BEFORE THE STATE WATER BOARD OF THE STATE OF OREGON

WATER DIVISION NO. 1. LAKE COUNTY.

IN THE MATTER OF THE DETERMINATION OF THE RELATIVE RIGHTS TO THE USE OF THE WATERS OF CHEWAUCAN RIVER AND ITS TRIBUTARIES, A TRIBUTARY OF ABERT LAKE.

FINDINGS OF FACT AND ORDER OF DETERMINATION.

Now on this 27th day of December, 1915, the above entitled matter coming on before the State Water Board of Oregon, at an adjourned regular meeting of said Board held on said day, and it appearing to said Board that all the evidence taken at the original hearing and in all contests has been filed in the office of said Board, and that the State Engineer has made the investigations and examinations required by law, and that a certified copy of the report of said State Engineer is now on file herein, and no further testimony or evidence having been offered by the parties hereto, and all the testimony taken, exhibits filed, maps, measurements and other record evidence submitted by the claimants herein and by the State Engineer having been fully and carefully considered, the State Water Board now makes the following

F I N D I N G S O F F A C T

I.

That the Chewaucan River is a non-navigable, perrenial, natural water course and stream, with well defined bed, banks and channel, flowing in a general northerly direction toward the Upper Chewaucan Marsh, where the water of said river in its original and natural condition spreads out and flows over and across said marsh, without any well defined channel, in a southerly direction, and thence from said marsh at its lower end, through a channel more or less defined, into the upper part of the Lower Chewaucan Marsh, where the water of said river again spreads over the said marsh, flowing slowly southerly and easterly to the lower end of said marsh, where said waters gather into a natural and well defined channel and flow thence in a general southerly direction to Lake Abert, of which said water course is a tributary.

II.

That during the months of May, June, July, August and September of each year, the rainfall in the Chewaucan Valley and in the vicinity of said stream and its various tributaries is insufficient for the production of profitable agricultural crops and grasses, and the lands in said valley susceptible of irrigation from said stream and its tributaries become dry, arid and unproductive without irrigation, and without irrigation are of little value; and that in order to render said lands productive, it is and has been at all times since the said lands have been utilized for the production of agricultural crops, necessary to divert and use the waters of said stream and its tributaries for the irrigation of said lands, and with irrigation the said lands yield annually profitable crops of hay, natural grasses, and general agricultural crops usually grown in that altitude, and produce pasture for cattle, horses and other livestock.

III.

That the lands irrigated from said stream and its tributaries, and the said stream and its tributaries, are situated wholly within said County of Lake and State of Oregon.

IV.

That on the 29th day of May, 1912, the Northwest Townsite Company, a corporation, was a water user of the waters of said river and its tributaries upon lands owned by said company susceptible of irrigation from said stream, and that on said date there was filed in the office of the State Water Board of Oregon, then designated and known as the Board of Control of the State of Oregon, a petition signed by said Northwest Townsite Company, by George M. Bailey, as President, requesting a determination of the relative rights of the various claimants to the waters of said stream; that said Board did, after full investigation and due consideration of said petition, find the facts and conditions such as to justify the making of a determination of the relative rights of the various claimants to the waters of said stream and the tributaries thereof, and accordingly made and entered its order in the records of said office, fixing a time and place for the beginning of the taking of testimony and the making of such an examination as would enable it to determine the relative rights of said various claimants.

V.

That a notice was prepared by said Board setting forth the date when the State Engineer, or his assistant, would begin the investigation of the flow of said stream and the ditches diverting water therefrom, and the place and time certain when the Superintendent of Water Division No. 1 would begin the taking of testimony as to the rights of the various claimants to the waters thereof; and the said notice was duly and regularly published in two issues of the Lake County Examiner, a newspaper printed and published weekly at Lakeview, County of Lake, State of Oregon, and of general circulation in said Lake County and adjoining counties, said publication being made for two consecutive weeks of the following named dates, to-wit: October 17, 1912, and October 24, 1912; the date of the last publication of said notice being more than thirty days prior to the date fixed in said notice for the making of said examinations and measurements of said stream and ditches by said State Engineer and for the beginning of the taking of testimony by said Division Superintendent; as more fully appears from the proof of publication of said notice, and the said notice, which is a part of the record herein.

VI.

That the Superintendent of Water Division No. 1 of the State of Oregon did, more than thirty days prior to the date fixed therein for the making of such examination by the State Engineer, or for the taking of testimony therein, send by registered mail to each person, firm and corporation claiming a right to the use of any waters of said stream, or any tributaries thereof, and to each person, firm and corporation owning or being in possession of the lands bordering on or having access to said stream, or its tributaries, in so far as said claimants, owners, or persons in possession could be reasonably ascertained, a similar notice to such published notice, setting forth the date when the State Engineer would commence the examination of said stream, and its tributaries, and the ditches diverting water therefrom and the time and place certain when the Superintendent of said water division would commence the taking of testimony as to the relative rights of the various claimants to said stream and tributaries, and that said Superintendent did enclose with each of said notices a blank form upon which said claimant, or the person in possession, should present in writing all the particulars necessary for the determination of his rights to the

waters of said stream, or a tributary, under oath.

VII.

That due proof of publication of said notice and of the sending of said notice by registered mail has been made and was duly filed and is now a part of the record hereof.

VIII.

That upon the date named in said notice so published and sent as aforesaid at the times and places therein specified, to-wit; on Tuesday, the 17th day of December, 1912, at the Court House in Lakeview, Lake County, Oregon, at the hour of ten o'clock a.m., and on Saturday, the 21st day of December, 1912, at the Chewaucan Hotel, in Paisley, Lake County, Oregon, at the hour of ten o'clock a.m., the said Superintendent of Water Division No. 1 did commence the taking of testimony as to the relative rights of said claimants as specified in said notice, and thereafter the taking of testimony was continued from time to time until finally completed, as more fully appears from the report and certificate of the Superintendent now a part of the record herein.

IX.

That upon the completion of the taking of testimony by said Superintendent he gave notice as required by law, by registered mail, to each of the various claimants to the waters of said stream, and its tributaries, who had theretofore appeared and submitted proof of their rights therein that at a time and place named in said notice, not less than ten days thereafter, all of the evidence and testimony theretofore taken should be open to the inspection of the various claimants, or owners, or persons having a right to inspect the same at the place and during the time and period set forth in said notice, to-wit: from Monday, the 8th day of December, 1913, to and including Friday, the 19th day of December, 1913 (Sundays excluded), from the hour of ten o'clock a.m. until twelve m., and from two p.m. until five p.m. of each and every day during said period for inspection; and that said notice also set forth the County in which the determination of the State Water Board would be heard by the Circuit Court, to-wit: the Circuit Court of the State of Oregon, for the County of Lake; that said testimony, evidence and proofs were by said Superintendent kept open to such public inspection at the place named in said notice ten full days during the period aforesaid; that on Wednesday, the 17th day of December, 1913, said Superintendent did give notice, by registered mail, to each of the claimants herein that the proofs, evidence and testimony taken would be further open to public inspection for a period of ten full days set forth in said notice, at the office of the Superintendent in Salem, Marion County, Oregon; and that the evidence, proofs and testimony taken were kept open during the full period fixed in said notice last referred to, at the place therein specified; due proof of the holding of said inspections, and of the sending of said notices by registered mail being a part of the record herein.

X.

That at the time specified in said original notice, the duly qualified assistant of the State Engineer of the State of Oregon did proceed to make an examination of said stream, and its tributaries, and of the ditches and canals diverting water therefrom and an examination and approximate measurement of the lands irrigated and susceptible of irrigation from said ditches and canals, which said observations and measurements were made a matter of record in the office of said State Engineer; that the State Engineer did prepare a plat or map, on a scale of measurement of two inches to the mile, showing with substantial accuracy the course of said stream, and its tributaries, and the location of each ditch and canal diverting water therefrom and the legal subdivisions of land which have been irrigated or are susceptible of irrigation from the ditches and canals already constructed, blue prints and copies of said maps, duly certified to by said en-

gineer being now on file herein and a part of the record hereof.

XI.

That upon the completion of the taking of testimony herein in the original hearings as hereinbefore set forth, and after the period for inspection had expired, the following contests were duly and regularly initiated against the rights claimed by various of said claimants, as follows, to-wit:

Contestants.		Contestees.
Chewacan Land & Cattle Company, a corporation.	vs.	Northwest Townsite Company, a corporation
Chewacan Land & Cattle Company, a corporation.	vs.	Portland Irrigation Company, a corporation
Northwest Townsite Company	vs.	Chewacan Land & Cattle Company.
Portland Irrigation Company	vs.	Chewacan Land & Cattle Company.
Fred T. Elsey	vs.	Portland Irrigation Company.
Jennie Holder	vs.	S. P. Moss
F. N. Curtis	vs.	Oregon Valley Land Company.
F. N. Curtis	vs.	John B. Elder and E. S. McDonald.
H. E. Curtis	vs.	Oregon Valley Land Company.
H. E. Curtis	vs.	John B. Elder and E. S. McDonald.
W. H. Roush	vs.	Christina Schmidt and William Schmidt.
D. M. Bryan	vs.	W. M. Schmidt.

XII.

That the statement and notice of contest in each of said contests was duly and regularly filed within the time permitted by law, said statements of contest being verified by the said contestants and setting forth with reasonable certainty the grounds of the proposed contests; and that said Division Superintendent did notify each of the contestants and each of the persons whose rights were so contested in each of said contests to appear before him, at a time and place designated in said notice, due proof of such notice of hearing being a part of the record herein.

XIII.

That after the expiration of said period for inspection, and after the taking of testimony at said original hearing, and in all contests filed herein, the evidence, exhibits and testimony taken and filed in said various hearings and said contests were transmitted by the Superintendent of Water Division No. 1 of Oregon in person to the office of said State Water Board and were filed with said Board.

XIV.

The Portland Irrigation Company, a corporation, as contestant, having filed a statement of contest herein against the Chewacan Land and Cattle

Company, a corporation, as contestee, and the Chewacan Land and Cattle Company, a corporation, as contestant, having filed a statement and notice of contest herein as against the Portland Irrigation Company, a corporation, as contestee, and said Chewacan Land and Cattle Company, a corporation, as contestant, having filed a notice of contest against the Northwest Townsite Company, a corporation, as contestee, and Fred T. Elsey, as contestant, having filed a notice of contest herein as against the Portland Irrigation Company, a corporation, contestee, the above entitled contests came on for hearing pursuant to notice duly and regularly given, as more fully appears from the record herein, on Wednesday, the 1st day of July, 1914, at the hour of ten o'clock a.m., at the Court House in Lakeview, Lake County, Oregon, before the Superintendent of Water Division No. 1 of Oregon, whereupon by stipulation for the purpose of taking the testimony in said various contests, the said contests were consolidated and the record taken therein was by said stipulation made available in each of said contests for the purpose of the determination thereof.

Pursuant to said stipulation, testimony on behalf of the various claims involved in said contests was thereafter taken, and the record thereof completed, and from the testimony and evidence and the exhibits offered and received the Board makes the following finds of fact as applicable particularly to the rights of the claimants involved in said contests and the determination of said contests, to-wit:

1. That the Chewacan Land and Cattle Company is and was at the time of the commencement of these proceedings, a corporation organized and existing under the laws of the State of California, and was then and is now the owner in fee and in the possession, and entitled to the possession of those certain lots, pieces and parcels of land situate in the County of Lake, State of Oregon, which are more particularly described in the statement and proof of claimant "A" of said Chewacan Land and Cattle Company now on file herein, and including all of the lands described more particularly in the tabulated statement in the order of determination herein.

2. That for the purposes of these proceedings, the Board finds that at the time these proceedings were commenced, said Chewacan Land and Cattle Company was and now is the owner of all of said lands as described in Exhibit "B" attached to its statement and proof of claim "A", and that said Exhibit "B" is a detailed and correct statement of the deraignment of title to the lands described therein. That said Exhibit "B" correctly shows the dates at which title to the several tracts or parcels of land therein described passed from the United States, or the State of Oregon, the nature of said lands with respect to the origin of title thereto (that is, whether school lands, school indemnity selections, swamp and overflowed lands, or otherwise) and the various mesne conveyances whereby title was derived by this claimant from the patentee or original grantee. And the Board further finds that the facts are as stipulated in that certain stipulation and agreement by and between said Chewacan Land and Cattle Company and the said Portland Irrigation Company and others, filed herein on the 3rd day of July, 1914, and dated as of that day, and now a part of the record herein; and said stipulation and agreement is hereby referred to, and made by reference a part of these findings. And that said Chewacan Land and Cattle Company has since these proceedings commenced, acquired those certain lands in the lower Chewaucan Marsh described on pages 461 and 462 of the record of contest testimony herein (bottom number of pages being 440 and 441); that sections 16 and 36 in Township 33 South, Range 19 East of W. M. were surveyed and the survey approved by the United States through its proper officials in the year 1874.

3. That it appears that all of said lands of said claimant are contiguous and form a large, single tract or parcel of land, and the several tracts composing the same were granted by the United States, or by the State of Oregon, to said claimant or its predecessors in interest at different times and under different public land laws. That the greater portion of the lands owned by said claimant were conveyed by the United States of America to the State of Oregon under the provisions

of the Act of Congress approved September 28, 1850, entitled "An Act to Enable the State of Arkansas and other states to Recover the Swamp Lands within their Limits," and the Act of Congress approved March 12, 1860, extending the provisions of said act of 1850 to the States of Minnesota and Oregon.

That it appears from said Exhibit "B" above referred to that all of said lands of said claimant passed into private ownership and became the property of said claimant, or its predecessors in interest, subsequent to March 3, 1877, prior to which date said lands were owned either by the United States of America or the State of Oregon, except Lots 1 and 2, of Section 5, and Lots 2, 3 and 4, and $E\frac{1}{2}SW\frac{1}{4}$ and $N\frac{1}{2}SE\frac{1}{4}$ of Section 15, Township 34 South, Range 19 E.W.M., which tracts or parcels of land were conveyed to the predecessors in interest of said claimant by the State of Oregon in the year 1874.

4. That said Chewacan Land and Cattle Company is the owner of certain lands within the boundaries of what are known as the Upper and Lower Chewaucan Marshes, in said county, which lands are alleged to be susceptible to irrigation from the waters of said river, and to be entitled to the use of said waters for the irrigation thereof, In addition thereto, said claimant is the owner of certain lands contiguous to and adjoining said marsh lands not within the boundaries of said marsh, and known as uplands, for which water rights are claimed. The Upper Chewaucan Marsh is an area of comparatively level land, situate in townships 33 and 34 South, Range 19 E.W.M., Lake County, Oregon, including about 14,343 acres within its boundaries, and the Lower Chewaucan Marsh isan area similar in character, south of said Upper Marsh, and comprising about 7,792 acres. Both of said marshes in their natural condition were covered with the grasses and vegetation usually found upon marsh lands, including various water grasses, tules, flags, canes, and other aquatic plants.

5. Prior to the year 1901 and under the natural conditions prevailing in said locality prior to any attempt at reclamation of said lands within said marshes, and the beneficial use of water thereon for irrigation purposes, said Chewaucan River flowed in its natural channel in an easterly direction, through Sections 19, 18 and 17, said township 33, to about Section 8 or Section 17, said township, where the waters flowing in said river and natural channel ceased to flow within well defined banks or channel, and spread out over the surface of the area known herein as the Upper Chewaucan Marsh, flowing slowly southerly, without defined or any channel, over and across said marsh a distance of several miles, to the lower end thereof, where, in about Section 13, said Township 34, said waters gathered into a natural channel more or less defined and flowed in a southerly course through the same; said channel or course being known as "The Narrows," and thence to the head of the said Lower Chewaucan Marsh in about Section 30, Tp. 34 S. R. 20 E.W.M., where the waters spread out over the surface of said Lower Marsh, without channel or without being confined in any well defined banks, but slowly flowing southerly over and across said Lower Marsh to Sections 2 and 11, of Tp. 35 S. R. 20 E., where the said waters again flowed into a natural channel, known as the Chewaucan River, or Lower Chewaucan River, and thence through and along said natural channel to Lake Abert, to which said waters are naturally tributary.

6. That at a point near the section line between Sections 23 and 24, Tp. 33 S. R. 18 E., a natural channel or water course, known as Small Creek and so referred to in the record herein, extends from said river in a southeasterly direction through said Section 24 and Sections 30 and 31, Tp. 33 S. R. 19 E.W.M., and originally the waters of said Chewaucan River, in the natural conditions prevailing prior to any artificial diversion or interference therewith, flowed into said Small Creek and through the same, down to said Upper Chewaucan Marsh, where the same spread out over a part of said marsh and commingled with the waters flowing over and across said marsh. That a number of sloughs, or natural channels diverged from said Small Creek, including Paisley Slough, Jones Slough, and Fisher Slough, which diverges from said Paisley Slough, these sloughs originally and under natural conditions receiving waters from the river and conducting the same down to and into said Upper Marsh.

7. Prior to said year 1901 these natural conditions practically remained unchanged so far as the lands owned now by said Chewacan Land and Cattle Company and its predecessors in interest were concerned, excepting that as early as 1885 some of the predecessors in interest of said company cut the wild grasses growing over a portion of said Upper Marsh, and removed the hay therefrom, and pastured cattle along the boundaries of said marsh, and annually thereafter, and to secure the better drainage of portions of said marsh, constructed a number of small drainage ditches, the purpose of which was apparently to permit of cutting hay upon said marsh and to render the portions of said marsh thus drained more accessible for those purposes, but otherwise no scheme of reclamation or irrigation appears to have been contemplated at said time. Prior to 1901 both said Upper and said Lower Marshes were natural swamps or marshes, annually overflowed by the waters of said river, and producing the usual swamp or marsh grasses common to such lands, and no attempt to reclaim said lands for the purposes of irrigation was made either by said Chewacan Land and Cattle Company, or any of its predecessors in interest.

8. That in the year 1901 the Chewacan Land and Cattle Company initiated the construction of works under a general plan for an artificial diversion, regulation, control, and distribution of the waters of the Chewaucan River, to secure the better drainage of the lands situated within said Upper Chewaucan Marsh, the Narrows, and the Lower Chewaucan Marsh, and to provide for the irrigation of said lands at the proper season, to produce the better growth of natural grasses growing upon said land for the purpose of producing crops of hay thereon and pasturage for a large number of cattle and other livestock annually pastured thereon. The plan proposed and the works constructed in pursuance of it involved a control, regulation and diversion of the flow of said Chewaucan River at or near the point where it enters said Upper Marsh, and thereby the irrigation of the lands of said claimant in said marsh, as well as the irrigation of said claimant's lands in The Narrows and in the Lower Chewaucan Marsh was accomplished.

In pursuance of said general plan, and about the month of October, 1901, said claimant commenced to construct, and in October, 1902, completed a canal in the Lower Chewaucan Marsh, known and referred to as the Lower Outside Canal, extending along the easterly borders of said Lower Marsh from The Narrows. In November, 1901, said claimant constructed and completed a dam and certain headgates near the southerly end of the Narrows at the head of said Lower Outside Canal, and in said dam, gates were installed to control the flow of the water through and around said dam into said Lower Marsh, and to control the flow of said water into and through said canal.

In the month of April, 1902, and as a part of said plan, claimant commenced to construct, and in July, 1902, completed the construction of a canal situate along the easterly side of the Upper Chewaucan Marsh, known and referred to herein as the Outside Canal. In the months of August and September, 1902, and as a part of said general plan, said claimant constructed and completed a levee approximately four thousand feet in length along the southerly side of the said Chewaucan River and following its general course westerly from the point where said river naturally discharges into said Upper Marsh. In September and October, 1907, said claimant extended said levee from its then terminus through Sections 17, 18 and a portion of Section 19, Township 33 South, Range 19 E. W. M. to its present terminus in said Section 19.

In June, 1902, and as a part of said plan, claimant constructed a headgate at the head of the Outside Canal to control the flow of the water from said Chewaucan River into said Outside Canal.

In June, 1902, and as a part of said plan, said claimant constructed and completed a headgate at the point where the Chewaucan River flows into said Upper Chewaucan Marsh.

In the summer and fall of the year 1902 said claimant did certain preliminary work for the construction of the canal known and referred to herein as the Center Canal, extending from the upper portion of said Upper Marsh down through said Upper Marsh to the lower end thereof.

In September, 1903, and as a part of said plan, said claimant began to construct, and in December, 1903, completed the construction of said Center Canal, and in the month of December, 1903, claimant constructed and completed an intake headgate near the head of said Center Canal to control the flow of water therein.

In September, 1903, and as a part of said plan, a dam was constructed by said claimant (for itself and certain other persons) in The Narrows on or near the south line of Section 19, Township 34 South, Range 20 E. W. M., with gates therein for the regulation of the flow of water through said dam. In the year 1910 a third headgate was constructed in said dam to assist with the regulation of the flow of water in the channel of said river and over the Lower Marsh below said dam.

In the year 1903, and as a part of said plan, and at the time of the construction of the dam last mentioned, claimant constructed (for itself and certain other persons) a ditch, known and referred to herein as the Brattain-ZX Ditch. Said ditch was first finished from its intake to the point where it intersects the westerly line of Section 30 in Township 34 South. Range 20 East. In October and November, 1903, said claimant constructed an extension of said Brattain-ZX Ditch, consisting of canals known and referred to as the East Branch Brattain-ZX Ditch, and the Lower Center Canal. The construction of the dam last above mentioned and of the said Brattain-ZX Ditch and its branches, and the maintenance and use thereof, as well as the construction of the Lower Outside Canal and its appurtenant headworks, was provided for in those certain agreements referred to more particularly in the statements and proofs of the said Chewacan Land and Cattle Company on file herein.

In the year 1910, and in pursuance of the agreements last mentioned, an extension of said Brattain-ZX Ditch was constructed from the intersection of said Brattain-ZX Ditch with the west line of Section 30, Tp. 34 S. R. 20 E. W. M. to a point in the NW¼ of the SW¼ of Section 1, Tp. 35 S. R. 19 E. W. M., said extension being known and referred to herein as the West Branch Brattain -ZX Ditch.

In addition to the larger works and structures hereinbefore mentioned, said claimant has from time to time during and since the year 1901 constructed, maintained and used various other ditches, levees, weirs, dams, gates and other structures for the regulation and utilization of the waters of said Chewaucan River in connection with the works more specifically above mentioned. Some of said latter structures consisted merely of temporary dams and other devices used during each irrigation season, located at different places from time to time, and in different years, their construction and use being dependent upon and controlled by conditions which vary from season to season and during each season.

In the month of September, 1901, claimant constructed, completed, and has since maintained and used a levee known and referred to herein as the Whitehouse Levee for the purpose of controlling the irrigation of lands lying between said levee and said Outside Canal, and certain other lands lying south of said levee. In the month of April, 1903, said claimant constructed and completed, and has since maintained and used certain gates in the west bank of said Outside Canal, and a weir therein, for the purpose of regulating the flow of and utilizing water from said Outside Canal for the irrigation of land adjacent thereto. In the said month of April, 1903, claimant constructed and completed and has since used and maintained, a ditch and headgate to divert water from said Outside Canal known and referred to herein as the Whitehouse Ditch, constructed and used for the purpose of controlling the flow of water through said Outside

Canal for the irrigation of certain lands of said claimant lying between said Whitehouse Ditch and said Outside Canal.

In the month of August, 1902, claimant constructed and completed, and has since maintained and used, a gate at the southerly end of the Outside Canal for the purpose of controlling the discharge of water from said canal. In addition to these works, various boxes have been installed at various points in said canals and in the Whitehouse and Redhouse Levees for the purpose of regulating the flow of water utilized in the irrigation of said lands.

In the month of April, 1909, a weir and gate was constructed in the Center Canal for the purpose of controlling and distributing the waters over claimant's lands lying west of said canal. In the year 1903 a headgate was constructed for the purpose of regulating the flow of water through the East Branch of Brattain-ZX Ditch and through the Center Canal, and in November, 1912, said Claimant constructed a weir and two gates in the lower Center Canal to distribute water over certain of its land. All of said works have, since their construction, been used by claimant, to secure the drainage of said marsh lands or for the control, regulation and distribution of the waters of the Chewaucan River in the irrigation of said lands during the proper season therefor, and in watering of claimant's live stock pastured upon said lands.

9. That said Chewacan Land and Cattle Company isthe owner of a right to take from and use water for domestic purpose from the T. J. Brattain, or Bagley Ditch, to the extent of and not exceeding eight miners inches in volume, whenever said ditch is conveying water. That on the 15th day of December, 1888, one T. J. Brattain was, by virtue of a valid appropriation of the waters of said river through what is known as the Bagley, or Brattain Ditch, entitled to divert and use an amount of water in excess of eight miners inches, continuous flow, of the waters of said river, and that by conveyances the said Chewacan Land and Cattle Company has become the owner and is entitled to take out and use for domestic purposes from said Bagley, or Brattain Ditch, running through Section 6, Township 34 South, Range 19 E. W. M., not to exceed eight miners inches, or one-fifth of one cubic foot per second, continuous flow, of the waters of said river, diverted through said ditch whenever the said ditch is carrying water.

10. That Small Creek is a branch of the Chewaucan River and a natural channel, as hereinbefore set forth. That prior to any artificial regulation for diversion of the waters of said creek by said Chewacan Land and Cattle Company, or other claimants, the water from said Chewaucan River, especially in times of high or flood waters, flowed into and through said Small Creek, and down over and across certain lands owned by said Chewacan Land and Cattle Company, through various channels and branches, and naturally overflowed said lands. That since about the year 1885 a headgate and a dam have been maintained in the Chewaucan River by the said Chewacan Land and Cattle Company, and others, for the purpose of diverting the waters of said river into Small Creek and of controlling and regulating the flow thereof into said stream. That continuously since about 1880, headgates have been maintained in said Small Creek at its junction with what is known as the Bagley Ditch, to regulate the flow of the water through said Small Creek from its junction with said Bagley Ditch. That said dam and said Small Creek headgate have been maintained and repaired by said Chewacan Land and Cattle Company, acting in common with other persons and claimants herein, or their predecessors, and said claimants have, for more than twenty years, controlled and regulated the flow of water into and through said Small Creek and into and through Paisley Slough, another branch of said river. That in September and October, 1910, said Chewacan Land and Cattle Company constructed a ditch upon its lands known and referred to as the Jones Ditch, tapping Small Creek in the NW¼ of the SW¼ of Section 32, Township 33 South, Range 19 E. W. M., and thence running easterly to an intersection with that certain ditch known herein as the Stock Ditch, constructed by the claimant in the year 1902. That in September, 1907, the said Stock Ditch was enlarged and extended

throughout its course, and in 1910 said Stock Ditch was enlarged throughout its entire length below its junction with the Jones Ditch to approximately the same dimensions as those of said Jones Ditch. That in September and October, 1911, said claimant Chewacan Land and Cattle Company constructed a levee extending along the northerly boundary of its said lands in Section 32, Township 33 South, Range 19 E. W. M., the purpose and effect of which levee was and is to more effectually control and divert into said Jones Ditch all of the waters of said Small Creek at the point where it enters the lands of said claimant. That the lands described in the tabulated statement herein as irrigated by the waters of said Small Creek have been irrigated since the construction of said Jones Ditch by openings in the southerly bank of said Jones Ditch, and by openings in the Jones Levee, which permit the waters to flow from said ditch and through said levee onto the land irrigated by such waters.

11. That Paisley Slough is a branch of Small Creek, as hereinbefore set forth. That said slough enters the lands of said Chewacan Land and Cattle Company at a point in section 32, Tp. 33 S. R. 19 E. M. M. That the waters flowing in said Paisley Slough are diverted through the natural channel of said slough at its head in Small Creek by a dam and headgate at the junction of Small Creek with the main channel of said Chewaucan River. That the waters are diverted from said Small Creek by a headgate in said creek and a headgate in said Bagley Ditch at the junction of Small Creek and said Bagley Ditch, whereby the waters are diverted from said Small Creek into said Paisley Slough. That continuously for more than fifteen years last past the said Chewacan Land and Cattle Company and its predecessors have, in common with other persons, maintained, repaired and used the said dam in said river, and have used the said gates in Small Creek at a junction with said Bagley Ditch to control the amount of water flowing into and through Small Creek and into and through Paisley Slough, and for more than ten years prior to the commencement of this proceeding the said Chewacan Land and Cattle Company has diverted through said Small Creek and through said Paisley Slough a portion of the waters of said Chewaucan River, and has conducted the same to the land of said claimant for the irrigation of said lands and the growing of crops thereon. That in the months of November and December, 1887, the predecessors in interest of said claimant constructed a dam in said Chewaucan River for the purpose of diverting certain waters of said river into Paisley Slough through a channel from said river connecting with said slough. That in the fall of 1902 this claimant, in common with other persons, began the construction of works for the purpose of changing the point of said diversion to the point where the same is now situated, and constructed a weir in the channel of said river, and a ditch known as the Jones-Innes-ZX Ditch, connecting Paisley, Jones and Fisher Sloughs with the channel of said river at said weir, and in October, 1903, constructed and completed certain gates at the junction of said ditch and slough, and has since, in common with other persons and their successors in interest, maintained and used the same for the purpose of regulating the flow of water into said Paisley Slough and into Jones and Fisher Sloughs, branches thereof. That the waters conducted through said Paisley Slough are carried over and distributed upon the lands of said claimant by the Vaquero, or Stock Ditch. That the waters of said Paisley Slough have been used by claimant the Chewacan Land and Cattle Company and its predecessors in interest for irrigation and stock purposes since 1885.

12. That Jones and Fisher Sloughs are branches of said Paisley Slough and that in the year 1884 a predecessor in interest of said Chewacan Land and Cattle Company constructed various headgates and boxes in Jones and Fisher Sloughs and the various branches and channels thereof, and by means thereof irrigated certain lands then owned by said predecessors and now by said claimant. That the said water is utilized by being carried through said Jones-Innes-ZX Ditch and Fisher and Jones Sloughs, and by being turned out of the latter and their branches and channels upon the land to be irrigated, by boxes and other openings and by dams in the channel of said sloughs and the minor branches thereof.

13. That in about the year 1902 the said Chewacan Land and Cattle Company commenced the construction of a weir in the Chewaucan River and completed the same in the fall of 1903, and in the months of September and October, 1903, constructed a portion of the Red House Ditch from its intake near said weir, and completed the same throughout its present length to said Outside Canal in May, 1904. That the headgate at the intake of said Red House Ditch was constructed and completed in the month of April, 1906, and a headgate near the eastern end of said ditch was constructed in the month of April, 1910. During and since the year 1904 the water diverted by said Red House Ditch has been put by said claimant to beneficial use for the irrigation of its lands and the watering of its cattle. That said Red House Ditch is owned by said Chewacan Land and Cattle Company, and by Fred T. Elsey, grantee of E. O. Lamb and Hayes McCall, successors in interest to J. E. Mitchell-Innes and C. L. Mitchell-Innes.

14. That Avery Creek is a natural channel and water course, also known as Moss Creek, flowing through Section 22 and into Section 15, Township 34 South, Range 19 E. W. M., and into said Upper Marsh. That since about the year 1885, the said Chewacan Land and Cattle Company has by means of small ditches distributed the waters of said creek over the lands described in the tabulated statement herein as irrigated thereby by means of said ditches, and thereby appropriated a sufficient quantity of water for the proper irrigation of said lands from said creek.

15. That a portion of the lands of said Chewacan Land and Cattle Company situated in said Upper Marsh, in Sections 3, 4, 5, 8, 9, 10 and 15, Township 34 South, Range 19 E. W. M., about 2,850 acres, has been designated upon the maps of the State Engineer herein as non-irrigated land, but that said land is claimed by said Chewacan Land and Cattle Company as irrigated land and as entitled to appurtenant water rights for the irrigation thereof.

That it appears to the Board that the growth upon said area last referred to consists chiefly of tules, flags, and other worthless and non-edible plants and grasses; that a very small part of the growth thereon consists of sugar grass or other vegetables useful for stock food or any other purpose. That said area appears, in fact, never to have been properly drained or reclaimed, and to require rather a proper drainage system than irrigation. That said area receives a large proportion of the waters from said river through Small Creek and its branches, and the seepage or waste waters from Bagley, or Brattain Ditch, and the Jones Ditch, and from the lands of the several claimants herein irrigating uplands between said Bagley Ditch and said Upper Marsh and adjacent to said Upper Marsh; that it appears to the Board that the use of water thereon in its present condition is unnecessary and wasteful, and not for a beneficial purpose or use, and that a claim of right to the use of water thereon is a claim for a non-beneficial use or purpose. That it appears, however, that said Chewacan Land and Cattle Company has been proceeding with its system of drainage works with due diligence, and that ultimately the said lands will be reclaimed from their swampy condition and become useful for the production of crops, and will eventually, if said drainage operations are prosecuted, require the application of water for irrigation of crops growing thereon. That said lands are a part of the general area for which the irrigation system hereinbefore described was constructed, and the ultimate reclamation of said lands, and the irrigation thereof, was undoubtedly contemplated by said claimant at the time of the commencement of its said system of irrigation. That in the opinion of the Board, therefore, said lands should be entitled to a conditional or inchoate water right, dependent upon their reclamation within the time fixed by the Board, and the application of water thereto for a useful or beneficial purpose, and the Board further finds that the use of water to promote the growth of tules, flags, and other worthless plants simply for the purpose of providing shelter for cattle and other livestock on account of the inclemency of the weather or otherwise, is not a beneficial use or purpose to which said claimant is entitled to devote any of the waters of said Chewaucan River, at any time.

That said lands should be considered as irrigable and fit for irrigation when the same have been properly drained and thereafter have been made to produce, by irrigation, the valuable grasses grown upon adjacent lands which are herein found entitled to a water right, where such grasses are valuable for stock food; and such growth of grass should be deemed sufficient if, in the judgment of the State Water Board, it constitutes the prevailing growth of vegetation upon said lands, that is, if the greater portion of the growth of vegetation upon said lands shall consist of grasses valuable for stock food of the same kind or character grown generally upon adjacent lands within said marsh. The cultivation of said lands and the production thereon of cereals, or other valuable vegetable crops fit for food, should be also considered a sufficient reclamation. As said lands are drained and properly prepared for irrigation, said claimant should be entitled to divert and use water for the irrigation thereof to assist in the production of said crops of grasses. That five years is a reasonable time within which to accomplish the complete reclamation of these lands so as to entitle said claimant to a vested and completed water right therefor. That upon it being made to appear to the satisfaction of the State Water Board that said lands have been properly reclaimed and made to produce a growth of vegetation valuable in character as hereinbefore defined, within the time herein limited, the said claimant should be entitled to a certificate of water right confirming to it a vested right for the irrigation of said lands, in the same amount and quantity of water per acre as said claimant is found entitled to for the irrigation of its other lands within said marsh.

16. That the Chewaucan River is a natural, non-navigable stream and water course, and from time immemorial has had its sources and origin upon public lands of the United States of America, and now rises and has its sources upon said public lands, and flows thence northerly through, over and across public lands of the United States of America for several miles, and that a considerable portion of the lands riparian to said stream and its tributaries above said Upper Chewaucan Marsh are the property of the United States of America.

