Accessing Water Rights Information

1ST ANNUAL WATER LAW CONFERENCE IN EASTERN WA

MAY 15, 2024

LANDAU ASSOCIATES

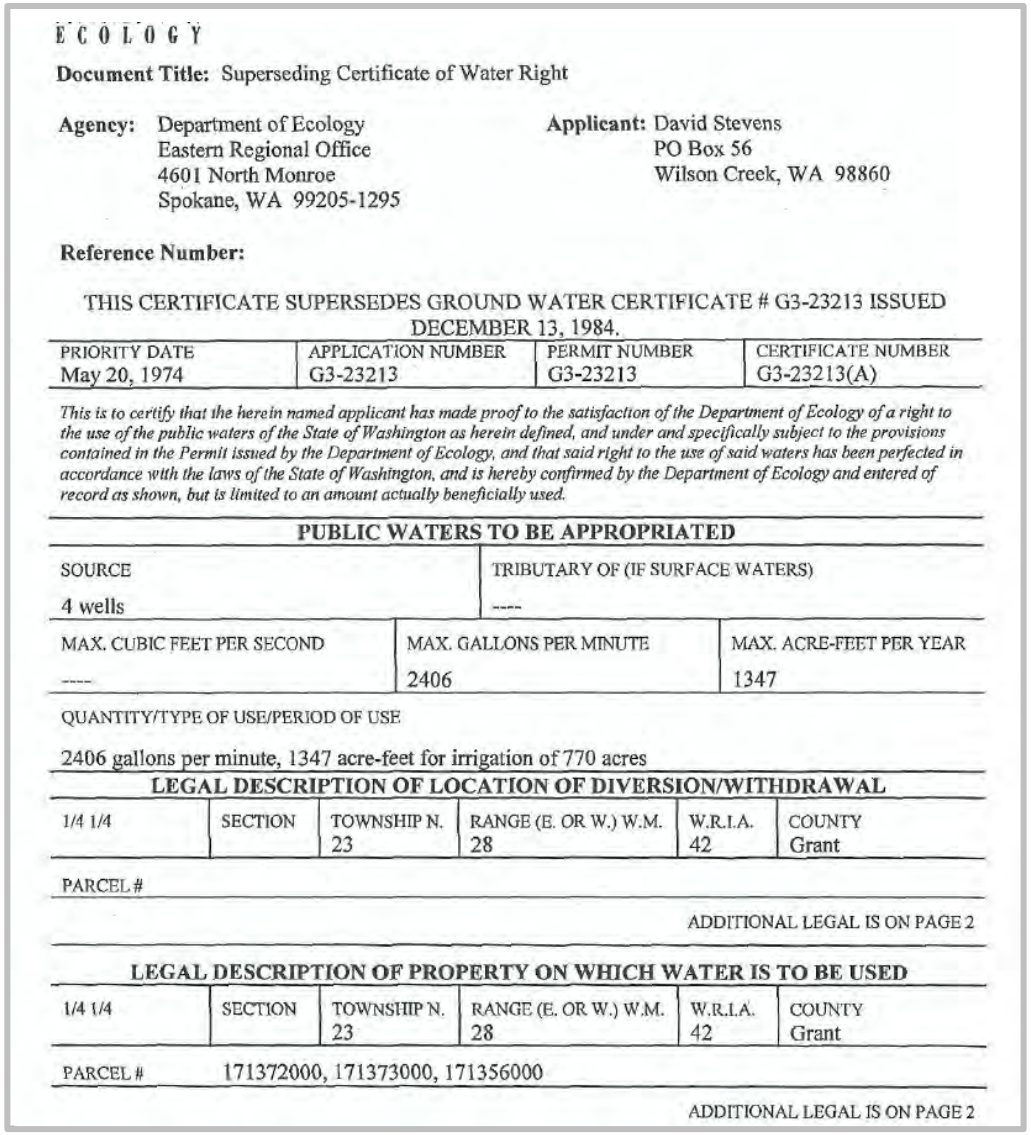
// Roadmap

1. How to research a water right (*know what is authorized*)

2. How to evaluate extent & validity of a water right (*know what has happened*)

// Researching a Water Right

- Ecology's Water Right Tracking System
- Ecology Public Records Request
- Third Party WebApp
- Court Adjudication
- Title/Deed Resources
- *And more!*



E C O L O G Y

Document Title: Superseding Certificate of Water Right

Agency: Department of Ecology
Eastern Regional Office
4601 North Monroe
Spokane, WA 99205-1295

Applicant: David Stevens
PO Box 56
Wilson Creek, WA 98860

Reference Number:

THIS CERTIFICATE SUPERSEDES GROUND WATER CERTIFICATE # G3-23213 ISSUED DECEMBER 13, 1984.

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
May 20, 1974	G3-23213	G3-23213	G3-23213(A)

This is to certify that the herein named applicant has made proof to the satisfaction of the Department of Ecology of a right to the use of the public waters of the State of Washington as herein defined, and under and specifically subject to the provisions contained in the Permit issued by the Department of Ecology, and that said right to the use of said waters has been perfected in accordance with the laws of the State of Washington, and is hereby confirmed by the Department of Ecology and entered of record as shown, but is limited to an amount actually beneficially used.

PUBLIC WATERS TO BE APPROPRIATED

SOURCE	TRIBUTARY OF (IF SURFACE WATERS)
4 wells	----

MAX. CUBIC FEET PER SECOND	MAX. GALLONS PER MINUTE	MAX. ACRE-FEET PER YEAR
----	2406	1347

QUANTITY/TYPE OF USE/PERIOD OF USE

2406 gallons per minute, 1347 acre-feet for irrigation of 770 acres

LEGAL DESCRIPTION OF LOCATION OF DIVERSION/WITHDRAWAL

1/4 1/4	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	W.R.I.A.	COUNTY
		23	28	42	Grant

PARCEL #

ADDITIONAL LEGAL IS ON PAGE 2

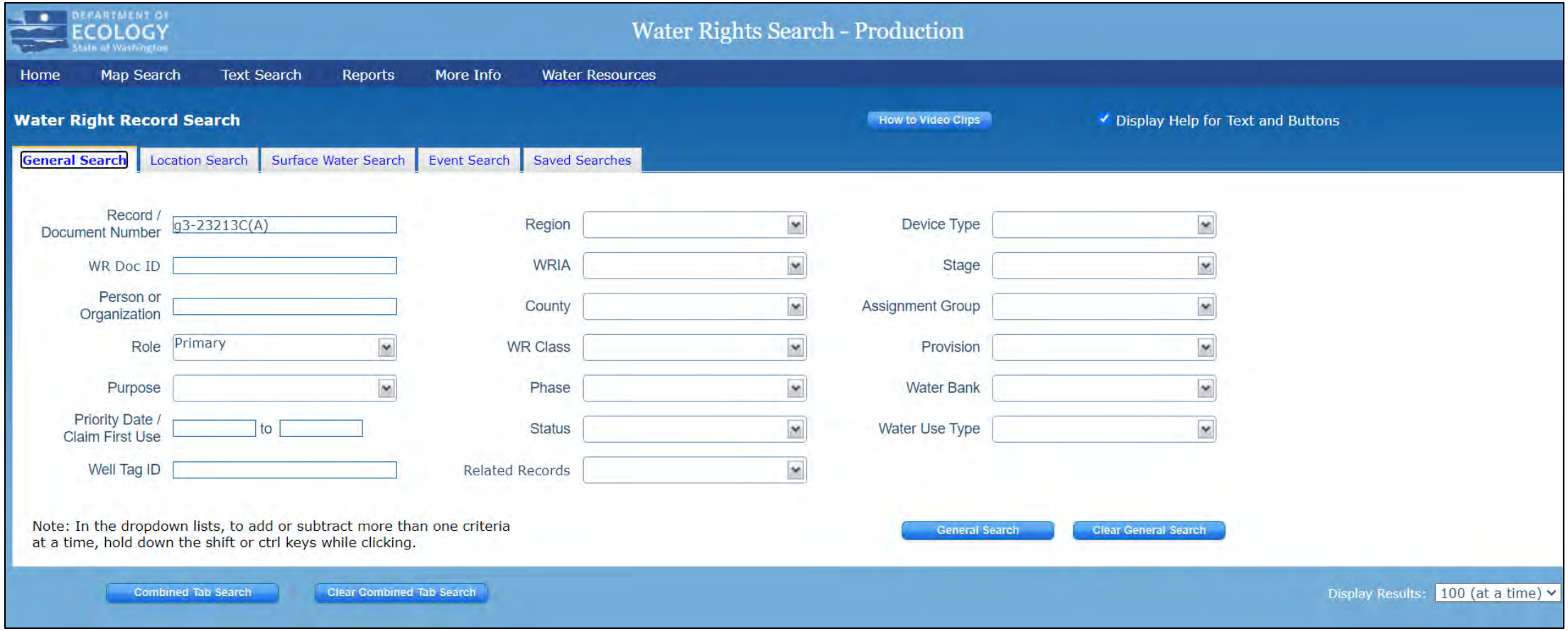
LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

1/4 1/4	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	W.R.I.A.	COUNTY
		23	28	42	Grant

PARCEL # 171372000, 171373000, 171356000

ADDITIONAL LEGAL IS ON PAGE 2

// Ecology's Water Right Tracking System (WRTS)



