

# Longview Drinking Water Supply Improvement Study

## Customer Advisory Committee Recommendation

August 20, 2015



# Longview Drinking Water Supply Improvement Study

## **PRESENTATION AGENDA**

1. CAC Process and Recommendation – CH2M
2. Ranney Collector Implementation Steps – CH2M
3. Project Financial Status – Jeff Cameron
4. Discussion

# CAC Process and Recommendation

# CAC Process and Recommendation

- Mint Farm RWTP began service – January 31, 2013
- Water quality complaints began – March 2013
  - July 2013: Hired Confluence Engineering to identify causes and potential solutions
  - August 2014: Hired CH2M/JLA Public Involvement to perform water supply review
    - Customer telephone survey
    - CAC Formation and Chartering
    - Evaluation Criteria
    - Options and Evaluation Process
    - Public Outreach
    - CAC Recommendations

# WATER QUALITY RATING

TEN-POINT SCALE WHERE “10” IS “VERY GOOD”  
TELEPHONE SURVEY – OCTOBER 2014

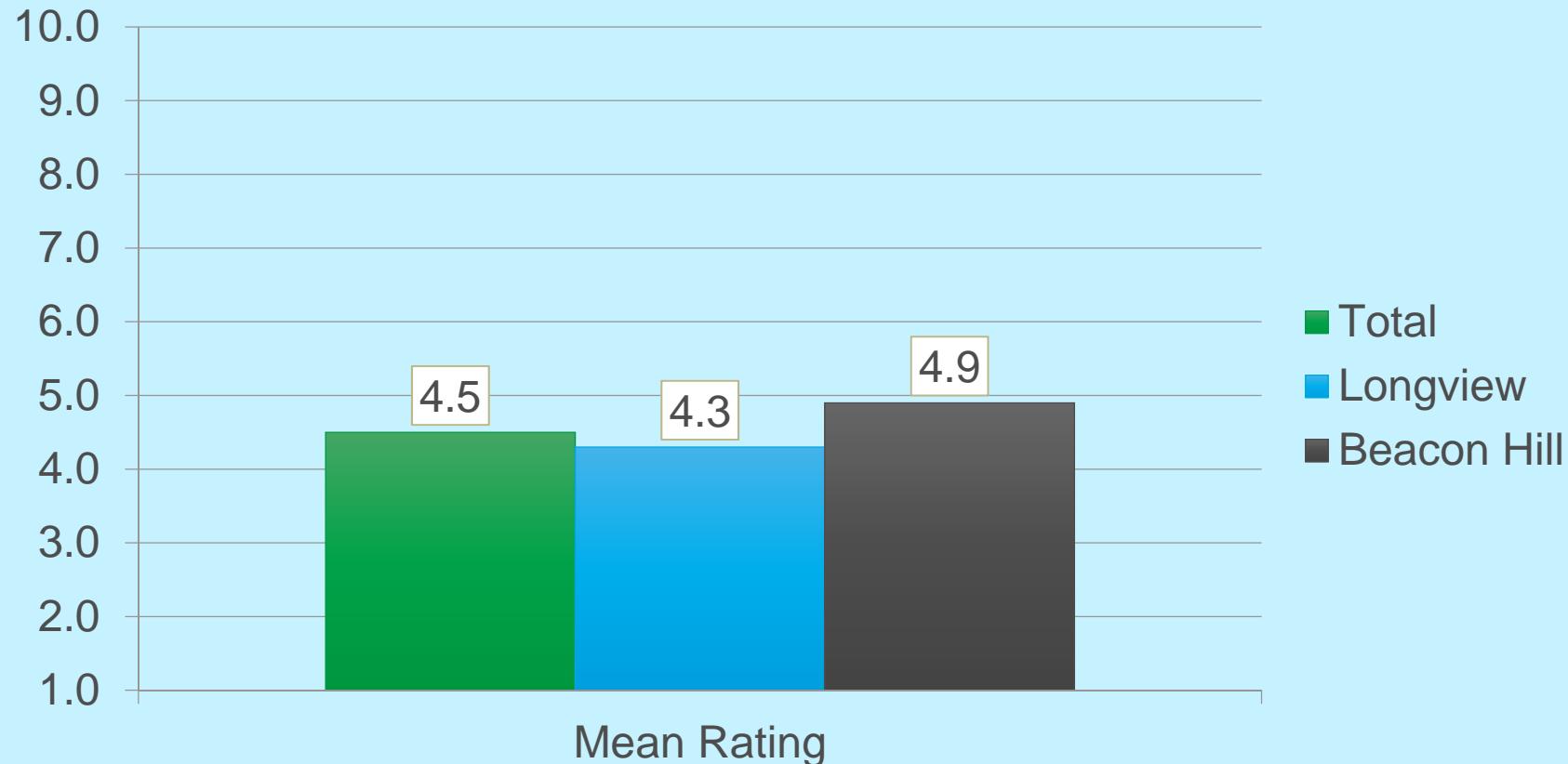
## WATER QUALITY CUSTOMER SURVEY

City of Longview  
Beacon Hill Water and Sewer District

Preliminary Survey Results  
October 21, 2014

|Riley Research Associates

### Current Water Quality Rating



# Selection of Customer Advisory Committee (CAC)

- Formal application
- Recruitment widely publicized
  - Council meetings
  - City website
  - Reader boards
- 100 applications received
- Defined evaluation process – by consultant staff
  - Applicants anonymous
- Recommendations submitted to Council and Board
  - Total of 14 appointed

Are you interested in serving on the Committee for the Longview Water Supply?

The Longview City Council and Beacon Hill Sewer and Water Supply Committee (CAC) that will meet regularly over the Longview water supply system, consider applying for a recommendation to the City Council.

If you are interested in serving on this committee, please complete the application questionnaire by December 10, 2014 or e-mail it to adrienne@longviewwa.gov

**Selection Guidelines**  
**Longview Drinking Water Supply Project  
Community Advisory Committee (CAC)**

The following criteria will guide selection of members for the Longview Drinking Water Improvement CAC. These guidelines are intended to ensure that the committee represents a cross-section of Longview and Beacon Hill water users. The City Council will have final decision-making authority and will determine membership to best serve the needs of all water users.

**CAC Member Qualification Guidelines**

1. Longview water or Beacon Hill Water & Sewer District customer.
2. Experience, interest or skills as a water customer (not necessarily professional experience).
3. Ability to work with others in a committee setting, willingness to listen to others, ability to

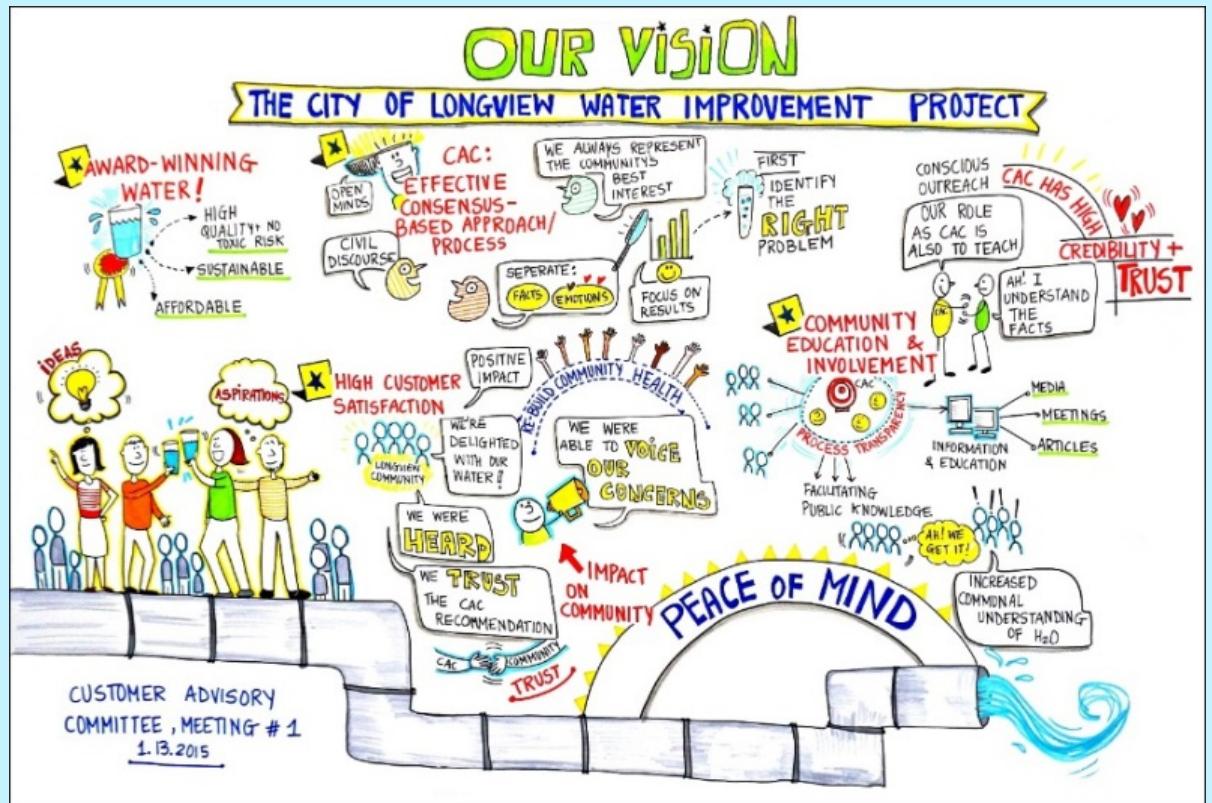
**Problem-Solving Role of the Citizens' Advisory Committee**

- Create an environment conducive to multiple and diverse opinions and ideas.
- Review and comment on technical data and materials prepared by staff and consultants.
- Discuss community concerns and balance interests in order to establish evaluation criteria that will help to narrow possible solutions to improving Longview's water supply.
- Ensure the preferred alternative for improving Longview's Water Supply is consistent with and supportive of the project purpose and need as well as the evaluation criteria established by the CAC, with input from the community.
- Promote public understanding of the Longview Water Supply Alternatives.