17. That the claimant Chewacan Land and Cattle Company in its claims filed herein, and in its notice of contest, is claiming to have or own some right, title or interest in and to the use of the waters of said river and to the flow thereof, down to and upon its lands, by virtue of the ownership of lands alleged to be riparian in character to said river and its tributaries and branches. That a portion of the entire tract or parcel of land owned by said Chewacan Land and Cattle Company borders upon said stream, and as to said portion said claimant is a riparian owner; but as to the greater portion of said lands within said marshes and bordering thereon, it appears to the Board that the same are non riparian in character; that the same are not contiguous to and do not abut upon said stream or any of its tributaries, and said stream and its tributaries do not flow through, over or across the same in a well defined or any channel, but as hereinbefore set forth, said river, entering the head of said Upper Marsh, naturally spreads out over the same without a defined or any channel, and is not in any sense a natural water course through, over or across said Upper Marsh, except for a short distance at the upper end of said marsh; that said water naturally spreads out over said Lower Marsh without a defined or any channel, and is not a natural water course flowing through, over or across said Lower Marsh. That the Board is of the opinion that the claim of said claimant to riparian rights for the greater portion of lands within said marshes is unreasonable and far in excess of any rights it might have heretofore been entitled to claim by virtue of its riparian ownership; and it furthermore appears that said claimant has at all times in this proceeding predicated and based its claim to a use of said waters upon an appropriation thereof, in preference to any claim based upon ownership of lands riparian to said stream; that said claimant is attempting in this proceeding to assert rights to the use of said waters based upon the ownership

of lands riparian in character to said river and its tributaries, and at the same time to assert a claim of right to the use of the waters of said stream by virtue of prior appropriation as against contestees and other claimants herein. That said claimant, Chewacan Land and Cattle Company has by its claims elected to claim herein the use of said water as an appropriator thereof, and as against said Portland Irrigation Company, contestee, by virtue of prior appropriation, and thereby the Board finds that it has waived and abandoned any claim it may have had prior to this proceeding to the use of the waters of said stream or its tributaries or branches, or to the flow thereof, as a riparian proprietor. The Board has therefore disregarded any and all claims of said Chewacan Land and Cattle Company as a riparian proprietor, and herein expressly determines its rights by virtue of the application of the waters of said stream to a beneficial use by appropriation thereof for the irrigation of its said lands, and for stock and domestic purposes.

18. That the Northwest Townsite Company is the owner of certain water rights through certain ditches diverting water above the head of said Upper Marsh. That about the year 1881 the predecessors in interest of said Northwest Townsite Company constructed a ditch known as the Drink Water, or Little Conn Ditch, tapping said stream on the south side in the SE¼ of Section 23, Township 33 South, Range 18 E. W. M., and thereafter the waters of said stream were diverted down through said ditch and conducted upon the lands of said claimant described in the tabulated statement herein and utilized for the irrigation thereof. That about the year 1886 the predecessors in interest of said Northwest Townsite Company constructed what is known as the Mill Ditch, tapping said stream on the north bank thereof in the NE¼ of the SE¼ of Section 23, Township 33 South, Range 18 E. W. M., and diverted the waters of said stream through said ditch and utilized the waters so diverted for domestic, power and irrigation purposes upon the lands and in the mill described in the tabulated statement in the order of determination herein. That by virtue of said diversions as aforesaid through said Little Conn and through said Mill Ditch, the predecessors in interest of said Northwest Townsite Company appropriated the waters of said stream in quantities reasonably necessary for the purposes of said appropriation. That for the development of power at said mill described in the tabulated statement herein, said Northwest Townsite Company is entitled to divert and use not to exceed thirty cubic feet per second, continuous flow, but is not thereby entitled to consume said quantity of water, or to change the character of said use to any other or a different use, but should return the said waters so diverted after use to said stream, without substantial diminution in quantity, at its point of present return near the center of the south line of the SE¼ of NW¼ of Section 24, Township 33 South, Range 18 E. W. M.

That in the year 1885 the predecessors in interest of said Northwest Townsite Company commenced the construction of the Lower Conn Ditch, tapping said stream on the south side at a point near the southeast corner of the NW¼ of the SW¼ of Section 24, Township 33 South, Range 18 E. W. M., and completed said ditch, and by means thereof diverted the waters of said stream through said ditch and utilized the same for the irrigation of said lands and for domestic purposes. In the year 1903 the point of diversion of the said ditch was changed to a point on the south side of the main channel of said stream in the SE¼ of the NE¼ of the said Section 24, and a ditch was constructed leading from said point of diversion to said premises, which said ditch has been used ever since in the irrigation of said premises as the same are described in the tabulated statement in the order of determination herein.

That in the year 1896 the predecessor in interest of said Northwest Townsite Company commenced the construction of a ditch known herein as the Conn Ditch, from a point on the north side of said stream near the southwest corner of the NW¼ of the SE¼ of Section 27, Township 33 South, Range 18 E. W. M., down to and upon the lands described in the tabulated statement herein as irrigated therefrom, and by means of said ditch diverted the waters of said stream down to and

upon said lands, and utilized the waters so diverted for the irrigation of said lands and for domestic purposes.

That by virtue of the construction of said Conn Ditch, and said Lower Conn Ditch, and the diversion and use of water through the same as aforesaid, the predecessors in interest of said Northwest Townsite Company did appropriate a portion of the waters of said stream to an amount necessary for the proper and reasonable irrigation and domestic requirements of said appropriator for the irrigation of said lands and for domestic purposes.

It is claimed by the contestee that this ditch was originally constructed to irrigate 529½ acres of land; that it was constructed in the year 1896, and that by the year 1898 about 120 acres had been irrigated by it; and that further increase in the area irrigated under the ditch was prevented by an injunction issued in a certain suit in the circuit court of Lake County, Oregon, brought by George Jones and others against George Conn, the predecessor in interest of said Northwest Townsite Company, in said year 1898. It is further claimed that after said injunction was dissolved in the year 1901, the area of irrigated land was increased until about 275 acres were being irrigated. In 1912 there was an enlargement of the Conn Ditch under the permit issued by the State Engineer, and subsequently the total area irrigated was about 530 acres. Contestant contends that the contestee's predecessor in interest, George Conn, never in fact irrigated more than 160 acres of land prior to the year 1913; and that contestee is not entitled to divert any quantity of water in excess of that necessary to irrigate 160 acres, and that all rights under the permit are subordinate to the rights of the cattle company. It is also contended that the quantity of water claimed by the contestee is in excess of the quantity actually required for the lands involved. The Board finds in favor of the contentions of the contestant in these respects, and that therefore said contestee is not entitled to more than sufficient water through said ditch to irrigate properly 160 acres of its said lands as described in the tabulated statement herein, as of the priority date of 1896; the remainder of its said lands having priority from the date of filing application for said Enlargement Permit.

19. That the Portland Irrigation Company, contestee was prior to these proceedings and now is a corporation organized and existing under the laws of the State of Oregon.

20. That the Portland Irrigation Company, claimant herein, as contestee and contestant in said contests, claims to be the owner of certain water rights appurtenant to certain lands which are public lands and the property of the United States of America. That on September 30, 1905, said Portland Irrigation Company, through its duly authorized agents, posted a notice of appropriation of 15,000 miner's inches of the waters of said stream at a proposed point of diversion north 10 degrees and 54 minutes east 22.15 chains from the 1/4 section corner between sections 27 and 34, Township 33 South, Range 18 E. W. M., in Lake County, Oregon. That subsequently and on March 31, 1906, said claimant posted a similar notice. That on the 30th day of September, 1906, said claimant posted a similar notice. That on the 24th day of January, 1907, said claimant posted a similar notice. That each of said notices was posted at said proposed point of diversion. That on the 27th day of February, 1907, said claimant entered into a contract with the State of Oregon acting by and through its State Land Board, to reclaim as desert lands the lands hereinafter in the order of determination described, under what is known as the Carey Act, and acts amendatory thereof, and prior thereto had surveyed all of said lands and the canals, laterals and distributing ditches necessary to constitute a system for the proper irrigation of said lands from said stream, tapping the same at the point designated in said notices and had made maps and plans thereof. That on January 18, 1908, and on July 18, 1908, and on January 2, 1909, said claimant posted similar notices of appropriation at said proposed point of diversion as said notice first posted as aforesaid. That on

November 24, 1911, H. C. Brodie, alleging himself to be trustee for the State of Oregon, made application No. 1886 to the State Engineer for permit to appropriate 300 cubic feet per second of the waters of said Chewaucan River, and to supplement the direct flow of said water by storage for irrigation and domestic use on said lands, and at the same time filed with the State Engineer Application No. 1887 for permit to construct a reservoir and store for irrigation and domestic use the unappropriated waters of said Chewaucan River to the extent of 50,000 acre feet, said water so stored to be used upon said lands. That on December 12, 1912, said Brodie, pursuant to an order of the Desert Land Board of Oregon, assigned said applications aforesaid to said Portland Irrigation Company.

That on December 29, 1911, claimant, the Portland Irrigation Company, entered into a supplemental agreement with the State of Oregon by and through its Desert Land Board, to reclaim as desert lands said lands aforesaid and hereinafter in the order of determination described, under the provisions of said Carey Act and its amendments, by and through a system of canals, ditches and reservoirs, using the water of said stream. That it is the intention of said Portland Irrigation Company to construct a main ditch, laterals and distributing ditches, and a storage reservoir for the purpose of diverting, storing and using water for the irrigation of said lands.

21. That on September 6, 1903, the duly authorized agent of the State of Oregon did under and by virtue of said Carey Act (Act of Congress of the United States of America approved August 18, 1894, and Act of June 11, 1896, and Act of March 3, 1901, amendatory thereof) and in pursuance of the rules and regulations prescribed by the Secretary of the Interior, make and file in the United States Land Office at Lakeview, Oregon, a list of desert public lands which the State was then authorized to select under the provisions of said Carey Act and acts amendatory thereof, which said list of public lands included the lands now proposed to be irrigated by said Portland Irrigation Company and as described in the tabulated statement in the order of determination, herein. That on September 18, 1913, the Register and Receiver of said Land Office at Lakeview, Oregon, did certify to the accuracy of said list, and allowed and approved the same, and did certify that the whole of said lands were at said time surveyed public lands of the United States, except certain lands in Section 4 and Section 9, Township 33 South, Range 18 E. W.M., which were then unsurveyed; that the said lands were not, nor any part thereof, returned and denominated as mineral or timber lands; that there was no homestead or other valid claim to any portion of said lands on file or of record in said office; and that said lands were, to the best of their knowledge and belief, desert lands as contemplated by the said acts of Congress.

22. That on the 11th day of September, 1907, articles of agreement were made and entered into by and between the United States of America, through the Secretary of the Interior, and the State of Oregon, through the State Land Board of said State, under the provisions of said Carey Act and acts amendatory thereof, whereby and wherein the United States of America did bind itself to donate, grant and patent to said State, or its assignees, any particular tract or tracts of the said lands as described in said list and in the tabulated statement herein, upon the proper reclamation thereof within ten years, as provided in said contract; and it was understood and agreed that said State should have full power, right and authority to enter such lands, and from time to time make and enter into such contracts and agreements and to create and assume such obligations in relation to and concerning said lands as might be necessary to induce and cause irrigation and reclamation thereof as required by said contract and said acts of Congress.

That by virtue of said notices of appropriation, the said acts of Congress, the selection of said lands for reclamation thereunder, said contract between the United States and said State, and said contract and supplemental contract between said State and said Portland Irrigation Company, all of the waters of said Chewaucan River and its tributaries above said proposed point of diversion, not theretofore appropriated, and in an amount and to such extent as was and is

required for the proper irrigation of said lands, was thereby appropriated, set apart for and dedicated to the reclamation and irrigation of said premises, and the surplus waters of said stream over and above prior appropriations thereof in an amount necessary and essential to the irrigation and reclamation of said desert lands became thereby appurtenant to said lands.

23. That prior to February 24, 1909, and under and by virtue of the notice of appropriation posted as aforesaid on September 30, 1905, said Portland Irrigation Company was in good faith and in compliance with the laws existing prior to said date, attempting to perfect and complete its said appropriation for the irrigation and reclamation of the said desert lands, of approximately 12,000 acres, and was entitled at said time to complete and perfect the same, and apply the full amount of water necessary and essential to the purposes of said appropriation to the beneficial use proposed thereby, and is entitled now to complete said appropriation and to a reasonable time, under all the circumstances of this case, to complete and perfect the same, and to make complete application of water to a beneficial use under said appropriation. That said appropriation should be completed and perfected within the time fixed in the State's contract with the United States for reclamation thereof, or any extension of such contract as may be approved by the State Water Board.

That to the extent and in the amount set forth in the order of determination herein the said Chewacan Land and Cattle Company, claimant herein, is entitled to priority of right to the use of the waters of said Chewaucan River above its point of diversion and use thereof as against any right of use or diversion thereof by said Portland Irrigation Company. That as against any surplus waters over and above the quantity required to supply the said prior rights of said Chewacan Land and Cattle Company or other claimants named and designated in said tabulated statement as having prior rights, the said Portland Irrigation Company is entitled to a priority right dating from September 30, 1905, in an amount and quantity sufficient for the proper irrigation and reclamation ofsaid lands not exceeding the quantity and amount herein and hereby confirmed unto it. That as against said Chewacan Land and Cattle Company, any irregularities in the manner of posting, recording or publication of said notices so posted as aforesaid by said Portland Irrigation Company, or the insufficiency of said notices, does not interfere with or impair, and has not interfered with, or impaired, the priority of the rights of said Chewacan Land and Cattle Company in and to said waters to the extent that it is entitled to the use thereof. The appropriations of said Portland Irrigation Company should not be set aside or voided in these proceedings by virtue of any irregularities in the manner of posting thereof or publication of said notices, or the insufficiency of said notices.

24. That the proposed diversion point for the canal and irrigation system to be constructed for the reclamation of said lands by said Portland Irrigation Company, and the proposed sites for the dam to be constructed by said claimant are situate upon the public lands of the United States of America, and the diversions of said claimant are to be made at points upon said public lands.

25. From the testimony, evidence, maps, exhibits, and other data filed in this cause, including the maps and information as furnished by the State Engineer, and a personal inspection of conditions on the ground by all the members of the State Water Board, the following facts are found relative to the character of soil, kinds of crop, climate, evaporation, alkali, reclamation system, duty of water and water supply.

(a) Character of Soil. The soils for the purpose of this adjudication may be divided into two classes, namely, marsh lands and uplands.

The marsh lands comprise all lands embraced within the upper and lower Chewaucan Marsh, or approximately 22,135 acres.

The uplands comprise all other lands irrigated or to be irrigated from the Chewaucan River or its tributaries outside the limits of the marsh. The water requirements of these two types of soil are different.

The marsh land is a rich, peaty soil of fine texture from 0.5 to 2.5 feet in depth, generally free from alkali and of high water holding capacity. This surface soil is underlaid by a comparatively impervious stratum of whitish earth of unknown depth. During the non-irrigation season the surface soil dries out a few inches in depth forming a fine spongy mulch, which largely prevents further evaporation, thus lessening materially the amount of water required the following year to bring the soil to a proper moisture capacity for plant growth. At a few places where little or no surface vegetation is found, the surface soil shrinks and cracks on drying, giving indications that the soil is bone dry to great depths. Such appears not to be the case. The surface of the marsh is comparatively flat, sloping to the southeast approximately one foot to the mile. It subdrains with difficulty, if at all, under present conditions.

The uplands are in general the usual volcanic ash soil typical of Eastern Oregon and Idaho, with more or less clay, sand, gravel and loam intermingled. They are generally steeper than the marsh lands and will require a somewhat greater amount of water for their proper irrigation.

(b) Kinds of Crop. A considerable portion of the marsh produces a wild grass intermingled with tules and flags. It is cut annually and used for hay. Portions of the marsh inadequately drained produce rank growths of tules and flags with little if any marsh grasses of commercial value intermingled. The sugar grass and other hay making grasses do not require water standing or moving over the surface of the ground, but appear to do best when the moisture capacity of the soil is something less then complete saturation. There is evidence to show that sugar grass of apparently good stand and quality is found on canal banks where no water is applied on the surface, the necessary moisture being supplied entirely by capillary action of the soil. Standing or moving water on the surface is therefore not essential to plant growth.

On the uplands, all of the grains, grasses and hardy fruits and vegetables which are ordinarily produced at such elevation and in such climate are grown.

(c) Climate. The average elevation of the marsh is approximately 4,400 feet. The climate is therefore peculiar to this elevation. During January, February, and March the mean temperature at Paisley is under 41 degrees F., as shown by the U. S. Weather Bureau records. This is below that necessary to produce plant growth. For April, it is 47 degrees and increases gradually to 67 degrees in July, diminishing to 55 degrees in September.

The mean annual precipitation at Paisley is practically 12 inches. Of this, 4.14 inches fall during the crop growing months, April, May, June and July. During the first three months of the year, 3.47 inches fall and the last three months, 2.9 inches, or a total of 6.37 inches. During the six winter months, evaporation is at its minimum, and the moisture in the soil due to this precipitation should be sufficient to start plant growth in the spring without immediate application of water. But little, if any, water should therefore be allowed for saturation of the soil.

(d) Evaporation. There being no necessity for standing water on the surface, the figures for evaporation from a water surface cannot be used in computing duty of water. The formation of a loose mulch on the surface of the peaty soils of the marsh during dry weather indicates that losses by surface evaporation are small and probably less than for the uplands.

(e) Reclamation System. The marsh lands are not completely drained nor is the irrigation system adequate for the most economical use of water thereof. For three years out of eleven for which records are available, the entire flow of the stream is inadequate to supply the marsh and uplands in the vicinity of Paisley. A dredge is now at work on the marsh looking to an improvement of the present system so as to meet this limitation on water supply imposed by nature.

Though the marsh lands are comparatively flat and well adapted to irrigation by flooding, yet few if any checks have been thrown up to divide the land into basins of reasonable area. For many miles at a stretch, no gates are found in the canals to turn water out. Water is applied at the upper end of the marsh in great quantities and allowed to find its way slowly over the marsh as best it may to the lower end. Some parts receive too much, others too little water. During years of extreme floods, damage is done by washing out headgates, overflowing canal banks, and flooding the marsh unnecessarily.

The uplands are irrigated by ditches according to the usual practice in such districts.

(f) Alkali. The rich peaty soil on the surface of the marsh is in general free from alkali. U. S. Geological Survey analyses of Chewaucan River waters show them "excellent for irrigation purposes and could be used almost indefinitely without causing injurious accumulation of alkali, because of the dissolved matter in them." The maintenance of a sheet of water moving over the surface to remove alkali is therefore unnecessary; furthermore, it appears from standard works that alkali when dissolved would sink into the soil and only pure water run off. The remedy for alkali is rather, removing excess irrigation water and provision for drainage.

(g) Allowable Waste. Theoretically, no irrigation water should be allowed to waste off the lower end of the field. This is considered by some impractical. The waste from the upper basins or upper marsh can be caught up and used on the lower basins and lower marsh. An allowance of 12½ percent of the water allowed for one-fourth the area appears to be reasonable.

(h) Duty of Water. Measurements of Chewaucan River above Paisley, at The Narrows, and at Hotchkiss Ford indicate by proper deductions the amount of water actually used or consumed on the intervening lands.

31,390 acre feet were consumed between the upper two gages on 20,538 acres of land, or 1.52 acre feet per acre for the irrigation season, January 19th to July 1st, 1914. On the 7,792 acres embraced in the lower marsh, 10,760 acre feet were consumed during the same period, or 1.38 acre feet per acre. On the total area of 28,330 acres which includes some uplands, substantially 1.5 acre feet per acre was actually consumed. This figure is arrived at by measuring the water which flows on a given tract, and deducting that which wastes off the lower end, which is the usual method of determining the duty of water. But in practice some water is generally allowed to waste off. While 12½ percent of the water allowed for one-fourth the marsh area is a sufficient allowance for waste, yet due to the inadequacy of the present drainage and irrigation system the Board feels that at least 25 percent of the above amount of water may be allowed at least temporarily while the system is being perfected, and accordingly 2 acre feet per acre of water from Chewaucan River should be allowed for the marsh lands, during an irrigation season from March 1st to July 15th of each year. The precipitation of twelve inches per annum, together with drainage from the uplands adjoining, which must flow into the marsh, makes this appear a liberal allowance.

The uplands being somewhat steeper and not so favorably located as to impervious substrata to prevent deep percolation, will require more water than the marsh lands, and three acre feet per acre diverted from the stream during an irrigation season commencing April 1st and ending September 1st of each year is an ample allowance. For the lands of the Portland Irrigation Company embraced in the Carey Act Project to be supplied largely by the storage of excessive floods, two acre feet per acre delivered on the land is required, and an ample storage reservoir of such capacity as will insure the carrying over of such amount of water from wet years and delivery in dry years should be provided.

For domestic and stock water, the marsh lands should not have delivered from the Chewaucan River to exceed twenty (20) second feet during the

months of December, January and February, when freezing weather prevails and ten (10) second feet during the balance of the non-irrigating season. During the irrigation season, the allowance for irrigation on both marsh and uplands is ample for stock and domestic purposes.

That to facilitate distribution of the waters of Chewaucan River and its tributaries in accordance with the above limitations as to volume, no diversion should be made at a rate in excess of one-fortieth of one cubic foot per second of time for each acre, and for such period when water is available as will not exceed the above limitations as to volume.

(i) Effect on Stream. Upon such basis, it will require more water than is found in the stream, three years out of eleven, to supply claimants diverting water from the stream below the U. S. Geological Survey station at Paisley, without leaving any water during these years from the direct flow of the stream to supply the 12,000 acre Carey Act project. During two of these years, the apparent shortage for such rights will be approximately 22 percent, and the third year 27 percent. The system is not being improved with a view of spreading the water and using it with such economy as to insure reasonable reclamation during dry years as forced by these natural limitations. If these natural limitations are not overcome by necessary improvements, the lands suffering from such frequent shortages cannot be said to be adequately irrigated. To increase the amount of water allotted will increase the apparent shortage in dry years. The storing of excess flood waters and carrying the same over from wet to dry years will supply a reasonable amount for the 12,000 acre Carey Act project.

XV.

That W. H. Roush, as contestant, filed herein a statement of contest against Christina Schmidt, and William Schmidt, as contestees; F. N. Curtis as contestant, filed a statement of contest as against John B. Elder and E. S. McDonald, as contestees, and as against the Oregon Valley Land Company, a corporation, as contestee; that H. E. Curtis filed a statement and notice of contest as against said Oregon Valley Land Company, a corporation, contestee, and as against John B. Elder and E. S. McDonald, contestees; that D. M. Bryan filed a statement and notice of contest as against William Schmidt; the said contests in each case involving the use of the waters of Willow Creek, a tributary of the Chewaucan River, and from the evidence taken herein and submitted, the Board makes the following findings of fact:

1. That W. H. Roush, said contestant, is the owner and in possession of the $SE\frac{1}{4}$ of $NE\frac{1}{4}$ of Section 8, the $SW\frac{1}{4}$ of $NW\frac{1}{4}$ and $NW\frac{1}{4}$ of $SW\frac{1}{4}$, Section 9, all in Township 36 South, Range 20 E. W. M., Lake County, Oregon. That William and Christina Schmidt are the owners of the $SE\frac{1}{4}$ of $NE\frac{1}{4}$, $NE\frac{1}{4}$ of $SE\frac{1}{4}$ of Section 18, and the $W\frac{1}{2}$ of $NW\frac{1}{4}$ of Section17, Township 36 South, Range 20 E. W. M. That patent conveying the said lands in Section 8 unto said Roush was issued by the United States on September 30, 1899; and patent conveying said lands in Section 9 was issued to the predecessors in interest of said Roush by the United States on November 5, 1884. That patent conveying the said lands in Sections 17 and 18 to the predecessors in interest of said Christina and William Schmidt was issued by the United States in 1882. That D. M. Bryan, contestant above named, is the owner of certain lands in Section 8, Township 36 South, Range 20 E.W.M., in said Lake County.

2. That said Willow Creek is a natural water course flowing in a general northwesterly direction through the lands of said Christina and William Schmidt, and thence through the adjacent lands of said Bryan, and thence through the lands of said W. H. Roush, and is a tributary of the said Chewaucan River, being situate wholly in said Lake County, Oregon.

3. That about the year 1878 the predecessors in interest of said William and Christina Schmidt settled upon lands adjacent to said Willow Creek,

and constructed that certain ditch known as Barnum, or Schmidt Ditch, for the irrigation of certain lands situate in said Section 17, Township 36 South, Range 20 E. W. M., and thereafter and within a reasonable time diverted the waters of said Willow Creek and applied the same to the irrigation of about 33 acres of the land in the NW¼ of said Section 17, and thereby appropriated the waters of said stream in an amount necessary for the proper irrigation of said lands, as of said year 1878. That said ditch has been extended down to and upon the lands of D. M. Bryan, above named contestant, and the waters of said Willow Creek diverted through the same have been utilized for the irrigation of the lands of said Bryan in the NW¼ of NE¼ of said Section 17, and the S½ of SE¼ and the NE¼ of SE¼ of said Section 8, Township 36 South, Range 20 E. W. M.

4. That as between said D. M. Bryan, contestant above named, and William Schmidt, as contestee, a stipulation and agreement was made and entered into, in writing, in full settlement of their conflicting claims, and was filed herein, as follows:

First, That said contestant, D. M. Bryan, and said Contestee, Wm. Schmidt, are the joint owners of that certain ditch, each owning a one-half interest therein, which ditch has its head on the banks of Willow Creek, a tributary of the Chewaucan River, at a point on said Willow Creek, at or near the west boundary line of the southwest quarter of the northwest quarter of Section Seventeen, in Township Thirty-six South, Range Twenty East of the Willamette Meridian, and extending in a northeasterly direction through the southwest quarter of the northwest quarter, northeast quarter of northwest quarter, and northwest quarter of northeast quarter of said Section Seventeen, and the East half of the Southeast quarter of Section Eight, in said Township and Range, terminating in the northeast quarter of southeast quarter of said Section Eight, and designated on the map of the survey of said township, of record in the State Engineer's Office, of the State of Oregon, according to the survey thereof, made by C. E. Stricklin, in the month of December, 1912, as "Schmidt Ditch," but sometimes locally known and called the "Branch-Barnum" or "Branch & Barnum" ditch, said ditch having been constructed for the purpose of diverting waters from said Willow Creek, to be used in irrigating certain lands now owned by said contestee, Wm. Schmidt, in the northwest quarter of said Section Seventeen, and also for irrigating lands now owned by said contestant, D. M. Bryan, located in the northwest quarter of the northeast quarter of said Section Seventeen, and the south half of Southeast quarter and Northeast quarter of southeast quarter of said Section Eight; and that said ditch is appurtenant to said lands so owned by said contestee, Wm. Schmidt, and is also appurtenant to said lands so owned by said contestant, D. M. Bryan.

Second. That the diversion of waters from said Willow Creek, through said stream, by the parties hereto, shall be discontinued on the 15th day of July of each year, by shutting down the headgate at the head of said ditch, and turning all water from said ditch at its headgate, into the channel of said stream, and no water shall be turned into said ditch from said stream, prior to the 7th day of August next following, provided, however, that if the said contestee, Wm. Schmidt, shall have finished cutting and stacking or baling the hay from said lands in the northwest quarter of said Section Seventeen, at an earlier date than August 7th, the said contestant D. M. Bryan, may at once thereupon divert and turn such of the waters of said stream, into said ditch, as he may be entitled to divert and convey there-through.

Third. That neither of the parties hereto shall divert the waters from said stream, into said ditch, or convey the same there-through, later than the 15th day of October, of any year.

Fourth. That the State Water Board of Oregon, Water Division No. 1 for Lake County, may make its findings in accordance with the facts herein

stipulated, and the Circuit Court of the State of Oregon, for the County of Lake, may make and enter a decree herein, in accordance with said findings, and that said decree shall be binding upon the heirs, successors and assigns forever, of each of the parties hereto, as owners of the said lands to which said ditch is appurtenant."

5. That said William and Christina Schmidt are the owners of certain lands in said Section 18, Township 36 South, Range 20 E. W. M., of which it is claimed a total of 82 acres have been irrigated by the diversion of the waters of said Willow Creek and application to the lands of said claimants since the year 1878. That the evidence shows the facts to be that prior to the year 1898 certain springs and feeders of said Willow Creek flowed through and across said lands in Section 18, and at certain seasons of the year overflowed the said lands naturally, and assisted in the production and growth of the natural wild grasses thereon. That about the year 1898 the predecessor in interest of said Christina and William Schmidt constructed a ditch to divert and utilize the waters of said springs and feeders for the proper irrigation of said lands, and also appeared to have constructed a ditch from said stream to convey the waters of said Willow Creek down to and upon said lands for the irrigation thereof. That by virtue of the construction of said ditch as aforesaid, the predecessors in interest of said Christina and William Schmidt did appropriate for the irrigation of said premises in said Section 18 the waters of said Willow Creek, and said tributary springs and feeders, and are entitled to an appropriation of said waters, dating from said year 1898, for the lands so described in Section 18.

6. That in the year 1891, said W. H. Roush constructed a ditch from said Willow Creek and diverted the waters of said Willow Creek through the same down to and upon his said lands, and thereafter and within a reasonable time applied the waters so diverted to the irrigation of about twenty acres of said lands, and thereby appropriated to a beneficial use the waters of said Willow Creek in an amount necessary for the irrigation of said premises and so far as said waters were then subject to appropriation as of said year 1891.

7. That the relative rights of the said claimants, their priorities, the quantity of water to which they are entitled by virtue of their several appropriations and the area of land irrigated, and a description thereof to which said water rights are appurtenant in each case are more fully and particularly set forth in the tabulated statement in the order of determination herein.

8. That H. E. Curtis, contestant above named, is a homestead entryman upon and in possession of the $S\frac{1}{2}$ of the $SW\frac{1}{4}$ of the $NW\frac{1}{4}$, the $W\frac{1}{2}$ of the $SE\frac{1}{4}$ of the $NW\frac{1}{4}$, and the $S\frac{1}{2}$ of the $NE\frac{1}{4}$ of the $NW\frac{1}{4}$ of Section 26, Township 35 South, Range 20 E. W. M., and that on November 29, 1913, said Curtis made application to the State Engineer for a permit to appropriate the waters of said Willow Creek, and thereafter Permit No. 1418 was duly issued unto him by the State Engineer of Oregon. That F. N. Curtis, contestant above named, on said 29th day of November, 1913, filed application in the office of the State Engineer of Oregon, and Permit No. 1417 was thereafter issued to him. That said F. N. Curtis is a homestead entryman upon, and in possession of, certain lands in the $SW\frac{1}{4}$ and $SE\frac{1}{4}$ of Section 26, Township 35 South, Range 20 E. W. M.; that thereafter said F. N. and H. E. Curtis, together with one H. C. Goff, commenced the construction of the Curtis and Goff Ditch for the irrigation of their said premises, and have been proceeding with due diligence in the construction of said ditch and the application of the waters appropriated to the said lands for the irrigation thereof.

9. That the Oregon Valley Land Company is a corporation, organized and existing under the laws of the State of South Dakota. That prior to 1890, the predecessors in interest of the said Oregon Valley Land Company entered upon Willow Creek and constructed several dams and ditches and weirs, whereby the waters of

said Willow Creek were diverted over and across the lands described opposite the name of said Oregon Valley Land Company in the tabulated statement herein. That at said time said predecessor in interest, the Heryford Land and Cattle Company, a corporation, was the owner of certain lands in Township 34 and Township 35 South, Range 20, Township 35 and Township 36 South, Range 21, East of W. M., in Lake County,Oregon; that about the year 1908 said Oregon Valley Land Company purchased from said Heryford Land and Cattle Company said real property, and thereafter sold the same at public auction in tracts ranging from ten acres up, under a contract which bound said Oregon Valley Land Company to furnish water to each purchaser of a ten acre tract sufficient to irrigate five acres thereof. That said predecessor in interest of said Oregon Valley Land Company commencing prior to said year 1890, constructed a system of dams and ditches for the regulation of the flow of water in said Willow Creek, and for the diversion of the same into said ditches, and thereby applied the waters of said Willow Creek to the lands described in the tabulated statement herein under and opposite the name of said Oregon Valley Land Company for the irrigation thereof. That the irrigation season begins subsequent to the first of March and terminates the first day of July, during which season the waters of Willow Creek have been heretofore diverted and applied to the irrigation of said lands by the predecessor in interest of said Oregon Valley Land Company. That the said lands require for their proper irrigation during said irrigation season an aggregate quantity or amount of water not exceeding three acre feet for each acre irrigated. That it appears to the Board that under the contracts executed by said Oregon Valley Land Company, said company agreed to furnish for each ten acre tract sufficient to irrigate five acres thereof. This being the contract with the company, and the lands having been sold, the company appearing herein on behalf of the purchasers, the Board finds that the quantity of water to which said company is entitled does not exceed the rate of three acre feet for each acre for which said lands are entitled to a right, and it appearing to the Board that only five acres of each ten acre tract is entitled to water, and application having been made without segregating the particular tracts to which water is appurtenant, the Board therefore finds that for each acre of land described in the tabulated statement hereinafter set forth, said company is entitled on behalf of the purchasers of said lands to not exceeding one and one-half acre feet of water during each irrigating season.

10. That J. B. Elder and E. S. McDonald are in possession of certain lands, under lease, described in the tabulated statement opposite their names herein, and prior to 1890 said lands were irrigated by a system of dams and ditches diverting the waters of Willow Creek onto said lands, through said ditches, and from the main channels of said Willow Creek. That by virtue of said use of the waters, an appropriation of the waters of said Willow Creek was made which thereby became appurtenant to the said lands for the irrigation thereof. That three acre feet per acre, during the irrigation season commencing the first of March and terminating the first of July, or a continuous flow of not to exceed one-half inch per acre during said season, is sufficient for the proper irrigation of said lands.

It further appearing to the Board that the lands for which water rights are claimed by said Elder and McDonald from Willow Creek are lands heretofore sold by said Oregon Valley Land Company in small tracts, with a water right for each five acres of each ten acre tract, the Board finds that for each acre of land to which a water right is hereby made appurtenant from said creek in favor of said Elder and McDonald, not to exceed one and one-half acre feet should be allowed.

XVI.

That in settlement of the contest brought by Jennie Holder, as contestant, against S. P. Moss, as contestee, the parties to said contest entered

into a stipulation and agreement in writing as follows, to-wit:

"1st. That the contestant, Jennie Holder, is the owner of the following described lands, to-wit: Southeast quarter of Southeast quarter of Section Thirty-three, and Southwest quarter of Section Thirty-four, in Township Thirty-four South, and Lots Two, Three and Four of Section Three, and Lot One of Section Four, in Township Thirty-five South, all in Range Nineteen East of Willamette Meridian, in Lake County, Oregon.

"2nd. That the Contestee, S. P. Moss, is the owner of the Northwest quarter of Section Thirty-four, Township Thirty-four South, Range Nineteen East of the Willamette Meridian, in Lake County, Oregon.

"3rd. That all of the natural flow of the waters of said Schoolhouse Creek is necessary for the use of said Contestant and said Contestee, for the irrigation of the above described lands belonging to said Contestant and said Contestee, and for stock and domestic purposes thereon.

"4th. That said Contestant is entitled to a first and prior right to the use, at all times of the year, of not to exceed one-fortieth of one cubic foot per second of the natural flow of the waters of said creek, for domestic and stock purposes, upon her said lands, said quantity of water to be measured at the point of diversion of the same from the channel of said stream.

