CLAIM OF BENEFICIAL USE for Surface Water Permits claiming more than 0.1 cfs

Oregon Water Resources Department
725 Summer Street NE, Suite A
Salem, Oregon 97301-1266
(503) 986-0900
www.wrd.state.or.us

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A fee of $200 must accompany this form for permits with priority dates of July 9, 1987, or later.

A separate form shall be completed for each permit.

In cases where a permit has been amended through the permit amendment process, a separate claim for the permit amendment is not required. Incorporate the permit amendment into the claim for the permit.

This form is subject to revision. **Begin each new claim** by checking for a new version of this form at: http://www.oregon.gov/owrd/pages/wr/cwre_info.aspx

The completion of this form is required by OAR 690-014-0100(1) and 690-014-0110(4).

Please type or print in dark ink. If this form is found to contain errors or omissions, it may be returned to you. **Every item must have a response.** If any requested information does not apply to the claim, insert "NA." **Do not delete or alter any section of this form unless directed by the form.** The Department may require the submittal of additional information from any water user or authorized agent.

"Section 8" of this form is intended to aid in the completion of this form and should not be submitted.

If you have questions regarding the completion of this form, please call 503-986-0900 and ask for the Certificate Section.

The Department has a program that allows it to enter into a voluntary agreement with an applicant for expedited services. Under such an agreement, the applicant pays the cost to hire additional staff that would not otherwise be available. This program means a certificate may be issued in about a month. For more information on this program see http://www.oregon.gov/owrd/pages/mgmt_reimbursement_authority.aspx

SECTION 1
GENERAL INFORMATION

1. File Information

APPLICATION #	PERMIT #	PERMIT AMENDMENT #
S-18423	**S-18547**	**T-**

2. Property Owner (current owner information)

Applicant/Business Name	Phone No.	Additional Contact No.
Warmsprings Irrigation District	**541-473-3951**	

Address			
334 Main Street North			
City	State	Zip	E-Mail
Vale	**OR**	**97918**	**wid4water@qwestoffice.net**

If the current property owner is not the permit holder of record, it is recommended that an assignment be filed with the Department. ***Each*** *permit holder of record must sign this form.*

3. Permit or holder of record (this may, or may not, be the current property owner)

Permit Holder of Record		
Warmsprings Irrigation District		
Address		
334 Main Street North		
City	State	Zip
Vale	**OR**	**97918**

Additional Permit Holder of Record		
n/a		
Address		
City	State	Zip

4. Date of Site Inspection:

5. Person(s) interviewed and description of their association with the project:

Name	Date	Association with the Project
Randy Kinney		**Irrigation District Manager**

6. County: **Malheur**

7. If any property described in the place of use of the permit final order is excluded from this report, identify the owner of record for that property (ORS 537.230(4)):

Owner of Record		
n/a		
Address		
City	State	Zip

Add additional tables for owners of record as needed

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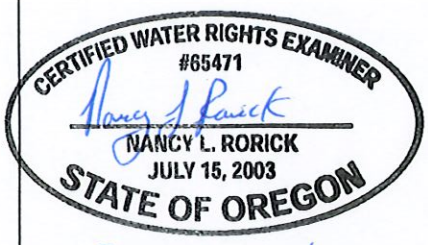
SECTION 2
SIGNATURES

CWRE Statement, Seal and Signature

The facts contained in this Claim of Beneficial Use are true and correct to the best of my knowledge.

Seal and Signature



CWRE NAME		PHONE NO.	ADDITIONAL CONTACT NO.
Nancy L Rorick		**541-519-3644**	
ADDRESS **645 L Loop**			
CITY **Baker City**	STATE **OR**	ZIP **97814**	E-MAIL **nrorick@nlr-water.com**

Permit Holder of Record Signature or Acknowledgement

Each *permit holder of record must sign this form in the space provided below.*

The facts contained in this Claim of Beneficial Use are true and correct to the best of my knowledge. I request that the Department issue a water right certificate.

SIGNATURE	PRINT OR TYPE NAME	TITLE	DATE
Randy Kinney	Randy Kinney	Manager	1/4/19

SECTION 3
CLAIM DESCRIPTION

1. Point of diversion name or number:

POINT OF DIVERSION (POD) NAME OR NUMBER (CORRESPOND TO MAP)
1. Vines Canal
2. JH Canal
3. Farmers Canal
4. GF Canal
5. Bully Creek Ditch
6. Bully Creek Exchange / Willow Creek Pump Canal
7. Nevada Canal
8. Willow Creek Feeder Canal
9. Wood Drain / Blanton Drain

2. Point of diversion source and tributary:

POD NAME OR NUMBER	SOURCE	TRIBUTARY
1. Vines Ditch	**VOID[1] return flow in the Malheur River, diversion out of the Malheur River**	**Snake River**
2. JH Canal	**VOID return flow in the Malheur River, diversion out of the Malheur River**	**Snake River**
3. Farmers Canal	**VOID return flow in the Malheur River, diversion out of the Malheur River**	**Snake River**
4. GF Canal	**VOID return flow in the Malheur River, diversion out of the Malheur River**	**Snake River**
5. Bully Creek Ditch	**VOID return flow in Bully Creek (Malheur River water stored in Bully Creek Reservoir)**	**Snake River**
6. Bully Creek Exchange / Willow Creek Pump Canal	**VOID Lateral 197 to WID Bully Creek Exchange Ditch (Malheur River water stored in Bully Creek Reservoir)**	**Snake River**
7. Nevada Canal	**VOID return flow in the Malheur River (diversion on the Malheur River) and backup water from the Owyhee Ditch**	**Snake River**
8. Willow Creek Feeder Canal	**VOID return flow from the Malheur River water stored in Bully Creek Reservoir via the Vale Main Canal discharged into Willow Creek and re-diverted into the WID Willow Creek Feeder Canal**	**Snake River**
9. Wood Drain / Blanton Drain	**Old Owyhee Ditch Company flow from the Old Owyhee Ditch into the Wood Drain to the Blanton Drain to the Blanton Canal.**	**Malheur River**

[1] **Vale Oregon Irrigation District**

3. Developed use(s), period of use, and rate for each use:

POD Name or Number	Uses	If Irrigation, List Crop Type	Season or Months When Water was Used	Actual Rate or Volume Used (CFS, GPM, or AF)
1. Vines Ditch	**Irrigation**	**Various crops including sugar beets, wheat, potatoes, onions, alfalfa, pasture grasses, corn, and grains.**	**From the Malheur Decree: "limited to the diversion not to exceed one and one-half acre feet per acre during any period of thirty days prior to June 1st of each year, and thereafter not to exceed one-acre foot per acre during any period of thirty days."**	**11.8 CFS**
2. JH Canal	**Irrigation**			**121 CFS**
3. Farmers Canal	**Irrigation**			**32.44 CFS**
4. GF Canal	**Irrigation**			**123.1 CFS**
5. Bully Creek Ditch	**Irrigation**			**19.44 CFS**
6. Bully Creek Exchange / Willow Creek Pump Canal	**Irrigation**			**4.43 CFS**
7. Nevada Canal	**Irrigation**			**102.8 CFS**
8. Willow Creek Feeder Canal	**Irrigation**			**26.2 CFS**
9. Wood Drain / Blanton Drain	**Irrigation**			**36.61 CFS**
Total Quantity of Water Used				**477.82 CFS**

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4. Provide a general narrative description of the distribution works. This description must trace the water system from **each** point of diversion to the place of use:

Permit and BOR Contract Summary

Permit S18547 (issued on September 1, 1948) with a 1939 priority date is for a supplemental water right held by the Warmsprings Irrigation District (WID) for "waste water." The permit defines this waste water as "waste and return flow from Vale, Oregon [now called Vale Oregon Irrigation District (VOID)], which water originates in the Malheur River." The waste water and return flow also include "water from the Owyhee and Ontario-Nyssa Irrigation Districts and the Owyhee Ditch Company lands, which water originates in the Owyhee River." The permit document shows that WID originally applied for 125 CFS, but that the permit was issued for 300 CFS.

The permit describes the points of diversion as "One diversion taken out of Willow Creek [POD 8] at the above point, the others not determined, part of the water drains directly into the present ditches of the District, will also use all our present diversion."

The permit was issued to establish a water right for return flow to WID from VOID under a Bureau of Reclamation (BOR) contract signed on April 30, 1926. The BOR contract specifies that WID accept return flow from VOID to the extent that water can be diverted and beneficially used by WID.

The return flow now used under this permit includes:

- all drainage and waste water from VOID that reach the Malheur River and are re-diverted into WID canals;
- all drainage and waste water from VOID that reaches Willow Creek and is re-diverted into the Willow Creek Feeder Canal and pumped from Willow Creek into the Willow Creek Pump Canal;
- all return flow and waste water from the Malheur River water stored (as part of the Vale project) in Bully Creek reservoir diverted into the Bully Creek Ditch;
- all water discharged from VOID, Owyhee Irrigation District, and Old Owyhee Ditch Improvement District canals directly into WID canals;
- all field runoff from the VOID, Owyhee Irrigation District and Old Owyhee Ditch Improvement District intercepted along the entire reach of the WID canals;
- Old Owyhee Ditch District Improvement District return flow (Old Owyhee Ditch) that backs up the Nevada Canal;
- and Old Owyhee Ditch spills excess water into the Wood Drain, which discharges to the Blanton Drain, which is pumped into the Blanton Canal (a lateral of the Nevada Canal).

System Description

The Warmsprings Irrigation District receives water from the Malheur River, Bully Creek, Willow Creek, Snake River, and Owyhee River drainage basins under permit S18547. This permit allows WID the use of Malheur River water diverted into Bully Creek and Willow Creek basin by the Vale project. It also allows WID to use water from the Owyhee Project and the Owyhee Ditch Company that flows into the WID. The Owyhee Project and Owyhee Ditch Company canals both contain water pumped from the Snake River at the Dunaway pumping station south of Nyssa.

The source reservoirs for the return flow are shown on map 1. The Warmsprings Reservoir owned by WID is the source of water for WID's primary reservoir right Certificate 48051. Permit S18547 is supplemental to Certificate 48051. The Beulah, Bully Creek and Owyhee Reservoirs are all BOR projects, the Warmsprings Reservoir is not. Map 2 shows the locations of the VOID and WID irrigation districts, and Map 3 shows lands irrigated under the Owyhee Project.

Map 4 shows the Owyhee and VOID canal systems that deliver water from the reservoirs and the Snake River that are the sources of the return flow used under Permit S18547. The VOID main canal diverts water from the Malheur River at Namorf. Water from the VOID canal is first used to irrigate fields at Harper. Return flow from these fields returns to the Malheur River and is picked up by WID downstream at the Vines Ditch, JH Canal, Farmers Ditch, GF Canal, and the Nevada Ditch (maps 5 and 6).

A portion of the Malheur River water from the Vale Main Canal is diverted north in VOID Lateral 197 into Bully Creek Reservoir. The VOID lands downstream from the Bully Creek Reservoir are irrigated with Malheur River water form the main canal, therefore return flow to Bully Creek from these lands is included under permit S18547. This water is diverted into WID's Bully Creek Ditch, which also receives water from the Farmers Canal.

Malheur River water is also diverted out of Bully Creek Reservoir to VOID's Lateral 197. At the end of Lateral l97 return flow enters WID's Bully Creek Exchange Canal (jointly managed by VOID and WID)

that then flows into WID's Willow Creek Pump Canal.

The Vale Main Canal crosses into the Willow Creek watershed to irrigate the lands above WID. Runoff from these lands enters Willow Creek and is re-diverted into WID's Willow Creek Feeder Canal; and is pumped from Willow Creek into the Willow Creek Pump Canal.

Lands on both the north and south borders of the WID are irrigated by the Owyhee Irrigation District. On the south side of WID water from the Owyhee Irrigation District enters directly into the WID Nevada Canal via the Shoestring Ditch. It also enters the WID canals as runoff in natural drainages at Morgan Lane and Onion Avenue. On the north side of WID, Owyhee water enters the GF Canal from the Henry's Gulch Drain. Owyhee water also enters the Willow Creek Pump Canal at the Belnap farm and at the End of the Owyhee Canal.

Due to the topographically lower position of the WID canals, they directly intercept field runoff and channel flow from VOID and the Owyhee District. Permit S18547 includes this in WID's water right by stating: "part of the water drains directly into the present ditches of the district."

Water from the Old Owyhee Ditch backs up the Nevada Canal and is also diverted into the Wood Drain, from the Wood Drain into the Blanton Drain, and into the Blanton canal (a lateral off the Nevada Canal).

POD Definition

The PODs are defined as the points where return flow is diverted from the Malheur River, Bully Creek and Willow Creek into a major WID canal; where the Bully Creek Exchange (jointly maintained by VOID and WID) discharges into the Willow Creek Pump Canal; and where the Old Owyhee Ditch can spill excess water into the Wood Drain and water also backs up into the Nevada. The inflow into the WID canals is not limited to these PODs, but also includes any inflow from natural drainages, drains, or canals from the other districts that discharge into the WID canals.

Flow Measurement

The VOID and WID measure the return flow to WID at various points. These include flow in the Malheur River, Bully Creek, and Willow Creek. These return flow points have automated gauges that are maintained by Idaho Power (map 4). The return flow on the Malheur River credited to VOID is the difference in flow between the flow at Namorf (just downstream of the diversion point to the Vale Main Canal) and at Vines (just upstream of WIDs uppermost diversion points from the Malheur River). The total flow measured at the Bully Creek and Willow Creek gauges is credited to VOID as return flow. Graphs showing the measured flow at these locations are included in Appendix A.

The CWRE and District Manager measured flow at inflow points where the canals intercept channelized field runoff and where canals from the surrounding districts spill into the WID canals. The measured inflow does not include all return entering WID. The permit grants WID all return flow intercepted by its canals from the other districts. Flow measurements and capacity calculations at these measuring points are in Appendix A and the measurement point locations are shown on the Final Proof Maps.

This claim includes a variety of measurement methods due to the complexity of the project. The NRCS office in Ontario provided WID with 1-meter resolution lidar data for the entire district. The CWRE used the 3D Analyst extension in ArcGIS to generate 0.5-foot-interval contour lines. These data were used to determine variables in the Manning flow equation used to calculate flow capacity: slope, bottom width, and

top width. The actual water depth in the canals is difficult to measure because the canals are steep sided, have high flow, and widely varying flow levels. The BOR manual on design standards[2] for canals recommends bottom width to depth ratio of no more than 2:1 for canals with capacities of less than 10,000 CFS. Therefore, the capacity based on channel dimensions was calculated using water depths that were ½ the bottom width or less.

Many of the natural drainages and canals carrying return flow have weirs. The CWRE and district manager measured the height of live flow over the weir blade and measured the height of the highwater mark above the weir blades. The flow rates over these weirs were calculated using equations from the *Isco Open Channel Flow Measurement Handbook, Forth Edition,* 1995, by Grant and Dawson.

Many of the measuring points had head gates. Flow through these head gates was determined using tables provided by Waterman, a company that manufactures headgates. The flow is based on the dimensions of the headgate, the height of the opening, and the amount of head on the upstream side of the headgate.

There are historic gauge data available on the OWRD website for the Vines, JH, Farmers, GF and Nevada Canals. These data were used to verify the maximum capacity.

Reminder: The map associated with this claim must identify the location of the point(s) of diversion, Donation Land Claims (DLC), Government Lots (GLot), and Quarter-Quarters (QQ).

5. Variations:

Was the use developed differently from what was authorized by the permit, or permit amendment final order? If yes, describe below. **YES**

(e.g. *"The permit allowed three points of diversion. The water user only developed one of the points."* or *"The permit allowed 40.0 acres of irrigation. The water user only developed 10.0 acres.")*

The geometry of the water rights was updated to match the District's 3111 mapping.

6. Claim Summary:

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[2] Design Standards No. 3, Canals and Related Structures, United States Bureau of Reclamation, 1967, available online: https://www.usbr.gov/pn/snakeriver/landuse/authorized/designstandards3.pdf

POD NAME OR #	MAXIMUM RATE AUTHORIZED	CALCULATED THEORETICAL RATE BASED ON SYSTEM	AMOUNT OF WATER MEASURED	USE	# OF ACRES ALLOWED	# OF ACRES DEVELOPED
1. Vines Ditch	**300 CFS**	**11.8 CFS**	**11.8 CFS**	**Irrigation**	**18,258**	**18,258**
2. JH Canal		**120.8 CFS**	**121 CFS**	**Irrigation**		
3. Farmers Canal		**47.8 CFS**	**32.44 CFS**	**Irrigation**		
4. GF Canal		**191.6 CFS**	**123.1 CFS**	**Irrigation**		
5. Bully Creek Ditch		**34.4 CFS**	**19.44 CFS**	**Irrigation**		
6. Bully Creek Exchange / Willow Creek Pump Canal		**10.1 CFS**	**4.43 CFS**	**Irrigation**		
7. Nevada Canal		**241.8 CFS**	**102.8 CFS**	**Irrigation**		
8. Willow Creek Feeder Canal		**54.8 CFS**	**26.2 CFS**	**Irrigation**		
9. Wood Drain / Blanton Drain		**26.7 CFS**	**36.61 CFS**	**Irrigation**		
Total		**739.8 CFS**	**477.82**		**18,258**	**18,258**

SECTION 4 – 1. Vines Ditch
SYSTEM DESCRIPTION

Are there multiple PODs? **YES**

If *"YES"* you will need to copy and complete Sections 4B through 4E for each POD.

POD Name or Number this section describes (only needed if there is more than one):

1. Vines Ditch

A. Place of Use

1. Is the right for municipal use? **NO**

If "YES" the table below may be deleted.

TWP	RNG	MER	SEC	QQ	GLOT	DLC	USE	IF IRRIGATION, # PRIMARY ACRES	IF IRRIGATION, # SUPPLEMENTAL ACRES
See attached tabulation.									
Total Acres Irrigated									

Reminder: The map associated with this claim must identify Donation Land Claims (DLC), Government Lots (GLot), Quarter Quarters (QQ), and if for irrigation, the number of acres irrigated within each projected DLC, GLot, and QQ.

B. Diversion and Delivery System Information

Provide the following information concerning the diversion and delivery system. Information provided must describe the equipment used to transport and apply the water from the point of diversion to the place of use.

1. Is a pump used? **YES**

If "NO" items 2 through item 6 may be deleted.

2. Pump Information

NO	MANUFACTURER	MODEL	SERIAL NUMBER	TYPE (CENTRIFUGAL, TURBINE OR SUBMERSIBLE)	INTAKE SIZE	DISCHARGE SIZE
1	**Berkeley**	**B6ZRHS**	**G220101**	**Centrifugal**	**8 inch**	**6 inch**
2	**Berkeley**	**B6ZRHS**	**G110800**	**Centrifugal**	**8 inch**	**6 inch**
3	**Berkeley**	**B6ZRHS**	**G220101**	**Centrifugal**	**8 inch**	**6 inch**
4	**Berkeley**	**B6ZRHS**	**G230201**	**Centrifugal**	**8 inch**	**6 inch**
5	**Berkeley**	**B6ZRHS**	**G280201**	**Centrifugal**	**6 inch**	**6 inch**

3. Motor Information

No.	Manufacturer	Horsepower
1	**Marathon**	**10**
3	**Teco**	**7.5**
3	**Teco**	**10**
4	**Baldor**	**7.5**
5	**Marathon**	**10**

4. Theoretical Pump Capacity

No	Horsepower	Operating PSI	Lift from Source to Pump	Lift from Pump to Place of Use	Total Pump Output (in CFS)
1	**10**	**7**	**3.6 feet**	**3.94 feet**	**2.6**
3	**7.5**	**7**	**3.6 feet**	**3.94 feet**	**2.0**
3	**10**	**7**	**3.6 feet**	**3.94 feet**	**2.6**
4	**7.5**	**7**	**3.6 feet**	**3.94 feet**	**2.0**
5	**10**	**7**	**3.6 feet**	**3.94 feet**	**2.6**
Total					**11.8 CFS**

5. Provide pump calculations:

The WID uses five pumps to pump water from the Malheur River into the Vines Ditch (MP1 on final proof map). The lift from source to pump is the difference in elevation between the water level in the river and the center of the pump. The lift from the pump to place of use is from the pump up to the bottom of the discharge pipe. The pumps are housed below ground level in a cement structure.

For three 10-HP pumps

Pressure head = 2.54 feet head/ PSI x 7 = 17.78 feet

Total head = Suction lift + pressure head + discharge lift
Total head = 3.6 feet + 17.78 + 3.94 feet = 25.32 feet

$$\text{Q pump} = \frac{\text{(horsepower)(pump efficiency)}}{\text{(total head in feet)}}$$

$$Q_{pump} = \frac{(10\ HP)(6.61\ ft^4/sec/HP)}{(25.32\ feet)} = 2.6\ cfs$$

For three pumps = 7.8 cfs

For two 7-HP pumps

Pressure head = 2.54 feet head/ PSI x 7 = 17.78 feet

Total head = Suction lift + pressure head + discharge lift
Total head = 3.6 feet + 17.78 + 3.94 feet = 25.32 feet

$$\text{Q pump} = \frac{\text{(horsepower)(pump efficiency)}}{\text{(total head in feet)}}$$

$$Q_{pump} = \frac{(7\ HP)(6.61\ ft^4/sec/HP)}{(25.32\ feet)} = 2.0\ cfs$$

For two pumps = 4.0 cfs

Total pump capacity = 7.8 cfs + 4.0 cfs = 11.8 cfs

6. Measured Pump Capacity (using meter if meter was present and system was operating)

Initial Meter Reading	Ending Meter Reading	Duration of Time Observed	Total Pump Output (in cfs)
n/a			

Reminder: For pump calculations use the reference information at the end of this document.

7. Is the distribution system piped? **NO**

12. Additional notes or comments related to the system:

Water is pumped from the Malheur River into the Vines Canal. The Vines Ditch is 2.6 miles long. At the end of the Vines Ditch water spills into the JH Canal. There is historic gauge data for the Vines Canal (number 13221000) available on the Department's website.

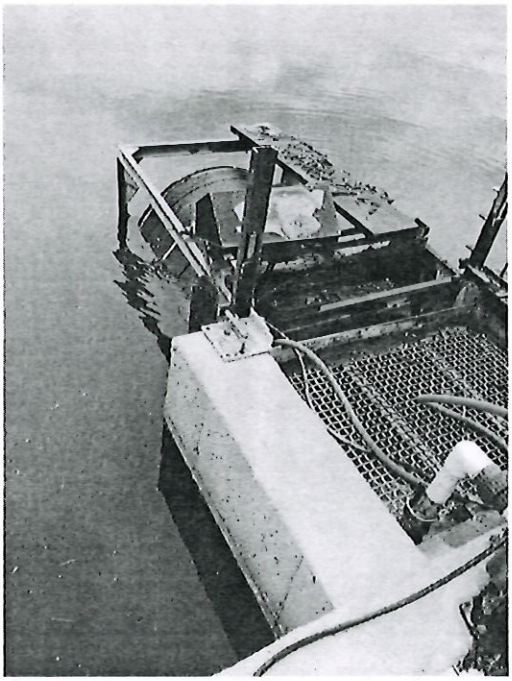

Photo shows pumping station intake on the Malheur River.

C. Storage

1. Does the distribution system include in-system storage (e.g. storage tank, bulge in system / reservoir) **NO**

D. Gravity Flow Pipe

(THE DEPARTMENT TYPICALLY USES THE HAZEN-WILLIAM'S FORMULA FOR A GRAVITY FLOW PIPE SYSTEM)

1. Does the system involve a gravity flow pipe? **NO**

E. Gravity Flow Canal or Ditch

(THE DEPARTMENT TYPICALLY USES MANNING'S FORMULA FOR CANALS AND DITCHES)

1. Is a gravity flow canal or ditch used to convey the water as part of the distribution system? **YES**

If "NO", items 2 through 4 relating to this section may be deleted.

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2. Complete the table:

Canal or Ditch Type (material)	Top Width of Canal or Ditch	Bottom Width of Canal or Ditch	Depth	"N" Factor	Amount of Fall	Length of Canal / Ditch	Slope	Computed Rate (in cfs)
Earth; straight and uniform	**15.5**	**7.7**	**2**	**0.025**	**0.4**	**2242**	**0.0006**	**24 cfs**

3. Provide calculations:

Capacity based on canal measurements taken from lidar data set.

Ditch Capacity Calcualtor
using Manning's Formula

Data Entry (fill in underlined blanks)

Top Width =	15.5	feet			
Bottom Width =	7.7	feet			
Depth =	2	feet			
Fall =	0.43	feet	per	2242	feet of distance
Grade =	0.000192	, or	0.0%		
n Factor =	0.025				

Results calculated

Area of cross-section =	23.2	square feet
Wetted Perimeter =	16.46584	feet
Hydraulic Radius =	1.408977	
Velocity =	1.035	feet per second
Calculated Ditch Capacity =	**24.0**	**cubic feet per second**

The OWRD has historical gauge data for the Vines Canal. The maximum flow measured on 5/28/1938 was 19 CFS.

4. If an actual measurement was taken, provide the following:

Date of Measurement	Who Made the Measurement	Measurement Method	Measured Quantity of Water (in cfs)
5/28/1938	**OWRD historical gauge data (number 13221000)**	**OWRD gauge**	**19 cfs**

Attach measurement notes.

SECTION 4 – 2. J.H. Canal SYSTEM DESCRIPTION

Are there multiple PODs? **YES**

If *"YES"* you will need to copy and complete Sections 4B through 4E for each POD.

POD Name or Number this section describes (only needed if there is more than one):

2. J.H. Canal

A. Place of Use

1. Is the right for municipal use? **NO**

If "YES" the table below may be deleted.

TWP	RNG	MER	SEC	QQ	GLOT	DLC	USE	IF IRRIGATION, # PRIMARY ACRES	IF IRRIGATION, # SUPPLEMENTAL ACRES
See attached tabulation									
Total Acres Irrigated									

Reminder: The map associated with this claim must identify Donation Land Claims (DLC), Government Lots (GLot), Quarter Quarters (QQ), and if for irrigation, the number of acres irrigated within each projected DLC, GLot, and QQ.

B. Diversion and Delivery System Information

Provide the following information concerning the diversion and delivery system. Information provided must describe the equipment used to transport and apply the water from the point of diversion to the place of use.

1. Is a pump used? **NO**

Reminder: For pump calculations use the reference information at the end of this document.

7. Is the distribution system piped? **NO**

12. Additional notes or comments related to the system:

Water is diverted from the Malheur River into the J.H. Canal on the south side of the river. The JH Canal is 16.1 miles long. The Trenkle and Purvis laterals divert off the JH Canal.

C. Storage

1. Does the distribution system include in-system storage (e.g. storage tank, bulge in system / reservoir) **NO**

D. Gravity Flow Pipe

(THE DEPARTMENT TYPICALLY USES THE HAZEN-WILLIAM'S FORMULA FOR A GRAVITY FLOW PIPE SYSTEM)

1. Does the system involve a gravity flow pipe? **NO**

E. Gravity Flow Canal or Ditch

(THE DEPARTMENT TYPICALLY USES MANNING'S FORMULA FOR CANALS AND DITCHES)

1. Is a gravity flow canal or ditch used to convey the water as part of the distribution system? **YES**

If "NO", items 2 through 4 relating to this section may be deleted.

2. Complete the table:

CANAL OR DITCH TYPE (MATERIAL)	TOP WIDTH OF CANAL OR DITCH	BOTTOM WIDTH OF CANAL OR DITCH	DEPTH	"N" FACTOR	AMOUNT OF FALL	LENGTH OF CANAL / DITCH	SLOPE	COMPUTED RATE (IN CFS)
Earth; straight and uniform	**20.7**	**8.4 ft**	**3.5 ft**	**0.025**	**0.5 ft**	**930 ft**	**0.000538**	**120.8 CFS**

3. Provide calculations:

Canal dimensions were determined from the Lidar data set. The maximum recorded measurement at the gauge (#13223000) was 121 CFS on 8/29/1986.

Ditch Capacity Calcualtor
using Manning's Formula

Data Entry (fill in underlined blanks)

Top Width =	20.7	feet			
Bottom Width =	8.4	feet			
Depth =	3.5	feet			
Fall =	0.5	feet	per	930	feet of distance
Grade =	0.000538	, or	0.1%		
n Factor =	0.025				

Results calculated

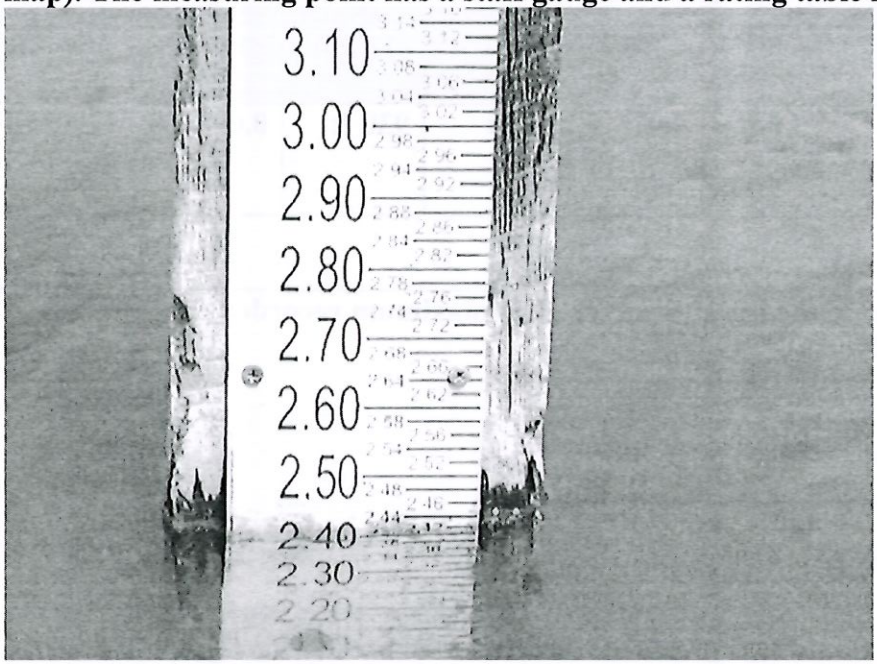
Area of cross-section =	50.925	square feet
Wetted Perimeter =	22.55238	feet
Hydraulic Radius =	2.258076	
Velocity =	2.372	feet per second
Calculated Ditch Capacity =	**120.8**	**cubic feet per second**

2. J.H. Canal

4. If an actual measurement was taken, provide the following:

DATE OF MEASUREMENT	WHO MADE THE MEASUREMENT	MEASUREMENT METHOD	MEASURED QUANTITY OF WATER (IN CFS)
6/29/1986	**OWRD data for gauge #13223000 (maximum recorded at gauge)**	**Gauging station**	**121 CFS**
5/5/2016	**Randy Kinney and Nancy Rorick**	**Gauge measurement and rating table**	**88.9 CFS**
5/31/2018	**JR Hicks**	**Gauge measurement and rating table**	**72.1 CFS**

The District measures flow in the canal at 0.6 miles downstream of the POD (MP 2 on final proof map). The measuring point has a staff gauge and a rating table from the OWRD.



Staff gauge on 5/5/2016 at MP2.

03/27/97 10:45
OREGON WATER RESOURCES DEPARTMENT

#13223000 J-H Canal nr Hope, OR

Rating Table 10 from 10/01/96 00:00 Scale Offset = 0.00

developed at the end of the 1996 water year
Note: Table is expanded rectilinearly from 1.00 to 1.10 feet

DISCHARGE IN CUBIC FEET PER SECOND

gage	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
1.0	0*	.190	.380	.570	.760	.953	1.14	1.33	1.52	1.71
1.1	1.90*	2.06	2.23	2.41	2.61	2.81	3.04	3.26	3.53	3.81
1.2	4.10*	4.33	4.56	4.84	5.10	5.39	5.68	5.99	6.31	6.65
1.3	7.00*	7.35	7.71	8.09	8.49	8.89	9.32	9.76	10.2	10.7
1.4	11.2*	11.7	12.3	12.8	13.4	14.0	14.7	15.3	16.0	16.7
1.5	17.4*	18.1	18.8	19.5	20.2	20.9	21.7	22.5	23.3	24.1
1.6	25.0*	25.7	26.4	27.1	27.9	28.6	29.4	30.2	31.0	31.8
1.7	32.6*	33.3	34.0	34.8	35.5	36.3	37.0	37.8	38.6	39.4
1.8	40.2*	40.9	41.6	42.4	43.1	43.9	44.7	45.4	46.2	47.0
1.9	47.8*	48.5	49.3	50.0	50.8	51.5	52.3	53.0	53.8	54.6
2.0	55.4*	56.1	56.9	57.6	58.4	59.1	59.9	60.7	61.4	62.2
2.1	63.0*	63.7	64.5	65.2	66.0	66.7	67.5	68.3	69.0	69.8
2.2	70.5*	71.3	72.1	72.8	73.6	74.3	75.1	75.9	76.6	77.4
2.3	78.2*	78.9	79.7	80.4	81.2	82.0	82.7	83.6	84.2	85.0
2.4	85.8*	86.6	87.4	88.1	88.9	89.7	90.5*	92.8	95.2	97.6
2.5	100.0*	102.0	103.9	106.0	108.0	110.1	112.2	114.4	116.5	118.7
2.6	121.0*	123.0	125.0	127.0	129.1	131.2	133.3	135.4	137.6	139.8
2.7	142.0*									

Rating table developed for the J-H canal by OWRD. The water-level was measured at 2.44 feet on the gauge. Based on the measurement, the table shows the flow rate at 88.9 CFS on May 5, 2016.

