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DISTRICT COURT-SRBA
TWIN FALLS CO., IDAHO
FILED

REPORT REGARDING CLAIM TO WATER RIGHT NO. 36-00085A

In Re SRBA

Twin Falls County Civil Case No. 39576

Sub-Case No. 36-00085A

Report to the SRBA District Court

Prepared by the Idaho Department of Water Resources

Karl J. Dreher, Director

David B. Shaw, Adjudication Bureau Chief

David R. Tuthill Jr., Acting Adjudication Bureau Chief

July 1, 1996

COPY

REPORT REGARDING CLAIM TO WATER RIGHT NO. 36-00085A

The Director of the Idaho Department of Water Resources (IDWR) submits this report regarding claim to water right no. 36-00085A in response to the request of Special Master Haemmerle, pursuant to Idaho Code §42-1412(4) and the court's Order Re: Contested Claims for Amounts Claimed in Excess of .02 CFS. This report was prepared under the supervision of Karl J. Dreher, Director, David B. Shaw, Adjudication Bureau Chief, and David R. Tuthill Jr., Acting Adjudication Bureau Chief for IDWR. The following persons assisted in the preparation of the following portions of this report:

David B. Shaw, Adjudication Bureau Chief, reviewed and verified this Report Regarding Claim to Water Right No. 36-00085A. The Affidavit of David B. Shaw describes Mr. Shaw's education and work experience, and is incorporated by reference herein. Mr. Shaw also reviewed IDWR's Report Regarding Evaluation of Irrigation Diversion Rates, described below.

Jeff Peppersack, Adjudication Engineer, prepared and verified IDWR's Report Regarding Evaluation of Irrigation Diversion Rates, which is incorporated by reference herein. The Affidavit of Jeff Peppersack describes Mr. Peppersack's education and work experience, and is incorporated by reference herein. Mr. Peppersack also reviewed IDWR's Report Regarding Consumptive Use for Irrigation in the Hagerman Area, described below.

David R. Tuthill Jr., Acting Adjudication Bureau Chief, prepared IDWR's Report Regarding Consumptive Use for Irrigation in the Hagerman Area, which is incorporated by reference herein. Mr. Tuthill also reviewed this Report Regarding Claim To Water Right No. 36-00085A. The Affidavit of David R. Tuthill Jr. describes Mr. Tuthill's education and work experience, and is incorporated by reference herein.

Marci S. Sterling, Adjudication Engineer, prepared and verified Appendix B, which describes the application of IDWR's methodology for evaluation of irrigation diversion rates to claim no. 36-00085A. Appendix B is incorporated by reference herein. The Affidavit of Marci S. Sterling describes Ms. Sterling's education and work experience, and is incorporated by reference herein.

Steven C. Clelland, Senior Water Resource Agent, investigated and prepared the preliminary recommendation for claim no. 36-00085A, and prepared Appendix C. The Affidavit of Steven C. Clelland describes Mr. Clelland's education and work experience, and is incorporated by reference herein. The affidavit also includes a general description of his investigation of claims in the Hagerman area.

I. INVESTIGATION AND RECOMMENDATION OF CLAIMS GENERALLY

IDWR's general methodology for the investigation and recommendation of claims is described in Appendix A, which is incorporated herein by reference.

II. WATER RIGHT NO. 36-00085A

A. Basis of Claim

Claim no. 36-00085A was filed with IDWR by Marilyn J. (Waite) Miller on August 29, 1988.¹ The claim is to a portion of a right decreed to Florence Parrott in the *New International Mortgage* decree, entered in 1932.² The water right decreed to Mrs. Parrott is numbered in IDWR's files as water right no. 36-00085. This right, along with numerous others in the decree, was decreed for "irrigation, domestic, power and other purposes thereon." Portions of right no. 36-00085 were claimed by and recommended to various claimants and are further described below.

B. Name and Address of Claimant

The name and address of the claimant set forth in the claimant's motion for summary judgment is the same as recommended in the director's report.

C. Source of Water

The source of water set forth in the claimant's motion for summary judgment is Billingsley Creek. The source of water is described in the director's report as Billingsley Creek tributary to Snake River.

The director's report includes the body of water to which the source of the right is tributary for each water right in the director's report, except for rights to ground water. IDWR adopted this standard for the description of the source of water

¹ The original notice of claim is currently located in the files of the SRBA District Court, attached to IDWR's response to the claimant's objection.

² *New International Mortgage Bank v. Idaho Power Co., et al.*, Equity No. 1602 (D.S.Id. 1932), at pp. 3-4.

rights because there are so many instances, sometimes in the same administrative basin, where different surface water sources bear the same name.³

D. Date of Priority

The priority date claimed in the notice of claim and recommended in the director's report is 09/20/1884. The claimant's objection does not contest the priority date. The priority date stated in the claimant's motion for summary judgment is 09/10/1884. The priority date decreed in the *New International Mortgage* decree is 09/10/1884.

E. Point of Diversion

The point of diversion set forth in the claimant's motion for summary judgment is the same as recommended in the director's report.

F. Purpose of Use

The purposes of use stated on the notice of claim and recommended in the director's report is irrigation. The objection does not contest the purpose of use. The claimant's motion for summary judgment now seeks to add wildlife, recreation, aesthetics, and "diversion system maintenance."⁴

The description of the purposes of use of this right in the decree is ambiguous in that it describes the purposes of use for this right and others in the same list collectively as "irrigation, domestic, power and other purposes," rather than specifically identifying each purpose of use for each right.⁵ IDWR's investigation confirmed the use of water for irrigation purposes, as further described below in the section addressing quantity. Neither the claimant nor IDWR's investigation has

³ IDWR relied upon the following in reaching its conclusion: Idaho Code §42-1411(2) (which provides that the director shall determine the source of the right to the extent the director deems appropriate and proper to define and administer water rights acquired under state law).

⁴ The filing fee for claims other than small domestic and stockwater claims consists of a \$50.00 flat fee, plus a variable fee of \$1.00 per acre for any claimed irrigation use, plus a per cfs variable fee for other claimed purposes of use. The filing fee paid for this claim was limited to the purposes of use claimed in the notice of claim. Filing fees are set forth in Idaho Code §42-1414 and IDWR's Adjudication Rules, IDAPA 37.03.01 *et seq.*

⁵ IDWR relied upon the following in reaching its conclusion: *Morgan v. Udy*, 58 Idaho 670, 79 P.2d 295 (1938) (a water right decree that omitted the description of the point of diversion necessarily determined the point of diversion but was ambiguous as to its location).

yielded information that would confirm the beneficial use of water for the other purposes listed in the motion, either pursuant to the right as originally appropriated or as currently used.⁶ Such information is necessary not only to confirm the use but to quantify the amount of water beneficially used for that purpose.

G. Quantity of Water Used

The notice of claim states a quantity of 0.20 cfs for irrigation. The quantity recommended in the director's report is 0.15 cfs for irrigation. The objection does not state the quantity claimed. The claimant's motion for summary judgment states a quantity of 0.20 cfs.

1. Splits of Water Right No. 36-00085

As noted above, various portions of right no. 36-00085 were claimed by and recommended to various claimants. The splits are listed below. The first column shows the quantity claimed; the second column shows the quantity recommended in the director's report. Water rights listed with an asterisk are contested.

<u>Right no.</u>	<u>Claim</u>	<u>Report</u>	
36-00085A*	0.20	0.15	
36-00085B*	0.04	0.04	This right is part of the group for which 706 reports are due 09/01/1996.
36-00085C	0.40	0.34	
Total	0.64	0.53	

The quantity decreed for right no. 36-00085 in the *New International Mortgage* decree is 1.2 cfs. The total quantity of water claimed in all claims based on the decree is 0.64 cfs, which does not exceed the decreed amount. IDWR recommended a total of 0.53 cfs pursuant to the various claims to portions of right no. 36-00085; this amount has not changed as a result of further proceedings in the subcases.

⁶ IDWR relies upon the following in reaching this conclusion: Idaho Code §42-1427 (which allows an ambiguity in a prior decree or license to be resolved based on current beneficial use); the statement of the Presiding Judge that this section "cannot change or exceed the previously decreed or recorded element of the decreed or licensed right" nor "be used to claim an expansion of use beyond the beneficial use existing at the time the right was originally memorialized in a decree or license," Revised Memorandum Decision and Order on Basin-Wide Issue 4, dated May 17, 1995, at page 9; and the statement of the Presiding Judge that, "the purpose of use is defined by the intentional application of water to an intended beneficial use of water," Memorandum Decision and Order Re: Basin-Wide Issue 5, dated April 26, 1996, at page 8.

The deed attached to the claimant's motion for summary judgment purports to convey "10 shares of stock of Buckeye Water." IDWR does not have information indicating to what this language refers. In addition, the lands described in the deed are not within the place of use described in the decree. IDWR does not have information indicating whether or how any portion of right no. 36-00085 came to be appurtenant to the claimant's lands. IDWR did not previously request this information from the claimants of the portions of right no. 36-00085 because the total amount IDWR found to be beneficially used under all the claimed portions of right no. 36-00085 did not exceed the decreed 1.2 cfs.⁷

2. Quantity for irrigation

As noted above, the director's report recommended a quantity of 0.15 cfs for irrigation. This includes 0.14 cfs (about 0.033 cfs per acre) for the on-farm diversion requirement (the amount of water needed at the place of use), and 0.01 cfs for conveyance losses (an additional amount of water needed at the point of diversion to deliver the amount needed at the place of use). IDWR has conducted further analysis of the quantity for irrigation due to further information IDWR received subsequent to its original analysis. IDWR's recommendation as to the quantity for irrigation has not changed as a result of this analysis.