"5th. That during the irrigation season of each year, as hereinafter defined, of the remainder of the natural flow of the waters of said stream, after supplying to said Contestant, for her said lands, such one-fortieth of one cubic foot per second, for the purposes aforesaid, the said Contestant, Jennie Holder, is entitled to the use of seven-tenths thereof, upon her said lands, for irrigation, domestic and stock purposes, and the said contestee, S. P. Moss, is entitled to the use of the remaining three-tenths thereof, upon his said lands, for irrigation, domestic and stock purposes.

"6th. That the use, for the purposes aforesaid, by said Contestant and said Contestee, of said remainder of the natural flow of the waters of said stream, after supplying to said contestant, for her use for stock and domestic purposes, the said one-fortieth of one cubic foot per second therefrom, shall be alternate, or by rotation, the said Contestant, Jennie Holder, using the entire natural flow of such remainder of the waters of said stream, for the first seven days of the irrigating season, beginning at six o'clock a.m. on March first, and ending at six o'clock a.m. on March 8th, and said Contestee, S. P. Moss, using such remainder of the natural flow of the waters of said stream, for three days next following, beginning at six o'clock a.m. on March 8th, and ending at six o'clock a.m. on March 11th, and so on alternately throughout the irrigating season of each year; the Contestant thus using such remainder the first seven days of each ten day period of the irrigating season, and the Contestee using the same the last three days of each ten day period of the irrigating season.

"7th. That the irrigating season, as herein understood and referred to, is defined to be that portion of the year beginning at the hour of six o'clock a.m. on the first day of March, and extending to the hour of six o'clock a.m. on the first day of October of each year, which period is the proper season for irrigating crops on the above described lands of Contestant and Contestee.

"8th. That said Contestant is entitled to the use, upon her said lands, for irrigation, domestic and stock purposes, of all of the natural flow of the waters of said stream, at all times of the year, outside of the irrigating season, as herein defined.

"9th. That the suit now pending in the Circuit Court of Lake County, Oregon, between said Contestant, Jennie Holder, as Plaintiff, and said Contestee, S. P. Moss, as Defendant, shall be immediately dismissed, without cost to either party, and the restraining order issued therein, be dissolved, and that

the defendant in said action will not claim damages, or maintain any action therefor, on account of the issuance of said restraining order.

"10th. That the use of the waters, by the parties hereto, under this stipulation, shall be effective and operative immediately upon the execution hereof, and the said Contestant shall be entitled to the use of the waters, as herein provided, up to six o'clock a.m. on July 2, 1914, and the Contestee shall be entitled to the use of said waters, as herein provided, for histhree day period, beginning at six o'clock a.m. on July 2, 1914, and the use of the same thereafter to continue alternately, or by rotation, as hereinbefore provided.

"11th. That the time for the change of use of the water, and shutting down headgates, shall begin and terminate at the exact time, as hereinbefore set forth, whether either party avails himself of the privileges of taking water, or not.

"12th. That the State Water Board of Oregon, Water Division No. 1, for Lake County, may make its findings in accordance with the facts herein stipulated, and the Circuit Court of the State of Oregon for the County of Lake, may make and enter a decree herein, in accordance with such findings."

XVII.

That as between J. C. Shellhammer and S. P. Dicks, claimants to the waters of Crooked Creek, the following stipulation and agreement was entered into in writing, and filed herein for the purpose of defining their respective rights and adjusting and settling their conflicting claimsto the waters of Crooked Creek, as follows, to-wit:

"First: That both of said claimants divert their respective appropriations, as set forth in their proofs herein, from what is herein designated "West Crooked Creek," the same being a natural channel following a northerly direction along a line approximately following the center line of Sections 12 and 24, in Tp. 37 S. R. 20 E. W. M., through which channel the natural drainage waters from lands above the respective points of diversion of said claimants, flows, and which channel is situate west of the natural channel of Crooked Creek proper.

"Second: That at a point in the NE¼ NW¼ of Section 24, Tp. 37 S. R. 20 E. W. M., said channel herein referred to as "West Crooked Creek," forks or divides into two separate channels or branches, through which the said waters flow to the respective points of diversion ofsaid claimants, which said branches are herein referred to as the EAST and WEST branches of said West Crooked Creek.

"Third: That said first party, J. C. Shellhammer, has for more than ten years last past, diverted and used the waters of said East branch of said West Crooked Creek, continuously, and under a claim of right, to the extent and in the manner set forth in his proof herein. That about two years ago, the said claimant, Shellhammer, constructed a dam or obstruction in the West Branch of said West Crooked Creek, for the purpose of diverting said waters to his said lands.

"Fourth: That said second party, S. P. Dicks, is the prior appropriator of, and has for more than ten years last past used the waters flowing in the West Branch of said West Crooked Creek, and has diverted the same at a point below the obstruction or dam in said West Branch, whereby said waters are diverted to said Shellhammer's lands, as aforesaid, to the extent and in the manner set forth in his proof herein.

"Fifth: That up to and until the first of June of each year, there is generally and ordinarily sufficient water in said West Branch, but subsequent to that time, said flow diminishes considerably and there is no more than sufficient forthe use of said Dicks for his said lands.

"Sixth: In view of the foregoing facts, it is therefore understood, stipulated and agreed by said parties, that said S. P. Dicks has the prior right and appropriation to any of the waters flowing in said West Branch, during the irrigating season of each year, for the uses and purposes set forth in his proof herein, and that said J. C. Shellhammer has the second right to said waters, for the irrigation of the lands described in his said proofs herein; that said claimant, Shellhammer, will not, after the first of June of each year, interfere with, molest, or hinder, by dam, obstruction, or otherwise, either by himself, his servants, or agents, or those in possession of his lands and water rights under him, the flow of said waters in said West Branch, down to the diversion point or points of said Dicks, or his successors in interest in said lands; that said Dicks shall not in any manner, either by himself, his agents, or servants, or those claiming by or through him, as tenants in possession or otherwise, interfere with, hinder, molest or obstruct the use of the waters of said East Branch by said Shellhammer, or his successors in interest in his said lands; and that each of said claimants shall have the unobstructed right to the use of said waters, as herein set forth, in the respective branches from which they are entitled to divert the same, without let or hindrance, the one by the other, peaceably and without obstruction, to the extent of their respective rights of appropriation.

"Provided, however, that said Shellhammer may use the waters of said West Branch whenever there shall be a surplus of waters in said West Branch, over and above the quantity required for the irrigation of the lands of said Dicks, as set forth in his proofs herein, up to the first day of June, of each year and irrigating season.

"Seventh: This agreement shall be binding upon claimants, their heirs, assigns and personal representatives."

XVIII.

That Carl J. Ringnell filed a claim as a riparian owner, claiming the waters of Juniper Creek by virtue of riparian ownership. That he alleges that his riparian rights were initiated in the year 1874 when the lands described in his proof passed from the United States of America to the State of Oregon, and thereafter to said claimant; that it appears from said proof that said claimant has made no beneficial use whatever of any of the waters of Juniper Creek, nor any actual application of water to beneficial use prior to the year 1909, or under and by virtue of any permit issued by the State Engineer of Oregon, or otherwise, or at all, nor does it appear that said riparian claimant was heretofore or on February 24, 1909, or thereafter, and prior to these proceedings engaged in constructing works for the application of water to a beneficial use. It appearing from said proof that the said claimant has never made any beneficial use of the waters of said stream for any purpose upon his said lands, the Board finds that there is nothing to determine or adjudicate with respect to said claim, and therefrom concludes that said proof of claim should be rejected and disregarded.

XIX.

That Geo. M. Jones has made claim to the waters of Dairy, South and Elder Creeks for the irrigation of 810 acres of land, claiming to have irrigated that area of land by means of temporary dams and plow furrows; that after a careful examination of the maps of the State Engineer and the maps filed on behalf of said claimant, it appears to the Board that said lands have not, in fact been irrigated as set forth in said claim, nor does it appear that the map submitted by said claimant made by one S. A. Mushen, was from a survey, or that there was any accurate description of any area of irrigated land, or any irrigated land, nor does the survey of said surveyor show that any of said lands have been actually irrigated. That the Board therefore rejects the application of said Geo. M. Jones for the

irrigation of said lands to the extent of 810 acres, for the reason that he has not furnished sufficient proof of the irrigation of said lands, or any part thereof.

XX.

That the following stipulation was filed by Hotchkiss Brothers, to-wit:

"It is hereby stipulated and admitted by A. C. Hotchkiss, P. W. Hotchkiss and Wm. Hotchkiss, partners doing business under the name of Hotchkiss Bros., and claimants in the above entitled proceeding, that the rights of these claimants in and to the waters and the use of the waters of Crooked Creek and its tributaries are inferior and subsequent to the rights of the Oregon Valley Land Company, a corporation, in and to said waters and the use thereof, and that the claim filed in the above entitled proceeding by the Oregon Valley Land Company in behalf of itself and all persons to whom it sold the lands in said claim described, is entitled to priority over the claim to said waters made in the above entitled proceeding by Hotchkiss Brothers. It is distinctly understood, however, that Hotchkiss Brothers claim a right to use the waters of said Crooked Creek and its tributaries, as set up in its claim on file herein, second only to the right and claim of the said Oregon Valley Land Company, and this admission is made to admit the priority of the right of said Oregon Valley Land Company only, permitting the claim as filed by the said Hotchkiss Brothers to stand as against the rights of all other claimants to the use of the waters of said Crooked Creek."

XXI.

The following stipulation was entered into by and between S.P. Moss and M. J. Bryan, claimants to the waters of Willow Creek, to-wit:

"Come now M. J. Bryan and S. P. Moss, claimants to the waters of the stream known as Pine Creek, a tributary of Willow Creek, a tributary of the Chewaucan River, and stipulate and agree to settle their conflicting claims to said waters, as follows:

"It is understood and agreed that the right of M. J. Bryan for the irrigation of 33 acres of her lands, as described in her proof herein, was initiated in the year 1880, and that the use of the waters of said stream was commenced about the year 1880 on her said lands; and it is further understood and agreed that the right of S. P. Moss, claimant herein, from said Pine Creek, for the irrigation of his lands, as set forth and described in his proof herein, was also initiated in and about the year 1880, and that the rights of said claimants, S. P. Moss and M. J. Bryan, as to the time of the initiation of their respective rights are equal, neither having priority over the other; and that each shall so use the waters of said stream under his respective appropriation as to not unnecessarily or unreasonably interfere with the like rights of use by the other."

XXII.

That Avery Creek mentioned in the tabulated statement in connection with the rights of the Chewacan Land and Cattle Company and to which said company is found entitled to have a right, is known locally as Moss Creek, and flows in several branches northerly through Sections 31, 32, 33, 34, 27, 28, 29, 31 and 22, to and upon the lands of said company as described in said tabulated statement. That said company does not claim any water from that certain canyon immediately east of section 15, Tp. 34 S. R. 19 E.W.M., debouching on said section near the buildings and improvements thereon, known as the Bogue place and flowing past certain property of V. O. Z. Morgan and to the waters of which Mrs. V. O. Z. Morgan is entitled to a right, as determined herein.

Based upon the foregoing findings of fact, the State Water Board now makes the following

ORDER OF DETERMINATION

1.

That the following is a tabulated statement setting forth the relative rights of the various claims to the waters of said stream and its tributaries. That in accordance with the findings of fact hereinbefore made, and the proofs and evidence on file herein on behalf of the several parties, and in the several contests, it is hereby determined by the Board that the following named claimants to the waters of said Chewaucan River, its tributaries and branches, are entitled to a decree and to a certificate of water right in accordance therewith, determining and establishing and confirming their several rights to the use of the waters of said stream, as of the date of relative priority, and in the amount in cubic feet per second (subject to the limitations in acre feet hereinafter in separate paragraphs in each case set forth) for the irrigation of the number of acres, through the ditch or ditches, or other means of use, upon the hereinafter described lands, as such date, amount, number of acres, use, ditch or ditches, or other means of use, and lands or place of use are hereunder set forth or described in tabulated form opposite the respective names of said claimants to the waters of said stream, or the particular tributary whence such appropriations are diverted as set forth in the seventh column of said tabulated statement, as follows, to-wit:

2.

The rights of appropriation herein confirmed confer no right to the diversion and use of water which shall have been lawfully impounded in reservoirs or other storage works which may hereafter be constructed in accordance with law, when the same are discharged into the natural channel of said stream or any tributary thereof in a lawful manner by those having a lawful right to do so, but the rights of appropriation herein confirmed, except as to those which are determined to have a right for storage purposes, are limited and confined to the waters flowing naturally in the natural channel of said stream and its tributaries.

3.

That none of the claimants hereinbefore named shall be entitled to divert a quantity of water for direct irrigation in excess of the quantity hereinbefore determined to be appurtenant to their particular tract of land as herein described, nor any quantity in excess of the quantity actually required by them for the beneficial irrigation of their lands. Said claimants may divert such quantities as the same are set forth in the tabulated statement herein, as appurtenant to their particular and respective tracts of land, from the beginning of the irrigation season as hereinbefore set forth, until the termination thereof, but the total quantity which any claimant shall be entitled to divert and use during the irrigation season shall not exceed in the aggregate in each case the quantity in acre feet for each acre actually irrigated as said claimant is determined entitled to herein, that is to say, no claimant shall be entitled to water in excess of the entire quantity which will supply each acre of his land actually irrigated and for which a water right has been confirmed, the quantity in acre feet to which he is herein found entitled, or to an amount in second feet in excess of the right herein limited at any time except under a rotation system and the water right certificate when issued shall express the limitation herein set forth as to quantity of water both in terms of acre feet during the irrigation season, and a rate of flow in cubic feet per second of time to which each of said claimants is entitled sufficient to furnish said quantity in acre feet, to be diverted at such times as required by said claimants during the said irrigation season. The quantity of water to which each claimant is entitled shall be measured both as to acre feet

and second feet at the head of the ditch through which water is diverted from the stream, or at the point where, by any other means of diversion, water is taken from said stream, or within a reasonable distance therefrom, except as otherwise provided for herein. The division and distribution among the various claimants shall be made at all times throughout the irrigation season in accordance with the dates of the relative priority of their respective rights as hereinbefore and in the tabulated statement herein set forth.

4.

That the rights of appropriation hereby confirmed are and shall remain appurtenant to the lands herein described, as provided by law, and the priorities herein confirmed confer no right of use of the waters of said stream or its tributaries on other lands than those specified tracts to which such rights of appropriation are hereinbefore set forth as appurtenant, except as otherwise provided by law.

5.

That the right of use for domestic and stock purposes hereinbefore confirmed (except as otherwise expressly set forth herein), entitle the owner of such right to divert and use such quantity of water as is reasonably necessary for his household and stock use, that is, for the watering of livestock upon the lands of the said claimants hereinbefore described, and during the irrigation season the amount of water confirmed herein to each claimant for irrigation includes the entire and total amount to which such claimant is entitled for irrigation, stock and domestic purposes during the irrigation season.

6.

That a system of rotation in the use of water among the several appropriators of small amounts of water, in the same neighborhood, or through the same ditch, has been in use more or less upon said stream and its tributaries, and adds greatly to the duty which said water may be made to perform, and, therefore, as among those irrigating small tracts or bodies of land where rotation in the opinion of the water master will be practicable and beneficial, they shall rotate in the use of water; and that in the absence of an agreement between such appropriators, arranging for such rotation and the manner in which such water shall be used in such rotation, the water master of the water district in which such stream and its tributaries may hereafter be situated, shall arrange such appropriators in groups or systems of rotation, first giving the appropriator who is first in priority an amount of water equal to the combined appropriations of allthe appropriators in said group or system for a length of time bearing the same ratio to the whole time required to make the complete rotation through the whole group of appropriators, as the appropriation of the said first appropriator bears to the combined appropriations of said appropriators, and shall next serve the next appropriator in priority with a like amount of water for his proportionate time, and so on, until all the appropriators in said group are served; then the distribution of water shall be repeated in the same manner through the irrigation season; that in case of two or more appropriators in said group or system having the same priorities, then the said water master shall distribute the water as between those appropriators having the same priorities to the one whose ditch taps the stream nearest its source first, and the next lower down next, and so on; and in case two or more appropriators have equal priorities and divert water through the same ditch, the said water master shall distribute the water as between said appropriators to the one whose lands are first covered by said ditch and nearest the head thereof, first, and to the next lower down on said ditch, next, and so on; and where two or more appropriators agree as between themselves as to the manner and system of rotation in the use of their water, the said water master shall distribute the water in accordance with such agreement; provided, always, that

such arrangement into groups or systems, or distribution under such agreements, shall not interfere with the prior rights of any appropriator not a member of such group or system.

7.

That for the irrigation of the lands of the Chewacan Land and Cattle Company included within the boundaries of the Upper and Lower Chewaucan Marshes, the same being a total of 17,747.7 acres, and described in the tabulated statement as irrigated from the Chewaucan River by main diversion and appurtenant works as of the priority of 1901; and for the irrigation of the lands of H. A. Brattain in said Lower Marsh, including a total of 415 acres, described in the tabulated statement as having a priority of 1875 for five acres, and remainder thereof 1901, and irrigated from the Lower Outside Canal; and for the irrigation of the lands of H. A. Brattain, P, J. Brattain and Mrs. C. N. Brattain-Small described in the tabulated statement herein as irrigated from the East and West Brattain-ZX ditches, and aggregating a total of 632 acres of land; the said claimants respectively shall be entitled to an amount of water during an irrigation season commencing March 1st and ending July 15th of each year not exceeding two acre feet per acre, to be measured at the point of diversion from said river, and not exceeding the rate of one second foot for each forty acres of said lands until such amount shall equal two acre feet per acre for each acre for which said claimants are found entitled to a water right under said priorities for said marsh land. That for the lands of said Chewacan Land and Cattle Company (and not included above), described in the tabulated statement as irrigated from the Red House Ditch, Avery or Moss Creek, Jones Innis ZX Ditch, Fisher and Jones Sloughs, Paisley Slough and stock ditch, Jones Ditch and Jones Levee, the said Chewacan Land and Cattle Company shall be entitled to a quantity of water in acre feet not exceeding three acre feet for each acre actually irrigated during an irrigation season commencing April 1st and terminating September 1st of each year, and not exceeding (for a length of time sufficient to supply said quantity of three acre feet during said irrigation season) the rate of one second foot for each forty acres actually irrigated by said diversions. For stock purposes said Chewacan Land and Cattle Company is entitled to not exceeding twenty second feet during December, January and February, and ten second feet during the remainder of the non-irrigating season, as herein limited, that is, from the 15th of July to the 1st of December of each year.

That for the irrigation of the lands of the Oregon Valley Land Company included within the boundaries of the Lower Chewaucan Marsh, the same being a total of 569.66 acres and described in the tabulated statement as having a priority of 1901 and irrigated from the lower Outside Canal, Brattain-ZX Ditch, East and West Brattain-ZX Ditches, and Lower Center Canal, the said claimant Oregon Valley Land Company shall be entitled to an amount of water during an irrigation season commencing March 1st and ending July 15th of each year not exceeding two acre feet per acre, to be measured at the point of diversion from said river, and not exceeding the rate of one second foot for each forty acres of said lands until such amount shall equal two acre feet per acre for the lands for which said claimants is found entitled to a water right, under said priority for said marsh land.

8.

That the several claimants enumerated in the said tabulated statement herein set forth (except as otherwise provided) diverting water from the Chewaucan River, or its tributaries such as Crooked Creek, Mill Creek, Coffee Pot Creek, Benefiel Creek, Pine Creek, Loveless Creek, Clover Creek, etc., or small unnamed tributary streams, ravines or gulches, either by direct diversion therefrom, or through natural channels or sloughs, such as Small Creek, Fisher Slough, Jones Slough, Innis Slough, Moss Slough, or other natural channels shall be entitled to an amount or quantity of water in acre feet not exceeding three acre feet for each acre of land actually irrigated during an irrigation season commencing the first day of April and terminating the first day of September, each year, and not exceeding

the rate of flow of one cubic foot per second of water for each forty acres of said land actually irrigated, for a length of time sufficient to furnish said quantity in acre feet during said irrigation season. The quantity in both acre feet and second feet herein limited to be measured at the point of diversion from said stream.

9.

That the rights of J. B. Elder and E. S. McDonald and of the Oregon Valley Land Company to the waters of Willow Creek shall not exceed the quantity of one and one-half acre feet during an irrigation season from April 1st to September 1st of each year, for each acre of land for which a water right is herein found appurtenant, or the rate of one-half inch per acre for said lands, for a sufficient length of time during said irrigation season to supply the said lands with one and one-half acre feet of water.

10.

That the Portland Irrigation Company is entitled to complete and perfect its right of appropriation of the waters of said river, both for direct diversion and use and for storage purposes, including immediate and future uses of said waters for the irrigation of its said lands, and to construct and complete its diversion works, canals and ditches, and reservoir or reservoirs to be used in connection therewith for the reclamation of the lands described hereinafter and embraced within the project described in the findings herein. That said rights of appropriation shall be completed and perfected, and said reservoir, or reservoirs, dams, canals, ditches and distributing system shall be completed and constructed and complete application of water to beneficial use shall be made within the time fixed in the State's contract with the United States for the reclamation thereof, or any extension of such contract as may be approved by the State Water Board. That the State Engineer is hereby directed to issue to said Portland Irrigation Company a certificate showing the determination hereby made, and for good cause shown the said Board may extend the time by granting further certificates. That the distribution system constructed shall be sufficient to furnish to said lands the said quantity of water to which they are hereinafter found entitled. That said Portland Irrigation Company, its successors in interest, or assigns, shall construct a reservoir, or reservoirs, of sufficient capacity that, together with such quantity as may be available for direct diversion will, in the opinion of the State Water Board, supply to the lands included with said project the amount of water which is hereby found necessary for the irrigation thereof, namely not to exceed two acre feet per acre to be delivered on the land during theirrigation season, and a reasonable amount for stock and domestic use at other seasons of the year. That upon the completion of said reservoir, or reservoirs, diversion works, canals and ditches, and other irrigation works necessary to complete the reclamation of said lands, and upon the complete application of the waters appropriated for the irrigation of said lands, and upon satisfactory proof that the said lands have been sufficiently reclaimed, the State Water Board shall take the proof of completion of said rights of appropriation, and if it appear to the Board that said rights have been completed and perfected within the time limited herein, or such extensions of such time as may be granted in accordance herewith, and that said lands have been properly prepared for irrigation, that the reservoir, or reservoirs, are of sufficient capacity to supply the said lands, together with whatever amount said company may be entitled to by direct diversion, sufficient water for the irrigation of said lands as herein determined, and that the reservoir, or reservoirs, as so constructed, will sufficiently store and retain said waters from the flow of said river, then the said Board shall issue to said company, or its successors in interest, or assigns, then having a contract with the said State for the reclamation of said lands as set forth

in the findings herein, water right certificate confirming the rights of appropriation so perfected and completed to the extent the same shall have been perfected and completed to the satisfaction of said Board. Said water right shall not be considered as completed and perfected until final proof thereof shall have been submitted to the satisfaction of said Board.

That a description of the lands to which said water right shall become appurtenant on completion is as follows, to-wit: all those lands described in the findings herein situated in Townships 32 and 33 South, Range 18 East W.M., and Township 33 South, Range 19 East W. M., in Lake County, Oregon, including about eleven thousand, seven hundred twenty-six (11,726) acres, more or less, as described in the statement and proof of said Portland Irrigation Company on file herein, and in its said contract with the State of Oregon attached to and made a part of its said statement and proof of claim, and as described in Application No. 1886, on file in the office of the State Engineer, said lands being known as Oregon Carey Act Selection List No. 16.

11.

That the Chewacan Land and Cattle Company is entitled to an inchoate or conditional right for the irrigation of the hereinafter described lands totaling 2850.3 acres, as set forth in the findings herein; that for the complete reclamation and irrigation of said lands, said Chewacan Land and Cattle Company is entitled to a period of time not exceeding five years from the date hereof, and therefore to the extent that the said lands shall be reclaimed and put in proper condition for the production of crops thereon commonly grown upon adjacent lands within the period of five years from the date hereof, said Chewacan Land and Cattle Company shall be entitled to rights of appropriation in the same amount and quantity of water per acre as for other so called marsh lands of said company similar in character and included within the tabulated statement hereinbefore set forth. That on or after the 1st day of January, 1921, the Superintendent of Water Division No. 1 shall take the proof or evidence of the said claimant as to the reclamation of said lands and the extent to which the same have been properly reclaimed; and the said Board shall make such further investigation and surveys as may be necessary to determine whether said lands have been reclaimed and the extent of reclamation thereof, and to the extent that said lands have been actually reclaimed and put in a proper condition for irrigation and for the production of crops grown upon similar adjacent lands, the Board is authorized and directed to issue a water right certificate to the said company, and the right of the said company for the irrigation of said lands to the extent it is found entitled to a right shall relate back to and date from, as its priority date, the year 1901. That the following is a description of the lands for which said company is entitled to an inchoate or conditional right and which shall be reclaimed as herein indicated within the time herein set forth:

160 acres in SW¼, Section 3;
80 acres in S½NE¼; 160 acres in NW¼; 320 acres in S½; Section 4;
160 acres in NE¼; 40 acres in NE¼ SW¼; 20 acres in NW¼ SW¼; 20 acres in SW¼ SW¼; 40 acres in SE¼SW¼; 160 acres in SE¼; Section 5;
160 acres in NE¼; 40 acres in NE¼NW¼; 19.7 acres in NW¼NW¼; 8.1 acres in SW¼NW¼; 40 acres in SE¼NW¼; 12 acres in NE¼SW¼; 40 acres in NE¼SE¼; 32 acres in NW¼SE¼; 4 acres in SW¼SE¼; 20.5 acres in SE¼SE¼; Sec. 8;
320 acres in N½; 80 acres in N½SW¼; 39 acres in SW¼SW¼; 40 acres in SE¼SW¼; 160 acres in SE¼; Section 9;
80 acres in W½NW¼; 80 acres in W½SW¼; 40 acres in SE¼SW¼; 160 acres in SE¼; 80 acres in S½NE¼; 40 acres in NE¼NE¼; Section 10;
80 acres in N½NE¼; 80 acres in N½NW¼; Section 15;
35 acres in NE¼NE¼; Section 16;
All in Township Thirty-four (34) South, Range Nineteen (19) East of W. M.

12.

That the Chewacan Land and Cattle Company is entitled to a priority date to the use of water from said stream for stock purposes as hereinbefore

determined, not exceeding the quantity hereinbefore found, or so much less thereof as may be necessary for the purpose of supplying the necessities of said company for stock purposes, dating from the year 1885.

13.

That the order of the rights of the respective appropriators of the waters of said stream and its tributaries, and in which order they are entitled to divert and use said water, shall be and is according to the dates of the relative priorities of the rights as herein set forth and determined, and the first in order of time according to the date of relative priority shall be and is the first in order of right; and so on down to the date of the latest priority; and those having prior rights are entitled to divert and use the waters of said stream, and its tributaries, when necessary for beneficial use in connection with the irrigation of their respective lands, or other useful and beneficial purpose for which they are decreed a right of use, at all times, as against those having subsequent rights without let or hindrance; but the priorities herein determined and the priorities of the rights of appropriation hereby confirmed, confer no right of use of the waters appropriated upon other lands than those to which the same are appurtenant, for the benefit of which such appropriations were initiated, and the waters diverted for the irrigation thereof; and whenever the water is not required by the appropriator having a prior right to its use for irrigation purposes, for the beneficial irrigation of his premises, or other beneficial use, he must and shall permit it to flow down in the natural channel of the stream as it was wont to flow in its natural course, without hindrance or diversion thereof, and those having subsequent rights are entitled to the use of such water and to divert the same to the extent of their rights of appropriation, according to the order of their priority rights, and at all times the water diverted shall be beneficially, economically, and reasonably used, without waste, by those having a right to do so by reason of the priority of their rights, and no rights of appropriation are hereby confirmed to divert a greater quantity of water into the head of the ditch, or ditches, of the appropriator having a valid right to divert the water, than such appropriator can beneficially use for the irrigation of his premises or for other purposes to which water is to be put, and in no event shall the quantity diverted exceed the quantity herein confirmed and set forth as the quantity to which such appropriator is entitled, as the same is necessary for the proper irrigation of his land and has been actually put to beneficial use. Whenever the waters appropriated by those having prior rights are not required by them for irrigation or other beneficial purposes, said water shall be at the disposal and subject to the use of those having later and subsequent rights, in the order of their respective priorities.

14.

That the Northwest Townsite Company, a corporation, claimant herein as the owner and holder of Enlargement Permit No. 5, issued by the State Engineer, upon Application No. 145, filed in his office on the 22nd day of June, 1909, and that said company has succeeded to all the right, title and interest in and to said permit of George Conn and M. C. Conn, the original applicants, and in and to the water right thereby initiated; that said Northwest Townsite Company shall complete and perfect the appropriation thereby initiated within the time limited, and subject to the terms and conditions set forth in said permit, and subject to the conditions of the laws under which the same was issued.

15.

That the rights of Frank M. Beane, Proof No. 6, having been initiated under Permit No. 788 issued by the State Engineer of Oregon for diversion of the waters of Swamp Creek, shall be completed in accordance with the terms and conditions of said permit and the laws under which the same was issued.

16.

That H. E. Curtis, owner of Permit No. 1418, and F. N. Curtis, owner of Permit No. 1417, having initiated rights of appropriation of the waters of Coyote, or Willow Creek, tributary of the Chewaucan River, by application to the State Engineer on the 29th day of November, 1913, and having duly received permits as provided by law, shall complete and perfect their appropriations of said waters in accordance with the terms and conditions of said permits and the laws under which the same were acquired.

	NAME AND POSTOFFICE ADDRESS OF APPROPRIATOR	DATE OF RELATIVE PRIORITY	AMOUNT CU. FT. PER SEC.	NO. ACRES	USE AND IRRIGATION SEASON	NAME OF DITCH	STREAM	DESCRIPTION OF LAND OR PLACE OF USE
					CHEWAUCAN RIVER AND TRIBUTARIES.			
3596	P. W. Banister, Paisley, Ore. (Proof 1, Vol. 1)	April 1, 1902	1.53	61	Irrigation	Banister	North Coffee Pot Creek	61 acres in E½SW¼; Sec. 33; Tp. 34 S. R. 18 E.W.M.
3597	S. S. Banister, Paisley, Ore. (Proof 2, Vol. 1)	1898	0.04	1½	Irrigation	Small's Creek and Banister Flume from Bagley Ditch	Chewaucan River	1½ acres in NW¼; Sec. 24; Tp. 33 S. R. 18 E.W.M.
3598	Everina Benefiel, Lakeview, Ore. (Proof 3, Vol. 1)	1892	0.15	6	Irrigation	Chandler	Crooked Creek	3½ acres in NW¼ NW¼; 2½ acres in SW¼ NW¼; Sec. 29; Tp. 37 S. R. 21 E.W.M.
	(Proof 4, Vol. 1)	1892	0.4	16	Irrigation	Benefiel	Benefiel Creek	7½ acres in SW¼ SW¼; Sec. 20; 8½ acres in NW¼ NW¼; Sec. 29; Tp. 37 S. R. 21 E.W.M.
3599	Mrs. Susie L. Benefiel Paisley, Ore. (Proof 5, Vol. 1)	1901	0.03	.75	Irrigation	Small's Creek and West Street Ditch	Chewaucan River	Lot 3, Block L, South Addition, and Lot 8 in Second South Addition to Town of Paisley, Oregon.
	Frank M. Beane Lakeview, Ore. (Proof 6, Vol. 1)	(Permit No. 788, Application No. 1547) (See Paragraph _____)						
3600	James M. Bevel, Paisley, Ore. (Proof 7, Vol. 1)	Apr. 15, 1908	0.13	5	Irrigation	Bevel	Mill Creek	5 acres in SE¼ SW¼; Sec. 29; Tp. 33 S. R. 18 E.W.M.
3601	W. S. Blair, and Blair Estate Paisley, Ore. (Proof 8, Vol. 1)	1881	0.03	½	Irrigation	North Fork Small's Creek and Hotel Paisley Ditch.	Chewaucan River	Lots 4 and 5, and W½ of Lot 3, Block A, Town of Paisley, Oregon.
3602	J. S. Branch Valley Falls, Ore. (Proof 9, Vol. 1)	1886	0.83	25	Irrigation and stock	Branch Ditches	Willow Creek	11 acres in SW¼ SW¼; 12 acres in SE¼ SW¼; 2 acres in SW¼ SE¼; Sec. 9; Tp. 36 S. R. 20 E.W.M.
	(Proof 10, Vol.1)	1893	3	120	Irrigation	Branch Ditch and Reservoir	Coyote Creek	25 acres in SW¼ SE¼; 35 acres in SE¼ SE¼; Sec. 15; 30 acres in NE¼ NE¼; Sec. 22; 30 acres in NW¼ NW¼; Sec. 23; Tp. 36 S. R. 20 E.W.M.
3603	H. A. Brattain Paisley, Ore. (Proof 11, Vol. 1)	1875	0.13	5	Irrigation and stock	No ditch; overflow from river	Chewaucan River	5 acres in SW¼ NE¼; Sec. 30; Tp. 34 S. R. 20 E.W.M.

NAME AND POSTOFFICE ADDRESS OF APPROPRIATOR	DATE OF RELATIVE PRIORITY	AMOUNT CU. FT. PER SEC.	NO. ACRES	USE AND IRRIGATION SEASON	NAME OF DITCH	STREAM	DESCRIPTION OF LAND OR PLACE OF USE
H. A. Brattain (Continued)							
(Proof 12, Vol. 1)	1901	10.25	410	Irrigation & Stock	Lower Outside Canal	Chewaucan River	20 acres in NE¼ NE¼; 10 acres in NW¼ NE¼; 20 acres in SE¼ NE¼; 20 acres in NE¼ NW¼; 10 acres in NW¼ NW¼; 10 acres in SW¼ NW¼; 30 acres in NW¼ SW¼; 10 acres in SW¼ SW¼; 10 acres in SE¼ SW¼; 30 acres in NE¼ SE¼; 10 acres in NW¼ SE¼; 10 acres in SW¼ SE¼; 30 acres in SE¼ SE¼; Sec. 31; 10 acres in SW¼ NE¼; 10 acres in SE¼ NE¼; 10 acres in SW¼ NW¼; 30 acres in SE¼ NW¼; 10 acres in NE¼ SW¼; 30 acres in NW¼ SW¼; 10 acres in SW¼ SW¼; 10 acres in SE¼ SW¼; 20 acres in NE¼ SE¼; 10 acres in SE¼ SE¼; Sec. 32; 10 acres in SW¼ SW¼; 10 acres in SE¼ SW¼; 10 acres in SW¼ SE¼; Sec. 33; 10 acres in SW¼ SW¼; Sec. 34; Tp. 34 S. R. 20 E.W.M.
8604 H. A. Brattain, P. J. Brattain, and Mrs. C. N. Brattain-Small (Successors to Estate of T.J.Brattain, deceased, and Permelia J. Brattain, and H.A. and P.J. Brattain, Partners) Paisley, Ore. (Proof 13, Vol. 1)	1883	16.9	676	Irrigation, domestic and stock.	Bagley	Chewaucan River	18 acres in SW¼ NE¼; 40 acres in SE¼ NE¼; 39 acres in NE¼ SE¼; 3 acres in NW¼ SE¼; 33 acres in SE¼ SE¼; Sec. 6; 20 acres in SW¼ NW¼; 20 acres in NW¼ SW¼; 20 acres in SW¼ SW¼; Sec. 5; 30 acres in NE¼ NE¼; 17 acres in SE¼ NE¼; Sec. 7; 22 acres in NW¼ NW¼; 32 acres in SW¼ NW¼; 23 acres in NE¼ SW¼; 25 acres in NW¼ SW¼; 11 acres in SE¼ SW¼; 6 acres in NW¼ SE¼; 38 acres in SW¼ SE¼; 20 acres in SE¼ SE¼; Sec. 8; 1 acre in SW¼ SW¼; Sec. 9; 40 acres in NW¼ NE¼; 40 acres in SW¼ NE¼; 40 acres in NE¼ NW¼; 40 acres in NW¼ NW¼; 16 acres in SW¼ NW¼; 31 acres in SE¼ NW¼; Sec. 16; 37 acres in NE¼ NE¼; 12 acres in NW¼ NE¼; 2 acres in SE¼ NE¼; Sec. 17; Tp. 34 S. R. 19 E.W.M.

