.C.C. Aug. 25, 1931 for $160,000.

TRANSMISSION LINES

Primary: Polson Dam to Round Butte - 15 miles
Voltage, 33,000; cycles, 60
Conductors: No., 3; #4 stranded copper
Poles, cedar; length, 40'; spaced 250'
Installed 1931; changed from 11,950 volts to 33,000 in 1936.

Primary: Polson Dam to Polson - 6 miles
Voltage, 33,000; cycles, 60
Conductors: No., 3; 3 strands of No. 8 copper
Poles, cedar; length, 35'; spaced 250'

Primary: Polson to Reservation North Boundary - 21 miles
Voltage, 33,000; cycles, 60
Conductors: No., 3; #2 stranded copper
Poles, length, 40', 10 miles; length, 45', 10 miles; spaced 250'
Installed 1937.

Primary: Polson to Big Creek Plant and Ninepipe Substation - 28 miles
Voltage, 16,550; cycles, 60
Conductors: No., 3; #6 copper and #4 aluminum
Poles, cedar; length, 35'; spaced 250'
Installed 1926.

Primary: Ninepipe Substation to Round Butte Substation, via St. Ignatius and Ravalli to Dixon - 55 miles
Voltage, ; cycles, 60
Conductors: No., 3; #4 stranded copper
Poles, cedar; length, 35' and 40'; spaced 250'
Installed 1931 to 1938.

Total miles Primary Lines, 125.

Secondary: 250 miles
Voltage, 6,900 and 2,300; cycles, 60
Conductors: No., ; mostly No. 6 copper
Poles, cedar; length, 30' and 35'; spaced 200 to 250'
Built 1931 to date.

Total miles Secondary Lines, 250.

IRRIGATION PUMPING PLANTS
(Except Well Pumps)

Flathead River

Location, 2 miles S.W. of Polson, Mont. No. pumps, 3; type, 1-stage centrifugal
Mfgr., Worthington Pump & Machinery Co.; size 24"; speed 900 RPM
Capacity, each, 67 sec. ft., static head, 335 ft.
Power units, kind: Synchronous AC vertical motors; No., 3; total HP, 9,000
Discharge pipe, kind: Welded steel - 3 lines; size, 48"; length, 630 ft. each
Source of power, Montana Power Co.; source of water, Flathead River
Date installed: Two units in 1939.
Ave. cost of pumped water per ac. ft. _____

Crow Creek
Location, 4 miles N.E. of Charlo, Mont. No. pumps, 1; type, 2-stage, vert. prop.
Mfgr., Fairbanks-Morse Co. Fig. 5330; size, 20"; speed, 1,160 RPM
Capacity, 25.9 sec. ft., static head, 42.7 ft.
Power units, kind: A.C. Motor; No., 1; total HP, 150
Discharge pipe, kind: Wood-stave; size, 30"; length, 350 ft.
Source of power, project-owned system; source of water, Crow Creek
Date installed, July, 1936; period of operation, intermittently to date.
Ave. cost of pumped water per ac. ft., 32.7¢, cost of power and attendant.

Revais
Location, 2 miles S.E. of Dixon, Mont. No. pumps, 1; type, 2-stage, vert. turb.
Mfgr., Pomona Pump Co.; size, 20"; speed, 1,160 RPM
Capacity, 8.85 sec. ft., static head, 79.2
Power units, kind: A.C. Motor; No., 1; total HP, 100
Discharge pipe, kind: Welded steel; size, 18" O.D.; length, 535 ft.
Source of power, project-owned system; source of water, Jocko River
Date installed, June, 1938; period of operation, 7-22-38 to 8-20-38
Ave. cost of pumped water per ac. ft., 35.8¢, cost of power and attendant.

PROJECT BUILDINGS

Unit	No. Residences	No. Offices	No. Ware-houses	No. Plant Bldgs.	Other	Total
Jocko	2	0	1	1	3	7
Camas	4	1	1	0	7	13
Mission Valley	16	4	7	1	22	50
Power System	2	0	1	1	0	4
Total	24	5	10	3	32	74

Reservoir Summary

Seventeen reservoirs supply irrigation water to Flathead Indian Irrigation Project (FIIP) canals and laterals. With the exception of the Camas Valley, this water supply is annual. The Camas Valley can have up to 3 years of carryover storage when Little Bitterroot Lake is full. These reservoirs provide only supplemental irrigation water for crop production, except in the Moiese and Camas Valleys, where their corresponding reservoirs can supply up to 100 percent of crop requirements. Total FIIP storage as of 1995 is 157,119 acre feet. The major FIIP reservoirs have been evaluated by the Bureau of Reclamation's Safety Evaluation of Existing Dams (SEED) Program and found to be in various stages of deficiency. Nearly all those facilities examined were classified as POOR condition. All of the FIIP major dams are classified as HIGH HAZARD facilities because of the potential for loss of life and property in the event of dam failure.

Following is a list of FIIP dams and reservoirs and narrative descriptions about their basins, storage, condition, etc.

JOCKO VALLEY

Black Lake Reservoir (Upper Jocko)

1. Receives natural runoff from Upper Middle Fork Jocko River Drainage; inflow is supplemented by a cross-basin diversion from Placid Creek.

2. Released water flows into Lower Jocko Lake Reservoir located downstream.

3. The overall Safety of Dams (SOD) classification of Black Lake Darn remains UNSATISFACTORY. The downstream hazard classification is HIGH. Although repairs have been completed to the lower pool area where a liner was installed, monitoring of unsatisfactory seepage conditions at the outlet continues on a regular basis. Repairs will be scheduled as funding becomes available (see Appendix A-3, b.).

4. Total designed storage capacity is 5,200 acre-feet at an elevation of 4440 feet. Present storage restrictions are limited to 2,840 acre-feet at elevation 4425 feet because of unsatisfactory seepage at the outlet.

Lower Jocko Lake Reservoir

1. Receives majority of inflow from Black Lake releases, natural runoff from upper reaches of Middle Fork Jocko River, and water diverted from Placid Creek.

2. Water is released into Middle Fork Jocko River. Released water can be diverted at Tabor Feeder, Upper “S,” “K,” Lower “S,” and Lower “J” Canals.

3. The overall SOD classification is POOR, and the downstream hazard classification is HIGH. (SEED report dated May 5, 1987).

4. Present total storage capacity is 6,380 acre feet at elevation 4340 feet. The reservoir level is limited to an elevation that will not impound water on the 20-foot-high dam embankment (elevation 4340-4360 feet).

MISSION VALLEY

Tabor Reservoir (St. Mary's Lake)

1. Total storage capacity is 23,300 acre-feet.

2. Receives flow from Dry Creek (natural flow is not enough to fill reservoir).

3. Receives supplemental water from the Middle Fork and North Fork Jocko River drainage through Tabor Feeder Canal (450 ft^3/s maximum capacity).

4. Criteria for reservoir filling are based on coordinating with the filling of other reservoirs and irrigation needs to ensure a full reservoir at the end of the runoff season (about July 1). Consideration is given to the available water supply from both sources (Dry Creek and Tabor Feeder Canal) and the limited capacity of the outlet canal (225 ft^3/s).

5. Water is released into the "DC" liner known as the Dry Creek Canal. Also serves Mission "F" and "DC-2" Delivery Canals and can also be released in Dry Creek.

6. Tabor Reservoir is the sole source of irrigation supply to the southeast part of the Mission Division and is maintained as high as possible at the end of the runoff season to meet those and other needs.

7. The overall SOD classification of Tabor Dam, rated in the SEED report dated July 1984, is POOR, and the downstream hazard classification is HIGH.

8. A minimum storage elevation between 3928 and 3926 feet has been established to provide access to spawning gravels for resident Bull Trout. This elevation should be reached near the first of September and held until the first part of November. The 2,500 acre-feet of water becomes available for transfer to Kicking Horse and Ninepipe Reservoirs after the Bull Trout spawning season, usually in November, or may be held in Tabor Reservoir for movement north the following spring.

Mission Reservoir

1. Total storage capacity is 8,135 acre-feet.

2. Minimum pool storage is 763 acre-feet. This pool level is provided for over-winter protection of the native Bull Trout population. The pool level may be reduced to a lower level, no less than 75 acre-feet, at the end of winter or when the ice has melted (after March 1.)

3. Receives natural flow from Mission Creek.

4. Water can be released into Mission Creek (and the Mission "A" Canal (a.k.a. Pablo Feeder Canal). The Mission "A" Canal delivers to the northeast part of the Mission Division and transports water to the Post and Pablo Divisions.

5. Criteria for filling are based on the annual total runoff forecast. Runoff in excess of downstream needs and of storage capacity is routed to other needs and to storage in other reservoirs within the FIIP. This excess water is utilized as much as canal and storage capacities will permit. The filling and releasing of the reservoir is coordinated with the filling and releasing of other reservoirs to ensure full capacity at the end of the runoff season and to maintain maximum storage in the upper part of system for versatility in movement and control.

6. The overall SOD classification of Mission Dam, rated in the SEED report dated September 6, 1985, is FAIR, and the downstream hazard classification is HIGH.

McDonald Reservoir

1. Total storage capacity is 8,225 acre-feet. A SOD operating constraint limits storage to 7,225 acre-feet until gates are installed in the spillway.

2. Receives natural flow from Post Creek.

3. Water released into Post Creek above Pablo Feeder Canal can either be diverted into the Pablo Feeder Canal or passed downstream. May also be diverted into Kicking Horse Feeder Canal and Post "F" Delivery Canal.

4. Criteria for filling reservoir are based on the annual total runoff forecast. Runoff in excess of downstream needs and of storage capacity is routed to other storage reservoirs within the FIIP through the Pablo Feeder Canal, Kicking Horse Feeder Canal, and other distribution facilities. This excess water is distributed as much as canal and storage capacities will permit. The filling and releasing of the reservoir is conducted so as to maximize the containment and use of the natural runoff available. Winter runoff in excess of minimum instream flows is intercepted and, if storage is significant, must be moved to other reservoirs before spring runoff begins. As runoff increases, effort is made to fill the other reservoirs while retaining enough runoff in McDonald so as to reach a full reservoir at the end of the high runoff period.

5. The overall SOD classification of McDonald Dam, rated in the SEED report dated July 30, 1985, is POOR, and the downstream hazard classification is HIGH. A 2-year SOD modification program to rehabilitate McDonald Dam began in November 1994. Operation of the dam was returned to the FIIP in mid-March 1995 to allow storage for irrigation. Completion of the SOD modification is scheduled for March, 1997. No construction was completed during the winter of 1995-96 because of a lack of funds.

This section on McDonald Reservoir should be revised to reflect the current situation.

Kicking Horse Reservoir

1. Total storage capacity is 9,005 acre feet.

2. Minimum pool storage is 780 acre-feet (9 percent of total storage); the maximum depth at minimum pool is 9 feet.

3. Receives flow from Kicking Horse and South Crow Feeder Canals and Marsh Creek. Additional inflow can be received from natural flows diverted at Post Creek, from FIIP water released from Tabor, Mission, and McDonald Reservoirs, and/or from natural flows intercepted by the Pablo Feeder Canal and routed through the South Crow or Kicking Horse Feeder Canals (Figure 2-3).

4. Water is released into Ninepipe Feeder Canal or can be routed into distribution facilities (Post "A" and "G" canals).

5. Operated in cooperation with Kicking Horse and Ninepipe National Wildlife Refuge. Releases are made to increase Ninepipe Reservoir to optimum levels for goose nesting and to hold a constant elevation through nesting season. In late fall and winter, storage is reduced to ensure available storage in Kicking Horse Reservoir without affecting Ninepipe Reservoir levels during critical periods. Ice fishing on both reservoirs is considered to the extent allowed by weather and runoff conditions.

6. Fishing is closed when the reservoir pool level recedes to an elevation of 3050 feet or less (1,520 acre-feet). Storage levels are coordinated between Kicking Horse and Ninepipe Reservoirs to allow fishing as long as possible.

7. The SEED report was completed for Kicking Horse Dam on April 14, 1989. The overall dam safety classification rating is POOR, and the downstream hazard classification is HIGH.

Ninepipe Reservoir

1. Total storage capacity is 15,150 acre-feet.

2. Minimum pool storage is 836 acre-feet (6 percent of total storage); maximum depth at minimum pool is 10 feet.

3. Receives inflow from Kicking Horse Reservoir through Ninepipe Feeder Canal. The reservoir can also receive up to 24 ft^3/s from Crow Creek drainage through the use of the Crow Pump (see Figures 2-2 and 2-3).

4. Releases are made to fulfill irrigation requirements.

5. Operated in cooperation with Ninepipe and Kicking Horse Reservoirs Wildlife Refuge. Waterfowl managers may arrange for pumping water from Crow Pumping Plant to provide an early winter pool.

6. Fishing is closed when the reservoir pool level recedes to an elevation of 2998 feet or less (1,905 acre-feet). Storage levels are coordinated between Kicking Horse and Ninepipe Reservoirs to allow fishing as long as possible.

7. The overall SOD classification of Ninepipe Dam in the SEED Report dated August 25, 1989, is FAIR, and the downstream hazard classification is HIGH.

Pablo Reservoir

1. Total storage capacity is 28,400 acre-feet.

2. Minimum pool storage is 410 acre-feet (1.5 percent of total storage).

3. Receives nearly all inflow from Pablo Feeder Canal (maximum capacity of 400 ft^3/s at the North Pablo Drop); inflow can originate from any of the natural runoffs which are intercepted by the Pablo Feeder Canal or from stored water re-distributed from Tabor, Mission, and McDonald Reservoirs.

4. The reservoir can also receive water from the Flathead River Pumping Plant (FRPP) (through the Pump Canal/Pablo Feeder Canal complex).

5. Fill criteria is based on availability of gravity water from the combined (six reservoir) storage system and the FIIP's need for operating the FRPP. Operation plans call for having Pablo Reservoir “full” at the end of the high runoff season and to receive all possible water from the creeks north of and including South Crow Creek.

6. Releases are made to fulfill irrigation requirements; discharge canal capacity and demand can, and often does, exceed the supply canal capacity.

7. The reservoir is operated in cooperation with Pablo Reservoir National Wildlife Refuge. Agreements with the Fish and Wildlife Service and a construction FIIP funded by Ducks Unlimited, Inc., in 1980 allow for staging the filling and draining of upper segments (old Middle Pablo Reservoir and new dike system) of the reservoir to enhance the waterfowl habitat around the reservoir perimeter.

8 A winter carryover storage level of about 12,000 acre-feet was established to help meet early spring irrigation needs under the Pablo “K” Canal.

9. Pablo Reservoir is closed to fishing when it reaches elevation 3190.0 feet or below.

10. The overall SOD classification of Pablo dam rated in the SEED report dated April 5, 1985, was UNSATISFACTORY, and the downstream hazard classification is HIGH. A new classification reflecting item 11, below, has not yet been released.

11. A dam rehabilitation program was completed in the spring of 1994. This program installed a liner along the dam face to an elevation of 3212 feet, 1 foot above the high water elevation. A toe drain and filter material were installed on the downstream toe of the dam, and monitoring stations with weirs were installed.

Monitoring is being conducted through the Confederated Salish and Kooteni Tribes' (CS&KT) SOD Program.

Lower Crow Reservoir

1. Total storage capacity is 10,350 acre-feet.

2. Minimum pool storage is 803 acre-feet (8 percent of total storage); maximum depth at minimum pool is 25 feet.

3. Receives inflow from Crow Creek drainage area, including Spring Creek, Lower Mud Creek, and Pablo Division irrigation return flows.