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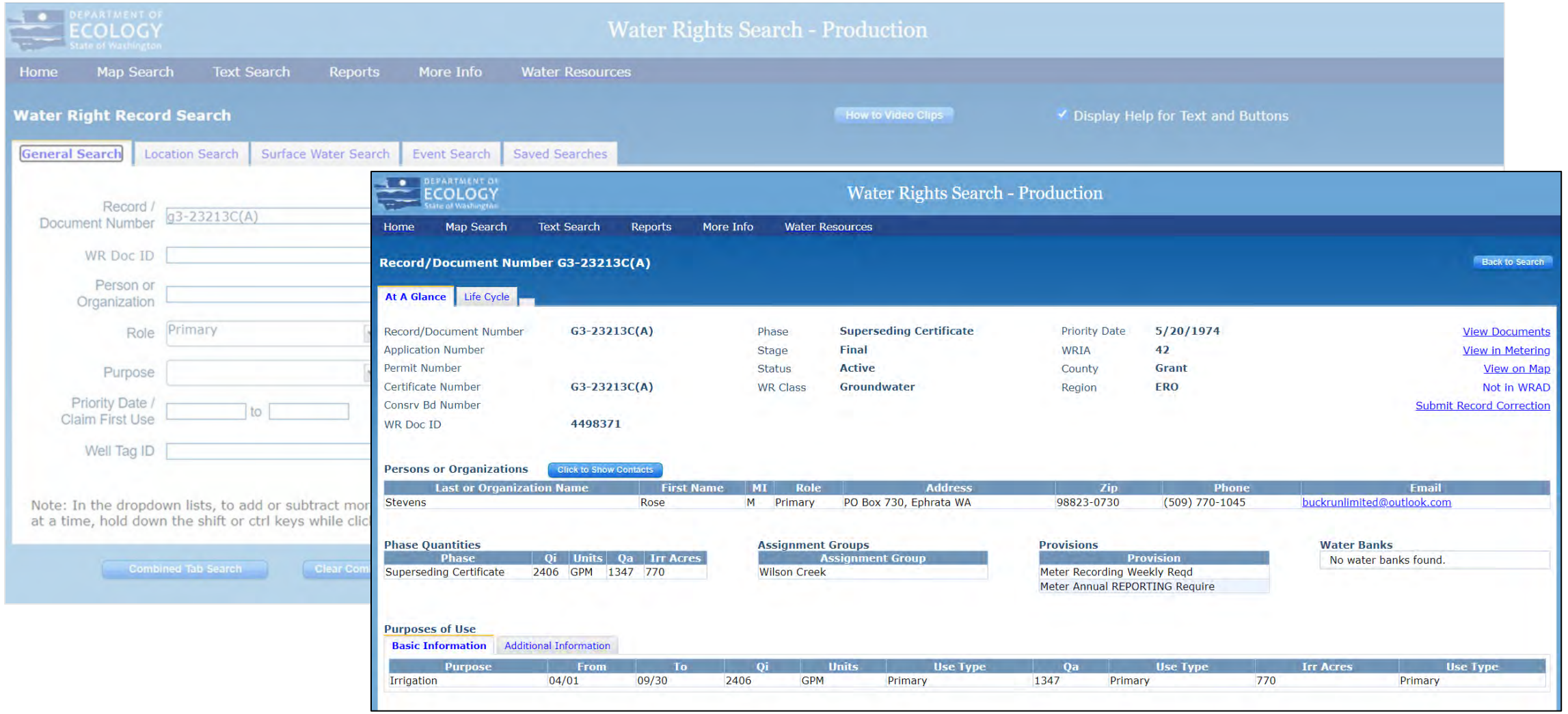
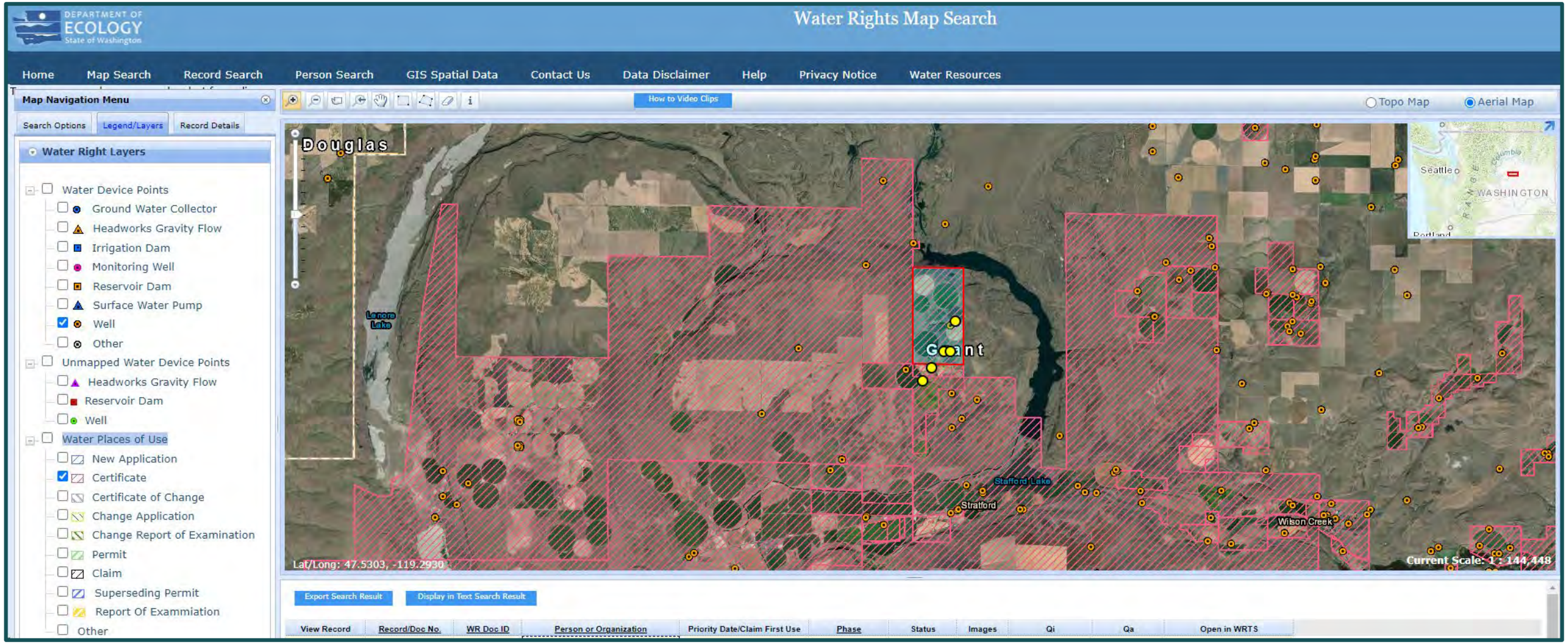
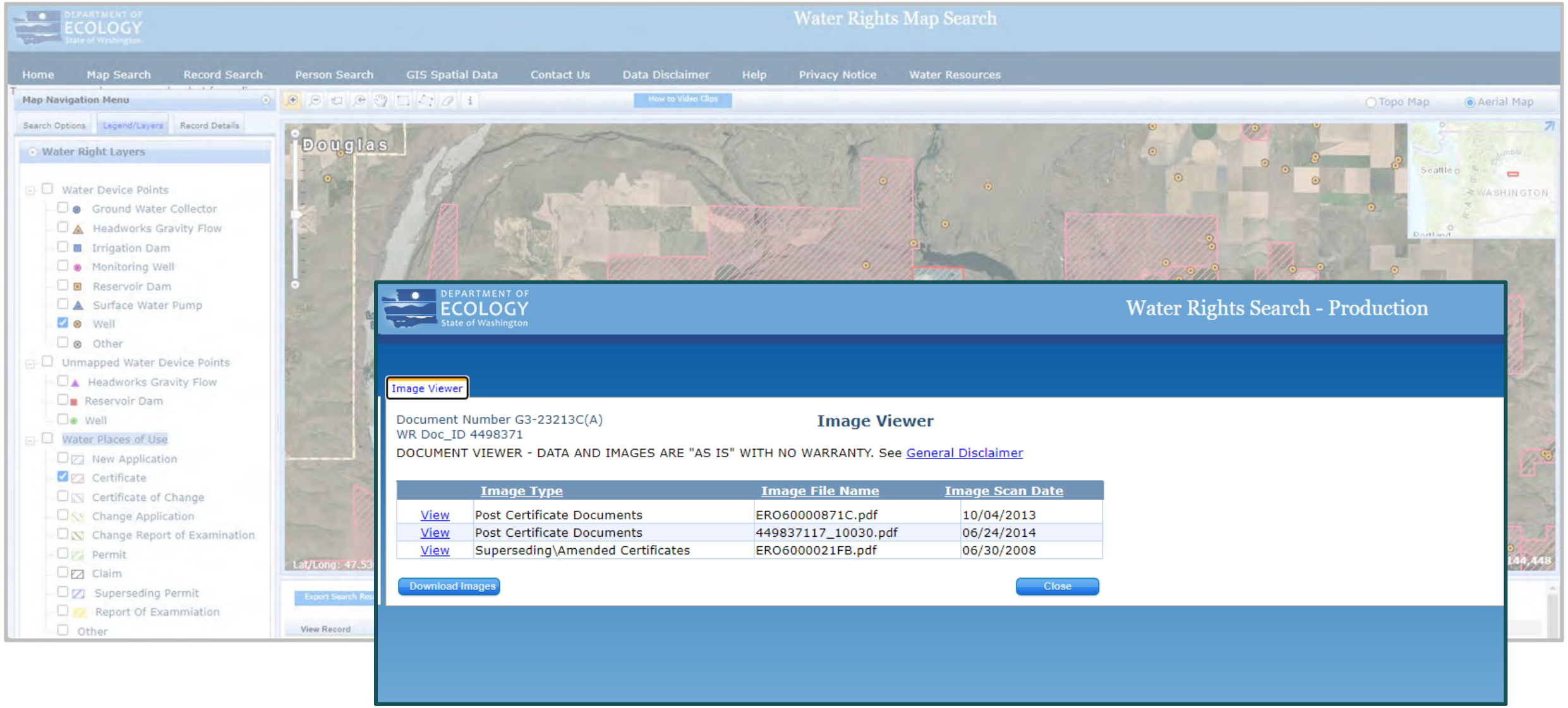