## Recruitment and Selection Process Resulted in Diverse Membership on the Customer Advisory Committee (CAC)

NAME	BACKGROUND	NEIGHBORHOOD
<b>William Beltz</b>	Business Owner	Columbia Valley Gardens
<b>Mark Bergeson</b>	Educator	N. 50 <sup>th</sup> Ave
<b>Orranda Chamberlin</b>	Resident	Lone Oak
<b>Raymond Colwell</b>	Chemist	Columbia Heights
<b>Philip Dennis</b>	Scientist & Accountant	Coal Creek
<b>Dave Hooper</b>	Environmental Scientist	Robbins Addition
<b>Rich Kirkpatrick</b>	Health Care Professional	Cascade Way
<b>Alissa Lee</b>	Food Service Industry	West Beacon Hill
<b>David Patrick McCoy</b>	Business Owner	Old West Side
<b>Amber Olson</b>	Undergraduate Student	Willow Grove
<b>Stephanie Owens</b>	Resident	New West Side Longview
<b>Dave Quinn</b>	Electrical Engineer	Coal Creek
<b>Vincent Scalesse</b>	Mechanical Engineer	Olympic
<b>Preston Worth</b>	Business Owner	City View
<b>Bonnie Decius</b>	Beacon Hill Water and Sewer District Board Liaison	
<b>Ken Botero</b>	Longview City Council Liaison	

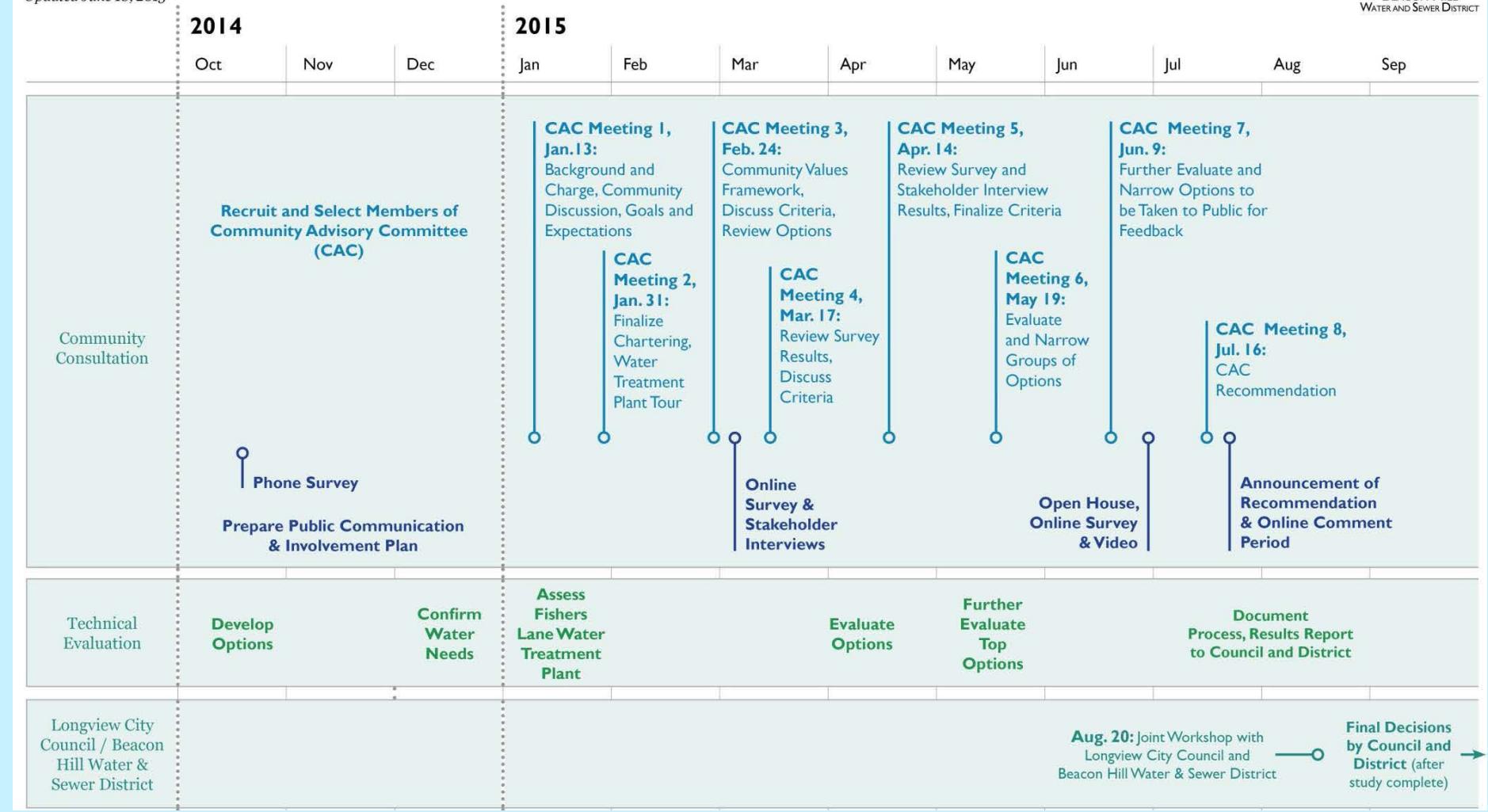
# First CAC Meeting: Background Provided and CAC Set the Stage for Their Work



# The CAC Held a Series of Eight Meetings, Corresponding with Community Outreach and Technical Evaluations

## Longview Drinking Water Improvement Study – Schedule

Updated June 18, 2015



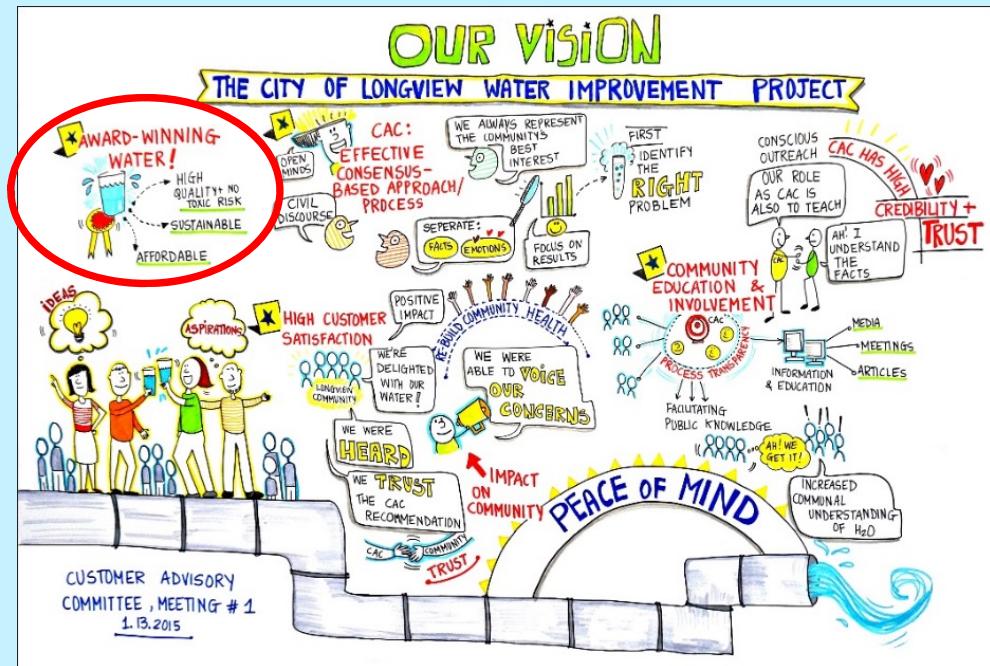
# CAC Toured former Fisher's Lane Water Treatment Plant and new Mint Farm Treatment Plant