	Name and Postoffice Address of Appropriator	Date of Relative Priority	Amount Cu.Ft. per sec.	No. Acres	Use	Name of Ditch	Stream	Description of Land or Place of Use
3605	H. A. Brattain, P. J. Brattain, and Mrs. C. N. Brattain-Small (Successors to Permelia J. Brattain) Paisley, Ore. (Proof 14, Vol. 1)	1881	0.04	1.4	Irrigation, domestic and stock	Small's Creek and Brattain Ditch	Chewaucan River	1.4 acres in NE¼ SW¼; Sec. 24; Tp. 33 S. R. 18 E.W.M. being Lots 1,2,9 and 10, South Addition to Town of Paisley, Oregon.
3606	H. A. Brattain, P. J. Brattain, and Mrs. C. N. Brattain-Small (Successors to H.A.Brattain, and H.A.Brattain and P.J.Brattain, Executors of T.J.Brattain Estate) Paisley, Ore. (Proof 15, Vol. 1)	1888 1903 Modified by Court Decree Vol. 5 pg 49	8.3 7.5	332 300	Irrigation and Stock	East and West Brattain-ZX Ditches	Chewaucan River	35 acres in NE¼ SE¼; 40 acres in SE¼ SE¼; Sec. 25; 40 acres in NE¼ NE¼; 5 acres in NW¼ NE¼; 32 acres in SW¼ NE¼; 40 acres in SE¼ NE¼; 4 acres in SE¼ NW¼; 40 acres in NE¼ SW¼; 37 acres in NW¼ SW¼; 40 acres in SW¼ SW¼; 40 acres in SE¼ SW¼; 160 acres in SE¼; Sec. 36; Tp. 34 S. R. 19 E.W.M. 25 acres in NE¼ SE¼; 35 acres in SE¼ SE¼; Sec. 35; 8 acres in NE¼ NE¼; 6 acres in NW¼ NE¼; 8 acres in SW¼ NE¼; 12 acres in SE¼ NE¼; 25 acres in NE¼ SE¼; Sec. 2; Tp. 35 S. R. 19 E.W.M.
3607	H. A. Brattain, P. J. Brattain, and Mrs. C. N. Brattain-Small (Successors to T.J.Brattain Estate, and H.A. and P.J. Brattain, Partners) Paisley, Ore. (Proof 16, Vol. 1)	1890	2.5	100	Irrigation and stock	Elder Ditches	Dairy and Auger Creeks	15 acres in NE¼ NE¼; 30 acres in SE¼ NE¼; Sec. 2; 40 acres in SW¼ NW¼; Sec. 1; Tp. 36 S. R. 17 E.W.M. 15 acres in SE¼ SE¼; Sec. 35; Tp. 35 S. R. 17 E.W.M.
3608	H. A. Brattain P. J. Brattain, and Mrs. C. N. Brattain-Small (Successors to Estate of T.J.Brattain, deceased, H.A. Brattain and Paul J. Brattain Executors, and H.A.Brattain and Paul J. Brattain) Paisley, Ore. (Proof 17, Vol. 1)	1875	3.28	130.9	Irrigation and stock	Brattain Ditch	Fuller Creek	19 acres in SW¼ NW¼; 0.5 acres in SE¼ NW¼; Sec. 16; 5 acres in NE¼ NE¼; 4 acres in NW¼ NE¼; 20 acres in SW¼ NE¼; 38 acres in SE¼ NE¼; 31 acres in NE¼ SE¼; 12 acres in NW¼ SE¼; 1 acre in SW¼ SE¼; 0.4 acre in SE¼ SE¼; Sec. 17; Tp. 34 S. R. 19 E.W.M.
3609	H.A.Brattain, P.J.Brattain and Mrs. C.N.Brattain-Small (Successors to Estate of T.J. Brattain, by H.A.Brattain and P.J.Brattain) Paisley, Ore. (Proof 18, Vol. 1)	1878	4	160	Irrigation, domestic and stock	Innis Slough	Chewaucan River	40 acres in NW¼ NE¼; 40 acres in SW¼ NE¼; 40 acres in NE¼ NW¼; 40 acres in SE¼ NW¼; Sec. 29; Tp. 33 S. R. 19 E.W.M.

	NAME AND POSTOFFICE ADDRESS OF APPROPRIATOR	DATE OF RELATIVE PRIORITY	AMOUNT CU. FT. PER SEC.	NO. ACRES	USE AND IRRIGATION SEASON	NAME OF DITCH	DESCRIPTION OF LAND OR PLACE OF USE
3610	A. W. Bryan, Lakeview, Ore. (Proof 19, Vol. 1)	1874	1.83	73	Irrigation and stock	Bryan Ditches	Green Creek, trib. of Willow Creek 1 acre in SW¼ NE¼; 14 acres in SE¼ NE¼; 3½ acres in NE¼ SE¼; 10 acres in NW¼ SE¼; Sec. 1; Tp. 36 S. R. 19 E.W.M. 5 acres in NE¼ NW¼; 8 acres in NW¼ NW¼; 17½ acres in SW¼ NW¼; 14 acres in SE¼ NW¼; Sec. 6; Tp. 36 S. R. 20 E.W.M.
36	(Proof 20, Vol. 1)	1900	0.25	10	Irrigation and domestic	A. W. Bryan	Willow Creek 10 acres in S½ NE¼; Sec. 33; Tp. 36 S. R. 20 E.W.M.
3612	D. M. Bryan, Lakeview, Ore. (Proof 21, Vol. 1)	1887	1.45	57½	Irrigation and stock	Barnum and Branch	Willow Creek 15 acres in NE¼ SE¼; 15 acres in SW¼ SE¼; 14 acres in SE¼ SE¼; Sec. 8; 13½ acres in NW¼ NE¼; Sec. 17; Tp. 36 S. R. 20 E.W.M.
	Proof 22, Vol. 1)	1891	0.53	21	Irrigation	Branch Ditch	Willow Creek 16 acres in NE¼ SE¼; 5 acres in SW¼ SE¼; Sec. 8; Tp. 36 S. R. 20 E.W.M.
3613	M. J. Bryan Lakeview, Ore. (Proof 23, Vol. 1)	1880	0.83	33	Irrigation and stock	Bryan Ditch No. 2	Pine Creek, trib. of Willow Creek 4 acres in SE¼ SW¼; Sec. 12; 5 acres in NE¼ NE¼; 3 acres in NE¼ NW¼; 21 acres in NW¼ NE¼; Sec. 13; Tp. 36 S. R. 19 E.W.M.
	(Proof 24, Vol. 1)	1897	0.15	6	Irrigation	Bryan Ditch No. 1	Pine Creek, trib. of Willow Creek 3 acres in SE¼ SW¼; 1 acre in SW¼ SE¼; Sec. 12; 2 acres in NW¼ NE¼; Sec. 13; Tp. 36 S. R. 19 E.W.M.
3	Mrs. Mary Busch Paisley, Ore. (Proof 25, Vol. 1)	1907	0.03	1/3	Irrigation	Hampton-Harvey and Currier flume	Middle Fork or Channel 1/3 acre in NE¼ SW¼; Sec. 24; Tp. 33 S. R. 18 E.W.M.
3	C. E. Campbell Paisley, Ore. (Proof 26, Vol. 1)	1900	0.03	1/4	Irrigation and stock	Campbell-Currier Ditch	Middle Channel 1/4 acre in NE¼ SW¼; Sec. 24; Tp. 33 S. R. 18 E.W.M., being described as follows: Starting at the Town corner, the intersection of Mill and Main streets; running East 366.6', North 225' to point of beginning; thence North 75', East 120', South 75', thence West 120' to point of beginning, containing 1/4 acre irrigated; also Starting at said Town corner and running East 306.6', thence North 300' to point of beginning; thence running West 90' North 58-1/3', East 90', thence South 58-1/3' to point of beginning. Water for stock on this lot.

Name and Postoffice Address of Appropriator	Date of Relative Priority	Amount Cu.Ft. per sec.	No. Acres	Use	Name of Ditch	Stream	Description of Land or Place of Use
H. L. Chandler, Lakeview, Ore. (Proof 27, Vol. 1) Cert. No. [illegible] Trs. Sp. Or. V.14 p.244	1882	2.49	99½	Irrigation and stock	Colvin Ditch	Creeked Creek	28½ acres in SE¼ NW¼; 27½ acres in NE¼ SW¼; 8½ acres in SE¼ SW¼; Sec. 8; 3½ acres in NW¼ NE¼; 1½ acres in SW¼ NE¼; 14 acres in NE¼ NW¼; 16 acres in SE¼ NW¼; Sec. 17; Tp. 36 S. R. 21 E.W.M.
S. B. Chandler, Lakeview, Ore. (Proof 28, Vol. 1)	1875	7.63	305	Irrigation and stock	Chandler ditch and dam	Crooked Creek	37 acres in SW¼ NE¼; 35 acres in SE¼ NE¼; 40 acres in NE¼ SE¼; 26½ acres in NW¼ SE¼; 40 acres in SE¼ SE¼; Sec. 24; 40 acres in NE¼ NE¼; 12½ acres in NW¼ NE¼; 25 acres in SW¼ NE¼; 10½ acres in SE¼ NE¼; 2 acres in NE¼ SE¼; 30 acres in NW¼ SE¼; 6 acres in SW¼ SE¼; ½ acres in SE¼ SE¼; Sec. 25; Tp. 37 S. R. 20 E.W.M.
(Proof 29, Vol. 1)	1875	14.78	591	Irrigation and stock	Chandler ditches and dams	Crooked Creek	17½ acres in NW¼ NW¼; 30½ acres in SW¼ NW¼; 8½ acres in NE¼ SW¼; 39½ acres in NW¼ SW¼; 38 acres in SW¼ SW¼; 10 acres in SW¼ SE¼; Sec. 19; 4 acres in NE¼ NE¼; 22 acres in NW¼ NE¼; 40 acres in SW¼ NE¼; 28 acres in SE¼ NE¼; 80 acres in N½ NW¼; 29 acres in SW¼ NW¼; 40 acres in SE¼ NW¼; 80 acres in N½ SW¼; 20 acres in SW¼ SW¼; 20 acres in SE¼ SW¼; 8 acres in NE¼ SE¼; 30 acres in NW¼ SE¼; 7 acres in SW¼ SE¼; Sec. 30; Tp. 37 S. R. 21 E.W.M.
3619 (Proof 30, Vol. 1)	1880	7.94	317½	Irrigation and stock	Highline ditch and system of ditches and dams.	Crooked Creek, Clover Creek, and small unnamed stream, trib. to Crooked Creek	38 acres in SW¼ NW¼; 37 acres in NW¼ SW¼; 2 acres in SW¼ SW¼; Sec. 16; 2½ acres in NE¼ NE¼; 13 acres in SE¼ NE¼; 13½ acres in NE¼ SW¼; 17 acres in SE¼ SW¼; 27 acres in NE¼ SE¼; 4½ acres in NW¼ SE¼; 2½ acres in SW¼ SE¼; 10½ acres in SE¼ SE¼; Sec. 17; 1½ acres in NE¼ NE¼; 10½ acres in SE¼ NE¼; ½ acre in NE¼ SE¼; Sec. 19;

NAME AND POSTOFFICE ADDRESS OF APPROPRIATOR	DATE OF RELATIVE PRIORITY	AMOUNT CU. FT. PER SEC.	NO. ACRES	USE AND IRRIGATION SEASON	NAME OF DITCH	DESCRIPTION OF LAND OR PLACE OF USE
S. B. Chandler, (Continued)						13 acres in NW¼ NE¼; 39 acres in SW¼ NE¼; 12½ acres in SE¼ NE¼; 15 acres in NE¼ NW¼; 16 acres in NW¼ NW¼; 11½ acres in SW¼ NW¼; 14 acres in SE¼ NW¼; 3 acres in NE¼ SE¼; 14½ acres in NW¼ SE¼; Sec. 20; Tp. 36 S. R. 21 E.W.M.
2344 (Proof 31, Vol. 1)	1888	1	40	Irrigation	Benefiel Ditch	Loveless Creek 30 acres in NE¼ SW¼; 10 acres in SW¼ SE¼; Sec. 17; Tp. 37 S. R. 21 E.W.M.
4 Chewacan Land and Cattle Company, 704 West Coast Life Building San Francisco, Cal. (Proof 32, Vol. 1)	1884	9.95	398.1	Irrigation and stock	Jones-Innis ZX ditch, and Fisher and Jones Sloughs	Chewaucan River 35 acres in NW¼ NE¼; 40 acres in SW¼ NE¼; 40 acres in SE¼ NE¼; 23 acres in NE¼ NW¼; 11 acres in NW¼ NW¼; 4 acres in SW¼ NW¼; 32.9 acres in SE¼ NW¼; 2.4 acres in NE¼ SW¼; 39.5 acres in NE¼ SE¼; 36.9 acres in NW¼ SE¼; Sec. 20; 38 acres in SW¼ NW¼; 5 acres in SE¼ NW¼; 31 acres in NE¼ SW¼; 40 acres in NW¼ SW¼; 11.4 acres in SW¼ SW¼; 8 acres in SE¼ SW¼; Sec. 21; Tp. 33 S. R. 19 E.W.M.
4 2347 (Proof 33, Vol. 1)	1885	6.99	279.6	Irrigation and stock	Small ditches	Avery Creek or Moss Creek 6.8 acres in NW¼ SW¼; Sec. 14; 22.4 acres in SW¼ NW¼; 5.3 acres in SE¼ NW¼; 40 acres in NE¼ SW¼; 31.5 acres in NW¼ SW¼; 8.9 acres in SW¼ SW¼; 39.6 acres in SE¼ SW¼; 23 acres in NE¼ SE¼; 37.4 acres in NW¼ SE¼; 35.7 acres in SW¼ SE¼; Sec. 15; 3.4 acres in SE¼ NE¼; Sec. 16; 4.3 acres in NW¼ NE¼; 21.3 acres in NE¼ NW¼; Sec. 22; Tp. 34 S. R. 19 E.W.M.
4 2348 (Proof 34, Vol. 1)	1885	3.58	143.1	Irrigation and stock	Small's Creek, Jones Ditch and Jones Levee	Chewaucan River 13 acres in NE¼ SW¼; 7 acres in NW¼ SW¼; 25 acres in SW¼ SW¼; 24.9 acres in SE¼ SW¼; 14.5 acres in NE¼ SE¼; 14 acres in NW¼ SE¼; 20.6 acres in SW¼ SE¼; 14.6 acres in SE¼ SE¼; Sec. 32; 8.5 acres in NW¼ SW¼; 1 acre in SW¼ SW¼; Sec. 33; Tp. 33 S. R. 19 E.W.M.
4 (Proof 35, Vol. 1)	1885	5.38	215.1	Irrigation and Stock	Paisley Slough and Stock Ditch	Chewaucan River 17.2 acres in NE¼ NE¼; 2.6 acres in NW¼ NE¼; 39.4 acres in SW¼ NE¼; 34.9 acres in SE¼ NE¼;

	Name and Postoffice Address of Appropriator	Date of Relative Priority	Amount Cu.Ft. per sec.	No. Acres	Use	Name of Ditch	Stream	Description of Land or Place of Use
4 284	Chewacan Land and Cattle Company (continued)							
4 285	(Proof 36, Vol. 1)	1888			Domestic	Small's Creek and T.J.Brattain (Bagley) ditch	Chewaucan River	11.2 acres in SE¼ NW¼; 27 acres in NE¼ SW¼; 7.9 acres in NW¼ SW¼; 25.5 acres in NE¼ SE¼; 26 acres in NW¼ SE¼; Sec. 32; 2.2 acres in SW¼ NW¼; 21.2 acres in NW¼ SW¼; Sec. 33; Tp. 33 S. R. 19 E.W.M. For use upon the lands of said Company herein described.
4 [illegible]	(Proof 37, Vol. 1)	1901	443.7 (17747.7 20598. Modified by Ct. Decree Vol 5 p 49		Irrigation, domestic and stock	Main Diversion and appurtenant works.	Chewaucan River	Red House Levee and Mixed Sources,----------397.1 A. 5.5 acres in NW¼ NW¼; 37 acres in SW¼ NW¼; 9 acres in SE¼ NW¼; 38.8 acres in NE¼ SW¼; 40 acres in NW¼ SW¼; 40 acres in SW¼ SW¼; 36 acres in SE¼ SW¼; 1.4 acres in NW¼ SE¼; Sec. 16; 20.8 acres in NE¼ NE¼; 25.1 acres in SE¼ NE¼; Sec. 17; 3.4 acres in SW¼ NE¼; 31.9 acres in NE¼ NW¼; 9.3 acres in NW¼ NW¼; 2 acres in SW¼ NW¼; 35 acres in SE¼ NW¼; 9 acres in NE¼ SW¼; 12 acres in SE¼ SW¼; 25.9 acres in NW¼ SE¼; 15 acres in SW¼ SE¼; Sec. 21; Tp. 33 S. R. 19 E.W.M. Red House Levee,--161.5 A. 10 acres in NE¼ NE¼; 17 acres in NW¼ NE¼; 19.2 acres in SW¼ NE¼; 17.4 acres in SE¼ NW¼; 15 acres in NE¼ SW¼; 29.1 acres in NW¼ SW¼; 5 acres in SW¼ SW¼; 35 acres in NW¼ SE¼; Sec. 17; 13.8 acres in NE¼ SE¼; Sec. 18; Tp. 33 S. R. 19 E.W.M. Irrigation Gate #14,--5642 A. 29.9 acres in SE¼ SE¼; Sec. 8; 35.4 acres in SW¼ SW¼; 27.7 acres in SE¼ SW¼; 22.8 acres in SW¼ SE¼; 15.3 acres in SE¼ SE¼; Sec. 9; 0.5 acres in NE¼ SW¼; 19.2 acres in NW¼ SW¼; 40 acres in SW¼ SW¼; 29.2 acres in SE¼ SW¼; 1.4 acres in SW¼ SE¼; Sec. 14; 34.5 acres in SW¼ NE¼; 16.4 acres in SE¼ NE¼; 7.8 acres in NE¼ NW¼; 38.2 acres in NW¼ NW¼;

Chewacan Land and Cattle Company (continued)

Irrigation Gate #14 (continued)

40	acres in	SW¼	NW¼;	
40	acres in	SE¼	NW¼;	
160	acres in		SW¼;	
160	acres in		SE¼;	Sec. 15;
160	acres in		NE¼;	
40	acres in	NE¼	NW¼;	
34½	acres in	NW¼	NW¼;	
3	acres in	SW¼	NW¼;	
31	acres in	SE¼	NW¼;	
1.2	acres in	NE¼	SW¼;	
4	acres in	SE¼	SW¼;	
40	acres in	NE¼	SE¼;	
38.6	acres in	NW¼	SE¼;	
80	acres in	S½	NE¼;	Sec. 16;
9.2	acres in	NE¼	NE¼;	Sec. 17;
80	acres in	N½	NE¼;	
36.6	acres in	SW¼	NE¼;	
40	acres in	SE¼	NE¼;	
8.1	acres in	NE¼	NW¼;	
35.4	acres in	NE¼	SE¼;	
13.1	acres in	NW¼	SE¼;	
1	acre in	SE¼	SE¼;	Sec. 21;
320	acres in		N½;	
80	acres in	N½	SW¼;	
34.2	acres in	SW¼	SW¼;	
40	acres in	SE¼	SW¼;	
160	acres in		SE¼;	Sec. 22;
18.4	acres in	NW¼	NE¼;	
38.5	acres in	SW¼	NE¼;	
8.5	acres in	SE¼	NE¼;	
320	acres in		W½;	
32.2	acres in	NE¼	SE¼;	
40	acres in	NW¼	SE¼;	
80	acres in	S½	SE¼;	Sec. 23;
1	acre in	NW¼	SW¼;	
13.2	acres in	SW¼	SW¼;	Sec. 24;
29.9	acres in	NW¼	NW¼;	
37.9	acres in	SW¼	NW¼;	
5.3	acres in	SE¼	NW¼;	
18.8	acres in	NE¼	SW¼;	
80	acres in	W½	SW¼;	
26.3	acres in	SE¼	SW¼;	Sec. 25;
640	acres,		all	Sec. 26;
160	acres in		NE¼;	
39	acres in	NE¼	NW¼;	
10.6	acres in	NW¼	NW¼;	
20.4	acres in	SE¼	NW¼;	
2.3	acres in	NE¼	SW¼;	
40	acres in	NE¼	SE¼;	
37.7	acres in	NW¼	SE¼;	
21.3	acres in	SW¼	SE¼;	
40	acres in	SE¼	SE¼;	Sec. 27;
40	acres in	NE¼	NE¼;	
8.1	acres in	NW¼	NE¼;	
30.4	acres in	SE¼	NE¼;	
11	acres in	NE¼	SE¼;	
1	acre in	SE¼	SE¼;	Sec. 34;
320	acres in		N½;	
80	acres in	N½	SW¼;	
36.1	acres in	SW¼	SW¼;	
40	acres in	SE¼	SW¼;	
160	acres in		SE¼;	Sec. 35;

Chewacan Land and Cattle Company, (continued)

Irrigation Gate #14 (continued)
24.8 acres in NE¼ NW¼;
80 acres in W½ NW¼;
15.6 acres in SE¼ NW¼;
8 acres in NE¼ SW¼;
80 acres in W½ SW¼;
10.6 acres in SE¼ SW¼; Sec. 36;
Tp. 33 S. R. 19 E.W.M.
14 acres in NE¼ NW¼;
40 acres in NW¼ NW¼;
37 acres in SW¼ NW¼;
2 acres in SE¼ NW¼;
32 acres in NW¼ SW¼;
28 acres in SW¼ SW¼; Sec. 1;
160 acres in NE¼;
40 acres in NE¼ NW¼;
20.3 acres in NW¼ NW¼;
1.2 acres in SW¼ NW¼;
36.3 acres in SE¼ NW¼;
16.1 acres in NE¼ SW¼;
1 acre in SE¼ SW¼;
80 acres in N½ SE¼;
36.6 acres in SW¼ SE¼;
40 acres in SE¼ SE¼; Sec. 2;
40 acres in NE¼ NE¼;
23 acres in NW¼ NE¼;
8.7 acres in SW¼ NE¼;
40 acres in SE¼ NE¼;
19.5 acres in NE¼ SE¼; Sec. 11;
33 acres in NW¼ NW¼;
39 acres in SW¼ NW¼;
1 acre in SE¼ NW¼;
8 acres in NE¼ SW¼;
40 acres in NW¼ SW¼;
29 acres in SW¼ SW¼;
15 acres in SE¼ SW¼; Sec. 12;
24 acres in NE¼ NW¼;
12.9 acres in NW¼ NW¼; Sec. 13;
Tp. 34 S. R. 19 E.W.M.
3.3 acres in SW¼ NW¼;
6 acres in SE¼ NW¼; Sec. 13;
Tp. 34 S. R. 19 E.W.M.
(Outside Canal (area between Outside Canal and White House Levee) ----------589 A.
3 acres in NE¼ NW¼;
3 acres in SW¼ NW¼;
20.3 acres in SE¼ NW¼;
38.6 acres in NE¼ SW¼;
8 acres in NW¼ SW¼;
12 acres in SW¼ SW¼;
40 acres in SE¼ SW¼;
6.9 acres in NW¼ SE¼;
28.7 acres in SW¼ SE¼; Sec. 1;
4 acres in NE¼ NE¼;
39.5 acres in NW¼ NE¼;
40 acres in SW¼ NE¼;
15 acres in SE¼ NE¼;
40 acres in NE¼ NW¼;
7 acres in NW¼ NW¼;
1 acre in SW¼ NW¼;
39 acres in SE¼ NW¼;
32 acres in NE¼ SW¼;

Chewacan Land and Cattle Company (continued)

(outside Canal (area outside White House Levee)(continued)
25 acres in SE¼ SW¼;
30 acres in NE¼ SE¼;
80 acres in W½ SE¼;
35 acres in SE¼ SE¼; Sec. 12;
7 acres in NE¼ NE¼;
20 acres in NW¼ NE¼;
14 acres in NE¼ NW¼; Sec. 13;
Tp. 34 S. R. 19 E.W.M.
Outside Canal (area outside White House Levee)---------141.8 A.
9.8 acres in SW¼ SW¼; Sec. 7;
1.6 acres in NW¼ NW¼; Sec. 18;
Tp. 34 S. R. 20 E.W.M.
24.9 acres in NE¼ NE¼;
20 acres in NW¼ NE¼;
27 acres in SW¼ NE¼;
14.5 acres in SE¼ NE¼;
3 acres in NE¼ SE¼;
24 acres in NW¼ SE¼;
7 acres in SW¼ SE¼;
5 acres in SE¼ SE¼; Sec. 13;
5 acres in SE¼ SE¼; Sec. 12;
Tp. 34 S. R. 19 E.W.M.
Outside Canal (area irrigated by White House Ditch -----34.9 A.
16 acres in SE¼ NE¼;
10 acres in NE¼ SE¼; Sec. 12;
Tp. 34 S. R. 19 E.W.M.
1.8 acres in SW¼ NW¼;
7.1 acres in NW¼ SW¼; Sec. 7;
Tp. 34 S. R. 20 E.W.M.

Center Canal (area between Center Canal and Stock Ditch---2199.1 A.
4.6 acres in NE¼ SE¼;
1 acre in NW¼ SE¼;
25 acres in SW¼ SE¼;
39 acres in SE¼ SE¼; Sec. 21;
5.8 acres in SW¼ SW¼; Sec. 22;
1 acre in NE¼ NW¼;
29.4 acres in NW¼ NW¼;
40 acres in SW¼ NW¼;
19.6 acres in SE¼ NW¼;
37.7 acres in NE¼ SW¼;
40 acres in NW¼ SW¼;
80 acres in S½ SW¼;
2.3 acres in NW¼ SE¼;
18.7 acres in SW¼ SE¼; Sec. 27;
160 acres in NE¼;
5.2 acres in NE¼ NW¼;
15.7 acres in SE¼ NW¼;
32.9 acres in NE¼ SW¼;
20.8 acres in SW¼ SW¼;
40 acres in SE¼ SW¼;
160 acres in SE¼; Sec. 28;
9.4 acres in NE¼ NE¼;
5.1 acres in SE¼ NE¼; Sec. 32;
160 acres in NE¼;
80 acres in N½ NW¼;
37.8 acres in SW¼ NW¼;
40 acres in SE¼ NW¼;
30.9 acres in NE¼ SW¼;
3.8 acres in NW¼ SW¼;
1.2 acres in SE¼ SW¼;

4 24 Chewacan Land and Cattle Company (continued)

Center Canal (area between Center Canal and Stock Ditch) (continued)
80 acres in N½ SE¼;
18 acres in SW¼ SE¼;
37.5 acres in SE¼ SE¼; Sec. 33;
31.9 acres in NW¼ NE¼;
40 acres in SW¼ NE¼;
9.6 acres in SE¼ NE¼;
320 acres in W½;
29 acres in NE¼ SE¼;
80 acres in W½ SE¼;
39 acres in SE¼ SE¼; Sec. 34;
3.9 acres in SW¼ SW¼; Sec. 35;
Tp. 33 S. R. 19 E.W.M.
19.7 acres in NW¼ NW¼;
38.8 acres in SW¼ NW¼;
3.7 acres in SE¼ NW¼;
23.9 acres in NE¼ SW¼;
38.6 acres in NW¼ SW¼;
7 acres in SW¼ SW¼;
35.3 acres in SE¼ SW¼;
3.4 acres in SW¼ SE¼; Sec. 2;
40 acres in NE¼ NE¼;
36.3 acres in NW¼ NE¼;
2.7 acres in SW¼ NE¼;
34.8 acres in SE¼ NE¼;
26.8 acres in NE¼ NW¼;
11.8 acres in NW¼ NW¼;
13.7 acres in NE¼ SE¼; Sec. 3;
2.7 acres in NE¼ NE¼; Sec. 4;
14.5 acres in NW¼ NE¼;
4 acres in SW¼ NE¼;
5.6 acres in NE¼ NW¼; Sec. 11;
Tp. 34 S. R. 19 E.W.M.

Center Canal (area south and west of Stock Ditch, irrigated from Central Canal, and to some extent by Jones Ditch and Stock Ditch)
-------2362.2 A.
9.1 acres in NE¼ SW¼;
6.5 acres in NW¼ SW¼;
39 acres in SW¼ SW¼;
38.8 acres in SE¼ SW¼;
22 acres in SW¼ SE¼;
2.5 acres in SE¼ SE¼; Sec. 33;
7.5 acres in SW¼ SW¼;
15.1 acres in SE¼ SW¼;
19.4 acres in SW¼ SE¼;
25.4 acres in SE¼ SE¼; Sec. 32;
Tp. 33 S. R. 19 E.W.M.
1.4 acres in NW¼ SW¼;
33 acres in SW¼ SW¼;
3.7 acres in SE¼ SW¼; Sec. 2;
3.7 acres in NW¼ NE¼;
37.3 acres in SW¼ NE¼;
5.2 acres in SE¼ NE¼;
13.2 acres in NE¼ NW¼;
28.2 acres in NW¼ NW¼;
80 acres in S½ NW¼;
26.3 acres in NE¼ SE¼;
40 acres in NW¼ SE¼;
80 acres in S½ SE¼; Sec. 3;

Chewacan Land and Cattle Company (continued)

Center Canal (area south and west of Stock Ditch) (continued)
37.3 acres in NE¼ NE¼;
40 acres in NW¼ NE¼; Sec. 4;
80 acres in N½ NW¼;
20 acres in SW¼ NW¼;
40 acres in SE¼ NW¼; Sec. 5;
2.5 acres in NW¼ NE¼;
27.3 acres in SW¼ NE¼;
34.4 acres in NE¼ NW¼;
40 acres in NW¼ NW¼;
80 acres in S½ NW¼;
160 acres in SW¼;
20.5 acres in NE¼ SE¼;
40 acres in NW¼ SE¼;
80 acres in S½ SE¼; Sec. 11;
40 acres in NW¼ NE¼;
80 acres in E½ NW¼;
40 acres in NE¼ SW¼; Sec. 10;
11 acres in SW¼ SW¼; Sec. 12;
27.1 acres in NW¼ NW¼;
36.7 acres in SW¼ NW¼;
2.5 acres in SE¼ NW¼;
35 acres in NE¼ SW¼;
40 acres in NW¼ SW¼;
80 acres in S½ SW¼;
16.6 acres in SW¼ SE¼; Sec. 13;
320 acres in N½;
23.7 acres in NE¼ SW¼;
30.9 acres in NW¼ SW¼;
80 acres in N½ SE¼;
25.2 acres in SW¼ SE¼;
39.5 acres in SE¼ SE¼; Sec. 14;
80 acres in S½ NE¼;
17.6 acres in SW¼ NW¼;
34.7 acres in SE¼ NW¼;
17 acres in NE¼ SE¼;
2.6 acres in NW¼ SE¼; Sec. 15;
1 acre in SE¼ NE¼; Sec. 16;
8.4 acres in NE¼ NE¼; Sec. 23;
0.5 acre in NW¼ NE¼;
10.2 acres in NE¼ NW¼;
22.7 acres in NW¼ NW¼; Sec. 24;
Tp. 34 S. R. 19 E.W.M.

Irrigated from mingled waters from all sources of the Upper Chewaucan Marsh, ----------40 A.
10 acres in SW¼ NE¼;
2 acres in NE¼ NW¼;
4 acres in SE¼ NW¼;
10 acres in NW¼ SE¼; Sec. 13;
Tp. 34 S. R. 19 E.W.M.
1 acre in NW¼ NE¼;
2 acres in SW¼ NE¼;
11 acres in NE¼ NW¼; Sec. 30;
Tp. 34 S. R. 20 E.W.M.

Upper Dam #22, Back Water. -------43 A.
2 acres in SW¼ NW¼;
12 acres in NE¼ SW¼;
5 acres in NW¼ SW¼;
6 acres in SW¼ SW¼;
18 acres in SE¼ SW¼; Sec. 19;
Tp. 34 S. R. 20 E.W.M.

Chewacan Land and Cattle Company (continued)

Irrigation Gates #30-31 (area between Lower Outside Canal, Lower Center Canal, and East Branch of Brattain ZX Ditch,----------2270.2 A.