SECTION 4 – 3. Farmers Canal
SYSTEM DESCRIPTION

Are there multiple PODs? **YES**

If *"YES"* you will need to copy and complete Sections 4B through 4E for each POD.

POD Name or Number this section describes (only needed if there is more than one):

3. Farmers Canal

A. Place of Use

1. Is the right for municipal use? **NO**

If "YES" the table below may be deleted.

TWP	RNG	MER	SEC	QQ	GLOT	DLC	USE	IF IRRIGATION, # PRIMARY ACRES	IF IRRIGATION, # SUPPLEMENTAL ACRES
See attached tabulation									
Total Acres Irrigated									

Reminder: The map associated with this claim must identify Donation Land Claims (DLC), Government Lots (GLot), Quarter Quarters (QQ), and if for irrigation, the number of acres irrigated within each projected DLC, GLot, and QQ.

B. Diversion and Delivery System Information

Provide the following information concerning the diversion and delivery system. Information provided must describe the equipment used to transport and apply the water from the point of diversion to the place of use.

1. Is a pump used? **NO**

7. Is the distribution system piped? **NO**

12. Additional notes or comments related to the system:

Water is diverted out of the Malheur River into the Farmers Canal through a 48-inch canal gate (MP3 on final proof map). Return from VOID also drains into the Farmers Canal. The VOID measures inflow into the Farmers Canal at Kings Drain and Eagle Pitcher (flow calculations in Appendix A). The Farmers Canal is 2.12 miles long. The Farmers Canal discharges into Bully Creek. One lateral comes off the Farmers Canal and discharges into the Bully Creek Ditch.

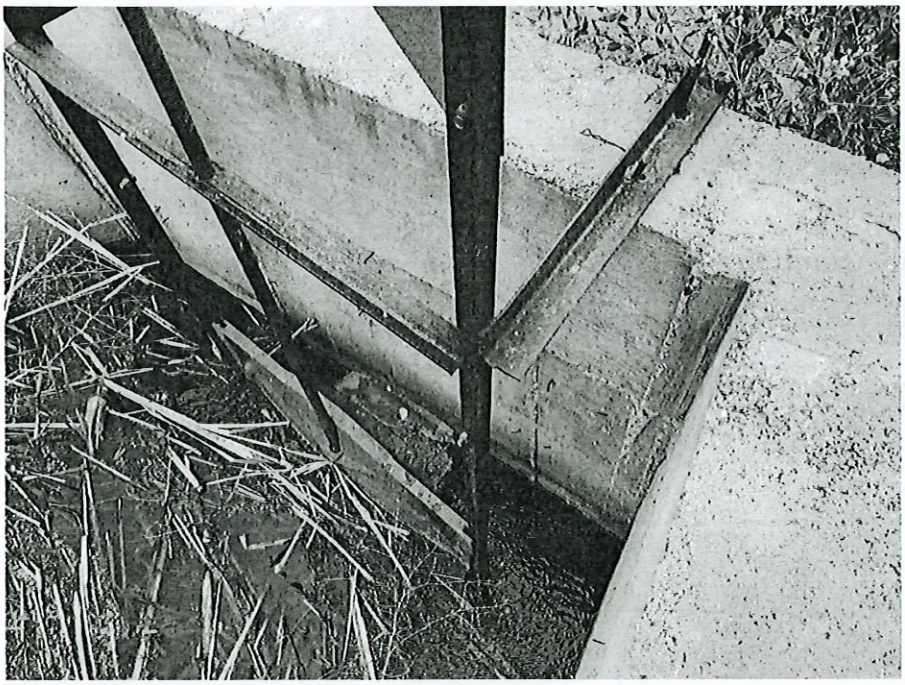


Photo of the Farmers Canal head gate.

C. Storage

1. Does the distribution system include in-system storage (e.g. storage tank, bulge in system / reservoir) **NO**

D. Gravity Flow Pipe

(THE DEPARTMENT TYPICALLY USES THE HAZEN-WILLIAM'S FORMULA FOR A GRAVITY FLOW PIPE SYSTEM)

1. Does the system involve a gravity flow pipe? **NO**

If "NO", items 2 through 4 relating to this section may be deleted.

Attach measurement notes.

E. Gravity Flow Canal or Ditch

(THE DEPARTMENT TYPICALLY USES MANNING'S FORMULA FOR CANALS AND DITCHES)

1. Is a gravity flow canal or ditch used to convey the water as part of the distribution system? **YES**

If "NO", items 2 through 4 relating to this section may be deleted.

2. Complete the table:

Canal or Ditch Type (material)	Top Width of Canal or Ditch	Bottom Width of Canal or Ditch	Depth	"N" Factor	Amount of Fall	Length of Canal / Ditch	Slope	Computed Rate (in cfs)
Earth; straight and uniform	**19.1 ft**	**6 ft**	**3 ft**	**0.025 ft**	**0.19 ft**	**942 ft**	**0.000202**	**47.8 cfs**

3. Provide calculations:

The channel dimensions were determined from lidar data.

Ditch Capacity Calcualtor

using Manning's Formula

Data Entry (fill in underlined blanks)

Top Width =	19.1	feet			
Bottom Width =	6	feet			
Depth =	3	feet			
Fall =	0.19	feet	per	942	feet of distance
Grade =	0.000202	, or	0.0%		
n Factor =	0.025				

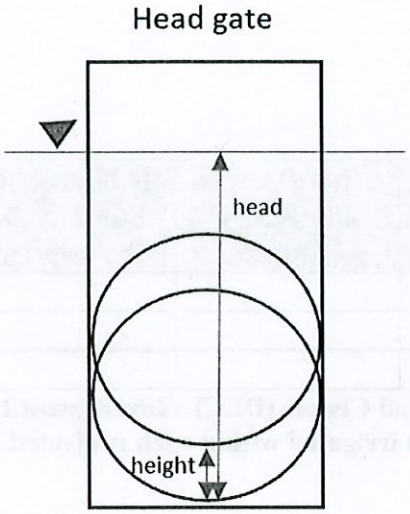
Results calculated

Area of cross-section =	37.65	square feet
Wetted Perimeter =	20.40868	feet
Hydraulic Radius =	1.844803	
Velocity =	1.270	feet per second
Calculated Ditch Capacity =	**47.8**	**cubic feet per second**

The maximum historical reading for the gauge on the Farmers Canal was 50 CFS on 6/26/1941.

4. If an actual measurement was taken, provide the following:

DATE OF MEASUREMENT	WHO MADE THE MEASUREMENT	MEASUREMENT METHOD	MEASURED QUANTITY OF WATER (IN CFS)
8/10/2018	**J.R. Hicks**	**Tables from Waterman Headgate company**	**32.44 CFS**
6/26/1941	**OWRD gauge data for station 13222000**		**50 CFS**



Water level on upstream side

For a 48-inch-diameter head gate, for head =45 inches and height = 9 inches

Diameter	48	in									
Perimeter	150-13/16	in									
Area (in²)	1,809-9/16	in²									
Area (ft²)	12.57	ft²									
Coefficient of Discharge	0.7										
					41	42	43	44	45	46	
Height (in)	q	Area of Overlap (in²)	Opening Area (in²)	Opening Area (ft²)	(3.417)	(3.500)	(3.583)	(3.667)	(3.750)	(3.833)	(3.
0	3.1416	1,809-9/16	0	0.00	0.000	0.000	0.000	0.000	0.000	0.000	
1	3.0999	1,761-9/16	48	0.33	3.461	3.503	3.545	3.586	3.626	3.666	
2	3.0582	1,713-19/32	95-31/32	0.67	6.920	7.004	7.087	7.169	7.250	7.330	
3	3.0165	1,665-21/32	143-29/32	1.00	10.377	10.502	10.627	10.750	10.871	10.991	1
4	2.9747	1,617-25/32	191-25/32	1.33	13.829	13.996	14.162	14.326	14.488	14.648	1
5	2.9329	1,570	239-9/16	1.66	17.274	17.484	17.691	17.895	18.097	18.297	1
6	2.8909	1,522-5/16	287-1/4	1.99	20.713	20.964	21.212	21.457	21.700	21.940	2
7	2.8489	1,474-25/32	334-25/32	2.32	24.140	24.433	24.722	25.008	25.290	25.570	2
8	2.8067	1,427-11/32	382-7/32	2.65	27.561	27.895	28.225	28.551	28.874	29.193	2
9	2.7644	1,380-1/8	429-7/16	2.98	30.966	31.341	31.712	32.079	32.441	32.799	3
10	2.7219	1,333-1/16	476-1/2	3.31	34.359	34.776	35.187	35.594	35.996	36.394	3
11	2.6791	1,286-7/32	523-11/32	3.63	37.737	38.194	38.646	39.093	39.535	39.972	4
12	2.6362	1,239-5/8	569-15/16	3.96	41.097	41.595	42.087	42.574	43.055	43.531	4
13	2.5931	1,193-9/32	616-9/32	4.28	44.438	44.977	45.509	46.036	46.556	47.070	4

SECTION 4 – 4. GF Canal
SYSTEM DESCRIPTION

Are there multiple PODs? **YES**

If *"YES"* you will need to copy and complete Sections 4B through 4E for each POD.

POD Name or Number this section describes (only needed if there is more than one):

G.F. Canal

A. Place of Use

1. Is the right for municipal use? **NO**

If "YES" the table below may be deleted.

TWP	RNG	MER	SEC	QQ	GLOT	DLC	USE	IF IRRIGATION, # PRIMARY ACRES	IF IRRIGATION, # SUPPLEMENTAL ACRES
See attached tabulation									
Total Acres Irrigated									

Reminder: The map associated with this claim must identify Donation Land Claims (DLC), Government Lots (GLot), Quarter Quarters (QQ), and if for irrigation, the number of acres irrigated within each projected DLC, GLot, and QQ.

B. Diversion and Delivery System Information

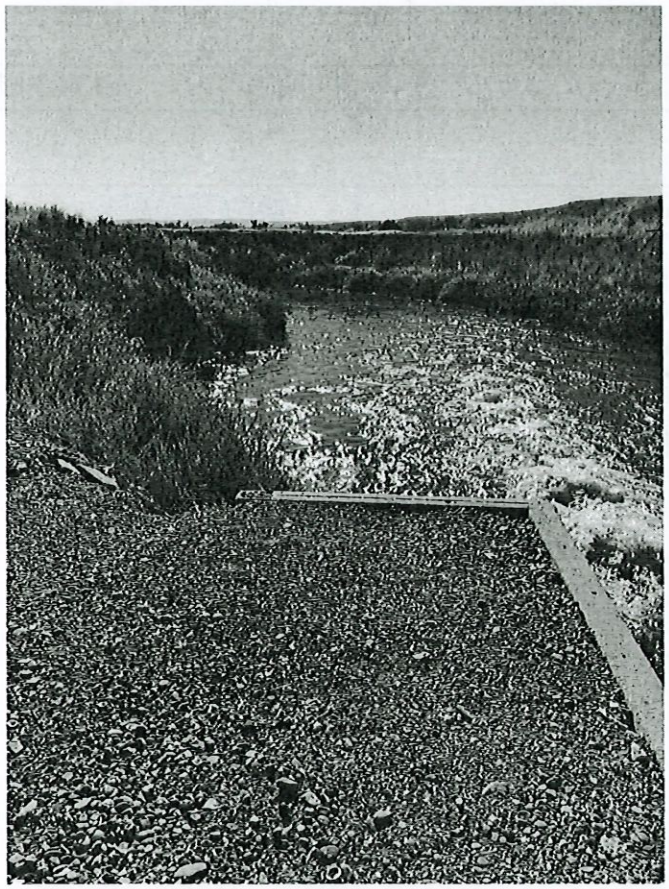
Provide the following information concerning the diversion and delivery system. Information provided must describe the equipment used to transport and apply the water from the point of diversion to the place of use.

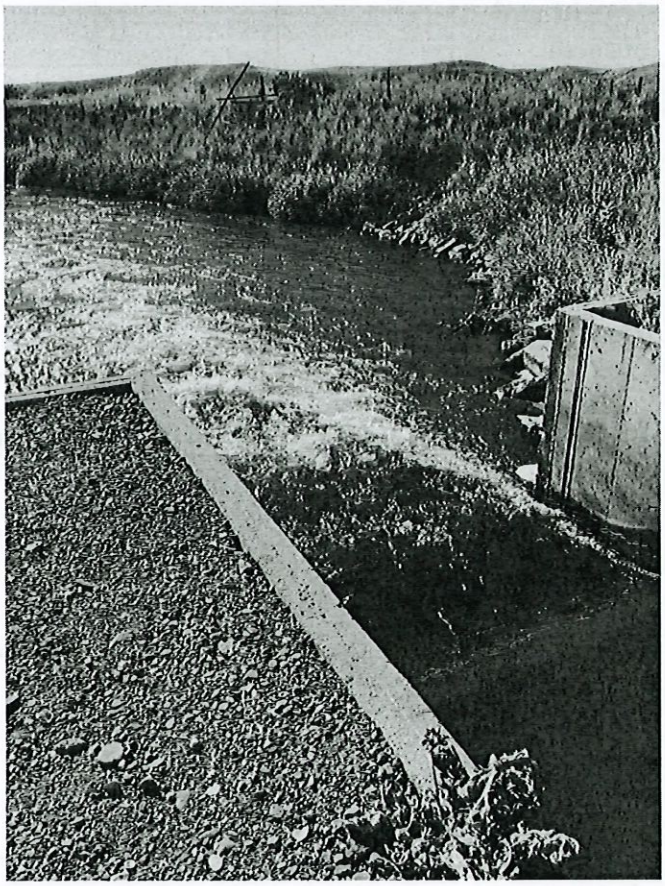
1. Is a pump used? **NO**

7. Is the distribution system piped? **NO**

12. Additional notes or comments related to the system:

Water is diverted out of the Malheur River into the GF Canal. The GF canal is 23.1 miles long. The Willow Creek Feeder canal discharges into the GF Canal. Historic gage data (number 13224000) are available for the GF Canal on the Department's website. The photos below show flow in the GF canal and over the weir (MP4 on final proof map).





C. Storage

1. Does the distribution system include in-system storage (e.g. storage tank, bulge in system / reservoir) **NO**

D. Gravity Flow Pipe

(THE DEPARTMENT TYPICALLY USES THE HAZEN-WILLIAM'S FORMULA FOR A GRAVITY FLOW PIPE SYSTEM)

1. Does the system involve a gravity flow pipe? **NO**

E. Gravity Flow Canal or Ditch

(THE DEPARTMENT TYPICALLY USES MANNING'S FORMULA FOR CANALS AND DITCHES)

1. Is a gravity flow canal or ditch used to convey the water as part of the distribution system? **YES**

2. Complete the table:

Canal or Ditch Type (material)	Top Width of Canal or Ditch	Bottom Width of Canal or Ditch	Depth	"N" Factor	Amount of Fall	Length of Canal / Ditch	Slope	Computed Rate (in cfs)
Earth; straight and uniform	**43 ft**	**29.6 ft**	**2 ft**	**0.025**	**2 ft**	**2004 ft**	**0.000998**	**191.6 cfs**
High water mark of 2.3 on gauge								**134.3 cfs**

3. Provide calculations:

The channel dimensions were determined from lidar data.

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JAN 09 2019
OWRD

Ditch Capacity Calcualtor
using Manning's Formula

Data Entry (fill in underlined blanks)

Top Width =	43	feet			
Bottom Width =	29.6	feet			
Depth =	2	feet			
Fall =	2	feet	per	2004	feet of distance
Grade =	0.000998	, or	0.1%		
n Factor =	0.025				

Results calculated

Area of cross-section =	72.6	square feet
Wetted Perimeter =	43.58428	feet
Hydraulic Radius =	1.665738	
Velocity =	2.639	feet per second
Calculated Ditch Capacity =	**191.6**	**cubic feet per second**

4. If an actual measurement was taken, provide the following:

DATE OF MEASUREMENT	WHO MADE THE MEASUREMENT	MEASUREMENT METHOD	MEASURED QUANTITY OF WATER (IN CFS)
7/15/1984	**OWRD gauge data for number 13224000.**		**171 cfs**
7/9/2018	**Terry Littlejohn**	**Gauge on ramp flume**	**123.1 cfs**
9/20/2018	**Nancy Rorick and Randy Kinney**		**51.6 cfs**

Rating table below is for the ramp flume developed by the OWRD. Gauge height measured by Terry Little John on 7/9/2018 at 2.18 feet.

03/27/97 09:24
OREGON WATER RESOURCES DEPARTMENT

#13224000 GELLERMAN-FROMAN CANAL NR HOPE, OR 1996 WY

Rating Table 13 from 10/01/96 00:00 Scale Offset = 0.00

developed at the end of the 1996 water year
Note: Table is expanded rectilinearly from 0.00 to 0.50 feet

DISCHARGE IN CUBIC FEET PER SECOND

ght	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09	1st diff	2nd diff
0.0	0*	.222	.444	.666	.888	1.11	1.33	1.55	1.78	2.00	2.22	
0.1	2.22	2.44	2.66	2.89	3.11	3.33	3.55	3.77	4.00	4.22	2.22	0
0.2	4.44	4.66	4.88	5.11	5.33	5.55	5.77	5.99	6.22	6.44	2.22	-0
0.3	6.66	6.88	7.10	7.33	7.55	7.77	7.99	8.21	8.44	8.66	2.22	0
0.4	8.88	9.10	9.32	9.55	9.77	9.99	10.2	10.4	10.7	10.9	2.22	0
0.5	11.1*	11.5	11.8	12.2	12.6	13.0	13.4	13.8	14.1	14.5	3.65	1.43
0.6	15.0	15.4	15.8	16.2	16.6	17.0	17.5	17.9	18.3	18.8	4.28	.631
0.7	19.2	19.7	20.1	20.6	21.1	21.5	22.0	22.5	23.0	23.4	4.69	.409
0.8	23.9	24.4	24.9	25.4	25.9	26.4	26.9	27.4	28.0	28.5	5.08	.388
0.9	29.0	29.5	30.1	30.6	31.1	31.7	32.2	32.8	33.3	33.9	5.45	.372
1.0	34.5	35.0	35.6	36.2	36.7	37.3	37.9	38.5	39.1	39.7	5.81	.358
1.1	40.3	40.9	41.5	42.1	42.7	43.3	43.9	44.5	45.2	45.8	6.15	.345
1.2	46.4	47.1	47.7	48.3	49.0	49.6	50.3	50.9	51.6	52.3	6.49	.334
1.3	52.9	53.6	54.3	54.9	55.6	56.3	57.0	57.7	58.3	59.0	6.81	.325
1.4	59.7	60.4	61.1	61.8	62.5	63.3	64.0	64.7	65.4	66.1	7.13	.316
1.5	66.9	67.6	68.3	69.1	69.8	70.5	71.3	72.0	72.8	73.5	7.44	.309
1.6	74.3	75.1	75.8	76.6	77.4	78.1	78.9	79.7	80.5	81.3	7.74	.301
1.7	82.0	82.8	83.6	84.4	85.2	86.0	86.8	87.6	88.4	89.3	8.03	.294
1.8	90.1	90.9	91.7	92.5	93.4	94.2	95.0	95.9	96.7	97.6	8.32	.288
1.9	98.4	99.2	100.1	100.9	101.8	102.7	103.5	104.4	105.3	106.1	8.60	.283
2.0	107.0*	107.9	108.7	109.6	110.5	111.4	112.3	113.2	114.1	114.9	8.84	.338
2.1	115.8	116.7	117.6	118.5	119.5	120.4	121.3	122.2	123.1	124.0	9.11	.268
2.2	125.0	125.9	126.8	127.7	128.7	129.6	130.5	131.5	132.4	133.4	9.37	.264
2.3	134.3	135.3	136.2	137.2	138.2	139.1	140.1	141.0	142.0	143.0	9.63	.259
2.4	144.0	144.9	145.9	146.9	147.9	148.9	149.9	150.9	151.9	152.9	9.89	.255
2.5	153.9	154.9	155.9	156.9	157.9	158.9	159.9	160.9	161.9	163.0	10.1	.251
2.6	164.0	165.0	166.1	167.1	168.1	169.2	170.2	171.2	172.3	173.3	10.4	.248
2.7	174.4	175.4	176.5	177.5	178.6	179.7	180.7	181.8	182.9	183.9	10.6	.244
2.8	185.0	186.1	187.2	188.3	189.3	190.4	191.5	192.6	193.7	194.8	10.9	.241
2.9	195.9	197.0	198.1	199.2	200.3	201.4	202.5	203.6	204.8	205.9	11.1	.238
3.0	207.0*											

SECTION 4 – 5. Bully Creek Ditch
SYSTEM DESCRIPTION

Are there multiple PODs? **YES**

If *"YES"* you will need to copy and complete Sections 4B through 4E for each POD.

POD Name or Number this section describes (only needed if there is more than one):

5. Bully Creek Ditch

A. Place of Use

1. Is the right for municipal use? **NO**

If "YES" the table below may be deleted.

TWP	RNG	MER	SEC	QQ	GLOT	DLC	USE	IF IRRIGATION, # PRIMARY ACRES	IF IRRIGATION, # SUPPLEMENTAL ACRES
See attached tabulation									
Total Acres Irrigated									

Reminder: The map associated with this claim must identify Donation Land Claims (DLC), Government Lots (GLot), Quarter Quarters (QQ), and if for irrigation, the number of acres irrigated within each projected DLC, GLot, and QQ.

B. Diversion and Delivery System Information

Provide the following information concerning the diversion and delivery system. Information provided must describe the equipment used to transport and apply the water from the point of diversion to the place of use.

1. Is a pump used? **NO**

7. Is the distribution system piped? **NO**

12. Additional notes or comments related to the system:

Water is diverted from Bully Creek into the Bully Creek Ditch through a 30-inch diameter head gate.

C. Storage

1. Does the distribution system include in-system storage (e.g. storage tank, bulge in system / reservoir) **NO**

D. Gravity Flow Pipe

(THE DEPARTMENT TYPICALLY USES THE HAZEN-WILLIAM'S FORMULA FOR A GRAVITY FLOW PIPE SYSTEM)

1. Does the system involve a gravity flow pipe? **NO**

Attach measurement notes.

E. Gravity Flow Canal or Ditch

(THE DEPARTMENT TYPICALLY USES MANNING'S FORMULA FOR CANALS AND DITCHES)

1. Is a gravity flow canal or ditch used to convey the water as part of the distribution system? **YES**

If "NO", items 2 through 4 relating to this section may be deleted.

2. Complete the table:

CANAL OR DITCH TYPE (MATERIAL)	TOP WIDTH OF CANAL OR DITCH	BOTTOM WIDTH OF CANAL OR DITCH	DEPTH	"N" FACTOR	AMOUNT OF FALL	LENGTH OF CANAL / DITCH	SLOPE	COMPUTED RATE (IN CFS)
Earth; straight and uniform	**12.6**	**6.7**	**1.5**	**0.025**	**1.3**	**911**	**0.0014**	**34.4 cfs**

3. Provide calculations:

The ditch dimensions were determined from lidar data.

Ditch Capacity Calcualtor
using Manning's Formula

Data Entry (fill in underlined blanks)

Top Width =	12.6	feet			
Bottom Width =	6.7	feet			
Depth =	1.5	feet			
Fall =	1.3	feet	per	911	feet of distance
Grade =	0.001427	, or	0.1%		
n Factor =	0.025				

Results calculated

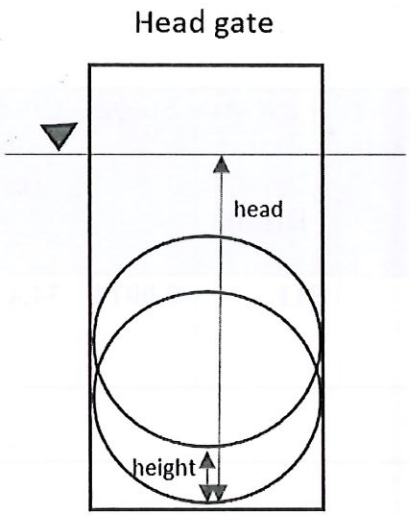
Area of cross-section =	14.475	square feet
Wetted Perimeter =	13.31891	feet
Hydraulic Radius =	1.0868	
Velocity =	2.374	feet per second
Calculated Ditch Capacity =	**34.4**	**cubic feet per second**

4. If an actual measurement was taken, provide the following:

DATE OF MEASUREMENT	WHO MADE THE MEASUREMENT	MEASUREMENT METHOD	MEASURED QUANTITY OF WATER (IN CFS)
5/31/2018	**Randy Kinney & Nancy Rorick**	**Used Waterman's tables for head gate**	**19.44 cfs**

5. Bully Creek Ditch

The head gate was used as the measuring point (MP 5 on final proof map). Measured opening of the head gate (height) at 8 inches and the height of the water above the bottom edge of the head gate (head in inches) at 53 inches. Used table from the Waterman's to calculate flow.



Diameter	30	in	
Perimeter	94-1/4	in	
Area (in²)	706-55/64	in²	
Area (ft²)	4.91	ft²	
Coefficient of Discharge	0.7		

				Head in inches										
				44	45	46	47	48	49	50	51	52	53	54
Height (in)	q	Area of Overlap (in²)	Opening Area (in²)	(3.667)	(3.750)	(3.833)	(3.917)	(4.000)	(4.083)	(4.167)	(4.250)	(4.333)	(4.417)	(4.500)
0	3.1416	706-7/8	-1/64	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
1	3.0749	676-7/8	29-63/64	2.240	2.265	2.290	2.315	2.339	2.364	2.388	2.411	2.435	2.458	2.481
2	3.0082	646-29/32	59-61/64	4.478	4.529	4.579	4.629	4.678	4.726	4.774	4.822	4.869	4.915	4.961
3	2.9413	617-1/32	89-53/64	6.710	6.786	6.861	6.935	7.008	7.081	7.153	7.224	7.295	7.364	7.434
4	2.8741	587-7/32	119-41/64	8.937	9.038	9.138	9.237	9.334	9.431	9.527	9.622	9.716	9.809	9.901
5	2.8067	557-9/16	149-19/64	11.152	11.278	11.403	11.526	11.648	11.769	11.888	12.007	12.124	12.240	12.355
6	2.7389	528-3/32	178-49/64	13.354	13.504	13.654	13.801	13.947	14.092	14.235	14.377	14.517	14.656	14.793
7	2.6706	498-25/32	208-5/64	15.543	15.719	15.893	16.064	16.234	16.403	16.569	16.734	16.897	17.059	17.219
8	2.6017	469-3/4	237-7/64	17.712	17.912	18.110	18.306	18.499	18.691	18.881	19.069	19.255	19.439	19.622
9	2.5322	440-31/32	265-57/64	19.862	20.086	20.308	20.528	20.745	20.960	21.173	21.383	21.592	21.799	22.003
10	2.4619	412-17/32	294-21/64	21.986	22.234	22.480	22.723	22.964	23.202	23.437	23.670	23.901	24.130	24.357
11	2.3907	384-7/16	322-27/64	24.085	24.357	24.626	24.892	25.156	25.416	25.674	25.930	26.183	26.433	26.681
12	2.3186	356-23/32	350-9/64	26.155	26.451	26.743	27.032	27.318	27.601	27.881	28.159	28.434	28.706	28.975

SECTION 4 – 6. Bully Creek Exchange /Willow Creek Pump Canal SYSTEM DESCRIPTION

Are there multiple PODs? **YES**

If *"YES"* you will need to copy and complete Sections 4B through 4E for each POD.

POD Name or Number this section describes (only needed if there is more than one):

6. Bully Creek Exchange / Willow Creek Pump Canal

A. Place of Use

1. Is the right for municipal use? **YES** **NO**

If "YES" the table below may be deleted.

TWP	RNG	MER	SEC	QQ	GLOT	DLC	USE	IF IRRIGATION, # PRIMARY ACRES	IF IRRIGATION, # SUPPLEMENTAL ACRES
See attached tabulation									
Total Acres Irrigated									

Reminder: The map associated with this claim must identify Donation Land Claims (DLC), Government Lots (GLot), Quarter Quarters (QQ), and if for irrigation, the number of acres irrigated within each projected DLC, GLot, and QQ.

B. Diversion and Delivery System Information

Provide the following information concerning the diversion and delivery system. Information provided must describe the equipment used to transport and apply the water from the point of diversion to the place of use.

1. Is a pump used? **NO**

7. Is the distribution system piped? **NO**

6. Bully Creek Exchange/Willow Creek Pump Ditch

12. Additional notes or comments related to the system:

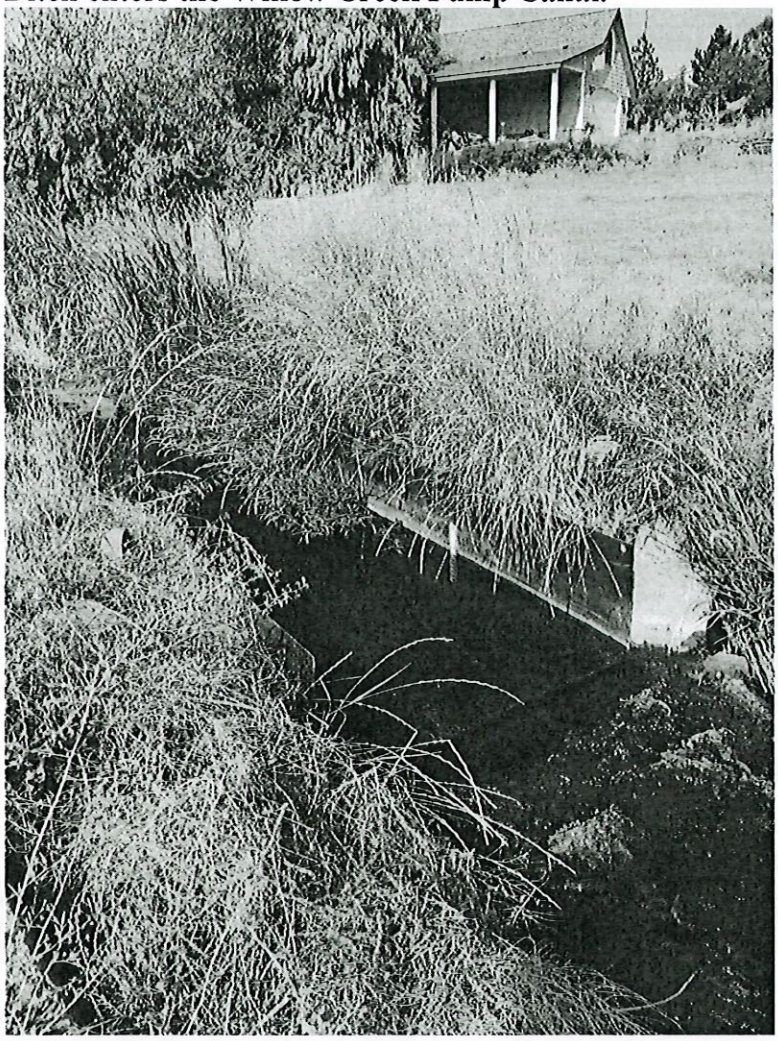
Flow is measured on the Bully Creek Exchange / Willow Creek Pump Ditch at two locations.

<u>Measuring point 6-1</u> Water from VOID 197 canal discharges into the Bully Creek Exchange canal. Water in Lateral 197 originates in Bully Creek Reservoir which contains water from the Malheur River and Bully Creek.

The measuring point is located 0.4 miles upstream of the Bully Creek Exchange Canal. Right below the measuring point water flows into a gravity-flow pipe, then into a natural drainage, and then into the Bully Creek Exchange Canal.

The photo below shows the weir where we measured flow.

Measuring point 6-2 – Ramp flume at Yakima Street North. This is where the Bully Creek Exchange Ditch enters the Willow Creek Pump Canal.



C. Storage

1. Does the distribution system include in-system storage (e.g. storage tank, bulge in system / reservoir) **NO**

D. Gravity Flow Pipe

(THE DEPARTMENT TYPICALLY USES THE HAZEN-WILLIAM'S FORMULA FOR A GRAVITY FLOW PIPE SYSTEM)

1. Does the system involve a gravity flow pipe? **YES**

If "NO", items 2 through 4 relating to this section may be deleted.

2. Complete the table:

PIPE SIZE	PIPE TYPE	"C" FACTOR	AMOUNT OF FALL	LENGTH OF PIPE	SLOPE	COMPUTED RATE OF WATER FLOW (IN CFS)
30 inch	**Plastic**	**145**	**64.6**	**550**	**0.1292**	**231.1 cfs**

3. Provide calculations:

Gravity flow pipe located just below lateral 197 weir.

Pipe Capacity Calcualtor

for pipes flowing full, using the Hazen-Williams Formula

Data Entry (fill in underlined blanks)

Interior Diameter =	30	inches, or	2.5	feet	
Roughness Coefficient (C) =	145				
Fall =	64.6	feet	per	500	feet of distance
Grade =	0.1292	, or	12.9%		

Results calculated

Area of cross-section =	4.908739	square feet
Wetted Perimeter =	7.853982	feet
Hydraulic Radius =	0.625	
Velocity =	47.07275	feet per second
Pipe Capacity =	**231.068**	**cubic feet per second**

4. If an actual measurement was taken, provide the following:

DATE OF MEASUREMENT	WHO MADE THE MEASUREMENT	MEASUREMENT METHOD	MEASURED QUANTITY OF WATER (IN CFS)
n/a			

Attach measurement notes.

E. Gravity Flow Canal or Ditch

(THE DEPARTMENT TYPICALLY USES MANNING'S FORMULA FOR CANALS AND DITCHES)

1. Is a gravity flow canal or ditch used to convey the water as part of the distribution system? **YES**

If "NO", items 2 through 4 relating to this section may be deleted.