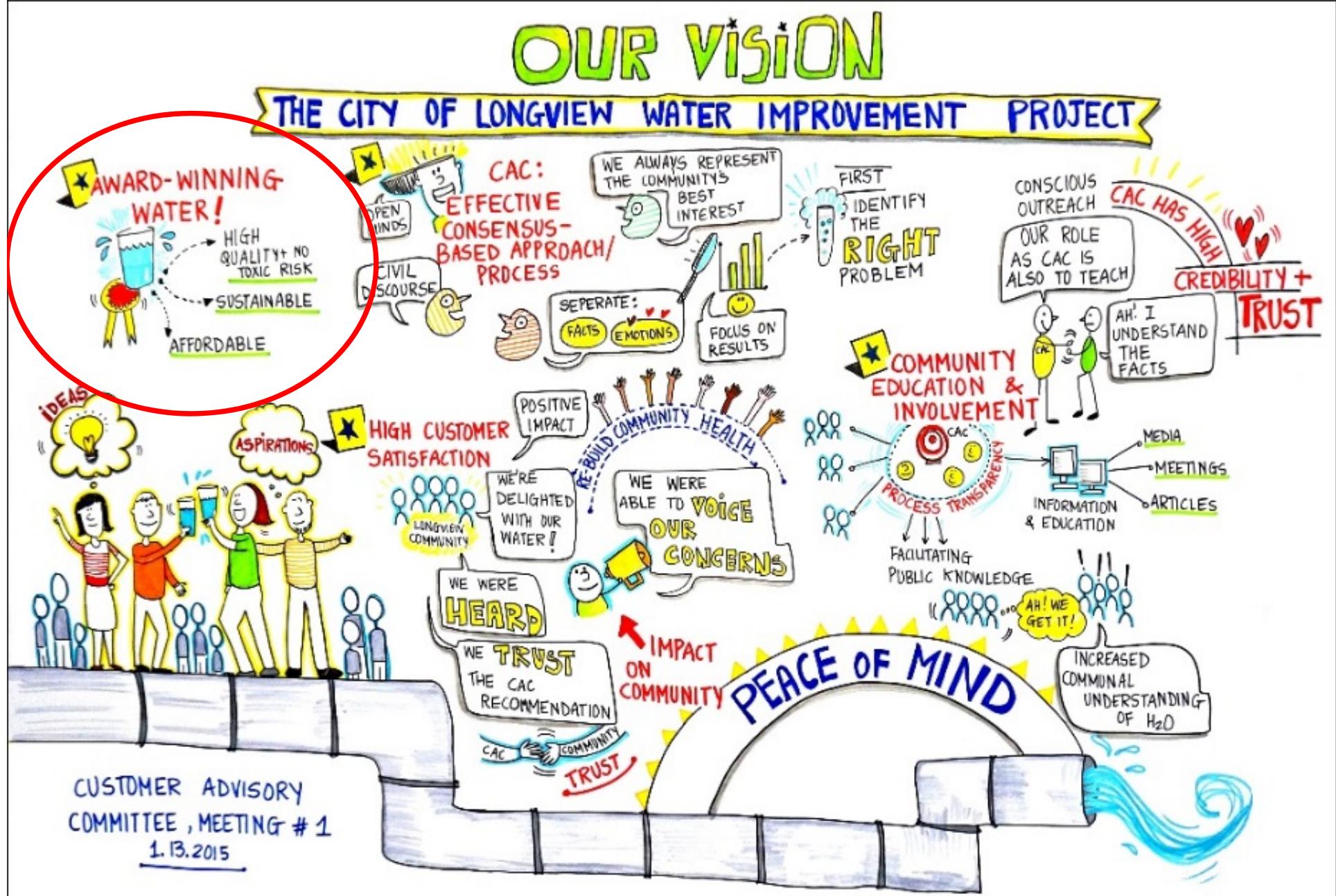
# 3 Key Values Guided Evaluation Criteria (reflected customer survey responses)

1. Customer Perspectives (High Quality, No Toxic Risk)
  - Aesthetic concerns – Spotting/Residue, Taste, Color, Smell
  - General Health concerns – Purity, Cleanliness
  - Impressions of safety – Source water quality, vulnerability to contamination
2. Technical (Sustainable)
  - Long-term capacity
  - Reliability
  - Environmental
3. Cost (Affordable)
  - Rate impacts
  - Indirect costs to customers
  - Effect on property values
  - Potential litigation costs to city

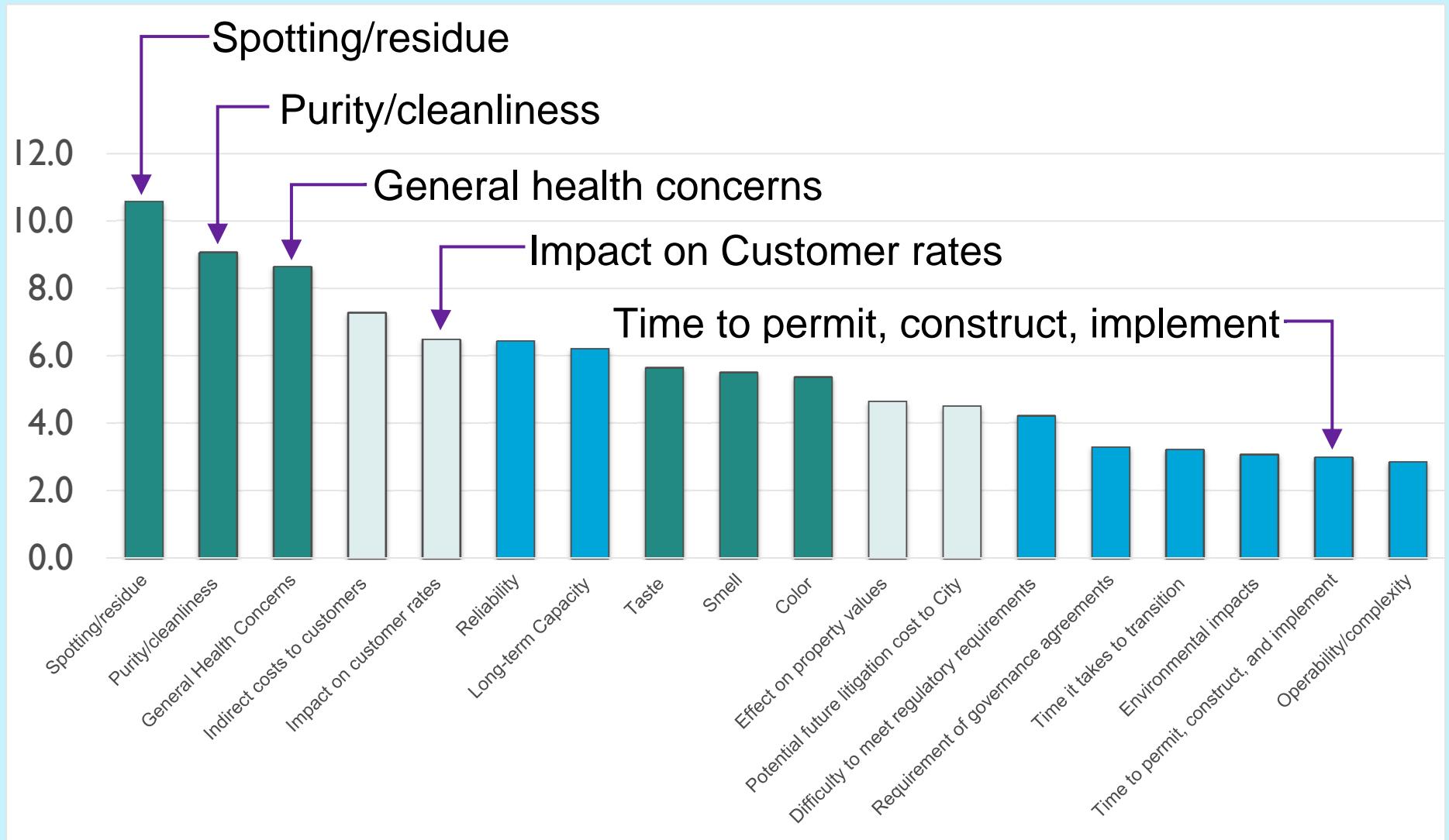
- Solicited community input on list of criteria



