

R-2

Application No. R-46372

Name TERRA CORPORATION

Permit No. R-5444

By 8 NORTH
31 South State Street

Certificate No. 42471

Address Lake Oswego, Oregon ~~97030~~ 97034

See File 46373

Stream Index, Page No. 2-76B9

DAM file- M-53
MAP " E.34-1/FLAT FILE 4-53

Date filed September 3, 1969

Priority September 3, 1969

Action suspended until OK Oct

Returned to applicant

Date of approval September 12, 1969

CONSTRUCTION

Date for beginning September 12, 1970

Date for completion October 1, 1971

Extended to

Date for application of water October 1, 1972

Extended to

PROSECUTION OF WORK

Form "A" filed started

Form "B" filed

Form "C" filed 10/7/71

FINAL PROOF

Blank mailed SEP 5 1975

Proof received

Date certificate issued SEP 15 1975

FEEES PAID

Date	Amount	Receipt No.
9-3-69	26 ⁸⁰	16126

9-9-75	\$1 ^{2.00} Cert. Fee	49337
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FEEES REFUNDED

Date	Amount	Check No.
------	--------	-----------

ASSIGNMENTS

Date	To Whom	Address	Volume	Page

REMARKS

This is a retiling of appl. no. R-45946
Manpano Reservoir and storage of water from Abernathy Creek to be used for fish culture
and recreation of 780.0 af. of 2.4d

9-4-69
OK
GRL

Form C

IMPORTANT—This form is a notice to the State Engineer that permittee is ready to make **final proof** to the extent to which the water has actually been applied to the intended use under the terms of the permit. Permittee is cautioned that Certificate of Water Right will be issued based on the extent of the quantity and use as determined by the **final proof** inspection and survey which will be made in response to the filing of this Form C.

NOTE: In the case of an irrigation permit, this Form C should not be mailed to the State Engineer until all of the land described in the permit, which it is intended to irrigate under this permit at any time, has actually been irrigated.
Fill out, detach and mail to the State Engineer, Salem, Oregon 97310, when all of the water has been applied.

Application No. R-46373

NOTICE OF COMPLETE APPLICATION OF WATER TO A BENEFICIAL USE

I, TERRA CORPORATION, the holder of Permit No. 34210

to appropriate the public waters of the state of Oregon, completely applied the waters to a beneficial use in accordance with the terms of said permit, on the 12th day of JAN., 1971.

Remarks: _____

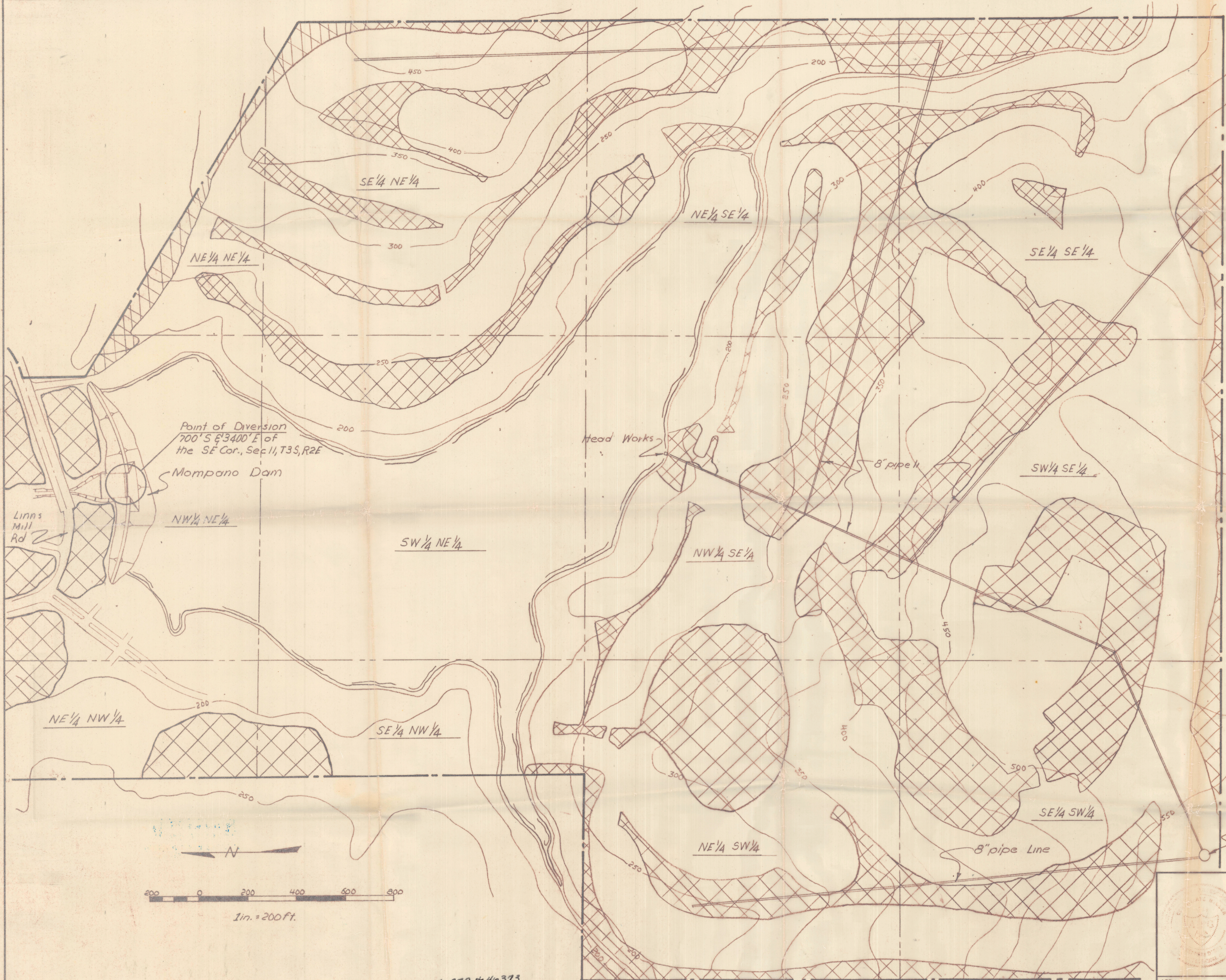
IN WITNESS WHEREOF, I have hereunto set my hand this 22ND day of SEPT, 1971.