10 acres in SW¼ NW¼;
16 acres in NE¼ SW¼;
2.5 acres in NW¼ SW¼;
30 acres in SW¼ SW¼;
30 acres in SE¼ SW¼;
11 acres in NW¼ SE¼;
17.5 acres in SW¼ SE¼;
12.5 acres in SE¼ SE¼; Sec. 30;
10 acres in NE¼ NE¼;
20 acres in NW¼ NE¼;
30 acres in SW¼ NE¼;
20 acres in SE¼ NE¼;
20 acres in NW¼ NW¼;
20 acres in SW¼ NW¼;
30 acres in SE¼ NW¼;
30 acres in NE¼ SW¼;
10 acres in NW¼ SW¼;
20 acres in SW¼ SW¼;
10 acres in SE¼ SW¼;
10 acres in NE¼ SE¼;
10 acres in NW¼ SE¼;
20 acres in SW¼ SE¼;
10 acres in SE¼ SE¼; Sec. 31;
16 acres in SW¼ NE¼;
10 acres in SE¼ NE¼;
10 acres in NE¼ NW¼;
37.1 acres in NW¼ NW¼;
10 acres in SW¼ NW¼;
10 acres in NE¼ SW¼;
30 acres in SW¼ SW¼;
10 acres in NE¼ SW¼;
30 acres in SW¼ SW¼;
20 acres in SE¼ SW¼;
10 acres in NE¼ SE¼;
10 acres in NW¼ SE¼;
30 acres in SW¼ SE¼;
20 acres in SE¼ SE¼; Sec. 32;
30 acres in NE¼ SW¼;
30 acres in NW¼ SW¼;
10 acres in SW¼ SW¼;
20 acres in SE¼ SW¼;
30 acres in SW¼ SE¼;
20 acres in SE¼ SE¼;
10 acres in NW¼ SE¼;
10 acres in NE¼ SE¼;
10 acres in SE¼ NW¼; Sec. 33;
20 acres in SW¼ SW¼; Sec. 34;
Tp. 34 S. R. 20 E.W.M.
19.7 acres in SW¼ NW¼;
2.8 acres in SE¼ NW¼;
39.3 acres in NE¼ SW¼;
40 acres in NW¼ SW¼;
80 acres in S½ SW¼;
17.2 acres in NW¼ SE¼;
40 acres in SW¼ SE¼;
11.5 acres in SE¼ SE¼; Sec. 2;
6.7 acres in NE¼ NE¼;
21.8 acres in NW¼ NE¼;
40 acres in SW¼ NE¼;

NAME AND POSTOFFICE ADDRESS OF APPROPRIATOR	DATE OF RELATIVE PRIORITY	AMOUNT CU. FT. PER SEC.	NO. ACRES	USE AND IRRIGATION SEASON	NAME OF DITCH	STREAM	DESCRIPTION OF LAND OR PLACE OF USE

Chewacan Land and Cattle Company (continued)

Irrigation Gates #30-31 (cont'd)
39.5 acres in SE¼ NE¼;
36.7 acres in NE¼ NW¼;
40 acres in NW¼ NW¼;
80 acres in S½ NW¼;
80 acres in N½ SW¼;
9 acres in SW¼ SW¼;
24 acres in SE¼ SW¼;
80 acres in N½ SE¼;
38 acres in SW¼ SE¼;
40 acres in SE¼ SE¼; Sec. 3;
160 acres in NE¼;
80 acres in N½ NW¼;
29.5 acres in SW¼ NW¼;
40 acres in SE¼ NW¼;
5 acres in NE¼ SW¼;
34 acres in NE¼ SE¼;
19.5 acres in NW¼ SE¼; Sec. 4;
40 acres in NE¼ NE¼;
38 acres in NW¼ NE¼;
2 acres in SW¼ NE¼;
14.5 acres in SE¼ NE¼;
25.5 acres in NE¼ NW¼;
20 acres in NW¼ NW¼; Sec. 5;
15 acres in NE¼ NE¼;
12 acres in NW¼ NE¼;
7 acres in NE¼ NW¼;
2 acres in NW¼ NW¼; Sec. 6;
13 acres in NE¼ NE¼;
1.5 acres in NW¼ NE¼; Sec. 10;
20.2 acres in NE¼ NE¼;
40 acres in NW¼ NE¼;
3 acres in SW¼ NE¼;
2.7 acres in SE¼ NE¼;
33 acres in NE¼ NW¼;
24 acres in NW¼ NW¼; Sec. 11;
Tp. 35 S. R. 20 E.W.M.
East and West Branches of Brattain-ZX Ditch, Lower Center Canal, I rrigation Gates #30-31, and water through the last named Gates being diverted through the Lower Center Canal by Weir #28 and Irrigation Gate #27, (area in Tp. 35 S. R. 20 E., south of Lower Center Canal and area in Tp. 35 S. R. 19 E.)
------3866.9 A.
160 acres in NE¼;
80 acres in N½ NW¼;
40 acres in SW¼ NW¼;
37.4 acres in SE¼ NW¼;
1.2 acres in NE¼ SW¼;
17.9 acres in NW¼ SW¼;
19.5 acres in NE¼ SE¼;
6.9 acres in NW¼ SE¼; Sec. 1;
35.3 acres in NE¼ NE¼;
34.7 acres in SE¼ NE¼;
1.2 acres in NE¼ SE¼; Sec. 2;
Tp. 35 S. R. 19 E.W.M.

4-7/11 Chewacan Land and Cattle Company (continued)

East and West Branches of Brattain-ZX Ditch, Lower Center Canal, Irrigation Gates #30-31 (cont'd)

31 acres in SW¼ SW¼;
16 acres in SE¼ SW¼;
2 acres in SW¼ SE¼; Sec. 3;
10.5 acres in SW¼ NW¼;
35 acres in NE¼ SW¼;
40 acres in NW¼ SW¼;
80 acres in S½ SW¼;
6 acres in NE¼ SE¼;
20.5 acres in NW¼ SE¼;
40 acres in SW¼ SE¼;
40 acres in SE¼ SE¼; Sec. 4;
2 acres in NW¼ NE¼;
38 acres in SW¼ NE¼;
25.5 acres in SE¼ NE¼;
14.5 acres in NE¼ NW¼;
20 acres in NW¼ NW¼;
80 acres in S½ NW¼;
160 acres in SW¼;
160 acres in SE¼; Sec. 5;
25 acres in NE¼ NE¼;
28 acres in NW¼ NE¼;
80 acres in S½ NE¼;
33 acres in NE¼ NW¼;
38 acres in NW¼ NW¼;
80 acres in S½ NW¼;
40 acres in NE¼ SW¼;
38.3 acres in NW¼ SW¼;
2.5 acres in SW¼ SW¼;
15.6 acres in SE¼ SW¼;
160 acres in SE¼; Sec. 6;
160 acres in NE¼;
27.1 acres in NE¼ NW¼;
14.9 acres in SE¼ NW¼;
23.2 acres in NE¼ SE¼; Sec. 7;
320 acres in N½;
40 acres in NE¼ SW¼;
30.3 acres in NW¼ SW¼;
0.5 acres in SW¼ SW¼;
23.4 acres in SE¼ SW¼;
160 acres in SE¼; Sec. 8;
80 acres in N½ NE¼;
35.4 acres in SW¼ NE¼;
40 acres in SE¼ NE¼;
160 acres in NW¼;
160 acres in SW¼;
5.5 acres in NE¼ SE¼;
6 acres in NW¼ SE¼;
1.4 acres in SW¼ SE¼; Sec. 9;
27 acres in NE¼ NE¼;
38½ acres in NW¼ NE¼;
80 acres in S½ NE¼;
160 acres in NW¼;
40 acres in NE¼ SW¼;
29.4 acres in NW¼ SW¼;
0.5 acres in SW¼ SW¼;
22 acres in SE¼ SW¼;
80 acres in N½ SE¼;
39.7 acres in SW¼ SE¼;
38.5 acres in SE¼ SE¼; Sec. 10;

NAME AND POSTOFFICE ADDRESS OF APPROPRIATOR	DATE OF RELATIVE PRIORITY	AMOUNT CU. FT. PER SEC.	NO. ACRES	USE AND IRRIGATION SEASON	NAME OF DITCH	STREAM	DESCRIPTION OF LAND OR PLACE OF USE
Chewacan Land and Cattle Company (continued)							East and West Branches of Brattain-ZX Ditch, etc. (cont'd) 31.3 acres in SW¼ NE¼; 7 acres in NE¼ NW¼; 16 acres in NW¼ NW¼; 80 acres in S½ NW¼; 31 acres in NE¼ SW¼; 40 acres in NW¼ SW¼; 18.8 acres in SW¼ SW¼; 4 acres in NW¼ SE¼; Sec. 11; Tp. 35 S. R. 20 E.W.M.
(Proof 39, Vol. 1)	Sept., 1902	7.19	287.7	Irrigation, domestic and stock	Red House Ditch	Chewaucan River	7.8 acres in SE¼ SW¼; 20.7 acres in NE¼ SE¼; 3.7 acres in NW¼ SE¼; 37.2 acres in SW¼ SE¼; 10.1 acres in SE¼ SE¼; Sec. 8; 15.2 acres in NW¼ SW¼; 4.6 acres in SW¼ SW¼; Sec. 9; 23 acres in NW¼ NE¼; 36.7 acres in NE¼ NW¼; 6.4 acres in NW¼ NW¼; 28 acres in SW¼ NW¼; 20.7 acres in SE¼ NW¼; 6.9 acres in NW¼ SW¼; Sec. 17; 9.5 acres in NE¼ SW¼; 7 acres in SW¼ SW¼; 19.2 acres in NE¼ SE¼; 22 acres in NW¼ SE¼; Sec. 18; 9 acres in NW¼ NW¼; Sec. 19; Tp. 33 S. R. 19 E.W.M.
Chewaucan Mercantile Co., a corporation Paisley, Ore. (Proof 40, Vol. 1)	1880	0.03	3/4	Irrigation and stock	North Fork of Small's Creek and small box flume	Chewaucan River	Lots 1, 2, 3, and W½ of Lots 5 and 6, Block B, Town of Paisley, Oregon.
Virgil Conn Paisley, Ore. (Proof 41, Vol. 1)	April, 1900	0.03	3/4	Irrigation	South Fork or Small's Creek and small ditch	Chewaucan River	3/4 acre in NE¼ SW¼; Sec. 24; Tp. 33 S. R. 18 E.W.M.
D. B. Conrad and Lettie E. Conrad Paisley, Ore. (Proof 42, Vol. 1)	1878	1.7	68	Irrigation, domestic and stock	Small's Creek and Bagley Ditch	Chewaucan River	10 acres in NE¼ NE¼; 35 acres in NW¼ NE¼; 13 acres in SW¼ NE¼; 10 acres in SE¼ NE¼; Sec. 25; Tp. 33 S. R. 18 E.W.M.
M. C. Currier, Paisley, Ore. (Proof 43, Vol. 1)	1878	4.14	165.6	Irrigation, domestic and stock	Innis Slough and Ditches	Chewaucan River	13 acres in NE¼ SW¼; 40 acres in NW¼ SW¼; 40 acres in SW¼ SW¼; 30 acres in SE¼ SW¼; 3.1 acres in NW¼ SE¼; 20 acres in SW¼ SE¼; 19.5 acres in SE¼ SE¼; Sec. 20; Tp. 33 S. R. 19 E.W.M.

3624	M. C. Currier (continued) (Proof 44, Vol. 1)	1878	3.1	124.2	Irrigation, domestic and stock	Innis Slough, Jones Slough, and Fisher Slough.	Chewaucan River	24.6 acres in NE¼ SW¼; 10 acres in SE¼ SW¼; 1.5 acres in NE¼ SE¼; 20 acres in SW¼ SE¼; 19½ acres in SE¼ SE¼; Sec. 20; 28.6 acres in SW¼ SW¼; 20 acres in SE¼ SW¼; Sec. 21; Tp. 33 S. R. 19 E.W.M.
3625	(Proof 45, Vol. 1)	1878	0.03	.6	Irrigation, domestic and stock	Moss Slough or North Branch of Small's Creek	Chewaucan River	.6 acre in NE¼ SW¼; Sec. 24; Tp. 33 S. R. 18 E.W.M.
3626	M. C. Currier, and Kittie Bell Currier Paisley, Ore. (Proof 46, Vol. 1)	1878	0.03	.7	Irrigation, domestic and stock	Small's Creek	Chewaucan River	.7 acre in NE¼ SW¼; Sec. 24; Tp. 33 S. R. 18 E.W.M.
3627	W. A. Currier, Paisley, Ore. (Proof 47, Vol. 1)	1906	0.03	½	Irrigation and stock	Middle Channel or Fork and Ditch	Chewaucan River	½ acre in NE¼ SW¼; Sec. 24; Tp. 33 S. R. 18 E.W.M.
	F. N. Curtis (Permit #1417) (See Paragraph _____) Valley Falls, Ore. Nov. 29, 1913 (proof 48, Vol. 1)				Irrigation	F. N. Curtis	Coyote or Willow Creek	
	H. E. Curtis, (Permit #1418) (See Paragraph _____) Valley Falls, Ore. Nov. 29, 1913				Irrigation	H. E. Curtis	Coyote or Willow Creek	
3628	S. P. Dicks Lakeview, Ore. (Proof 50, Vol. 1)	1875	1.19	47½	Irrigation, domestic and stock	Dick's Ditch	Mill Creek, trib. of Crooked Creek	11.5 acres in SW¼ SW¼; 14.5 acres in SE¼ SW¼; Sec. 1; 4.5 acres in SE¼ SE¼; Sec. 2; 16.5 acres in NE¼ NE¼; 0.25 acres in SE¼ NE¼; Sec. 11; Tp. 37 S. R. 20 E.W.M.
	(Proof 51, Vol. 1)	1875	1.64	65½	Irrigation, domestic and stock	Dick's Ditches	Loveless Creek	10.5 acres in SE¼ SW¼; Sec. 1; 21 acres in NE¼ NW¼; 26 acres in SE¼ NW¼; 8 acres in NE¼ SW¼; Sec. 12; Tp. 37 S. R. 20 E.W.M.
	(Proof 52, Vol. 1)	1875	5.89	235½	Irrigation, domestic and stock	Dams and Headgates	Crooked Creek	10 acres in NE¼ NE¼; 24 acres in SE¼ NE¼; 12 acres in NE¼ SE¼; Sec. 11; 17 acres in NE¼ NW¼; 39½ acres in NW¼ NW¼; 40 acres in SW¼ NW¼; 17 acres in SE¼ NW¼; 25 acres in NE¼ SW¼; 35 acres in NW¼ SW¼; 1 acre in SW¼ SW¼; 15 acres in SE¼ SW¼; Sec. 12; Tp. 37 S. R. 20 E.W.M.
	(Proof 53, Vol. 1)	1882	4.38	175	Irrigation and stock	Dams and Furrow Ditches	Dairy Creek	40 acres in NE¼ SE¼; Sec. 2; 15 acres in NE¼ SW¼; 25 acres in NW¼ SW¼; 35 acres in SE¼ SW¼; 40 acres in SW¼ SE¼; 20 acres in SE¼ SE¼; Sec. 1; Tp. 36 S. R. 17 E.W.M.

3629 W. M. Dobkins, Paisley, Ore. (Proof 54, Vol. 1)	1878	4.63	185	Irrigation, domestic and stock	Small's Creek and Ditches therefrom	Chewaucan River	40 acres in NW¼ NE¼; 32.5 acres in SW¼ NE¼; 40 acres in NE¼ NW¼; 40 acres in NW¼ NW¼; 32.5 acres in SE¼ NW¼; Sec. 30; Tp. 33 S. R. 19 E.W.M.
(Proof 55, Vol. 1)	1878	4	160	Irrigation, domestic and stock	Innis Slough and ditches	Chewaucan River	40 acres in NE¼ NE¼; 40 acres in SE¼ NE¼; Sec. 30; 40 acres in NW¼ NW¼; 40 acres in SW¼ NW¼; Sec. 29; Tp. 33 S. R. 19 E.W.M.
(Proof 56, Vol. 1)	1897	2.5	100	Irrigation, domestic and stock	Dobkins Ditch	Elder Creek, trib. ofChewaucan River	30 acres in SW¼ NW¼; 15 acres in SE¼ NW¼; 15 acres in NW¼ SW¼; 20 acres in NE¼ SW¼; 20 acres in NW¼ SE¼; Sec. 31; Tp. 35 S. R. 18 E.W.M.
3630 John Drumm, Sr. Paisley, Ore. (Proof 57, Vol. 1)	1906	0.05	2	Irrigation	Middle Fork and Hampton, Harvey, Currier Flume.	Chewaucan River	2 acres in NW¼ SE¼; Sec. 24; Tp. 33 S. R. 18 E.W.M.
3631 Mrs. Ola Drumm, Paisley, Ore. (Proof 58, Vol. 1)	1900	0.25	10	Irrigation	Middle Fork and Green Drumm Ditch	Chewaucan River	Lots 14 and 15, Second Addition to Paisley, Oregon; Lots 10,11, 12 and 13, Block F, Second East Addition to Paisley, Oregon; also a tract of land described as follows: Beginning at the SE corner of Lot 10, Block F, Paisley, Oregon, thence Northerly along the Eastern Boundary of said Block 150', thence Easterly at right angle 100', thence at right angle Southerly and parallel with the Eastern boundary of said Block F 150', thence at right angle Westerly 100' to place of beginning.
(Proof 59, Vol. 1)	1900	0.03	1	Irrigation	Middle Fork and Conley Ditch	Chewaucan River	1 acre in NE¼ SE¼; and NW¼ SW¼; Sec. 24; Tp. 33 S. R. 18 E.W.M.
3627 Anton Egli, Egli, Oregon. (Proof 60, Vol. 1)	1878	3.25	130	Irrigation, domestic and stock	Jones Slough and Ditches therefrom	Chewaucan River	20 acres in NE¼ SE¼; 40 acres in SE¼ SE¼; Sec. 17; 40 acres in NE¼ NE¼; Sec. 20; 30 acres in NW¼ NW¼; Sec. 21; Tp. 33 S. R. 19 E.W.M.
(Proof 61, Vol. 1)	1878	1.39	55.74	Irrigation, domestic and stock	Unnamed Ditch	Chewaucan River	20.8 acres in SW¼ NE¼; 14.94acres in SE¼ NE¼; 20 acres in NE¼ SE¼; Sec. 17; Tp. 33 S. R. 19 E.W.M.
3633 J. B. Elder, Paisley, Ore. (Proof 62, Vol. 1)	1873	7.29	291.5	Irrigation	70 Ditch	Crooked Creek	29.5 acres in NW¼ NE¼; 10 acres in NW¼ SE¼; Sec. 25; 33.5 acres in NE¼ NE¼; 16.5 acres in SW¼ SE¼; 8.5 acres in SE¼ SE¼; 14 acres in SE¼ NE¼; 29 acres in SW¼ NE¼; Sec. 25; Tp. 35 S. R. 20 E.W.M.

	Name and Postoffice Address of Appropriator	Date of Relative Priority	Amount Cu.Ft. per sec.	No. Acres	Use	Name of Ditch	Stream	Description of Land or Place of Use
	J. B. Elder (continued)							The remaining tracts in $S\frac{1}{2}SE\frac{1}{4}$; Sec. 31; Tp. 35 S. R. 21 E.W.M. and remaining tracts in $E\frac{1}{2}$ Sec. 36; Tp. 35 S. R. 20 E.W.M., containing 150 acres.
3624	Jason S. Elder Paisley, Ore. (Proof 63, Vol. 1)	June 14, 1908	0.03	1	Irrigation	Small's Creek and Elder Park Flume	Chewaucan River	Beginning at the SW corner of intersection of West & W illow Sts. Paisley, Oregon; thence S. 200'; thence W. 50'; thence S. 100'; thence W. 75'; thence N. 300'; thence E. 125' to place of beginning. Beginning at a point on the West line of Willow St. 200' South from the SW intersection of Willow and West Sts. Paisley, Oregon; thence Westerly 50'; thence Southerly 100'; thence Easterly 50'; thence Northerly 100' to place of beginning. All lines to be parallel to the streets of Paisley, Oregon. All in Sec. 24, Tp. 33 S. R. 18 E.W.M.
4 3623	Fred T. Elsey 1016 Ashmont Ave. Oakland, Cal. (Proof 64, Vol. 1)	1878	2.3	92	Irrigation and stock	Jones Slough Ditch	Chewaucan River	30 acres in $SE\frac{1}{4}$ $SE\frac{1}{4}$; Sec. 18; 39 acres in $NE\frac{1}{4}$ $NE\frac{1}{4}$; 14 acres in $NW\frac{1}{4}$ $NE\frac{1}{4}$; Sec. 19; 9 acres in $NW\frac{1}{4}$ $NW\frac{1}{4}$; Sec. 20; Tp. 33 S. R. 19 E.W.M.
4 3624	(Proof 65, Vol. 1)	1902	1.88	75	Irrigation, domestic and stock	Red House Ditch	Chewaucan River	40 acres in $SW\frac{1}{4}$ $SE\frac{1}{4}$; 9 acres in $SE\frac{1}{4}$ $SE\frac{1}{4}$; Sec. 18; 26 acres in $NW\frac{1}{4}$ $NE\frac{1}{4}$; Sec. 19; Tp. 33 S. R. 19 E.W.M.
3625	F. W. Farrow, Paisley, Ore. (Proof 66, Vol. 1)	April, 1894	0.7	$2\frac{1}{2}$	Irrigation	Small's Creek and Miller Ditch	Chewaucan River	$2\frac{1}{2}$ acres in $SW\frac{1}{4}$ $SE\frac{1}{4}$; Sec. 24; Tp. 33 S. R. 18 E.W.M.
3626	Mary L. Farrow, Paisley, Ore. (Proof 67, Vol. 1)	1894	0.7	$2\frac{1}{2}$	Irrigation	Small's Creek and Miller Ditch	Chewaucan River	$2\frac{1}{2}$ acres in $SW\frac{1}{4}$ $SE\frac{1}{4}$; Sec. 24; Tp. 33 S. R. 18 E.W.M.
3627	Estate of Martha J. Farrow, deceased, W.Y.Miller, Executor Paisley, Ore. (Proof 68, Vol. 1)	1878	1.48	59	Irrigation, domestic and stock	Innis, Jones and Fisher's Slough Ditches	Chewaucan River-	8 acres in $NE\frac{1}{4}$ $SW\frac{1}{4}$; 33 acres in $NW\frac{1}{4}$ $SW\frac{1}{4}$; 18 acres in $SW\frac{1}{4}$ $SW\frac{1}{4}$; Sec. 28; Tp. 33 S. R. 19 E.W.M.
	(Proof 69, Vol. 1)	1878	2.55	102	Irrigation, domestic and stock	Innis Slough and ditches therefrom	Chewaucan River	40 acres in $NE\frac{1}{4}$ $SE\frac{1}{4}$; 40 acres in $SE\frac{1}{4}$ $SE\frac{1}{4}$; Sec. 29; 14 acres in $NE\frac{1}{4}$ $NE\frac{1}{4}$; Sec. 32; 6 acres in $NW\frac{1}{4}$ $SW\frac{1}{4}$; 2 acres in $SW\frac{1}{4}$ $SW\frac{1}{4}$; Sec. 28; Tp. 33 S. R. 19 E.W.M.
3634	(Proof 70, Vol. 1)	1885	0.03	.55	Irrigation	North Fork of Small's Creek and Hampton Flume	Chewaucan River	.05acres in $NE\frac{1}{4}$ $SW\frac{1}{4}$; 0.5 acres in $NW\frac{1}{4}$ $SW\frac{1}{4}$; Sec. 24; Tp. 33 S. R. 18 E.W.M.

3638	Estate of Martha J. Farrow (continued) (Proof 71, Vol. 1)	1901	0.59	23.3	Irrigation, domestic and stock	Small's Creek and West Street Ditch	Chewaucan River	13.3 acres in NW¼ SE¼; 10 acres in SW¼ SE¼; Sec. 24; Tp. 33 S. R. 18 E.W.M.
3639	J. D. Farra, Paisley, Ore. (Proof 72, Vol. 1)	1900	0.04	1.4	Irrigation	Small's Creek and Mill Street Ditch	Chewaucan River	All of Block K, South Addition of Town of Paisley, Oregon
3640	Charles Garner, Lakeview, Ore. (Proof 73, Vol. 1)	Aug. 31, 1889	0.27	10½	Irrigation, domestic and stock	Hawkins Ditch	Spring Branch of Crooked Creek	10½ acres in SW¼ SE¼; Sec. 2; Tp. 37 S. R. 20 E.W.M.
3641	Mary C. Green, Watsonville, Cal. (Proof 74, Vol. 1)	1901	0.03	3/4	Irrigation	Middle Fork Ditch	Chewaucan River	Lots 8 and 9, Block F, Second Addition to the Town of Paisley, Oregon; and a piece beginning at SE corner Lot 8, Block F, said Second Addition, thence North 150'; thence East 100'; thence South 150'; thence West 100' to place of beginning.
3642	S. G. Hadley, and Lillian A. Hadley Paisley, Ore. (Proof 75, Vol. 2)	1878	0.13	5	Irrigation, domestic and stock	Bagley Ditch	Chewaucan River	2 acres in SE¼ SW¼; Sec. 24; 3 acres in NE¼ NW¼; Sec. 25; Tp. 33 S. R. 18 E.W.M.
3643	W. L. Hammond, Klamath Falls, Ore. (Proof 76, Vol. 1)	1882	0.03	½	Irrigation	North Fork of Small's Creek and McCall Ditch	Chewaucan River	150' square at the SW corner of Church and Willow Streets, Paisley, Oregon.
3644	J. L. Hampton, and Sadie L. Hampton, Paisley, Ore. (Proof 77, Vol. 2)	1899	0.03	3/4	Irrigation	Middle Fork and Hampton, Harvey and Currier Flume	Chewaucan River	Lots 7, 8 and 9, East Addition to Town of Paisley, Oregon; also commencing at a point 150' N from SE corner of Block E of East Addition aforesaid; thence N along E boundary of said Block E 150' to NE corner of said block; thence at right angles E 100'; thence at right angles S and parallel with E line of said Block E 150'; thence at right angles and W 100' to place of beginning.
3645	Geo. W. Hanan, Paisley, Ore. (Proof 78, Vol. 2)	1888	0.03	½	Irrigation	No Name	Moss Creek	½ acre in NE¼ SW¼; Sec. 24; Tp. 33 S. R. 18 E.W.M.
3646	H. E. Hanan and Eda Hanan Paisley, Ore. (Proof 79, Vol. 2)	1878	0.03	.7	Irrigation, domestic and stock	Bagley	Chewaucan River	Lot 3, Miller Addition to Town of Paisley, Oregon.
3647	John Hanan Warmspring, Ore. (Proof 80, Vol. 2)	1888	0.03	.2	Irrigation, domestic and stock	Small's Creek and Ditch	Chewaucan River	0.2 acre in SE¼ SW¼; Sec. 24; Tp. 33 S. R. 18 E.W.M.

	Name and Postoffice Address of Appropriator	Date of Relative Priority	Amount Cu.Ft. per sec.	No. Acres	Use	Name of Ditch	Stream	Description of Land or Place of Use
3648	Lena A. Hardisty Lakeview, Ore. (Proof 81, Vol. 2)	1875	2.69	107	Irrigation, domestic and stock	Dams, ditches and levees.	Crooked Creek	16 acres in NE¼ SE¼; 24 acres in NW¼ SE¼; 40 acres in SW¼ SE¼; 27 acres in SE¼ SE¼; Sec. 12; Tp. 37 S. R. 20 E.W.M.
	(Proof 82, Vol. 2)	1875	0.1	4	Irrigation, domestic and stock	Loveless-Hardisty Ditch	Loveless Creek, trib. of Crooked Creek	4 acres in SE¼ SE¼; Sec. 12; Tp. 37 S. R. 20 E.W.M.
36[illegible]	Mrs. Melissa Hartelrode Paisley, Ore. (Proof 83, Vol. 2)	1894	0.03	1	Irrigation	Small's Creek and Pike-Hartelrode Ditch and Flume	Chewaucan River	Beginning at a point on the W. line of Willow St. 40' W from a point on the E line of said street, said last point being 168½' S from the NW corner of Block A. Running thence Westerly at right angles with said W line of Willow St. 153'; thence S at right angles with said last line and parallel to said W line of Willow St. 156½'; thence Easterly at right angles with said street 153' to the W line of Willow St.; thence Northerly along the W line of said Willow St. 168½' to place of beginning. All according to map and plat of Town of Paisley, Oregon, filed with County Clerk of Lake County, Oregon, Dec. 14, 1879
3650	Jennie Holder Paisley, Ore. (Proof 84, Vol. 2)	1877	3.23	129	Irrigation, domestic and stock	Dams and Ditches	School House Creek	7 acres in NE¼ SW¼; 37 acres in SE¼ SW¼; Sec. 34; Tp. 34 S. R. 19 E.W.M. 39.5 acres in NE¼ NW¼; 38 acres in NW¼ NW¼; Sec. 3; 7.5 acres in NE¼ NE¼; Sec. 4; Tp. 35 S. R. 19 E.W.M.
	(Proof 85, Vol. 2)	1888	0.35	14	Irrigation, domestic and stock	Holder Ditch	Moss Creek	14 acres in NW¼ NE¼; Sec. 3; Tp. 35 S. R. 19 E.W.M.
365[illegible]	H. C. Hotchkiss, P. W. Hotchkiss, and William Hotchkiss, doing business as Hotchkiss Bros., Valley Falls, Ore. (Proof 86, Vol. 2)	1880	2.13	85	Irrigation, domestic and stock	Hotchkiss Ditches	Crooked Creek	11 acres in SE¼ SW¼; 10 acres in SW¼ SE¼; Sec. 20; 5 acres in NE¼ NE¼; 33 acres in NW¼ NE¼; 26 acres in NE¼ NW¼; Sec. 29; Tp. 35 S. R. 21 E.W.M.
3652	(Proof 87, Vol. 2)	(Permit #986) 1906 Modified by Court Decree 1-15-1949	8.90	356.2	Irrigation, domestic and stock	Hotchkiss Dam	Chewaucan River	3 acres in SW¼ SE¼; Sec. 12; 14 acres in NE¼ NE¼; Sec. 13; 5 acres in NE¼ NW¼; 17 acres in NW¼ NW¼; 0.5 acres in SW¼ NW¼; 13 acres in SE¼ NW¼; 1 acre in NE¼ SW¼; 10 acres in NE¼ SE¼; 23 acres in NW¼ SE¼; 7.6 acres in SW¼ SE¼; 29 acres in SE¼ SE¼; Sec. 18; 27 acres in NW¼ NW¼; 28 acres in SW¼ NW¼;

NAME AND POSTOFFICE ADDRESS OF APPROPRIATOR	DATE OF RELATIVE PRIORITY	AMOUNT CU. FT. PER SEC.	NO. ACRES	USE AND IRRIGATION SEASON	NAME OF DITCH	STREAM	DESCRIPTION OF LAND OR PLACE OF USE
3652 H. C. Hotchkiss et al. (continued)							15.5 acres in NE¼ SW¼; 10.5 acres in NW¼ SW¼; 19.6 acres in SE¼ SW¼; 21.5 acres in SW¼ SE¼; 20.5 acres in SE¼ SE¼; Sec. 20; 7 acres in SW¼ SW¼; 3 acres in SE¼ SW¼; Sec. 21; 11 acres in NE¼ NW¼; 32 acres in NW¼ NW¼; Sec. 28; 32 acres in NE¼ NE¼; 5.5 acres in NW¼ NE¼; Sec. 29; Tp. 35 S. R. 21 E.W.M.
		24		Power 38 H.P. Power cancelled Sup. Or. V. 12 pg 24 11/19/63 Power Claim # 765			Power developed at Concrete Dam across river. Water returned to river from penstock.
3653 Frances E. Howell Lakeview, Ore. (Proof 88, Vol. 2)	1889	0.08	3	Irrigation	Bagley	Chewaucan River	Lots 1,2,3 and 4, Miller's Addition to the Town of Paisley, Oregon.
(Proof 89, Vol. 2)	April 1, 1894	0.07	2.6	Irrigation	Small's Creek and Miller Ditch	Chewaucan River	2.6 acres in SW¼ SE¼; Sec. 24; Tp. 33 S. R. 18 E.W.M.
3654 Lester I. Hampton (A.M.Smith, Guardian) and Frances E.Howell Lakeview, Ore. (Proof 90, Vol. 2)	April 1, 1894	0.13	5	Irrigation	Small's Creek and Miller Ditch	Chewaucan River	5 acres in SW¼ SE¼; Sec. 24; Tp. 33 S. R. 18 E.W.M.
3655 I. O. O. F. #177 Paisley, Ore. (Proof 92, Vol. 2)	April 1, 1908	0.03	½	Irrigation	Unnamed Ditch	Chewaucan River	Lots 7 and 8, Miller Addition to Town of Paisley, Oregon.
3656 Florence Jones, Paisley, Ore. (Proof 93, Vol. 2)	1878	2.75	110	Irrigation, domestic and stock	Small's Creek and Ditches therefrom	Chewaucan River	15 acres in SE¼ SW¼; 15 acres in SW¼ SE¼; 40 acres in SE¼ SE¼; Sec. 30; 40 acres in NE¼ NE¼; Sec. 31; Tp. 33 S. R. 19 E.W.M.
(Proof 94, Vol. 2)	1878	9.84	393.6	Irrigation, domestic and stock	Innis Slough and Ditches therefrom	Chewaucan River	160 acres in SW¼; 80 acres in W½ SE¼; Sec. 29; 40 acres in NE¼ SE¼; Sec. 30; 33.6 acres in NW¼ NE¼; 80 acres in N½ NW¼; Sec. 32; Tp. 33 S. R. 19 E.W.M.
3657 Estate of Geo. M. Jones Paisley, Ore.	1876	0.5	20	Irrigation, domestic and stock	Jones Ditch No. 1	Springs trib. to Chewaucan River	10 acres in SW¼ SW¼; 10 acres in SE¼ SW¼; Sec. 31; Tp. 35 S. R. 19 E.W.M.
3658 (Proof 96, Vol. 2)	1876	0.5	20	Irrigation	Jones Ditch No. 2	Runoff waters by ravine trib. to Chewaucan River	10 acres in NW¼ SW¼; 10 acres in SW¼ SW¼; Sec. 31; Tp. 33 S. R. 19 E.W.M.
3659 (Proof 97, Vol. 2)	1878	5.18	207	Irrigation, domestic and stock	Bagley Ditch	Chewaucan River	4 acres in NW¼ NE¼; 4 acres in SW¼ NE¼; 30 acres in NE¼ NW¼; 38 acres in SE¼ NW¼; 35 acres in NE¼ SW¼; 30 acres in SE¼ SW¼; 7 acres in NW¼ SE¼; 18 acres in SW¼ SE¼; Sec. 31; Tp. 33 S. R. 19 E.W.M.

