

State of Idaho

SCANNED

License and Certificate of Water Right

APR 30 2001

Water License No. G-24547 Priority October 29, 1953 Amount 2.0 c. f. s.

THIS IS TO CERTIFY that Marion Stranger-Assignee- United States of America, Bureau of Reclamation of Boise, Idaho, made application for a permit to appropriate the public waters of the State of Idaho, dated October 29, 1953; that Permit No. G-24547 was issued under said application; that Certificate of Completion of Works, with a carrying capacity of 2.0 second feet, was issued thereunder on March 29, 1968, showing that said works were completed on the 25 day of June, 1965; and that on the 25 day of June, 1965 The United States of America, acting the Regional Director, Region I, Bureau of Reclamation of Boise, State of Idaho, made proof to the satisfaction of the State Reclamation Engineer of Idaho, of a right to the use of the waters of a well

a tributary of subterranean flow for the purpose of irrigation, under Use Permit No. G-24547 of the Department of Reclamation, and that said right to the use of said waters has been perfected in accordance with the laws of Idaho. and is hereby confirmed by the State Reclamation Engineer of Idaho and entered of record ~~xx~~ ~~Volume~~ ~~of Licenses, at Page~~ ~~xx~~, on the 29 day of March, 1968.

The right hereby confirmed dates from October 29, 1953.

The Point of Diversion is located

in the NW $\frac{1}{4}$ SW $\frac{1}{4}$, Sec. 32, Twp. 7 S, R. 31 E, B.M. Power County.

That the amount of water to which such right is entitled and hereby confirmed, for the purposes aforesaid, is limited to an amount actually needed and beneficially used for said purposes, and shall not exceed 2.0 cubic feet per second.

Description and location of use:

Twp.	Range	Section	Forty-Acre Tract	No. Acres Described in Permit	No. Acres Actually Irrigated	
7 S	31 E	31	NE $\frac{1}{4}$	40	39	
			NW $\frac{1}{4}$	40	29	
		32	NW $\frac{1}{4}$	40	39	
Total number of acres irrigated:					107	

The right to the use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, as provided by the laws of Idaho.

WITNESS the seal and signature of the State Reclamation Engineer, affixed at Boise, Idaho, this 29 day of March, 1968.

R. Kirk Higgins
State Reclamation Engineer.

29-2341
24547

APPLICATION FOR PERMIT To Appropriate the Subterranean Waters of The State of Idaho

Application No. G- 32347
Permit No. G- 24547
District No.

Marion Stanger
General Delivery
American Falls, Idaho

1. Name of Applicant: MARION STANGER
Postoffice address: American Falls County: Power State: Idaho
2. Quantity of water claimed: 100 inches, or 2.0 cu. ft. per second of time
(a) Rate of withdrawal in cubic feet per second. 2.0 or Idaho
Miners' inches 100 or gallons per minute. 996
(b) Annual withdrawal in acre feet per annum
3. Source of water supply: Subterranean well
4. Location of point of diversion or well is in the SE $\frac{1}{4}$ of the NW $\frac{1}{4}$ of Section 32
Twp. 7 S., Rge. 31 E., B.M., County of Power
5. Water is to be used for: Irrigation only.
6. If for municipal, industrial or recreational purposes, give:
(a) Point of use of water is in the $\frac{1}{4}$ of the $\frac{1}{4}$ of Section , Twp.
Rge. , B.M.
(b) Waste water or sewage effluent is to be returned to
at a point in the $\frac{1}{4}$ of the $\frac{1}{4}$ of Section , Twp. , Rge. , B.M.
7. Kind of works: Cased well, electric drive turbine pump, discharging into open ditch.
8. Estimated cost of works: \$ 8,000.00
9. (a) Is reservoir to be used? No
(b) Capacity of reservoir:
10. The time required for the completion of such work and complete application of the water to the proposed use is 5 years.
11. If applicant is a corporation, give:
I. (a) Date and place of incorporation:
(b) Amount of capital stock: \$ (c) Amount paid in: \$
(d) Names and addresses of directors:
II. The financial resources of the applicant are (a) Cash on hand: \$
(b) Treasury stock: (c) Bonds to be issued:
(d) Other resources:
12. The land to be irrigated is described in the following tabulation:
13. Existing water rights and/or valid permits appurtenant to the lands to be irrigated are: None
(a) (cubic feet per second, inches or gallons per minute) of the water herein applied for is to be supplemental to the existing water rights.
(b) (cubic feet per second, inches or gallons per minute) is for new lands.

Remarks: I will attempt to complete works and apply water to beneficial use within three years, but am asking for 5 years to cover contingencies which might arise to prevent me from meeting a 3-year deadline.

BE IT KNOWN THAT The undersigned hereby makes appli cation for permit to appropriate the public waters of the State of Idaho as herein set forth.

MARION STANGER

Applicant.

By

Agent.

Date of first receipt at Department of Reclamation: 9:00 a.m., October 29, 1953

Returned to applicant for correction:

Corrected application received:

Approval of State Reclamation Engineer

The number of this permit is G-24547

Recorded in Book 87 Page 24547 Approved November 9, 1953

This is to certify that I have examined the within application for a permit to appropriate the public waters of the State of Idaho, and hereby approve the same, subject to the following limitations and conditions:

Bond in the sum of \$ to be filed on or before

Work to begin on or before January 9, 1954

and to continue diligently and uninterruptedly to completion,

unless temporarily interrupted by circumstances over which the permit holder has no control.

One-fifth of the work above specified to be completed on or before May 9, 1956

The whole of said work to be completed and beneficial use of water appropriated in accordance herewith, to be made on or before November 9, 1958.

Witness my hand this 9th day of November, 1953

MARK R. KULP
State Reclamation Engineer.

IN TESTIMONY WHEREOF, We, LEN JORDAN, Governor of the State of Idaho, and IRA H. MASTERS, Secretary of State of the State of Idaho, have caused this instrument to be executed in the name of the State of Idaho, and caused the Great Seal of the State of Idaho to be hereunto affixed, this 9th day of November, 1953.

Countersigned:

STATE OF IDAHO

(SEAL)

By IRA H. MASTERS

Secretary of State.

By LEN JORDAN

Governor

12.

Twp.	Range	Sec.	NE ¹ / ₄				NW ¹ / ₄				SW ¹ / ₄				SE ¹ / ₄				Totals
			NE ¹ / ₄	NW ¹ / ₄	SW ¹ / ₄	SE ¹ / ₄	NE ¹ / ₄	NW ¹ / ₄	SW ¹ / ₄	SE ¹ / ₄	NE ¹ / ₄	NW ¹ / ₄	SW ¹ / ₄	SE ¹ / ₄	NE ¹ / ₄	NW ¹ / ₄	SW ¹ / ₄	SE ¹ / ₄	
7 S.	31 E.	31 32									40				40	20			60 40 100

ORDER EXTENDING TIME WITHIN WHICH TO MAKE PROOF OF COMPLETION
OF WORKS AND APPLICATION OF WATER TO BENEFICIAL USE, PERMIT NO.
G-24547, MARION STANGER, HOLDER

✓
WHEREAS, Marion Stanger, Post office Address American Falls, Idaho, holder of Permit No. G-24547 was notified on September 2, 1958 in usual form that Proof of Completion of Works and Application of Water to Beneficial Use was due not later than November 9, 1958, and;

WHEREAS, Marion Stanger by letter of September 8, 1958 stated that the well described in Permit No. G-24547 had been sold to the Bureau of Reclamation and incorporated in the Michaud Flats Project of the Bureau's Project, and;

WHEREAS, the United States of America, acting through the Bureau of Reclamation heretofore made application for and secured Permit No. G-26603 which described among other wells the Marion Stanger well designated as Well No. M. on its filing map, and;

WHEREAS, the Bureau of Reclamation now requests that the time for making proof of Completion of Works and Application of Water to Beneficial Use be extended to the required date of proofs on Permit No. G-26603, namely November 13, 1961, and;

It appearing that the required proofs on Permit No. G-24547, can best be made in orderly manner when proofs are submitted on Permit No. G-26603 for the entire Michaud Flats Project, it is hereby ordered that the time for making proof of Completion of Works and Application of Water to Beneficial Use on Permit No. G-24547 be extended to November 13, 1961.

Bureau of Reclamation shall secure from Marion Stanger, assignment in usual form to be recorded on the permit.

Given under my hand and the seal of the State Department of Reclamation at Boise, Idaho, this 17th day of November, 1958.

/s/ Geo. N. Carter
Geo. N. Carter
State Reclamation Engineer

Recorded: November 18, 1958

A S S I G N M E N T ✓

✓
For value received, I hereby assign my right, title, and interest in and to Permit to appropriate the Public Waters of the State of Idaho, No. G-24547 to The United States of America.

/s/ Marion Stanger
Permit Holder

/s/ Mary Ethel Stanger
Wife of Permit Holder

State of Idaho)
: ss
County of Power)

On this 27th day of September, 1960, before me, a Notary Public for the State of Idaho, residing at American Falls, Idaho personally appeared Marion Stanger and Mary Ethel Stanger known to me to be the person whose name are subscribed to the within instrument, and duly acknowledged to me that they executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Notarial Seal, the day and year in this certificate first above written.

/s/ J. Paul Crans
Notary Public, residing at American Falls, Idaho

My commission expires 2-10-63

Application for Amendment
LAND LIST
Permit No. G-24547

Comes now The United States of America, acting through the Regional Director, Region I, Bureau of Reclamation, and represents to the STATE RECLAMATION ENGINEER of the State of Idaho: That he is the owner and holder of Permit to appropriate the Public Waters of the State of Idaho, No. G-24547, and requests that the list of lands to be irrigated, as described in said permit, be changed to read as follows:

Land in Sections 31 and 32, Township 7 South, Range 31 East, Boise meridian, the Michaud Flats Project, making a total of 403 acres.

That an additional amount of water is not asked for, and that the rights of others will not be adversely by such change.

Signed at Boise, Idaho this 15th day of January, 1962

/s/ M. B. Austin
Acting Regional Director, Region I

Date of receipt at office of Department of Reclamation: January 17, 1962

APPROVAL OF STATE RECLAMATION ENGINEER

I, Ralph W. Thomas, Deputy State Reclamation Engineer of the State of Idaho, hereby approve the above and foregoing application for amendment to Permit to appropriate the Public Waters of the State of Idaho, No. G-24547. This approval constitutes a new permit and is issued as an amendment to the original permit, to which it refers, and of which it becomes a part, and said application is approved only insofar as the rights of others will not be adversely affected thereby.

/s/ RALPH W. THOMAS
Deputy State Reclamation Engineer

Recorded: January 17, 1962

Application for Amendment
POINT OF DIVERSION
Permit No/ G-24547

Comes now the United States of America, Acting through the Regional Director, Region I, Bureau of Reclamation, and represents to the State Reclamation Engineer of the State of Idaho:

That he is the owner and holder of Permit to appropriate the Public Waters of the State of Idaho, No. G-24547.

That the point of diversion is described in said Permit as being located: In the SE $\frac{1}{4}$ NW $\frac{1}{4}$, of Sec. 32, T. 7 S., R. 31 E., B. M.

That he now requests that the point of diversion be changed to a point located: In the NW $\frac{1}{4}$ SW $\frac{1}{4}$ of Sec. 32, T. 7 S., R. 31 E., B. M.

That the reason for desiring to make such change is as follows: Final determination of location of well as drilled shows it to be in NW $\frac{1}{4}$ SW $\frac{1}{4}$ of said Sec. 32.

That no one will be injured by such change, and that such change will be made at Permit Holder's own risk.

Signed at Boise, Idaho, this 4th day of May, 1965.

s/ NORMAN H. MOORE
Acting Regional Director
Region I
Bureau of Reclamation

Date of Receipt at Department of Reclamation: May 7, 1965

APPROVAL OF STATE RECLAMATION ENGINEER

I, RALPH W. THOMAS, Deputy State Reclamation Engineer of the State of Idaho, hereby approve the above and foregoing application for amendment to Permit to appropriate the Public Waters of the State of Idaho, No. G-24547. This approval constitutes a new permit and is issued as an amendment to the original permit, to which it refers and of which it becomes a part, and said application is approved only insofar as the rights of others will not be adversely affected thereby.

s/ RALPH W. THOMAS
Deputy State Reclamation Engineer

Recorded: May 7, 1965

PERMIT NO. G-24547 ✓

CERTIFICATE OF COMPLETION OF WORKS

TO ALL WHOM IT MAY CONCERN:

This is to certify that Marion Stranger-Assignee-UNITED STATES OF AMERICA, Bureau of Reclamation of Boise, County of Ada, and State of Idaho, the holder of Permit No. G-24547, issued upon Application No. G-32347 bearing date of priority of October 29, 1953, authorizing the diversion of 2.0 second feet of waters of a well County of Power, State of Idaho, for irrigation purposes, has fully complied with the provisions of the laws of the State of Idaho relating to the proof of completion of the works of diversion set out and described in said Permit; that said works are adequate for diverting and conveying to the place of intended use 2.0 second feet of the waters of a well from subterranean flow, that the point of diversion of said waters is in the NW $\frac{1}{4}$ SW $\frac{1}{4}$ Section 32, Township 7 South, Range 31 East, Boise Meridian; and that the lands proposed to be irrigated by the use or place of use of said water are described as follows, to-wit:

N $\frac{1}{2}$ SE $\frac{1}{4}$ Section 31 and NW $\frac{1}{4}$ SW $\frac{1}{4}$ Section 32, Township 7 South, Range 31 East, Boise Meridian.

Proof of completion of works made: June 25, 1965

Witness my hand this 29 day of March, A.D. 1968

/S/ R. KEITH HIGGINSON
State Reclamation Engineer

LICENSE ISSUED FOR 2.0 SEC. FT.
LICENSE PAGE NO. 24547

SCANNED

APR 30 2001

June 3, 1968

Re: Permit No. G-24547

C
O
P
Y

U. S. A. c/o Regional Director
Region 1
Bureau of Reclamation
Box 937
Boise, Idaho

Gentlemen:

Enclosed are your Certificate of Completion of Works
and License and Certificate of Water Right on the above
numbered permit.

We are very sorry for the inconvenience our error
has caused you.

Very truly yours,

C. Stephen Allred, Assistant
State Reclamation Engineer

CSA:kd

Enclosures: Certificates

85-341
24547



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

REGIONAL OFFICE REGION I
BOX 8008
BOISE, IDAHO 83707

IN REPLY
REFER TO 424

RECEIVED
JUN 12 1968

Department of Reclamation

MAY 31 1968

Mr. R. Keith Higginson
State Reclamation Engineer
Department of Reclamation
107 State House
Boise, Idaho 83701

Attention: Mr. Donald W. McEldowney

Re: Permit No. G-24547

Dear Mr. Higginson:

The License and Certificate of Water Right recently issued by you in connection with Permit No. G-24547 states the priority date is June 11, 1957 (late proof). We wonder if a clerical error has been made in this case. When you first notified us in December 1967 that you were prepared to issue the Certificate of Water Right you stated the priority date would be June 11, 1957. We inquired about how this date was arrived at and received a response, signed by Mr. Donald W. McEldowney, stating that the State Reclamation Engineer had decided the priority date would be October 29, 1953. A copy of his letter is attached for your ready reference.

The License and Certificate of Water Right and the Certificate of Completion of Works are enclosed for correction of priority dates to agree with the January 4, 1958 letter from your office.

Very truly yours,

Wm. H. Moore
Acting for H. T. Nelson
Regional Director

Enclosure

RECEIVED
JUN 12 1968

March 29, 1968

Re: Permit No. G-24547

C
O
P
Y

U. S. A. c/o Regional Director
Region 1
Bureau of Reclamation
Box 337
Boise, Idaho

Gentlemen:

Enclosed are your Certificate of Completion of Works and
License and Certificate of Water Right on the above numbered
permit.

Also enclosed is departmental receipt No. 473 in the amount
of \$11.00 covering the fees.

Very truly yours,

C. Stephen Allred, Assistant
State Reclamation Engineer

CSA:kd

Enclosures: Certificates
Receipt

501234
24547

Certificate of Completion of Works

TO ALL WHOM IT MAY CONCERN:

This is to certify that ... MARION STRANGER-Assignee-UNITED STATES OF AMERICA,
Bureau of Reclamation
of ... Boise ... , County of ... Ada ... , and State of
... Idaho ... , the holder ... of Permit No. G-24547 ... , issued upon
Application No. G-32347, bearing date of priority of ... October 29, 1953 ... , authorizing the
diversion of ... 2.0 ... second feet of waters of ... a well ...

County of ... Power ... , State of Idaho, for ... irrigation
purposes, has ... fully complied with the provisions of the laws of the State of Idaho
relating to the proof of completion of the works of diversion set out and described in said
Permit; that said works are adequate for diverting and conveying to the place of intended
use ... 2.0 ... second feet of the waters of ... a well from subterranean flow

that the point of diversion of said waters ... is in the NW $\frac{1}{4}$ SW $\frac{1}{4}$ Section 32, Township 7
South, Range 31 East, Boise Meridian;

and that the lands proposed to be irrigated by the use or place of use of said water are
described as follows, to-wit: ... N $\frac{1}{2}$ SE $\frac{1}{4}$ Section 31 and NW $\frac{1}{4}$ SW $\frac{1}{4}$ Section 32, Township
... 7 South, Range 31 East, Boise Meridian.

Proof of completion of works made: June 25, 1965

Witness my hand this ... 29 ... day of ... March ... , A. D. 19 .. 68...

State Reclamation Engineer

24547
29-2341

**PUBLIC VOUCHER FOR PURCHASES AND
SERVICES OTHER THAN PERSONAL**

Use continuation sheet(s) if necessary

D. O. VOU. NO. _____

BU. VOU. NO. 11

U. S. Department of the Interior, Bureau of Reclamation
(Department, bureau, or establishment)

Voucher prepared at P. O. Box 8008, Boise, Idaho Dec. 21, 1967
(Give place and date)

Payee's Account No. _____ Discount Terms _____

TO State Reclamation Engineer
(Payee)

107 State House, Boise, Idaho
(Address)

PAID BY

Contract No. _____ Date _____ Req. No. _____ Date _____ Invoice Rec'd. _____
Shipped from _____ to _____ Weight _____ Govt. B/L No. _____

No. and Date of Order	Date of Delivery or Service	ARTICLES OR SERVICES (Enter description, item number of contract or Federal supply schedule, and other information deemed necessary)	Quantity	UNIT PRICE		AMOUNT
				Cost	Per	
		Fee for issuance of Certificate of Completion of Works and License and Certificate of Water Right, Permit No. G-24547.				11.00
				TOTAL		11.00

PAYMENT:

COMPLETE ☐

PARTIAL ☐

FINAL ☐

PROGRESS ☐

ADVANCE ☐

(PAYEE MUST NOT USE THIS SPACE)

DIFFERENCES _____

Amount verified; correct for 11.00

(Signature or initials) _____

MEMORANDUM

Department of Reclamation

ACCOUNTING CLASSIFICATION (Appropriation Symbol must be shown; other classification optional)

11X0661

Construction & Rehabilitation
Michaud Flats Project, Idaho

11.00

Paid by { Check No. _____ on Treasurer of the United States
Check No. _____ on _____ (Name of Bank)
Cash, \$ _____, on _____, 19 _____

11X0661
11.00

METHOD OF OR ABSENCE OF ADVERTISING

METHOD OF ADVERTISING

1. Advertising in newspapers Yes ☐ No ☐
2. (a) Advertising by circular letters sent to dealers.
(b) And by notices posted in public places Yes ☐ No ☐.

(If notices were not posted in addition to advertising by circular letters sent to dealers, explanation of such omission must be made below.)

ABSENCE OF ADVERTISING

3. Without advertising, under an exigency of the service which existed prior to the order and would not admit of the delay incident to advertising.
4. Without advertising in accordance with
5. Without advertising, it being impracticable to secure competition because of

(Here state in detail the nature of the exigency or circumstances under which the securing of competition was impracticable under 3 and 4)

NOTE.—The above form "Method of or Absence of Advertising" is to be used when purchases are made or services secured under proper authority without written agreement in any form. In case of a written agreement (formal contract, proposal, and acceptance, or less formal agreement) Standard Form No. 1036 should be used for abstracting the method of or absence of advertising and award of contract. (See 7 GAO 4500 and 5000.)



UNITED STATES
DEPARTMENT OF THE INTERIOR

BUREAU OF RECLAMATION

REGIONAL OFFICE REGION I

BOX 8008

BOISE, IDAHO 83707

IN REPLY
REFER TO: 424

JAN 8 0 1968

Mr. R. Keith Higginson
State Reclamation Engineer
Department of Reclamation
107 State House
Boise, Idaho 83701

Re: Permit No. G-24547

Dear Mr. Higginson:

Your notice dated January 25, 1968 concerning Permit No. G-24547 calls our attention to the need for payment of the required fee of \$11.00. We have arranged for prompt payment of the fee.

Our December 27, 1967 letter to you submitted a voucher for the \$11.00 fee, but apparently it was not signed and returned for payment. The payment will be made even though we do not have the signed voucher.

Very truly yours,

Norman H. Moore

Assistant Regional Director

RECEIVED
JAN 31 1968
Department of Reclamation

54547
29-0341

INSTRUCTIONS TO DELIVERING EMPLOYEE

☐ Show to whom, date, and
address where delivered ☐ Deliver ONLY
to addressee
(Additional charges required for these services)

RECEIPT

Received the numbered article described below.

REGISTERED NO. SIGNATURE OR NAME OF ADDRESSEE (Must always be filled in)

CERTIFIED NO.

19724

INSURED NO.

1

2

SIGNATURE OF ADDRESSEE'S AGENT, IF ANY

DATE DELIVERED

JAN 20 1968

SHOW WHERE DELIVERED (only if requested)

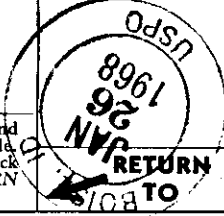
3

POST OFFICE DEPARTMENT
OFFICIAL BUSINESS

PENALTY FOR PRIVATE USE TO AVOID
PAYMENT OF POSTAGE, \$300

POSTMARK OF
DELIVERING OFFICE

INSTRUCTIONS: Show name and address below and
complete instructions on other side, where applicable.
Moisten gummed ends, attach and hold firmly to back
of article. Print on front of article RETURN
RECEIPT REQUESTED.



NAME OF SENDER

Department of Reclamation

STREET AND NO. OR P.O. BOX

Room 107, Statehouse

POST OFFICE, STATE, AND ZIP CODE

Boise, Idaho 83701

POD Form 3811 Apr. 1967 655-16-71648-10

January 25, 1968

Re: Permit No. G-24547

U.S.A. c/o Regional Director
Region 1
Bureau of Reclamation
Box 937
Boise, Idaho

Gentlemen:

It appearing to the State Reclamation Engineer that the terms and conditions of Permit G-24547 to appropriate the public waters of the State of Idaho, have not been complied with as to failure to remit licensing fees of \$11.00 (see copy of our 12-5-67 letter enclosed)

you are hereby notified that under the provisions of Section 42-311, Idaho Code, as amended, said permit is hereby held for cancellation, and you are required to show cause before the State Reclamation Engineer on or before March 5, 1968. why said permit should not be cancelled.

Permit G-24547 claims the use of 2.0 c.f.s. of water. The point of diversion was to be located NW 1/4, Sec. 32, T. 7 S, R. 31 E, B.M., Power County,

and the permit was approved November 9, 1953.

State Reclamation Engineer

24547
29-2341

DON SAMUELSON
GOVERNOR



R. KEITH HIGGINSON
State Reclamation Engineer

STATE OF IDAHO

DEPARTMENT OF RECLAMATION
107 STATE HOUSE
BOISE, IDAHO 83701

January 4, 1968

Re: Permit No. G-24547

Mr. Butler
c/o U.S.A. Regional Director
Region 1
Bureau of Reclamation
Box 937
Boise, Idaho

Dear Mr. Butler:

Pursuant to your telephone request of December 18, 1967,
the department has reviewed the proposed priority date indicated in
our letter December 5, 1967.

Please be advised that the State Reclamation Engineer has
decided that the priority that is to be established under your permit
will be October 29, 1953.

As soon as we are in receipt of the required licensing fees,
we shall issue the license in question. Your prompt attention is appreciated.

Very truly yours,

A handwritten signature in cursive script, reading "Donald W. McEldowney".

Donald W. McEldowney
Water Rights Clerk

DWN:ks

29-2341
24547

January 4, 1968

Re: Permit No. G-24547

Mr. Butler
c/o U.S.A. Regional Director
Region 1
Bureau of Reclamation
Box 937
Boise, Idaho

Dear Mr. Butler:

Pursuant to your telephone request of December 18, 1967, the department has reviewed the proposed priority date indicated in our letter December 5, 1967.

Please be advised that the State Reclamation Engineer has decided that the priority that is to be established under your permit will be October 29, 1953.

As soon as we are in receipt of the required licensing fees, we shall issue the license in question. Your prompt attention is appreciated.

Very truly yours,

Donald .. McElldowney
Water Rights Clerk

DWN:ks

24547



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

RECEIVED

REGIONAL OFFICE, REGION I

DEC 28 1967

BOX 8008

BOISE, IDAHO 83707

IN REPLY
REFER TO: 424

Department of Reclamation

DEC 27 1967

Mr. R. Keith Higginson
State Reclamation Engineer
107 State House
Boise, Idaho 83701

Re: Permit No. G-24547

Dear Mr. Higginson:

Enclosed is a voucher in the amount of \$11.00 covering the fee required in connection with the Certificate of Completion of Works and the License and Certificate of Water Right for Permit No. G-24547. Please sign and return the voucher for prompt payment.

In your December 5, 1967, letter concerning this permit, you state that the priority date for the permit is June 11, 1967. In a telephone conversation we asked Mr. Donald W. McEldowney for an explanation of the date of priority, but we have had no response. The original application was made on October 29, 1953, and on May 23, 1962 Mr. George Carter advised us that the priority date of the permit would be October 29, 1953. We would appreciate information about the proposed priority date before the Certificate of Water Right is issued.

Very truly yours,

Norman H. Moore

Acting

Regional Director

Enclosure

24547

**PUBLIC VOUCHER FOR PURCHASES AND
SERVICES OTHER THAN PERSONAL**

Use continuation sheet(s) if necessary

D. O. VOU. NO. _____

BU. VOU. NO. _____

U. S. Department of the Interior, Bureau of Reclamation
(Department, bureau, or establishment)

Voucher prepared at P. O. Box 8008, Boise, Idaho Dec. 21, 1967
(Give place and date)

Payee's Account No. _____ Discount Terms _____

TO State Reclamation Engineer
(Payee)

107 State House, Boise, Idaho
(Address)

PAID BY

Contract No. _____ Date _____ Req. No. _____ Date _____ Invoice Rec'd. _____
Shipped from _____ to _____ Weight _____ Govt. B/L No. _____

No. and Date of Order	Date of Delivery or Service	ARTICLES OR SERVICES (Enter description, item number of contract or Federal supply schedule, and other information deemed necessary)	Quantity	UNIT PRICE		AMOUNT
				Cost	Per	
		Fee for issuance of Certificate of Completion of Works and License and Certificate of Water Right, Permit No. G-24547.				11.00
TOTAL						11.00

PAYMENT:

COMPLETE ☐
PARTIAL ☐
FINAL ☐
PROGRESS ☐
ADVANCE ☐

(PAYEE MUST NOT USE THIS SPACE)

DIFFERENCES _____

Amount verified; correct for 11.00
(Signature or initials) _____

† Approved for _____ = \$ _____

By _____

Title _____

Exchange rate _____ = \$1.00

Pursuant to authority vested in me, I certify that this voucher is correct and proper for payment.

† R. Keith Higgins
(Authorized Certifying Officer) (Date)

THE REVERSE OF THIS FORM MUST BE EXECUTED WHEN PURCHASES ARE MADE OR SERVICES SECURED WITHOUT WRITTEN AGREEMENT IN ANY FORM

ACCOUNTING CLASSIFICATION (Appropriation Symbol must be shown; other classification optional)

Paid by

Check No. _____ on Treasurer of the United States

Check No. _____ on _____
(Name of Bank)

Cash, \$ _____, on _____, 19 _____ Payee _____

* When used in foreign countries, insert name of currency of country in which used.

† If the ability to certify and authority to approve are combined in one person, one signature only is necessary; otherwise the approving officer will sign on the line below "Approved for \$ _____", and over his official title.

Per _____

Title _____

METHOD OF OR ABSENCE OF ADVERTISING

METHOD OF ADVERTISING

1. Advertising in newspapers Yes ☐ No ☐.
2. (a) Advertising by circular letters sent to dealers.
 (b) And by notices posted in public places Yes ☐ No ☐.

(If notices were not posted in addition to advertising by circular letters sent to dealers, explanation of such omission must be made below.)

ABSENCE OF ADVERTISING

3. Without advertising, under an exigency of the service which existed prior to the order and would not admit of the delay incident to advertising.
4. Without advertising in accordance with
5. Without advertising, it being impracticable to secure competition because of

.....
.....
.....

(Here state in detail the nature of the exigency or circumstances under which the securing of competition was impracticable under 3 and 4)

NOTE.—The above form "Method of or Absence of Advertising" is to be used when purchases are made or services secured under proper authority without written agreement in any form. In case of a written agreement (formal contract, proposal, and acceptance, or less formal agreement) Standard Form No. 1036 should be used for abstracting the method of or absence of advertising and award of contract. (See 7 GAO 4500 and 5000.)

December 5, 1967

Re: Permit G-24547

U.S.A. c/o Regional Director
Region 1
Bureau of Reclamation
Box 937
Boise, Idaho

Gentlemen:

A representative of this department has made an examination of the works covered by your permit G-24547 and has found the following:

Quantity of water diverted: 2.0 c.f.s.

Amount of water that can be recognized as beneficially used
under Idaho Law: 2.0 c.f.s.

Purpose of use: irrigation of 107 acres in N $\frac{1}{2}$ SE $\frac{1}{4}$, Sec. 31;
NW $\frac{1}{4}$ SW $\frac{1}{4}$, Sec. 32, T. 7 S, R. 31 E, B.M.

The priority date established is: June 11, 1957. *CEA 1157 RWA*

A fee totaling \$ 11.00 must be received within 30 days from the date of this letter in order that we can issue you the Certificate of Completion of Works and the License and Certificate of Water Right as described above.

Very truly yours,

Donald W. McEldowney
Water Rights Clerk

DWM:nw

G24547

June 29, 1965

Re: Permit No. G-24547
United States of America

Regional Director
Region 1
Bureau of Reclamation
Box 937
Boise, Idaho

Dear Sir:

We acknowledge receipt of the depositions of holder and two witnesses, also affidavit of publication in the POWER COUNTY PRESS, all submitted in proof of completion of works and beneficial use on Permit No. G-24547

Before final action is taken in the matter, the law requires that a field examination be made by an engineer from this department.

We cannot tell just when this examination will be made, but our field engineer will try and contact you at the time he makes the examination so that arrangements may be made to show him over the grounds.

Very truly yours,

CARL E. TAPPAN
State Reclamation Engineer

By:

(Mrs.) Edna P. Rule
Chief Clerk

EPR: st

24547

62-1547

June 25, 1965

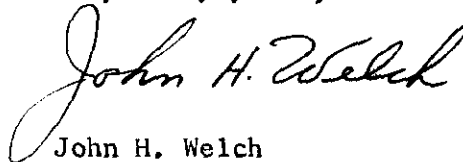
JUN 28 1965
BUREAU OF RECLAMATION

Mr. Carl E. Tappan
State Reclamation Engineer
Department of Reclamation
107 State House
Boise, Idaho 83701

Dear Mr. Tappan:

In accordance with your letter of May 18, 1965, Messrs. H. T. Nelson, Theodore Nelson and William J. Edwards appeared before me in the Bureau of Reclamation office at the Fairgrounds, Boise, Idaho, at 10:00 a.m. on June 25, 1965, to sign the required documents for Notice of Proof of Completion of Works and Application of Water to Beneficial Use under Permit No. G-24547. The documents were signed in my presence and I have so noted by my signature and Notary seal thereon.

Very truly yours,



John H. Welch
Notary Public for the
State of Idaho

Copy to: Bureau of Reclamation, Boise, Idaho

62-1547



UNITED STATES
DEPARTMENT OF THE INTERIOR

BUREAU OF RECLAMATION

REGIONAL OFFICE, REGION I

BOX 937

BOISE, IDAHO 83701

IN REPLY
REFER TO: 424

JUN 25 1965

Mr. Carl E. Tappan
State Reclamation Engineer
State of Idaho
107 State House
Boise, Idaho 83701

Re: Permit No. G-24547

Dear Mr. Tappan:

Enclosed are the Deposition of Holder and Depositions of two witnesses in connection with the proof of application of water to beneficial use in connection with Permit No. G-24547. The Depositions were all signed before John H. Welch, Notary Public, at 10:00 a.m. on June 25, 1965 at the Bureau of Reclamation office at the Fairgrounds in Boise.

Also enclosed is an affidavit of publication from the Power County Press concerning publication of a notice about Permit No. G-24547.

Very truly yours,


Regional Director

Enclosures

G-24547

STATE OF IDAHO
DEPARTMENT OF RECLAMATION
BOISE, IDAHO

DEPARTMENT OF RECLAMATION

Permit No. G-24547

* * * *

PROOF OF APPLICATION OF WATER TO BENEFICIAL USE
and Completion of Works

DEPOSITION OF HOLDER

Ques. 1. State your name, residence, occupation and postoffice address: The United States of America, acting through the Regional Director, Region I, Bureau of Reclamation, P. O. Box 937, Boise, Idaho

Ques. 2. If acting in behalf of corporation, state its name, principal place of business (if a foreign corporation, give name of postoffice of statutory agent), your position with reference to same, and your authority for appearing in its behalf:

Bureau of Reclamation, United States of America, Regional Director, Region I

Ques. 3. State number, approval date of permit, and date of priority you propose to establish under the permit; G-24547 dated October 29, 1953, priority date October 29, 1953

Ques. 4. State source of water supply: Deep well

Give location of point of diversion, showing subdivision, section, township and range:

Well is located in the NW $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 32, T. 7 S., R. 31 E., B.M.

Ques. 5. Describe your works of diversion: Deep well

_____ ; state amount of water they are capable of conveying from point of diversion to place of use 2.0 cfs ; Give name of canal or ditch

or other works by which water is conducted to such place of use: No name

_____ ; if a well, state depth of well 300 feet ; depth and size of casing: 16" casing to bottom ; depth to water 90.5 ; if pump is used,

state discharge of pump: W.S.-154.0 feet
1175 gpm / ; tell how it was measured or determined: Orifice plate

_____ ; if sprinkler irrigation, give number and size of nozzles and operating pressure: _____

Ques. 6. State for what purpose water is used: Irrigation

If for irrigation, name each subdivision in which used and number of acres in each subdivision that have actually been irrigated with said water : N $\frac{1}{2}$ SE $\frac{1}{4}$ of Section 31,

NW $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 32, all in T. 7 S., R. 31 E., B.M.

State nature of all improvements which have been made as a direct result of said use:

Improvements normal to diversified irrigated land.

A 24547

Ques. 6-a: If this is a ground water permit, give name and address of person that drilled the well: Mr. Oscar Sigman, Pocatello, Idaho

Ques. 7. If for other than irrigation purposes, state purpose and how used:

Ques. 8. What is the minimum amount of water required for the purpose specified above:

2.0 cfs

Ques. 9. If you are not the person or representative of the corporation to whom above mentioned permit was originally issued, please state how ownership was acquired by present holder:

Acquired by purchase of well from Marion Stanger, who assigned his permit No. 24547 to United States of America on September 27, 1960.

Ques. 10. State when and in what amount the water diverted under above mentioned permit has been first used: 2.0 cfs in 1959 Time used since first use:

Every irrigation season since 1959

Ques. 11. Describe all other water rights appurtenant to same place of use:

Well M, Permit No. G-24547, provides water to irrigate a portion of the 11,240 irrigable acre Michaud Flats Project. This integrated project has Permit No. 26602 (Certificate) for 160 cfs by pumping from American Falls Reservoir. It also has Permit 26603 for 17 wells, and permits (licensed) G-22559, G-22944, 19754, 22226, 21508, 23753 and G-22542.

(sign) H. T. Nelson

H. T. Nelson

I hereby certify that the foregoing testimony was read to the above subscribed, before its signing, that I believe him to be the person he represents himself to be, and that said testimony was subscribed and sworn to before me, at my office in

Boise

, County of Ada

State of Idaho, on this 25th day of JUNE, A.D. 1965.

My Commission expires: 6-10-67

B24547

STATE OF IDAHO
DEPARTMENT OF RECLAMATION
BOISE, IDAHO
Permit No. G-24547

PROOF OF APPLICATION OF WATER TO BENEFICIAL USE
and Completion of Works

DEPOSITION OF WITNESS

The deposition of two witnesses on this form, taken separately, required in each case

Ques. 1. State your name, age, residence, occupation and postoffice address:

Theodore Nelson, Civil Engineer, Voting age, United States Bureau of Reclamation,
P. O. Box 937, Boise, Idaho

Ques. 2. Are you acquainted with through the Regional Director, Bureau of Reclamation
the United States of America, acting /, the holder of
Permit No. G-24547? How long have you known him and where does he reside:

Yes 10 years

Ques. 3. Have you read or heard said Permit No. G-24547 read, and are you familiar
with its provisions and conditions: Yes: Yes No:

Ques. 4. State source of water supply: Well M

State place of diversion: NW $\frac{1}{4}$ SW $\frac{1}{4}$, Section 32, T. 7 S., R. 31 E., B.M.

Describe works for conveying water to place of use: Open canal for conveying water
to irrigate land described below.

Ques. 5. How many second feet of water do you estimate said works will safely conduct
to place of use: Two cubic feet per second How much water have you seen being so
conveyed: Two cubic feet per second

Ques. 6. If for irrigation, show number of acres irrigated in each subdivision, giving
full legal description:

The water is used for irrigation of 109 acres in the N $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 31, and in the
NW $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 32, all in T. 7 S., R. 31 E., B.M.

24547

Ques. 7. If for power or other purposes than irrigation, state how water has been used.

Ques. 8. (If for irrigation) state character of land that has been reclaimed, and give your estimate of the amount of water required for its profitable cultivation:

The land that is being irrigated is classified as fine sandy loam and silt loam.

Approximately 4.5 acre-feet per acre is required for profitable cultivation.

Ques. 9. Have you any interest in the works, water or lands above mentioned? If so, in what way and to what extent: No

Ques. 10. When did you first see this water used: During the 1959 irrigation season

Other times you have seen such use: At intervals in several irrigation seasons

since 1959.

(Signed)

Theodore Nelson
Theodore Nelson

I hereby certify that the foregoing testimony was read to the above subscriber before its signing, that I believe him to be the person he represents himself to be, and that said testimony was subscribed and sworn to before me in Boise

Ada, County of Ada, State of Idaho, on this 25th day of June,

A. D., 1962.

John H. Welch
Notary Public for State of Idaho

Residing: at: Boise

My commission expires: 6-10-67

824547

STATE OF IDAHO
DEPARTMENT OF RECLAMATION

BOISE, IDAHO
Permit No. G-24547

PROOF OF APPLICATION OF WATER TO BENEFICIAL USE
and Completion of Works

DEPOSITION OF WITNESS

The deposition of two witnesses on this form, taken separately, required in each case

Ques. 1. State your name, age, residence, occupation and postoffice address:

William J. Edwards, Administrative Assistant, Voting age, United States Bureau of
Reclamation, P. O. Box 937, Boise, Idaho

Ques. 2. Are you acquainted with the Regional Director, Bureau of Reclamation
the United States of America, acting through the holder of
Permit No. G-24547 ? How long have you known him and where does he reside:

Yes 10 years

Ques. 3. Have you read or heard said Permit No. G-24547 read, and are you familiar
with its provisions and conditions: Yes: Yes No:

Ques. 4. State source of water supply: Well M

State place of diversion: NW $\frac{1}{4}$ SW $\frac{1}{4}$, Section 32, T. 7 S., R. 31 E., B.M.

Describe works for conveying water to place of use: Open canal for conveying water
to irrigate land described below.

Ques. 5. How many second feet of water do you estimate said works will safely conduct
to place of use: Two cubic feet per second How much water have you seen being so
conveyed: Two cubic feet per second

Ques. 6. If for irrigation, show number of acres irrigated in each subdivision, giving
full legal description:

The water is used for irrigation of 109 acres in the N $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 31, and in the
NW $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 32, all in T. 7 S., R. 31 E., B.M.

824547

Ques. 7. If for power or other purposes than irrigation, state how water has been used.

Ques. 8. (If for irrigation) state character of land that has been reclaimed, and give your estimate of the amount of water required for its profitable cultivation:

The land that is being irrigated is classified as fine sandy loam and silt loam.

Approximately 4.5 acre-feet per acre is required for profitable cultivation.

Ques. 9. Have you any interest in the works, water or lands above mentioned? If so, in what way and to what extent: No

Ques. 10. When did you first see this water used: During the 1959 irrigation season

Other times you have seen such use: At intervals in several irrigation seasons since 1959.

(Signed)

William J. Edwards
William J. Edwards

I hereby certify that the foregoing testimony was read to the above subscriber before its signing, that I believe him to be the person he represents himself to be, and that said testimony was subscribed and sworn to before me in Boise

Ada, County of Ada, State of Idaho, on this 25th day of June,

A. D., 1962.

John H. Welch
Notary Public for State of Idaho

Residing: Boise

My commission expires: 6-10-67

24547

Affidavit of Publication

STATE OF IDAHO,
COUNTY OF POWER. }

ss.

Phyllis Ringe

being first duly sworn JUN 28 1965

on oath, states:

Department of Reclamation

That she is the principal clerk of the printer of the Power County Press, a newspaper of general circulation in Power County, Idaho, published weekly at American Falls in said County; that said newspaper has been published in said County uninterruptedly and continuously for over seventy-eight consecutive weeks, prior to the first publication of the annexed notice or advertisement:

That the annexed notice or advertisement was published as per clipping attached in the regular and entire edition of said

newspaper and not in any supplement thereof for 4 successive weekly issues thereof, the date of the first publica-

tion being the 27th day of May, 1965

the date of last publication being the

17th day of June, 1965

(Signed)

Subscribed and sworn to before me this

11 day of June, 1965.

Notary Public, residing at American Falls, Idaho.

My Commission expires the

(SEAL)

22 day of October, 1967.

24547

Affidavit of Publication

STATE OF IDAHO, }
COUNTY OF POWER. } ss.

being first duly sworn
on oath, states:

That _____ is the _____
of the Power County Press, a newspaper of general circulation
in Power County, Idaho, published weekly at American Falls
in said County; that said newspaper has been published in said
County uninterruptedly and continuously for over seventy-
eight consecutive weeks, prior to the first publication of the
annexed notice or advertisement:

That the annexed notice or advertisement was published as
per clipping attached in the regular and entire edition of said

newspaper and not in any supplement thereof for _____
successive weekly issues thereof, the date of the first publica-

tion being the _____ day of _____, 19_____
the date of last publication being the _____

_____ day of _____, 19____.

(Signed) *Thyllis George*

Subscribed and sworn to before me this

_____ day of _____, 19____.

W. J. [Signature]
Notary Public, residing at American Falls,
Idaho.

My Commission expires the _____

(SEAL) _____ day of _____, 19____.

Legal Notice
Published in the Power
County Press, May 27, June
3, 19, and 17, 1965.

NOTICE OF PROOF OF COMPLETION OF WORKS and APPLICATION OF WATER TO BENEFICIAL USE

Notice is hereby given that
at 10 a.m., on the 25th day
of June 1965, at Boise, County
of Ada, State of Idaho before
John H. Welch, Notary Pub-
lic, at the Fairgrounds, Boise
proof will be submitted of the
completion of works for the
diversion of 2.0 cubic feet
per second of underground
water from a well, and of
the application to beneficial
use of said water in accord-
ance with the terms and con-
ditions of Permit No. G-24547

heretofore issued by the De-
partment of Reclamation of
the State of Idaho.

1. The name and postoffice
address of the person or cor-
poration holding said permit
is The United States of Amer-
ica, Acting through its Re-
gional Director, Region I,
Bureau of Reclamation, P.
O. Box 937, Boise, Idaho.

2. Said works of diversion
will be fully completed on
the date for such completion,
and the amount of water which
said works are capable of
conveying to the place of use
is 2.0 cubic feet per second.

3. The use to which said
water has been applied is
irrigation purposes and the
amount applied to beneficial
use is 2.0 cubic feet per sec-
ond.

4. The point of diversion of
water is NW1/4 SW1/4 Sec. 32,
T. 7 S., R. 31 E., B.M.

5. The place where said wa-
ter is used is Section 31 and
32, T. 7 S., R. 31 E., B.M., in
Michaud Flats Project.

6. The date of priority
which said user is prepared
to establish is October 20,
1953.

CARL E. TAPPAN
State Reclamation Engineer

office yellow copy)

Re: Permit No. **G-24547**
U.S.A.-Bureau of Reclamation

May 18, 1965

**Mr. H. T. Nelson, Regional Director,
Bureau of Reclamation,
Box 937,
Boise, Idaho.**

Dear Mr. Nelson:

This acknowledges the Notice of Proof of Completion of Works and Application of water to Beneficial Use under Permit No. **G-24547**. The proofs are to be made at **10:00** o'clock **A.M.**, on the **25th** day of **June**, 19**65**, before **John H. Welch, F. Ingroux, Boise, Idaho**, Notary Public.

As of this date, we have mailed the Notice to the **Power County Press** **American Falls, Ida.**, with instructions to publish it once a week for four consecutive weeks prior to the date set for final proof then mail the affidavit of publication and statement of costs to you.

It is important that the enclosed depositions be executed by you and two disinterested witnesses who are familiar with the terms of the permit and the work done thereunder, at the place, on the date, and at the time and before the Notary, as advertised. It is very important and necessary that each question be answered in detail.

In returning the depositions to this office, be sure that all copies have been signed, the Notary's seal has been placed on each and that all depositions, (holder and two witnesses) are being returned. Also be sure to enclose the AFFIDAVIT OF PUBLICATION.

Very truly yours,

CARL E. TAPPAN
State Reclamation Engineer
By

(MRS.) EDNA P. RULE
Chief Clerk

Encl.
EPR:pkk
cc: Notary

G-24547

Re: Permit No. **G-24547**
Bureau of Reclamation

Date: **May 18, 1965**

**Power County Press,
American Falls, Idaho.**

Gentlemen:

Enclosed you will find Notice for Publication, once a week for four consecutive weeks prior to June 25, 1965 the date set for proof; the expense of the publication is to be paid by the applicant United States of America, Bureau of Reclamation of Box 937, Boise, Idaho to whom you should furnish proof of publication on or prior to the date set for proof.

Please acknowledge receipt of this notice and furnish this office with a copy or tear sheet of the first publication. **

Very truly yours,

Carl E. Tappan
CARL E. TAPPAN
State Reclamation Engineer

** If the first copy is not received in this office for checking purposes and errors appear in subsequent issues, it is possible that re-publication of corrected copy will be at your own expense

Encl. - Advertising Order
Original Form 36

824547



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

REGIONAL OFFICE, REGION I
BOX 937
BOISE, IDAHO 83701

IN REPLY
REFER TO: 424

RECEIVED

MAY 18 1965

MAY 17 1965

Department of Reclamation

Mr. Carl E. Tappan
State Reclamation Engineer
State of Idaho
107 State House
Boise, Idaho 83701

Re: Permit No. G-24547

Dear Mr. Tappan:

Enclosed is a notice of proof of completion of works and application of water to beneficial use in connection with subject permit. There is also enclosed an advertising order which should be sent to the Power County Press along with the notice.

We have assumed that publication of the notice will be for four weeks starting May 27. The witnesses and holder are to appear before our notary public on June 25, 1965.

Very truly yours,


Regional Director

Enclosure

G-24547

RECEIVED
MAY 18 1963
Department of Reclamation

NOTICE TO ACCOMPANY THIS LETTER MUST BE MADE IN DUPLICATE

(Date) _____

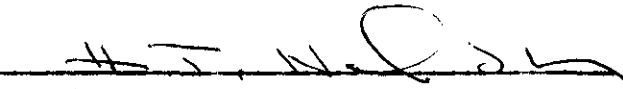
(P. O.) Box 937, Boise, Idaho

TO THE STATE RECLAMATION ENGINEER

Boise, Idaho

Dear Sir:

You are hereby authorized to have the attached notice published
at my expense in the POWER COUNTY PRESS of
American Falls, Idaho published in the
county in which the works are situated.



Regional Director, Region I
Bureau of Reclamation

(In case of canals or other works designed to divert and
carry more than 50 cubic feet of water per second, the following certificate
must be signed by a well known and competent engineer.)

I hereby certify that the facts set forth in the
attached notice are true.

Engineer

824547

RECEIVED
MAY 18 1965

NOTICE OF PROOF OF COMPLETION OF WORKS **Department of Reclamation**
and
APPLICATION OF WATER TO BENEFICIAL USE

Notice is hereby given that at 10:00 AM., on the 25th day of June
19 65, at Boise, County of Ada, State of Idaho
before John H. Welch, Notary Public, at (address) the
Fairgrounds, Boise, proof will be submitted of the completion
of works for the diversion of 2.0 cubic feet per second of underground water from a
well, and of the application to beneficial use of said water, in accordance with the
terms and conditions of Permit No. G-24547, heretofore issued by the Department of
Reclamation of the State of Idaho.

1. The name and postoffice address of the person or corporation holding said permit
The United States of America, Acting through its Regional Director, Region I,
is Bureau of Reclamation, P. O. Box 937, Boise, Idaho.

2. Said works of diversion will be fully completed on the date for such completion,
and the amount of water which said works are capable of conveying to the place of
use is 2.0 cubic feet per second.

3. The use to which said water has been applied is irrigation
, purposes and the amount applied to beneficial use is
2.0 cubic feet per second.

