



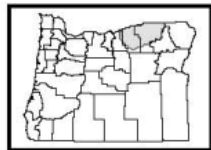
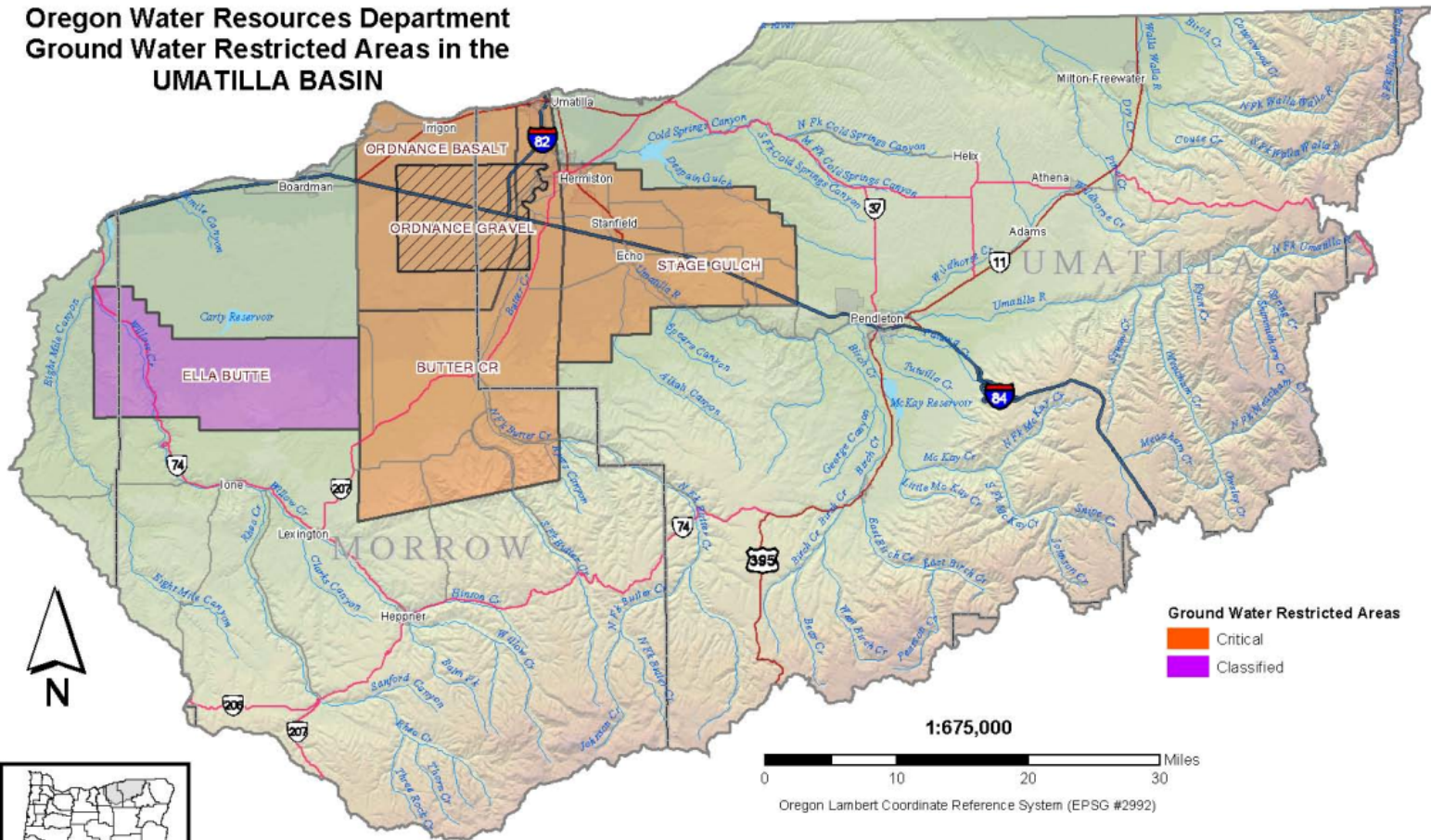
UMATILLA BASIN WATER SUPPLY SOLUTIONS

BARRY NORRIS, STATE ENGINEER
OREGON WATER RESOURCES DEPARTMENT

Groundwater Restricted Areas



Oregon Water Resources Department Ground Water Restricted Areas in the UMATILLA BASIN



