

March 29, 2017

Water Supply Planning:

Water Supply

The City's Portfolio is comprised of three "source" components

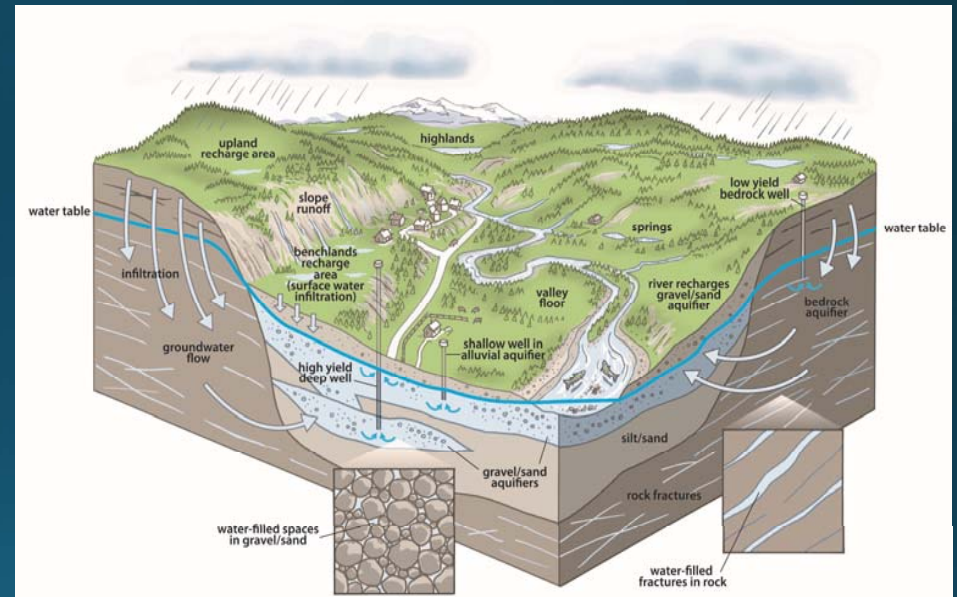
- Surface Water
- Groundwater
- Recycled Water



Water Supply

All are interrelated, but each source has factors that determine its “value” as a resource

- Volume
- Reliability
- Regulatory Restrictions



Surface Water

Defined by the USGS as "*water that is on the Earth's surface, such as in a stream, river, lake, or reservoir.*"



Surface Water

Regulated since 1914 by the SWRCB thru "water rights"

- Riparian
- Pre-1914
- Appropriative
- Contract (RRFC)



CORR. OCT. 1918

WATER WORKS: Ukiah Water & Improvement Co. (Private Corporation). - Gravity & Direct press. systems. Source of supply: from 200,000 gal. reservoir (located 3/4 mi. N. of, & elev. 162' abv. Court Ho.), which is supplied in winter from Gibson Creek, at a point in foot-hills, N.W. of town. - In summer, reservoir is supplied from 3 dug wells each 22' deep & located 2 mi. N.E. of town, by an elec. driven centrif. pump (cap. 890 gal. per min.). - About 9 mi. 10" 8", 6", 4", & 2" iron mains, laid in 1896. - #2 single & 1 dbl. hydr. Arge. press, both direct & gravity, about 65 lbs.

Surface Water

Water rights may have a number of constraints including:

- Annual volume
- Diversion rate
- Point of diversion (POD)
- Place of use (POU)
- Beneficial use
- Season of use
- Seniority
- Abandonment

STATE OF CALIFORNIA—STATE WATER RIGHTS BOARD

Application No. 15704 Filed January 25, 1954, at 3:58 P.M.
(Applicant must not fill in the above blanks)

APPLICATION TO APPROPRIATE UNAPPROPRIATED WATER
AMENDED APPLICATION RECEIVED 7-12-54

I, City of Ukiah
Name of applicant
of Ukiah County of Mendocino
Address
State of California, do hereby make application for a permit to appropriate the following described unappropriated waters of the State of California, **SUBJECT TO VESTED RIGHTS:**

Source, Amount, Use and Location of Diversion Works

1. The source of the proposed appropriation is Russian River (underflow)
Give name of stream, lake, etc., if named; if unnamed state nature of source and that it is unnamed
located in Mendocino County, tributary to Pacific Ocean

2. The amount of water which applicant desires to appropriate under this application is as follows:

(a) For diversion to be directly applied to beneficial use 20 cubic feet per second equals 48 acre-feet or 464,112 gallons per day
second, to be diverted from January 1 to December 31 of each year.
Beginning date Closing date

(b) For diversion to be stored and later applied to beneficial use _____ acre-feet
per annum, to be collected between _____ and _____ of each season.
Beginning date Closing date

Note.—Answer (a) or (b) or both (a) and (b) as may be necessary. If amount under (a) is less than .025 cubic foot per second, state in gallons per day. Neither the amount nor the season may be increased after application is filed. If underground storage is proposed a special supplemental form will be supplied by the State Water Rights Board upon request.