4. The point of diversion of said water is NW 1/4 Sec. 32, T. 7 S., R. 31 E., B.M.

5. The place where said water is used is Sections 31 and 32, T. 7 S., R. 31 E.,
B.M. in the Midland State Project.

6. The date of priority which said user is prepared to establish is October 29, 1953.

CARL E. TAPPAN

State Reclamation Engineer

24547

May 7, 1965

Re: Permit No. G-24547

C
O
P
Y

Harold T. Nelson, Regional Director
U. S. Bureau of Reclamation
P. O. Box 937
Boise, Idaho

Dear Mr. Nelson:

Enclosed is amendment to the point of diversion of above noted permit which has been recorded in this office; also Forms 36 and 11, with instructions and your voucher for \$12.00.

As noted in our letter of April 6, 1965, the Attorney General's office has ruled that all legal notices must show the true location of the point of diversion and/or place of use. In this case both have been changed since the legal notice was published in October, November, 1961.

Kindly complete Forms 36 and 11 and file in this office prior to June 9, 1965, pursuant to our notice dated April 9, 1965.

Very truly yours,

RALPH W. THOMAS, Deputy
State Reclamation Engineer

Rt: ew

Enc. amendment
Form 36 and 11,
instructions

J24547



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

REGIONAL OFFICE, REGION I
BOX 937, BOISE, IDAHO 83701

RECEIVED
MAY 7 1965
Department of Reclamation

IN REPLY
REFER TO: 424

MAY 4 1965

Mr. Carl E. Tappan
State Reclamation Engineer
Department of Reclamation
107 State House
Boise, Idaho 83701

Re: Permit No. G-24547

Dear Mr. Tappan:

Enclosed is an application for amendment of the point of diversion in connection with Permit No. G-24547. Apparently the original applicant drilled this well in a different 40-acre subdivision than the one described in the application. The two subdivisions corner, but the well is not close to the corner.

We are enclosing a voucher for \$12.00 for the amendment of point of diversion plus payment of the fees described in your May 23, 1962, letter on above subject. If this is not the proper handling, please send us information as to the procedure you now recommend that we follow.

Very truly yours,

Norman H. Moore
Acting for H. T. Nelson
Regional Director

Enclosure

J 24547

Application for Amendment

POINT OF DIVERSION

Permit No. G-24547

RECEIVED
MAY 7 1965

Department of Reclamation

the United States of America, Acting through the
Comes now Regional Director, Region I, Bureau of Reclamation, and
represents to the State Reclamation Engineer of the State of Idaho:

That he is ~~(owner)~~ the owner and holder of Permit to Appropriation the Public
Waters of the State of Idaho, No. G-24547.

That the point of diversion is described in said Permit as being located:

In the SE1/4 of Sec. 32, T. 7 S., R. 31 E. B.M.

That he now requests that the point of diversion be changed to a point
located: In the NW1/4 of Sec. 32, T. 7 S., R. 31 E. B.M.

That the reason for desiring to make such change is as follows:

Final determination of location of well as drilled shows it to be in NW1/4 of said
Sec. 32.

That no one will be injured by such change, and that such change will be made
at Permit Holder's own risk.

Signed at Boise, Idaho, this 4th day of May,
1965.

Norman H. Moore
Acting Regional Director
Region I
Bureau of Reclamation

Date of Receipt at Department of Reclamation

APPROVAL OF STATE RECLAMATION ENGINEER

I, ROY N. CARTER, State Reclamation Engineer of the State of Idaho, HEREBY APPROVE
the above and foregoing application for amendment to Permit to Appropriation the Public
Waters of the State of Idaho, No. G-24547. This approval constitutes a new permit
and is issued as an amendment to the original permit, to which it refers and of which
it becomes a part, and said application is approved only insofar as the rights of others
will not be adversely affected thereby.

Ralph W. Thomas
Deputy
State Reclamation Engineer

Recorded in Book 97 of
Permits, at Page 24547, 1965

24547



UNITED STATES
DEPARTMENT OF THE INTERIOR

BUREAU OF RECLAMATION

REGIONAL OFFICE, REGION I
BOX 937, BOISE, IDAHO 83701

IN REPLY
REFER TO: 424

APR 20 1965

RECEIVED
APR 20 1965

Department of Reclamation

Mr. Carl E. Tappan
State Reclamation Engineer
Department of Reclamation
107 State House
Boise, Idaho 83701

Re: Permit No. G-24547

Dear Mr. Tappan:

Thank you for calling our attention to the fact that action on Permit No. G-24547 was not completed. We are embarrassed to find that your May 23, 1962, letter about the permit was misplaced in this office, hence our failure to act on it then.

We agree that the well is located in the NW $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 32, as indicated in your letter that was misplaced here. We plan to submit an application for amendment of point of diversion as soon as the facts of the field location are more definitely determined. This will be prior to expiration of 60 days from April 9 as indicated in your pre-cancellation notice.

Very truly yours,

Norman H. Moore

Assistant Regional Director

G24547

STATE OF IDAHO
DEPARTMENT OF RECLAMATION
Boise, Idaho

April 9, 1965

Re: Permit No. G- 24547

To Bureau of Reclamation
Region I
P. O. Box 937
Boise, Idaho

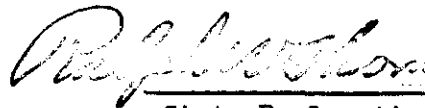
It appearing to the State Reclamation Engineer that the terms and conditions of Permit No. G- 24547 to Appropriate the Public Waters of the State of Idaho, have not been complied with as to Amending of point of diversion, if necessary, and non-payment of statutory fees of \$11.00

YOU ARE HEREBY notified in compliance with Sec. 42-234, Idaho Code that said Permit No. G- 24547 is hereby held for cancellation.

YOU ARE HEREBY required to show cause before the State Reclamation Engineer on or before sixty days from date of this notice why said Permit should not be cancelled.

SAID PERMIT NO. G- 24547 claims the use of 2.0 cubic feet per second of the Subterranean Waters well with point of diversion located SE $\frac{1}{4}$ NW $\frac{1}{4}$ Sec. 32., Twp. 7 S., Rge. 31 E.B.M. and was approved November 9, 1953.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official seal of my office at Boise, Idaho, the 9th day of April, 1965.


Deputy
State Reclamation Engineer

824547

April 6, 1965

RE: Permit No. G-24547

Regional Director
Bureau of Reclamation
P. O. Box 937
Boise, Idaho

Dear Sir:

Enclosed is copy of letter sent to you, however we have no record of an answer.

also enclosed is a pre-cancellation notice allowing 60 days within which to show cause why the permit should not be cancelled.

Since the letter was written May 23, 1962, the Attorney General's Office has ruled that all legal notices must show accurately the points of diversion and the place of use.

The point of diversion must be amended, if the well is not in the SE $\frac{1}{4}$ NW $\frac{1}{4}$ Sec. 32., Twp. 7 S., Rge. 31 E.B.M., and a new legal notice published with new depositions showing true location of the well.

The permit can be assigned, in which case the new holder of the permit should be given copies of this correspondence as well as the permit and any former amendments.

Very truly yours,

RWT:er

RALPH W. THOMAS, Deputy
State Reclamation Engineer

Encl. copy of letter dated May 23, 1962

G-24547

May 23, 1962

Re: Permit No. G-24547

Harold T. Nelson, Regional Director
Bureau of Reclamation
Box 937
Boise, Idaho

Dear Mr. Nelson:

Our field engineer's report on his inspection of proof of completion of works and application of water to beneficial use under the terms of Permit No. G-24547 shows the well is ~~(are)~~ capable of conveying 100 miner's inches, or 2.0 c.f.s. of water for the irrigation of 109 acres.

Upon receipt of the statutory fees, totaling \$ 11.00 , we will issue the Certificate of Completion of Works (fee \$5.00) and the License and Certificate of Water Right (fee \$ 6.00 , based at the rate of \$2.00 for each 40-acre subdivision) confirming the right, with priority of October 29, 1953 to the use of 2.0 second feet of subterranean water with the point of diversion in the NW $\frac{1}{4}$ SW $\frac{1}{4}$, Sec. 32 for irrigation of 109 acres in the NE $\frac{1}{4}$ SE $\frac{1}{4}$, Sec. 31, NW $\frac{1}{4}$ SW $\frac{1}{4}$, Sec. 32, T. 7 S., R. 31 E., B.M.

Since your permit shows the point of diversion to be in the SE $\frac{1}{4}$ NW $\frac{1}{4}$, Sec. 32 it will be necessary to amend the point of diversion. Complete the enclosed form, submit it with the above mentioned statutory fees, plus an additional fee of \$1.00 for recording the amendment, to this office and the Certificate of Completion of Works and License and Certificate of Water Right will be issued as shown above.

Very truly yours,

GEO. N. CARTER
State Reclamation Engineer
By

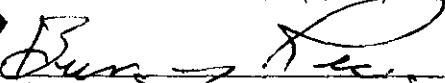
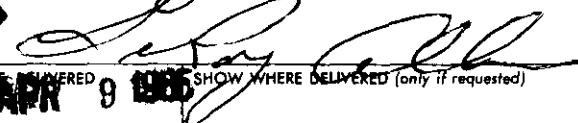
(Mrs.) Edna P. Rule
Chief Clerk

824547

EPR:mr

Enc. amendment form

INSTRUCTIONS TO DELIVERING EMPLOYEE	
☐ Deliver <i>ONLY</i> to addressee	☐ Show address where delivered
<i>(Additional charges required for these services)</i>	

RECEIPT	
Received the numbered article described on other side.	
SIGNATURE OR NAME OF ADDRESSEE (must always be filled in)	
	
SIGNATURE OF ADDRESSEE'S AGENT, IF ANY	
	
DATE DELIVERED APR 9 1985	SHOW WHERE DELIVERED (only if requested)

524547

POST OFFICE DEPARTMENT
OFFICIAL BUSINESS

PENALTY FOR PRIVATE USE TO AVOID
PAYMENT OF POSTAGE, \$300

24547-1, etc		POSTMARK OF DELIVERING OFFICE IDAHO APR 1965 RETURN TO
INSTRUCTIONS: Fill in items below and complete instructions on other side, if applicable. Moisten gummed ends, attach and hold firmly to back of article. Print on front of article RETURN RECEIPT REQUESTED.		
REGISTERED NO.	NAME OF SENDER Department of Reclamation	
CERTIFIED NO. 19530	STREET AND NO. OR P. O. BOX Room 107 Statehouse	
INSURED NO.	CITY, ZONE AND STATE Boise, Idaho 83701	

POD Form 3811 Apr. 1962

24547

C55-16-71548-S-F

STATE OF IDAHO
DEPARTMENT OF RECLAMATION
BOISE, IDAHO
REPORT OF EXAMINER

Permit No. G-24547

This proof is for Comp. of Works & Bene. Use In Water District No. _____

1. Name of applicant United States of America

2. Source of water supply: subterranean well

3. Location of point of diversion: Is in the NW 1/4 SW 1/4 of Section 32

T. 7S R. 31E County of Power

4. Describe works as they exist, giving dimensions and capacities of same: _____

75 HP U.S. ELEC. MOTOR # 984859

BERKELEY VERT PUMP # 5410248

10" DISCHARGE THROUGH GATE VALVE

18' INTO DIVERSION POND, THREE

DIVERSION GATES - THROUGH EARTH DITCHES

5. Water is used for: irrigation only

6. State whether or not water has been turned into works of diversion: YES

7. List legal subdivisions of lands to be irrigated. If proof is for beneficial use, give exact number of acres under cultivation in each forty-acre tract. (Describe manner and place of use if other than irrigation):

as says on permit--land in Section 31 & 32, T. 7S-R. 31E.B.M. a total of 403 acres.

(Submit map on attached plat, showing location and details of above description.)

8. What large stream would the water here appropriated finally reach? _____

Remarks: _____

NOTE PREVIOUS EXAM

This examination was made on the _____ day of _____, 19____

(Signed) See previous report Examiner.

G-24547

DW
Plat

INSTRUCTIONS TO EXAMINERS

1. Always carefully note the location of the point of diversion and accurately plat same.
2. When proof is for beneficial use, carefully check up the number of acres actually irrigated in each forty and accurately plat same.
3. Make a map showing the correct location of streams and ditches, and the irrigated lands, and any adjacent permanent landmarks, such as towns, lakes, large streams and public roads.
4. If any unusual conditions are discovered, make plain statement of them under remarks.
5. Always see the holder, if possible, and go over the whole ground with him and make your report only upon actual existing facts and conditions.
6. Give general characteristics of soils, topography, and crops raised.

18-25-64
11-13-61

7-12-63
10-29-63
17-11-61

6-11-57

U. S. A. ✓ SEE PREVIOUS EXAM
C/O REGIONAL DIRECTOR
Box 937
Boise
Permit No. G-24547

Examination for Comp. of Works & Bene. Use

County _____ Power _____

Sec. 32 T. 7S. R. 31E

Quantity: 2.0 CFS

Source: SUBTERRANEAN WELL

P.D.: NW 1/4 SW 1/4, S. 32, T. 7S - R. 31E

Use: IRRIGATION

Extension: TO Nov. 13, 1961

Protest: -

Completion of Works: -

Other Rights: -

Filed: Oct. 29, 1953

Due: Nov. 13, 1961

Made: June 25, 1965

Priority: June 11, 1957 late proof

FALLS IRRIGATION DIST

75 HP US MOTOR

984859

10" DISCHARGE

THROUGH GATE VALVE

18' INTO POND

THREE DIVERSION GATES

THROUGH EARTH DITCHES

30 HP US KOLLOSTAT

3052096

BERKELEY VALVE PUMP

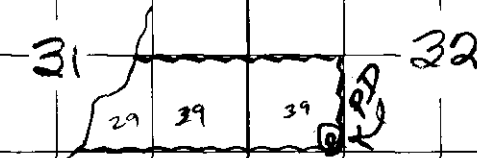
6107766

8" DISCHARGE THROUGH
UNDERGROUND MAIN LINE

MAIN TEE 200

R 31 E

T
7
S



WITHIN CITY
LIMITS OF PREVIOUS
TAXES

AREA - 10.7 ACRES

SUBD - 3

Q - ALLOW 2.0 c.f.s. AS
PREVIOUSLY MEASURED.

STATE OF IDAHO
DEPARTMENT OF RECLAMATION
BOISE

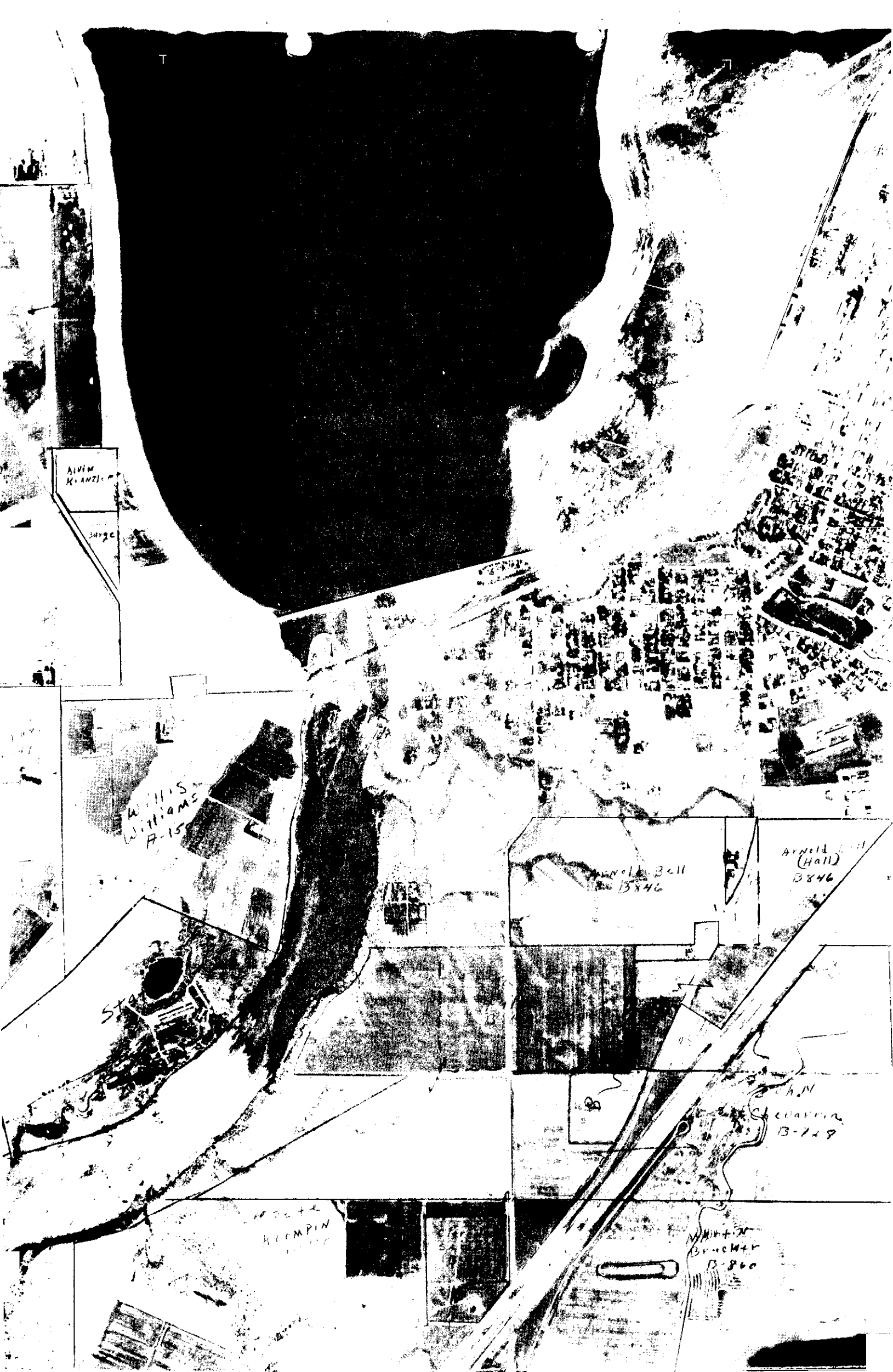
REPORT OF EXAMINER

PERMIT NO. G-24547✓

REPORT ON PROOF OF Completion of Works & Beneficial Use✓

United State of America^l

c/o REGIONAL DIRECTOR^l
REGION #1
Box 937
BOISE, IDAHO



ALVIN
K. ANZIC

WILLIS
WILLIAMS
A-150

ST-4

KEEMPIN

ARNOLD B-11
B-846

ARNOLD
(Hall)
B-846

LEHN
B-749

BRUCHER
B-860

824547

STATE OF IDAHO
DEPARTMENT OF RECLAMATION
BOISE, IDAHO

REPORT OF ENGINEER

Permit No. G-24547

This proof is for Completion of Works & Beneficial Use In Water District No. _____

1. Name of applicant Bureau of Reclamation

2. Source of water supply: Subterranean well

3. Location of point of diversion: Is in the "M" SE 1/4 NW 1/4 of Section 32

T. 7 S. R. 31 E. B. M. County of Power

4. Describe works as they exist, giving dimensions and capacities of same: 75 HP US Motor
984959, Burkley Pump # 5410248, 170' x 10" Column; Well is
300' x 16" cased all the way. h: 42'

5. Water is used for: irrigation

6. State whether or not water has been turned into works of diversion: yes.

7. List legal subdivisions of lands to be irrigated. If proof is for beneficial use, give exact number of acres under cultivation in each forty-acre tract. (Describe manner and place of use if other than irrigation):

60 acres in NE 1/4 Sec. 31., 40 acres in NW 1/4 Sec. 32., Twp. 7 S., Rge. 31 E. B. M.

according to record card file on this PD there is 129.6 acres
under this pump.

(The Bureau turned this project over to the Fall Irrigation
District about a year ago.)

(Submit map on attached plat, showing location and details of above description.)

8. What large stream would the water here appropriated finally reach?

Remarks: Mr. Robert E. Wagner Mgr. Fall Irrigation Dist along

Amend PD.

Measured over Rio Cippolletti weir. 53' = 2.59 cfs.

This examination was made on the 16th day of May, 1962

(Signed) Lynne Johnson & Ben Heizer
Examiner.

24547

22-2243
Harold T. Nelson, Regional Director
Bureau of Reclamation
P. O. Box 937, Boise, Idaho
Permit No. G-24547

Examination for Completion of Works & Beneficial Use

County _____ Power _____

Sec. 32 T. 7 S R. 31 E B.M.

Quantity: 2.0 c.f.s.

Source: Well "M"

P.D.: SE. NW., Sec. 32, T. 7 S. - R. 31 E BM

Use: Irrigation

Filed: Oct. 29, 1953

Due: Nov. 9, 1958

Extension: to Nov. 13, 1961

Completion of Works: _____

Other Rights: none

INSTRUCTIONS TO EXAMINERS

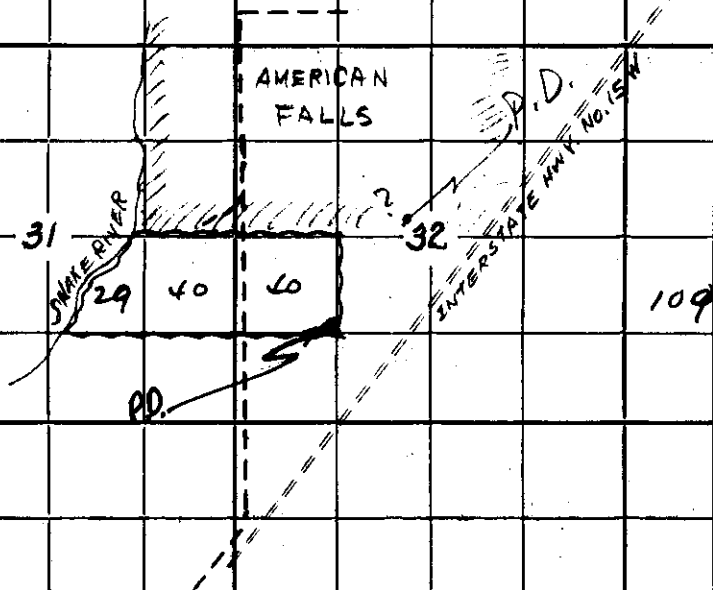
1. Always carefully note the location of the point of diversion and accurately plat same.
2. When proof is for beneficial use, carefully check up the number of acres actually irrigated in each forty and accurately plat same.
3. Make a map showing the correct location of streams and ditches, and the irrigated lands, and any adjacent permanent landmarks, such as towns, lakes, large streams and public roads.
4. If any unusual conditions are discovered, make plain statement of them under remarks.
5. Always see the holder, if possible, and go over the whole ground with him and make your report only upon actual existing facts and conditions.
6. Give general characteristics of soils, topography, and crops raised.

RECEIVED
MAY 21 1962

Department of Reclamation

R-31E.

T.
7
S.



Subdivisions 3

AREA 109 ACRES.

Allow. 9 2.0 cts. or 100 inches

STATE OF IDAHO
DEPARTMENT OF RECLAMATION
BOISE

REPORT OF ENGINEER

PERMIT NO. G-24547

REPORT ON PROOF OF ~~Completion of Works & Beneficial Use~~

Harold T. Nelson, Regional Director
Bureau of Reclamation
P. O. Box 937, Boise, Idaho

January 17, 1962

RE: Permit No. G-24547

M. B. Austin, Acting Regional Director
Bureau of Reclamation, Region 1
Box 937
Boise, Idaho

424

Dear Mr. Austin:

Enclosed is the amendment to the list of lands to be irrigated
under the terms of Permit No. G-24547.

Very truly yours,

GEO. N. CARTER
State Reclamation Engineer
By

(Mrs.) Edna P. Rule
Chief Clerk

EPR:mr

Enc. amendment

24547



IN REPLY
REFER TO: 424

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

REGIONAL OFFICE, REGION 1
BOX 937, BOISE, IDAHO

JAN 17 1962

Department of Reclamation

JAN 16 1962

Mr. George N. Carter
State Reclamation Engineer
Department of Reclamation
Boise, Idaho

Re: Permit No. G-24547

Dear Mr. Carter:

Enclosed is an application for amendment of Permit No. G-24547 to show that the water is utilized on more acreage than was included in the original application.

In our proof of beneficial use documents, we indicated that irrigation water for the Michaud Flats Project was obtained from several sources in an integrated canal and lateral system.

Very truly yours,

Acting Regional Director

Enclosure

824547

Permit No. G-24547

The United States of America, acting Through the Regional Director,
Bureau of Reclamation, and represents
the STATE RECLAMATION ENGINEER of the State of Idaho:

That he is the owner and holder of Permit to appropriate the Public Waters of the
State of Idaho, No. G-24547, and requests that the list of lands to be irrigated,
as described in said permit, be changed to read as follows:

Land in Sections 31 and 32, Township 7 South, Range 31 East, Boise meridian, the
Michaud Flats Project

, making a total of 403 acres.

That an additional amount of water is not asked for, and that the rights of others
will not be adversely affected by such change.

Signed at Boise, Idaho this 15th day of January, 1962

Acting

M. B. Austin
Regional Director, Region I

Date of receipt at office of Department of Reclamation: January 17, 1962

APPROVAL OF STATE RECLAMATION ENGINEER

Ralph W. Thomas, Deputy

I, ~~Arthur H. Carter~~, State Reclamation Engineer of the State of Idaho, hereby approve

the above and foregoing application for amendment to Permit to appropriate the Public
Waters of the State of Idaho, No. G-24547. This approval constitutes a new permit
and is issued as an amendment to the original permit, to which it refers, and of which
it becomes a part, and said application is approved only insofar as the rights of others
will not be adversely affected thereby.

Ralph W. Thomas
Deputy State Reclamation Engineer

January 17, 1962

G-24547

December 20, 1961

Re: Permit No. 0-24547

Harold T. Nelson, Regional Director
Bureau of Reclamation
P. O. Box 937
Boise, Idaho

Dear Mr. Nelson:

We acknowledge receipt of the depositions of holder and two witnesses, also affidavit of publication in the Power County Press, all submitted in proof of completion of works and beneficial use on Permit No. 0-24547.

Before final action is taken in the matter, the law requires that a field examination be made by an engineer from this department.

We cannot tell just when this examination will be made, but our field engineer will try and contact you at the time he makes the examination so that arrangements may be made to show him over the grounds.

Very truly yours,

GEO. N. CARTER
State Reclamation Engineer

By:

(Mrs.) Edna P. Rule
Chief Clerk

EPR:

24547

November 17, 1961

Re: Permit No. G-24547

Regional Director
Bureau of Reclamation
Box 937
Boise, Idaho

Dear Sir:

Enclosed is a form to amend place of use of water under a permit.

We have received the depositions of completion of works and beneficial use of the water and the affidavit of publication. All is satisfactory except the place of use of the water is shown as 403 acres in Section 31 and 32, T. 7 S., R. 31 E., B. 2. Our record of the permit shows the place of use as being 100 acres in N $\frac{1}{2}$ SE $\frac{1}{4}$, Sec. 31 and NW $\frac{1}{4}$ SW $\frac{1}{4}$, Sec. 32, T. 7 S., R. 31 E.

The permit may be amended now or the amendment can be deferred until after our field engineer has made his examination and the evidence of water right is ready to be issued.

We do not know when the works will be examined, however the field engineer will make arrangements before his visit in order that some one can show him the works.

Very truly yours,

GEO. N. CARTER
State Reclamation Engineer

By:

RALPH W. THOMAS, Deputy
State Reclamation Engineer

RT:ew

Enc. amendment form

824547

Enclosure
24547



IN REPLY
REFER TO: 424

UNITED STATES
DEPARTMENT OF THE INTERIOR

BUREAU OF RECLAMATION

REGIONAL OFFICE, REGION 1
BOX 937, BOISE, IDAHO

RECEIVED
NOV 16 1961
Department of Reclamation

NOV 15 1961

Mr. George N. Carter
State Reclamation Engineer
State House
Boise, Idaho

Re: Permit No. G-24547

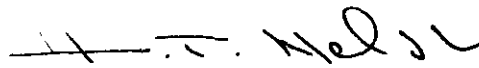
Dear Mr. Carter:

Enclosed are the appropriately signed and notarized deposition of holder and depositions of witness for proof of application of water to beneficial use and completion of works in connection with Permit No. G-24547 for the Michaud Flats Project, Idaho.

Also enclosed is the Affidavit of Publication in connection with the notice for the permit.

The witnesses and the holder of the permit appeared before John H. Welch, Notary Public, at the time and date specified in the notice and signed the enclosed documents.

Very truly yours,


Regional Director

Enclosures

24547

RECEIVED
NOV 16 1953

STATE OF IDAHO
DEPARTMENT OF RECLAMATION
BOISE, IDAHO

Department of Reclamation

✓
Permit No. G-24547

Proof of Application of Water to Beneficial Use

and Completion of Works

Deposition of Holder

Ques. 1. State your name, residence, occupation and postoffice address.

Ans. ✓ The United States of America, acting through the Regional Director, Region I
Bureau of Reclamation, P.O. Box 937, Boise, Idaho

Ques. 2. If acting in behalf of corporation, state its name, principal place of business (if a foreign corporation, give name of postoffice of statutory agent), your position with reference to same, and your authority for appearing in its behalf.

Ans. Bureau of Reclamation, United States of America, Boise, Idaho, Regional Director of Region I

Ques. 3. State number and date of permit, and date of priority you propose to establish under the permit.

Ans. Permit No. G-24547, dated ^{Nov. 9} ~~October 29~~, 1953, Priority date, October 29, 1953.

Ques. 4. State source of water supply and give exact location of point of diversion.

Ans. Water is pumped from the ground. The well is located in the SE¹/₄ NW¹/₄ of Section 32, T. 7 S., R. 31 E., B.M.

Ques. 5. Describe your works of diversion, and state amount of water they are capable of conveying from point of diversion to place of use, and give name of canal or ditch or other works by which water is conducted to such place of use. If a well, state depth of well, depth and size of casing and depth to water. If pump is used, state discharge of pump and tell how it was measured or determined. If sprinkler irrigation, give number and size of nozzles and operating pressure.

Ans. The well is 300 feet deep, cased to the bottom with 16" outside diameter casing with perforations in the casing at the 128, 246 and 300 foot levels. Discharge of the pump 2.0 cubic feet per second measured by weir. Static water level 90.5 feet.

Ques. 6. State for what purpose water is used and describe place of use. (If for irrigation, name each subdivision in which used, and number of acres in each subdivision that have actually been irrigated with said water.) State whether cultivated or natural meadow land and the nature of all improvements which have been made as a direct result of said use.

Ans. The water is used for irrigation of 403 acres in Sections 31 and 32, T. 7 S., R. 31 E., B.M. in the Highwood Flats Project. The land is cultivated and is adapted to a variety of irrigated crops. Improvements on the land are the ones normal to a diversified irrigated area.

Ques. 6-a If this is a ground water permit, give name and address of person that drilled the well.

Ans. Mr. Sigman, address unknown

G24547

RT

Ques. 7. If for other than irrigation purposes; state how applied, amount of horse power generated, etc.

Ans. _____

Ques. 8. What is the minimum amount of water required for the purpose specified above?

Ans. _____

Ques. 9. If you are not the person or representative of the corporation to whom above mentioned permit was originally issued, please state how ownership was acquired by present holder.

Acquired by purchase of well from Marion Stanger and assignment of permit No. G-24547 by Marion Stanger and Mary Ethel Stanger to the United States of America on September 27, 1960.

Ques. 10. State when, how, in what amount and to what extent the water diverted under above mentioned permit has been used.

The well has been in use each irrigation season since it was first placed in operation in the spring of 1954. It was operated by the original applicant until November 1, 1957. Since that date, it has been operated by the United States or by the Falls Irrigation District as part of the Michaud Flats Project.

Ques. 11. State when, how, in what amount and to what extent waters other than those diverted under the above mentioned permit have been diverted and applied to beneficial use upon the lands herein described. Give full particulars regarding such other appropriations and rights claimed thereunder.

The land irrigated by water from the well described herein is a portion of the Michaud Flats Reclamation Project containing 11,240 irrigable acres. The water is supplied from 23 wells in addition to the one described in this permit, and by pumping from American Falls Reservoir. The integrated canal and lateral system provides for delivery of water from different wells or from the pumping plant at American Falls Reservoir. See Permit No. 26602 for 160 cfs. from American Falls Dam and Permit No. G-26603 for 17 wells, all for the Michaud Flats Project. Licensed wells G-22559, G-22944 and 19754, 22,226, 21508, 23,753 and G-22542 also included in this project. Capacity production of 2.0 cubic feet per second from this well has been beneficially used each season on lands of the Michaud Flats Project (Sign) *[Signature]* beginning in 1954.

I hereby certify that the foregoing testimony was read to the above subscribed before its signing, that I believe him to be the person he represents himself to be, and that said testimony was subscribed and sworn to before me, at my office in Boise, Idaho, County of Ada

State of Idaho, on this 13th day of November, A. D. 1961

My commission expires June 10, 1963

[Handwritten: 24547]

**STATE OF IDAHO
DEPARTMENT OF RECLAMATION
BOISE, IDAHO**

RECEIVED
DEPARTMENT OF RECLAMATION

Permit No. G-24547

**Proof of Application of Water to Beneficial Use
Deposition of Witness and Completion of Works**

The deposition of two witnesses, on this form, taken separately, required in each case.

Ques. 1. State your name, age, residence, occupation and postoffice address.

Ans. E. G. Whitaker, Voting age, Civil Engineer, United States Bureau of Reclamation,
P.O. Box 937, Boise, Idaho

Bureau of Reclamation

Ques. 2. Are you acquainted with the United States of America/, the
holder of Permit No. G-24547? How long have you known him and where does
he reside?

Ans. yes

Ques. 3. Have you read or heard read said Permit No. G-24547, and are you
familiar with its provisions and conditions?

Ans. yes

Ques. 4. State source of water supply, place of diversion, and describe works for con-
veying water from point of diversion to place of use.

Ans. Deep well "M", located in SE $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 32, T. 7 S., R. 31 E., B.M.
Open canal for conveying water to 403 irrigable acres in Sections 31 and 32,
T. 7 S., R. 31 E., B.M.

Ques. 5. How many second feet of water do you estimate said works will safely con-
duct to place of use, and how much water have you seen being so conveyed?

Ans. Two cubic feet per second. I have observed 2 cubic feet per second
carried in the distribution system.

Ques. 6. (Pumps) How much water in cubic feet per second, miner's inches, or gallons
per minute have you seen the pump deliver, and how did you measure or estimate the
amount?

Ans. The pump delivers 2 cubic feet per second, measured over weirs.

G-24547

Ques. 7. State for what purpose water is used and at what place. (If for irrigation, give each subdivision in which water has been used and number of acres irrigated in each subdivision.) State whether cultivated or natural meadow land and the nature of all improvements which have been made as a direct result of said use.

Ans. The water is used for irrigation of 403 acres in Sections 31 and 32, T. 7 S., R. 31 E., B.M. The land is cultivated. Improvements are typical of those in a diversified irrigated area.

Ques. 8. If for power or other purposes than irrigation, state how water has been applied and to what extent.

Ans.

Ques. 9. (If for irrigation) state character of land that has been reclaimed, and give your estimate of the amount of water required for its profitable cultivation.

Ans. The land that is being irrigated is classified as fine sandy loam and silt loam. Approximately 4.5 acre-feet of water per acre is required for profitable cultivation.

Ques. 10. Have you any interest in the works, water or lands above mentioned? If so, in what way and to what extent?

Ans. no

Ques. 11. State when, how, in what amount and to what extent you have witnessed the application to beneficial use of water diverted under said permit.

Ans. During the 1959, 1960 and 1961 irrigation seasons, I have witnessed the application to beneficial use of the capacity flow of 2.0 cfs from well "M" for irrigation of lands of the Michaud Flats Project.

(Signed) F. G. Whitaker

I hereby certify that the foregoing testimony was read to the above subscriber before its signing, that I believe him to be the person he represents himself to be, and that said testimony was subscribed and sworn to before me in Boise, Idaho, County of Ada, State of Idaho, on this 13th day of November, A. D. 1961

John H. Welch
Notary Public.

My commission expires June 10, 1963

824547

RECEIVED
NOV 16 1961

STATE OF IDAHO
DEPARTMENT OF RECLAMATION
BOISE, IDAHO

Department of Reclamation

Permit No. G-24547

Proof of Application of Water to Beneficial Use

Deposition of Witnesses and Completion of Works

The deposition of two witnesses, on this form, taken separately, required in each case.

Ques. 1. State your name, age, residence, occupation and postoffice address.

Ans. Robert H. Harris, Voting age, Supervisory General Engineer, United States
Bureau of Reclamation, P.O. Box 937, Boise, Idaho

Ques. 2. Are you acquainted with The United States of America ^{the Bureau of Reclamation} /, the holder of Permit No. G-24547? How long have you known him and where does he reside?

Ans. yes

Ques. 3. Have you read or heard read said Permit No. G-24547, and are you familiar with its provisions and conditions?

Ans. yes

Ques. 4. State source of water supply, place of diversion, and describe works for conveying water from point of diversion to place of use.

Ans. Deep well "M", located in SE $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 32, T. 7 S., R. 31 E., B.M.,
Open canal for conveying water to 403 irrigable acres in Sections 31 and 32,
T. 7 S., R. 31 E., B.M.

Ques. 5. How many second feet of water do you estimate said works will safely conduct to place of use, and how much water have you seen being so conveyed?

Ans. Two cubic feet per second. I have observed 2 cubic feet per second
carried in the distribution system.

Ques. 6. (Pumps) How much water in cubic feet per second, miner's inches, or gallons per minute have you seen the pump deliver, and how did you measure or estimate the amount?

Ans. The pump delivers 2 cubic feet per second, measured over weirs.

J 24547

Affidavit of Publication

STATE OF IDAHO, }
COUNTY OF POWER. } ss.

RECORDED

NOV 16 1961

Phyllis Ringe being first duly sworn Department of
on oath, states:

That she is the principal clerk of the printer
of the Power County Press, a newspaper of general circulation
in Power County, Idaho, published weekly at American Falls
in said County; that said newspaper has been published in said
County uninterruptedly and continuously for over seventy-
eight consecutive weeks, prior to the first publication of the
annexed notice or advertisement:

That the annexed notice or advertisement was published as
per clipping attached in the regular and entire edition of said

newspaper and not in any supplement thereof for 4
successive weekly issues thereof, the date of the first publica-
tion being the 12th day of October, 1961

the date of last publication being the
2nd day of November, 1961

(Signed)

Subscribed and sworn to before me this

6th day of November, 1961

[Signature]
Notary Public, residing at American Falls,
Idaho.

My Commission expires the

(SEAL) 12 day of February, 1964

L24547

Affidavit of Publication

STATE OF IDAHO,
COUNTY OF POWER. } ss.

Phyllis Ringe being first duly sworn
on oath, states:

That she is the principal clerk of the printer
of the Power County Press, a newspaper of general circulation
in Power County, Idaho, published weekly at American Falls
in said County; that said newspaper has been published in said
County uninterruptedly and continuously for over seventy-
eight consecutive weeks, prior to the first publication of the
annexed notice or advertisement:

That the annexed notice or advertisement was published as
per clipping attached in the regular and entire edition of said

newspaper and not in any supplement thereof for 4
successive weekly issues thereof, the date of the first publica-
tion being the 12th day of October, 1961

the date of last publication being the
2nd day of November, 1961

(Signed) _____

Subscribed and sworn to before me this

_____ day of _____, 1961

Notary Public, residing at American Falls,
Idaho.

My Commission expires the

(SEAL) _____ day of _____, 1961

204547

NOTICE OF PROOF OF COM- PLETION OF WORKS

APPLICATION OF WATER TO BENEFICIAL USE

Notice is hereby given that
at 10 A.M., on the 13th day of
November 1961, at Boise, Co-
ounty of Ada, State of Idaho,
before John H. Welch, Notary
Public, at Boise, Idaho, proof
will be submitted of the com-
pletion of works for the divers-
ion of 2.0 cubic feet per second
of underground water from a
well, and of the application to
beneficial use of said water, in
accordance with the terms and
conditions of Permit No. G-24-
547 heretofore issued by the
Department of Reclamation of
the State of Idaho.

1. The name and postoffice
address of the person or corpor-
ation holding said permit. The
United States of America, act-
ing through its Regional Dir-
ector, Region 1, Bureau of
Reclamation, Department of
the Interior, P. O. Box 937,
Boise, Idaho.

2. Said works of diversion
will be fully completed on the
date set for such completion,
and the amount of water which
said works are capable of con-
veying to the place of use is
2.0 cubic feet per second.

3. The use to which said
water has been applied is Irr-
igation purposes, and the amou-
nt applied to beneficial use is
2.0 cubic feet per second.

4. The point of diversion of
said water is SE $\frac{1}{4}$ NW $\frac{1}{4}$ Sec.
32, T. 7 S., R. 31 E., B.M.

5. The place where said
water is used is N $\frac{1}{2}$
SE $\frac{1}{4}$, Sec. 31. and NW $\frac{1}{2}$ SW $\frac{1}{4}$
Sec. 32, T. 7 S., R. 31 E. B.M. in
the Michaud Flats Project.

6. The date of priority which
said user is prepared to estab-
lish is October 29, 1953.

GEO. N. CARP

State Reclamation Engineer

October 23, 1961

Re: Permit No. G-24547
U. S. A. Dept. of Interior
Bureau of Reclamation

Power County Press
American Falls, Idaho

Gentlemen:

On October 5th a Notice of Publication was mailed to your office, on which we have received copy for checking purposes, and we find Paragraph 4 and 5 should read as follows:

4. The point of diversion of said water is SE $\frac{1}{4}$ NW $\frac{1}{4}$, Sec. 32, T. 7 S., R. 31 E., B. N.

5. The place where said water is used is N $\frac{1}{4}$ SE $\frac{1}{4}$, Sec. 31 add NW $\frac{1}{4}$ SW $\frac{1}{4}$, Sec. 32, T. 7 S., R. 31 E., B. N. in the Michaud Flats Project.

The copy showed the point of diversion (Paragraph 4) and the land list together (Paragraph 5)

Kindly mail us another copy for our files when correction has been made.

Very truly yours,

GEO. N. CARTER
State Reclamation Engineer

By:

H. PETRI
Water Rights Clerk

HPew

24547

STATE OF IDAHO
DEPARTMENT OF RECLAMATION

BOISE
October 5, 1961

Re: Permit No. 8-24547

DEPOSITIONS ARE OF NO VALUE
UNLESS AFFIDAVIT OF PUBLICATION
IS ATTACHED

Mr. M. E. Austin, Acting Eng. Director,
Bureau of Reclamation,
Department of the Interior,
P. O. Box 937,
Boise, Idaho.

Dear Mr. Austin:

This acknowledges the Notice of Proof of Completion of Works and Application of Water to Beneficial Use under Permit No. 8-24547. The proofs are to be made at 8:00 o'clock A.M., on the 13th day of November, 1961, before John C. Smith, Notary Public, Boise, Idaho, Notary Public.

As of this date we have mailed the Notice to the Boise County Press, American Falls with instructions to publish it once a week for four consecutive weeks prior to the date set for final proof and then mail the affidavit of publication and statement of costs to you.

It is important that the enclosed depositions be executed by you and two disinterested witnesses who are familiar with the terms of the permit and the work done thereunder, at the place, on the date, and at the time and before the Notary, as advertised. It is very important and necessary that each question be answered in detail.

In returning the depositions to this office, be sure that all copies have been signed, the Notary's seal has been placed on each and that all depositions, (holder and two witnesses) are being returned. Also be sure to enclose the Affidavit of Publication.

Very truly yours,

GEO. N. CARTER
State Reclamation Engineer

By:

(Mrs.) Edna P. [Signature]
Chief Clerk

Encl.
KPR: [Signature]
cc: Notary

824547

STATE OF IDAHO

DEPARTMENT OF RECLAMATION

BOISE
October 5, 1961

Re: Permit No. G-24547

DEPOSITIONS ARE OF NO VALUE

UNLESS AFFIDAVIT OF PUBLICATION

IS ATTACHED

Mr. M. B. Austin, Acting Reg. Director,
Bureau of Reclamation,
Department of the Interior,
P. O. Box 937,
Boise, Idaho.

Dear Mr. Austin:

This acknowledges the Notice of Proof of Completion of Works and Application of Water to Beneficial Use under Permit No. G-24547. The proofs are to be made at 10:00 o'clock A.M., on the 13th day of November, 1961, ~~1960~~, before John H. Welch, USBR, Boise, Idaho, Notary Public.

As of this date we have mailed the Notice to the Power County Press, American Falls with instructions to publish it once a week for four consecutive weeks prior to the date set for final proof and then mail the affidavit of publication and statement of costs to you.

It is important that the enclosed depositions be executed by you and two disinterested witnesses who are familiar with the terms of the permit and the work done thereunder, at the place, on the date, and at the time and before the Notary, as advertised. It is very important and necessary that each question be answered in detail.

In returning the depositions to this office, be sure that all copies have been signed, the Notary's seal has been placed on each and that all depositions, (holder and two witnesses) are being returned. Also be sure to enclose the Affidavit of Publication.

Very truly yours,

GEO. N. CARTER
State Reclamation Engineer

By:

Rule

(Mrs.) Edna P. ~~Kennedy~~
Chief Clerk

Encl.
EPR: pak
cc: Notary

24547

1200
6-28-61

STATE OF IDAHO
DEPARTMENT OF RECLAMATION
Boise, Idaho

Re: Permit No. G-24547
United States of America,
Bureau of Reclamation
Department of the Interior

Date: Oct. 5, 1961

Power County Press,
American Falls, Idaho.

Gentlemen:

Enclosed you will find notice for publication, once a week for four consecutive
weeks prior to November 13, 1961 the date set for proof;

the expense of the publication is to be paid by the applicant **The United States of
America, acting through its Regional Director,
Region 1, Bureau of Reclamation, Department of P. O. Box 937, Boise, Idaho
of the Interior,**
to whom you should furnish proof of publication on or prior to the date set for
proof.

Please acknowledge receipt of this notice and furnish this office with a copy
or tear sheet of the first publication.**

Very truly yours,



GEO. N. CARTER
State Reclamation Engineer

** If the first copy is not received in this office for checking purposes
and errors appear in subsequent issues, it is possible that re-publication
of corrected copy will be at your own expense.

Encl.

24547



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
REGIONAL OFFICE, REGION 1
BOX 937, BOISE, IDAHO

RECEIVED
OCT 5 1961

Department of the Interior

IN REPLY
REFER TO: 150

OCT 4 1961

Registered Mail
Return Receipt Requested

Mr. George N. Carter
State Reclamation Engineer
State House
Boise, Idaho

Dear Mr. Carter:

I wish to hereby give notice that I am prepared to submit proof of completion of works and of application of water to beneficial use under permits G-24547 and G-26603, for appropriation of 72 cubic feet per second from ground water. There are enclosed in duplicate forms No. 36 entitled "Notice of Proof of Completion of Works and Application of Water to Beneficial Use" that have been prepared for your signature.

There is also enclosed form No. 11 authorizing publication of the notices in the Power County Press of American Falls, Idaho. This form is certified to by an engineer as required by Sec. 42-214 of the Idaho Code.

It would be appreciated if you would submit a bill to this office after you have received from the publisher the amount due for printing the advertisement notice. I will then have a voucher prepared for your execution in order that you may be reimbursed for such amount.

Sincerely yours,

M.B. Austin

Acting Regional Director

Enclosures

24547

RECEIVED
OCT 5 1961

Department of Reclamation

NOTICE TO ACCOMPANY THIS LETTER MUST BE MADE IN DUPLICATE

(Date) _____

(P.O.) Box 957, Boise, Idaho

TO THE STATE RECLAMATION ENGINEER

Boise, Idaho

Dear Sir:

You are hereby authorized to have the attached notices published at
my expense in the Power County Press of
American Falls, Idaho published in the county in which the
works are situated.

M. B. Austin
Acting Regional Director, Region I
Bureau of Reclamation

(In case of canals or other works designed to divert and carry more than 50
cubic feet of water per second, the following certificate must be signed by a well known
and competent engineer.)

I hereby certify that the facts set forth in the attached notices are true.

M. B. Austin

24547

15
OCT 1953

NOTICE OF PROOF OF COMPLETION OF WORKS, ~~Department of Reclamation~~
and
APPLICATION OF WATER TO BENEFICIAL USE

Notice is hereby given that at 10 A.M., on the 13th day of November
1961, at Boise, County of Ada, State of Idaho,
before John H. Welch, Notary Public, at (address) Boise,
Idaho, proof will be submitted of the completion of works for
the diversion of 2.0 cubic feet per second of underground water from a well, and of
the application to beneficial use of said water, in accordance with the terms and
conditions of Permit No. G-24547 ✓, heretofore issued by the Department of Reclamation
of the State of Idaho.

1. The name and postoffice address of the person or corporation holding said permit
is The United States of America, acting through its Regional Director, Region 1, Bureau
of Reclamation, Department of the Interior, P. O. Box 937, Boise, Idaho

2. Said works of diversion will be fully completed on the date set for such com-
pletion, and the amount of water which said works are capable of conveying to the place of
use is 2.0 cubic feet per second.

3. The use to which said water has been applied is Irrigation
purposes, and the amount applied to beneficial use is 2.0
cubic feet per second.

4. The point of diversion of said water is SE 1/4 Sec. 32, T. 7 S., R. 31 E., B.M.

5. The place where said water is used is Secs. 31 and 32, T. 7 S., R. 31 E., B.M.
in the Michaud Flats Project.

6. The date of priority which said user is prepared to establish is October 29, 1953

JCH 547

State Reclamation Engineer

S T A T E O F I D A H O
D E P A R T M E N T O F R E C L A M A T I O N

Boise, Idaho

Re: Permit No. G- 24547

Date: Sept. 1, 1961

U. S. Regional Director, Region 1
Bureau of Reclamation
Box 937, Boise, Idaho

Gentlemen:

The date for proofs of Completion of Works and Application of Water to Beneficial Use, as set out under the terms of Permit No. G- 24547 are due not later than **November 13, 1961**

Before these proofs can be made, the statutory requirement is that a notice of your intention of proof be published once a week for four consecutive weeks in a newspaper within the county in which the land is located. In completing the Notice of proof for publication, the information should be taken from your Permit, including any amendments made in connection with a change of point of diversion or land list which has been recorded in this department. If changes have been made and no amendments are on record, we advise that you request a form for this purpose before your Notice is published.

