Water Resource Committee's Task:

- Study and identify a supplemental water source sufficient to address the City's immediate needs during the current shortage.
- Study and identify supplemental water sources sufficient to ensure water security to meet the City's long-term needs.
- Review the City's current drought plan and make recommendations for changes.

BARTLESVILLE SERVICE AREA

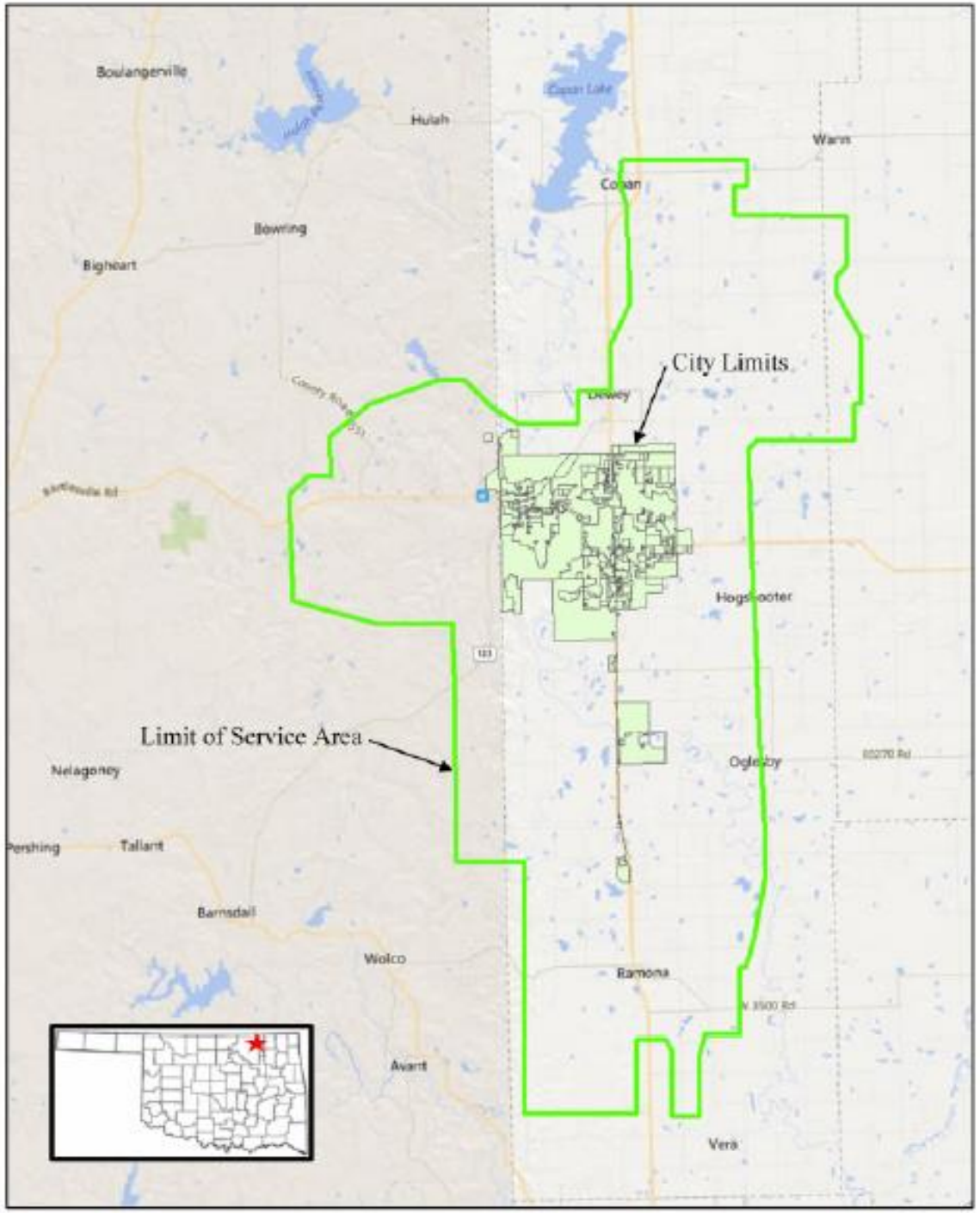
Bville Population – 37,000

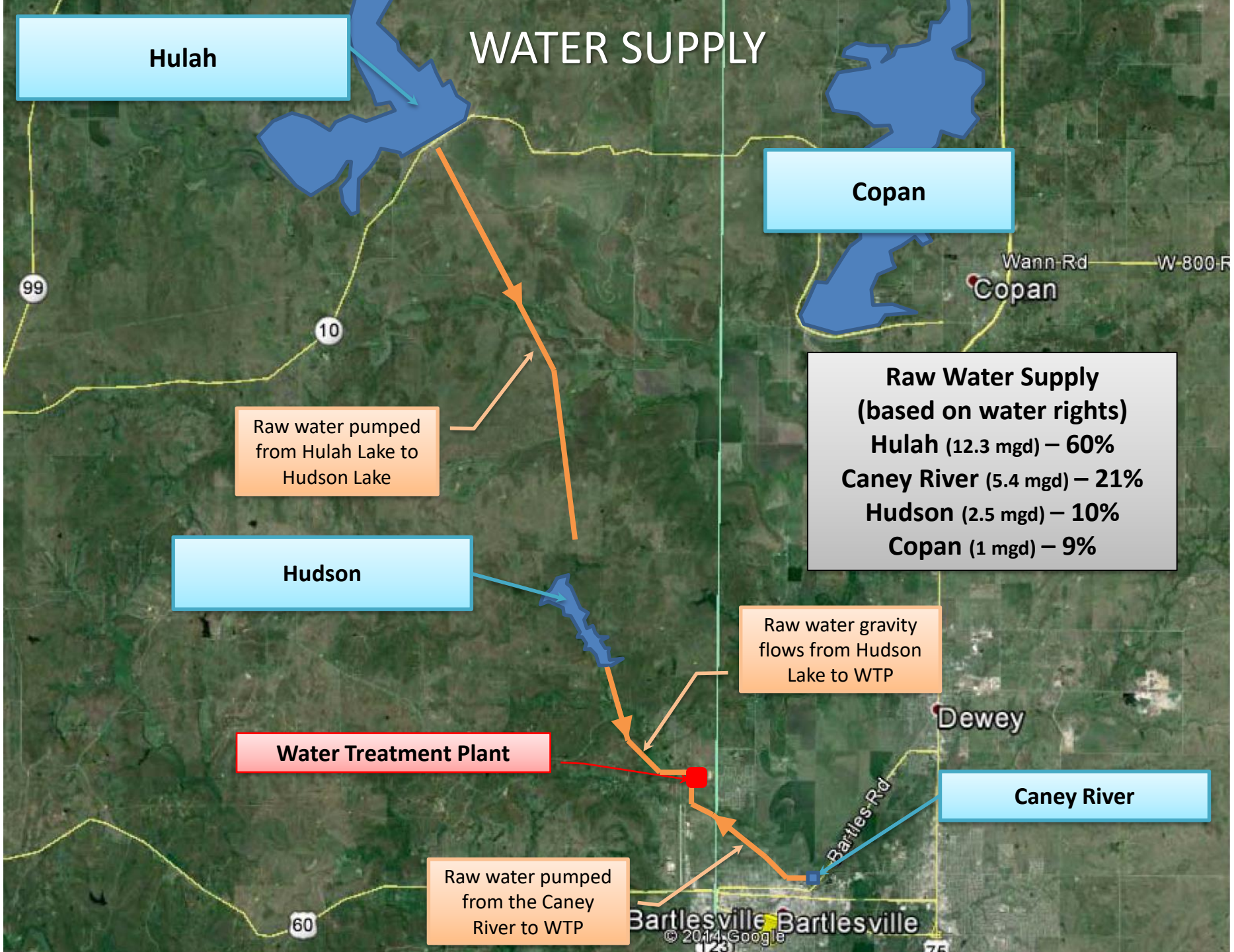
Serve 3 surrounding municipalities and 5 rural water districts