IDWR's methodology for investigating and recommending claims to water for irrigation in excess of 0.02 cfs per acre is described in IDWR's Report Regarding Evaluation of Irrigation Diversion Rates.⁸ The application of that methodology to this claim is described in Appendix B.

As described in Appendix B, IDWR's analysis shows that the amount of water reasonably required at the place of use (the on-farm requirement) is 0.019 cfs per acre, and recommendation of an additional 0.01 cfs is warranted due to conveyance losses. Thus, neither the claimant nor IDWR's investigation has yielded information which would confirm the beneficial use of a quantity for irrigation greater than IDWR's standard of 0.03 cfs for irrigation systems up to 5 acres.

⁷ IDWR does not require all claimants to submit information showing a "chain of title" demonstrating ownership of all or part of a previously decreed or licensed right in its investigation of the claims. Generally, IDWR requires information as to ownership as part of the investigation of claims only where there are competing claims to the same water right.

⁸ IDWR relied upon the following in reaching its conclusions: Idaho Code §42-220 (which provides that no license or decree will be issued confirming a right to more than 0.02 cfs per acre for irrigation unless it can be shown that a greater amount is necessary) and Idaho Code §42-1402 (which limits the amount of water allotted by a decree to the amount of water beneficially used).

As noted in Appendix B, the application of IDWR's methodology for evaluation of irrigation diversion rates resulted in the recommendation of an additional 0.01 cfs for conveyance losses. IDWR determined the total conveyance losses for the ditch through which this water right is delivered, and allocated that total among the various rights to water delivered through the same ditch. Further information as to the other rights delivered through the same ditch is described in subsection 4 below.

3. Quantity for other purposes

As to the quantity for other purposes of use stated in the claimant's motion for summary judgment, neither the claimant nor IDWR's investigation has yielded information that would confirm the beneficial use of water for other purposes, as noted in section F above. Therefore, IDWR does not have information that would confirm the quantity used for the other purposes.

4. Other rights delivered through same ditch

As noted in Appendix B, IDWR determined the total conveyance losses for the ditch through which this right is delivered, and allocated that total among the various rights to water delivered through the same ditch. For this reason, IDWR previously proposed that contested water rights in the Hagerman area be grouped by ditch for scheduling purposes to facilitate resolution of quantity issues for those rights. Water right 36-00085A is delivered through the Buckeye ditch. Appendix C is a schematic which shows the water rights delivered through the Buckeye ditch, and which includes a variety of information as to the water rights listed.

H. Period of Year Water is Used for Each Purpose of Use

Both the notice of claim and director's report state a period of use of 3/15 to 11/15 for irrigation. The claimant's objection states a period of use of 1/1 to 12/31. The claimant's motion for summary judgment states the period of use as "the irrigation season." The *New International Mortgage* decree does not state a period of use for irrigation.

The recommended season of use is consistent with season of use standards for irrigation developed by IDWR for various climatic regions throughout the state, which are based on a 75% chance of a 24 degree Fahrenheit frost. In addition, the director's report included general provision 12b, which allowed use of water for irrigation outside the season of use stated in the description of the individual right subject to certain conditions. In the Memorandum Decision and Order Re: Basin-Wide

Issue 5, the Presiding Judge concluded that general provision 12 is not necessary and would not be decreed. This decision further provided that "all decrees for irrigation in the SRBA shall set the period of use as the "irrigation season." Order, pp. 15-16. The district court denied a subsequent motion for permission to appeal the decision. Pending any further proceedings on the decision, any further statement of the basis for IDWR's recommendation as to the season of use for irrigation appears to be unnecessary.

As to the season of use for other purposes of use stated in the claimant's motion for summary judgment, neither the claimant nor IDWR's investigation has yielded information that would confirm the beneficial use of water for other purposes, as noted in section F above. Therefore, IDWR does not have information that would confirm the season of use for the other purposes.

I. Legal Description of the Place of Use

The legal description under item 8 in the claimant's motion for summary judgment is the same as the legal description of the place of use for irrigation recommended in the director's report. The number of acres following the legal description is the same as the number of irrigated acres per 40-acre subdivision recommended in the director's report; both list the number of irrigated acres as 4.3.

As to the legal description of the place of use for other purposes of use stated in the claimant's motion for summary judgment, neither the claimant nor IDWR's investigation has yielded information that would confirm the beneficial use of water for other purposes, as noted in section F above. Therefore, IDWR does not have information that would confirm the place of use for the other purposes.

J. Annual Volume of Consumptive Use

The notice of claim does not state an annual volume of consumptive use. The annual volume of consumptive use recommended in the director's report is 12.9 AFY, or 3.0 AFY per acre. The objection contests the recommended consumptive use, but does not state an amount. The claimant's motion for summary judgment states an amount of 19.35 AFY, or 4.5 AFY per acre. The Affidavit of Charles E. Brockway, submitted by the claimant in support of the motion for summary judgment, states "that 3.75 acre feet per acre per annum is the amount of consumptive use that is reasonable [in the Hagerman area] based upon a yield of ten tons [of alfalfa] per acre." Applying this standard, the total annual consumptive use volume would be 16.13 AFY.

IDWR developed standards for annual volume of consumptive use for the various climatic areas throughout the state. The standard for the area in which the claimant's place of use is located is 3.0 AFY. IDWR's recommendation is based on this standard. The development of IDWR's standards for annual volume of consumptive use is described in IDWR's Report Regarding Evaluation of Irrigation Diversion Rates. IDWR has conducted further analysis of the annual volume of consumptive use based on further information IDWR received subsequent to its original analysis. The further analysis is described in IDWR's Report Regarding Consumptive Use for Irrigation in the Hagerman Area. Based on this further analysis, IDWR recommends an annual volume of consumptive use of 3.5 AFY per acre, for a total of 15.05 AFY for this right (rounded up to 15.10).

K. Conditions on the Exercise of the Right and Other Necessary Matters

The recommendation of this right in the director's report includes the following remarks:

WATER IS DELIVERED THROUGH THE BUCKEYE DITCH.
A DIVERSION RATE OF 0.14 CFS AT THE FIELD HEADGATE IS
RECOMMENDED FOR THE PLACE OF USE DESCRIBED ABOVE.
0.01 CFS OF THIS RIGHT IS LIMITED TO USE FOR CONVEYANCE LOSSES IN
DELIVERY OF THIS RIGHT.
PROPERTY IS ALSO KNOWN AS A PORTION OF BLK A-82, A-83 AND A-84
OF THE HAGERMAN TOWNSITE.

The claimant's objection seeks deletion of the three remarks. The claimant's motion for summary judgment seeks deletion of all the remarks.

In response to the request of the Presiding Judge, the director filed an Amended Director's Report for Reporting Area 3 (Basin 36), which substantially reduced the number of general provisions in the director's report. Attachment 2 to the amended report explains the changes made to the general provisions, and further explains changes to the list of recommended rights necessitated by the changes to the general provisions. The amended report deleted General Provision 16, which set forth certain provisions as to conveyance losses. The conveyance loss remark in the description of the individual right was a corollary to the general provision. As a result, the remark in the description of this right as to conveyance losses is no longer necessary. (Deletion of the remark does not change IDWR's recommendation as to the quantity for this right.)

REPORT REGARDING CLAIM TO WATER RIGHT NO. 36-00085A

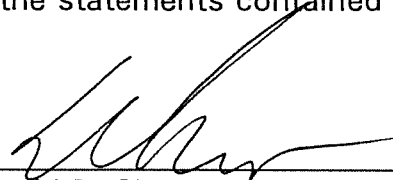
In response to the request of the Presiding Judge, IDWR submitted IDWR's Report for September 19, 1995 Status Conference. In this report, IDWR indicated that it had reviewed its use of remarks in the description of the individual water right, both to address concerns identified by the court, and to separate explanatory material from material the Director recommends be included in the decree of water rights pursuant to the 1994 amendments to the adjudication statute.⁹ The remaining three remarks are explanatory material.

⁹ See Idaho Code §42-1411 (which addresses the form and content of director's reports).

State of Idaho)
) ss.
County of Ada)

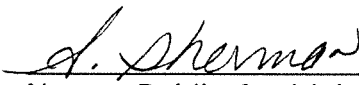
David B. Shaw, being first duly sworn, upon oath, deposes and says:

That I am the Adjudication Bureau Chief for IDWR, that I have read the foregoing report, know its contents, and that the statements contained therein are true to the best of my knowledge and belief.



David B. Shaw

Subscribed and sworn to before me this 15th day of July, 1996.

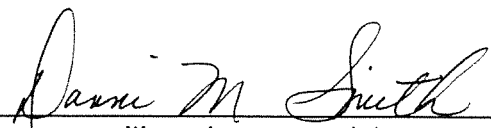


Notary Public for Idaho
Residing at: Boise ID
My commission expires: 11-14-1998

Certificate of Service

I certify that on the 15th day of July, 1996, I hand-delivered copies of the foregoing document, including all attachments, to the following:

Patrick D. Brown
133 Shoshone St North
Twin Falls, ID 83303



Person mailing document(s)

APPENDIX A

A. INVESTIGATION AND RECOMMENDATION OF CLAIMS GENERALLY

To promote the accuracy and consistency of water right decrees, and to minimize the burden on the court and the claimants in a water right adjudication, the state has made the specialized expertise of IDWR available through IDWR's investigation and reporting function.¹

The resources the state has made available for this function, however, are limited. IDWR has the duty to conduct a reasonable investigation within the spending authority granted by legislative appropriation. Those resources are not sufficient for IDWR to exhaustively investigate each and every potentially relevant fact regarding each and every claim and to make a conclusive determination of the water right. Rather, IDWR reviews the claim and the information already available to IDWR, and conducts such further investigation as is reasonable to determine whether there is sufficient information to support recommendation of the water right to be decreed.