We enclose Form 36, in duplicate, which is to be filled out and returned to this department at least forty (40) days before the mentioned date, (allowing for four weeks publication). Please give the name of the town, the address of the place where the depositions will be executed, and, the name of the notary public before whom you will appear to make the depositions of proof (this may be at any place convenient for you and your two witnesses), the quantity of water filed; for what purpose it is used; the point of, or points of diversion; and the location of use of the lands which are irrigated -- all by legal land description.

Enclosed also is Form 11, which is the authorization for us to have the notice published in the designated county newspaper at your expense. This is to be returned with Form 36.

At the time we send the notice to the newspaper we will send to you the forms for the depositions of holder and two disinterested witnesses. It is important that the depositions be executed at the time, on the date set, at the place named and before the notary public, as advertised in the publication notice.

Very truly yours,



GEO. N. CARTER
State Reclamation Engineer

Enclosures Form 36 - 11

24547

November 21, 1960

RE: Permit No. 21477, Vern Eames
G-24547, Marion Stanger
G-26603, Bureau of Reclamation

M. B. Austin, Regional Director
Bureau of Reclamation
Box 937
Boise, Idaho

Dear Mr. Austin:

Enclosed are the assignments on Permit No. 21477 and G-24547 and the amendment to the points of diversion on Permit No. G-26603 which have been recorded in this office.

Also enclosed is departmental receipt No. G-5375 in the amount of \$2.00 for the fee for recording the assignments and the change in points of diversion.

Very truly yours,

GEO. N. CARTER
State Reclamation Engineer
By

(Mrs.) Edna F. Rule
Chief Clerk

EPR:mr
Enc. Assignments 2
amendment
receipt

24547

October 31, 1960

Re: Permit No. G-26603
21477
G-24547

Bureau of Reclamation
M. E. Austin, Regional Director
P. O. Box 937, Boise, Idaho

Dear Mr. Austin:

The amendment to the points of diversion under Permit G-26603 and the assignments of Permits No. 21477 and G-24547 will be recorded upon payment of the fees.

The fee for recording the amendment is \$1.00 and the fee for recording each assignment is \$0.50 or a total of \$2.00 which you may remit to this office.

Very truly yours,

D. O. R. CARTER
State Reclamation Engineer

By:

RALPH W. THOMAS
Office Engineer

AT:ew

24547

ORDER EXTENDING TIME WITHIN WHICH TO MAKE PROOF OF COMPLETION
OF WORKS AND APPLICATION OF WATER TO BENEFICIAL USE, PERMIT NO.
G-24547, MARION STANGER, HOLDER

WHEREAS, Marion Stanger, Post Office Address American Falls, Idaho, holder of Permit No. G-24547 was notified on September 2, 1958 in usual form that Proof of Completion of Works and Application of Water to Beneficial Use was due not later than November 9, 1958, and;

WHEREAS, Marion Stanger by letter of September 8, 1958 stated that the well described in Permit No. G-24547 had been sold to the Bureau of Reclamation and incorporated in the Michaud Flats Project of the Bureau's Project, and;

WHEREAS, the United States of America acting through the Bureau of Reclamation heretofore made application for and secured Permit No. G-26603 which described among other wells the Marion Stanger well designated as Well No. M. on its filing map, and;

WHEREAS, the Bureau of Reclamation now requests that the time for making Proof of Completion of Works and Application of Water to Beneficial use be extended to the required date of proofs on Permit No. G-26603, namely November 13, 1961, and;

It appearing that the required proofs on Permit No. G-24547, can best be made in orderly manner when proofs are submitted on Permit No. G-26603 for the entire Michaud Flats Project, it is hereby ordered that the time for making proofs of Completion of Works and Application of Water to Beneficial Use on Permit No. G-24547 be extended to November 13, 1961.

Bureau of Reclamation shall secure from Marion Stanger, assignment in usual form to be recorded on the permit.

Given under my hand and the seal of the State Department of Reclamation at Boise, Idaho, this 17th day of November, 1958.

GEO. N. CARTER
State Reclamation Engineer

ORDER EXTENDING TIME WITHIN WHICH TO MAKE PROOF OF COMPLETION
OF WORKS AND APPLICATION OF WATER TO BENEFICIAL USE, PERMIT NO.
G-24547, MARION STANGER, HOLDER

WHEREAS, Marion Stanger, Post Office Address American Falls, Idaho, holder of Permit No. G-24547 was notified on September 2, 1958 in usual form that Proof of Completion of Works and Application of Water to Beneficial Use was due not later than November 9, 1958, and;

WHEREAS, Marion Stanger by letter of September 8, 1958 stated that the well described in Permit No. G-24547 had been sold to the Bureau of Reclamation and incorporated in the Michaud Flats Project of the Bureau's Project, and;

WHEREAS, the United States of America acting through the Bureau of Reclamation heretofore made application for and secured Permit No. G-26603 which described among other wells the Marion Stanger well designated as Well No. M. on its filing map, and;

WHEREAS, the Bureau of Reclamation now requests that the time for making Proof of Completion of Works and Application of Water to Beneficial use be extended to the required date of proofs on Permit No. G-26603, namely November 13, 1961, and;

It appearing that the required proofs on Permit No. G-24547, can best be made in orderly manner when proofs are submitted on Permit No. G-26603 for the entire Michaud Flats Project, it is hereby ordered that the time for making proofs of Completion of Works and Application of Water to Beneficial Use on Permit No. G-24547 be extended to November 13, 1961.

Bureau of Reclamation shall secure from Marion Stanger, assignment in usual form to be recorded on the permit.

Given under my hand and the seal of the State Department of Reclamation at Boise, Idaho, this 17th day of November, 1958.

GEO. N. CARTER
State Reclamation Engineer

ORDER EXTENDING TIME WITHIN WHICH TO MAKE PROOF OF COMPLETION
OF WORKS AND APPLICATION OF WATER TO BENEFICIAL USE, PERMIT NO.
G-24547, MARION STANGER, HOLDER

WHEREAS, Marion Stanger, Post Office Address American Falls, Idaho, holder of Permit No. G-24547 was notified on September 2, 1958 in usual form that Proof of Completion of Works and Application of Water to Beneficial Use was due not later than November 9, 1958, and;

WHEREAS, Marion Stanger by letter of September 8, 1958 stated that the well described in Permit No. G-24547 had been sold to the Bureau of Reclamation and incorporated in the Michaud Flats Project of the Bureau's Project, and;

WHEREAS, the United States of America acting through the Bureau of Reclamation heretofore made application for and secured Permit No. G-26603 which described among other wells the Marion Stanger well designated as Well No. M. on its filing map, and;

WHEREAS, the Bureau of Reclamation now requests that the time for making Proof of Completion of Works and Application of Water to Beneficial use be extended to the required date of proofs on Permit No. G-26603, namely November 13, 1961, and;

It appearing that the required proofs on Permit No. G-24547, can best be made in orderly manner when proofs are submitted on Permit No. G-26603 for the entire Michaud Flats Project, it is hereby ordered that the time for making proofs of Completion of Works and Application of Water to Beneficial Use on Permit No. G-24547 be extended to November 13, 1961.

Bureau of Reclamation shall secure from Marion Stanger, assignment in usual form to be recorded on the permit.

Given under my hand and the seal of the State Department of Reclamation at Boise, Idaho, this 17th day of November, 1958.

Geo. N. Carter

GEO. N. CARTER
State Reclamation Engineer

24547

November 17, 1958

Re: Permit No. G-24547

Regional Director
Bureau of Reclamation
Box 937
Boise, Idaho

ATTENTION: 150

Agreeable to the request enclosed in your letter of September 26, 1958 regarding making Proof of Completion of Works and Beneficial Use on the well permits which have been acquired by the Bureau of Reclamation for the Michaud Project, find enclosed a copy of the Order extending the time for Completion of Works and Beneficial Use on the Marion Stanger Permit No. G-24547 to November 13, 1961, the date upon which proofs are due on the Government's Permit No. G-26603.

Very truly yours,

GEO. N. CARTER
State Reclamation Engineer

GNC/lw
Enclosure

24547



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

REGIONAL OFFICE, REGION 1
BOX 937, BOISE, IDAHO

IN REPLY
REFER TO: 150

RECEIVED

NOV 14 1958

516

Mr. George N. Carter
State Reclamation Engineer
Boise, Idaho

Dear Mr. Carter:

In your letter of October 1, with respect to Permits Nos. G-24547 and G-26603, you asked to be furnished with a copy of the earliest document of the Bureau of Reclamation showing the intent or the plan of the Bureau to acquire wells already in operation in connection with the Michaud Flats Project. There is enclosed a copy of House Document 485, 83d Congress, 2d Session with respect to the Michaud Flats Project, Idaho. On pages 21 and 22 you will see the information with respect to the acquisition of existing wells. Although the letter from the Assistant Secretary of the Interior transmitting the Michaud Flats Project report to the Speaker of the House of Representatives is dated July 23, 1954, the report of the Regional Director of the Bureau of Reclamation to the Commissioner of Reclamation is dated October 22, 1953. That is the date of the formal report.

When we have secured the assignment in the form you have transmitted to us of the Stanger well, we will send it along to you. Thank you for your cooperation in this matter.

Sincerely yours,

Wm H Tuller

Assistant Regional Director

Enclosure

G-24547

P. G 24547 & G 24603

MICHAUD FLATS PROJECT, IDAHO

RECEIVED
NOV 17 1958
Department of Reclamation

LETTER

FROM

ASSISTANT SECRETARY OF THE INTERIOR

TRANSMITTING

A REPORT ON THE MICHAUD FLATS PROJECT, IDAHO,
PURSUANT TO SECTION 9 (a) OF THE RECLAMATION
PROJECT ACT OF 1939 (53 STAT. 1187)



AUGUST 3, 1954.—Referred to the Committee on Interior and
Insular Affairs and ordered to be printed, with illustrations

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1954

LETTER OF TRANSMITTAL

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington 25, D. C., July 23, 1954.

HON. JOSEPH W. MARTIN, JR.,
Speaker of the House of Representatives,
Washington 25, D. C.

MY DEAR MR. SPEAKER: My report on the Michaud Flats project, Idaho, is transmitted herewith pursuant to the provisions of section 9 (a) of the Reclamation Project Act of 1939 (53 Stat. 1187).

The report presents a plan for irrigation development of 11,035 acres of irrigable land extending in a narrow strip northeast and southeast from American Falls, Idaho, in the Snake River Basin. Water supply for the irrigation of these lands would be obtained by pumping from storage reserved for the project in the Palisades and American Falls Reservoirs and by pumping from ground water. The estimated cost of this single-purpose development is approximately \$4,600,000 based on July 1953 prices, all of which is allocated to irrigation. The project is economically justified with estimated benefits exceeding the estimated costs in a ratio of 2.8 to 1. The total project costs will be repaid by the water users and the use of net power revenues from the Palisades and American Falls power developments.

Copies of the proposed report of the Secretary of the Interior were transmitted to the States of the Columbia River Basin and to the Secretary of the Army in accordance with the provisions of section 1 (c) of the Flood Control Act of 1944 (58 Stat. 887) and to the State of Idaho for comments from the head of the agency exercising administration over the wildlife resources of that State in accordance with the provisions of the act of August 14, 1946 (60 Stat. 1080). Copies of the report were sent also to the agencies represented on the Federal Inter-Agency River Basin Committee for their comments. Comments have been received from all States and agencies to which the report was sent and copies are attached.

The report and copies of all comments were transmitted to the President. A copy of the July 23, 1954, letter from the Director of the Bureau of the Budget is enclosed.

Sincerely yours,

FRED G. AANDAHL,
Assistant Secretary of the Interior.

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COMMENTS FROM BUREAU OF THE BUDGET

EXECUTIVE OFFICE OF THE PRESIDENT,
BUREAU OF THE BUDGET,
Washington 25, D. C., July 23, 1954.

The honorable the SECRETARY OF THE INTERIOR.

MY DEAR MR. SECRETARY: This will acknowledge receipt of your letter to the President of July 1, 1954, requesting advice concerning the relationship to the program of the President of your proposed report on the Michaud Flats project, Idaho.

The proposed project consists of 11,035 irrigable acres situated just south of the American Falls Reservoir and along the Snake River in southern Idaho. Water supply for the project would be obtained by pumping from storage reserved in the Palisades and American Falls Reservoirs for 7,077 acres and by pumping from ground water for 3,958 acres. Approximately 9,500 acres would receive water from surface laterals and about 1,500 acres by sprinkler application.

The estimated total cost of the project, \$4,578,500 (\$415 per acre), July 1952 price levels, is allocated to irrigation. The Commissioner's letter refers to a total estimated cost of \$4,600,000, indexed upward to July 1953 prices. Amortized over 50 years at 2½ percent, the annual construction cost is \$161,950 and, including \$35,160 for operation and maintenance, \$18,600 for replacement reserve, and \$29,930 for power, results in a total annual cost of \$245,640. Average annual benefits are estimated at \$591,000, of which \$315,300 are direct benefits to irrigation farms, and \$275,700 are indirect and public benefits. The benefit-cost ratios are 2.40 on total benefits and 1.28 based on direct benefits, using a 50-year period to amortize construction costs.

The regional director, in his report of October 1953, states that water users can be expected to pay a total of \$132,700 annually or an average of \$12.03 per acre for irrigation. Annual operating costs of the project are estimated at \$74,900. Hence, an annual installment of \$57,800 would be available for use in repaying the construction cost of the project. Annual payments of this amount by water users would repay all construction costs of the project, including \$474,500 for storage in American Falls and Palisades Reservoirs in 80 years. During a 50-year repayment period the annual installments would total \$2,890,000 (\$262 per acre) or 63 percent of the \$4,578,500 total cost of the project. A Federal contribution in the amount of \$1,688,500 (\$153 per acre or 37 percent) would be required, unless funds in this amount are obtained from some other source.

The regional director recommends that net power revenues from the Palisades project and any associated projects be utilized to repay the cost beyond the water users repayment ability. The director's report states that the net surplus power revenues from the Palisades project, including the American Falls powerplant, amounting to \$856,000 per year, would be sufficient to pay the reimbursable costs

beyond the repayment ability of the Michaud Flats irrigators in approximately 2 years after such revenues become available.

According to information contained in Repayment Histories and Payout Schedules, 1952, the Palisades and American Falls projects would repay all reimbursable costs now assigned to these projects in about 62 years provided the interest component of power revenues is used to show repayment of irrigation costs associated with the Palisades project. Assuming initial Palisades power generation by 1957 and full power generation of both plants by 1961, these projects would be fully repaid in the year 2019. The inclusion of the \$1,688,500 discussed above for the Michaud Flats project would have the effect of extending this payout period about 2 years or to the year 2021. It is our understanding that under the present policy of the Department the interest component of power revenues in aid of irrigation is not used on projects recommended for authorization, but no decision in this respect has been made relative to previously authorized projects.

If the interest component is not used, the Palisades and American Falls projects would repay the reimbursable costs now assigned to these projects in about 71 years instead of 62 years. This in turn would make the combined payout for the Palisades-American Falls and Michaud Flats projects in 73 years or to the year 2030. However, there is no assurance at this time that the American Falls powerplant will be built. If the American Falls powerplant is not constructed, the cost of which is allocated mostly to non-interest-bearing irrigation pumping, and the interest component is not used on the Palisades project, the repayment period for the combined projects would be about 83 years or to the year 2040.

In general, the States of the Columbia River Basin favor or offer no objection to the project. The State of Utah has no objection to approval of the project, but makes reference to conflicting evidence relative to the construction of successful pump wells, doubts the adequacy and right to underground water, considers the repayment cost of \$12 per acre per year high for the crops to be grown, and questions the use of sprinkler irrigation in a dry, windy climate.

Federal agencies make no particular comments excepting the Department of Health, Education, and Welfare, which recommends that the Idaho State Department of Health be consulted concerning possible contamination of water-bearing strata resulting from irrigation well construction and that their recommendations concerning this matter be followed. It also strongly recommends that the Bureau of Reclamation utilize the consultant services of the Public Health Service when developing details of construction and operation of the project in order to minimize conditions when they may contribute to mosquito production.

The regional director's report indicates that irrigators would be able to repay \$12.03 per acre annually. While this estimate of repayment ability is supported by detailed farm budgets, in view of existing repayment histories of some irrigation districts in the general area of this project, including amendatory contracts, there may be some question that water users would be willing to repay at this proposed level.

The Bureau of the Budget believes that 50 years is a reasonable maximum period for repayments of irrigation construction invest-

ments, as was recommended in the case of the Department's report on the Colorado River storage project and participating projects. Considering the indefinite status of the presently proposed power repayment schedule and to protect any Federal investment in the proposed project, it would appear appropriate that authorizing legislation should provide some safeguards. Therefore, requests for appropriations for construction of the irrigation works, if authorized, should be conditioned on a current financial analysis and schedule of power generation and rates demonstrating the availability of power revenues in an amount sufficient to repay that part of the irrigation investment not paid by irrigation water users within 50 years after completion of construction with an allowance for a development period not to exceed 10 years. If sufficient power revenues are not expected to be available for this purpose during the irrigation water users 50-year repayment period, the Michaud Flats project should be deferred accordingly.

It is also believed that, in view of the relatively sizable secondary benefits involved, consideration should be given to a requirement for the establishment of a conservancy district as a means of insuring maximum justifiable contribution or repayment by those to whom secondary benefits of the project will accrue.

Accordingly, you are advised that, while there would be no objection to the submission of your report to the Congress subject to consideration of the above comments, authorization of the proposed project would be without objection only if provision is made to repay all reimbursable costs within a period of not to exceed 50 years as outlined above. No commitment, however, can be made at this time as to when any estimate of appropriation would be submitted for construction of the project, if authorized by the Congress, since this would be governed by the President's budgetary objectives as determined by the then prevailing fiscal situation.

It is requested that a copy of this letter be included with your report when it is submitted to the Congress.

Sincerely yours,

ROWLAND HUGHES, *Director.*

**LETTER FROM THE SECRETARY OF THE INTERIOR TO THE
PRESIDENT THROUGH THE BUREAU OF THE BUDGET**

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington 25, D. C., July 1, 1954.

The PRESIDENT,
The White House.

(Through the Bureau of the Budget.)

MY DEAR MR. PRESIDENT: My report on the Michaud Flats project, Idaho, is transmitted herewith, pursuant to the provisions of section 9 (a) of the Reclamation Project Act of 1939 (53 Stat. 1187).

Michaud Flats project, utilizing ground water and water regulated by existing American Falls Reservoir and the Palisades Reservoir which is currently under construction, would provide for the irrigation of 11,035 acres of land in the immediate vicinity of the town of American Falls, Idaho. Irrigation of these lands has been contemplated for many years and is necessary to the economic welfare of this semiarid area in which dry farming prevails. This is a single-purpose project and the estimated cost of about \$4,600,000, based on July 1953 prices, is all allocated to irrigation. The project has a benefit-cost ratio of about 2.8 to 1, and interested local persons have expressed approval of the general plan. I recommend that the Michaud Flats project be authorized as set forth in my report.

The report has been transmitted to officials of the States of the Columbia River Basin and to the Secretary of the Army for their consideration and recommendations as required by the provisions of section 1 (c) of the Flood Control Act of 1944 (58 Stat. 887). It was also sent to the State of Idaho for the comments of the head of the agency exercising administration over the wildlife resources of that State as required by the provisions of the act of August 14, 1946 (60 Stat. 1080), and to the Departments of Agriculture, Commerce, Labor, and Health, Education, and Welfare, and the Federal Power Commission in accordance with interagency agreements. All reviewing agencies have submitted comments and copies are enclosed with the report.

I shall appreciate having advice concerning the relationship of the Michaud Flats project to your program before I transmit the report to the Congress for its consideration and appropriate action in accordance with the provisions of the Reclamation Project Act of 1939.

Sincerely yours,

DOUGLAS MCKAY,
Secretary of the Interior.

REPORT OF THE COMMISSIONER OF RECLAMATION

DEPARTMENT OF THE INTERIOR,
BUREAU OF RECLAMATION,
Washington 25, D. C., June 28, 1954.

The SECRETARY OF THE INTERIOR.

SIR: This is my report on the Michaud Flats project, Idaho. It is based on, and includes, the proposed report on this project which you approved and adopted on March 15, 1954.

Copies of your proposed report were transmitted to the States of the Columbia River Basin and to the Secretary of the Army in accordance with the provisions of section 1 (c) of the Flood Control Act of 1944 (58 Stat. 887) and to the State of Idaho for comments from the head of the agency exercising administration over the wildlife resources of that State in accordance with the provisions of the act of August 14, 1946 (60 Stat. 1080). Copies of the report were sent also to the agencies represented on the Federal Inter-Agency River Basin Committee for their comments. Comments have been received from all States and agencies to which the report was sent and copies are attached.

In view of the favorable nature of the comments received it does not appear that revision of your proposed report as a result of the review of various agencies is necessary. In particular the officials of the State of Idaho, as well as other review agencies, advised that they were pleased to recommend the authorization of the Michaud Flats project.

Accordingly, I recommend that you approve and adopt this report as your report on the Michaud Flats project, Idaho, and that you transmit it together with the attached comments to the President and subsequently to the Congress in accordance with the provisions of the Reclamation Project Act of 1939.

Respectfully,

W. A. DEXHEIMER, *Commissioner.*

Approved and adopted: July 1, 1954.

DOUGLAS MCKAY,
Secretary of the Interior.

II

PROPOSED REPORT OF THE COMMISSIONER OF RECLAMATION

DEPARTMENT OF THE INTERIOR,
BUREAU OF RECLAMATION,
Washington 25, D. C., February 19, 1954.

THE SECRETARY OF THE INTERIOR.

SIR: This is my proposed report on the potential Michaud Flats project, Idaho. It is based on and includes the accompanying report of the regional director, Bureau of Reclamation, Boise, Idaho.

This irrigation project is located in Power County, Idaho, in the immediate vicinity of the town of American Falls. The irrigable lands consisting of 11,035 acres extend in a narrow strip northeast and southwest from American Falls and lie just south of the American Falls Reservoir and the Snake River.

The economy of the project area is based largely on dry farming. This is a semiarid area with average annual precipitation of about 13 inches of which less than 6 inches occurs during the growing season. Actually, dry farming is marginal and is successful only during periods of high demand and prices and sufficient rainfall. The welfare of the community has suffered frequently because of variation in these factors. Irrigation would broaden the agricultural base and stabilize the economy of the area. The local people recognize the need for irrigation and have expressed on various occasions the desire that such a project as discussed herein be constructed. The project is economically justified in that the expected benefits are well in excess of estimated costs.

Water supply would be obtained from storage reserved for the project in the Palisades and American Falls Reservoirs and from pumping from ground water. The storage water would be pumped directly from the American Falls Reservoir to serve 7,077 acres via two main canals. Pumping from wells tapping the ground water supply would provide water adequate to serve an additional 3,958 acres. Of the total, approximately 9,500 acres would receive water from surface laterals and about 1,500 acres by sprinkler application. In addition to the main pumping plant, canals, and wells with associated equipment, the project would consist of laterals, drains, and necessary electrical works.

As stated in the regional director's report, until such time as energy is available from the authorized Federal powerplant at American Falls Dam, pumping power probably would be furnished by wheeling over Idaho Power Co. lines. Based upon the proposed rates quoted in the report, this interim plan appears to be slightly more favorable than the plan for Federal construction of the electric distribution system. However, the costs of the two plans are such that the finally established rates for the pumping power will determine which plan is actually the cheaper.

The estimated cost of the project based on July 1952 prices is \$4,578,500. Indexed to July 1953 prices this would amount to approximately \$4,600,000. Included in the project cost is \$474,500 which is the cost of storage in Palisades and American Falls Reservoirs allocated to irrigation and assigned to the Michaud Flats project. Annual operation, maintenance, and replacement costs, including pumping energy, are estimated to amount to \$74,500. This amount would be slightly higher during the period of wheeling of pumping power by the power company.

All of the estimated cost is allocated to irrigation and is reimbursable. Studies indicate that the irrigators probably would repay \$2,890,000 or 63 percent of the total cost in a 50-year repayment period following a 10-year development period. It is recommended that net power revenues from the Palisades project and any associated projects be utilized to repay the costs beyond the water users repayment ability. The net surplus power revenues from the Palisades project, including the American Falls powerplant, amounting to \$856,000 per year would be sufficient to pay the reimbursable costs beyond the repayment ability of the Michaud Flats irrigators in approximately 2 years after such revenues become available.

In the preparation of this report, consideration was given to a plan for irrigation of lands in the Fort Hall Indian Reservation in combination with the Michaud Flats area. It was found that it would be more economical and advantageous to handle the Indian irrigation unit separately, although the advantage of making power revenues from the Palisades project available to assist in repayment of the portion of the cost of the Indian project is recognized. This would require legislative authorization, but would be compatible with the overall irrigation plan for this area developed by the Bureau of Indian Affairs and the Bureau of Reclamation.

The Fish and Wildlife Service of this Department has studied the proposed project and has concluded that it would have certain wildlife benefits and would not affect fishery resources significantly.

I concur in and adopt the recommendations of the regional director as set forth in paragraph 21 of his report and the recommendations of the Fish and Wildlife Service, dated January 30, 1953, which is appended to the underlying report.

I recommend that you approve and adopt this report, including the appended Fish and Wildlife report, as your proposed report on the Michaud Flats project and that you authorize me in your behalf to transmit copies to the States of the Columbia River Basin and to the Secretary of the Army in accordance with requirements of the Flood Control Act of 1944 (58 Stat. 887), to the State of Idaho for the views and recommendations of the head of the agency exercising administration over the wildlife resources of that State in accordance with provisions of the act of August 14, 1946 (60 Stat. 1080), and to other interested Federal agencies for their comments.

Respectfully,

W. A. DEXHEIMER, *Commissioner.*

Approved and adopted: March 15, 1954.

DOUGLAS MCKAY,
Secretary of the Interior.

UNITED STATES DEPARTMENT OF THE INTERIOR

DOUGLAS McKAY, Secretary

BUREAU OF RECLAMATION

W. A. DEXHEIMER, Commissioner

REGION 1

HAROLD T. NELSON, Regional Director

MICHAUD FLATS PROJECT

IDAHO

Report of the Regional Director

and

Substantiating Materials

Regional Office

Boise, Idaho

October 1953

REPORT OF REGIONAL DIRECTOR, BUREAU OF RECLAMATION

DEPARTMENT OF THE INTERIOR,
BUREAU OF RECLAMATION,
REGIONAL OFFICE, REGION 1,
Box 937, Boise, Idaho, October 22, 1953.

To: Commissioner, Bureau of Reclamation.
From: Regional Director, Region 1, Boise, Idaho.
Subject: Report on Michaud Flats Project, Idaho.

TRANSMITTAL

1. Herein is my report outlining the potential development of the Michaud Flats project, Idaho. A more detailed description of the development is presented in the accompanying substantiating materials. The proposed construction has engineering feasibility. Annual benefits would exceed the annual costs by a ratio of 2.83 to 1.00. After paying annual operation and maintenance charges, water users would be able to repay 63 percent of the construction cost within a 50-year repayment period. The remainder, \$1,688,500, could be repaid with power revenues from the Palisades project, extending the payout period for that project by slightly less than 3 years. I recommend that you approve the report and present it for appropriate departmental action with a view to authorization of the Michaud Flats project for construction.

AUTHORITY FOR THE REPORT

2. This report is authorized to be made by virtue of the Federal reclamation laws (act of June 17, 1902, 32 Stat. 388, and acts amendatory thereof or supplementary thereto).

COOPERATION AND ACKNOWLEDGMENTS

3. In the course of the investigations, other agencies, State and Federal, and many individuals have been consulted. I wish to acknowledge especially the assistance and cooperation of the State of Idaho Department of Reclamation; the United States Department of the Interior, Geological Survey; staff members of the University of Idaho; and the many residents of the project area who supplied information required in the investigations.

DESCRIPTION OF THE AREA

4. Michaud Flats project is located in Power County, Idaho, south of American Falls Reservoir and Snake River. The town of American Falls (population about 1,900), county seat and trading center, is

23 miles west of Pocatello, Idaho. The project lands extend in a narrow strip southwest and northeast of American Falls, occupying the loess-covered valley and benchlands between the river channel and the foothills of the Deep Creek Mountains.

5. Climate of the area is semiarid. Of the average annual precipitation of 13 inches, about 6 inches falls during the growing season. Except for the scant and unpredictable summer rainfall which has been as little as 3 inches and the drying winds, the climate is favorable for agriculture. The growing season for frost hardy crops averages about 180 days.

6. The economy of the community is based on agriculture—largely dry-farmed wheat in adjacent districts for which American Falls is the nearest rail shipping point. Industrial and commercial activity in American Falls primarily involves the handling of farm products and provision of goods and services required by the community.

NEED FOR DEVELOPMENT

7. The occurrence and amount of rainfall is generally unsatisfactory for maintaining dry-farming operations on the project lands, although production has been profitable during several periods of above-normal precipitation and prices. Requests of landowner organizations in the area for irrigation development date from 1927 when construction of American Falls Dam was completed. Organization of the Falls Irrigation District in 1949 by owners of 22,000 acres in the Michaud Flats area for the purpose of contracting with the Government for construction of irrigation facilities reflects community awareness of the need for the development.

PLAN OF DEVELOPMENT

8. The selected plan involves distribution of water, lifted by electrically powered pumps from American Falls Reservoir and from ground water, to an irrigable area of 11,035 acres. Of this area, 7,077 acres would be served directly by pumping from the primary supply in American Falls Reservoir; and 3,958 acres by pumping from ground-water wells a part of the return flow resulting from application of the primary supply. Distribution would be through canals for gravity application to about 9,500 acres and through pipelines for sprinkler application to about 1,500 acres which can only be irrigated by this method.

9. Water for the project would be obtained primarily from surface flow of Snake River stored in American Falls and Palisades Reservoirs. It is assumed that the space in these two reservoirs assigned for new land development on the Michaud Flats will be proportioned to this project and the Bureau of Indian Affairs' proposed development within the Fort Hall Reservation. As the Michaud Flats project acreage to be served from surface water is limited by the available supply, the plan provides for pumping from wells a part of the surface applications which are lost through deep percolation and its reuse on an additional acreage.

10. Pumping power would be obtained from the Palisades-American Falls-Minidoka Federal system authorized for construction by Public Law 864, under provisions of which power would be supplied for

pumping on Michaud Flats at a uniform energy rate of 3 mills per kilowatt-hour. If the Michaud Flats project is to be developed before the authorized American Falls powerplant is constructed, an alternate means of supplying power to the main pumping plant and well pumps will have to be provided. This can be done by having power from the Palisades powerplant transmitted from the Goshen substation to American Falls and delivered to the pump locations by the Idaho Power Co. It is estimated that power can be delivered to the American Falls pumping plant at a rate of 3 mills per kilowatt-hour and to the well pumps at a rate of 3.9 mills per kilowatt-hour.

11. The development plan spreads the limited water supply over the maximum acreage, and the proposed pumping would not interfere with existing downstream rights, as amounts of ground water pumped would be less than the return flow to ground water from surface irrigation.

COSTS AND REPAYMENT

12. Estimated total construction and storage cost of the recommended plan for the Michaud Flats project, based on prices prevailing July 1952, as shown in the accompanying detailed report, amounts to \$4,578,500. At July 1953 price levels, the cost would be about \$4,600,000. Of the total cost, \$474,500 is for storage costs in American Falls and Palisades Reservoirs. All of the cost is reimbursable to the Federal Government.

13. Under the interim power service plan, which would be required if project construction precedes construction of the American Falls powerplant, costs would differ somewhat from those shown for the recommended plan. In this case, no project power facilities would be required to serve the American Falls pumping plant except the transformers at the pumping plant. The covered bus would be deferred and distribution lines and facilities to supply the well and sprinkler pumps would be provided by the company with the exception of the transformers, meters, and motor controls at the well pumps. Estimated total construction and storage cost under this plan, based on July 1952 unit prices, amounts to \$4,425,000, including the \$474,500 storage cost as used for the recommended plan.

14. Estimated annual costs for operating and maintaining the project works, including pumping power costs plus estimated reserves for replacements over a 50-year repayment period, total approximately \$74,900 for the recommended plan. The same items of cost under the interim power service plan total approximately \$75,370.

15. Payment ability of the water users is calculated at about \$12 per acre per year. The total annual payment would be \$132,700. After meeting operating costs, \$57,800 would be available annually to repay the construction obligation. Annual payments of this amount would repay all construction and storage costs of the project in 80 years.

16. If a 40-year repayment period were entered into under section 9 (d) of the Reclamation Project Act of 1939, approximately 50 percent of the construction costs could be repaid by the water users.

17. If a 50-year repayment period were authorized, approximately 63 percent of the construction costs could be repaid by the water users. Repayment of the balance of the construction costs could be

achieved through the Palisades project by the use of net power revenues for slightly less than 3 years after that project is paid out.

BENEFIT-COST RATIO

18. Benefits from the Michaud Flats project are estimated at \$591,000 annually. Annual costs associated with these benefits amount to \$209,000. Thus, the ratio of benefits to costs is 2.83 to 1.00.

LOCAL ATTITUDE

19. Various Bureau officials presented statements regarding the project plan and related costs to members of the Falls irrigation district and other interested persons in meetings during August 1952. The local attitude toward the project, as expressed at the meetings, is one of approval if total costs are reasonable.

CONCLUSIONS

20. It is concluded that:

(a) The accompanying report presents a sound engineering plan for irrigation development of the Michaud Flats project.

(b) The project has economic justification.

(c) It would be possible for water users to return, with annual water charges averaging \$12 per acre, \$2,890,000, or 63 percent of the \$4,578,500 reimbursable cost of the project in 50 years; or 100 percent in 80 years.

(d) There is widespread support for the project. The expressed attitude of the prospective water users is one of approval of the development as proposed.

(e) There is definite need for the project. Under their present use, project lands add little to the economic well-being of the community. The construction, as part of the overall plan for development of land and water resources in the Snake River Basin, would maximize the use of these two resources.

(f) An orderly and economical schedule of construction, including the detailed surveys, farm unit layout, designs and plans, has been developed, as well as a schedule of annual appropriations necessary to carry out the operations during the proposed 36 months construction period.

RECOMMENDATIONS

21. It is recommended that:

(a) The plan of development, as described in this report, be approved.

(b) An application for a project permit to divert 125 cubic feet per second of Snake River spring runoff surplus to existing demand and to pump 13,900 acre-feet from ground water, be filed, and that contracts for 23,300 acre-feet of American Falls space and 40,900 acre-feet of Palisades space be entered into by the Falls Irrigation District before construction work is initiated.

(c) The following principal features and such related works as may be incidental thereto, constituting the Michaud Flats project, to wit:

 Main pumping plant

 Main east and west canals

Storage capacity consisting of 23,300 acre-feet of capacity in American Falls Reservoir and 40,900 acre-feet in Palisades Reservoir

Wells, pumping plants, and associated distribution systems

Power service system

Drainage works

be authorized to be constructed and/or operated and maintained by the Bureau of Reclamation, Department of the Interior, in accordance with the Federal Reclamation Laws (act of June 17, 1902, 32 Stat. 388, and acts amendatory thereof or supplementary thereto), substantially in accordance with the plans set forth in this report, with such modifications, omissions or additions to the works as the Commissioner of Reclamation, with the approval of the Secretary of the Interior, may find proper for carrying out the plan to the end of providing water for the irrigation of approximately 11,035 acres of land and for accomplishing the other purposes of the plan: *Provided*, That, of the project construction cost properly allocable to irrigation, the water users shall be required to assume an obligation to repay only that part which the Secretary shall find to be within their ability to repay under the provisions of the Federal reclamation laws as modified by the following special terms and conditions:

(1) The total repayable amount shall be scheduled for payment on a basis of uniform charges for like classes of land that will result in the annual installment to be established for each year being an amount which is, as nearly as practicable, equal to the ability of the water users to pay in that year, having regard to their volume of production, prices they received for their farm products, and their production and living costs; but the objective shall be to provide a plan that, assuming the existence of normal relationships between the farm prices and costs, would result in full repayment of that portion of the construction costs assigned to water users for repayment by the Secretary in not to exceed a 50-year period beginning with the first year after the close of the development period; and

(2) It shall be required that there be established and maintained a replacement reserve in an amount sufficient to meet replacement costs likely to be incurred before the end of the repayment period.

The balance of the construction costs shall be assigned for return from net power revenues from the Palisades project and any interconnected developments combined therewith for payout purposes under the provisions of section 2 of the act of September 30, 1950 (64 Stat. 1083).

HAROLD T. NELSON, *Regional Director*.

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
REGION 1

MICHAUD FLATS PROJECT, IDAHO
SUBSTANTIATING MATERIALS

Planning Area Office
October 1953

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Plan for development—Continued

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2. Preliminary evaluation report on fish and wildlife resources. United States Department of the Interior, Fish and Wildlife Service, January 1953.	

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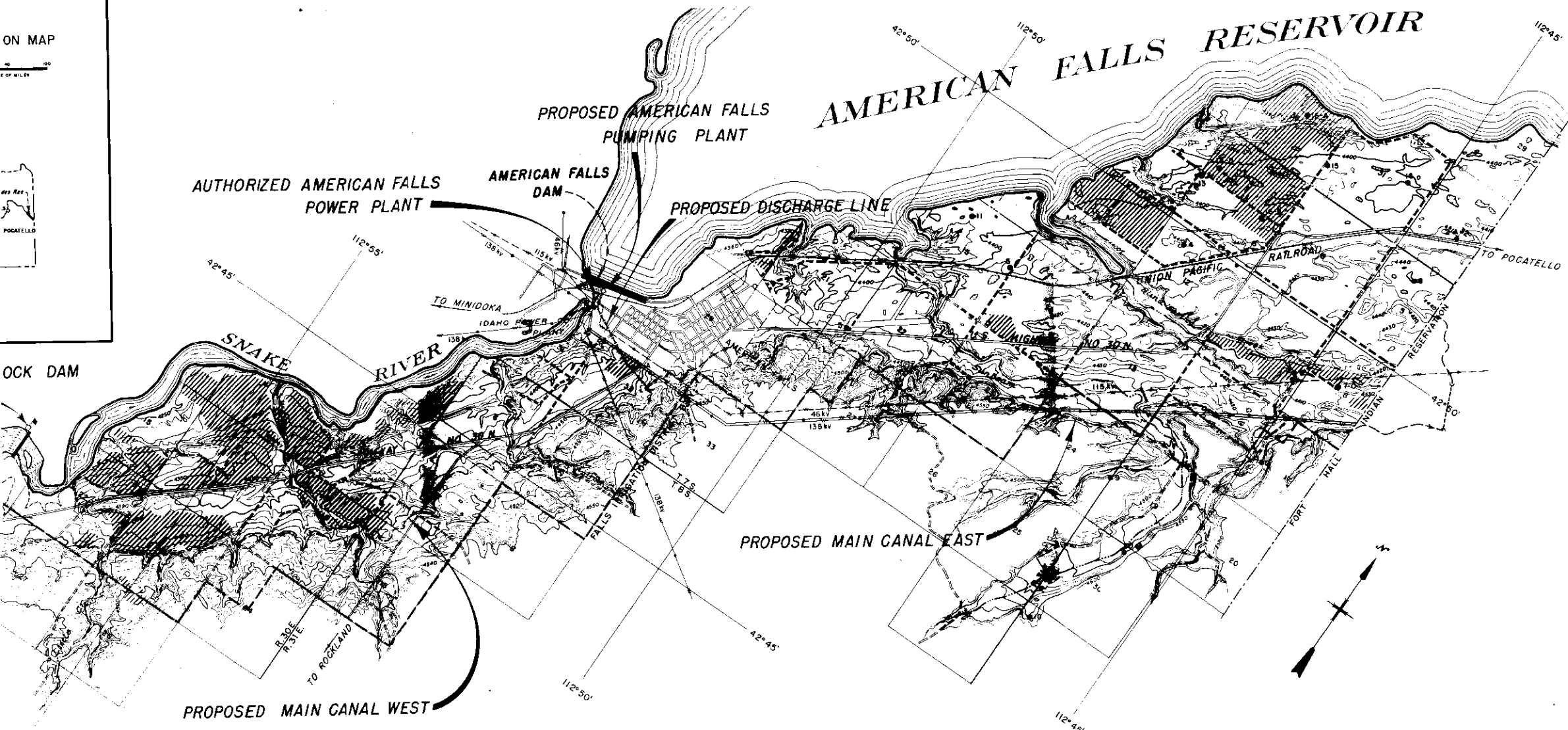
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ON MAP

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OCK DAM



PROPOSED MAIN CANAL EAST

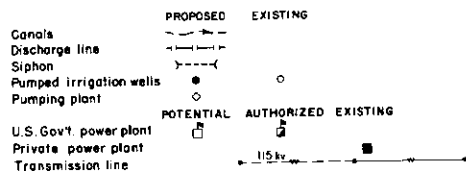
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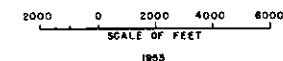
PROJECT WORKS



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

MICHAUD FLATS PROJECT
IDAHO

REGION I
GENERAL MAP



SUBSTANTIATING MATERIALS

CHAPTER I

GENERAL DESCRIPTION

Michaud Flats project would provide irrigation for 11,035 acres of irrigable land along Snake River adjacent to the town of American Falls in southeastern Idaho. Surface flows of Snake River stored in space allotted to the project in American Falls and Palisades Reservoirs would be pumped from American Falls Reservoir into canals which would serve the major portion of the land. Ground water, in an amount less than return flow from the lands served by surface water, would be pumped from wells and distributed to the remainder of the land. Topography, soil, economic, and engineering considerations influenced selection of this plan as affording optimum utilization of the available water supply.

CHARACTERISTICS OF THE AREA

The project area (see general map) is part of the 65 square miles of flat to rolling land south of Snake River between Portneuf River and Neeley known as the Michaud Flats. Irrigable land on the flats is divided by the western boundary of Fort Hall Indian Reservation into a Michaud Flats extension of the Fort Hall Indian project and the Michaud Flats project described herein. American Falls, Power County seat, is 23 miles west of Pocatello, about 100 miles east of Twin Falls, and about 200 miles north of Salt Lake City, Utah. The eastern portion of the project area borders American Falls Reservoir. Palisades Reservoir (under construction) lies 120 miles upstream on Snake River.

Palisades Dam and Reservoir is a multipurpose development involving irrigation, power, flood control, recreation, and fish and wildlife. A total of 124,800 acre-feet of space in this reservoir has been reserved for new irrigation development on Michaud Flats, including Michaud Flats project. The reservoir will only store water available for carryover from years of above average streamflow to years of below average flow, as existing reservoirs in the upper Snake River Valley have sufficient capacity to hold all presently storable water in years of average or below average flow. The Palisades development and the authorized, but not as yet constructed, American Falls powerplant, will provide hydroelectric power badly needed in the upper valley to serve irrigation pumping and other loads.

American Falls Reservoir, with an active capacity of 1,700,000 acre-feet, was constructed in 1926-27 to provide storage for existing irrigation developments and for new developments then under consideration, including Michaud Flats project. Of the space reserved

in that reservoir for new lands, 71,000 acre-feet have been allocated to Michaud Flats area including Michaud Flats project for use in conjunction with Palisades storage.

PHYSICAL FEATURES

The general area, of which the Michaud project is a part, lies at the southern edge of the Snake River Plain which was formed when lava flows filled the ancient valley of Snake River (see relief map). The project lands occupy a strip about 18 miles long and 3 to 4 miles wide southeast of the river and American Falls Reservoir. They include old lake terraces, alluvial benchlands, and adjoining foothill slopes. Geologic and physiographic characteristics of the area are described in the appended preliminary report on ground water in the Michaud Flats project prepared by the Geological Survey.

CLIMATE

The area has a semiarid continental climate with wide seasonal and daily temperature ranges, moderate to high winds, high evaporation rates, and a high incidence of sunshine. Average annual precipitation is about 13 inches, of which less than 6 inches occurs during the growing season. Much of the remainder falls as snow. As indicated in table 1, annual precipitation varies widely, ranging from 6 to 24 inches. Frost-free seasons averaging about 118 days and growing seasons of about 180 days for frost-hardy crops are sufficient for satisfactory production. Adequate irrigation will overcome the major climatic handicaps of meager growing season precipitation and high evaporation.

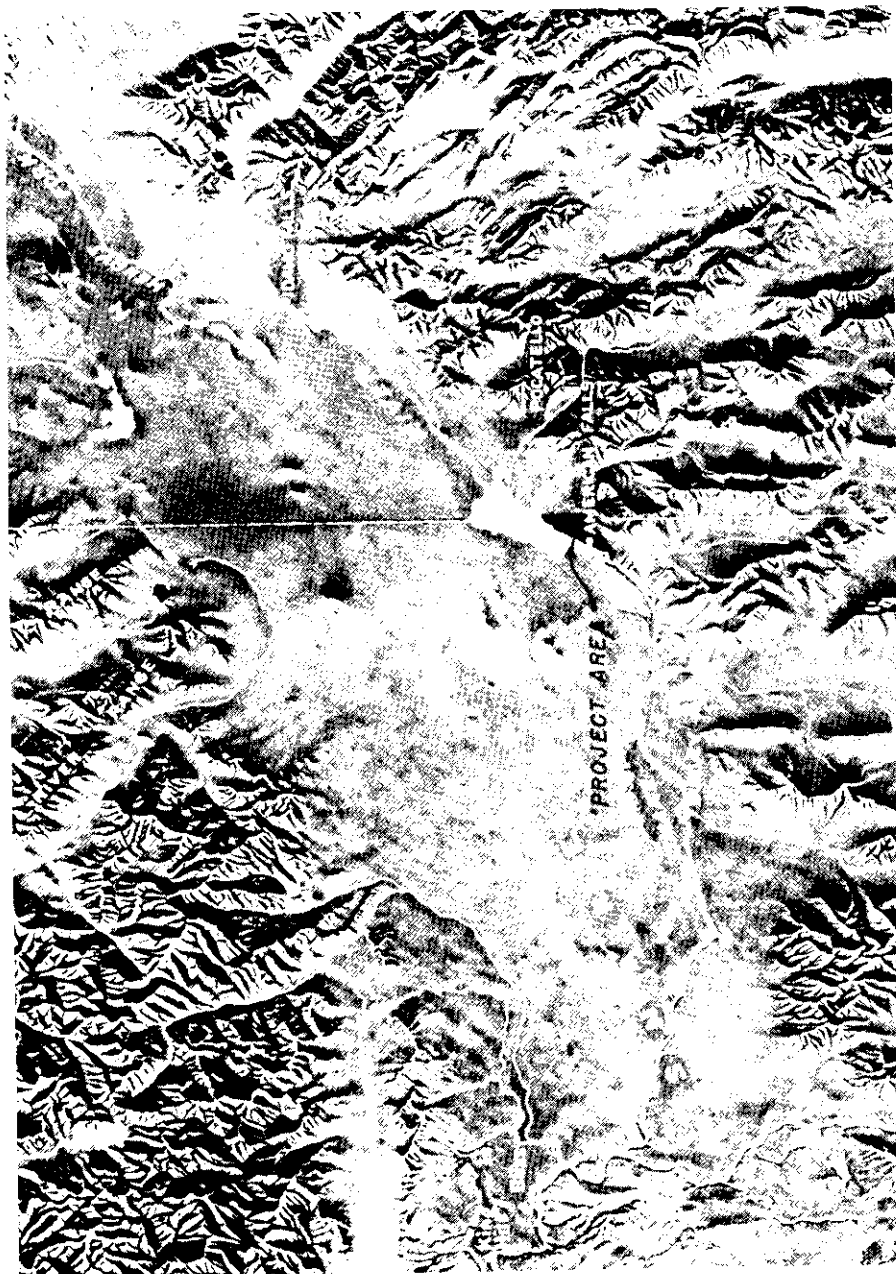
TABLE 1.—*Climate summary, American Falls, Idaho*¹

Precipitation (inches):	
Average annual.....	12. 94
Average growing season.....	5. 65
Highest annual (1912).....	24. 35
Lowest annual (1924).....	6. 18
Snowfall (average).....	31. 40
Temperature (° F.):	
Average July maximum.....	88. 9
Average January minimum.....	14. 1
Highest.....	106. 0
Lowest.....	-38. 0
Prevailing wind.....	Southwest
Average May-October evaporation (inches).....	38. 86
Last killing frost in spring:	
Average date.....	May 21
Latest date.....	July 1
First killing frost in fall:	
Average date.....	Sept. 15
Earliest date.....	Aug. 19
Length season between killing frosts (days):	
Average.....	118
Shortest (1934 to date).....	84

¹ 52 years of record.

SETTLEMENT AND DEVELOPMENT

Named from American Falls on Snake River, site of the dam and reservoir of that name, the town of American Falls grew from a camp-site on the old Oregon Trail. Placer mining brought the first settle-



ment; stock raising and farming followed and have continued to increase.

HISTORY

Early settlement of the general area began in the sixties on the bottom lands along Snake River and its tributaries where the plentiful native hay and pasture encouraged stock raising. Most of the settlers came from Utah and their descendants occupy much of the area today. Others came from Eastern States via the Oregon Trail. Establishment of the Fort Hall military post on Lincoln Creek in 1870 afforded protection and a trading center; thereafter, agriculture began to expand onto the surrounding benchlands.

Irrigation of areas upstream from American Falls was first practiced by simple diversions to bottom lands (now largely covered by American Falls Reservoir) in the seventies, then was expanded to the higher terraces when Carey Act companies were organized to build the larger facilities required. Most of this development took place from 1884 to 1905, fostered by completion through the area of the Utah & Northern Railroad in 1881 and the Union Pacific shortly thereafter.

POPULATION

In 1898 there were only 103 people in the town of American Falls, but there were considerably more in the adjacent farming area. Power County, with an area of 1,391 square miles, was created from parts of adjacent counties in 1913, and American Falls was named the county seat. Construction of the dam and reservoir involved moving the town but brought new population to the area. Population of the town was 1,890 in 1950, that of the county was approximately 4,000. About 100 people lived on the project lands in 1952.