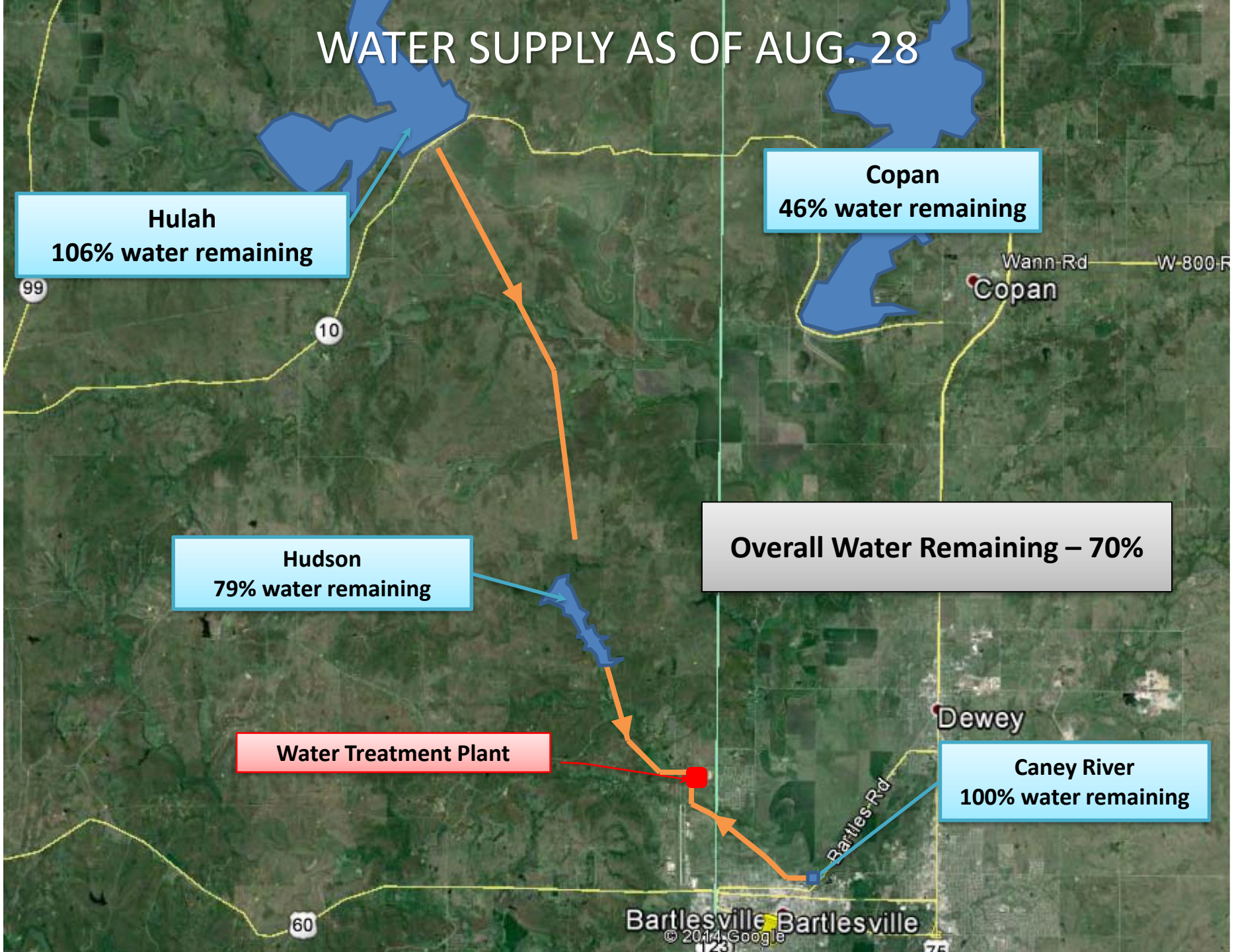
Land area – 573 sq mi

Total Population – 55,000

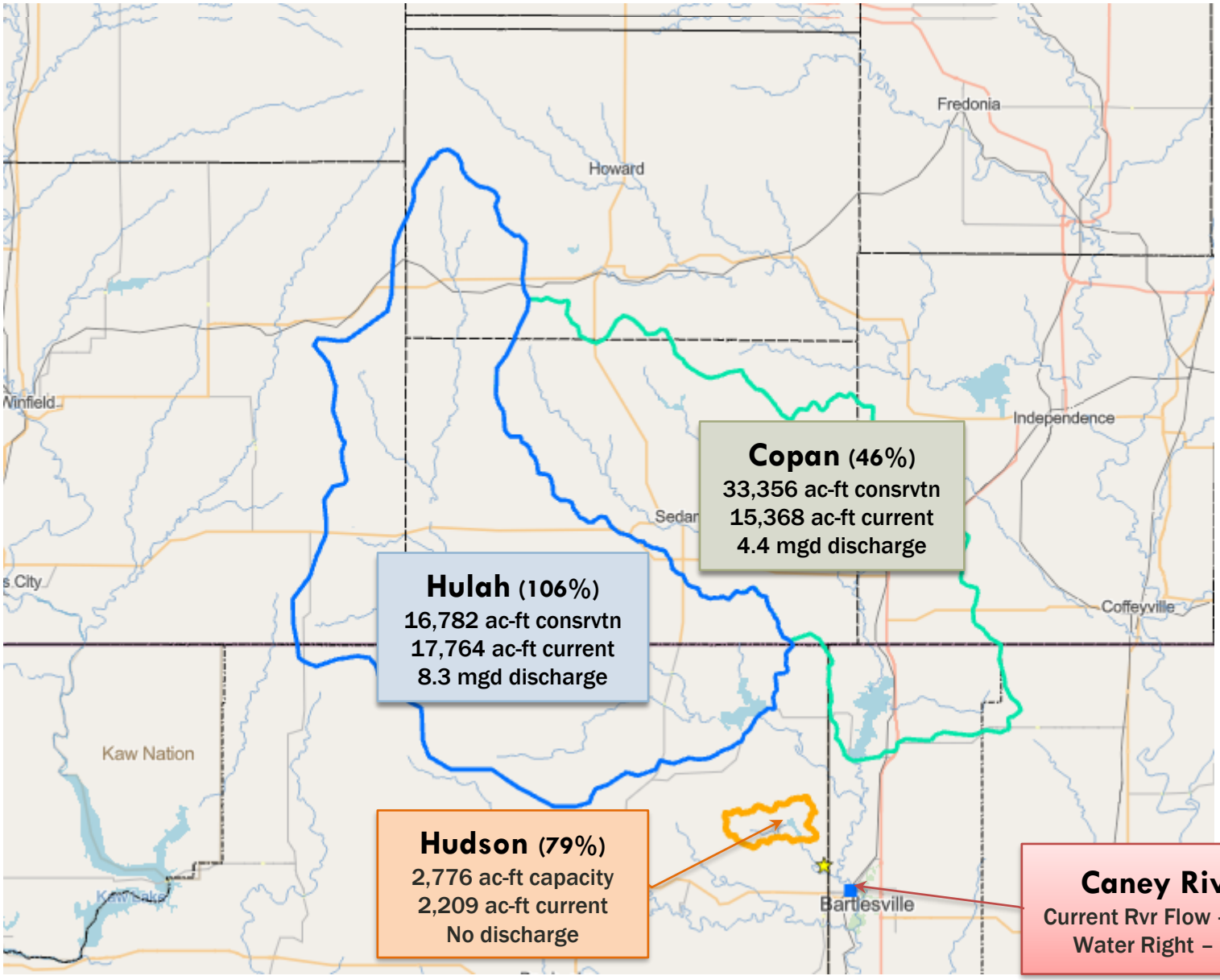
Avg Daily Use – 5.5 MGD
Max Day – 14 MGD



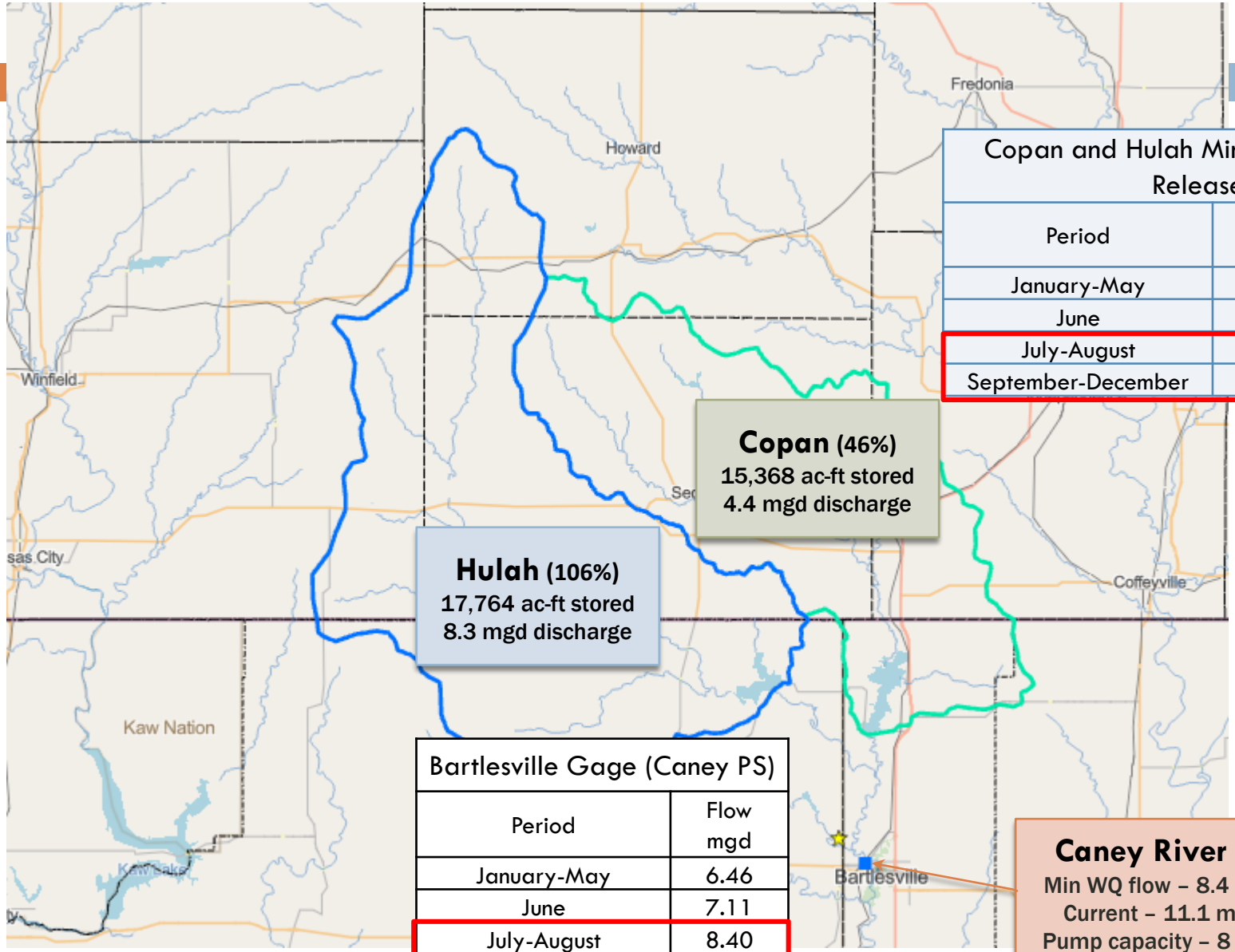

WATER SUPPLY
Hulah
Copan
Raw water pumped from Hulah Lake to Hudson Lake
Hudson
Raw water gravity flows from Hudson Lake to WTP
Water Treatment Plant
Caney River
Raw water pumped from the Caney River to WTP
Raw Water Supply
(based on water rights)
Hulah (12.3 mgd) – 60%
Caney River (5.4 mgd) – 21%
Hudson (2.5 mgd) – 10%
Copan (1 mgd) – 9%
Wann Rd
W 800 R
Copan
Dewey
Bartles Rd
Bartlesville
Bartlesville
© 2014 Google
99
10
60
123
75