Frank E. Weber pres.
(Signature of Applicant)

8 North State St. Lake Oswego, Ore.
(Address)

RECEIVED
OCT 7 1971
STATE ENGINEER
SALMON OREGON

OK
m.B.



NOTES

- 1.) Total acreage available for irrigation is 104 acres which includes 8 Acres north of Linns Mill road just off of the map.
- 2.) Drawing is based upon layout performed by David A. Soderstrom.
- 3.) All irrigated land lies entirely within Sec 13, T3S, R2E.

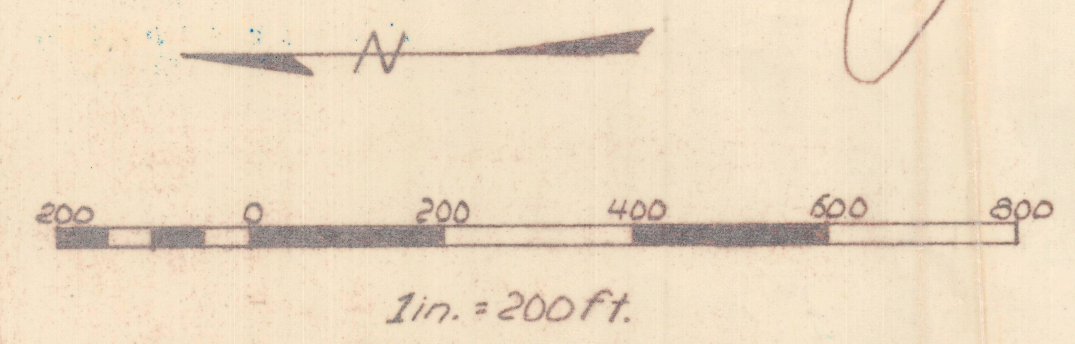
AREA TABLE

Township	Range	Section	Forty Acre Tract	Area
3S	2E	13	NE 1/4 NW 1/4	4
3S	2E	13	SE 1/4 NW 1/4	2
3S	2E	13	NE 1/4 SW 1/4	16
3S	2E	13	SE 1/4 SW 1/4	16
3S	2E	13	NW 1/4 SE 1/4	11
3S	2E	13	NE 1/4 SE 1/4	13
3S	2E	13	SW 1/4 SE 1/4	12
3S	2E	13	SE 1/4 SE 1/4	10
3S	2E	13	NE 1/4 NE 1/4	3
3S	2E	13	NW 1/4 NE 1/4	5
3S	2E	13	SE 1/4 NE 1/4	3
3S	2E	13	SW 1/4 NE 1/4	9

LEGEND

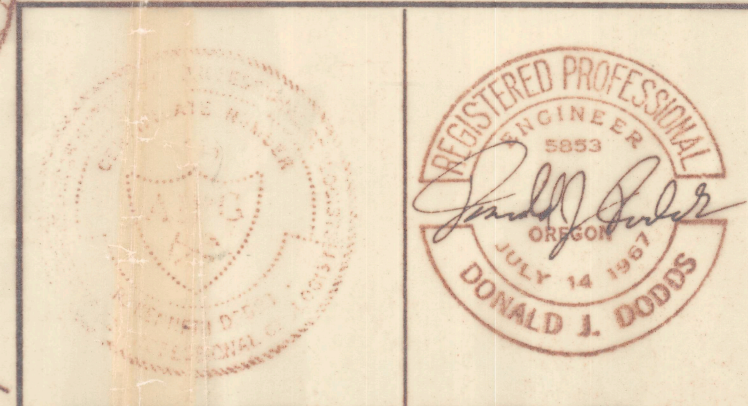
- Areas requiring irrigation
- Property Line