3. The use to which the water is to be applied is municipal
Domestic, irrigation, power, municipal, mining, industrial, recreational
_____ purposes.

4. The point of diversion is to be located See supplement
State bearing and distance or coordinate distance from section or quarter section corner
Assessed by order of _____

being within the _____
State 40-acre subdivision of public land survey or projection thereof

of Section _____, T. _____, R. _____, B. & M., in the County of Mendocino
Projected

5. The main conduit terminates in SE¹ of SW¹ of Sec. 18, T. 15N, R. 12W, M. D. & M.
State 40-acre subdivision of U. S. Government survey or projection thereof

Surface Water

City of Ukiah has several sources via water rights

- Pre 1914
- Appropriative
 - Permit 012952
 - RRFC Contract

	Pre-1914	Permit	Contract
Annual Volume	2023	14,479.6	800
Diversion Rate	2.8	20	n/a
POD		Yes	Yes
POU		Yes	Yes
Beneficial Use		Municipal	All
Season of Use		All Year	All Year
Seniority	Pre-1914	1954	1949
Abandonment	*	*	*

Surface Water

Production Facilities

- Ranney Collector
 - Built in 1966
 - 9027 gpm
- Well 3
 - Built in 1949
 - 300 gpm
- Divert underflow from Russian River



Groundwater

Defined by the USGS as "*water that flows or seeps downward and saturates soil or rock, supplying springs and wells.*"



Groundwater

Unlike Surface Water there is no “water rights” system for Groundwater

- There are also no corresponding constraints
- Reliable
- Low cost
- Sustainable Groundwater Management Act (SGMA) may eventually regulate diversions



Groundwater

Production Facilities

- Well 4 (1000 gpm)
- Well 7 (650 gpm)
- Well 8 (300 gpm)
- Well 9 (700 gpm)



Groundwater

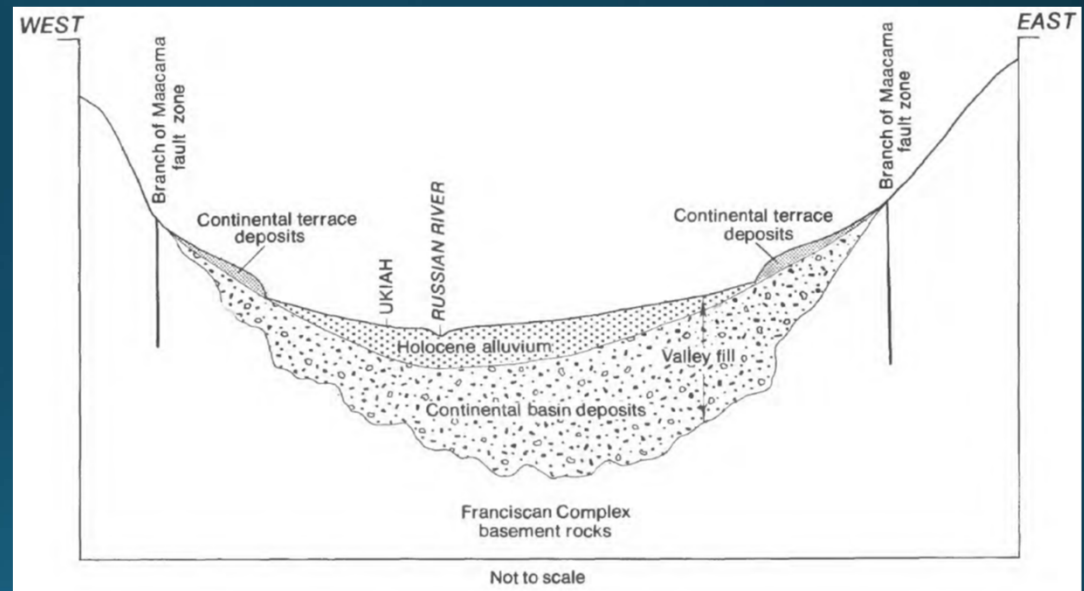
City facilities designed to expressly avoid confrontation with limitations of Surface Water.