	Geo. M. Jones (continued)							37 acres in NW$\frac{1}{4}$ NE$\frac{1}{4}$; 4 acres in NE$\frac{1}{4}$ NW$\frac{1}{4}$; Sec. 6; Tp. 34 S. R. 19 E.W.M.
3699	(Proof 98, Vol. 2)	1878	9.61	384.4	Irrigation, domestic and stock	Small's Creek and Old Channel	Chewaucan River	36 acres in NW$\frac{1}{4}$ NE$\frac{1}{4}$; 36 acres in SW$\frac{1}{4}$ NE$\frac{1}{4}$; 40 acres in SE$\frac{1}{4}$ NE$\frac{1}{4}$; 40 acres in NE$\frac{1}{4}$ SE$\frac{1}{4}$; 33 acres in NW$\frac{1}{4}$ SE$\frac{1}{4}$; 12 acres in SW$\frac{1}{4}$ SE$\frac{1}{4}$; 40 acres in SE$\frac{1}{4}$ SE$\frac{1}{4}$; Sec. 31; 6 acres in SW$\frac{1}{4}$ NE$\frac{1}{4}$; 40 acres in SW$\frac{1}{4}$ NW$\frac{1}{4}$; 28.8 acres in SE$\frac{1}{4}$ NW$\frac{1}{4}$; 25.1 acres in NW$\frac{1}{4}$ SW$\frac{1}{4}$; 7.5 acres in SW$\frac{1}{4}$ SW$\frac{1}{4}$; Sec. 32; Tp. 33 S. R. 19 E.W.M.
	Frances J. Snider & Hana F. Jones Proof #99, Vol 2 Cert 3658. (See Court Decree Vol. 5 pg 48) 148.							
[illegible]	(Proof 100, Vol. 2)	1890	6	240	Irrigation and stock	Temporary dams and furrow ditches	Coffee Pot Creek	30 acres in SW$\frac{1}{4}$ NE$\frac{1}{4}$; 36 acres in SE$\frac{1}{4}$ NE$\frac{1}{4}$; 12 acres in SE$\frac{1}{4}$ NW$\frac{1}{4}$; 16 acres in NE$\frac{1}{4}$ SW$\frac{1}{4}$; 24 acres in NW$\frac{1}{4}$ SW$\frac{1}{4}$; 10 acres in NE$\frac{1}{4}$ SE$\frac{1}{4}$; 20 acres in NW$\frac{1}{4}$ SE$\frac{1}{4}$; Sec. 7; 6 acres in NE$\frac{1}{4}$ NW$\frac{1}{4}$; 6 acres in NW$\frac{1}{4}$ NW$\frac{1}{4}$; 28 acres in SW$\frac{1}{4}$ NW$\frac{1}{4}$; 16 acres in SE$\frac{1}{4}$ NW$\frac{1}{4}$; Sec. 8; Tp. 35 S. R. 18 E.W.M.
[illegible]	Emma Kelsay and J. S. Kelsay Paisley, Ore. (Proof 101, Vol. 2)	1893	2.5	100	Irrigation and stock	Not named	Dairy Creek	40 acres in NE$\frac{1}{4}$ SE$\frac{1}{4}$; 20 acres in NW$\frac{1}{4}$ SE$\frac{1}{4}$; 40 acres in SE$\frac{1}{4}$ SE$\frac{1}{4}$; Sec. 8; Tp. 36 S. R. 18 E.W.M.
366[illegible]	Don C. LaFont Creede, Colo. (Proof 102, Vol. 2)	1900	0.25	10	Irrigation	Heryford Ditch	Willow Creek	10 acres in SW$\frac{1}{4}$ SE$\frac{1}{4}$; Sec. 23; Tp. 35 S. R. 20 E.W.M.
3662	E. O. Lamb, Paisley, Ore. (Proof 103, Vol. 2)	1878	0.03	.7	Irrigation, domestic and stock	Small's Creek Ditches	Chewaucan River	0.7 acre in NE$\frac{1}{4}$ SW$\frac{1}{4}$; Sec. 24; Tp. 33 S. R. 18 E.W.M.
3663	M. H. Lauritzen Paisley, Ore. (Proof 104, Vol. 2)	1878	3.06	122.6	Irrigation, domestic and stock	Fisher's Slough and Ditches therefrom	Chewaucan River	34.3 acres in NE$\frac{1}{4}$ NW$\frac{1}{4}$; 36 acres in NW$\frac{1}{4}$ NW$\frac{1}{4}$; 28 acres in SW$\frac{1}{4}$ NW$\frac{1}{4}$; 24.3 acres in SE$\frac{1}{4}$ NW$\frac{1}{4}$; Sec. 28; Tp. 33 S. R. 19 E.W.M.
	(Proof 105, Vol. 2)	1878	2.4	96	Irrigation, domestic and stock	Innis Slough and Ditches therefrom (12 Pr. Trsf. Sp. Or Vol. 10 p. 555) (12 " " " Vol. 11 p. 421)	Chewaucan River	4 acres in NW$\frac{1}{4}$ NW$\frac{1}{4}$; 12 acres in SW$\frac{1}{4}$ NW$\frac{1}{4}$; Sec. 28; 40 acres in NE$\frac{1}{4}$ NE$\frac{1}{4}$; 40 acres in SE$\frac{1}{4}$ NE$\frac{1}{4}$; Sec. 29; Tp. 33 S. R. 19 E.W.M.
[illegible]	F. D. Loveless Lakeview, Ore. (Proof 106, Vol. 2)	1875	3.05	122	Irrigation, domestic and stock	Dams and ditches	Loveless Creek	7 acres in NE$\frac{1}{4}$ NE$\frac{1}{4}$; 26 acres in NW$\frac{1}{4}$ NE$\frac{1}{4}$; 40 acres in SW$\frac{1}{4}$ NE$\frac{1}{4}$; 18 acres in SE$\frac{1}{4}$ NE$\frac{1}{4}$; 13 acres in NE$\frac{1}{4}$ SE$\frac{1}{4}$; 18 acres in NW$\frac{1}{4}$ SE$\frac{1}{4}$; Sec. 12; Tp. 37 S. R. 20 E.W.M.

NAME AND POSTOFFICE ADDRESS OF APPROPRIATOR	DATE OF RELATIVE PRIORITY	AMOUNT CU. FT. PER SEC.	NO. ACRES	USE AND IRRIGATION SEASON	NAME OF DITCH	STREAM	DESCRIPTION OF LAND OR PLACE OF USE
Cynthia I. McCall Paisley, Ore. (Proof 107, Vol. 2)	1878	0.17	6.5	Irrigation, domestic and stock	Small ditches	Chewaucan River	0.5 acres in NE¼ SW¼; 6 acres in NW¼ SW¼; Sec. 24; Tp. 33 S. R. 18 E.W.M.
(Proof 108, Vol. 2)	1902	1.75	70	Irrigation, domestic and stock	Red House	Chewaucan River	40 acres in SE¼ SW¼; Sec. 18; 30 acres in NE¼ NW¼; Sec. 19; Tp. 33 S. R. 19 E.W.M.
E. S. McDonald, Paisley, Ore. (Proof 109, Vol. 2)	1878	3.63	145	Irrigation, domestic and stock	Small's Creek and ditches therefrom	Chewaucan River	7.5 acres in SW¼ NE¼; 7.5 acres in SE¼ NW¼; 40 acres in NE¼ SW¼; 25 acres in SE¼ SW¼; 40 acres in NW¼ SE¼; 25 acres in SW¼ SE¼; Sec. 30; Tp. 33 S. R. 19 E.W.M.
(Proof 110, Vol. 2)	1880	0.38	15	Irrigation and Stock	McDonald ditches	A small Creek rising in Sec. 33, Tp. 35 S. R.18 EWM. trib. of Chewaucan River.	15 acres in NW¼ SW¼; Sec. 34; Tp. 35 S. R. 18 E.W.M.
(Proof 111, Vol. 2)	1890	0.63	25	Irrigation and stock	McDonald ditches	A small Creek in Secs. 9 & 10. T.35 S.R. 18 E.W.M., trib. of Chewaucan River.	13 acres in SE¼ NE¼; 12 acres in NE¼ SE¼; Sec. 9; Tp. 35 S. R. 18 E.W.M.
(Proof 112, Vol. 2)	1890	0.38	15	Irrigation and stock	McDonald ditches	Antelope Creek	15 acres in NW¼ NE¼; Sec. 27; Tp. 35 S. R. 18 E.W.M.
E. S. McDonald and J. B. Elder (Partners) Paisley, Ore. (Proof 113, Vol. 2)	1873	12.25	490	Irrigation and stock	Dams and ditches	Willow Creek	80 acres in W½ NE¼; 20 acres in SE¼ NE¼; 40 acres in NE¼ NW¼; 10 acres in SE¼ NW¼; 80 acres in N½ SE¼; 20 acres in SE¼ SE¼; 20 acres in SW¼ SE¼; Sec. 23; 20 acres in SW¼ NE¼; 20 acres in SW¼ NW¼; 20 acres in SE¼ NW¼; 80 acres in W½ SE¼; Sec. 24; 80 acres in N½ SW¼; Sec. 24; Tp. 35 S. R. 20 E.W.M.
(Proof 114, Vol. 2)	1873	2.68	107	Irrigation, domestic and stock	Dams and ditches	Willow Creek	4 acres in NE¼ SW¼; 7 acres in SE¼ SW¼; 21 acres in NE¼ SE¼; 22 acres in NW¼ SE¼; 25 acres in SW¼ SE¼; 28 acres in SE¼ SE¼; Sec. 23; Tp. 35 S. R. 20 E.W.M.
(Proof 115, Vol. 2)	1873	5.84	233.5	Irrigation and stock	Dams and Ditches	Crooked Creek	30 acres in NE¼ NE¼; 30 acres in NW¼ NE¼; 30 acres in SW¼ NE¼; 10 acres in SE¼ NE¼; 10 acres in NE¼ SE¼; 30 acres in NW¼ SE¼; 31 acres in SE¼ SE¼; Sec. 36; Tp. 35 S. R. 20 E.W.M. 10 acres in SW¼ NW¼; 0.5 acres in SE¼ NW¼; 10 acres in NW¼ SW¼; 30 acres in SW¼ SW¼; 2 acres in SE¼ SW¼; Sec. 31; 10 acres in NW¼ SW¼; Sec. 30; Tp. 35 S. R. 21 E.W.M.

	Name and Postoffice Address of Appropriator	Date of Relative Priority	Amount Cu.Ft. per sec.	No. Acres	Use	Name of Ditch	Stream	Description of Land or Place of Use
	E.S.McDonald & J.B.Elder (continued) (Proof 116, Vol. 2)	1878	2.58	103	Irrigation, domestic and stock	Bagley Ditch	Chewaucan River	4 acres in SW¼ SE¼; 37 acres in SE¼ SE¼; Sec. 25; 3 acres in NE¼ NE¼; Sec. 36; Tp. 33 S. R. 18 E.W.M. 40 acres in SW¼ SW¼; Sec. 30; 19 acres in NW¼ NW¼; Sec. 31; Tp. 33 S. R. 19 E.W.M.
	Ruby McKay, and Ruby McKay, Guardian for Joseph B. Harvey and W. H. Harvey, minors. Paisley, Ore. (Proof 117, Vol. 2)	1888	0.03	0.4	Irrigation and domestic	Moss Slough	Chewaucan River	0.4 acre in NE¼ SW¼; Sec. 24; Tp. 33 S. R. 18 E.W.M.
	Alice M. Miller, Paisley, Ore. (Proof 118, Vol. 2)	1901	0.03	0.75	Irrigation	Small's Creek and West Street Ditch	Chewaucan River	0.75 acre in SW¼ SE¼; Sec. 24; Tp. 33 S. R. 18 E.W.M.
	W. Y. Miller, Paisley, Ore. (Proof 119, Vol. 2)	1878	0.13	5	Irrigation, domestic and stock	Bagley Ditch and Small's Creek	Chewaucan River	5 acres in SE¼ SW¼; Sec. 24; Tp. 33 S. R. 18 E.W.M.
	(Proof 120, Vol. 2)	Apr. 1, 1894	0.13	5	Irrigation, domestic and stock	Small's Creek and Miller's Ditch	Chewaucan River	5 acres in SW¼ SE¼; Sec. 24; Tp. 33 S. R. 18 E.W.M.
	(Proof 121, Vol. 2)	1901	0.23	9½	Irrigation, domestic and stock	Small's Creek and West Street Ditch	Chewaucan River	9½ acres in SW¼ SE¼; Sec. 24; Tp. 33 S. R. 18 E.W.M.
	Flora Moore, Paisley, Ore. (Proof 122, Vol. 2)	1904	0.03	¼	Irrigation	Hampton-Sherlock Ditch, Church Street Flume	Chewaucan River	Lots 11 and 12, Block C, Town of Paisley, Oregon.
	Mrs. V.O.Z.Morgan, Paisley, Ore. (Proof 123, Vol. 2)	1873	1.78	71	Irrigation, domestic and stock	Morgan Ditch	Avery Creek and Reed Creek	18 acres in NW¼ SE¼; Sec. 29; 17 acres in NE¼ NE¼; 22.5 acres in SE¼ SW¼; 6.5 acres in SW¼ NE¼; 2 acres in NE¼ NW¼; 5.5 acres in SW¼ SE¼; Sec. 29; Tp. 34 S. R. 19 E.W.M.
	Annie Moss Paisley, Ore. (Proof 124, Vol. 2)	1878	2.75	110	Irrigation, domestic and stock	Small's Creek and ditches therefrom	Chewaucan River	40 acres in SE¼ SE¼; Sec. 24; Tp. 33 S. R. 18 E.W.M. 40 acres in SW¼ SW¼; 30 acres in SE¼ SW¼; Sec. 19; Tp. 33 S. R. 19 E.W.M.
	(Proof 125, Vol. 2)	1878	1.25	50	Irrigation, domestic and stock	Moss Slough and ditches therefrom	Chewaucan River	2 acres in SE¼ NE¼; 38 acres in NE¼ SE¼; Sec. 24; Tp. 33 S. R. 18 E.W.M. 10 acres in SE¼ SW¼; Sec. 19; Tp. 33 S. R. 19 E.W.M.
	S. P. Moss, Lakeview, Ore. (Proof 126, Vol. 2)	August, 1872	20.22	808.75	Irrigation, domestic and stock	King, Spring and Moss ditches	King, Moss, White and Newland Creeks	31½ acres in SW¼ NE¼; 1½ acres in SE¼ NW¼; ½ acre in NE¼ SW¼; 2 acres in SE¼ SW¼; 9½ acres in NE¼ SE¼; 40 acres in NW¼ SE¼;

NAME AND POSTOFFICE ADDRESS OF APPROPRIATOR	DATE OF RELATIVE PRIORITY	AMOUNT CU. FT. PER SEC.	NO. ACRES	USE AND IRRIGATION SEASON	NAME OF DITCH	STREAM	DESCRIPTION OF LAND OR PLACE OF USE
S. P. Moss (continued)							40 acres in SW¼ SE¼; 32 acres in SE¼ SE¼; Sec. 3; 37 acres in NE¼ NE¼; 35½ acres in NW¼ NE¼; 10.75acres in SW¼ NE¼; 35½ acres in SE¼ NE¼; 6½ acres in NE¼ NW¼; 11 acres in NE¼ SE¼; Sec. 10; 2 acres in NW¼ NW¼; 24 acres in SW¼ NW¼; 5½ acres in NE¼ SW¼; 39½ acres in NW¼ SW¼; 39½ acres in SW¼ SW¼; 18 acres in SE¼ SW¼; Sec. 11; 2 acres in SW¼ NE¼; 30½ acres in NE¼ NW¼; 38 acres in NW¼ NW¼; 39 acres in SW¼ NW¼; 40 acres in SE¼ NW¼; 40 acres in NE¼ SW¼; 21½ acres in NW¼ SW¼; 6½ acres in SW¼ SW¼; 40 acres in SE¼ SW¼; 4½ acres in NW¼ SE¼; 37 acres in SW¼ SE¼; 3 acres in SE¼ SE¼; Sec. 14; ½ acre in NE¼ NE¼; 1½ acres in SE¼ NE¼; 4 acres in NE¼ SE¼; 16 acres in NW¼ SE¼; Sec. 15; 3½ acres in NE¼ NE¼; 33½ acres in NW¼ NE¼; 7½ acres in SW¼ NE¼; 16 acres in NE¼ NW¼; 2½ acres in NW¼ NW¼; Sec. 23; Tp. 35 S. R. 19 E.W.M.
(Proof 127, Vol. 2)	1880	3	120	Irrigation, domestic and stock	Randall's Ditches	Moss Creek and School House Creek	40 acres in NE¼ NW¼; 25 acres in NW¼ NW¼; 40 acres in SW¼ NW¼; 15 acres in SE¼ NW¼; Sec. 34; Tp. 34 S. R. 19 E.W.M.
(Proof 128, Vol. 2)	1880	0.87	34.5	Irrigation, domestic and stock	Old Ditch	Pine Creek	5.5 acres in SE¼ SW¼; 3 acres in NE¼ SE¼; 14.5 acres in NW¼ SE¼; 11.5 acres in SW¼ SE¼; Sec. 7; Tp. 36 S. R. 20 E.W.M.
3647 Northwest Townsite Company, a corporation. 308 Chestnut Street Philadelphia, Penn. by Geo. M. Bailey, President 601 Yeon Building, Portland, Ore. (Proof 129, Vol. 2)	1881	0.43	17	Irrigation and domestic	Little Conn or Drinkwater Ditch	Chewaucan River	12 acres in NE¼ SE¼; Sec. 23; 5 acres in NW¼ SW¼; Sec. 24; Tp. 33 S. R. 18 E.W.M.
(Proof 130, Vol. 2)	1885	2	80	Irrigation and domestic	Lower Conn Ditch	Chewaucan River	80 acres in N½ SW¼; Sec. 19; Tp. 33 S. R. 19 E.W.M.
(Proof 131, Vol. 2)	1886	0.17	6½	Irrigation and domestic	Mill Ditch	Chewaucan River	3 acres in NE¼ NW¼; 1½ acres in NW¼ NW¼; 2.3 acres in NW¼ SW¼; Sec. 24; Tp. 33 S. R. 18 E.W.M.

Name and Postoffice Address of Appropriator	Date of Relative Priority	Amount Cu.Ft. per sec	No. Acres	Use	Name of Ditch	Stream	Description of Land or Place of Use
[illegible] 9 514							
3675 Northwest Townsite Company (continued) Power Claim #764		30		Power 80 H.P.			Flour Mill on North bank of Chewaucan River near Center of S. line of SE¼NW¼; Sec.24; Tp.33 S.R. 18 E.W.M. Water to be returned to stream at or near this point, above all lower present diversions.
3684 (Proof 132, Vol. 2) [illegible] Spec. Or. V13 p.408	June 18, 1896	4	160	Irrigation and domestic	Conn Ditch	Chewaucan River	15 acres in NE¼ NE¼; 15 acres in SE¼ NE¼; 20 acres in NE¼ SE¼; Sec. 23; 30 acres in NW¼ SW¼; 15 acres in NE¼ NW¼; 20 acres in SE¼ NW¼; 20 acres in SW¼ NW¼; 25 acres in SW¼ NE¼; Sec. 24; Tp. 33 S. R. 18 E.W.M.
A.C. Hotchkiss Substituted Base Record Decree Vol. 5, p. 38 & 39 3687 54467 55519 Oregon Valley Land Company, a corporation. Midland Building, Kansas City, Mo. by W. Lair Thompson, Lakeview, Ore. (Proof 133, Vol. 2)	1890	55.59 ~~34.72~~	1388.7	Irrigation and stock	Heryford Ditch	Crooked Creek and Juniper Creek	80 acres in W½ NW¼; 80 acres in W½ SW¼; Sec. 31; 80 acres in W½ NW¼; 80 acres in W½ SW¼; Sec. 30; 80 acres in W½ NW¼; 80 acres in W½ SW¼; Sec. 19; 18 acres in SW¼ SW¼; Sec. 18; Tp. 35 S. R. 21 E.W.M. 80 acres in N½ NE¼; 29 acres in SW¼ NE¼; 40 acres in SE¼ NE¼; 40 acres in NE¼ SE¼; 15 acres in NW¼ SE¼; 30.9 acres in SE¼ SE¼; Sec. 36; 160 acres in NE¼; 160 acres in SE¼; Sec. 25; 33 acres in NE¼ NE¼; 5 acres in NW¼ NE¼; 33 acres in SW¼ NE¼; 40 acres in SE¼ NE¼; 15.3 acres in SE¼ NW¼; 30 acres in NE¼ SW¼; 12 acres in SE¼ SW¼; 80 acres in N½ SE¼; 37.5 acres in SW¼ SE¼; 40 acres in SE¼ SE¼; Sec. 24; Tp. 35 S. R. 20 E.W.M. 35 acres in NE¼ SE¼; 80 acres in S½ SE¼; Sec. 12; 80 acres in E½ NW¼; 7 acres in NW¼ NW¼; 27 acres in SW¼ NW¼; 160 acres in SW¼; 30.4 acres in NE¼ SE¼; 1 acre in NW¼ SE¼; 30.7 acres in SW¼ SE¼; Sec. 13; 160 acres in NE¼; 80 acres in E½ NW¼; 40 acres in NE¼ SW¼; 27.7 acres in SE¼ SW¼; 80 acres in N½ SE¼; 80 acres in S½ SE¼; Sec. 23;
				CANCELED Spec. Or. V36 p.611			
3684 (Proof 134, Vol. 2)	1890	45.81 ~~28.63~~	1145.2	Irrigation, domestic and stock	Heryford Ditch	Willow Creek	

Oregon Valley Land Company (continued)							7 acres in NE¼ NE¼; 24.7 acres in NW¼ NE¼; 7 acres in SW¼ NE¼; 29.7 acres in NE¼ NW¼; 80 acres in W½ NW¼; 24.7 acres in SE¼ NW¼; 31.3 acres in NW¼ SW¼; Sec. 24; Tp. 35 S. R. 20 E.W.M.
Oregon Valley Land Company 3682 (Proof 135, Vol. 2) See ... Vol. 5, p. 58	1901	14.24	569.66	Irrigation and stock	Lower Outside Canal, Brattain-ZX Ditch, East and West Brattain-ZX Ditches, and Lower Center Canal	Chewaucan River	2.81acres in NW¼ NE¼; 10 acres in SW¼ NE¼; 40 acres in NE¼ NW¼; 40 acres in NW¼ NW¼; 20 acres in SW¼ NW¼; 30 acres in SE¼ NW¼; 20 acres in NE¼ SW¼; 10 acres in NW¼ SW¼; 10 acres in SW¼ SW¼; 10 acres in SE¼ SW¼; 4.35acres in NW¼ SE¼; Sec. 30; 10 acres in NW¼ NE¼; 30 acres in NE¼ NW¼; 10 acres in SW¼ NW¼; 10 acres in SE¼ NW¼; 10 acres in NE¼ SW¼; 10 acres in SW¼ SW¼; 20 acres in SE¼ SW¼; 10 acres in NE¼ SE¼; 30 acres in NW¼ SE¼; 10 acres in SW¼ SE¼; Sec. 31; 10 acres in SW¼ NE¼; 30 acres in NE¼ NW¼; 20 acres in SW¼ NW¼; 10 acres in SE¼ NW¼; 10 acres in NE¼ SW¼; Sec. 32; 10 acres in SE¼ SW¼; 10 acres in NE¼ SE¼; 10 acres in NW¼ SE¼; 10 acres in SW¼ SE¼; 10 acres in SE¼ SE¼; Sec. 32; 10 acres in NW¼ SW¼; 20 acres in SW¼ SW¼; 10 acres in SE¼ SW¼; 30 acres in NW¼ SE¼; 12.5 acres in SE¼ SE¼; Sec. 33; 10 acres in SW¼ SW¼; Sec. 34; Tp. 34 S. R. 20 E.W.M.
3683 George S. Park Paisley, Ore. (Proof 136, Vol. 2)	1908	0.03	1	Irrigation	Small's Creek and Park Elder Flume	Chewaucan River	Starting at the Town corner at the intersection of Main & Mill Streets; running W. 480' to point of beginning; then W. 180' to Small Creek; thence southeasterly 230' along Small Creek; thence N. 170' to point of beginning, in the Town of Paisley, Oregon.
(Proof 137, Vol. 2)	1908	0.19	7½	Irrigation	Park Ditch	Chewaucan River /Transferred: Sp. Or. Vol. 1, p. 437	7½ acres in NE¼ NW¼; Sec. 23; Tp. 33 S. R. 18 E.W.M.
3684 W. B. Parker Paisley, Ore. (Proof 138, Vol. 2)	1878	1	40	Irrigation, domestic and stock	Small's Creek, Moss Slough, and ditches therefrom	Chewaucan River	35 acres in SW¼ NW¼; 5 acres in SE¼ NW¼; Sec. 19; Tp. 33 S. R. 19 E.W.M.

Name and Postoffice Address of Appropriator	Date of Relative Priority	Amount Cu.Ft. per sec	No. Acres	Use	Name of Ditch	Stream	Description of Land or Place of Use
W. B. Parker (continued) (Proof 139, Vol. 2)	1878	0.75	30	Irrigation, domestic and stock	Innis, Jones and Fisher Sloughs, and Ditches	Chewaucan River	20 acres in SE¼ NW¼; Sec. 19; 10 acres in SW¼ NW¼; Sec. 20; Tp. 33 S. R. 19 E.W.M.
(Proof 140, Vol. 2)	1878	0.5	20	Irrigation, domestic and stock	Innis Slough and ditches therefrom	Chewaucan River	5 acres in SW¼ NW¼; 15 acres in SE¼ NW¼; Sec. 19; Tp. 33 S. R. 19 E.W.M.
(Proof 141, Vol. 2)	1878	2.83	113	Irrigation, domestic and stock	Jones Slough and ditches therefrom	Chewaucan River	40 acres in SW¼ NE¼; 20 acres in SE¼ NE¼; 20 acres in SE¼ NW¼; Sec. 19; 27 acres in SW¼ NW¼; 6 acres in SE¼ NW¼; Sec. 20; Tp. 33 S. R. 19 E.W.M.
R. N. Phelps, Paisley, Oregon (Proof 142, Vol. 2)	1883	0.03	.83	Irrigation and stock	Small's Creek and Middle Fork	Chewaucan River	0.83 acres in NE¼ SW¼; Sec. 24; Tp. 33 S. R. 18 E.W.M.
Geo. Pike Paisley, Ore. (proof 143, Vol. 2)	Sept. 18, 1893	0.04	1½	Irrigation, domestic and stock	Small's Creek, or South Fork and ditch	Chewaucan River	½ acre in NE¼ SW¼; 1 acre in NW¼ SW¼; Sec. 24; Tp. 33 S. R. 18 E.W.M.
Portland Irrigation Company, 601 Yeon Building, Portland, Oregon. by Geo. M. Bailey, President. (Proof 144, Vol. 2)	(See Paragraph _____)						
Harriet L. Random Paisley, Ore. (Proof 145, Vol. 2)	1878	3.5	140	Irrigation, domestic and stock	Bagley ditch	Chewaucan River	30 acres in NE¼ NE¼; 30 acres in SE¼ NE¼; Sec. 25; Tp. 33 S. R. 18 E.W.M. 40 acres in SW¼ NW¼; 40 acres in NW¼ SW¼; Sec. 30; Tp. 33 S. R. 19 E.W.M.
C. A. Rehart Lakeview, Ore. (Proof 146, Vol. 2)	1874	7.22	288½	Irrigation, domestic and stock	Blair, or Rehart Ditch	Salt Creek and Springs, trib. to Crooked Creek	18½ acres in NE¼ NE¼; 3½ acres in SE¼ NE¼; Sec. 1; Tp. 38 S. R. 20 E.W.M. 4.05 acres in NE¼ NW¼; 28 acres in NW¼NW¼; 10.5 acres in SW¼NW¼; 1.05 acres in SE¼NW¼; Sec. 6: Tp. 38 S., R. 21 E. W. M. 40 acres in NE ¼NE¼; 12½ acres in NW¼NE¼; 8 acres in SW¼NE¼; 40 acres in SE¼NE¼; 37 acres in NE¼ SE¼; 32 acres in SE¼ SE¼; 1 ac re in NW¼ SE¼; Sec. 36; Tp. 37 S. R. 20 E.W.M. 4½ acres in NW¼ NW¼; 10½ acres in SW¼ NW¼; 18½ acres in NW¼ SW¼; 18½ acres in SW¼ SW¼; Sec. 31; Tp. 37 S. R. 21 E.W.M.

NAME AND POSTOFFICE ADDRESS OF APPROPRIATOR	DATE OF RELATIVE PRIORITY	AMOUNT CU. FT. PER SEC.	NO. ACRES	USE AND IRRIGATION SEASON	NAME OF DITCH	STREAM	DESCRIPTION OF LAND OR PLACE OF USE
W. H. Roush, Lakeview, Ore. (Proof 148, Vol. 2)	April, 1886	1.03	41	Irrigation and stock	Roush Pine Creek Ditch	Pine Creek	20 acres in NE¼ NW¼; 15 acres in NW¼ NW¼; 5 acres in SW¼ NW¼; 1 acre in SE¼ NW¼; Sec. 9; Tp. 36 S. R. 20 E.W.M.
(Proof 149, Vol. 2)	1891	0.5	20	Irrigation, domestic and stock	Roush Ditch	Willow Creek	5 acres in SE¼ NE¼; Sec. 8; 10 acres in SW¼ NW¼; 5 acres in NW¼ SW¼; Sec. 9; Tp. 36 S. R. 20 E.W.M.
Christina Schmidt, and William Schmidt Lakeview, Ore. (Proof 150, Vol. 2)	1878	0.83	33	Irrigation	Schmidt Dams and Ditches	Willow Creek	17 acres in NE¼ NW¼; 5 acres in NW¼ NW¼; 11 acres in SW¼ NW¼; Sec. 17; Tp. 36 S. R. 20 E.W.M.
	1898	2.05	82				34.5 acres in SE¼ NE¼; 7 acres in NE¼ NW¼; 8 acres in NW¼ NW¼; 32.5 acres in NE¼ SE¼; Sec. 18; Tp. 36 S. R. 20 E.W.M.
School District No. 11 D.B.Conrad, Chairman, Paisley, Ore. (Proof 151, Vol. 2)	1901	0.04	1.8	Irrigation	West Street Ditch, and Small's Creek	Chewaucan River	1.8 acres in SE¼ SW¼; Sec. 24; Tp. 33 S. R. 18 E.W.M.
J. C. Shellhammer, Lakeview, Ore. (Proof 152, Vol. 2)	1885	6.48	259	Irrigation	Shellhammer Ditches	Crooked Creek	38½ acres in NE¼ NE¼; 10 acres in NW¼ NE¼; 21½ acres in SW¼ NE¼; 39 acres in SE¼ NE¼; 40 acres in NE¼ SE¼; 30 acres in NW¼ SE¼; 24½ acres in SW¼ SE¼; 25½ acres in SE¼ SE¼; Sec. 13; 16 acres in NE¼ NE¼; 14 acres in NW¼ NE¼; Sec. 24; Tp. 37 S. R. 20 E.W.M.
Mary Helen Sherman Lakeview, Ore. (Proof 153, Vol. 2)	1888	0.38	15	Irrigation, domestic and stock	A. W. Bryant Ditch	Willow Creek	3 acres in NW¼ NW¼; 12 acres in Lot 4; Sec. 18; Tp. 36 S. R. 20 E.W.M.
Annetta Sherlock Paisley, Ore. (Proof 154, Vol. 2)	1900	0.03	1	Irrigation, domestic and stock	South Fork and Harvey-Hampton-Sherlock-Benoch Ditch (Box Flume)	Chewaucan River	1/5 acre in NE¼ SW¼; 4/5 acre in NW¼ SE¼; Sec. 24; Tp. 33 S. R. 18 E.W.M.
Mrs. L. B. Sult, Paisley, Ore. (Proof 155, Vol. 2)	1878	0.03	.4	Irrigation, domestic and stock	Small's Creek and Moss Slough	Chewaucan River	0.4 acre in NE¼ SW¼; Sec. 24; Tp. 33 S. R. 18 E.W.M.
(Proof 156, Vol. 2)	1878	0.03	.3	Irrigation, domestic and stock	Small's Creek Ditch	Chewaucan River	0.3 acre in SE¼ SW¼; Sec. 24; Tp. 33 S. R. 18 E.W.M.
S. S. Thayer, Paisley, Ore. (Proof 157, Vol. 2)	1898	0.03	1	Irrigation	Small's Creek and Banister flume and small natural channel	Chewaucan River	1 acre; being a Lot in the Town of Paisley, Oregon.

State Water Board
Order Record—~~Board of Control~~—State of Oregon

CHEWAUCAN RIVER

	Name and Postoffice Address of Appropriator	Date of Relative Priority	Amount Cu.Ft. per sec.	No. Acres	Use	Name of Ditch	Stream	Description of Land or Place of Use
3697	Rosa Tucker, Paisley, Ore. (Proof 158, Vol. 2)	April 2, 1903	0.03	1/9	Irrigation	North Fork of Small's Creek and Tucker Ditch	Chewaucan River	Lots 2 and 3, Block H, Second North Addition to Town of Paisley, Oregon.
3698	F. Wiedey, Paisley, Ore. (Proof 159, Vol. 2)	1878	3.38	135	Irrigation, domestic and stock	Innis Slough and Ditches therefrom	Chewaucan River	40 acres in NE¼ SE¼; 30 acres in NW¼ SE¼; 25 acres in SW¼ SE¼; 40 acres in SE¼ SE¼; Sec. 19; Tp. 33 S. R. 19 E.W.M.
	(Proof 160, Vol. 2)	1878	0.63	25	Irrigation, domestic and stock	Small's Creek and Moss Slough and ditches therefrom	Chewaucan River	10 acres in NW¼ SE¼; 15 acres in SW¼ SE¼; Sec. 19; Tp. 33 S. R. 19 E.W.M.

And the State Water Board being fully advised in the premises, it is hereby

CONSIDERED and ORDERED that the relative rights to the use of the waters of Chewaucan River and its tributaries, be and the same are hereby adjudicated, determined, and settled, in accordance with and as set out in the foregoing findings of fact and order of determination. It is further ordered that each and every appropriator holding State Engineer's permits for the appropriation of water from said Chewaucan River and its tributaries, shall have such water right thereunder as is provided by law, and the rights of such appropriators shall be established in the manner provided by law for the issuing of water right certificates in such cases.

John H. Lewis.
State Engineer, and President of State Water Board.

James T. Thurnock
Superintendent of Water Division No. 1.

Geo. Cochran
Superintendent of Water Division No. 2.

ATTEST:

M. F. Mers
Secretary of State Water Board.

I, John H. Lewis, State Engineer of the State of Oregon, and ex officio President of the State Water Board of Oregon, concur in the foregoing decision, as more fully set forth in the attached reports dated September 1, 1915, and December 6, 1915, respectively.

John H. Lewis,
State Engineer of the State of Oregon.

BEFORE THE STATE WATER BOARD OF THE STATE OF OREGON

WATER DIVISION NO. 1. LAKE COUNTY.

In the Matter

of

THE DETERMINATION OF THE RELATIVE RIGHTS

to the

WATERS OF CHEWAUCAN RIVER AND ITS TRIBUTARIES,

a tributary of Abert Lake.

* * REPORT * *

Based upon testimony and briefs filed in the above entitled cause, and a personal inspection of conditions on the ground, accompanied by the two division superintendents, comprising the STATE WATER BOARD,
by
JOHN H. LEWIS, State Engineer of the State of Oregon.