ECONOMIC DEVELOPMENT

Industrial and commercial activities in the town of American Falls are almost exclusively concerned with handling farm products and providing other services and goods required by the local population. Existing facilities will fill needs of settlers on the project, at least during early stages of development.

TRANSPORTATION AND OTHER FACILITIES

Rail and highway transportation in the area is adequate to handle increased loads anticipated to follow project development. The area is traversed by the Union Pacific Railroad main line to the northwest and by transcontinental highway U. S. 30 which connects American Falls with Pocatello on the east and Rupert on the west. State Highway 39 enters the town from the north, crossing the dam, and State Highway 37 leads to Rockland on the south. County roads extend through most of the irrigable lands on section lines.

American Falls has been one of the major primary hard wheat shipping points in the United States, and grain elevator capacity is adequate in most years to handle production. The nearest flour mill is at Pocatello. Some of the milk produced in the area is sold fresh to market milk dairies in Pocatello, some goes to cream-buying stations

in American Falls, but most of the product reaches Kraft's cheese factories at Rockland and Aberdeen.

Idaho Power Co. operates a 27,000-kilowatt plant on Snake River below American Falls Dam and distributes electricity to the town and most parts of the project area. Adequate communication facilities are available except in more remote areas. In addition to business enterprises in American Falls, there are churches and a well-equipped consolidated high school and elementary school.

LAND USE

Range and bottom-land pasture, dry-farmed grain, and irrigated crops are the land uses in the area. The pioneer agriculture consisted chiefly of growing native hay on the river-bottom lands for winter feeding. The next stage was production of tame hay, mainly alfalfa, and feed grains on the irrigated benchlands north of the river. By 1910 sugar beets and potatoes had become important crops in this section. Dairying became a substantial enterprise in several districts shortly thereafter.

Dry farming for winter wheat began about 1905 and grew to a 3-million-bushel industry in Power County. During a period of relatively high rainfall about 1910-17, claims were filed for most of the tillable land around American Falls and it was dry farmed to winter wheat. Much of the land in the immediate vicinity of the project was abandoned during the ensuing dry periods, only the better land being farmed in seasons when moisture and price conditions were favorable. The important wheat producing sections of Power County lie to the south in a higher rainfall zone. It is the production from this extensive dry-farmed area, totaling more than 2 million bushels annually, that makes Power County one of the 5 leading wheat-producing counties of Idaho.

The two major milksheds in the county adjoin the project area. The Rockland district lies to the south, the Aberdeen area is across Snake River north of American Falls.

IRRIGATION

Of the nearly 11,000 irrigated acres in Power County in 1949, the Aberdeen and Rockland tracts accounted for about 8,000 acres. Water rights of these and other smaller tracts date from 1879 to 1886. Irrigated acreage in the Michaud Flats project area totaled only about 400 acres in 1949, and water was obtained almost entirely by diversion of surface flows from the several small streams crossing the area.

Domestic and stockwater supplies have been pumped from ground water since the project area was first settled. Since 1949 irrigation wells have been drilled in various sections of the project area and electrically driven pumps installed to provide full season supplies. Of the 13 installations operated in 1952, most of them delivered about 2 cubic feet per second from water depths usually less than 200 feet. Several of the systems distribute water by canals and laterals; some of the later installations supply water under pressure to portable-pipe sprinklers used largely on potatoes, seed peas and sugar beets and to some extent on alfalfa.

Wells in the project area west of American Falls tap a ground-water supply that apparently is not tributary to Snake River flow above Lake Walcott. However, water users in downstream irrigation districts supplied from American Falls Reservoir believe that wells adjacent to the reservoir east of the town are pumping from the water supply of that reservoir. Spokesmen for these districts state their intention to seek an adjudication following initial action in accepting or rejecting plans for developing the Michaud Flats project.

UNDEVELOPED RESOURCES

Arable drylands in the area constitute its major undeveloped resource. Most of these lands are dry farmed to wheat periodically when moisture and price conditions are favorable. Other tracts, topographically less favorable for cultivation, remain in the native cover of sagebrush, annual grasses, and weeds.

Irrigation by diversion of small streams tributary to Snake River reached its maximum development early in the century and declined greatly during the drought of the early thirties. Expansion of the irrigated area took place only recently when a number of individuals drilled wells to obtain irrigation supplies. Success of these enterprises has given rise to widespread interest in enlarging the irrigated acreage, but such expansion is restricted by uncertainties regarding the legal ownership of ground waters.

NEED FOR DEVELOPMENT

The community clearly needs the widened agricultural base obtainable through expansion of irrigation. Dry farming in and adjacent to the project has been successful only during two relatively short periods. The first of these was the direct result of the shortage and high market price for wheat directly attributable to World War I. The second period, 1945-50, resulted from the demand and accompanying high price for wheat occasioned by World War II.

Economy of the community has alternately suffered because of the lack of returns from dry-farmed lands in and adjoining the project area and prospered with satisfactory returns from these lands. Despite high prices, unfavorable growing conditions in 1951 and 1952 have already adversely affected the community's economy.

ATTITUDE OF LOCAL PEOPLE TOWARD THE PROJECT

Local people are keenly aware of the stabilizing effect that irrigation of project lands would have upon the economy of the community. Both the farmers and townspeople realize that irrigation development affords the best opportunity for obtaining and maintaining a stabilized economy. The several recent individual irrigation developments in the vicinity have demonstrated the possibilities and have focused community interest upon further development. The local attitude toward the project, expressed at several meetings during the summer of 1952, is one of approval.

INVESTIGATIONS AND REPORTS

The present investigation is an outgrowth of a 1926 Bureau of Reclamation investigation of the Neeley project petitioned by the Power County Irrigation District which was organized in 1920. The landowners originally contemplated obtaining a water supply from Snake River through extension of the Fort Hall Indian project canal, but the short water years of 1924 and 1926 indicated the need for additional storage before further development was undertaken. It was assumed that after completion of American Falls Dam and Reservoir in 1927, the Michaud area would be developed. However, another series of short water years from 1930 to 1934 indicated that even with that reservoir, the water supply was inadequate for new land development.

As a result of the 1930-34 drought, all irrigation interests in the Snake River Basin began seeking construction of additional storage capacity to insure supplies for existing developments and to provide water for development of new lands. This movement gave rise to proposals to construct Palisades Dam and Reservoir. Continuing interest and desires of landowners, reflected in organization of the Falls Irrigation District of 22,000 acres in 1949, pointed up the advisability of a detailed investigation of the Michaud Flats project.

PREVIOUS INVESTIGATIONS

Investigation of the Neeley project, involving examination of some 2,700 acres in a 6-mile-long strip along Snake River downstream from American Falls and preparation of engineering plans and estimates, was completed by the Bureau in 1926 on allotted funds totaling \$3,500. The interested landowners manifested their faith in the project by submitting recordable contracts to lands held in excess of legally specified ownerships and by advancing \$1,265.75 for purchase and installation of a 36-inch irrigation outlet through the American Falls Dam during its construction.

As described in the report submitted November 10, 1926, the proposed plan contemplated pumping from American Falls Reservoir under a mean static head of about 90 feet into a 40-cubic-foot-per-second earth canal serving the area. Estimated construction cost totaled \$279,595, or \$102.80 per acre, which would have required a construction charge of \$2.57 per acre over a 40-year period. Estimated annual operation and maintenance charges totaled \$15,370.38, or \$5.65 per acre, making total annual charges per acre of \$8.22.

The estimated charges support the conclusion reached in the report that the "present state of agricultural development and the demand for irrigated lands in the locality (negligible owing to the agricultural depression then extant) and the present productive power of the project area are not sufficient to pay annual water-right charges in excess of \$8 per acre."

Irrigation possibilities in the Michaud Flats and adjacent areas have been the subject of various investigations beginning about 1890 by the Bureau of Indian Affairs. These investigations related to construction and extension of facilities needed to serve primarily Indian lands of the Fort Hall Reservation. Diversion from Snake River to Fort Hall lands, authorized by Congress in 1894, was the first develop-

ment, followed by construction of a reservoir on Blackfoot River in 1907, and rehabilitation of the storage facilities in 1927.

Continuing interest in developing white-owned, Indian-owned, and Indian-ceded lands fostered promotion of the so-called Greater Fort Hall project, a plan which involved construction of a high-line canal for irrigating Indian and non-Indian lands along the east bank of Snake River from a point north of Pocatello to Neeley. Plans for the canal were prepared under direction of the Bureau of Indian Affairs and in 1931 Congress authorized extension of the Fort Hall project system to serve up to 47,000 acres in the Michaud Flats area. However, as the plan did not provide the required additional water supply and contemplated construction of an expensive siphon, the construction was never undertaken.

A proposed revision of the canal extension plan to provide for a less expensive siphon and to provide water to virtually the same area as that contemplated in this report was prepared by a private engineer at the direction of the Falls Irrigation District. A brief of the plan was submitted to the State department of reclamation January 13, 1949, with a petition for Federal construction of irrigation works under that or another plan, under contract with the district. Detailed examination of the revised canal extension plan was not made by the Bureau of Reclamation because of its relatively high construction cost, its lack of a specified water supply source, and the operation and maintenance complications involved in serving both Indian and non-Indian-owned lands from the same canal.

A thorough investigation by the Bureau of Reclamation of water use and requirements in the upper Snake River Valley was made after the original Palisades Dam and Reservoir project was authorized. This served as the basis for determining the disposition of the 433,593 acre-feet of reserved space in American Falls Reservoir. When American Falls Reservoir was completed in 1927, the contemplated use of that reserved space was for new land development. However, during a several-year drought following its completion the reservoir failed to fill and the reserved space was leased to water users on developed lands, an arrangement which in various forms has been in effect ever since.

A report covering results of that investigation entitled, "Water Supply for Palisades Reservoir Project, Idaho," (project planning report No. 1-5.17-1), was issued by the Bureau of Reclamation October 1946. The report presented a proposed winter water-saving program and a plan for development of new land. Since issuance of the report, the Bureau of Reclamation has carried on lengthy negotiations with water users to obtain maximum water conservation and agreement on the disposition of the reserved space in American Falls Reservoir. Various proposals were made by the United States, out of which a compromise evolved. The compromise, to which there has been general agreement, involves these principal points: (1) The elimination by water users in the upper valley of the present winter diversions in order to conserve water for storage in Palisades Reservoir; and (2) the disposition of American Falls Reservoir space as follows: 315,000 acre-feet to present lessees, 47,593 acre-feet to be set aside for the North Side pumping division of the Minidoka project, and 71,000 acre-feet to be set aside for the Michaud area.

The Palisades Dam and Reservoir project was authorized under provisions of Federal reclamation laws by the presentation to the President and the Congress of the Palisades project report of December 9, 1941 (H. Doc. 457, 77th Cong., 1st sess.), by the Secretary of the Interior. The project was reauthorized by Public Law 864 (S. Doc. 2, 195, 81st Cong.), for construction and operation and maintenance substantially in accordance with that report as supplemented and modified by the Commissioner's supplemental report which was approved and adopted by the Secretary July 1, 1949.

The supplemental report upon which the reauthorization was based contemplated use of power from the therein authorized American Falls and Palisades powerplants for irrigation pumping in the Michaud area. A reservation of storage space for Michaud area irrigation was made also in that report.

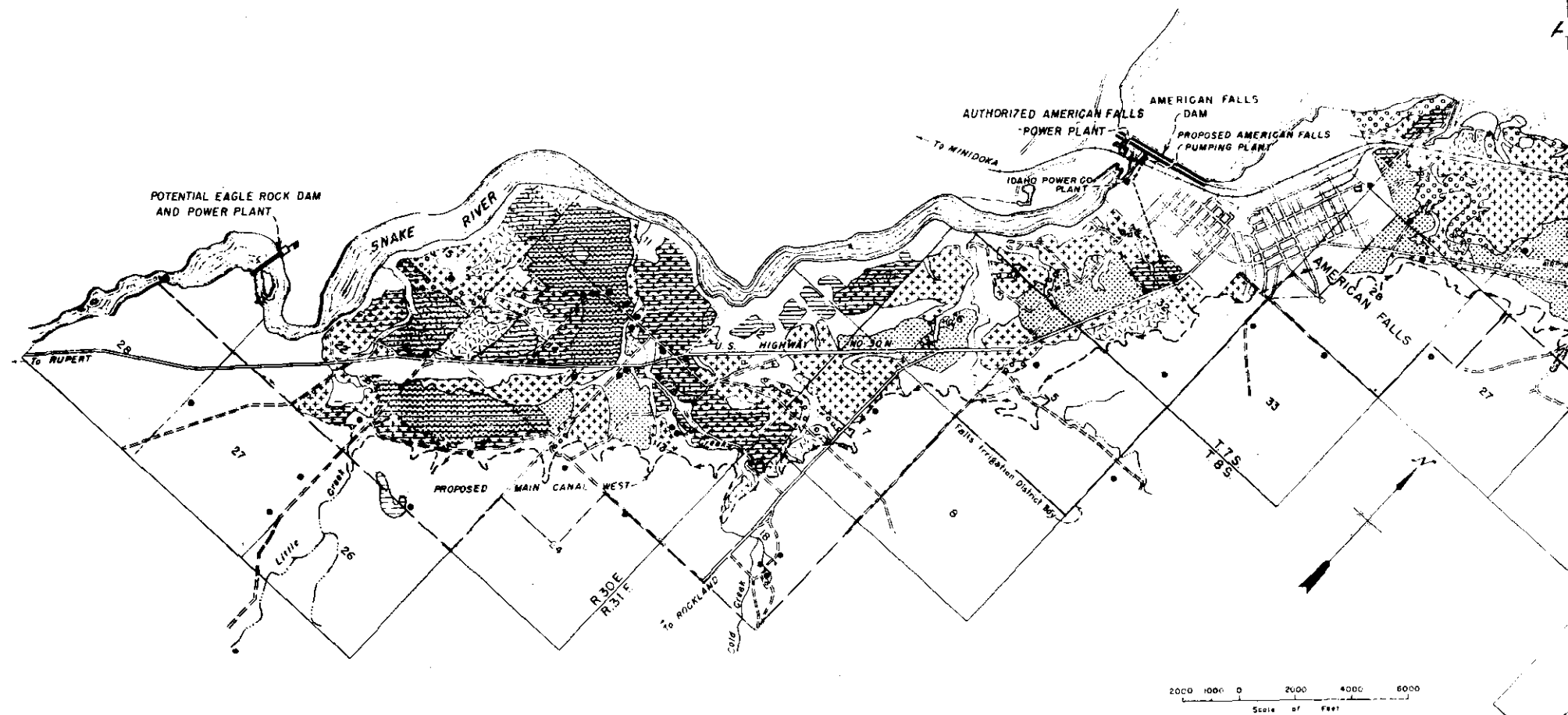
PRESENT INVESTIGATION

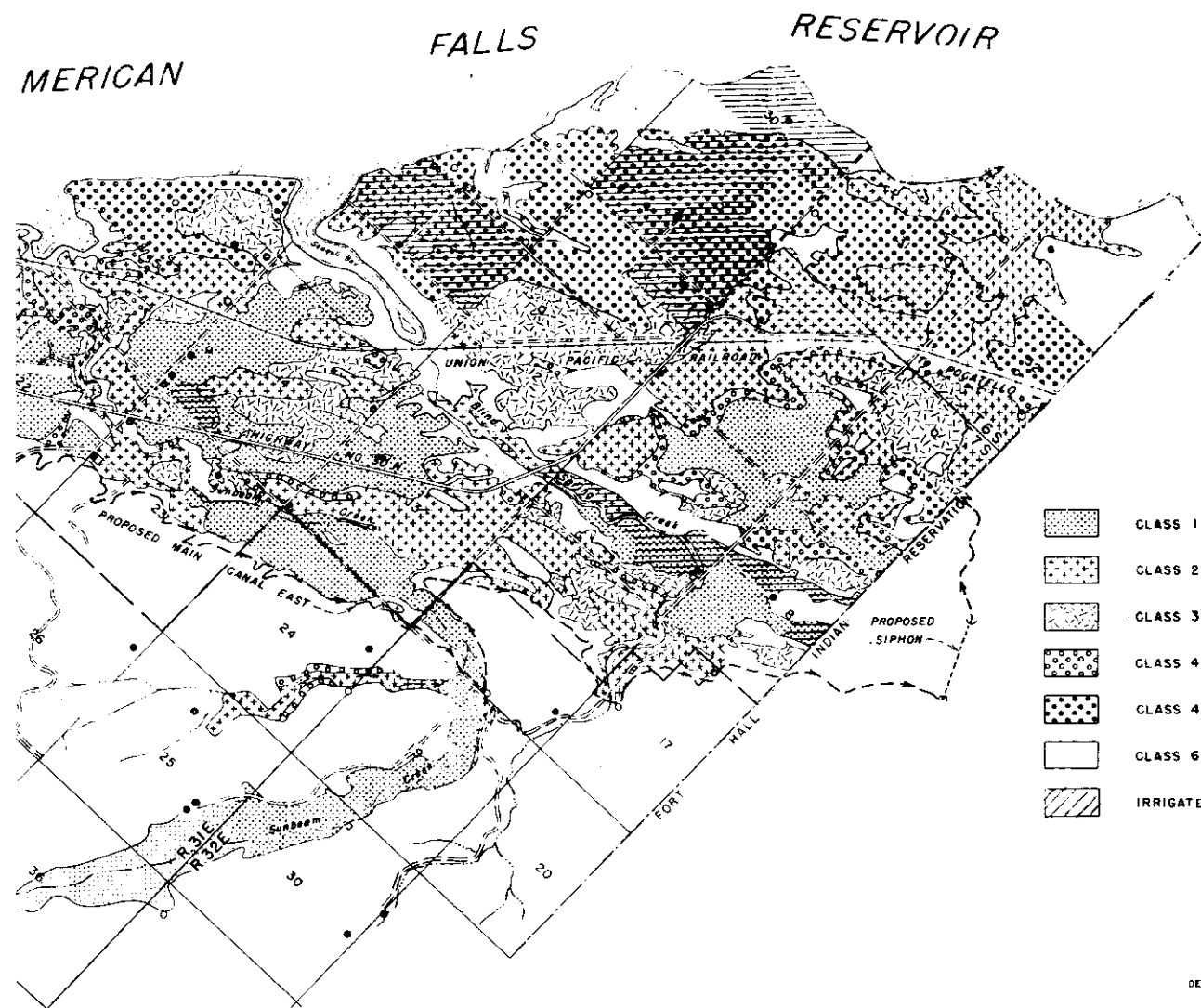
Investigations upon which this report is based were begun in 1948 under the general investigations program of region 1, Bureau of Reclamation, for fiscal year 1948. They included field mapping, engineering designs and estimates, land classification, economic studies of the project area to determine overall benefits and payment capacity, water-supply studies, and investigations of alternative plans to serve the area independently of, or in combination with, plans developed by the Bureau of Indian Affairs for serving reservation lands.

Dr. G. O. Baker of the University of Idaho, in cooperation with representatives of the Extension Service, reviewed the land classification in the field, and their suggestions pertaining to the classification were adopted.

A preliminary investigation of ground-water resources available to the project was conducted in collaboration with the Geological Survey, and a report of the survey is appended.

Effects of the project upon fish and wildlife resources were evaluated by officials of the Fish and Wildlife Service and a report of their findings is also appended.





LEGEND

- | | | | |
|--|----------------------------|--|------------------------------------|
| | CLASS 1 | | DOMESTIC WELL |
| | CLASS 2 | | IRRIGATION WELL |
| | CLASS 3 | | PRIMARY ROAD |
| | CLASS 4 | | SECONDARY ROAD |
| | CLASS 4 Sprinkler | | IRRIGATION WELL (PROPOSED) |
| | CLASS 6 | | FALLS IRRIGATION DISTRICT BOUNDARY |
| | IRRIGATED LAND (AUG. 1952) | | |

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

MICHAUD FLATS PROJECT - IDAHO
LAND CLASSIFICATION

CHAPTER II

PROJECT LANDS

The project comprises 11,035 irrigable acres which were selected from the approximately 26,000 acres investigated. Land was classified into 6 classes—1, 2, 3, 4, 4S (sprinkler), and 6. The latter is nonarable. The lands chosen for irrigation (see land classification map) consist of 3,144 acres of class 1, 4,221 acres of class 2, 1,466 acres of class 3, 630 acres of class 4, and 1,574 acres of class 4S. Selection of these lands from the 11,376 acres classed as arable was influenced by land class, water supply limitations, position with respect to canals and wells and other irrigable lands.

Irrigation methods described in the plans and estimates chapter, and cropping practices recommended in the agricultural economy chapter, will assure maximum development and utilization of the project lands.

SOILS

Soils of the project area are generally well adapted to irrigation farming. Largely loessal in origin, they are deep, friable, medium-textured, calcareous, and high in mineral constituents, but low in organic matter content. The soils were formed largely upon American Falls lakebed sediments and basalt flows, and partly on recent alluvial deposits. They are very fine sandy loams and silt loams containing a penetrable lime accumulation zone which occurs from 3 to 24 inches in depth below the surface. Thickness of the soil mantle ranges from less than 14 inches to more than 5 feet over gravel or basalt.

TOPOGRAPHY

Topography of the lands on this project is of major significance in the delineation of the various land classes. Much of the lower quality land is steep or irregular in surface relief.

Four-fifths of the lands occupy the elevated bench extending from the river to the foothill slopes. One-fifth lie along the river west of American Falls. Topography of the bench ranges from gently undulating to rolling, but a considerable area has small, isolated, low hills and depressions. Several well-defined natural drainageways traverse this part of the project area. The adjacent foothill slopes are rougher and more rolling and the gradients are steeper. However, the area contains large bodies of relatively smooth, gently sloping lands. Topography of the lands west of American Falls is more regular, with flatter gradients, fewer irregularities, and only a few well-defined drainageways.

SALINITY AND ALKALINITY

Salinity and alkalinity are not major problems in the area. The lands are largely free from harmful accumulations of soluble salts. Although soils in some places have relatively high pH values, these soils are so constituted chemically as to favor easy reclamation.

Irrigation water available for the lands is of suitable quality and there is no danger of adding soluble salts to the soils by irrigation.

Additional early spring or late fall irrigations at higher than usual rates during the first year of the development period should eliminate the possibility of future production losses due to salts.

DRAINAGE

Surface drainage of most of the project lands is good. However, protection of lands adjoining existing drainageways, by providing for conveyance of stormflows from adjacent mountainous areas, may be required. Construction of drains in the northeast area to prevent development of a perched water table may also be necessary.

Drainage of the 3,100 acres of project lands southwest of American Falls will require no project-constructed works. Necessary drainage construction will involve only small surface drains or waste ditches leading to the stream channels which cross that area. These drains would be built by the farmers.

Project drainage works would be required in the portion of the area northeast of American Falls. Two intermittent streams crossing this area would be channelized and deepened. Construction of open drains through the relatively flat area underlain at 8- to 12-foot depths by lacustrine deposits may be necessary to prevent development of a high water table in portions of this area. However, deep borings indicate that the clay is overlain by permeable materials which would provide for lateral movement of percolating water.

Project drainage construction proposed, and the costs involved in such construction, are detailed in the plans and estimates chapter.

VEGETATIVE COVER

About four-fifths of the project area has been cleared of native vegetation; the remainder is in sagebrush. Several hundred acres of uncleared land within project boundaries occupy strips of shallow soils and rough topography along drainageways and stream channels. These uncleared strips are not included in the project acreage.

LAND CLASSIFICATION

The semidetalled land classification survey of the project area covered 26,000 acres. The survey was made to determine the extent and character of lands suitable for irrigation; also to determine the area best suited to sprinkler methods. The classification involved separation of arable lands (11,376 acres) from nonarable lands (14,624 acres), and separation of arable lands into classes in order of suitability for irrigation.

Table 2. Minimum land classification specifications

Michaud Flats Project, Idaho

Soil						
Land Characteristics	Class 1 Arable	Class 2 Arable	Class 3 Arable	Class 4P Limited Arable	Class 4S Limited Arable	Class 6 Nonarable
Texture	Sandy loam to friable clay loam	Loamy sand to permeable clay	Loamy sand to permeable clay	Loamy sand to permeable clay	Meets	Includes
Depth to: Sand, gravel or cobble ^{1/}	36"	24"	18"	14"	minimum	lands which
Penetrable lime zone	14"	10"	10"		specifications	do not meet
Basalt bedrock	54"	42"	36"	16"	for	the minimum
Thin limey caliche-like layer	42"	30"			Class	requirements
Total saline salts ^{2/}	Not to exceed 0.2 per cent profile average	Not to exceed 0.5 per cent profile average	Not to exceed 0.5 per cent profile average	Not to exceed 0.5 per cent profile average	2.	of the next
Alkalinity	pH up to 8.8	pH up to 8.8 in surface 30", may be slightly higher below.	pH up to 8.8 in surface 18" and up to 9.6 below	pH up to 8.8 in surface 18" and up to 9.6 below		higher class,
Topography ^{3/}						
Slope	Smooth slopes up to 3% in general gradient in reasonably large bodies sloping in the same general plane	Smooth slopes 3 to 7% in general gradient in reasonably large bodies sloping in the same plane; or rougher slopes which are less than 3% in general gradient.	Smooth slopes 7 to 12% in general gradient in reasonably large sized bodies sloping in the same plane; or rougher slopes which are less than 7% in general gradient.	Smooth slopes up to 18% in general gradient in reasonably large sized bodies; or rougher slopes which are less than 12% in general gradient	Meets minimum specifications for Class 2.	Includes lands which do not meet the minimum requirements of the next higher
Surface	Even enough to require only small amount of leveling and no heavy grading.	Moderate grading required but in amounts found feasible at reasonable cost in comparable areas.	Heavy and expensive leveling required in spots but in amounts found feasible in comparable areas.	Surface conditions such that crop adaptation is very limited and management problems would be very complex.	Surface conditions such that gravity application is impractical and leveling inadvisable.	class, and small areas of arable land lying within larger bodies of non-arable land.
Drainage						
Soil and Topographic Conditions	No farm drainage problems anticipated.	Topographic conditions such that some farm drainage may be required, if so reclamation by artificial means can be accomplished at reasonable costs.	Soil and topographic conditions such that significant farm drainage may probably be required, reclamation by artificial means may be expensive but feasible.	Drainage conditions such that land is limited to pasture.	Meets minimum specifications of Class 2.	Includes lands which do not meet the minimum requirements of the next higher class, and small areas of arable land lying within larger bodies of non-arable land.

^{1/} At minimum depth soil must be sandy or heavier. ^{2/} May be higher if soil, topography and water conditions are such as to permit leaching. If mixed, salt soil must be judged on basis of pH of leached sample.

^{3/} Lands unfavorable for gravity but favorable for sprinkler irrigation are mapped 4S.

SYMBOLS AND MAPPING PROCEDURE

Alkali — Alkali areas will be delineated. Alkali symbol (in parenthesis) will be part of land type symbol.

Soil Descriptions — Each mapping sheet should have profile sketches, descriptions and location of typical profile of each soil group encountered; or large deviations where they are only occasionally encountered; or where alkali is present, actual amounts should be shown.

Land Use — Land use will be delineated and shown as: I - irrigated lands, DF - dry farmlands, SG - sagebrush cover, Within the delineations and aside from the land class and informative symbol.

STANDARDS OF CLASSIFICATION

The specifications for classification of the lands define the minimum requirement for each characteristic. Primary factors considered were soils, topography, and drainage. These factors were used as a basis for judging land values for irrigation, inasmuch as these factors largely determine crop adaptability and productivity and development and management costs. Minimum specifications used for field mapping of the lands are presented in table 2.

LAND CLASS CHARACTERISTICS

Results of the land classification are as follows:

Class 1

Lands of class 1 quality make up 28.5 percent of the project's arable area. They occupy broad, smooth, gently sloping areas of benchland and to a minor extent bottom lands along major drainage-ways. Slopes are less than 3 percent, and most are not more than 2 percent. Soils are 36 to 42 inches deep over sand or gravel, deeper over caliche-like substrata, and 54 inches or more over basalt. They have no harmful salt accumulations and no drainage problems. Surface layers are friable, permeable, very fine sandy loams to silt loams 14 inches or more in depth over slightly compact calcareous subsoils. Class 1 lands are high quality, are well adapted to all crops climatically suited to the locality, and are capable of sustained yields under common agricultural practices. They can be prepared for irrigation at relatively small cost.

Class 2

Lands of class 2 quality make up 38.2 percent of the arable area. They were so classed largely because of such topographic deficiencies as roughness or steepness, but in part because of small size and irregular shape of land bodies, low-lying position, or soil deficiencies. Class 2 lands are adapted to the same crops as class 1 lands, but they are less fertile and will involve higher preparation and management costs.

Class 3

Class 3 lands make up 13.3 percent of the arable area. They occupy fairly small scattered tracts throughout the area, are rougher than the class 2 lands and in places have shallower topsoils over the calcareous subsoil accumulation which will make them more costly to keep in production. Topography is the major deficiency. In places, fairly large bodies of class 3 lands have smooth slopes in the same plane up to 12 percent, in other places smaller bodies have rougher slopes, but here average gradients do not exceed 7 percent.

Class 4

Class 4 lands make up only 5.7 percent of the arable area. The classification designates these lands as useful only for pasture because of shallow soils, topography which is less desirable for irrigated farming, or other deficiencies.

Class 4S

Class 4S lands make up 14.3 percent of the arable area. Owing to rough relief consisting of isolated hills and depressions, these lands are not adaptable to use of the usual surface irrigation methods. However, the soils are of relatively high quality. Under sprinklers, the 4S lands will produce yields comparable to those obtainable on the better lands of the project.

Class 6

Class 6 lands are permanently nonarable because they are too low in productive capacity to justify farming under irrigation. In the Michaud Flats area these lands include rough, steep terrain, rocky and shallow soil areas, and stream flood channels.

IRRIGABLE LANDS

The area selected for project development totals 11,035 irrigable acres. Several thousand acres of these lands are irrigated. The water supplies for some of these lands are inadequate for maximum production and the water rights under which other lands are supplied are of questionable legal ownership. The remaining project acreage is largely dry farmed in favorable moisture and price years, or is in native dry pasture. Only in a relatively few crop years, since the land was first broken out of sagebrush, have profitable yields been obtained. Complete crop failures are commonplace and the lands have been left idle for long periods.

A summary of the project acreage by classes is presented in table 3.

TABLE 3.—*Project acreages by land classes, Michaud Flats project, Idaho*

Land class	Arable	Irrigable ¹	Productive acres ²	Percent
	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	
1.....	3,241	3,144	2,955	28.5
2.....	4,352	4,221	3,968	38.2
3.....	1,511	1,466	1,378	13.3
4.....	649	630	592	5.7
4 sprinkler.....	1,623	1,574	1,480	14.3
Total.....	11,376	11,035	10,373	100.0

¹ Arable acreage less 3 percent for public rights-of-way.

² Irrigable acreage less 6 percent for farmsteads, farm roads, and ditches.

As there are adequate public roads serving part of the area, only 3 percent was deducted from the arable area to provide for additional roads, drains, and canals. The productive acreage, the land to be used for irrigated crops, is 6 percent less than the irrigable acreage. The latter deduction allows for the acreage needed for farmsteads, farm roads, and ditches. The irrigable acreage does not include about 60 acres of land classed as nonirrigable (and so shown on land-classification map) which has been placed under irrigation since the 1950 land-classification survey.

PREPARATION AND CULTURAL PRACTICES

The better quality bottom lands and smooth lands of the bench can be readily irrigated by gravity methods. Both gravity and sprinkler methods are employed on the lands now irrigated. Soils of the class 1 and some of the class 2 lands have sufficient depth to permit some light grading in preparation for gravity irrigation. Care should be exercised in grading the class 2 and class 3 lands with shallow soils in order to maintain adequate soil depth over the calcareous layer. Examination of soil profiles on individual tracts before land preparation would point the way toward safe development and management practice.

The rough topography of the class 4S lands is best suited to sprinkler irrigation. Heavy grading required to prepare these lands for gravity irrigation would greatly damage the soils.

The light floury soils of the project lands are susceptible to wind erosion and early adoption of protective measures will reduce topsoil and crop loss. Use of contour irrigation and short runs on the steeper lands will prevent water erosion.

Under good farm management, by use of fertilizers, soil-building crop rotations and with adequate irrigation, production from the class 2 and 3 lands could be made to approach that of class 1. However, with similar treatment on all land classes, production would be lower on class 2 lands and substantially lower on the class 3 lands. Crop production under sprinkler irrigation on the class 4S lands would be equivalent to that on class 2 lands, assuming similar management.

CHAPTER III

WATER SUPPLY AND REQUIREMENTS

Water for the project would be obtained primarily from assigned space in American Falls and Palisades Reservoirs. As the acreage to be irrigated with surface water is limited by the available water supply, the plan of development provides for pumping from ground water to an additional acreage. The total acreage that forms the project area is established by the economics of providing irrigation water to the lands classified as arable. The quantity of ground water pumped will be more than compensated for by that part of the primary supply returning to the river from percolation losses and surface waste. The development involves irrigation water only; domestic and municipal requirements in the area are now, and can continue to be, adequately supplied from wells and springs.

WATER SUPPLY

During critical drought periods such as 1931-35, the entire flow of Snake River, including natural flow and storage water, has been fully controlled and utilized for irrigation above Milner Dam, except for that portion released to fill established rights below the dam. However, during wet years, runoff is sufficient to fill all reservoirs including Palisades Reservoir, and to meet all irrigation requirements until late June or early July. In such years an appreciable amount of natural flow could be diverted to Michaud Flats project. Although the fullest possible use of natural flow available for the project is desirable, this potential source of supply would have little value unless sufficient storage water is provided to meet the entire irrigation requirement during dry cycles. The use of natural flow whenever available will insure that the project's holdover storage space will be full upon entering a dry cycle; therefore, the allocated space in the reservoirs determines the limit of project development.

SURFACE WATER

Storage space allocated to new-land development on the Michaud Flats, comprising the Michaud Flats project and Michaud Flats extension of the Fort Hall Indian project, is 124,800 acre-feet in Palisades, and 71,000 acre-feet in American Falls Reservoir. No distribution between reservation and nonreservation lands on Michaud Flats was made by the board charged with establishing the allotments, and no definite agreement concerning division of allocated storage has been reached with the Bureau of Indian Affairs. Inasmuch as the respective areas will be separate developments and the dependable annual supply from storage is inadequate to provide for irrigation of all the available irrigable lands in both proposed developments, a division of the 195,800 acre-feet of allocated reservoir space and the

annual yield of 85,100 acre-feet therefrom must be established in order to formulate a precise plan for developing the Michaud Flats project.

The acreage most recently submitted by the Bureau of Indian Affairs was utilized in making a division of the allocated reservoir space. This division, basic to the Michaud Flats project plan, was established as follows: A total productive area of 13,608 acres of Indian-owned land in the reservation with a diversion demand of 4.2 feet per acre would require 57,200 acre-feet of water annually. The aforementioned yield of 85,100 acre-feet, less the 57,200 acre-feet diverted to the Indian lands, leaves 27,900 acre-feet for use on the Michaud Flats project, and with an average diversion demand of 4.2 feet per acre, a total of 6,652 productive acres could be supplied. Thus, division of the allocated storage space of 195,800 acre-feet in American Falls and Palisades Reservoirs was based upon a full supply for the Indian lands within the reservation and assignment of the balance to the Michaud Flats project.

This results in the assignment of 23,300 acre-feet of space in American Falls Reservoir and 40,900 acre-feet in Palisades Reservoir to Michaud Flats project. This total space, 64,200 acre-feet, would yield 27,900 acre-feet in 29 of 30 years on the basis of past recorded flows. A shortage of 11,000 acre-feet in the 1 year of the 30 would be approximately 40 percent of the annual diversion requirement.

GROUND WATER

As the available surface supply is insufficient to irrigate all the undeveloped irrigable area on Michaud Flats, and limited ground-water pumping has been successful at each extremity of the area, pumping was investigated as a possible source of supplementing the available surface water supply. The Ground Water Branch of the United States Geological Survey made a preliminary study of ground water, particularly in the Michaud Flats project area.

Data developed in this study led the Bureau of Reclamation to the conclusion that it would be economically feasible to pump from ground water and develop a larger acreage than could be irrigated from surface water only. Deep percolation and surface waste from the application of 27,900 acre-feet of primary supply from Snake River to Michaud Flats project will more than compensate for the depletion effected by pumping 13,900 acre-feet of ground water to complement surface flows in meeting the total irrigation requirement of the project. The supply made available to Michaud Flats project by pumping from ground water, plus the available surface flow, totals 41,800 acre-feet.

Return flow and waste from the 57,200 acre-feet of surface water reserved for the Indian project will be considerably in excess of the 22,400 acre-feet needed from ground-water supplies to develop the 5,342 acres of productive area which would not be served from the proposed assignment of surface water. The preliminary ground-water data indicate that the pump lifts involved in obtaining this ground-water supply might be less than the lift required at the Bureau of Indian Affairs' proposed main pumping plant east of Portneuf River. Full development of the entire area of irrigable land on Michaud Flats can therefore be obtained by coordinated use of surface and ground-water supplies.

Although most of the ground-water supply for new lands in the Michaud Flats area will be pumped from aquifers which may not be directly recharged by percolation losses from surface irrigation, the return flow to Snake River after full irrigation development will be greater than the amount consumptively used from the ground-water supply by such irrigation, even though some of the return flow may not be tributary to Snake River in the immediate project area.

QUALITY OF WATER

Snake River water has been used for irrigation for nearly three-quarters of a century with no deleterious effects. Chemical analyses of Snake River samples show the water to be within the "good" classification for irrigation purposes. Ground-water samples from six wells in the project area were analyzed and found to be also within standards set for "good" irrigation water.

RETURN FLOW

Return flow from deep percolation would recharge the natural ground-water reservoir beneath the project area. Perched water table areas requiring drainage may be created in certain locations. Part of the return flow resulting from surface waste would also reach the ground-water body; the remainder of the surface waste would flow into American Falls Reservoir or into Snake River below the reservoir. Measurements of and arrangements for disposal of the latter can best be made after project development. Return flow into American Falls Reservoir would take the place of depletions of ground water in areas which are now tributary to the reservoir.

Accretion to Snake River flows totaling about 27,000 acre-feet annually, resulting from irrigation of Michaud Flats project and Michaud Flats extension of Fort Hall Indian project by application of surface water and pumped ground-water supplies, is expected to originate as follows:

(a) Irrigation in Michaud Flats extension of Fort Hall Indian project of 13,608 acres of productive area from surface flows and storage and 5,342 acres of productive area from ground-water pumping would increase existing Snake River streamflow accretion above American Falls Dam by 21,000 acre-feet per year.

(b) Ground-water movement from the Michaud Flats project area northeast of Sunbeam Creek is tributary to Snake River above American Falls Dam. Of this area, 3,466 productive acres would be irrigated from Snake River surface flows and 3,116 productive acres from ground-water pumping. Depletion by ground-water pumping would offset return flows from surface irrigation supplies; consequently accretions to Snake River would not be changed by such irrigation development.

(c) Irrigation of the 3,791-acre productive area southwest of Sunbeam Creek would produce return flow amounting to some 6,600 acre-feet annually. Of this area, 3,186 acres would be supplied from surface flows of Snake River and 605 acres from ground-water supplies. Ground-water studies of the area indicate that a portion of this return flow may reach ground-water aquifers where flows move below the bed of Snake River and emerge farther downstream.

WATER REQUIREMENTS

Annual consumptive use by anticipated farm crops in the project area, computed by the Lowry-Johnson method, averages 2.3 feet. Growing season consumptive use averages 1.92 feet. This amount, less effective growing season precipitation of 0.20 foot, equals 1.72 feet, the consumptive use to be supplied by irrigation.

The adopted farm delivery requirement of 3.2 feet provides for a farm irrigation efficiency of 54 percent. Distribution of this requirement is as follows:

	April	May	June	July	August	September	October	Total
Feet.....	0.05	0.51	0.57	0.81	0.73	0.41	0.12	3.2
Percent.....	1.6	15.9	17.8	25.3	22.8	12.8	3.8	100

Estimated distribution losses and operational waste in the unlined main west canal will total 29 percent, making the diversion requirement through the canal 4.5 feet. Estimated losses and operational waste in the concrete-lined main east canal total 20 percent, making the diversion requirement 4 feet at the main pumping plant. With an estimated allowance for delivery losses of 16 percent, lands irrigated by water pumped into the east canal by 3 wells have a diversion requirement of 3.8 feet. Lands in separate units served by gravity distribution systems from wells require a diversion of 3.6 feet, including 11 percent for delivery losses. Sprinkler lands (class 4S) have a diversion requirement of 3.9 feet, including an allowance of 18 percent for distribution system losses.

WATER RIGHTS

Water rights for Michaud Flats project are concerned with flows of Snake River, ground water, and two small tributaries to Snake River that traverse the southwestern portion of the project area. Rights to divert natural flow and to expand ground-water pumping should be established, whereas storage rights in American Falls Reservoir have been established and storage rights in Palisades Reservoir (now under construction) have been initiated with the probability of being established in accordance with the filing.

STORAGE RIGHTS

Space allocations in American Falls and Palisades Reservoirs upon which project rights are based were established by engineering determinations of water supplies and water requirements of all existing and proposed irrigation developments in Snake River Basin and by negotiations with present water users. As noted under Water Supply, the proposed assigned storage space for Michaud Flats project totals 64,200 acre-feet. Negotiation of a repayment contract for Palisades project will assure storage rights to the Michaud Flats project.

NATURAL-FLOW RIGHTS

Occasionally, spring runoff of Snake River exceeds demands of right holders, and an application for a project permit to divert 125 cubic feet per second of such flow surplus to existing demand should be filed.

Existing private rights to diversion of tributary Warm Creek and Little Creek flows aggregating about 7 cubic feet per second minimum would be sold or transferred to potential upstream users outside the project area. The sellers would obtain water from the project system. The available irrigation supply to the rights from Warm and Little Creeks is inadequate to meet the needs of the lands to which the rights are pertinent, and the present landowners want to obtain project water. Upstream areas on these streams cannot be supplied economically from the project, but could utilize the water now used by the rights within the project area. If present users do not sell their rights to the upstream landowners, the present users would want only supplemental water from the project, and the remainder of the project water proposed for use in this area would then be available for use on additional land not now included in the project. However, interviews with right holders indicate these owners anticipate little difficulty in disposing of their rights to potential users upstream.

GROUND-WATER RIGHTS

The amounts of ground water planned to be pumped would be less than the return flow from surface irrigation; therefore, such pumping would not interfere with existing downstream rights. However, a permit for such pumping should be obtained as a means of establishing the project's right to such use. Under the project plan, existing wells of adequate construction would be incorporated in the project works.

Available data on ground water in the project area indicate that the irrigation wells now pumping in the portion of the area east of American Falls are obtaining most of their water supply from aquifers which normally are tributary to Snake River or American Falls Reservoir. Before the development of these wells this water supply was available to prior direct-flow rights downstream. If it is finally established, as it might be through judicial proceedings, that the pumping is being done from waters that are tributary to the river or the reservoir, the question as to the extent to which pumping can continue under the permits is in considerable doubt.

WATER UTILIZATION

The 27,900 acre-feet of annual yield from the 64,200 acre-feet of allocated space will provide an adequate irrigation supply for 6,652 acres of productive land, allowing an average of 4.5 feet per acre to the 2,530 acres under the main west canal and an average of 4.0 feet per acre to the 4,122 acres under the main east canal. Return flow from the irrigation of the 6,652 acres supplied with storage water would total 15,000 acre-feet annually.

An adequate irrigation supply would be provided to a productive area of 3,721 acres by pumping approximately 13,900 acre-feet of

ground water. Of this acreage, 434 acres with a diversion demand of 3.8 feet per acre would be supplied from wells pumping into the east canal; 1,807 acres with a diversion demand of 3.6 feet per acre would be supplied directly by pumping from wells into farm laterals; and 1,480 acres with a diversion demand of 3.9 feet would be supplied by pumping from wells into pipelines and distributing the water at sprinkler pressures. Total consumptive use on the 3,721 acres irrigated from wells would be 8,400 acre-feet annually. Sufficient data are not available to determine whether additional pumping could be done in the area without interference to prior rights downstream.

CHAPTER IV

PLANS AND ESTIMATES

Plans for Michaud Flats project involve pumping from American Falls Reservoir and from strategically located wells. Distribution would be largely through canals for gravity application and partly through pipelines and sprinkler pressures.

Total investigation and construction cost is estimated at \$4,104,000 and costs for storage in existing, and reservoirs under construction is \$474,500. The estimated project cost totals \$4,578,500.

PLAN FOR DEVELOPMENT

The plan requires construction of a pumping plant at American Falls Dam, canals along upper project boundaries and associated lateral systems, 25 wells with pumps, power distribution lines to the pumps, pressure-pipe mains from wells in the sprinkler-service area, drainage works, and facilities for operating and maintaining the project works. It provides for irrigating 11,035 irrigable acres, of which 7,077 would be served directly from the primary supply in the reservoir, 3,958 from the secondary supply obtained by pumping from ground water.

PROJECT WORKS

American Falls pumping plant

The American Falls pumping plant would be built on the left bank of Snake River immediately below American Falls Dam. The design provides 3 pumping units, powered by 1,000-horsepower motors, each with capacity of 41 cubic feet per second at 160 feet head. The maximum head under which the pumps will operate is 187 feet. During periods of peak requirements this head will be reduced owing to positive head in American Falls Reservoir.

Intake structure.—Draft tubes of the plant would be connected directly to the existing sluice gate opening number 20 through the dam, thereby employing the reservoir head.

Discharge line.—The welded steel pipe pump discharge line to the canals would be 5,600 feet long and 60 inches in diameter. It would carry water from the pumps, around the American Falls town limits, to a concrete bifurcation structure with a submerged type of discharge which would dissipate the kinetic energy and deliver water to the main canals at elevation 4,475 feet. Flow of water into the canals would be controlled by adjustable weirs.

Surge tank.—A surge tank on the pump discharge line would provide relief for sudden changes in pressure and flow in the line owing to power interruption.

Power.—Power to operate the plant would be obtained via covered bus extending across Snake River from the authorized American Falls powerplant. Switch gear and transformers would be installed at the

powerplant as part of the project works to service the bus to the pumping station.

Main west canal

The main canal serving the 2,692 acres west of American Falls would be unlined and would have a maximum initial capacity of 46 cubic feet per second, reducing to 15 cubic feet per second at the end of its 10-mile length. The maximum section would have a bottom width of 6 feet and a depth of 2.4 feet; the minimum section, a bottom width of 4 feet and a depth of 1.6 feet. It would be constructed largely through material classed as common excavation. Appurtenant structures include 8 cross-drainage culverts, 15 to 60 inches in diameter; 7 checks, 11 weirs, 17 turnouts, a siphon under Little Creek, and 4 timber farm- and county-road bridges.

Main east canal

The main canal serving the 4,385 acres east of American Falls would be 14.4 miles in length and concrete lined throughout. Its initial capacity would be 76 cubic feet per second; its terminal capacity, 30 cubic feet per second. The maximum section would have a bottom width of 4 feet and a depth of 2.8 feet; the minimum section a bottom width of 3 feet and a depth of 2 feet. The steep sidehills through which the canal must be routed make lining necessary. Major structures are the Blind Springs Creek siphon 600 feet long, and the 2,300-foot-long siphon inside Fort Hall Indian Reservation. Other appurtenant structures are similar to those required for the main west canal.

Lateral canal system

Unlined laterals from both canals are designed to deliver 1 cubic foot per second for each 47 acres, plus 10 percent for peaking. The system includes the necessary crossings, turnouts, drops, and distribution boxes at the high point of each 40-acre tract.

Wasteways

Wasteways would be constructed at strategic locations along the canal lines, discharging into natural drainageways which would be improved as required to provide adequate surface drainage.

Wells

Twenty-five deep wells would serve the area to be irrigated from ground water. Three wells would pump directly into the main east canal; 8 wells would pump into separate lateral systems; 4 wells would similarly serve lands above the main east canal; and 10 wells would serve sprinkler systems.

The plan developed in this report proposes the use of privately constructed and operated wells, two in the extreme western portion of the project area, and several in the eastern section, including some sprinkler wells, should these wells prove adequate to supply the required demand. These wells would be integrated with the project system. The owners have expressed their desire to be included in the project. Acquisition costs are computed as equivalent to new well costs.

Ten of the wells would serve the area best suited to sprinkler irrigation north of the Union Pacific tracks and south of American Falls Reservoir. The pumps would deliver water through pressure

mains extending from each well and through portable laterals from each side of the main to serve each 40-acre tract. Main lines only would be constructed under the project plan. Portable laterals would be supplied by farm owners. The wells would serve about 120 acres each, the systems are designed to deliver about 1 cubic foot per second of continuous flow per 63 acres.

Well construction would proceed on a trial basis and data from operating tests of the first wells would guide development of additional wells. Estimates are based on 20-inch wells, 250 feet deep, with vertical turbine pumps driven by 75- and 100-horsepower electric motors, and designed to deliver 2.5 cubic feet per second against heads of 130 to 206 feet. Installations would be outdoor type, with necessary transformers, starting, and overload protection equipment.

Power distribution lines

Power would be distributed to the well pumps by construction of 21 miles of 15-kilovolt-ampere wood-pole line, extending from the switchyard of the authorized American Falls powerplant through the project area. Although cost estimates are based upon construction of lines to all the pumps, it is anticipated that where power company lines of adequate capacity are available, satisfactory carriage arrangements would be made with the company. Duplication of facilities thus would be avoided.

Drainage system

Except for Sunbeam and Blind Spring Creeks, which will require channelization, the existing natural drainage channels traversing the project area from the upper to the lower borders are adequate to collect and dispose of surface runoff from the contributing watersheds and project area without improvement.

As noted in the project lands chapter, drainage of the 3,100 acres southwest of American Falls will require no project-constructed works, as necessary drainage construction will involve only small farm-built surface drains or waste ditches leading to the natural drainageways.