4. Criteria for filling are based on water runoff forecast. Winter storage is balanced to provide early season irrigation for the Moiese Valley and to provide space for anticipated runoff without discharging water over the spillway crest.

5. Releases are made into Crow Creek for irrigation and other downstream needs. FIIP facilities divert water from Crow Creek below Crow Dam into the Moiese "A" (MA) Canal.

6. Extensive work on the spillway and control gates was completed in 1987. The overall SOD classification of Crow Dam, rated in the SEED report dated March 1982, is POOR, and the downstream classification is HIGH.

Hell Roaring Reservoir

1. Total storage capacity is approximately 40 acre-feet.

2. Receives inflow from Hell Roaring Creek (a.k.a. Big Creek).

3. Releases are made through the Hell Roaring Power Plant and the Twin Feeder Canal.

4. The SEED report dated July 7, 1992, lists the overall SOD classification as CONDITIONALLY POOR, and the downstream hazard classification is HIGH.

Twin Reservoir (Turtle Lake)

1. Total storage capacity is approximately 909 acre-feet.

2. Receives inflow from Hell Roaring Creek through Twin Feeder Canal, from creeks intercepted by the canal, and from Bison Creek through the Southeast Feeder (see Figure 2-2).

3. Serves irrigation needs in the east Polson (South Shore) area.

4. The SEED report dated February 20, 1990, lists the overall SOD classification as CONDITIONALLY POOR, and the downstream hazard classification is HIGH.

Horte Reservoir

1. Total storage capacity is approximately 265 acre-feet.

2. Serves as a re-regulating reservoir for the Round Butte Distribution System.

3. A SEED report for this dam will probably not be required. The downstream hazard is not high.

Hillside Reservoir

1. Total storage capacity is approximately 95 acre-feet.

2. Serves as a re-regulating reservoir for the Post Distribution System.

3. A SEED report for this dam will probably not be required. The downstream hazard is not high.

CAMAS DIVISION

Little Bitterroot Lake

1. Total storage capacity is 26,400 acre-feet.

2. A portion of this storage, 1,790 acre-feet, is below the gate sill and cannot be utilized without pumping.

3. Normal discharge is limited to 25 to 50 ft^3/s because of channel restrictions.

4. This lake is located north of the Flathead Indian Reservation, also north of U.S. Highway 2, and is supplied by natural flows.

5. The SEED report dated August 28, 1990, lists the overall SOD classification of Little Bitterroot Lake Dam as CONDITIONALLY POOR, and the downstream hazard classification is HIGH.

Hubbart Reservoir

1. Total storage capacity is 12,120 acre-feet. Minimum pool is 27 acre-feet.

2. Receives natural flows from the upper Little Bitterroot Drainage. Inflow is supplemented by flows from Little Bitterroot Lake Dam.

3. The SEED reports dated June 18, 1985, and September 30, 1385, list the overall SOD classification for Hubbart Dam as CONDITIONALLY POOR, and the downstream hazard classification is HIGH.

Upper Dry Fork Reservoir

1. Total storage capacity is 2,815 acre-feet. Minimum pool is 41 3 acre-feet.

2. Receives natural flows from Dry Fork Creek, a tributary of the Little Bitterroot River. Receives supplemental flow through Alder Ditch from the Little Thompson River Basin.

3. The SEED reports dated June 18, 1985, and September 30, 1985, list the overall SOD classification as CONDITIONALLY POOR, and the downstream hazard classification is HIGH.

Lower Dry Fork Reservoir

1. Total storage capacity is 3,860 acre-feet. Minimum pool is 636 acre-feet.

2. Receives natural flows from Dry Fork Creek, a tributary of the Little Bitterroot River, and diverted flows through the Camas “A” Canal.

3. The SEED report dated July 31, 1985, lists the overall SOD classification as POOR, and the downstream hazard classification is HIGH.

Fisheries Protection

a. Facilities – Screens and Ladders

Fisheries protection facilities are located throughout the FIIP. There is a combination of static and mechanical fish screens and fish ladders. Initial startup, maintenance, and repair of these facilities are the responsibility of the Biological Technician(s). Routine maintenance, such as removal of debris from structures, is the responsibility of the Irrigation System Operator (ISO) on the system where the facility is located. Operating procedures for individual facilities, such as the Crow Fish Screen, are found in the Hydrologist's office at the Irrigation Headquarters in Saint lgnatius and in the specific operating procedures provided to individual ISOs.

Fish Screen and Fish Passage Structures: Regular monitoring and maintenance is necessary to ensure that instream flows are met, that the screens are kept clear, and that fish passage is maintained. Following is a list of structures that are operational as of the 1995 irrigation season. The fish ladder at the Middle Fork of the Jocko River is now maintained as a fish barrier at the request of the Tribes.

Structure	Screen	Ladder
Mission “H” Canal from Mission Creek	X	
East Creek at Post “F” Canal Diversion		X
Lower “J” Canal Diversion from Jocko River	X	
Crow Creek Diversion to Moiese “A” (MA) Canal	X	X
Lower “S” Canal from the Jocko River	X	
Upper “S” Canal from the Jocko River	X	
Mission “B” Canal from Mission Creek	X	X
Mission “C” Canal from Mission Creek	X	X
Mission “6C” Canal from Mission Creek	X	
Jocko “K” Canal from Jocko River	X	X
Middle Fork Jocko River (operated as barrier)		X

b. Instream Flows

Interim instream flows on waters impacted by the FIIP were established using a combination of the Wetted Perimeter and Tennant methodologies. Flows in Mud Creek, Big Knife Creek, Hot Springs Creek, Little Bitterroot River, and the Jocko River will continue using the Tennant methodology. The Jocko River presents a special case; because of safety concerns associated with the Black Lake Reservoir, Jocko River flows were held to the Tennant level at the "K" Canal diversion. Emergency repairs to the reservoir were completed in 1992 and Black Lake Dam and Reservoir operations were scheduled to be released to the FIIP after filling during the 1994 irrigation season. However, deficiencies at the outlet involving "sand boils" were noted in the 1994 and 1995 seasons. The CS&KT SOD program will not release Black Lake Dam to store water above 2,840 acre-feet and will not release the combined storage of Black Lake Dam and Lower Jocko Dam to above 9,180 acre-feet. Once funding becomes available, these deficiencies will be corrected and the filling restrictions will be re-evaluated. The Tennant level method flow referenced above will remain in effect until after the dam is released to the FIIP without restrictions.

lnstream Flow Incremental Methodology (IFIM) flow recommendations are being developed at this time.

Following is a list of instream flow measurement locations and their corresponding flows.

Streams	Minimum Flow (ft^3/s)	Control Method	Monitoring Point	Remarks
Mud Creek				
a. Below Ronan "B"	0.8	Orifice	Gage	
b. Below Pablo Feeder	0.8	Gate Orifice	Gate opening	
Big Knife Creek				
a. Below Jocko "S"	2.00	Fixed orifice	Gage	Controlled head
Hot Springs Creek				
a. At MT Hwy 28	1.0	Upstream gates	Gage	
b. Below Camal "C"	1.0	Fixed orifice	Gage	Controlled head
Little Bitterroot River				
a. Below Camas "A"	6.0	Fixed orifice	Gage	
NOTE: Site in progress of being re-evaluated by CS&KT Natural Resources Department and FIIP. Flow is made up from flow at two locations, Little Bitterroot at the canyon mouth and Mill Creek above Camas "A" Canal.				
Jocko River				
a. Below Jocko "K"	36.0	Fixed orifice	Gage	
b. Below Lower "S"	43.0	Diversion gates	Gage	
c. Below Lower "J"	76.0	Diversion gates	Gage	
d. At Dixon Bridge	96.0	Diversion gates	Gage	
North Fork Jocko River				
a. Below Tabor Feeder	18.0	Diversion gate	Gage	Wetted P
Middle Fork Jocko River				
a. Below Tabor Feeder	20.0	Fixed orifice	Gage	Wetted P
Mission Creek				
a. Below Pablo Feeder	18.0	Gate	Weir	Wetted P
NOTE: Action needed for Secretarial diverters.				
b. Below Mission "C"	20.0	Diversion gate & fish ladder	Gage	Wetted P
c. Below Mission "6-C"	22.0		Gage	Wetted P
Post Creek				
a. Above Pablo Feeder	20.0	McDonald Dam gate	Gage	
b. Below Kicking Horse Feeder	19.0	Fixed orifice	Gage	Wetted P
c. Below Post "F"	22.0	Fixed orifice & fish ladder	Gage	Wetted P
South Crow Creek				
a. Below Pablo Feeder	24.0	Fixed orifice	Gage	Wetted P
NOTE: Flow is 24 ft^3/s or flow in S. Crow above Pablo Feeder, whichever is less				
b. Below South Crow Feeder	9.5	Fixed orifice	Gage	Wetted P
North Crow Creek				
a. Below Pablo Feeder	10.0	Gate Orifice	Gage	Wetted P
NOTE: Action needed for Secretarial diverters.				
Middle Crow Creek				
a. Below Pablo Feeder	1.0	Gate	Weir	
NOTE: Not formal ISF. Traditional release to maintain creek.				

Streams	Minimum Flow (ft^3/s)	Control Method	Monitoring Point	Remarks
Crow Creek				
a. Below Crow Pump	17.0	Pump control	Weir & gage	
b. Below Moiese "A"	21.0	Fixed orifice	gage	Wetted P
Finley Creek				
a. Below Jock "E"	7.5	Fixed orifice	Gage	
b. Above confluence with Jocko River	8.5	Diversion gates	Gage	
NOTE: Action needed for Secretarial diverters.				
Agency Creek				
a. Below Jocko Upper "J"	8.0	Fixed orifice	Gage	Wetted P
East Finley Creek				
a. Below Jocko "N"	8.0	Fixed orifice	Gage	Wetted P

c. Fish Rescue

Operational procedures will require that the canals not protected by screening facilities will be progressively shut down over a period of up to 5 days. A typical shutdown for a larger canal would encompass 5 days with a flow reduction of 20 percent each day and fish rescue on the fifth or later day (20%, 40%, 60%, 80%, and shutoff). For smaller canals or flows, (i.e., 10 to 15 ft^3/s or less), flows will be reduced to about 4 to 5 ft^3/s for 2 days before shutdown and fish rescue. This operational procedure may encourage limited out-migration and could reduce the number of fish in a canal prior to rescue. In conjunction with the reduction of water into the canal, it is necessary to reduce the hydraulic head on the gate to reduce the water velocity through the gate opening. This will help to promote fish passage back into the stream.

Rescue of the fish by physical removal will be utilized during and after operational procedures as outlined above. These operations will be carried out in close cooperation with the CK&KT. The Tribes will be given verbal notification 1 week (7 calendar days) in advance of any planned facility dewatering and at the earliest possible moment in an emergency dewatering.

Pumping Policy
Flathead River Pumping Plant

This policy will allow water, above quota deliveries, to be delivered to lands served by the FRPP during and after the normal irrigation season in years of short supply. However, water users who avail themselves of this service will be charged a fee to reflect all the costs associated with pumping (including operation and maintenance [O&M]) of the FRPP. This proposal will not result in a lessening of water availability for any area. All efforts will be concentrated on maximizing deliveries to the land served by the irrigation project.

In the Mission Valley Divisions, except the Moiese area, the initial water quota will be set by calculating the available runoff and storage (water supply) and dividing by the acreage expected to be irrigated. Pumped water from the FRPP will then be calculated into the supply in order to allow more water from Tabor, Mission, and McDonald Reservoirs to be used above the Pablo complex, thus allowing the quota to be maximized for all the Mission Valley Divisions except Moiese.

After the available quota for any individual has been delivered and/or the irrigation season has ended for the lands under the Pablo Reservoir system, water supplied from the FRPP may be made available to those lands. The cost of that water, calculated as a charge “per acre-foot,” will be such that the cost of pump O&M, delivery losses, and other delivery costs (such as personnel delivery costs if the water is delivered after the end of the normal irrigation season) will be fully recovered. Finally, this policy excludes the Camas and Jocko Divisions.

The charges discussed above will be calculated by the FIIP and will be reviewed and updated annually in advance of water deliveries.

Charges for delivery of irrigation water

1. Operation and Maintenance – A single project-wide O&M rate is established as presently calculated on a per-acre basis. This rate will provide service for the operation, maintenance, and repair of FIIP facilities. Properly operating facilities ensure delivery of irrigation water during the normal season of April 15 to September 15 (or until water is no longer available under the quota).

2. Pump Service – Those lands served by the FRPP, and which have exhausted their quota allocation prior to the end of the irrigation season, may purchase additional water service for the cost of pumping O&M, including delivery losses. The cost of this service will be calculated on a per acre-foot basic.

3. Delivery Service – Those individuals with remaining quota water after the end of the normal irrigation season may have such deliveries made at the cost of such delivery. The cost of this service will be calculated on a per acre-foot basis.

This means that water users desiring additional water service after the end of the irrigation season, and who are served by the FRPP, will pay both a pump service charge and a delivery service charge. An example of this would be water users in the Valley View and Round Butte areas. Water users who have a supply of water available to them that has not been pumped would only be charged the delivery service cost. An example of this would be water above winter carryover left in Pablo Reservoir after the end of the baseline irrigation season.

Any requests for additional service will be handled only where efficient water deliveries can be maintained. All additional services must be paid for in advance. District landowners shall make payment to the irrigation district through the Flathead Joint Board of Control office in Saint Ignatius. Owners and operators of non-district and Trust lands shall make payment to the Flathead Agency Irrigation Division headquarters in Saint lgnatius.

Water Measurement and Accounting

The FIIP attempts to provide an assessment of the quantity of water passed through FIIP facilities. At one time, nearly every farm turnout could provide for reasonably accurate measurement of water delivered. Over the years, lack of maintenance and replacement has caused these facilities to become unusable for water measurement. Installation of pipelines throughout the FIIP has also contributed to loss of measurement accuracy because of the cost of in-line flow meters and unwillingness on the part of some irrigators to allow their trunk lines to be metered. Open channel water deliveries are estimated with varying degrees of accuracy.

The FIIP Hydrologist has been identifying devices that can be used for water measurement skills in measurement requesting Watermasters to clean weir pools and maintain or repair crests that are already in place, and has been working with individual Ditchriders to improve their skills in measurement. The goal is to improve water measurement on FIIP deliveries to the point that disputes and water wasting during delivery are radically reduced. In 1994, FIIP purchased an ultrasonic flowmeter which can perform non-intrusive flow measurements in pipes. This was a major step toward improving water measurement in pipe systems without “in line” flow meters. Should disputes arise, it is the Hydrologist's responsibility to provide accurate measurements of flows delivered. Equipment available consists of a Price AA flow meter and two Montedero-Whitney electronic flowmeters. There are also a variety of propeller meters of varying sizes for use in submerged structure outlets.

Because of the high cost and high degree of maintenance required, in-line flowmeters are not considered an affordable option for water measurement on pipelines served by FIIP. Future pipelines installations shall be designed to provide physical access to the pipe to allow periodic measurement with FIIP’s Ultrasonic Flowmeter. These periodic measurements will be used by the ditchrider to keep track of rate of use when a particular pipe is in use. While this does not provide a continuous water use record, it does provide accurate spot-checking of pipeline water use. Together with careful tracking of “on/off” dates and times by the ditchrider, this method provides for reasonably accurate accounting of water use.

As open channel turnouts are replaced, structures are installed to provide for the replacement of removable propeller meters to provide similar spot-checking of water deliveries. Where practicable, weirs and other accurate measuring structures shall be installed in delivery ditches. If disputes arise, the FIIP Hydrologist shall be called to provide accurate verification of water being delivered.