// Ecology's Water Right Tracking System

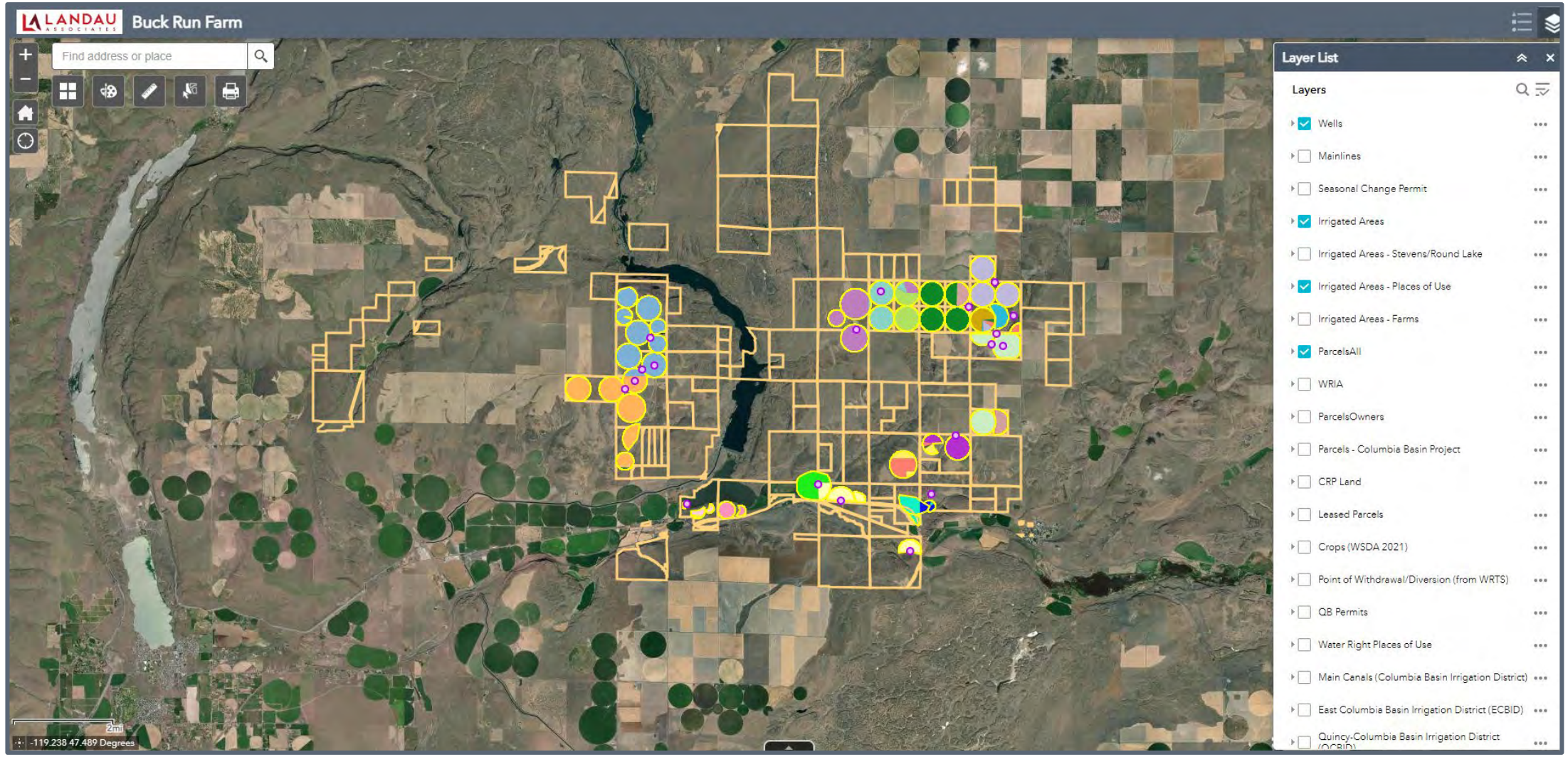


// Ecology's Water Right Tracking System



// Ecology Public Records Request

// Third Party WebApp



// Adjudication- *Ecology Publication 19-11-073*

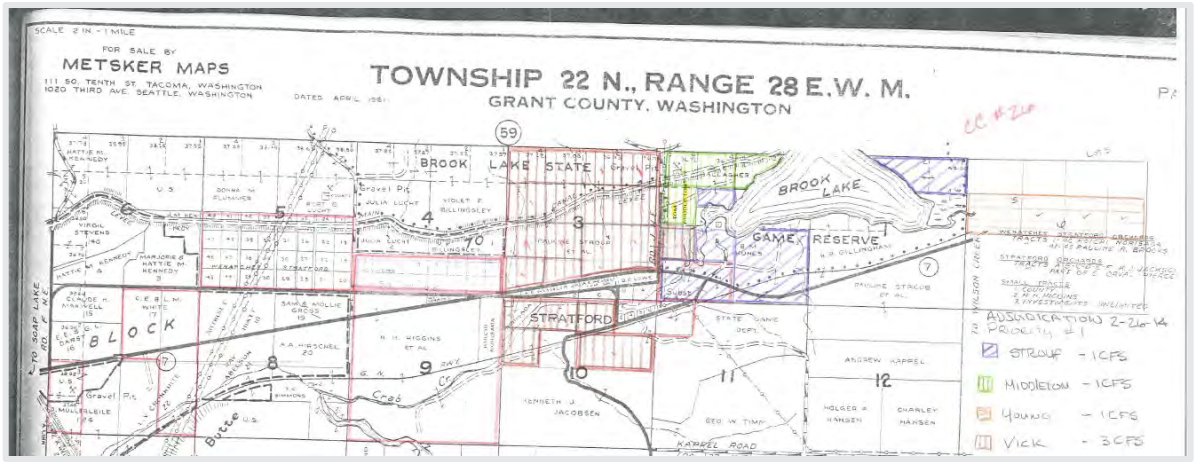
DEPARTMENT OF ECOLOGY
State of Washington

Completed Adjudications in Washington

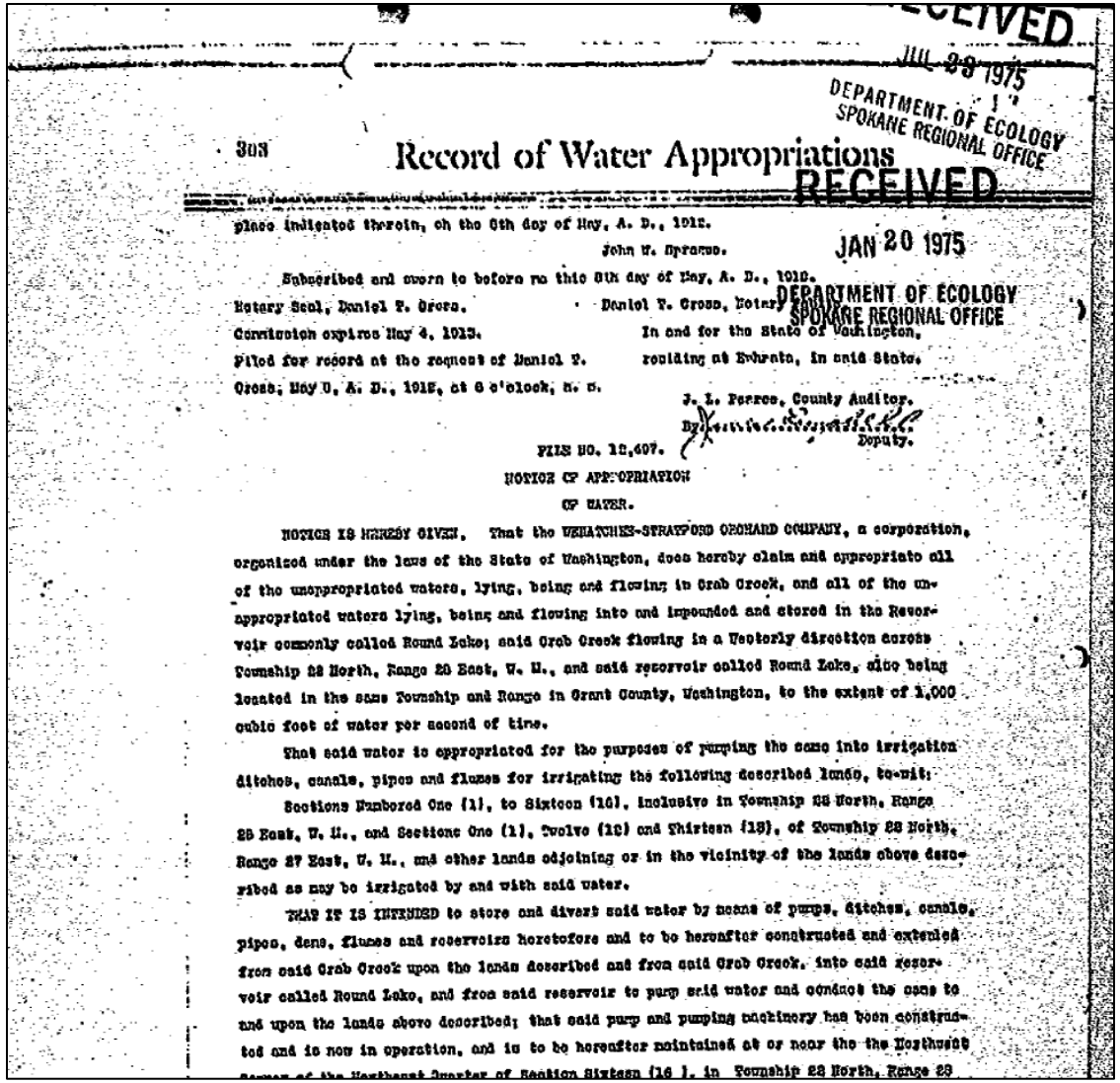
As of May 9, 2019, there are 83 completed adjudications since the adoption of the 1917 water code. These adjudications resulted in final decrees. Certificates were issued to parties who were confirmed rights. See the complete list below.

Code	Watercourse	County	Region	WRIA	Decree Filed
01	Similkameen River	Okanogan	Central	49	11/26/1918
02	Roaring Creek	Chelan	Central	46	10/24/1919
03	Wenas Creek	Kittitas, Yakima	Central	39	02/23/1921
04	Bird & Frazier Creeks	Klickitat, Yakima	Central	30	03/14/1921
05	Teanaway River	Kittitas	Central	39	06/16/1921
06	Cooke Creek	Kittitas	Central	39	08/13/1921
07	Beaver Creek	Okanogan	Central	48	09/20/1921
08	Libby Creek	Okanogan	Central	48	11/18/1921
09	Cowiche Creek	Yakima	Central	38	05/18/1922
10	Meadow Gulch Creek	Garfield	Eastern	35	06/061922
11	McFarland Creek	Okanogan	Central	48	11/16/1922
12	Alpowa Creek	Asotin, Garfield	Eastern	35	03/26/1923
13	Upper Stone Creek	Walla Walla	Eastern	32	07/10/1923
14	Doan Creek	Walla Walla	Eastern	32	06/01/1922
15	Alder Creek	Stevens	Eastern	58	02/19/1924
16	Cheweka Creek	Stevens	Eastern	58	02/19/1924
17	Dungeness River	Clallam	Southwest	18	03/07/1924
18	Big Creek	Kittitas	Central	39	03/27/1924
19	Crab Creek & Moses Lake	Adams, Grant	Eastern	41	03/27/1924
20	Ahtanum Creek	Yakima	Central	37	05/05/1924
21	Safety Harbor Creek	Chelan	Central	47	06/20/1925
22	Stemilt Creek	Chelan	Central	40	01/22/1926
23	Salmon Creek, North Fork	Okanogan	Central	49	04/06/1926
24	Johnson Creek	Okanogan	Central	49	05/20/1926
25	Squilchuck Creek	Chelan	Central	40	06/14/1928
26	Lower Antoine Creek	Okanogan	Central	49	07/09/1928
27	Bigelow Gulch Creek	Spokane	Eastern	55	08/31/1928
28	Walla Walla River	Walla Walla	Eastern	32	09/12/1928
29	Corus Creek	Stevens	Eastern	58	10/03/1928
30	Deadman Creek	Garfield	Eastern	35	01/04/1929
31	Quilisascut Creek	Stevens	Eastern	58	01/19/1929
32	Gold Creek	Okanogan	Central	48	05/07/1929
33	Black Canyon Creek	Okanogan	Central	48	06/20/1929

- Can contact adjudication coordinator or watermaster
- Public records request
- Court records



// County Documents



RECEIVED
JUL 28 1975
DEPARTMENT OF ECOLOGY
SPOKANE REGIONAL OFFICE

303

Record of Water Appropriations

RECEIVED
JAN 20 1975
DEPARTMENT OF ECOLOGY
SPOKANE REGIONAL OFFICE

place indicated therein, on the 6th day of May, A. D., 1912.

John W. Sprague.

Subscribed and sworn to before me this 6th day of May, A. D., 1912.

Notary Seal, Daniel T. Cross. Daniel T. Cross, Notary Public
In and for the State of Washington,
residing at Ephrata, in said State.

Commission expires May 4, 1913.

Filed for record at the request of Daniel T. Cross, May 9, A. D., 1912, at 8 o'clock, A. M.

J. L. Pearce, County Auditor.
By ..... Deputy.

FILE NO. 12,407.

NOTICE OF APPROPRIATION
OF WATER.

NOTICE IS HEREBY GIVEN, That the WENATCHEE-STRATFORD ORCHARD COMPANY, a corporation, organized under the laws of the State of Washington, does hereby claim and appropriate all of the unappropriated waters, lying, being and flowing in Crab Creek, and all of the unappropriated waters lying, being and flowing into and impounded and stored in the Reservoir commonly called Round Lake; said Crab Creek flowing in a Westerly direction across Township 22 North, Range 28 East, W. M., and said reservoir called Round Lake, also being located in the same Township and Range in Grant County, Washington, to the extent of 1,000 cubic feet of water per second of time.