The major drainage construction involves channelization of Sunbeam and Blind Spring Creeks, which will require excavation of about 12 miles of channel to an average depth of 8 feet to provide 300 cubic feet per second capacity, and building of necessary inlet structures, culverts, and road bridges.

The other major project drainage item is the construction of intercepting open drains or drainage wells in areas where a perched water table might develop over impermeable lakebed clay layers occurring at depths of 8 to 12 feet. These facilities would be built only when and in locations where need therefor should arise under project operation.

General property

Operation and maintenance facilities provided in the plan are an office building, shops, garage, and warehouse in American Falls, with necessary automotive equipment, tractor with loader and dozer, and small tools. Two operators' houses would be provided, one at the pumping plant site and one in the central portion of the major pumping area. Most of these buildings would also serve during the construction period.

PROJECT COSTS

Project costs, based on unit prices as of July 1952, total \$4,578,500. This total includes all costs incurred prior to completion of the project for construction of project works, storage costs, investigation and engineering plans and designs. The official estimate (see pp. 24 and 25) totals \$4,104,000 and includes all costs for facilities to be constructed under this project.

ANNUAL OPERATING COSTS

Annual operating costs are composed of reserves for replacement and operation and maintenance costs.

Reserves for replacement

The annual estimated reserve for replacement of project facilities with useful life of less than 60 years, computed on a 60-year, 2½ percent sinking fund basis and reduced from an April 1952 basis to a projected price level comparable to that used in the benefit and repayment analysis, is \$9,780, or \$0.89 per acre distributed equally over the 11,035 irrigable acres.

Operation and maintenance

Operation (excluding power) and maintenance of project facilities will cost an estimated \$35,160 annually, or \$3.19 per acre.

Pumping power would be obtained from the Palisades-American Falls-Minidoka Federal system authorized for construction by Public Law 864, 81st Congress, 2d session. Approximately 10 million kilowatt-hours of electrical energy would be required each year to pump 27,900 acre-feet at American Falls Dam and 13,900 acre-feet from ground water. This would comprise approximately one-half of the 7,000 kilowatts of pumping power load previously estimated as required for the development of Michaud Flats, including land within the Fort Hall Indian Reservation. Payout studies indicate this will cost 3 mills per kilowatt-hour. The annual energy cost for operation of the project pumps would total \$29,930, or \$2.72 per acre. Other costs associated with the electrical operations are included in the operation, maintenance, and replacement reserve costs.

CONSTRUCTION PERIOD

The suggested construction period for Michaud Flats project would start 1 year after the program goes into effect. The first year's program would include funds for preconstruction activities only. Construction would extend over a period of 36 months, and project operation would commence at the beginning of the irrigation season in the third program year.

All of the identified properties have been scheduled according to a coordinated plan taking into account administration of construction contracts, reservoir high water periods, the weather, the urgency of need for the property, and the time required to complete the project. The schedule and estimate are shown in the following tables.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
FORM PW-1 (MAY 1961)

OFFICIAL ESTIMATE

PROJECT MICHAUD FLATS, IDAHO

REGION 1 DATE OF ESTIMATE JULY 1962

SHEET 1 OF 2 SHEETS

ACCOUNT NUMBER	DESCRIPTION	TOTAL COST	ESTIMATE DETAIL					OTHER COSTS
			CONSTRUCTION CONTRACTS	MATERIALS AND SUPPLIES	FORCE ACCOUNT LABOR	CONSTRUCTION FACILITIES		
(1)		(2)	(4)	(5)	(6)	(7)	(8)	
03-01	MICHAUD FLATS PROJECT, IDAHO	\$4,104,000	2,360,400	885,380		9,200	908,520	
	American Falls Pumping Plant	1,250,400	540,250	614,550		2,800	272,500	
-30	Land and Rights	2,600						
-33	Structures and Improvements	105,320	144,000			430	40,900	
-36	Waterways	747,920	122,100	487,900		1,200	166,200	
-40	Pumps and Prime Movers	148,040	20,400	94,600		340	32,700	
-43	Auxiliary Electric Equipment	183,480	43,550	46,450		280	27,200	
-49	Riesel access Equipment	22,560	1,400	15,600		50	5,500	
04-01	Deep Wells	370,100	286,900	500		900	81,800	
-36	Waterways	223,040	172,900	500		540	49,100	
-40	Pumps and Prime Movers	88,120	72,500			220	20,400	
-46	Auxiliary Electric Equipment	58,940	41,500			160	12,800	
04-02	Deep Wells	251,800	186,700			900	54,500	
-36	Waterways	142,940	111,500			740	31,100	
-40	Pumps and Prime Movers	72,470	57,500			170	15,800	
-49	Auxiliary Electric Equipment	35,390	27,700			90	7,600	
05-01	Main Canal West	81,200	59,600	3,200		200	18,200	
-30	Land and Rights	8,920	6,900			20	2,000	
-31	Relocation of Existing Property	12,830	9,300	600		30	2,900	
-36	Waterways	23,060	17,900			60	5,100	
-37	Canal Structures	22,860	15,500	1,800		60	5,100	
-38	Canal Protective Works	13,550	10,000	700		50	3,100	
05-02	Main Canal East	1,059,600	754,600	26,230		2,500	238,200	
-30	Land and Rights	12,400	10,000			30	2,370	
-31	Relocation of Existing Property	29,660	20,900	900		30	7,080	
-36	Waterways	918,781	639,900	73,600		2,150	203,130	
-37	Canal Structures	100,310	77,400	1,500		280	21,850	
-38	Canal Protective Works	9,180	6,570	250		20	2,360	
05-03	Lateral (Under Main Canal West)	163,700	108,800	11,200		400	35,300	
-36	Waterways	14,110	30,900			40	3,200	
-37	Lateral Structures	129,590	56,000	11,200		360	31,600	
05-04	Lateral (Under Main Canal East & Wells)	205,300	144,100	15,700		500	45,400	
-36	Waterways	17,250	32,600			40	4,000	
-37	Lateral Structures	167,500	130,500	15,700		460	41,400	
05-05	Lateral (Sprinkler Area)	160,100	123,400			400	35,500	
-36	Waterways	160,100	123,400			400	35,500	

OFFICIAL ESTIMATE

PROJECT MICHAUD FLATS, IDAHO
REGION 1 DATE OF ESTIMATE July 1962
SHEET 2 OF 2 SHEETS

ACCOUNT NUMBER	DESCRIPTION	TOTAL COST	ESTIMATE DETAIL				
			CONSTRUCTION CONTRACTS	SUPPLY CONTRACTS	FORCE ACCOUNT LABOR	CONSTRUCTION FACILITIES	OTHER INDIRECT COSTS
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
07.01	Drains	Total	258,200	1,100		700	65,800
.50	Lands and Rights	18,160	14,300			40	3,820
.51	Relinquishment of Existing Property	58,710	45,400	1,100		130	12,080
.55	Waterways	124,020	97,700			290	26,030
.59	Drain Structures	14,020	10,800			40	3,180
	Subsurface Drains	88,840	70,000			200	18,440
08.01	Farm Unit Development	Total	30,000			100	9,100
.64	Project Settlement	19,560	12,700			40	3,820
.65	Settler Assistance	22,540	17,300			80	5,280
14.01	Transmission Lines	Total	53,900	32,800		300	27,500
.30	Lands and Rights	5,050	2,200			10	820
.53 & .54	Poles, Fixtures & Conductors	111,270	51,700	32,800		290	26,480
15.01	General Property	Total	16,880	80,100		300	27,320
.30	Lands and Rights	820	700				250
.33	Structures and Improvements	68,980	15,600	34,400		150	15,330
.49	Miscellaneous Equipment	1,950	340	1,010			560
.72	Office Furniture and Equipment	2,850	250	2,070		10	550
.73	Transportation Equipment	45,150		35,200		110	9,840
.74	Stores Equipment	870	110	430			270
.75	Shop Equipment	5,990		4,600		20	1,370
.77	Tools and Work Equipment	2,850		2,500		10	540

INTERIM POWER SERVICE PLAN

Until power is available from the authorized American Falls powerplant, an alternate means of supplying power to the pumps will have to be provided if the Michaud Flats project is to be developed. This can be done by using power from the Palisades powerplant, transmitted to American Falls and delivered to the pump locations by the Idaho Power Co.

PROJECT WORKS

Under the interim power service plan, no project power facilities would be required to serve the American Falls pumping plant except the transformers at the plant and the facilities utilized within the pumphouse building itself. The distribution lines and facilities to supply the well and sprinkler pumps would be provided by the power company with the exception of the transformers, meters, and motor controls at the well pumps.

The interim power service plan will result in somewhat different costs from those shown for the recommended plan, both for construction of the works and for the power utilized for the pumping. The cost data under this plan are summarized in the following paragraphs.

American Falls pumping plant

Pumping power for operation of the pumping plant would be secured from the Palisades project at Goshen substation, transmitted over Idaho Power lines to American Falls, and delivered to the pumping plant transformers at 46 kilovolts. The cost of the pumping plant and appurtenant facilities, including transformers to step down from 46 kilovolts to motor voltage, is estimated to be \$1,181,300.

Deep wells

The 25 wells included in the project plan would be served with Palisades project power, transmitted to American Falls and distributed over Idaho Power Co. lines to the well sites. The project-provided facilities at the wells will include transformers, meters, starting, and overload protection equipment. The estimated cost of the wells, pumps, motors, and accessory equipment is \$627,000.

Power system

No project-constructed works would be required for delivering power to the high-voltage side of the transformers at the various pumps. Power delivery is estimated at a rate of 3 mills per kilowatt-hour, which includes not to exceed 1.0 mill for transmission over company lines to American Falls, where it would be delivered to the American Falls pumping plant. Distribution to the well pumps over power company lines would be made at a rate of 3.9 mills per kilowatt-hour, which would include distribution charges and losses plus transformation to distribution voltage.

General property

A small saving in cost of equipment required for operation and maintenance of the proposed project power distribution facilities would result under the interim plan for furnishing power to the pumps. The estimated cost of the remaining facilities required for operation and maintenance is \$123,800.

LEGEND: Types of Activity

Praconstruction

Construction

LINE NO	CLASS AND ACCOUNT	PROGRAM ITEM	QUANTITY	UNIT	TOTAL ESTIMATED COST	COST TO JUNE 30/1962	FISCAL YEARS							BALANCE TO COMPLETE	ESTIMATED COMPLETION DATE	LINE NO
							First	Second	Third	Fourth						
							7	8	9	10	11	12	13			
	1	2	3	4	5	6			3,968	7,077				14	15	
1		RATE OF IRRIGATION	11,035	Ac.												1
2		IRRIGATION FACILITIES														2
3	03.01	American Falls Pumping Plant	125	c.c.f.s.	1,250,100	23,400	200,000	500,000	500,700							3
4	04.01	Deep Wells - 20-inch Diameter - 250-ft. Deep	15 each 2.5	c.c.f.s.	\$70,100	8,800	100,000	261,500								4
5	04.02	Deep Wells - 20-inch Diameter - 250-ft. Deep	10 each 2.5	c.c.f.s.	251,800	6,000	80,000	166,800								5
6	05.01	Main Canal West			81,200	1,900	5,000	56,500	38,000							6
7	05.02	Main Canal East			1,089,600	25,600	50,000	500,000	494,000							7
8	06.01	Laterals from Main Canal West	2,692	Ac.	163,700	3,700		70,000	80,000							8
9	06.02	Laterals from Main Canal East	4,395	Ac.	205,700	4,900		125,000	75,800							9
10	06.03	Lateral Main Lines for Sprinklers			160,100	3,800	60,000	96,300								10
11	07.01	Drainage System			508,600	7,300		108,600	192,700							11
12	08.01	Farm Unit Development			59,200	900			38,500							12
13	14.01	Distribution Lines (electric)			114,800	2,700	111,600									13
14	15.01	General Property			124,600	3,000	50,000	71,600								14
15																15
16		TOTAL PROJECT CONSTRUCTION COST			4,104,000	98,000	656,600	1,929,500	1,419,500							16
17																17
18		Less Nonappropriation Transfers			-98,000											18
19																19
20		APPROPRIATION REQUIREMENT			4,006,000											20
21																21
22																22
23																23
24																24
25																25
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31																31
32																32
33																33

Notes:

Recommended: _____ (Project Head) _____ (Date)
 Recommended: _____ (Regional Director) _____ (Date)
 Recommended: _____ (Director of Programs & Finance) _____ (Date)
 Approved: _____ (Commissioner) _____ (Date)
 Revised: _____ (Date)

SHEET _____ OF _____ SHEETS

Form PF-2 UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF RECLAMATION CONTROL SCHEDULE FOR THE
 MICHAUD PLATS, IDAHO PROJECT OR UNIT
 Boise, Idaho July, 1962
☐ GENERAL INVESTIGATIONS ☐ OPERATION & MAINTENANCE
☐ CONSTRUCTION ☐ OTHER

INTERIM POWER SERVICE COSTS

Project costs under the interim power service plan, based on unit prices as of July 1952, total \$4,425,000, including \$474,500 for storage in American Falls and Palisades Reservoirs. This is the total cost to be incurred prior to completion of the project, including construction of works, cost of storage space, investigations, and engineering plans, designs, and supervision. Total investigation and construction cost is estimated at \$3,950,500.

Annual operating costs are composed of reserves for replacement and operation and maintenance costs, including the cost of power for pumping. They will amount to an average annual cost of \$6.82 per irrigable acre.

Reserves for replacement

The annual reserve for replacement of project facilities with useful service life of less than 60 years, computed on a 60-year, 2½ percent sinking fund basis and reduced from July 1952 price basis to a projected price level comparable to that used in the repayment analysis is \$8,540, or \$0.77 per acre, distributed equally over the 11,035 irrigable acres of the project.

Operation and maintenance

Operation and maintenance of project facilities will cost an estimated \$34,490 annually, equivalent to \$3.12 per irrigable acre.

The pumping power requirement at the American Falls pumping plant will be about 6,234,000 kilowatt-hours and at the well pumps about 3,498,000 kilowatt-hours annually. At 3.0 mills per kilowatt-hour delivered to the American Falls pumping plant and 3.9 mills delivered to the well pumps, the annual energy cost would be \$32,340, or \$2.93 per irrigable acre. Other costs associated with the electrical facilities at the pumping plants are included in the operation, maintenance, and replacement costs.

CHAPTER V

AGRICULTURAL ECONOMY

Development of the Michaud Flats project will create a more profitable and stable agriculture in the area. The economy, now based on production of dry-farmed wheat, would become diversified and more intensive under irrigation, and production would be substantially increased. The project would provide opportunities for settlement on about 100 new full-time farms of adequate size to provide reasonable levels of living for farm families. Operators of these new farms, and of the 30 existing farm units which would be provided a dependable irrigation supply, would have sufficient income to pay the recommended water charges averaging about \$12 per acre.

PRESENT AND ANTICIPATED DEVELOPMENT

Dry farming in adjacent districts and irrigation agriculture in portions of the project area are basic activities of the community. The production which made American Falls at one time the second largest hard wheat shipping point in the Nation comes largely from high rainfall districts to the south. Dry farming on the project area has been successful during only two relatively short periods. Except for these periods, the lands have provided spring and fall grazing for sheep or have lain idle. Most of the irrigation farming on the project is of recent development, based upon pumping from ground water or Snake River. Creek flows in the area which serve several hundred acres are fully utilized.

Correlation areas were selected as a basis for predicting yields, farm types and sizes, cropping practices, and payment ability for water charges on the new lands. A survey of the Snake River Basin showed that the soils and general climatic conditions of lands east of Twin Falls were sufficiently similar to the best project lands to be used as a base area for class 1 lands. An area just east of Hazelton was selected as the correlation area for class 2, 3, and poorer lands.

Data on each of the correlation areas were obtained from 25 farms in selected areas covering 5 to 8 sections. These farms were selected by random sampling but include more than half the farms in each correlation area. The records were taken in the winter of 1946-47.

FARMS AND FARMERS

Ownerships and operating units

Since the project lands are used primarily for grazing and dry farming, ownerships in the project area are relatively large. Ninety-three

percent of the irrigable acreage is held in 73 private ownerships which range from 15 "homesite" units of less than 10 acres each in the old Neeley townsite to 3 ownerships larger than 640 acres each (table 4).

TABLE 4.—Size of ownership units, 1952,¹ Michaud Flats project, Idaho

Range in size, irrigable acres	Ownerships		Land in each size group	
	Number	Percent	Irrigable acres	Percent
Under 10.....	15	21	43	
10 to 29.....	8	11	116	1
30 to 49.....	3	4	120	1
50 to 69.....	6	8	332	3
70 to 99.....	11	15	910	8
100 to 129.....	5	7	560	5
130 to 159.....	5	7	683	6
160 to 239.....	6	8	1,166	11
240 to 319.....	6	8	1,718	16
320 to 479.....	3	4	1,239	11
480 to 639.....	2	3	1,037	9
Over 639 ²	3	4	2,346	22
Subtotal.....	73	100	10,270	93
Miscellaneous ³			765	7
Total.....	73	100	11,035	100

¹ Ownership data obtained from the Power County assessor, April 1952. All land owned by 1 person, or by man and wife, is considered as 1 ownership.

² Consists of the following sized ownerships: 646 acres, 647 acres, and 1,053 acres.

³ Includes the following lands:

Irrigable acres of United States owned lands.....	245
Irrigable acres of American Falls Airport.....	150
Irrigable acres of Highway District No. 1.....	147
Irrigable acres of State of Idaho.....	109
Irrigable acres of city of American Falls.....	95
Irrigable acres of small tracts, city of American Falls.....	19
Total.....	765

Over one-third of the acreage is held in ownerships ranging from 160 to 480 acres. Forty-two percent of the acreage is in ownerships larger than 320 acres. However, with 1 exception accounting for about 650 acres, owners of land in excess of reclamation law limitations have indicated their willingness to reduce their holdings in compliance therewith. Public (Federal, State, and county) lands total about 800 acres.

There were 30 operating farm units within project boundaries in 1952. Three operating units of 640 acres or more (2 of which were more than 2,000 acres) brought the average size of the operating farm units to about 350 acres.

Farms on the project are expected to be relatively large in comparison with other irrigated areas during the early years of development. After full development, however, farm sizes are expected to become smaller and more nearly equal to those found on old established irrigated areas (see table 5). Therefore the anticipated size under full development is based on: (1) The situation in comparable areas, and (2) the size necessary to provide adequate net farm income to permit a reasonable return to the farmer and pay estimated water charges.

TABLE 5.—Range in size of farms, census and correlation area data, Michaud Flats project, Idaho

Range in irrigated acres	Twin Falls County census data ¹		Correlation area data ²	
	1940	1945	Twin Falls	Hazelton
	Number	Number	Number	Number
Under 9.....	259	383	0	0
10 to 29.....	236	217	0	1
30 to 49.....	411	376	4	2
50 to 69.....	154	152	5	1
70 to 99.....	690	723	6	8
100 to 139.....	333	348	1	5
140 to 179.....	315	309	3	0
180 to 499.....	258	284	3	2
500 and over.....	62	55	0	0
Total.....	2,717	2,847	22	19

¹ Census data includes all farms in the county, 97 percent are irrigated.

² These data do not include part-time farms.

Net farm income and the ability to meet estimated water charges vary with the size of farm and the land class. Farm budgets, subsequently presented, indicate the size and type of farm by land class that will provide for an adequate level of living and payment of water charges. Information developed by the farm budgets and data from correlation areas are the basis for these conclusions as to farm sizes in the Michaud Flats area under full development:

Class 1 lands: Average size about 80 acres.

Class 2 and 4S lands: Average size about 100 acres.

Class 3 lands: Average size about 120 acres.

Class 4 lands: About 6 percent of project lands and not found in blocks large enough to establish a farm unit. In conjunction with other land classes, it is about equal to class 3 lands.

Based on the above, the Michaud Flats project under full development would contain about 130 full-time farm units.

Farm population

Farm population on the project lands was about 100 persons in 1952. After development, farm population is anticipated to reach approximately 460 persons, an increase of 360 percent.

LAND USE

Dry farming is the major land use, but has been unprofitable except for several short periods. Nearly three-fourths of the 2,000 acres irrigated in 1952 were brought into production since 1949.

After project development, grains would occupy only about one-eighth of the area. About half the developed acreage would be devoted to forage crops, largely alfalfa, and the remainder to such row crops as dry beans, sugar beets, and potatoes.

Crop distribution

Of the project's 11,035 irrigable acres, about 7,000 acres have been dry-farmed during the favorable moisture and price periods (see table 6).

TABLE 6.—*Crop distribution in 1952, Michaud Flats project, Idaho*

Item	Land use	
	Acres	Percent
Dry-farmed area:		
Wheat.....	4,007	36.4
Other grain.....	25	.2
Summer fallow.....	3,326	30.1
Subtotal.....	7,358	66.7
Irrigated area:		
Wheat.....	940	8.5
Other grain.....	114	1.0
Potatoes.....	344	3.1
Sugar beets.....	78	.7
Alfalfa hay.....	428	3.9
Pasture.....	75	.7
Miscellaneous.....	21	.2
Subtotal.....	2,000	18.1
Other areas:		
Pasture, sagebrush, other and dry.....	1,373	12.4
Other (including idle).....	304	2.8
Subtotal.....	1,677	15.2
Total.....	11,035	100.0

About 2,000 acres were irrigated in 1952, of which 1,700 acres were served by pumps and 300 acres by diversion of creek flow. About 1,700 acres of the irrigable area are largely in sagebrush.

With development, general farming with forage and feed crops would predominate. Dry beans, sugar beets and potatoes would be major cash crops in rotations properly balanced to preserve soil fertility and make best use of irrigation water. The anticipated distribution (table 7) is patterned after crop distribution in similar Idaho areas, adjusted to represent a future normal period of demand.

TABLE 7.—Normal crop distribution, correlation areas compared to estimated crop distribution by land class, Michaud Flats project, Idaho

[Percent]

Crop	Correlation areas		Land class					Project weighted average
	Twin Falls ¹	Hazelton ²	1	2	3	4S	4	
Grain:								
Wheat.....	3.0	11.5	6	7	10	7		6.7
Barley.....		5.7	6	6	7	6		5.8
Mixed grain.....	2.2	1.3						
Subtotal.....	5.2	18.5	12	13	17	13		12.5
Row crops:								
Potatoes.....	6.6	8.8	12	7		7		7.1
Sugar beets.....	6.3	3	15	10		10		9.5
Beans, dry.....	25.9	28.2	10	15	10	15		12.1
Peas.....	11.0	12.8						
Subtotal.....	49.8	50.1	37	32	10	32		28.7
Seed crops: Bean seed.....	8.6	1.9						
Forage crops:								
Alfalfa hay.....	24.4	24.1	37	37	40	37		35.3
Clover hay and seed.....	4.0	1.2	5	5	10	5		5.4
Pasture.....	5.5	3.4	6	10	20	10	100	15.3
Subtotal.....	33.9	28.7	48	52	70	52	100	56.0
Miscellaneous crops.....	2.5	.8	3	3	3	3		2.8
Total.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹ Normal crop distribution on 23 farm management survey records, approximates class 1 land.² Normal crop distribution on 16 farm management survey records, approximates class 2 and 3 land.

Crop yields

Dry-land wheat yields on the project lands have ranged from 25 bushels to less than 1 bushel, with a crop-year average in the wet cycles of about 15 bushels. In 1951 and 1952 the crop from a considerable portion of the dry land failed to meet production costs, averaging about 7 bushels with many of the fields yielding as low as 3 bushels per acre. The wheat is raised on a crop and fallow basis.

The value of sagebrush pasture for cattle and sheep is low. The Bureau of Land Management which administers Federal lands comparable to the project lands estimates that 10 to 12 acres are needed to graze 1 animal unit for 1 month.

As most of the irrigated land has been placed in production recently, little information is available on crop yields. Interviews with farmers on the Warm and Little Creek lands and lands irrigated by pump in 1951 indicated the following crop yields could be expected on the project lands:

Alfalfa hay.....	tons.....	2-4
Wheat.....	bushels.....	40-50
Barley.....	do.....	50-60
Potatoes.....	sacks.....	160
Beans.....	bushels.....	25-30

Estimated crop yields (table 8) were based on information from the correlation areas, the Federal Census of Agriculture, and interviews with project farmers. In estimating the yields by land class 1, 2,

TABLE 8.—Average crop yields on correlation areas and anticipated project yields, Michaud Flats project, Idaho

Crop	Unit of yield	Twin Falls correlation area ¹	Hazelton correlation area ²	Land class					Weighted average
				1	2	3	4S	4	
Wheat.....	Bushel.....		60.9	50	40	35	40		41.5
Barley.....	do.....	56.5	43.5	62	50	45	50		52.7
Potatoes.....	Hundredweight.....	196.7	164.8	170	150		150		159.6
Sugar beets.....	Ton.....	22.7	16	16	14		14		14.9
Bean, commercial.....	Bushel.....	34.2	33.0	30	27	25	27		27.6
Bean seed.....	do.....	30.7	20.0						
Red clover seed.....	do.....			4.5	4.0	3.5	4.0		4.0
Alfalfa hay.....	Ton.....	5.7	2.9	4.0	3.5	3.0	3.5		3.6
Pasture.....	Animal unit month.....	7.6	5.5	9.0	7.0	6.0	7.0	5.0	6.3

¹ From 23 farm management survey records for 1946.² Farm management survey data from 21 records for 1946. This area averages class 3 and 2 lands.

and 3, the Twin Falls and Hazelton correlation areas were the major source of information, with adjustment being made to reflect differences in climatic conditions. These estimates agree with estimates made by the county agent of Power County and irrigation farmers in the project. Although yield information for sprinkler land in the area was not available, the 4S lands are expected to produce yields comparable to the class 2 lands.

Type of farming

Cash-crop farming predominates on adapted soils in southern Idaho. In the Twin Falls correlation area, 73 percent of the farms are cash-crop farms and the remainder are combination crop-livestock farms with major returns from crops but with an important livestock enterprise in addition. In the Hazelton correlation area, 84 percent of the farms covered in the survey were cash-crop farms and the remainder crop-livestock type.

It is expected that project farms will follow the same general pattern as on the correlation areas with the exception that greater emphasis on livestock appears likely on the Michaud Flats project. Normal farm prices in the future are expected to be relatively more favorable for livestock and livestock products than for cash crops.

Livestock

Livestock on the project area consist of two small dairy herds and an occasional family cow. Some sheep and beef cattle are wintered on the area, but feeding is limited by the lack of hay.

The production of livestock will have a significant place in the economy of the project. Rotations containing a substantial acreage of alfalfa will maintain the irrigated lands at a high level of fertility. Although not all of the hay produced on the farms will be consumed on them, a considerable portion will be used in project dairy, beef, or sheep-feeding enterprises.

GENERAL ECONOMIC OUTLOOK

Taxes and county finances

Power County is in good financial condition. Its assessed valuation was about \$9,400,000 January 1, 1950. The tax rate has been about

\$4 per \$100 valuation. Roads, schools, and other public facilities are adequately financed and in good condition.

Farm mortgages represented less than 10 percent of total farm investment in the project area in 1950. Delinquencies in payment of current assessments for county taxes are insignificant.

Existing markets and service facilities

The town of American Falls furnishes nearly all of the marketing facilities for lands of the project. It is located in the center of the project and most of the project lands are within 4 or 5 miles of the town. American Falls is a town of about 1,900 population, located on transcontinental highway U. S. 30 N. and on the main line of the Union Pacific Railroad from Chicago to Portland.

Public grain elevators in American Falls have capacity for 1,220,000 bushels which is sufficient for the normal requirements of the immediate area and an adjacent extensive dry-farming wheat district. Potatoes have been marketed successfully in American Falls in recent years. A Pocatello dairy now collects milk in the vicinity of American Falls. There is considerable demand for additional milk in that city, about 25 miles away. It is anticipated that a beet dump will be installed at American Falls upon completion of the project. Sugar-beet factories at Paul and Lincoln have ample capacity to take care of new acreages. There should be no difficulty in selling hay, as many sheep outfits from the nearby ranges would winter their flocks on project lands when sufficient hay becomes available. Two new phosphate fertilizer plants, a Navy ordnance plant, and other industrial expansion have increased the population of Pocatello from 18,133 in 1940 to 26,131 in 1950, an increase of 44 percent. Some of the additional crop production and most of the dairy products would be consumed in this area.

Employment opportunities

The economy of the American Falls area rests mainly on agriculture. With the present dryland grain farming, employment is largely limited to seasonal work in fields and the usual service functions found in towns of comparable size.

Under project conditions, additional opportunities for seasonal employment will exist, but the farm operator probably will not be free at the right time to take advantage of such opportunities. Only a small portion of the project, largely in the vicinity of American Falls and Neeley, would be used for part-time farms.

Attitude of local people toward the project

There is widespread local pressure for development of the Michaud Flats lands. The proposed development has been considered since American Falls Reservoir flooded the bottom hay lands which supported production in the area. Support elsewhere in the upper Snake River has existed to the extent that water supplies in American Falls and Palisades Reservoirs have been allotted for the development of the Michaud Flats lands.

In 1949, the majority of landowners in the Michaud Flats area formed the Falls Irrigation District, signed a petition agreeing to dispose of their excess lands, and requested that a project study be made.

PAYMENT CAPACITY

Farm earnings that will be realized during the repayment period constitute the revenue source on commercial farms for the repayment of capital costs assigned to irrigation. Analysis of water users' payment ability therefore has been based upon a consideration of prospective farm earnings on family-size farms during an extended period in the future. Twenty-one farm budgets representing such farms were prepared, depicting the many different farm situations expected to be encountered after project development. Details of the farm budget analysis and the conclusions reached with regard to size and type of farms adapted to the project and to the capacity of such farms to pay water charges are presented below.

FARM BUDGET ANALYSIS

The budgets present estimates of physical production, income, and expenses for representative farms when operated under the conditions expected to prevail during the repayment period. The estimated earnings are considered typical of those obtainable by operators of average managerial ability under normal conditions.

General assumptions

Preparation of the farm budgets involved the making of numerous assumptions. Estimates of farm income were based upon farm production that would be obtained under normal conditions on family-size farms, using modern production practices and modern mechanical equipment. The normal crop yields presented in table 8 form the basis for the estimated crop production. In converting the salable portion of the farm production to monetary values, the long-term normal prices presented in the following section was used. All items of farm expenses were based upon a general level of prices paid by farmers equal to 215 percent of the 1910-14 base.

Commodity prices

The anticipated farm commodity prices (table 9) are the long-term average projected prices expected to prevail during the repayment period. They were developed under the long-term agricultural price projection set forth in the August 28, 1951, Report on Price Levels by the Subcommittee on Benefits and Costs of the Federal Interagency River Basin Committee, which have been adopted by the Bureau of Reclamation for use in economic analysis. This general level of the price projection is 215 (1910-14 equals 100) or approximately 83 percent of the 1946-50 price level.

TABLE 9.—*Anticipated farm commodity prices, Michaud Flats project, Idaho*

Item	Unit	Average 1946-50 price	Long-term projected price	Condition of commodity
Wheat.....	Bushel.....	\$1.88	\$1.38	Bulk delivered.
Corn.....	do.....	1.69	1.42	Do.
Oats.....	do.....	.82	.70	Do.
Barley.....	do.....	1.12	.90	Do.
Hay (baled).....	Ton.....	20.76	17.20	Baled and stacked.
Alfalfa hay.....	do.....		17.50	Do.
Beans, dry.....	Hundredweight.....	7.74	5.20	Cleaned, sacked, and delivered.
Sugar beets.....	Ton.....	13.27	11.70	Delivered sugar-beets dump.
Potatoes.....	Bushel.....	1.05	.72	Marketable without sack.
Cattle.....	Hundredweight.....	19.40		
Grass fat.....	do.....		17.00	Delivered to local sales yard.
Feeders.....	do.....		16.00	Do.
Grain fed.....	do.....		18.50	Do.
Culls.....	do.....		12.00	Do.
Calves.....	do.....	21.16		
Veal.....	do.....		18.40	Do.
Sheep.....	do.....	9.74	9.00	Do.
Lambs.....	do.....	21.00	18.70	Do.
All hogs.....	do.....	21.14		
Hogs, sows.....	do.....		14.00	Do.
Hogs, barrows and gilts.....	do.....		16.50	Do.
Chickens.....	Pound.....	.26	.25	Delivered.
Eggs.....	Dozen.....	.45	.40	Do.
Milk, wholesale.....	Hundredweight.....	3.53		
Butterfat in whole milk.....	Pound.....		.82	Delivered creamery.
Butterfat in cream.....	do.....		.56	Do.
Wool.....	do.....	.46	.42	Sacked and delivered.

Idaho prices were derived by the following procedure: (1) average prices received by Idaho farmers during the 1946-50 period were collected from the Bureau of Agricultural Economics, United States Department of Agriculture, (2) projected long-term indexes established by the above-mentioned Bureau were applied and the resultant prices used with exception of minor adjustment for local conditions.

Farm investment items

A major item of farm expense is the cost associated with the farm investment. This cost includes an allowance for interest and capital accumulation equal to 5 percent of the total investment in the farm, in addition to the annual cost of depreciation and repairs. The major assumptions made with regard to principal farm investment items are listed below.

Value of land.—The average value of sagebrush land under long-term price conditions was used as the base price. To this base price was added the cost of clearing the land and preparing it for irrigation. The following summary shows the land values in the farm budgets.

Land class	Sagebrush value	Development cost	Total land value
1	\$10.00	\$21	\$31.00
2	7.50	30	37.50
3	5.00	38	43.00
4	5.00	38	43.00
4S	5.00	21	26.00

Value of permanent improvements.—The value of farm buildings and other improvements was estimated at current prices and then reduced to a level consistent with the long-term price projection.

In all budgets the value of the farm dwelling was set at \$7,000. The value of other buildings on the various representative farms was varied according to size and type required for the kind of agricultural enterprise being considered.

Domestic water for the farms will be obtained from a farm well which has been estimated to cost \$1,000.

Machinery and equipment.—Adequate farm machinery and equipment to perform plowing, planting, tillage, and harvesting operations, except combining of grain and baling of hay, has been included in the farm budgets. The cost of the machinery needed was established by converting dealers' current prices to the long-term basis. On the average-size farm budgeted the total cost of machinery and equipment was about \$5,300 and included a tractor valued at \$1,345 and \$521 for the farm share of the family car.

Sprinkler systems.—The proposed project plan provides, in the case of sprinkler (class 4S) lands, that water will be furnished to each farm under sufficient pressure for sprinkling. Therefore, the only special costs incurred by a sprinkler irrigation farmer, over those costs incurred by a gravity irrigation farmer, are the costs associated with the sprinkler lateral system. Estimated cost of a 4-inch lateral 1,320 feet long and mounting 34 sprinkler heads was established by converting present cost to long-term price base. On an 80-acre farm three laterals would be required at an estimated cost of about \$3,400 or \$42.50 per acre.

Gravity irrigation structures.—The estimated cost of irrigation and drainage facilities for each land class is as follows:

Land class 1	\$5. 00
Land class 2	7. 50
Land class 3	10. 00
Land class 4	12. 50

Depreciation and repairs.—Annual allowances were made in farm operating expenses for depreciation and repair of buildings, machinery, and sprinkler equipment. Depreciation allowances were based upon the expected life of the items involved.

Farm work

Labor requirements.—The amount of work required in the operation of each representative farm was based upon detailed estimates for each farm enterprise under the specific conditions assumed to apply. It is usually necessary to employ some hired labor on irrigated farms at various times of the year. In estimating the amount of hired labor needed on representative farms, the following assumptions were made with respect to the maximum amount of work that would be performed by the average operator and members of his family: 2,800 hours for the operator in a year; 1,050 hours for other members of the farm family in a year; and 420 hours for operator and family in any one month. All labor required above these maximums was figured as hired labor on an hourly basis. Man-day of labor is figured at 10 hours.

Wages for hired labor.—In estimating cost of hired labor, a wage rate of 80 cents an hour was used. This rate is about 86 percent of the 1946-50 average wage rate of 92 cents an hour, and is somewhat lower than current wage rates.

Custom and piece farm work.—Ownership of machinery needed in combining grain and baling hay was not considered practicable; therefore, these operations were custom performed at rates expected to prevail during the payout period. It was assumed that the following operations in producing sugar beets would be performed with hired labor at piecework rates: block, thin, hoe, top, load, and haul. In potato production, picking and hauling were assumed to be performed at piecework rates.

Family-living allowance

A family-living allowance of \$2,250 per year, used in all representative budgets, includes the value of farm privileges which is that portion of the family living furnished by the farm.

PAYMENT CAPACITY ON REPRESENTATIVE FARMS

As noted previously, the ability of water users on the Michaud Flats project to pay for irrigation water has been determined by means of farm budgets prepared for farms considered typical of those that will develop on the various classes of land in the project under the recommended plan of development. In selecting the farms for use in the farm-budget analysis, full consideration was given to the information obtained on farms in the correlation areas as well as upon the views expressed by the present landowners and farm operators who have had actual irrigation experience in the project area.

Farm organization and financial summaries of the budgeted farms, presented on the following pages, show effects on payment capacity of varying crop and livestock enterprises and changing the size of farms. The representative farms are based on workable crop rotations that conserve soil and water. All operations are keyed to a realistic farm program.

Farms on class 1 land

Cash-crop farms are expected to predominate on the good quality lands in the Michaud project just as they do on similar quality lands elsewhere in south central Idaho. Accordingly, representative farms on class 1 land selected for farm-budget analysis place heavy reliance on the production of cash crops.

Seven farm budgets were prepared for class 1 land. All were for 80-acre farms except one for a 60-acre farm. (See table 10.) Cash crops would be a major source of income on all of these farms, but on three, those represented by budgets 1, 6, and 7, the sale of crops would constitute the sole source of income. It was assumed for purposes of the farm-budget analysis that farmers on class 1 land would follow a general rotation consisting of alfalfa, 3 years; row crops (sugar beets, potatoes, or dry beans), 2 years; and small grains, 1 or 2 years.

Due to the highly seasonal nature of the work requirements on crops, farm operators on cash-crop farms would have to employ large amounts of hired labor during peak seasons and would have little to do during off seasons. The addition of livestock enterprises would permit much more complete utilization of operator and family labor. This is shown by comparing farm budgets 2, 3, and 5 with farm budgets 1, 6, and 7. The essential difference in these farms is that a 15-cow dairy enterprise has been included in the first mentioned set of budgets.

It will be noted that the amount of work performed by operator and family labor on these farms would be more than double that performed on straight cash-crop farms. Farm earnings would also be considerably higher.

The adjusted payment capacity of water users on representative farms on class 1 land, after an allowance has been made for contingencies, would exceed \$14 per acre on all of the 80-acre farms except the cash-crop farms where dry beans were included as the row crop, farm budget 7. The adjusted payment capacity of this latter farm is shown in table 10 as \$4.99 per acre. The poor showing on this farm is accounted for by the fact that beans would be less profitable when grown on class 1 land than either sugar beets or potatoes under the assumptions employed in the farm-budget analysis. Therefore, farmers growing dry beans would require a larger acreage or would need to add a livestock enterprise as in the case of farm budget 5 which has substantially the same farm organization as farm budget 7 except that a 15-cow dairy enterprise has been added.

TABLE 10.—*Farm organization and financial summary for representative farms on class 1 land, Michaud Flats project, Idaho*

Item	Unit	Cash-crop farms			Crop dairy farms			Dairy-crop farms
		1	6	7	2	3	4	
Farm budget number								5
Farm acreage:								
Total	Acre	80.0	80.0	80.0	80.0	80.0	80.0	80.0
Irrigable	do	77.6	77.6	77.6	77.6	77.6	58.2	77.6
Irrigated crops:								
Potatoes	do		24.3			19.2	14.4	
Sugar beets	do	24.3			19.2			
Beans	do			24.3				22.4
Grains	do	12.2	12.2	12.2	19.2	19.2	14.2	11.2
Alfalfa	do	36.4	36.4	36.4	23.2	23.2	17.0	28.0
Pasture	do				11.3	11.3	9.1	11.3
Livestock: Dairy cows	Number				16	16	12	15
Farm investment ¹	Dollar	17,039	17,406	17,130	24,297	24,664	22,487	24,397
Work by operator and family	Day	122	147	134	308	318	287	316
Financial summary:								
Cash farm receipts	Dollar	8,091	8,305	5,622	9,033	9,202	6,727	7,253
Farm privileges	do	679	679	679	843	843	843	843
Gross farm income	do	8,770	8,984	6,301	9,876	10,045	7,570	8,096
Farm expenses ²	do	4,784	5,254	3,535	5,114	5,620	4,607	4,906
Family living allowance	do	2,250	2,250	2,250	2,250	2,250	2,250	2,250
Allowance for contingencies ³	do	448	370	129	628	644	178	385
Adjusted payment capacity, total	do	1,340	1,110	387	1,884	1,631	536	1,156
Adjusted payment capacity per acre	do	17.27	14.30	4.99	24.28	21.02	9.19	14.88

¹ The farm investment consists of the original cost of buildings and improvements, and farm machinery and equipment, and of the inventory value of livestock and feed, plus the value of dry land and land-development costs.

² Includes an investment allowance equal to 5 percent of the farm investment.

³ Equal to 25 percent of the unadjusted payment capacity.

Farms on class 2 land

Farms on class 2 lands will be similar to those on class 1 land. The main difference is that crop yields will be lower and land development and production costs will be higher than on class 1 land. The net effect will be that farms on class 2 land will return less net income than farms of the same type and size on class 1 land. It follows, therefore, that farms will need to be larger on class 2 land to yield the same returns as on class 1 land at the same level of cropping intensity; or greater reliance will have to be placed on livestock.

Farm budgets for six representative farms on class 2 land are summarized in table 11. Two of these are for straight cash-crop farms; the other four are for farms with cash crops and dairy cows. Farm budget 12 shows that an 80-acre cash-crop farm on class 2 land would not be quite large enough to provide sufficient income for family living and for the payment of any appreciable amount on irrigation costs. Farm budget 10 shows the effect of adding a 15-cow dairy enterprise.

The adjusted payment capacity would exceed \$11 per acre on 4 of the 6 representative farms on class 2 land. The adjusted payment capacity on the 80-acre cash-crop farm, farm budget 12, is estimated at \$5.41 per acre; whereas the adjusted payment capacity on the 80-acre dairy-crop farm, where it is assumed dry beans would be used as the row crop, is estimated at \$7.78 per acre.

TABLE 11.—Farm organization and financial summary for representative farms on class 2 land, Michaud Flats project, Idaho

Item	Unit	Cash-crop farms		Crop-dairy farms	Dairy-crop farms		
		12	13	8	9	10	11
Farm budget number.....							
Farm acreage:							
Total.....	Acre.....	80.0	100.0	120.0	80.0	80.0	80.0
Irrigable.....	do.....	77.6	97.0	116.4	77.6	77.6	77.6
Irrigated crops:							
Potatoes.....	do.....	24.3				18.8	
Sugar beets.....	do.....		30.4	28.8	18.8		
Beans.....	do.....						21.8
Grains.....	do.....	12.2	15.2	28.8	18.6	18.6	11.0
Alfalfa.....	do.....	36.4	45.6	34.8	20.9	20.9	25.3
Pasture.....	do.....			17.0	14.6	14.6	14.8
Livestock: Dairy cows.....	Number.....			18	15	15	15
Farm investment ¹	Dollar.....	18,110	18,601	28,473	25,001	25,368	25,101
Work by operator and family.....	Day.....	158	161	373	314	325	320
Financial summary:							
Cash farm receipts.....	Dollar.....	7,235	8,778	11,465	7,889	8,062	6,420
Farm privileges.....	do.....	679	679	843	843	843	843
Gross farm income.....	do.....	7,914	9,457	12,308	8,732	8,905	7,263
Farm expenses ²	do.....	5,104	5,353	6,649	4,929	6,428	4,207
Family living allowance.....	do.....	2,250	2,250	2,250	2,250	2,250	2,250
Allowance for contingencies ³	do.....	140	464	852	388	307	202
Adjusted payment capacity, total.....	do.....	420	1,390	2,557	1,165	920	604
Adjusted payment capacity per acre.....	do.....	5.41	14.33	21.97	15.01	11.86	7.78

¹ The farm investment consists of the original cost of buildings and improvements, and farm machinery and equipment, and of the inventory value of livestock and feed, plus the value of dry land and land-development costs.

² Includes an investment allowance equal to 5 percent of the farm investment.

³ Equal to 25 percent of the unadjusted payment capacity.

Farms on class 3 land

Few row crops should be grown on class 3 land. Hence, farmers on this land class will have to rely heavily on the production of hay, pasture, and small grains for livestock feed. Class 3 land accounts for about 13 percent of the project acreages, but it occurs, for the most part, as small, scattered tracts interspersed among better classes of land. It will be possible in most instances, therefore, to utilize the class 3 land to produce forage crops and grain while the better land in the farm is used for row crops.

Successful farms can be developed on class 3. The farm organization and returns for three farms composed entirely of class 3 land are shown in table 12. Farm budget 15 shows that an 80-acre farm will

be too small even though a fairly large (18-cow) dairy enterprise is included. Satisfactory returns can be obtained, however, on 120 acres of class 3 land. This is shown by farm budgets 14 and 16. The major enterprise on both of these farms is assumed to be a 25-cow dairy. The only differences between these two farms is that farm budget 14 includes a 4-sow hog enterprise. The adjusted payment capacity on the two farms is essentially the same—\$9.19 per acre on farm budget 14 and \$8.95 per acre on farm budget 16.

TABLE 12.—*Farm organization and financial summary for representative farms on class 3 land, Michaud Flats project, Idaho*

Item	Unit	Dairy farms		
		Dairy-hog farms	Dairy farms	
Farm budget number.....		14	15	16
Farm acreage:				
Total.....	Acre.....	120.0	80.0	120.0
Irrigable.....	do.....	116.4	77.6	116.4
Irrigated crops:				
Grains.....	do.....	33.4	22.2	33.4
Alfalfa.....	do.....	48.4	30.5	48.4
Pasture.....	do.....	27.6	20.2	27.6
Livestock:				
Dairy cows.....	Number.....	25	18	25
Brood sows.....	do.....	4		
Farm investment ¹	Dollar.....	31,693	26,076	30,711
Work by operator and family.....	Day.....	385	334	385
Financial summary:				
Cash farm receipts.....	Dollar.....	8,680	5,572	8,247
Farm privileges.....	do.....	876	843	843
Gross farm income.....	do.....	9,556	6,415	9,090
Farm expenses ²	do.....	5,879	3,859	5,451
Family living allowance.....	do.....	2,250	2,250	2,250
Allowance for contingencies ³	do.....	357	76	347
Adjusted payment capacity, total.....	do.....	1,070	230	1,042
Adjusted payment capacity per acre.....	do.....	9.19	2.96	8.95

¹ The farm investment consists of the original cost of buildings and improvements, and farm machinery and equipment, and of the inventory value of livestock and feed, plus the value of dry land and land development costs.

² Includes an investment allowance equal to 5 percent of the farm investment.

³ Equal to 25 percent of the unadjusted payment capacity.

Farms on class 4 land

No farms would be composed primarily of class 4 land, inasmuch as this class comprises less than 6 percent of the project area and it occurs in scattered tracts in a way that class 4 land would make up but a small portion of a farm unit. When combined with other classes of land and used to increase the size of farm operations class 4 land would contribute significantly to farm earnings. Two farm budgets showing the use of class 4 land in conjunction with better quality lands are summarized in table 13. Farm budget 17 shows the organization of, and returns from, a farm containing 21.7 acres of class 4 land and 62 acres of class 2 land where the class 4 land would be used for pasture and the class 2 land would be used in a 6-year rotation of alfalfa, potatoes, and grain. Farm budget 18 shows the possible use of 35.2 acres of class 4 land in conjunction with 87 acres of class 3 land. No row crops would be produced on such a farm. Instead, income would come from a 25-cow dairy enterprise. The adjusted payment capacity on these two farms is estimated at \$9.90 per acre on farm budget 17 and \$8.12 per acre on farm budget 18.

TABLE 13.—*Farm organization and financial summary for representative farms on class 4 land, Michaud Flats project, Idaho*

Item	Unit	Dairy-crop farms	Dairy farms
Farm budget number.....		17	18
Farm acreage:			
Total.....	Acre.....	86.3	126.0
Irrigable.....	do.....	83.7	122.2
Irrigated crops:			
Potatoes.....	do.....	16.7	—
Grains.....	do.....	18.6	27.2
Alfalfa.....	do.....	25.0	54.6
Pasture.....	do.....	20.4	33.1
Livestock: Dairy cows.....	Number.....	15	25
Farm investment ¹	Dollar.....	25,873	31,109
Work by operator and family.....	Day.....	332	385
Financial summary:			
Cash farm receipts.....	Dollar.....	7,836	8,309
Farm privileges.....	do.....	843	843
Gross farm income.....	do.....	8,679	9,152
Farm expenses ²	do.....	5,324	5,580
Family living allowance.....	do.....	2,250	2,250
Allowance for contingencies ³	do.....	276	330
Adjusted payment capacity, total.....	do.....	829	992
Adjusted payment capacity per acre.....	do.....	9.90	8.12

¹ The farm investment consists of the original cost of buildings and improvements, and farm machinery and equipment, and of the inventory value of livestock and feed, plus the value of dry land and land-development costs.

² Includes an investment allowance equal to 5 percent of the farm investment.

³ Equal to 25 percent of the unadjusted payment capacity.

Farms on class 4S land

Farms on class 4S land would be about the same in many respects as those on class 2 land. Crop adaptability and yields are expected to be the same as for class 2 land. Class 4S lands will have to be irrigated by sprinkler systems because they are not susceptible to leveling. Under the recommended plan, irrigation water would be supplied under pressure to each 40-acre tract of class 4S land. Individual farmers would provide portable laterals, risers, and sprinkler heads. The cost of the sprinkler system to be provided by farmers is expected to be somewhat greater than the cost of preparing class 2 land for gravity irrigation and installing a gravity distribution system.

The farm organization and financial returns for 3 representative farms on class 4S land are shown in table 14. The adjusted payment capacity on farms on class 4S lands would be essentially the same as for those on class 2 land.