RECEIVED
MAY 20 1969
STATE ENGINEER
SALEM OREGON

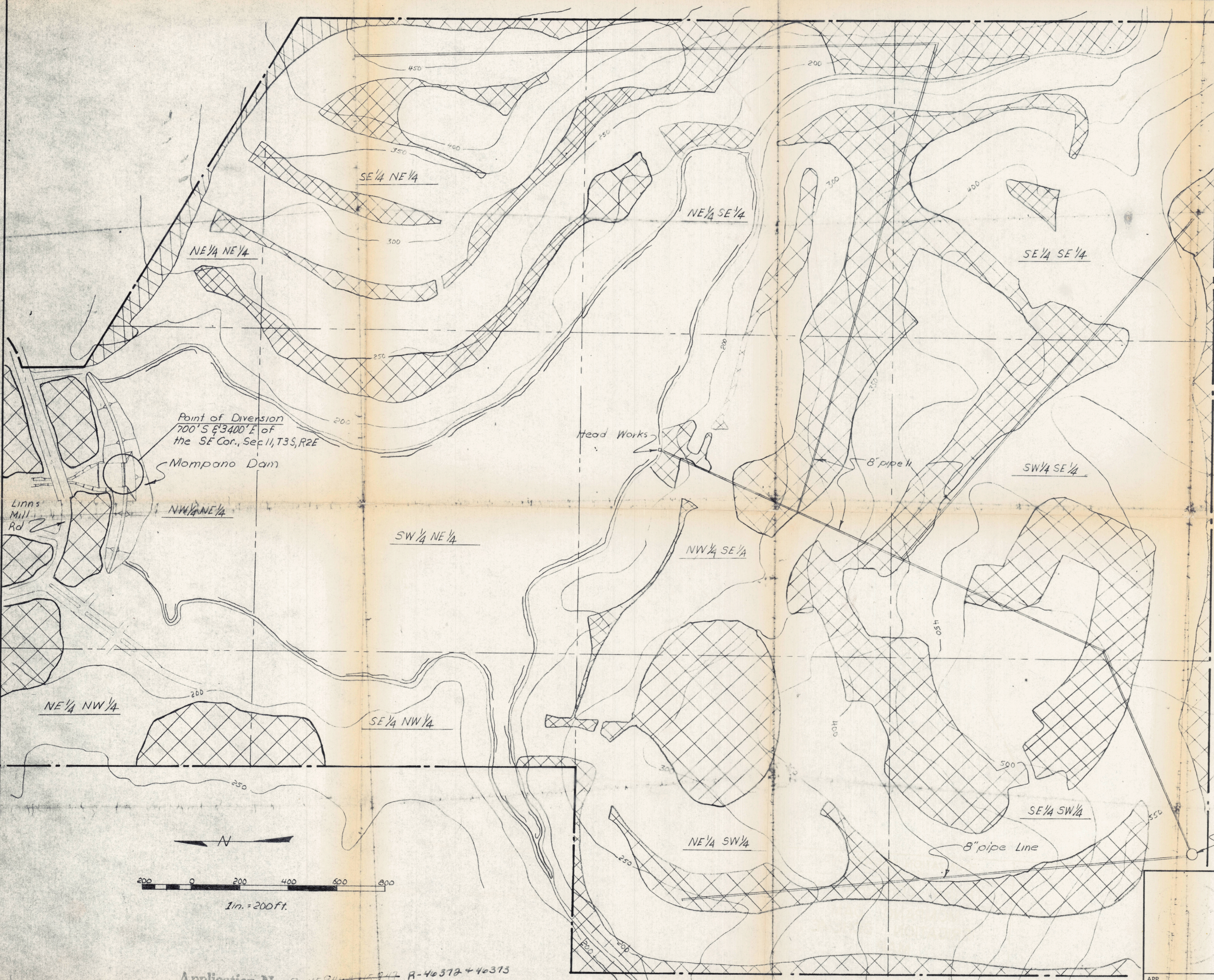


Application No. R-45946 + 45947 R-46372 + 46373
Permit No. R-5400 + 34057

NO.	DATE	REV.	BY	CHK	APP	DSN	DRN	CHK	REC	SCALE	DATE	NUMBER
1	5-20-69	Addition of Area table	DJD	ND	SDP	DCB	DCB	DJD	NTM	1" = 200'	4-16-69	32-2-Z



FOUNDATION SCIENCES, INC.
PORTLAND, OREGON
TERRA CORPORATION
MOMPANO DAM
IRRIGATION SCHEME
MAP



NOTES

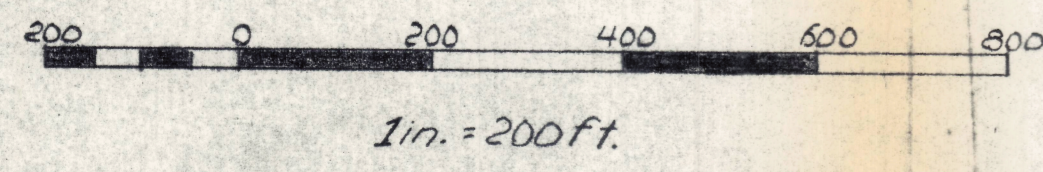
- 1.) Total acreage available for irrigation is 104 acres which includes 8 Acres north of Linns Mill road just off of the map.
- 2.) Drawing is based upon layout performed by David A. Soderstrom.
- 3.) All irrigated land lies entirely within Sec 13, T3S, R2E.

AREA TABLE

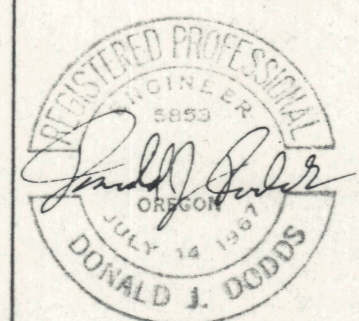
Township	Range	Section	Forty Acre Tract	Area
3S	2E	13	NE 1/4 NW 1/4	4
3S	2E	13	SE 1/4 NW 1/4	2
3S	2E	13	NE 1/4 SW 1/4	16
3S	2E	13	SE 1/4 SW 1/4	16
3S	2E	13	NW 1/4 SE 1/4	11
3S	2E	13	NE 1/4 SE 1/4	13
3S	2E	13	SW 1/4 SE 1/4	12
3S	2E	13	SE 1/4 SE 1/4	10
3S	2E	13	NE 1/4 NE 1/4	3
3S	2E	13	NW 1/4 NE 1/4	5
3S	2E	13	SE 1/4 NE 1/4	3
3S	2E	13	SW 1/4 NE 1/4	9

LEGEND

- Areas requiring irrigation
- Property Line



Application No. R-45740 + 45942 R-46372 + 46373
 Permit No. R-5400 + 34057



FOUNDATION SCIENCES, INC.
 PORTLAND, OREGON
TERRA CORPORATION
MOMPANO DAM
IRRIGATION SCHEME
MAP

NO. 1	DATE 5-20-69	REV. Addition of Area table	BY DJD	CHK [Signature]	APP [Signature]	DSN DeB	DRN DCB	CHK DJD	REC NTM	SCALE 1" = 200'	DATE 4-16-69	NUMBER 32-2-Z
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STATE OF OREGON

COUNTY OF **CLACKAMAS**

Proof of Appropriation of Water

RECEIVED

SEP - 9 1975

WATER RESOURCES DEPT.
SALEM, OREGON

TERRA CORPORATION

of **8 North State Street, Lake Oswego**, State of **Oregon**, has

constructed a reservoir to store the waters of **Abernathy Creek, tributary of Willamette River, appropriated under Application No. 46373, Permit No. 34210, in Mampano Reservoir**

fish culture and recreation

for the purposes of

under Reservoir Permit No. **R-5444** of the State Engineer, and that the storage of said waters has been completed within the terms of said Permit; that the priority of the right dates from **September 3, 1969**

that the amount of water entitled to be stored each year under such right, for the purposes aforesaid, shall not exceed **780.0 acre feet**

The reservoir is located in

**NW¹/₄ NE¹/₄
SW¹/₄ NE¹/₄
SE¹/₄ NW¹/₄
NE¹/₄ SE¹/₄
NW¹/₄ SE¹/₄
Section 13
T. 3 S., R. 2 E., W. M.**

I have read the above and foregoing proof of appropriation of water; I know the contents thereof, and that the facts therein stated are true.