Matt Kennedy
Project Manager
GHD



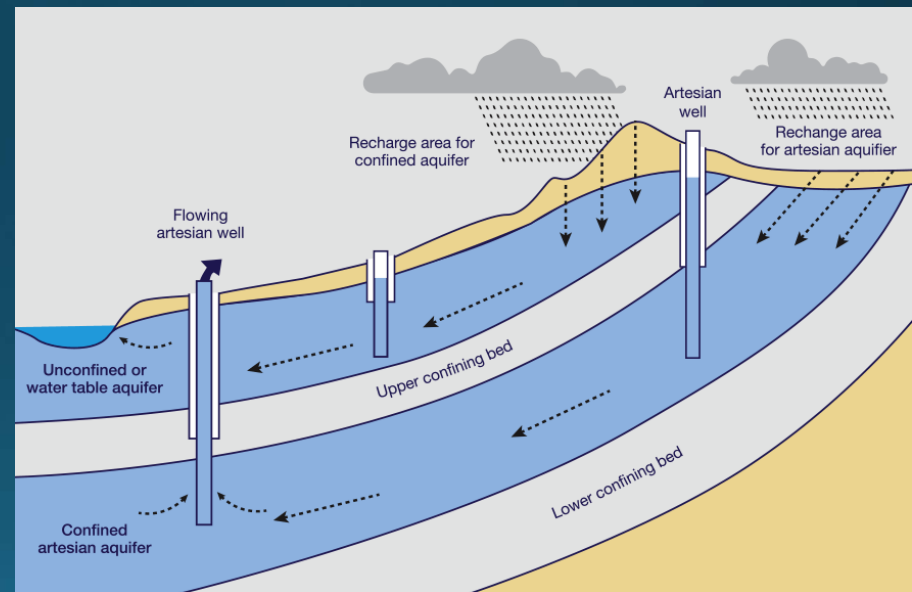
Groundwater: Ukiah Valley

- Holocene alluvium is the water bearing unit in Ukiah Valley
- Alluvium is deposits from flood and landslide events
- Wells in this zone can produce more than 1,000 gallons per minute