WATER SUPPLY AS OF AUG. 28
Hulah
106% water remaining
Copan
46% water remaining
Hudson
79% water remaining
Overall Water Remaining – 70%
Water Treatment Plant
Caney River
100% water remaining
Copan
Wann Rd
W-800 R
Dewey
Bartles Rd
Bartlesville
Bartlesville
© 2014 Google
99
10
60
123
75

WATER SUPPLY



HULAH – COPAN – CANEY RIVER



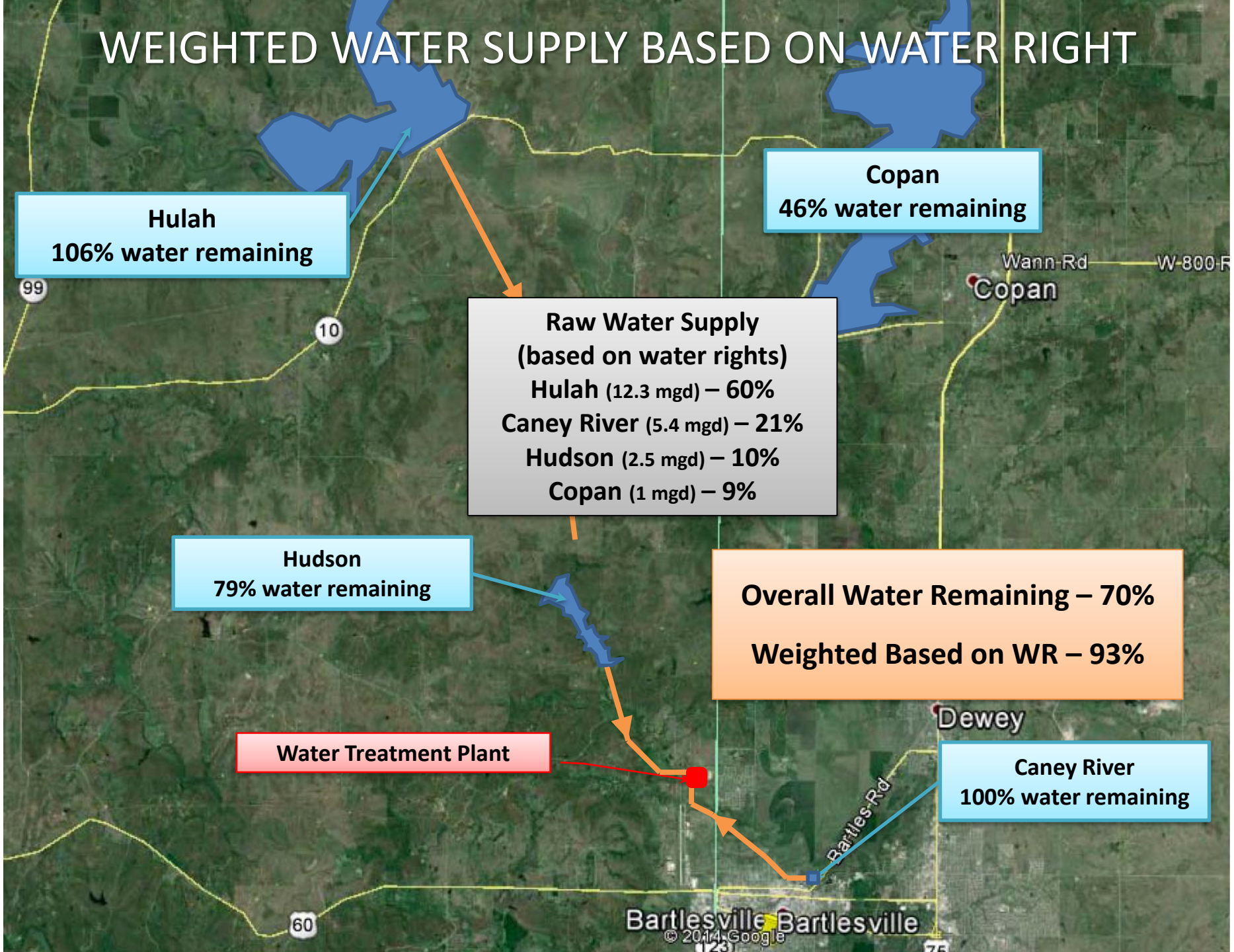
Copan and Hulah Minimum Low-Flow Releases		
Period	Copan mgd	Hulah mgd
January-May	3.23	1.29
June	5.17	2.59
July-August	3.23	1.29
September-December	3.72	1.62

Copan (46%)
15,368 ac-ft stored
4.4 mgd discharge

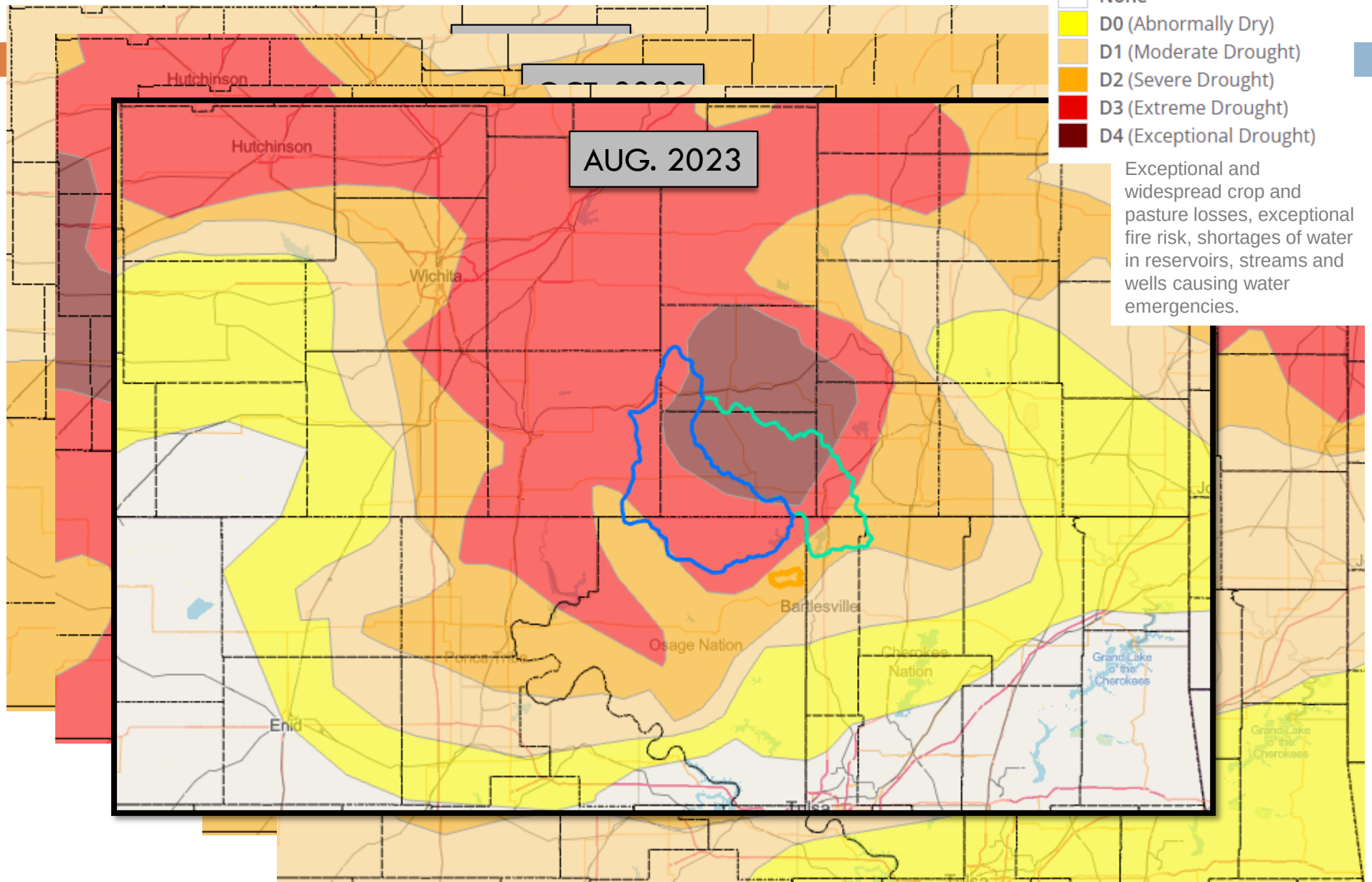
Hulah (106%)
17,764 ac-ft stored
8.3 mgd discharge

Bartlesville Gage (Caney PS)	
Period	Flow mgd
January-May	6.46
June	7.11
July-August	8.40
September-December	6.46