2. Complete the table:

	Canal or Ditch Type (material)	Top Width of Canal or Ditch	Bottom Width of Canal or Ditch	Depth	"N" Factor	Amount of Fall	Length of Canal / Ditch	Slope	Computed Rate (in cfs)
Measuring point 6-1 at lateral 197	**Earth; straight and uniform**	**12.9 ft**	**6 ft**	**1 ft**	**0.025**	**0.47 ft**	**348 ft**	**0.001351**	**16.5 cfs**
Measuring point 6-2 at ramp flume	**Earth; straight and uniform**	**9.3 ft**	**5.8 ft**	**1 ft**	**0.025**	**0.72 ft**	**996 ft**	**0.000723**	**10.1 cfs**

3. Provide calculations:

Capacity at measuring point 6-1 - At lateral 197 from field measurements.

Ditch Capacity Calcualtor
using Manning's Formula

Data Entry (fill in underlined blanks)

Top Width =	12.9	feet			
Bottom Width =	6	feet			
Depth =	1	feet			
Fall =	0.47	feet	per	348	feet of distance
Grade =	0.001351	, or	0.1%		
n Factor =	0.025				

Results calculated

Area of cross-section =	9.45	square feet
Wetted Perimeter =	13.18401	feet
Hydraulic Radius =	0.716777	
Velocity =	1.750	feet per second
Calculated Ditch Capacity =	**16.5**	**cubic feet per second**

Capacity at measuring point 6-2 – just upstream of the rmap flume. Channel dimensions based on lidar data.

Ditch Capacity Calcualtor
using Manning's Formula

Data Entry (fill in underlined blanks)

Top Width =	9.3	feet			
Bottom Width =	5.8	feet			
Depth =	1	feet			
Fall =	0.72	feet	per	996	feet of distance
Grade =	0.000723	, or	0.1%		
n Factor =	0.025				

Results calculated

Area of cross-section =	7.55	square feet
Wetted Perimeter =	9.831129	feet
Hydraulic Radius =	0.767969	
Velocity =	1.340	feet per second
Calculated Ditch Capacity =	**10.1**	**cubic feet per second**

4. If an actual measurement was taken, provide the following:

DATE OF MEASUREMENT	WHO MADE THE MEASUREMENT	MEASUREMENT METHOD	MEASURED QUANTITY OF WATER (IN CFS)
5/31/2018 – at measuring point 6-1 at the 197 lateral	**Randy Kinney and Nancy Rorick**	**Measured water height over the weir with portable staff gauge.**	**8.69 cfs**
9/19/2018 – at measuring point 6-1 at the 197 lateral	**Randy Kinney and Nancy Rorick**	**Measured water height over the weir with portable staff gauge.**	**3.21 cfs**
9/18/2018 at measuring point 6-2	**Randy Kinney and Nancy Rorick**	**Measured gauge height on ramp flume**	**4.43**

Live flow measured at the weir on 5/31/2018 at measuring point 6-1 (the 197 lateral)

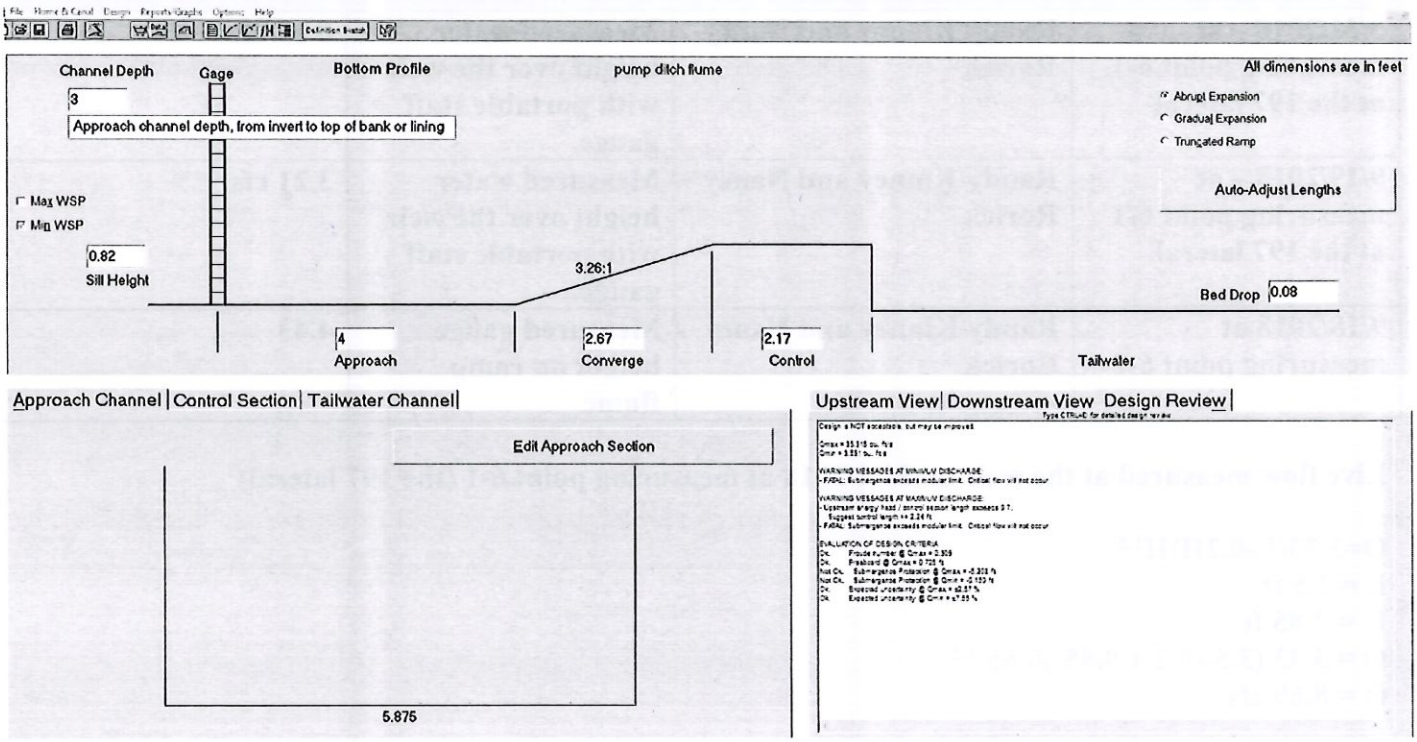
$Q=3.33(L-0.2H)H^{1.5}$
L = 3.5 ft
H = 0.85 ft
$Q = 3.33\ (3.5-(0.2 \times 0.85))0.85^{1.5}$
Q = 8.69 cfs

Live flow measured at the weir on 9/19/2018 at measuring point 6-1 (the 197 lateral)

H = 0.43 ft
$Q = 3.33\ (3.5-(0.2 \times 0.43))0.43^{1.5}$
Q = 3.21 cfs

6. Bully Creek Exchange/Willow Creek Pump Ditch

The flow at measuring point 6-2 was calculated using the BOR program WinFlume 32 based on the dimensions in the diagram below.



On 9/19/2018 the water height measured at the gauge was 0.39 feet and the high-water mark was 0.54 feet. Based on the rating table generated by WinFlume, the live flow was 4.43 cfs and the flow at the high-water mark was 7.35 cfs.

6. Bully Creek Exchange/Willow Creek Pump Ditch

C:\Program Files (x86)\WinFlume\pump ditch 3.Flm - Revision 6

pump ditch flume

Standard Rating Table, Printed: 10/5/2018 2:53:05 PM

Head at Gage, h1 feet	Discharge cfs	Froude Number	Required Head Loss ft	H1/L Ratio	Submerge. Ratio	Warnings
0.1	0.53562	0.01822	0.03599	0.04616	0	5
0.38	4.25583	0.09716	0.09765	0.17783	1.49891	*21
0.39	4.43068	0.0999	0.09923	0.18262	1.56524	*21
0.4	4.60763	0.10261	0.10075	0.18741	1.6284	*21
0.41	4.78762	0.10532	0.10226	0.19221	1.68917	*21
0.42	4.97013	0.10802	0.10375	0.19702	1.74745	*21
0.43	5.15516	0.1107	0.1052	0.20183	1.80342	*21
0.44	5.34266	0.11336	0.10663	0.20664	1.85724	*21
0.45	5.53265	0.11601	0.10803	0.21147	1.90906	*21
0.46	5.72508	0.11864	0.1094	0.2163	1.959	*21
0.47	5.91994	0.12125	0.11075	0.22113	2.00719	*21
0.48	6.11722	0.12385	0.11207	0.22598	2.05374	*21
0.49	6.31727	0.12644	0.11338	0.23082	2.09891	*21
0.5	6.51933	0.129	0.11465	0.23568	2.14247	*21
0.51	6.72375	0.13155	0.1159	0.24054	2.18467	*21
0.52	6.93054	0.13408	0.11713	0.2454	2.2256	*21
0.53	7.13966	0.13659	0.11833	0.25028	2.26532	*21
0.54	7.3511	0.13909	0.11951	0.25515	2.3039	*21
0.55	7.56486	0.14157	0.12068	0.26004	2.34141	*21

SECTION 4 – 7. Nevada
SYSTEM DESCRIPTION

Are there multiple PODs? **YES**

If *"YES"* you will need to copy and complete Sections 4B through 4E for each POD.

POD Name or Number this section describes (only needed if there is more than one):

7. Nevada

A. Place of Use

1. Is the right for municipal use? **NO**

If "YES" the table below may be deleted.

TWP	RNG	MER	SEC	QQ	GLOT	DLC	USE	IF IRRIGATION, # PRIMARY ACRES	IF IRRIGATION, # SUPPLEMENTAL ACRES
See attached tabulation									
Total Acres Irrigated									

Reminder: The map associated with this claim must identify Donation Land Claims (DLC), Government Lots (GLot), Quarter Quarters (QQ), and if for irrigation, the number of acres irrigated within each projected DLC, GLot, and QQ.

B. Diversion and Delivery System Information

Provide the following information concerning the diversion and delivery system. Information provided must describe the equipment used to transport and apply the water from the point of diversion to the place of use.

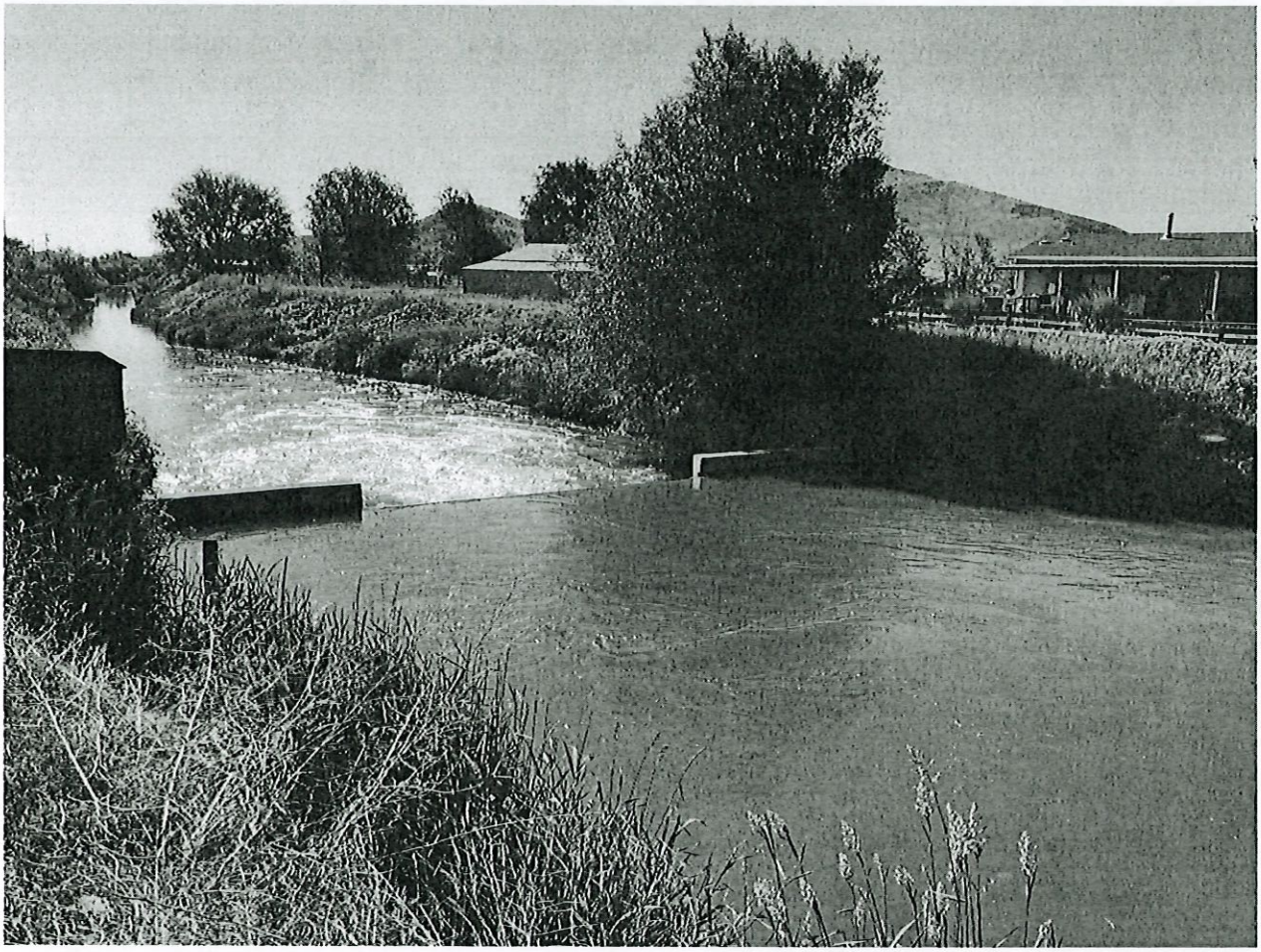
1. Is a pump used? **NO**

Reminder: For pump calculations use the reference information at the end of this document.

7. Is the distribution system piped? **NO**

12. Additional notes or comments related to the system:

Water is diverted out of the Malheur River to the 10.8-mile-long Nevada Canal. The photo below shows the flow measurement weir and gauge (measuring point 7 on final proof map). The department has historic gauge data for the Nevada Canal (number 13233200).



C. Storage

1. Does the distribution system include in-system storage (e.g. storage tank, bulge in system / reservoir) **NO**

D. Gravity Flow Pipe

(THE DEPARTMENT TYPICALLY USES THE HAZEN-WILLIAM'S FORMULA FOR A GRAVITY FLOW PIPE SYSTEM)

1. Does the system involve a gravity flow pipe? **NO**

E. Gravity Flow Canal or Ditch

(THE DEPARTMENT TYPICALLY USES MANNING'S FORMULA FOR CANALS AND DITCHES)

1. Is a gravity flow canal or ditch used to convey the water as part of the distribution system? **YES**

2. Complete the table:

Canal or Ditch Type (material)	Top Width of Canal or Ditch	Bottom Width of Canal or Ditch	Depth	"N" Factor	Amount of Fall	Length of Canal / Ditch	Slope	Computed Rate (in cfs)
Earth; straight and uniform	**30 ft**	**16.6 ft**	**4 ft**	**0.025**	**0.74 ft**	**1602 ft**	**0.000462**	**241.8 cfs**

3. Provide calculations:

Channel dimensions are based on lidar data.

Ditch Capacity Calcualtor

using Manning's Formula

Data Entry (fill in underlined blanks)

Top Width =	30	feet			
Bottom Width =	16.6	feet			
Depth =	4	feet			
Fall =	0.74	feet	per	1602	feet of distance
Grade =	0.000462	, or	0.0%		
n Factor =	0.025				

Results calculated

Area of cross-section =	93.2	square feet
Wetted Perimeter =	32.20641	feet
Hydraulic Radius =	2.893834	
Velocity =	2.594	feet per second
Calculated Ditch Capacity =	**241.8**	**cubic feet per second**

4. If an actual measurement was taken, provide the following:

DATE OF MEASUREMENT	WHO MADE THE MEASUREMENT	MEASUREMENT METHOD	MEASURED QUANTITY OF WATER (IN CFS)
5/22/2018	**Randy Kinney and Nancy Rorick**	**OWRD stream gauge and rating table**	**102.8 CFS**
7/30/1985	**OWRD guage 132333200**		**237 cfs**

There is a gauge on the Nevada Ditch. The flow rate is calculated based on a rating table prepared by the Oregon Water Resources Department. On May 22, 2018 the gauge read 2.28 ft which on the rating table below is 102.8 CFS.

03/27/97 09:27
OREGON WATER RESOURCES DEPARTMENT

#13233200 Nevada Canal 1996 WY

Rating Table 10 from 10/01/96 00:00 Scale Offset = 0.00

developed mar 1997 from temperary rating #10
Note: Table is expanded rectilinearly from 1.00 to 1.10 feet

DISCHARGE IN CUBIC FEET PER SECOND

ght	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09	1st diff	2nd diff
1.0	0*	.550	1.10	1.65	2.20	2.75	3.30	3.85	4.40	4.95	5.50	
1.1	6.50*	5.94	6.41	6.91	7.44	8.02	8.63	9.28	9.97	10.7	6.00	.500
1.2	11.5*	12.0	12.6	13.1	13.7	14.3	15.0	15.6	[illegible]	[illegible]	6.20	.200
1.3	17.7*	18.3	18.9	19.6	20.2	20.9	21.6	22.3	23.0	23.7	6.80	.600
1.4	24.5*	25.2	25.9	26.6	27.3	28.1	28.8	29.6	30.4	31.2	7.50	.700
1.5	32.0*	32.7	33.4	34.2	34.9	35.7	36.5	37.3	38.1	38.9	7.70	.200
1.6	39.7*	40.4	41.2	41.9	42.7	43.5	44.3	45.1	45.9	46.7	7.80	.100
1.7	47.5*	48.3	49.2	50.1	50.9	51.8	52.7	53.6	54.5	55.5	8.90	1.10
1.8	56.4*	57.3	58.1	59.0	59.9	60.7	61.6	62.5	63.5	64.4	8.90	0
1.9	65.3*	66.2	67.2	68.1	69.0	70.0	71.0	71.9	72.9	73.9	9.60	.700
2.0	74.9*	75.8	76.8	77.7	78.7	79.7	80.6	81.6	82.6	83.6	9.70	.100
2.1	84.6*	85.6	86.5	87.5	88.5	89.5	90.5	91.5	92.5	93.5	9.90	.200
2.2	94.5*	95.5	96.5	97.6	98.6	99.7	100.7	101.8	102.8	103.9	10.5	.600
2.3	105.0*	106.1	107.1	108.2	109.3	110.4	111.5	112.6	113.7	114.9	11.0	.500
2.4	116.0*	117.1	118.2	119.2	120.3	121.4	122.5	123.6	124.8	125.9	11.0	0
2.5	127.0*	128.2	129.4	130.5	131.7	132.9	134.1	135.3	136.6	137.8	12.0	1.00
2.6	139.0*	140.2	141.4	142.5	143.7	144.9	146.1	147.3	148.6	149.8	12.0	0
2.7	151.0*	152.2	153.4	154.5	155.7	156.9	158.1	159.3	160.6	161.8	12.0	0
2.8	163.0*	164.3	165.6	166.8	168.1	169.4	170.7	172.0	173.4	174.7	13.0	1.00
2.9	176.0*	177.4	178.8	180.1	181.5	182.9	184.3	185.7	187.2	188.6	14.0	1.00
3.0	190.0*	191.4	192.8	194.1	195.5	196.9	198.3	199.7	201.2	202.6	14.0	0
3.1	204.0*	205.4	206.8	208.1	209.5	210.9	212.3	213.7	215.2	216.6	14.0	0
3.2	218.0*	219.4	220.8	222.2	223.5	224.9	226.3	227.8	229.2	230.6	14.0	0
3.3	232.0*	233.4	234.8	236.2	237.6	238.9	240.4	241.8	243.2	244.6	14.0	0
3.4	246.0*	247.4	248.8	250.2	251.6	253.0	254.4	255.8	257.2	258.6	14.0	.026
3.5	260.0	261.4	262.9	264.3	265.7	267.2	268.6	270.1	271.5	273.0	14.4	.371
3.6	274.4	275.9	277.3	278.8	280.3	281.8	283.2	284.7	286.2	287.7	14.8	.370
3.7	289.2	290.7	292.2	293.7	295.2	296.7	298.2	299.7	301.3	302.8	15.1	.369
3.8	304.3	305.9	307.4	308.9	310.5	312.0	313.6	315.1	316.7	318.3	15.5	.368
3.9	319.8	321.4	323.0	324.6	326.1	327.7	329.3	330.9	332.5	334.1	15.9	.367
4.0	335.7*											

* skeletal rating point

SECTION 4 – 8. Willow Creek Feeder Canal
SYSTEM DESCRIPTION

Are there multiple PODs? **YES**

If *"YES"* you will need to copy and complete Sections 4B through 4E for each POD.

POD Name or Number this section describes (only needed if there is more than one):

8. Willow Creek Feeder Canal

A. Place of Use

1. Is the right for municipal use? **YES** **NO**

If "YES" the table below may be deleted.

TWP	RNG	MER	SEC	QQ	GLOT	DLC	USE	IF IRRIGATION, # PRIMARY ACRES	IF IRRIGATION, # SUPPLEMENTAL ACRES
See attached tabulation									
Total Acres Irrigated									

Reminder: The map associated with this claim must identify Donation Land Claims (DLC), Government Lots (GLot), Quarter Quarters (QQ), and if for irrigation, the number of acres irrigated within each projected DLC, GLot, and QQ.

B. Diversion and Delivery System Information

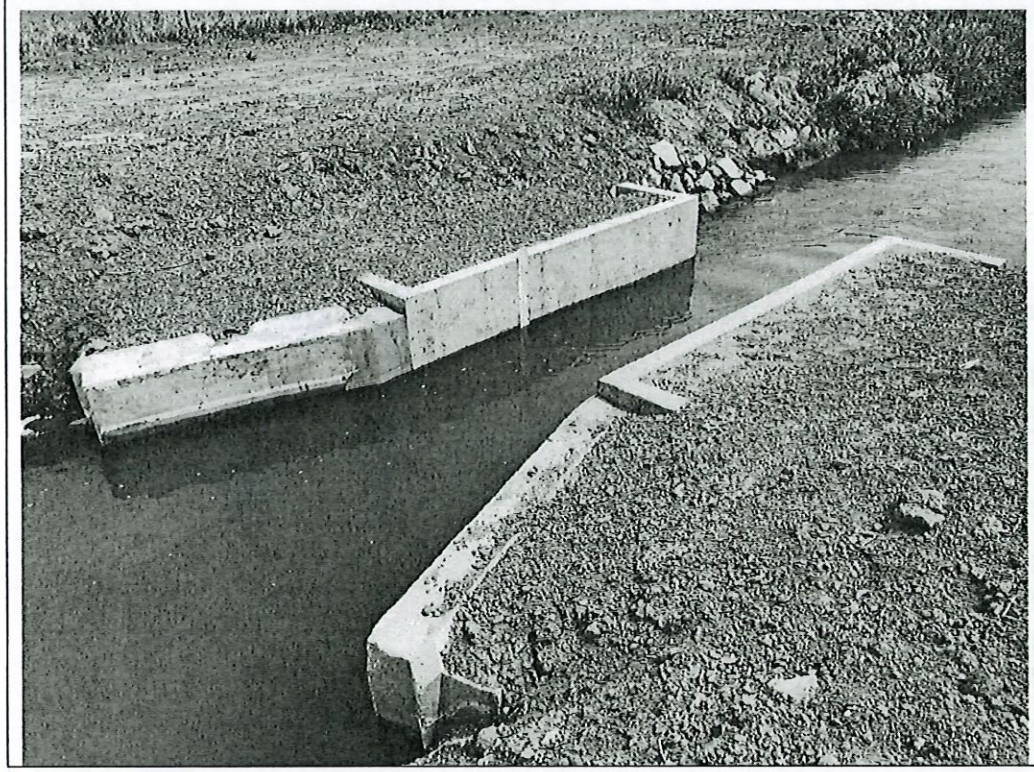
Provide the following information concerning the diversion and delivery system. Information provided must describe the equipment used to transport and apply the water from the point of diversion to the place of use.

1. Is a pump used? **NO**

7. Is the distribution system piped? **NO**

12. Additional notes or comments related to the system:

The Willow Creek valley northwest of Vale is irrigated with water from the Vale Main Canal. At the upper end of the Vale District the canal flows into Willow Creek. Vale water also reaches Willow Creek from drains, field runoff, and return flow from ditches. This return flow from Vale is re-diverted at the Willow Creek Point of Diversion. The picture shows the ramp flume installed by WID to measure flow (MP8 on final proof map).



C. Storage

1. Does the distribution system include in-system storage (e.g. storage tank, bulge in system / reservoir) **NO**

D. Gravity Flow Pipe

(THE DEPARTMENT TYPICALLY USES THE HAZEN-WILLIAM'S FORMULA FOR A GRAVITY FLOW PIPE SYSTEM)

1. Does the system involve a gravity flow pipe? **NO**

Attach measurement notes.

E. Gravity Flow Canal or Ditch

(THE DEPARTMENT TYPICALLY USES MANNING'S FORMULA FOR CANALS AND DITCHES)

1. Is a gravity flow canal or ditch used to convey the water as part of the distribution system? **YES**

2. Complete the table:

CANAL OR DITCH TYPE (MATERIAL)	TOP WIDTH OF CANAL OR DITCH	BOTTOM WIDTH OF CANAL OR DITCH	DEPTH	"N" FACTOR	AMOUNT OF FALL	LENGTH OF CANAL / DITCH	SLOPE	COMPUTED RATE (IN CFS)
Earth; straight and uniform	**12.8**	**5.5**	**2.5**	**0.025**	**2**	**2297**	**0.000871**	**54.8 cfs**

3. Provide calculations:

The channel dimensions were determined from lidar data.

Ditch Capacity Calcualtor

using Manning's Formula

Data Entry (fill in underlined blanks)

Top Width =	12.8	feet			
Bottom Width =	5.5	feet			
Depth =	2.5	feet			
Fall =	2	feet	per	2297	feet of distance
Grade =	0.000871	, or	0.1%		
n Factor =	0.025				

Results calculated

Area of cross-section =	22.875	square feet
Wetted Perimeter =	14.34816	feet
Hydraulic Radius =	1.594281	
Velocity =	2.394	feet per second
Calculated Ditch Capacity =	**54.8**	**cubic feet per second**

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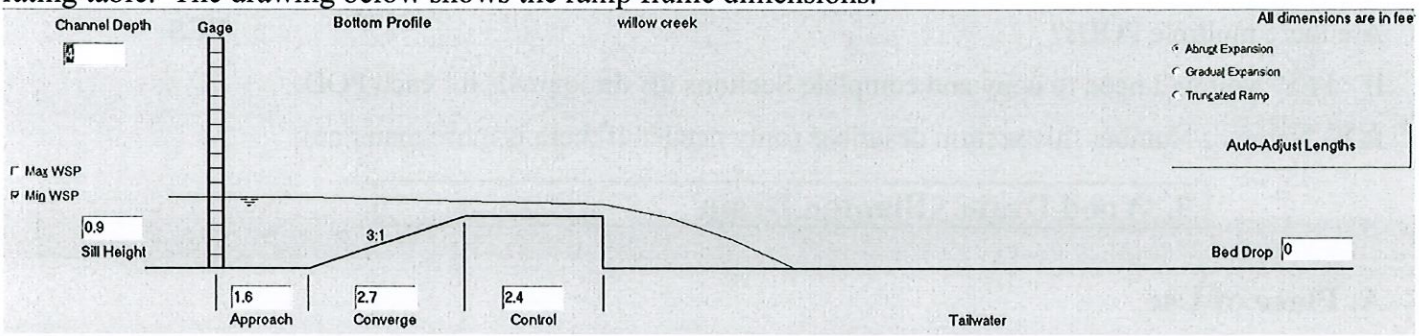
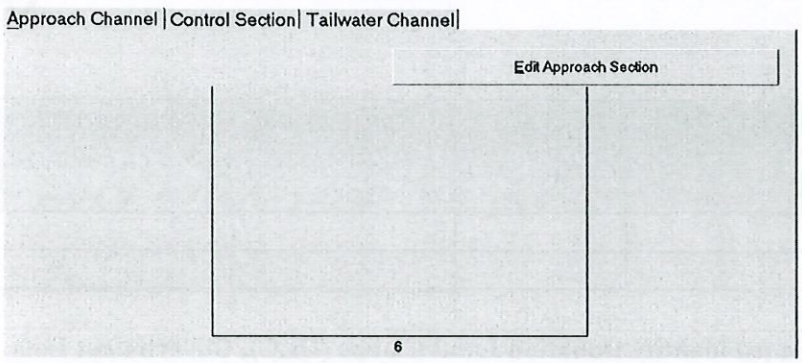
4. If an actual measurement was taken, provide the following:

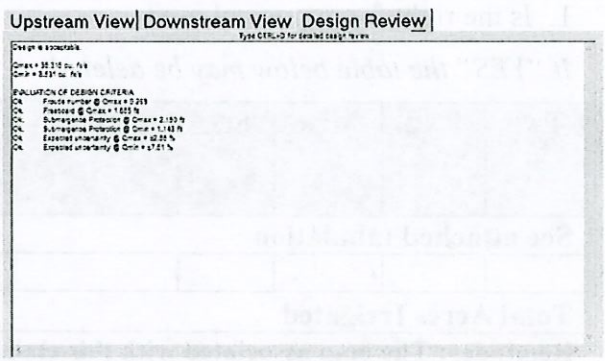
DATE OF MEASUREMENT	WHO MADE THE MEASUREMENT	MEASUREMENT METHOD	MEASURED QUANTITY OF WATER (IN CFS)
5/30/2018	**Randy Kinney and Nancy Rorick**	**Ramp flume**	**26.2 CFS**

8. Willow Creek Feeder Canal

The flow was measured at the ramp flume constructed by WID prior to the 2018 irrigation season. The district used WinFlume (a computer program developed by the BOR) to design the flume and to provide a rating table. The drawing below shows the ramp flume dimensions.







On May 30, 2018 the water level as measured on the gauge was 1.2 feet. The rating table generated by WinFlume shows that the flow was 26.2 CFS.

Table Choices | Rating Table | H-Q Graph | Ditchrider's Table

Head at Gage, h1 feet	Discharge cfs	Froude Number	Required Head Loss ft	H1/L Ratio	Submergence Ratio
0.400	4.7	0.093	0.101	0.169	0.000
0.500	6.6	0.117	0.115	0.213	0.000
0.600	8.8	0.140	0.127	0.256	0.000
0.700	11.2	0.162	0.136	0.301	0.000
0.800	13.8	0.183	0.145	0.346	0.000
0.900	16.6	0.202	0.152	0.391	0.000
1.000	19.6	0.220	0.159	0.437	0.000
1.100	22.8	0.237	0.165	0.483	0.000
1.200	26.2	0.253	0.170	0.529	0.000
1.300	29.8	0.268	0.175	0.576	0.000
1.400	33.6	0.283	0.179	0.623	0.000

SECTION 4 – 9. Wood Drain/Blanton Drain SYSTEM DESCRIPTION

Are there multiple PODs? **YES**

If *"YES"* you will need to copy and complete Sections 4B through 4E for each POD.

POD Name or Number this section describes (only needed if there is more than one):

9. Wood Drain / Blanton Drain

A. Place of Use

1. Is the right for municipal use? **NO**

If "YES" the table below may be deleted.

TWP	RNG	MER	SEC	QQ	GLOT	DLC	USE	IF IRRIGATION, # PRIMARY ACRES	IF IRRIGATION, # SUPPLEMENTAL ACRES
See attached tabulation									
Total Acres Irrigated									

Reminder: The map associated with this claim must identify Donation Land Claims (DLC), Government Lots (GLot), Quarter Quarters (QQ), and if for irrigation, the number of acres irrigated within each projected DLC, GLot, and QQ.

B. Diversion and Delivery System Information

Provide the following information concerning the diversion and delivery system. Information provided must describe the equipment used to transport and apply the water from the point of diversion to the place of use.

1. Is a pump used? **NO**

Reminder: For pump calculations use the reference information at the end of this document.

7. Is the distribution system piped? **NO**

12. Additional notes or comments related to the system:

Water from the Old Owyhee Ditch discharges directly into the Wood Drain. When the water is high in the Old Owyhee Ditch it backs up the Nevada Canal and is used by WID for irrigation. Water from the Wood Drain flows into the Blanton Drain and then into the Blanton Canal. Water from the Blanton Canal is used to irrigate lands north and northwest of Ontario.

Water flowing over the weir at the Wood Drain (measuring point 9 on the final proof map).

Downstream side of the weir, showing water from the Old Owyhee Ditch flowing into Wood Drain.

C. Storage

1. Does the distribution system include in-system storage (e.g. storage tank, bulge in system / reservoir) **NO**

D. Gravity Flow Pipe

(THE DEPARTMENT TYPICALLY USES THE HAZEN-WILLIAM'S FORMULA FOR A GRAVITY FLOW PIPE SYSTEM)

1. Does the system involve a gravity flow pipe? **NO**

Attach measurement notes.

E. Gravity Flow Canal or Ditch

(THE DEPARTMENT TYPICALLY USES MANNING'S FORMULA FOR CANALS AND DITCHES)

1. Is a gravity flow canal or ditch used to convey the water as part of the distribution system? **YES**

If "NO", items 2 through 4 relating to this section may be deleted.