To make the most efficient use of the available resources, IDWR must make determinations as to what is a reasonable level of investigation for various classes of claims prior to making a recommendation to the court regarding any particular claim. IDWR has employed two primary mechanisms to identify a reasonable level of investigation. First, the statutes set criteria and IDWR has developed standards for various types of uses, requiring less information to support a claim to water within those standards and more information to support a claim outside those standards. Second, IDWR has adopted a "tier" approach, identifying classes of claims which for various reasons merit further investigation.

Generally, with claims based on beneficial use², IDWR conducts a "licensing type" field exam, which includes confirmation of the source, point(s) of diversion, purpose(s) of use, place(s) of use, and an examination of the water delivery system and the quantity of water beneficially used. IDWR also contacts the claimant to obtain information supporting the priority date claimed. This level of examination is conducted because there has been no prior administrative or judicial

¹ Idaho Code §§ 42-1410 and 42-1411.

² Water rights based on beneficial use are sometimes referred to as constitutional rights or grandfather rights.

confirmation of the existence and extent of a water right based on beneficial use.³

Generally, for water rights that have been previously confirmed by license or decree, IDWR begins its examination by comparing the claim to information already available to IDWR. Other information includes, for example, IDWR's decree files; license, permit and transfer files; remotely sensed data, including Landsat imagery of irrigated acres and aerial photography; watermaster reports; applicable laws and IDWR's interpretation of those laws in light of the water resource policies of the state; etc. If there are discrepancies between the claim and information already available to IDWR, IDWR conducts further investigation to resolve the discrepancy, which generally includes a field exam and/or contacting the claimant for further information. Thus, where there has been a prior judicial or administrative confirmation of the existence and extent of a water right, IDWR uses information already available to IDWR to limit its review to issues identified by its discrepancy analysis.

Finally, IDWR uses both the court-ordered notice of error process⁴ and the statutory objection process to identify claims which merit further review. If this further review yields new information that supports a different description of the water right, then IDWR will revise its recommendation (in the case of a notice of error) or submit a supplemental director's report or offer a standard form 5 (in the case of an objection), consistent with the new information.⁵

Further information as to IDWR's standards and procedures for the investigation and recommendation is set forth in IDWR's Claim Investigation Manual, Field Examiner's Handbook, Administrative Memorandums, and

³ IDWR conducts a more summary investigation of beneficial use claims limited to domestic and/or stockwater use up to 0.24 cfs.

⁴ The notice of error process, as originally conceived and implemented, was limited to disagreements between the claimant and IDWR as to fairly straight-forward "errors", such as clerical errors or other readily verifiable matters. Based on its experience in the test basins, IDWR has subsequently recommended that the notice of error process be expanded to address any type of perceived error, as well as to address disagreements between claimants.

⁵ This "tiered" approach to determining a reasonable level of investigation is embodied in the statutory framework for water right adjudications. See §42-1410 (which provides for the discretion of the director in determining the level of IDWR's investigation, and allows but does not require the agency to conduct hearings), and §42-1412 (which authorizes IDWR to submit supplemental reports, and authorizes the court or the parties to request further investigation by IDWR in contested subcases). The tiered approach embodied in the statutory framework promotes efficiency and minimizes the burden on the court and the claimants by providing a report/objection process to identify disputed matters, and reserving the highest level of investigation for disputed matters.

B. METHODOLOGY TO DETERMINE IRRIGATED ACREAGE

The area of irrigated acreage can be determined by information obtained from scaled and non-scaled photographs of the place of use supplied by one of several U.S. government agencies. The use of aerial photography by the U.S. government dates back to 1937, when the U.S. Department of Agriculture, Agricultural Stabilization and Conservation Service (ASCS, now known as the Farm Service Agency, or FSA) began photographing selected counties of the United States on a repetitive basis. This coverage continues today and aerial photos are used by the ASCS (FSA) to figure acreage planted on farms for purposes of managing farm programs. Photos used by IDWR typically include: ASCS photos and 35 mm color slides⁷; NAPP photos⁸; ortho-photoquads⁹; and U2

⁶ These documents set forth general standards and procedures and do not address all possible exceptions to the general standards and procedures. In addition, as a result of its experience in the test basins, statutory changes, judicial decisions, etc., IDWR has identified refinements and revisions to its standards and procedures for the investigation and recommendation of claims that have not yet been included in these documents.

⁷ Both the photos and slides are high oblique and vertical aerial photography. The ASCS photos are scaled and have selected features, such as roads, section lines, ditches, and field acreage superimposed on them by the ASCS. The color slides are simply color slides frequently taken with hand-held 35mm equipment. IDWR staff typically obtain copies (which are not scaled) of maps for lands claimed as the place of use during the investigation of the claims, either from the claimant or from the local ASCS office. Color slides may also be checked-out from the local ASCS office as needed; IDWR sometimes obtains the color slides as they are discarded by the local ASCS office.

⁸ NAPP (National Aerial Photography Program) photos are all color-infrared aerial photography. IDWR obtained coverage for most of the Snake River Basin, including all of the test basins; the photos are primarily from flights during 1987 and 1988, though some are from 1986 or 1989. The date of the flight is shown on the photo. NAPP photography is available from the U.S. Geological Survey Earth Resources Observation Systems (EROS) data center in Sioux Falls, South Dakota.

⁹ The full name for an ortho-photoquad is "orthographic photograph quadrangle." These are black and white photoimages prepared from aerial photographs that have been rectified to eliminate image displacement due to terrain relief that cover a systematically subdivided area of latitude and longitude. IDWR obtained coverage for most of the Snake River Basin, including all the test basins; the photos are primarily from flights during the 1970's. The date of the flight is shown on the quad sheet. Most of the orthophotos were obtained from the U.S. Geological Survey National Cartographic Information Center (NCIC) in Menlo Park, California. In some areas, maps were not available from U.S.G.S. but were available from other agencies, such as the United States Department of Agriculture, Forest Service.

aerial photos¹⁰.

A photographic "scale," like a map scale, is an expression that states that one unit of distance on a photograph represents a specific number of units of actual ground distance.

$$S = \text{Photo scale} = \frac{\text{Photo distance}}{\text{Ground distance}} = \frac{d}{D}$$

The scale may be expressed as unit equivalents, representative fractions, or ratios. For example, if 1 mm on a photo represents 25 m on the ground, the scale of the photo can be expressed as 1 mm = 25 m (unit equivalents), or 1/25,000 (representative fraction), or 1:25,000 (ratio).

The photo(s) used by IDWR personnel have varying scales. The ASCS photographs have map features drawn in by the ASCS. These photos are stated to be "not to scale," but do include the field acreage as determined by ASCS written on the places of use. NAPP photography is at a nominal scale of 1:40,000; U2 aerial photography is at a nominal scale of 1:120,000; and ortho-photoquads have a scale of 1:24,000.

To determine the area used, IDWR staff employed various transparent overlays, known as grid templates. These templates are available at most blueprint supply stores. One type consists of lines forming rectangles or squares of known area in the same scale that is utilized in the scaled photograph. The grid is placed over a scaled photograph and the area of a ground unit is estimated by counting grid units that fall within the unit to be measured.

Another commonly used grid is the dot grid, which is composed of uniformly spaced dots on a transparent overlay. The grid is placed over the photograph and the dots falling within the region to be measured are counted. The value assigned to each dot is dependent on the scale of the photograph. First, the number of acres per centimeter (or other measuring unit) is computed. This figure is then divided by the number of dots per measuring unit on the grid to obtain the acreage represented by each dot. For instance, a square 3.4 cm on each side containing 640 dots will cover 160 acres on a photo with a nominal

¹⁰ These photos are color-infrared aerial photography obtained by the National Aeronautics and Space Administration (NASA) Airborne Instrumentation Research Project, and available from EROS. IDWR obtained coverage of most of the southern portion of the Snake River Basin, most of which was flown in 1977. In addition, because the State of Idaho was part of an ongoing project with NASA to photograph selected areas, photography from various areas in various years is also available. The date of the flight is shown on the photo.

scale of 1:24000; 640 dots divided by 160 acres equals 4 dots to the acre, thus 1 dot equals 0.25 acres.

Because of its simplicity, the grid system is a practical method to determine the size of irrigated areas; it nonetheless requires some training and experience to be used effectively.

For non-scaled photos, such as the ASCS 35 mm photos, IDWR did not directly make acreage determinations. Instead, these photos were used to confirm whether the place of use and amount of irrigated acreage had changed for that year according to common landmarks visible in the photographs.

APPENDIX B

EVALUATION OF IRRIGATION DIVERSION RATE

WATER RIGHT NUMBER: 36-00085A

INTRODUCTION

This water right was recommended in the Director's Report with a diversion rate of 0.15 cfs. A portion of that total amount was recognized as the on-farm diversion requirement, and the remaining amount as conveyance loss. Based on IDWR's methodology to evaluate irrigation diversion rates, the quantity required on-farm was recommended as 0.14 cfs, or approximately 0.033 cfs per acre for 4.3 acres, with an additional 0.01 cfs for conveyance loss. The total, 0.15 cfs, is equivalent to a total per acre rate of diversion of approximately 0.035 cfs per acre.

Because IDWR has received new information and has refined the methodology since the time of the original analysis of irrigation diversion requirement, a revised analysis has been completed. The revised analysis is based upon information already contained in the claim file and the new information detailed in this report. An expanded explanation of the methodology used is contained in the report entitled Report Regarding Evaluation of Irrigation Diversion Rates, dated July, 1996. Hereinafter, that report will be referred to as IDWR's Methodology Report.