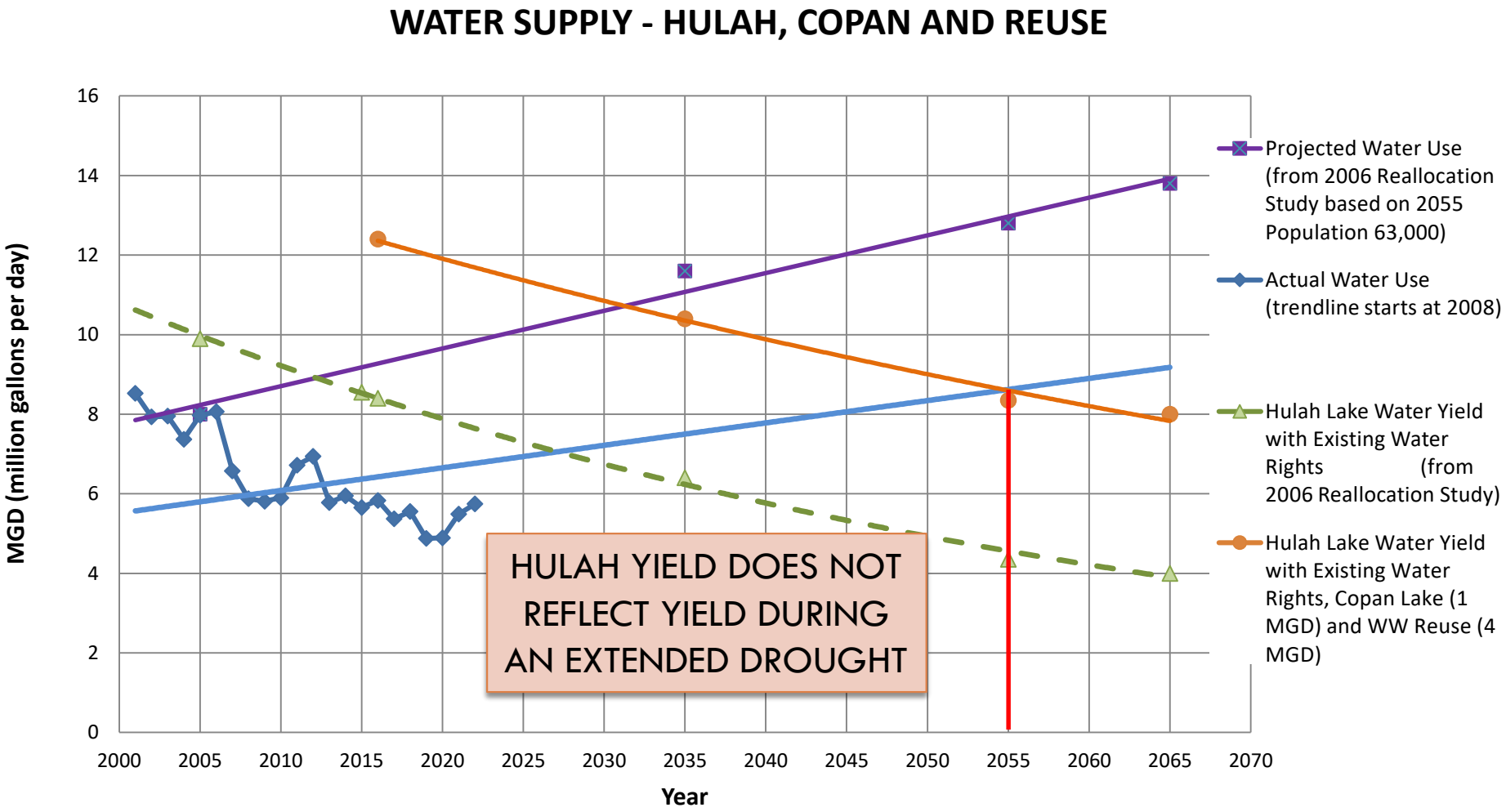
Caney River PS
Min WQ flow – 8.4 mgd
Current – 11.1 mgd
Pump capacity – 8 mgd


WEIGHTED WATER SUPPLY BASED ON WATER RIGHT
Hulah
106% water remaining
Copan
46% water remaining
Raw Water Supply
(based on water rights)
Hulah (12.3 mgd) – 60%
Caney River (5.4 mgd) – 21%
Hudson (2.5 mgd) – 10%
Copan (1 mgd) – 9%
Hudson
79% water remaining
Overall Water Remaining – 70%
Weighted Based on WR – 93%
Water Treatment Plant
Caney River
100% water remaining
Wann Rd
W-800-R
Copan
Dewey
Bartles Rd
Bartlesville
Bartlesville
© 2014 Google
99
10
60
123
75

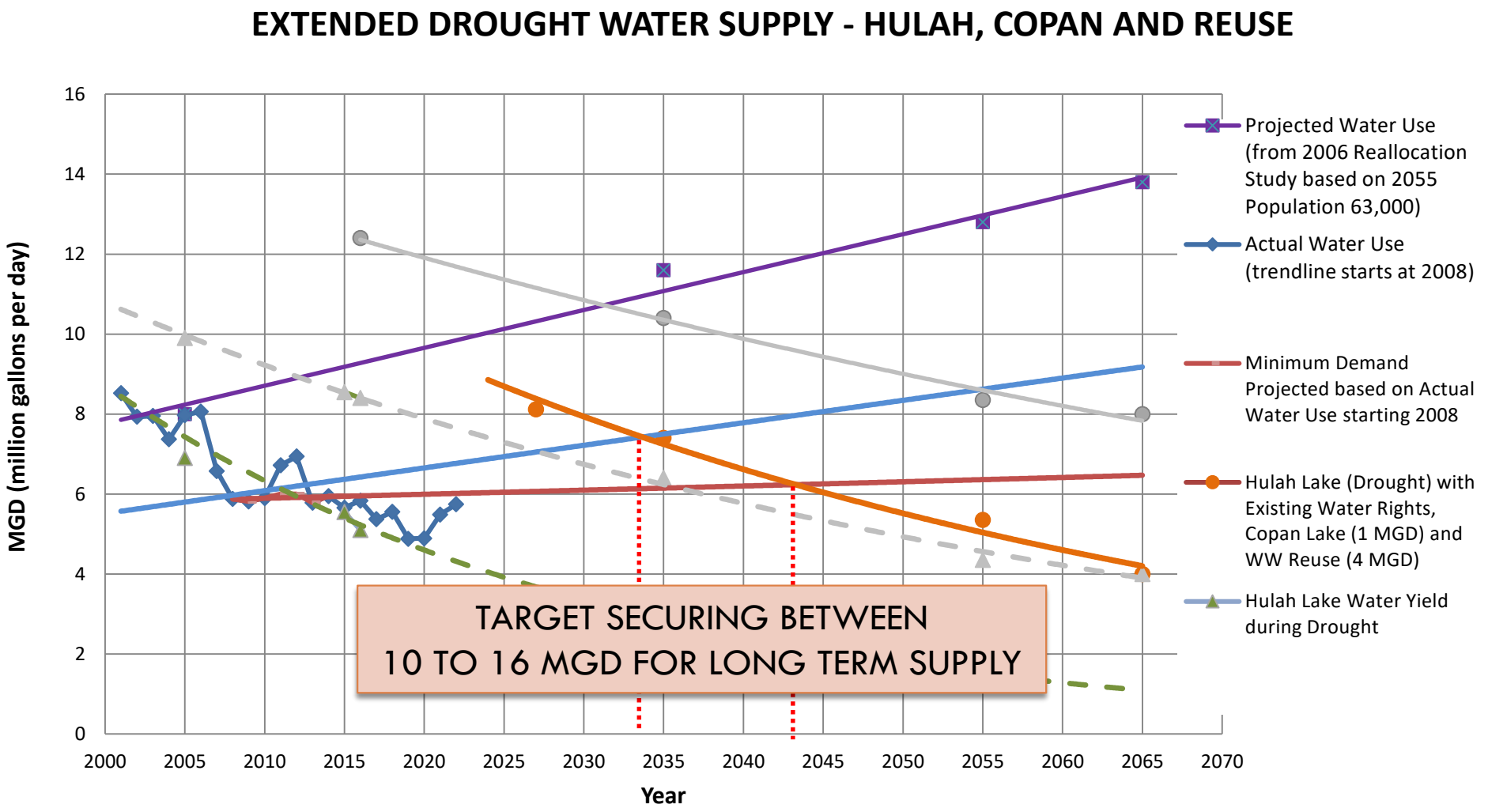
DROUGHTS


None
D0 (Abnormally Dry)
D1 (Moderate Drought)
D2 (Severe Drought)
D3 (Extreme Drought)
D4 (Exceptional Drought)
Exceptional and widespread crop and pasture losses, exceptional fire risk, shortages of water in reservoirs, streams and wells causing water emergencies.
AUG. 2023
Hutchinson
Wichita
Bartlesville
Osage Nation
Cherokee Nation
Grand Lake o' the Cherokees
Enid
Tulsa