That said water is appropriated for the purposes of pumping the same into irrigation ditches, canals, pipes and flumes for irrigating the following described lands, to-wit:

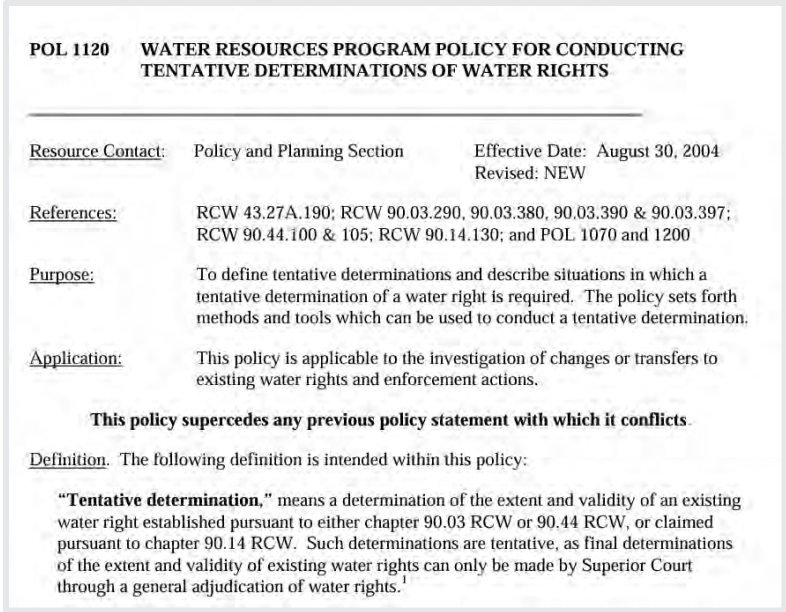
Sections Numbered One (1), to Sixteen (16), inclusive in Township 22 North, Range 28 East, W. M., and Sections One (1), Twelve (12) and Thirteen (13), of Township 22 North, Range 27 East, W. M., and other lands adjoining or in the vicinity of the lands above described as may be irrigated by and with said water.

THAT IT IS INTENDED to store and divert said water by means of pumps, ditches, canals, pipes, dams, flumes and reservoirs heretofore and to be hereafter constructed and extended from said Crab Creek upon the lands described and from said Crab Creek, into said reservoir called Round Lake, and from said reservoir to pump said water and conduct the same to and upon the lands above described; that said pump and pumping machinery has been constructed and is now in operation, and is to be hereafter maintained at or near the the Northwest Corner of the Northeast Quarter of Section Sixteen (16), in Township 22 North, Range 28

// Preliminary Assessment of Extent & Validity

- Triggered when a water right is undergoing a change or transfer.
- Ecology needs to know if the water right is in good standing.

- **Extent** = *how much water has been used and where?*
- **Validity** = *is the water use valid? Any relinquishment?*



POL 1120 WATER RESOURCES PROGRAM POLICY FOR CONDUCTING TENTATIVE DETERMINATIONS OF WATER RIGHTS

Resource Contact: Policy and Planning Section — Effective Date: August 30, 2004 Revised: NEW

References: RCW 43.27A.190; RCW 90.03.290, 90.03.380, 90.03.390 & 90.03.397; RCW 90.44.100 & 105; RCW 90.14.130; and POL 1070 and 1200

Purpose: To define tentative determinations and describe situations in which a tentative determination of a water right is required. The policy sets forth methods and tools which can be used to conduct a tentative determination.

Application: This policy is applicable to the investigation of changes or transfers to existing water rights and enforcement actions.

This policy supercedes any previous policy statement with which it conflicts.

Definition. The following definition is intended within this policy:

"Tentative determination," means a determination of the extent and validity of an existing water right established pursuant to either chapter 90.03 RCW or 90.44 RCW, or claimed pursuant to chapter 90.14 RCW. Such determinations are tentative, as final determinations of the extent and validity of existing water rights can only be made by Superior Court through a general adjudication of water rights.[1]

// "Fact Checking"

- Change/transfer is a public process.
- Your historical water use and all the water use from previous landowners will be scrutinized.
- Multiple lines of evidence are preferred.

// Extent & Validity Checklist

- Instantaneous Quantity
- Annual Quantity
- Point of Withdrawal/Diversion
- Place of Use
- Purpose of Use
- Period of Use
- Extent of Beneficial Use

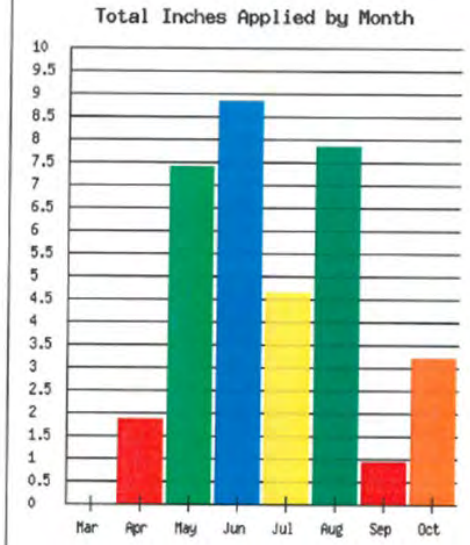
// How Much Water Has Been Used?- *Instantaneous Quantity*

- Water conservation & irrigation efficiencies can lower these values over time.
- **Data Sources**:
  - Flow meter*
  - Pump curves & capacity
  - Irrigation system demands
  - Aquifer testing data
  - Well Log
  - WagNet*

// WagNet- AgSense

- **Remote pivot management (app)**
- Pivot control & monitoring
  - *Pivot speed*
  - *Application rate*
- Real-time & historical data
  - *Flow rate*
  - *Gallons pumped*
  - *Inches applied*

Irrigation Report: Mar 1 2023 - Oct 31 2023 - **Report Type:** Acre Inches Applied by Month



Total Inches Applied

- 0.9
- 1.9
- 3.2
- 4.6
- 7.4
- 7.8
- 8.8

Total Hours Power On:	5872.52 hours
Total Hours Power Off:	6.11 hours
Total Hours Pump On:	2510.67 hours
Total Hours Pump Off:	3367.95 hours
Total Hours Endgun On:	1635.74 hours
Total Hours Endgun Off:	4242.88 hours
Total System Gallons Pumped:	111,473,958 gallons
Total Endgun Gallons Pumped:	4,416,509 gallons
Total Gallons Pumped:	115,890,466 gallons
Total Inches Applied:	34.64 inches

Date	Acres Watered	Hours Pumped	System Gallons	Endgun Gallons	Total Gallons	Inches Applied	Average PSI	Dry Hours
Mar 2023	0.000	0	0	0	0	0.00	0	742.72
Apr 2023	124.148	134.65	5,978,250	311,361	6,289,611	1.86	69.3228	585.35
May 2023	123.222	535.32	23,768,307	970,106	24,738,412	7.39	64.252	208.68
Jun 2023	122.935	639.24	28,382,441	1,082,355	29,464,796	8.82	65.4238	80.76
Jul 2023	122.936	336.25	14,929,549	578,599	15,508,148	4.64	64.8033	407.75
Aug 2023	122.610	566.17	25,138,084	972,878	26,110,962	7.84	65.3771	177.83
Sep 2023	122.610	65.68	2,916,007	107,723	3,023,730	0.91	65.7029	654.32
Oct 2023	122.936	233.36	10,361,320	393,488	10,754,807	3.22	66	510.54
Totals	**123.089 Acres Watered**	**2510.67 Hours Pumped**	**111,473,958 System Gallons**	**4,416,509 Endgun Gallons**	**115,890,466 Total Gallons**	**34.64 Inches Applied**	**65.3487 Average PSI**	**3367.95 Dry Hours**

// How Much Water Has Been Used?- *Annual Quantity*

- **Data Sources**:
  - Flow meter*
  - Aerial imagery & photos
  - Crop demand estimates
  - Power meter records
  - Wagnet*
  - Farm or business records
  - Personal affidavits or photos
  - And more!

// Crop Demand Estimates

Crop Irrigation Requirement (CIR) = ET

- **Washington Irrigation Guide (WIG)**
  - Appendix A (*variety of crops*)- 1985
  - Appendix B (*field corn & pasture*)- 1992
- **Open ET**
- And more!