2. Complete the table:

CANAL OR DITCH TYPE (MATERIAL)	TOP WIDTH OF CANAL OR DITCH	BOTTOM WIDTH OF CANAL OR DITCH	DEPTH	"N" FACTOR	AMOUNT OF FALL	LENGTH OF CANAL / DITCH	SLOPE	COMPUTED RATE (IN CFS)
Earth; straight and uniform	**13.3**	**7.6**	**1**	**0.025**	**1.5 feet**	**570 feet**	**0.002632**	**26.7 cfs**

3. Provide calculations:

Based on ditch dimension obtained from Lidar Data

Ditch Capacity Calcualtor
using Manning's Formula

Data Entry (fill in underlined blanks)

Top Width =	13.3	feet			
Bottom Width =	7.6	feet			
Depth =	1	feet			
Fall =	1.5	feet	per	570	feet of distance
Grade =	0.002632	, or	0.3%		
n Factor =	0.025				

Results calculated

Area of cross-section =	10.45	square feet
Wetted Perimeter =	13.6407	feet
Hydraulic Radius =	0.76609	
Velocity =	2.553	feet per second
Calculated Ditch Capacity =	**26.7**	**cubic feet per second**

4. If an actual measurement was taken, provide the following:

DATE OF MEASUREMENT	WHO MADE THE MEASUREMENT	MEASUREMENT METHOD	MEASURED QUANTITY OF WATER (IN CFS)
9/20/2018	**Randy Kinney and Nancy Rorick**	**Rectangular weir**	**36.61 cfs**

$Q=3.33(L-0.2H)H^{1.5}$
L = 5.3 feet
H = 1.7 feet
$Q = 3.33(5.3-(0.2 \times 1.7))1.7^{1.5}$
Q = 36.61 CFS

SECTION 5

CONDITIONS

All conditions contained in the permit, permit amendment, or any extension final order shall be addressed. Reports that do not address all performance related conditions will be returned.

1. Time Limits:

Permits and any extension final orders contain any or all of the following dates: the date when the actual construction work was to begin, the date when the construction was to be completed, and the date when the complete application of water to the proposed use was to be completed. These dates may be referred to as ABC dates. Describe how the water user has complied with each of the development timelines established in the permit or permit extension of time:

	Date from Permit	Date Accomplished*	Description of Actions Taken by Water User to Comply with the Time Limits
Issuance Date	**April 25, 1950**		
Begin construction (A)	**April 25, 1950**		
Complete construction (B)	**October 1, 1951**	**4/25/1950**	**Historic aerial photographs show that the feeder canal was installed by 1943.**
Complete application of water (C)	**October 1, 1952**	**Irrigation season 1950**	**The 1943 and 1954 aerial photographs show the canal installed and lands under irrigation.**

* MUST BE WITHIN PERIOD BETWEEN PERMIT OR ANY EXTENSION FINAL ORDER ISSUANCE AND THE DATE TO COMPLETELY APPLY WATER

2. Is there an extension final order(s)? **NO**

3. Measurement Conditions:

a. Does the permit, permit amendment, or any extension final order require the installation of a meter or approved measuring device? **NO**

4. Recording and reporting conditions

a. Is the water user required to report the water use to the Department? **NO**

5. Fish Screening

a. Are any points of diversion required to be screened to prevent fish from entering the point of diversion? **NO**

6. By-pass Devices

a. Are any points of diversion required to have a by-pass device to prevent fish from entering the point of diversion? **NO**

11. Other conditions required by permit, permit amendment final order, or extension final order:

a. Was the water user required to restore the riparian area if it was disturbed? **NO**

b. Was a fishway required? **NO**

c. Was submittal of a water management and conservation plan required? **NO**

d. Other conditions? **NO**

If "YES" to any of the above, identify the condition and describe the water user's actions to comply with the condition(s):

SECTION 6

ATTACHMENTS

Provide a list of any additional documents you are attaching to this report:

ATTACHMENT NAME	DESCRIPTION
	BOR contract
Map 1	**Overview of source reservoirs for the return flow**
Map 2	**Vale Oregon Irrigation District**
Map 3	**Owyhee Irrigation District**
Map 4	**VOID and Owyhee PODs and Canals that deliver return flow to WID.**
Map 5	**Delivery system for return flow to WID.**
Map 6	**Delivery system for return flow to WID (base aerial photography USDA 2016).**
Appendix A	**Flow calculations at measuring points.**
Historic aerial photographs	**1943 and 1954 aerial photographs obtained from the University of Oregon map library.**
Tabulation	**Tabulation of irrigated acres.**
Final Proof Maps	**WID west and WID east.**

SECTION 7

CLAIM OF BENEFICIAL USE MAP

The Claim of Beneficial Use Map must be submitted with this claim. Claims submitted without the Claim of Beneficial Use map will be returned. The map shall be submitted on poly film at a scale of 1" = 1320 feet, 1" = 400 feet, or the original full-size scale of the county assessor map for the location.

Provide a general description of the survey method used to prepare the map. Examples of possible methods include, but are not limited to, a traverse survey, GPS, or the use of aerial photos. If the basis of the survey is an aerial photo, provide the source, date, series and the aerial photo identification number.

The mapping was completed using ArcGIS 10.6. The tax lot boundaries, section lines and quarter quarter lines are based on a data set provided by the Malheur County GIS Department. The base aerial photography was the 2016 USDA aerial photograph for Malheur County. Aerial photographs from other years and Google Earth imagery were used to verify field boundaries. The CWRE and District Manager met with all district patrons to verify the lands they irrigate.

Map Checklist

Please be sure that the map you submit includes ALL the items listed below.
(Reminder: Incomplete maps and/or claims may be returned.)

- ☒ Map on polyester film *(waived per conversation with Mary Grainey 12/5/2018)*
- ☒ Appropriate scale (1" = 400 feet, 1" = 1320 feet, or the original full-size scale of the county assessor map)
- ☒ Township, Range, Section, Donation Land Claims, and Government Lots
- ☒ If irrigation, number of acres irrigated within each projected Donation Land Claims, Government Lots, Quarter-Quarters
- ☒ Locations of fish screens and/or fish by-pass devices in relationship to point of diversion
- ☒ Locations of meters and/or measuring devices in relationship to point of diversion or appropriation
- ☒ Conveyance structures illustrated (pumps, reservoirs, pipelines, ditches, etc.)
- ☒ Point(s) of diversion or appropriation (illustrated and coordinates)
- ☒ Tax lot boundaries and numbers
- ☒ Source illustrated if surface water
- ☒ Disclaimer ("This map is not intended to provide legal dimensions or locations of property ownership lines")
- ☒ Application and permit number or transfer number
- ☒ North arrow
- ☒ Legend
- ☒ CWRE stamp and signature

Appendix A

Flow Calculations and Measurements

at Return Flow Points

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Namorf / Vines Gauges

Stream flow on the Malheur River is measured by Idaho Power at the Namorf (upstream) and Vines (downstream). The Namorf gauge is located just downstream of the Vale Main Canal diversion and the Vines gauge is located just upstream of WID's diversions to the Vines, Farmers and JH Canals. The Bureau of Reclamation contract gives credits to VOID for return flow from the Vale Main Canal that enters the Malheur River between the Namorf and Vines gauges. The return flow credits to VOID are calculated by subtracting the flow at Namorf from the flow at Vines.

The charts below show gauging station flow data at Namorf and Vines for the 2017-2018 water year. The first chart (figure 1) shows flow measured at the two gauges and the second chart (figure 2) shows the difference between the flow at Namorf and Vines. The maximum return flow (calculated as the difference in daily mean flow at the two gauges) was 167.1 CFS on 7/23/2018. According to district manager Randy Kinney, this is likely an error. Other maximum return flow values were 95 CFS on 7/22/108 and 73.4 CFS on 7/24/2018.

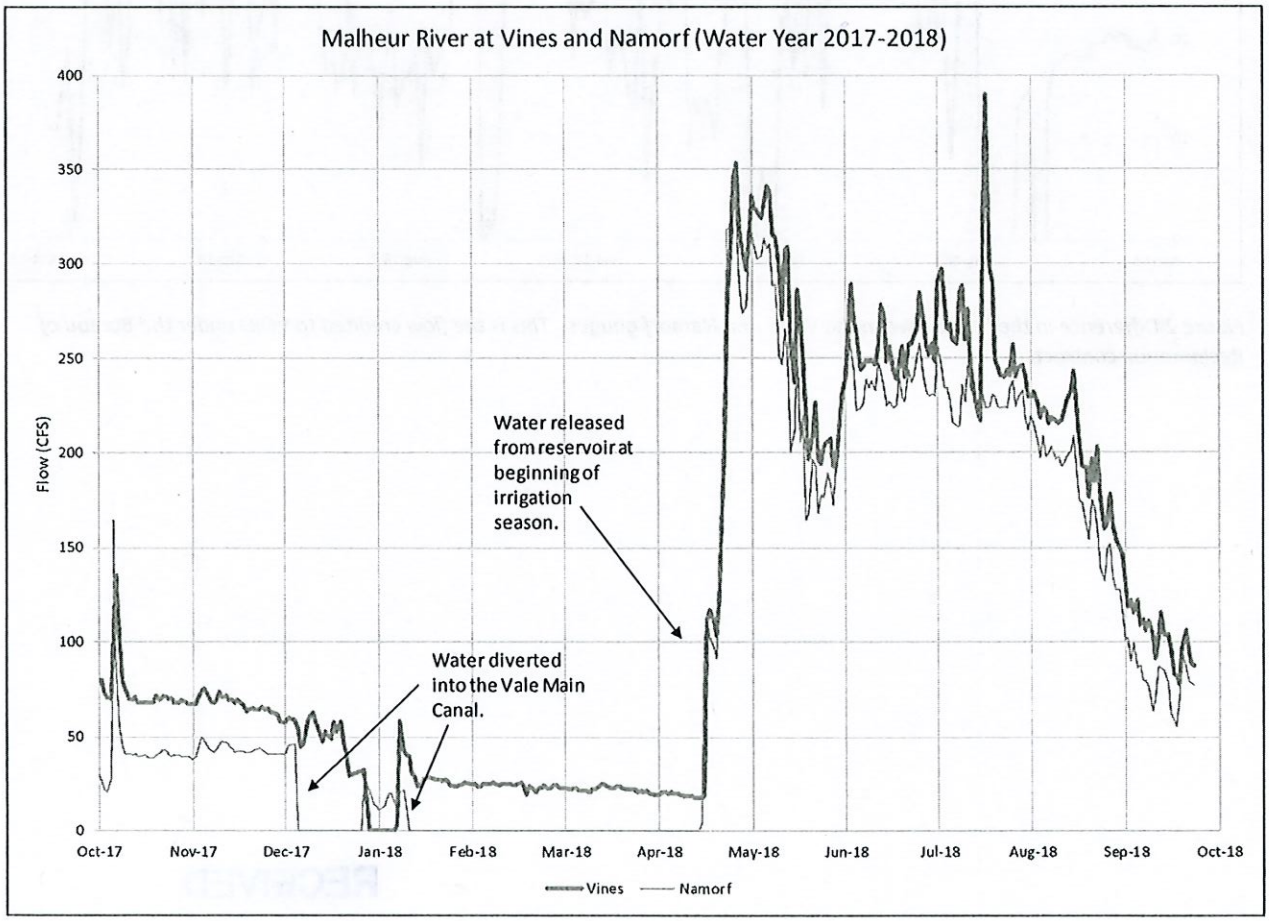


Figure 1 Flow measured by Idaho Power at the Vines and Namorf gauges on the Malheur River during the 2017-2018 water year.

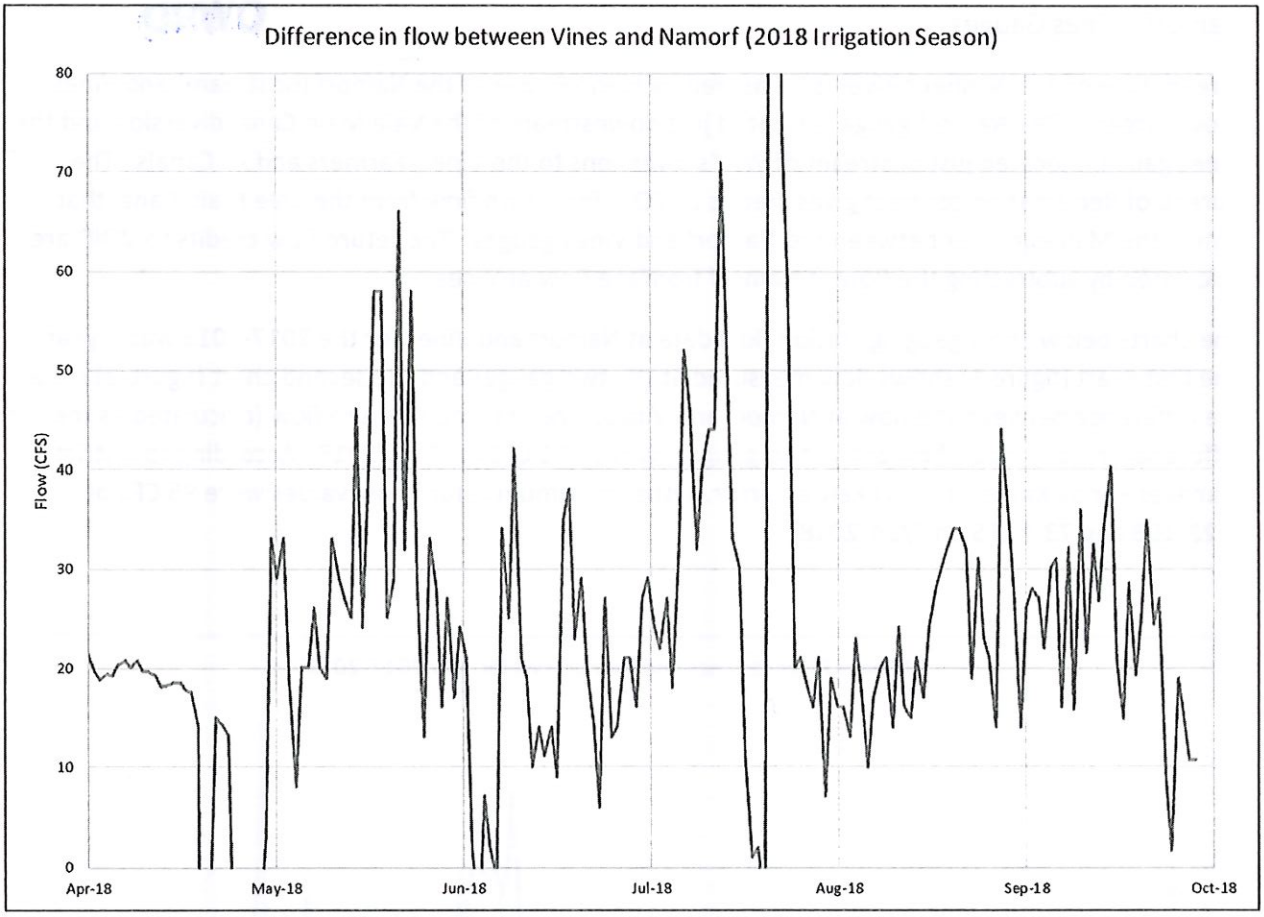


Figure 2 Difference in the flow between the Vines and Namorf gauges. This is the flow credited to VOID under the Bureau of Reclamation contract.

Bully Creek Gauge

A portion of the water that flows into the Vale Main Canal is stored in Bully Creek Reservoir. This water is released from the reservoir for use on lands in the VOID. Idaho Power maintains a gauge on Bully Creek just upstream of where the Farmer's Canal discharges into Bully Creek. The Farmer's Canal marks the boundary between the VOID and WID Districts. The flow measured at the Bully Creek Greek Gauge is credited to VOID as return flow under the Bureau of Reclamation contract. Figure 3 shows flow at the Bully Creek Gauge for the 2017-2018 water year.

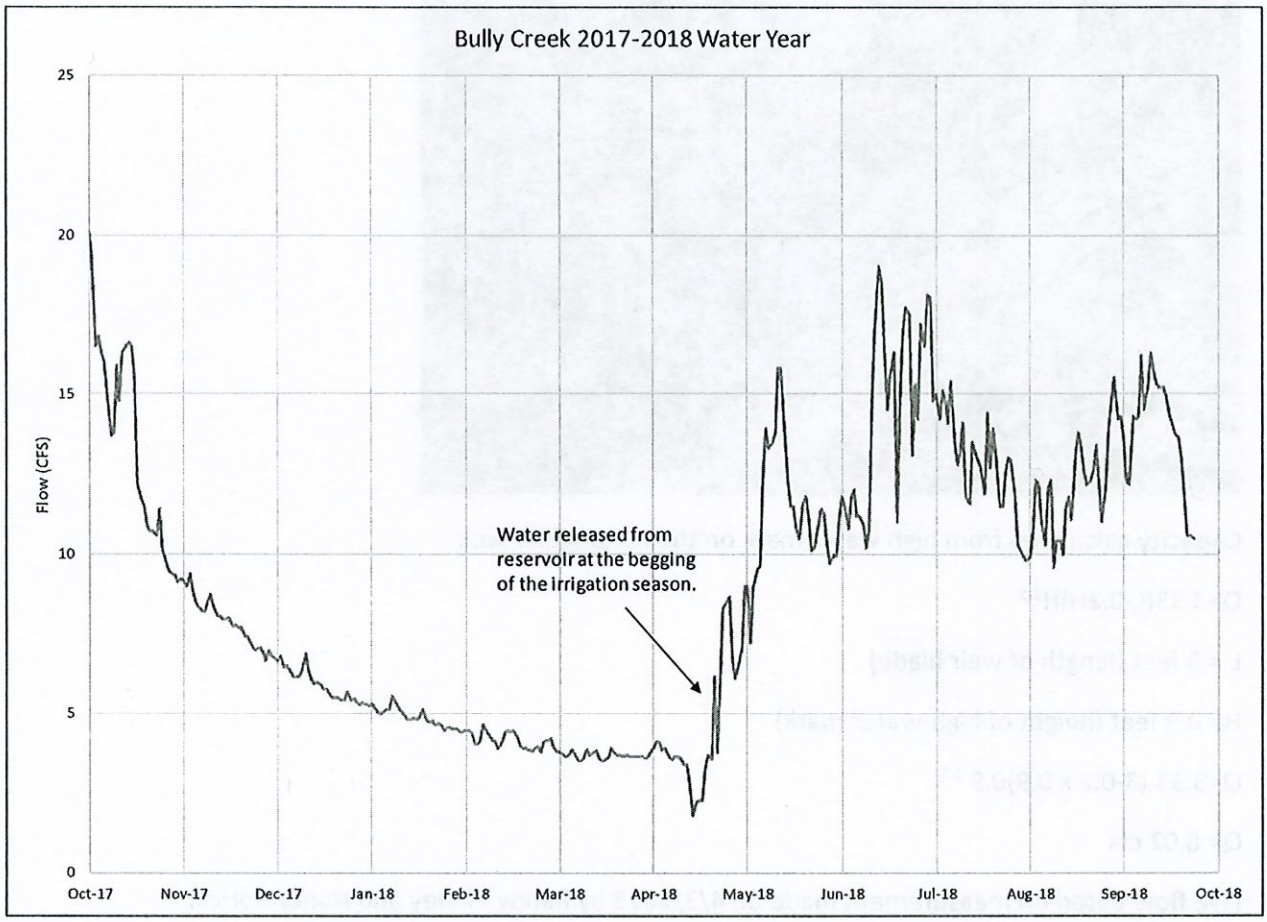


Figure 3 Flow measured at the Idaho Power gauge on Bully Creek. The gauge is just upstream of where the Farmers Canal discharges into Bully Creek. This flow is credited as return flow to VOID under the Bureau of Reclamation Contract.

3.Farmers Canal

a. Kings Drain

Kings Drain is a small natural drainage that receives field runoff from VOID. We measured flow at the weir and the height of the high-water mark above the weir blade.

Capacity calculated from high water mark on the rectangular weir.

$Q=3.33(L-0.2H)H^{1.5}$

L = 3 feet (length of weir blade)

H= 0.9 feet (height of high-water mark)

$Q=3.33\ (3-0.2 \times 0.9)0.9^{\ 1.5}$

Q= 8.02 cfs

Live flow based on measurement made on 4/3/2018 by Randy Kinney and Nancy Rorick.

$Q=3.33(L-0.2H)H^{1.5}$

H= 0.22 feet (height of water above weir blade)

$Q=3.33\ (3-0.2 \times 0.22)0.22^{\ 1.5}$

Q= 1.02 cfs

3. Farmers Canal

b. Eagle Pitcher

Return flow from VOID drains into a natural drainage that discharges in to the Farmers Ditch.

Capacity calculated from high water mark on trapezoidal weir.

$Q = 3.367\ L\ H^{1.5}$

L = 2 feet (length of weir blade)

H= 0.75 feet (height of high-water mark)

$Q = 3.367 \times 2 \times 0.75^{1.5}$

Q = 4.37 cfs

Live flow measured on 4/3/2018

H = 0.2 feet (height of water above weir blade)

$Q = 3.367 \times 2 \times 0.2^{1.5}$

Q = 0.6 cfs

Live flow measured on 5/31/2018

H = 0.53 feet (height of water above weir blade)

$Q = 3.367 \times 2 \times 0.53^{1.5}$

Q = 2.6 cfs

4. GF Canal

a. Shelby's

Return flow from VOID drains into a natural drainage that discharge to the GF canal.

Live flow measured on 4/3/2018 at the trapezoidal weir

$Q = 3.367\ L\ H^{1.5}$

L = 2 feet (length of weir blade)

H= 0.3 feet (height of water above weir blade)

$Q = 3.367 \times 2 \times 0.3^{1.5}$

Q = 0.6 cfs

Live flow and capacity measured on 5/31/2018 (at capacity)

H= 0.5 feet (height of water above weir blade)

$Q = 3.367 \times 2 \times 0.5^{1.5}$

Q = 2.38 cfs

4. GF Canal

b. Bench Road

Return flow from VOID drains into a natural drainage that discharge to the GF canal.

Capacity calculated from high water mark on trapezoidal weir.

$Q = 3.367\ L\ H^{1.5}$

L = 2 feet (length of weir blade)

H= 1.1 feet (height of high-water mark)

$Q = 3.367 \times 2 \times 1.1^{1.5}$

Q = 7.77 cfs

Live flow measured on 4/3/2018

H = 0.3 feet (height of water above weir blade)

$Q = 3.367 \times 2 \times 0.3^{1.5}$

Q = 1.1 cfs

Live flow measured on 5/31/2018

H = 0.49 feet (height of water above weir blade)

$Q = 3.367 \times 2 \times 0.49^{1.5}$

Q = 2.31 cfs

4. GF Canal

c. Henry's Gulch

Owyhee District return flow discharges to the GF Canal. **Capacity** calculated based on measured ditch dimensions. Flow was too low during field visit to accurately measure.

Ditch Capacity Calcualtor
using Manning's Formula

Data Entry (fill in underlined blanks)

Top Width =	2	feet		
Bottom Width =	1.4	feet		
Depth =	1.4	feet		
Fall =	3	feet	per	214 feet of distance
Grade =	0.014019	, or	1.4%	
n Factor =	0.025			

Results calculated

Area of cross-section =	2.38	square feet
Wetted Perimeter =	4.263564	feet
Hydraulic Radius =	0.558218	
Velocity =	4.771	feet per second
Calculated Ditch Capacity =	**11.4**	**cubic feet per second**

6. Bully Creek Exchange / Willow Creek Pump Canal

a. Hale Road

VOID return flow discharges to the Willow Creek Pump Canal.

Capacity calculated from high water mark on trapezoidal weir.

$Q = 3.367\ L\ H^{1.5}$

L = 3 feet (length of weir blade)

H = 0.8 feet (height of highwater mark)

$Q = 3.367 \times 3 \times 0.8^{1.5}$

Q = 7.23 cfs

Live flow measured on 5/31/2018

$Q = 3.367 \times 3 \times 0.17^{1.5}$

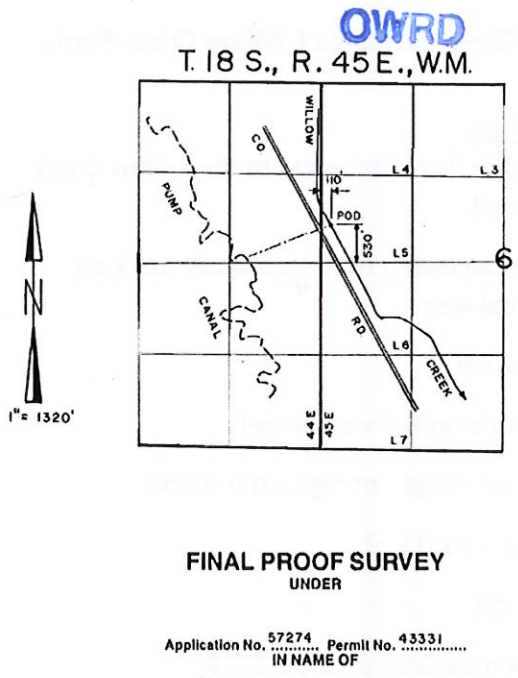
H = 0.8 feet (height of water above weir blade)

Q = 0.71 cfs

6. Bully Creek Exchange / Willow Creek Pump Canal

b. Willow Creek Pump Station

VOID return flow in Willow Creek is pumped into the Willow Creek Pump Canal.
Map (right) shows the location of the pump in final proof map for certificate 65891.



Pump Information

Manufacturer	Model	Serial Number	Type (centrifugal, turbine or submersible)	Intake size	Discharge size
Goulds	14	unknown	turbine	14 inch	12 inch

Motor Information

Manufacturer	Horsepower
US Electric Motor	40 HP

Theoretical Pump Capacity

Horsepower	Operating PSI	Lift from Source to Pump	Lift from Pump to Place of Use	Total Pump Output (in cfs)
40 HP	2	7 feet	47 feet	4.77 cfs

Pump Capacity Calculation Sheet

using Department designed formula:

(hp)(efficiency) / (lift + psi head) = capacity in cfs

Efficiency:

Centrifugal = 6.61
Turbine = 7.04

Data Entry (fill in underlined blanks)

HP =	40
Efficiency =	7.04
Lift =	54
PSI =	2

Results Calculated

(hp)(efficiency) =	281.6
Head based on psi =	5.1
Total dynamic head = (head + lift)	59.1

Pump Capacity = 4.77 feet per second

6. Bully Creek Exchange / Willow Creek Pump Canal

c. Laterals 278 and 455

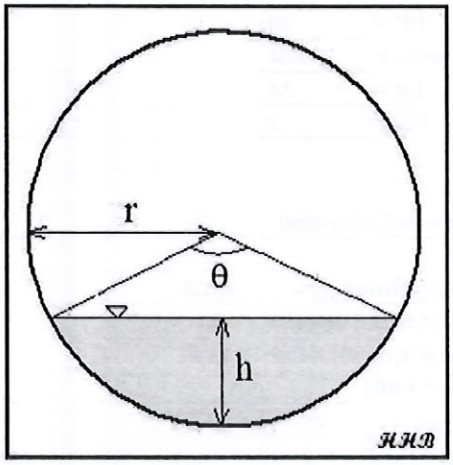
VOID return flow discharges into the Willow Creek Pump Canal. The two laterals merge downstream of the measuring points and discharge into the canal.

Lateral 278 (MP c-1)

Capacity calculated based on high water mark in culvert. The weir was damaged and could not be used to measure flow. Equation is from https://www.cedengineering.com/userfiles/Partially%20Full%20Pipe%20Flow%20Calculations.pdf

$Q = (1.49/n)A(R_h^{2/3})S^{1/2}$

Where:
Q is the flow in cfs
A is the cross-sectional area of flow in ft^2
S is the slope of the channel in ft/ft (dimensionless) = 0.017
n is the roughness coefficient = 0.022 (for corrugated metal)
R_h is the hydraulic radius = A/P
P is the wetted perimeter of the cross-sectional area of flow in ft
r is the radius of the pipe = 1.25 ft (for 30-inch diameter culvert)
h is the height of water measured in the pipe



Partially Full Pipe Flow Parameters
(Less Than Half Full)

$\Theta = 2\arccos((r-h)/r))$
$A = (r^2(\theta-\sin\theta))/2$
$P = r\theta$
$R_h = A/P$

For high water mark h = 1.25

$\Theta = 2\arccos((1.25-1.25)/1.25)) = 3.14$
$A = (1.25^2(3.14-\sin 3.14))/2 = 2.454\ ft^2$
$P = 1.25\ ft \times 3.14 = 3.93\ ft$
$R_h = 2.454\ ft^2/3.93\ ft = 0.1886\ ft$

$Q = (1.49/0.022)(2.454\ ft^2)(0.1886\ ft^{2/3})0.017^{1/2} =$ **15.86 cfs**

For **live flow** h = 0.3 ft

$\Theta = 2\arccos((1.25-0.3)/1.25)) = 1.415 A = (1.25^2(1.415-\sin 1.415))/2 = 0.3337\ ft^2$

P = 1.25 ft x 1.415 = 1.77 ft

R_h = 0.3337 ft^2/1.77 ft = 0.1886 ft

Q = (1.49/0.022) (0.3337 $ft^{2)}$ (0.1886 $ft^{2/3}$)$0.017^{1/2}$ = **0.97 cfs**

Lateral 455 (MP 6c-2)

Capacity calculated from highwater mark on rectangular weir.

$Q=3.33(L-0.2H)H^{1.5}$, for L = 5 feet and H = 1.3 feet

Q = 3.33(5-0.2 x 1.3) $1.3^{1.5}$

Q = 23.4 cfs

Live flow measured on 5/31/2018

Q = 3.33(5-0.2 x 0.44) $0.44^{1.5}$ for H = 0.44 feet

Q = 4.77 cfs

Capacity of laterals 278 and 455 combined = 15.86 cfs +23.4 cfs = **39.26 cfs**

Live flow of laterals 278 and 455 combined measured on 5/31/2018 = 0.97 cfs + 4.77 cfs = **5.74 cfs**

6. Bully Creek Exchange / Willow Creek Pump Canal

d. End Owyhee Ditch

Water flow measured at weir on 5/30/2018. Owyhee District return water flows from the ditch over the weir and into a six-inch diameter PVC pipe. From the pipe it discharges into the Willow Creek Pump Canal.

Live flow over the weir was measured on 5/30/2018. Using the equation for a rectangular weir.

$Q=3.33(L-0.2H)H^{1.5}$

L = 3 feet (length of weir blade)

H = 0.6 feet (height of water above weir blade)

$Q = 3.33(3-0.2 \times 0.6)\ 0.6^{1.5}$

Q = 0.15 cfs

Capacity is limited to the 6-inch diameter pipe.

Pipe Size	Pipe Type	"C" factor	Amount of Fall	Length of Pipe	Slope	Computed Rate of Water Flow (in cfs)
6"	PVC	150	25	188	0.133	3.52 cfs

Pipe Capacity Calcualtor

for pipes flowing full, using the Hazen-Williams Formula

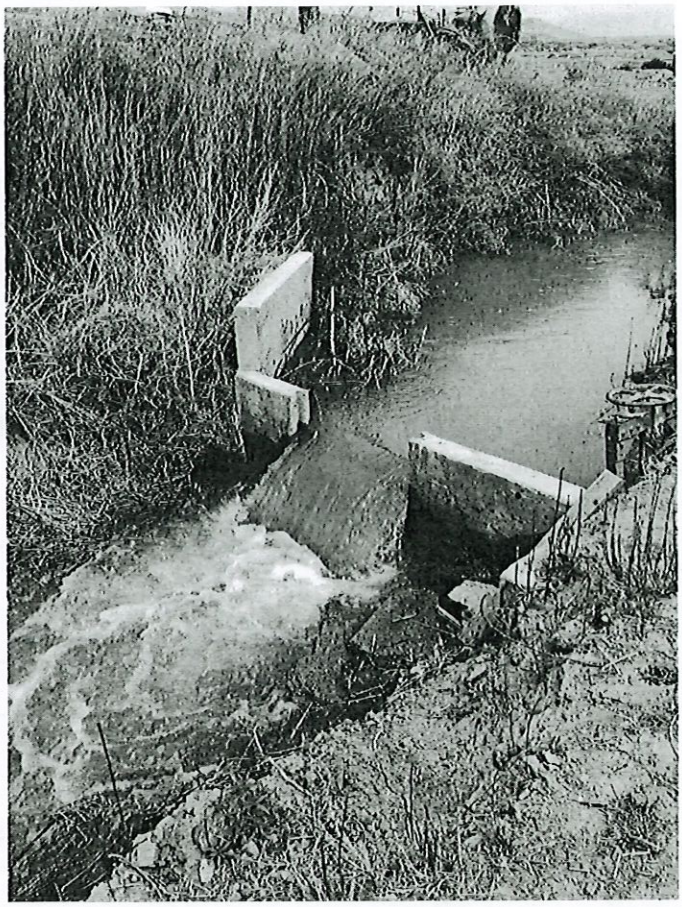
Data Entry (fill in underlined blanks)

Interior Diameter =	6	inches, or	0.5	feet
Roughness Coefficient (C) =	150			
Fall =	25	feet	per 188	feet of distance
Grade =	0.13297872	, or	13.3%	

Results calculated

Area of cross-section =	0.19635	square feet
Wetted Perimeter =	1.570796	feet
Hydraulic Radius =	0.125	
Velocity =	17.9433	feet per second
Pipe Capacity =	**3.523**	**cubic feet per second**

6. Bully Creek Exchange / Willow Creek Pump Canal



e. Belnap farm

Owyhee District return water flows to the Bully Creek Exchange / Willow Creek Pump Canal.

Live flow measured on 5/30/2018 at the rectangular weir. Flow was at high water mark, so this measurement was also the **capacity**.