Water accounting is currently accomplished using a “dBASE III Plus” program. This program considers the tract numbers, acreage owned, water order amounts, and times, etc., and compute delivery volumes. The water volume allowed each tract and operator is also calculated. Water deliveries are noted by Ditchriders, submitted to the Irrigation Clerk, and entered into the computer. Delivery reports are generated on an as-needed basis or weekly, whichever interval is shortest. Ditchrider reports show each tract along a given lateral, the volume allowed under the advertised quota, the delivery flow rates as reported by the ditchrider, and the total volume used on each tract and totaled for each owner. Problems occur as the database record rapidly becomes overwhelming for the computer. It can take most of a day to run ditchrider reports for the entire FIIP. In an attempt to rectify this situation, the FIIP is computerizing its field offices and will provide each of the four camps the capability to enter their own data and generate their own reports. Water accounting program modification is needed to update the existing program, which was written in 1989. Funding for these program modifications has not been allocated to date.

NOTE: Excerpts from 25 CFR Part 171, provided below:

171.6 Distribution and apportionment of water

(a) The Officer-in-Charge will establish the method of and procedures for the delivery and distribution of the available irrigation water supply. He will endeavor to apportion the water at all times on a fair and equitable basis between all project water users entitled to the receipt of irrigation water.

– Water available for irrigation will be apportioned and delivered on a fair and equitable basis in accordance with the procedures outlined herein.

– A water quota and/or water delivery rationing plan shall be established yearly for each of the three significant but interdependent areas of FIIP. Quotas and rationing plans will be established with input from all water user entities. The water distribution plans and/or quotas according to significant project areas are discussed below:

a. Jocko Valley – During the period where natural flows exceed the irrigation demand, water will be delivered upon demand. When natural flows fall below irrigation demand water will be delivered under FIIP's rationing procedure at a rationed share of 0.75 cfs per forty (40) acres assessed acreage. Storage water will be released when natural flows cannot meet the rationed flow demand at 0.75 cfs/40 acres.

b. Mission Valley – A water delivery quota will be established for all lands within the Mission Valley area (Mission Division, Post Division and Pablo Division). This quota will be established based on projected water runoff and available storage. Since projected water runoff is dependent upon variable such as projected rainfall and snow runoff, this quota shall be subject to change. Updates and revisions to the quota shall be made as deemed necessary by FIIP in order to insure the fair and equitable distribution of the available water supply to all water users.

c. Moiese Subdivision (Mission Valley) – The Moiese subdivision obtains a majority of it's water from run off collected within Lower Crow Reservoir. Typically this procedures an adequate supply to all Water users without the implementation of a quota, however, during drier than normal years a quota may be implemented if the storage in Lower Crow Reservoir falls below a total capacity of 3500 acre feet prior to August 15 of the calendar year. All water delivered, retroactive to the beginning of this irrigation season, shall be applied towards the established quota. All lands within the Moiese Valley shall be considered equal in the apportionment of the quota.

– Lands within the Moiese Subdivision which are served by water from Hillside Reservoir and canal, shall be eligible to receive water delivered from the Post Division storage and distribution system until the total amount of water delivered from all sources meets the Mission Valley quota apportionment. Any delivery of water excess to the Mission Valley quota shall be dependent upon the "return water" collected and delivered from Hillside Reservoir.

d. Camas Valley – A yearly delivery quota shall be established on May 1 for the Camas Valley Division. This quota shall be established based upon projected run off and available water storage. Since projected runoff is dependent upon variables such as rainfall and snow runoff, this quota is subject to revision as deemed necessary by FIIP in order to insure a fair and equitable distribution to all water users.

– Water Rationing During Water Shortages: Flathead Indian Irrigation Project's delivery policy during water shortages is outlined below:

1. The Ditchrider of each established beat shall, under the supervision of the Watermaster, distribute water within the division in fair and equitable manner.

2. During times of water shortages caused by either a short water supply or a situation where demand exceeds the capacity of FIIP's distribution facility and Ditchrider shall, under the supervision of the Watermaster, implement a water rationing plan within the division according to the following conditions:

a. Whenever demand within a division exceeds the supply of water apportioned to the division, rationing shall be conducted so as to distribute the supply of water evenly throughout the acreage demanding water service.

b. A water user should be allowed a ration comparable to the total number assessed acres he or she operates within the division regardless of farm unit boundaries. The aggregate unit must consist of land owned or leased by water user and must be directly and actively farmed by the water user.

c. A water user shall be allowed to distribute his/her operations except where larger flows would interfere with fair distribution to other water users by exceeding the capacity of FIIP's distribution system.

d. A water user cannot transfer water during rationing periods or during any other time from one project division to another. Water apportioned to each division must be utilized entirely within the division regardless of farm operation layouts.

e. Water users who have enough acreage to entitle them to a flow equal to or greater than 2 cfs under the rationing scheme will be expected to best utilize that flow within their own operations.

f. Water users who do not have enough acreage to entitle them to a continuous "usable head of water" under rationing procedures will be delivered a usable flow (2 cfs if owning more than 10 acres, 1-1/2 cfs if owning less than 10 acres) for a specified amount of time. The total water delivered during the specified time will be the same per acre as those users who have enough acreage to justify a continuous "useable" flow of water.

g. Water users who are not entitled to a continuous flow (greater than 2 cfs) of water will be on an eleven day rotation program. A water user on the rotation schedule will not receive delivery for their next irrigation until eleven or more days have passed since first receiving water for their previous irrigation. In other words, a user on rotation can turn water on every eleven days if needed.

– Non-Quota Water – During periods of excess runoff when all reservoirs are completely full and surplus water is available, water may be made available to all users on a "non-quota" basis. Water delivered at this time shall not be counted against the established quota; however, all deliveries shall still be recorded in FIIP's water books for record.

(b) Any person who interferes with the flow of water in or from project's storage, carriage or lateral systems or opens or closes or in any other way changes the position of a headgate or any other water control structure without specific authority from the Officer-in-Charge or his designated representative will be subject to prosecution. Cutting a canal or lateral bank for the purposes of diverting water or placing an obstruction in such facilities in order to change the flow of water through a headgate will be considered a violation of this section.

– All FIIP facilities including check structures and farm turnouts shall be operated solely by FIIP personnel. FIIP personnel shall chain and lock any turnout or facility that appears to have been tampered with or adjusted by anyone other than by the Ditchrider or Watermaster. Any water user who continues to tamper or interfere in any way with the flow of water in or from FIIP's storage or distribution system is subject to having their delivery turnout/structure removed by FIIP forces; all costs incurred by FIIP associated with structure removal shall be billed to the landowner. Any future replacement of removed turnout will be contingent upon resolution of any turnout interference problems and the landowner shall be required to pre-pay turnout re-installation costs.

171.7 Application for and record of deliveries of irrigation water

(a) Except when rotation schedules have been established and are being followed, water users in requesting the delivery of water will so notify the Officer-in-Charge or his designated representative by such means and with such advance notice as may be required by system operations and as established by the Officer-in-Charge. There quest shall indicate the time the water is to be delivered, the period of time it will be used, the rate of flow desired, and where the water will be used.

– Water Ordering Procedures – Water deliveries must be ordered on and ordered off in accordance with the following conditions:

a. Requests for water shall be made at least 48 hours in advance of the desired delivery date.

b. Water deliveries will not be curtailed unless an order to do so is received by FIIP at least 24 hours in advance of the desired date of curtailment. During periods of high demand early curtailment may be allowed. Water users shall not turn their own water off after receiving a significant rainfall; water must still be ordered off in accordance with the above procedure.

c. Orders may be received through designated ditchrider drop box or by phone contact with the Watermaster, FIIP Receptionist or Water Clerk.

d. Phone orders to Watermasters must be received between 8:00 am and 8:30 am; phone orders will also be received at FIIP Headquarters until 3:00 pm. Any order received after 3:00 pm will be acknowledged as being received the following day.

e. A water user may transfer water from one turnout to another within a Division by ordering to do so at least 24 hours in advance of the transfer date desired.

f. FIIP will not make water deliveries on Saturday, Sunday or any legal holidays. Curtailment of water delivery and transfers of water within the same lateral will be performed on Saturday during peak irrigation seasons only.

g. All water orders shall include date action requested, farm unit number, lateral, turnout, and desired flow in cubic feet per second. Standard water order cards shall be provided and used at all ditchrider drop boxes (see Appendix B-2).

– FIIP reserves the right to shut off, turn down or delay deliveries of water in order to perform emergency or otherwise necessary maintenance of FIIP facilities in order to insure safe and efficient water operations.

(b) It is the responsibility of the ditchriders during the irrigation season to maintain records showing the beginning and ending time of each water delivery, the amount of such delivery, and the estimated acreage irrigated. Such records are to be filed at the irrigation project office at the end of the season.

– It shall be the duty of the Watermaster/ditchrider to maintain and record accurate daily records of all water diversions, this will include:

a. Canals
b. Laterals
c. Farm deliveries
d. Water Service Contract deliveries
e. Wasteway Spills
f. Instream Flows
g. Reservoir Operations

– The Watermaster's office shall maintain the daily records on the items listed above. These records shall be collected and kept at FIIP Headquarters on a monthly basis and shall be mailed to the water users. Upon the completion of FIIP's current program to up date water accounting methods through computerization, the water user records shall be updated and made available for review on a weekly basis.

171.8 Surface drainage

(a) The water users will be responsible for all waste water resulting from the irrigation practices and for its conveyance to project canals, drains, wasteways or natural drainage channels. Any expenses involved in doing this will be borne by the water user. Waste water may be emptied into project constructed ditches only at points designated by and in a manner approved by the Officer-in-Charge. In those situations involving two or more landowners and/or water users, it is their responsibility to work out a satisfactory arrangement among themselves for the conveyance of their wastewater to project ditches or natural drainage channels.

– All waste water, including Secretarial Water Right waste water, will not be allowed to drain into Project canals from December 1 through March 15 of each year.

– FIIP personnel and water users shall be conscientious of the erosion problems on waste ways and drainage systems within the project and shall take all reasonable steps to reduce such erosion problems.

– As stated previously in paragraph 171.5(a) – Pumps:, water users utilizing pump methods shall not be allowed to pump directly out of canals or laterals. All water users will be required to handle their "operational spill" on pumps and shall also be required to take pump spill water during times of power outages when canal or laterals lack the capacity.

– Because waste water is not controllable and not a dependable water supply, it will not be permitted to enter directly into a Project supply or distribution systems without written FIIP approval under a Special Use Permit. Any structure which is utilized to convey waste water into a project distribution facility shall be properly maintained by landowner. Failure of landowner to properly maintain these structures shall be basis for FIIP to withhold delivery of water until the structure is properly maintained.

– Under no circumstances will sewage connections or drainage from corrals be permitted to enter into the project distribution system

(b) Waste water shall not be permitted to flow upon o r collect in road or project rights-of-way. Failure to comply with this requirement could result in the Officer-in-Charge refusing the further delivery of water.

– Field irrigation operational runoff water shall be allowed to drain to the nearest natural drainage way. However, water delivery shall be shut off to water users who are not actively and properly managing their irrigation operations and, due to this, create excess waste water into other land owners properties and/or across project rights-of-way and roads. FIIP personnel shall, when practical, notify the landowner when this type of deficiency exists; however, this water may be shut off FIIP field personnel without prior notification and the ditchrider shall note in his water delivery book the reason for turning water off.

171.9 Structures

(a) All structures, including bridges or other crossings, which are necessary as a part of the project's irrigation and drainage system will be installed and maintained by the project

– Any structure crossing with in a farm unit that is used daily by FIIP personnel for performance of operation and maintenance work will be jointly maintained with the landowner. Occasional use shall not be considered as a joint responsibility; however, if FIIP uses an "occasional use" crossing and damages the crossing, FIIP will be responsible for repairing any damage caused by its use.

(b) During the construction of a new irrigation project or the extension of an existing project, bridges, crossings or other structures may be built by the Officer-in-Charge for private use where justified by severance agreements or other practical considerations. Title to these structures may or may not be vested in the United States depending upon the agreement with the landowner. Structures built partially or wholly in lieu of severance damages may be required to be maintained by the landowner even though title remains with the United States.

– The landowner is responsible for the maintenance of all structures originally constructed by the United States across Project facilities for landowner use. The landowner shall also bear any future costs in replacement of these facilities.

(c) After a project is completed, additional structures crossing or encroaching on project canal, lateral or drain rights-of-way, which are needed for private use may be constructed privately in accordance with plans approved by the Officer-in-Charge or by the project. In either case the cost of installing such structures will not be at the project's expense. Such structures will be constructed and maintained under revocable permits on proper forms issued by the Officer-in-Charge of the irrigation project to the party or parties desiring such structures.

– Prior to beginning any type of construction across Project facilities or rights-of-way, the landowner must submit for reviewing any type of construction across Project facilities or rights-of-way, the landowner must submit for review and approval, to FIIP through the Watermaster of their division, a written request for a "Special Use Permit" covering requested action. Construction of non-government structures shall not be allowed until the landowner has received a copy of the Special Use Permit signed by the FIIP Irrigation Systems Manager. (A copy o f FIIP's standard Special Use Permit form is provided in Appendix B-4). Along with all standard requirements detailed in FIIP's Special Use Permit form, additional minimum requirements may be required for specific structures, as decided by the FIIP Irrigation Systems Manager. Typical minimum requirements for culvert crossings, bridge crossings, foot bridge crossings, utility and sprinkler mainline crossings, and garden and lawn pumps in canals are also included in Appendix B-4. All existing non-government structures placed into FIIP distribution systems without written Project approval (Special Use Permits) are subject to removal without prior notification by FIIP forces. Landowner shall be billed for costs incurred by FIIP in association with structure removal and structure shall not be reinstalled until a Special Use Permit has been applied for in writing through the FIIP watermaster and approved by the Irrigation Systems Manager.

– County Roads:

  The FIIP distributors within the county road dedication have prior right-of-way. All county road crossings over FIIP facilities shall be maintained by the appropriate county.

– Utilities:

  1. Any utility constructed on FIIP rights-of-way, shall be the responsible of the utility company and any costs incurred by FIIP as a result of the utility crossing, when performing FIIP's operation, maintenance, or rehabilitation within the FIIP rights-of-way shall be the responsibility of the utility. FIIP shall not be liable for any damages which might occur to any utility structure or crossing on FIIP rights-of-way due to the FIIP's operation, maintenance or rehabilitation activities.

  2. All utility crossings within FIIP rights-of-way must have written consent by the Irrigation Systems Manager through Special Use Permits issued by FIIP.

– Bridges:

  1. Any bridge constructed after May 1, 1988, must be certified by a registered Professional Engineer, competent in the field, to safely support a minimum load rating of H15 (AASHO). A copy of certification must be received at FIIP Headquarters prior to being used and every five years thereafter.

  2. Bridge must clearly span the canal section and not in any way interfere with the flow of water in the canal during maximum flow conditions, as determined by FIIP.

  3. All approaches to bridge shall be maintained in accordance with all County and State safety requirements. A standard sign shall be posted at each side of bridge identifying the maximum bridge load capacity.

4. Any new bridge constructed after May 1, 1988, not complying with FIIP requirements shall be subject to removal by FIIP forces. FIIP personnel shall, when practical, notify the landowner of any deficiencies so that adequate compliances can be made. However, bridge may be removed without prior notice if determined necessary by Irrigation Division Watermaster. Landowner shall be billed for all costs incurred by FIIP associated with bridge removal.