IN WITNESS WHEREOF, I have hereunto set my hand this 8th day of Sept

1975

Fred E. Weber



STATE OF OREGON

INTEROFFICE MEMO

TO: FILE

DATE: SEPTEMBER 9, 1982

FROM: CLIF KING

SUBJECT: BEAVER LAKE - R-46372 and 46373, MR. LAFAVE COMPLAINT

Mr. Lafave called this office to complain of a potential hazard involving Beaver Lake. Mr. Lafave claims the water level was within one foot of topping the dam this last winter. He also said the stream below the spillway floods over the bridge and road onto his property.

On September 7, 1982, I made an inspection of the Beaver Lake dam, spillway and surrounding area. The dam appeared to be in good condition with no signs of erosion. The spillway appeared in good condition with no cracks or shifting of the concrete walls and bottom, with one exception. There is some minor erosion on the bank between the north spillway wall and the county road. It also appears that a portion of the spillway wall may be shifting inward. The spillway was virtually dry during my inspection with all outflow contained within the fish ladder. The bridge and road over the stream into which the spillway empties appeared in good condition. There were no obvious signs of flood damage. There did not appear to be any major erosion in the area below the bridge crossing.

2549B

H.
Charles La Fave
11500 SW Denney Road (Redland)
641 5923
Complaint - Beaver Creek



Water Resources Department
MILL CREEK OFFICE PARK

555 13th STREET N.E., SALEM, OREGON 97310

PHONE 1-800-452-7813
378-3066

March 26, 1980

Metropolitan Service District
527 SW Hall
Portland, OR 97201

Dear Mr. Holstun:

Reference: File Nos. R-46372 and 46373

Pursuant to your request, enclosed are the copies of the permits numbered R-5444 and 34210 along with the certificates recorded at pages 42471 and 42472 in Volume 34 State Record of Water Right Certificates. These certificates are the documents of record pertaining to the above mentioned permits. Our receipt No. 16750 covering the copying fee of \$2.75 you submitted is also enclosed.

While in most cases the rights described by the certificates will be valid, you are cautioned that the rights or any part thereof may be lost through intentional abandonment or forfeited by five successive years of non-use. Our records will not show that any portion of a right has been lost until a cancellation proceeding has been completed.

Sincerely,

Stephen C. Brown
Water Rights Engineer

SCB:ka
enclosures
cc: Files
0375A

COPY

Metropolitan Service District

527 SW Hall Portland, Oregon 97201 503/221-1646

March 19, 1980

RECEIVED
MAR 21 1980
WATER RESOURCES DEPT
SALEM, OREGON

Water Resources Department
555 13th Street, NE
Salem, Oregon 97310

Rick Gustafson,
Executive Officer

To whom it may concern:

Please send a copy of permit numbers R-5444 and 34210.
Enclosed is a check for the \$2.75 copying fee.

Thank you.

Sincerely,



Mike Holstun
Legal Clerk

MH:kc
Enclosure

MSD Council

Mike Burton,
Presiding Officer
District 12

Donna Stuhr,
Deputy Presiding
Officer
District 1

Charles Williamson
District 2

Craig Berkman
District 3

Corky Kirkpatrick
District 4

Jack Deines
District 5

Jane Rhodes
District 6

Betty Schedeen
District 7

Caroline Miller
District 8

Cindy Banzer
District 9

Gene Peterson
District 10

Marge Kafoury
District 11

October 30, 1972

R-46372
46373

Terra Corporation
8 North State Street
Lake Oswego, Oregon 97034

Attention: Mr. Fred Weber

Dear Sir:

In response to your earlier telephone call, I have inspected the rip-rap which has been placed below the spillway of the Mompano Dam. The rip-rap does not appear to be large enough to withstand flow conditions such as those experienced last winter. This rip-rap contains more soil than is desirable.

I suggest that clean rip-rap with a minimum size of $1\frac{1}{2}$ cubic foot be used for any lining which is placed in the future.

Very truly yours,

G. L. OBERHOLTZER,
Engineer

GLO:gb

cc; Mike Ricks, Watermaster

April 5, 1972

R-46372
46363
Dam File
M-53

Werner S. Storch & Assoc., Inc.
Consulting Engineers
Suite 800
1220 SW Morrison Street
Portland, OR 97205

Attention George M. Jacobs

Dear Sir:

I have reviewed your letter and a drawing of March 30, 1972, regarding the Beaver Lake spillway problem and there is no doubt that part of the troubles with the road and the embankment washing is as you have indicated. Our local watermaster has received a report from someone in the county to the effect that the water was washing over the road, and when I examined the area just after, I could see where water had flowed across the road into the ditch below. Also, it was apparent that there was a significant amount of water in the ditch on the north side of the road.

I'm not sure I will agree with your thoughts on not raising the concrete wall in the area upstream of the stilling basin and until we can make a cross-section and profiles of the ditch immediately downstream of the bridge and run a backwater profile of this section at the design flow, we will not have the answer. Obviously, some work needs to be done in this area, and our only point of disagreement is the extent of this work. I am of the opinion at the present time that backwater from the bridge and the flat ditch section below, has moved the hydraulic jump up the spillway chute. The exact distance up the chute, and the magnitude of the jump can be computed when we have completed the cross-section and profile of the bank and channel sections. I suggest you delay remedial work until this information can be gathered and computations made.