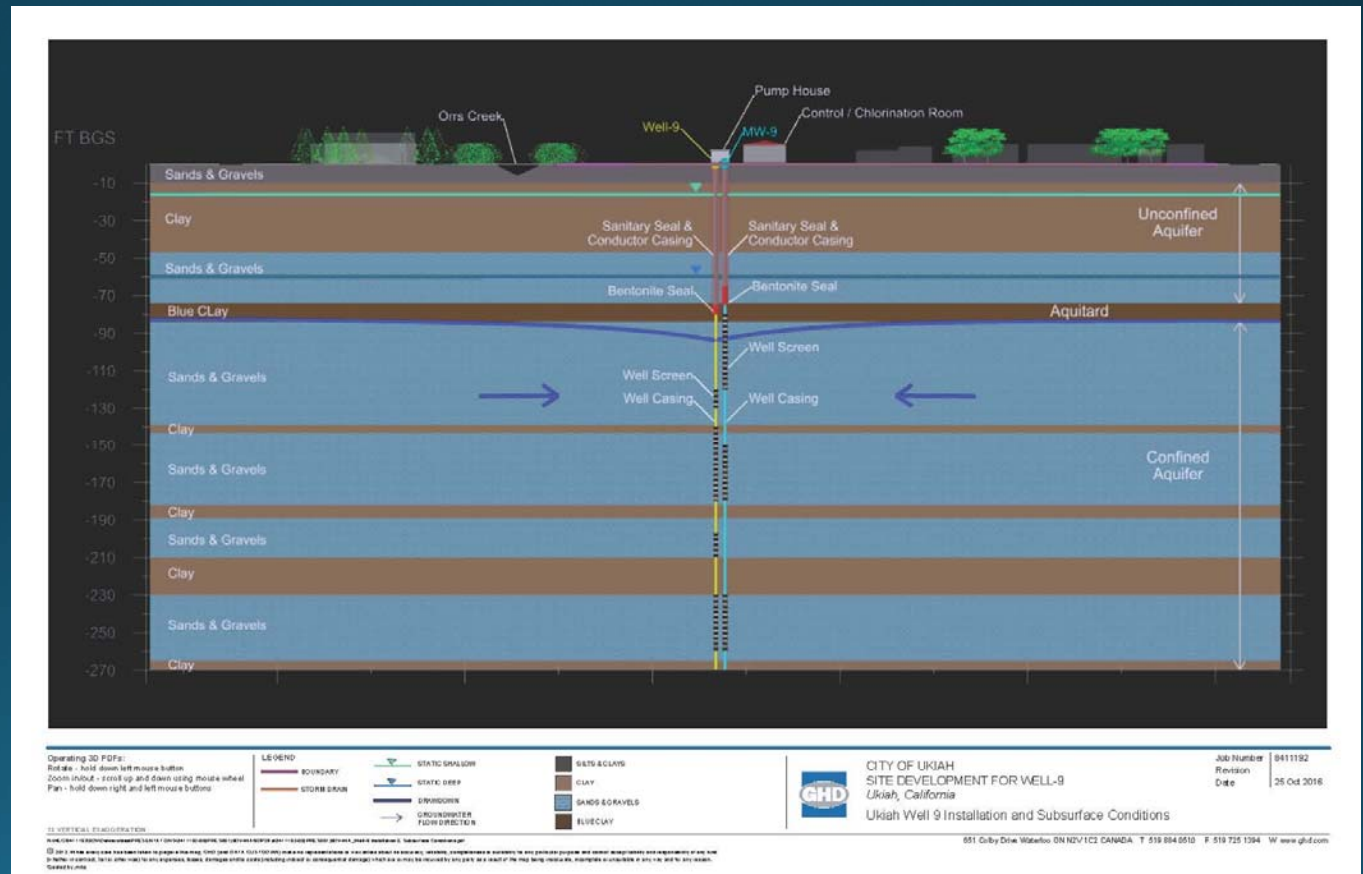
Groundwater: Confined vs Unconfined

- Groundwater in the alluvium is either unconfined (shallow) or confined (deeper)
- Confining layers are composed of fat clays (high organics).
- City of Ukiah wells 4, 7, 8 and 9 are located in the confined aquifer zone



Groundwater: City of Ukiah Wells

- Blue Clay is very consistent across valley area where City wells are located.
- Encountered at both Well 4 and Well 9.
- Wells are sealed to the Blue Clay



Recycled (reclaimed) Water

Defined by the USGS as
"wastewater-treatment plant effluent that has been diverted for beneficial uses such as irrigation, industry, or thermoelectric cooling instead of being released to a natural water way or aquifer"