5. All bridge crossings constructed prior to May 1, 1988, must be inspected and a minimum load rating shall be established and certified by a Registered Professional Engineer competent in the field. Certification of bridge load ratings must be received at FIIP Headquarters prior to December 31, 1989.

a. Any bridge which cannot meet a minimum load rating of 10 - ton shall be removed by December 31, 1994. Crossing may be replaced with a bridge meeting Project policies on new bridges.

b. Any existing bridge which is certified for a minimum load rating of 10 - ton or greater may be used until replaced at a future date. Load rating signs designating the 10 - ton limit shall be posted on each side of the bridge. When bridge is replaced in the future it must conform to all policies regarding new bridge crossings.

c. Any existing bridges prior to May 1, 1988, which are not inspected and certified to meet 10 - ton minimum requirements shall be removed by FIIP forces on or any time after January 1, 1995. The landowner shall be billed for all costs incurred by FIIP associated with bridge removal.

6. Any existing bridge which has deteriorated, been damaged or be in any other condition which would cause it to restrict the flow of water within the Project distribution system shall be removed by FIIP forces. FIIP personnel shall, when practical, notify the landowner of this deficiency and allow adequate time for landowner to make prompt repairs; however, bridges of this type are subject to removal without prior notice at the Watermaster's or Irrigation Systems Manager's discretion. Landowner shall be billed for all costs incurred by FIIP associated with bridge removal.

– Footbridges:

1. Footbridges must be certified by a registered Professional Engineer, competent in the field, to safely support a minimum load rating of 25 lbs. per square foot for spans greater than 40 foot length and 20 lbs. per square foot for spans less than 40 foot length. A copy of certification must be received at Project Headquarters prior to bridge being used and every five years thereafter.

2. The total width of the footbridge cannot exceed 4 feet - 0 inches. Footbridge must be constructed with a top handrail of 42 inches high and an intermediate handrail at 24 inches on each side.

3. The foot bridge must clearly span the canal section and not in any way interfere with the flow of water during maximum flow conditions, as determined by FIIP.

4. All footbridges constructed after May 1, 1988, must comply with this policy. Footbridges constructed prior to May 1, 1988, shall meet these requirements by December 31, 1994. Footbridges that fail to comply with all of the above requirements shall be subject to removal by

FIIP forces. Landowner shall be billed for all cost incurred by FIIP associated with bridge removal.

– Culvert Crossings:

On approved culvert crossings the culvert pipe shall be of sufficient size and proper type and shall be properly installed to pass the required flow in the canal without restricting water, trapping trash or debris, or causing scouring or erosion in the canal. A minimum pipe diameter shall be required by FIIP. The landowner and successors in interest shall be solely responsible for - maintaining the culvert and for any replacement in the future.

– Turnouts:

All turnouts installed after May 1, 1988, shall be of a type either approved or designed by FIIP. The landowner may install a screening device, which must also meet FIIP approval in front of their farm delivery turnout structure. This screening device shall be designated to as not to interfere with the operations of the turnout and shall be easily removable by FIIP personnel for turnout maintenance. FIIP personnel shall not be responsible for cleaning trash screens installed on farm turnout delivery structures; it shall be the landowners sole responsibility to keep these trash screens clear of debris. If screening device is not regularly and properly cleaned by landowner, and this creates unmanageable fluctuations of water in Project laterals, FIIP field personnel may refuse further delivery of irrigation water until cleaning problem is rectified.

– Pumps:

All irrigation pumps installed after May 1, 1988, shall be located completely outside of Project rights-of-way. Pumps shall meet all requirements, with respect to operational and power outage waste water as detailed and outlined under CFR 25 171.5(a).

– Trashracks:

1. No trashracks shall be in stalled in Project distribution system without written consent from the Irrigation Systems Manager through a Special Use Permit. On any approved trashrack structure installed by the landowner, the landowner shall be solely responsible for cleaning of trashrack and shall be liable for any damages to Project facilities incurred due to trashrack installation. If continued operation and maintenance problems incurred due to the improper maintenance of these trashracks, the Irrigation Division Watermaster shall have the authority to remove these trashracks, without prior notice, at the landowner's expense.

2. Trashracks constructed by FIIP shall be maintained by FIIP field personnel.

– Irrigation Flumes:

Flumes used to convey water over FIIP ditches, which bisect a farm unit shall be solely maintained by the landowner. An exception to this may be Secretarial Water Right flumes where written agreements specifically cover the maintenance of Secretarial Water Right structures.

– Garden and Lawn Pump Deliveries:

1. Any structure constructed for garden and lawn irrigation purposes, which is located within the Project rights-of-way, shall require review and approval by FIIP prior to installation and shall also be subject to final approval after construction. All structures shall be constructed in accordance to Project standards so as not to interfere with canal operation and maintenance.

2. Any electrical pump and/or electrical hookup shall be in compliance with all National Electric Code requirements.

3. All pump structures constructed prior to May 1, 1989 shall have until December 31, 1991, to comply with this policy.

4. Small pump structures that do not meet policy requirements shall be subject to removal by FIIP and associated landowners shall be billed for all costs incurred. As a courtesy, FIIP field personnel shall, when practical, try to notify the landowner of this deficiency and allow reasonable time for prompt removal. However, this shall not be a required policy and removal without prior notification may be made at the watermasters discretion.

5. A Special Use Permit shall be required for all existing and future lawn and garden pumps. Landowner shall submit his request for Special Use Permits in writing to the field FIIP Watermaster for processing.

6. Garden and lawn pump irrigation deliveries shall be made only to land classified as irrigable within the Project. Irrigation water for gardens and lawns located outside Project or classified as non-irrigable shall not be allowed until authorized under a Water Service Contract between the landowner and Irrigation Systems Manager.

– Hand Made Structures:

Installation of rocks, wooden checks, fence posts, plywood, or other material into Project canals and laterals to enhance a landowner's water diversion capabilities shall not be permitted. Such obstructions may be removed by FIIP without prior notification and the landowner will be billed for full cost incurred.

– Special Use Permit Fee:

An administrative fee of $50.00 shall be charged for processing all typical Special Use Permits for parties who are not owners of assessed ground within FIIP. This fee may be increased to cover additional costs of required to process, review, and inspect activity associated with Special Use Permit. This fee may be waived for government agencies and requesting landowners served under the FIIP.

(d) If it is determined that a crossing constructed for and by the project is no longer needed for operation and maintenance of the system. It should be removed. However, if a private party, corporation, State or other Federal entity desires to use the crossing, it may be transferred t o such entity by the Officer-in-Charge under a permit which relieves the United States from any further liability or responsibility for the crossing, including it's maintenance. The following provisions pertain:

(1) Permits issued in such situations shall stipulate what is granted, and accepted by the permittee on the condition that the repair and maintenance of the structure shall be the duty of the permittee or his successors without cost to the irrigation project.

(2) The permit shall further provide that if any such structure is not regularly used for a period of one year or is not properly maintained, the Officer-in-Charge may notify the person responsible for the structure's maintenance either to remove it or to correct any unsafe conditions within a period of 90 days.

(3) If the structure is not removed or the unsafe condition corrected within the time allowed, it may be removed by the Officer-in-Charge, the cost of such removal to be paid by the party responsible for the maintenance of the structure.

– The provisions in section 171.9(d)(1, 2 & 3) apply only to structures which were constructed by the United States and subsequently turned over to another entity for maintenance. On all other non-government structures within FIIP, the provisions within the Special Use Permits (see Appendix B-4) shall apply.

171.10 Fencing

Fences across project rights-of-way will not be constructed without the approval of the Officer-in-Charge. The granting of such approval shall be dependent upon proper installation so as not to interfere with the flow of water or the passage of project operators and equipment. In case an unauthorized fence is installed, the landowner shall be notified to remove it. If it is not removed within a reasonable period of time or satisfactory arrangements made with the Officer-in- Charge, it may be removed by project personnel at the landowner's expense.

1. All new or rebuilt cross fences:

(a) Fence gates across irrigation operation and maintenance roadways must be a minimum of 14 feet in width. Cattleguards may be installed in lieu of gates in accordance to Irrigation Division specifications.

(b) On O&M roadways that are traveled daily the gates shall be open during the irrigation season (May 1 through September 30). Self opening and closing gates are exempt from these requirements.

(c) Those landowners that request to lock these gates during the winter months, (December 21 through March 21) will be provided a government lock to be locked in with theirs.

(d) Cattleguards shall be designed to permit a minimum load of 15 tons; the minimum width shall be normally 12 feet wide. Maintenance of cattleguards shall be the landowners responsibility. Large gates shall be provided by each cattleguard to permit heavy tractor equipment or other heavy loads to bypass the cattleguards; if possible the gate should be adjacent to the canal.

2. All new or rebuilt fences that parallel the rights-of-way:

(a) Will not be allowed on a cut or fill section of the canal.

(b) Will not provide for the grazing of livestock on an embankment section.

(c) Will not provide for the grazing of livestock on a section of canal that has been rehabilitated which may or may not include lining.

(d) Will be kept back away from the centerline of the canal so as not to interfere with normal O&M activities. The specific distance will be prescribed by the Irrigation Systems Manager. For those canals that are not built in fill or cut acres or do not have O&M roads established this distance will normally be 12 feet from the canal bank on one side and 8 feet on the other side.

(e) When FIIP establishes O&M roads and/or rehabilitates canals it will assume the responsibility of moving parallel fences and providing gates to meet the above policy.

3. All existing fences and gates:

   (a) Will meet the above criteria by the beginning of the irrigation season (May 1) in 1991.

4. Compliance:

   (a) In order to conduct field operation and maintenance activities in an efficient/effective manner, FIIP field personnel shall have authority to remove or open existing fences that are constructed across Project rights-of-way without notifying or requesting permission from landowners. Fences not meeting the above requirement by the implementation date or obstructions that remain upon Project rights-of-way after May 1, 1991, shall be removed by FIIP. FIIP field personnel shall, when practical, try to notify the landowner of this deficiency and allow a reasonable time for prompt removal of the fence or installation of a gate. In instances of fence crossings twenty working days shall be considered reasonable time; however, this shall not be a reasonable policy and removal without prior notification may be made at the Watermasters discretion.

   All fence gates across Project rights-of-way which remain closed beyond the specified deadline for clearing rights-of-way shall be subject to being opened and left open by the ditchrider/watermaster without notification to landowners. If fence gates continue to be closed during the irrigation season, the ditchrider/watermaster shall be authorized to remove fence gates entirely from rights-of-way without requiring notification of landowner. The landowner shall be responsible for re-installing any gates removed by FIIP at the end of the irrigation season. During the spring, any fences which were constructed across Project distribution system must be removed no later than April 1 of each year. Any fences within the canal and lateral prism after this date shall be subject to removal by FIIP forces, without notification, and the landowner shall be billed for all costs incurred.

171.11 Obstructions

No obstructions of any kind including service or farm ditches, will be permitted upon project rights-of-way. Due notice will be given to an operator or landowner to remove any obstructions. If not removed within a reasonable period of time after notice is given, an obstruction will be removed by project forces at the expense of the operator or landowner.

– All Project canals and laterals shall be accessible by FIIP equipment from either side of canal section. The distance from each outer edge of ditch prism section, which must be kept free of obstructions for Project maintenance requirements, is generally sixteen feet. Obstructions which shall be considered under this policy are: fences, buildings, corrals, machinery and equipment, farm ditches, service ditches, haystacks, sprinkler pipe, vehicles, grain bins, potato/root cellars, wells, pump sump structures etc.

– Obstructions that are not removed before May 1, 1990 shall be removed by FIIP forces. The landowner shall be billed for all expenses incurred by FIIP associated with removing the obstruction.

– Trashracks and weed screens shall not be permitted to be installed on Project canals or laterals unless approved by FIIP's Irrigation Systems Manager and permitted under FIIP's Special Use Permit standards.

– Farm ditches and service ditches shall not be permitted to be located upon Project rights-of-way where such location shall interfere or restrict access of Project equipment and vehicles in carrying out operation and maintenance activities.

171.12 Rights-of-Way

(a) Rights-of-way reserved for the project's irrigation system are of sufficient width to permit passage and use of equipment necessary for construction and proper operation and maintenance of the project's canals, laterals, and other irrigation works.

– Project rights-of-way shall be kept clear of all obstructions and shall be opened for access by FIIP personnel and equipment for operation and maintenance purposes. FIIP field personnel shall be given the authority to carry out all normal operation and maintenance activities without requiring prior landowner contact and approval. These normal operation and maintenance activities are: ditch riding, ditch cleaning (including depositing spoil banks), weed burning within Project rights-of-way, weed spraying within Project rights-of-way, clearing of all trees and vegetative growth within the ditch prism section and along O&M roads, maintenance of O&M roads along side or on top of ditch banks, hauling and replacing of fill material along Project rights-of-way, and other similar work typically conducted on annual basis under FIIP's operation and maintenance program. FIIP cannot grant permission to third parties to use Project rights-of-way for any purposes.

– Existing service or farm ditches which are encroached upon Project rights-of-way shall be relocated outside of rights-of-way a sufficient width to meet all criteria outlined in sections 171.11 and 171.12 by May 1, 1991. All new field ditches constructed as of May 1, 1989, shall comply with this standard. All relocations shall be at landowner's expense. Service or farm ditches which fail to comply with this policy shall be subject to being filled in by FIIP at the landowner's expense.

– All ditch banks within FIIP rights-of-way which have been altered by landowner shall be reconstructed to original standards, as required by FIIP, in order to meet water delivery requirements and to allow for proper operation and maintenance activities. FIIP personnel shall, when practical, notify the landowner of deficiency. If the landowner fails to return ditch banks to the original constructed condition in a prompt and reasonable time, then FIIP shall reconstruct the ditch and the landowner shall be billed for all costs incurred.

– FIIP shall be responsible for carrying out a weed control program with Project rights-of-way in accordance with an approved weed control procedure meeting all State and Federal regulations. Any landowner that does not want weed spraying activities on Project rights-of-way through his/her property shall be responsible then to keep all weeds either cleared or mowed at all times throughout the year. Landowner shall also post a sign with the wording “no spraying requested”. If the landowner has not sufficiently control the weed growth within Project rights-of-way through his/her land as determined by the watermaster, then the watermaster shall have full authority to authorize weed spraying within the Project rights-of- way regardless of landowners previous request by sign.

(b) In the construction of new irrigation projects, rights-of-way which have not been reserved across Indian lands will be obtained in accordance with Part 169 of this chapter.

171.13 Crops and statistical reports

An annual project crops and statistical report shall be prepared by the Officer-in-Charge. The landowner or farm unit operator shall cooperate in furnishing such information as requested.

– All costs incurred in gathering crop and statistical reports by FIIP personnel are charged to FIIP annual operation and maintenance budget (water user assessments). Therefore, it is in the best interest of the Landowner to assist FIIP personnel in providing such information freely and efficiently so as to reduce costs incurred which the landowners indirectly pay. The FIIP will continue to look at methods to streamline this cumbersome and time consuming statistical report process. Failure to the Landowners to provide information required by the United States for these statistical purposes may result in the refusal of water delivery by FIIP.

171.15 Leaching water

(a) The Officer-in-Charge is authorized to furnish irrigation water for leaching purposes without the payment of operation and maintenance charges to any Indian trust land, or patent in fee land covered by a repayment contract, as an aid to improve land within the project that is impregnated by alkali or in the development of new project land.

(b) Delivery of such water will depend upon the availability of water and the preparation of a definite plan of operation by the land operator satisfactory to the Officer-in- Charge. In addition, the operator shall agree to meet such reasonable leaching and cropping activities as shall be prescribed by the Officer-in-Charge.