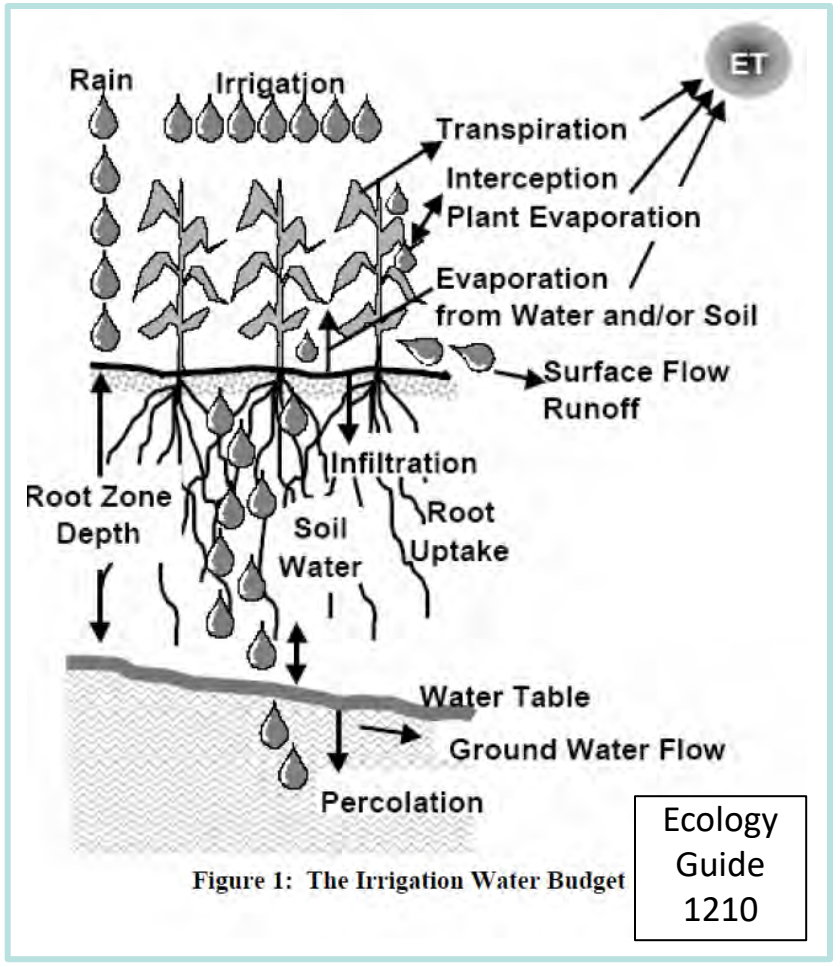


Figure 1: The Irrigation Water Budget

Ecology Guide 1210

// Crop Demand Estimates- WIG

- 100 acres of cherries near Spokane

SPOKANE

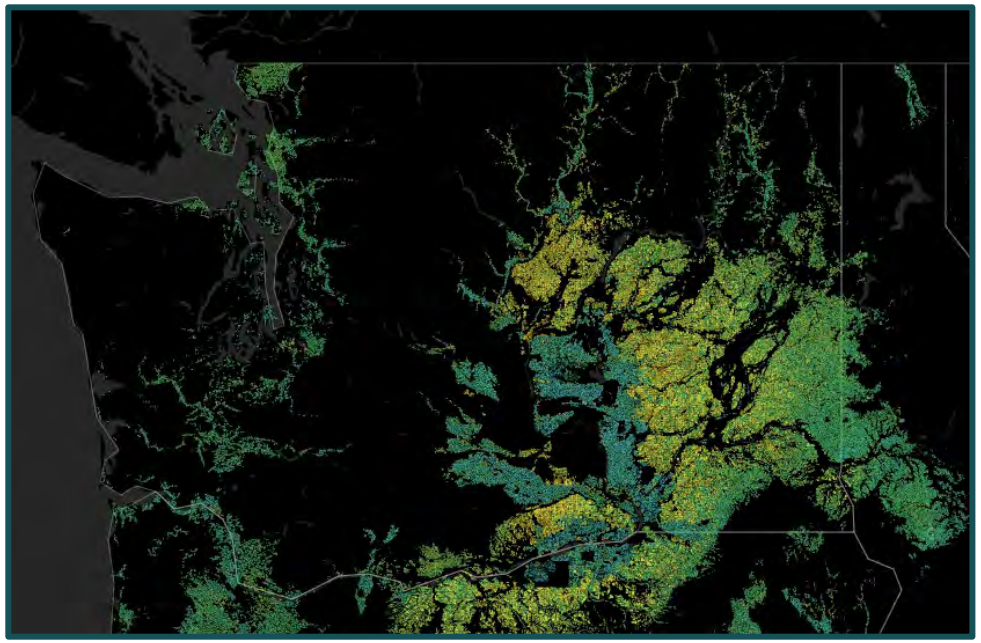
APRICOT W/O COVER	BEG 4/16	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.12	1.84	4.09	7.95	6.34	2.89	.04	.00	.00	23.25
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	
CHERRY W/O COVER	BEG 5/ 4	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.00	1.46	4.76	8.88	7.11	4.11	.07	.00	.00	26.39
AV. PAN FACTOR	.32	.32	.32	.32	.48	.68	.80	.80	.76	.56	.32	.32	
PEACH W/O COVER	BEG 4/25	END 10/10											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEASON
MONTHLY NET IRRIG REQUIRE(IN)	.00	.00	.00	.04	1.84	4.09	7.95	6.34	2.89	.04	.00	.00	23.17
AV. PAN FACTOR	.32	.32	.32	.32	.44	.60	.72	.72	.56	.52	.32	.32	

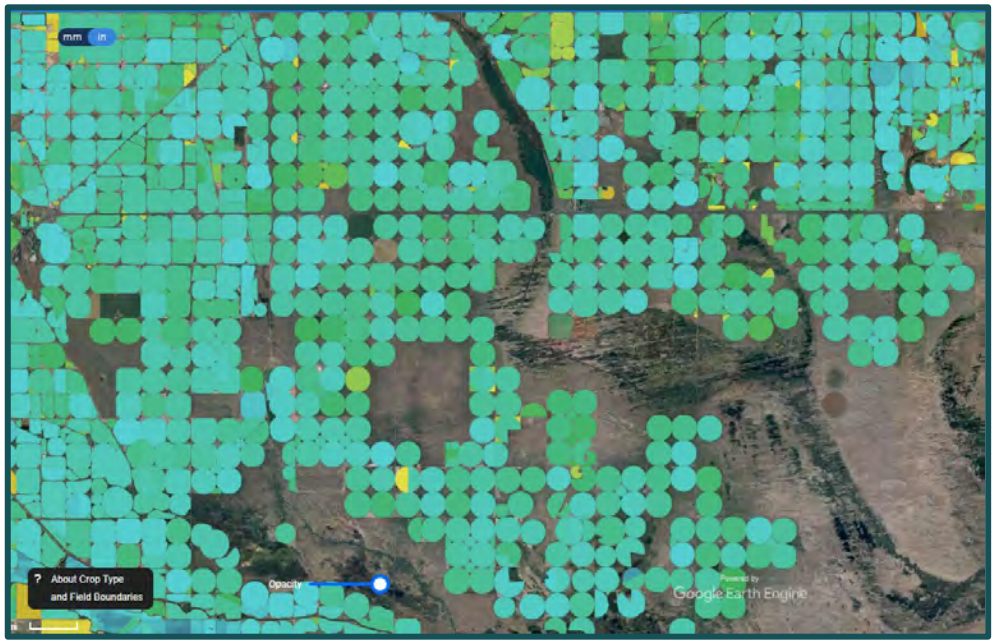
$$Water\ Use\ (AF) = Irrigated\ Area\ (ac) * Net\ Irrigation\ Required\left(\frac{in}{yr}\right) * \frac{1\ ft}{12\ in}$$

$$219.9\ AF = 100\ ac\ * 26.39 \frac{in}{yr} * \frac{1\ ft}{12\ in}$$

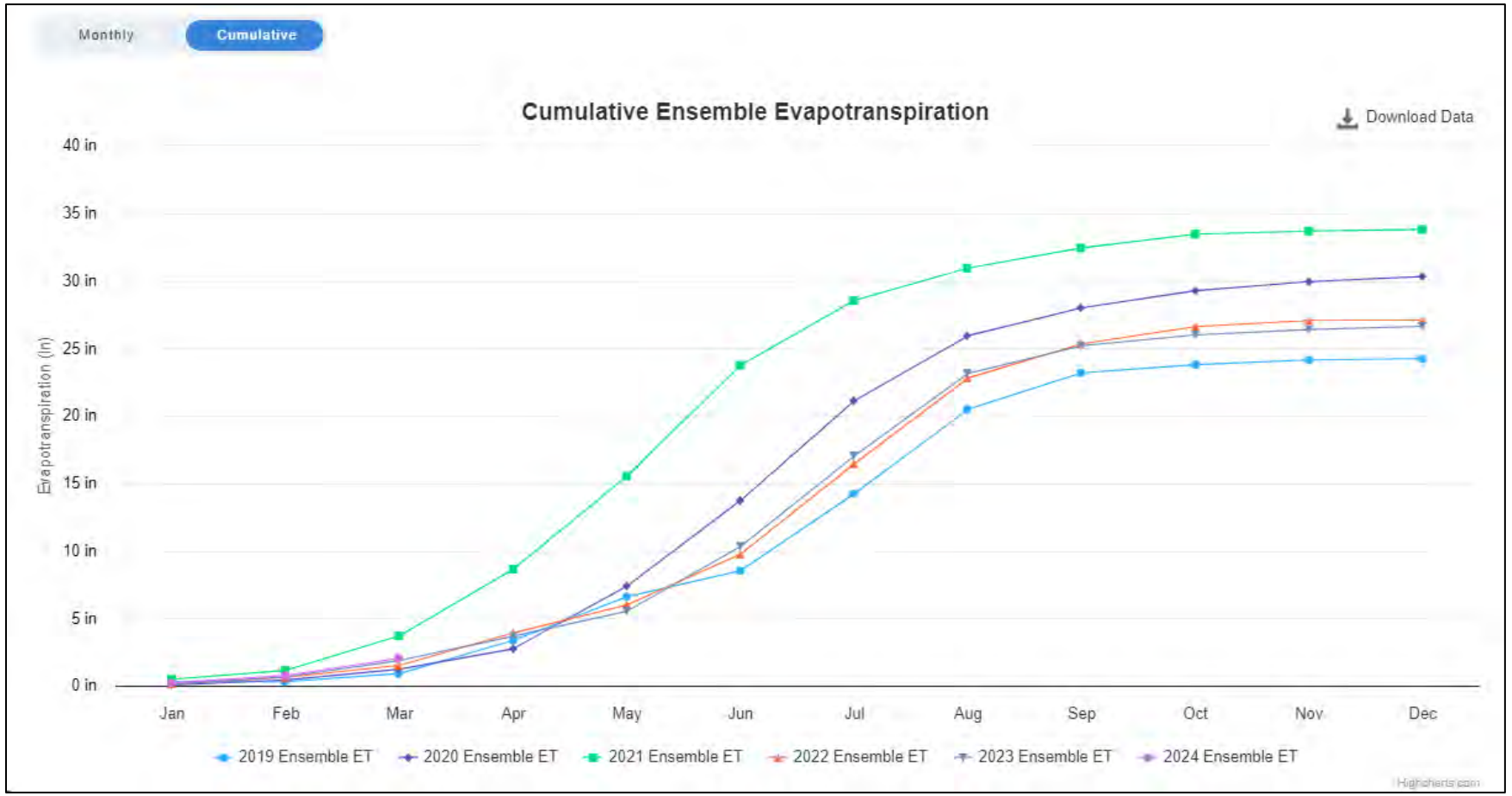
// Open ET

Open ET is a publicly available satellite-based water data resource which **reports ET** for areas as small as a ¼ acres at daily, monthly, and yearly intervals.





// Open ET


Monthly
Cumulative
Cumulative Ensemble Evapotranspiration
Download Data
40 in
35 in
30 in
25 in
20 in
15 in
10 in
5 in
0 in
Evapotranspiration (in)
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
2019 Ensemble ET
2020 Ensemble ET
2021 Ensemble ET
2022 Ensemble ET
2023 Ensemble ET
2024 Ensemble ET
Highcharts.com

// Crop Demand Estimates

Variables impacting irrigation efficiency:

- Spray evaporation loss
- Canopy loss
- Wind drift
- Runoff
- Deep percolation

// Crop Demand Estimates

- **Washington Irrigation Guide (WIG)** = crop irrigation requirement (CIR)
- **Ecology Guide 1210** = guide for estimating irrigation consumptive use and efficiency

Actual Efficiency (Ea)

$$Ea = \frac{CIR}{Total\ Water\ Use}$$

Or

$$\text{Total Water Use} = \frac{CIR}{Ea}$$

// Crop Demand Estimates- Ecology Guide 1210

Table 1: Summary of Application Efficiency Ranges, Consumptive Use, and Return Flows[1]

Method		Application Efficiency, Ea (%)[2]		%Total Evaporated	% Total Use Consumed	Return Flow
		Range	Average, Ea_{avg}	%Evap	%CU, Average[3]	%RF, Average[4]
Surface:	Graded Furrow	50 – 80	65	5	70	30
	w/ tailwater reuse	60 – 90	75	5	80	20
	Level Furrow	65 – 95	80	5	85	15
	Graded Border	50 – 80	65	5	70	30
	Level Basins	80 – 95	85	5	90	10
	Flood	35 – 60	50	5	55	45
Sprinkler:	Periodic Move (Handline)	60 – 85	75	10	85	15
	Side Roll (Wheelline)	60 – 85	75	10	85	15
	Moving Big Gun	55 – 75	65	10	75	25
	Solid-Set—Overtree	55 – 80	70	15	85	15
	Solid Set--Undertree	60 – 85	75	10	85	15
	Pop-Up Impact	60 – 85	75	10	85	15
Center-Pivot	Impact heads w/end gun	75 – 90	80	15	95	5
	Spray heads w/o end gun	75 – 95	90	10	100	0
	LEPA[5] w/o end gun	80 – 98	92	5	97	3
Lateral-Move	Spray heads w/hose feed	75 – 95	90	10	100	0
	Spray heads w/canal feed	70 – 95	85	10	95	5
Microirrigation:	Trickle/Drip	70 – 95	88	5	93	7
	Subsurface Drip	75 – 95	90	0	90	10
	Microspray	70 – 95	85	10	95	5

1. Calculate the actual water use from water meter data, power meter, or run-time data. In the absence of such data, the TIR (total irrigation requirement) = CIR / Ea, where CIR is the crop irrigation requirement from the WIG (Appendix B) and Ea is the case-specific application efficiency above.
2. %Evap is the portion of the total irrigation requirement that is evaporated due to factors other than crop ET.
3. Select appropriate %CU based on type of irrigation system. If calculated Ea is greater or less than Ea_{avg}, then %CU = Ea + %Evap. CU = TIR x %CU.
4. Select appropriate %RF based on type of irrigation system. If calculated Ea is greater or less than Ea_{avg}, then %RF = 100 - %CU. RF = TIR x %RF
5. Low Energy Precision Application.