### 3 Key Values Guided Evaluation Criteria (reflected customer survey responses)



# Evaluation Criteria were Weighted and Ranked for Importance



# 56 Options Listed to Address the Water Supply Situation

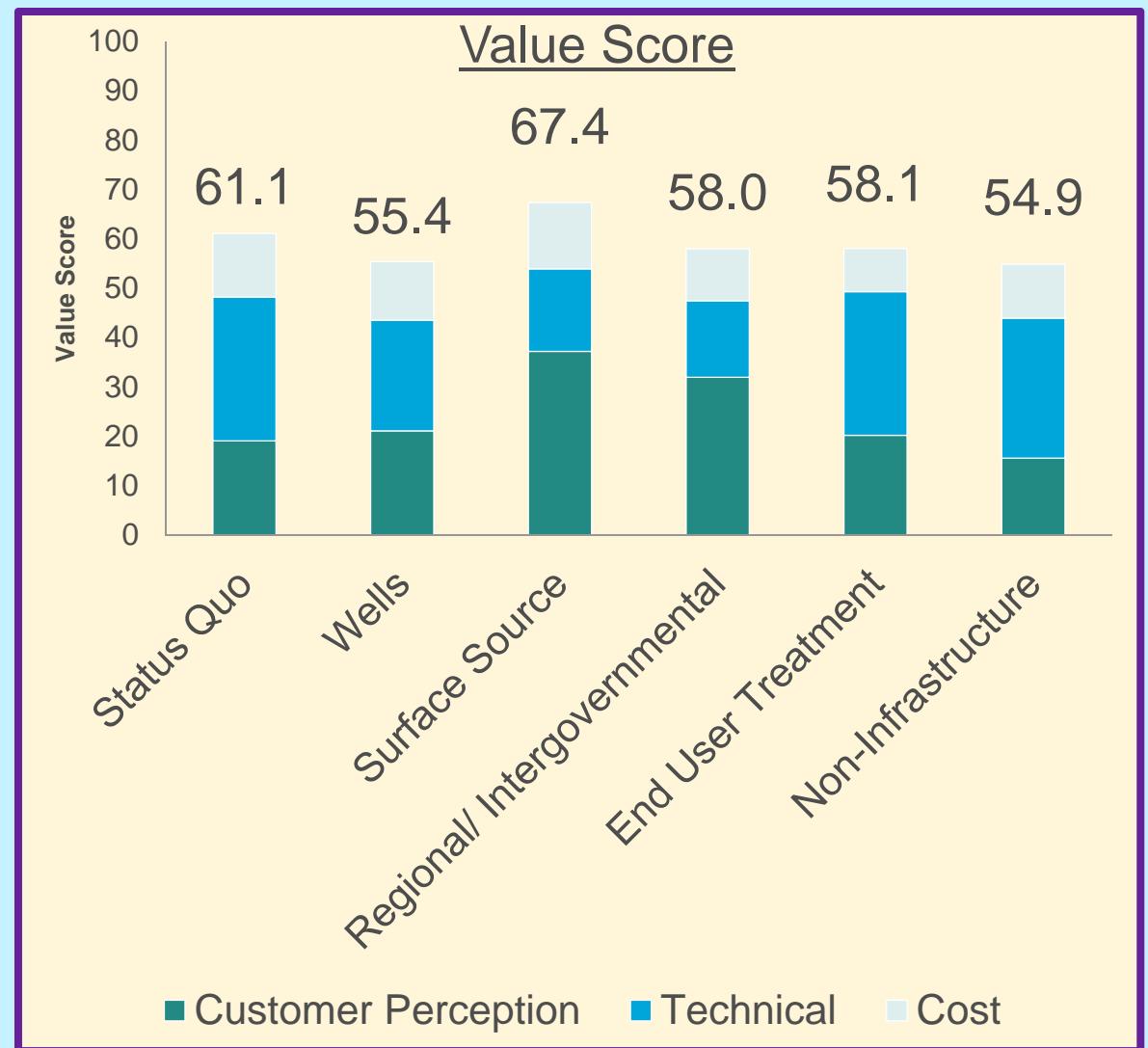
- Stay the course / no change
- Modified treatment of the existing wells, or changes in the distribution system
- Change to a surface water source
  - Direct withdrawal
  - Ranney collector wells
  - Aquifer storage & recovery (ASR)
  - Blending surface water with groundwater
- Buy water from or collaborate with another entity
- End user treatment at the individual home/business level
- Non-infrastructure products and education to deal with water issues

**Longview Drinking Water Improvement Study  
Water Supply Improvement Options Complete**  
March 2015

Category	Source	Option ID	Description
Status Quo	Mint Farm Wellfield	A	No Additional Treatment; Optimize Existing Mint Farm Water Treatment Plant (WTP)
Wells	Mint Farm Wellfield	B	Add Dissolved Oxygen to Mint Farm WTP
		C	Add Post Chlorination to Mint Farm WTP
		D	Add Softening to Mint Farm WTP
		E	Add Silica Removal to Mint Farm WTP
		E <sub>1</sub>	Isolate Well Screens in potential Silica strata layer(s) at Mint Farm WTP
	Unspecified Location	E <sub>2</sub>	Utilize Scavenger Wells at Mint Farm WTP
Distribution/ Transmission System Changes	Mint Farm Wellfield	F	Other Groundwater Sources
		G	Add Chlorine Booster Stations to Distribution System
		H	Add Dissolved Oxygen injection to Distribution System
		I	Replace Pipes in Distribution System
	Cowlitz River	J	Mint Farm WTP Finished Water Conveyed to Fishers Lane for Connection to Distribution System
		K	Rehabilitate Fishers Lane WTP and Existing Intake
		L	Rehabilitate Fishers Lane WTP with New Cowlitz River Intake Near Existing (within 5 miles +/-)
Surface Source	Cowlitz River	M	Rehabilitate Fishers Lane WTP with New Cowlitz River Intake above Toule River
		N	Replace Fishers Lane WTP with New Cowlitz River Intake Near Existing (within 5 miles +/-)
		O	Replace Fishers Lane WTP with New Cowlitz River Intake above Toule River
		P	Rehabilitate Cowlitz River Intake; Treat at Mint Farm WTP
		Q	New Cowlitz River Intake (within 5 miles +/-); Treat at Mint Farm WTP
	Columbia River	R	Rehabilitate Cowlitz River Intake; Clarification at Fishers Lane and Filtration at Mint Farm WTP
		S	New Cowlitz River Intake (within 5 mi +/-); Clarification at Fishers Lane and Filtration at Mint Farm WTP
	Unspecified Location	T	Columbia River Intake with New WTP
		U	Columbia River Intake; Treat Water at Mint Farm WTP
	Aqueduct	V	Columbia River Intake; Treat Water at New/Rehabilitated Fishers Lane WTP
		W	New Upland Water Source with Surface Dam and Treatment
		W <sub>1</sub>	Conveys surface water to treatment plant in open channel
Ranney Collector	Cowlitz River	X	Ranney Collectors on Cowlitz River Downstream; Treat at Fishers Lane WTP
		Y	Ranney Collectors on Cowlitz River Downstream; Treat at Mint Farm WTP
		Z	Ranney Collectors on Cowlitz River Downstream with new WTP at New Location
		AA	Ranney Collectors near Fishers Lane; Treat at Fishers Lane WTP
	Columbia River	AB	Ranney Collectors near Fishers Lane; Treat at Mint Farm WTP
		AC	Ranney Collectors near Lexington; Treat at Fishers Lane WTP
		AD	Ranney Collectors near Lexington; Treat at Mint Farm WTP
		AE	Ranney Collectors and new WTP near Lexington
Aquifer Storage & Recovery (ASR)	Columbia River	AF	Ranney Collectors on Columbia River; Treat at Mint Farm WTP
		AG	Ranney Collectors on Columbia River; Treat at Fishers Lane WTP
	Kalama River	AH	Ranney Collector on Columbia River with WTP at New Location
		AI	Ranney Collector on Kalama River
	Cowlitz River	AJ	ASR at Mint Farm WTP; Rehabilitate Fisher's Lane WTP and Intake
		AK	ASR at Mint Farm with New Cowlitz River Intake and WTP
	Columbia River	AL	ASR at Mint Farm with Cowlitz River Ranney Collector
		AM	ASR at Mint Farm with Columbia River Ranney Collector
Blending	Columbia River and Mint Farm	AN	ASR at Mint Farm with Columbia River Intake and Treatment
		AO	Cowlitz River Blending with Mint Farm WTP; Surface Intake or Ranney Collectors
	Columbia River and Mint Farm	AP	Columbia River Blending with Mint Farm WTP; Surface Intake or Ranney Collectors
		AQ	Connect to City of Kelso System
Regional/ Intergovernmental	Cowlitz River	AR	Joint Expansion with City of Kelso; Ranney Collectors and Treatment
		AS	Connect to Port of Kalama Ranney Collector
	Kalama River	AT	Connect to City of Kalama Ranney Collector
Private/Public Partnership	Columbia River	AU	Utilize Weyerhaeuser or Kapstone Surface Water System
		AV	Customer Treatment Systems - Whole house, City-owned
End User Treatment	Mint Farm Wellfield	AW	Customer Treatment Systems - Whole house, Resident-owned
		AX	Customer Treatment System at the Faucet, Resident-owned
		AY	Conduct Public Education about Water Purity, Safety, Aesthetics, Comparisons with Other Cities
Non-Infrastructure	Mint Farm Wellfield	AZ	Conduct Public Education about Using Hard Water, Preventing and Removing Water Spots
		BA	Provide Products for Preventing and Removing Water Spots

# Evaluation Involved Multiple Steps

- Six categories of options
  - Evaluated using decision support model
  - Eliminated 3 categories of options
    - Regional/Intergovernmental
    - End User Treatment
    - Non-Infrastructure



# Evaluation Involved Multiple Steps

- After 3 categories dropped
  - Created 14 groupings from remaining 45 options
  - CAC ranked groupings
  - Identified 6 highest-ranked groupings
  - Dropped Columbia River and Mint Farm Wells groups due to concern about potential contamination
  - Dropped Kalama River group due to distance and questions about amount of available water
- Identified 2 preferred groups
  - **New Surface Water Source – Cowlitz River**
  - **Ranney Collector – Cowlitz River**