I will advise and set up a meeting when we have reached a conclusion.

Very truly yours,

AMP:cd
cc Terra Corporation

A. M. PETSKA
Engineer

WERNER S. STORCH & ASSOCIATES, INC., CONSULTING ENGINEERS

March 30, 1972

Project #5240

Mr. A. M. Petska, Engineer
Water Resources Department
1178 Chemeketa St., N. E.
Salem, Oregon 97310

RECEIVED
MAR 31 1972
STATE ENGINEER
SALEM OREGON

RE: BEAVER LAKE

R-46372
R-46363 73?
Dam File M-53

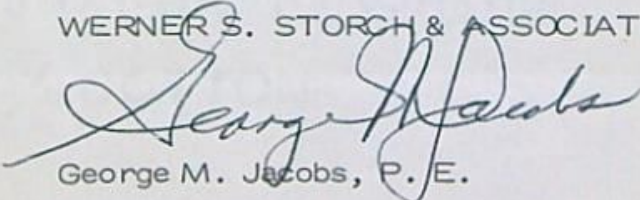
Dear Mr. Petska:

Mr. Weber has forwarded me a copy of your letter of March 8 regarding the chute section of the spillway. I believe that, with this letter, I can save you some work. What apparently is happening is that the water backed up by the bridge constriction is recirculating back into the upper end of the stilling basin. The action is similar to that of an aspirator. In this case, the lower depth of super-critical flow entering the stilling basin provides an opportunity for the higher level of the downstream flow to recirculate back along the road and, by gravity, re-enter the stilling basin. (See the accompanying sketch) In the process, some of the loose road embankment material has been eroded and washed into the spillway.

A simple solution to this washing would be to lay a concrete pavement section on this slope similar to the one upstream at the spillway entrance. Raising of the wall does not appear to be necessary.

Very truly yours,

WERNER S. STORCH & ASSOCIATES, INC.


George M. Jacobs, P. E.

GMJ:jc

Encl.

cc: Fred Weber

March 8, 1972

R-46372
46373
Dam File
M-53

Terra Corporation
8 N. State Street
Lake Oswego, OR 97034

Attention Fred Webber

Dear Sir:

This is to confirm our telephone conversation of Wednesday, March 8, regarding your Mompano Reservoir, in particular, the current problems with the chute section of the spillway. As I indicated, the backwater conditions in the bridge area are causing a hydraulic jump to move up into the concrete chute which is overtopping the road and will need to be corrected. To determine the exact location of this jump and the height to which the concrete wall on the left side of the spillway chute will need to be constructed, it is necessary to run cross-sections and water surface profiles through the bridge and downstream for a rather significant distance. This cannot be done at present due to the depth of the water downstream of the bridge, and as I indicated, when the flows recede, we will take these cross-sections and profiles and computations, compute the necessary height of the wall and will advise.

When we have completed this work, we will contact you and meet with you and your engineer at the site sometime early this spring in order that you might complete this construction during the coming summer.

Very truly yours,

A. M. PETSKA
Engineer

AMP:cd

cc. Clayton Gardner,
Watermaster

**STATE
ENGINEER**

WATER RESOURCES DEPARTMENT

1178 CHEMEKETA STREET N.E. • SALEM, OREGON • 97310 • Phone 378-3739

Terra Corp.
8 N. State St.
Lake Oswego, OR 97034

October 21, 1971

R-46372
46373

Gentlemen:

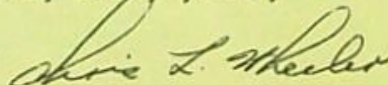
This will acknowledge receipt of your notice to the effect that complete application of water has been made under permit No. R-5444 and 34210.

Pursuant to your report and in line with the general practice of this office, a survey will be made at a later date.

After this survey, proof may be made and certificate issued covering the actual use of water as found by the engineer. In case of irrigation, any lands described in the permit that have not been irrigated will be automatically eliminated from the water right.

In the meantime, the permit which you hold will be valid evidence of the water right in question so long as you continue to use the water.

Very truly yours,



CHRIS L. WHEELER
State Engineer

Form 128c
reo

July 14, 1971

R-46372
46373

Terra Corporation
31 S. State Street
Lake Oswego, Oregon 97034

Gentlemen:

My last inspection of your Manpano Reservoir, I noted the rip-rap had not been placed in the spillway exit channel in accordance with the approved plans and specifications. I presume this work will be accomplished this year, prior to the winter rain. Would you please advise when you expect to initiate placing of this rip-rap.

Very truly yours,

A.M. PETSKA
Engineer

AMP:cd

cc Clayton Gardner, Watermaster

STATE OF OREGON

INTEROFFICE MEMO

TO: Files R-46372 and 46373 and
Dam File M-53

DATE: October 1, 1970

FROM: A. M. Petaka, Engineer

SUBJECT: Construction Inspection Report

On Wednesday, September 30, 1970, I performed a construction inspection of the Beaver Lake Project and found the fill had been completed, slopes dressed, however, the riprap had not been placed. The concrete contractor was busy cutting to grade the lower portion of the concrete spillway chute and placing steel. Mr. Linn, the contractor, estimated the lower block would be poured on the afternoon of October 1, 1970. My observation of the steel placement and concrete work and grade lines appeared that Mr. Linn was a competent concrete man and was doing an excellent job.

AMP:mfb

October 1, 1970

R-46372
46373
Dam File
M-53

Werner S. Storch and Associates, Inc.
Consulting Engineers
Suite 810
509 SW Oak Street
Portland, Oregon 97204

ATTENTION George M. Jacobs

Gentlemen:

In response to your letter of September 24 and September 25, 1970, the proposed change in the control works on the stainless-steel-oil filled pipe operating stem to a 1½ inch diameter coldrolled steel shaft and stem supports at 12 foot 6 inch spacing is hereby approved. You stipulate the gate to be an Armco Heavy Duty unit and the gate lift pedestal is the Armco CPE-2, I presume that the Armco Heavy Duty unit is the same as stipulated in the approved plans and specifications.