TABLE 14.—Farm organization and financial summary for representative farms on class 4S (sprinkler) land, Michaud Flats project, Idaho

Item	Unit	Cash crop farms	Crop dairy farms	Dairy crop farms
Farm budget number.....		21	19	20
Farm acreage:				
Total.....	Acre.....	100.0	120.0	80.0
Irrigable.....	do.....	97.0	116.4	77.6
Irrigated crops:				
Potatoes.....	do.....			18.8
Sugar beets.....	do.....	30.4	28.8	
Beans.....	do.....			
Grains.....	do.....	15.2	28.8	18.6
Alfalfa.....	do.....	46.6	34.8	20.9
Pasture.....	do.....		17.0	14.6
Livestock: Dairy cows.....	Number.....		18	15
Farm investment ¹	Dollar.....	21,278	31,834	27,236
Work by operator and family.....	Day.....	142	370	316
Financial summary:				
Cash farm receipts.....	Dollar.....	8,776	11,465	8,062
Farm privileges.....	do.....	679	843	843
Gross farm income.....	do.....	9,455	12,308	8,905
Farm expenses ²	do.....	5,746	7,052	5,689
Family living allowance.....	do.....	2,250	2,250	2,250
Allowance for contingencies ³	do.....	365	752	242
Adjusted payment capacity, total.....	do.....	1,094	2,254	724
Adjusted payment capacity per acre.....	do.....	11.28	19.36	9.33

¹ The farm investment consists of the original cost of buildings and improvements, and farm machinery and equipment, and of the inventory value of livestock and feed, plus the value of dry land and land-development costs.

² Includes an investment allowance equal to 5 percent of the farm investment.

³ Equal to 25 percent of the unadjusted payment capacity.

PROJECT ADJUSTED PAYMENT CAPACITY

The adjusted payment capacity for the project as a whole is estimated at an average of just slightly less than \$12 per acre. This estimate was obtained by weighting the adjusted payment capacity of water users on the representative farms as developed in the preceding section, in the manner indicated in table 15. The weighted average payment capacity of water users on the various classes of land was found to be \$15.21 per acre on class 1, \$11.43 per acre on class 2, \$8.42 per acre on class 3, \$11.31 per acre on class 4S, and \$8.12 per acre on class 4.

TABLE 15.—*Water users' adjusted payment capacity, Michaud Flats project, Idaho*

Land class and farm budget number	Area to which farm budget applies	Adjusted payment capacity: ¹	
		Per acre	Total
Land class 1:	<i>Acres</i>	<i>Dollars</i>	<i>Dollars</i>
Farm budget 1.....	630	17.27	10,880
Farm budget 2.....	314	24.28	7,624
Farm budget 3.....	314	21.02	6,600
Farm budget 4.....	314	9.19	2,886
Farm budget 5.....	472	14.88	7,023
Farm budget 6.....	786	14.30	11,240
Farm budget 7.....	314	4.99	1,567
All class 1 lands.....	3,144	15.21	47,820
Land class 2:			
Farm budget 8.....	211	21.97	4,636
Farm budget 9.....	422	15.01	6,334
Farm budget 10.....	844	11.86	10,010
Farm budget 11.....	1,266	7.78	9,849
Farm budget 12.....	422	5.41	2,283
Farm budget 13.....	1,056	14.33	15,132
All class 2 lands.....	4,221	11.43	48,244
Land class 3:			
Farm budget 14.....	440	9.19	4,044
Farm budget 15.....	147	2.96	435
Farm budget 16.....	879	8.95	7,867
All class 3 lands.....	1,466	8.42	12,346
Land class 4S:			
Farm budget 19.....	157	19.36	3,040
Farm budget 20.....	630	9.33	5,878
Farm budget 21.....	787	11.28	8,877
All class 4S lands.....	1,574	11.31	17,795
Land class 4: Farm budget 18.....	630	8.12	5,116
The project.....	11,085	11.90	131,321

¹ Payment capacity less 25 percent allowance for contingencies and additional incentive to water users.

RECOMMENDED WATER CHARGES

On the basis of the foregoing analysis of payment capacity, the following water charges are recommended:

Class 1 land.....	\$15.00
Class 2 and class 4S land.....	11.50
Class 3 land and class 4 land.....	9.00

Under this schedule of charges water users would pay \$132,700 annually, or an average of \$12.03 per acre, for irrigation service. See tabulation below.

Repayment class	Irrigable acres	Water charges	
		Per acre	Total
Class 1.....	3,144	\$15.00	\$47,160
Classes 2 and 4S.....	5,795	11.50	66,640
Classes 3 and 4.....	2,096	9.00	18,860
All classes.....	11,035	12.03	¹ 132,700

¹ Rounded.

DEVELOPMENT PERIOD

A 10-year development period during which water users would be required to pay only operating costs of the project is recommended. Such a period would enable farmers to develop their farms and to get into full production by the time construction assessments would become due.

CHAPTER VI

FINANCIAL ANALYSIS

Development of the Michaud Flats project has economic justification as shown by the ratio of benefits to cost of 2.83 to 1, but the project is not financially feasible under a 50-year repayment period. The water users would be able to pay the annual operation, maintenance, and replacement costs of the project and would be able to repay 62 percent of the construction and storage costs of the project in a 50-year repayment period.

ECONOMIC JUSTIFICATION

The economic justification analysis measures the benefits of the project in comparison to the Federal costs required to secure them. The analysis is based upon an assumed economic life of the works to be constructed of 100 years. Both the benefits and the cost associated with obtaining the benefits have been converted to annual equivalent sums as of the end of the construction period.

NATIONAL BENEFITS

Benefits from development of the Michaud Flats project would total approximately \$591,000 annually. Of this amount, \$586,300 represents irrigation benefits and \$4,700 represents the annual benefit in enhancement of wildlife habitat.

Irrigation benefits

Direct irrigation benefits to project farmers in the form of increased net income would total \$356,300 annually after full development of the project. Indirect irrigation benefits totaling \$280,100 annually would accrue from increased profits from local sales, increased profits from processing, and from increased profits from farm purchases by the new settlers. An additional public benefit of \$26,100 would be derived from improved community facilities and services resulting from the irrigation development.

The direct and indirect irrigation benefits would total \$662,500 (table 16) annually after the project is developed. The average annual equivalent of the project irrigation benefits over the economic life of the project after adjustment for the 10-year development period would amount to \$586,300.

TABLE 16.—*Summary of annual irrigation benefits, Michaud Flats project, Idaho*

Direct farm benefits:	
Improved family living.....	\$155, 000
Increased cash farm income.....	172, 200
Accumulation of equity.....	29, 100
Subtotal.....	356, 300
Indirect benefits:	
Increased profits from local sales.....	9, 200
Increased profits from processing.....	146, 500
Increased profits from farm purchases.....	124, 400
Subtotal.....	280, 100
Public benefits: Improved community facilities.....	26, 100
Total.....	662, 500
Total annual net irrigation benefits under full development.....	\$622, 500
Development period factor, 10 years (percent).....	88. 5
Total annual net irrigation benefit.....	\$586, 312
Rounded to.....	\$586, 300

Fish and wildlife benefits

The Fish and Wildlife Service estimated that annual benefits amounting to \$4,700 would accrue from development of the project. This figure represents the estimated annual gain to wildlife. Fishery resources would not be affected significantly by the recommended project development, but the Service estimates that construction of a hydroelectric plant at Eagle Rock as outlined under alternative plan A, alternative plans chapter, might have marked adverse effects on fish and wildlife resources. The report of the Fish and Wildlife Service is appended.

Recreational benefits

The report of the National Park Service on recreational benefits has not been appended because it deals entirely with the alternative Plan A development at the Eagle Rock site. The Eagle Rock development is not included in the recommended plan, therefore the assumption that no recreational benefits would accrue from development of the Michaud Flats project as recommended is justified.

NATIONAL COSTS

National costs include the Federal investment required for construction of the project with adjustments for investigation costs, salvage values, and interest during construction, and the continuing operation, maintenance, and replacement costs necessary to keep the facilities in operation for the 100-year life of the project. Non-Federal costs incurred in obtaining benefits have been deducted in computing the benefit figures presented previously.

The estimated construction and storage cost of the project is \$4,578,500. In comparing Federal costs with benefits to establish the economic justification, investigational costs already expended

(\$98,000) have been deducted and the estimated interest costs during construction (\$113,400) have been added to arrive at a net Federal investment of \$4,593,900. This net investment is converted to an annual equivalent cost during the economic life of the project of \$125,460, table 17.

Annual operation and maintenance costs including power costs total about \$65,100. Replacements required to keep the facilities at operating efficiency for the 100-year period would cost \$18,600 annually.

Thus the annual Federal investment cost and the annual operation, maintenance and replacement costs total \$209,000.

TABLE 17.—Summary of Federal project costs, Michaud Flats project, Idaho

Item	Amount	
Federal project cost.....	\$4,593,900	
Annual project investment—\$4,593,900 at 0.02731 ¹		\$125,460
Annual replacement cost.....		18,600
Operation and maintenance.....		35,160
Power costs.....		29,930
Annual Federal project cost.....		209,150
Rounded.....		209,000

¹ Annual equivalent cost at 2¼-percent interest.

BENEFIT-COST RATIO

Annual benefits to the Nation (\$591,000) which would be realized from development of the project exceed the annual costs to the Nation (\$209,000) in the ratio of 2.83 to 1.

ALLOCATION OF COSTS

The construction and storage costs of the Michaud Flats project, totaling \$4,578,500, are allocated to irrigation and are reimbursable.

REPAYMENT

On the basis of the payment capacity analysis presented in the agricultural economy chapter of this report, water users of the project can be expected to pay a total of \$132,700 annually, or an average of \$12.03 per acre, for irrigation. Annual operating costs of the project are estimated at \$74,900. Hence, an annual construction installment of \$57,800 would be available for use in repaying the construction cost of the project. Annual payments of this amount by water users would repay all construction and storage costs of the project in 80 years. During a 50-year repayment period, the annual construction installments would total \$2,890,000, or 63 percent of the \$4,578,500 total cost of the project. Financial assistance in the amount of \$1,688,000 would be required to achieve full repayment of project cost.

A repayment summary follows:

Total capital costs: Construction and storage costs.....	\$4, 578, 500
Recommended charges: Total annual payments by water users.....	132, 700
Annual operating costs:	
Ordinary operation and maintenance.....	\$35, 160
Replacement reserve.....	9, 780
Power cost.....	29, 930
Total annual operating costs.....	74, 870
Rounded.....	74, 900
Amortization capacity:	
Difference between total annual payments by water users and total annual operating costs (amount available annually for repayment of capital costs).....	57, 800
Total repayment by water users of capital costs, 50-year repay- ment period ($\$57,800 \times 50$).....	2, 890, 000
Balance of capital costs: Balance of capital costs to be paid from power revenues or other source.....	1, 688, 500

WATER USERS ORGANIZATION

The repayment contract for the project would be completed between the Falls Irrigation District (or similar organization of landowners established for the purpose) and the Government. After meeting the repayment obligation and with the approval of Congress, the irrigation project would be turned over to the water users.

BUDGET BUREAU CIRCULAR A-47

The application of Budget Bureau Circular A-47 to this project would have very little effect. It would change the ratio of benefits to costs from 2.83 to 2.39. This reduction results from amortizing the project cost in 50 years rather than 100 years. The 100 years was used in the report because the major works, including the storage, will last at least that long.

CHAPTER VII

ALTERNATIVE PLANS

Several alternative plans for development of the Michaud Flats project were considered before the favored plan was selected. These alternative plans are described briefly in the following paragraphs.

PLAN A

Plan A involved all the features of the selected plan as presented in the plans and estimates chapter, plus construction of a dam and 30,000-kilowatt hydroelectric generating plant at the Eagle Rock site on Snake River 7 miles downstream from American Falls Dam. Eagle Rock Dam would be an earth-fill structure about 35 feet in height above the original riverbed with a crest length of 2,950 feet. Provision would be made for a spillway capable of discharging 90,000 cubic feet per second. Estimated cost of the dam is \$4,700,000, estimated cost of the generating plant is \$10 million.

Inclusion of this power development was considered because pumping power is required for the project and it was evident at the outset of investigations that cost of the irrigation works would exceed repayment ability of water users. The powerplant would supply pumping power to the project and revenues from sale of surplus power would assist in the repayment of project costs.

However, comparison of annual costs relevant to the estimated \$14,700,000 construction cost with anticipated bus-bar revenues shows the Eagle Rock development is not feasible because revenues would be insufficient to retire the cost of the works in the required 50-year period. The Eagle Rock development would not be feasible so long as construction cost exceeds \$11,850,000. Therefore, this plan merits no additional consideration at this time.

PLAN B

Plan B involved a cooperative development with the Bureau of Indian Affairs to serve 28,350 acres of Indian- and white-owned lands in the Michaud Flats area on both sides of the reservation boundary. The initial plan was prepared under direction of the Irrigation Division of the Bureau of Indian Affairs and included designs of a pumping plant on Portneuf River lifting water from the backwater of American Falls Reservoir to a proposed canal extending westward to the reservation boundary. Designs and estimates for extending the canal to serve Michaud Flats project were prepared by Bureau of Reclamation forces. The plan involved an expensive siphon crossing of Portneuf River, 35 miles of main canal, and two relift pumping stations on the project. Excessive costs of the plan (\$21 per acre annually) and the possibility of complications arising from dual-agency operation and maintenance are the basis for rejection of this plan.

PLAN C

Plan C involved extension of the existing Fort Hall Indian project canal to Michaud Flats project and diverting through the existing Fort Hall works a water supply obtained by exchange of downstream supply for an upstream supply. It requires an expensive siphon crossing, enlargement of the entire length of the existing Idaho and Fort Hall Canals, and concrete lining of the canal extension. The plan was rejected because of the excessive cost.

OTHER ALTERNATIVES

Several additional alternative methods of providing water to the project lands were investigated and rejected in favor of the selected plan on the basis of providing less than optimum use of the available water supply, or excessive costs.

Examination of these alternatives led to determination of the optimum acreage that could be served under a single lift from a pumping plant at American Falls Dam and to elimination from consideration of the plans involving relift pumping plants and a smaller initial lift. The possibility of hydropumping from a dam and tunnel to be constructed at the Eagle Rock site was also examined but rejected because of the small area capable of being economically served by that method and the requirement for an additional and costly electric relift pump to serve the remaining irrigable acreage.

APPENDED MATERIAL

1. Preliminary Report on Ground Water in the Michaud Flats Project, Power County, Idaho. United States Department of the Interior, Geological Survey, November 1951.
2. Preliminary Evaluation Report on Fish and Wildlife Resources. United States Department of the Interior, Fish and Wildlife Service, January 1953.

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
GROUND WATER BRANCH

PRELIMINARY REPORT ON GROUND WATER IN THE
MICHAUD FLATS PROJECT, POWER COUNTY, IDAHO

By

J. W. Stewart, R. L. Nace, and Morris Deutsch

Prepared in cooperation with the U. S. Bureau of Reclamation
and the Idaho State Department of Reclamation

Boise, Idaho
November 1951

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REPORT OF THE GEOLOGICAL SURVEY

PRELIMINARY REPORT ON GROUND WATER IN THE MICHAUD FLATS PROJECT, POWER COUNTY, IDAHO

By J. W. Stewart, R. L. Nace, and Morris Deutsch

ABSTRACT

The Michaud Flats project area, as here described, includes about 65 square miles in central Power County, south of the Snake River in the southeastern Snake River Plain of Idaho. The principal town and commercial center of the area is American Falls.

The immediate purpose of work in the area by the United States Geological Survey was to investigate the possibility of developing substantial quantities of ground water for irrigating high and outlying lands in the proposed Michaud Flats project area of the United States Bureau of Reclamation. Initial findings are sufficiently favorable to warrant comprehensive further investigation. Advanced study would assist proper utilization of ground-water resources and would aid ultimate evaluation of total water resources available in the area.

About 10,000 acres of low-lying lands in the Michaud Flats project could be irrigated with water from the Snake River under a low-line distribution system involving a maximum pumping lift of about 200 feet above the river. An additional larger area of high and outlying lands is suitable for irrigation with water pumped from wells. If sufficient ground water is economically available the expense of constructing and operating a costly high-line distribution system for surface water could be saved.

Reconnaissance of the ground-water geology of the area disclosed surface outcrops of late Cenozoic sedimentary, pyroclastic, and volcanic rocks. Well logs and test borings show that similar materials are present beneath the land surface in the zone of saturation. Ground water occurs under perched, unconfined, and confined (artesian) conditions, but the aquifers have not been adequately explored. Existing irrigation wells, 300 feet or less in depth, yield several hundred to 1,400 gallons of water a minute, with pumping drawdowns of 6 to 50 feet, and perhaps more. A few wells have been "pumped out" at rates of less than 800 gallons a minute. Scientific well construction and development methods would lead to more efficient well performance.

A generalized water-table contour map of the area shows that the principal general direction of ground-water movement is toward the west and northwest. The southwestern part of the American Falls Reservoir, and a segment of the Snake River below the dam, may be perched above the water table. Ground water appears to move be-

neath this segment of the river to the Snake River Plain on the northwest side.

So far as is known, recharge to the ground-water reservoir is chiefly from local sources and from the runoff from the mountain area southeast of the project. Seepage losses from surface water spread for irrigation would contribute a substantial amount of new recharge to the ground water, but the amount of such recharge might be less than the depletion of ground water by pumping. Therefore, with ground-water irrigation of part of the project, return flow to the American Falls Reservoir might be less than it is in the existing regimen. Ground-water pumping where the ground water is not tributary to the reservoir might not deplete the reservoir appreciably, but would reduce the net supply of water available west of Neeley.

Evidence indicates that at least moderate supplies of ground water can be obtained in low-lying areas southwest and northeast of American Falls, but the safe perennial yields of the aquifers cannot now be estimated. The ground-water potential in high and outlying lands is not known. It is unlikely that this potential is sufficient to supply all high and outlying lands, but the supply may be adequate for a substantial part of these lands. Thorough investigation appears to be warranted.

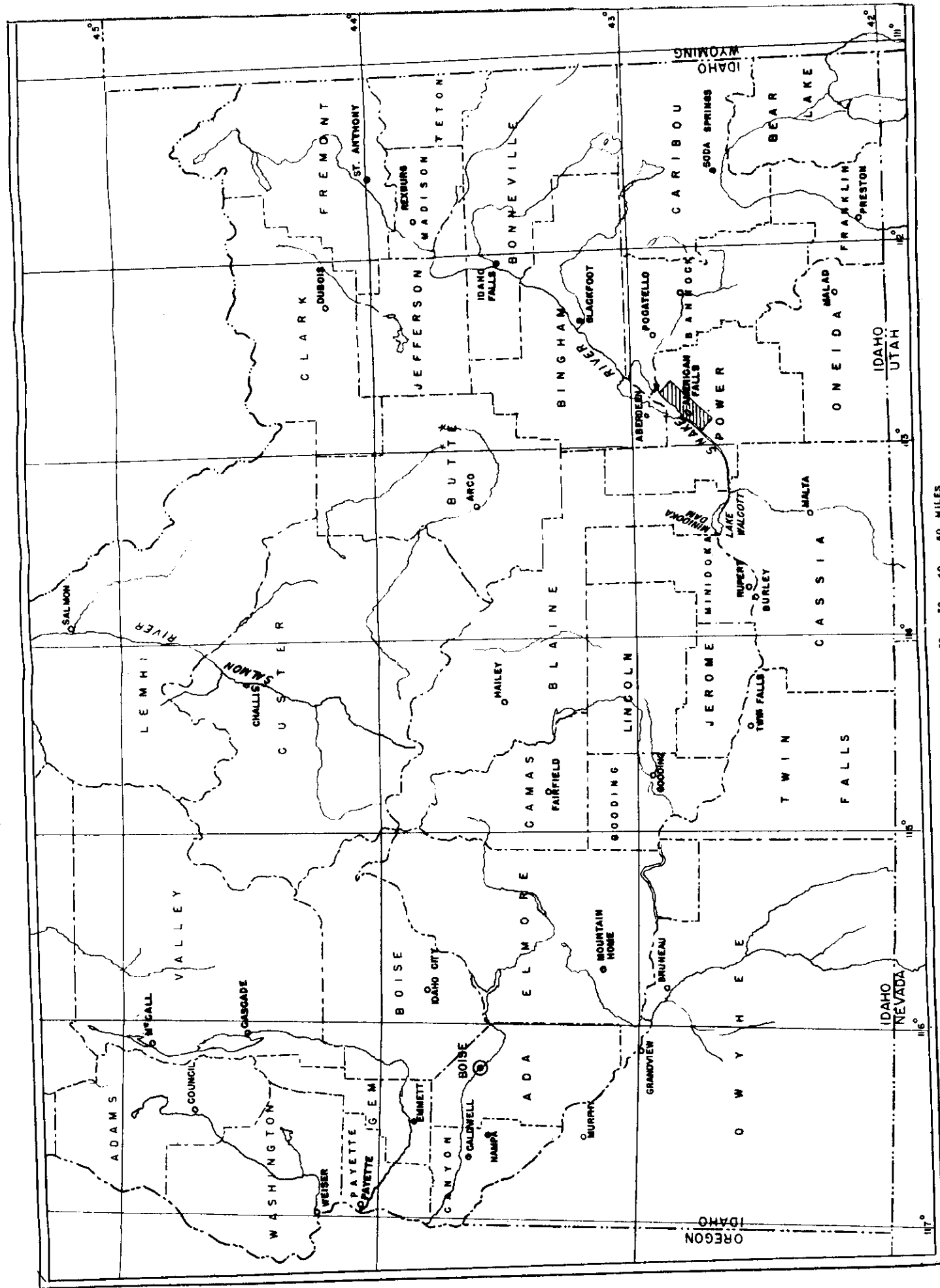
INTRODUCTION

Location and general features

Power County includes approximately 1,411 square miles in southeastern Idaho. The area here described occupies about 65 square miles in parts of Tps. 6-9 S., Rs. 30-32 E., in central Power County (index map, fig. 1), and includes the Michaud Flats project of the United States Bureau of Reclamation. Michaud Flats, a flat plain from which the project name is derived, is in the Fort Hall Indian Reservation, about 12 miles northeast of the town of American Falls. Michaud Flats project is the name applied by the Bureau of Reclamation to the whole area of flat to rolling land that extends from the Portneuf River westward to the vicinity of Neeley on the south side of the Snake River below American Falls. The irrigable land in this area is divided by the western boundary of the Fort Hall Indian Reservation into a Michaud Flats extension of the Fort Hall Indian project, and the Michaud Flats project, which is now under investigation by the Bureau of Reclamation.

The ground-water investigation herein reported upon was limited to an area west of the Indian reservation boundary. The area covered is a narrow belt of land at the southeastern edge of the Snake River Plain, bounded on the northwest by the Snake River and American Falls Reservoir and on the southeast by the Deep Creek Mountains. The belt of land is about 18 miles long from northeast to southwest, and about 3 to 4 miles wide.

American Falls, the principal town and commercial center of Power County, had a population of 1,890 in 1950. Much of the area is dry-farmed lands from which the principal crops are wheat, oats, barley, and rye. The area is served by the Union Pacific Railroad, United States Highway 30N, State Highway 37, and numerous local roads.



Previous investigations

A geologic study of petroleum possibilities in Power and Oneida Counties was made by Piper in 1923.¹ A report by Stearns and others² on the geology and water resources of the Snake River Plain included data on the Michaud Flats project area. A plan map and profile of the Snake River in this area has been published.³ D. P. Affleck and L. D. Jarrard, of the Bureau of Reclamation, canvassed many wells in the area in August 1949, as a part of the Bureau's preliminary study of the proposed Michaud Flats project.

Purpose and scope of report

This report reviews the results of a preliminary investigation by the United States Geological Survey of the source, direction of underflow, quantity, and availability of ground water for irrigation in the American Falls area. The immediate purpose of the investigation was to assist study by the Bureau of Reclamation of the relative economy and feasibility of developing ground water, rather than diverting surface water, for irrigating part of the Michaud Flats project.

Approximately 10,000 acres of land bordering the reservoir and river northeast and southwest of American Falls (herein called the lowline tract) is comparatively flat and is included in the project proposed to be irrigated with surface water from the Snake River. A maximum lift of about 200 feet would be required to get water from the river to the distribution system. An area of about 20,000 additional acres (herein called the highline tract), is very irregular in configuration and has considerable relief. Part of the highline tract is above the lowline distribution system; other parts either are isolated from the system or are too rough for practical gravity irrigation. If water from local underground sources could be developed on a substantial scale, irrigation from wells in the highline tract might be economically feasible. Irrigation from strategically located wells would eliminate the need for relift pumps to raise water to parts of the highline tract, and for costly structures to deliver water to isolated tracts. Areas that are too rough to be leveled might be irrigated with sprinkler systems supplied with water from wells.

The data contained herein were obtained chiefly during rapid reconnaissance in an area for which little subsurface information is available. Observations of water-level fluctuations have not been of sufficient duration to be of much use. The inferences and recommendations herein are of a preliminary and highly generalized nature; they may be modified appreciably after further study.

Field work and acknowledgments

Data were obtained during a brief field study, September 13-27, 1950, and from subsequent periodic observations of water-level fluctuations in wells. A geologic reconnaissance was made, existing wells were canvassed, water levels in wells were measured, and available well logs and pumping information were collected. Twenty-four wells were selected for continued observation, and periodic measurements

¹ Piper, Arthur M., 1924, Possibilities of Petroleum in Power and Oneida Counties, Idaho: Idaho Bureau of Mines and Geology Pamphlet 12, 24 pp., 4 pls., 1 fig., December.

² Stearns, H. T., Crandall, Lynn, and Steward, W. G., 1938, Geology and Ground-water Resources of the Snake River Plain in Southeastern Idaho: U. S. Geol. Survey Water-Supply Paper 774, pp. 69-72, 117-118.

³ Werner, E. L., and Lundberg, John, Jr., 1939, Plan and Profile of Snake River, Milner to Pine Creek, Idaho: Henry's Fork, Mouth to St. Anthony Dam Site: U. S. Geol. Survey, 12 plan and 7 profile sheets.

of water levels in these wells have been made. A brief discharge-drawdown test was made on well 8S 30E-14cbl. Well canvassing and engineering study were by J. W. Stewart. Geological reconnaissance was by Morris Deutsch. General reconnaissance and supervision were by R. L. Nace. S. W. Fader, P. T. Voegeli, and G. E. Brandvold, of the Geological Survey, assisted in the field and laboratory work.

Fred Sawyer, superintendent of the American Falls powerplant, furnished the logs of diamond-drill cores from the site of the powerplant. Robert Cure, well driller, collected cuttings from several wells in the area. T. C. Sparks, water superintendent of American Falls, and local residents of the American Falls area furnished useful information. The investigations were financed largely by the Bureau of Reclamation. The Idaho State Department of Reclamation participated in the operation and maintenance of the network of project observation wells, and in the duplication of the report.

The investigation here reported was made at the request of the planning division, Central Snake River District, Bureau of Reclamation. Investigations of ground water by the Geological Survey in Idaho are under the general direction of A. N. Sayre, Chief of the Ground Water Branch, Washington, D. C., and under the immediate supervision of R. L. Nace, district geologist, Boise, Idaho. Mark R. Kulp, Idaho State reclamation engineer, participates in the direction of the cooperative ground-water investigations.

PHYSIOGRAPHY

Where the Snake River borders on the Michaud Flats project area the river has carved a narrow gorge which is about 100 feet deep at American Falls. From there to Massacre Rocks, about 10 miles to the southwest, the depth of the gorge ranges from 100 to 150 feet. The dam at American Falls impounds a reservoir about 22 miles long and 2 to 8 miles wide. The maximum upstream extent of backwater is to a point about 24 miles downstream from Blackfoot. The central Snake River basalt plain lies north and west of this segment of the river.

An alluvial plain 3 to 4 miles wide borders the southeast side of the river in the area here discussed. Alluvial fans extend onto the plain from the mouths of the canyons in the adjacent mountains. Gently rolling foothills of the Deep Creek Mountains occupy much of the reclamation project area and grade into the alluvial plain. The foothills are relatively rugged along the southeast margin of the area.

All drainage in the area is to the Snake River, through Ferry Hollow, Sunbeam, Cold, and Little Creeks. These are intermittent at their mouths and across the alluvial plain, but their headwaters are perennial and have cut deep canyons in the Deep Creek Mountains.

The total physiographic relief in the area is about 900 feet, the altitude ranging from 4,230 feet at the project boundary on the south bank of the Snake River below the reservoir, to 5,130 feet in the foothills of the Deep Creek Mountains southeast of American Falls. The altitude of the water surface in American Falls Reservoir during the period September 14 to 22, 1950, when measurements of ground-water levels were made, was 4,338.8 feet above mean sea level datum. The altitude of the water surface in the Snake River at the Neeley gaging station during the same period was 4,247.3 feet. At the rated

reservoir capacity of 1,700,000 acre-feet the altitude of the reservoir water surface is 4,354.5 feet. The altitude for rated zero capacity is about 4,296 feet. The maximum altitude that actually has been reached is about 4,355 feet.

AREAL GEOLOGY

Paleozoic sedimentary rocks in the Deep Creek Mountains are the oldest rocks that crop out in the area. The late Cenozoic American Falls lake beds and Neeley lake beds, consisting of clay, silt, sand, pebbly sand, and tuff, crop out in the Snake River gorge and in tributary valleys below the American Falls Dam. The beds accumulated in ancient basalt dammed lakes of wide areal extent, including all or most of the area here reported on, whose shorelines at times were about 100 feet higher than that of American Falls Reservoir. At some places the lake beds are interbedded with volcanic rocks. Tuff and basalt of the Eagle Rock tuff and Massacre volcanics crop out in the gorge of the river below the dam and in small scattered outcrops south of the river.

In most of the project area older beds are covered by Quaternary flood plain and alluvial-fan sediments deposited by the Snake River and its principal local tributaries, Sunbeam, Cold, and Little Creeks and Blind Stream. The Deep Creek Mountains were the source of much of these sediments. In much of the area the sediment and rock units are overlain by a mantle of unconsolidated light-tan to brown loess.

SUBSURFACE GEOLOGY

Basalt and more acidic types of volcanic rock are interbedded with clastic sediments to an unknown depth beneath the surface. Rhyolite tuff and obsidian tuff are present at shallow depth. Drill logs show that beds of clay, silt, sand, and gravel overlie the major basalt flows. In the southern part of the area extensive deposits of rhyolite tuff and obsidian tuff are intermixed with the sediments. The "black sand" reported by some drillers consists of grains of basalt; some of the black sand may be volcanic tuff of basic composition. The so-called blackjack of drillers in the area is obsidian tuff.

Northeastward from American Falls volcanic rock apparently was not encountered by the drill in any of the wells reported herein. The materials drilled below the American Falls lake beds in that area are sandy, ranging from unconsolidated sand to hard well-cemented sandstone. Tongues and lenses of silt and clay are interbedded with coarser materials at many places. Both the lake beds and underlying sand contain gravel lenses but generally these are in thin beds of small volumetric importance.

OCCURRENCE OF GROUND WATER

Available subsurface data from drillers logs and reports of well owners is not sufficient to indicate the details of ground water occurrence in the Michaud Flats project. The amount of information about existing wells is extremely small because about three-fourths of all wells in the area have been abandoned and for these no drilling, construction, or production data are available. For many producing wells information could not be obtained about the amount of casing and the size and position of perforations. Records show that water

from some deeper sources that have been drilled may be under low artesian pressure. At depths greater than those yet drilled there may be untapped sources of water.

Some useful available data pertain to the region northeast of American Falls, between the reservoir and the foothills of the Deep Creek Mountains. In that area irrigation wells 200 to 300 feet deep tap 2 principal depth-zones of water-bearing material. The upper zone, extending from the surface to a maximum known depth of about 80 feet, contains water that may be perched or semiperched in a zone of saturation ranging from 10 to 35 feet in thickness. Below this is 60 to 115 feet of relatively impervious material, chiefly clay, clayey silt, silt, and fine sand. An underlying zone of gravel and sandstone, extending to unknown depth, contains water that has been tapped by several irrigation wells.

It is reported that the water table in the shallow zone fluctuates widely and wells that tap only this source yield very limited quantities of water. The areal extent of the shallow water body is not known but it appears to be limited largely to the northeastern part of the area.

Evidence is not sufficient to determine whether water of the lower zone is confined, but it is believed to be under low artesian pressure at some localities.

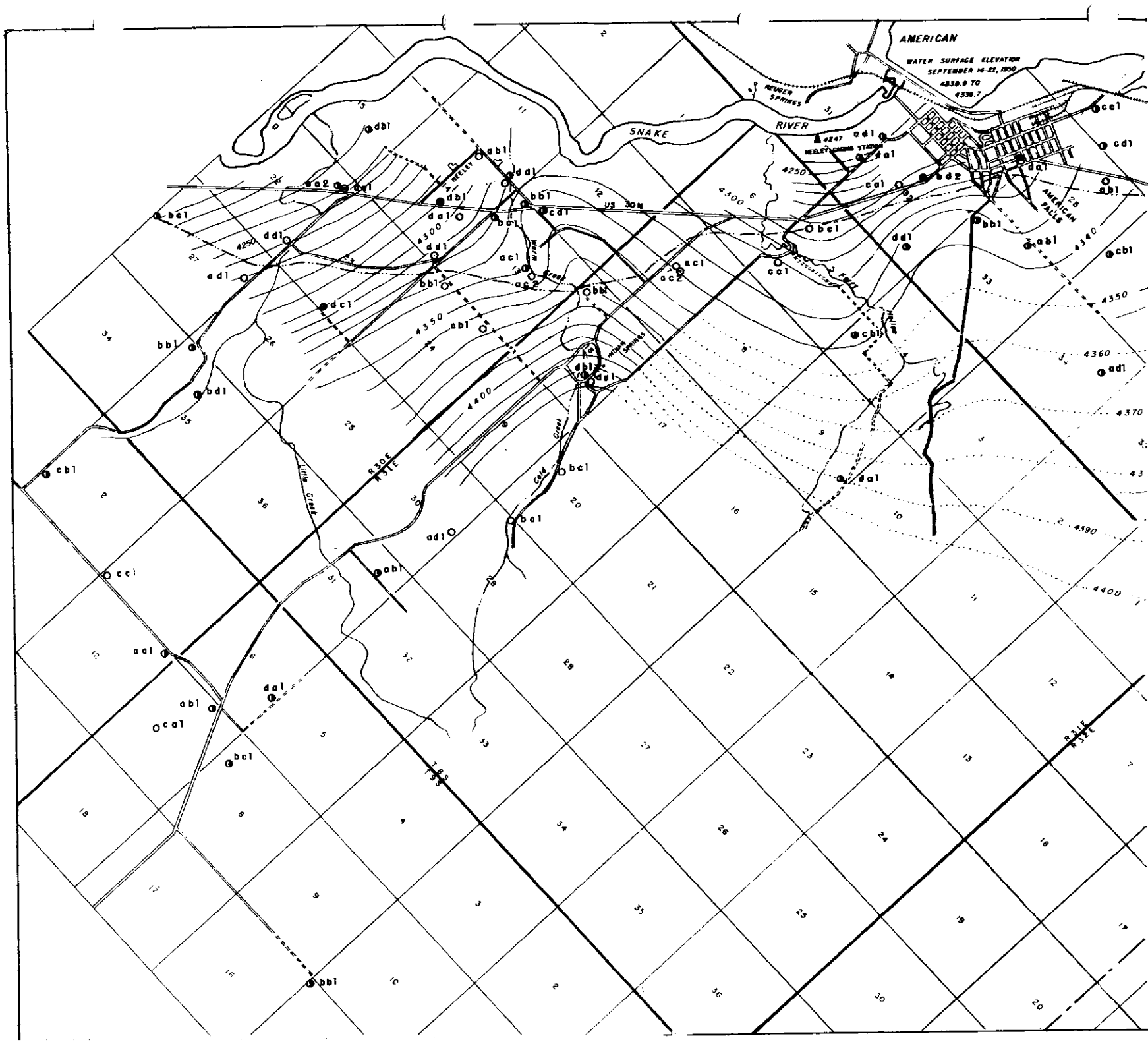
The driller's log of the Eames well (7S 31E-1da2), about 1½ miles southeast of the shore of the American Falls Reservoir, records shallow water in sand from 65 to 77 feet, and a deeper source of water in gravel and sandstone from 195 to 292 feet. The material separating the two water-bearing zones is predominantly clay, silt, and fine sand. It is believed that the casing in this well is perforated in both the upper and lower zones, and the driller reported a depth of 48 feet to the static water level when the well was completed. This is 17 feet above the depth to water reported when only the shallow zone had been penetrated. In September 1950 the depth to water was 54.4 feet below the land surface. Possibly the lower water is under artesian pressure and is leaking out into the upper zone of saturation.

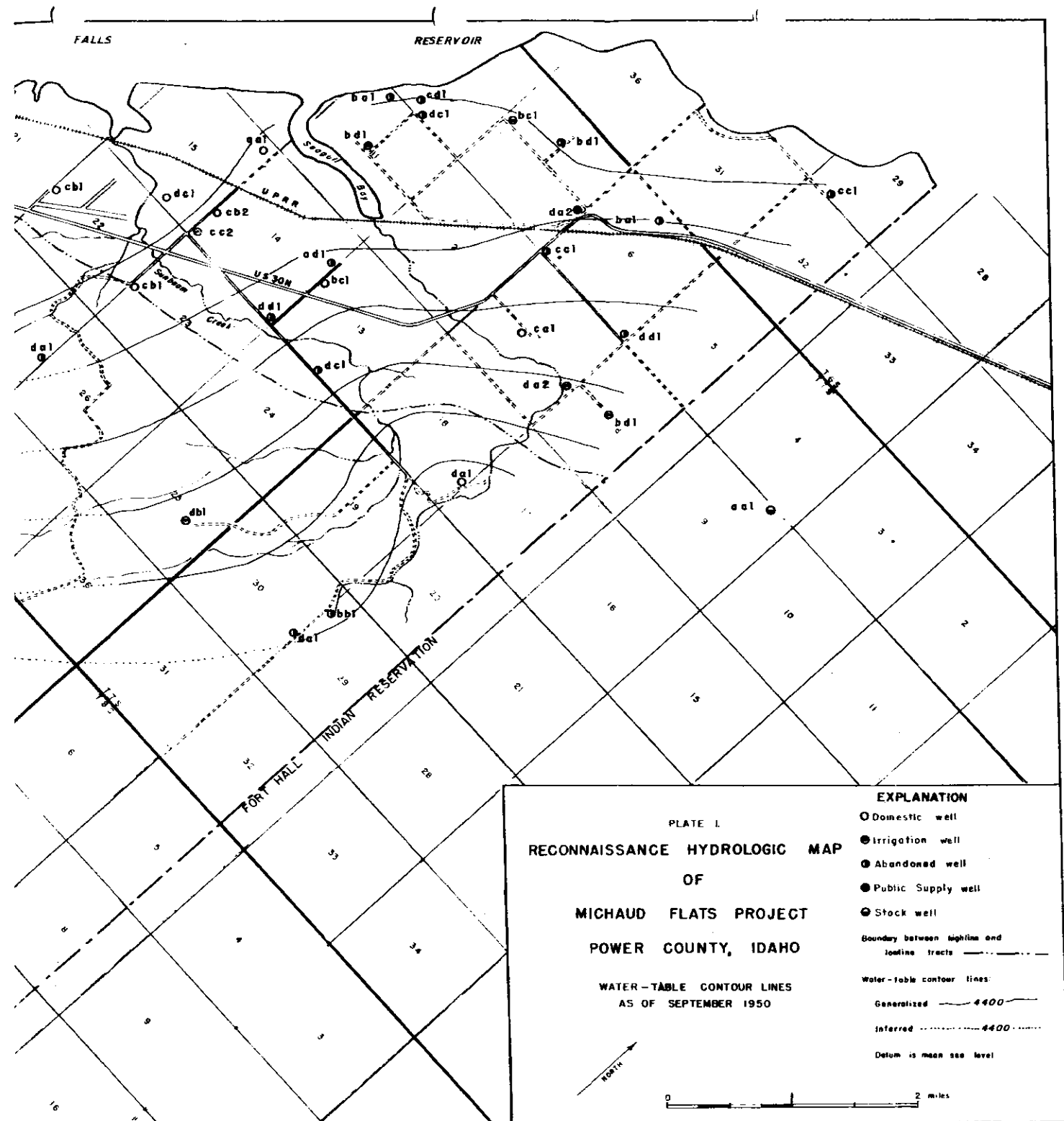
The log of the Smith well (7S 32E-7da2), about 1½ miles southeast of the Eames well near the foothills of the Deep Creek Mountains, records water in sand from 35 to 68 feet, and deeper water in sandstone from 190 to 295 feet. Clay, sandy clay, gravel, and sandstone separate the two aquifers. There is no evidence that any source of water tapped by this well is under artesian pressure.

Available drillers' logs indicate only one main aquifer in the southwestern part of the area, but the data are not sufficient to show the lateral extent and thickness of the water-bearing formation.

The reconnaissance hydrologic map (pl. 1) shows by contours the approximate altitude and configuration of the ground-water pressure surface in the American Falls area. The map is based on water-level measurements by the Geological Survey, chiefly in September 1950. Bureau of Reclamation local leveling records were used to compute the altitude of the water surface in feet above mean sea level datum of 1929, Pacific Northwest Supplementary Adjustment of 1947. The pressure-surface contours are subject to revision for reasons noted below.

1. A few wells had been pumped immediately before being measured, and the water levels as measured may not have represented accurately the position of the water table.





2. Confined, unconfined, and perched or semiperched water could not be distinguished in all wells. Therefore, the hydrologic contours do not necessarily represent a normal pressure surface (water table) at all places. The contours may be somewhat distorted, especially in parts of the area northeast of American Falls, where water levels were used as though they represent a normal pressure surface, whereas in some wells they may represent unrecognized low-artesian-pressure surfaces.

3. Altitudes of some wells in the area have not been determined. Completion of the leveling would improve the accuracy and extend the area of contouring. Reconnaissance leveling that has been done is not sufficiently precise to permit accurate map compilation.

As a whole, the hydrologic map is believed to be a reasonably accurate representation of the general configuration of the water table, and of the general directions of ground-water underflow, but it cannot be used rigidly to predict the altitudes at which water would be struck or at which it would stand in new wells.

MOVEMENTS OF GROUND WATER

Movement of ground water in the area mapped is generally north-westward toward the Snake River and American Falls Reservoir. The hydraulic gradient is about 50 to 70 feet per mile in the hilly section in the southwestern part of the area, and about 15 feet per mile in the nearly level flat area in the northeast. The trends and altitudes of the water-table contours south of the river in the vicinity of American Falls and Neeley suggest that the southwestern part of the reservoir basin, and a reach of the river channel below the reservoir, may be above the water table. The materials underlying the basin and channel may be of sufficiently low permeability to perch the reservoir and river. Although measurements of ground-water levels could not be made in the critical areas adjacent to the river and reservoir, it is apparent that the water-table contours would have to curve downstream as they approach these areas. Recent test drilling by the Bureau of Reclamation at the Eagle Rock Dam site, about 3 miles southwest of Neeley, shows that the water table in that area is below the river level. It is likely that both the river and the southwestern part of the reservoir lose appreciable amounts of water to the ground. Southwest of American Falls ground water may pass beneath the river from the south to the north side. From the vicinity of Seagull Bay northeastward the ground water appears to be tributary to the reservoir.

Between American Falls and the former location of the Neeley gaging station in sec. 11, T. 8 S., R. 30 E., "There is about 35 second-feet of ground-water inflow to the river along the north bank. About 25 second-feet of this comes from Ruegar Springs, about 1 mile below American Falls. The remainder comes from various small seeps, apparently mostly from irrigation at the southwest end of the Aberdeen irrigation project."⁴ There is no apparent hydraulic connection between the ground water represented by the contours on the south side of the river (pl. 1) and the ground water that discharges to the north bank of the river below American Falls. Seeps or springs have not been found in the south bank of the river.

⁴ Crandall, Lynn, personal communication, August 31, 1951.

RECHARGE OF GROUND WATER

Present regimen

Natural recharge to the ground-water reservoirs in the American Falls area is derived directly and indirectly from precipitation, of which the annual average in the area is about 13 inches. Much of the recharge is from surface-water seepage losses along the channels of the numerous streams that cross the area from the Deep Creek Mountains, especially during periods of heavy runoff. Because of the limited precipitation and its strongly seasonal distribution, most of the streams are intermittent below their headwater areas. Except during the period of heavy spring runoff, very little surface water is discharged by these streams into the Snake River.

Some recharge may be derived from seepage losses from the southwestern part of the American Falls Reservoir, where the reservoir bottom appears to be above the water table, and from the Snake River below the reservoir. The northeastern part of the Michaud Flats project may receive recharge by underflow from areas to the northeast, where there are known large supplies of ground water.

Water levels in the wells generally rise in seasons of melting snow and decline during the dry months of summer and fall. Erratic fluctuations of water levels in wells 8S 31E-18db1 and 8S 30E-13ac2, which tap shallow water-bearing material, appear to be caused by seepage losses from nearby Warm Creek. In September 1950 and June 1951 water levels in most project observation wells rose from a tenth to a few tenths of a foot. The September rise may reflect local recharge from late summer precipitation. The June rise may be a tardy effect of spring precipitation and of regional recharge from melting snow in the nearby mountains. Records of water-level fluctuations cover too short a period to support much interpretation.

An estimate of the amount of water discharged from the area by surface runoff, evapotranspiration, ground-water underflow, and other means is beyond the scope of this preliminary report. Further study is needed to determine the relations of ground-water recharge and discharge to storage levels in American Falls Reservoir and to the stages and channel conditions of the Snake River.

REGIMEN UNDER IRRIGATION

The effective precipitation, available for consumptive use by crops and other vegetation during the growing season in the Michaud Flats project, is not known. Diversion requirements for irrigation with surface water, expectable consumptive use, and probable losses by deep percolation also are not known. Therefore, there is no adequate basis for estimating the amount of ground-water recharge that might result from percolation losses of irrigation water. An estimate of the order of magnitude of these losses may be gained from speculations based on experience and observation elsewhere. Assuming a diversion requirement of 4.1 acre-feet per acre and farm delivery of 3.6 acre-feet per acre, for 10,000 acres under surface-water irrigation, total annual diversions would amount to 41,000 acre-feet of water. Canal losses by seepage, evaporation, and waste might amount to 5,000 acre-feet, of which perhaps 3,000 acre-feet would reach the zone of saturation as ground-water recharge. Farm delivery of 36,000 acre-feet might result in the contribution of 18,000 acre-feet to ground-water recharge. Total ground-water recharge

thus might be about 21,000 acre-feet. These figures have no factual standing whatever, but they can be used to illustrate qualitatively the changes in ground-water regimen that may occur with irrigation.

Increased ground-water storage would cause the water table to rise in and near the irrigated area. Where the subsurface materials are of low permeability and low porosity, or both, the rise would be relatively rapid. Soil-drainage problems might develop in some areas. Increased hydraulic gradients would increase the ground-water contribution to the American Falls Reservoir, and buildup of the water table might reduce seepage losses from the southwestern part of the reservoir. The time lag between application of water to the land surface and increase of return flow to the reservoir might range from days to months, depending upon the permeability of aquifers, the distance of the recharge area from the area of discharge, the velocity of the induced ground-water recharge wave, and other factors. All the induced recharge could not be credited as return flow to the reservoir, however, because some of the water would pass beneath the river downstream from the reservoir, and join the body of ground water beneath the central Snake River Plain north of the river. On the other hand, the upper part of Lake Walcott, and a considerable reach of the river above it, is fed by ground water from the central plain, down the ground-water gradient from the area of loss from the Michaud Flats project. Therefore, a part of the water lost by underflow from the project below American Falls would appear as return flow above Minidoka Dam. For these reasons, net depletion of the surface-water supply above Minidoka Dam would be less than the total diversion for the Michaud Flats project.

Irrigation of only a small tract with surface water alone has been considered above. Concurrent irrigation of a larger tract with pumped ground water would alter materially the trend of effects from irrigation with surface water. Assuming that 54,000 acre-feet of water might be pumped, of which possibly 27,000 acre-feet might return to the zone of saturation, net depletion of ground water would be about 27,000 acre-feet, which is substantially more than the supposed recharge induced by irrigation with surface water. The net depletion of total ground- and surface-water resources in this instance would be the amount of pumped ground water consumptively used, less the amount of diverted surface water that reaches the zone of saturation, plus the amount of surface water consumptively used, or about 26,000 acre-feet. The proportion of net depletion above American Falls to that below cannot be estimated at present.

Again it is emphasized that the above computations are illustrative only. They have no necessary relation to actual conditions that may develop, and they have been introduced only to indicate the probable nature of those conditions and the interplay of hydrologic factors that are or will be operative.

UTILIZATION OF GROUND WATER

Ground water in the Michaud Flats project area is obtained largely from dug and drilled wells. Springs are utilized to a limited extent.

Springs

Minor springs in the foothills area were not investigated. In the SE $\frac{1}{4}$ sec. 18, T. 8 S., R. 31 E., the large Indian Springs emerge from

a hillside along an inferred fault, where there are large deposits of travertine. The springs are reported to yield 1.5 million gallons a day. The temperature of the water on September 22, 1950, was 90° F. A swimming pool formerly was maintained near the springs, but all the water now is used for irrigation.

Wells

The depth to water in wells ranges from 25 to 70 feet below the land surface in the valley bottoms, 80 to 140 feet along the edges of the valley slopes, and 150 to 245 feet in the foothills of the Deep Creek Mountains south of American Falls.

Dug wells.—Some domestic water supplies in the area are obtained from dug wells in the valley bottom and in the alluvial plain on the south side of the Snake River. Nearly all the dug wells are in T. 8 S., R. 30 E., in the vicinity of the village of Neeley, about 4 miles southwest of American Falls. Most of the finished dug wells are 2 to 4 feet in diameter and are cribbed with either wood or stone. The depths range from 6 feet at Indian Springs to a reported 100 feet at Neeley. Dug wells yield from 5 to 20 gallons a minute.