Curtailed Groundwater Amounts

Critical Groundwater Area	Sub-Area	Irrigated Acreage (acres)	Groundwater Right ^(a) (acre-feet)	SAY ^(a) (acre-feet)	Curtailment	
					(acre-feet)	%
Ordnance Gravel	Lost Lake Westland Road	5,667	17,000	9,000	8,000	47%
		2,000	6,000	6,000	0	0%
Ordnance Basalt	Ordnance Basalt	2,267	6,800	6,800	0	0%
Butter Creek Basalt	North	898	2,693	250	2,443	91%
	Section 21	17	52	28	24	46%
	Echo Junction	3,702	11,106	1,260	9,846	89%
	4 Mile Canyon	1,688	5,064	1,300	3,764	74%
	East	790	2,370	720	1,650	70%
	West	15,022	45,066	5,670	39,396	87%
	Pine City	3,936	11,808	4,150	7,658	65%
	South	866	2,598	1,000	1,598	62%
Stage Gulch Basalt	A	10,990	32,971	11,450	21,521	65%
	B	1,138	3,414	200	3,214	94%
	C	1,111	3,333	400	2,933	88%
	D	2,933	8,799	3,250	5,549	63%
	E	50	150	150	0	0%
	F	140	420	200	220	52%
	G	4,224	12,672	2,750	9,922	78%
	H	6,050	18,150	8,850	9,300	51%
	Totals		63,489	190,466	63,428	127,038

Target Flows at McNary Dam



MONTH

KCFS

April 10 – 30

220 – 260

May

220 – 260

June

220 – 260

July

200

August

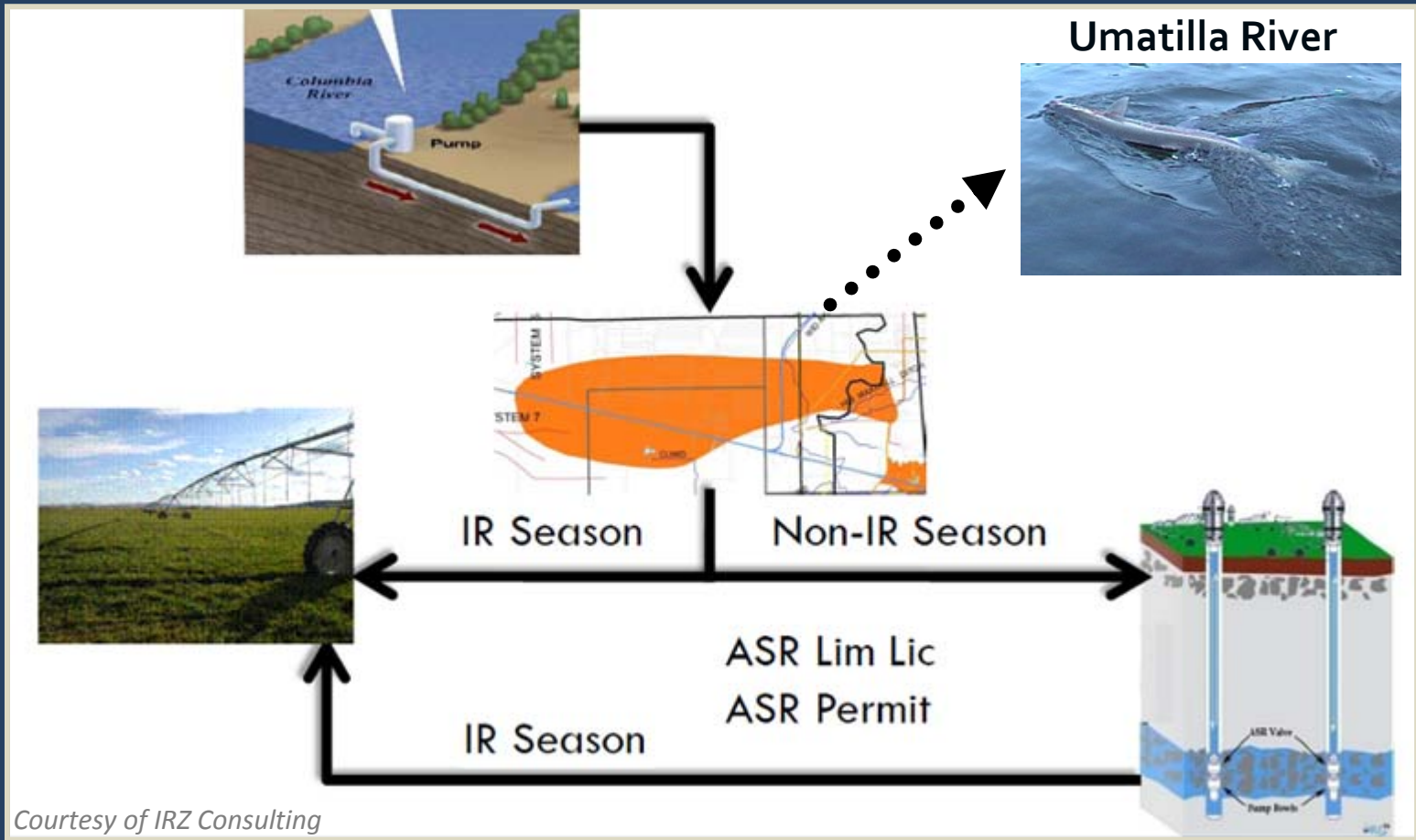
200

Additional Water for the Umatilla Basin



- Alluvial storage
- Basalt storage
- Increased existing surface water storage sites
- Build new surface water storage sites
- Partner with Washington State
- Flow management
- Excess water
- Water bank