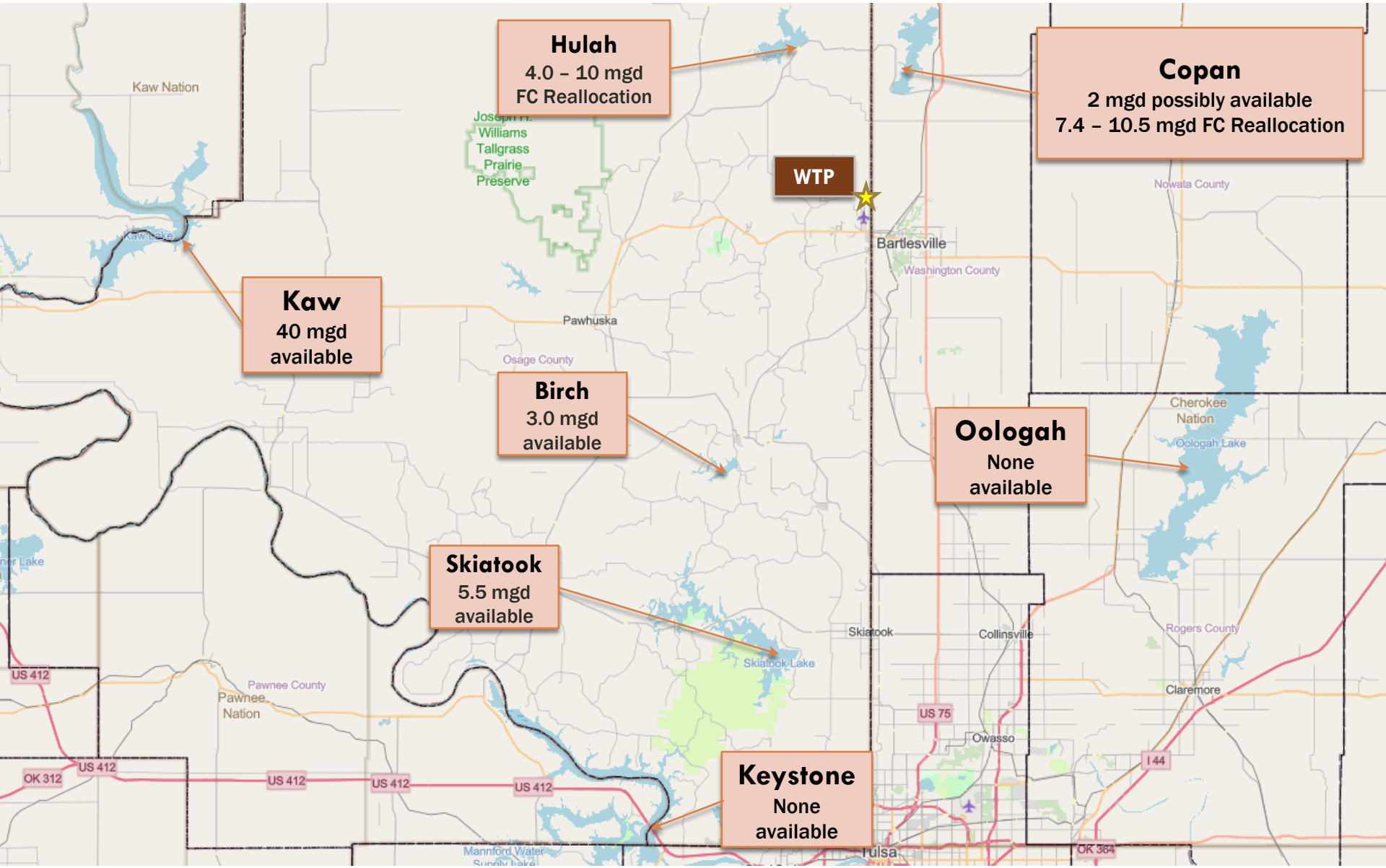
WATER


WATER SUPPLY - HULAH, COPAN AND REUSE
MGD (million gallons per day)
16
14
12
10
8
6
4
2
0
2000
2005
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055
2060
2065
2070
Year
HULAH YIELD DOES NOT REFLECT YIELD DURING AN EXTENDED DROUGHT
Projected Water Use (from 2006 Reallocation Study based on 2055 Population 63,000)
Actual Water Use (trendline starts at 2008)
Hulah Lake Water Yield with Existing Water Rights (from 2006 Reallocation Study)
Hulah Lake Water Yield with Existing Water Rights, Copan Lake (1 MGD) and WW Reuse (4 MGD)

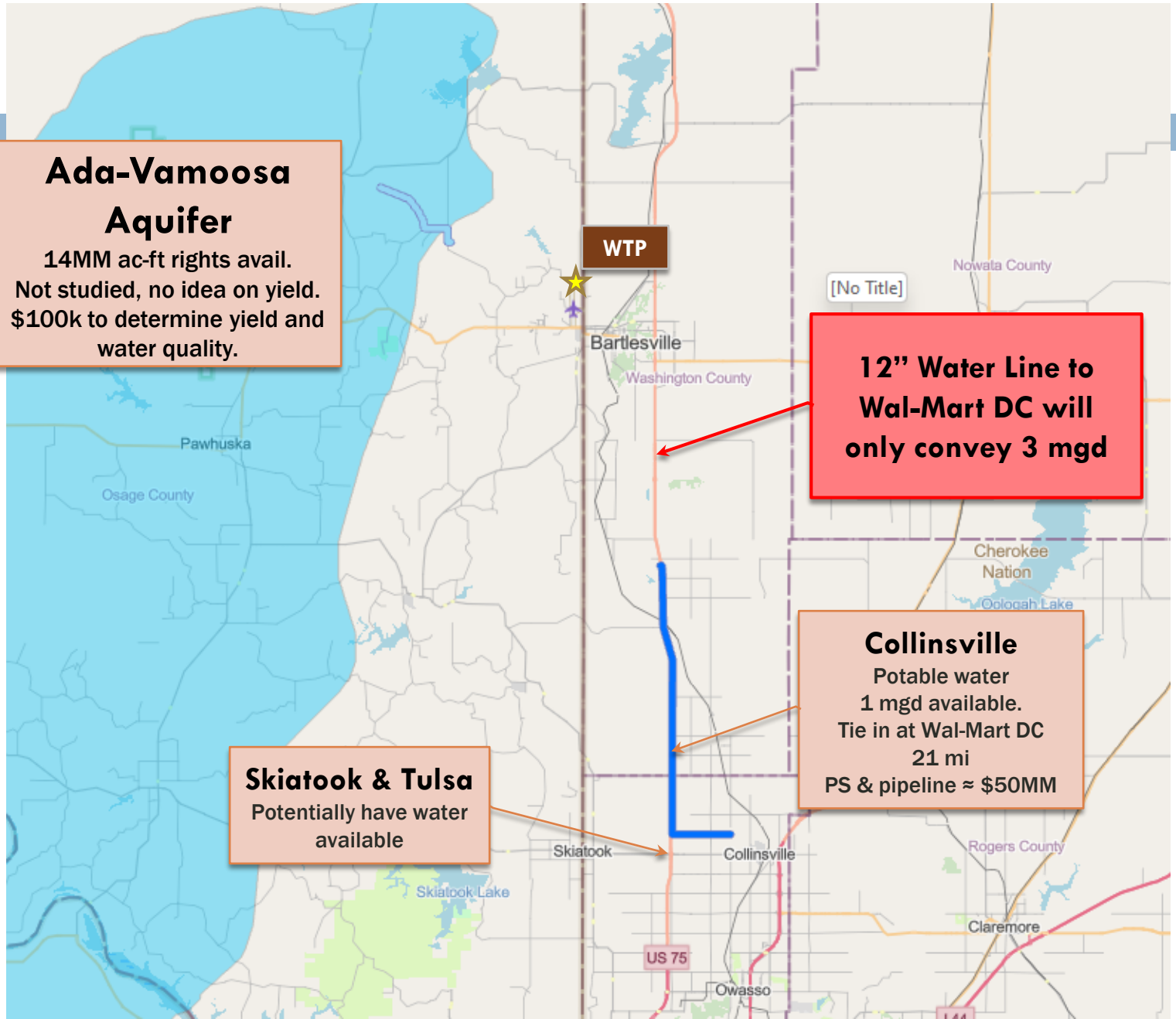
WATER


EXTENDED DROUGHT WATER SUPPLY - HULAH, COPAN AND REUSE
MGD (million gallons per day)
16
14
12
10
8
6
4
2
0
2000
2005
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055
2060
2065
2070
Year
Projected Water Use (from 2006 Reallocation Study based on 2055 Population 63,000)
Actual Water Use (trendline starts at 2008)
Minimum Demand Projected based on Actual Water Use starting 2008
Hulah Lake (Drought) with Existing Water Rights, Copan Lake (1 MGD) and WW Reuse (4 MGD)
Hulah Lake Water Yield during Drought
TARGET SECURING BETWEEN
10 TO 16 MGD FOR LONG TERM SUPPLY