Drilled wells.—Most irrigation wells are situated in valley bottoms near the edges of valley slopes. Drilled domestic wells are scattered throughout the area, including the foothills of the Deep Creek Mountains. Wells drilled by the cable-tool (percussion) method are the more common type and range in diameter from 4 to 16 inches. Most domestic wells are 6 inches; a large number of 4-inch wells have been drilled but very few are now in use. Most of the domestic wells are cased to about 10 to 15 feet below the land surface, with open hole below. A few, drilled in exceptionally unstable materials, are cased throughout. The most common casing is No. 20 galvanized iron, locally called stove-pipe casing.⁵

Irrigation wells range in diameter from 8 to 16 inches, the 10- and 12-inch sizes being the most common. Most irrigation wells drilled within the past 5 years are 14 to 16 inches in diameter. The common types of casing in current use are (1) black iron, (2) steel, and (3) flume pipe. Practically all the earlier wells were cased partially with No. 20 galvanized iron. An appreciable percentage of irrigation wells is equipped with improvised casing made from hot-water tanks and steel oil drums. Commonly, the casing is seated just below the water table, regardless of the total depth of the well or the character of the aquifer. In wells finished with slotted casing in the zone of saturation no apparent effort was made to relate the slot sizes to the grain-size characteristics of sedimentary aquifers, or with the expected or desired pumping rates. In at least some wells the slot openings provide insufficient water-entrance area, causing excessive head loss in the wells and large drawdown during pumping. For these and other reasons satisfactory pumping tests cannot be made in existing wells.

The methods and materials generally in use for construction of domestic and irrigation wells in this area are unsuitable for the type of materials drilled. The wells deteriorate rapidly, caving is common, and there is a very high percentage of abandoned wells. Approximately 50 of the 80 wells that were canvassed have been abandoned (table 1). Further study is needed to determine the types of well construction that are suitable for the water-bearing materials in the area.

⁵ This is not true stovepipe casing, which is double walled. The term is used by local well drillers in reference to the thin wall and light weight of 20 gage casing.

TABLE 1.—Records of wells in Power County, Idaho ¹

Well No.	Owner	Driller	Use of well	Depth of well	Depth of casing	Diameter of casing	Type of casing ¹	Depth to water ²	Yield of well ³	Type of well	Remarks
68 32E-29cc1	Vern Eames		Abandoned	Feet 68	Feet	Inches 6	Stovepipe	61.1		Drilled	
78 31E-1bc1	Coon	G. Vollmer	Irrigation	275	215	12	Steel	58.0	560	do	3-foot drawdown after pumping 3 hours at 560 gallons per minute.
78 31E-1bd1	do		Abandoned	96	50	5	Stovepipe	52.0		do	
78 31E-1da2	Vern Eames	G. Vollmer	Irrigation	295	290	16	Perforated steel	54.4	1,400	do	41-foot drawdown after pumping 7 hours at 1,400 gallons per minute.
78 31E-2cd1			Abandoned	68		6	Stovepipe	52.6		do	
78 31E-2de1	Coon		do	59		4	do	50.2		do	
78 31E-11bd1	Tom Parish	G. Vollmer	Irrigation	169		14	do	62.5		do	
78 31E-13bc1	Frank Cunningham	John Wagner	Domestic	369	200	4 1/2	Steel			do	Open-end casing.
78 31E-13de1	Paul Evans	Cecil Johnson	Abandoned	80		5 1/2	Galvanized iron	60.3		do	
78 31E-14ad1	Grace McLaughlin	John Wagner	do	74		6	do	55.5		do	
78 31E-14cb2	Ben Kopp	Oscar Sigmund	Domestic	117		6	do	60.0		do	
78 31E-14cc2	do	do	Stock and irrigation	243	80	14	Black iron	58.7		do	
78 31E-14dd1			Abandoned	57		6	Stovepipe	55.5		do	
78 31E-15de1	Kucera		Domestic			6	do	55.6		do	
78 31E-21cc1	Paul Spaulding		Abandoned	86		4	Steel	60.1		do	
78 31E-22cb1	Arnold Annon		Domestic	90		6	do	58.4		do	
78 31E-23cb1	George Kopp	Oscar Sigmund	Stock and domestic	156		8	do	75.0		do	
78 31E-25db1	Dave Kosanke		Irrigation	280		10	Wrought iron	122.0		do	
78 31E-27cb1			Abandoned	240		14	Stovepipe	233.6		do	
78 31E-27da1	Ben Kopp		do	266		8	do			do	Dry at 266 feet.
78 31E-29da1	Town of American Falls	G. W. Wilson	Public supply	141	135	12 1/2	Perforated steel	86.4	375	do	6- to 8-foot drawdown after pumping 60 days at 375 gallons per minute.
78 31E-29da2	Town of American Falls	Sigmund & Co-tant	Public supply	149	149	12 1/2	do	92.0	550	do	6-foot drawdown after pumping 60 days at 550 gallons per minute.
78 31E-31ad1	Marion Spanger		Abandoned	78		6	Galvanized iron	71.9		do	
78 31E-31da1	do		do	119		4	do	113.8		do	
78 31E-32bd2	Ed Lish	Robert Cure	Irrigation	103		10	Flume pipe	87.3		do	Pump not installed.
78 31E-32ca2	United Oil Co	G. Vollmer	Domestic	100	100	6	Perforated steel	85.7	16	do	
78 31E-32dd1	Hornbacher		Abandoned	231		4	do	137.1		do	
78 31E-33ab1	Woody Meadows		do	232		10	Stovepipe	199.9		do	
78 31E-33bb1	Alex Scherer		do	234			do	186.9		do	
78 31E-34a11			do	92		5	do			do	Dry at 92 feet.
78 32E-6ba1	Vern Eames		do	54		6-3	do	44.2		do	

See footnotes at end of table, p. 67.

TABLE 1.—Records of wells in Power County, Idaho¹—Continued

Well No.	Owner	Driller	Use of well	Depth of well	Depth of casing	Diameter of casing	Type of casing ¹	Depth to water ²	Yield of well ³	Type of well	Remarks
78 32E-6cc1	Hughes		Abandoned	Feet	Feet	Inches	Stovepipe	49.3		Drilled	
78 32E-6dd1			do.	66		4	Iron			do.	Dry at 65 feet.
78 32E-7ad1			do.	47		6	Stovepipe			do.	Dry at 47 feet.
78 32E-7ca1	Bill Smith		Domestic	100		6	Black iron	62.5		do.	
78 32E-7da2	do.	G. Vollmer	Irrigation	298	200	16	do.	26.0		do.	33-foot drawdown after pumping 10 days at 1,200 gallons per minute.
78 32E-8bd1	Ray Barnard		do.							do.	
78 32E-9aa1	Fort Hall Indian Reservation		Stock	84				44.9		do.	
78 32E-16da1			Stock and domestic	68		6	Stovepipe	63.7		do.	
78 32E-29bb1	Ben Kopp			132		6		118.3		do.	
78 32E-30da1			Abandoned	161		6	Stovepipe			do.	Dry at 161 feet.
88 30E-11dd1	Luera Thornton		do.	31		4	do.	15.2		do.	
88 30E-12cd1	Sinclair		do.	87		(¹) 4	Wood cribbing	63.6		Dug	
88 30E-13ac1	Pearle Dille		do.	102		4	Stovepipe	90.4		Drilled	
88 30E-13ac2	do.		Domestic	24		4		18.0		do.	
88 30E-18bb1	Thornton		Abandoned	145		6		135.2		do.	
88 30E-13bc1	A. W. Isaac		do.	142		4	Steel	106.4		do.	
88 30E-14aa1	Roy Zaring		Domestic	110				98.0		do.	
88 30E-14ab1	E. O. Winter		do.			4		71.0		do.	
88 30E-14da1	Falls View Cemetery	Oscar Sigmund	Irrigation	239		6		150.0	60	do.	
88 30E-14db1	Roy Zaring	Robert Cure	do.	181		10		121.4	1,180	do.	3.7-foot drawdown after pumping 3 hours at 1,180 gallons per minute.
88 30E-14dd1	A. W. Isaac	Paul Vollmer	Stock and domestic	184				161.0	600	do.	
88 30E-15db1	A. R. Kramer		Abandoned	42		8		32.7		do.	
88 30E-22aa1	do.	Paul Vollmer	Irrigation	248		16	Galvanized iron	111.8	1,400	do.	
88 30E-22aa2	do.		Abandoned	125				111.1		do.	
88 30E-22dd1	do.	Oscar Sigmund	Domestic	251		6		147.2		do.	
88 30E-23cd1	do.		do.	273		5		211.6		do.	
88 30E-24ab1	Emil Mayer		do.					141.2		do.	
88 30E-27ad1	A. R. Kramer		do.	290				196.8		do.	
88 30E-27bc1	do.		Abandoned	252		6		229.6		do.	
88 30E-35bb1	J. P. Melhoff		Stock	212		5	Stovepipe	192.2		do.	
88 31E-4cb1	Hornbacher		Abandoned	277		6		235.0		do.	
88 31E-5bc1	do.	Oscar Sigmund	Domestic	217	82	10	Steel	172.6		do.	22-foot drawdown after pumping 30 minutes at 315 gallons per minute.

88 31E-5cc1	do		do	188		6	Stovepipe	163.1	do	Water reported warm.
88 31E-7ac1	Eldron Thornton	Robert Cure	Domestic	* 217	* 217	8	Flume pipe	* 214.0	do	Pump not installed.
88 31E-7ac2	do	do	Irrigation	315	259	12	do	217.0	do	Do.
88 31E-9da1	Fred Mayer		Abandoned	250		4	Black iron	230.6	do	
88 31E-17ab4	do		Stock			6		* 260.0	do	Water rose 117 feet when struck. Water was warm.
88 31E-18bb1	George Jones		Domestic	* 127		4		* 109.0	do	
88 31E-18da1	Indian Springs Nat.	Paul Vollmer	do	152		8	Steel	67.8	do	Pump not installed.
88 31E-18db1	do		Abandoned	8				5.6	Dug	
88 31E-20bc1	Roland Mayer	Oscar Sigmund	Domestic	* 100		8		* 22.0	Drilled	Water reported to have risen 38 feet when struck.
88 31E-20ba1	J. R. Orders		Abandoned	69		6		27.2	do	
88 31E-30cd1	do	Oscar Sigmund	Domestic	* 750				* 385.0	do	
88 31E-31ab1	do		Abandoned	204		4		152.3	do	
98 30E-1ec1	Emanuel Perman		Stock and domestic	284		6	Black iron	244.4	do	
98 30E-12aa1	Ernest Perman		Abandoned	177		6	Stovepipe	153.3	do	
98 31E-6da1	do		do	125		4	Black iron	179.5	do	
98 31E-7ab1	do		do	406		6	do	215.8	do	
98 31E-4bc1	Harold Meisenheimer		do	382		6	do	271.1	do	
98 31E-15bb1	Ernest Perman		do	205		8	Stovepipe	202.4	do	

* So-called stovepipe casing is 20-gage galvanized iron.
 * Depth to water is given in feet below land-surface datum.
 * Yield of well is given in gallons a minute.

* Reported data, not verifiable.
 * 24 by 48 inches.

The depth of the wells varies widely. Irrigation wells, even in areas where the water table is only 25 to 60 feet below the land surface, are 200 to 300 feet deep, depending upon the quantity of water needed and the driller's estimate of the necessary depth. Most stock and domestic wells are more than 24 and less than about 370 feet deep.

Performance of wells.—Irrigation wells in the area are pumped by deep-well turbines having 3 to 7 stages; most stock and domestic wells are pumped by windmill and lift pump. A few domestic wells are connected with closed pressure systems.

Very few data are available on the rates and quantities of water pumped from wells. Information from well owners and drillers indicates that the capacities of most irrigation wells are severely limited; many can be pumped dry at rates of 600 to 800 gallons a minute. The drawdown in some wells pumped at these rates ranges from a few feet to 50 feet.

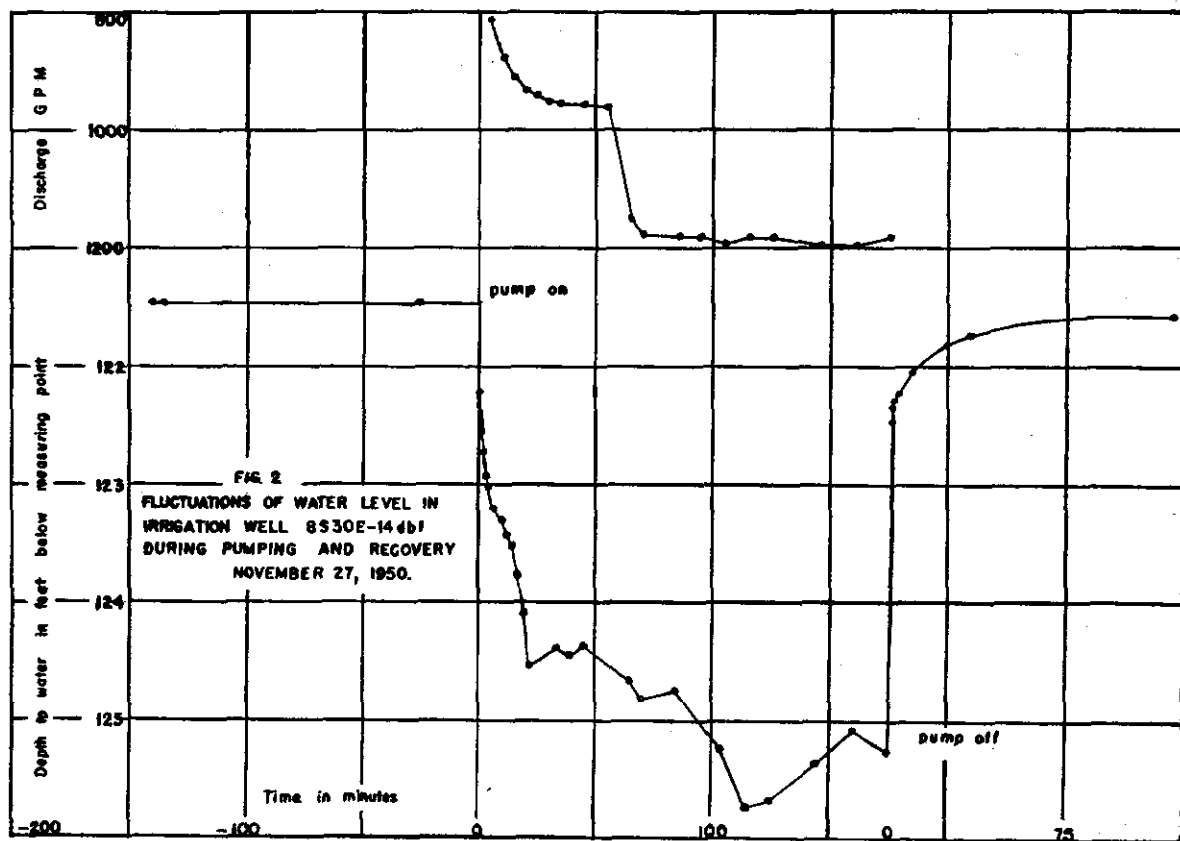
The Kramer irrigation well (8S 30E-22aa1) penetrates lava in the lower part of the well, which has a total yield of about 1,400 gallons a minute with a 10- to 12-foot drawdown. The Zaring irrigation well (8S 30E-14db1) yields about 1,180 gallons a minute with a drawdown of 4 feet. In the Eames well (7S 31E-1da2) the drawdown was about 41 feet after 7 hours' pumping 1,400 gallons a minute. The water pumped from this well in September 1950 contained an excessive amount of sand.

The drawdown in two public-supply wells (7S 31E-29 da1, da2) at American Falls was reported to be 6 and 8 feet after 60 days' pumping 375 and 550 gallons a minute, respectively.

Discharge-drawdown tests.—The Zaring irrigation well (8S 30E-14db1) was pumped for 3 hours on November 27, 1950, after drilling was completed, but it was possible to make only incidental observations relating to the water-bearing properties of the aquifer. The well is near the river slope on the north side of United States Highway 30 about a mile east of the Snake River. The well was not cased at the time of the test; the hole diameter was 10 inches and the depth about 180 feet. The discharge test was with a deep-well turbine pump powered by a diesel engine. The end of the suction pipe was 180 feet below the land surface. Water-level measurements were by steel tape and electric tape; the discharge was measured with a 6-inch orifice weir and manometer gage on an 8-inch discharge pipe.

The average rate of pumping was 900 gallons a minute for 1 hour and 1,180 gallons a minute for the succeeding 2 hours. A large amount of sand was discharged but during the first hour the water cleared considerably. The later increase in pumping rate caused additional sand movement and the water contained much sand throughout the test.

The depth to static water level in the well before the test was 121.4 feet below the measuring point, which is 0.3 foot above the land-surface datum. After pumping for 15 minutes the water level had dropped 2 feet (fig. 2). The maximum drawdown of 4.2 feet occurred after 115 minutes of pumping, and at the end of the test the net drawdown was 3.7 feet. Erratic fluctuations of the water level during the test were caused by varying pumping rate and excessive caving of sand, presumably from the depth interval 121 to 169 feet. A steadily increasing pumping rate and dewatering of a cone of depression in the



aquifer probably caused unstable material to slump and partially fill the hole, reducing pump efficiency and steadily increasing the drawdown until most of the loosened sand was pumped from the well. Caving continued at intervals throughout the test.

The test was too short to permit determining the water-bearing properties of the aquifer. Moreover, the results obtained are not representative of the drawdown that would occur during continuous pumping at a steady rate for a longer period in a properly constructed and developed well. The test does indicate, however, that the permeability of the aquifer is high, and moderate to large yields can be expected from properly constructed wells south of American Falls along the slope near the river.

It is reported that a test of the Lish irrigation well (7S 31E-32bd2) was attempted, but that the well was pumped dry in less than an hour, at a pumping rate of 600 gallons a minute. The well is 103 feet deep and the depth to water is 86 feet below the land surface.

The Thornton irrigation well (8S 30E-7ac2) was pumped in October 1950. The depth of the well is 315 feet and the depth to water 259 feet below the land surface. The well was pumped dry after several hours of pumping at 800 to 1,000 gallons a minute.

CONCLUSIONS

The low yield of most existing wells in the Michaud Flats project is not an accurate index of the quantity of water that is available or that could be developed, because improper well construction limits the output of many wells. Sand screens have not been used and in those wells that are equipped with slotted casing the slot dimensions were selected at random, without regard to the mechanical composition of the unconsolidated aquifer. Artificial gravel packing has not been tried and any natural gravel packs that are present were developed unintentionally.

The safe yield of the water-bearing materials cannot be determined until more basic data are obtained about the hydraulic properties, areal extent, thickness, sources and amount of recharge, and fluctuations of water levels in the aquifers.

A moderate supply of ground water is available in the alluvial and volcanic aquifers in the plain southwest of American Falls. North-east of American Falls moderate yields can be developed from wells in some areas; other parts of the northeastern area are less favorable for ground-water development. Thus at least a part of the lowline tract could be irrigated with ground water if that becomes desirable. The effects of heavy pumping on the ground-water regimen and return flow to the American Falls Reservoir and the Snake River cannot be quantitatively estimated on the basis of available data. It is possible that, from the vicinity of Sunbeam Creek southwestward pumping from wells would not materially influence local return flow to the river or reservoir. The situation is complex, however, and needs careful study.

The probable individual and aggregate yield of future wells in the highline tract cannot now be estimated accurately. Shallow aquifers containing perched or semiperched water would yield only limited supplies. Deeper aquifers doubtless would yield sufficient water to irrigate parts of the tract. Assuming that there are 15,000 irrigable

acres in the highline tract, and that the diversion requirement would be 3.6 acre-feet of water per acre (applied during a 150-day irrigation season), the annual water demand would be 54,000 acre-feet. Sprinkler irrigation of some crops and areas would reduce substantially the water demand. The rate of pumping from all wells during the season thus might be about 180 second-feet or less. Assuming wells of moderate capacity, probably 50 to 90 wells would be needed. Thus there would be 1 well per 200 to 400 acres of total area—perhaps 2 or 3 wells per section of land. Though this would not be an unreasonable number and spacing of wells for a highly productive area, the safe yield of the aquifers in the Michaud Flats project is unknown.

Available information is inadequate for definite conclusions as to the feasibility of pumping ground water for irrigation of all or part of the Michaud Flats project. The productive capacities of the aquifers have not been demonstrated, recharge data are qualitative and incomplete, and the relations between ground- and surface-water bodies are poorly known. The prospect that development of ground water for part of the tract might be feasible is sufficiently good to warrant thorough investigation of the area. If further study leads to definite project plans, these plans, because of the small size of the area in which ground-water sources would be tapped, should provide for development of small units on a semiexperimental basis, supported by adequate continued observations.

SUGGESTIONS FOR FURTHER STUDY

Investigations and observations within the appropriate field of activity of the Geological Survey, leading to an adequate appraisal of ground-water resources in the Michaud Flats project, would include the phases outlined below:

1. Test drilling to assist delineation of the extent, occurrence, and characteristics of water-bearing materials. The ultimate number of needed test holes necessarily could be determined only after an initial few had been drilled. Several tests, at geologically favorable localities, should extend to depths of at least 1,000 feet, to explore the possibilities for developing ground water from more permeable zones within economic limits. These test holes logically would be drilled early in an exploration program.

2. Pumping tests to determine the hydraulic properties of aquifers at representative localities. These tests would assist an estimate of the expectable yield of production wells, and of the probable range of drawdown and pumping lifts.

3. Maintenance and improvement of the project observation-well net in order to determine the seasonal and other fluctuations in ground-water levels and storage. All or most of the test holes (par. 1, above) would become observation wells. If and when development of an irrigation project was underway, the observation wells would assist estimation of the effects of heavy pumping on ground-water storage. Ultimately the safe annual yield of the aquifer might be determined.

4. Study of the hydraulic relations of American Falls Reservoir and the Snake River to the ground-water bodies, and the effect of heavy ground-water pumping on these relations. Pumping from some areas and aquifers unquestionably would deplete the total annual

contribution to the surface-water system by ground-water discharge. The magnitude and time of year of these effects, however, could be determined only by careful study. Pumping from deep ground-water sources might not measurably affect the river and reservoir regimen.

5. Census of total annual pumpage of ground water. A census should be made and repeated yearly, as a phase of water budgeting.

6. Study of the infiltration rate, through soils and subsoils, of water applied to the surface. The derived data, in conjunction with information about consumptive use of water, would assist estimation of probable depletion of total water supply.

7. Leveling of all wells in accordance with third-order leveling standards. Permanent altitude reference marks should be established in order to insure permanence and accuracy of the measuring datum for wells.

8. Refinement and extension of the water-table contour map, with the aid of new leveling and other data, and extension of the area of investigation to the southwest. The complex interrelations of ground- and surface-water bodies in the southeastern Snake River Plain emphasize that the water in the plain must be treated as a single resource, not two. The full water potential of the area cannot be developed without appraisal of the total surface- and ground-water resources. Development of water from one source inevitably will affect the other source, and the effects may extend far beyond the boundaries of the project. In order to evaluate properly the effects of development of the Michaud Flats project, therefore, ground-water investigations should be extended southwestward on both sides of the Snake River from American Falls to Minidoka Dam.

9. Survey of the chemical quality of ground water in the area, to determine the range of variation in composition and the suitability of the water for irrigation of the types of soils that are present.

Possibly additional irrigation or experimental wells will be drilled in the American Falls area by private or other interests. To obtain the maximum yield with a minimum of drawdown it is suggested that wells should be drilled and developed in accordance with the following general principles:

1. Dependence should not be placed on shallow sources of perched or semiperched water.

2. Deeper sources should be efficiently exploited with the aid of detailed test-hole logging. At most locations the cost of a preliminary test hole would be adequately repaid because (a) it would eliminate the cost of large-bore drilling in nonproductive areas, and (b) it would guide large-bore drilling and construction design in productive areas.

3. Wells in unconsolidated sediments and loose volcanic rock should be equipped with screens or perforated casings and gravel packs, in order to stabilize surrounding subsurface materials and to insure the maximum production of clear water with the minimum of drawdown. The size of opening in perforated casings and screens should be chosen individually for each well and aquifer on the basis of analyses of the mechanical composition of water-bearing materials.

4. Screens and perforated casing should not be set indiscriminately in all water-bearing materials. Natural pressure heads in artesian basins differ from bed to bed and free communication between

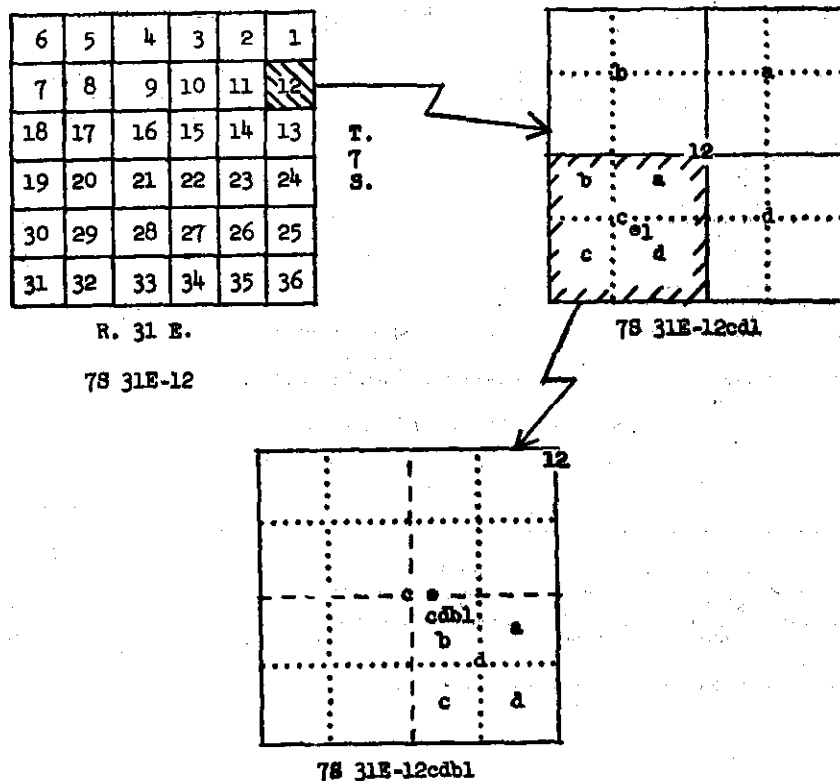
separate beds may permit subsurface migration and loss of water. Thus in some instances tapping several sources of water may lead to less pump production than would be obtained from a single source.

5. Well sites should be distributed so as to minimize mutual interference and competition.

6. Pumping rates should be controlled in accordance with the hydrologic properties of the aquifers at individual well sites.

WELL-NUMBERING SYSTEM

Idaho well numbers indicate the locations of wells within the official rectangular subdivisions of the public lands, with reference to the Boise baseline and meridian. The first two segments of a number designate the township and range. The third segment gives the section number, followed by 2 or 3 letters and a numeral, which indicate the quarter-section, the 40-acre tract, the 10-acre tract, and the serial number of the well within the tract. Quarter sections are lettered a, b, c, and d in counterclockwise order, from the northeast quarter of each section (see diagram). Within the quarter-sections 40-acre tracts are lettered in the same manner. Well 7S 31E-12cd1 is in the SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 12, T. 7 S., R. 31 E., and is the well first visited in that tract. Where wells are numerous and closely spaced the 40-acre tracts may be subdivided into 10-acre tracts, designated by a third letter in the third segment of the number. Thus well 12cdb1 is in NW $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 12.



LOGS OF WELLS AND TEST BORINGS

The following logs, except as noted, are drillers' logs that were obtained from either drillers or well owners. The terminology of drillers' logs has been slightly modified in order to achieve a degree of uniformity. The few logs that were compiled from a study of drill cuttings may be inaccurate because collection of cuttings was unsupervised and sampling methods did not conform to acceptable standards.

WELLS

7S 31E-1da2.—Vern Fames irrigation well

[Log obtained from driller Sept. 22, 1950]

Material	Thickness	Depth
	<i>Feet</i>	<i>Feet</i>
Soil.....	10	10
Clay, sandy.....	55	65
Sand and water.....	12	77
Clay, blue.....	15	92
Sand, blue.....	38	130
Sand and blue mud.....	25	165
Clay, brown, sandy.....	30	195
Gravel and water.....	13	208
Mud, brown, with sandstone shelves.....	84	292

NOTE.—Water level 48 feet below land surface Sept. 20, 1950.

7S 31E-29da2.—American Falls public-supply well

[Log obtained from T. C. Sparks, water superintendent, American Falls, Sept. 21, 1950; terminology of original log slightly modified herein]

Material	Thickness	Depth
	<i>Feet</i>	<i>Feet</i>
Soil.....	8	8
Sandstone, gray, soft.....	5	13
Sandstone, red, soft.....	50	63
Sandstone, red, hard.....	17	80
Alternate 5- to 6-inch layers.....	5	85
Sandstone, red, very hard.....	3	88
Sandstone, gray, hard.....	6	94
Limestone, very hard.....	3	97
Gravel (water).....	3	100
Sand and gravel, compact.....	7	107
Gravel, coarse, free (water).....	3	110
Sandstone, brownish red, soft.....	35	145
Clay, solid bluish gray; impervious; interbedded with fragments of gravel.....	6	151

NOTE.—Water level was reported to be 92 feet below land-surface fall, 1933.

7S 31E-32bd2.—Ed Lish irrigation well

[Log by Geological Survey from examination of drill cuttings]

Material	Thickness	Depth
	<i>Feet</i>	<i>Feet</i>
Clay, sandy, reddish tan; contains a few angular fragments.....	8	91
Gravel, dark pink; rounded pebbles are mostly quartzitic conglomerate.....	3	94
Gravel and sand, dark pink, subangular to rounded.....	3	97
Gravel and sand, dark pink, subangular to rounded; more gravel and less sand than in cuttings from 94 to 100 feet.....	6	103

NOTE.—Water level 88.8 feet below land surface Oct. 11, 1950.

7S 32E-7da2.—Bill Smith irrigation well

[Log obtained from Vollmer Drilling Co., Sept. 27, 1950]

Material	Thickness	Depth
	Feet	Feet
Soil.....	30	30
Sand.....	5	35
Sandstone and water.....	3	38
Sand, gray.....	30	68
Clay:		
Gray.....	10	78
Red, sandy.....	26	104
Gravel.....	4	108
Clay, red, sandy.....	22	130
Sandstone:		
Gray.....	10	140
Red.....	30	170
Sand and gravel, water-bearing.....	20	190
Sandstone:		
White, water-bearing.....	50	240
Red.....	40	280
Gray.....	15	295

NOTE.—Water level 26 feet below land surface Sept. 26, 1950.

8S 30E-14db1.—Roy Zaring irrigation well

[Log by Geological Survey from examination of cuttings obtained Nov. 27, 1950]

Material	Thickness	Depth
	Feet	Feet
Loessial soil, calcareous, poorly cemented, tan.....	20	20
Cuttings not recovered:		
Driller reported "soft formation".....	20	40
Driller reported hard drilling.....	15	55
Basalt, light gray.....	3	58
Cuttings not recovered:		
Drilled hard.....	6	64
Driller reported gray cinders.....	6	70
Volcanic tuff and ash, with obsidian fragments.....	3	73
Volcanic tuff, tan and pink, with fragments of obsidian.....	5	78
Cuttings not recovered. Driller reported tan volcanic ash.....	6	84
Volcanic tuff, tan ash and obsidian fragments.....	13	97
Cuttings not recovered. Driller reported red volcanic ash.....	6	103
Volcanic tuff, tan; also ash and obsidian fragments.....	6	109
Cuttings not recovered. Driller reported tan volcanic ash.....	6	115
Volcanic tuff, cinders, and obsidian fragments. Driller reported gray sandstone.....	6	121
Cuttings not recovered. Driller reported water-bearing sand and cinders.....	12	133
Sand, angular, light-gray to gray.....	6	139
Cuttings not recovered. Driller reported water-bearing sand and cinders.....	24	163
Basalt:		
Amygdaloidal, grayish-black, vesicles filled with carbonate.....	3	166
Vesicular, gray; carbonate filling in some vesicles.....	3	169
Cuttings not recovered:		
Driller reported hard gray lava.....	4	173
Driller reported hard water-bearing lava.....	8	181

NOTE.—Water level was 121.4 feet below land surface Nov. 27, 1950.

8S 31E-7ac2—Eldron Thornton irrigation well

[Log for upper 243 feet of hole from driller's record (modified); log from 243 to bottom of well by Geological Survey from examination of cuttings obtained Sept. 23, 1950]

Material	Thickness	Depth
	<i>Feet</i>	<i>Feet</i>
Soil.....	16	16
Cinders and gravel.....	18	34
Basalt and cinders, black.....	16	50
Clay and gravel.....	10	60
Clay.....	8	68
Sandstone, red.....	104	172
Sand, red, coarse.....	13	185
Lava, hard.....	11	196
Sand:		
Black.....	6	202
Red, fine, clayey.....	5	207
Gravel, coarse, cemented.....	7	214
Not recorded.....	29	243
Basalt; silt in cuttings may be from above.....	2	245
Cuttings not recovered.....	11	256
Rhyolite:		
Porphyritic; about 50 percent gravel in cuttings.....	3	259
Porphyritic; small amount of gravel in cuttings, probably from above.....	3	262
Porphyritic; obsidian fragments, gravel containing quartz and basalt grains.....	3	265
Obsidian fragments, gravel.....	3	268
Basalt, dense, blue-gray; obsidian fragments; some rhyolite in cuttings probably from above.....	3	271
Rhyolite, obsidian; basalt, light to dark blue.....	3	274
Basalt, blue to gray; obsidian; rhyolite. Clay comprises about 25 percent of cuttings.....	3	277
Silt and clay, white to buff; fragments of light to dark blue-gray basalt and rhyolite.....	3	280
Basalt:		
Blue-gray; also rhyolite, silt, clay and traces of gravel.....	3	283
Porphyritic; minor amount of gravel.....	3	286
Porphyritic; also rhyolite, gravel and calcareous cemented conglomerate.....	3	289
Porphyritic; also obsidian and rhyolite.....	3	292
Porphyritic; calcite crystals; some rhyolite.....	3	295
Dark gray; trace of rhyolite.....	3	298
Dark gray.....	3	301
Dark gray, olivine; also obsidian.....	3	304

NOTE.—Water level 217 feet below land surface Oct. 3, 1950.

8S 31E-17ab3.—Fred Mayer domestic well

[Log obtained from owner Sept. 20, 1950]

Material	Thickness	Depth
	<i>Feet</i>	<i>Feet</i>
Light red formation.....	56	56
Sandstone, soft, black.....	6	62
Obsidian.....	4	66
Sandstone:		
Brown.....	42	108
Light brown.....	29	137
Hard rock.....	3	140
Do.....	20	160
Sand and rock, hard, some gravel.....	14	174
Clay, red, sticky.....	6	180
Light red formation, similar to silt.....	15	195

NOTE.—Struck water at 160 feet in brown formation. Water rose to 135 feet below surface. Water-bearing bed about 14 feet thick.

TEST BORINGS

The Idaho Power Co. has tested and bored subsurface rocks at the site of the hydroelectric plant at American Falls. Logs of test borings were furnished to the Geological Survey by Fred Sawyer of the Idaho Power Co. on September 22, 1950. The principal variations in the logs of these closely spaced test holes are minor differences in the recorded thicknesses of the various formations. The two logs reproduced below are typical of all the test borings.

7S 31E-31ab.—Core Hole 1

Material	Thickness	Altitude, top of bed
	<i>Feet</i>	<i>Feet</i>
Clay and sand.....	1.5	4,283.0
Concrete (from building).....	1.8	4,281.5
Basalt:		
Black. Contains seam of calcite near bottom.....	26.6	4,279.7
Brown.....	.6	4,263.1
Clay:		
Baked, brick red.....	9.4	4,262.5
Brown, sandy.....	3.7	4,243.1
Sandstone, red; clay seam in this bed dips 60 degrees.....	1.5	4,239.4
Sand, black.....	1.0	4,237.9
Black jack (obsidian tuff).....	15.2	4,236.9
Sand and gravel, black.....	4.8	4,221.7
Sandstone:		
Black, fine, hard.....	2.1	4,218.9
Black, coarse.....	4.6	4,214.8
Gray, fine, soft.....	8.2	4,210.2
Clay, sandy, light brown.....	2.8	4,202.0
Altitude of bottom of hole.....		4,199.2

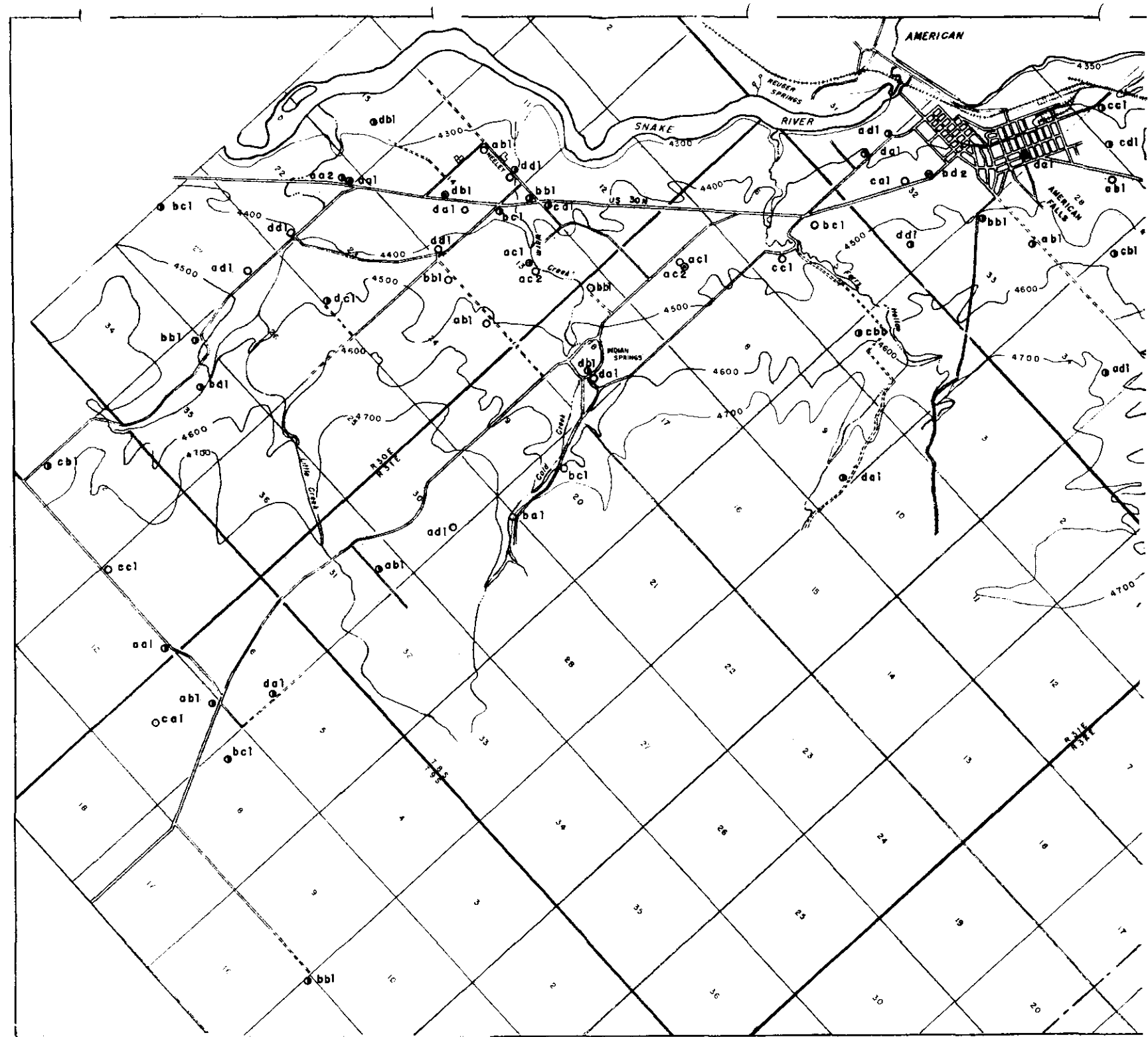
¹ At top.

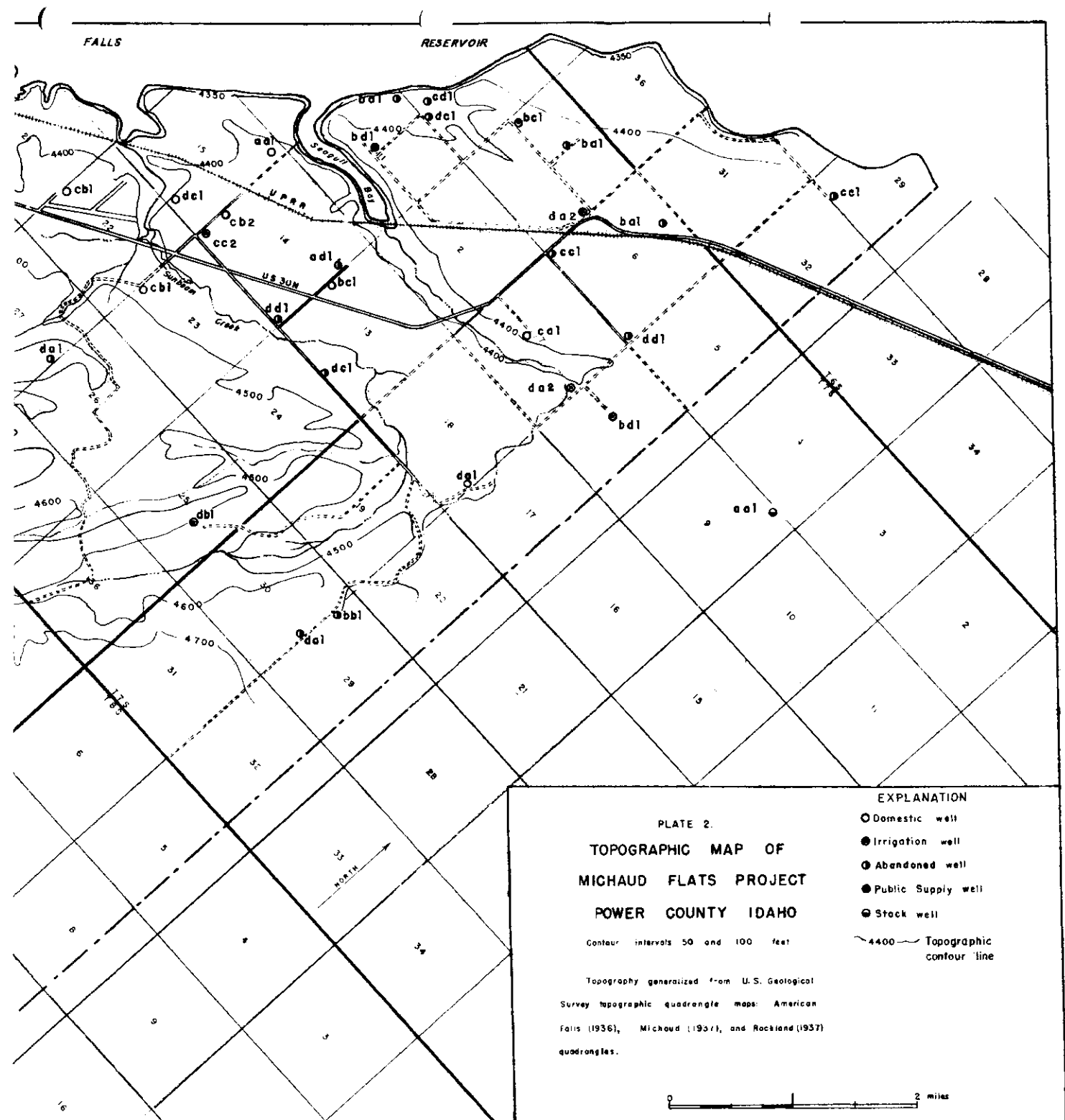
NOTE.—Total rock drilled, 83.8 feet.

7S 31E-31ab.—Core Hole 7

Material	Thickness	Altitude, top of bed
	<i>Feet</i>	<i>Feet</i>
Sandstone:		
Very fine grained, black.....	2.1	4,222.0
Coarse, black.....	4.4	4,219.9
Gray.....	4.5	4,215.5
White, with lenses of calcite.....	.1	4,211.0
Gray. Layer of ash $\frac{3}{8}$ -inch thick included.....	2.5	4,210.9
Sandstone and lava.....	.6	4,208.4
Clay:		
Sandy, brown.....	31.5	4,207.8
Sandy, brown with black veins.....	26.0	4,176.3
Sandstone, brown.....	.1	4,150.3
Sandstone and clay, transition.....	1.0	4,150.2
Sandstone, brown, also clay in black veins.....	10.8	4,149.2
Clay:		
Very sticky, light-brown with black veins.....	6.7	4,138.4
Sandy, light-brown.....	8.5	4,131.7
Do.....	24.9	4,123.2
Altitude of bottom of hole.....		4,098.3

NOTE.—Total rock drilled, 123.7 feet.





UNITED STATES DEPARTMENT OF THE INTERIOR

**Fish and Wildlife Service
Office of Regional Director
Portland 18, Oreg.**

**A Preliminary Evaluation Report on Fish and Wildlife
Resources Affected by
MICHAUD FLATS PROJECT, SNAKE RIVER, IDAHO**

**Location: Power County, Idaho
Planning Agency: Bureau of Reclamation
Status of Project: Planning Stage
Source of Engineering Data: Bureau of Reclamation, Region 1, Boise, Idaho
Field Investigation: July and August 1952
Report Prepared: January 1953 by River Basin Studies**

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INTERIOR

PREFACE

This report is based on preliminary data furnished by the Bureau of Reclamation in March, June, and August 1952, and presents an evaluation of the fish and wildlife resources which would be influenced by the Bureau of Reclamation's Michaud Flats project, Idaho, as these resources would have existed without the project and as they are expected to exist after development.

Water for irrigation under the proposed plan will be secured from storage at American Falls and Palisades Reservoirs in which space has been reserved for this purpose. In addition to the stored irrigation supply the project will pump from ground water. The effects of the project will influence wildlife resources only on the 18,682 acres of land within the irrigation area. Fishery resources will not be affected significantly by the project.

In early planning for this project, consideration was given to the development of hydroelectric power at a proposed dam at the Eagle Rock site about 7 miles downstream from American Falls. This feature is not included in present plans but is mentioned because development of it would have very marked adverse effects on fish and wildlife resources.

Since this report has been prepared in advance of the Bureau of Reclamation's report, the Fish and Wildlife Service should be informed of any alterations in the present scope of the project or method of operation so that their effects on fish and wildlife may be considered.

Acknowledgment is made to the Idaho Fish and Game Department for information which has been used in the preparation of this report.

REPORT OF THE FISH AND WILDLIFE SERVICE

DESCRIPTION OF THE PROPOSED PROJECT

1. The Michaud Flats project is an irrigation development for which water will be furnished from storage in Palisades and American Falls Reservoirs and by pumping from wells within the project area. It is located southwest of the Fort Hall Indian Reservation boundary and adjacent to the American Falls Reservoir and the Snake River. The town of American Falls is situated centrally within the project, which extends about 9 miles both upstream and downstream along the Snake River. The width of the project area is 3 or 4 miles.

2. The irrigation area now contains 18,682 acres of land, of which 11,667 acres are dry-farmed and 2,000 productive acres are irrigated. Under the proposed plans an additional 8,373 productive acres will be irrigated with surface water pumped directly from one of the American Falls Dam outlet tubes or supplied by pumping ground water from wells.

3. The plan of development requires construction of a pumping plant at the American Falls Dam, canals along the upper project boundaries and associated lateral systems, wells with pumps, powerlines to the well pumps, pressure-pipe mains from wells in the sprinkler service area, drains, and facilities for operating and maintaining the project works.

4. The pumping plant will be built on the left bank of the Snake River immediately below American Falls Dam. It is designed to deliver a maximum of 122 second-feet under a maximum working head of 187 feet to a reinforced-concrete stilling basin from which the canals will originate. The intake structure will be connected to the penstock outlet in the dam, thereby taking advantage of the reservoir head. The plant will be operated primarily from April through October.

5. The main canal serving the 2,691 irrigable acres west of American Falls will be unlined and will have a velocity of 2 feet per second and a maximum capacity of 46 second-feet with a 15-second-foot capacity at the end of its 10-mile length. The maximum bottom width of the ditch will vary from 6 to 4 feet.

6. The main canal serving the 4,385 irrigable acres east of American Falls will be lined with a 3-inch, reinforced-concrete slab for its entire length of 14.4 miles. Its initial capacity will be 76 second-feet; its terminal capacity, 30 second-feet. The maximum bottom section of the ditch will be from 4 to 3 feet with side slopes of $1\frac{1}{2}$ to 1.

7. The laterals from both canals will be unlined but designed to deliver 1 second-foot to 47 acres, plus 10 percent for peaking. Waste-ways will be provided at strategic locations along the canal lines, discharging into natural drainageways. Twenty-five wells will serve the project area to be irrigated from ground water. Three wells will pump directly into the main east canal, 8 wells will pump into separate

lateral systems, 4 wells will be used above the main east canal, and 10 wells will be used to serve sprinkler irrigation.

8. Drainage necessary to protect project lands from surface runoff, irrigation waste, and rising water table due to irrigation are also provided in the project plan. There will be 11.6 miles of drainage channel constructed, and all will be assumed to be permanent after the project is developed. It appears that some lateral collector drains will also be developed, but they will be considered as seasonal channels.

DESCRIPTION OF THE WATERSHED

9. Michaud Flats, in central Power County, Idaho, is the name applied to an area of about 65 square miles of flat rolling lands extending from the Portneuf River westward to the vicinity of Neeley on the south side of the Snake River.