Recycled Water

Regulated by the SWRCB

- Place of use
- Beneficial Use
- WQ

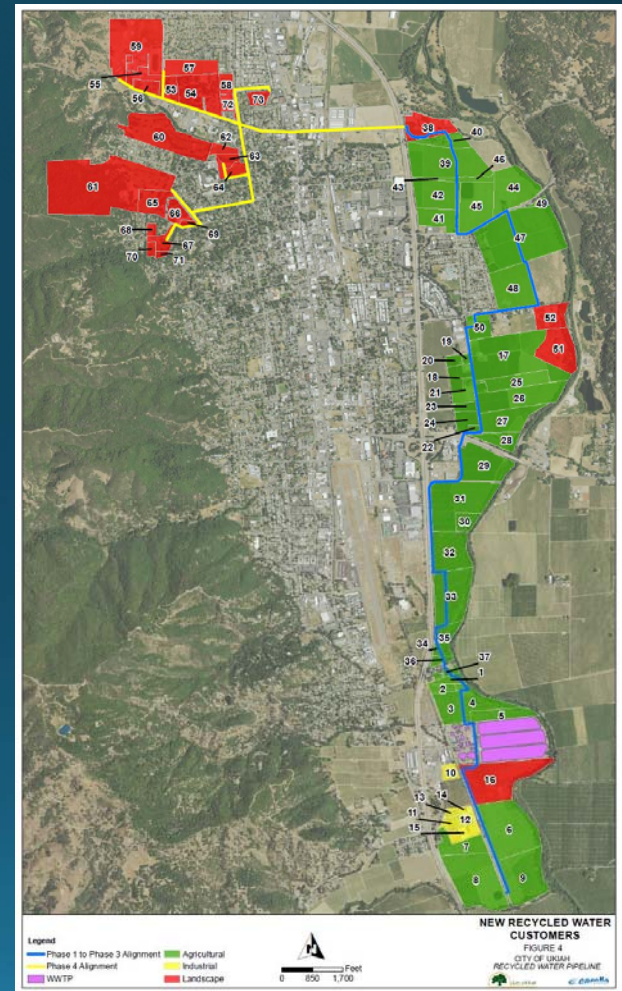
Drought resistant



Recycled Water

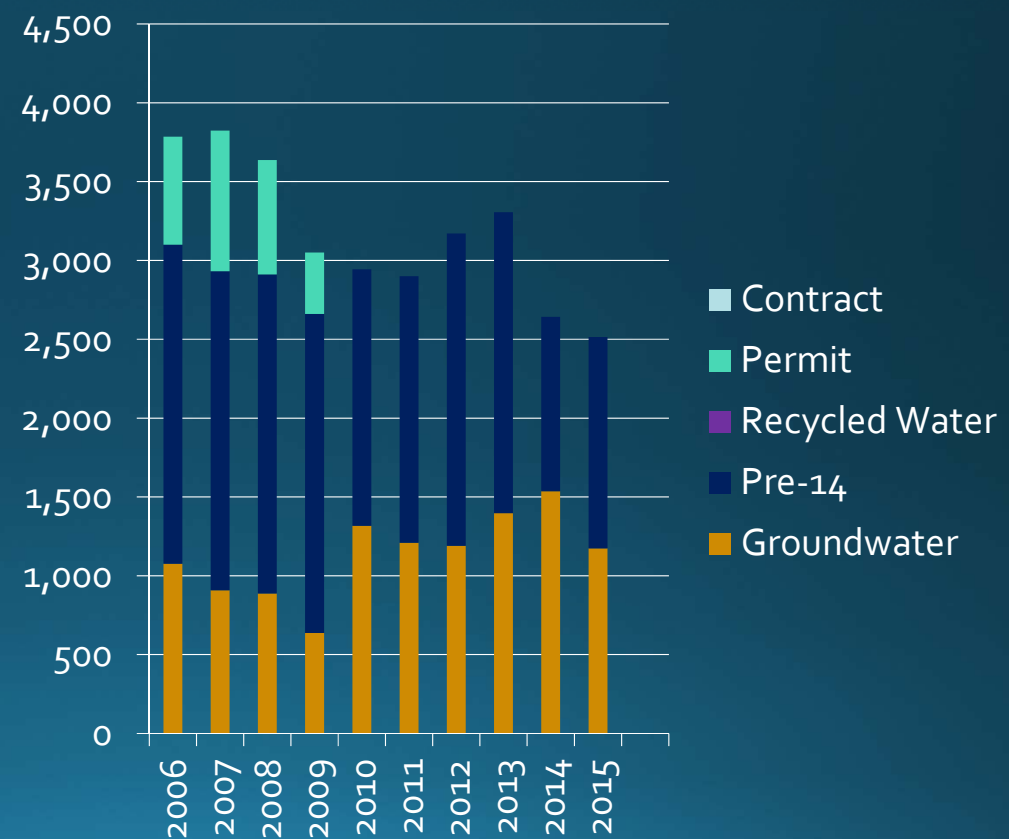
Production Facilities

- Phases 1-3 (2018)
 - 1000 afy
- Phase 4 (TBD)
 - 400 afy



Supply vs Demand

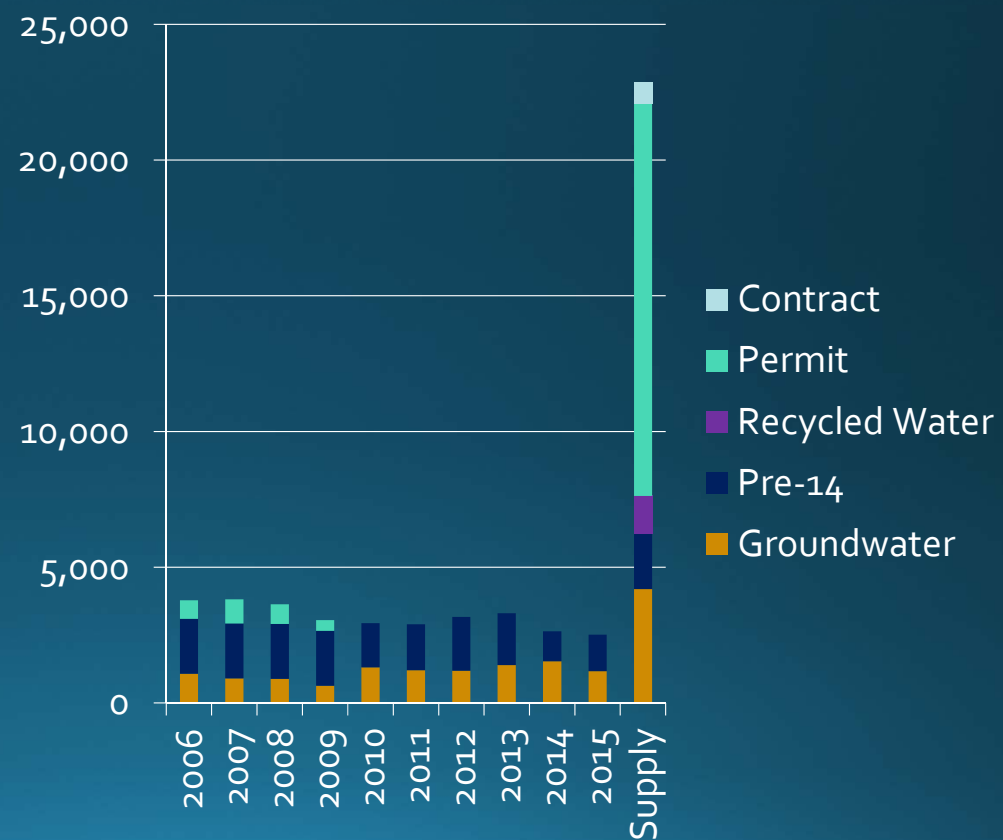
City's average demand since 2006 is 3,178 AFY



Supply vs Demand

Total supply (22,702 AFY) greatly exceeds demand (3,178 AFY)