(c) If prompt and beneficial use of the leaching water is not made by or before July 1 of the season of which it is granted, the Officer-in-Charge may declare the leaching permit forfeited. The normal water charges will be considered as assessed and any delinquency enforced as though no leaching privilege had been granted.

(d) n the case of patent in fee lands no water will be delivered for leaching purposes until the annual construction costs, when assessed, are paid.

171.16 Excess water

(a) General. On those irrigation projects where a water duty or water quota has been established each water user will be notified when his quota of water, as covered by the basic assessment and as announced in the public notice, has been delivered. In such cases, additional irrigation water if available, may be delivered providing the water user so requests it and agrees to pay for the excess water in accordance with the excess water provisions as set forth the public notice.

(b) Flathead Indian Irrigation Project, Montana:

(1) After an agreement has been reached by the Commissioners of the irrigation district and the Officer-in-Charge as to the duty of water on individual tracts where water users claim excess requirements above the duty of water established for the project on account of porous of gravelly soils, the Officer-in-Charge is authorized to increase the quantity of water to be delivered to such tracts.

(2) The amount of water delivered in such cases will not exceed four acre-feet per assessable acre except in the Moiese Division where the amount shall not exceed six (6) acre-feet providing there is sufficient water available in Lower Crow Reservoir without having to draw on the water supply for the Mission Valley Division.

(3) The charge for such water shall be at the same general rate as established for project land not having such a porous or gravelly condition.

Transfer of Water:

– A water user shall be allowed to transfer water among any farm unit he owns or leases; however, if water is transferred from leased land to any other land not under the same ownership, the owner of the leased land must have filed written permission with FIIP, allowing such transfer to the lessee. The farm units must be within the same division. Written permission must be on file at FIIP Headquarters prior to the beginning of the irrigation season (April 15).

– Transfer of water from one farm unit to another farm unit under the same ownership within the same division shall be allowed regardless of cropping pattern.

– Transfer of water from leased land which is non-cropped under a single year lease or the first year of a multi-year lease shall not he allowed.

– In multi-year leases which records have been filed at FIIP Headquarters, transfer of water from non-crop leased ground to cropped land under the ownership of the lessee shall be allowed only after the second or greater year of a multi-year lease agreement. Permission by the record landowner for transfer of water to lessee shall be provided to FIIP through the use of the standard form for “Allowance of Transfer of Water Apportionment from Leased land to Other Land Leased by Lessee” (see Appendix B-5). This form must be signed by the record landowner or mortgage holder, who is presently administering the land, and the Lessee, and shall be notarized by a Notary Public. Signed transfer allowance must be received at FIIP Headquarters no later than April 15 of the irrigation season in order to qualify for transfer provisions;

– If a water apportionment (quota) transfer is made from any farm unit to any other farm unit, the farm unit which water is being transferred from shall be considered “single duty” for that irrigation season regardless of previous established water duty. The total amount of water delivered to this land plus the total of amount transferred from this land shall not exceed the single duty water apportionment (quota) established by FIIP for the irrigation season.

171.17 Delivery of water

(a) Irrigation water will not be delivered until the annual operation and maintenance assessments are paid in accordance with the established annual rate schedule as set forth in the public notice issued by the Regional Director. Under the following special circumstances, this rule may be waived and water delivered to:

(1) Trust and restricted lands farmed by the Indian owner when the Superintendent has certified that the operator is financially unable to pay the assessment and he has made arrangements to pay such assessments from the proceeds received from the sale of crops or from any other source of income. In such cases the unpaid charges will stand as a first lien against the land until paid but without penalty on account of delinquency.

(2) Non-Indian lands on which there is an approved deferred payment contract executed under the provisions of the Act of June 22, 1936 (49 Stat. 1803).

(3) Land on which an adjustment or cancellation of unpaid assessments has been recommended and final action is pending.

(b) Water will not be delivered to Indian trust or restricted lands that are under lease approved by the Secretary of the Interior or his authorized representative acting under delegated authority until the lessee has paid the annual assessed operation and maintenance charges.

(c) No water will be delivered to Indian trust land under a lease that has been negotiated by an Indian owner until the owner has paid the annual assessed operation and maintenance charges or has made satisfactory arrangements for their payments with the Superintendent who has so notified the Officer-in-Charge.

(d) Water will not be delivered to any lands within an irrigation district which has executed a repayment contract with the United States until all irrigation charges, as assessed, are paid in accordance with the terms and conditions of the contracts and the public notice as issued by the Regional Director.

(e) All irrigation districts may make such rules and regulations as they may find necessary in regard to the delivery of the water to water users within the district who are delinquent in their payments to the district of assessed irrigation charges. Such rules and regulations will be adhered to by the Officer-in-Charge when it appears to be in the best interests of the United States and the district to do so.

– Water shall not be delivered to any land which is not current in payment of it’s O&M assessment.

– Watermasters and ditchriders shall be provided with an O&M delinquency list at the beginning of each irrigation season. On District lands, no water delivery shall be made to delinquent lands until the landowner has provided FIIP Headquarters Water Clerk a copy of the tax payment

receipt issued by the appropriate County Treasurer's office. FIIP personnel will not accept verbal confirmation by landowner that taxes have been paid.

– On Indian and Non-district lands water delivery shall not be made until payment has been made at the appropriate FIIP collection facility. Upon receipt of this payment Irrigation field staff shall be notified and water users shall be given a receipt of payment for their records.

(f) Water will not be delivered to lands that are subject to construction assessments not paid in accordance with Part 134 of this chapter

(g) Flathead Indian Irrigation Project, Montana.

(1) Secretarial Water Right Holders.

(i) For all acres recognized by the Secretary of the Interior as entitled to a "Secretarial Water Rights", the Officer-in-Charge is authorized to carry such water in the projects carriage and distribution system and deliver it: Providing, That landowner holding such a right requests it and his land is so located that the water can be delivered without undue expense to the project. Before this service is provided, the landowner must also agree to pay a minimum of fifty (50) percent of up to a maximum of one hundred (100) percent of the annual operation and maintenance charges as assessed against project lands in the same general area as his. Under such agreement the project will not be obligated to deliver more than that allowed for each acre of land under the Secretary's private water right findings less a proportionate share of the project's normal losses in transporting the water from the point of entry into the project's system to the point of delivery.

– All Secretarial Water Right deliveries which have been brought into the Project distribution system shall be delivered to in accordance with all FIIP operation and maintenance policies.

(ii) "Secretarial Water Rights" are defined as those rights allocated to Indian allotments by the Assistant Secretary of the Interior by his approval an November 25, 1921, of the findings of the Commission appointed by him to investigate the "private rights: on the Flathead Indian Reservation. Authority: Sec. 9, Act of May 29, 1908 (35 Stat. 449).

(2) Pump Lands - Flathead Indian Irrigation Project.

(i) The Officer-in-Charge is authorized to deliver unit that are too high to be served from the project's gravity flow system: Providing, the holder of legal title to the lands so requests it in writing and agrees to have such land designated by the Secretary of the Interior or his authorized representative as a part of the irrigation project. Land so designated shall be subject to the assessment and payment of the pro rata per acre share of the project's construction, operation and maintenance costs the same as all other lands within the irrigation project in the same general area. In addition, such "pump lands" shall be obligated to pay an additional assessment on an annual basis as determined by the Officer-in-Charge to defray the cost of pumping the water from the Flathead River for those lands in the Mission Valley Division and from the Little Bitterroot Lake for lands in the Camas Division.

– The Irrigation Systems Manager shall be responsible for determining additional pumping costs associated with serving pump lands. These costs shall be adjusted every three years to be kept consistent with economic conditions (inflation, etc.). Factors which shall be considered in establishing the cost of pumping water are electrical energy costs,

pumping plant maintenance costs, pumping plant operation costs, and any other costs incurred in pumping the calculation of the additional assessment rate for pump lands shall be based upon costs which would be incurred to "pump" all water required to meet the average quota delivery. The "average quota" for this calculation, shall be based on the previous ten years.

– The Irrigation Systems Manager shall annually include the pump lands cost into the pumping electrical cost under a separate line item in the operation and maintenance budget proposal as identified in section 171.1(e)(f). The most recent determination of pump operation costs by the Irrigation Systems Manager is presented in Appendix B-6 of this policy.

– Farm units which have been subdivided into tracts of less than 40 acres are not eligible to be brought into project "pump lands" status as outlined in 25 CFR 171.17(g)(2). All subdivided home sites and industrial sites etc., are also ineligible for consideration under the pump lands provision. Water shall not be diverted to non-irrigable land within any subdivided farm unit except through the provisions of a Water Service Contract authorized and approved by the Agency Superintendent as outlined previously in this policy under Excess Water, CFR 171.16.

– All eligible pump lands shall be redesignated on an "interim" in basis according to BIA policy. The final approval for serving pump lands shall be contingent upon land being brought into the Project by a redesignation committee duly appointed by the Secretary of Interior. Land failing to meet the requirements at the time of the official redesignation shall be removed from pump land status and shall no longer be eligible to receive the Project irrigation water.

(ii) At the time he submits the request, the landowner must also agree in writing to include the "pump lands" in an existing irrigation district or a district that may be subsequently formed pursuant to the laws of the State of Montana. This will not apply to Indian trust or restricted lands as such lands cannot be included with irrigation district.

(iii) A request for the inclusion of "pump lands" into the project will not be considered until the Officer-in-Charge determines that there is sufficient project water available to serve these lands without adversely affecting in any way the water entitlement of the designated project lands for which the project was designed and constructed.

(iv) All costs incidental to the pumping and distribution of the delivered water from the project farm unit delivery point to the "pump lands" shall be borne by the landowner.

Delivery only to Assessable Lands:

– Irrigation water from FIIP facilities shall only be delivered to lands which are classified as presently assessable irrigable lands (Class 1) under BIA classification standards. FIIP field personnel shall be required (and have full authority) to shut off delivery of water, without prior notification to landowner, on any land being irrigated which is classified as Temporarily Non-Assessable (Class 3), Permanently Non-Assessable (Class 4), or Not in Project (NIP). Water shall not be delivered until landowner has resolved the problem of diverting Project water to non-assessable ground with the Irrigation Systems Manager. Certain lands may be eligible to be brought into (or out of) irrigable status within the Project.

– Class 1 lands will not normally be moved to either 3 or 4, except if it is found that the land is incapable of successful cultivation under irrigation, on account of seepage, alkaline condition, unavailability of water, subdivision of the farm unit or Project's mobility to deliver water. Those District and Non-District lands that move from class 1 and 3 to class 4 will be required to pay the unpaid construction charge due on the land.

– Landowners requesting interim classification will be required to submit a completed "Request for Interim Redesignation of Lands" form (see Appendix B-7) to the Irrigation Systems Manager. This request shall be reviewed by the Watermaster and forwarded to the Irrigation Systems Manager for final review and approval.

171.18 Service or farm ditches

The service or farm ditches into which water is delivered from project canals or laterals must be ample capacity and be maintained by the water user in proper condition to receive water and convey it to the place of use with minimum of loss. Water delivery will be refused to such ditches not satisfactorily maintained. Project irrigation water shall be put to beneficial use.

– FIIP field personnel shall have full authority to refuse delivery to those service or farm ditches which are not adequately maintained or not in proper condition to receive water. The Watermaster/ditchrider shall notify landowner when delivery has been refused due to this condition; the ditchrider shall also document the refusal of delivery in his daily log book for Project record purposes. It shall be the landowner's responsibility to notify the ditchrider and re-order water after proper maintenance has been completed.

171.19 Operation and maintenance assessments

(a) Operation and maintenance assessments will be levied against the acreage within each allotment, farm unit or tribal unit that is designated as assessable and to which irrigation water can be delivered by the project operators from the constructed works whether water is requested or not unless specified otherwise in this section.

(b) Subdivided farm units.

(1) General

(i) Where farm units as defined in 171.4 have been subdivided into smaller units the Area Director or such official as he may so delegate may at his discretion fix a higher operation and maintenance rate for such subdivided acreage than the rate fixed for the

acreage in the original farm unit. In such cases the higher rate will also be announced in the annual public notice.

The minimum assessment rate for all small tracts of irrigated land shall be $25.00. This rate will be reviewed annually.

(ii) In the event higher rates are fixed for a subdivided farm unit, the individual owners there of may obtain for their lands the same rate as fixed for acreages within farm units not so divided by joining in a written contract with the other owners with in the subdivided unit. Under such a contract the various owners will appoint an agent in whom shall be vested full power and authority to enter into a contract with the Regional Director, here after referred to as the Contracting Officer or such official as he may so authorize, covering the water rights for the entire area of the several small acreages: Provided, however, Such contract must not represent less acreage than that included in the original farm unit unless a smaller unit has been established by project regulation as eligible for a subdivision contract; and provided further, That whether the contract involves acreage in one or more farm units, it must represent contiguous acreages.

(iii) The contact between the agent of the owners of the small tracts and the Contracting Officer shall be executed on or before February 1 of the year preceding the next irrigation season. The agent shall at the time of the execution of this contract, on a form approved by the Secretary of the Interior furnish a certified copy of the contract executed by the several landowners of the subdivided tract appointing the agent to act in their behalf.

(iv) Any owner of a tract within a subdivided unit with the written consent of the owners of a majority of the acreage under a contract as set forth in paragraph (b) (1) (iii) of this section may voluntarily withdraw from the contract by filing a written notice of his intent to withdraw with the Contracting Officer on or before February 1 of the year such withdrawal is to be effective together with the consent of the owners of the majority of the acreage endorsed there on: Provided, That the remaining acreage is contiguous: such withdrawal does not reduce the remaining acreage under the contract to less than the acreage if included in the original farm unit before it was subdivided or less than the minimum acreage established on a project as eligible for a subdivision contract: and all irrigation charges due under said contract have been paid. Upon the receipt of said notice, the Contracting Officer, if the notice meets the requirements as herein provided, shall note his approval thereon and send a copy thereof to the agent of the Landowners. Thereafter the land of the withdrawing owner shall no longer be subject to the contract.

(v) If one or more owners under a contract desire to withdraw, and if, by so doing, it would reduce the total remaining contiguous acreage under the contract to less than the total acreage included in the original farm unit or the minimum eligible acreage established on the project the contract can be terminated. However, before such a termination can be approved a written notice from the owners of the majority of the acreage must be filed with the Contracting Officer indicating their consent to and requesting his approval of the termination. The notice must be filed on or before February 1 of the year the termination is to become effective and must include the payment of any irrigation charges then due under the existing contract. Upon the receipt of the written notice the Contracting Officer shall note his approval thereon provided that the requirements set forth herein are satisfied. A copy of the approved notice will be given to the agent of the landowners concerned.

171.20 Water users' ledgers

(a) Water users' ledgers will be maintained by the Officer-in-Charge on all irrigation projects or units where irrigation assessments are levied and collected. Separate entries shall be made in the ledger for each farm tract and bills issued to the owner or owners of record. When payment is received it will be credited to the proper ledger account.

(b) When Indian trust or restricted land is leased and the Officer-in-Charge has been so advised by the Superintendent irrigation bills will be submitted to the lessee. Upon receipt of payment, it will be credited to the Indian owner or owners of record in the ledger account.

(c) On those projects where irrigation districts have been formed and have executed repayment contracts irrigation bills will be rendered to the district. When payment is received it will be credited to the proper ledger accounts.

171.21 Health and sanitation

Use of Government storage reservoirs, canals, laterals or drains for disposal of sewage and trash shall not be permitted under any circumstances. If such conditions occur and project forces are unable to correct them the Officer-in-Charge shall request the Regional Director to arrange for the necessary legal action.