10. The Snake River Basin above the gaging station at Neeley, Idaho, which is located in the southwest portion of the Michaud Flats project, has an area of 15,200 square miles, extending from southeastern Idaho into northwestern Wyoming. The upper watershed is largely surrounded by rugged mountain peaks and forested ranges. Centennial and Sawtooth Mountains form the northern part of the basin. The Continental Divide, through Yellowstone National Park and southward for approximately 100 miles, forms the eastern boundary which separates the Snake River watershed from the Missouri River Basin. To the south, the Gros Ventre and Wyoming Ranges separate the Snake River Basin from that of the Colorado and Salt Lake Basins.

11. The physiographic relief of the Michaud Flats project is a high plateau forming a wide intermountain belt, the elevations varying from 4,230 feet at the south bank of the Snake River below the reservoir to 5,130 feet bordering the foothills south of American Falls. Below the town of American Falls, the Snake River has carved a narrow gorge about 125 feet deep. The American Falls Dam impounds 1,700,000 acre-feet of usable storage in a reservoir that is 2 miles long and 2 to 8 miles wide. South of the reservoir and river, smooth to rolling benchlands extend 3 to 4 miles to the foothills of Deep Creek Mountains.

12. The Snake River rises in the mountains of the Continental Divide in the southern portion of Yellowstone National Park and flows in a generally southerly direction through Jackson Lake Reservoir to the Wyoming-Idaho boundary. After entering Idaho, the river flows northwest for about 60 miles through a rather wide canyon to Heise, where it enters a wide plain. From Heise to American Falls, the river flows in a southwesterly direction across the Snake River Plain.

13. The principal tributaries of the upper Snake River above the Michaud Flats project are listed in table 1.

TABLE 1.—Principal Snake River tributary streams above American Falls, Idaho

Tributary	Confluence with Snake River		Drainage area, square miles
	River mile	Left or right side	
Gros Ventre River.....	967.3	Left.....	758
Hoback River.....	944.3	do.....	572
Greys River.....	920.6	do.....	415
Salt River.....	917.2	do.....	889
Henry's Fork.....	837.4	Right.....	3,010
Blackfoot River.....	751.2	Left.....	1,110
Portneuf River.....	(1)	do.....	1,120

¹ Flows into American Falls Reservoir.

14. A part of the semiarid Snake River Plain occupies about one-fourth of the upper Snake River subbasin and yields no appreciable surface runoff. This plain is underlain by a vast ground-water storage reservoir, which intercepts most of the surface runoff from the mountains north of the river between Heise and King Hill and large quantities of return water from irrigated areas.

15. The streamflow in the upper Snake River and its tributaries usually follows a regular runoff pattern throughout the year. High flows occur during the melting of snow from April through July, while low flows usually prevail during the fall and winter. Runoff commences at lower elevations in March and increases with rising temperatures through April and May. When the annual peak discharge occurs in May or June, most of the reservoirs are filled. The average discharge at the Neeley gaging station, downstream from American Falls, for a period of 42 years from March 1906 through September 1948, was 7,708 second-feet, representing a mean annual runoff of 5,584,000 acre-feet.

16. Streams flowing into the Snake River from the Michaud Flats project have cut deep canyons in the headwater of the Deep Creek Mountains. Perennial flows of the Ferry Hollow, Sunbeam, Cold, and Little Creeks, after crossing the alluvial plain usually are intermittent at their mouths.

17. The climate at American Falls, which lies approximately in the center of the project lands, is characterized by an abundance of sunshine and little precipitation. The average frost-free period of 113 days, covering a 30-year record, is from May 26 to September 16. Temperature averages are 24.4° F. for January and 70.2° for July. The minimum recorded temperature is -33°, and the maximum is 106°. The average annual precipitation over a 33-year period is 13.23 inches.

18. Agriculture is the basic industry within the project area. Industrial and commercial activities in the town of American Falls are almost exclusively concerned with handling farm products and providing other services and goods required for local consumption.

19. Highway and rail transportation are adequate to the area. The Union Pacific Railroad's main east-west line and U. S. Highway No. 30 connect American Falls with Pocatello to the east and Rupert to the west. State Highway No. 39 enters the town from the north, while State Highway No. 37 leads to Rockland on the south.

FISHERY SECTION

20. Water from American Falls Reservoir will be pumped from the penstock outlet in the dam, provision of which was made in the original construction for future installation of a turbine unit. It is not feasible to install a fish screen at the pump intake structure because at maximum forebay elevation the penstock outlet is submerged approximately 187 feet. Diversion of water from American Falls Reservoir for the Michaud Flats project will not significantly change the existing water levels of the reservoir and thus will not measurably affect the fish population. In view of this, it is believed that the project's effects on fishery resources will be negligible.

WILDLIFE SECTION

INTRODUCTION

21. The without-the-project wildlife appraisal evaluates only the irrigation area, which contains 18,682 acres. This is based on the assumption that the diversion of water from the existing American Falls Reservoir to irrigate additional lands within this proposed project would have no appreciable effect on the wildlife resource of this reservoir or on the river below the dam. Therefore, no further discussion on wildlife for this segment of the project will be made in this report.

22. Without the project, the irrigation area consists of 2,000 productive acres of irrigated and 16,682 acres of nonirrigated lands. Principal crops on the irrigated lands now include wheat, alfalfa, sugar beets, and potatoes. The nonirrigated lands may be separated into two classifications, namely: (1) those that are irrigable and are either dry-farmed or covered principally with sagebrush, rabbitbrush, downy chess, needlegrass, Sandberg bluegrass, Jim Hill mustard, Russian thistle, and other miscellaneous plants; and (2) those that are nonirrigable (yet a part of the project) and are covered principally with the plants listed above.

23. With the project, the wildlife resources are evaluated only on the irrigation area, comprising 18,682 acres, of which 8,373 productive acres would be irrigated in addition to the 2,000 productive acres already under irrigation. In this period the principal crops would be alfalfa, potatoes, sugar beets, grain, beans, and irrigated pasture.

24. The economy of the area is presently associated with dry-farmed wheat cropping. With development, it appears that more emphasis will be placed on diversified farming practices, largely in connection with the livestock industry and some row cropping. This is evidenced by the land-use pattern in table 2.

TABLE 2.—Estimated land use and crops of the irrigation area

Land use or crop	Without the project		With the project	
	Acres	Percent	Acres	Percent
Nonirrigated and other lands:				
Idle land (sagebrush, grass, etc.)	4,711	25	3,565	19
Dry-farmed, fallow ¹	11,667	62	3,741	20
Farmsteads, rights-of-way	304	2	1,003	5
Total	16,682	89	8,309	44
Irrigated lands:				
Grain	1,054	6	1,297	7
Potatoes and sugar beets	422	2	1,721	9
Alfalfa	428	2	3,663	20
Clover			560	3
Pasture	75	1	1,587	8
Beans			1,253	7
Miscellaneous	21		290	2
Total	2,000	11	10,373	56
Total	18,682	100	18,682	100

¹ About half in grain annually.

WITHOUT THE PROJECT

25. *Big game*.—There apparently is no big-game use on the project lands.

26. *Upland game*.—A few ringnecked pheasants, Hungarian partridges, and mourning doves are found on the project area, but they are scarce and do not provide much hunting. The present upland-game habitat on the area is restricted to the small irrigated tracts. The without-the-project value for upland game is estimated at \$450 annually.

27. *Fur animals*.—The principal species of fur animals inhabiting the project lands are skunks, weasels, and badgers, but they are scarce and generally not trapped. The fur-animal resources without the project are considered insignificant.

28. *Waterfowl*.—A few ducks and geese feed on the grainfields of the irrigation area, but the annual value is considered insignificant.

WITH THE PROJECT

29. *Big game*.—There would be no big-game use on the irrigation area.

30. *Upland game*.—With the project, the sponsor's plans would result in good habitat for most species of upland-game birds. This belief is based on an increase of 8,373 acres of irrigated lands; the construction of additional canals, laterals, and drains; and the transition from dry-farming to irrigated diversified agriculture, thereby making water available and creating good habitat. After development, an estimated 17,000 acres would constitute suitable habitat for upland game. Since improved environmental conditions are anticipated, it appears that there would be a proportionate increase in the populations of ringnecked pheasants, Hungarian partridges, and mourning doves to provide a population adequate to support hunting similar to that which exists on the west side of Snake River

in the vicinity of Aberdeen. With this in view, the annual upland-game resource is evaluated at \$4,950.

31. *Fur animals*.—Studies on irrigated lands indicate that the developed irrigation would continue to have small populations of skunks and weasels and to a lesser extent a few badgers. In addition, the construction of proposed permanent drainage ditches would support small populations of muskrats. In view of the foregoing, the fur-animal value is estimated at \$170 annually.

32. *Waterfowl*.—With full development the irrigation area would have some additional waterfowl-feeding use, and moderate nesting benefits are likewise anticipated. Nevertheless, the feeding use would be insignificant due to the small population of waterfowl using American Falls Reservoir in relation to the great acreages of cultivated lands available throughout this vicinity for feeding. Consequently, the with-the-project waterfowl value is restricted to nesting, or \$30 annually.

TABLE 3.—Summary of annual wildlife values

Wildlife group	Without the project	With the project
Big game.....		
Upland game.....	\$450	\$4,950
Fur animals.....		170
Waterfowl.....		30
Total.....	450	5,150
Difference (gain).....		4,700

RECOMMENDATIONS

33. It is recommended that:

(1) The Fish and Wildlife Service, the State of Idaho, and the United States Bureau of Reclamation enter into an agreement which shall cover such assistance as the Bureau can reasonably and lawfully provide for making lands in the irrigation area accessible for public hunting and fishing and otherwise assuring that the maximum public benefits are realized from the fish and wildlife resources.

(2) Leases of Federal land in the project stipulate the right of public access for the purpose of hunting, fishing, and other uncommercialized recreational purposes.

CONCLUSIONS

34. It is concluded that the effects of the Michaud Flats project as presently proposed would be an estimated annual gain of \$4,700 to wildlife. Fishery resources would not be affected significantly.

PAUL T. QUICK, *Acting Regional Director*.

JANUARY 30, 1953.

NOTE.—Map not reproduced because same information is included on other maps in Substantiating Materials section of this report.

COMMENTS FROM THE STATE OF IDAHO

STATE OF IDAHO,
OFFICE OF THE GOVERNOR,
Boise, April 28, 1954.

Mr. H. F. McPHAIL,
*Assistant Commissioner, Bureau of Reclamation,
Department of the Interior,
Washington, D. C.*

DEAR MR. McPHAIL: Governor Jordan asked that I advise you that he is pleased to recommend the authorization of the Michaud Flats project, Power County, Idaho.

Very truly yours,

LEONARD WOOD,
Administrative Assistant.

COMMENTS FROM THE STATE OF MONTANA

STATE OF MONTANA,
OFFICE OF THE GOVERNOR,
Helena, May 21, 1954.

Mr. H. F. McPHAIL,
*Assistant Commissioner, Department of the Interior,
Bureau of Reclamation,
Washington, D. C.*

DEAR MR. McPHAIL: This will acknowledge receipt of a copy of the engineering report on the Michaud Flats project in Idaho, which was sent to me for review and comments in accordance with the Flood Control Act of December 22, 1944.

From the report, the project seems to be a very commendable one, it is desired by the local farmers and the ratio of costs to benefits is very reasonable.

The water to be diverted comes from the Snake River, a tributary of the Columbia River. The Snake River does not run through Montana nor are there any tributaries of the Snake River that arise in or cross Montana; therefore, we have no objection whatever to having the project authorized for construction.

Projects of this type should be built as rapidly as possible in order to keep an even balance between our rapidly growing population and the increasing demand for food and fiber.

Montana heartily endorses the construction of the project.

Sincerely yours,

J. HUGO ARONSON,
Governor.

By FRED J. MARTIN,
Executive Secretary to the Governor.

COMMENTS FROM THE STATE OF NEVADA

STATE OF NEVADA,
OFFICE OF STATE ENGINEER,
Carson City, Nev., March 26, 1954.

DEPARTMENT OF THE INTERIOR,
Bureau of Reclamation,
Washington, D. C.

(Attention: H. F. McPhail, Assistant Commissioner.)

DEAR SIR: We have received the report on the Michaud Flats project, Idaho. This project does not affect any interest of the State of Nevada and we therefore have no comments to make concerning the same.

Very truly yours,

HUGH A. SHAMBERGER,
State Engineer.
By EDMUND MUTH,
Assistant State Engineer.

COMMENTS FROM THE STATE OF OREGON

STATE OF OREGON,
EXECUTIVE DEPARTMENT,
Salem, April 8, 1954.

HON. DOUGLAS MCKAY,
Secretary of the Interior,
Washington, D. C.

DEAR SECRETARY MCKAY: With reference to your proposed report and the reports of the regional director, Bureau of Reclamation, on the Michaud Flats project, Idaho, I wish to advise that Mr. Charles E. Stricklin, State engineer, has completed a review of these reports and is of the opinion that the use of water for the irrigation of lands in the proposed project would not in any way result in injury to the State of Oregon. I concur with Mr. Stricklin in his comment.

Very truly yours,

PAUL L. PATTERSON,
Governor.

COMMENTS FROM THE STATE OF UTAH

THE STATE OF UTAH,
UTAH WATER AND POWER BOARD,
Salt Lake City 1, May 21, 1954.

MR. W. A. DEXHEIMER,
Commissioner, United States Bureau of Reclamation,
Department of Interior, Washington, D. C.

DEAR MR. DEXHEIMER: I have reviewed your report on the Michaud Flats project, Idaho, dated October 1953.

The report appears to submit conflicting evidence relative to the construction of successful pump wells and raises some doubt about the rights to the underground waters. The statements relative to the replacement of such underground waters as may be used, with return

flow and deep seepage, are inconclusive and submitted without proof. The conclusions seem to cast doubt on the adequacy of the underground supply.

The repayment cost of \$12 per acre per year seems high for the crops to be grown.

In general, this project appears physically and economically feasible and with the assistance of power revenues from the Palisades Dam can pay out in 50 years. The land classification shows the area proposed to be arable and largely in class I and II. There is a question in my mind relative to sprinkling. Dry windy climate will make this difficult. Utah has no objection to the approval of this project.

Yours very truly,

GEORGE D. CLYDE,
Commissioner of Interstate Streams.

COMMENTS FROM THE STATE OF WASHINGTON

STATE OF WASHINGTON,
DEPARTMENT OF CONSERVATION AND DEVELOPMENT,
Olympia, May 3, 1954.

MR. H. F. MCPHAIL,
*Assistant Commissioner,
Bureau of Reclamation, Washington 25, D. C.*

DEAR MR. MCPHAIL: After making a study of the proposed report of the Department of the Interior on the Michaud Flats project, Idaho, the Department of Conservation and Development of the State of Washington is pleased to recommend the authorization of the same.

Sincerely yours,

W. A. GALBRAITH, *Director.*

COMMENTS FROM THE STATE OF WYOMING

STATE OF WYOMING,
STATE ENGINEER'S OFFICE,
Cheyenne, March 25, 1954.

MR. H. F. MCPHAIL,
*Assistant Commissioner,
United States Bureau of Reclamation,
Washington 25, D. C.*

DEAR MR. MCPHAIL: Agreeable to the request contained in your letter of March 19, 1954, I have reviewed the report of the Department of the Interior on the Michaud Flats project in Idaho, and offer comments of the State of Wyoming as follows:

According to the report there is (1) a definite need for this development to assist in maintaining the economy of the area, and (2) the people of the area are for the development, (3) the investigations, including classification of the lands, appear to be complete, (4) the soils are generally well adapted to irrigation farming, (5) the topography is from gently undulating to rolling, (6) salinity and alkalinity are not major problems, (7) surface drainage is generally good, (8) most of the irrigable area can be irrigated by gravity, (9) with the

storage space being provided in American Falls and Palisades Reservoirs supplemented by some pumping from ground water the project is assured of an adequate water supply, (10) the quality of the water is classified as "good" for irrigation purposes, (11) the estimated benefits to the Nation of \$591,000 annually appears reasonable to us, and (12) the annual cost to the Nation of \$209,000, making the ratio 2.83 to 1.0 makes the project desirable and feasible.

My comment in behalf of Gov. C. J. Rogers for the State of Wyoming is "that the interests of Wyoming are not adversely affected, and we offer no objection to the proposed Michaud Flats project."

Yours very truly,

L. C. BISHOP, *State Engineer.*

COMMENTS FROM THE DEPARTMENT OF THE ARMY

DEPARTMENT OF THE ARMY,
OFFICE OF THE CHIEF OF ENGINEERS,
Washington, June 1, 1954.

HON. WILBUR A. DEXHEIMER,
*Commissioner of Reclamation,
Department of the Interior,
Washington, D. C.*

DEAR MR. DEXHEIMER: Reference is made to letters dated March 19, 1954, from the Assistant Commissioner of Reclamation to the Secretary of the Army and the Chief of Engineers transmitting for review and comment the proposed report of the Department of the Interior on the Michaud Flats project, Idaho.

The proposed Michaud Flats project is located in Power County, Idaho, south of the American Falls Reservoir and Snake River. As described in the report, the project would provide water to an irrigable area of 11,035 acres, of which 7,077 acres would be served directly by pumping from the primary supply in the American Falls Reservoir and 3,958 acres would be served by pumping from ground-water wells, a part of the return flow resulting from application of the primary supply. Power for pumping would be obtained from the Palisades-American Falls-Minidoka Federal system at a rate of 3 mills per kilowatt-hour. In the event the Michaud Flats project is developed prior to construction of the authorized American Falls powerplant, power from the Palisades project could be furnished by wheeling over the power lines of the Idaho Power Co.

The estimated total cost of the proposed Michaud Flats project is \$4,578,500, based on prices prevailing July 1952. Of the total cost, \$474,500 is for storage costs in the American Falls and Palisades Reservoirs. The total cost is reimbursable to the Federal Government. Benefits that would accrue annually to the project are estimated at \$591,000 which, compared with annual costs of \$209,000, based on a 100-year economic life, result in a benefit-to-cost ratio of 2.83. It is estimated that the irrigators would repay 63 percent of the total cost in a 50-year repayment period. It is recommended in the report that costs not reimbursed by the irrigators be repaid from net power revenues from the Palisades project and any interconnected developments combined therewith for payout purposes after the power facilities are paid out.

The proposed Michaud Flats project would not affect adversely any existing projects or prospective plans of the Corps of Engineers.
I appreciate the opportunity to review the report.

Sincerely yours,

S. D. STURGIS, Jr.,
Major General, Chief of Engineers.

COMMENTS FROM THE DEPARTMENT OF AGRICULTURE

DEPARTMENT OF AGRICULTURE,
Washington 25, D. C., June 23, 1954.

The honorable the SECRETARY OF THE INTERIOR.

DEAR MR. SECRETARY: This is in reply to Assistant Commissioner of Reclamation H. F. McPhail's letter of March 19, 1954, transmitting copies of the proposed report of the Department of the Interior on the Michaud Flats project, Idaho.

The recommended works of improvement would provide irrigation water for 2,000 acres of land presently irrigated and 9,035 acres of dry farmland. Water for 7,077 acres of project lands would be pumped from Snake River water stored in American Falls Reservoir. The remaining land would be irrigated by pumping from ground water. Project costs which include the allocable charge of reservoir storage average \$418 per acre of irrigable land. Based on 2½ percent interest, and a 10-year development period, the present worth of expected net revenue from irrigators is equal to 28 percent of the project cost. Irrigation benefits at the time of full development are expected to total \$662,500, of which 54 percent is classed as direct farm benefits.

The report shows that the project would have a relatively high return. The ratio of all calculated benefits to costs is shown to be 2.83 to 1.0. Direct annual agricultural benefits as shown exceed the annual associated costs.

We appreciate your courtesy in having copies of the report made available to this Department for review.

Sincerely yours,

J. EARL COKE, *Assistant Secretary.*

COMMENTS FROM THE DEPARTMENT OF COMMERCE

DEPARTMENT OF COMMERCE,
BUSINESS AND DEFENSE SERVICES ADMINISTRATION,
Washington 25, April 1, 1954.

MR. H. F. MCPHAIL,
*Assistant Commissioner, Department of the Interior,
Bureau of Reclamation, Washington 25, D. C.*

DEAR MR. MCPHAIL: Thank you for your letter of March 19, transmitting three copies of the proposed report of the Department of the Interior on the Michaud Flats project, Idaho.

We are glad to have the report for reference purposes and have no further comments.

Sincerely yours,

H. B. MCCOY,
Chairman, Federal Interagency River Basin Committee.

COMMENTS FROM THE FEDERAL POWER COMMISSION

FEDERAL POWER COMMISSION,
Washington 25, June 18, 1954.

Subject: Michaud Flats project, Idaho.

HON. DOUGLAS MCKAY,
Secretary of the Interior,
Washington 25, D. C.

DEAR MR. SECRETARY: The comments herein with respect to the proposed report of your Department on the Michaud Flats project, Idaho, are transmitted in response to Assistant Commissioner McPhail's letter of March 19, 1954. Transmitted with that letter were copies of the Commissioner of Reclamation's report of February 19, 1954, approved and adopted by you on March 15, 1954, the regional director's report of October 22, 1953, and substantiating materials. The transmittal of these comments by the Commission is in accordance with the established procedures of the Federal Inter-agency River Basin Committee.

The report presents a plan for the irrigation of 11,035 acres of land in the immediate vicinity of the town of American Falls, Idaho, just south of the existing American Falls Reservoir on Snake River. Water supply would be obtained from storage reserved for the project in the Palisades and American Falls Reservoirs and by pumping from ground water. The storage water would be pumped directly from the American Falls Reservoir to serve 7,077 acres of land via two main canals, and ground water pumped from wells would serve the remaining 3,958 acres. The proposed plan consists of the construction of a pumping plant at the existing American Falls Dam, a pump discharge line, two main canals with appurtenant structures, laterals, drains, wells with associated equipment, and necessary electrical works. Until such time as energy is available from the authorized Federal powerplant to be constructed at the American Falls Dam, pumping power probably would be furnished by wheeling over existing transmission facilities of the Idaho Power Co.

The total capital cost of the project, based on July 1953 prices, exclusive of interest during construction, is estimated in the report to be \$4,600,000, including the cost of storage in the Palisades and American Falls Reservoirs allocated to irrigation and assigned to the Michaud Flats project. Annual benefits and annual costs are estimated to be \$591,000 and \$209,000, respectively, the ratio of benefits to costs being 2.83 to 1.0.

The Commission staff has reviewed the report of your Department with a view to determining the effects the Michaud Flats project might have on the development of hydroelectric power. As a result of its studies, the staff is of the opinion that modification of stream flow resulting from the project, such as loss of water through increased evaporation and transpiration, would have no material effect on power development in the basin. The staff also advises that there are no opportunities for the development of power in connection with the project.

The Commission appreciates the opportunity of reviewing and commenting on the report of your Department.

Sincerely yours,

JEROME K. KUYKENDALL, *Chairman.*

**COMMENTS FROM THE DEPARTMENT OF HEALTH,
EDUCATION, AND WELFARE**

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE,
PUBLIC HEALTH SERVICE,
Washington 25, D. C., May 26, 1954.

Hon. DOUGLAS MCKAY,
*Secretary of the Interior,
Department of the Interior,
Washington, D. C.*

DEAR MR. SECRETARY: Pursuant to the policies and procedures established by the Federal Interagency River Basin Committee, we have reviewed the Department of the Interior's proposed report on the Michaud Flats project, Idaho.

The Michaud Flats project will provide irrigation for 11,035 acres of irrigable land along the Snake River adjacent to the town of American Falls, Idaho. Surface flows of the Snake River stored in space allocated to the project in American Falls and Palisades Reservoirs would be pumped from the American Falls Reservoir into canals which would serve the major portion of the land. Ground water, in an amount less than return flow from the land served by surface water, would be pumped from wells and distributed to the remainder of the land. Topography, soil, economic, and engineering considerations influence selection of this plan as affording optimum utilization of the available water supply.

Of the 11,035 acres to be irrigated, 7,077 acres would be supplied by the diversion of 27,900 acre-feet of storage water from the American Falls Reservoir. The remaining 3,958 acres would be supplied by 13,900 acre-feet secured from the wells on the marginal areas of the project.

Of the 41,800 acre-feet of water to be used for irrigation, it is anticipated that 27,000 will ultimately return to the Snake River and its tributaries. As the diversion from American Falls Reservoir is only 27,900, there will be little change in the annual flow of Snake River. Actually, it is estimated that return flow above the American Falls Dam will be 21,000 acre-feet, with the remaining 6,000 reaching the river downstream. Although much of the return flow will reach the river months after the flow was diverted, surface diversions will come from storage and will have little or no effect on the streamflow. In fact, irrigation return flows may be expected to actually increase the streamflow during the late summer low-flow periods.

It appears that the net effect of the project will be slightly beneficial insofar as the dilution of wastes is concerned. With reference to municipal and industrial water supplies, it is believed that the increased chemical content of the river will be slight and that the increase in flow during critical low-flow periods would not be sufficiently dependable to warrant benefit consideration.

The proposed irrigation wells will penetrate waterbearing formations serving wells used by the town of American Falls, the Fort Hall Indian Reservation, and numerous individuals. Accordingly, it is recommended that the Idaho State Department of Health be consulted concerning possible contamination of waterbearing strata resulting from irrigation well construction and that their recommendations concerning this matter be followed.

From the standpoint of insect vector problems, natural drainage over most of the project lands is good. No project constructed drainage works will be required on the 3,100 acres southwest of American Falls other than small waste ditches and surface drains to be built by the farmers. In the relatively flat area northeast of American Falls, deepening of the existing natural channels of Sunbeam and Blind Spring Creeks is expected to provide adequate channels for major drainage. Project operations will indicate the need for the construction of other major drainage facilities.

There are few areas described in this report where natural conditions indicate that serious mosquito hazards would result from the construction of this project. With the possible exception of a few local areas, known geological conditions indicate that subsurface drainage is at least adequate to prevent extensive accumulation of standing water under irrigation conditions. If high-water-table conditions do occur, the proposed program of drainage mentioned above supplementing the natural return flows should adequately provide for disposal of standing surface water.

Although some mosquito problems may result locally from improper irrigation practices, no serious hazard inherent in the project plan is noted.

In the event of activation of this project, it is strongly recommended that the Bureau of Reclamation utilize the consultant services of the Public Health Service when developing details of construction and operation of the project in order to minimize conditions which may contribute to mosquito production.

The opportunity to review this report is appreciated.

Sincerely yours,

M. D. HOLLIS,
*Chief Sanitary Engineering Officer, Public Health Service,
Health, Education, and Welfare Member, Federal Inter-
agency River Basin Committee.*

COMMENTS FROM THE DEPARTMENT OF LABOR

DEPARTMENT OF LABOR,
BUREAU OF EMPLOYMENT SECURITY,
UNITED STATES EMPLOYMENT SERVICE,
Washington 25, D. C., April 29, 1954.

Mr. W. A. DEXHEIMER,
*Commissioner, Bureau of Reclamation,
Department of the Interior, Washington 25, D. C.*

DEAR MR. DEXHEIMER: We have examined the report on the Michaud Flats project, Idaho.

The proposed project would have a generally beneficial effect upon the economy not only of the immediate area but of the entire State of Idaho. During this period of lower employment levels, construction activities on the project would employ a significant number of construction workers now seeking jobs. Also, by providing irrigation, the project would permit more intensive utilization of land and

greater diversification of crops. The reclamation of additional land would provide a livelihood for approximately 100 additional farm units.

In view of these considerations, the Department of Labor is pleased to give its endorsement to the Michaud Flats project, Idaho. This recommendation presupposes, of course, that the proposed project is economically sound and feasible and that it meets the standards set forth in the pertinent laws.

I appreciate the opportunity to review this report.

Sincerely yours,

ROBERT C. GOODWIN, *Director.*

○

October 1, 1958

Re: Permits No. G-24547 and G-26603

Bureau of Reclamation
Box 937
Boise, Idaho

ATTENTION: 150

We will need to have something more than your letter of September 26, 1958, as evidence to record the conveyance of Marion Stanger's Permit No. G-24547 to the United States and neither do we want to record the conveyance which is filed in the County records.

The simple short assignment form here enclosed best answers our purpose and I will ask that you secure on this form, assignment from the original permit holder of the well filing acquired by the United States.

We have compared the list of names, locations and permit numbers accompanying your letter with our records and attached is an abstract of what the records of this office show. From examination of this abstract it appears the Marion Stanger filing is the only one requiring an assignment. All the others have been either licensed or canceled except the Vern Eames filing No. 21477 upon which proof of Completion of Works was made but not the Beneficial Use Proof. Thus it remains in status quo, it can never be canceled but if and when Beneficial Use Proof is offered, the priority of license will be stepped down as much in time as the proof is overdue. Our records of well filings in Michaud Project are as per attached.

The filing fee for recording the assignment is fifty cents.

Regarding postponement of Proof of Completion of Works and Beneficial Use of Water on Permit No. 24547, will you please furnish me a copy of the earliest or first authenticated document in Bureau of Reclamation files showing the intent or plan of the Bureau to acquire wells already in operation or well filings made prior to the time the construction of the project by the United States was a certainty.

Very truly yours,

GEO. N. CARTER
State Reclamation Engineer

ONG/lw
Enclosures

824547

In checking list of former owners which was enclosed in your letter of September 26, 1958, our records show the following:

John L. Gaskill & Ruland Williams - Permit No. G-22559
SE $\frac{1}{4}$ Sec. 36, Twp. 6 So., Rge. 31 E. - Licensed

Carrie E. Spaulding
We show - - Paul P. Spalding - Permit No. G-23753
NE $\frac{1}{4}$ NE $\frac{1}{4}$ Sec. 29, Twp. 7 So., Rge. 31 E. - Licensed

Marion Stanger - Permit No. G-24547
We show location - SE $\frac{1}{4}$ NW $\frac{1}{4}$ Sec. 32, Twp. 7 So., Rge. 31 E.

Vern Eames - Permit No. G-23379
Cancelled 3/31/58 for non-compliance with permit contract.

Vern Eames - Permit No. G-23380
Cancelled 3/31/58 for same reason as G-23379

Vern Eames - Permit No. 21477
Completion of Works proof only - Beneficial Use proof
due 6/10/52, but was not made.

D. G. Taylor - No records in NE $\frac{1}{4}$ Sec. 11, Twp. 7 S., Rge. 31 E.

Ben G. Kopp - Permit No. 19977 - Licensed
SW $\frac{1}{4}$ Sec. 14, Twp. 7 S., Rge. 31 E.

E. G. Lish - Permit No. G-21935 - No record of Lish having
any connection with Permit No. G -24547.
G-21935 cancelled 12/30/53 for non-compliance with permit
contract.

T. S. Vanderford - Listed as holder of Permit No. G-22944 and
19754 in connection with the land description given for
Thomas Vanderford on your list - Licensed.

Ira Neibauer & Newell J. Neibaur - No records of either men in
connection with listed description.

Harold Isaak - Permit No. G-22542 - Licensed
SE $\frac{1}{4}$ Sec. 23, Twp. 8 S., Rge. 30 E.

f 24547



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
REGIONAL OFFICE, REGION I
BOX 937, BOISE, IDAHO

IN REPLY REFER TO:

150

RECEIVED
SEP 29 1958
Department of Reclamation

SEP 26 1958

Mr. Geo. N. Carter
State Reclamation Engineer
Boise, Idaho

Dear Mr. Carter:

In your letter of September 10, pertaining to Mr. Marion Stanger's Permit No. G-24547 for a well which has been sold to the United States for incorporation into the Michaud Flats Project, you stated that proof of completion of works and application of water to beneficial use would be due under the permit by November 9, 1958. Mr. Stanger and his wife have conveyed to the United States all their right, title and interest in the well and the land upon which it is located. The conveyance has been recorded in the County records and we hope this information is sufficient to permit you to note the assignment on your records. If, however, it is essential that we go back to the former owner and obtain a further signature on an assignment document, we will attempt to do so. For your information and noting of your records, enclosed is a list of the other wells where we have completed similar purchase transaction.

As to making proof of completion of works and application of water to beneficial use under this particular permit, we would much prefer not to complete this proof at this time. And for the reasons hereinafter set out, we request an extension of time, concurrent with our Permit No. G-26603, for this permit and the similar ones related to the enclosed list of wells. You will recall that the United States' Application No. G-34427, Permit No. G-26603 described a number of existing wells to be incorporated into the Michaud Flats Project system. The Stanger well was designated as well "M" and is identified in the papers appended to the United States' Permit No. G-26603 as Permit No. G-24547. In view of these facts and because the Stanger's well may discharge into the Project's system and thereby water lands in addition to or other than those for which the original filing was made, we believe that it would be less confusing for all concerned if proof of completion of works and application of water to beneficial use was made on this particular well at the time such proof is made with respect to all of the wells and other Snake River water for the entire Michaud Flats Project. This

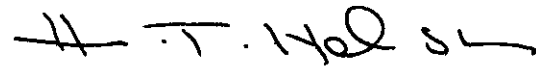
G 24547

Proof of G. N. Carter 26603 closed Nov. 13, 1961

procedure would obviate the expense in both our offices connected with the piecemeal handling of the necessary paper work, field inspections and administrative expenses.

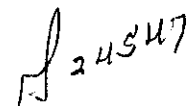
Therefore, it is requested that an extension of time be granted so that all these permits can be handled as a unit at the same time. We appreciate your consideration in calling this matter to our attention.

Sincerely yours,

A handwritten signature in dark ink, appearing to read "H. T. Noel" followed by a stylized flourish.

Regional Director

Enclosure

Handwritten initials "J" and the number "24547" in dark ink.

Former OwnerLocationPermit No.

John L. Gaskill and
Ruland Williams

SE $\frac{1}{4}$ Sec. 36, T. 6 S., R. 31 E. G-22559

Carrie E. Spalding

Lot 16, Block 8, of the Reclamation
Addition to the City of American
Falls, Idaho (Sec. 29, T. 7 S.,
R. 31 E.) G-23753

Holder. - Paul P.

Marion Stanger

SW $\frac{1}{4}$ Sec. 32, T. 7 S., R. 31 E.

G-24547 well in SE $\frac{1}{4}$ NW $\frac{1}{4}$ Sec. 32

Vern Eames

NE $\frac{1}{4}$ Sec. 31, T. 6 S., R. 32 E.

G-23380 cano. 3/31/58

Vern Eames

NE $\frac{1}{4}$ Sec. 1, T. 7 S., R. 31 E.

G-23379 cano. 3/31/58

Vern Eames

SE $\frac{1}{4}$ Sec. 1, T. 7 S., R. 31 E.

21477 c/w. 6/12/51

D. G. Taylor

NE $\frac{1}{4}$ Sec. 11, T. 7 S., R. 31 E.

Ben G. Kopp

SW $\frac{1}{4}$ Sec. 14, T. 7 S., R. 31 E.

19977

E. G. Lish

NW $\frac{1}{4}$ Sec. 32, T. 7 S., R. 31 E.

G-24547 G-21935
cano. 12/30/53

Thomas Vanderford

NW $\frac{1}{4}$ Sec. 1, T. 7 S., R. 31 E.

19754
G-22944

Ira Neibaur

NE $\frac{1}{4}$ Sec. 36, T. 6 S., R. 31 E.

Newell J. Neibaur

NW $\frac{1}{4}$ Sec. 11, T. 7 S., R. 31 E.

Harold Isaak

SE $\frac{1}{4}$ Sec. 23, T. 8 S., R. 30 E. G-22542 v

September 10, 1958

Re: Permit No. G-24547

U. S. Bureau of Reclamation
P. O. Box 937
Boise, Idaho

ATTENTION: 150

Dear Sir:

This department has been advised by Marion Stanger, who is holder of Permit No. G-24547, that the well in connection with said permit has been sold to the Bureau of Reclamation and has been incorporated in the Michaud Flats Project in American Falls, Idaho.

This is to advise that Proofs of Completion of Works and Beneficial Use are due under this Permit on November 9, 1958.

If proofs are to be executed by other than the original holder of permit, it will be necessary that permit be assigned to present owner by the holder. We enclose a form for "Assignment".

If other wells have been purchased in the area, to be incorporated in Michaud Flats Project, and from which the waters have been filed on under permits with the Department of Reclamation, and it is intended that these rights be of record in the State of Idaho, it is likewise necessary that assignments of said permits be made to Bureau of Reclamation, - Michaud Flats Project.

Very truly yours,

Geo. N. Carter
State Reclamation Engineer

Enc.

GNC/nls

cc: Marion Stanger
American Falls
Idaho

24547

American Falls, Idaho
September 8, 1958

Department of Reclamation
State House
Boise, Idaho

RECEIVED
Department of Reclamation

Attention: Mr. Geo. N. Carter

Dear Sir:

This well has been sold to the Bureau of Reclamation
and has been incorporated in the Michaud Flats Project in
American Falls, Idaho.

Very truly yours,

Marion Stanger

Marion Stanger
American Falls
Idaho

in M.F. Area

TS

all: # 1850

f 24547

S T A T E O F I D A H O
D E P A R T M E N T O F R E C L A M A T I O N
B O I S E

RE: Permit No. G-24547

Date September 2, 1958

Marion Stanger
Gen. Del.
American Falls, Idaho

Dear Sir:

The date for proofs of completion of works and application of water to beneficial use, as set out under the terms of Permit No. G-24547 are due not later than November 9, 1958.

Before these proofs can be made, the statutory requirement is that a notice of your intention of proof be published once a week for four consecutive weeks in a newspaper within the county in which the land is located. In completing the Notice of proof for publication, the information should be taken from your Permit, including any amendments made in connection with a change of point of diversion or land list which has been recorded in this department. If changes have been made and no amendments are on record, we advise that you request a form for this purpose before your Notice is published.

We enclose Form 36, in duplicate, which is to be filled out and returned to this department at least forty (40) days before the above mentioned date, (allowing for four weeks publication). Please give the name of the town, the address of the place where the depositions will be executed, and, the name of the notary public before whom you will appear to make the depositions of proof (this may be at any place convenient for you and your two witnesses), the quantity of water filed; for what purpose it is used; the point or points of diversion; and the location of use or the lands which are irrigated--all by legal land description.

Enclosed also is Form 11, which is the authorization for us to have the notice published in the designated county newspaper at your expense. This is to be returned with Form 36.

At the time we send the notice to the newspaper we will send to you the forms for the depositions of holder and two disinterested witnesses. It is important that the depositions be executed at the time, on the date set, at the place named and before the notary public, as advertised in the publication notice.

Very truly yours,

GEO. N. CARTER

State Reclamation Engineer

Enclosures

24547

S T A T E O F I D A H O

D E P A R T M E N T O F R E C L A M A T I O N

B O I S E

Permit No. G-24547

Date November 10, 1953

We enclose herewith the above numbered permit. BE SURE AND
NOTE LIMITATIONS AND CONDITIONS OF SAME as given under approval of the
State Reclamation Engineer, on the fourth page.

Mr. Marion Stanger
General Delivery
American Falls, Idaho

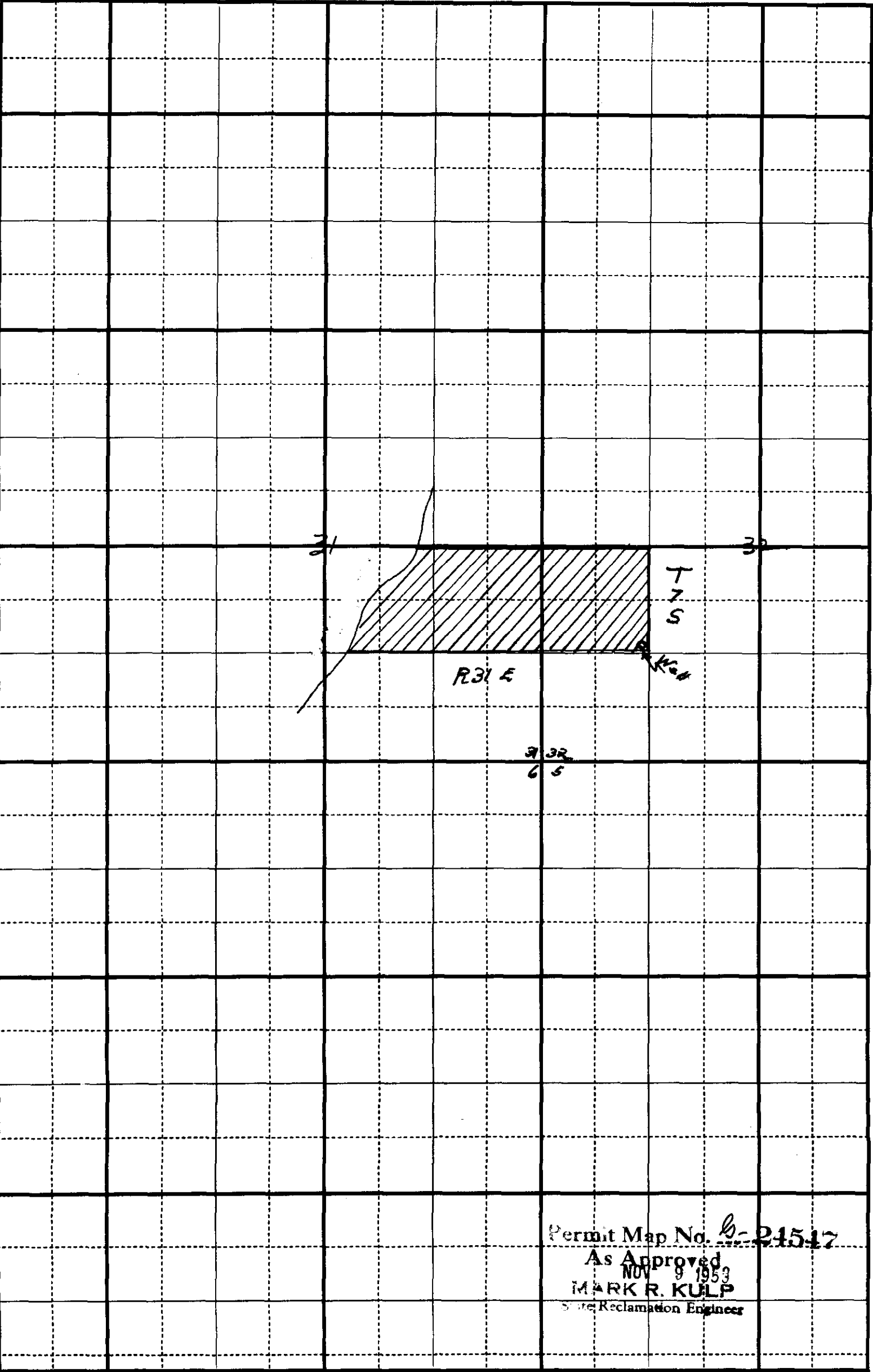
MARK R. KULP
State Reclamation Engineer

Enc. Departmental receipt No. G-326 for \$5.25 filing fee.

G-24547

NAME OF APPLICANT.....Mario Stanger, American Falls, Idaho.....

Form No. 0



Permit Map No. B-24547
As Approved
NOV 9 1953
MARK R. KULP
State Reclamation Engineer

SCALE: 1/4 Inches Equal 1 Mile. Draw Plan In Ink.

24547

American Falls, Idaho
October 31, 1953

RECEIVED
NOV 2 1953

Department of Reclamation

State Department of Reclamation
State House
Boise, Idaho

Gentlemen:

RE MARION STANGER PERMIT APPLICATION

We are in receipt of your letter of October 30, 1953 in the above connection, in which you state that the description given in ~~Page~~ Question 12 does not agree with the land shown on the sketch map.

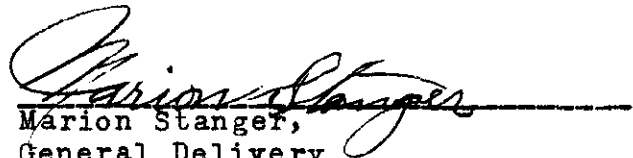
This is true if your scale of 2" to the mile is used, however, in order to get a more nearly correct showing of the land to be irrigated, the aerial map of the soil conservation service was used, which necessitated the use of a scale of 4" to the mile. Applying this scale, I believe you will find that the two descriptions are in agreement as to the land to be irrigated.

If it is necessary to use the 2" scale, please return the application and two maps and I will have the changes made. In this case, it will be necessary for me to have two new map sheets, as I will be unable to use the ones enclosed if the 2" scale is now used.

I am enclosing herewith the application and two maps.

Thanking you for your attention, I am

Very truly yours,


Marion Stanger,
General Delivery
American Falls, Idaho

24547

October 30, 1953

Mr. Marion Stanger
General Delivery
American Falls, Idaho

Dear Mr. Stanger:

We are in receipt of your application for permit to appropriate 2 second feet of water from a well in the SE $\frac{1}{4}$ NW $\frac{1}{4}$ Section 32, Township 7 South, Range 31 East, B.M., accompanied by your check for the \$5.25 filing fee.

However, the land description as given in Question 12 does not agree with the land shown on the sketch map. Question 12 describes 60 acres in the N $\frac{1}{2}$ SE $\frac{1}{4}$ Section 31, and 40 acres in the NW $\frac{1}{4}$ SW $\frac{1}{4}$ Section 32; however the sketch map shows the NE $\frac{1}{4}$, NE $\frac{1}{4}$ NW $\frac{1}{4}$ and S $\frac{1}{2}$ NW $\frac{1}{4}$ Section 31, and the NW $\frac{1}{4}$ Section 32.

We return the application and sketch map with the request that you correct whichever is necessary.

Very truly yours,

MARK R. KULP
State Reclamation Engineer
By

Chief Clerk

A:fg
Enc.

24547

Legal Notice

Published in T. Power County Press Oct. 14, 19, 26 and Nov. 1, 1961.

NOTICE OF PROOF OF COMPLETION OF WORKS and APPLICATION OF WATER TO BENEFICIAL USE

Notice is hereby given that at 10 A.M., on the 13th day of November 1961, at Boise, County of Ada, State of Idaho, before John H. Welch, Notary Public, at Boise, Idaho, proof will be submitted of the completion of works for the diversion of 2.0 cubic feet per second of underground water from a well, and of the application to beneficial use of said water, in accordance with the terms and conditions of Permit No. G-24-547, heretofore issued by the Department of Reclamation of the State of Idaho.

1. The name and postoffice address of the person or corpor-

ation holding said permit. The United States of America, acting through its Regional Director, Region 1, Bureau of Reclamation, Department of the Interior, P. O. Box 937, Boise, Idaho.

2. Said works of diversion will be fully completed on the date set for such completion, and the amount of water which said works are capable of conveying to the place of use is 2.0 cubic feet per second.

3. The use to which said water has been applied is Irrigation purposes, and the amount applied to beneficial use is 2.0 cubic feet per second.

4. The point of diversion of said water is SE $\frac{1}{4}$ NW $\frac{1}{4}$ Sec. 32, T. 7 S., R. 31 E., B.M. N $\frac{1}{2}$ SE $\frac{1}{4}$, Sec. 31. and NW $\frac{1}{4}$ SW $\frac{1}{4}$ Sec. 32, T. S., R. 31 E. B.M. in the Michaud Flats Project.

6. The date of priority which said user is prepared to establish is October 29, 1953.

GEO. N. CARTER
State Reclamation Engineer

Legal Notice

Published in the Power County Press, May 27, June 3, 19, and 17, 1965.

NOTICE OF PROOF OF COMPLETION OF WORKS and APPLICATION OF WATER TO BENEFICIAL USE

Notice is hereby given that at 10 a.m., on the 25th day of June 1965, at Boise, County of Ada, State of Idaho before John H. Welch, Notary Public, at the Fairgrounds, Boise proof will be submitted of the completion of works for the diversion of 2.0 cubic feet per second of underground water from a well, and of the application to beneficial use of said water in accordance with the terms and conditions of Permit No. G-24547 heretofore issued by the Department of Reclamation of the State of Idaho.

1. The name and postoffice address of the person or corporation holding said permit is The United States of America, Acting through its Regional Director, Region 1, Bureau of Reclamation, P. O. Box 937, Boise, Idaho.

2. Said works of diversion will be fully completed on the date for such completion, and the amount of water which said works are capable of conveying to the place of use is 2.0 cubic feet per second.

3. The use to which said water has been applied is irrigation purposes and the amount applied to beneficial use is 2.0 cubic feet per second.

4. The point of diversion of water is NW $\frac{1}{4}$ SW $\frac{1}{4}$ Sec. 32, T. 7 S., R. 31 E., B.M.

5. The place where said water is used is Section 31 and 32, T. 7 S., R. 31 E., B.M., in the Michaud Flats Project.

6. The date of priority which said user is prepared to establish is October 29, 1953.

CARL E. TAPPAN
State Reclamation Engineer

Published in The Power County Press Oct. 12, 19, 26 and Nov. 2, 1961.

NOTICE OF PROOF OF COMPLETION OF WORKS

and

APPLICATION OF WATER TO BENEFICIAL USE

Notice is hereby given that at 10 A.M., on the 13th day of November 1961, at Boise, County of Ada, State of Idaho, before John H. Welch, Notary Public, at Boise, Idaho, proof will be submitted of the completion of works for the diversion of 2.0 cubic feet per second of underground water from a well, and of the application to beneficial use of said water, in accordance with the terms and conditions of Permit No. G-24547, heretofore issued by the Department of Reclamation of the State of Idaho.

1. The name and postoffice address of the person or corporation holding said permit. The United States of America, acting through its Regional Director, Region 1, Bureau of Reclamation, Department of the Interior, P. O. Box 937, Boise, Idaho.

2. Said works of diversion will be fully completed on the date set for such completion, and the amount of water which said works are capable of conveying to the place of use is 2.0 cubic feet per second.

3. The use to which said water has been applied is Irrigation purposes, and the amount applied to beneficial use is 2.0 cubic feet per second.

4. The point of diversion of said water is SE $\frac{1}{4}$ NW $\frac{1}{4}$ Sec. 32, T. 7 S., R. 31 E., B.M.

5. The place where said water is used is N $\frac{1}{2}$ SE $\frac{1}{4}$, Sec. 31, and NW $\frac{1}{2}$ SW $\frac{1}{4}$ Sec. 32, T. 7 S., R. 31 E., B.M., in the Michaud Flats Project.

6. The date of priority which said user is prepared to establish is October 29, 1953.

GEO. N. CARTER
State Reclamation Engineer