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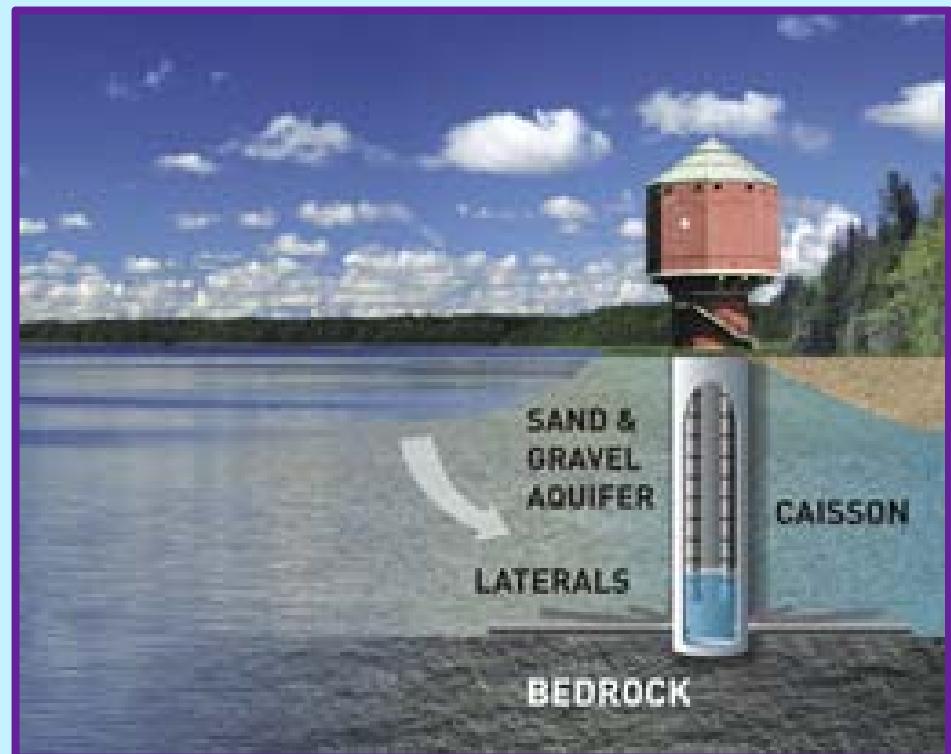
# Public Outreach Activities Included

- Statistically valid telephone survey
- Project Website [www.longviewwater.org](http://www.longviewwater.org)
- Stakeholder contact database and email distribution list
- CAC Survey Number 1 – community feedback on evaluation criteria
- Stakeholder interviews
- Project fact sheet
- Explanatory videos
- Public Open House
- Virtual Open House and CAC Survey Number 2 – community feedback on primary water supply improvement options
- Media outreach – media releases, newspaper and radio coverage



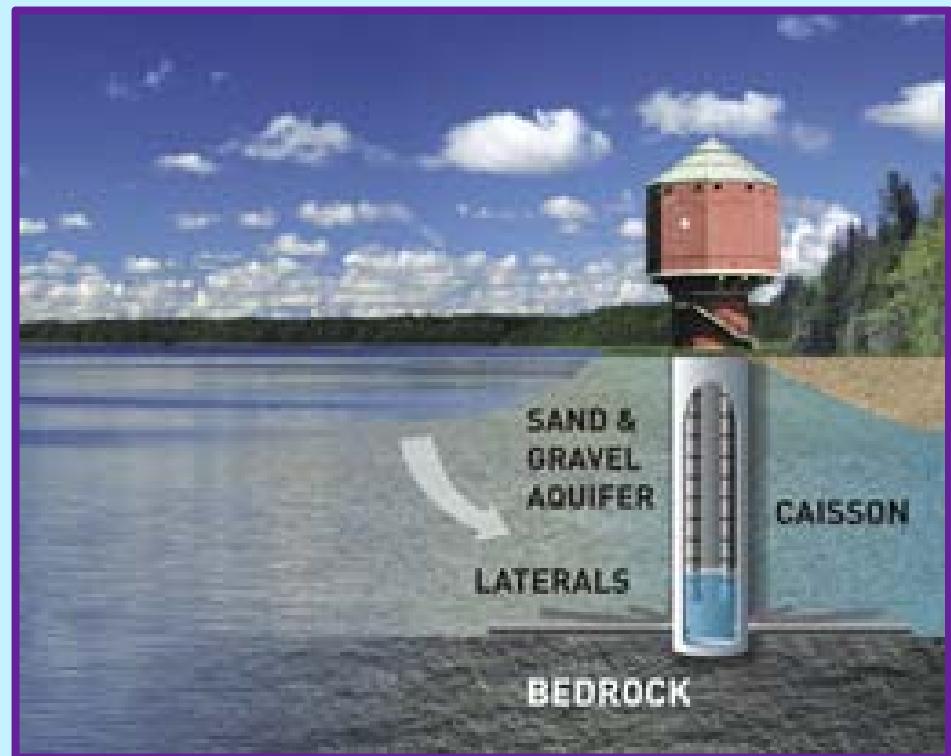
## CAC Recommendation

- Recommended **Ranney Collector on the Cowlitz River**
- Concerns about Surface Water Source on the Cowlitz River
  - Complex permitting
  - Regulatory requirements
  - Sediment



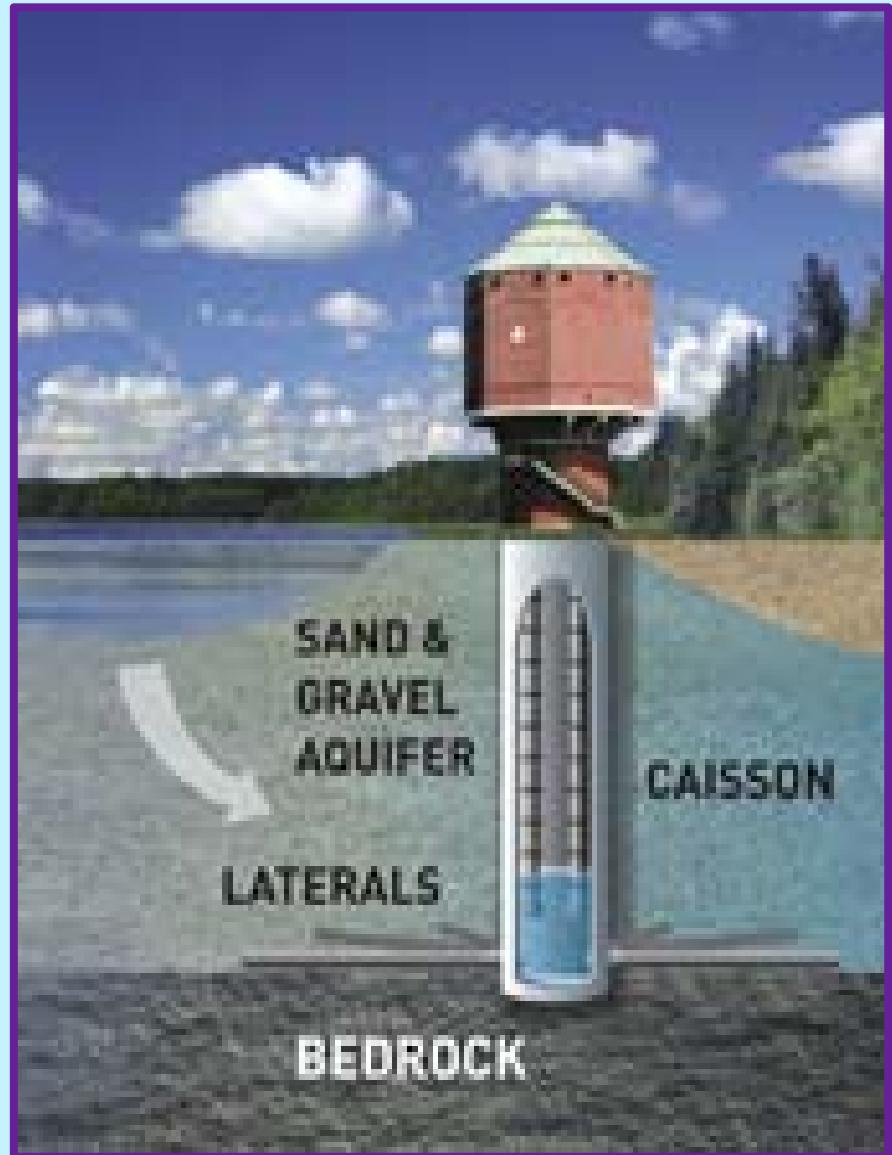
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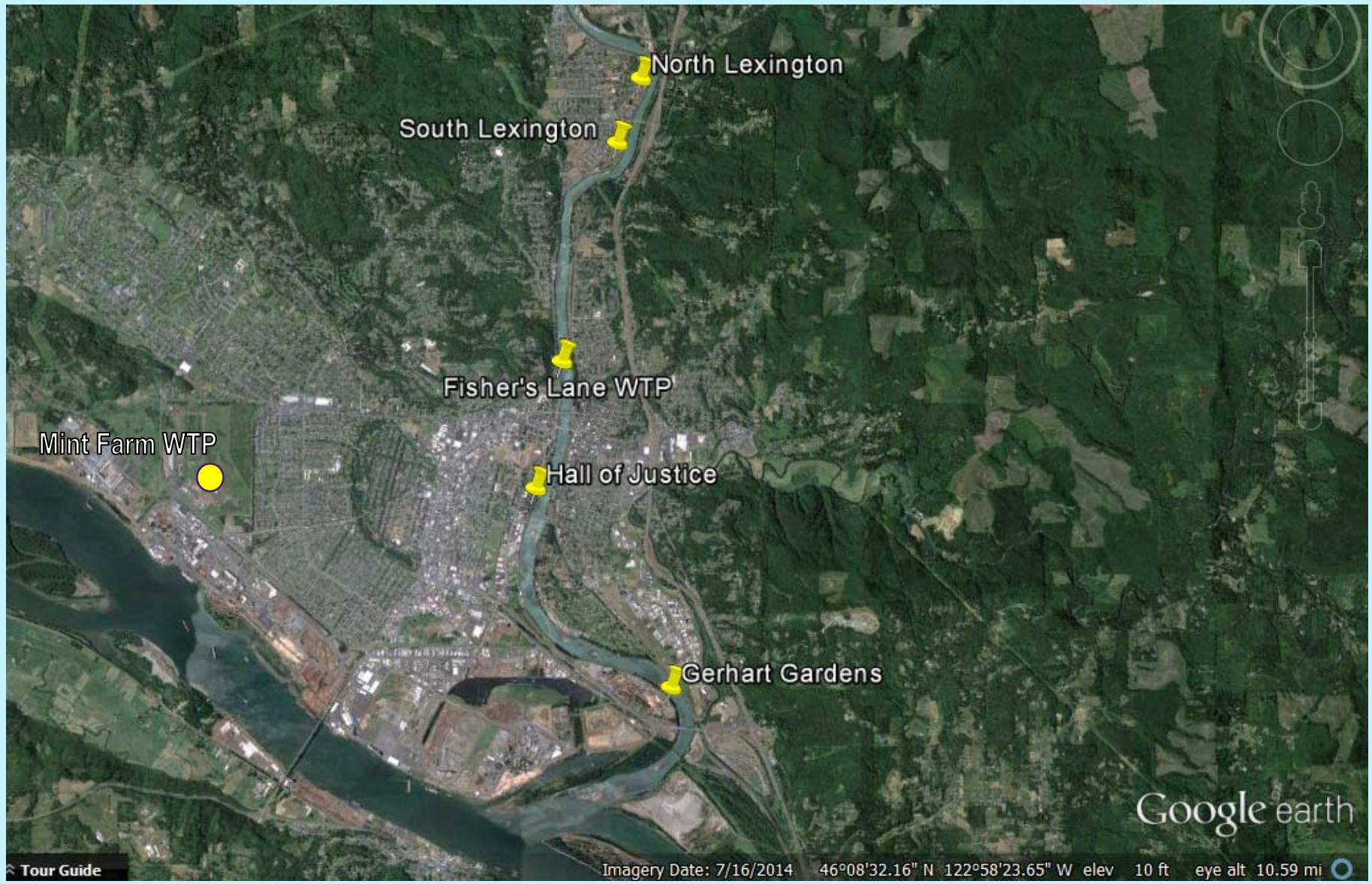
# Ranney Collector Well