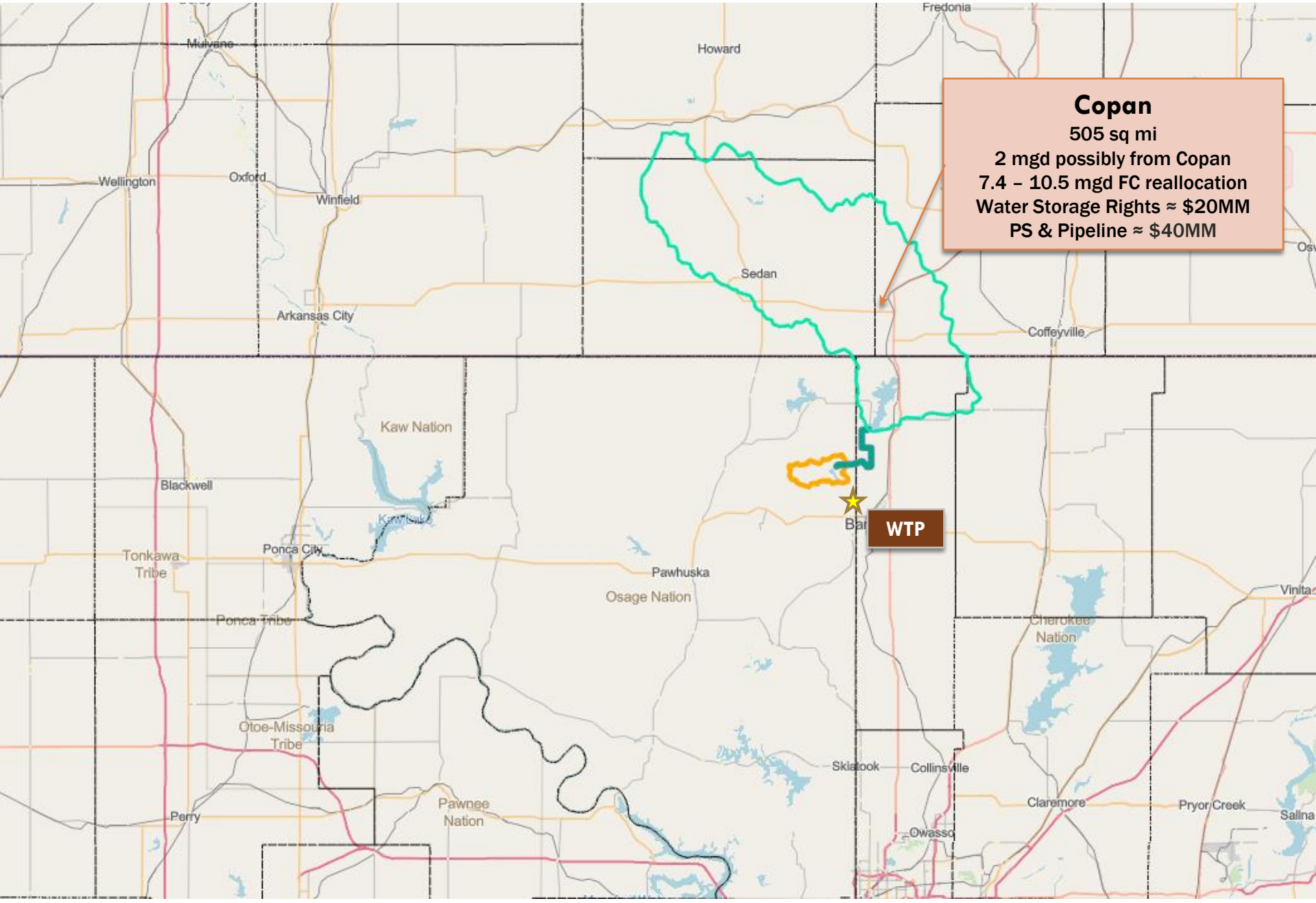
RESERVIOR OPTIONS



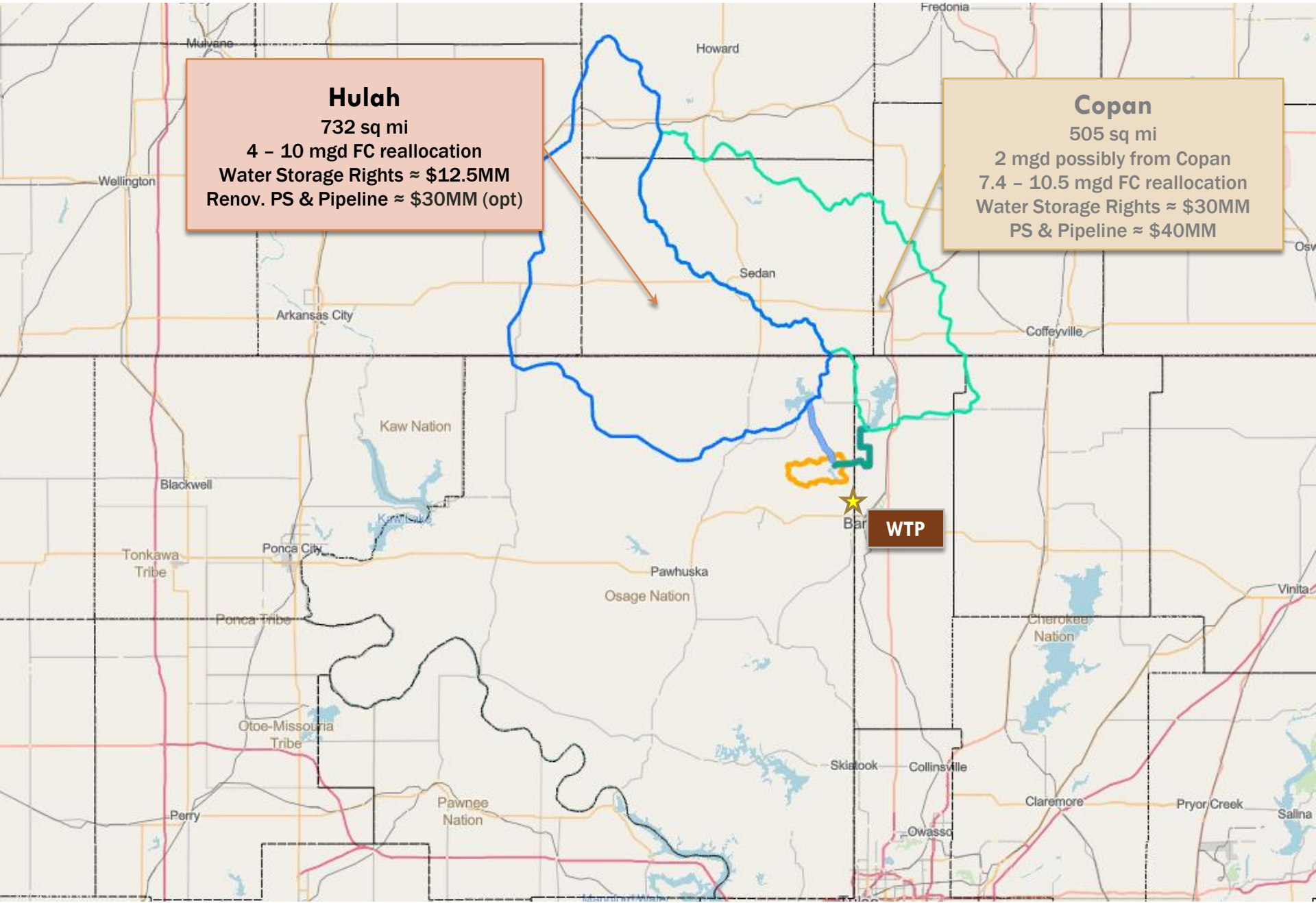
GROUND WATER AND POTABLE WATER



RESERVIOR OPTIONS



RESERVIOR OPTIONS



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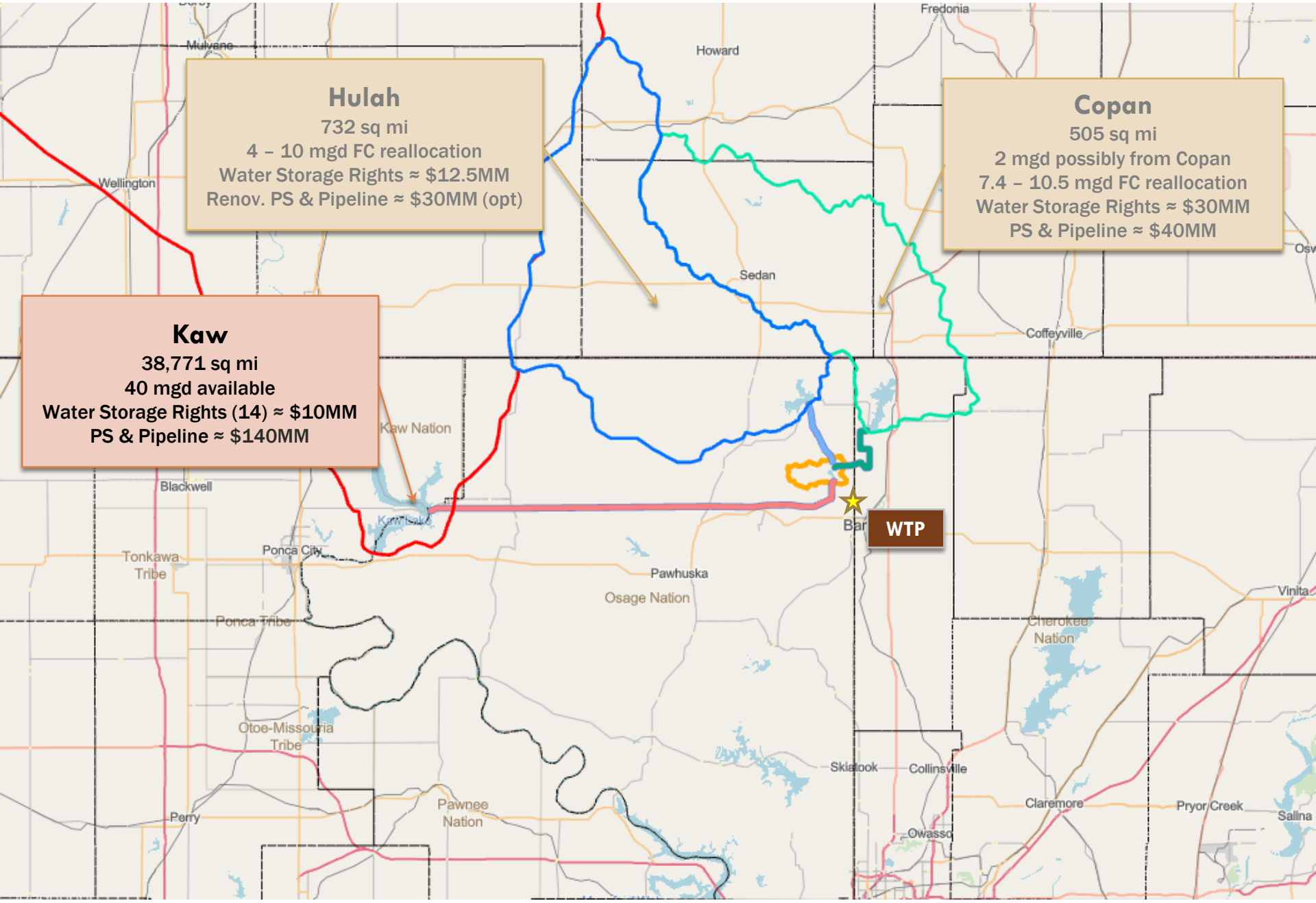
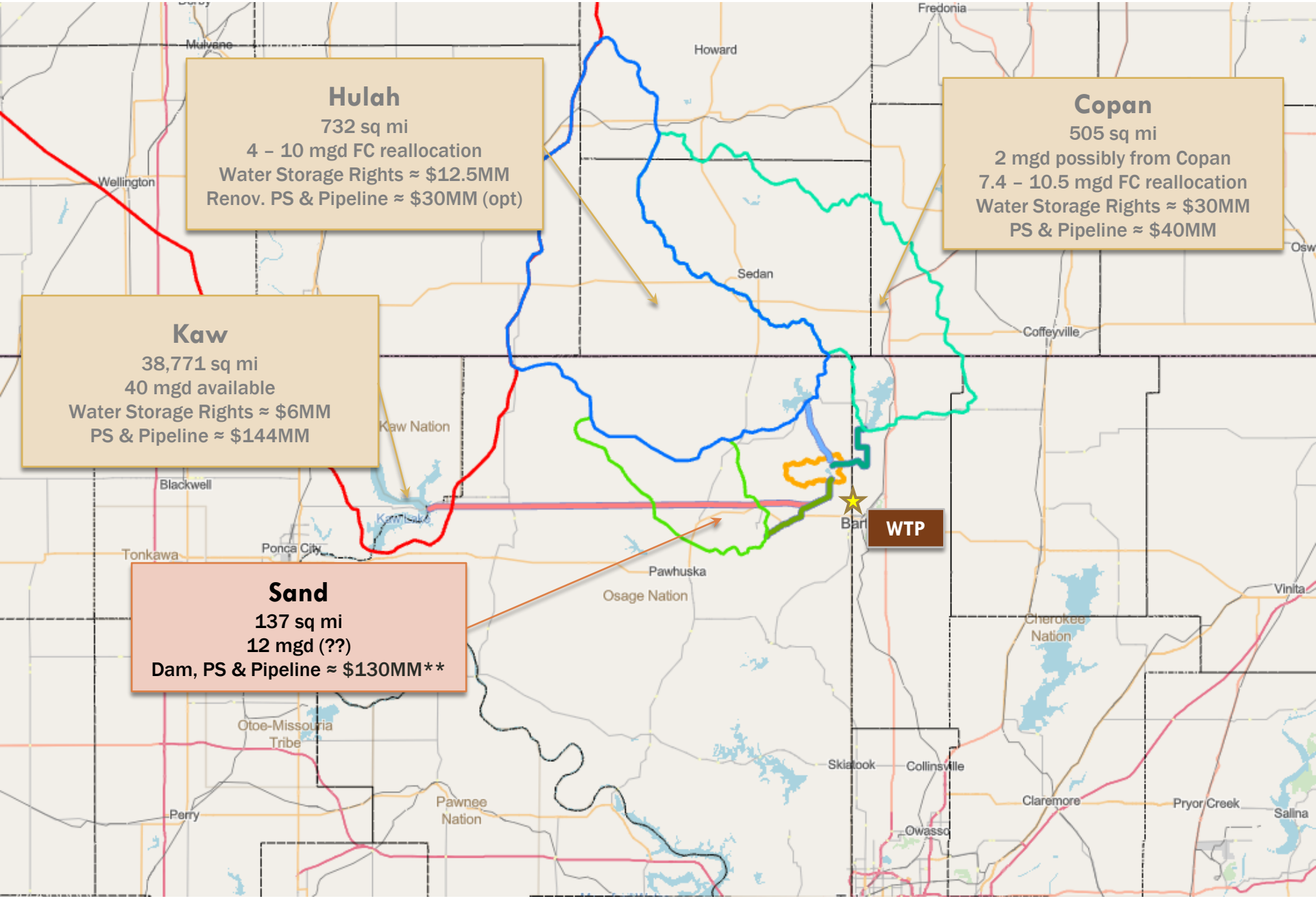