Several factors must be considered when determining the necessity of an irrigation diversion rate greater than 0.02 cfs per acre. Those factors are crop types, irrigated acres, types of irrigation systems used, evapotranspiration estimates, field application efficiencies, and conveyance loss. These items are discussed in the following paragraphs, along with the results of the analysis.

IRRIGATED ACRES/CROPS

The property described on the claim as the place of use was found to have 4.3 acres of irrigated land, planted in pasture. As shown in Figure 1 of the Attachments, the property in question has an irregular shape, bounded on the west by the Sands Ditch and on the east by the Bell Ditch. The available aerial photography¹ indicates

¹Photos used are all color-infrared aerial photography. They were obtained through projects coordinated by the federal government, including the National Aerial Photography Program (NAPP) and the National Aeronautics and Space Administration (NASA) Airborne Instrumentation Research Project.

NAPP photos used are: Photo No. 439-43, dated 8/1/1988; Photo No. 419-59, dated 6/25/1987; and Photo No. 419-61, dated 6/25/1987.

NASA photos used are: Photo No. 6134, Flight No. 75-131, FSR 706, dated 6/8/1975; Photo

that there is a small ditch running north-south which separates the property into two distinct fields. In this report, the west field is referred to as Field 1 and the east field as Field 2. The fields are irrigated using a corrugation system.²

EVAPOTRANSPIRATION

Evapotranspiration is the amount of water evaporated from the soil plus the amount used by a crop during crop growth. IDWR's estimate used for evapotranspiration (ET) for the Hagerman area has been refined since the original analysis of required diversion rate was completed. Originally, the monthly consumptive irrigation requirements for the Bliss weather station were used, based on consumptive irrigation data estimated by Allen and Brockway³. IDWR has since obtained information allowing adjustments to the values that more accurately represent conditions in the Hagerman area. This process is outlined in the section of IDWR's Methodology Report titled EVAPOTRANSPIRATION (CROP CONSUMPTIVE USE) and the resulting ET values are summarized in Table 1 of the Attachments.

The ET values used in calculations for pasture are shown under the column titled PAST. in the table. For each month of the irrigation season, the values in the row titled 80PCT ET are used. This represents the 80th percentile value for ET. The reasoning behind the use of these particular ET numbers is further explained in the EVAPOTRANSPIRATION section of IDWR's Methodology Report.

FIELD APPLICATION EFFICIENCY

In order to calculate the field application efficiency, several elements must first be considered. Among these elements are the slope, approximate furrow lengths, furrow spacings, and set time for each field. Additionally, the soil information described below is necessary.

Soil Information

Some data unique to each soil type are required for the analysis, including the management allowed deficit (MAD) and intake family. The MAD is based on the maximum soil moisture deficit which will not cause the crop to exceed its stress point. Intake family is a classification of soils with similar water intake rate characteristics. The Natural Resources Conservation Service (NRCS), formerly Soil Conservation

No. 2471, Flight No. 77-134, FSR 1049, dated 10/8/1977; Photo No. 3472, Flight No. 80-152, FSR 1462, dated 9/17/1980; and Photo No. 2314, Flight No. 83-095, FSR 1760, dated 6/7/1983.

²Information as to crop types and irrigation method was provided by IDWR Senior Agent Steve Clelland and confirmed by aerial photography.

³Allen, R.G. and C.E. Brockway, Appendix E (unpublished)

Service (SCS), compiles soil surveys describing the various soil types within the state and the locations where those soils may be found. The procedure used to determine the value of MAD and intake family using SCS data is described in the sections of IDWR's Methodology Report titled NET IRRIGATION APPLICATION and IRRIGATION APPLICATION SYSTEMS. In order to use the correct values for MAD and intake family, it is necessary to determine the worst-case significant soil for each field if more than one soil type is present in that field.

There are two different soil types on the property described as the place of use for this water right. These soils are Ephrata Fine Sandy Loam (EPC) and Kecko Fine Sandy Loam (KOB). Field 1, as shown in Figure 1, consists entirely of one soil type, EPC, while Field 2 contains both soil types. These soil types have similar MAD values and the same intake family. The soil type with the lower MAD value, EPC, was used for analysis of Field 2 because the field is small and slight variations in MAD values would have a negligible effect on the diversion requirement for the entire field.

The MAD for both fields was the same since they are both pasture and were both being analyzed using soil type EPC. That MAD value for EPC and pasture is 1.84 inches. The MAD values are provided in Tables 2 and 3 of the Attachments. These tables were created using a spreadsheet developed by IDWR to simplify calculations to determine MAD and intake family.

There are two procedures described in the section of IDWR's Methodology Report entitled IRRIGATION APPLICATION SYSTEMS for determining intake family. The alternative procedure is considered a refinement for some soil conditions and is used where available. The furrow intake family for EPC was found to be 0.55 using either procedure, so this value was used. The intake families are also shown in Tables 2 and 3.

Field Slope

Field slopes were determined based on USGS topographic maps. An estimate of the average slope from top end to bottom end of furrows was calculated for each field. To calculate these slopes, it was necessary to make a determination as to the direction of furrows. Those determinations were based on the available aerial photography and information in the claim file, where available. The field slopes of both Field 1 and Field 2 were estimated to be approximately 4.0 percent.

Furrow Lengths

The furrow lengths were determined using the same topographic maps and aerial photos. If fields appeared to have a rectangular shape, an average length was used. Furrow lengths for Field 1 were scaled from the map to be approximately 275 feet. That field was not rectangular, but there was little enough variation in furrow lengths throughout the field that the maximum scaled furrow length was used. The furrow lengths for Field 2 were scaled to be approximately 200 feet. That field is

somewhat rectangular in shape.

Use of cross-ditches or gated pipe to reduce the furrow length is an alternative irrigation practice which will improve the efficiencies of fields with high intake rate soils if set times and inflow rates are adjusted appropriately. This alternative is not considered reasonable if it would result in furrow lengths less than 300 feet. A length of 300 feet is considered by IDWR to be a minimum practical length for farm cultivation practices.

Furrow Spacing/Set Times

When the system efficiencies were calculated, 30 inch furrow spacings were used. Information as to actual furrow spacings was not available, but 30 inches is a common spacing and is a standard used by IDWR for consistency. In addition, both 8 hour and 12 hour set times were analyzed and compared to determine which would result in the optimum overall efficiency of the system. Eight hour and twelve hour set times are considered acceptable irrigation practices which can be used during the peak water use period to improve application efficiencies.

Results

Field application efficiencies are estimated using a computer program developed by SCS for use with furrow irrigation and provided with the Hubble Report⁴. Efficiencies less than 15 percent or greater than 70 percent are outside the practical limits of the program. In cases where efficiency is estimated to be greater than 70 percent, an efficiency of 70 percent is used. In addition, the program does not recognize erosive flows or furrow carrying capacities. The limiting erosive flow is dependent on the slope of a particular field and must be calculated for each field. In this case, the limiting erosive flow for both fields would be 10 gpm. The practical carrying capacity limit of corrugations is 10 gpm. The term identified in the program as design application is equivalent to the MAD, as determined above. Refer to the section FIELD APPLICATION EFFICIENCY in IDWR's Methodology Report for more information regarding the methodology used in determining field application efficiency.

The furrows for both Field 1 and Field 2 are less than 600 feet in length. Splitting these fields for analysis purposes would result in furrow lengths less than 300 feet; thus the full furrow length was considered for each field. Set times of 8 and 12 hours were considered, and an irrigation method using 8 hour set times and an appropriate inflow rate provided an efficiency greater than 70 percent in both cases, substantially larger than the efficiencies estimated using 12 hour set times. For Field 1, the program estimated an efficiency of 82 percent using an 8 hour set time and an efficiency of 55 percent using a 12 hour set time. For Field 2, the

⁴The Hubble Report is a common name given to a pair of reports developed for IDWR in July, 1990 by Hubble Engineering, Inc. and Associated Earth Sciences, Inc. entitled "Guidelines for the Evaluation of Irrigation Diversion Rates" and "Evaluation Workbook for Irrigation Diversion Rates".

program estimated an efficiency of 80 percent using 8 hour set times and 53 percent using 12 hour set times. Therefore, an efficiency of 70 percent was used for each field. See Table 4 of the Attachments for results.

ON-FARM IRRIGATION DIVERSION REQUIREMENT

The on-farm irrigation diversion requirement is the amount of water needed on the farm itself to provide adequate water to the crop(s) being grown. The procedure used to determine that amount is described in detail in the section of IDWR's Methodology Report titled ON-FARM IRRIGATION REQUIREMENT. The results of that procedure are provided in Table 5 of the Attachments. Table 5 was created using a spreadsheet developed by IDWR which utilizes the information detailed above and calculates the irrigation diversion requirement. The resulting maximum diversion rate requirement for the entire 4.3 acres was determined to be 0.09 cfs, or 0.020 cfs per acre.

CONVEYANCE LOSS

When water is conveyed through an earthen delivery ditch, a certain portion of the total flow is lost through seepage into the ground. The method used to estimate seepage losses is referred to as the Worstell method, which is further explained in the CONVEYANCE LOSS section of IDWR's Methodology Report. The Worstell method relies on the characteristics of the soil, the ditch width, and the ditch length to estimate the actual seepage losses of the ditch. IDWR has developed a spreadsheet which calculates the total conveyance loss estimate on a ditch and prorates that loss among the reaches of the ditch based on the total amount of water removed from each reach of the ditch and the location of each reach.