// Crop Demand Estimates

- 100 acres of cherries near Spokane
- **CIR** = 220 acre-ft (*from the WIG*)
- **Ea** = 75% (*from GUIDE 1210*)

$$\text{Total Water Use} = \frac{CIR}{Ea} \qquad \text{Total Water Use} = \frac{220\ acre-ft}{75\%}$$

Total water use = 290 acre-ft

// Power Meter Records- KWH to Gallons

GRANT COUNTY PUBLIC UTILITY DISTRICT

Premise History

For the period 01/01/2020 through 11/13/2023

Premise ID: 9167204619
KWH Meter: KZD78958455

Address 1	Address 2	City	State	Zip	Premise Type
222706	700 Hp IPA YES	Soap Lake	WA	98851-0000	IRR

Read Date	Estimated	Rate	KWH	KVr	Meter Demand	Bill Demand	PF	Amount	Days	Discount Applied
10-01-2023	N	RATE3	132,372		524.256			5,793.48	30	
09-01-2023	N	RATE3	292,902		524.256			10,598.17	31	
08-01-2023	N	RATE3	363,750		524.256			12,718.65	31	
07-01-2023	N	RATE3	359,837		524.256			12,601.53	30	
06-01-2023	N	RATE3	278,355		524.256			10,162.76	31	
05-01-2023	N	RATE3	55,560		522.624			3,494.52	30	
04-01-2023	N	RATE3	10,705		520.544			309.90	43	
02-17-2023	N	RATE3	0		0.000			0.00	47	
01-01-2023	N	RATE3	3,978		6.176			115.16	31	
12-01-2022	N	RATE3	19,362		517.696			560.54	30	
11-01-2022	N	RATE3	142,484		520.096			5,898.32	31	
10-01-2022	N	RATE3	236,424		523.648			8,617.90	30	
09-01-2022	N	RATE3	359,363		522.848			12,176.98	31	
08-01-2022	N	RATE3	338,561		522.848			11,574.75	31	
07-01-2022	N	RATE3	318,253		524.256			10,986.85	30	
06-01-2022	N	RATE3	219,758		524.256			8,135.43	31	
05-01-2022	N	RATE3	76,226		515.936			3,980.17	30	
04-01-2022	N	RATE3	27,011		518.016			781.96	42	
02-18-2022	N	RATE3	5,700		6.336			165.03	48	
01-01-2022	N	RATE3	4,330		6.272			125.36	31	
12-01-2021	N	RATE3	4,430		515.264			128.24	30	
11-01-2021	N	RATE3	23,824		513.856			2,463.12	31	
10-01-2021	N	RATE3	131,097		516.384			5,568.67	30	
09-01-2021	N	RATE3	284,438		516.768			10,007.90	31	
08-01-2021	N	RATE3	315,132		518.112			10,896.50	31	

// Power Meter Records- WAC 173-173-160

$$V = \frac{318{,}600(kWh)(Peff)(Meff)}{TDH}$$

Where:

318,600 = conversion factor

V = volume of water pumped in gallons

kWh = number of kilowatt-hours for the time period in question

Peff = pump efficiency as a decimal

Meff = motor efficiency as a decimal

TDH = total dynamic head

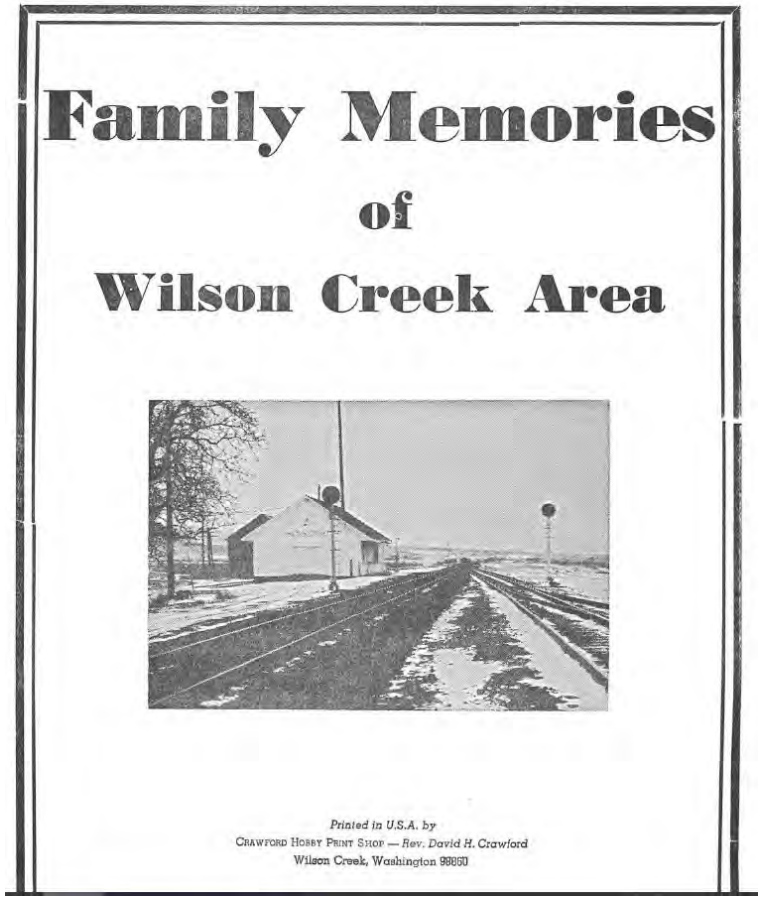
PUMP EFFICIENCY	MOTOR EFFICIENCY
$\eta = \frac{P_{out}}{P_{in}}$	$\eta = \frac{0.7457 \times hP \times load}{P_{in}}$
$P_{out} = Q\rho gH$	

// Personal Affidavits or Farm/Business Records

of Round Lake for irrigation puposes to irrigate the nearby orchards.

In the summer of 1915, when I was ~~four (4)~~ five (5) years old, we moved into a little wood shack located right at Round Lake and we stayed there all summer long through the irrigation season. ~~I can remember my father getting out the horses and taking me with him over to the pumps.~~ I spent most of that summer with my father over at the pumping station. Attached hereto, as Exhibit "A", and included herein by this reference is a true and correct copy of a photograph of my father, standing by the pumps at the pumps at Round Lake that he operated. This photograph was taken in approximately 1916 or 1917.

I know from first hand knowledge that water was being pumped from Round Lake for irrigation purposes at least as early as 1912. My grandfather, John Wesley Dudley, moved to the Stratford, Washington, area in 1912 for the purpose of managing an



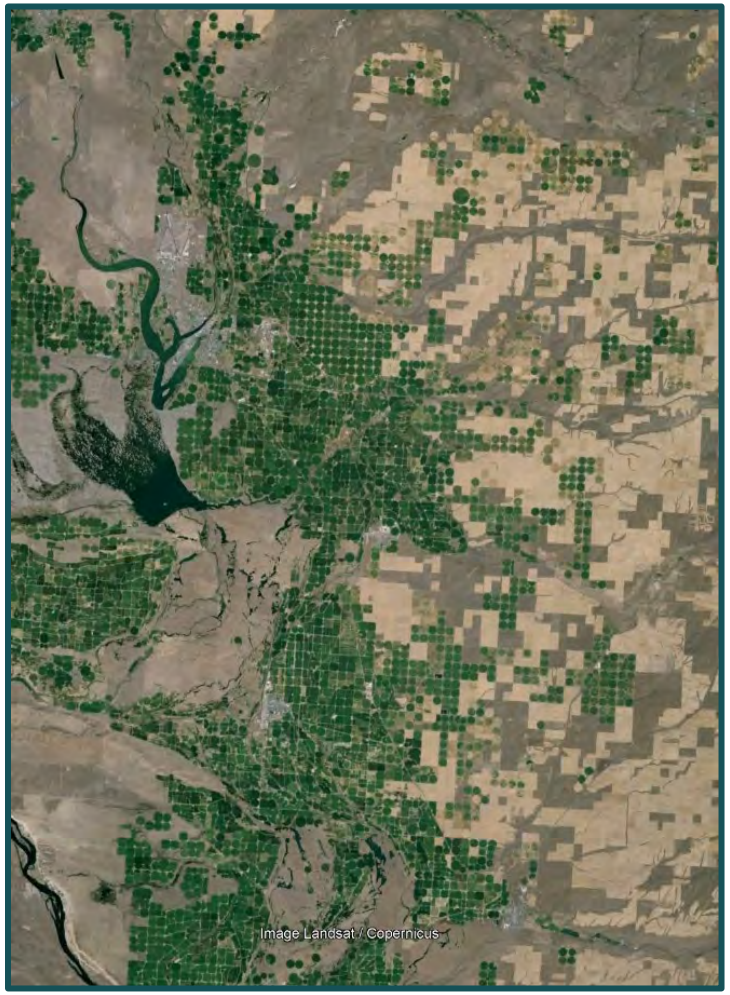
// What Acreage Has Been Irrigated- *Place of Use*

- When was water used?
- Where was water used?
- How many acres were irrigated?
- **Data Sources**:
  - Aerial imagery
  - Aerial photos
  - And more!