- Center Caisson is constructed to depth of targeted water-bearing formation
- Laterals are installed horizontally from the center caisson to collect water
- Pumps are installed inside or above the Caisson



# Ranney Collector Implementation

# Ranney Collector Location Alternatives



# Implementation Ranney Collector Location Alternatives

<b>Potential Location of Ranney Well(s)</b>	<b>Raw Water Transmission Distance (feet)</b>	
	<b>to Fishers Lane</b>	<b>to Mint Farm</b>
Gerhart Gardens	21,000	27,000
Near Hall of Justice	7,000	16,000
Near Fishers Lane WTP	300	20,000
South Lexington	12,000	32,000
North Lexington	15,000	37,000

# Implementation Ranney Collector Treatment Scenarios

Groundwater		Groundwater Under the Direct Influence of Surface Water (GUI)		
<u>Treatment 1</u>	<u>Treatment 2</u>	<u>Treatment 3</u>	<u>Treatment 4</u>	<u>Treatment 5</u>
Chlorination Only	Use Mint Farm Pressure Filters	Ultraviolet Disinfection and Chlorination Only	Coagulant Addition, Filtration, Disinfection	Coagulant Addition, Clarification, Filtration, Disinfection
Groundwater with No Iron or Manganese	Groundwater with Iron and Manganese	Allowed if Riverbank Filtration credit is granted	Allowed if water quality meets certain limits	Required if little water quality data is available, or if turbidity is above 5 NTU

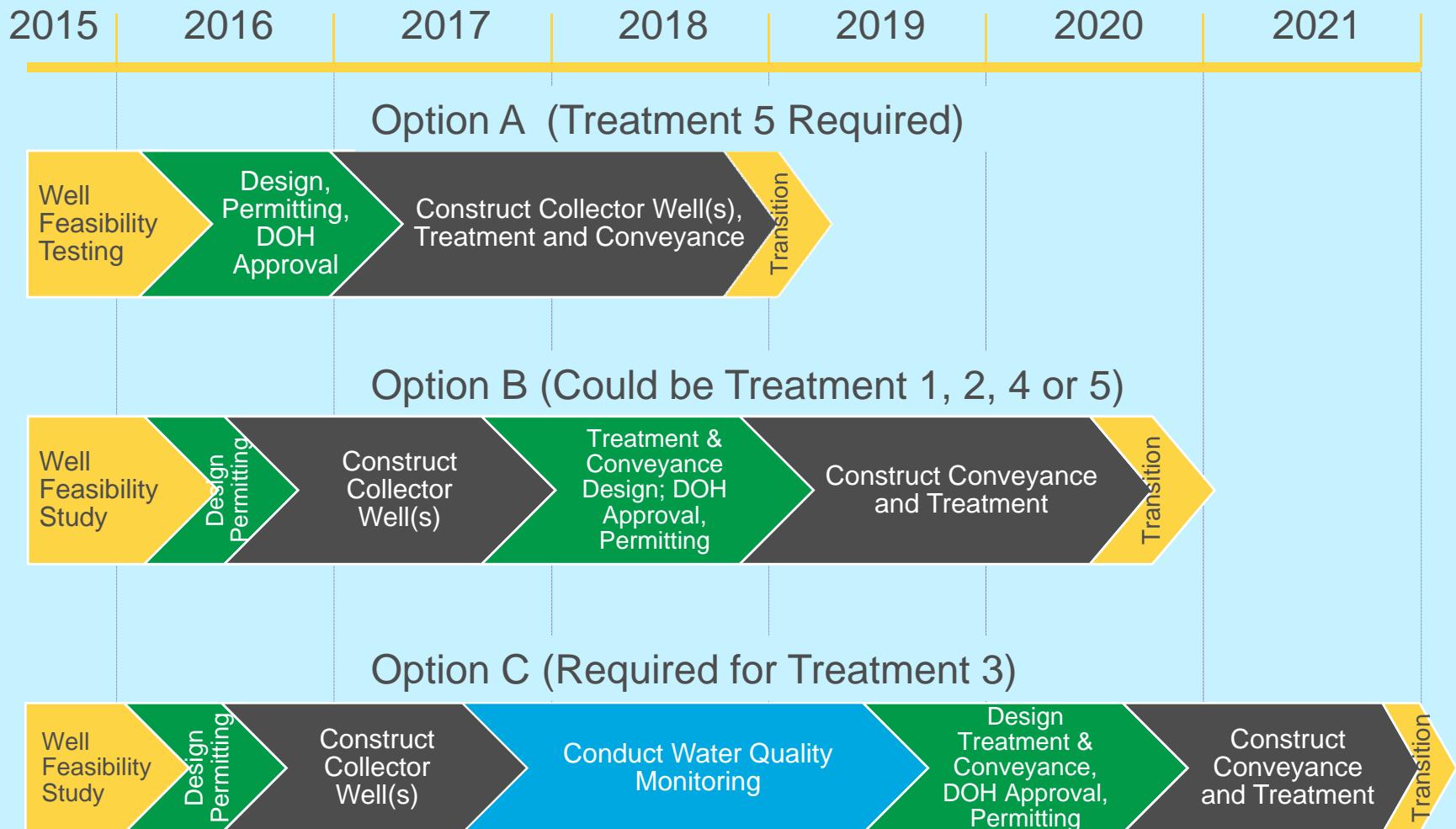
# Implementation Costs

## ***Total Project Cost:***

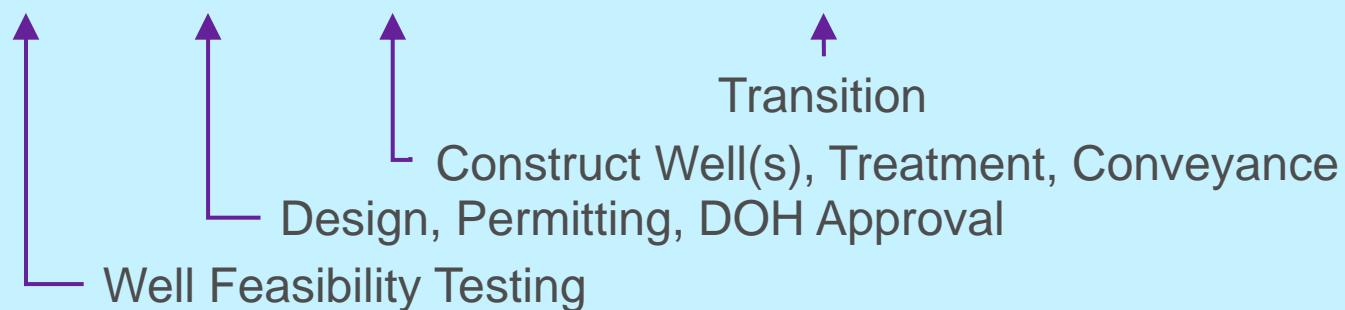
Estimates Developed for 2 Ranney Wells, Transmission and Treatment from North Lexington Site