In the original analysis of conveyance loss for the Buckeye Ditch, delivery locations were identified along the entire ditch. In some cases, more than one right is supplied from a single reach of the ditch. The total conveyance loss estimate for all water use from that reach of the ditch was calculated using the spreadsheet based upon the Worstell method. If there were found to be multiple users removing water from the same reach of the ditch, the conveyance loss estimate for that reach was divided equally among those users. This approach was used along the entire length of the Buckeye Ditch.

It would not be practical or meaningful for IDWR to re-evaluate the conveyance loss attributable to this right for two primary reasons. First, because the Worstell method does not depend on total flow in a ditch, but rather the top width of the water surface and the ditch length, the total conveyance loss estimate for the ditch would not change even if the determinations of individual water rights were to vary from IDWR's recommendations. The only change might be the allocation of the total conveyance loss among the individual water rights. However, not all of the water

rights on the ditch are contested, and of those that are contested, not all are presently before the special master. In addition, no historical method for allocation of conveyance loss exists to use as a basis for distribution of conveyance losses for water rights along this ditch. For all these reasons, the recommended conveyance loss amount remains at 0.01 cfs.

IRRIGATION DIVERSION REQUIREMENT

The total irrigation diversion requirement is the sum of the on-farm irrigation diversion requirement and the conveyance loss. For this right, the total amount is 0.09 cfs + 0.01 cfs, or 0.10 cfs.

REFERENCES

- Allen, R.G., and C.E. Brockway, 1983, Estimating Consumptive Irrigation Requirements for Crops in Idaho, Idaho Water and Energy Resources Research Institute, University of Idaho, Appendix E (unpublished).
- Hubble Engineering, Inc. and Associated Earth Sciences, Inc., 1991, Guidelines for the Evaluation of Irrigation Diversion Rates, Idaho Department of Water Resources.
- Hubble Engineering, Inc. and Associated Earth Sciences, Inc., 1991, Evaluation Workbook for Irrigation Diversion Rates, Idaho Department of Water Resources.
- Idaho Department of Water Resources, 1996, Report Regarding Evaluation of Irrigation Diversion Rates, also referred to as IDWR's Methodology Report.
- National Aerial Photography Program, Color-infrared aerial photography, Flight dates June 25, 1987, August 1, 1988.
- Soil Conservation Service (now Natural Resources Conservation Service) - Gooding, Idaho office, 1992, Unpublished soil survey data.

ATTACHMENTS

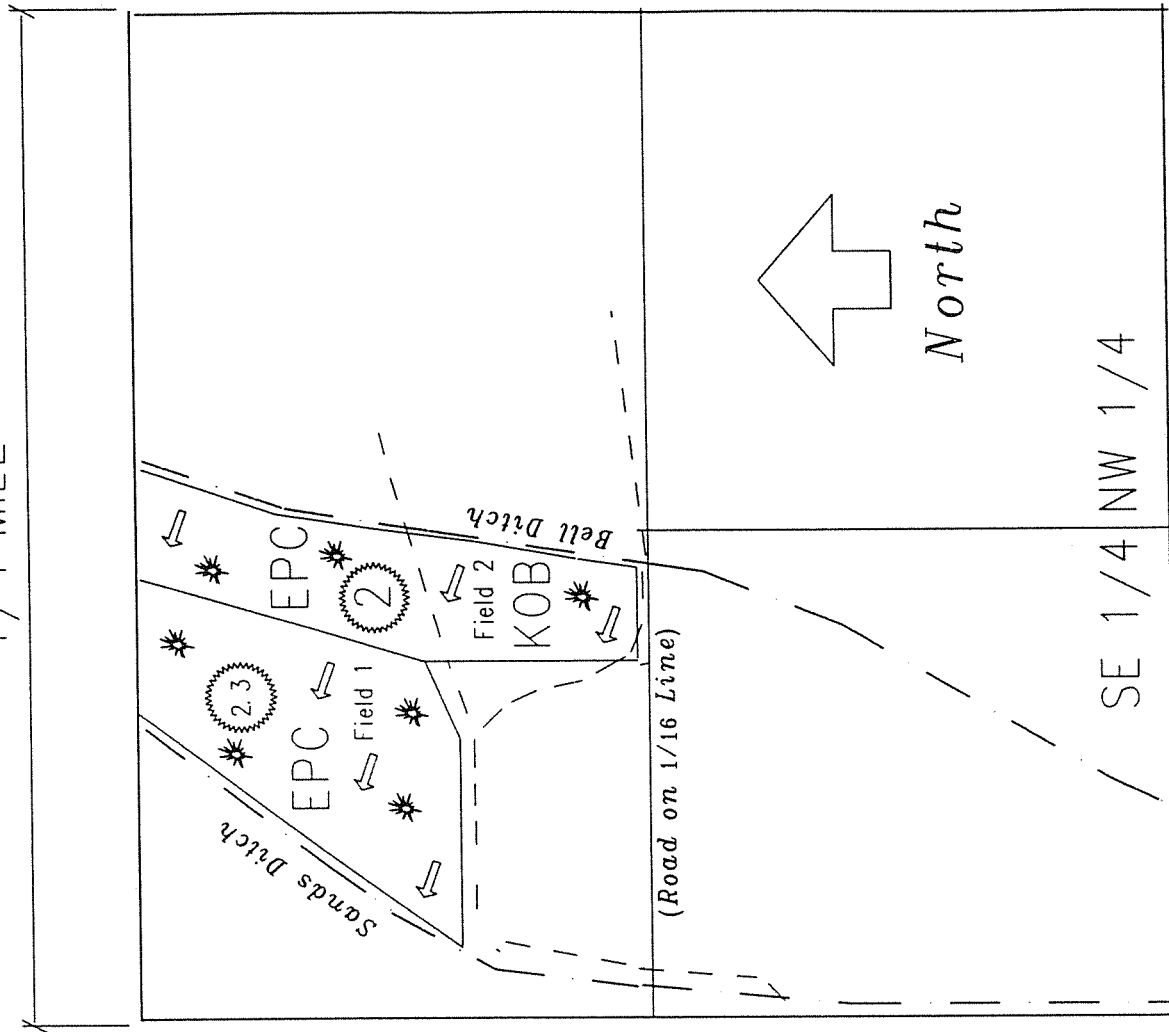
T.7 S., R.13 E.
 Section 14
 Gooding County

FIGURE 1

1/4 MILE

Legend:

- ⇐ Furrow Direction
- EPC Soil Type
- - - Soil Type Division Line
- - - Ditch
- 1/4 1/4 Line
- 2 Irrigated Acres
- * Pasture



Water Right No. 36-00085A

Table 1

80th Percentile values of monthly ET estimated for
the Hagerman Valley adjusted from the Bliss Station
(mm/day)

	MO	ETR	ALFH.	BEANS	F.CRN	SILGE	S.CRN	PEAS	POTAT	SBEET	SGRAN	WGRAN	PAST.	VEGES
AVE ET	4	5.28	3.30					1.60	1.58	1.58	1.65	4.82	3.27	
TMP ADJ	4	5.68	3.55					1.72	1.70	1.70	1.77	5.18	3.52	
ALT ADJ	4	5.75	3.59					1.74	1.72	1.72	1.80	5.25	3.56	
STDD ET	4	0.47	0.29					0.14	0.14	0.14	0.15	0.43	0.29	
ADJ STDD	4	0.80	0.49					0.24	0.24	0.24	0.26	0.73	0.49	
80PCT ET	4	6.42	4.01					1.94	1.92	1.92	2.01	5.86	3.97	
AVE ET	5	6.79	6.29	2.04	2.04	2.04	2.04	3.85	2.19	2.04	5.11	6.79	5.23	2.07
TMP ADJ	5	7.18	6.65	2.16	2.16	2.16	2.16	4.07	2.31	2.16	5.40	7.18	5.53	2.19
ALT ADJ	5	7.27	6.73	2.18	2.18	2.18	2.18	4.12	2.34	2.18	5.47	7.27	5.60	2.21
STDD ET	5	0.49	0.46	0.15	0.15	0.15	0.15	0.28	0.16	0.15	0.37	0.49	0.38	0.15
ADJ STDD	5	0.80	0.75	0.25	0.25	0.25	0.25	0.46	0.26	0.25	0.61	0.80	0.62	0.25
80PCT ET	5	7.94	7.37	2.39	2.39	2.39	2.39	4.51	2.56	2.39	5.98	7.94	6.12	2.42
AVE ET	6	8.41	7.32	3.26	3.66	3.66	3.53	6.82	5.77	3.91	8.39	8.41	6.47	4.40
TMP ADJ	6	8.82	7.68	3.42	3.84	3.84	3.70	7.15	6.05	4.10	8.80	8.82	6.79	4.62
ALT ADJ	6	8.93	7.77	3.46	3.89	3.89	3.75	7.24	6.13	4.15	8.91	8.93	6.87	4.67
STDD ET	6	0.47	0.41	0.18	0.21	0.21	0.20	0.38	0.32	0.22	0.47	0.47	0.36	0.25
ADJ STDD	6	1.27	1.11	0.49	0.57	0.57	0.54	1.03	0.86	0.59	1.27	1.27	0.97	0.68
80PCT ET	6	10.00	8.71	3.87	4.36	4.36	4.20	8.11	6.85	4.65	9.98	10.00	7.69	5.24
AVE ET	7	8.54	6.94	7.37	7.68	7.68	7.47	2.99	7.17	8.14	7.05	6.80	6.57	6.57
TMP ADJ	7	8.89	7.22	7.67	7.99	7.99	7.78	3.11	7.46	8.47	7.34	7.08	6.84	6.84
ALT ADJ	7	9.00	7.31	7.77	8.09	8.09	7.87	3.15	7.56	8.58	7.43	7.17	6.92	6.92
STDD ET	7	0.26	0.21	0.23	0.24	0.24	0.23	0.09	0.22	0.25	0.22	0.21	0.20	0.20
ADJ STDD	7	0.58	0.47	0.51	0.53	0.53	0.51	0.20	0.49	0.56	0.49	0.47	0.44	0.44
80PCT ET	7	9.49	7.71	8.20	8.54	8.54	8.30	3.32	7.97	9.05	7.84	7.56	7.30	7.30
AVE ET	8	7.18	5.41	4.97	6.63	6.63	6.38		5.57	7.06	1.47	1.32	5.53	5.72
TMP ADJ	8	7.50	5.65	5.19	6.92	6.92	6.66		5.82	7.37	1.53	1.38	5.77	5.97
ALT ADJ	8	7.59	5.72	5.25	7.01	7.01	6.74		5.89	7.46	1.55	1.40	5.84	6.05
STDD ET	8	0.33	0.25	0.23	0.30	0.30	0.29		0.26	0.32	0.07	0.06	0.25	0.26
ADJ STDD	8	0.70	0.53	0.49	0.64	0.64	0.62		0.55	0.68	0.15	0.13	0.53	0.55
80PCT ET	8	8.18	6.17	5.66	7.54	7.54	7.26		6.35	8.04	1.68	1.50	6.29	6.51
AVE ET	9	5.60	3.67	0.77	4.19	4.19			3.29	4.86			4.32	3.83
TMP ADJ	9	5.90	3.87	0.81	4.42	4.42			3.47	5.12			4.55	4.04
ALT ADJ	9	5.97	3.92	0.82	4.47	4.47			3.51	5.19			4.61	4.09
STDD ET	9	0.41	0.27	0.06	0.31	0.31			0.24	0.36			0.32	0.28
ADJ STDD	9	0.66	0.43	0.10	0.50	0.50			0.39	0.58			0.52	0.45
80PCT ET	9	6.53	4.28	0.90	4.89	4.89			3.84	5.67			5.04	4.47
AVE ET	10	3.73	1.26		1.04					2.48			2.88	
TMP ADJ	10	4.02	1.36		1.12					2.67			3.10	
ALT ADJ	10	4.07	1.37		1.13					2.70			3.14	
STDD ET	10	0.35	0.12		0.10					0.24			0.27	
ADJ STDD	10	0.47	0.16		0.14					0.32			0.36	
80PCT ET	10	4.46	1.51		1.25					2.98			3.45	