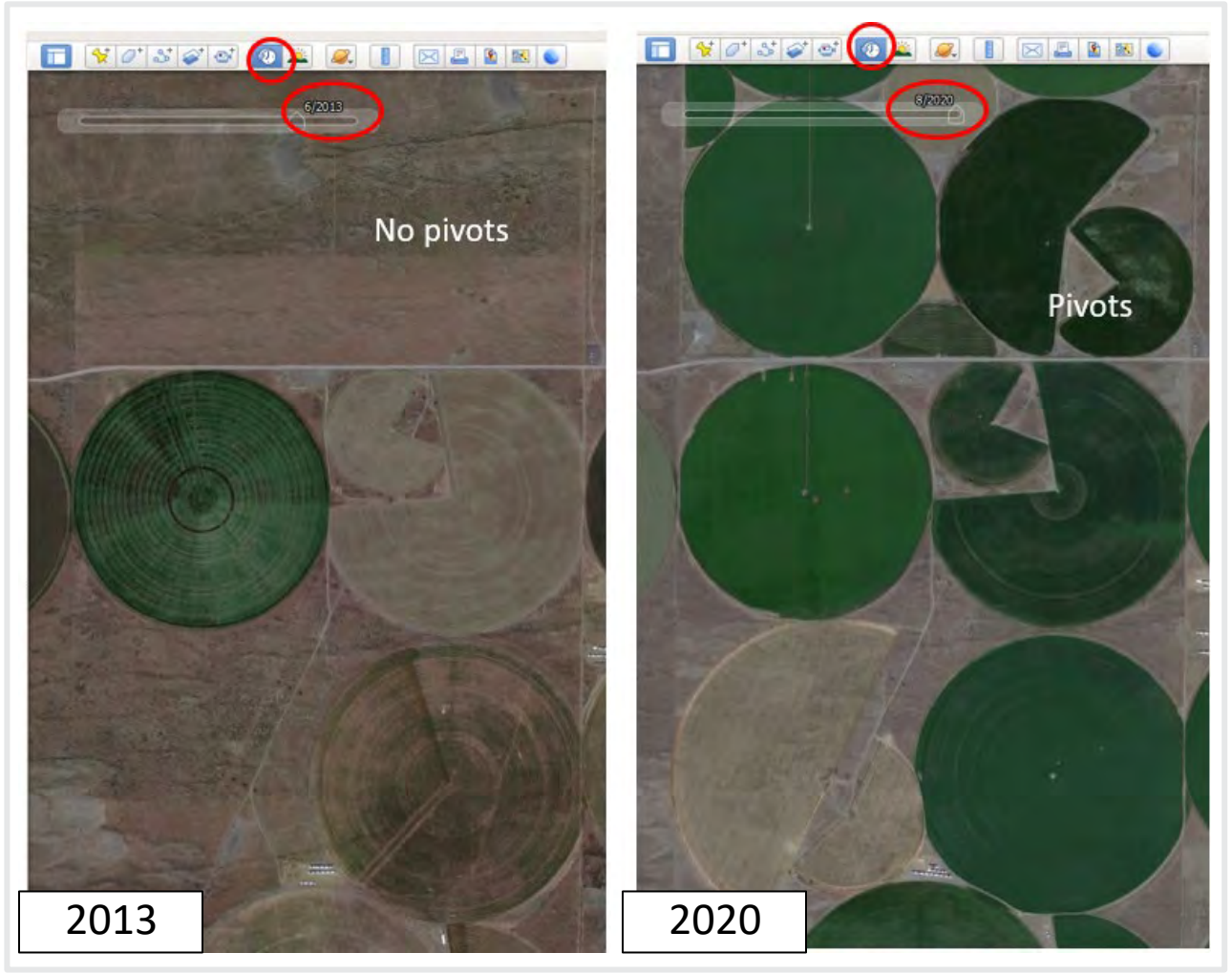
Can build a historical record from priority date to present to demonstrate use at least once every 5 years

// Aerial Imagery and Photos Data Sources

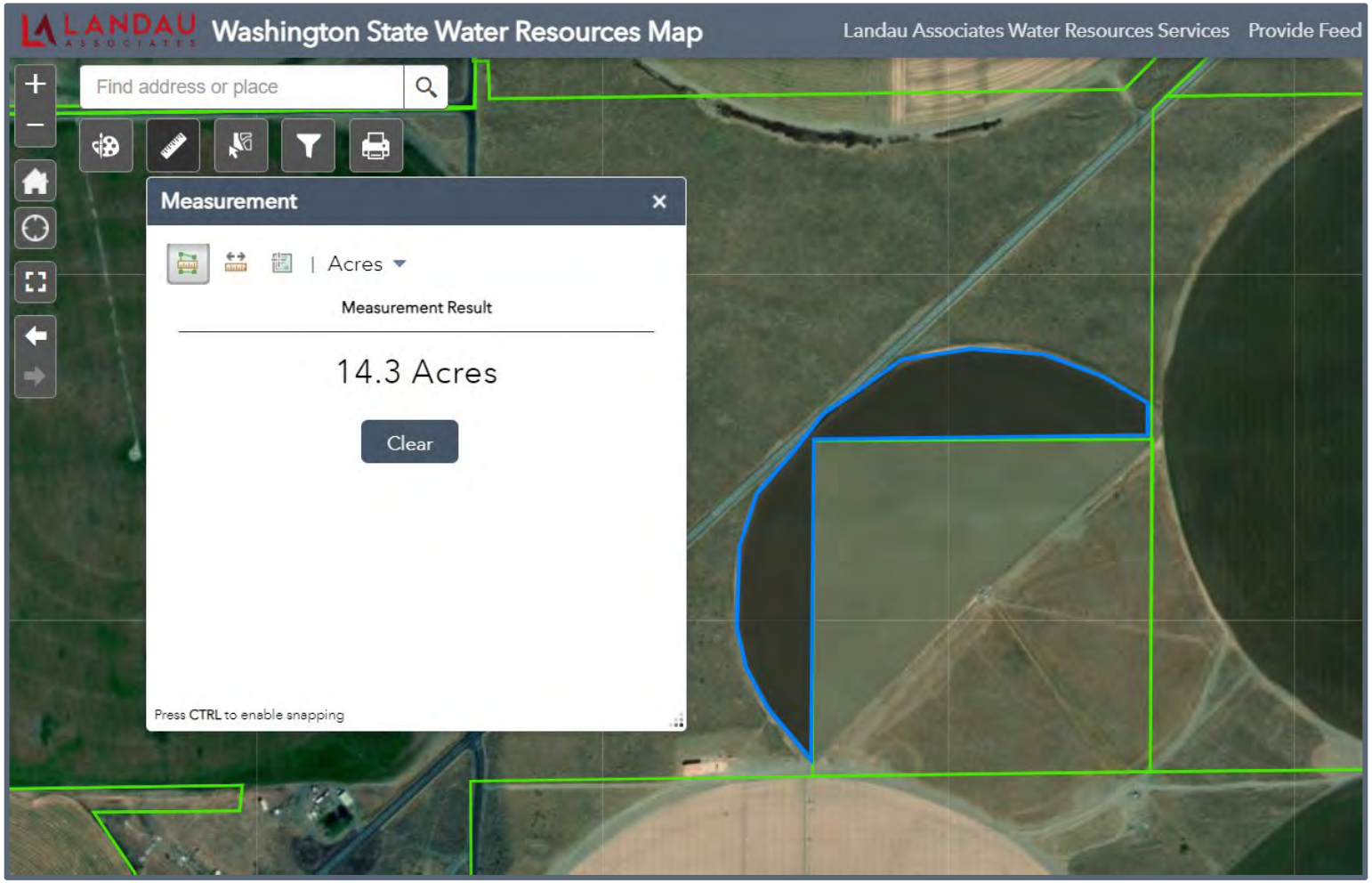
- Google Earth
- USGS Landsat Look
- USGS GloVis
- USGS Earth Explorer
- WDNR Records
- Library, University, Museum Records
- And more!