- Groundwater (4,000 AFY)
- Pre-1914 (2,023 AFY)
- Appropriative (14,479 AFY)
- Contract Water (800 AFY)
- Recycled Water (1,400 AFY)



Abandonment vs Growth

Abandonment is a serious liability for the City.

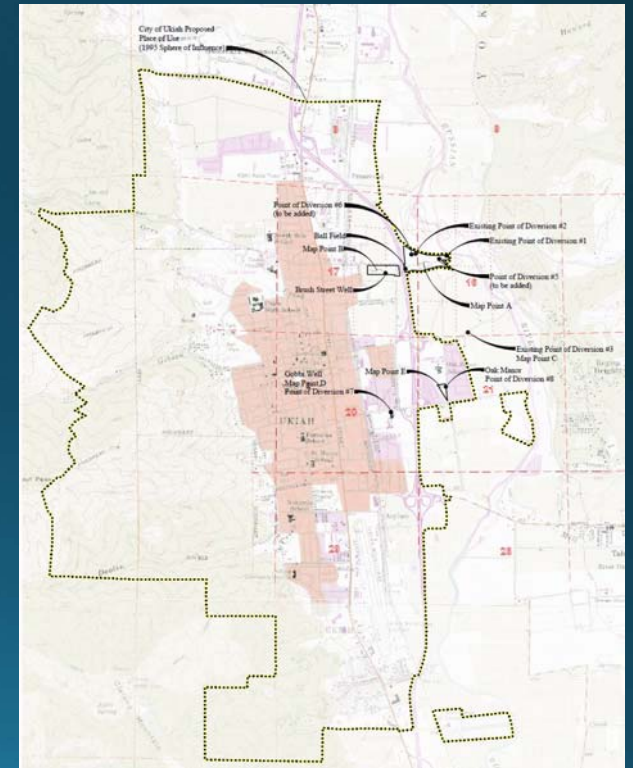
- Protecting City's rights were the focus of past workshops
- Change Petition filed in 2002
 - Expand POU
 - Adding wells as PODs
 - Transfers



Abandonment vs Growth

Expand Place of Use (POU)