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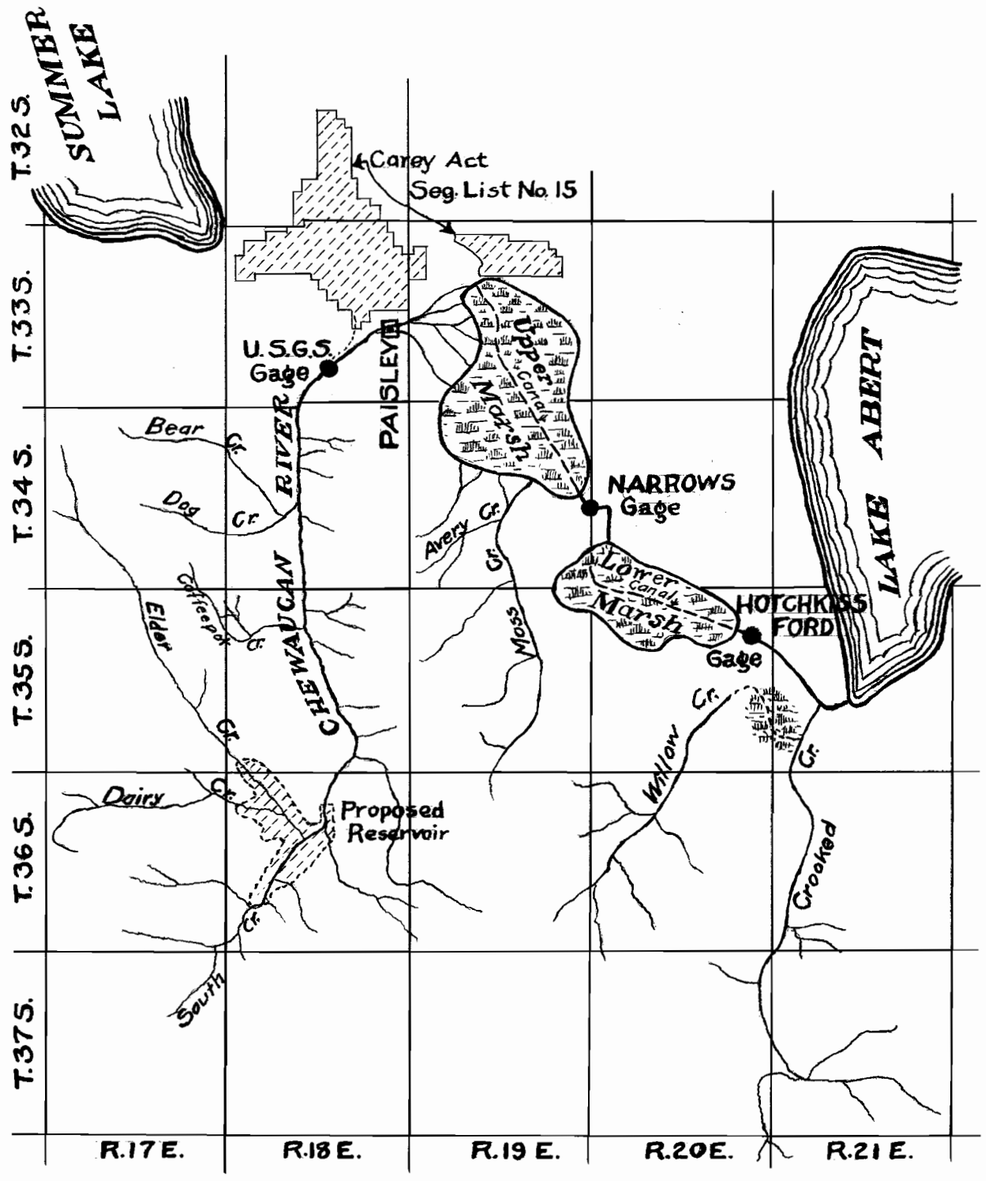


Figure 1.
MAP OF CHEWAUCAN RIVER AND ITS TRIBUTARIES
showing location of river gaging stations with reference to lands irrigated;
also location of Carey Act Project and storage reservoir site.

REPORT

This is the first case coming before the State Water Board wherein the rights to the use of water on so called marsh lands are to be determined.

Owing to the great mass of more or less conflicting testimony which has been offered, and to the importance of this case, the State Engineer accompanied by the two division superintendents, comprising the State Water Board, deemed it advisable to make a personal inspection of conditions on the ground.

In view of the fact that some 300,000 acres of marsh land are embraced in the Klamath, Sycan, Paulina, Chewaucan, Warner, Harney Valley and other marsh districts in southern Oregon, and to the fact that this section of the State can only be opened to transportation and development through the irrigation of arid lands, and the drainage and irrigation of swamp lands, it was decided to make a study of conditions on all of the marshes as above listed. Soil samples at different depths were taken at typical points, and the character of soil, crops, depth of water and other conditions compared. July 19, 20, and 21, 1915, were spent in the vicinity of Paisley studying the territory embraced in this controversy. Both the Upper and Lower Chewaucan Marshes were examined as well as the uplands, and the land which it is proposed to irrigate through the storage of extreme floods of Chewaucan River.

We were particularly fortunate in meeting Mr. E. R. Greenslet at Paisley. Since April 20th, Mr. Greenslet had been employed by the U. S. Department of Irrigation and Drainage Investigations of the Department of Agriculture, in making water variation tests and other practical tests and experiments with a view to determining the proper amount of water to be supplied for the production of crops on this type of soil. He was bringing his season's work to a close as water had been turned off the marsh to facilitate haying operations. He accompanied members of the Board on their various horse-back and automobile trips and gave us the benefit of the conclusions which he had reached as a result of this season's work.

Mr. Greenslet formerly worked under Don H. Bark, who for four years carried on extensive investigations for the State of Idaho and the United States, to determine the proper duty of water for Idaho soils.

PURPOSE OF REPORT.

The purpose of this report is to comply as fully as possible with Section 6647, Lord's Oregon Laws, wherein the State Engineer is directed "to take such other steps and gather such other data and information as may be essential to the proper understanding of the relative rights" to the waters of Chewaucan River and its tributaries, in Lake County, Oregon.

This report is based upon an examination of the maps, testimony, exhibits and briefs filed in the above entitled cause, together with a subsequent field inspection as outlined above. A review of all recognized authorities dealing with this subject has been made so far as this has been possible, with a view to ascertain whether or not the facts observed in this case conflict in any way with the theories advanced by such authorities. For convenience, quotations from such authorities will be given where in point.

MARSH LANDS.

There are two classes of land embraced in this case, namely, marsh and uplands. The duty of water will be different for each of these classes.

We will first consider the duty of water on the marsh lands. This will be discussed first under the head of actual records of use, and second, based upon theoretical considerations, such as a study of the various factors affecting the duty and by comparison with other sections where records as to the proper

duty of water are available.

Area of Marsh	(Upper Marsh	14,343 acres
	(Lower Marsh	7,792 acres
	Total acres	22,135 acres
Uplands below U.S.G.S. gage and above the Narrows		6,195 acres

Records of Water used. We are fortunate in having records in this case showing the actual use of water on the marsh lands for the irrigation season of 1914.

To determine the amount of water actually used on a given tract of land, it is customary to measure the water delivered to the tract and deduct the amount which wastes off at the lower end. The difference is the amount which is consumed on the tract in question.

The United States Geological Survey maintains a gage in the river above the town of Paisley. This gage is in the canyon above all diversions to the marsh, as well as above all diversionsto uplands in the vicinity of, and above the upper marsh. While these uplands are admitted in the record to be steeper and more porous and therefore consume more water than the marsh lands, yet this area, comprising approximately 6,195 acres, will, for convenience, be assumed as marsh lands, in studying the amount of water used on the marsh. The error due to this will be in favor of the marsh lands.

The Chewaucan Land and Cattle Company also maintained a gage in the immediate vicinity of the Geological Survey gage. The records serve as a check on the government figures. However, the two records serve to confuse as different methods appear to have been used in computing the final discharge in acre feet. This is especially true for the winter months when ice conditions make it necessary to use a different rating curve, in computing river discharge from the gage heights secured by the observer, or automatic recording device.

All surface flow, drainage or waste waters from the upper marsh is accumulated at the Narrows and flows in a well defined channel to the lower marsh.

From January 19th to June 30th, a gaging station was maintained at the Narrows to record this flow of water.

Below the lower marsh, the surplus, waste and overflow waters come together again in a well defined channel, and flow thence into Abert Lake.

During the above mentioned period, a gage was also maintained at this point. These three gages, records for which are available for the period January 19th to June 30th, 1914, show by proper deductions the amount of water consumed on the intervening marsh and uplands. The record at The Narrows enables a comparison to be made as to the amount consumed on the Upper and Lower Marsh, thus serving as a check. The location of these gages is shown on the accompanying map. (Figure 1.)

I have examined all of the exhibits, maps, hydrographs, tabular statements and other data as found in the testimony and briefs submitted in this case. There appears to be considerable difference in the deductions based upon the information submitted. These differences will be noted by comparing the table on page 19 of the brief filed by the Northwest Townsite Company with the table on page 47 of the reply brief by the Chewaucan Land and Cattle Company.

Some of these differences may be accounted for by the fact that the rating table used by one of the companies may have been constructed from the few river discharge measurements made by such company, while the other appears to have been based upon all available data. Then again, ice conditions during freezing weather would require a modification of the rating as used for open water conditions.

All measurements of stream flow and river gage heights in this case have been forwarded to Fred F. Henshaw, District Engineer, U. S. Geological Survey, in Portland, who has prepared rating tables and computations based upon standard government practice for publication in official bulletins. Mr. Henshaw has been in this work many years, part of which time he was in Alaska, where he had considerable experience in estimating the flow of water under ice conditions. His tabulation furnished in detail to the State Engineer shows the daily flow of water at the three gaging stations in question, and a summary by months is presented in the following table.

Table 1.

USE OF WATER ON CHEWAUCAN MARSH

Discharge of Chewaucan River above all diversions at Paisley. At The Narrows and at Hotchkiss Ford. January 19 to June 30, 1914, inclusive. Acre feet.

		Jan. 19-31	February	March	April	May	June	Totals
(1)	Chewaucan River at gage above Paisley	1,340	3,900	25,700	33,000	34,500	14,600	113,040
(2)	Used for irrigation above Narrows 20,538 acres	- 280	370	7,700	9,400	12,200	2,000	31,390
(3)	Flow in River at The Narrows	1,620	3,530	18,000	23,600	22,300	12,600	81,650
(4)	Use for irrigation on Lower Marsh, 7792 ac.	- 330	- 410	2,800	3,800	5,100	- 200	10,760
(5)	Waste off Lower Marsh at Hotchkiss Ford	1,950	3,940	15,200	19,800	17,200	12,800	70,890
(6)	Use on both Upper and Lower Marsh 28,330 acres	- 610	- 40	10,500	13,200	17,300	1,800	42,150

The use, or the amount of water consumed on the Upper Marsh, and uplands below the Paisley gage, is shown in the second line of the above table, and is obtained by subtracting the water which wastes off this tract at The Narrows, line 3, from the total flow in the river above Paisley, line 1. The use on the Lower Marsh is shown in line 4. The total waste from both marshes is shown in line 5, and the total use on such marshes is shown in line 6.

It will be observed that during the thirteen days in January for which records are available, more water flowed off both the Upper and Lower marsh than flowed on, as indicated by the minus signs in the first column. Likewise during February more water flowed off the Lower Marsh than flowed on. This may be accounted for in several ways. During the cold winter months, plant life was dormant. There was therefore practically no consumption of water from this source. (See table 2 for mean temperatures during January, 31.9 degrees, and February 34.3 degrees F.). During this period there was about 1.75 inches of rain-

fall as shown by table 3, and evaporation losses are at a minimum at such season.

The table indicates that 113,040 acre feet of water passed the upper gage and 81,650 acre feet passed the Narrows gage. The difference, or 31,390 acre feet, was consumed or used up in the irrigation of 20,538 acres. This is at the rate of 1.52 acre feet per acre on the Upper Marsh and uplands.

On the Lower Marsh, 81,650 acre feet passed the Narrows, and 70,890 acre feet wasted off at the lower end of the marsh as indicated by such table. The difference is 10,760 acre feet which was consumed on the 7,792 acres embraced in the lower marsh, or 1.38 acre feet per acre.

On the total area of 28,330 acres embraced between the upper and lower gage, 42,150 acre feet was used, or at the rate of 1.48 acre feet per acre.

The use of 1.52 acre feet on the Upper Marsh as compared with 1.38 acre feet on the Lower Marsh, may be accounted for by the fact that about one-third the area included between the two upper gaging stations consisted of uplands wherein deep percolation losses are probably greater than in the flat marsh area.

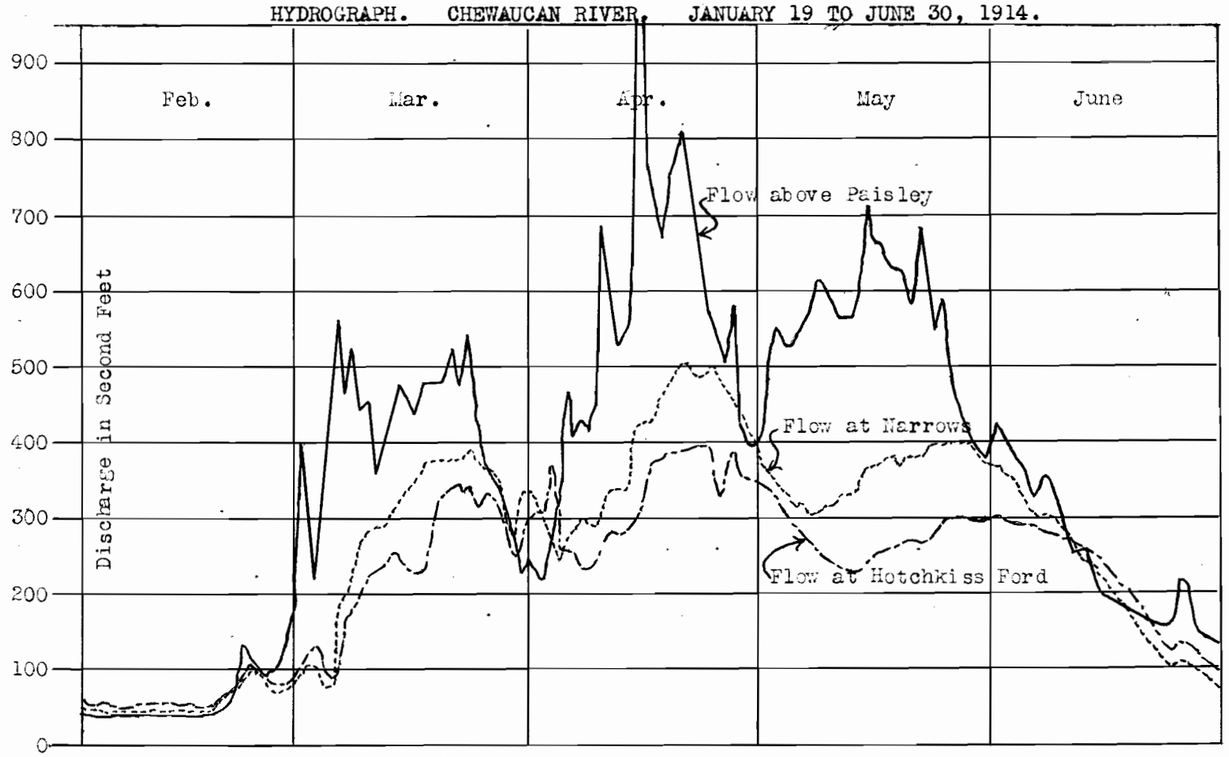
MARSH SERVES TO EQUALIZE FLOW.

Because of the great area embraced in the Upper and Lower Marshes, it should be pointed out that the difference between the amount of water which flows past the upper gage and the lower gage, for any particular day, does not represent the water consumed on the marsh for that day. Nor is it contended that monthly differences will represent the exact consumption between points under consideration. But it is contended that the difference in flow at the different stations for the entire irrigation season represents for all practical purposes, the amount of water consumed by plant growth on the intervening area, including evaporation, transpiration, deep percolation and other losses.

The accompanying hydrograph shows the flow in cubic feet per second of the Chewaucan River at the three gages mentioned in the above table, for each day from January 19th to June 30th, 1914.

FIGURE 2.

HYDROGRAPH. CHEWAUCAN RIVER. JANUARY 19 TO JUNE 30, 1914.



The upper line in the hydrograph (Figure 2), represents the daily fluctuations in the flow at the river gage above Paisley. The middle line, that at the Narrows, and the lower line, that at Hotchkiss Ford. Floods will be noted in March, April and May, with lower water conditions in February and July.

On February 26th, it will be observed that the river at the upper gage began to rise rapidly to a flood of 570 second feet on March 6th. A corresponding increase in the flow at the Narrows did not occur until about March 4th. The water then rose gradually without violent fluctuations to about 380 second feet 12 days later. The peaks on the top line are flattened out considerably on the second and still more on the bottom line. In general a flood at the upper gage might be expected to reach the Narrows one or two weeks later, and still further delayed before its effect would be noticeable at Hotchkiss Ford. The marsh thus acts somewhat as a large lake to equalize the flow of the river.

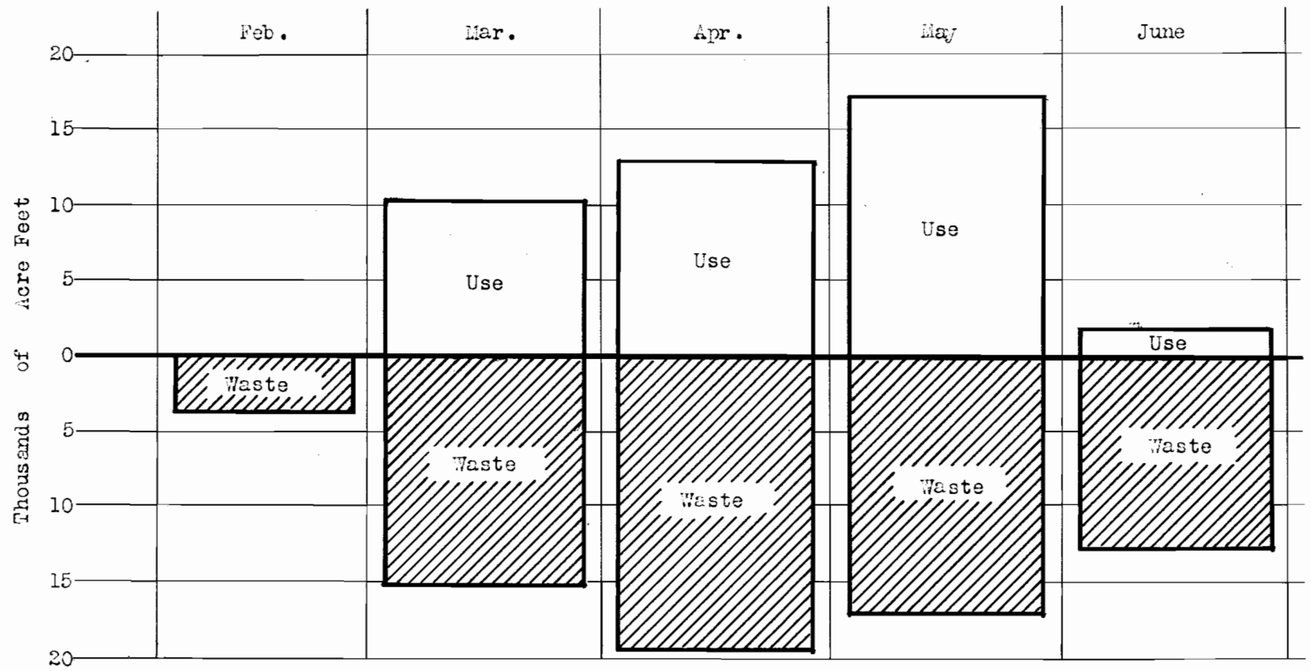
Before and after the irrigation season, the three lines become reversed in position. This indicates that more water runs off than runs on the marsh. This is expected. During the flood season the marsh becomes supersaturated and for considerable periods a film of water moves slowly over its surface. This surplus surface and underground water collects at the Narrows and Hotchkiss Ford and would continue for some time even though no water was applied on the upper portion of the marsh. This equalizing effect is due largely to the porous surface soil of which the marsh is composed, its gentle slope and great area, together with the comparatively tight and impervious sub-soil which prevents deep percolation. The rank growth of tules found on very considerable areas of the marsh indicate an excessive water supply.

WATER USED AND WASTED.

To further emphasize the figures presented in Table 1, the following diagram has been prepared, showing the amount of water used or wasted each month.

Figure 3.

WATER USED PER MONTH ON MARSH.



By use we mean not only the water consumed by surface vegetation but also that stored in the porous surface soil or held on the surface in a thin film of slowly moving water with attendant losses by deep percolation and evaporation.

Having in mind this definition and appreciating the equalizing effect of the great expanse of relatively flat marsh, the excessive use for March, April and May as compared with June will not be deceiving.

All of the water shown as used during the three months prior to June was not actually used by surface vegetation. Part of this was stored in the porous soil, thus forming a sort of reservoir within reach of the plant roots. This underground reservoir was of course drawn upon during June, so that if a curve of actual use were drawn upon this diagram, it would begin at about zero early in March, keeping below the top line for April and May, and taper from a maximum the later part of May to practically zero on July 1st. Losses by months have been considered merely for convenience of tabulation and study. A curve of actual use has not been drawn for the reason that figures are not available showing the amount stored in the soil and on the surface during the early summer months for use during later months.

The above Table No. 1, together with Figures Nos. 2 and 3, indicate that by considering the entire irrigation season, from low water to low water, a reliable estimate can be made of the actual use of water on the lands in question.

From Figure 4, it will be noted that the 1914 season is not an extremely high or low year, but an average year. There are six years out of eleven when the flow was not widely different. On the whole it would appear that the study of records for this year would give a fair and reasonable idea as to the use and waste of water.

It therefore appears that the actual use together with incidental losses, on the total area considered, amount to 1.48 acre feet per acre. For the marsh lands alone it is probably less owing to the necessity of including a considerable area of uplands in the consideration of this question which uplands are more porous and require more water.

ALLOWABLE WASTE.

The best authority on this subject is probably Don H. Bark, who for four years conducted hundreds of experiments in Idaho for the U. S. Department of Agriculture in cooperation with the State of Idaho. He states in paragraph 25 of the summary to his report entitled "Duty of Water Investigations" that

"The average waste from grain fields has been 25.3 percent, and 19.1 percent for alfalfa. The duty for a project should be so fixed that 12.5 percent of the amount delivered to a farm may be wasted."

These experiments were made on relatively small tracts. He states on page 161 of such report that

"The average figures, however, are based on the result from single fields, and irrigators should not be allowed to waste this percentage from their entire holdings. Their irrigation system should be so laid out that as much as possible of the waste water could be caught up and used over again on one or more fields before it is finally allowed to waste off the farm. It is safe to assume that the average farms in Idaho could be so laid out that waste would not run directly off the farm from over one-quarter its area. Rather steep farms of small area would naturally waste more water, all other conditions being uniform, than the large flat farms with the more porous soil."

From the large topographic map, Exhibit V, of the Chewacan Land and Cattle Company, where contours are shown every foot, it will be noted that the fall is about one foot per mile. By installing a few more gates in their canals for turning out water and building a few low dikes, the marsh lands could be

made ideal for irrigation purposes at comparatively little cost. The saving of water by so doing would be considerable.

While the marsh is thus readily adapted to the installation of an economic system of using water so that it would be reasonable to limit the marsh area to an allowance for waste of say 12.5 percent of the water allowed, for one-fourth its area, yet no such system has been installed, and the peculiar conditions which exist on this stream at this time seem to make it unnecessary on the ground of public policy to compel the installation of such economic system. Therefore 25 percent of the water allowed for the entire area, should be allowed for waste, making the duty of water for the marsh lands two acre feet per acre.

PRECIPITATION AND SEEPAGE.

In addition to the two acre feet which should be allowed direct from the river, the marsh lands will receive on the average, 11.75 inches of precipitation during the year, making a total of substantially three acre feet of water. This will be further increased by return seepage water from the uplands, also by the drainage water of more or less uncertain volume from the extensive area surrounding the marsh, including the flood waters of Moss and Avery Creeks. The area which drains directly into the marsh is "one hundred square miles, independent of the drainage area of Chewaucan River where it enters the Marsh." (Testimony, p. 807, as numbered at bottom of page). This area is more than one-third the drainage area of Chewaucan River at Paisley.

CONCLUSION.

From the standpoint of stream flow data, and the studies of use and waste based thereon, it appears that not more than two acre feet per acre of water from Chewaucan River can be put to beneficial use on the marsh lands.

THEORETICAL CONSIDERATIONS AND STUDY OF FACTORS AFFECTING DUTY OF WATER.

Having arrived at a definite conclusion as to the proper duty of water for marsh lands based upon actual measurements of use and waste, we will next consider the matter from the theoretical point of view, studying the various factors which determine or affect the duty of water.

As a proper basis for such theoretical consideration, it becomes necessary to know something concerning the fundamental principles as to the use of water by plants, transpiration, soil moisture, the relation of fertility to soil moisture, the various losses from percolation and evaporation, the effect of water on the quality of plants, the relation of temperature to duty of water, the relation of run off to alkali and its prevention, and other related subjects.

The conclusions reached by authorities in these various lines will be summarized herein, giving references to book and page, with exact quotations where brief and to the point.

THE USE OF WATER BY PLANTS AND TRANSPIRATION.

Plants, like animals, breath in order to get from the air certain elements necessary for their existence. Plants require carbon from the air while animals require oxygen and breathe out the carbon. The lungs of animals must be moist in order to function properly and so must the texture of plant leaves be moist for the same reason. Plants breathe through pores in the leaves. The under side of the leaves having about three or four times as many breathing pores as the upper side, the air enters the leaf through the pores, and carbon is extracted from the air by the leaf structure and combined with water to make up the physical structure of the plant.

This process uses up a great deal of moisture which is obtained through the roots of the plant. The root system, through myriads of fine thread-like roots, absorbs water from the ground which passes up through the root system into the stalk and leaf of the plant, giving up as it goes all these valuable and necessary minerals which the water had in solution by passing through the soil. Thus water does three things:

1st. Keeps moist the plant leaf texture so that it may properly extract carbon from the air in its breathing processes.

2nd. Supplies in solution minerals for plant food.

3rd. In combination with carbon, forms part of the plant itself.

This use of water by plants is called "transpiration" and the pounds of water used to produce one pound of dry matter is called the "transpiration ratio." Many things affect the amount of water used by plants, sunshine, humidity, wind, temperature, presence or absence of plant food in soil, moisture in soil, etc., which makes this transpiration ratio a very uncertain one. Many experiments have been made to determine the exact amount of this water requirement of plants. Dr. Fortier, in presenting a table of transpiration figures, gathered from all parts of the world, says in his work on "Use of Water in Irrigation":

"In scanning the figures *** one cannot be note their incongruity. While the results which have been assembled in the table cannot be accepted as a safe guide to practice, yet they show that a beginning has been made in this important study." (Page 149.)

Prof. King's able discourse on this subject, on pages 39 to 46 of his book "Irrigation and Drainage" also mentions the many variations. Dr. Widtsoe says:

"Yet in a given locality the transpiration ratio is not even approximately constant unless the many factors conserved in plant growth and in evaporation are constant." (Page 139) "Whether countries, or various fields of the same crop in the same county are compared, the water cost of dry matter will vary widely." (Page 135)

So it is that many variations occur in this transpiration figure which cannot be explained in the present stage of development of the science.

The study of transpiration ratios made by Shantz and Briggs (Office of Experiment Station, Bulletins Nos. 284 and 285, U. S. Department of Agriculture) show that plants waste water either with a deficient amount of water in the soil, or with an excess amount. That is, plants are most economical in the use of water somewhere between the extreme of large and small amounts of available moisture in the soil.

SOIL MOISTURE.

All soils under normal conditions contain moisture. Only artificial heating can drive it all out. Soil moisture is classified as hydroscopic, capillary and gravitational.

Absolutely dry soil will absorb moisture from the air in proportion to its temperature and humidity, and this moisture is called hydroscopic. It can be driven out of the soil only by artificial heating and is unavailable for plant use, therefore is practically valueless. The percentage of the hydroscopic moisture varies with the class of soil. The coarser soils having the lesser and the finer soils the greater amount, ranging from about one percent for a very coarse soil, to as much as thirty percent for a heavy muck or peaty soil.

Capillary moisture is that moisture which attaches itself to the surface of every grain in the soil, covering it as a film, but from which it will not drain. This capillary moisture moves more or less freely within the particles of the soil in proportion to the amount of moisture present, passing in general from the larger particles to the smaller particles. The greater the amount of this capillary moisture the greater is its ease of motion. The nearer it

approaches the hydroscopic moisture content, the slower will be this motion. Plants utilize this moisture and as the fine thread-like roots absorb it from the soil in close contact, capillary action brings moisture from other parts of the soil replacing that taken up by the roots, allowing the process to continue, thus supplying the plant with all the necessary moisture for its growth. If this movement is too easy, however, the plant fails to properly develop its roots and develops the habit of using an excess of water. See "The Principles of Irrigation Practice," by John A. Widtsoe, page 112.)

Since this capillary moisture is a film of water holding to the surface of soil grains by adhesion of liquid surface tension, therefore the greater the number of grains in soil, that is, the finer the soil texture, the greater is its soil moisture capacity. Thus would we expect and actually find that gravelly soils have a low moisture capacity and fine clayey loam soils or peaty soils have a very high moisture capacity. See Bulletins Nos. 50, 248 and 10, of the Bureau of Soils, U. S. Department of Agriculture.

That amount of water which poured into the soil fills up all the holes between the grains and which drains out the soil, is called gravitational moisture, or free water. It will be noted that the free water capacity, therefore, is an entirely different figure from its capillary moisture capacity. Gravitational water gives rise to drainage problems. Its continuing presence in soils is detrimental to the growth of plants in many ways.

Air is necessary to the proper functioning of plant organisms. The roots need it as well as the leaves and that is why proper cultivation of soils increases their productivity. The roots obtain air from the fine spaces between the soil grains. If these spaces are filled with water, it is evident the plants cannot properly grow and experience proves this point conclusively.

Water takes into solution from the soil these valuable minerals which plants require as food. A certain degree of concentration is necessary in order that plants get sufficient food without absorbing excess amounts of water and that the plant may do its best. Excess water, such as gravitational water, greatly dilutes this solution to the detriment of the plant so that it has to absorb a large amount of water in order to get sufficient mineral food for its proper growth. The degree of dilution may be so great that the capacity of the plant is insufficient to get the proper supply of food. Also if large quantities of water drain from a soil that is being irrigated, it carries off with it in solution, valuable mineral plant foods and thus impoverishes the soil. An excess of water also induces a shallow development of the root system, so that when dry weather occurs the root system is not sufficient to assimilate the necessary moisture. (See Widtsoe, pages 162, 163 and 122, Principles of Irrigation Practice).

The effect of gravitational water in causing the rise of alkali will be discussed under separate heading, but the consensus of opinion and evidences of experimentation are certainly clear that the complete saturation of the soil during the growing season is detrimental to ordinary agricultural crops.

From a study of the marsh, at the time of the visit of the State Water Board, and the foregoing authorities, it appears that the marsh in general does not become bone dry between irrigation seasons; that the capillary moisture remaining in the soil during the winter protected by the surface mulch, and together with winter rains, is sufficient to sustain plant growth for a considerable period in the spring without irrigation; that where surface water has not been applied for more than a year, moisture will be found in general four to six inches below the surface, and that the excessive amount of gravitational moisture or sheet of water over the surface of the marsh is harmful and wasteful.

SOIL MOISTURE AS AFFECTED BY FERTILITY.

Since peaty or muck soils are high in humus content and exceedingly rich in plant food, it is well to see how this affects the use of water by plants. It would appear reasonable that since plants obtain their food by assimilation from the soil moisture which has this plant food in solution, the richer this solution the less water the plant will need. This is true and the use of manure on poor lands to reduce the water necessary is an established practice.

Dr. Fortier says:

"Generally speaking, the richer the soil and better it is tilled, the less the water requirement for any one crop." (Page 143, Use of Water in Irrigation.)

Professor King seems to think that the higher duty of water obtained on fertile soil is due to the decrease of losses and higher plant efficiency in the use of water. (See page 207, Irrigation and Drainage, also Bulletin No. 23, United States Bureau of Soil; Whitney and Cameron, Investigations in Soil Fertility).

Dr. Widtsoe says, in his "Principles of Irrigation Practice":

"The soil solutions of fertile soils are usually more concentrated than those of less fertile soils. It follows, therefore, that the more fertile a soil is, the less rapidly does the plant absorb the soil moisture with a given rate of growth. This law, which has been demonstrated in a number of interesting experiments, teaches the farmer the great importance of keeping the soil in a most fertile condition." (Page 119).

"In practically every investigation, from the first to the latest, soils rated as fertile because of their large annual yields, invariably yielded dry matter at a lower water cost than less fertile soils." (Page 139).

"The richer the soil is in nitrates, the more surely will the water cost of the crops be reduced. This law appears and re-appears in investigations on all manner of soils and from all parts of the world." (Page 140)

It is a fact of common knowledge that organic matter contains nitrogen and also that marsh soils contain a large amount of organic matter. Therefore the adaptability of the marsh land soil to a low use of water from the standpoint of fertility is evident.

LOSSES IN THE DUTY OF WATER.

Probably the greatest source of loss in irrigation is from deep percolation. This is clearly brought out in Don H. Bark's investigations in Idaho, where it was found that sandy and gravelly soils needed much larger amounts of water than did the tighter loamy or clayey soils. It is easy to understand that an open, porous soil permitting the ready flow of water will allow an irrigation application to get quickly out of range of the root system, making more frequent applications necessary. The tight, almost impervious substrata of the marsh lands, the fine texture of the compacted soil, is proof against loss from deep percolation.

The evaporation from ground surface is also a loss tending to increase the necessary amount of water for irrigation. We learn from Bulletin No. 50 of the Bureau of Soils how on muck or peaty soils the evaporation is much less than from looser soils. The fact that the vegetable matter on the top of the marsh soil, dying, makes an excellent natural mulch, preventing still further evaporation, is to be considered. These facts, together with consideration of the high moisture capacity of the soil are corroberated by the observation of the State Water Board on the Chewaucan Marsh, where in July, the hottest month, during haying season, they found a moisture content of from 74 to 82.7 percent, some two feet below the surface, on soil which had no irrigation water for one year. It shows that the efficiency of the self mulching action on the marsh permits the retention of a large part of the ordinary precipitation by reducing evaporation losses. It also shows that a high initial moisture content is in the soil at the beginning of the season.

No claim is made in this case for loss of water by deep percolation, on the marsh, and the record shows that the subsoil is practically impervious.

THE EFFECT OF WATER ON QUALITY OF PLANTS.

It is a well known fact that the food value of a crop can and does vary with conditions of its growth. The three principal elements of plants which make food for animals are protein, hydrocarbon and fats. Of these the most valuable, and hardest to obtain, is protein, or nitrogen.

Dr. Widtsoe says:

"The percentage of protein in plants is very sensitive to irrigation. The more water used, the smaller is the percentage of protein in the resulting plant." (Page 220, Principles of Irrigation Practice.)

Another effect of irrigation on plants is the production of ash. The ash is the non-combustible portion of plants and consists of that which makes up soil fertility.

(B. Tollens, The Ash Constituents of Plants, Experiment Station Record, Vol. XIII, Nos. 3 and 4. J. A. Widtsoe and Robt. Stewart, The Chemical Composition of Crops as Affected by different Quantities of Water, Utah Experiment Station, Bulletin No. 120, 1912)

Investigation and experiment show the ash content increases with the amount of irrigation water used.

Dr. Widtsoe says again, on page 220 of his "Principles of Irrigation Practice,"

"This law, that the percentage of ash in plants increases as the irrigation water is increased, means, apparently, that more plant food is used to produce a unit of dry matter as more water is used in irrigation. This is one of the strongest arguments yet found against the excessive use of water. The farmer who uses a small quantity of water in crop production not only obtains a larger amount of dry matter for each unit of water used, but also uses a smaller quantity of plant food for each unit of dry matter. The waste due to over irrigation is therefore at least two fold; it diminishes the yield, and it increases the soil fertility cost per unit of dry matter. This must be a fundamental consideration in the establishment of a permanent system of agriculture under irrigation."

It is evident, therefore, that a use of water which is more than that which will produce the crop of highest quality, is not a beneficial use, of water, but a detrimental and wasteful use of water. Mere luxuriance of plant growth, and the presence of tules and flags is not evidence of an economical or beneficial use of water.

TEMPERATURE AFFECTING DUTY OF WATER.