RESERVIOR OPTIONS



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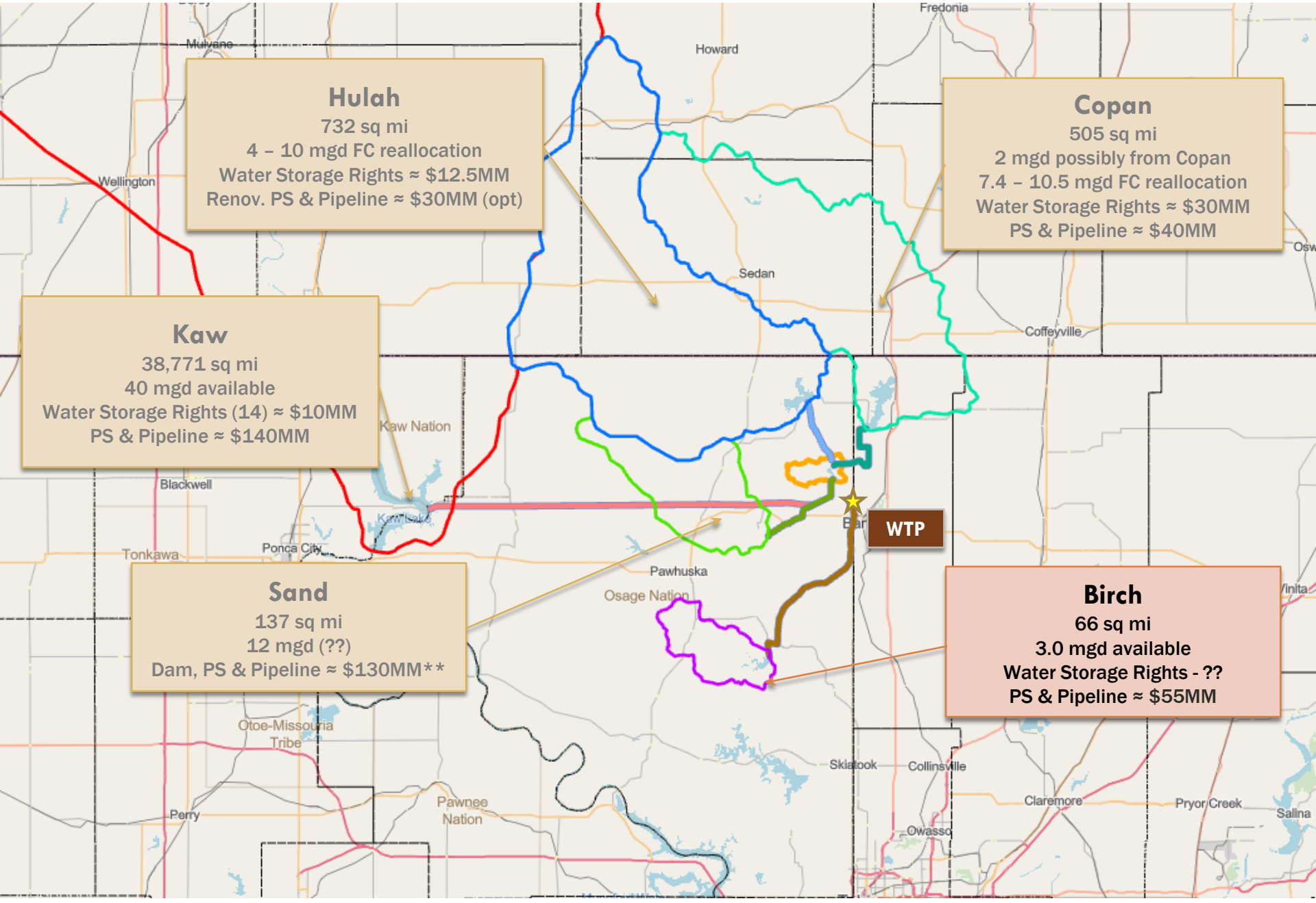
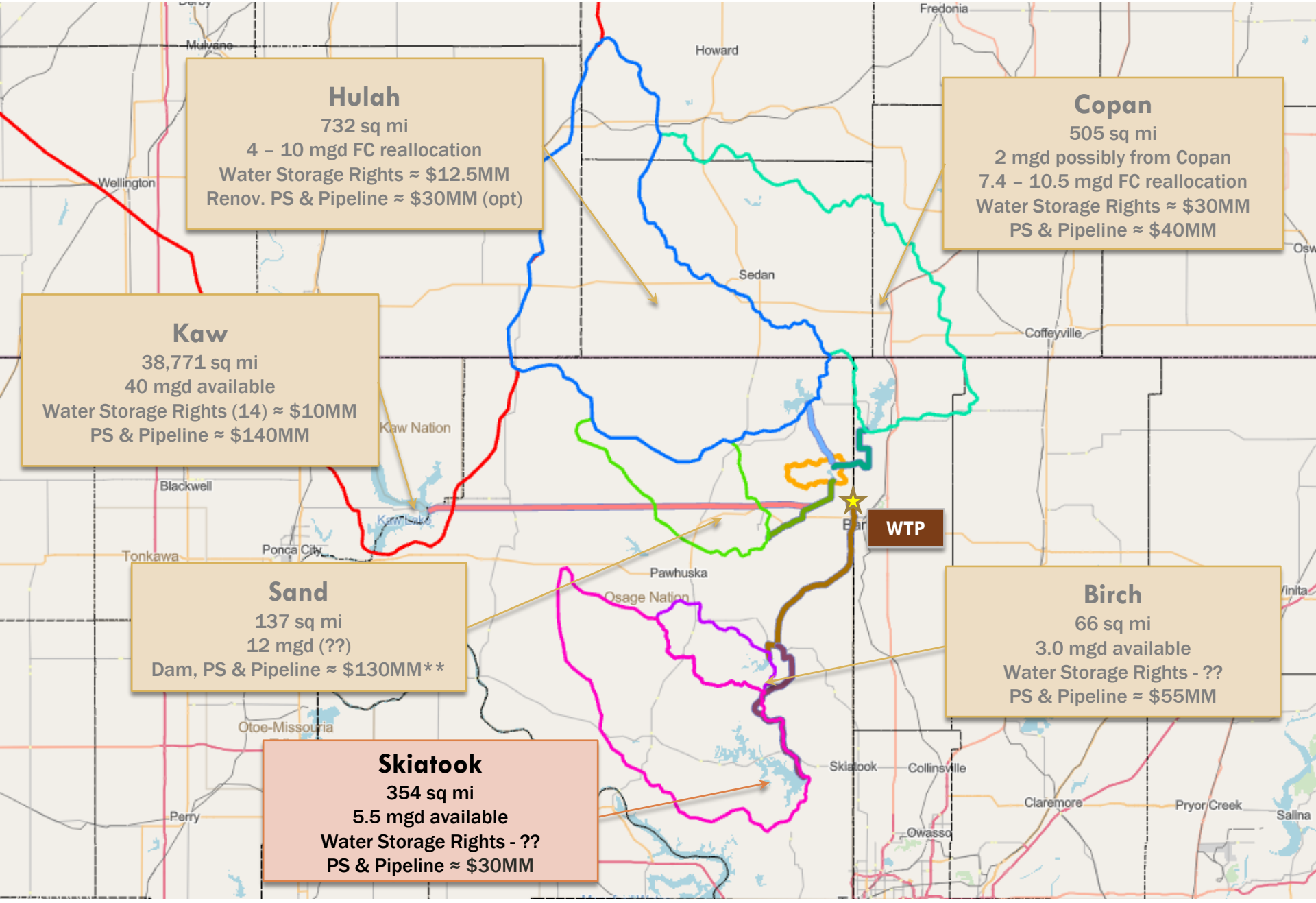
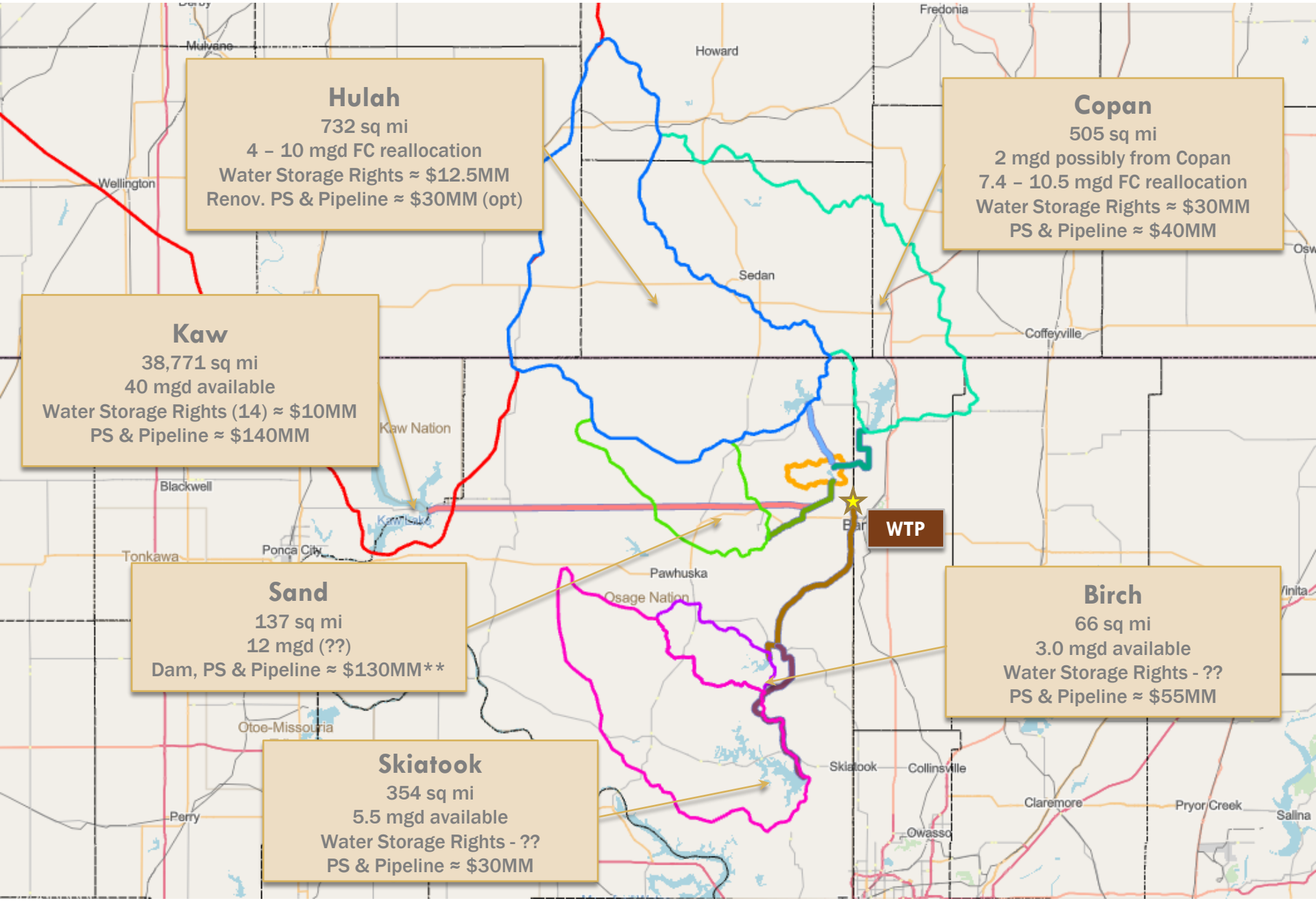