Recently some questions arose regarding the riprap on the upstream face of the dam and I was under the impression that you proposed to eliminate a significant amount of the riprap bedding material, however, the riprap would still be placed as specified, would you please confirm.

Very truly yours,

A. M. PETSKA
Engineer

AMP:mfb

cc Fred E. Weber, President
Terra Corporation

September 23, 1970

R-46372
46373
M-53

Fred E. Weber, President
Terra Corporation
31 State Street
Lake Oswego, Oregon 97034

Dear Mr. Weber:

Thank you for your letter of September 17, 1970 advising that Werner Storch & Associates, Inc. are the engineers in charge of your project and have been so engaged since the fall of 1969. We will look to Mr. George Jacobs to answer any questions we may have regarding the engineering and construction of the project.

Very truly yours,

A. M. Petska
Engineer

AMP:lsj

cc: Mr. George Jacobs
Werner Storch & Associates, Inc.

September 4, 1970

R-46372
46373
M-53

Werner S. Storch & Associates, Inc.
Consulting Engineers
Suite 810
509 S.W. Oak Street
Portland, Oregon 97204

Attention: George M. Jacobs, Engineer

Dear Mr. Jacobs:

This is in response to your letter of August 13, 1970 in which you request approval for a change in the construction of the upstream slope Beaver Lake Dam. The proposed construction, a one-foot layer of six-inch minus pit-run rock on the upstream slope will not be as maintenance free as that originally proposed. However, this is a small item.

This proposed construction will be approved, and so indicate this change or deviation from the approved plans on the as-built drawings.

Very truly yours,

A. M. Petska
Engineer

AMP:lsj

cc: Terra Corporation

R-46372
46373
M-53

June 22, 1970

Robert A. Martin
4621 S.W. Kelly
Portland, Oregon 97201

Dear Mr. Martin:

This is to advise you that the modified spillway for the Beaver Lake Dam as prepared by Werner S. Storch and Associates has been approved by the State Engineer, and a print of these approved drawings has been sent to the applicant, Terra Corporation. Mr. Jacobs of Storch and Associates has advised that his organization was to prepare the plans and specifications and that you as the construction engineer will supervise the construction. Please confirm this assumption and advise this office when construction on this phase is initiated. Mr. Jacobs stipulated that the specifications pertaining to concrete originally approved for this project are applicable for this spillway, and any exceptions or deviations to these specifications appear as notes on the plans.

I would like to call your attention to Sheet 1 of 6, particularly the notes calling for the placement of rock riprap in the area around the existing bridge. When this spillway operates at its design capacity, considerable displacement of this rock riprap can be expected. Unanticipated currents and turbulence will exist, and I strongly recommend stockpiling a supply of riprap to be placed to protect the existing bridge and its abutments.

Sheet 6 of 6 shows the underdrain system for the spillway. Considerable care could be exercised in the placement and the blinding of this drain line to insure minor uplift pressures.

Please advise when construction on this and any phase of this project is initiated in order that engineers from this office may schedule inspections while construction is in progress. As we have indicated before,

Robert A. Martin

-2-

June 22, 1970

we will expect a completion report citing a summation of all engineering tests performed on the materials to insure their meeting specifications.

Very truly yours,

A. M. Petska
Engineer

AMP:lisa

cc: Terra Corporation
31 South State Street
Lake Oswego, Oregon 97034

Werner S. Storch & Associates
Suite 810
509 S.W. Oak Street
Portland, Oregon 97204

CERTIFIED - Return Receipt Requested

INSTRUCTIONS TO DELIVERING EMPLOYEE	
<input type="checkbox"/> Show to whom, date, and address where delivered	<input type="checkbox"/> Deliver ONLY to addressee
<i>(Additional charges required for these services)</i>	
RECEIPT	
Received the numbered article described below.	
REGISTERED NO.	SIGNATURE OR NAME OF ADDRESSEE (Must always be filled in)
CERTIFIED NO. 53771	<i>Robert A. Martin</i>
INSURED NO.	SIGNATURE OF ADDRESSEE'S AGENT, IF ANY
DATE DELIVERED 6-23-70	SHOW WHERE DELIVERED (only if requested)
AMP-lisa R-46372+3 655-16-71648-10 GPO	

Robert A. Martin

-2-

June 22, 1970

we will expect a completion report citing a summation of all engineering tests performed on the materials to insure their meeting specifications.

Very truly yours,

A. M. Petska
Engineer

AMP:lisa

cc: Terra Corporation
31 South State Street
Lake Oswego, Oregon 97034

Werner S. Storch & Associates
Suite 810
509 S.W. Oak Street
Portland, Oregon 97204

CERTIFIED - Return Receipt Requested

U.S. DEPARTMENT OF POSTS AND TELECOMMUNICATIONS
BUSINESS REPLY PERMIT NO. 1000 PORTLAND, OREGON

POSTAGE WILL BE PAID BY ADDRESSEE

ALWAYS USE ZIP CODE

TO RETURN TO

INSTRUCTIONS: Show name and address below and
numbered ends, attach and hold firmly to back
of envelope. Print on front of article RETURN
REQUESTED.