– Any trash which is dumped into Project facilities by Landowner shall be removed by FIIP personnel shall, when practical, notify the landowner of this deficiency; however, this trash is subject to removal without prior notice and landowner shall be billed for all associated costs incurred by FIIP.

– Under no circumstances will sewage or drainage from corrals be permitted to enter into the Project distribution system. Any violation of this type is subject to immediate removal by FIIP and the landowner shall be billed for all associated costs associated with removal.

171.22 Complaints

All complaints must be made in writing to the Irrigation Systems Manager or the Officer-in-Charge of the Project.

171.23 Disputes

In case of a dispute between a water user and the Irrigation Systems Manager or Officer-in-Charge of the project concerning the application of the regulations of this part of a decision rendered by such official, the water user within 30 days may appeal to the Regional Director. Further appeals may be made to the Commissioner of Indian Affairs pursuant to Part 2 of this chapter.

XXX.X1 Work Done for Others:

- If it is convenient and manpower and equipment is available, FIIP may, upon written request by landowner, perform irrigation improvement construction activities with in irrigation rights-of-way for Project water users; however, any work performed FIIP forces for Project water users shall not, under any circumstances, have priority over essential Project maintenance activities, as determined by the Irrigation Systems Manager. All private irrigation improvement construction work will be prioritized according to date first requested and shall be scheduled into maintenance program by the Watermaster.

- Labor, equipment and materials required to complete water users irrigation improvement construction request shall be prepared by the Watermaster and submitted to the Irrigation Systems Manager. This estimate shall be presented in the format of FIIP's standard Maintenance Order (see Appendix B-8). This estimate shall be forwarded, with estimated costs included, in writing from the Irrigation Systems to the water user. Upon receipt of payment by the water user for the estimated cost, the Irrigation Systems Manager shall return a maintenance order estimate to Watermaster so work can be scheduled within normal maintenance program. Under no circumstances shall work be performed prior to receiving full payment of estimated cost by landowner. Upon completion of work, Watermaster shall forward to the Irrigation Systems Manager a completed maintenance order detailing actual material, equipment and labor utilized. The Irrigation Systems Manager shall then prepare a completed bill based on the published annual rental rates for FIIP equipment and the standard labor rates for Irrigation, System Operators, Maintenance Workers, Equipment Operators, and Watermaster, (See Appendix B-8). In the event that the actual completed costs are greater or less than the estimate amount paid, by the water user shall be billed or refunded accordingly by FIIP. The only exception to this policy will be where construction improvement benefits FIIP as well as the requesting landowner. In this specific case FIIP may provide in-kind labor and equipment at no charge to the landowner, provided funds are available and the construction improvement is a priority for FIIP.

- In order to standardize equipment rental rates, materials costs, and labor costs, and also in order to help water users estimate what projected constructed costs may be, a price list shall be established by the Irrigation Systems Manager for equipment rental rates, materials costs, and labor costs. Current rental rates are on file at FIIP Headquarters and shall be reviewed and adjusted annually to be kept consistent wlth economic conditions.

- All irrigation delivery turnouts and water control structures shall be constructed by FIIP forces: all turnouts reconstruction under relocation of turnout requests shall be billed to the landowner In accordance with the "Work Done for Others" procedure.

- Criteria used for establishing equipment rental rates shall be from information published in the Associated General Contractors Equipment Cost Operating Guides, Costs Reference Guide for Construction Equipment published by Neilsen – Dataquest Incorp., and nation wide rental rate guidelines such as the Blue Book Rental Guide. Materials costs shall be based upon price quotas from local vendors, plus handling. Labor costs shall be based on the average salary of each major position, utilized by FIIP.

APPENDIX B
FORMS AND FIGURES

DITCH OFFICE COPY

TYPE: 1 - **ON : TOTAL** FLOW CURRENTLY BEING DELIVERED TO TRACT
2 - **CHANGE FLOW : TOTAL** FLOW CURRENTLY BEING DELIVERED TO TRACT
3 - **OFF : NO** FLOW CURRENTLY BEING DELIVERED TO TRACT

DITCHRIDER:_____

DATE:_____

WATER ORDERS

OPERATOR	TRACT NUMBER	TYPE	DELIVERY DATE	TIME	FLOW	COMMENTS, DITCH, T.O., ETC.	REC

*U.S. GPO: 1992-674-291/65045

Water Orders “Green Sheet”

WATER ORDER

Tract No. _____

TRANSFER TO

Date _____ Tract No. _____

Type	Date	Lateral	Turnout	Flow
Turn On (1)				
Change From (2)				
Change To (2)				
Turn Off (3)				

Remarks _____

Owner _____ Phone _____

By _____

*U.S. GPO: 1992-674-280/60044

Contract No:_____
Priority Date:_____

U.S. BUREAU OF INDIAN AFFAIRS
FLATHEAD IRRIGATION PROJECT

WATER SERVICE CONTRACT FOR NONASSESSABLE LAND

THIS CONTRACT, made and entered into this _____ day of _____, 20_____, by and between the U.S. Bureau of Indian Affairs – Flathead Agency, Irrigation Division, hereinafter referred to as the "BUREAU" and _____, hereinafter referred to as the "WATERUSER".

WITNESSETH THAT:

WHEREAS, the BUREAU has the responsibility for operation and maintenance of the Flathead Irrigation Project (Project), and;

WHEREAS, the undersigned WATERUSER, as owner or lessee of non-assessable land, has requested the delivery of available water by the BUREAU through facilities of said Project for irrigation purposes.

NOW, THEREFORE, in consideration of the rents and covenants hereinafter specified, it is hereby mutually agreed by the parties hereto as follows:

DEFINITIONS

1. The following items are referred to in this contract and hereby defined:

AVAILABLE WATER: Water made available to the Flathead Irrigation Project by means of extending the pumping schedule of the Project's pumping plants beyond that needed to meet the BUREAU's yearly established quota and which is both surplus to fisheries instream flow requirements and the quota needs of assessed lands within the Flathead Irrigation Project, and capable of being delivered at the requested point of Water Service Contract delivery. During the irrigation season, water is also available throughout the Project because of operational conditions such as spills, collection of local run off and return flows from fields being flood irrigated.

ASSESSED ACRES: Classified irrigable acreage officially plotted and assessed for the recovery of operation and maintenance and construction costs of Project works.

NON-ASSESSED ACRES: Any acreage being successfully irrigated from Project facilities which are not assessed acres.

POINT OF DELIVERY: The actual location where surplus and/or available pumped water is diverted from Project facilities for use on non-assessed acres.

RETURN FLOWS: Any surface or subsurface water returning to a natural drainage from an irrigation development.

QUOTA: The quantity of irrigation water determined to be available within the irrigation season to one acre of land within the irrigation project.

IRRIGATION PREMISES

2. Subject to the conditions hereinafter set forth, the BUREAU does hereby allow the WATERUSER to receive surplus and/or available pumped water for the irrigation of one acre or less than one acre of land lying within the following described premises in the State of Montana, to wit:

CONTRACT TERMS

3. This contract shall be for the period of _____, 20_____ to _____, 20____ inclusive, unless sooner terminated as hereinafter provided, and shall be subject to the following conditions:

a. OPTION TO EXTEND: The WATERUSER has an option to extend the contract for successive additional periods of one year each, but in no event beyond December 31, 200___, provided that the WATERUSER shall have paid all previous fees due at the times of the exercising of this option.

b. CONTRACT MODIFICATION: The terms and conditions of this contract may be modified at any time upon written application by the WATERUSER and upon good cause shown and written consent by the BUREAU.

c. RE-ASSIGNMENT: A re-assignment of this contract cannot be made without written approval from the BUREAU. A re-assignment can only be made to a subsequent possessor of the land described in Article 2. A payment of $50 to cover the cost of reviewing and approving the re-assignment must be paid to the BUREAU prior to executing the re-assignment. The priority date of the contract will be maintained during re-assignment of the contract unless denied by the BUREAU.

d. SUBCONTRACTING: The WATERUSER shall not in any way subcontract the authorities granted by this contract.

e. TERMINATION: This contract shall terminate and all rights granted the WATERUSER shall cease:

(1) At the expiration of the term as provided heretofore;
(2) Without notice, upon default in payment to the BUREAU, for any installment of fees as provided herein;
(3) On December 31 of any year, upon written notice to the WATERUSER, served 30 days in advance thereof; or
(4) After failure of the WATERUSER to observe any of the conditions of this contract, and on the tenth day following service of written notice on the WATERUSER of termination because of failure to observe such conditions;

CONTRACT FEES

4. The WATERUSER shall pay to the BUREAU fees for the receipt of irrigation water as follows:

   a. ADMINISTRATIVE FEE: A fee of $50 to cover the administrative costs involved with this contract shall be paid prior to the execution of this contract and prior to November 30 ahead of any year of extension as provided for in Article 3a.

   b. WATER FEE: An appropriate fee to cover full BUREAU construction, operation and maintenance expenses of Project facilities conveying water served hereunder shall be paid by the WATERUSER, such fee to be annually determined by the amount of water delivered and the rate per acre-foot as determined and fixed by the BUREAU. The water service delivery fee for 1989 shall be $25 per the quota set. The water fee shall be paid within 30 days of BUREAU billing and before the delivery of water.

CONTRACT NOT A WATER RIGHT

5. Nothing contained in this contract, nor the furnishing of water hereunder, is to be construed as the basis for a water right. Privileges or rights granted hereunder are to be construed as the right to utilize surplus water only. Any such privileges or rights shall end upon termination of this contract.

CONDITIONS

6. This contract is subject to the following conditions which shall be faithfully observed:

   a. DELIVERY SCHEDULE: The WATERUSER shall request or order water for use on said land in accordance with the BUREAU'S current water ordering procedures as established in the BUREAU's current operating policies. Water will be delivered to said land in a reasonable amount only if surplus and/or available pumped water as determined by the BUREAU is available at the WATERUSER's point of diversion. The delivery of available water will not jeopardize the entitlement of water to any assessed acres. During the course of each year of this contract, estimates will be made by the BUREAU as to the availability of water to be delivered. The WATERUSER shall immediately stop diversion of water upon notice by the BUREAU that irrigation water is no longer available at the WATERUSER's point of delivery.

   b. PRIORITY: All water Service Contracts shall be assigned a priority date being the date originally executed, thereby establishing a "first in time" priority system. In the event that the request for water and/or available pumped water exceeds the amount of available water, priority in receiving water shall be granted to older priority date contracts.

c. WATER QUALITY: The BUREAU is not responsible for the quality of water it deems as surplus water.

d. RIGHTS TO RETURN FLOWS: The WATERUSER is granted by these provisions the use of available water and any return flow leaving said facilities shall be available for collection and re-use by the BUREAU.

e. MISUSE: The WATERUSER is required to use the water in an effective manner. The BUREAU shall reserve the right to curtail water delivery in the event that the water is not used for the purpose intended, or not cared for, or otherwise misused.

f. STRUCTURES: Any required for the diversion of water from facilities of the Flathead Irrigation Project must be approved by the BUREAU's Special Use Permit and installed as directed by the BUREAU. The WATERUSER shall be responsible for the entire cost of installation of the structures and the BUREAU shall maintain ownership of all permanent structures installed.

g. WATER MEASUREMENT: The WATERUSER must provide and maintain an adequate measuring device open to inspection by BUREAU personnel at all times located in the immediate vicinity of the point of delivery. The BUREAU may waive the measuring device requirement for land irrigated by the sprinkler method, such waiver being subject to a plan approved by the BUREAU for determining the amount of water used on said land and such plan to be clearly specified at the end of this contract.

h. LIABILITIES: The exercise of rights granted by this contract shall not jeopardize the welfare or safety of others. The WATERUSER shall be responsible for any damage or failure of Irrigation facilities occurring as a result of activities perpetuated by this contract. In the event such damage or failure occurs, the WATERUSER shall immediately repair or provide for the repair of damaged facilities: The WATERUSER releases the BUREAU from all claims for damages to property due to flooding, seeping, soil and water erosion, or any other consequences resulting from activities perpetuated by this contract.

i. OTHER RULES & REGULATIONS: The WATERUSER must comply with all applicable rules and regulations as specified in the Code of Federal Regulations, Title 25, Chapter 1, Section 171.

j. POLLUTION CONTROL: The WATERUSER shall, within their legal authority, comply fully with all applicable Federal and State laws, orders, and regulations, all as administered by appropriate authorities, concerning the pollution of streams, reservoirs, groundwater, or water courses with respect to thermal pollution or the discharge of refuse, garbage, sewage effluent, industrial waste, oil mine tailings, mineral salts, or other pollutants, and concerning the pollution of the air with respect to radioactive materials or other pollutants. The WATERUSER further agrees that they shall obtain all required permits or licenses from the appropriate Federal, State or Local Authorities.

IN WITNESS WHEREOF, the parties have hereunto subscribed their name as of the date written below.

_____ _____
(DATE) WATERUSER

Approval Recommended: _____
WATERMASTER

_____
IRRIGATION SYSTEM MANAGER

Approved:

_____ _____
(DATE) AGENCY SUPERINTENDENT
BUREAU OF INDIAN AFFAIRS
FLATHEAD AGENCY

Recorded:

_____ _____
(DATE) IRRIGATION CLERK

WAIVER OF WATER MEASUREMENT REQUIREMENT (If applicable)

The WATERUSER hereby agrees to waive the water measurement requirements specified in Article 6g and accepts an annual usage amount of 0.8 acre-feet, such amount to be used to compute the water fee as described in Article 4b. The usage may be raised or lowered by the BUREAU in the event that abnormal irrigation activity occurs during the irrigation season.

_____
WATERUSER

UNITED STATES DEPARTMENT OF THE INTERIOR
U.S. BUREAU OF INDIAN AFFAIRS
FLATHEAD AGENCY
FLATHEAD IRRIGATION PROJECT

SPECIAL USE PERMIT

Contract number: _____
Exhibits attached: _____
(Place Contract No. on all Exhibits)

Term:
From _____
To _____
Month Day Year

Permittee *(Name and address)*

Permit Fee $ _____

Successive Fee $ _____

Purpose *(specify use requested: what, quantities, dimensions, etc.)*

Description of Premises *(Specify legal descriptions of land and major features such as reservoir, canal, etc.)*

Special Conditions *(The permittee must consult with and receive written approval from the issuing officer for any species of plants proposed for planting.)*

The Permittee hereby accepts this permit subject to the terms, covenants, obligations, and reservations, expressed or implied herein.

Sign name or names as written in body or permit, for copartnership, permittees should sign as "members of firm", for corporation, the officer authorized to execute contracts, etc. should sign, with title, the sufficiency of such signature being attested by the Secretary, with corporate seal, in lieu of witnesses.