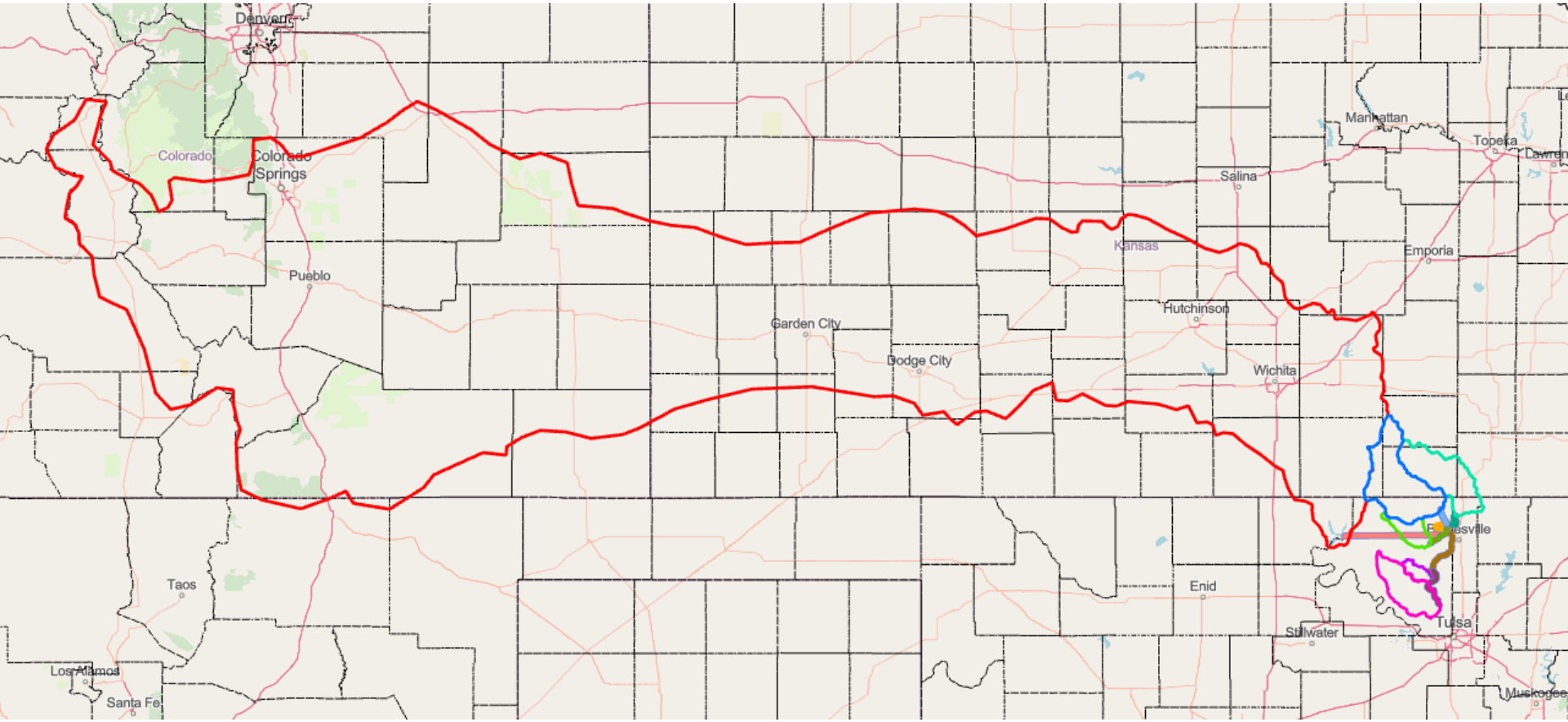
RESERVIOR OPTIONS



RESERVIOR OPTIONS



RESERVIOR OPTIONS



SUPPLEMENTAL WATER SUPPLY OPTIONS

TARGET SECURING BETWEEN
10 TO 16 MGD FOR LONG TERM SUPPLY

SOURCE	WATERSHED SIZE (SQ. MI)	WATER YIELD (mgd)	COST**	COST per MGD	NOTES
HULAH LAKE	732	10	$ 42,500,000	$ 4,250,000	REALLOCATE 10 MGD (10%) OF FLOOD CONTROL TO WATER SUPPLY. EXISTING INFRASTRUCTURE FROM HULAH TO HUDSON CAN CONVEY 10 MGD. PIPELINE AND PUMP STATION UPGRADE NOT NEEDED IMMEDIATELY, COST TO SECURE WATER STORAGE RIGHTS WOULD BE APPROX. $1.25MM/MGD
COPAN LAKE	505	12.5	$ 70,000,000	$ 5,600,000	SECURE REMAINING 2 MGD THROUGH PARTNERSHIP WITH THE TOWN OF COPAN, REALLOCATE 10 MGD (10%) OF FLOOD CONTROL TO WATER SUPPLY
KAW LAKE	38,771	14	$ 150,000,000	$ 10,714,286	40 MGD IS AVAILABLE AT KAW, INCREASING THE YIELD UP TO 18 MGD WILL LIKELY NOT IMPACT THE PUMP STATION AND PIPELINE COST SIGNIFICANTLY
SKIATOOK LAKE	354	8.5	$ 85,000,000	$ 10,000,000	COST DOES NOT INCLUDE PURCHASING STORAGE RIGHTS AT SKIATOOK OR BIRCH, WILL HAVE THIS COST BY SEPT. 11. YIELD FROM SKIATOOK LAKE IS 5.5 MGD, IF GO TO SKIATOOK WOULD PICK UP YIELD FROM BIRCH AS WELL.
SAND LAKE	137	12	$ 130,000,000	$ 10,833,333	COST DOES NOT REFLECT MITIGATION FOR MINERAL RIGHTS OR CULTURAL/ARCHAEOLOGICAL IMPACTS
POTABLE WATER FROM COLLINSVILLE/SKIATOOK/TULSA	N/A	3	$ 50,000,000	$ 16,666,667	PURCHASE TREATED WATER (1 MGD FROM COLLINSVILLE AND 2 MGD FROM TULSA/SKIATOOK).
BIRCH LAKE	66	3	$ 55,000,000	$ 18,333,333	COST DOES NOT INCLUDE PURCHASING STORAGE RIGHTS, WILL HAVE COST BY SEPT. 11
ADA-VAMOOSA AQUIFER	N/A	UNKNOWN	UNKNOWN		TO DETERMINE THE YIELD AND SUITABILITY OF WATER FOR USE, WILL NEED TO SPEND $100k FOR A WELL STUDY