$Q=3.33(L-0.2H)H^{1.5}$

L = 3 feet (length of weir blade)

H = 0.8 feet (height of water above weir blade)

$Q = 3.33(3-0.2 \times 0.8)\ 0.8^{1.5}$

Q = 6.77 cfs

7. Nevada Canal

a. Morgan Lane

Owyhee District return flow discharges to the Gravity canal (lateral off the Nevada Canal).

Capacity calculated using the Manning flow equation. Channel dimensions measured in the field.

Canal or Ditch Type (material)	Top Width of Canal or Ditch	Bottom Width of Canal or Ditch	Depth	"N" Factor	Amount of Fall	Length of Canal / Ditch	Slope	Computed Rate (in cfs)
Earth: straight and uniform	4.2 ft	2 ft	0.4 ft	0.025	5.34	125.18	0.043	6.6 cfs

Ditch Capacity Calcualtor
using Manning's Formula

Data Entry (fill in underlined blanks)

Top Width =	4.2	feet			
Bottom Width =	2	feet			
Depth =	0.4	feet			
Fall =	5.34	feet	per	125.18	feet of distance
Grade =	0.042659	, or	4.3%		
n Factor =	0.025				

Results calculated

Area of cross-section =	1.24	square feet
Wetted Perimeter =	4.34094	feet
Hydraulic Radius =	0.285652	
Velocity =	5.325	feet per second
Calculated Ditch Capacity =	**6.6**	**cubic feet per second**

7. Nevada Canal

b. Onion Avenue

Field runoff from the Owyhee District flows into the drainage at Onion Avenue.

We measured a cross-sectional profile of the channel with a hand level, stadia rod, and tape. The water depth was measured across the profile at one-foot intervals. These one-foot intervals were multiplied by the depth to get an area and summed to get the total cross-sectional area.

The flow velocity was measured by timing how long it took a small ball to float a measured distance. The flow velocity was the average of four timed floats.

Cross sectional area = 4.55 ft^2

Flow velocity = 1.45 ft/sec

Flow = 6.59 ft^3/sec

The capacity is based on the channel dimensions.

Ditch Capacity Calcualtor
using Manning's Formula

Data Entry (fill in underlined blanks)

Top Width =	14.4	feet			
Bottom Width =	7.1	feet			
Depth =	1	feet			
Fall =	0.827	feet	per	139	feet of distance
Grade =	0.00595	, or	0.6%		
n Factor =	0.025				

Results calculated

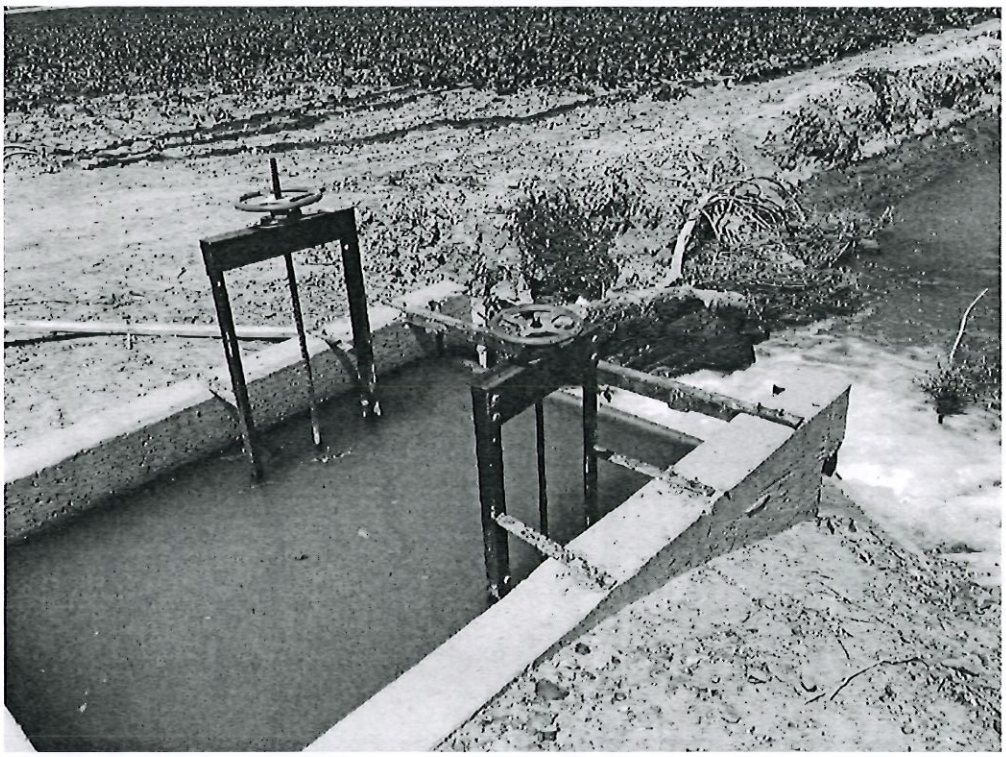
Area of cross-section =	10.75	square feet
Wetted Perimeter =	14.66902	feet
Hydraulic Radius =	0.732837	
Velocity =	3.727	feet per second
Calculated Ditch Capacity =	**40.1**	**cubic feet per second**

7. Nevada Canal

c. Shoestring Ditch

The Shoestring Ditch discharges water from the Owyhee District into the Nevada Canal. The photo below was taken from the measuring point looking south (upstream) at the Shoestring Ditch.

Live flow was measured on 5/30/2018. At the time of the site visit water was flowing over the weir and through the 18-inch head gate (on the left) into another ditch. The calculated flow is the sum of the water going over the weir boards and the water flowing into the pipe.



Capacity of the Shoestring Ditch

Canal or Ditch Type (Material)	Top Width of Canal or Ditch	Bottom Width of Canal or Ditch	Depth	"N" Factor	Amount of Fall	Length of Canal / Ditch	Slope	Computed Rate (in cfs)
Earth; straight and uniform	13.9 feet	7.5 feet	1.5	0.025	2.9	1181	0.0025	50.4 cfs

Channel dimensions based on Lidar data

Ditch Capacity Calcualtor
using Manning's Formula

Data Entry (fill in underlined blanks)

Top Width =	13.9	feet			
Bottom Width =	7.5	feet			
Depth =	1.5	feet			
Fall =	2.9	feet	per	1181	feet of distance
Grade =	0.002456	, or	0.2%		
n Factor =	0.025				

Results calculated

Area of cross-section =	16.05	square feet
Wetted Perimeter =	14.56824	feet
Hydraulic Radius =	1.101712	
Velocity =	3.142	feet per second
Calculated Ditch Capacity =	**50.4**	**cubic feet per second**

The calculation of live flow over the rectangular weir on 5/30/2018.

$Q=3.33(L-0.2H)H^{1.5}$

L = 5.45 feet (length of weir blade)

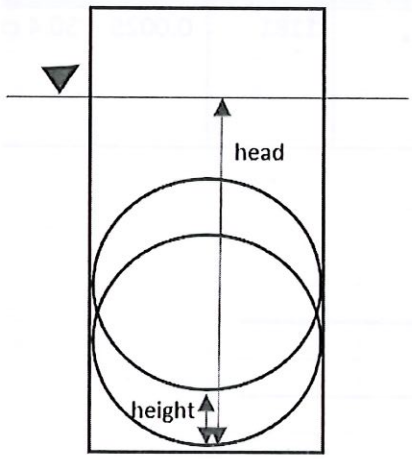
H = 0.45 feet (height of water above weir blade)

$Q = 3.33(5.45-0.2 \times 0.45)\ 0.45^{1.5}$

Q = 5.39 cfs

Flow through 18-inch head gate based on the height of opening where the head is 37 inches and the height of the opening is 5 inches. The table for the Waterman's Headgate shows that Q = 6.09 cfs.

Head gate



Water level on upstream side

Diameter	18	in
Perimeter	56-9/16	in
Area (in²)	254-31/64	in²
Area (ft²)	1.77	ft²
Coefficient of Discharge	0.7	

					0	1	35	36	37	
Height (in)	q	Area of Overlap (in²)	Opening Area (in²)	Opening Area (ft²)	(0.000)	(0.083)	(2.917)	(3.000)	(3.083)	(3
0	3.1416	254-1/2	-1/64	0.00	0.000	0.000	-0.001	-0.001	-0.001	
1	3.0304	236-1/2	17-63/64	0.12	0.000	0.203	1.198	1.215	1.232	
2	2.9189	218-9/16	35-59/64	0.25	0.000	0.405	2.393	2.427	2.461	
3	2.8067	200-3/4	53-47/64	0.37	0.000	0.605	3.580	3.631	3.681	
4	2.6934	183-3/32	71-25/64	0.50	0.000	0.804	4.756	4.824	4.890	
5	2.5786	165-21/32	88-53/64	0.62	0.000	1.000	5.918	6.002	6.085	
6	2.4619	148-17/32	105-61/64	0.74	0.000	1.193	7.059	7.159	7.258	
7	2.3427	131-3/4	122-47/64	0.85	0.000	1.382	8.177	8.293	8.407	
8	2.2205	115-3/8	139-7/64	0.97	0.000	1.567	9.268	9.399	9.529	

Live flow = 6.09 cfs + 5.39 cfs = **11.48 cfs**

7. Nevada Canal

d. Corn Drain

Return flow from the Owyhee District discharges into the Nevada Canal. **Capacity** calculated based on the channel dimensions.

Canal or Ditch Type (Material)	Top Width of Canal or Ditch	Bottom Width of Canal or Ditch	Depth	"N" Factor	Amount of Fall	Length of Canal / Ditch	Slope	Computed Rate (in cfs)
Earth; straight and uniform	2.5 ft	1 ft	1.5 ft	0.025	0.4	380	0.001	1.6 cfs

Ditch Capacity Calcualtor
using Manning's Formula

Data Entry (fill in underlined blanks)

Top Width =	2.5	feet		
Bottom Width =	1	feet		
Depth =	0.8	feet		
Fall =	0.4	feet	per	380 feet of distance
Grade =	0.001053	, or	0.1%	
n Factor =	0.025			

Results calculated

Area of cross-section =	1.4	square feet
Wetted Perimeter =	3.193171	feet
Hydraulic Radius =	0.438436	
Velocity =	1.113	feet per second
Calculated Ditch Capacity =	**1.6**	**cubic feet per second**

8. Willow Creek Feeder Canal

a. 430 Lateral

VOID water returns to Willow Creek and then flows into the Willow Creek Feeder Canal.

Capacity calculated based on high water mark over weir.

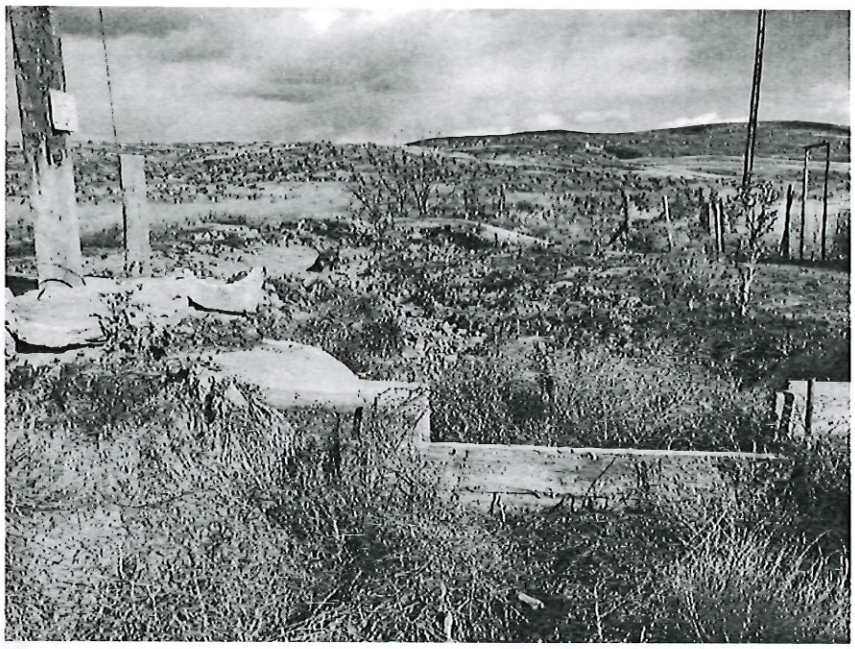
$Q=3.33(L-0.2H)H^{1.5}$

L = 6.8 feet (length of the weir blade)

H = 0.6 feet (height of high-water mark)

$Q = 3.33(6.8-0.2 \times 0.6)\ 0.6^{1.5}$

Q = 10.34 cfs



8. Willow Creek Feeder Canal

b. Dry Gulch

VOID water returns to Willow Creek and then flows into the Willow Creek Feeder Canal. Unable to discern high water mark. **Live flow** is:

$Q=3.33(L-0.2H)H^{1.5}$

L = 2.5 feet (length of weir blade)

H= 0.6 feet (height of water above the weir blade)

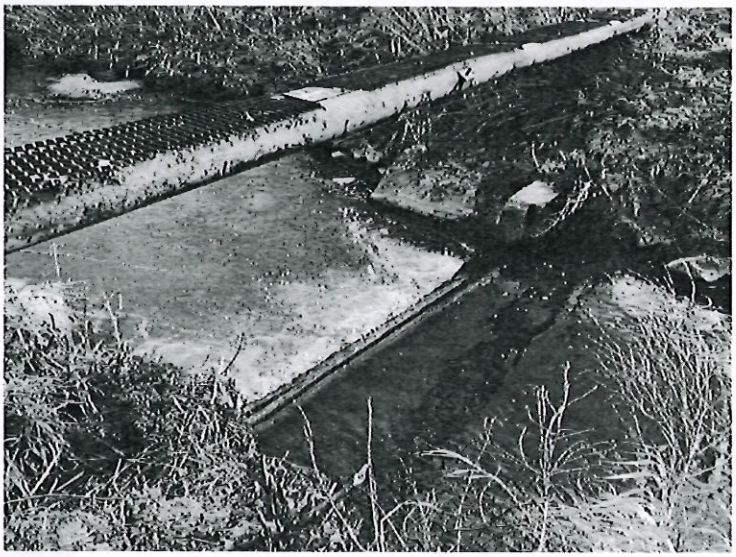
$Q = 3.33(2.5-0.2 \times 0.6)\ 0.6^{1.5}$

Q = 3.68 cfs

8. Willow Creek Feeder Canal

c. Willow Creek Gauge

VOID return flow in Willow Creek enters the WID.



Live flow on 4/2/2018

$Q=3.33(L-0.2H)H^{1.5}$

L = 10.2 feet (length of weir blade)

H = 1.65 feet (height of water above weir blade)

$Q = 3.33(10.2-0.2 \times 1.65)\ 1.65^{1.5}$

Q = 69.66 cfs

Live flow on 5/31/2018

$Q=3.33(L-0.2H)H^{1.5}$

H = 1.0 feet (height of water above weir blade)

$Q = 3.33(10.2-0.2 \times 1.0)\ 1.0^{1.5}$

Q = 33.30 cfs

Summary Table

	Date	Length of weir blade (ft)	Height above weir blade (ft)	Discharge (cfs)
3a. Kings Drain - VOID return flow to Farmers Canal (Rectangular weir)				
Capacity based on high water mark	4/3/2018	3	0.9	8.02
Live flow	4/3/2018	3	0.22	1.02
3b.Eagle Pitcher - VOID return flow to Farmers Canal (Trapezoidal weir)				
Capacity based on high water mark	4/3/2018	2	0.75	4.37
Live flow	4/3/2018	2	0.2	0.60
Live flow	5/31/2018	2	0.53	2.60
4a. Shelbys - VOID return flow to GF Canal (Trapezoidal weir)				
Live flow	4/3/2018	2	0.3	1.11
Live flow at capcity	5/31/2018	2	0.5	2.38
4b. Bench Road - VOID return flow to GF Canal (Trapezoidal weir)				
Capacity based on high water mark	4/3/2018	2	1.1	7.77
Live flow	4/3/2018	2	0.3	1.11
Live flow	5/31/2018	2	0.49	2.31
4c. Henry's Gulch - Owyhee District return flow to GF Canal				
Capacity based on channel dimensions	9/20/2018			11.4
6a. Hale Road - VOID return flow to Bully Creek Exchange/Willow Creek Pump Canal (Trapezoidal weir)				
Capacity based on high water mark	4/2/2018	3	0.8	7.23
Live flow	5/31/2018	3	0.17	0.71
6b. Willow Creek Pump - VOID return fow in Willow Creek to Bully Creek Exchange / Willow Creek Pump Canal				
Capacity based on pump capacity				4.77 cfs
6c. Lateral 278 and 455 - VOID return fow in Willow Creek to Bully Creek Exchange / Willow Creek Pump Canal				
Capacity based on high water mark in culvert for Lateral 278	5/31/2018			15.86

	Date	Length of weir blade (ft)	Height above weir blade (ft)	Discharge (cfs)
Live flow lateral 278	5/31/2018			0.97
Capacity based on high water mark on rectangular weir for Lateral 455	4/2/2018	5	1.3	23.40
Live flow lateral 455	5/31/2018	5	0.44	4.77

6d. End Owyhee Ditch - Owyhee District return flow to Bully Creek Exchange/ Willow Creek Pump Canal (rectangular weir)

Capacity based on 6-inch outflow pipe	5/30/2018			3.52
Live flow	5/30/2018	3	0.06	0.15

6d. Belnap farm - Owyhee District water to Bully Creek Exchange/Willow Creek Pump Canal at Ray Belnaps (rectanguar weir)

Live flow at capacity	5/30/2018	3	0.8	6.77

7a. Morgan Lane - Owyhee District return flow to the Gravity Canal a lateral off the Nevada Canal

Capacity calculated using Manning flow equation.				6.6

7b. Onion Avenue - Owyhee District return flow to Lee Spill a lateral off the Nevada Canal

Capacity calculated using Manning flow equation.				40.1
Live flow (measured velocity and cross section area.				6.59

7c. Shoestring Ditch - Owyhee District Return flow to the Nevada Canal

Capacity calculated using Manning flow equation.				50.4
Live flow over rectangular weir	5/30/2018	5.45	0.45	5.39
Live flow through 18 inch headgate	5/30/2018			6.09
Total live flow	5/30/2018			**11.48**

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	Date	Length of weir blade (ft)	Height above weir blade (ft)	Discharge (cfs)
7d. Corn Drain - Owyhee District return flow to the Nevada Canal				
Capacity calculated using Manning flow equation.				1.6
8a. 430 Lateral -VOID return flow in Willow Creek to Willow Creek Feeder Canal (rectangular weir)				
Capacity calculated from high water mark.	4/2/2018	6.8	0.6	10.34
8b. Dry Gulch -VOID return flow in Willow Creek to Willow Creek Feeder Canal (rectangular weir)				
Live flow	5/31/2018	2.5	0.6	3.68
8c. Willow Creek -VOID water in Willow Creek to Willow Creek Feeder Canal (rectangular weir)				
Live flow	4/2/2018	10.2	1.65	69.66
Live flow	5/31/2018	10.2	1	33.30

Permit S18547

JAN 09 2019

OWRD

Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T17S	R44E		24	SWSW			Irrigation		2.9
T17S	R44E		24	SWSW			Irrigation		0.2
T17S	R44E		24	SWSE			Irrigation		14.4
T17S	R44E		24	SESW			Irrigation		5.3
T17S	R44E		24	SESW			Irrigation		9.5
T17S	R44E		25	NWNE			Irrigation		31.1
T17S	R44E		25	NWNE			Irrigation		6.5
T17S	R44E		25	SWNE			Irrigation		23.8
T17S	R44E		25	SWNE			Irrigation		5.5
T17S	R44E		25	SWNE			Irrigation		4.1
T17S	R44E		25	SWNE			Irrigation		0.9
T17S	R44E		25	NENW			Irrigation		7.2
T17S	R44E		25	NENW			Irrigation		12.2
T17S	R44E		25	NENW			Irrigation		16
T17S	R44E		25	NWNW			Irrigation		2.7
T17S	R44E		25	SENW			Irrigation		17.5
T17S	R44E		25	SENW			Irrigation		2.9
T17S	R44E		25	SENW			Irrigation		6.3
T17S	R44E		25	SENW			Irrigation		2.6
T17S	R44E		25	SENW			Irrigation		1.7
T17S	R44E		25	NESW			Irrigation		33.1
T17S	R44E		25	NWSW			Irrigation		0.1
T17S	R44E		25	SWSW			Irrigation		5.7
T17S	R44E		25	SWSW			Irrigation		5.1
T17S	R44E		25	NESE			Irrigation		30.2
T17S	R44E		25	NESE			Irrigation		4.6
T17S	R44E		25	NWSE			Irrigation		6.4
T17S	R44E		25	NWSE			Irrigation		16.9
T17S	R44E		25	NWSE			Irrigation		9.2
T17S	R44E		25	SWSE			Irrigation		1.6
T17S	R44E		25	SWSE			Irrigation		1.3
T17S	R44E		25	SESE			Irrigation		14.3
T17S	R44E		25	SESE			Irrigation		11.2
T17S	R44E		25	SESE			Irrigation		4.8
T17S	R44E		25	SESW			Irrigation		37.5
T17S	R44E		36	NENE			Irrigation		15.4
T17S	R44E		36	NENE			Irrigation		7.8
T17S	R44E		36	NWNE			Irrigation		13
T17S	R44E		36	SWNE			Irrigation		20.4
T17S	R44E		36	SENE			Irrigation		0.4
T17S	R44E		36	NENW			Irrigation		25.4
T17S	R44E		36	NENW			Irrigation		1.2
T17S	R44E		36	NENW			Irrigation		3.3
T17S	R44E		36	NWNW			Irrigation		6.1
T17S	R44E		36	SENW			Irrigation		10.4
T17S	R44E		36	SENW			Irrigation		5.6
T17S	R44E		36	NESW			Irrigation		8.8
T17S	R44E		36	NWSE			Irrigation		10
T17S	R45E		30	NWSW	3		Irrigation		0.6
T17S	R45E		30	NWSW	3		Irrigation		6.4
T17S	R45E		30	NWSW	3		Irrigation		0.6

Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T17S	R45E		30	SWSW	4		Irrigation		5.6
T17S	R45E		30	SWSW	4		Irrigation		17.7
T17S	R45E		30	SWSW	4		Irrigation		3.1
T17S	R45E		31	NWNW	1		Irrigation		30.2
T17S	R45E		31	NWNW	1		Irrigation		0.8
T17S	R45E		31	NWNW	1		Irrigation		3.1
T17S	R45E		31	SWNW	2		Irrigation		22.9
T18S	R43E		34	SWSW			Irrigation		5.4
T18S	R43E		34	SWSW			Irrigation		4.2
T18S	R43E		34	SWSW			Irrigation		0.1
T18S	R43E		34	SWSE			Irrigation		7.7
T18S	R43E		34	SESE			Irrigation		11.9
T18S	R43E		34	SESE			Irrigation		5.3
T18S	R43E		34	SESE			Irrigation		1.4
T18S	R43E		34	SESE			Irrigation		1.4
T18S	R43E		34	SESW			Irrigation		7
T18S	R43E		34	SESW			Irrigation		0.2
T18S	R43E		34	SESW			Irrigation		8
T18S	R43E		34	SESW			Irrigation		2.4
T18S	R43E		35	SWSW			Irrigation		29.1
T18S	R43E		35	SWSE			Irrigation		0.1
T18S	R43E		35	SESW			Irrigation		0.9
T18S	R44E		1	NENE			Irrigation		5.2
T18S	R44E		1	SWNE			Irrigation		1.5
T18S	R44E		1	SENE			Irrigation		27.7
T18S	R44E		1	NESE			Irrigation		16.6
T18S	R44E		1	NESE			Irrigation		4.4
T18S	R44E		1	NESE			Irrigation		3.2
T18S	R44E		1	SESE			Irrigation		5.9
T18S	R44E		25	NENE			Irrigation		2.1
T18S	R44E		25	SWNE			Irrigation		1
T18S	R44E		25	SENE			Irrigation		29.2
T18S	R44E		25	NESW			Irrigation		2.3
T18S	R44E		25	SWSW			Irrigation		0.5
T18S	R44E		25	NESE			Irrigation		1.2
T18S	R44E		25	NESE			Irrigation		13.6
T18S	R44E		25	NESE			Irrigation		19.7
T18S	R44E		25	NESE			Irrigation		0.5
T18S	R44E		25	NESE			Irrigation		0.6
T18S	R44E		25	NWSE			Irrigation		2.1
T18S	R44E		25	NWSE			Irrigation		21.8
T18S	R44E		25	NWSE			Irrigation		2.7
T18S	R44E		25	NWSE			Irrigation		1.4
T18S	R44E		25	SWSE			Irrigation		34.9
T18S	R44E		25	SESE			Irrigation		6.9
T18S	R44E		25	SESE			Irrigation		13.2
T18S	R44E		25	SESE			Irrigation		10
T18S	R44E		25	SESE			Irrigation		0.6
T18S	R44E		25	SESW			Irrigation		7.2
T18S	R44E		25	SESW			Irrigation		21.4
T18S	R44E		25	SESW			Irrigation		0.4

Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T18S	R44E		35	NENE			Irrigation		1.1
T18S	R44E		35	SENE			Irrigation		2
T18S	R44E		35	SENE			Irrigation		1.2
T18S	R44E		35	SENE			Irrigation		0.4
T18S	R44E		35	SENE			Irrigation		0.3
T18S	R44E		35	SENE			Irrigation		1.7
T18S	R44E		35	SENE			Irrigation		0.4
T18S	R44E		35	NESE			Irrigation		32.1
T18S	R44E		35	NESE			Irrigation		0.9
T18S	R44E		35	NESE			Irrigation		3
T18S	R44E		35	NWSE			Irrigation		7
T18S	R44E		35	NWSE			Irrigation		0.1
T18S	R44E		35	SWSE			Irrigation		3.7
T18S	R44E		35	SWSE			Irrigation		0.4
T18S	R44E		35	SWSE			Irrigation		20
T18S	R44E		35	SWSE			Irrigation		4.8
T18S	R44E		35	SESE			Irrigation		16.8
T18S	R44E		35	SESE			Irrigation		14.6
T18S	R44E		35	SESE			Irrigation		1.8
T18S	R44E		35	SESW			Irrigation		4.8
T18S	R44E		36	NENE			Irrigation		0.6
T18S	R44E		36	NENE			Irrigation		5.2
T18S	R44E		36	NENE			Irrigation		14.4
T18S	R44E		36	NENE			Irrigation		7.6
T18S	R44E		36	NWNE			Irrigation		4.8
T18S	R44E		36	NWNE			Irrigation		10.6
T18S	R44E		36	NWNE			Irrigation		11.2
T18S	R44E		36	NWNE			Irrigation		0.2
T18S	R44E		36	SWNE			Irrigation		12.8
T18S	R44E		36	SWNE			Irrigation		24.9
T18S	R44E		36	SENE			Irrigation		2.6
T18S	R44E		36	SENE			Irrigation		6.3
T18S	R44E		36	SENE			Irrigation		16.6
T18S	R44E		36	SENE			Irrigation		7.7
T18S	R44E		36	SENE			Irrigation		3.1
T18S	R44E		36	NENW			Irrigation		23.9
T18S	R44E		36	NENW			Irrigation		6.9
T18S	R44E		36	NENW			Irrigation		0.1
T18S	R44E		36	NWNW			Irrigation		26.5
T18S	R44E		36	NWNW			Irrigation		2.9
T18S	R44E		36	SWNW			Irrigation		31.2
T18S	R44E		36	SWNW			Irrigation		1.1
T18S	R44E		36	SWNW			Irrigation		1
T18S	R44E		36	SENW			Irrigation		4.9
T18S	R44E		36	SENW			Irrigation		2.3
T18S	R44E		36	SENW			Irrigation		21.1
T18S	R44E		36	NESW			Irrigation		18.3
T18S	R44E		36	NESW			Irrigation		18.7
T18S	R44E		36	NESW			Irrigation		0.4
T18S	R44E		36	NWSW			Irrigation		13.8
T18S	R44E		36	NWSW			Irrigation		4.9

Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T18S	R44E		36	NWSW			Irrigation		0.8
T18S	R44E		36	NWSW			Irrigation		12.7
T18S	R44E		36	SWSW			Irrigation		14.4
T18S	R44E		36	SWSW			Irrigation		17.5
T18S	R44E		36	SWSW			Irrigation		3
T18S	R44E		36	NESE			Irrigation		17.6
T18S	R44E		36	NESE			Irrigation		14.1
T18S	R44E		36	NWSE			Irrigation		18.9
T18S	R44E		36	NWSE			Irrigation		16.3
T18S	R44E		36	NWSE			Irrigation		1.5
T18S	R44E		36	SWSE			Irrigation		16.6
T18S	R44E		36	SWSE			Irrigation		17
T18S	R44E		36	SESE			Irrigation		24.1
T18S	R44E		36	SESE			Irrigation		1.4
T18S	R44E		36	SESW			Irrigation		16.8
T18S	R44E		36	SESW			Irrigation		16.6
T18S	R44E		36	SESW			Irrigation		1.3
T18S	R45E		6	NWNE	2		Irrigation		34.5
T18S	R45E		6	NWNE	2		Irrigation		0.4
T18S	R45E		6	SWNE			Irrigation		32.4
T18S	R45E		6	NENW	3		Irrigation		38.5
T18S	R45E		6	NWNW	4		Irrigation		17
T18S	R45E		6	NWNW	4		Irrigation		16.8
T18S	R45E		6	SWNW	5		Irrigation		27.6
T18S	R45E		6	SWNW	5		Irrigation		3.4
T18S	R45E		6	SWNW	5		Irrigation		0.6
T18S	R45E		6	SENW			Irrigation		33.8
T18S	R45E		6	SENW			Irrigation		3.8
T18S	R45E		6	NESW			Irrigation		18.1
T18S	R45E		6	NESW			Irrigation		14.9
T18S	R45E		6	NESW			Irrigation		2.7
T18S	R45E		6	NWSW	6		Irrigation		5
T18S	R45E		6	NWSW	6		Irrigation		8.8
T18S	R45E		6	NWSW	6		Irrigation		12.2
T18S	R45E		6	NWSW	6		Irrigation		2.8
T18S	R45E		6	SWSW	7		Irrigation		28
T18S	R45E		6	SWSW	7		Irrigation		4.5
T18S	R45E		6	SWSW	7		Irrigation		0.8
T18S	R45E		6	NWSE			Irrigation		37.6
T18S	R45E		6	NWSE			Irrigation		0.6
T18S	R45E		6	SWSE			Irrigation		9.2
T18S	R45E		6	SWSE			Irrigation		20.4
T18S	R45E		6	SWSE			Irrigation		5.2
T18S	R45E		6	SESW			Irrigation		1.1
T18S	R45E		6	SESW			Irrigation		14.3
T18S	R45E		6	SESW			Irrigation		12
T18S	R45E		7	NWNE			Irrigation		21.8
T18S	R45E		7	NWNE			Irrigation		7.1
T18S	R45E		7	SWNE			Irrigation		3.6
T18S	R45E		7	SWNE			Irrigation		22.8
T18S	R45E		7	SWNE			Irrigation		0.1

Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T18S	R45E		7	SWNE			Irrigation		0.2
T18S	R45E		7	SENE			Irrigation		0.9
T18S	R45E		7	SENE			Irrigation		7.6
T18S	R45E		7	NENW			Irrigation		1.9
T18S	R45E		7	NENW			Irrigation		13.7
T18S	R45E		7	NENW			Irrigation		3.4
T18S	R45E		7	NWNW	1		Irrigation		4.8
T18S	R45E		7	NWNW	1		Irrigation		17.1
T18S	R45E		7	NWNW	1		Irrigation		8.2
T18S	R45E		7	NWNW	1		Irrigation		1.3
T18S	R45E		7	SWNW	2		Irrigation		2.5
T18S	R45E		7	SWNW	2		Irrigation		0.5
T18S	R45E		7	SENW			Irrigation		14.9
T18S	R45E		7	SENW			Irrigation		18.9
T18S	R45E		7	SENW			Irrigation		0.8
T18S	R45E		7	SENW			Irrigation		0.1
T18S	R45E		7	NESW			Irrigation		3.2
T18S	R45E		7	NESW			Irrigation		8.8
T18S	R45E		7	NESE			Irrigation		9
T18S	R45E		7	NESE			Irrigation		11.7
T18S	R45E		7	NESE			Irrigation		4.1
T18S	R45E		7	NESE			Irrigation		7.4
T18S	R45E		7	NWSE			Irrigation		3.3
T18S	R45E		7	NWSE			Irrigation		1
T18S	R45E		7	NWSE			Irrigation		16.8
T18S	R45E		7	NWSE			Irrigation		4.2
T18S	R45E		7	SESE			Irrigation		9.3
T18S	R45E		7	SESE			Irrigation		11.2
T18S	R45E		8	SWNW			Irrigation		12.4
T18S	R45E		8	SENW			Irrigation		6.8
T18S	R45E		8	NESW			Irrigation		37.2
T18S	R45E		8	NWSW			Irrigation		36
T18S	R45E		8	NWSE			Irrigation		6.6
T18S	R45E		8	SWSE			Irrigation		32.1
T18S	R45E		8	SESW			Irrigation		10.2
T18S	R45E		12	SWSE			Irrigation		6.9
T18S	R45E		12	SWSE			Irrigation		0.4
T18S	R45E		12	SESE			Irrigation		15.3
T18S	R45E		12	SESW			Irrigation		0.3
T18S	R45E		13	NENE			Irrigation		15.1
T18S	R45E		13	NENE			Irrigation		0.7
T18S	R45E		13	NENE			Irrigation		10.3
T18S	R45E		13	NWNE			Irrigation		34.8
T18S	R45E		13	NWNE			Irrigation		4.2
T18S	R45E		13	SWNE			Irrigation		29.8
T18S	R45E		13	SENE			Irrigation		34.4
T18S	R45E		13	NENW			Irrigation		17.1
T18S	R45E		13	SWNW			Irrigation		3.3
T18S	R45E		13	NESW			Irrigation		1.2
T18S	R45E		13	NESW			Irrigation		0.9
T18S	R45E		13	NWSW			Irrigation		22