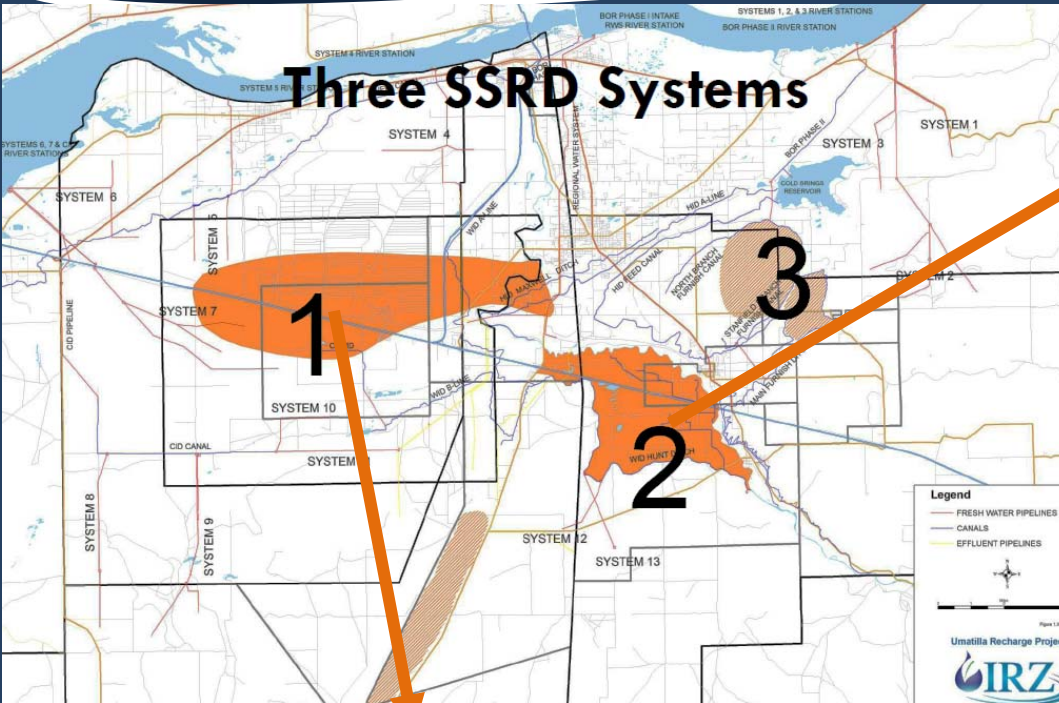
Umatilla Recharge Project



Courtesy of IRZ Consulting

Echo Meadows & County Line

Three SSRD Systems



ECHO MEADOWS AR SITE

- Primarily treatment of Umatilla River water
- Treated groundwater injected into basalt
- Relatively low storage volume
- Umatilla River flow augmentation