ET and standard deviation data (AVE ET and STDD ET) for Bliss weather station taken from Appendix E (unpublished) of Brockway, C.E., and R.G. Allen, 1983, Estimating Consumptive Irrigation Requirements for Crops in Idaho, Idaho Water and Energy Resources Research Institute.

Adjustments to standard deviation (ADJ STDD) based on Allen & Brockway Report, pp. 18, and Allen, R.G., and J.L. Wright, 1983, Variation Within Measured and Estimated Consumptive Use Requirements, Proceedings of the Irrigation and Drainage Specialty Conference of the American Society of Agricultural Engineers, Jackson Hole, Wyoming, July 20-22, 1983, pp. 1-12.

Temperature adjustment (TMP ADJ) based on temperature differences between Bliss and Hagerman and temperature sensitivity of ET estimates given in Brockway, C.E., G.S. Johnson, J.L. Wright, and A.L. Coiner, 1985, Remote Sensing for Irrigated Crop Water Use - Phase 1, Water Resources Research Institute, pp. 101-107.

Altitude adjustment (ALT ADJ) based on Doorenbos, J., and W.O. Pruitt, 1977, Crop Water Requirements, Food and Agriculture Organization of the United Nations, p. 59.

80th percentile ET values (80PCT ET) calculated based on Walpole, R.E., and R.H. Meyers, 1985, third edition, PROBABILITY AND STATISTICS FOR ENGINEERS AND SCIENTISTS, New York: Macmillan Publishing Company, pp. 132-144 and 574.

SOIL CHARACTERISTICS initials: JP date: 11/20/92
 Soil Type = EPB + EPC FSL
 Source of Soils Data = SCS - GOODING

soil depth (inches)		AWC (in/in)		PH		organic (%)		soil depth (inches) (ft)	AWC (inches)	intake family	
lower	upper	lower	upper	lower	upper	lower	upper			flood	furrow
0	5	0.1	0.14	6.6	7.3	0.5	1	1	1.48	2	0.55
5	26	0.1	0.15					2	2.98		
26	61	0.03	0.06					3	3.68		
								4	4.22	alternate	
								5	4.76	method	
										2	0.55

Management Allowed Deficit (MAD)

crop	root depth (ft)	stress point	MAD (inches)
alfalfa (hay or seed)	5	0.5	2.38
corn (field or silage)	4	0.5	2.11
grain (winter or spring)	4	0.5	2.11
pasture (or grass hay)	3	0.5	1.84
other (enter below)			
beets	5	0.5	2.38
mint	3	0.5	1.84
beans	2	0.4	1.19
potatoes	3	0.35	1.29

For definition of terms, refer to the sections called NET IRRIGATION APPLICATION and IRRIGATION APPLICATION SYSTEMS of the IDWR report titled Report Regarding Evaluation of Irrigation Diversion Rates, dated July, 1996.

SOIL CHARACTERISTICS initials: JP date: 11/23/92

Soil Type = KOB → KOC FSL
 Source of Soils Data = SCS - GOODING

soil depth (inches)		AWC (in/in)		PH		organic (%)		soil depth (ft)	AWC (inches)	intake family	
lower	upper	lower	upper	lower	upper	lower	upper			flood	furrow
0	9	0.12	0.14	7.4	8.4	1	2	1	1.59	2	0.55
9	21	0.13	0.15					2	3.08		
21	60	0.03	0.12					3	3.98		
								4	4.88	alternate	
								5	5.77	method	
										2	0.55

Management Allowed Deficit (MAD)

crop	root depth (ft)	stress point	MAD (inches)
alfalfa (hay or seed)	5	0.5	2.89
corn (field or silage)	4	0.5	2.44
grain (winter or spring)	4	0.5	2.44
pasture (or grass hay)	3	0.5	1.99
other (enter below)			
beets	5	0.5	2.89
mint	3	0.5	1.99
beans	2	0.4	1.23
potatoes	3	0.35	1.39

For definition of terms, refer to the sections called NET IRRIGATION APPLICATION and IRRIGATION APPLICATION SYSTEMS of the IDWR report titled Report Regarding Evaluation of Irrigation Diversion Rates, dated July, 1996.

Table 4

	INTAKE FAMILY	DESIGN APPLIC. Inches	FURROW SLOPE Ft/Ft	FURROW SPACING Feet	FURROW LENGTH Feet	INFLOW RATE Gpm	APPROXIMATE INFLOW TIME Hours	ADVANCE TIME Minutes	GROSS	NET	DEEP PERC. In.	IRRIGATION EFFICIENCY %	
									IRRIGATION	IRRIGATION			
									APPLICATION	APPLICATION			RUNOFF
									Inches	Inches	Inches		
eld 1	0.55	1.84	.040	2.50	275	2.0	12	25.7	3.36	2.88	0.43	1.09	54.76
	0.55	1.84	.040	2.50	275	2.0	8	25.7	2.24	2.12	0.06	0.34	82.15 *
eld 2	0.55	1.84	.040	2.50	200	1.5	12	18.2	3.46	2.81	0.62	1.01	53.10
	0.55	1.84	.040	2.50	200	1.5	8	18.2	2.31	2.08	0.19	0.28	79.66 *

Use of this program and input requirements are described in the FIELD APPLICATION EFFICIENCY section of the IDWR report titled Report Regarding Evaluation of Irrigation Diversion Rates, dated July, 1996.

FIELD IRRIGATION REQUIREMENT

initials: MS Claimant = Miller
 date: 06/25/96 Weather Station = Bliss/Hagerman

crop	acres	irrig. system (%)	irrig. eff.	Monthly ET (mm/day)												AVE IR season (mm/yr)	net irrig. app. (in)	ET ratio	irrig. freq. (days)	Gross Irrigation Application (peak period ET/eff. in mm/day)												season (mm/yr)					
				mar	apr	may	jun	jul	aug	sep	oct	oct	sep	aug	jul					jun	may	apr	apr	may	jun	jul	aug	sep	oct	sep	aug		jul	jun	may	apr	
past	2.3	cor	70		3.97	6.12	7.69	7.3	6.29	5.04	3.45							1.84	1.11	5.5	6.30	9.70	12.19	11.58	9.97	7.99	5.47				6.30	9.70	12.19	11.58	9.97	7.99	5.47
past	2	cor	70		3.97	6.12	7.69	7.3	6.29	5.04	3.45							1.84	1.11	5.5	6.30	9.70	12.19	11.58	9.97	7.99	5.47				6.30	9.70	12.19	11.58	9.97	7.99	5.47

Summary 4.3

Peak Gross Irrigation Application (mm/day) = 12.19
 On-farm Irrigation Requirement (cfs/acre) = 0.020
 Total On-farm Irrigation Requirement (cfs) = 0.09
 Irrigation Diversion Volume (ft/yr) = 0.00
 Total Irrigation Diversion Volume (ac-ft/yr) = 0

State of Idaho)
) ss.
County of Ada)

Marci S. Sterling, being first duly sworn, upon oath, deposes and says:

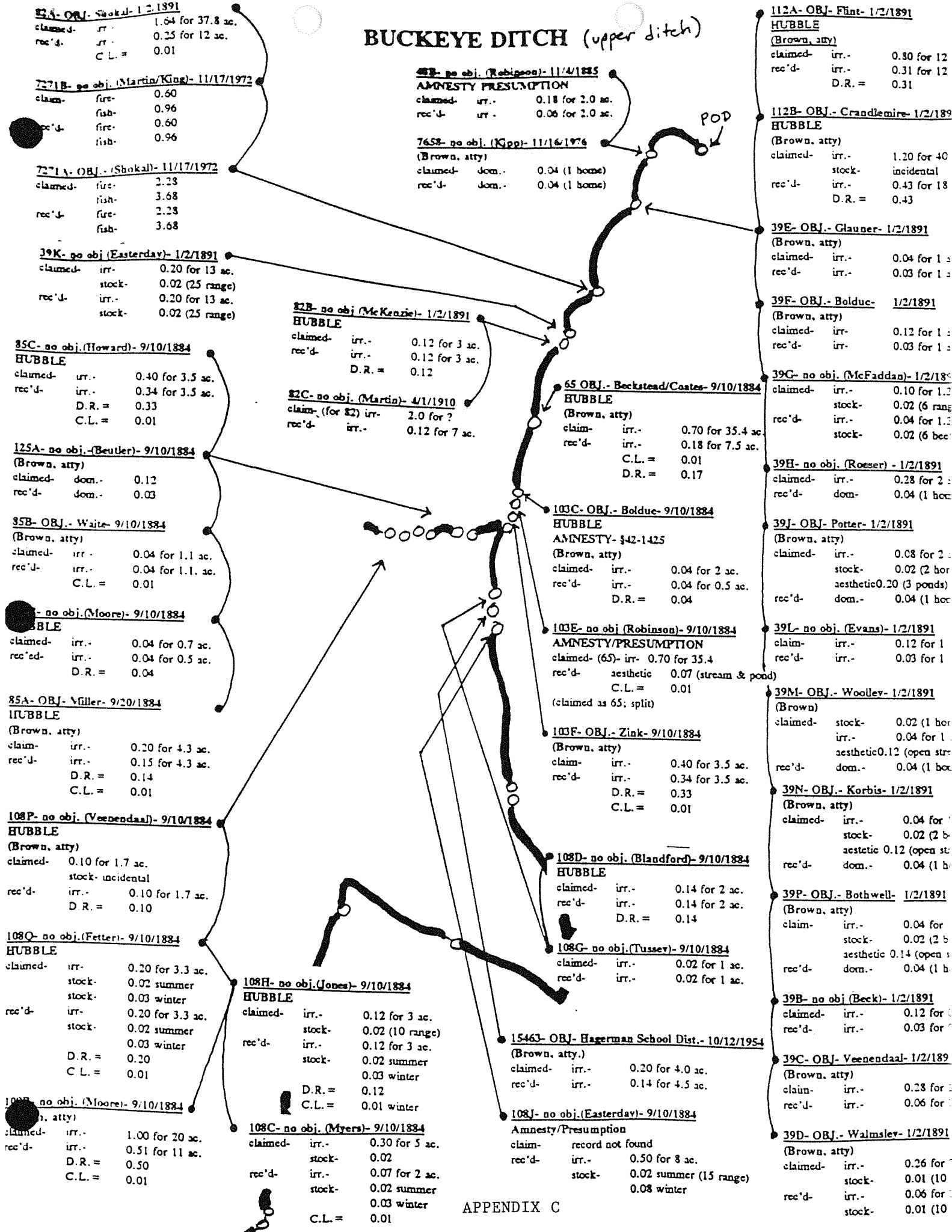
That I am an Engineer for the Adjudication Bureau of IDWR, that I prepared the foregoing appendix, know its contents, and that the statements contained therein are true to the best of my knowledge and belief.

Marci S. Sterling
Marci S. Sterling

Subscribed and sworn to before me this 1st day of July, 1996.

A. Sherman
Notary Public for Idaho
Residing at: Boise ID
My commission expires: 11-14-1998

BUCKEYE DITCH (upper ditch)



72A- OBJ. Shokal- 1/2/1891
 claimed- irr. 1.54 for 37.8 ac.
 rec'd- irr. 0.25 for 12 ac.
 C.L. = 0.01

727B- go obj. (Martin/King)- 11/17/1972
 claim- fire- 0.60
 fish- 0.96
 rec'd- fire- 0.60
 fish- 0.96

727A- OBJ. (Shokal)- 11/17/1972
 claimed- fire- 2.23
 fish- 3.68
 rec'd- fire- 2.23
 fish- 3.68

39K- go obj. (Easterday)- 1/2/1891
 claimed- irr. 0.20 for 13 ac.
 stock- 0.02 (25 range)
 rec'd- irr. 0.20 for 13 ac.
 stock- 0.02 (25 range)

85C- no obj. (Howard)- 9/10/1884
 HUBBLE
 claimed- irr. 0.40 for 3.5 ac.
 rec'd- irr. 0.34 for 3.5 ac.
 D.R. = 0.33
 C.L. = 0.01

125A- no obj. (Beutler)- 9/10/1884
 (Brown, atty)
 claimed- dom. 0.12
 rec'd- dom. 0.03

35B- OBJ. Waite- 9/10/1884
 (Brown, atty)
 claimed- irr. 0.04 for 1.1 ac.
 rec'd- irr. 0.04 for 1.1 ac.
 C.L. = 0.01

no obj. (Moore)- 9/10/1884
 HUBBLE
 claimed- irr. 0.04 for 0.7 ac.
 rec'd- irr. 0.04 for 0.5 ac.
 D.R. = 0.04

85A- OBJ. Miller- 9/20/1884
 HUBBLE
 (Brown, atty)
 claim- irr. 0.20 for 4.3 ac.
 rec'd- irr. 0.15 for 4.3 ac.
 D.R. = 0.14
 C.L. = 0.01

108P- no obj. (Veenendaal)- 9/10/1884
 HUBBLE
 (Brown, atty)
 claimed- 0.10 for 1.7 ac.
 stock- incidental
 rec'd- irr. 0.10 for 1.7 ac.
 D.R. = 0.10

108Q- no obj. (Fetter)- 9/10/1884
 HUBBLE
 claimed- irr. 0.20 for 3.3 ac.
 stock- 0.02 summer
 stock- 0.03 winter
 rec'd- irr. 0.20 for 3.3 ac.
 stock- 0.02 summer
 stock- 0.03 winter
 D.R. = 0.20
 C.L. = 0.01

108R- no obj. (Moore)- 9/10/1884
 (h, atty)
 claimed- irr. 1.00 for 20 ac.
 rec'd- irr. 0.51 for 11 ac.
 D.R. = 0.50
 C.L. = 0.01

108H- no obj. (Jones)- 9/10/1884
 HUBBLE
 claimed- irr. 0.12 for 3 ac.
 stock- 0.02 (10 range)
 rec'd- irr. 0.12 for 3 ac.
 stock- 0.02 summer
 stock- 0.03 winter
 D.R. = 0.12
 C.L. = 0.01 winter

108C- no obj. (Myers)- 9/10/1884
 claimed- irr. 0.30 for 5 ac.
 stock- 0.02
 rec'd- irr. 0.07 for 2 ac.
 stock- 0.02 summer
 stock- 0.03 winter
 C.L. = 0.01

48B- no obj. (Robinson)- 11/4/1885
 AMNESTY PRESUMPTION
 claimed- irr. 0.18 for 2.0 ac.
 rec'd- irr. 0.06 for 2.0 ac.

765B- go obj. (Kipp)- 11/16/1976
 (Brown, atty)
 claimed- dom. 0.04 (1 home)
 rec'd- dom. 0.04 (1 home)

82B- no obj. (McKenzie)- 1/2/1891
 HUBBLE
 claimed- irr. 0.12 for 3 ac.
 rec'd- irr. 0.12 for 3 ac.
 D.R. = 0.12

82C- no obj. (Martin)- 4/1/1910
 claim- (for 82) irr. 2.0 for ?
 rec'd- irr. 0.12 for 7 ac.

65 OBJ.- Beckstead/Coates- 9/10/1884
 HUBBLE
 (Brown, atty)
 claim- irr. 0.70 for 35.4 ac.
 rec'd- irr. 0.18 for 7.5 ac.
 C.L. = 0.01
 D.R. = 0.17

100C- OBJ.- Bolduc- 9/10/1884
 HUBBLE
 AMNESTY- §42-1425
 (Brown, atty)
 claimed- irr. 0.04 for 2 ac.
 rec'd- irr. 0.04 for 0.5 ac.
 D.R. = 0.04

100E- no obj. (Robinson)- 9/10/1884
 AMNESTY/PRESUMPTION
 claimed- (65)- irr. 0.70 for 35.4
 rec'd- aesthetic 0.07 (stream & pond)
 C.L. = 0.01
 (claimed as 65; split)

100F- OBJ.- Zink- 9/10/1884
 (Brown, atty)
 claim- irr. 0.40 for 3.5 ac.
 rec'd- irr. 0.34 for 3.5 ac.
 D.R. = 0.33
 C.L. = 0.01

108D- no obj. (Blandford)- 9/10/1884
 HUBBLE
 claimed- irr. 0.14 for 2 ac.
 rec'd- irr. 0.14 for 2 ac.
 D.R. = 0.14

108G- no obj. (Tussey)- 9/10/1884
 claimed- irr. 0.02 for 1 ac.
 rec'd- irr. 0.02 for 1 ac.

15463- OBJ.- Hagerman School Dist.- 10/12/1954
 (Brown, atty.)
 claimed- irr. 0.20 for 4.0 ac.
 rec'd- irr. 0.14 for 4.5 ac.