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Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T18S	R45E		13	NWSW			Irrigation		11.4
T18S	R45E		13	SWSW			Irrigation		8.5
T18S	R45E		13	SWSW			Irrigation		9.4
T18S	R45E		13	NESE			Irrigation		0.5
T18S	R45E		13	NESE			Irrigation		1.6
T18S	R45E		13	NWSE			Irrigation		5.5
T18S	R45E		13	NWSE			Irrigation		3.5
T18S	R45E		13	SWSE			Irrigation		1.3
T18S	R45E		13	SWSE			Irrigation		0.7
T18S	R45E		13	SWSE			Irrigation		1.9
T18S	R45E		13	SWSE			Irrigation		5.3
T18S	R45E		13	SWSE			Irrigation		20.4
T18S	R45E		13	SWSE			Irrigation		0.1
T18S	R45E		13	SWSE			Irrigation		1
T18S	R45E		13	SESE			Irrigation		11.6
T18S	R45E		13	SESE			Irrigation		4.3
T18S	R45E		13	SESE			Irrigation		13.8
T18S	R45E		13	SESE			Irrigation		0.2
T18S	R45E		13	SESE			Irrigation		1.8
T18S	R45E		13	SESW			Irrigation		8.4
T18S	R45E		13	SESW			Irrigation		11.5
T18S	R45E		13	SESW			Irrigation		20.1
T18S	R45E		13	SESW			Irrigation		2.9
T18S	R45E		14	SWNE			Irrigation		17.4
T18S	R45E		14	SWNE			Irrigation		0.8
T18S	R45E		14	SENE			Irrigation		14.9
T18S	R45E		14	SENE			Irrigation		5.2
T18S	R45E		14	SENE			Irrigation		8.7
T18S	R45E		14	SWNW			Irrigation		28.6
T18S	R45E		14	SENW			Irrigation		19.3
T18S	R45E		14	NESW			Irrigation		11.3
T18S	R45E		14	NESW			Irrigation		4.2
T18S	R45E		14	NESW			Irrigation		19.9
T18S	R45E		14	NESW			Irrigation		0.4
T18S	R45E		14	NESW			Irrigation		0.6
T18S	R45E		14	NWSW			Irrigation		10.2
T18S	R45E		14	NWSW			Irrigation		13.8
T18S	R45E		14	NWSW			Irrigation		12.2
T18S	R45E		14	SWSW			Irrigation		18.3
T18S	R45E		14	SWSW			Irrigation		17.4
T18S	R45E		14	NESE			Irrigation		18.3
T18S	R45E		14	NESE			Irrigation		6.5
T18S	R45E		14	NESE			Irrigation		7.3
T18S	R45E		14	NESE			Irrigation		1.1
T18S	R45E		14	NWSE			Irrigation		15.9
T18S	R45E		14	NWSE			Irrigation		11.1
T18S	R45E		14	NWSE			Irrigation		4.1
T18S	R45E		14	NWSE			Irrigation		0.4
T18S	R45E		14	NWSE			Irrigation		0.8
T18S	R45E		14	NWSE			Irrigation		1
T18S	R45E		14	NWSE			Irrigation		0.3

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Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T18S	R45E		14	SWSE			Irrigation		16.1
T18S	R45E		14	SWSE			Irrigation		12.5
T18S	R45E		14	SWSE			Irrigation		1.4
T18S	R45E		14	SWSE			Irrigation		1.2
T18S	R45E		14	SWSE			Irrigation		4.6
T18S	R45E		14	SESE			Irrigation		10.7
T18S	R45E		14	SESE			Irrigation		9.2
T18S	R45E		14	SESE			Irrigation		16.6
T18S	R45E		14	SESW			Irrigation		15.5
T18S	R45E		14	SESW			Irrigation		19.4
T18S	R45E		14	SESW			Irrigation		0.7
T18S	R45E		15	SWNE			Irrigation		11.3
T18S	R45E		15	SENE			Irrigation		29.3
T18S	R45E		15	SWNW			Irrigation		0.5
T18S	R45E		15	SWNW			Irrigation		3.1
T18S	R45E		15	SWNW			Irrigation		0.5
T18S	R45E		15	SENW			Irrigation		14
T18S	R45E		15	SENW			Irrigation		0.2
T18S	R45E		15	NESW			Irrigation		2
T18S	R45E		15	NESW			Irrigation		25.1
T18S	R45E		15	NESW			Irrigation		7
T18S	R45E		15	NWSW			Irrigation		32.2
T18S	R45E		15	NWSW			Irrigation		2.1
T18S	R45E		15	NWSW			Irrigation		0.5
T18S	R45E		15	SWSW			Irrigation		1.1
T18S	R45E		15	SWSW			Irrigation		9.8
T18S	R45E		15	SWSW			Irrigation		13.4
T18S	R45E		15	SWSW			Irrigation		9
T18S	R45E		15	SWSW			Irrigation		1.1
T18S	R45E		15	NESE			Irrigation		17.8
T18S	R45E		15	NESE			Irrigation		17.6
T18S	R45E		15	NESE			Irrigation		0.5
T18S	R45E		15	NESE			Irrigation		0.6
T18S	R45E		15	NESE			Irrigation		0.2
T18S	R45E		15	NWSE			Irrigation		7.1
T18S	R45E		15	NWSE			Irrigation		10.1
T18S	R45E		15	NWSE			Irrigation		3.8
T18S	R45E		15	NWSE			Irrigation		7.9
T18S	R45E		15	NWSE			Irrigation		2.5
T18S	R45E		15	NWSE			Irrigation		2
T18S	R45E		15	NWSE			Irrigation		0.7
T18S	R45E		15	SWSE			Irrigation		2.1
T18S	R45E		15	SWSE			Irrigation		8.4
T18S	R45E		15	SWSE			Irrigation		15.7
T18S	R45E		15	SWSE			Irrigation		10
T18S	R45E		15	SWSE			Irrigation		0.2
T18S	R45E		15	SESE			Irrigation		1.5
T18S	R45E		15	SESE			Irrigation		7.3
T18S	R45E		15	SESE			Irrigation		9.5
T18S	R45E		15	SESE			Irrigation		13.8
T18S	R45E		15	SESW			Irrigation		19.3

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Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T18S	R45E		15	SESW			Irrigation		18
T18S	R45E		15	SESW			Irrigation		0.1
T18S	R45E		16	SWNW			Irrigation		13
T18S	R45E		16	NESW			Irrigation		15.4
T18S	R45E		16	NWSW			Irrigation		10.8
T18S	R45E		16	NWSW			Irrigation		0.3
T18S	R45E		16	NESE			Irrigation		1.7
T18S	R45E		16	NESE			Irrigation		28
T18S	R45E		16	NESE			Irrigation		0.5
T18S	R45E		16	NWSE			Irrigation		3.7
T18S	R45E		16	NWSE			Irrigation		0.4
T18S	R45E		16	NWSE			Irrigation		6.8
T18S	R45E		16	SWSE			Irrigation		1.6
T18S	R45E		16	SWSE			Irrigation		2.2
T18S	R45E		16	SWSE			Irrigation		19.5
T18S	R45E		16	SWSE			Irrigation		7.6
T18S	R45E		16	SESE			Irrigation		17.6
T18S	R45E		16	SESE			Irrigation		6.9
T18S	R45E		16	SESE			Irrigation		2.1
T18S	R45E		16	SESW			Irrigation		1.1
T18S	R45E		17	NENE			Irrigation		14.4
T18S	R45E		17	NENE			Irrigation		8.3
T18S	R45E		17	NENE			Irrigation		0.6
T18S	R45E		17	NENE			Irrigation		1.7
T18S	R45E		17	SENE			Irrigation		11.9
T18S	R45E		17	SENE			Irrigation		6.7
T18S	R45E		17	NWSW			Irrigation		3.2
T18S	R45E		17	NWSW			Irrigation		3.4
T18S	R45E		17	NWSW			Irrigation		1.6
T18S	R45E		17	NWSW			Irrigation		2.9
T18S	R45E		17	NWSW			Irrigation		6
T18S	R45E		17	SWSW			Irrigation		1.3
T18S	R45E		17	SWSW			Irrigation		1.2
T18S	R45E		17	SWSW			Irrigation		1.2
T18S	R45E		17	SWSW			Irrigation		1.2
T18S	R45E		17	SWSW			Irrigation		0.3
T18S	R45E		17	SWSW			Irrigation		0.9
T18S	R45E		17	SWSW			Irrigation		9.4
T18S	R45E		17	SWSW			Irrigation		5.1
T18S	R45E		17	SWSW			Irrigation		0.4
T18S	R45E		17	SWSW			Irrigation		0.9
T18S	R45E		17	SWSW			Irrigation		0.9
T18S	R45E		17	SWSW			Irrigation		0.9
T18S	R45E		17	SWSW			Irrigation		0.9
T18S	R45E		17	SWSW			Irrigation		0.8
T18S	R45E		17	SWSW			Irrigation		0.8
T18S	R45E		17	SWSW			Irrigation		1
T18S	R45E		17	SWSW			Irrigation		1
T18S	R45E		17	SWSW			Irrigation		0.9
T18S	R45E		17	SWSW			Irrigation		0.1
T18S	R45E		17	SESW			Irrigation		3.7

Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T18S	R45E		17	SESW			Irrigation		1.9
T18S	R45E		18	NENE			Irrigation		5.7
T18S	R45E		18	NENE			Irrigation		20
T18S	R45E		18	NENE			Irrigation		2.1
T18S	R45E		18	NWNE			Irrigation		0.6
T18S	R45E		18	SENE			Irrigation		1.2
T18S	R45E		18	NESE			Irrigation		11.7
T18S	R45E		18	NESE			Irrigation		5.9
T18S	R45E		18	SESE			Irrigation		2.2
T18S	R45E		18	SESE			Irrigation		0.9
T18S	R45E		18	SESE			Irrigation		0.3
T18S	R45E		18	SESE			Irrigation		0.2
T18S	R45E		19	NENE			Irrigation		2.1
T18S	R45E		19	NENE			Irrigation		0.5
T18S	R45E		19	SENE			Irrigation		2.4
T18S	R45E		19	SENE			Irrigation		2
T18S	R45E		19	SENE			Irrigation		2.3
T18S	R45E		19	SENE			Irrigation		2.5
T18S	R45E		19	SENE			Irrigation		0.1
T18S	R45E		19	SENE			Irrigation		0.1
T18S	R45E		19	SENE			Irrigation		4.9
T18S	R45E		19	SENE			Irrigation		1.1
T18S	R45E		19	SENE			Irrigation		0.2
T18S	R45E		19	SENE			Irrigation		1.1
T18S	R45E		19	SENE			Irrigation		0.1
T18S	R45E		19	SENW			Irrigation		0.6
T18S	R45E		19	NESW			Irrigation		2.8
T18S	R45E		19	SWSW	4		Irrigation		9.4
T18S	R45E		19	SWSW	4		Irrigation		8.2
T18S	R45E		19	SWSW	4		Irrigation		1.5
T18S	R45E		19	NESE			Irrigation		4.8
T18S	R45E		19	NESE			Irrigation		1.2
T18S	R45E		19	NESE			Irrigation		3.9
T18S	R45E		19	NWSE			Irrigation		2.3
T18S	R45E		19	NWSE			Irrigation		2.1
T18S	R45E		19	NWSE			Irrigation		3.1
T18S	R45E		19	NWSE			Irrigation		2.1
T18S	R45E		19	NWSE			Irrigation		0.5
T18S	R45E		19	NWSE			Irrigation		0.4
T18S	R45E		19	SWSE			Irrigation		0.6
T18S	R45E		19	SWSE			Irrigation		0.2
T18S	R45E		19	SWSE			Irrigation		0.1
T18S	R45E		19	SESW			Irrigation		0.4
T18S	R45E		19	SESW			Irrigation		10.4
T18S	R45E		19	SESW			Irrigation		0.1
T18S	R45E		19	SESW			Irrigation		2.1
T18S	R45E		19	SESW			Irrigation		0.2
T18S	R45E		19	SESW			Irrigation		2
T18S	R45E		20	NENE			Irrigation		18.8
T18S	R45E		20	NENE			Irrigation		9.7
T18S	R45E		20	NWNE			Irrigation		12.1

Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T18S	R45E		20	NWNE			Irrigation		1.8
T18S	R45E		20	NWNE			Irrigation		1.5
T18S	R45E		20	NWNE			Irrigation		11.4
T18S	R45E		20	NWNE			Irrigation		6.5
T18S	R45E		20	SWNE			Irrigation		0.3
T18S	R45E		20	SWNE			Irrigation		32.5
T18S	R45E		20	SENE			Irrigation		9.5
T18S	R45E		20	NENW			Irrigation		4.5
T18S	R45E		20	NENW			Irrigation		11.2
T18S	R45E		20	NENW			Irrigation		0.7
T18S	R45E		20	NENW			Irrigation		1.4
T18S	R45E		20	NENW			Irrigation		1.5
T18S	R45E		20	NENW			Irrigation		0.3
T18S	R45E		20	NENW			Irrigation		0.4
T18S	R45E		20	NENW			Irrigation		0.4
T18S	R45E		20	NWNW			Irrigation		0.2
T18S	R45E		20	NWNW			Irrigation		0.6
T18S	R45E		20	NWNW			Irrigation		5.4
T18S	R45E		20	NWNW			Irrigation		3.5
T18S	R45E		20	NWNW			Irrigation		3.1
T18S	R45E		20	NWNW			Irrigation		2.9
T18S	R45E		20	NWNW			Irrigation		0.4
T18S	R45E		20	NWNW			Irrigation		0.3
T18S	R45E		20	NWNW			Irrigation		5.2
T18S	R45E		20	NWNW			Irrigation		2.1
T18S	R45E		20	NWNW			Irrigation		0.7
T18S	R45E		20	SWNW			Irrigation		4.3
T18S	R45E		20	SWNW			Irrigation		1
T18S	R45E		20	SWNW			Irrigation		4
T18S	R45E		20	SWNW			Irrigation		0.7
T18S	R45E		20	SWNW			Irrigation		0.2
T18S	R45E		20	SWNW			Irrigation		0.2
T18S	R45E		20	SENW			Irrigation		10.9
T18S	R45E		20	NWSW			Irrigation		0.8
T18S	R45E		20	NWSW			Irrigation		0.8
T18S	R45E		21	NESW			Irrigation		0.7
T18S	R45E		21	NESW			Irrigation		1
T18S	R45E		21	NESW			Irrigation		0.3
T18S	R45E		21	NESW			Irrigation		0.4
T18S	R45E		21	NESW			Irrigation		0.5
T18S	R45E		21	NESW			Irrigation		0.3
T18S	R45E		21	NWSW			Irrigation		1
T18S	R45E		21	NESE			Irrigation		5.6
T18S	R45E		21	SESE			Irrigation		3.8
T18S	R45E		21	SESE			Irrigation		7.4
T18S	R45E		21	SESE			Irrigation		5.2
T18S	R45E		21	SESE			Irrigation		1.6
T18S	R45E		21	SESE			Irrigation		0.6
T18S	R45E		22	NENW			Irrigation		10.6
T18S	R45E		22	NENW			Irrigation		0.6
T18S	R45E		22	NENW			Irrigation		0.1

Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T18S	R45E		22	NENW			Irrigation		0.5
T18S	R45E		22	NWNW			Irrigation		14
T18S	R45E		22	NWNW			Irrigation		11.1
T18S	R45E		22	NWNW			Irrigation		0.8
T18S	R45E		22	SWNW			Irrigation		23.5
T18S	R45E		22	SWNW			Irrigation		12
T18S	R45E		22	SENW			Irrigation		11.9
T18S	R45E		22	SENW			Irrigation		24.1
T18S	R45E		22	NESW			Irrigation		1.7
T18S	R45E		22	NESW			Irrigation		1.1
T18S	R45E		22	NESW			Irrigation		4.7
T18S	R45E		22	NESW			Irrigation		5
T18S	R45E		22	NWSW			Irrigation		0.6
T18S	R45E		22	NWSW			Irrigation		10
T18S	R45E		22	NWSW			Irrigation		4.4
T18S	R45E		22	NWSW			Irrigation		3.4
T18S	R45E		22	NWSW			Irrigation		2.7
T18S	R45E		22	SWSW			Irrigation		2.1
T18S	R45E		22	SWSW			Irrigation		10.2
T18S	R45E		22	SWSW			Irrigation		5.6
T18S	R45E		22	SWSW			Irrigation		3.8
T18S	R45E		22	SWSW			Irrigation		7.4
T18S	R45E		22	SWSW			Irrigation		0.5
T18S	R45E		22	SWSW			Irrigation		0.4
T18S	R45E		22	NESE			Irrigation		22.6
T18S	R45E		22	NESE			Irrigation		1
T18S	R45E		22	NESE			Irrigation		6.1
T18S	R45E		22	NWSE			Irrigation		14.5
T18S	R45E		22	NWSE			Irrigation		5.9
T18S	R45E		22	NWSE			Irrigation		1.8
T18S	R45E		22	NWSE			Irrigation		4
T18S	R45E		22	SWSE			Irrigation		7.3
T18S	R45E		22	SWSE			Irrigation		7.8
T18S	R45E		22	SWSE			Irrigation		5.7
T18S	R45E		22	SWSE			Irrigation		9.2
T18S	R45E		22	SESE			Irrigation		4.7
T18S	R45E		22	SESE			Irrigation		11.9
T18S	R45E		22	SESE			Irrigation		4
T18S	R45E		22	SESE			Irrigation		0.3
T18S	R45E		22	SESE			Irrigation		2.3
T18S	R45E		22	SESW			Irrigation		5.8
T18S	R45E		22	SESW			Irrigation		2.7
T18S	R45E		22	SESW			Irrigation		2.7
T18S	R45E		22	SESW			Irrigation		7.5
T18S	R45E		22	SESW			Irrigation		13.1
T18S	R45E		23	SWNE			Irrigation		1.5
T18S	R45E		23	SENE			Irrigation		2.1
T18S	R45E		23	SENE			Irrigation		6.7
T18S	R45E		23	NWNW			Irrigation		26.7
T18S	R45E		23	SWNW			Irrigation		9.1
T18S	R45E		23	NESW			Irrigation		1.5

Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T18S	R45E		23	NESW			Irrigation		14.9
T18S	R45E		23	NESW			Irrigation		2.7
T18S	R45E		23	NWSW			Irrigation		19.2
T18S	R45E		23	NWSW			Irrigation		0.1
T18S	R45E		23	NWSW			Irrigation		10.2
T18S	R45E		23	SWSW			Irrigation		4.1
T18S	R45E		23	SWSW			Irrigation		3.3
T18S	R45E		23	SWSW			Irrigation		2.8
T18S	R45E		23	SWSW			Irrigation		2.9
T18S	R45E		23	SWSW			Irrigation		0.7
T18S	R45E		23	NESE			Irrigation		12.5
T18S	R45E		23	NESE			Irrigation		12.6
T18S	R45E		23	NESE			Irrigation		5.4
T18S	R45E		23	NESE			Irrigation		2.1
T18S	R45E		23	NWSE			Irrigation		18
T18S	R45E		23	NWSE			Irrigation		3
T18S	R45E		23	NWSE			Irrigation		4.8
T18S	R45E		23	NWSE			Irrigation		6.5
T18S	R45E		23	SWSE			Irrigation		16.2
T18S	R45E		23	SWSE			Irrigation		3.8
T18S	R45E		23	SWSE			Irrigation		5.4
T18S	R45E		23	SWSE			Irrigation		6.9
T18S	R45E		23	SESE			Irrigation		0.5
T18S	R45E		23	SESE			Irrigation		15.3
T18S	R45E		23	SESE			Irrigation		16.3
T18S	R45E		23	SESW			Irrigation		19.6
T18S	R45E		23	SESW			Irrigation		5.2
T18S	R45E		23	SESW			Irrigation		5.3
T18S	R45E		23	SESW			Irrigation		2.3
T18S	R45E		24	NENE			Irrigation		0.8
T18S	R45E		24	NENE			Irrigation		20.7
T18S	R45E		24	NENE			Irrigation		2.7
T18S	R45E		24	NWNE			Irrigation		34.3
T18S	R45E		24	SWNE			Irrigation		12.6
T18S	R45E		24	SWNE			Irrigation		13.6
T18S	R45E		24	SWNE			Irrigation		7
T18S	R45E		24	SWNE			Irrigation		0.9
T18S	R45E		24	SWNE			Irrigation		0.9
T18S	R45E		24	SENE			Irrigation		11.2
T18S	R45E		24	SENE			Irrigation		9.1
T18S	R45E		24	SENE			Irrigation		14.8
T18S	R45E		24	NENW			Irrigation		33.4
T18S	R45E		24	NENW			Irrigation		0.7
T18S	R45E		24	SWNW			Irrigation		13.7
T18S	R45E		24	SWNW			Irrigation		13.6
T18S	R45E		24	SWNW			Irrigation		3.6
T18S	R45E		24	SENW			Irrigation		33.6
T18S	R45E		24	SENW			Irrigation		1.2
T18S	R45E		24	NESW			Irrigation		5.6
T18S	R45E		24	NESW			Irrigation		18.4
T18S	R45E		24	NESW			Irrigation		3.2

Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T18S	R45E		24	NESW			Irrigation		1.5
T18S	R45E		24	NESW			Irrigation		1.2
T18S	R45E		24	NWSW			Irrigation		7.6
T18S	R45E		24	NWSW			Irrigation		16.6
T18S	R45E		24	NWSW			Irrigation		3.7
T18S	R45E		24	SWSW			Irrigation		16.7
T18S	R45E		24	SWSW			Irrigation		17
T18S	R45E		24	NESE			Irrigation		11.5
T18S	R45E		24	NESE			Irrigation		25.4
T18S	R45E		24	NWSE			Irrigation		12.7
T18S	R45E		24	NWSE			Irrigation		17.2
T18S	R45E		24	NWSE			Irrigation		3.1
T18S	R45E		24	SWSE			Irrigation		24
T18S	R45E		24	SWSE			Irrigation		12.7
T18S	R45E		24	SESE			Irrigation		1.8
T18S	R45E		24	SESE			Irrigation		30.2
T18S	R45E		24	SESW			Irrigation		8.2
T18S	R45E		24	SESW			Irrigation		10.1
T18S	R45E		24	SESW			Irrigation		5.1
T18S	R45E		24	SESW			Irrigation		2.4
T18S	R45E		24	SESW			Irrigation		6.1
T18S	R45E		25	NENE			Irrigation		35.2
T18S	R45E		25	NWNE			Irrigation		4.2
T18S	R45E		25	NWNE			Irrigation		27.7
T18S	R45E		25	SWNE			Irrigation		3.4
T18S	R45E		25	SWNE			Irrigation		23.5
T18S	R45E		25	SENE			Irrigation		30.2
T18S	R45E		25	NENW			Irrigation		38.4
T18S	R45E		25	NWNW			Irrigation		26.2
T18S	R45E		25	NWNW			Irrigation		11.3
T18S	R45E		25	SWNW			Irrigation		26.3
T18S	R45E		25	SWNW			Irrigation		0.6
T18S	R45E		25	SENW			Irrigation		28.4
T18S	R45E		26	NENE			Irrigation		21.3
T18S	R45E		26	NENE			Irrigation		7
T18S	R45E		26	NENE			Irrigation		7.5
T18S	R45E		26	NWNE			Irrigation		37.2
T18S	R45E		26	SWNE			Irrigation		23.4
T18S	R45E		26	SENE			Irrigation		20.6
T18S	R45E		26	SENE			Irrigation		8.3
T18S	R45E		26	NENW			Irrigation		13.8
T18S	R45E		26	NENW			Irrigation		13.9
T18S	R45E		26	NENW			Irrigation		0.1
T18S	R45E		26	NENW			Irrigation		0.1
T18S	R45E		26	NWNW			Irrigation		9
T18S	R45E		26	SENW			Irrigation		2.1
T18S	R45E		27	NWNE			Irrigation		6
T18S	R45E		27	NENW			Irrigation		24.9
T18S	R45E		27	NENW			Irrigation		4.2
T18S	R45E		27	NWNW			Irrigation		2.1
T18S	R45E		27	NWNW			Irrigation		1.5

Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T18S	R45E		27	NWNW			Irrigation		3.6
T18S	R45E		27	NWNW			Irrigation		11.2
T18S	R45E		27	NWNW			Irrigation		9.3
T18S	R45E		27	NWNW			Irrigation		5.3
T18S	R45E		27	SENW			Irrigation		7.2
T18S	R45E		28	NENE			Irrigation		0.5
T18S	R45E		28	NENE			Irrigation		1
T18S	R45E		28	NENE			Irrigation		0.9
T18S	R45E		28	NENE			Irrigation		0.3
T18S	R45E		28	NENE			Irrigation		1.1
T18S	R45E		29	SENW			Irrigation		9.2
T18S	R45E		29	NESW			Irrigation		27.7
T18S	R45E		29	NWSW			Irrigation		1.7
T18S	R45E		29	NWSW			Irrigation		9.6
T18S	R45E		29	NWSW			Irrigation		15.1
T18S	R45E		29	SWSW			Irrigation		7.5
T18S	R45E		29	SWSW			Irrigation		2.5
T18S	R45E		29	SWSW			Irrigation		3.6
T18S	R45E		29	SWSW			Irrigation		15.8
T18S	R45E		29	SESW			Irrigation		31.3
T18S	R45E		29	SESW			Irrigation		1
T18S	R45E		29	SESW			Irrigation		0.1
T18S	R45E		29	SESW			Irrigation		0.1
T18S	R45E		30	NWNE			Irrigation		0.5
T18S	R45E		30	NWNE			Irrigation		0.1
T18S	R45E		30	NWNE			Irrigation		0.2
T18S	R45E		30	NWNE			Irrigation		1.7
T18S	R45E		30	NWNE			Irrigation		0.2
T18S	R45E		30	NWNE			Irrigation		0.1
T18S	R45E		30	SWNE			Irrigation		6
T18S	R45E		30	SWNE			Irrigation		6.8
T18S	R45E		30	SWNE			Irrigation		2.1
T18S	R45E		30	SWNE			Irrigation		9
T18S	R45E		30	SWNE			Irrigation		1.7
T18S	R45E		30	SWNE			Irrigation		0.2
T18S	R45E		30	SWNE			Irrigation		0.1
T18S	R45E		30	SWNE			Irrigation		2.9
T18S	R45E		30	NENW			Irrigation		1.5
T18S	R45E		30	NENW			Irrigation		2.8
T18S	R45E		30	NENW			Irrigation		5.7
T18S	R45E		30	NENW			Irrigation		18.2
T18S	R45E		30	NWNW	1		Irrigation		3.1
T18S	R45E		30	NWNW	1		Irrigation		11.8
T18S	R45E		30	NWNW	1		Irrigation		9.6
T18S	R45E		30	NWNW	1		Irrigation		0.7
T18S	R45E		30	SWNW	2		Irrigation		1.5
T18S	R45E		30	SWNW	2		Irrigation		21.7
T18S	R45E		30	SWNW	2		Irrigation		9.8
T18S	R45E		30	SWNW	2		Irrigation		0.6
T18S	R45E		30	SWNW	2		Irrigation		0.3
T18S	R45E		30	SENW			Irrigation		2.7

Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T18S	R45E		30	SENW			Irrigation		30.6
T18S	R45E		30	NESW			Irrigation		10.4
T18S	R45E		30	NESW			Irrigation		7.3
T18S	R45E		30	NESW			Irrigation		6
T18S	R45E		30	NESW			Irrigation		4
T18S	R45E		30	NESW			Irrigation		0.2
T18S	R45E		30	NESW			Irrigation		3.1
T18S	R45E		30	NESW			Irrigation		4.3
T18S	R45E		30	NWSW	3		Irrigation		4.1
T18S	R45E		30	NWSW	3		Irrigation		6.1
T18S	R45E		30	NWSW	3		Irrigation		6.7
T18S	R45E		30	NWSW	3		Irrigation		10.5
T18S	R45E		30	NWSW	3		Irrigation		3.1
T18S	R45E		30	NWSW	3		Irrigation		0.6
T18S	R45E		30	SWSW	4		Irrigation		8.7
T18S	R45E		30	SWSW	4		Irrigation		10.2
T18S	R45E		30	SWSW	4		Irrigation		6.4
T18S	R45E		30	NESE			Irrigation		1.3
T18S	R45E		30	NESE			Irrigation		8.7
T18S	R45E		30	NESE			Irrigation		0.3
T18S	R45E		30	NWSE			Irrigation		5.3
T18S	R45E		30	NWSE			Irrigation		4.2
T18S	R45E		30	SWSE			Irrigation		2.6
T18S	R45E		30	SWSE			Irrigation		0.7
T18S	R45E		30	SESE			Irrigation		2.8
T18S	R45E		30	SESE			Irrigation		3.3
T18S	R45E		30	SESE			Irrigation		14.8
T18S	R45E		30	SESW			Irrigation		7.1
T18S	R45E		30	SESW			Irrigation		6.2
T18S	R45E		30	SESW			Irrigation		3
T18S	R45E		31	NENW			Irrigation		6.8
T18S	R45E		31	NWNW	1		Irrigation		14.3
T18S	R45E		31	NWNW	1		Irrigation		14.3
T18S	R45E		31	NWNW	1		Irrigation		1.1
T18S	R45E		31	NWNW	1		Irrigation		1.5
T18S	R45E		31	SWNW	2		Irrigation		8.9
T18S	R45E		31	SWNW	2		Irrigation		0.3
T18S	R45E		31	NWSW	3		Irrigation		5.2
T18S	R45E		31	SWSE			Irrigation		12.1
T18S	R45E		31	SESE			Irrigation		18.6
T18S	R45E		31	SESE			Irrigation		5.6
T18S	R45E		31	SESE			Irrigation		5.1
T18S	R45E		31	SESE			Irrigation		2.1
T18S	R45E		32	NENW			Irrigation		12.6
T18S	R45E		32	NENW			Irrigation		24.3
T18S	R45E		32	NWNW			Irrigation		6.4
T18S	R45E		32	NWNW			Irrigation		17
T18S	R45E		32	SWNW			Irrigation		11.3
T18S	R45E		32	SWNW			Irrigation		4.5
T18S	R45E		32	SWNW			Irrigation		14.3
T18S	R45E		32	SENW			Irrigation		3.1

Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T18S	R45E		32	SENW			Irrigation		13.4
T18S	R45E		32	SENW			Irrigation		3.5
T18S	R45E		32	SENW			Irrigation		1.7
T18S	R45E		32	SENW			Irrigation		2
T18S	R45E		32	SENW			Irrigation		2.3
T18S	R45E		32	SENW			Irrigation		2
T18S	R45E		32	NESW			Irrigation		7.8
T18S	R45E		32	NWSW			Irrigation		36.2
T18S	R45E		32	SWSW			Irrigation		12.4
T18S	R46E		1	SWSE			Irrigation		7.9
T18S	R46E		1	SWSE			Irrigation		5.8
T18S	R46E		1	SESE			Irrigation		11.4
T18S	R46E		1	SESE			Irrigation		4.7
T18S	R46E		1	SESE			Irrigation		8.8
T18S	R46E		7	SWSW	4		Irrigation		19.7
T18S	R46E		7	NESE			Irrigation		19.3
T18S	R46E		7	SESE			Irrigation		33.3
T18S	R46E		7	SESW			Irrigation		17.6
T18S	R46E		8	SWNE			Irrigation		0.8
T18S	R46E		8	SWNE			Irrigation		0.6
T18S	R46E		8	SENE			Irrigation		5.9
T18S	R46E		8	SWNW			Irrigation		4.5
T18S	R46E		8	SWNW			Irrigation		7.6
T18S	R46E		8	SENW			Irrigation		17.4
T18S	R46E		8	NESW			Irrigation		14.8
T18S	R46E		8	NESW			Irrigation		9.9
T18S	R46E		8	NESW			Irrigation		8.3
T18S	R46E		8	NESW			Irrigation		4.2
T18S	R46E		8	NESW			Irrigation		0.4
T18S	R46E		8	NWSW			Irrigation		14.7
T18S	R46E		8	NWSW			Irrigation		14.1
T18S	R46E		8	NWSW			Irrigation		4.3
T18S	R46E		8	NWSW			Irrigation		4.4
T18S	R46E		8	SWSW			Irrigation		14.6
T18S	R46E		8	SWSW			Irrigation		5.9
T18S	R46E		8	SWSW			Irrigation		10.3
T18S	R46E		8	NESE			Irrigation		27.8
T18S	R46E		8	NESE			Irrigation		6
T18S	R46E		8	NESE			Irrigation		0.4
T18S	R46E		8	NESE			Irrigation		1.6
T18S	R46E		8	NWSE			Irrigation		5.6
T18S	R46E		8	NWSE			Irrigation		27.8
T18S	R46E		8	NWSE			Irrigation		3.9
T18S	R46E		8	NWSE			Irrigation		0.3
T18S	R46E		8	SWSE			Irrigation		8.8
T18S	R46E		8	SWSE			Irrigation		22.8
T18S	R46E		8	SWSE			Irrigation		2.9
T18S	R46E		8	SESE			Irrigation		17.2
T18S	R46E		8	SESE			Irrigation		10.5
T18S	R46E		8	SESE			Irrigation		5.6
T18S	R46E		8	SESW			Irrigation		10.5

Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T18S	R46E		8	SESW			Irrigation		0.7
T18S	R46E		8	SESW			Irrigation		12.6
T18S	R46E		8	SESW			Irrigation		2.5
T18S	R46E		8	SESW			Irrigation		2
T18S	R46E		8	SESW			Irrigation		1.4
T18S	R46E		9	NESW			Irrigation		14.6
T18S	R46E		9	NESW			Irrigation		4.6
T18S	R46E		9	NWSW			Irrigation		27.2
T18S	R46E		9	NWSW			Irrigation		0.5
T18S	R46E		9	SWSW			Irrigation		14.6
T18S	R46E		9	SWSW			Irrigation		17.8
T18S	R46E		10	SWNE			Irrigation		6.7
T18S	R46E		10	SENE			Irrigation		1.4
T18S	R46E		10	SENE			Irrigation		14.5
T18S	R46E		10	SENE			Irrigation		4.7
T18S	R46E		10	SENE			Irrigation		4.7
T18S	R46E		10	NESE			Irrigation		0.6
T18S	R46E		10	NESE			Irrigation		14.1
T18S	R46E		10	NESE			Irrigation		21.7
T18S	R46E		10	NWSE			Irrigation		3
T18S	R46E		10	NWSE			Irrigation		13.2
T18S	R46E		10	SWSE			Irrigation		6
T18S	R46E		10	SWSE			Irrigation		18.8
T18S	R46E		10	SESE			Irrigation		20.8
T18S	R46E		10	SESE			Irrigation		16.2
T18S	R46E		10	SESW			Irrigation		1.1
T18S	R46E		11	NENE			Irrigation		18
T18S	R46E		11	NENE			Irrigation		14.9
T18S	R46E		11	NWNE			Irrigation		18.9
T18S	R46E		11	NWNE			Irrigation		18.9
T18S	R46E		11	SWNE			Irrigation		13.8
T18S	R46E		11	SWNE			Irrigation		4.2
T18S	R46E		11	SWNE			Irrigation		18
T18S	R46E		11	SENE			Irrigation		8
T18S	R46E		11	SENE			Irrigation		27.1
T18S	R46E		11	NENW			Irrigation		15
T18S	R46E		11	NENW			Irrigation		15.7
T18S	R46E		11	NENW			Irrigation		3.3
T18S	R46E		11	NWNW			Irrigation		9.4
T18S	R46E		11	NWNW			Irrigation		6.6
T18S	R46E		11	NWNW			Irrigation		9.6
T18S	R46E		11	NWNW			Irrigation		6.3
T18S	R46E		11	SWNW			Irrigation		17.9
T18S	R46E		11	SWNW			Irrigation		17.3
T18S	R46E		11	SENW			Irrigation		18.8
T18S	R46E		11	SENW			Irrigation		18.6
T18S	R46E		11	NESW			Irrigation		17.3
T18S	R46E		11	NESW			Irrigation		18.3
T18S	R46E		11	NESW			Irrigation		1.2
T18S	R46E		11	NWSW			Irrigation		16.5
T18S	R46E		11	NWSW			Irrigation		18.6

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Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T18S	R46E		11	SWSW			Irrigation		16.9
T18S	R46E		11	SWSW			Irrigation		15.6
T18S	R46E		11	NESE			Irrigation		29.8
T18S	R46E		11	NESE			Irrigation		4.6
T18S	R46E		11	NESE			Irrigation		0.4
T18S	R46E		11	NESE			Irrigation		0.9
T18S	R46E		11	NWSE			Irrigation		14.8
T18S	R46E		11	NWSE			Irrigation		23.3
T18S	R46E		11	SWSE			Irrigation		20.7
T18S	R46E		11	SWSE			Irrigation		14.4
T18S	R46E		11	SESE			Irrigation		12
T18S	R46E		11	SESE			Irrigation		23.2
T18S	R46E		11	SESW			Irrigation		17.4
T18S	R46E		11	SESW			Irrigation		15.5
T18S	R46E		11	SESW			Irrigation		0.7
T18S	R46E		12	NESW			Irrigation		15.2
T18S	R46E		12	NWSW			Irrigation		25.2
T18S	R46E		12	NWSW			Irrigation		12.9
T18S	R46E		12	SWSW			Irrigation		19.8
T18S	R46E		12	SWSW			Irrigation		6
T18S	R46E		12	SWSW			Irrigation		2.2
T18S	R46E		12	SESW			Irrigation		1
T18S	R46E		12	SESW			Irrigation		0.7
T18S	R46E		13	NENW			Irrigation		5.4
T18S	R46E		13	NWNW			Irrigation		2.8
T18S	R46E		13	NWNW			Irrigation		8.1
T18S	R46E		13	NWNW			Irrigation		19.4
T18S	R46E		13	SWNW			Irrigation		39
T18S	R46E		13	SENW			Irrigation		14.1
T18S	R46E		13	SENW			Irrigation		10.4
T18S	R46E		13	NESW			Irrigation		4.8
T18S	R46E		13	NESW			Irrigation		11.3
T18S	R46E		13	NESW			Irrigation		7.1
T18S	R46E		13	NESW			Irrigation		3.1
T18S	R46E		13	NESW			Irrigation		7.1
T18S	R46E		13	NWSW			Irrigation		11.3
T18S	R46E		13	NWSW			Irrigation		21.8
T18S	R46E		13	NWSW			Irrigation		5
T18S	R46E		13	SWSW			Irrigation		8.9
T18S	R46E		13	SWSW			Irrigation		11.6
T18S	R46E		13	SWSW			Irrigation		8.4
T18S	R46E		13	SWSW			Irrigation		6.6
T18S	R46E		13	NESE			Irrigation		0.2
T18S	R46E		13	NWSE			Irrigation		2.3
T18S	R46E		13	SWSE			Irrigation		23.4
T18S	R46E		13	SWSE			Irrigation		5.4
T18S	R46E		13	SESE			Irrigation		3.9
T18S	R46E		13	SESE			Irrigation		11.4
T18S	R46E		13	SESE			Irrigation		0.1
T18S	R46E		13	SESW			Irrigation		13.5
T18S	R46E		13	SESW			Irrigation		5.6

Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T18S	R46E		13	SESW			Irrigation		0.6
T18S	R46E		14	NENE			Irrigation		28.2
T18S	R46E		14	NWNE			Irrigation		16.1
T18S	R46E		14	NWNE			Irrigation		21.3
T18S	R46E		14	SWNE			Irrigation		11.5
T18S	R46E		14	SWNE			Irrigation		2.9
T18S	R46E		14	SWNE			Irrigation		17.2
T18S	R46E		14	SWNE			Irrigation		3.3
T18S	R46E		14	SENE			Irrigation		22.1
T18S	R46E		14	SENE			Irrigation		8.9
T18S	R46E		14	SENE			Irrigation		4.2
T18S	R46E		14	NENW			Irrigation		9.7
T18S	R46E		14	NENW			Irrigation		5.8
T18S	R46E		14	NENW			Irrigation		1.1
T18S	R46E		14	NENW			Irrigation		19.2
T18S	R46E		14	NWNW			Irrigation		17
T18S	R46E		14	NWNW			Irrigation		12.1
T18S	R46E		14	NWNW			Irrigation		7.1
T18S	R46E		14	NWNW			Irrigation		0.8
T18S	R46E		14	SWNW			Irrigation		6.6
T18S	R46E		14	SWNW			Irrigation		24.9
T18S	R46E		14	SENW			Irrigation		32
T18S	R46E		14	SENW			Irrigation		0.6
T18S	R46E		14	SENW			Irrigation		0.6
T18S	R46E		14	SENW			Irrigation		0.6
T18S	R46E		14	NESW			Irrigation		26.2
T18S	R46E		14	NESW			Irrigation		5.2
T18S	R46E		14	NESW			Irrigation		3.4
T18S	R46E		14	NESW			Irrigation		0.7
T18S	R46E		14	NESW			Irrigation		0.4
T18S	R46E		14	NWSW			Irrigation		10.8
T18S	R46E		14	NWSW			Irrigation		3.8
T18S	R46E		14	NWSW			Irrigation		13.5
T18S	R46E		14	NWSW			Irrigation		10.1
T18S	R46E		14	NWSW			Irrigation		0.1
T18S	R46E		14	SWSW			Irrigation		6.7
T18S	R46E		14	SWSW			Irrigation		20.3
T18S	R46E		14	SWSW			Irrigation		2.2
T18S	R46E		14	SWSW			Irrigation		4.9
T18S	R46E		14	NESE			Irrigation		1.3
T18S	R46E		14	NESE			Irrigation		8.8
T18S	R46E		14	NESE			Irrigation		17.9
T18S	R46E		14	NESE			Irrigation		8.2
T18S	R46E		14	NESE			Irrigation		0.5
T18S	R46E		14	NWSE			Irrigation		3.1
T18S	R46E		14	NWSE			Irrigation		8.5
T18S	R46E		14	NWSE			Irrigation		27
T18S	R46E		14	SWSE			Irrigation		34.9
T18S	R46E		14	SESE			Irrigation		6.1
T18S	R46E		14	SESE			Irrigation		27.4
T18S	R46E		14	SESW			Irrigation		1.9

Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T18S	R46E		14	SESW			Irrigation		5
T18S	R46E		14	SESW			Irrigation		27.5
T18S	R46E		15	NENE			Irrigation		13.6
T18S	R46E		15	NENE			Irrigation		16.4
T18S	R46E		15	NWNE			Irrigation		8.1
T18S	R46E		15	NWNE			Irrigation		2.9
T18S	R46E		15	NWNE			Irrigation		11.8
T18S	R46E		15	NWNE			Irrigation		7.9
T18S	R46E		15	SWNE			Irrigation		11.6
T18S	R46E		15	SWNE			Irrigation		20.5
T18S	R46E		15	SWNE			Irrigation		1.9
T18S	R46E		15	SWNE			Irrigation		0.4
T18S	R46E		15	SENE			Irrigation		35.7
T18S	R46E		15	NENW			Irrigation		9.4
T18S	R46E		15	NENW			Irrigation		2.1
T18S	R46E		15	NENW			Irrigation		6.5
T18S	R46E		15	SWNW			Irrigation		6.7
T18S	R46E		15	SWNW			Irrigation		16.5
T18S	R46E		15	SENW			Irrigation		12.7
T18S	R46E		15	SENW			Irrigation		8.5
T18S	R46E		15	SENW			Irrigation		4.3
T18S	R46E		15	SENW			Irrigation		10.6
T18S	R46E		15	NESW			Irrigation		9.8
T18S	R46E		15	NESW			Irrigation		12
T18S	R46E		15	NESW			Irrigation		3.3
T18S	R46E		15	NWSW			Irrigation		28
T18S	R46E		15	NWSW			Irrigation		9.1
T18S	R46E		15	SWSW			Irrigation		18.9
T18S	R46E		15	SWSW			Irrigation		12.5
T18S	R46E		15	NESE			Irrigation		4.1
T18S	R46E		15	NESE			Irrigation		9.7
T18S	R46E		15	NESE			Irrigation		7.2
T18S	R46E		15	NESE			Irrigation		6.3
T18S	R46E		15	NESE			Irrigation		4.8
T18S	R46E		15	NWSE			Irrigation		11.9
T18S	R46E		15	NWSE			Irrigation		20.6
T18S	R46E		15	SWSE			Irrigation		3.5
T18S	R46E		15	SWSE			Irrigation		5
T18S	R46E		15	SWSE			Irrigation		10.6
T18S	R46E		15	SWSE			Irrigation		12.7
T18S	R46E		15	SESE			Irrigation		16.6
T18S	R46E		15	SESE			Irrigation		2.3
T18S	R46E		15	SESE			Irrigation		12.4
T18S	R46E		15	SESE			Irrigation		1.2
T18S	R46E		15	SESE			Irrigation		0.6
T18S	R46E		15	SESW			Irrigation		16.3
T18S	R46E		15	SESW			Irrigation		1.6
T18S	R46E		15	SESW			Irrigation		6
T18S	R46E		16	SENE			Irrigation		18.2
T18S	R46E		17	NENE			Irrigation		1
T18S	R46E		17	NWNE			Irrigation		3.9

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Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T18S	R46E		17	NENW			Irrigation		20.5
T18S	R46E		17	NWNW			Irrigation		12.6
T18S	R46E		17	NWNW			Irrigation		13.5
T18S	R46E		18	NENE			Irrigation		8.2
T18S	R46E		18	NENE			Irrigation		8
T18S	R46E		18	NWNE			Irrigation		35.5
T18S	R46E		18	NWNE			Irrigation		7.8
T18S	R46E		18	SWNE			Irrigation		4.5
T18S	R46E		18	SWNE			Irrigation		23.5
T18S	R46E		18	SWNE			Irrigation		1.6
T18S	R46E		18	SWNE			Irrigation		2
T18S	R46E		18	SENE			Irrigation		36.6
T18S	R46E		18	NENW			Irrigation		2
T18S	R46E		18	NENW			Irrigation		26.1
T18S	R46E		18	NENW			Irrigation		9.3
T18S	R46E		18	NWNW	1		Irrigation		0.6
T18S	R46E		18	NWNW	1		Irrigation		15.8
T18S	R46E		18	NWNW	1		Irrigation		18.4
T18S	R46E		18	NWNW	1		Irrigation		0.4
T18S	R46E		18	SWNW	2		Irrigation		3.7
T18S	R46E		18	SWNW	2		Irrigation		22.2
T18S	R46E		18	SWNW	2		Irrigation		6.4
T18S	R46E		18	SENW			Irrigation		12.9
T18S	R46E		18	SENW			Irrigation		6.1
T18S	R46E		18	SENW			Irrigation		10.8
T18S	R46E		18	NESW			Irrigation		5.2
T18S	R46E		18	NESW			Irrigation		4.7
T18S	R46E		18	NESW			Irrigation		12.2
T18S	R46E		18	NESW			Irrigation		4.2
T18S	R46E		18	NESW			Irrigation		3.1
T18S	R46E		18	NESW			Irrigation		0.1
T18S	R46E		18	NWSW	3		Irrigation		3.7
T18S	R46E		18	SWSW	4		Irrigation		1.9
T18S	R46E		18	SWSW	4		Irrigation		14
T18S	R46E		18	SWSW	4		Irrigation		6.6
T18S	R46E		18	SWSW	4		Irrigation		6.6
T18S	R46E		18	NESE			Irrigation		7.6
T18S	R46E		18	NESE			Irrigation		5.1
T18S	R46E		18	NESE			Irrigation		7.7
T18S	R46E		18	NESE			Irrigation		0.7
T18S	R46E		18	NESE			Irrigation		0.2
T18S	R46E		18	NESE			Irrigation		2.4
T18S	R46E		18	NWSE			Irrigation		18.6
T18S	R46E		18	NWSE			Irrigation		1.9
T18S	R46E		18	NWSE			Irrigation		1.7
T18S	R46E		18	SWSE			Irrigation		20.2
T18S	R46E		18	SWSE			Irrigation		16.2
T18S	R46E		18	SESE			Irrigation		17.8
T18S	R46E		18	SESE			Irrigation		18.5
T18S	R46E		18	SESE			Irrigation		0.9
T18S	R46E		18	SESW			Irrigation		4.3

Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T18S	R46E		18	SESW			Irrigation		8.6
T18S	R46E		18	SESW			Irrigation		22.1
T18S	R46E		18	SESW			Irrigation		3
T18S	R46E		18	SESW			Irrigation		0.2
T18S	R46E		19	NENE			Irrigation		17.2
T18S	R46E		19	NENE			Irrigation		7.6
T18S	R46E		19	NENE			Irrigation		7.6
T18S	R46E		19	NWNE			Irrigation		6.6
T18S	R46E		19	NWNE			Irrigation		24.2
T18S	R46E		19	NWNE			Irrigation		1.3
T18S	R46E		19	NWNE			Irrigation		0.7
T18S	R46E		19	SWNE			Irrigation		18.1
T18S	R46E		19	SWNE			Irrigation		11.4
T18S	R46E		19	SWNE			Irrigation		6.7
T18S	R46E		19	SENE			Irrigation		10
T18S	R46E		19	SENE			Irrigation		7.9
T18S	R46E		19	SENE			Irrigation		6.7
T18S	R46E		19	SENE			Irrigation		6.4
T18S	R46E		19	SENE			Irrigation		1.8
T18S	R46E		19	NENW			Irrigation		10
T18S	R46E		19	NENW			Irrigation		21.9
T18S	R46E		19	NWNW	1		Irrigation		18.7
T18S	R46E		19	NWNW	1		Irrigation		12.5
T18S	R46E		19	SWNW	2		Irrigation		9.9
T18S	R46E		19	SWNW	2		Irrigation		6.5
T18S	R46E		19	SWNW	2		Irrigation		12.2
T18S	R46E		19	SWNW	2		Irrigation		7.3
T18S	R46E		19	SENW			Irrigation		17.6
T18S	R46E		19	SENW			Irrigation		5.7
T18S	R46E		19	SENW			Irrigation		12.2
T18S	R46E		19	NESW			Irrigation		6.1
T18S	R46E		19	NESW			Irrigation		25.2
T18S	R46E		19	NESW			Irrigation		5.3
T18S	R46E		19	NWSW	3		Irrigation		14.5
T18S	R46E		19	NWSW	3		Irrigation		2.4
T18S	R46E		19	NWSW	3		Irrigation		9
T18S	R46E		19	NWSW	3		Irrigation		9.7
T18S	R46E		19	NWSW	3		Irrigation		2
T18S	R46E		19	SWSW	4		Irrigation		21.3
T18S	R46E		19	SWSW	4		Irrigation		3.7
T18S	R46E		19	SWSW	4		Irrigation		4.8
T18S	R46E		19	SWSW	4		Irrigation		2
T18S	R46E		19	NESE			Irrigation		10.6
T18S	R46E		19	NESE			Irrigation		13.5
T18S	R46E		19	NESE			Irrigation		0.2
T18S	R46E		19	NESE			Irrigation		4.4
T18S	R46E		19	NESE			Irrigation		6.1
T18S	R46E		19	NWSE			Irrigation		0.6
T18S	R46E		19	NWSE			Irrigation		5.7
T18S	R46E		19	NWSE			Irrigation		21.4
T18S	R46E		19	NWSE			Irrigation		10.3

Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T18S	R46E		19	SWSE			Irrigation		2
T18S	R46E		19	SWSE			Irrigation		1.5
T18S	R46E		19	SWSE			Irrigation		7.4
T18S	R46E		19	SWSE			Irrigation		2.7
T18S	R46E		19	SWSE			Irrigation		8.2
T18S	R46E		19	SWSE			Irrigation		9.9
T18S	R46E		19	SESE			Irrigation		0.1
T18S	R46E		19	SESE			Irrigation		9.2
T18S	R46E		19	SESE			Irrigation		21.5
T18S	R46E		19	SESE			Irrigation		1.8
T18S	R46E		19	SESW			Irrigation		14
T18S	R46E		19	SESW			Irrigation		18.7
T18S	R46E		20	NENE			Irrigation		34.7
T18S	R46E		20	NWNE			Irrigation		32.9
T18S	R46E		20	SWNE			Irrigation		2.2
T18S	R46E		20	SWNE			Irrigation		7
T18S	R46E		20	SWNE			Irrigation		26.2
T18S	R46E		20	SENE			Irrigation		9.2
T18S	R46E		20	SENE			Irrigation		27.8
T18S	R46E		20	NENW			Irrigation		30.1
T18S	R46E		20	NENW			Irrigation		1.2
T18S	R46E		20	NWNW			Irrigation		31.2
T18S	R46E		20	SWNW			Irrigation		25.4
T18S	R46E		20	SWNW			Irrigation		12.6
T18S	R46E		20	SENW			Irrigation		24.9
T18S	R46E		20	SENW			Irrigation		12.1
T18S	R46E		20	NESW			Irrigation		8
T18S	R46E		20	NESW			Irrigation		18.3
T18S	R46E		20	NESW			Irrigation		9.9
T18S	R46E		20	NWSW			Irrigation		24.6
T18S	R46E		20	NWSW			Irrigation		13
T18S	R46E		20	SWSW			Irrigation		0.7
T18S	R46E		20	SWSW			Irrigation		20.7
T18S	R46E		20	SWSW			Irrigation		8.2
T18S	R46E		20	SWSW			Irrigation		5.6
T18S	R46E		20	SWSW			Irrigation		0.3
T18S	R46E		20	SWSW			Irrigation		0.1
T18S	R46E		20	NESE			Irrigation		27.7
T18S	R46E		20	NESE			Irrigation		6.5
T18S	R46E		20	NWSE			Irrigation		1.5
T18S	R46E		20	NWSE			Irrigation		16.8
T18S	R46E		20	NWSE			Irrigation		4.3
T18S	R46E		20	NWSE			Irrigation		4.4
T18S	R46E		20	NWSE			Irrigation		8
T18S	R46E		20	SWSE			Irrigation		22.8
T18S	R46E		20	SESW			Irrigation		4.1
T18S	R46E		20	SESW			Irrigation		9.6
T18S	R46E		20	SESW			Irrigation		14.6
T18S	R46E		20	SESW			Irrigation		3
T18S	R46E		20	SESW			Irrigation		0.8
T18S	R46E		20	SESW			Irrigation		1

Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T18S	R46E		21	NENE			Irrigation		22.3
T18S	R46E		21	NENE			Irrigation		9.7
T18S	R46E		21	NWNE			Irrigation		8.1
T18S	R46E		21	NWNE			Irrigation		24.8
T18S	R46E		21	SWNE			Irrigation		23.3
T18S	R46E		21	SENE			Irrigation		17.2
T18S	R46E		21	NENW			Irrigation		14.2
T18S	R46E		21	NENW			Irrigation		18.2
T18S	R46E		21	NWNW			Irrigation		13.4
T18S	R46E		21	NWNW			Irrigation		17.4
T18S	R46E		21	NWNW			Irrigation		3.1
T18S	R46E		21	SWNW			Irrigation		25.4
T18S	R46E		21	SWNW			Irrigation		10
T18S	R46E		21	SENW			Irrigation		18
T18S	R46E		21	SENW			Irrigation		16.9
T18S	R46E		21	NESW			Irrigation		10.1
T18S	R46E		21	NWSW			Irrigation		7.2
T18S	R46E		21	NWSW			Irrigation		3
T18S	R46E		21	NWSW			Irrigation		9
T18S	R46E		21	NWSW			Irrigation		1.7
T18S	R46E		21	NWSW			Irrigation		12.7
T18S	R46E		21	SWSW			Irrigation		0.7
T18S	R46E		21	SWSW			Irrigation		5.3
T18S	R46E		21	SWSW			Irrigation		1.6
T18S	R46E		22	NWNE			Irrigation		0.7
T18S	R46E		22	NENW			Irrigation		18.9
T18S	R46E		22	NWNW			Irrigation		34.2
T18S	R46E		22	SWNW			Irrigation		2.2
T18S	R46E		29	NWNW			Irrigation		1.2
T18S	R46E		29	NWNW			Irrigation		2.4
T18S	R46E		29	NWNW			Irrigation		0.2
T18S	R46E		30	NENE			Irrigation		1
T18S	R46E		30	NENE			Irrigation		4.2
T18S	R46E		30	NENE			Irrigation		10.2
T18S	R46E		30	NENE			Irrigation		1
T18S	R46E		30	NWNE			Irrigation		7.3
T18S	R46E		30	NWNE			Irrigation		11
T18S	R46E		30	NWNE			Irrigation		8.2
T18S	R46E		30	NWNE			Irrigation		1.8
T18S	R46E		30	NWNE			Irrigation		1.4
T18S	R46E		30	SWNE			Irrigation		0.3
T18S	R46E		30	NENW			Irrigation		11.4
T18S	R46E		30	NENW			Irrigation		20.7
T18S	R46E		30	NWNW	1		Irrigation		14.4
T18S	R46E		30	NWNW	1		Irrigation		14
T18S	R46E		30	NWNW	1		Irrigation		1.6
T18S	R46E		30	NWNW	1		Irrigation		0.1
T18S	R46E		30	NWNW	1		Irrigation		2.6
T18S	R46E		30	NWNW			Irrigation		4.4
T18S	R46E		30	SWNW	2		Irrigation		8.1
T18S	R46E		30	SWNW	2		Irrigation		11.2

Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T18S	R46E		30	SENW			Irrigation		1.4
T18S	R46E		30	SENW			Irrigation		7.3
T18S	R47E		6	NENE	1		Irrigation		14.3
T18S	R47E		6	NENE	1		Irrigation		2.7
T18S	R47E		6	SWNE			Irrigation		7.6
T18S	R47E		6	SENE			Irrigation		15.4
T18S	R47E		6	NESW			Irrigation		16.9
T18S	R47E		6	SWSW	7		Irrigation		5.8
T18S	R47E		6	SESW			Irrigation		11.9
T19S	R430E		20	NENW	3		Irrigation		1.7
T19S	R43E		1	SWNE			Irrigation		23.2
T19S	R43E		1	SWNE			Irrigation		0.7
T19S	R43E		1	SWNE			Irrigation		0.2
T19S	R43E		1	SWNE			Irrigation		0.9
T19S	R43E		1	SENE			Irrigation		5.1
T19S	R43E		1	NENW			Irrigation		0.5
T19S	R43E		1	SWNW			Irrigation		12.8
T19S	R43E		1	SWNW			Irrigation		4.9
T19S	R43E		1	SENW			Irrigation		2.4
T19S	R43E		1	SENW			Irrigation		11.2
T19S	R43E		1	SENW			Irrigation		3.3
T19S	R43E		1	SENW			Irrigation		4.7
T19S	R43E		1	NESW			Irrigation		1.2
T19S	R43E		1	NESW			Irrigation		0.6
T19S	R43E		1	NWSW			Irrigation		5.1
T19S	R43E		1	NWSW			Irrigation		4.7
T19S	R43E		1	NWSW			Irrigation		0.9
T19S	R43E		1	SWSW			Irrigation		9.6
T19S	R43E		1	SWSW			Irrigation		0.7
T19S	R43E		1	SWSW	7		Irrigation		0.8
T19S	R43E		1	NESE			Irrigation		24.1
T19S	R43E		1	NWSE			Irrigation		0.2
T19S	R43E		1	NWSE			Irrigation		0.1
T19S	R43E		1	NWSE			Irrigation		24.7
T19S	R43E		1	SWSE			Irrigation		22.1
T19S	R43E		1	SESE			Irrigation		17.8
T19S	R43E		1	SESE			Irrigation		4.1
T19S	R43E		1	SESE			Irrigation		0.4
T19S	R43E		2	NENE	1		Irrigation		2.8
T19S	R43E		2	NWNE	2		Irrigation		15.3
T19S	R43E		2	SWNE			Irrigation		0.7
T19S	R43E		2	SWNE			Irrigation		1
T19S	R43E		2	SWNE			Irrigation		28.2
T19S	R43E		2	SENE			Irrigation		2.9
T19S	R43E		2	SENE			Irrigation		7.8
T19S	R43E		2	SENE			Irrigation		7.9
T19S	R43E		2	NENW	3		Irrigation		2.2
T19S	R43E		2	NWNW	4		Irrigation		0.9
T19S	R43E		2	SWNW			Irrigation		32.7
T19S	R43E		2	SENW			Irrigation		36.6
T19S	R43E		2	NESW			Irrigation		38

Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T19S	R43E		2	NWSW			Irrigation		34
T19S	R43E		2	SWSW			Irrigation		30.2
T19S	R43E		2	NESE			Irrigation		12.6
T19S	R43E		2	NESE			Irrigation		5.6
T19S	R43E		2	NESE			Irrigation		11.3
T19S	R43E		2	NESE			Irrigation		3.7
T19S	R43E		2	NWSE			Irrigation		2.8
T19S	R43E		2	NWSE			Irrigation		17.2
T19S	R43E		2	NWSE			Irrigation		4.7
T19S	R43E		2	NWSE			Irrigation		1.1
T19S	R43E		2	NWSE			Irrigation		9.3
T19S	R43E		2	SWSE			Irrigation		7.2
T19S	R43E		2	SWSE			Irrigation		5.9
T19S	R43E		2	SESE			Irrigation		26.5
T19S	R43E		2	SESE			Irrigation		3.8
T19S	R43E		2	SESE			Irrigation		3.3
T19S	R43E		2	SESW			Irrigation		32
T19S	R43E		3	SWNE			Irrigation		12.9
T19S	R43E		3	SWNE			Irrigation		0.1
T19S	R43E		3	SENE			Irrigation		14.6
T19S	R43E		3	SENE			Irrigation		6.5
T19S	R43E		3	NENW	3		Irrigation		15.3
T19S	R43E		3	NENW	3		Irrigation		7.9
T19S	R43E		3	NENW	3		Irrigation		0.5
T19S	R43E		3	NWNW	4		Irrigation		23.7
T19S	R43E		3	NWNW	4		Irrigation		0.5
T19S	R43E		3	SWNW			Irrigation		17.3
T19S	R43E		3	SWNW			Irrigation		7.9
T19S	R43E		3	SENW			Irrigation		0.2
T19S	R43E		3	SENW			Irrigation		3.2
T19S	R43E		3	SENW			Irrigation		7.2
T19S	R43E		3	NESW			Irrigation		0.8
T19S	R43E		3	NESW			Irrigation		9.2
T19S	R43E		3	NESW			Irrigation		17.2
T19S	R43E		3	NESW			Irrigation		3.7
T19S	R43E		3	NESW			Irrigation		2.1
T19S	R43E		3	NESW			Irrigation		0.7
T19S	R43E		3	NWSW			Irrigation		5.9
T19S	R43E		3	NWSW			Irrigation		5.7
T19S	R43E		3	NWSW			Irrigation		17.3
T19S	R43E		3	NWSW			Irrigation		5.3
T19S	R43E		3	SWSW			Irrigation		17.4
T19S	R43E		3	SWSW			Irrigation		3.4
T19S	R43E		3	SWSW			Irrigation		0.8
T19S	R43E		3	NESE			Irrigation		12.5
T19S	R43E		3	NESE			Irrigation		7.3
T19S	R43E		3	NESE			Irrigation		1.3
T19S	R43E		3	NWSE			Irrigation		1.7
T19S	R43E		3	NWSE			Irrigation		20.4
T19S	R43E		3	NWSE			Irrigation		0.7
T19S	R43E		3	NWSE			Irrigation		4.3

Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T19S	R43E		3	SWSE			Irrigation		17.5
T19S	R43E		3	SWSE			Irrigation		1.3
T19S	R43E		3	SWSE			Irrigation		14
T19S	R43E		3	SESE			Irrigation		10.1
T19S	R43E		3	SESE			Irrigation		16.2
T19S	R43E		3	SESW			Irrigation		3
T19S	R43E		3	SESW			Irrigation		14.9
T19S	R43E		3	SESW			Irrigation		16
T19S	R43E		4	NENE	1		Irrigation		2.3
T19S	R43E		4	NENE	1		Irrigation		1.9
T19S	R43E		4	NENE	1		Irrigation		6.6
T19S	R43E		4	NENE	1		Irrigation		0.1
T19S	R43E		4	NWNE	2		Irrigation		1.6
T19S	R43E		4	NWNE	2		Irrigation		3.3
T19S	R43E		4	SENE			Irrigation		6.5
T19S	R43E		4	SENE			Irrigation		16.9
T19S	R43E		4	SENE			Irrigation		6.3
T19S	R43E		4	SENE			Irrigation		0.2
T19S	R43E		4	NESE			Irrigation		13.7
T19S	R43E		10	NENE			Irrigation		29.9
T19S	R43E		10	NWNE			Irrigation		38.6
T19S	R43E		10	SWNE			Irrigation		9.2
T19S	R43E		10	NENW			Irrigation		25.7
T19S	R43E		10	NENW			Irrigation		13.2
T19S	R43E		10	NWNW			Irrigation		16
T19S	R43E		10	SWNW			Irrigation		0.1
T19S	R43E		10	SENW			Irrigation		9.1
T19S	R43E		10	SENW			Irrigation		4
T19S	R43E		11	NENE			Irrigation		33.5
T19S	R43E		11	NENE			Irrigation		0.3
T19S	R43E		11	NWNE			Irrigation		1.1
T19S	R43E		11	SENE			Irrigation		10.7
T19S	R43E		11	NWNW			Irrigation		1.1
T19S	R43E		12	NENE			Irrigation		35.6
T19S	R43E		12	NENE			Irrigation		0.6
T19S	R43E		12	NWNE			Irrigation		28.4
T19S	R43E		12	SWNE			Irrigation		19.7
T19S	R43E		12	SWNE			Irrigation		6.7
T19S	R43E		12	SWNE			Irrigation		7.6
T19S	R43E		12	SENE			Irrigation		7.8
T19S	R43E		12	SENE			Irrigation		17.1
T19S	R43E		12	SENE			Irrigation		7.8
T19S	R43E		12	NENW			Irrigation		5.6
T19S	R43E		12	NENW			Irrigation		8.7
T19S	R43E		12	NWNW			Irrigation		6.4
T19S	R43E		12	NWNW			Irrigation		20
T19S	R43E		12	NWNW			Irrigation		4.4
T19S	R43E		12	SWNW			Irrigation		34.9
T19S	R43E		12	SENW			Irrigation		38.5
T19S	R43E		12	NESW			Irrigation		25.5
T19S	R43E		12	NESW			Irrigation		2.5

Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T19S	R43E		12	NWSW			Irrigation		6.1
T19S	R43E		12	NESE			Irrigation		19.4
T19S	R43E		12	NESE			Irrigation		14.8
T19S	R43E		12	NESE			Irrigation		0.3
T19S	R43E		12	NWSE			Irrigation		31.6
T19S	R43E		12	NWSE			Irrigation		1.2
T19S	R43E		12	NWSE			Irrigation		5.6
T19S	R43E		12	SWSE			Irrigation		2.4
T19S	R43E		12	SWSE			Irrigation		3.1
T19S	R43E		12	SWSE			Irrigation		9.7
T19S	R43E		12	SWSE			Irrigation		0.1
T19S	R43E		12	SESE			Irrigation		35.2
T19S	R43E		12	SESW			Irrigation		0.3
T19S	R44E		1	NENE	1		Irrigation		18.8
T19S	R44E		1	NENE	1		Irrigation		17.4
T19S	R44E		1	NWNE	2		Irrigation		23.5
T19S	R44E		1	NWNE	2		Irrigation		13.6
T19S	R44E		1	SWNE			Irrigation		16.8
T19S	R44E		1	SWNE			Irrigation		13.3
T19S	R44E		1	SENE			Irrigation		1
T19S	R44E		1	NENW	3		Irrigation		4.2
T19S	R44E		1	NENW	3		Irrigation		15.2
T19S	R44E		1	NENW	3		Irrigation		7.5
T19S	R44E		1	NENW	3		Irrigation		0.7
T19S	R44E		1	NWNW	4		Irrigation		21
T19S	R44E		1	NWNW	4		Irrigation		13.5
T19S	R44E		1	SWNW			Irrigation		8.2
T19S	R44E		1	SWNW			Irrigation		3.6
T19S	R44E		1	SWNW			Irrigation		1.7
T19S	R44E		1	SWNW			Irrigation		5.6
T19S	R44E		1	SENW			Irrigation		36.9
T19S	R44E		1	NESW			Irrigation		14.8
T19S	R44E		1	NWSW			Irrigation		37.4
T19S	R44E		1	SWSW			Irrigation		36
T19S	R44E		1	NESE			Irrigation		4.2
T19S	R44E		1	NWSE			Irrigation		3
T19S	R44E		1	SWSE			Irrigation		12.1
T19S	R44E		1	SWSE			Irrigation		4.5
T19S	R44E		1	SESE			Irrigation		22.3
T19S	R44E		1	SESE			Irrigation		1.1
T19S	R44E		1	SESE			Irrigation		0.2
T19S	R44E		1	SESW			Irrigation		10.5
T19S	R44E		2	NENE	1		Irrigation		38
T19S	R44E		2	NWNE	2		Irrigation		14
T19S	R44E		2	NWNE	2		Irrigation		6.4
T19S	R44E		2	NWNE	2		Irrigation		2.6
T19S	R44E		2	NWNE	2		Irrigation		6.4
T19S	R44E		2	NWNE	2		Irrigation		1
T19S	R44E		2	SWNE			Irrigation		38.8
T19S	R44E		2	SENE			Irrigation		36.2
T19S	R44E		2	NENW	3		Irrigation		7.3

Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T19S	R44E		2	NENW	3		Irrigation		21.8
T19S	R44E		2	NWNW	4		Irrigation		0.7
T19S	R44E		2	SWNW			Irrigation		4.6
T19S	R44E		2	SWNW			Irrigation		13.7
T19S	R44E		2	SENW			Irrigation		11.7
T19S	R44E		2	SENW			Irrigation		21.5
T19S	R44E		2	NESW			Irrigation		37.1
T19S	R44E		2	NWSW			Irrigation		9.5
T19S	R44E		2	NWSW			Irrigation		14.6
T19S	R44E		2	NWSW			Irrigation		5
T19S	R44E		2	NWSW			Irrigation		1.2
T19S	R44E		2	SWSW			Irrigation		35.1
T19S	R44E		2	SWSW			Irrigation		0.2
T19S	R44E		2	NESE			Irrigation		4.7
T19S	R44E		2	NESE			Irrigation		6.2
T19S	R44E		2	NESE			Irrigation		22.3
T19S	R44E		2	NWSE			Irrigation		38.2
T19S	R44E		2	SWSE			Irrigation		39
T19S	R44E		2	SESE			Irrigation		20.9
T19S	R44E		2	SESE			Irrigation		5.7
T19S	R44E		2	SESE			Irrigation		7.7
T19S	R44E		2	SESW			Irrigation		39.9
T19S	R44E		3	SWSW			Irrigation		3.9
T19S	R44E		3	SWSW			Irrigation		0.4
T19S	R44E		3	NESE			Irrigation		6.6
T19S	R44E		3	NESE			Irrigation		6.4
T19S	R44E		3	NESE			Irrigation		1
T19S	R44E		3	SWSE			Irrigation		8.7
T19S	R44E		3	SWSE			Irrigation		5.6
T19S	R44E		3	SWSE			Irrigation		0.9
T19S	R44E		3	SESE			Irrigation		4.4
T19S	R44E		3	SESE			Irrigation		8.2
T19S	R44E		3	SESE			Irrigation		2.4
T19S	R44E		3	SESE			Irrigation		0.2
T19S	R44E		3	SESW			Irrigation		6.4
T19S	R44E		4	NWNE	2		Irrigation		1.5
T19S	R44E		4	SWNE			Irrigation		23.1
T19S	R44E		4	NENW	3		Irrigation		12.9
T19S	R44E		4	NWNW	4		Irrigation		0.7
T19S	R44E		4	SWNW			Irrigation		22.2
T19S	R44E		4	SWNW			Irrigation		13.9
T19S	R44E		4	SENW			Irrigation		24
T19S	R44E		4	SENW			Irrigation		15
T19S	R44E		4	NESW			Irrigation		39.2
T19S	R44E		4	NWSW			Irrigation		39.4
T19S	R44E		4	NWSW			Irrigation		0.4
T19S	R44E		4	SWSW			Irrigation		14
T19S	R44E		4	SWSW			Irrigation		18.6
T19S	R44E		4	NESE			Irrigation		1.3
T19S	R44E		4	NESE			Irrigation		0.2
T19S	R44E		4	NWSE			Irrigation		31.3

Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T19S	R44E		4	NWSE			Irrigation		5.4
T19S	R44E		4	NWSE			Irrigation		0.4
T19S	R44E		4	SWSE			Irrigation		33.8
T19S	R44E		4	SWSE			Irrigation		1.3
T19S	R44E		4	SWSE			Irrigation		0.3
T19S	R44E		4	SESE			Irrigation		16.8
T19S	R44E		4	SESE			Irrigation		0.8
T19S	R44E		4	SESE			Irrigation		4.2
T19S	R44E		4	SESW			Irrigation		3.6
T19S	R44E		4	SESW			Irrigation		3.2
T19S	R44E		4	SESW			Irrigation		15.3
T19S	R44E		4	SESW			Irrigation		10.1
T19S	R44E		5	SENE			Irrigation		21.2
T19S	R44E		5	NWNW	4		Irrigation		0.1
T19S	R44E		5	SWNW			Irrigation		6.9
T19S	R44E		5	NESE			Irrigation		2.5
T19S	R44E		5	NESE			Irrigation		2.5
T19S	R44E		5	NESE			Irrigation		17.5
T19S	R44E		5	NESE			Irrigation		1.2
T19S	R44E		5	SWSE			Irrigation		1.6
T19S	R44E		5	SESE			Irrigation		4.1
T19S	R44E		5	SESE			Irrigation		25.5
T19S	R44E		5	SESE			Irrigation		2.7
T19S	R44E		6	NENE	1		Irrigation		0.1
T19S	R44E		6	SWNE			Irrigation		13.2
T19S	R44E		6	SWNE			Irrigation		0.1
T19S	R44E		6	SENE			Irrigation		3.3
T19S	R44E		6	SENE			Irrigation		10
T19S	R44E		6	SENE			Irrigation		7.2
T19S	R44E		6	NWNW	4		Irrigation		22.9
T19S	R44E		6	NWNW	4		Irrigation		6.8
T19S	R44E		6	SWNW	5		Irrigation		3.8
T19S	R44E		6	SWNW	5		Irrigation		6.9
T19S	R44E		6	SWNW	5		Irrigation		7.7
T19S	R44E		6	SWNW	5		Irrigation		7.8
T19S	R44E		6	SWNW	5		Irrigation		1
T19S	R44E		6	SWNW	5		Irrigation		0.8
T19S	R44E		6	SENW			Irrigation		0.4
T19S	R44E		6	SENW			Irrigation		0.2
T19S	R44E		6	NESW			Irrigation		18.7
T19S	R44E		6	NWSW	6		Irrigation		4.1
T19S	R44E		6	NWSW	6		Irrigation		0.7
T19S	R44E		6	NWSW	6		Irrigation		4.5
T19S	R44E		6	NWSW	6		Irrigation		5.6
T19S	R44E		6	NWSW	6		Irrigation		1
T19S	R44E		6	NWSW	6		Irrigation		1
T19S	R44E		6	SWSW	7		Irrigation		25.5
T19S	R44E		6	SWSW	7		Irrigation		7.4
T19S	R44E		6	SWSW	7		Irrigation		5.5
T19S	R44E		6	SWSW			Irrigation		0.2
T19S	R44E		6	SWSW			Irrigation		0.1

Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T19S	R44E		6	SWSW	7		Irrigation		2.1
T19S	R44E		6	SWSW	7		Irrigation		2.8
T19S	R44E		6	NESE			Irrigation		5
T19S	R44E		6	NESE			Irrigation		22.7
T19S	R44E		6	NESE			Irrigation		1.3
T19S	R44E		6	NWSE			Irrigation		12.4
T19S	R44E		6	NWSE			Irrigation		8.3
T19S	R44E		6	NWSE			Irrigation		7.8
T19S	R44E		6	NWSE			Irrigation		0.1
T19S	R44E		6	SWSE			Irrigation		4.5
T19S	R44E		6	SESE			Irrigation		0.9
T19S	R44E		6	SESE			Irrigation		2
T19S	R44E		6	SESW			Irrigation		0.7
T19S	R44E		6	SESW			Irrigation		0.9
T19S	R44E		6	SESW			Irrigation		1.9
T19S	R44E		7	NENE			Irrigation		8.3
T19S	R44E		7	NENE			Irrigation		21
T19S	R44E		7	NENE			Irrigation		6.3
T19S	R44E		7	NWNE			Irrigation		10.5
T19S	R44E		7	NWNE			Irrigation		5.6
T19S	R44E		7	NWNE			Irrigation		2.2
T19S	R44E		7	NWNE			Irrigation		9.8
T19S	R44E		7	SWNE			Irrigation		24.4
T19S	R44E		7	SWNE			Irrigation		3.4
T19S	R44E		7	SWNE			Irrigation		2.4
T19S	R44E		7	SWNE			Irrigation		1.6
T19S	R44E		7	SENE			Irrigation		27.4
T19S	R44E		7	SENE			Irrigation		7
T19S	R44E		7	SENE			Irrigation		4
T19S	R44E		7	NWNW	1		Irrigation		1
T19S	R44E		7	NESW			Irrigation		27.8
T19S	R44E		7	NESW			Irrigation		9.4
T19S	R44E		7	NWSW	3		Irrigation		52.3
T19S	R44E		7	SWSW	4		Irrigation		2.6
T19S	R44E		7	SWSW	4		Irrigation		36.4
T19S	R44E		7	SWSW	4		Irrigation		9.1
T19S	R44E		7	NESE			Irrigation		0.3
T19S	R44E		7	NESE			Irrigation		12.5
T19S	R44E		7	NESE			Irrigation		8.2
T19S	R44E		7	NESE			Irrigation		14.2
T19S	R44E		7	NWSE			Irrigation		14.4
T19S	R44E		7	NWSE			Irrigation		14.4
T19S	R44E		7	NWSE			Irrigation		6.8
T19S	R44E		7	SWSE			Irrigation		5.7
T19S	R44E		7	SWSE			Irrigation		14.5
T19S	R44E		7	SWSE			Irrigation		10.1
T19S	R44E		7	SWSE			Irrigation		3.3
T19S	R44E		7	SESE			Irrigation		14.1
T19S	R44E		7	SESE			Irrigation		15.9
T19S	R44E		7	SESE			Irrigation		7.9
T19S	R44E		7	SESW			Irrigation		24.1

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Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T19S	R44E		7	SESW			Irrigation		2
T19S	R44E		7	SESW			Irrigation		1.2
T19S	R44E		7	SESW			Irrigation		1.5
T19S	R44E		7	SESW			Irrigation		0.2
T19S	R44E		8	NENW			Irrigation		3.7
T19S	R44E		8	NENW			Irrigation		32.9
T19S	R44E		8	NENW			Irrigation		0.3
T19S	R44E		8	NWNW			Irrigation		10
T19S	R44E		8	NWNW			Irrigation		11.3
T19S	R44E		8	NWNW			Irrigation		6.5
T19S	R44E		8	SWNW			Irrigation		1.8
T19S	R44E		8	SWNW			Irrigation		28.7
T19S	R44E		8	SENW			Irrigation		26.7
T19S	R44E		8	NESW			Irrigation		0.4
T19S	R44E		8	NESW			Irrigation		10
T19S	R44E		8	NESW			Irrigation		1.6
T19S	R44E		8	NWSW			Irrigation		7.3
T19S	R44E		8	NWSW			Irrigation		5.7
T19S	R44E		8	NWSW			Irrigation		7.1
T19S	R44E		8	NWSW			Irrigation		0.9
T19S	R44E		8	NWSW			Irrigation		6.5
T19S	R44E		8	NWSW			Irrigation		7.1
T19S	R44E		8	SWSW			Irrigation		7.1
T19S	R44E		8	SWSW			Irrigation		21.9
T19S	R44E		8	SWSW			Irrigation		7.6
T19S	R44E		8	SWSW			Irrigation		1.9
T19S	R44E		8	NWSE			Irrigation		6.6
T19S	R44E		8	NWSE			Irrigation		7.8
T19S	R44E		8	NWSE			Irrigation		0.3
T19S	R44E		8	NWSE			Irrigation		0.1
T19S	R44E		8	SWSE			Irrigation		17.3
T19S	R44E		8	SWSE			Irrigation		1.3
T19S	R44E		8	SWSE			Irrigation		6.6
T19S	R44E		8	SESW			Irrigation		8.4
T19S	R44E		8	SESW			Irrigation		4.6
T19S	R44E		9	NENE			Irrigation		4.2
T19S	R44E		9	NENE			Irrigation		22.7
T19S	R44E		9	NWNE			Irrigation		15.9
T19S	R44E		9	NWNE			Irrigation		15.5
T19S	R44E		9	SWNE			Irrigation		3.7
T19S	R44E		9	SWNE			Irrigation		3.6
T19S	R44E		9	SWNE			Irrigation		8.1
T19S	R44E		9	SWNE			Irrigation		19.7
T19S	R44E		9	SENE			Irrigation		33.2
T19S	R44E		9	NENW			Irrigation		17
T19S	R44E		9	NWNW			Irrigation		2.3
T19S	R44E		9	NWNW			Irrigation		11.1
T19S	R44E		9	NWNW			Irrigation		16.3
T19S	R44E		9	NWNW			Irrigation		4.6
T19S	R44E		9	SWNW			Irrigation		12
T19S	R44E		9	NESE			Irrigation		36.1

Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T19S	R44E		9	NWSE			Irrigation		39.7
T19S	R44E		9	SWSE			Irrigation		38
T19S	R44E		9	SESE			Irrigation		38
T19S	R44E		10	NENE			Irrigation		0.7
T19S	R44E		10	NENE			Irrigation		0.2
T19S	R44E		10	NENE			Irrigation		0.8
T19S	R44E		10	NENE			Irrigation		6.9
T19S	R44E		10	NENE			Irrigation		3.8
T19S	R44E		10	NENE			Irrigation		0.3
T19S	R44E		10	NENE			Irrigation		7.2
T19S	R44E		10	NWNE			Irrigation		0.2
T19S	R44E		10	NWNE			Irrigation		8.6
T19S	R44E		10	NWNE			Irrigation		6.2
T19S	R44E		10	NWNE			Irrigation		5.7
T19S	R44E		10	NWNE			Irrigation		6.9
T19S	R44E		10	SWNE			Irrigation		10.7
T19S	R44E		10	SWNE			Irrigation		24.6
T19S	R44E		10	SENE			Irrigation		11.5
T19S	R44E		10	SENE			Irrigation		2.6
T19S	R44E		10	NENW			Irrigation		4.5
T19S	R44E		10	NENW			Irrigation		14.9
T19S	R44E		10	NENW			Irrigation		6.5
T19S	R44E		10	NENW			Irrigation		4.6
T19S	R44E		10	NWNW			Irrigation		0.7
T19S	R44E		10	NWNW			Irrigation		7
T19S	R44E		10	NWNW			Irrigation		3.7
T19S	R44E		10	NWNW			Irrigation		13.3
T19S	R44E		10	NWNW			Irrigation		4.2
T19S	R44E		10	SWNW			Irrigation		10.7
T19S	R44E		10	SWNW			Irrigation		25.8
T19S	R44E		10	SENW			Irrigation		22.5
T19S	R44E		10	SENW			Irrigation		13.8
T19S	R44E		10	NESW			Irrigation		11
T19S	R44E		10	NESW			Irrigation		25
T19S	R44E		10	NWSW			Irrigation		17.8
T19S	R44E		10	NWSW			Irrigation		13.6
T19S	R44E		10	SWSW			Irrigation		23.6
T19S	R44E		10	SWSW			Irrigation		13.2
T19S	R44E		10	SWSW			Irrigation		0.3
T19S	R44E		10	NESE			Irrigation		18.9
T19S	R44E		10	NESE			Irrigation		16.1
T19S	R44E		10	NWSE			Irrigation		17.5
T19S	R44E		10	NWSE			Irrigation		0.9
T19S	R44E		10	NWSE			Irrigation		12.7
T19S	R44E		10	NWSE			Irrigation		1.7
T19S	R44E		10	SWSE			Irrigation		0.1
T19S	R44E		10	SWSE			Irrigation		22.9
T19S	R44E		10	SWSE			Irrigation		12.6
T19S	R44E		10	SWSE			Irrigation		0.1
T19S	R44E		10	SWSE			Irrigation		0.5
T19S	R44E		10	SESE			Irrigation		31.6

Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T19S	R44E		10	SESE			Irrigation		5.3
T19S	R44E		10	SESE			Irrigation		0.9
T19S	R44E		10	SESE			Irrigation		0.1
T19S	R44E		10	SESW			Irrigation		11
T19S	R44E		10	SESW			Irrigation		8.7
T19S	R44E		10	SESW			Irrigation		15.8
T19S	R44E		11	NWNE			Irrigation		13.2
T19S	R44E		11	NENW			Irrigation		37.7
T19S	R44E		11	NWNW			Irrigation		37.6
T19S	R44E		11	SWNW			Irrigation		3.8
T19S	R44E		11	SWNW			Irrigation		31.1
T19S	R44E		11	SENW			Irrigation		0.5
T19S	R44E		11	SENW			Irrigation		24.9
T19S	R44E		11	SENW			Irrigation		3.6
T19S	R44E		12	NENE			Irrigation		10.9
T19S	R44E		12	NENE			Irrigation		6.3
T19S	R44E		12	NWNE			Irrigation		5
T19S	R44E		12	NWNE			Irrigation		12.7
T19S	R44E		12	NWNE			Irrigation		2.1
T19S	R44E		12	SWNE			Irrigation		16.7
T19S	R44E		12	SWNE			Irrigation		5.1
T19S	R44E		12	SENE			Irrigation		30.1
T19S	R44E		12	SENE			Irrigation		2.5
T19S	R44E		12	SWNW			Irrigation		3.2
T19S	R44E		12	SWNW			Irrigation		10.9
T19S	R44E		12	SWNW			Irrigation		12
T19S	R44E		12	SENW			Irrigation		4.6
T19S	R44E		12	SENW			Irrigation		6.6
T19S	R44E		12	SENW			Irrigation		0.2
T19S	R44E		12	NESE			Irrigation		35.9
T19S	R44E		12	NESE			Irrigation		0.3
T19S	R44E		12	NESE			Irrigation		0.8
T19S	R44E		12	NWSE			Irrigation		11.1
T19S	R44E		12	NWSE			Irrigation		27.4
T19S	R44E		12	NWSE			Irrigation		0.1
T19S	R44E		12	SWSE			Irrigation		24.2
T19S	R44E		12	SWSE			Irrigation		14.3
T19S	R44E		12	SESE			Irrigation		1
T19S	R44E		12	SESE			Irrigation		28.2
T19S	R44E		12	SESE			Irrigation		0.8
T19S	R44E		12	SESW			Irrigation		8.4
T19S	R44E		13	NENE			Irrigation		4.6
T19S	R44E		13	NENE			Irrigation		0.8
T19S	R44E		13	NENE			Irrigation		0.2
T19S	R44E		13	NWNE			Irrigation		8
T19S	R44E		13	NWNE			Irrigation		5.4
T19S	R44E		13	NWNE			Irrigation		15.8
T19S	R44E		13	NWNE			Irrigation		7.5
T19S	R44E		13	SWNE			Irrigation		0.5
T19S	R44E		13	SWNE			Irrigation		6.8
T19S	R44E		13	SWNE			Irrigation		3

Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T19S	R44E		13	SWNE			Irrigation		0.6
T19S	R44E		13	SWNE			Irrigation		0.1
T19S	R44E		13	NENW			Irrigation		14.2
T19S	R44E		13	NWNW			Irrigation		3.6
T19S	R44E		13	SWNW			Irrigation		16.9
T19S	R44E		13	SWNW			Irrigation		1.2
T19S	R44E		13	SWNW			Irrigation		2.8
T19S	R44E		13	SENW			Irrigation		11.9
T19S	R44E		13	SENW			Irrigation		12.9
T19S	R44E		13	SENW			Irrigation		2.5
T19S	R44E		13	SENW			Irrigation		0.8
T19S	R44E		13	NESW			Irrigation		3.8
T19S	R44E		13	NWSW			Irrigation		1.6
T19S	R44E		13	NWSW			Irrigation		18.3
T19S	R44E		13	NWSW			Irrigation		8.3
T19S	R44E		13	SWSW			Irrigation		1.7
T19S	R44E		14	NENE			Irrigation		36.1
T19S	R44E		14	NENE			Irrigation		0.3
T19S	R44E		14	NENE			Irrigation		0.9
T19S	R44E		14	NWNE			Irrigation		3.7
T19S	R44E		14	NWNE			Irrigation		27.6
T19S	R44E		14	NWNE			Irrigation		5.5
T19S	R44E		14	SWNE			Irrigation		30.6
T19S	R44E		14	SWNE			Irrigation		4.5
T19S	R44E		14	SENE			Irrigation		12.6
T19S	R44E		14	SENE			Irrigation		1.5
T19S	R44E		14	SENE			Irrigation		0.6
T19S	R44E		14	SENE			Irrigation		18.6
T19S	R44E		14	NENW			Irrigation		1.6
T19S	R44E		14	NENW			Irrigation		1.3
T19S	R44E		14	NENW			Irrigation		8.3
T19S	R44E		14	NENW			Irrigation		14
T19S	R44E		14	NWNW			Irrigation		0.1
T19S	R44E		14	NWNW			Irrigation		3.6
T19S	R44E		14	SWNW			Irrigation		20.4
T19S	R44E		14	SWNW			Irrigation		1.1
T19S	R44E		14	SWNW			Irrigation		0.9
T19S	R44E		14	SENW			Irrigation		19.5
T19S	R44E		14	SENW			Irrigation		0.9
T19S	R44E		14	SENW			Irrigation		17.1
T19S	R44E		14	NESW			Irrigation		13.1
T19S	R44E		14	NESW			Irrigation		22.5
T19S	R44E		14	NWSW			Irrigation		7.9
T19S	R44E		14	NWSW			Irrigation		2.3
T19S	R44E		14	NWSW			Irrigation		16.7
T19S	R44E		14	NWSW			Irrigation		3.4
T19S	R44E		14	NWSW			Irrigation		2
T19S	R44E		14	NWSW			Irrigation		0.6
T19S	R44E		14	SWSW			Irrigation		1.4
T19S	R44E		14	SWSW			Irrigation		9.4
T19S	R44E		14	NESE			Irrigation		3.3

Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T19S	R44E		14	NESE			Irrigation		7.9
T19S	R44E		14	NESE			Irrigation		11
T19S	R44E		14	NESE			Irrigation		13
T19S	R44E		14	NESE			Irrigation		0.6
T19S	R44E		14	NWSE			Irrigation		17.4
T19S	R44E		14	NWSE			Irrigation		17.4
T19S	R44E		14	SWSE			Irrigation		36.7
T19S	R44E		14	SESE			Irrigation		31
T19S	R44E		14	SESW			Irrigation		8.6
T19S	R44E		14	SESW			Irrigation		14.9
T19S	R44E		15	NENW			Irrigation		12.1
T19S	R44E		15	NENW			Irrigation		28.1
T19S	R44E		15	NENW			Irrigation		0.3
T19S	R44E		15	NWNW			Irrigation		9.9
T19S	R44E		15	NWNW			Irrigation		16.2
T19S	R44E		15	SWNW			Irrigation		1.2
T19S	R44E		15	SWNW			Irrigation		14.2
T19S	R44E		15	SWNW			Irrigation		0.5
T19S	R44E		15	SWNW			Irrigation		0.4
T19S	R44E		15	SWNW			Irrigation		19
T19S	R44E		15	SENW			Irrigation		0.4
T19S	R44E		15	SENW			Irrigation		26.9
T19S	R44E		15	SENW			Irrigation		11.5
T19S	R44E		15	NESW			Irrigation		13.8
T19S	R44E		15	NESW			Irrigation		0.1
T19S	R44E		15	NWSW			Irrigation		17.3
T19S	R44E		15	SWSW			Irrigation		2.1
T19S	R44E		15	SWSW			Irrigation		15.7
T19S	R44E		15	NESE			Irrigation		15.3
T19S	R44E		15	NESE			Irrigation		6.3
T19S	R44E		15	NESE			Irrigation		2
T19S	R44E		15	NWSE			Irrigation		7.1
T19S	R44E		15	NWSE			Irrigation		11.5
T19S	R44E		15	SWSE			Irrigation		3.2
T19S	R44E		15	SWSE			Irrigation		4.6
T19S	R44E		15	SWSE			Irrigation		11.3
T19S	R44E		15	SWSE			Irrigation		9.7
T19S	R44E		15	SWSE			Irrigation		0.1
T19S	R44E		15	SESE			Irrigation		2.5
T19S	R44E		15	SESE			Irrigation		14
T19S	R44E		15	SESE			Irrigation		19
T19S	R44E		15	SESW			Irrigation		4.3
T19S	R44E		15	SESW			Irrigation		6.1
T19S	R44E		15	SESW			Irrigation		16.2
T19S	R44E		16	SWNE			Irrigation		26
T19S	R44E		16	SENE			Irrigation		7.4
T19S	R44E		16	SENE			Irrigation		11.8
T19S	R44E		16	SENE			Irrigation		10.2
T19S	R44E		16	SENW			Irrigation		8.1
T19S	R44E		16	NESW			Irrigation		0.2
T19S	R44E		16	NESW			Irrigation		4.2

Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T19S	R44E		16	NESE			Irrigation		2.6
T19S	R44E		16	NESE			Irrigation		4
T19S	R44E		16	NESE			Irrigation		4.8
T19S	R44E		16	NWSE			Irrigation		2.2
T19S	R44E		16	NWSE			Irrigation		32.1
T19S	R44E		17	NENE			Irrigation		8
T19S	R44E		17	NENE			Irrigation		7
T19S	R44E		17	NWNE			Irrigation		6.3
T19S	R44E		17	NWNE			Irrigation		6.6
T19S	R44E		17	NWNE			Irrigation		6
T19S	R44E		17	NWNE			Irrigation		2.6
T19S	R44E		17	SWNE			Irrigation		2.5
T19S	R44E		17	SWNE			Irrigation		8.7
T19S	R44E		17	SWNE			Irrigation		3.3
T19S	R44E		17	SWNE			Irrigation		1.5
T19S	R44E		17	SENE			Irrigation		4.9
T19S	R44E		17	SENE			Irrigation		18.3
T19S	R44E		17	NENW			Irrigation		6.3
T19S	R44E		17	NENW			Irrigation		18
T19S	R44E		17	NENW			Irrigation		12.4
T19S	R44E		17	NWNW			Irrigation		33.8
T19S	R44E		17	NWNW			Irrigation		0.8
T19S	R44E		17	SWNW			Irrigation		36.5
T19S	R44E		17	SENW			Irrigation		4.2
T19S	R44E		17	SENW			Irrigation		32
T19S	R44E		17	NESW			Irrigation		2.7
T19S	R44E		17	NWSW			Irrigation		3.8
T19S	R44E		18	NENE			Irrigation		13.2
T19S	R44E		18	NENE			Irrigation		1.4
T19S	R44E		18	NENE			Irrigation		10
T19S	R44E		18	NENE			Irrigation		9.8
T19S	R44E		18	NENE			Irrigation		0.4
T19S	R44E		18	NWNE			Irrigation		33.3
T19S	R44E		18	NWNE			Irrigation		0.1
T19S	R44E		18	NWNE			Irrigation		3.6
T19S	R44E		18	SWNE			Irrigation		10.6
T19S	R44E		18	SWNE			Irrigation		1.2
T19S	R44E		18	SENE			Irrigation		6.8
T19S	R44E		18	SENE			Irrigation		4.5
T19S	R44E		18	SENE			Irrigation		8.3
T19S	R44E		18	SENE			Irrigation		11.5
T19S	R44E		18	SENE			Irrigation		1.8
T19S	R44E		18	NENW			Irrigation		10.9
T19S	R44E		18	NENW			Irrigation		11.9
T19S	R44E		18	NWNW	1		Irrigation		3.5
T19S	R44E		18	NWNW	1		Irrigation		4
T19S	R44E		22	NENE			Irrigation		6.9
T19S	R44E		22	NENE			Irrigation		14.4
T19S	R44E		22	NENE			Irrigation		6.9
T19S	R44E		22	NENE			Irrigation		0.5
T19S	R44E		22	NWNE			Irrigation		11.8

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Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T19S	R44E		22	NWNE			Irrigation		2.7
T19S	R44E		22	SWNE			Irrigation		30.8
T19S	R44E		22	SENE			Irrigation		2.7
T19S	R44E		22	SENE			Irrigation		17
T19S	R44E		22	SENE			Irrigation		12.6
T19S	R44E		22	NENW			Irrigation		0.9
T19S	R44E		22	SWNW			Irrigation		4.1
T19S	R44E		22	SENW			Irrigation		16.5
T19S	R44E		22	SENW			Irrigation		7.7
T19S	R44E		22	SENW			Irrigation		1.6
T19S	R44E		22	NESW			Irrigation		7.7
T19S	R44E		22	NWSW			Irrigation		7.6
T19S	R44E		22	SWSW			Irrigation		11.9
T19S	R44E		22	NESE			Irrigation		12.6
T19S	R44E		22	SESW			Irrigation		25.8
T19S	R44E		22	SESW			Irrigation		0.1
T19S	R44E		23	NENE			Irrigation		0.9
T19S	R44E		23	NENE			Irrigation		1.4
T19S	R44E		23	NWNE			Irrigation		20.9
T19S	R44E		23	NWNE			Irrigation		5.6
T19S	R44E		23	NWNE			Irrigation		5.6
T19S	R44E		23	SWNE			Irrigation		2.3
T19S	R44E		23	NENW			Irrigation		25
T19S	R44E		23	NENW			Irrigation		0.3
T19S	R44E		23	NWNW			Irrigation		10.9
T19S	R44E		23	SWNW			Irrigation		25.1
T19S	R44E		23	SENW			Irrigation		0.3
T19S	R44E		23	SENW			Irrigation		13.2
T19S	R44E		23	SENW			Irrigation		0.8
T19S	R45E		6	NENE	1		Irrigation		13.7
T19S	R45E		6	NWNE	2		Irrigation		31.2
T19S	R45E		6	NWNE	2		Irrigation		6.5
T19S	R45E		6	SWNE			Irrigation		5.2
T19S	R45E		6	SWNE			Irrigation		9.1
T19S	R45E		6	SWNE			Irrigation		0.4
T19S	R45E		6	SWNE			Irrigation		3.8
T19S	R45E		6	SWNE			Irrigation		3.2
T19S	R45E		6	SENE			Irrigation		0.7
T19S	R45E		6	NENW	3		Irrigation		11.6
T19S	R45E		6	NWNW	4		Irrigation		7.3
T19S	R45E		6	NWNW	4		Irrigation		10.9
T19S	R45E		6	NWNW	4		Irrigation		12.4
T19S	R45E		6	NWNW	4		Irrigation		3.2
T19S	R45E		6	NWNW	4		Irrigation		3.7
T19S	R45E		6	SWNW	5		Irrigation		3.7
T19S	R45E		6	SWNW	5		Irrigation		17.5
T19S	R45E		6	SWNW	5		Irrigation		3.5
T19S	R45E		6	SENW			Irrigation		1.2
T19S	R45E		6	SENW			Irrigation		1.4
T19S	R45E		6	SWSE			Irrigation		9.1
T19S	R45E		6	SWSE			Irrigation		18.2

Twp	Rng	Mer	Sec	QQ	Gov Lot	DLC	Use	If Irrigation # Primary Acres	If Irrigation # Supplemental Acres
T19S	R45E		6	SWSE			Irrigation		0.2
T19S	R45E		7	NWNE			Irrigation		7.6
T19S	R45E		7	NWNE			Irrigation		1
T19S	R45E		7	NENW			Irrigation		35
T19S	R45E		7	SWNW	2		Irrigation		38.9
T19S	R45E		7	SENW			Irrigation		11.4
T19S	R45E		7	SENW			Irrigation		4
T19S	R45E		7	NWSW	3		Irrigation		15.7
T19S	R45E		7	NWSW	3		Irrigation		5.3
T19S	R45E		7	SWSW	4		Irrigation		0.7