SENDER

CHRIS L. WHEELER
STATE ENGINEER
SALEM, OREGON

NO. OR P.O. BOX

STATE, AND ZIP CODE

JUN 23 1970
PM
PORTLAND, OREGON

04670
ZIP CODE

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

June 19, 1970

R-46372
46373

Werner S. Storch & Associates, Inc.
Consulting Engineers
Suite 810
509 S. W. Oak Street
Portland, Oregon 97204

Attention: George M. Jacobs

Gentlemen:

This is to confirm our telephone conversation of Wednesday, June 17, 1970 regarding the proposed spillway for the Beaver Lake Dam. As I indicated, my computations utilizing the method outlined in Chow's chapter on spatially varied flow essentially agree with those you submitted on June 10, 1970. Selection of the control point as outlined by Mr. Chow is based on work performed by Mr. Hines who has defined the location of the control point being that point where the channel slope becomes tangent to and exceeds the slope of the line of critical depths. I find in my computations and in plotting your computations that the channel slope in the area of station 115 and station 110 are only infinitesimally steeper than the slope of critical depths. This would indicate that flow downstream of this control point would be at critical depth, providing the channel section maintained a constant width. In this particular instance, the channel is converging and the flow is further impaired by the baffels and the abrupt channel bend. Therefore, to insure that critical, or super critical flow will occur in this area, I have recommended a 3 foot drop in grade from station 108 to station 155. This would be accomplished by lowering the grade at the entrance to the chute to elevation 171. Mr. Jacobs disagreed that this was necessary. However, he indicated that this change would be made.

In reviewing the structural components and grades as shown in the spillway plans, I advised Mr. Jacobs that when the spillway is operating at its design capacity, the back wall of the spillway would be overtopped at cross section B24, cross section C24 and cross section D24. Mr. Jacobs advised that this was a function of his design, that

June 19, 1970

this area would be sodded, that no damage would occur. Furthermore, the wing walls provided at approximately the center line of the dam would convey this overtopping flow into the spillway channel.

Upon your resubmission of a set of reproducible drawings together with one print reflecting the aforementioned changes, I will recommend the State Engineer approve these plans, and a copy will be returned to the applicant and this deviation from the approved plans and specifications will be approved. This change may then be initiated.

Very truly yours,

A. M. Petska
Engineer

AMP:lsc

May 21, 1970

R-46372
46373

~~W-5~~

Werner S. Storch & Associates, Inc.
Consulting Engineers
Suite 810
509 S.W. Oak Street
Portland, Oregon 97204

Attention: George M. Jacobs

Gentlemen:

This is to confirm our telephone conversation of Tuesday, May 19, 1970 regarding the proposed spillway for Beaver Lake Dam. As I indicated, my computations indicate this spillway will not pass the required 1,400 cubic feet per second expected flow while maintaining 2 feet of freeboard on the dam.

The computations of this spillway, particularly the angle point with baffles and the throat section is rather questionable and the literature indicates that these computations are more of an approximation and are not very precise. For the purposes of my computations, I selected the change in grade at the head of the spillway chute as the control point and computed the critical depth at that point. Backwater profiles were run downstream and upstream and the downstream section presented no problems. However, proceeding upstream, the flow of water through these baffles and the angle point is rather difficult to predict, and a search of the literature indicated that the method prescribed by Yarnell, which resulted from an extensive study of related literature and tests conducted on different kinds of piers, would be most applicable to this project. This method is outlined in the literature and I refer you to Mr. Chow's publication, "Open Channel Hydraulics" Article 17-10, and to Calvin Davis' second edition of the Handbook of Applied Hydraulics for a more complete dissertation on this subject. My computations indicated that there is approximately 3 feet of head lost in this area and that the flow immediately upstream of the baffles is sub-critical at a depth of 8.3 feet with a velocity of 9.3 feet per second. Carrying these computations upstream at the spillway throat, I arrive with the energy grade at elevation 184.

May 21, 1970

I suggest that perhaps some realignment of the spillway channel and entrance section could be made by moving the entrance section further into the left abutment and moving the alignment of the spillway chute further toward the end of the dam, and at this resulting angle point the approach channel could be raised to assure that critical depth occurs at this point.

As I indicated, computations of backwater profile through the angle point baffle area are subject to some disagreement and perhaps you disagree with the assumptions I have made. I suggest before completely discarding this design that copies of your computations be submitted for our review.

Very truly yours,

A. M. Petska
Engineer

AMP:lsc

Applications R46372-3

December 8, 1969

Chris Wheeler

Mr. Jim Brennen telephoned this date and complained about the reservoir constructed under permit R-5444; that it has destroyed the stream; devalued all property on the creek and he and his neighbors object. He states that he will sue. (Mr. Posey has an attorney.) I advised Mr. Brennen of his right if he wishes to do so, but that action is in accord with the statutes and I didn't know of any grounds he has for success. I further advised him that the Corporation would have to pass the natural flow through, when required for prior rights, and it was probable that this would provide a better stream than nature as well as some minor flood benefits. He further stated that mud during construction killed all fishlife, including crawdads, and that even today there is not a single fish or crawdad in the stream as a result. This I question?

R-46372
46373

October 14, 1969

Terra Corporation
31 South State Street
Lake Oswego, Oregon 97034

Gentlemen:

and 34210.

R-46372, 46373, permit Nos. R-5444,

R-46372
46373

October 14, 1969

Terra Corporation
31 South State Street
Lake Oswego, Oregon 97034

Attention: Mr. Fred Weber, President

Gentlemen:

The plans and specifications for the Momjano Dam which were approved by the State Engineer are in effect together with the revised State Engineer permit for construction.

As stated previously, it is necessary that construction of this dam be done under the direct supervision of a registered professional engineer; and he must insure that construction is in strict accordance with the approved plans and specifications. If conditions are encountered which require modifications to these plans and specifications, the prior written approval must be obtained from the State Engineer.

During my last telephone conversation with Mr. Weber, revision of the spillway facility was discussed. If it is desired to modify the spillway and its location, a complete revision of the original plans will need to be submitted to the State Engineer for his tentative approval before initiation of the change.

Engineers from this office will be available to assist and advise in these changes.

Very truly yours,

Gary A. Gasaway
Engineer

GAG:lss

September 17, 1969

Martin Engineering Company
4621 S. W. Kelly Street
Portland, Oregon 97201

Dear Mr. Martin:

This letter will confirm our telephone conversation of this date concerning construction of the Mompano Dam by Terra Corporation. The moisture density tests performed on samples of the compacted fill material by Pittsburg Laboratory, taken September 16 and earlier, indicate that there is considerable material which has been placed in the fill that does not meet the minimum criteria of the approved specifications and generally falls within the range of 90 to 95% optimum density as determined by the standard Proctor test developed by Pittsburg Laboratory. This office must therefore conclude that this material as compacted is unsuitable for the storage of water and for the support of the spillway structure on the crest of the dam.