It is a matter of common knowledge that plants will grow best in warm or hot weather, and not at all in freezing weather. Prof. King, referring to Ebermayer's experiments, says that at temperatures about 45 degrees or 48 degrees F. the growth of plants becomes stationary, at 68 degrees or 70 degrees they do best. Evidently therefore, winter irrigation in frozen ground is absolutely useless or with ice cold water when used continuously is a positive detriment to plant life. To quote Prof. King's "Irrigation and Drainage," page 248:

"It is plain, therefore, that if large volumes of cold water were applied to the soil at one time, and especially if a flooding system were adopted by which the cold water were kept moving over the ground in the growing season during several days, the temperature of the soil might easily be brought so low as to seriously interfere with normal growth."

Dr. Widtsoe says:

"On lands bearing grass or lucerne, great injury is done when sheets of ice are formed over the surface of the field and winter irrigation should never be practiced on such fields when freezing weather characterizes the winters." (Principles of Irrigation Practice, page 178)

The above statements are still further corroborated by the observations of Mr. J. G. Camp, of the Klamath Project, reported to the State Water Board this summer. Mr. Camp has observed many farmers ruining their crops by flooding their lands in the early spring with cold water just when they needed warmth to

utilize the moisture already in the soil.

Mr. Beals of the Weather Bureau at Portland, says:

"The power of the sun's rays is increased with the latitude and the soil becomes thereby relatively warmer altho the atmosphere, owing to its diathermancy, does not become heated to a corresponding degree.

"Thus we have at a higher altitude, a warmer soil with relatively low air temperatures. This is important inasmuch as the soil is always ready for the germination of seed as soon as the air temperature will permit of upward growth."

Mr. Beals, on the authority of a number of scientists, has taken that mean temperature above 42 degrees is favorable to plant growth and that mean temperature below this is negligible. Bearing in mind that air temperature may be ten degrees more or less lower than soil temperature and that soil has an initial moisture content at the beginning of a growing season due to the winter precipitation, the warmth and availability of which moisture should be fully utilized before irrigation with cold water be commenced.

Dr. Widtsoe in writing of the ability of the soil to absorb heat to the benefit of growing plants, says on page 72, Principles of Irrigation Practice:

"This is of special importance in districts where the irrigation water is taken from cold mountain streams that are often only a few degrees above the freezing point. Under such conditions, the ready absorption and conduction of heat by the soil may determine the rate of growth and length of growing season.

"All in all, our knowledge of the relation of water to the physical properties of soils would indicate that the wise irrigation farmer will apply to the soil only moderate quantities of water. Too little or too much water at a time are equally dangerous and threaten loss to the farmer."

Since plants obtain their mineral food from moisture which has it in solution from the soil, the solvency of the water has a direct effect on the growth of plants. It is a fact learned in elementary chemistry that heat increases the solvency of water or the action of chemicals and therefore cold waters are not as beneficial to plant growth as warm waters for this reason also. Dr. Widtsoe writes, page 73, of the work referred to above:

" * * * the water as it issues from the mountain canyons is almost immediately spread over the soil. Such water, fresh from the melting snowbanks, is of low temperature and chills the soil considerably and in all probability retards the rate of solution of the soil."

It can be readily seen that early flooding with cold water in the early spring is a serious detriment to the growing crops.

ALKALI AND ITS PREVENTION

The disintegration of soil produces soluble salts, some of which are used by plants as food, and some are not. The latter variety is commonly known as alkali and is composed of many chemicals, most notable of which are sodium carbonate, sodium sulphate and sodium chloride or common salt.

When soils become impregnated with alkali, plants cannot grow and just the amount of alkali which is detrimental to plants varies with the crop, the soil and other conditions. The roots of growing plants under normal conditions produce a slightly acid reaction which can be detected on litmus paper or even on polished marble. See King, Irrigation and Drainage, page 59. Therefore peaty or marshy soils containing large amounts of organic matter might be expected to be acid rather than alkaline. That this is the case is indicated by Jay A. Bonsteel in Circular No. 69 of the Bureau of Soils, U. S. Department of Agriculture on Marsh and Swamp, page 9, where on eastern marshes the soil must be "sweetened" by "liming" before crops can be grown thereupon. In order to make sure that these theories fit conditions on this marsh, soil samples were collected by members of the State Water Board at the time of their visit and tested with litmus paper. These tests showed a distinct acid reaction. The samples were further tested with hydrochloric acid for carbonates. No efforvescence was noted, indicating absence of carbonates and serving as a check on the litmus paper test.

No doubt there are small local patches in the marsh where, due to the occurence of an alkali substrata, the alkali will appear on the surface. Excess water and high evaporation with lack of drainage is generally considered the cause of the rise of alkali. Evidently where the waters are "sweet" and the soil is free from alkali, it will be a long time before the concentration of alkali will become so great as to injure the plant life. Where the uplands intersect the marsh, considerable alkali is noted, but this is not typical of the marsh proper.

Walton Van Winkle, in Water Supply Paper 363, Quality of Surface Waters of Oregon, says on page 131:

"All the river waters of the State that were examined are excellent for irrigation and could be used almost indefinitely without causing injurious accumulation of alkali because of the dissolved matter in them."

Mr. Van Winkle's analysis of Chewaucan River showed a total dissolved solids of 85 parts in a million. Since the danger point is apparently above 200 parts in a million (See Fortier, Use of Water in Irrigation, page 163), it is evident that there is no danger to the Chewaucan Marsh from alkali in the Chewaucan River.

Authorities are practically unanimous in saying that the proper way to prevent alkali is the sparing use of water in irrigation, providing proper drainage and the growth of alkali resisting plants. (See Widtsoe, pages 371 to 405, Principles of Irrigation Practice).

A method once used for ridding land of alkali was flooding. This is effective on open soils or lands with well defined under drainage, but on lands of the marsh type where the drainage is imperfect, the sub-soil very tight and retentive of moisture, this system will not work. Dr. Widtsoe says, on page 400 of the work referred to above:

"The theory has been that rapidly moving water passing over the soil will dissolve the alkali and carry it off. This, however, has been found to be ineffective, for the moment the water dissolves the alkali, it sinks into the soil and only the pure water runs off the surface."

The use of flooding whenever recommended at all, is conditioned upon the presence of an adequate drainage system which is conspicuously absent on the Chewaucan Marsh and which the engineers of the Cattle Company claim is too expensive to install. It therefore appears that to allow flooding the marsh to prevent the accumulation of alkali under the present system now being installed, would only result in hastening the coming of the evil day when the concentration of alkali would render the further growing of crops on the marsh impossible. That such under drainage as is had through the surface soil has been sufficient to prevent the formation of excess alkali since the installation of the present system, should not be used as an argument that the wasteful practice of excessive surface flooding should be continued. The lack of alkali in the river water and the neutralizing effect of the acid in the marsh further disproves the necessity of excessive surface flooding to remove alkali.

SUMMARY.

The careful study of the works of the leading authorities on the subject of the water requirement of plants and of the experiments of many scientists of the U. S. Department of Agriculture, together with a personal knowledge of marsh conditions, leads to the following conclusions:

1. That winter irrigation in cold climates is harmful.

2. The complete and continued saturation of the soil is detrimental to plant life. (In face of the repeated testimony of many witnesses that sugar-grass, a sedge grass sometimes used as a poor grade of hay, required the complete saturation of the soil with water running over the surface of the ground,

the Water Board actually saw luxuriant grass, including sugar grass, growing on canal banks and other places where no water was applied on the surface of the ground for over a year. The entire supply of moisture for the plant being obtained by capillarity from the soil and from the annual precipitation).

3. That the use of a small amount of water, not large amounts, is the remedy for alkali troubles, and that flooding is inefficient where the substrata is tight and impervious to water. The under drainage through the surface soil should be assisted by removing surplus water and installing a drainage system so far as practicable.

4. That an economical use of water is productive of the best crops and that any use of water for excessive saturation of the soil or water on the surface of the soil, or for removing alkali under present conditions on the Chewaucan Marsh, is not a beneficial use of water, but a detrimental and wasteful use of water.

5. That a fertile soil of fine texture and an impervious substrata such as the Chewaucan Marsh is ideally adapted to a low use of water in irrigation.

PHYSICAL CHARACTERISTICS OF THE CHEWAUCAN MARSH SOIL.

From a study of the testimony in the Chewaucan adjudication and of actual soil of the Chewaucan Marsh, the following characteristics stand out clearly.

1st. That the marsh soil contains large amounts of organic matter and is very fertile.

2nd. That it is a close textured soil and subdrains with difficulty when at all.

3rd. That under present conditions the marsh has no adequate system of either drainage or irrigation. (A dredge is now at work on the drain ditch. Few structures for turning water out of the long canals exist, and few checks are built for dividing the fields into basins of reasonable size for convenience in irrigation).

4th. That the undersoil or substrata is practically impervious.

As to the crops which can be grown on these marsh soils, the experience of Mr. McCormack at Klamath Falls, in growing timothy, red top, clover, grains, etc., on marsh lands, together with the universal experience in the use of such lands, show clearly and without question that with proper cultivation methods, almost any crop which is at all suitable to the climate can be grown on the marsh lands.

THE QUANTITATIVE DETERMINATION OF THE DUTY OF WATER.

King has concluded from some 138 determinations of the transpiration ratio that it averages about 23.125" and says that this figure is higher than would obtain under field conditions. On account of the great variation in such figures, it is not considered advisable to use them in the determination of the duty of water, and these figures are given only to indicate that trend of previous investigations.

Regarding experiments on the duty of water for hay making grasses, Dr. Widtsoe says as follows, in his work on "The Principles of Irrigation Practice":

"From five to ten inches were used in the experiments. In every case there was a smaller yield with 100 inches than with 5 inches. In some cases, smaller yields were obtained with 10 to 15 inches than with 5 inches. The evidence of the available experimental work is that these grasses tolerate only small

quantities of water. * * *

"Since the roots of these plants do not penetrate the soil deeply, the frequent application of water may be justified, but the total quantity need not be great. Timothy appears to endure much water better than the other crops. One crop only is obtained from these grasses, and they are, therefore, much like the small grains in their water requirements. Ordinarily it is sufficient to give these crops one good irrigation before cutting. From 5 to 10 inches of water should be sufficient to produce the one crop of hay. On unfertile or sandy soils from ten to fifteen inches should be ample. * * *

"These and other grasses, especially the native grasses, are often grown on the large ranches of the west. One crop is ordinarily harvested and the aftermath pastured. As early as possible in the spring, these fields are covered with immense quantities of water, which often stand for days, 1 to 2 inches deep. It is believed that under such conditions the frost is taken out of the soil, and a larger quantity of hay is obtained. The experiments at our service indicate that all hay crops are injured by an excess of water and that the best yields are obtained only by moderate irrigations. The immoderate use of water on such ranches should be discontinued, for it is an absolutely senseless practice. The hay-making grasses, Whether tame or wild, should not be given too much water if large yields are desired."

" * * * * * It is probable that from 12 to 15 inches would meet amply the requirements of practically any one of the standard hay crops. (pages 279, 280 and 281).

"With our present knowledge, however, it is safe to say that from 12 to 24 inches of water should be ample to maintain any well planted pasture in a luxuriant condition throughout the season. This is a wide limit, and it is probable that the best quantity lies near 18 inches." (Pages 283 and 284).

The duty of water on the Klamath Project ranged from two acre feet per acre to .90 acre foot per acre, averaging 1.3 acre feet per acre, or about sizteen inches for four years records, While some of the land included in this project from which this figure was taken was open sandy loam or sandy soil requiring larger amounts of water, there was no land which was better adapted for a low use of water than these marsh lands, hence we may consider that the Klamath Project figures are a little high for strictly marsh lands. (See table 9, page 21, "Working Data for Irrigation Engineers," by A. E. Moritz). (These figures were checked with Government reports and found correct).

In the case of the Chewaucan River adjudication, it was argued that except for climate, the conditions of rice culture might represent the high limit for the duty of water on sugar grass, a grass much used for hay on the marsh. Altho the conditions of rice culture are so entirely different from any reasonable agricultural conditions which prevail on the marshes, it may be interesting to note that records as low as 29 inches have been obtained, including rainfall as reported by Dr. Widtsoe. Dr. Fortier says, on page 229 of his "Use of Water in Irrigation":

"Measurements have been made of rainfall, evaporation and the duty of water for irrigating rice on prairie lands of Lousiana, Texas and Arkansas for 11 years, during which 21 measurements have been made. The average of these measurements give 15.74 inches of pumped water, and 17.16 inches of rainfall applied to the land and a loss due to evaporation from flooded rice fields of 15.33. The total average depth of water applied was 32.90 inches."

It is interesting to compare this figure of 32.9 inches for a crop grown with a long season, high temperatures and flooded fields with the figure of 59.77 inches estimated for a sugar grass supposed to require flooding with water on the surface of the ground.

DUTY OF WATER.

Based upon the foregoing theoretical discussion, and the claim as presented by the Chewacan Land and Cattle Company, we will now endeavor to arrive at some definite conclusion as to the proper duty of water for marsh lands.

Claim of Company:

1. Saturation of soil - - - - - - - - - - - - - - - - - 12.4 inches in depth on land
2. Sheet of water over the surface - - - - - - - - - - 4.0 "
3. Evaporation during the irrigation season - - - - - 8.2 "
4. Use of water by plants - - - - - - - - - - - - - - 11.5 "

5. Runoff due to sheet of moving water over surface - 23.7 inches on depth on land

Total needs during irrigation season as claimed - 59.8 "

These elements even if correctly determined, would not act independently, but would overlap such that the correct resultant would not be obtained by addition.

As shown above, very little, if any, water will be required in the spring for saturation of the soil, that the allowance of sheet water over the surface, and excessive runoff due to movement of this sheet water over the surface is an extravagant and wasteful use of water and not a beneficial use and that the discontinuance of such wasteful practice will greatly reduce the loss by surface evaporation. This leaves the actual use of water by plants, together with deep percolation if any, and transpiration losses 11.5 inches as the only claim which can be considered as within reason. The allowance of 8.2 inches, as claimed, for evaporation, would doubtless be more than sufficient to cover items 1 and 3, making a total use of 19.7 inches. A reasonable allowance for loss due to the inability in actual practice to recover the waste water from the lowest check in the field under irrigation, would keep the water requirement for marsh lands well within the two acre feet per acre as arrived at above from a study of water records in this case. This duty is believed to be a liberal allowance.

DISTRIBUTION OF THE WATER REQUIREMENT.

As was discussed in the foregoing pages, temperature plays a vital part in the growth of plants. It was seen that for temperatures below 42 degrees or 48 /degrees, plant growth is practically at a standstill. Since in the early spring the water in the stream is ice cold, it is evident that plant growth is not stimulated by a dosing of cold water, when temperatures are below the figure of 42 degrees.

TABLE 2.

MEAN TEMPERATURES AT PAISLEY, OREGON

Compiled from U. S. Weather Bureau Records

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual.
04-08	32.9	36.5	39.1	48.0	51.6	58.3	69.2	66.5	58.6	47.5	38.1	31.9	48.2
1909	35.6	37.4	40.5	46.8	51.0	60.4	64.4	66.4	50.3	50.7	41.2	27.0	47.6
1910	28.0	33.2	46.2	53.2	57.9	59.2	69.6	65.4	56.5	50.8	38.8	34.0	49.4
1911	30.8	27.3	42.0	44.6	48.7	61.4	71.5	----	53.8	47.0	37.8	30.4	----
1912	37.0	40.2	38.6	----	----	59.6	----	----	----	----	----	31.6	
1913	28.4	31.2	37.8	45.2	----	57.3	63.6	65.8	57.6	49.0	44.8	27.9	
1914	----	----	----	44.2	54.4	58.5	67.0	67.3	54.8	47.6	----	21.0	
1915	30.4	34.4	42.6	48.0	48.6	57.1	63.8	----	----	----	----	----	
Mean	31.9	34.3	41.0	47.1	52.0	59.0	67.0	66.3	55.3	48.8	40.2	29.1	47.7

Since mean temperatures lower than 42 degrees occur in January, February and March, and it would appear logical to begin the application of water not earlier than April 1st. It might be expected, however, that the last few days in March would be quite warm enough to use water. This is not advisable, however, for many reasons.

In the first place, the water is cold. Its minimum air temperature for these three months must of necessity be less than the mean of the recorded temperatures and is below the freezing point. The water must therefore be very cold. Except under certain conditions, in open sandy or gravelly soils,

this cold water is decidedly harmful.

The foregoing figures and reasoning makes clear that water cannot be used beneficially for plant growth in January, February and for at least a considerable part of March. Then again there is a large residual soil moisture content in the soil, which is augmented by winter precipitation and the runoff from the surrounding hills, which moisture would be ample for this early season of the year if any is needed, thus rendering irrigation unnecessary.

TABLE 3.

PRECIPITATION IN INCHES AT PAISLEY, OREGON.
Compiled from U. S. Weather Bureau Records.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1906	----	----	----	0.44	1.11	0.55	1.03	0.94	0.15	0.89	0.75	0.89	
1907	1.03	1.67	2.65	0.09	1.62	2.80	0.30	0.50	1.35	0.88	0.70	2.40	15.99
1908	0.34	0.58	0.11	0.21	0.95	0.56	1.07	0.44	0.40	1.42	0.41	0.30	6.79
1909	2.60	0.55	1.02	T	0.91	0.81	0.23	0.06	0.81	0.98	2.06	0.77	10.80
1910	0.30	0.49	0.67	0.21	0.12	0.49	0.30	0.00	0.76	0.29	2.83	0.18	6.64
1911	2.95	1.33	0.53	1.24	0.10	1.83	T	----	1.31	0.45	0.14	T	
1912	2.44	1.83	0.57	2.30	2.78	2.36	0.82	0.49	0.75	0.82	0.94	2.25	
1913	0.89	0.16	0.07	0.34	----	1.95	2.34	0.79	0.42	0.11	1.38	0.80	
1914	----	----	----	1.50	1.36	2.25	0.69	T	1.59	2.51	0.51	0.39	
1915	0.60	2.89	1.51	1.02	1.72	0.23	1.56	----	----	----	----	----	
Mean	1.39	1.19	0.89	0.74	1.19	1.38	0.83	0.40	0.84	0.93	1.08	0.89	11.75

At Paisley the mean annual rainfall is 11.75 inches. 3.47 inches fall in the first three months as shown by the above table, and in the last three months, 2.9 inches fall, or 6.37 inches which is over half the total amount and at the time when evaporation is the least. It is also interesting to note that in the months of April, May, June and July, some 4.14 inches of rainfall occurs. This is just the months when it is most needed but is in insufficient quantities to make irrigation unnecessary.

Except for unusual seasons, it is doubtful if any water to speak of is beneficially used before April 1st and therefore it is chosen as the beginning of the irrigation season. The latter part of June or early in July, water isturned off that the ground may become solid for haying operations, therefore the irrigation season is thus logically confined between April 1st and July 1st for hay making crops. By examination of the records of stream flow, it will be noted that the river falls quite low in July, thus naturally limiting irrigation on the marsh to prior months.

Since the marsh has been irrigated by the natural flow of Chewaucan River for a number of years, it is natural to suppose that the vegetation has become accustomed to use water in the proportion which this flow occurs.

The following, therefore, is a mean of ten years records of the flow of the Chewaucan River, compiled from the records of the U. S. Geological Survey for the three growing months for hay crops, namely, April, May and June.

	Acre Ft.	Percent of total	Distribution of duty of water in acre feet per acre.
April	27,400	33.6%	0.67 ac. ft. per month
May	33,456	41.0%	0.82 " " " "
June	20,818	25.5%	0.51 " " " "
Total	81,664	100.0%	2.00 " " " acre

The distribution here given is only applicable to the present conditions of growth on the marsh and no claim of great refinement is made for it. A sufficiently large duty, however, is allowed with the idea that the excess amount can readily take care of unusual conditions. Few irrigation projects furnish or need more than 0.5 to 0.6 acre foot per month. The average under the distribution above suggested is 0.66 acre feet per month.

While the foregoing discussion has disclosed the fact that only in exceptional cases can water be beneficially used during March, yet in order that advantage can be taken of any unusual conditions as to flow, the decree should permit the diversion of water in March for marsh lands.

DUTY OF WATER IN IDAHO.

As further evidence that two acre feet is a liberal allowance for marsh lands, comparison will be made with the actual use of water in Idaho, on so called uplands. Only one hay crop is grown on the marsh, with a comparatively short irrigation season. The Idaho figures include water for irrigation during July and August, and not only for one crop growth, but also for alfalfa which is cut several times during the season. Because of these differences, and the absence of a uniformly impervious substrata for Idaho conditions, the same as under the Chewaucan Marsh, one would expect that the Idaho measurements would show more water used than should be allowed for the Chewaucan Marsh.

The following table shows that only 1.98 acre feet of water was actually used, which figure is the "general average of the results that have been secured on the average soil of south Idaho, during the entire four years investigation." The use per month is also given. If the irrigation season in Idaho ended July 1st, as on the marsh, less than one acre foot would be ample as shown by the table. The general elevation and climate are much similar to that of Central Oregon and such figures should be valuable as a guide in checking the conclusions which have been reached as to the duty of water in this case.

Table 4.

Summary of Depths of Water in Feet Applied by Months to One Hundred and Seventy-one Selected Fields of Grain and Alfalfa on Medium Clay and Sandy Loam Soils. Altitude ranging from 2400 to 5000 feet. Seasons of 1910, 1911, 1912, 1913.

Crop	Season	No.of Plots	April		May	June	July	Aug.	Sept.	Total for Season
			1 - 15	16 - 30						
Alfalfa	1910	15	.0600	.0210	.5540	.7390	.6530	.6070	.0650	2.6990
Grain	1910	31	----	----	.3210	.6000	.5460	.0780	----	1.5450
Alfalfa	1911	13	----	.0350	.4930	.2930	.9130	.6970	.2480	2.6790
Grain	1911	30	----	----	.0270	.6540	.4780	.0100	----	1.1690
Alfalfa	1912	11	----	----	.4910	.5030	.6210	.6080	.0380	2.2610
Grain	1912	25	----	----	----	.9420	.6550	.0460	----	1.6430
Alfalfa	1913	13	----	----	.8627	.2284	.7422	.3854	.0175	2.2362
Grain	1913	33	----	.0392	.2062	.5434	.5941	.2268	----	1.6097
Average	----	--	.0075	.0119	.3693	.5628	.6504	.3323	.0460	1.9802
Percent of total		--	.38	.60	.1865	28.42	32.85	16.78	2.32	100.00

Duty of Water Investigations by Don H. Bark, p. 106.

UPLANDS. DUTY OF WATER.

The foregoing discussion will largely apply also to a consideration of the duty of water on the uplands. Practically all of the uplands now

irrigated in the vicinity of Paisley were included in the area considered between the two upper gaging stations. The conclusions reached in such discussion will be an approximate guide in considering these lands. The foregoing table for Idaho conditions will also be of assistance. It is believed that most of these lands are perhaps somewhat steeper than for Idaho conditions.

Taking into consideration the testimony and all other conditions as noted from a field inspection, it is believed that not more than three acre feet per acre has been put to beneficial use on these uplands and such amount is recommended as a proper duty.

Table 2, supplemented by the testimony in this case, indicates that the irrigation season for uplands should be fixed as from April 1st to September 1st.

RATE OF FLOW

In order that proper distribution of the water may be had for the protection of prior appropriators, it is necessary that some maximum rate of flow be fixed. Water in excess of such rate can of course be secured by arranging rotation periods between several water users so that the water of all can be used by each one part of the time.

It is recommended that a rate of not to exceed one cubic foot per second of water for each forty acres of land be allowed for such time during the irrigation season for both marsh and uplands, as will be necessary to furnish the volume above recommended as a proper duty of water. This is at the rate of one miner's inch to the acre, which is one-fortieth of one cubic foot per second per acre, or 1½ acre feet per month of thirty days.

EFFECT OF THIS RATE OF FLOW

At this rate, it will take 708 second feet of water in the river at the U. S. Geological Survey gage above Paisley to simultaneously supply all of the land (28,330 acres), between this gage and the lower gage at Hotchkiss Ford.

This will require practically all of the water in the stream during flood periods while such simultaneous use continues, except during excessive floods of short duration. The area above mentioned does not include the Carey Act project of 12,000 acres to which it is proposed to supply two acre feet through storage of these excessive floods which do damage to the country below under present conditions.

EFFECT ON VOLUME OF WATER AVAILABLE

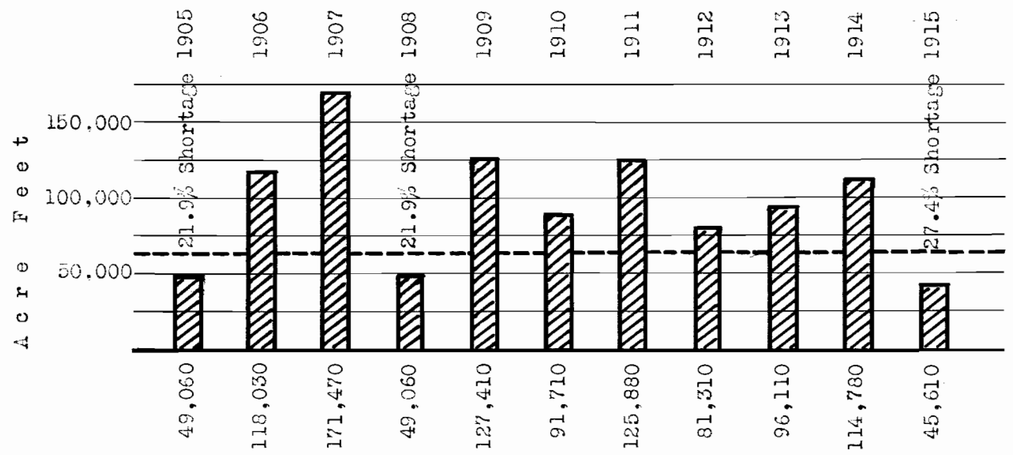
Elaborate studies have been made to ascertain the effect on the stream of allowing the amount of water for the above classes of land, namely, two acre feet on the marsh and three acre feet on the uplands.

For the 22,135 acres of marsh land and 6,195 acres of upland lying below the Paisley River gage, 62,855 acre feet of water will be required. This is more water than the amount which flows in the river past such gage during the irrigation season for three years out of eleven, for which U. S. Geological Survey records are available, as shown on the following diagram.

FIGURE 4.

FLOW OF CHEWAUCAN RIVER ABOVE PAISLEY FOR SIX MONTHS PERIOD,
MARCH 1 TO SEPTEMBER 1, 1905 TO 1915 INCL.

From U. S. Geological Survey Records. Expressed in Acre Feet.



Dotted horizontal line in above diagram indicates amount of water necessary to supply all rights below the Paisley gage, with exception of 12,000 acre Carey Act project.

It will be noted that for years like 1905 and 1908, there will be a shortage of practically 22 percent in the water available, and for a year like 1915 there will be a shortage of 27.4 percent. Few, if any, projects are designed and built where such excessive shortages will occur so frequently as three years out of eleven. It was stated above that the Chewaucan Marsh is not completely drained nor is a proper irrigation system installed. The tule swamp and bad lands mentioned in the testimony indicate lack of proper drainage facilities. The dredge now at work in the center canal of the upper marsh indicates that this company appreciates the need of better irrigation and drainage. Doubtless this work of gradual improvement will continue until the marsh is put in shape to utilize the available water to the best advantage. It should be done as the present apparent shortages seem to be due rather to an inability to handle and spread the available water, than to an actual shortage. Owing to the great area of arid land in Central Oregon which requires water to make it productive, and to the extreme scarcity of water, it seems that public policy should demand that modern irrigation systems should be installed at least where they can be so cheaply and economically constructed as on this marsh. The extent of this irrigated tract almost exclusively under one management should be all the more reason for the public demanding economical and beneficial use of water, as the usual troubles through diversity of ownership would not be encountered. In this case, however, an increase in the amount of water granted, would increase rather than decrease the extent of the apparent shortage. Nature in this case will therefore compel the installation of a more adequate system and such appears to be in process of construction. An inchoate right to water for irrigation purposes should accordingly be allowed

for the swamp area which is now in process of reclamation.

For three years out of eleven, there will be no water at all for the 12,000 acre Carey Act project. However, by building a large enough reservoir and carrying water over from flood years to piece out the dry years, sufficient water will be available to satisfy all claims as presented in this case, with only occasional shortages. This State Carey Act project has been referred to specifically in the public press as one of the principal factors in encouraging the construction of the system of railroads proposed for Central Oregon by Mr. Strahorn. The allowance of excessive quantities of water for the irrigation of the extensive marsh areas in Central Oregon would not only tend to maintain marsh conditions, but would defeat the reclamation of additional areas, all of which must be developed if Central Oregon is to be opened to railway transportation.

SUMMARY OF CONCLUSIONS ON DUTY OF WATER.

It is recommended:

First, that the amount of water for the marsh lands shall not exceed two acre feet per acre diverted from Chewaucan River, to be delivered during an irrigation season commencing March 1, and ending July 15 of each year.

Second, that the amount of water for the uplands (6,195.73 acres below Paisley River gage and above Hotchkiss Ford, balance 2,199.7, or 8,395.4 acres in all, exclusive of Carey Act project of 12,000 acres) shall not exceed three acre feet per acre diverted from Chewaucan River during an irrigation season commencing April 1st and ending September 1st of each year; all uplands on tributaries of Chewaucan River to be allowed the same duty of water and irrigation season.

Third, that the rights of the Portland Irrigation Company for the Carey Act project, be limited to an amount of water not to exceed two acre feet per acre to be delivered on the land and the company be required to construct a reservoir of such capacity as will insure the delivery of such an amount of water.

Fourth, that all diversions from Chewaucan River and its tributaries be limited for convenience of distribution to a rate of flow not exceeding one-fortieth of one cubic foot per second of time for each acre, and for such period during the irrigation season as will be necessary to deliver the volume of water to which each claimant is entitled under this decree, unless such claimant shall combine with others and take his supply of water in rotation, using the combined supply for his portion of the time.

LIST OF TECHNICAL AND SCIENTIFIC WORKS CONSULTED IN THE PREPARATION OF THIS DISCUSSION.

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Utah Experiment Station Bulletin No. 120. (1912)

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Respectfully submitted,

John H. Lewis

State Engineer of the State of Oregon.

Salem, Oregon.
September 1, 1915.

R E P O R T

Supplemental to State Engineer's Report
of September 1, 1915.

In the Matter of the Determination of the Relative Rights to the Waters of
Chewaucan River and its Tributaries.

December 6, 1915.

The statements of Mr. W. C. Hammott, the principal expert witness of the Chewacan Land and Cattle Company, as found on pages 458 to 461, 471, 472, 475, 501 and 502 of the testimony, tend to confirm the conclusions reached in the attached report of the State Engineer dated September 1, 1915, when read in connection with Mr. Hammott's statements to the American Society of Civil Engineers, as found on pages 2447 and 2448 of the November, 1915, proceedings of such society.

In his testimony, Mr. Hammott shows by answers to numerous questions, that he has had much experience in all branches of irrigation work which particularly qualifies him as an expert on the question of duty of water.

On page 458, he states that he was employed for a considerable period as chief engineer for the San Joaquin and Kings River Canal and Irrigation Company; also for Miller and Lux.

On page 501 we find the following question and his reply thereto:

Q 6 - "Now summing up all of these things, are the upper and lower Chewaucan marshes well or badly adapted to irrigation by flooding without excessive waste or loss, I should say? A. They are better adapted than any flooding proposition that I have ever seen."

In the November proceedings above mentioned, page 2447, Mr. Hammott furnishes detailed figures for some of the California tracts mentioned in the testimony of this case, as follows:

"The writer had occasion to make very accurate determinations as to canal losses and as to the duty of water applied to the land under the San Joaquin and Kings River Canal and Irrigation Company's system extending over several years. The results of the investigations were as follows:
(1). -- That 45% of the water taken into the system was lost by percolation and evaporation in the entire system.
(2). -- That the quantity of water measured as flowing to the land for irrigation was 2.44 acre ft. per acre for 1907, 1.49 acre ft. for 1908, and 1.44 acre ft. for 1909."

In explaining the method used in securing the reduction from 2.44 to 1.44 acre feet, he states: "This change was made for two reasons: first, because the extraordinary demand for water was forcing the system beyond its capacity; and second, because the excessive use was drowning the land."

Evidently Mr. Hammott considers a duty of water of 2.44 acre feet per acre an "extraordinary demand" and an "excessive use" and later on in this paper appears to recommend 1.5 acre feet as the proper duty on the California lands which he intimates in the testimony are less adapted to an economical use of water than the Chewaucan Marsh.

On page 38, Bulletin No. 1, Progress Report of Cooperative Investigations in California by the State and Federal Bureaus, the following data on the gross duty of water is given:

Miller and Lux Canals in 1912, had a gross duty of 2.46 acre feet per acre
San Joaquin & Kings River " " " " " " 2.75 " " " "
East Side Canal " " " " " " 2.65 " " " "

Mr. Hammott states "that 45% of water taken into the system was lost by seepage and evaporation the the entire system." But assuming that only the customary allowance of 33-1/3% for losses (which do not occur on the Chewaucan Marsh) the actual duty of water on these 200,000 or more acres, which include wild grass crops and flooding systems, amounts to 1.64, 1.83 and 1.67 acre feet per acre respectively. The longer season, hotter climate, and looser soil of California, would naturally require more water than the Chewaucan Marsh of Oregon.

The foregoing are the results of extensive studies and elaborate experiments on the part of Mr. Hammott and it is not surprising that with only the few days examination of the Chewaucan Marsh, he should have reached the erroneous conclusion that five acre feet per acre was the minimum amount of water which should be allowed such tract.

In conclusion, we may summerise the important information bearing on the duty of water as follows:

Results of duty of water investigation by Federal and State Governments in 1912 on California Project using flooding systems and growing wild grasses corrected for system losses. - - - - - - 1.71 ac. ft. per ac.

Results of duty of water studies in 1909 on California projects using flooding systems and growing wild grasses, by Mr. W. C. Hammott, Chief Witness for the Chewacan Land and Cattle Company - - - 1.44 ac. ft. per ac.

Results of actual water records in 1914 on Chewaucan Marsh characterized by Mr. W. C. Hammott as "better adapted than any flooding proposition that I have ever seen." Tr., pg. 501 - - - - - - 1.48 ac. ft. per acre.

Duty of water on Klamath Project in Oregon reported by U. S. Reclamation Service, climate and soil conditions similar to Chewaucan Country. Average of 5 years records. - - - - - - - - - - - - 1.30 ac. ft. per ac.

Duty of water obtained from study of many scientific works dealing with results of measurements from all parts of the world, referred to in the main report. - - - - - - - - - - - - - - - - 1.50 ac. ft. per ac.

Duty of Water recommended to the State Water Board of Oregon for marsh lands in Chewaucan River, having cooler claimate, shorter growing season, lighter subsoil and higher altitude than California conditions mentioned above - - - - - - - - - - - - - - - 2.00 ac. ft. per ac.

In view of the foregoing statements, and the fact that Mr. Hammott is the leading witness for the Chewacan Land and Cattle Company, it appears that two acre feet per acre as recommended in the foregoing report of the State Engineer, dated September 1, 1915, is as liberal allowance as could reasonably be expected for the marsh lands of the Chewaucan district.

Salem, Oregon.
December 6, 1915.

John H. Lewis,
State Engineer of the State of Oregon.