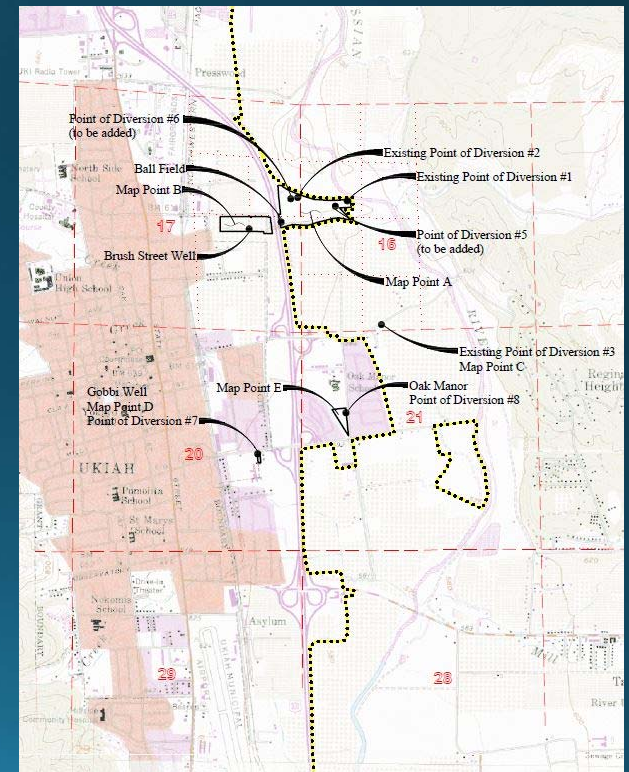
- Larger POU could increase use
 - Partially overlaps other Districts
 - Insufficient unmet demand
 - Concerns regarding growth
- Coterminous with 1995 Sphere of Influence
 - 1995 Sphere withdrawn



Abandonment vs Growth

Increase use by adding wells as POD

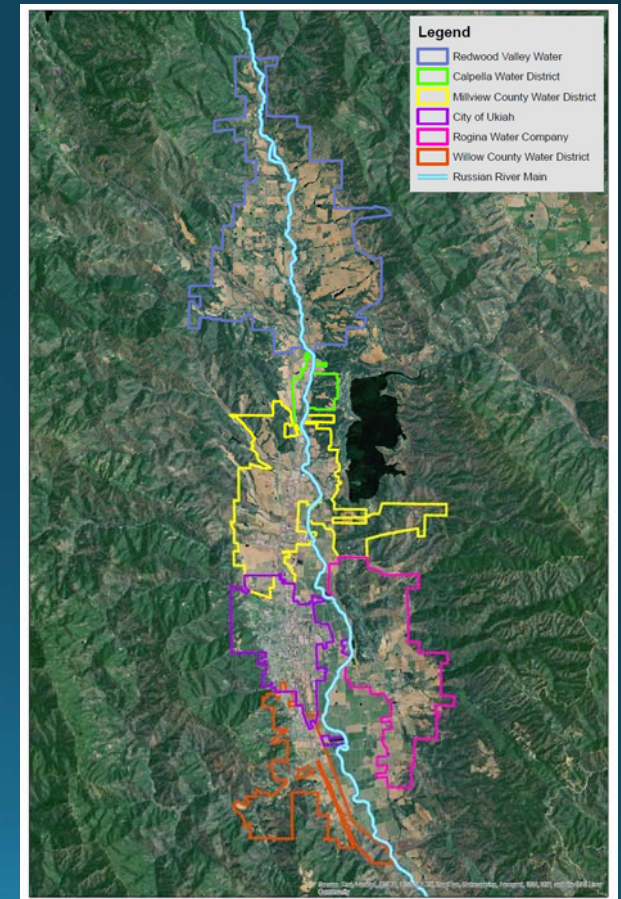
- Reclassifying wells as surface water would heavily restrict use of City's most versatile source.



Abandonment vs Growth

Transfers

- Concerns regarding growth
- Expiration
- Significant unmet demand only in Redwood Valley
 - Can be remedied without petition