COUNTY LINE AR SITE

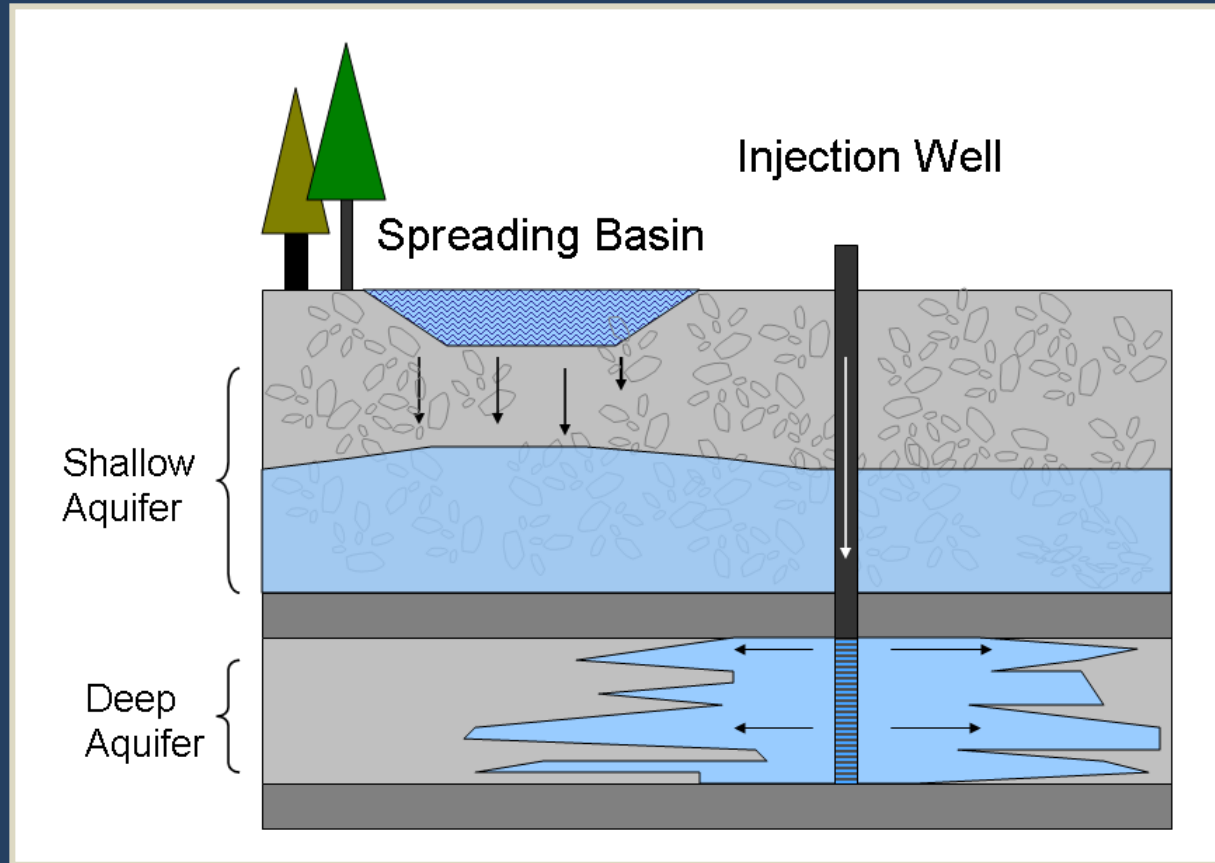


- Canal recharge began in 1977
- Recharges an average of 6,000 acre-feet/year
- Purpose is to replenish the Ordinance Critical Area sand and gravel aquifer for irrigation