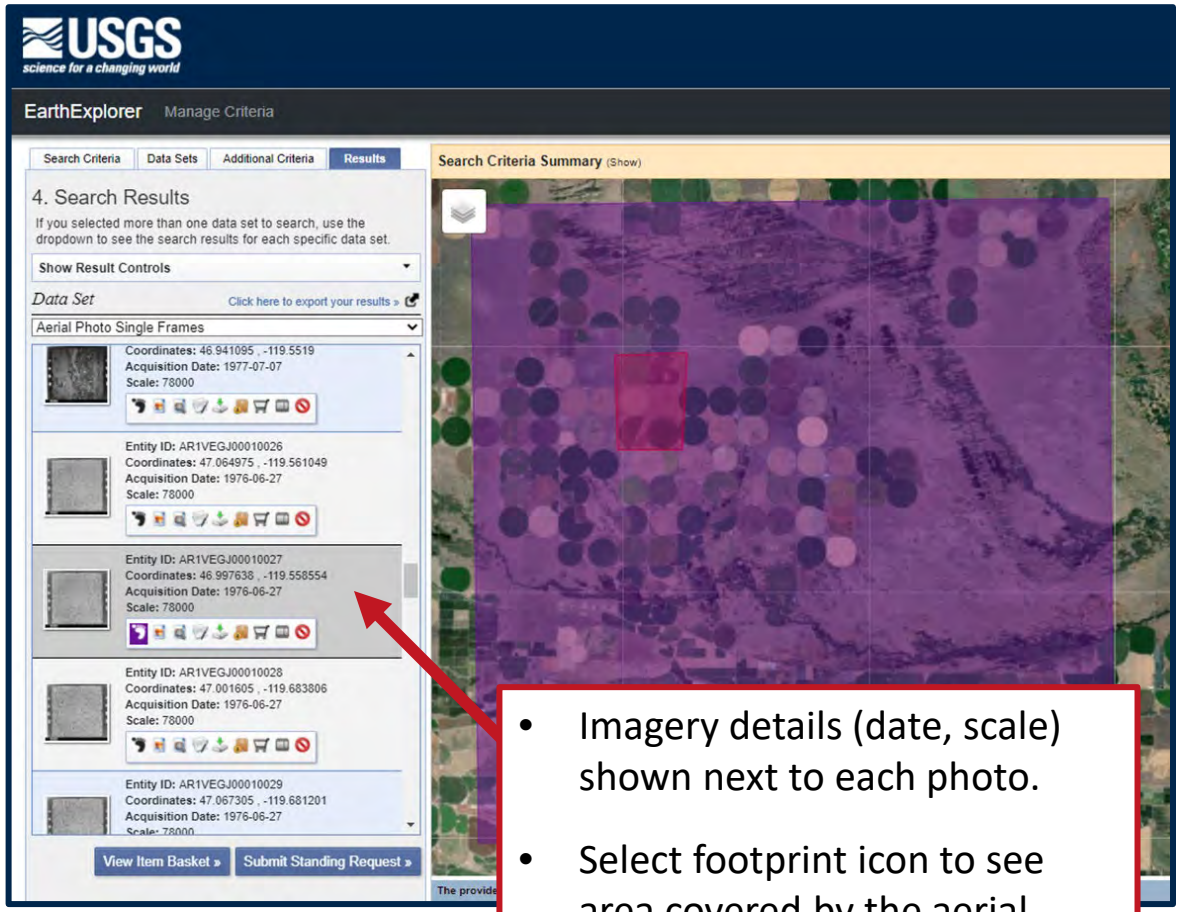
// Google Earth



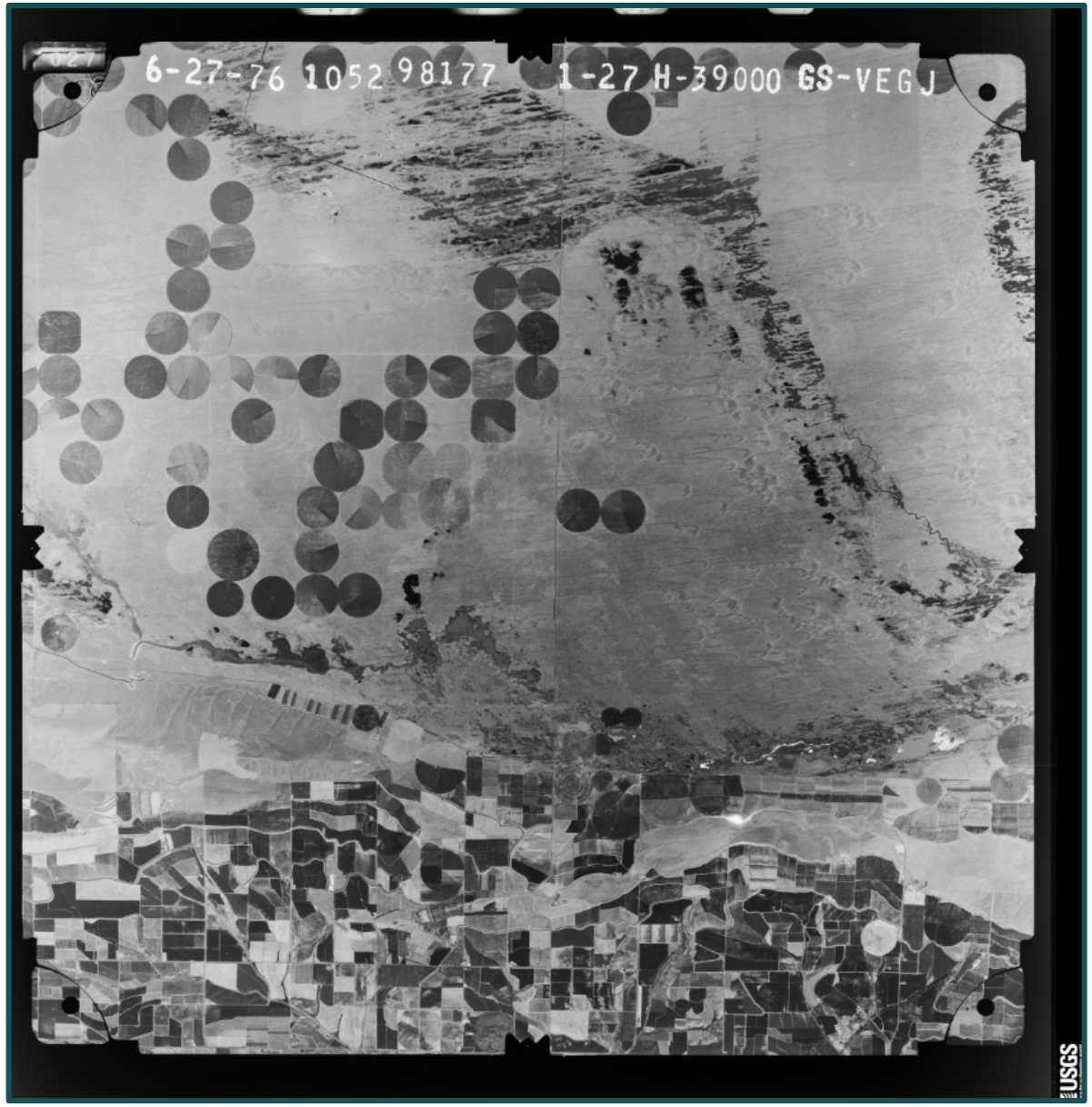
// Google Earth + Earthpoint / WebApp



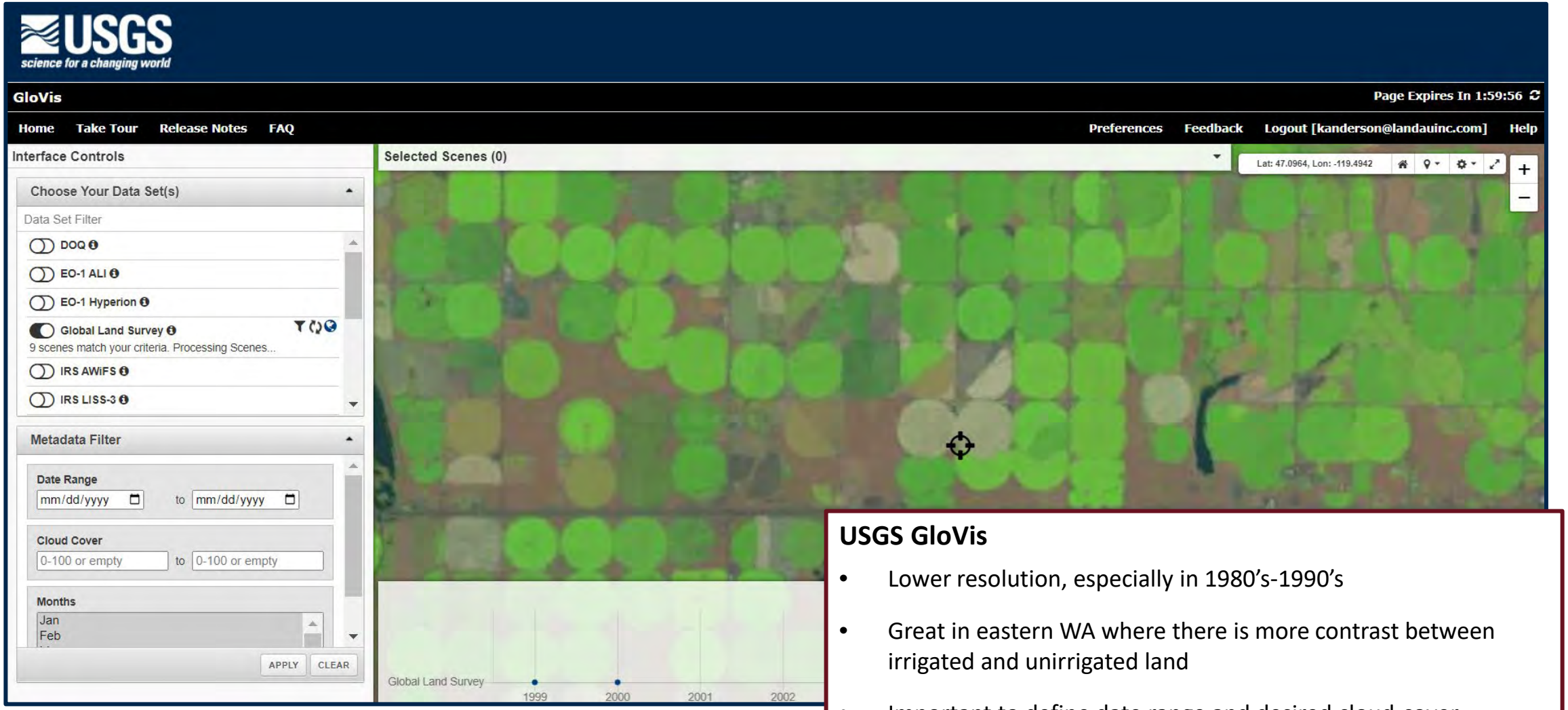
// USGS Earth Explorer



- Imagery details (date, scale) shown next to each photo.
- Select footprint icon to see area covered by the aerial photograph.
- Click download button to view the photograph.



// USGS GloVis



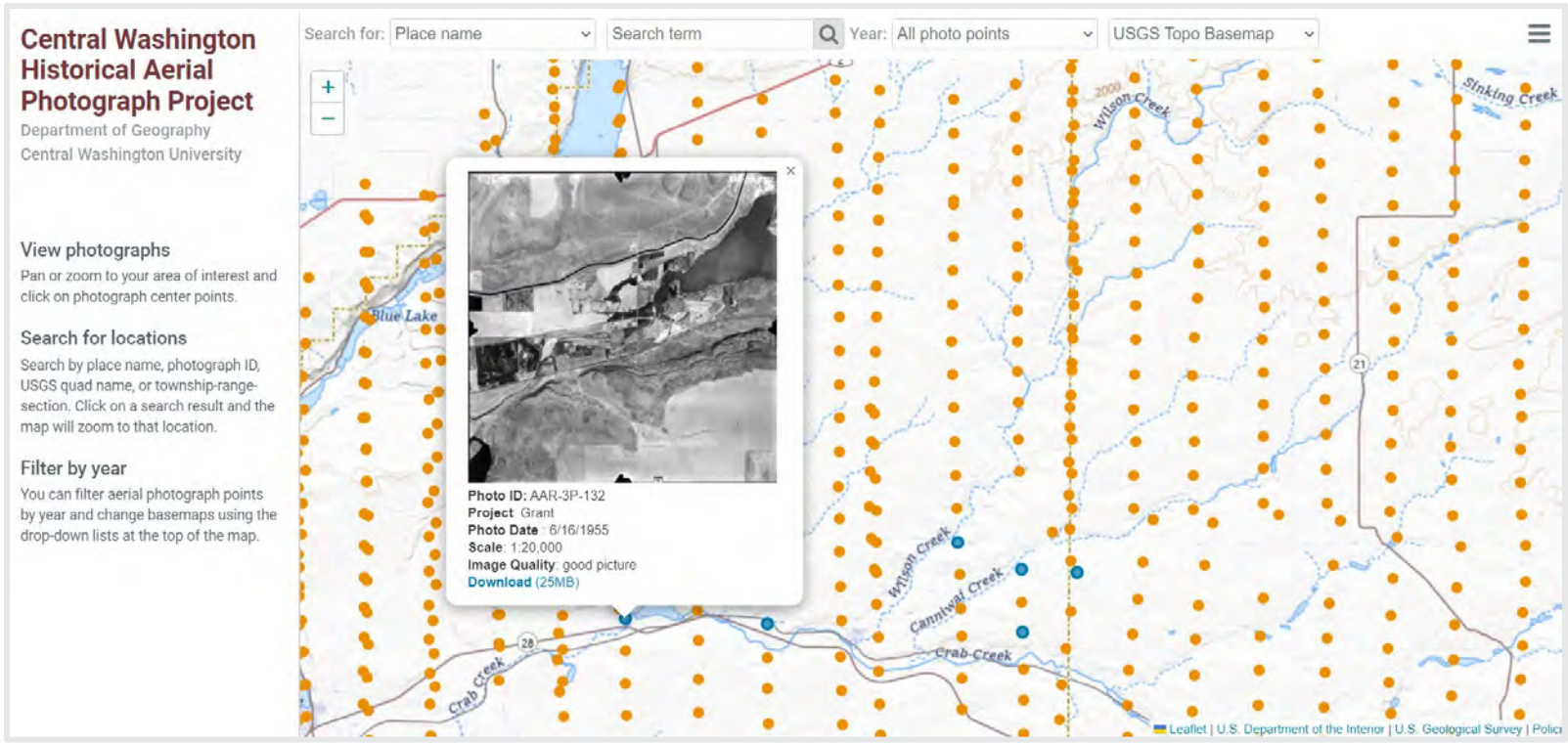
USGS GloVis

- Lower resolution, especially in 1980's-1990's
- Great in eastern WA where there is more contrast between irrigated and unirrigated land
- Important to define date range and desired cloud-cover percentage

// Central Washington University

Photo years:

- 1949
- 1954
- 1955
- 1957
- 1960
- 1961
- 1964



// Aerial Photos & Imagery

June 2, 1948 (USGS)

October 17, 1952 (USGS)

November 2, 1964 (USGS)

February 28, 1968 (WA DNR)

July 1, 1973 (USGS)

April 6, 1976 (UW Libraries)

August 1, 1982 (UW Libraries)

December 31, 1984 (Landsat/Copernicus)

Nicole Mehr, LG

NMEHR@LANDAUINC.COM