ASSIGN/MANAGING AGENCY	ASSIGN/MANAGING AGENCY	PERMITTEE
AGENCY		SIGNATURE
SIGNATURE		TITLE
TITLE		SIGNATURE
ATTEST		ATTEST
DATE	DATE	DATE

Approved by Issuing Officer: *(Name and Title)* *Signature* *Date*

CULVERT CROSSINGS:

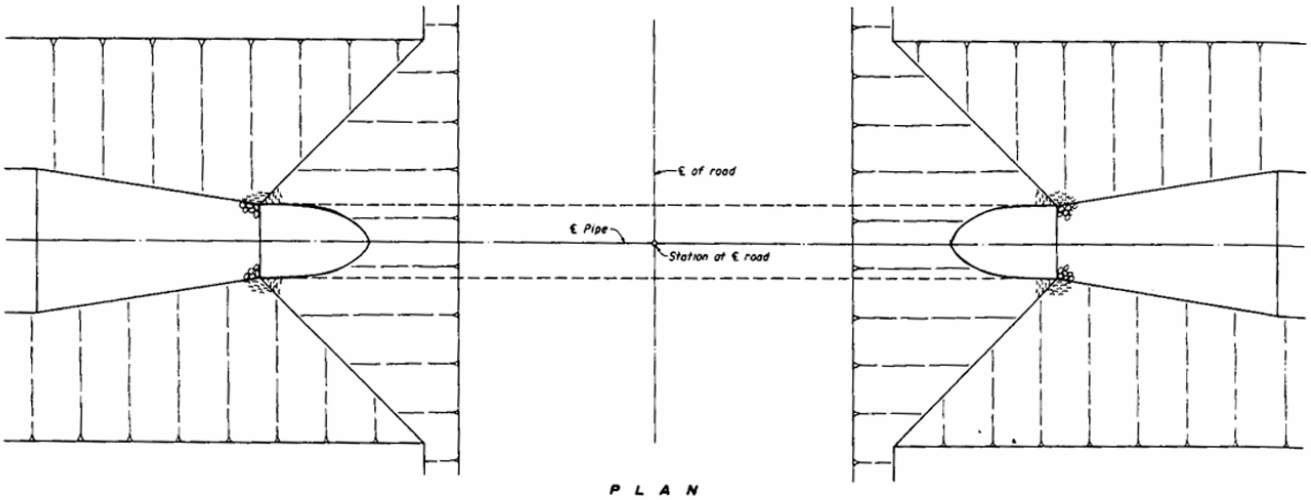
1. The culvert shall be of sufficient size and proper type and shall be properly installed to pass the required flow in the canal without restricting water, trapping trash or debris, or causing scouring and erosion in the canal. A minimum pipe diameter shall be required by the Project (listed above). The permittee and any successors in interest shall be solely responsible for maintaining the culvert.

2. The culvert shall be placed in the canal bottom according to criteria illustrated in Exhibit "A" (Dwg #103-D-1253) unless directed otherwise by the Watermaster.

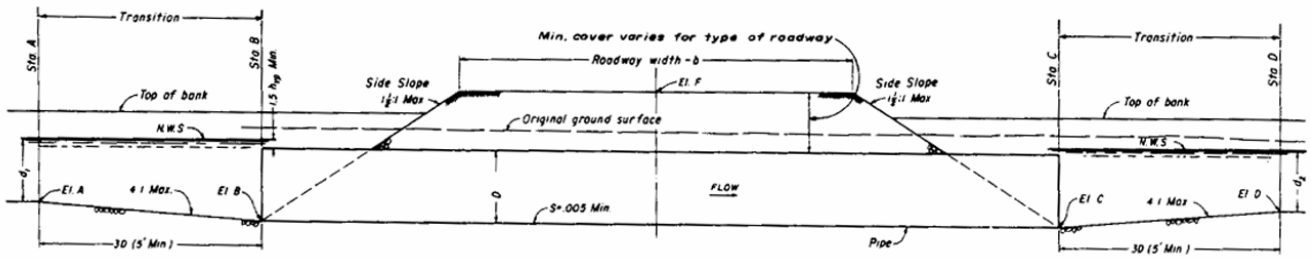
3. Backfill shall be selected, placed and compacted in 6-inch lifts to prevent erosion, sloughing, and settlement. Riprap protection shall be placed, as determined by Project, to prevent erosion.

4. The Division Watermaster, Mr._____, phone_____, will act as construction advisor and inspector. He shall be notified for approval to proceed with construction before any construction begins and may require that all construction be completed in his presence. All construction shall be subject to the final approval of the Watermaster and/or Project Engineer. Any structure not meeting final approval shall be removed at the permittee's expense.

5. Permittee shall follow all applicable Occupational Health and Safety Administrative (OSHA) requirements during construction and maintenance of structure.

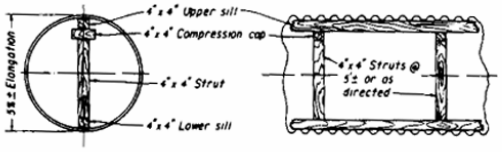


PLAN



LONGITUDINAL SECTION

PIPE DIAMETER SELECTION DATA					
MAX. V=3.5 fps (EARTH TRANSITION)		MAX. V=5.0 fps (CONC. TRANSITION)		PIPE	
Q (cfs)		Q (cfs)		DIA.	AREA
FROM	INCLUDING	FROM	INCLUDING	(INCHES)	(SQ. FT.)
0	2.7	0	3.9	12	0.785
2.7	4.3	3.9	6.1	15	1.227
4.3	6.2	6.1	8.8	18	1.767
6.2	8.4	8.8	12.0	21	2.405
8.4	11.0	12.0	15.7	24	3.142
11.0	13.9	15.7	19.9	27	3.976
13.9	17.2	19.9	24.5	30	4.909
17.2	20.8	24.5	29.7	33	5.940
20.8	24.7	29.7	35.3	36	7.069
24.7	29.0	35.3	41.5	39	8.296
29.0	33.7	41.5	48.1	42	9.621
33.7	38.7	48.1	55.2	45	11.045
38.7	44.0	55.2	62.8	48	12.566
44.0	49.7	62.8	70.9	51	14.186
49.7	55.7	70.9	79.5	54	15.904
55.7	62.0	79.5	88.6	57	17.721
62.0	68.7	88.6	98.2	60	19.635
68.7	75.8			63	21.648
75.8	83.2			66	23.758
83.2	90.9			69	25.967
90.9	99.0			72	28.274



METHOD OF STRUTTING CORRUGATED METAL PIPE

No strutting required for pipes less than 54-inches in diameter. Pipe strutting to be installed before backfill is placed, and to remain in place until embankment is completed

NOTES

Pipe may terminate in concrete structure or concrete transition at either end as directed
Elevation F is approximate elevation of finished grade of road
Pipe may be Corrugated Metal Pipe (CMP), Concrete Culvert Pipe (RCCP), or Precast Concrete Pressure Pipe (PCP)

Figure 2-2. **Road crossing plan and section. 103-D-1253.**

Exhibit "A"

BRIDGE CROSSINGS:

1. Bridge must be certified by a registered Professional Engineer, competent in the field, to safely support a minimum load rating of H-15 (AASHO). A copy of certification must be received at Project Headquarters prior to bridge being used and every five years thereafter.

2. Bridge must clearly span the canal section and not in any way interfere with the flow of water in the canal during maximum flow conditions, as determined by the Irrigation Division.

3. Permittee agrees to maintain all approaches to bridge in accordance with all county and state safety requirements. The maximum bridge capacity shall be posted on each side by an accepted "standard sign"

4. This permit grants the construction of the bridge only; it does not grant any right-of-way for access roads.

5. Construction of the bridge must be during the non-irrigation season (September 15 to March 15). Any excavation in the canal bank or canal prism section must be backfilled & compacted to 95% density (Proctor Method); this must be done in the presence of an inspector from the Irrigation Division. Permittee agrees to provide and place all necessary materials for bank protection and stabilization under and around the bridge.

6. Permittee shall follow all applicable Occupational Health and Safety Administrative (OSHA) requirements during construction and maintenance of structure.

7. If the permittee fails to keep bridge in compliance with all of the above requirements it shall be subject to removal by Irrigation Division forces without prior notice at the permittee's expense.

FOOTBRIDGE:

1. - For Spans greater than 40' length

   Footbridge must be certified by a registered Professional Engineer, competent in the field, to safely support a minimum load rating 85 lbs./ft2. A copy of certification must be received at Project Headquarters prior to bridge being used and every five years thereafter.

   - For Spans less than 40' length

   Footbridge must be certified by a registered Professional Engineer, competent in the field, to safely support a minimum load rating 60 lbs./ft2. A copy of certification must be received at Project Headquarters prior to bridge being used and every five years thereafter.

2. Total width of the footbridge cannot exceed 4'-0". Bridge must be constructed with a top handrail of 42" height and an intermediate handrail at 24" on each side.

3. Bridge must clearly span the canal section and not in any way interfere with the flow of water in the canal during maximum flow conditions, as determined by the Irrigation Division.

4. The Division Watermaster, Mr._____, phone_____, will act as construction advisor and inspector. He shall be notified for approval to proceed with construction before any construction begins and may require that all construction be completed in his presence. All construction shall be subject to the final approval of the Watermaster and/or Project Engineer. Any structure not meeting final approval shall be removed at the permittee's expense.

5. Permittee shall follow all applicable Occupational Health and Safety Administrative (OSHA) requirements during construction and maintenance of structure.

6. If the permittee fails to keep footbridge in compliance with all of the above requirements, it shall be subject to removal by Irrigation Division forces without prior notice at the permittee's expense.

UTILITY CROSSINGS AND
SPRINKLER MAINLINE CROSSINGS:

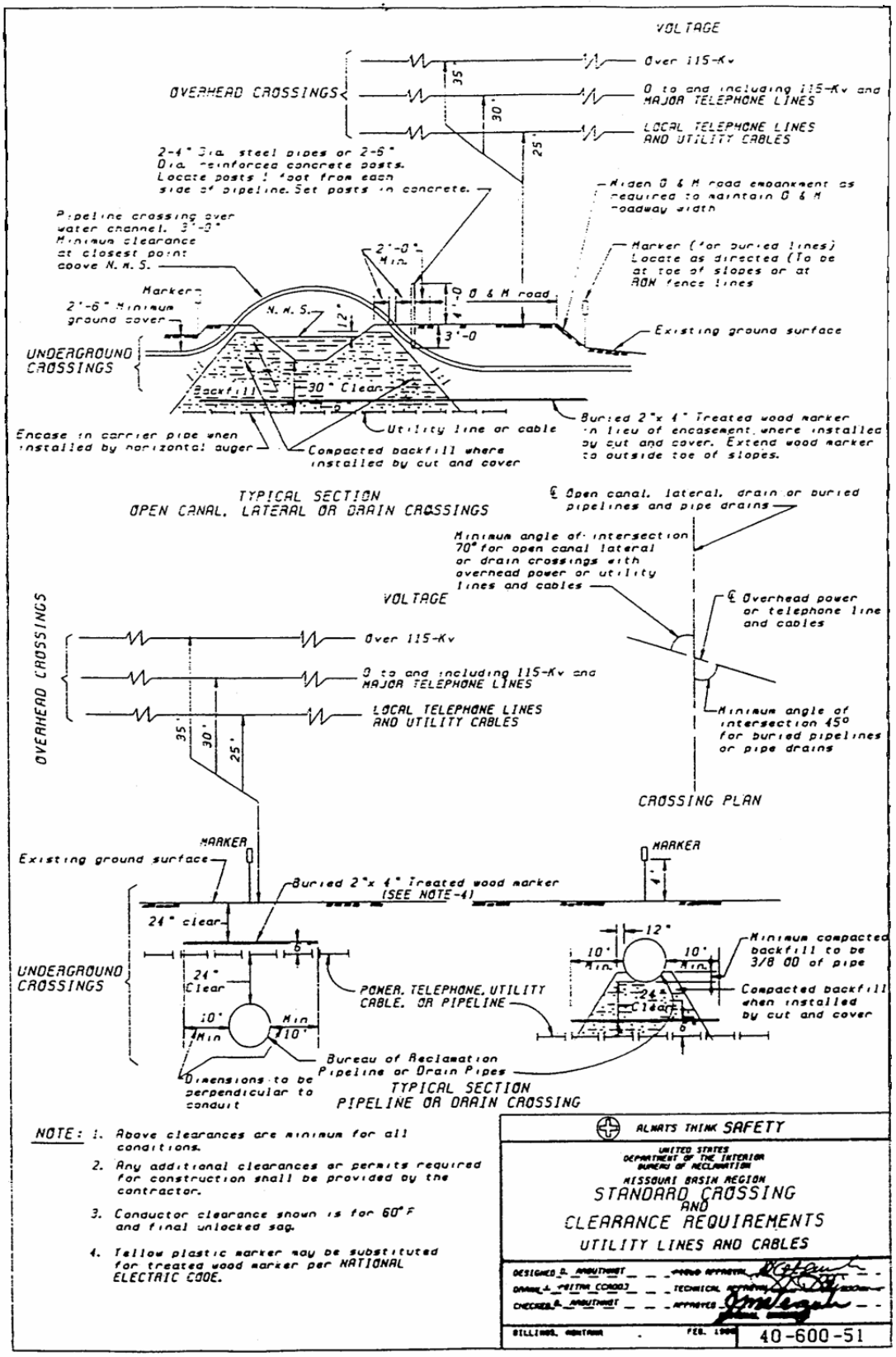
1. Crossing shall be constructed in compliance with all requirements of Exhibit "A" (Dwg. #40-600-51).

2. Any buried line (water, power, telephone, etc.) shall be identified by a marker acceptable to the Irrigation Division (suggest steel fence post with metal painted sign).

3. Construction of the crossing must be during the non-irrigation season (September 15 to March 15). Any excavation in the canal bank or canal prism section must be backfilled & compacted to 95% density (Proctor Method); this must be done in the presence of an inspector from the Irrigation Division.

4. The Division Watermaster, Mr._____, phone_____, will act as construction advisor and inspector. He shall be notified for approval to proceed with construction before any construction begins and may require that all construction be completed in his presence. All construction shall be subject to the final approval of the Watermaster and/or Project Engineer. Any structure not meeting final approval shall be removed at the permittee's expense.

5. Permittee shall follow all applicable Occupational Health and Safety Administrative (OSHA) requirements during construction and maintenance of structure.


VOLTAGE
OVERHEAD CROSSINGS
Over 115-Kv
0 to and including 115-Kv and MAJOR TELEPHONE LINES
LOCAL TELEPHONE LINES AND UTILITY CABLES
35'
30'
25'
2-4" Dia. steel pipes or 2-6" Dia. reinforced concrete posts. Locate posts 1 foot from each side of pipeline. Set posts in concrete.
Widen O & M road embankment as required to maintain O & M roadway width
Pipeline crossing over water channel. 3'-0" Minimum clearance at closest point above N.W.S.
2'-0" Min.
Marker (for buried lines) Locate as directed (To be at toe of slopes or at ROW fence lines
Marker
2'-6" Minimum ground cover
N.W.S.
12"
O & M road
3'-0
Existing ground surface
UNDERGROUND CROSSINGS
1:1
Backfill
30" Clear
Utility line or cable
Buried 2"x 4" Treated wood marker in lieu of encasement where installed by cut and cover. Extend wood marker to outside toe of slopes.
Encase in carrier pipe when installed by horizontal auger
Compacted backfill where installed by cut and cover
TYPICAL SECTION
OPEN CANAL, LATERAL OR DRAIN CROSSINGS
℄ Open canal, lateral, drain or buried pipelines and pipe drains
Minimum angle of intersection 70° for open canal lateral or drain crossings with overhead power or utility lines and cables
VOLTAGE
℄ Overhead power or telephone line and cables
OVERHEAD CROSSINGS
Over 115-Kv
0 to and including 115-Kv and MAJOR TELEPHONE LINES
LOCAL TELEPHONE LINES AND UTILITY CABLES
35'
30'
25'
Minimum angle of intersection 45° for buried pipelines or pipe drains
CROSSING PLAN
MARKER
Existing ground surface
Buried 2"x 4" Treated wood marker (SEE NOTE-4)
MARKER
24" clear
6"
UNDERGROUND CROSSINGS
24" Clear
10' Min
10' Min
POWER, TELEPHONE, UTILITY CABLE, OR PIPELINE
12"
10' Min
10' Min
Minimum compacted backfill to be 3/8 OD of pipe
24" Clear
Compacted backfill when installed by cut and cover
6"
Bureau of Reclamation Pipeline or Drain Pipes
Dimensions to be perpendicular to conduit
TYPICAL SECTION
PIPELINE OR DRAIN CROSSING
NOTE: 1. Above clearances are minimum for all conditions.
2. Any additional clearances or permits required for construction shall be provided by the contractor.
3. Conductor clearance shown is for 60°F and final unlocked sag.
4. Yellow plastic marker may be substituted for treated wood marker per NATIONAL ELECTRIC CODE.
ALWAYS THINK SAFETY
UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF RECLAMATION
MISSOURI BASIN REGION
STANDARD CROSSING AND CLEARANCE REQUIREMENTS
UTILITY LINES AND CABLES
DESIGNED D. ARMUTHEIT
DRAWN A. KEITH (CORDS)
CHECKED D. ARMUTHEIT
TECHNICAL APPROVAL
APPROVED
BILLINGS, MONTANA
FEB. 1966
40-600-51

GARDEN & LAWN
PUMPS IN CANALS (up to 2" diameter):

1. Any structure constructed or located within Project right-of-way by permittee shall require review and approval by the Flathead Irrigation Project prior to installation and is also subject to final approval after construction. All structures shall be constructed in accordance with attached Exhibit "A", Typical Small Pump Intake Structures, so as not to interfere with canal operation and maintenance.