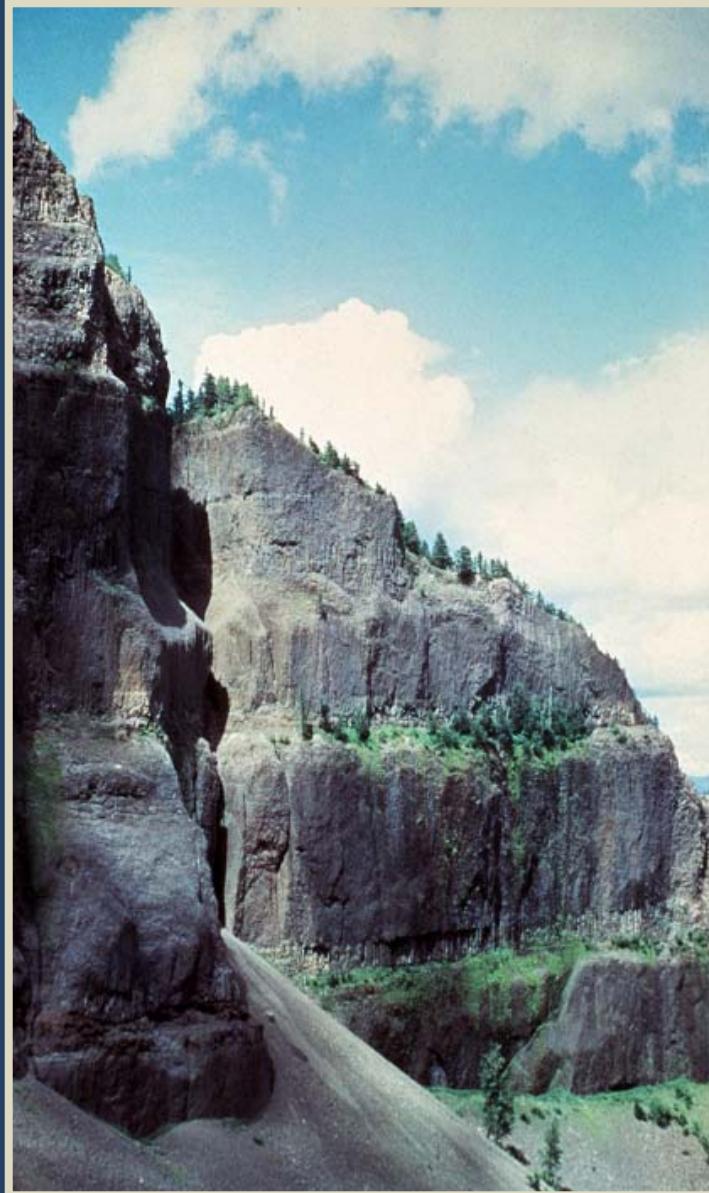
Underground Storage



- Infiltration
- Injection



Basalt Flows



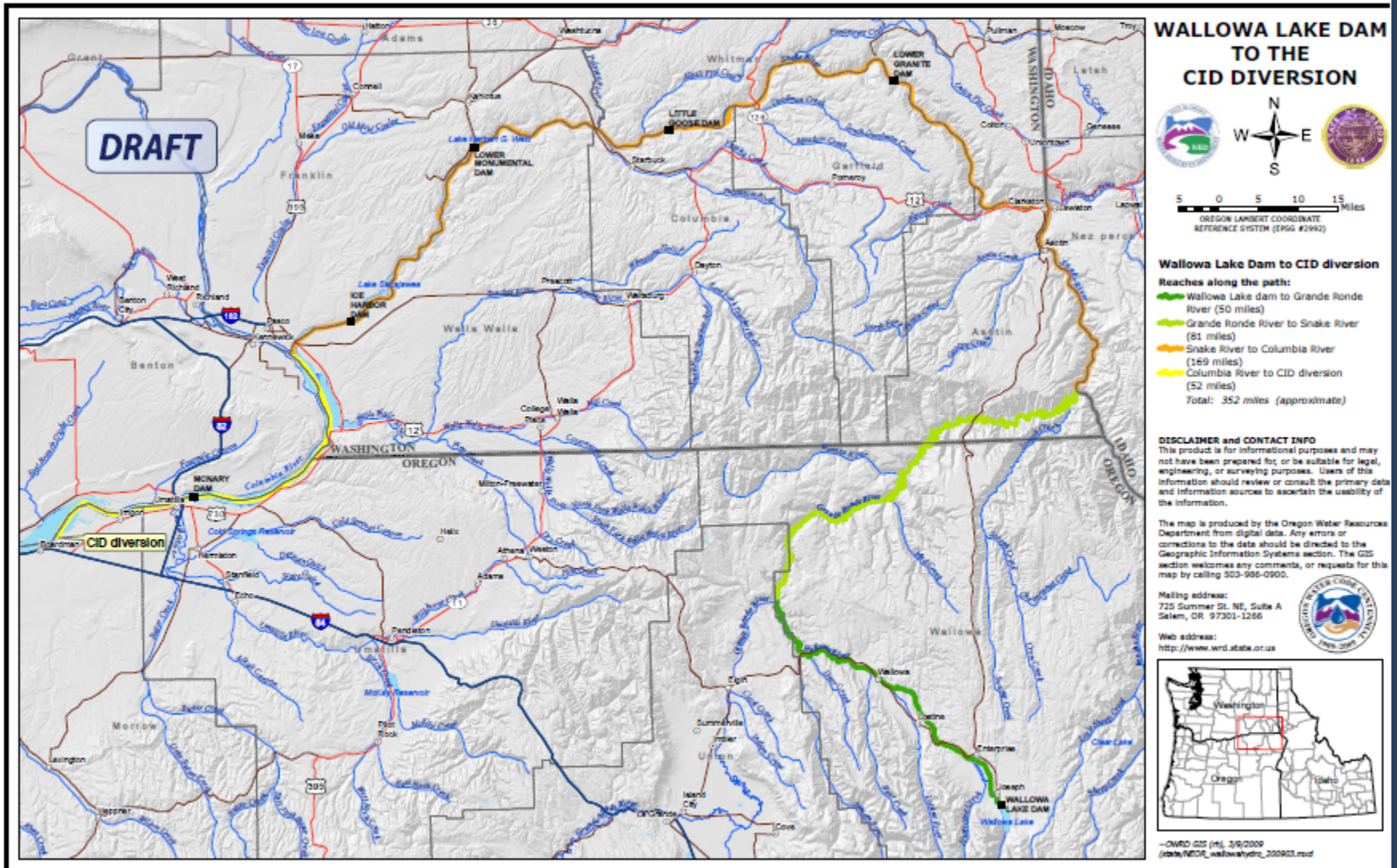
Carty Reservoir



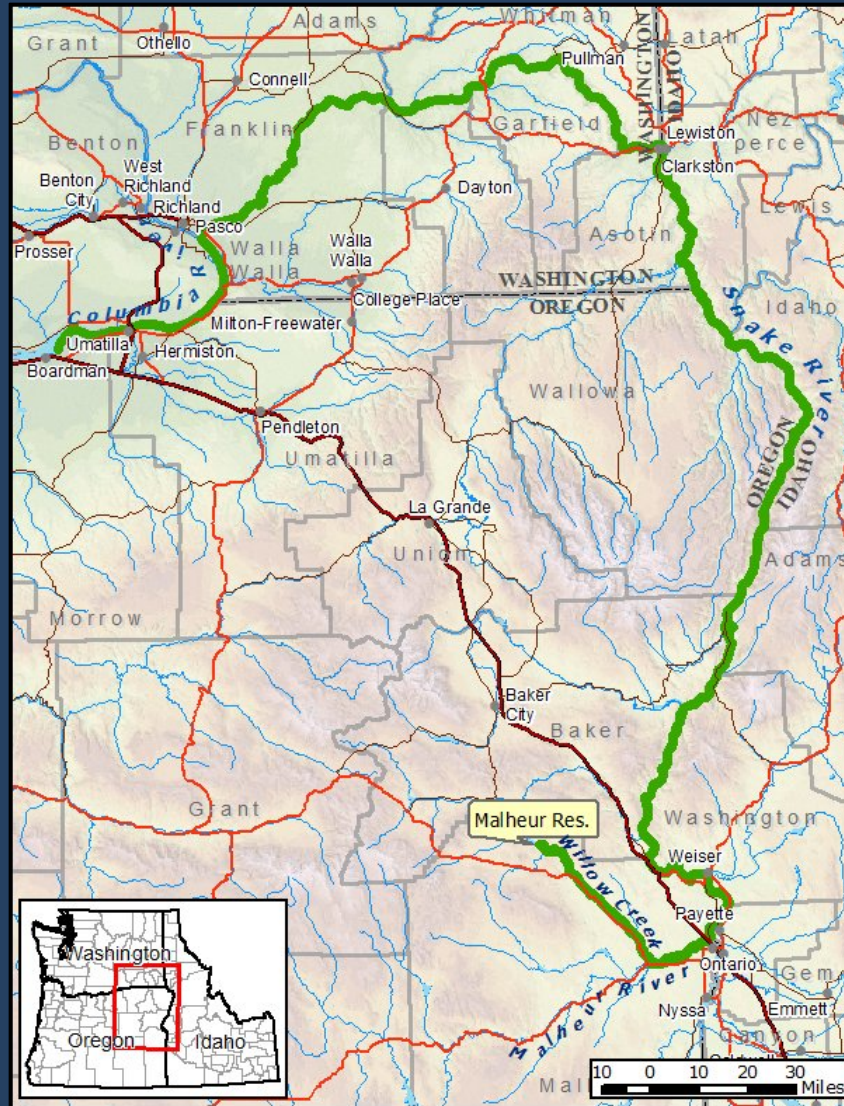