108J- no obj. (Easterday)- 9/10/1884
 Amnesty/Presumption
 claim- record not found
 rec'd- irr. 0.50 for 8 ac.
 stock- 0.02 summer (15 range)
 stock- 0.08 winter

112A- OBJ.- Flint- 1/2/1891
 HUBBLE
 (Brown, atty)
 claimed- irr. 0.30 for 12
 rec'd- irr. 0.31 for 12
 D.R. = 0.31

112B- OBJ.- Crandlemire- 1/2/1891
 HUBBLE
 (Brown, atty)
 claimed- irr. 1.20 for 40
 stock- incidental
 rec'd- irr. 0.43 for 18
 D.R. = 0.43

39E- OBJ.- Glauner- 1/2/1891
 (Brown, atty)
 claimed- irr. 0.04 for 1
 rec'd- irr. 0.03 for 1

39F- OBJ.- Bolduc- 1/2/1891
 (Brown, atty)
 claimed- irr. 0.12 for 1
 rec'd- irr. 0.03 for 1

39G- no obj. (McFadden)- 1/2/1891
 claimed- irr. 0.10 for 1.2
 stock- 0.02 (6 range)
 rec'd- irr. 0.04 for 1.2
 stock- 0.02 (6 range)

39H- no obj. (Roesser)- 1/2/1891
 claimed- irr. 0.28 for 2
 rec'd- dom. 0.04 (1 home)

39J- OBJ.- Potter- 1/2/1891
 (Brown, atty)
 claimed- irr. 0.08 for 2
 stock- 0.02 (2 home)
 aesthetic 0.20 (3 pounds)
 rec'd- dom. 0.04 (1 home)

39L- no obj. (Evans)- 1/2/1891
 claim- irr. 0.12 for 1
 rec'd- irr. 0.03 for 1

39M- OBJ.- Woolley- 1/2/1891
 (Brown)
 claimed- stock- 0.02 (1 home)
 irr. 0.04 for 1
 aesthetic 0.12 (open stream)
 rec'd- dom. 0.04 (1 home)

39N- OBJ.- Korbis- 1/2/1891
 (Brown, atty)
 claimed- irr. 0.04 for 1
 stock- 0.02 (2 home)
 aesthetic 0.12 (open stream)
 rec'd- dom. 0.04 (1 home)

39P- OBJ.- Bothwell- 1/2/1891
 (Brown, atty)
 claim- irr. 0.04 for 1
 stock- 0.02 (2 home)
 aesthetic 0.14 (open stream)
 rec'd- dom. 0.04 (1 home)

39B- no obj. (Beck)- 1/2/1891
 claimed- irr. 0.12 for 1
 rec'd- irr. 0.03 for 1

39C- OBJ.- Veenendaal- 1/2/1891
 (Brown, atty)
 claim- irr. 0.23 for 1
 rec'd- irr. 0.06 for 1

39D- OBJ.- Walmslev- 1/2/1891
 (Brown, atty)
 claimed- irr. 0.26 for 1
 stock- 0.01 (10 range)
 rec'd- irr. 0.06 for 1
 stock- 0.01 (10 range)

64B- OBJ. - Fleming- 9/10/1884

Brown
claimed- irr.- 4.52 for 51 ac.
stock- accidental
rec'd- irr.- 0.72 for 19 ac.
D.R. = 0.56
C.L. = 0.16

3E- OBJ. - Vargo- 9/10/1884

HUBBLE
(Brown, atty.)
claimed- irr.- 0.20 for 10 ac.
rec'd- irr.- 0.20 for 5 ac.
D.R. = 0.20

**BUCKEYE
DITCH**

(cont'd from above)
(lower)

91A no obj. (Ellston)- 9/10/1884

HUBBLE
claim- irr.- 0.64 for 16 ac.
rec'd- irr.- 0.64 for 12 ac.
D.R. = 0.64

91B- no obj. (Fobes)- 9/10/1884

HUBBLE
claimed- irr.- 0.16 for 4 ac.
rec'd- irr.- 0.16 for 4 ac.
D.R. = 0.13
C.L. = 0.03

108M- Messersmith/Bothwell- 9/10/1884

HUBBLE
claimed- no records found
rec'd- irr.- 2.95 for 53.2
D.R. = 2.81
C.L. = 0.41

108N- Brooks- 9/10/1884

HUBBLE
claimed- irr.- 0.06 for 2.3 ac
rec'd- irr.- 0.16 for 2.3 ac
D.R. = 0.15
C.L. = 0.01

108L- Gridlev- 9/10/1884

HUBBLE
claimed- irr.- 1.46 for 5 ac.
rec'd- irr.- 0.17 for 3 ac.
D.R. = 0.16
C.L. = 0.01

OBJ. - Lord- 9/10/1884

(Brown, atty.)
claimed- irr.- 0.40 for 20 ac.
rec'd- irr.- 0.12 for 3 ac.
C.L. = 0.03

35J- OBJ. - Simcoe- 9/10/1884

(Brown, atty.)
claimed- no record found
rec'd- irr.- 0.40 for 9 ac.
D.R. = 0.34
C.L. = 0.06

26- OBJ. - Brown- 3/30/1884

HUBBLE
claimed- irr.- 2.40 for 40 ac.
stock- 0.05 (125 range)
rec'd- irr.- 1.05 for 40 ac.
stock- 0.05 summer
0.24 winter
C.L. = 0.19
D.R. = 0.86

34- no obj. (Peterson)- 3/30/1884

claimed- irr.- 2.40 for 34 ac.
rec'd- irr.- 0.87 for 34 ac.
C.L. = 0.19

3C- OBJ. - Babington- 9/10/1884

(Brown, atty.)
claimed- irr.- 0.30 for 10 ac.
rec'd- irr.- 0.30 for 10 ac.
C.L. = 0.10

OBJ. - Simcoe- 9/10/1884

(Brown, atty.)
claimed- irr.- 0.30 for 40 ac.
rec'd- irr.- 0.80 for 40 ac.

35E- OBJ. - Brown- 9/10/1884

AMNESTY
claimed- 3/8/1902
irr.- 0.24 for 8 ac.
rec'd- irr.- 0.10 for 3 ac.
C.L. = 0.04
(combined with 34E)
(8 ac. place of use)

35C- no obj. (Vargo)- 9/10/1884

claimed- 3/8/1902
irr.- 0.02 for 0.5 ac.
rec'd- dom.- 0.02

35C- no obj. (Hoffman)- 9/10/1884

claimed- 9/4/1884
dom.- 0.02
rec'd- dom.- 0.02

35H- no obj. (Drage)- 9/10/1884

claimed- records not found
rec'd- irr.- 0.20 for 5 ac.
C.L. = 0.10

87- no obj. (Peterson)- 3/30/1884

HUBBLE
claimed- irr.- 2.40 for 31 ac.
rec'd- irr.- 2.40 for 31 ac.
D.R. = 1.55
C.L. = 0.85

3A- OBJ. - Rea- 9/10/1884

(Brown, atty.)
claimed- irr.- 1.60 for 13 ac.
stock- 0.04 (19 range)
rec'd- irr.- 0.41 for 13 ac.
stock- 0.02 summer
0.17 winter
C.L. = 0.15

3K- no obj. (Gardner)- 9/10/1884

(Brown, atty.)
claimed- irr.- 0.71 for 10 ac.
rec'd- record not found

3L- no obj. (Babington)- 9/10/1884

(Brown, atty.)
claimed- irr.- 1.97 for 27.5 ac.
stock- 0.04
fish- 4.00
rec'd- record not found

3M- no obj. (Simcoe)- 9/10/1884

(Brown, atty.)
claimed- irr.- 1.32 for 18.5 ac.
rec'd- record not found

3B- OBJ. - Kingston- 9/10/1884

(Brown)
claimed- irr.- 7.16 for 129 ac.
stock- 0.05 (200 range)
fish- 7.16
rec'd- irr.- 5.00 for 129 ac.
stock- 0.05 summer
1.80 winter
D.R. = 3.25
C.L. = 1.75

3D- no obj. (Harbison)- 9/10/1884

HUBBLE
claimed- irr.- 0.24 for 10 ac.
rec'd- irr.- 0.24 for 2 ac.
D.R. = 0.24

3H- OBJ. - Buckeye Farms- 9/10/1884

(Rosholt, atty.)
claimed- irr.- 12.0 for 445
rec'd- irr.- 8.37 for 224
C.L. = 3.89
(combined with I)

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IN THE DISTRICT COURT OF THE FIFTH JUDICIAL DISTRICT
OF THE STATE OF IDAHO, IN AND FOR THE COUNTY OF TWIN FALLS

In Re SRBA	)	Subcase No. 36-00085A
	)	
Case No. 39576	)	AFFIDAVIT OF STEVE CLELLAND
	)	REGARDING CLAIM NO. 36-00085A
	)	

STATE OF IDAHO	)
	) ss.
County of Twin Falls	)

I, STEVE CLELLAND, being first duly sworn on oath, depose and state as follows:

1. I am a Senior Water Resource Agent with the Idaho Department of Water Resources (IDWR).
2. My work address is Idaho Department of Water Resources (IDWR), Southern Regional Office, 222 Shoshone St. East, Twin Falls, ID 83301-6105. I reside in Twin Falls, Idaho.

DATED this 1st day of July, 1996.

Steve Clelland
STEVE CLELLAND

SUBSCRIBED AND SWORN to before me this 1st day of July, 1996.

Danni M. Smith
Notary Public for the State of Idaho
Residing at Bose
My commission expires: 12-5-2002