No.	Treatment Scenarios	Capital Cost (+50% to -30%)	Change In Annual O&M	ERU Cost
		(millions)	(monthly)	
T1	Groundwater – No Iron or Manganese	\$29.5	(\$0.6)	\$5.26
T2	Groundwater with Iron/Manganese	\$40.4	\$0	\$9.65
T3	GUI – with Riverbank Filtration Credit	\$33.2	(\$0.5)	\$6.44
T4	GUI – Coagulation, Filtration, Disinfection	\$48.9	(\$0.1)	\$11.38
T5	GUI – Coagulation, Clarification, Filtration, Disinfection	\$55.1	\$0	\$13.16

# Implementation Cowlitz River Ranney Collector Schedule Options



## Implementation Ranney Collector – Option A



Treatment	Feasibility	Design	Construction
(millions)			
T5	\$0.3	\$8.9	\$45.9

Requires Highest Level of Treatment - no Water Quality data collected over multiple seasons

# Implementation Ranney Collector – Option A

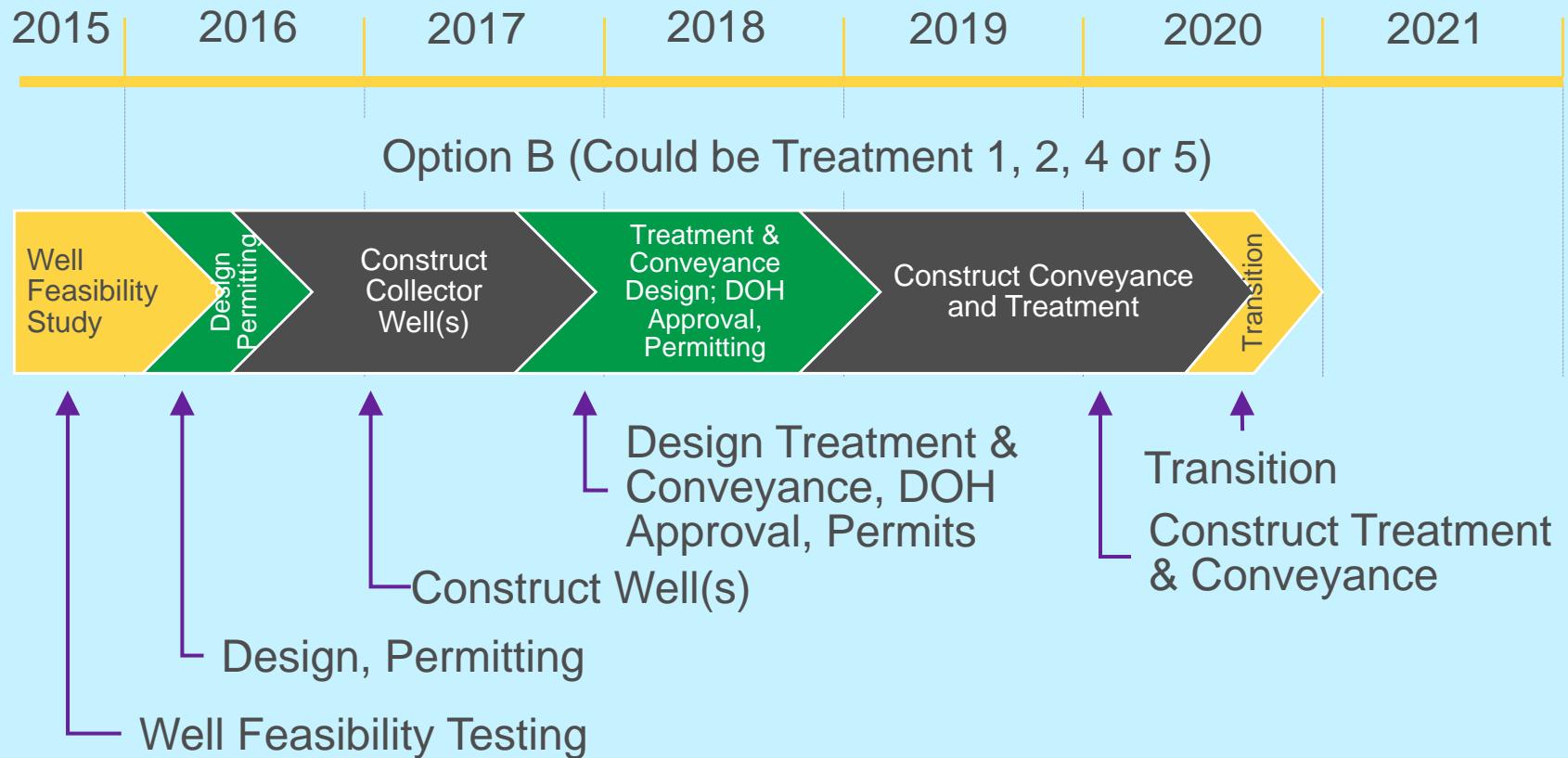


## New Water Source: 3+ Years

- Conduct Well Feasibility Testing
- Confirm Water Availability and General Water Chemistry
- Design Collector and Surface Water Treatment Processes
- Obtain Water Rights, Regulatory Approval, and Permits
- Construct All Facilities Simultaneously

Pros	Cons
<ul style="list-style-type: none"><li>• Most Expedient Path to New Water Source</li></ul>	<ul style="list-style-type: none"><li>• Potentially Highest Cost Option</li><li>• May result in Facilities not needed when water quality is known</li></ul>

# Implementation Ranney Collector – Option B (Treatment 1, 2, 4 or 5)



# Implementation

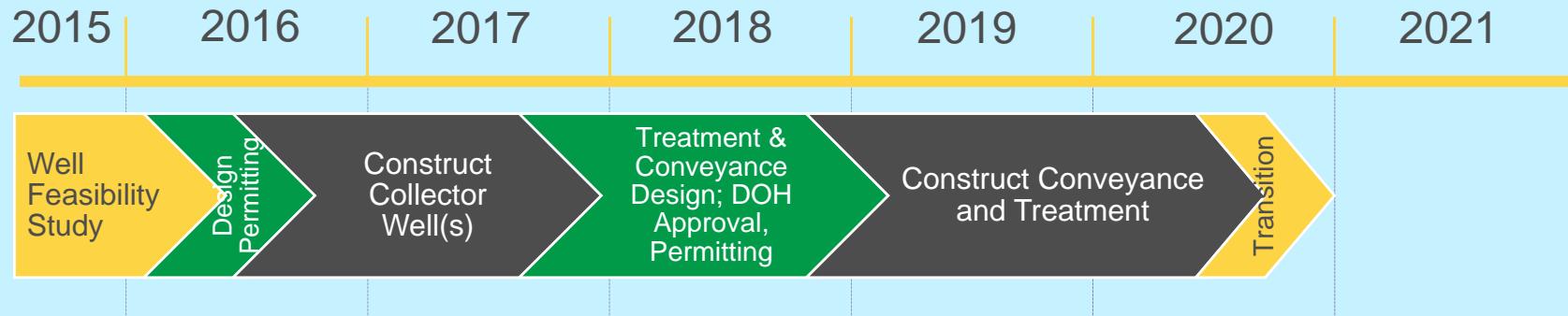
## Ranney Collector – Option B (Treatment 1, 2, 4 or 5)

2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021



No.	Feasibility	Ranney Design	Ranney Construction	Design of Conveyance and Treatment	Construction of Conveyance and Treatment
	(millions)				
T1	\$0.3	\$2.3	\$10.5	\$2.3	\$14.1
T2	\$0.3	\$2.3	\$10.5	\$4.1	\$23.2
T4	\$0.3	\$2.3	\$10.5	\$5.5	\$30.3
T5	\$0.3	\$2.3	\$10.5	\$6.6	\$35.4