Willow Creek Reservoir & Wallowa Lake



Wallowa Lake Stored Water



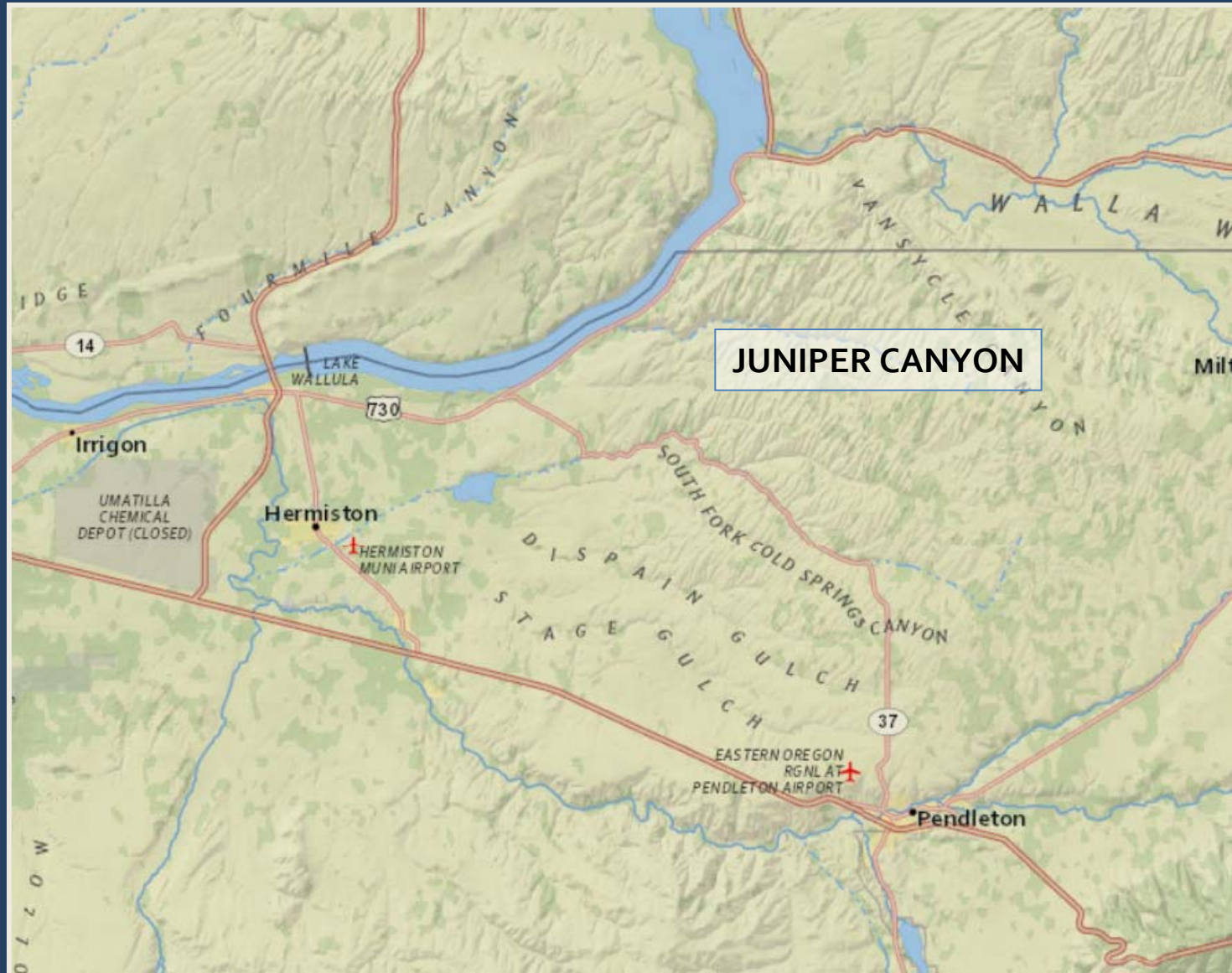
Willow Creek Dam



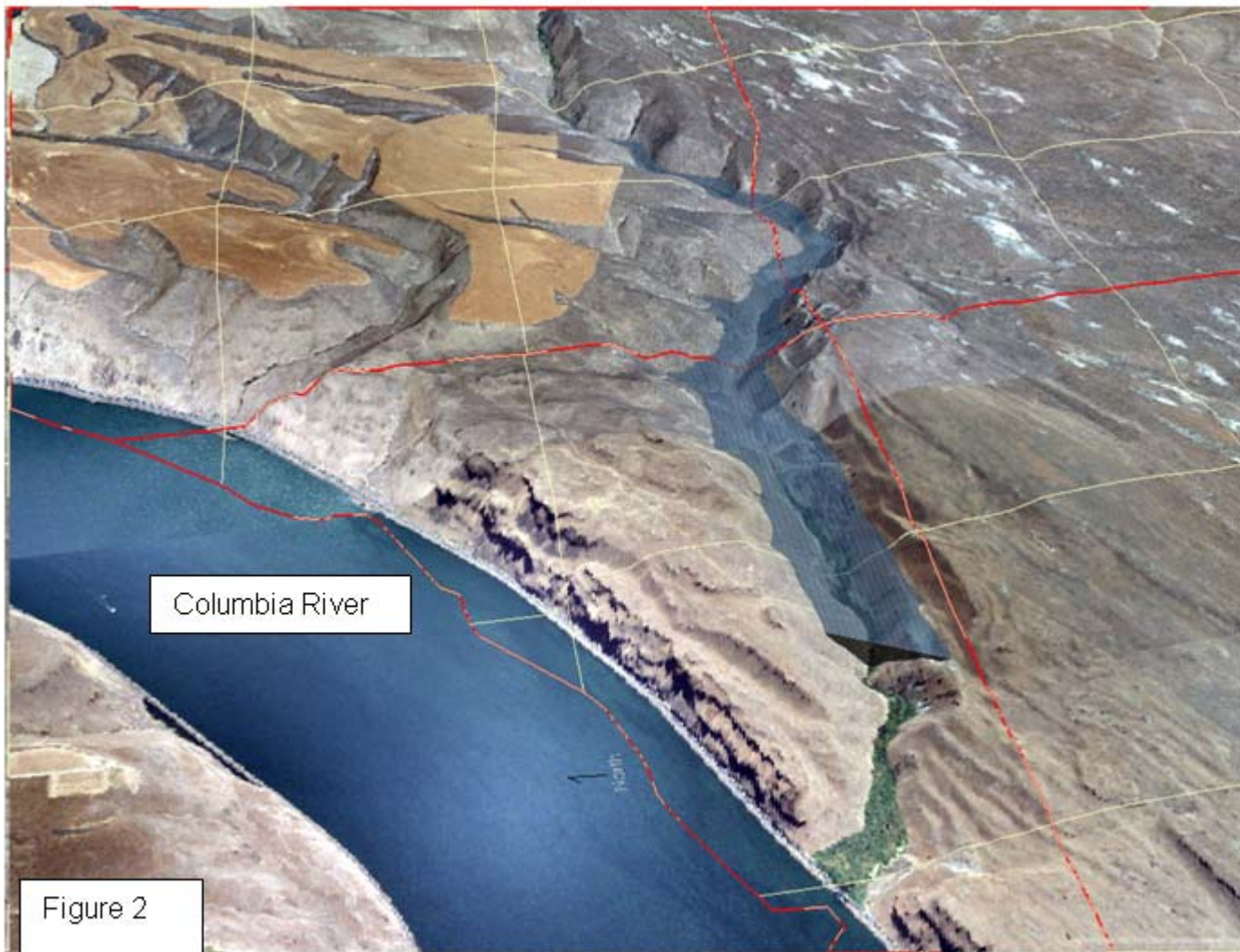
Sand Hollow



Juniper Canyon



Juniper Canyon