It is the logical decision, as you have pointed out, that all material which does not meet the criteria of the approved specifications should be removed to the extent that the remaining compacted fill does satisfy the specifications. The adequacy of the remaining fill will need to be supported by engineering tests. As we have discussed, that material in the vicinity of the spillway should be compacted to a density of 100% of optimum by the standard Proctor tests. The remaining fill will be adequate at 95% of optimum density.

It is our recommendation, that you, as the supervising engineer of this project, formally outline your plan to the owner for removal of the unsuitable fill material and its recompaction in the embankment, including placement of the remaining fill so as to obtain results which satisfy the many engineering tests of the soil and the presence of you or your qualified representative on the site at all times directing the placement of fill and supervising testing schedules and locations. It has become obvious that very close control in the placement of this soil will be necessary in order to obtain the density as specified.

Martin Engineering Company

September 17, 1969

If you have any questions, comments, or recommendations regarding this matter, please feel free to contact the State Engineer for assistance. Please keep this office informed of further developments and plans concerning construction of this dam.

Very truly yours,

Gary A. Gasaway
Engineer

GAG:lsa

cc: Fred Weber, President
Terra Corporation

RE: R-46372
46373

September 4, 1969

Terra Corporation
31 South State Street
Lake Oswego, Oregon 97630

Gentlemen:

This will acknowledge receipt of your application for a permit to construct a reservoir and store 780 acre feet of water therein from Abernethy Creek for recreation and fish culture uses and the fee of \$26.80 for which our receipt No. 16126 is enclosed. This application has been filed and numbered R-46372.

Also acknowledged is receipt of your application for a permit to appropriate 2.0 cubic feet of water per second from Abernethy Creek and Mompano Reservoir for recreation and fish culture and the fee of \$27.00 for which our receipt No. 16127 is enclosed. This application has been filed and numbered 46373.

Your applications No. R-46372 and 46373 are in satisfactory form for approval by issuance of permits.

Very truly yours,

Larry W. Jebousek
Assistant

LWJ:cdc
Enclosures

RE: R-46372
46373

September 10, 1969

Terra Corporation
31 South State Street
Lake Oswego, Oregon 97034

Gentlemen:

This is to advise you that your applications numbered R-46372 and 46373 have been approved by issuance of permits authorizing the construction of a reservoir and the storage of 780.0 acre feet of water from Abernethy Creek and the appropriation of 2.0 cubic feet of water per second from the reservoir and Abernethy Creek for recreation and fish culture.

You may use this letter as your authority to start construction of the project authorized by the permits pending your receipt of the permits. The permits will be mailed to you as soon as the necessary entries have been completed in the records of this office. However, this may take sometime due to a shortage of secretarial help.

Very truly yours,

Larry W. Jebousek
Assistant

LWJ:cdc

DAM NAME: Montano Dam
 APPL. NO.: R-45746 R-4110372
 DAM FILE: _____
 MAP FILE: _____

CHECKED BY: 6AG
 DATE: 4-22-69
 REVIEWED: _____

CONCURRENCE OF APPLICATION AND PLANS

ITEM	APPLICATION	PLANS	CORRECTIONS MADE		REMARKS
			APPL.	PLANS	
Location	NW NE	NW SW, S. 13 35, 2E			OK
Max Dam Height	33'	scale 35'			OK
Top Length	820	⁸¹⁸⁴ 0194 / 795			}
Bottom Length	—	—			
Crest Width	10'	10'			
Front and Rear Slopes	3:1 / 2 1/2:1	3:1 / 2 1/2:1			
Height of Dam above W. S. when full	4'	4'			
Wasteway	b = 102'	b = 103', z = 2 d = 4 chute 5/10			
Surface Area	56	56			
Capacity	780	780			
Conduit	48" CM10 w 24" gate	48" w 24" gate			
Max Depth	30'	¹⁸⁰ 150 / 22'			
Mean Depth	14'	14			

REMARKS

Info: Woman who lives @ Dam
She said no one allowed to
use lake. She also said Fish
Commission use lake for steelhead
& trout 24N 10-8-74

Terra Corp
Lake Plaza bld
8 N. State St.
Lake Oswego

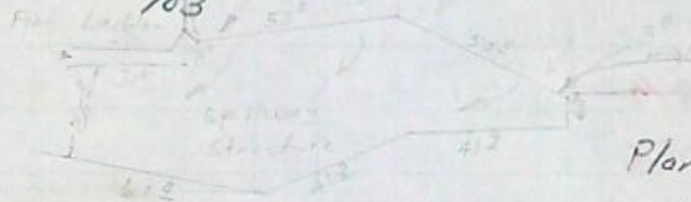
Info: Mr. Webber

Source: Abernethy Cr. (trib Willamette) & ~~two~~ ^{three} intermittent streams

Dam: Dirt Dam, 48" CMP, ~~no visible control~~, in conc. control house, no apparent erosion

PWL - $\frac{100^{\pm}}{0'}$; Top - $\frac{103^{\pm}}{13'}$; Front - $\frac{103^{\pm}}{24'}$; Break - $\frac{87^{\pm}}{70'}$

Toe - $\frac{78^{\pm}}{84}$; Cr. - $\frac{75^{\pm}}{103'}$



Plan - Spillway structure
NTS

Use: Recreation, about 50 people, sailing & swimming
Fish Culture, used by Wild Life Comm. as Salmon
rearing pond.

Tie: PTS-1974-5, tied to DFK-344-167

Depth: Corp employee said averages
about 30' deep.

10-11-74

Larry P. Quinn
Field Engineer