Abandonment vs Growth

Change Petition not approved

- Concerns regarding growth
- Resulted in Numerous protests
- EIR incomplete



Opportunities

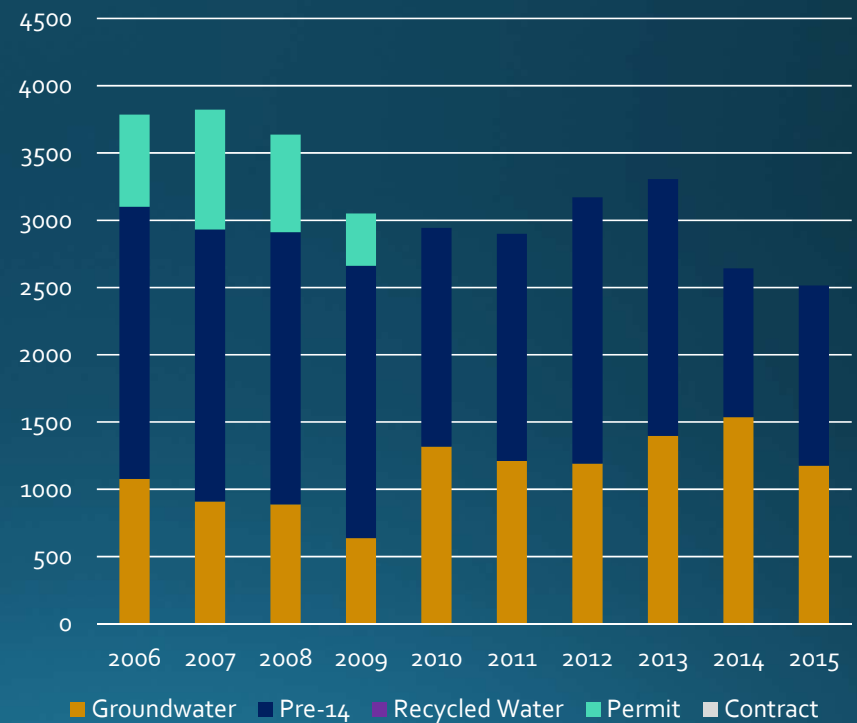
Three ways to protect the City's rights that also help the greater community

- Change operations
- Return RRFC contract water
- Repurpose unused supply



Opportunities

- Change operations
 - Utilize surface water facilities (Ranney and Well 3) whenever feasible
 - Turbidity
 - Cost

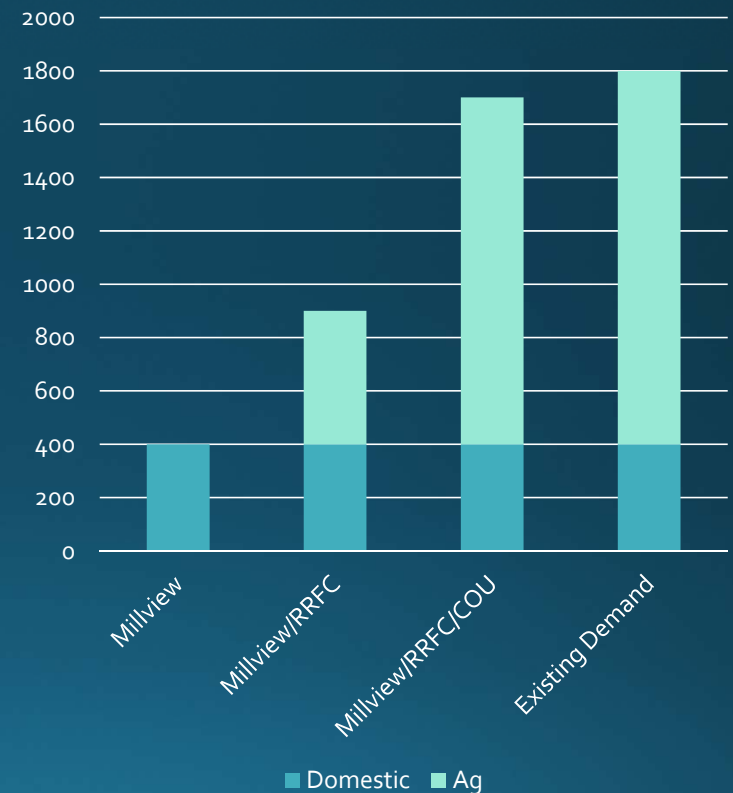


Opportunities

Return RRFC contract water

- Redwood Valley currently underserved
- Addition of COU contract would still not meet average demand
- Preserving agriculture deters urbanization and growth
- Save COU \$40k annually

RVCWD Supply vs Demand



Opportunities

Repurpose unused supply

"Under certain conditions, a reduction or loss of the appropriative water right may not occur due to: (1) water conservation efforts; (2) use of recycled, desalinated, or polluted water; and/or (3) conjunctive use of groundwater and surface water.

Any credit claim based on conservation of water (Water Code section 1011), water quality and wastewater reclamation (section 1010), or conjunctive use of surface water and groundwater (section 1011.5) must be reported."



Opportunities

- Conservation
 - Baseline established in UWMP
- Recycled Water
 - Scale is significant
- Conjunctive Use
 - Recharge helps with SGMA
 - Could assist with achieving zero-discharge at WWTP
 - Ideal site at Riverside Park



Future Direction

Protect City's water rights without using additional water

- Change operations
- Return RRFC contract water
- Report Conservation and Recycled Water
- Develop Conjunctive Use
- Amend or retract Petition
 - Approach
 - Footprint
- Water Rights Attorney



Questions?