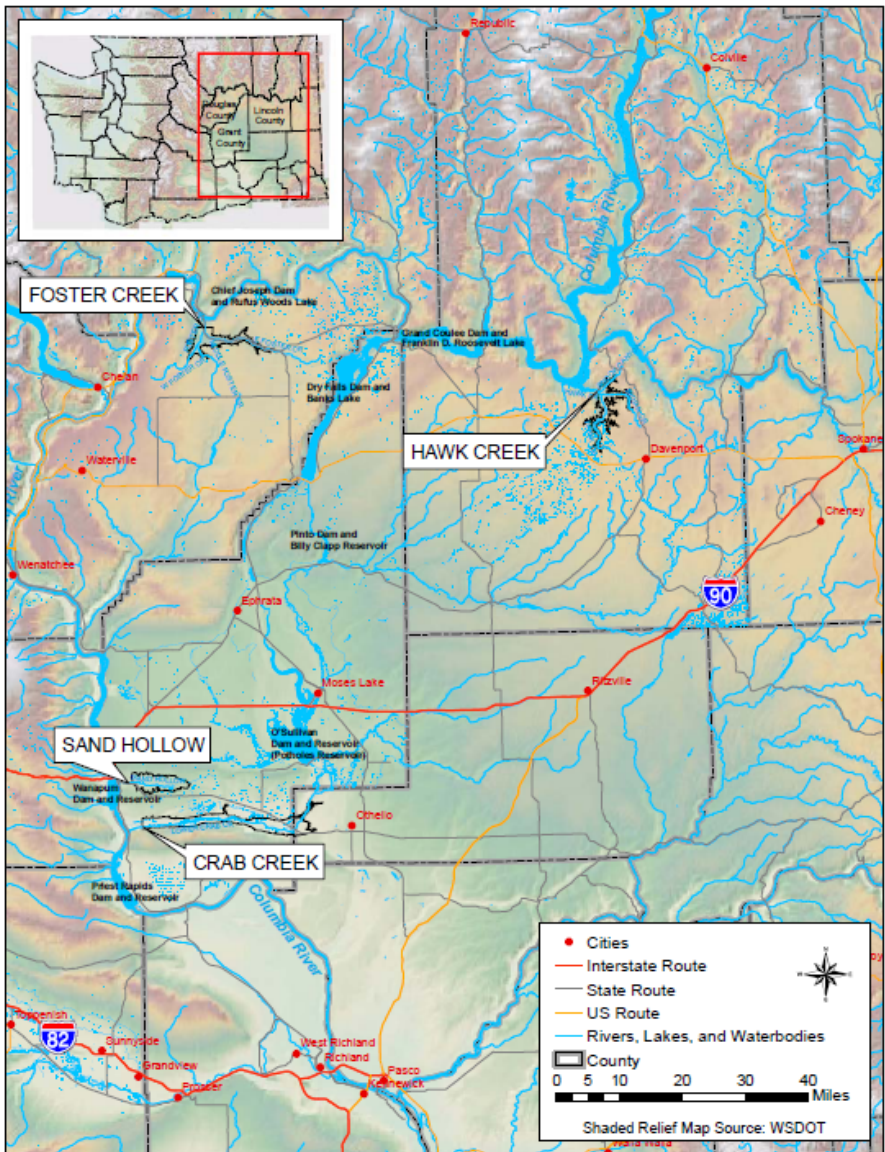
Columbia River

Figure 2

Columbia River Basin



Crab Creek



Additional Water for the Umatilla Basin



- Alluvial storage
- Basalt storage
- Increased existing surface water storage sites
- Build new surface water storage sites
- Partner with Washington State
- Flow management
- Excess water
- Water bank
- *Columbia River Treaty*



Thank you

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