2. Any pump intake structure shall be placed in the canal bank and shall not interfere with canal flows or be placed in the present canal channel. The intake structure shall be constructed such that the pump suction inlet is low enough to receive irrigation water without the need to install a check structure.

3. The permittee shall request or order water for use on said land in accordance with current water ordering procedures of the Flathead Irrigation Project (FIP).

4. Any electrical pump and electrical hook-up shall be in compliance with all National Electric Code requirements. Pumps shall be protected by a Ground Fault Interupter Circuit which can be verified and tested by Irrigation personnel.

5. The Division Watermaster, Mr._____, phone_____, will act as construction advisor and inspector. He shall be notified for approval to proceed with construction before any construction begins and may require that all construction be completed in his presence. All construction shall be subject to the final approval of the Watermaster and/or Project Engineer. Any structure not meeting final approval shall be removed at the permittee's expense.

HIBIT A
URE 1

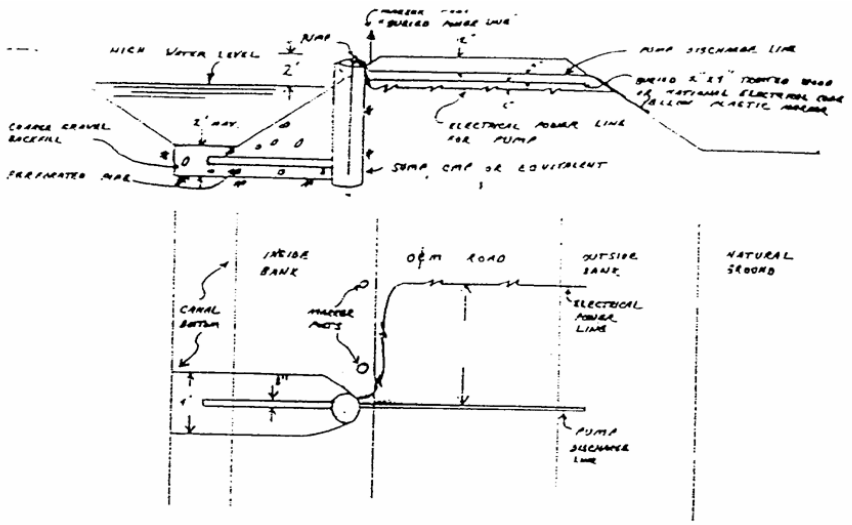


EXHIBIT A
FIGURE 2

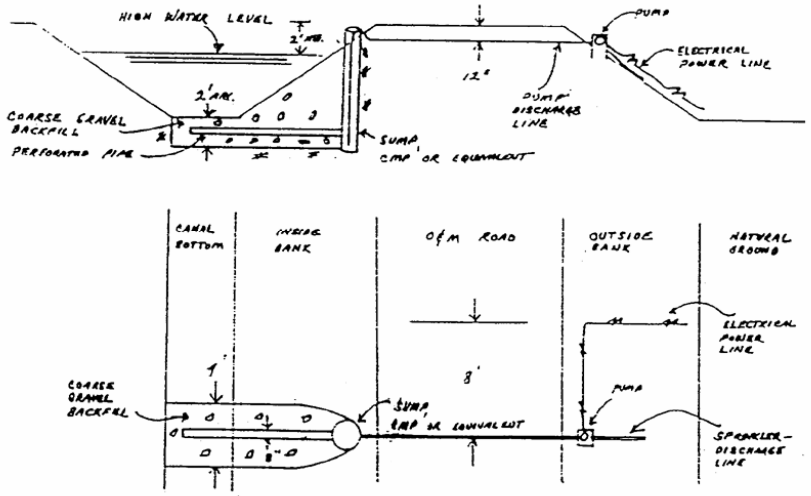
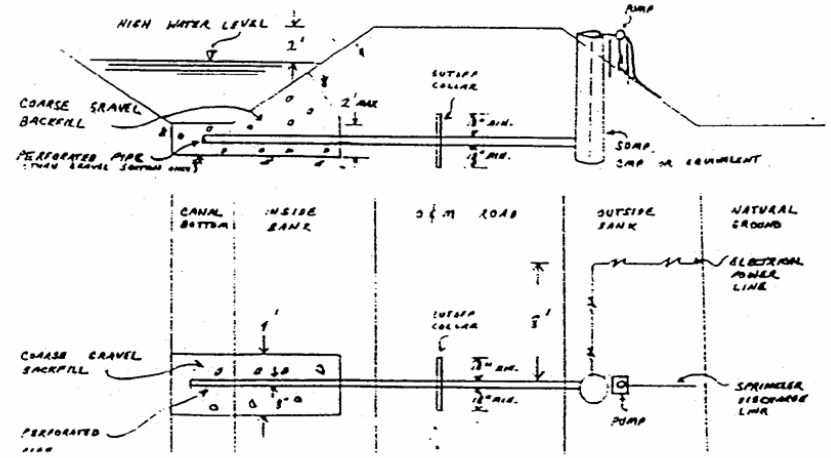


EXHIBIT A
FIGURE 3



ALLOWANCE OF TRANSFER OF WATER APPORTIONMENT FROM LEASED LAND TO OTHER LAND OWNED BY LESSEE

TO: Officer-in-Charge, Flathead Indian Irrigation Project:

I _____, hereby certify that I am the owner of the land described as _____ Section _____, T. ____ N., R. ____ W. also referred to as farm unit no. _____, and that _____ is currently the lessee of the above described property.

The terms of this lease are for _____ one year _____ more than one year beginning 20____.
(Check One)

I also hereby authorize _____, the lessee of the above described lands, to transfer irrigation water, designated for the above described land under the Flathead Indian Irrigation Project's apportionment (quota), to other lands owned by the lessee in order to best utilize available water for the lessee's farming operation needs.

I understand that water transfer can not be allowed if the leased land is not being actively farmed (cropped) on the first year of any multi-year agreement or actively farmed on any single year agreements.

I also understand that if a water apportionment (quota) transfer is made, then the above described land shall be considered "single duty" land for that year regardless of previous established duty and that the total water delivered to this land plus the total amount transferred shall not exceed the established "single duty" quota amount.

_____ _____
Landowner Date

_____ _____
Lessee Date

STATE OF _____)
) SS
COUNTY OF _____)

On this _____ day of _____, in the year 20____, before me, a Notary Public, personally appeared _____ known to me to be the _____who executed the within instrument, and acknowledged to me that _____executed the same.

Notary Public _____

(SEAL) Residing at _____

My Commission Expires _____

UNITED STATES GOVERNMENT

memorandum

DATE: SEP 2 2 1987

REPLY TO ATTN OF: Rick Wells, Civil Engineer

SUBJECT: Analysis of Fee Charge to Pump Lands

TO: FILES

An analysis of pumping plant costs has been completed. Factors considered have been:

1. Annual energy cost
2. Direct labor cost
3. Preventive maintenance and supervision
4. Average volume of water pumped
5. Pumping plant replacement costs

Based on this analysis of fee of $10.00 per acre is recommended as a charge to pump lands to defray costs of pumping plant operation.

A fee of $45.00 per acre foot is proposed for industrial water users. This figure includes a charge for plant replacement costs. Payment of replacement cost is not proposed for agricultural water users.

A copy of the calculations is attached.

Rick Wells

ANALYSIS OF PUMPING PLANT COSTS

Given:

1. 20 year average volume pumped - 16,591 ac. ft.
2. 20 year average annual power use - 6,787,000 kwh
3. 20 year average man-hours of plant operation 1,344 h

(56 days X 24 man-hours/day)

Energy Cost:

$$\frac{6{,}787{,}000 \text{ kwh} \times \frac{\$0.012}{1 \text{ KWH}}}{16{,}591 \text{ Ac. Ft.}} = \frac{\$4.91}{\text{Ac. Ft.}}$$

Labor Cost for Operation:

$$\frac{\frac{\$7.16}{\text{h}} \times 1{,}344 \text{ h}}{16{,}591 \text{ Ac. Ft.}} = \frac{\$0.58}{\text{Ac. Ft.}}$$

Projected Maintenance:

$$\frac{\$25{,}000/\text{yr}}{16{,}591 \text{ Ac. Ft.}} = \frac{\$1.51}{\text{Ac. Ft.}}$$

Annual O&M Costs: $\frac{\$7.00}{\text{Ac. Ft.}}$

REPLACEMENT COSTS:

(Note: To be assessed industrial users only)

Assumptions:

1. Replacement cost of $4.7 million estimated in 1975

   (Source: Morrison-Maierle, Inc. "Engineering Evaluation - Flathead Irrigation Project")

2. 100 year remaining service life to 2087

3. 5% Interest/Discount Rate

Capital Recovery Factor

$$A = P\left[\frac{i\,(1+i)^{N}}{(1+i)^{N}-1}\right] \quad P$$

A = Annual Payment

P = "Present" value (1975)

i = 5% Discount Rate

n = Number of periods (112 - 1975 to 2087)
(covers inflation from 1975 to present and discount from 2087 to present @ Avg. 5% rate)

$$A = 4.7\ m\left[\frac{.05\ (1+.05)^{112}}{(1+.05)^{112}-1}\right] = 0.24M$$

A = $236,000/Year

$$\frac{\$236,000}{16,591\ \text{Ac. Ft.}} = \frac{\$14.22}{\text{Ac.Ft.}}$$

Calculation of Costs Per Acre, Irrigation users

$\frac{7.00}{\text{Ac. Ft.}}$

Cost per acre ft. of water delivered to the land at 50% conveyance loss:

$\frac{\$7.00}{\text{Ac.Ft.}} \div 0.5 = \frac{\$14.00}{\text{Ac. Ft.}}$

Water use by Pump lands:

Mean Seasonal Irrigation Requirement is:

$\frac{1.5 \text{ Ac. Ft.}}{\text{Ac.}}$ (SCS - Lake Co.)

20 year average project Quota*
is: $\frac{0.83 \text{ Ac. Ft.}}{\text{Ac.}}$ (FIIP Crop Reports)

*Quota applied during non-spill periods

Average cost per acre of applying pump water during non-spill periods:

$\frac{\$14.00}{\text{Ac. Ft.}} \times \frac{0.83 \text{ Ac. Ft.}}{\text{Ac.}} = \frac{\$11.62}{\text{Ac.}}$

SUMMARY:

1. Costs per acre of applied pump water for irrigation users:

(Replacement costs not included)
$= \frac{\$11.62}{\text{AC.}}$

2. Costs per acre ft. of pump water for industrial users:

(Replacement costs included)

$$\frac{\frac{7.00 \text{ (O\&M)}}{\text{Ac. Ft.}} + \frac{\$14.22 \text{ (Replacement)}}{\text{Ac. Ft.}}}{0.5 \text{ (Conveyance Eff.)}} \qquad \frac{\$42.44}{\text{Ac. Ft.}}$$

DISCUSSION:

25 CFR Part 171.17(g)(2) specifies that pump lands within the Flathead Irrigation Project be assessed an annual fee to defray the cost of operating the pumping plant.

Water used by pump lands during quota periods is assumed to have been provided by the pumps or to require reservoir replenishment by the pumps at a later date. Such replenishment would be necessary to maintain the quota for gravity lands at a level that could have otherwise been maintained without the irrigation demand of the pump lands.

The increase in fees charged to pump lands is to be increased substantially for the following reasons:

1. Power costs have increased dramatically from $.00175 to $ .012/kwh

2. Maintenance budgets in the past have been deficient and an increase in the level of maintenance is needed.

3. Inflation since the previous fee level was set ($2.00 rate was established in the early 1960's).

The fee per acre charged to pump land is to be set at $10.00

The fee per acre foot charged to industrial users is to be set at $45.00/Ac. ft. This will cover a charge for administrative costs in addition to the other costs considered above.

Ditch Rider
Watermaster
Land Owner
Revised 3-05

REQUEST FOR
INTERIM REDESIGNATION OF LAND CLASSIFICATION STATUS

Serial No. _____ Section _____, Township _____, N., Range _____W.

PRESENT STATUS (1963 DESIGNATION):

Description	Original G.L.O. Survey Acreage	Presently Assessable (Class 1 & 2)	Temporarily Non-Assessable (Class 3)	Permanently Non-Assessable (Class 4)

REQUESTED CHANGE OF CLASSIFICATION:

Description	Original G.L.O. Survey Acreage	Presently Assessable (Class 1 & 2)	Temporarily Non-Assessable (Class 3)	Permanently Non-Assessable (Class 4)

I, _____, do hereby request that the change in the classification of the above described lands which I am the owner of be approved. It is understood that if an inclusion into Class 1 & 2 status is approved, I will be assessed irrigation operation and maintenance charges for the increased acreage and that I will not be able to have this land excluded from class 1 & 2 status except by a reclassification committee duly appointed by the Secretary of the Interior. It is also understood that the above requested change in land status is for an interim basis only and will be subject to final approval by a reclassification committee duly appointed by the Secretary of the Interior.

_____ _____
(Date) (Landowner)

I have inspected this farm unit and ☐ do/ ☐ do not recommend the change for approval.

_____ _____
(Date) (Watermaster)

Approval Recommended:

_____
(Irrigation System Manager)

Approved:

_____ _____
(Date) (Superintendent / Officer-in-Charge)

Recorded:

_____ _____
(Date) (Irrigation Clerk)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
IRRIGATION DIVISION
FLATHEAD AGENCY

MAINTENANCE ORDER

WORK ORDER NO.				2. DATE:
DIV:	4. COST ACCT:	5. LOCATION:	6. CANAL:	7. STA:

DESCRIPTION OF WORK:

ATERIALS:	10. QTY:	11. EST. COST.	12. ACT. COST.	13. EQUIPMENT:	14. EST. HR.	15. ACT. HR.	16. LABOR:	17. EST. HR.	18. AC HI

SUPPLY	20. ITEMS ORDERED	21. QTY	22. U/I	23. P.O. #	24. DATE	25. EST. DEL.	26. DATE REC
DATE:							

SUBMITTED BY:	29. APPROVED BY:	30. INSPECTED BY:	31. STARTED BY:	32. INSPECTED BY:
TE:	DATE:	DATE:	DATE:	DATE:

WHITE - ORIGINAL COPY
YELLOW - FILE COPY
PINK - SUPPLY COPY

APPENDIX C
MAPS AND DRAWINGS

APPENDIX D

CURRENT FISCAL YEAR BUDGET