# Implementation Ranney Collector – Option B (Treatment T1, T2, T4 or T5)

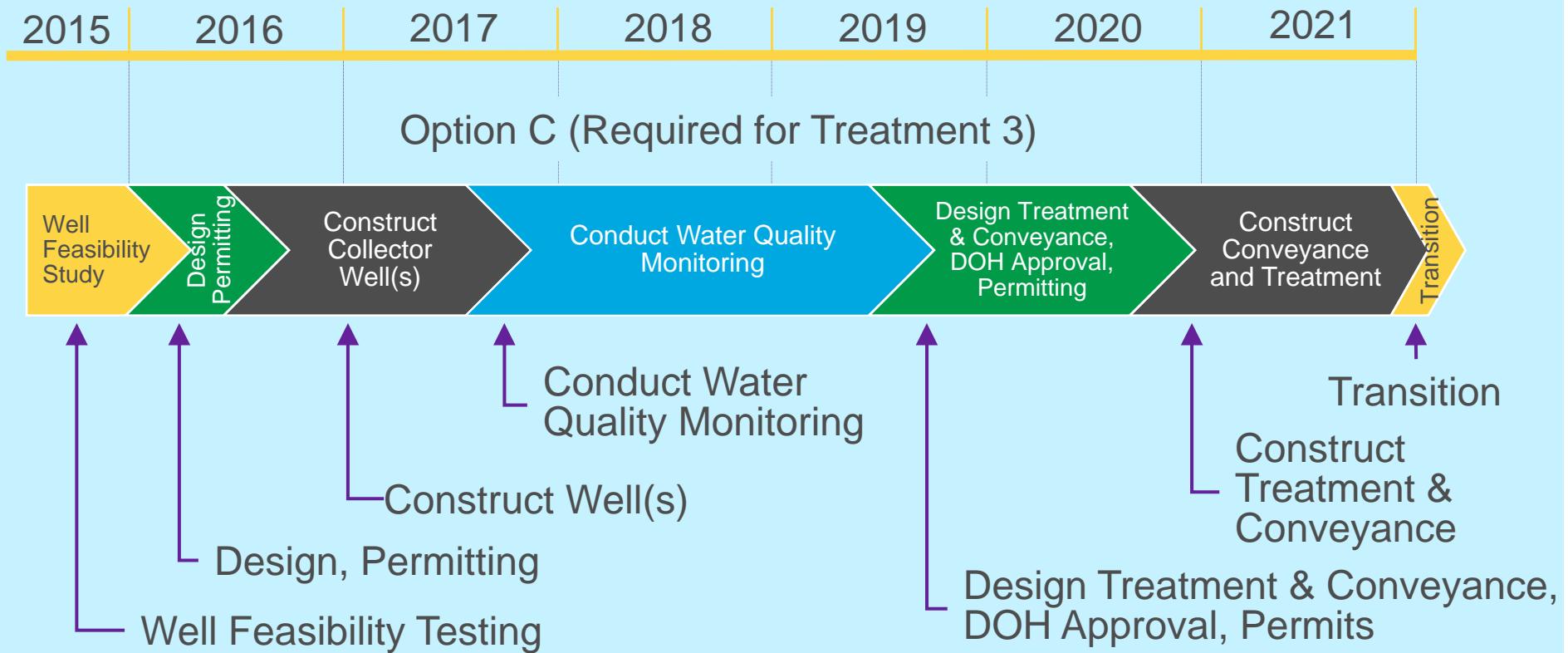


## New Water Source: 5+ Years

- Conduct Well Feasibility Testing
- Confirm Water Availability and General Water Chemistry
- Design and Obtain Permits to Construct Ranney Collectors
- Construct Ranney Collectors – Confirm Water Quantity & Quality
- Determine if Groundwater or GW under the Influence of Surface Water
- Obtain Permits for Additional Construction; Water Rights; DOH Approval
- Construct Treatment and Conveyance

Pros	Cons
<ul style="list-style-type: none"><li>• Better knowledge of water quantity and quality to determine necessary facilities</li><li>• Potentially lowest cost if water determined to be groundwater</li></ul>	<ul style="list-style-type: none"><li>• If under the influence of Surface Water, Treatment Costs Remain High</li><li>• No credit for Riverbank Filtration</li></ul>

# Implementation Ranney Collector – Option C (Treatment 3 - Riverbank Filtration Credit)



# Implementation

## Ranney Collector – Option C (Treatment 3 - Riverbank Filtration Credit)



No.	Feasibility	Design/Permit Well	Construct Well	Water Quality	Design Conveyance/Treatment	Construct Conveyance/Treatment	
(millions)							
T3	\$0.3		\$2.3	\$10.5	\$0.6	\$2.3	\$17.2

# Implementation

## Ranney Collector – Option C (Treatment 3 - Riverbank Filtration Credit)



### New Water Source: 7+ Years

- Conduct Well Feasibility Testing
- Confirm Water Availability and General Water Chemistry
- Design and Obtain Permits to Construct Ranney Well
- Construct Ranney Well(s)
- 2 Year Water Quality Testing Period for Riverbank Filtration
- Obtain Permits for Additional Construction; Water Rights; DOH Approval
- Construct Treatment and Conveyance

Pros	Cons
<ul style="list-style-type: none"><li>• Provides best knowledge of necessary facilities for New Source</li><li>• Potentially Second Lowest Cost if Riverbank Filtration Credit is Granted</li></ul>	<ul style="list-style-type: none"><li>• Longest Implementation Timeframe</li><li>• May not receive Riverbank Filtration Credit and treatment costs still high</li></ul>

# Water Supply Project Financial Status

# Water Supply Project Financial Status

- MFRWTP Cost to Date.....\$33,711,906
- Filter Plant Construction Fund Balance.....\$ 3,661,192
  - Longview (85.41%): \$ 3,127,024
  - BHWSD (14.59%): \$ 534,168
- DWSRF Loan
  - Remaining Balance.....\$ 2,172,336
  - Expires December 31, 2015
  - Potential to extend expiration date
  - Water Supply Review and new Ranney source are not eligible expenses

# Water Supply Project Financial Status

- Ranney Source Costs
  - Capital: \$29.5 M to \$55.1 M
  - Monthly: \$5.26 / ERU to \$13.16 / ERU (including change in O&M cost)
- Existing Customer Bills – Single Family Residence
  - Longview (inside City):

Winter Avg =	\$ 25.91/mo	(Cons = 6 CCF)
Summer Avg =	\$ 28.32/mo	(Cons = 7 CCF)
  - Longview (outside City):

Winter Avg =	\$ 42.75/mo	(Cons = 6 CCF)
Summer Avg =	\$ 46.72/mo	(Cons = 7 CCF)
  - BHWSD: Winter Avg = \$ 39.85/mo (Cons = 5 CCF)  
Summer Avg = \$ 44.35/mo (Cons = 7 CCF)

# Water Supply Project Financial Status

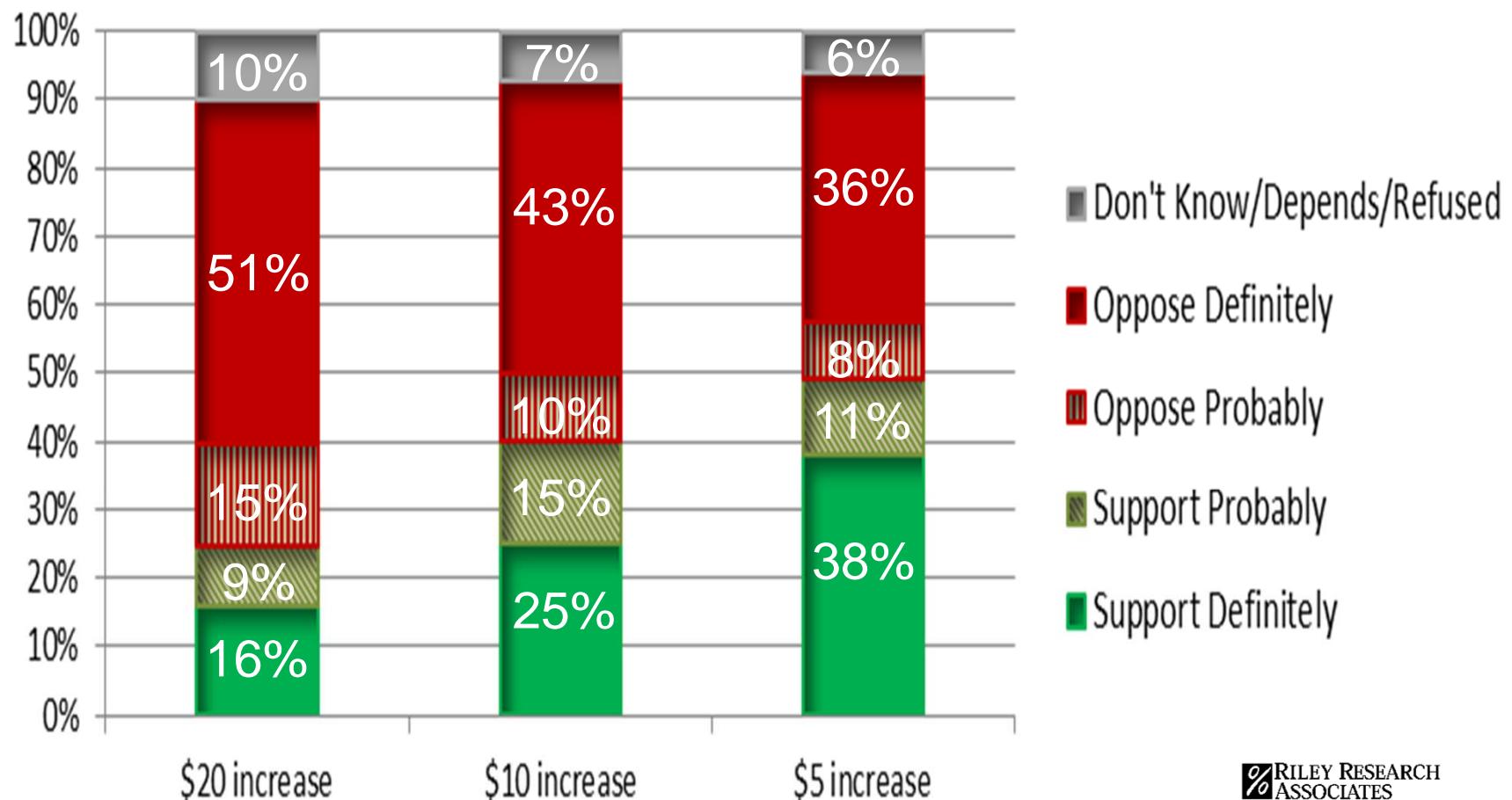
- Ranney Source Financing
  - Potential obligation to pay back \$1 M EPA grant if MFRWTP not used for municipal supply
  - Not eligible for Federal or State grants or loans
  - Revenue bonds
    - Interest Rate Projection: 4% to 5%
    - Issuance Costs (Underwriter; Bond Counsel): 2% of bond amount
    - Bond proceeds must be spent within 3 years

# Water Supply Project Financial Status

## TELEPHONE SURVEY – OCTOBER 2014

### Level of Support for a Monthly Rate Increase

#### All Respondents



# DISCUSSION