

# Northwest Water Treatment Plant Improvements

Project Update

Greg Roy, PE

*January 15, 2019*



**CDM  
Smith**

# Project Timeline

**Advanced Treatment  
Evaluation**  
Jan - Apr '18

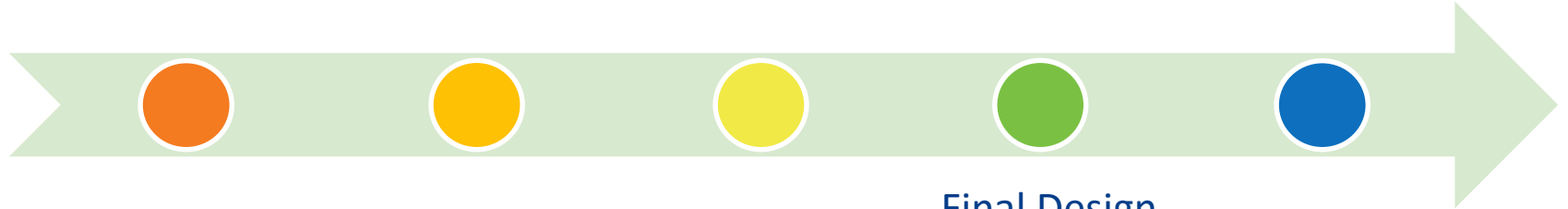
**Preliminary Engineering  
& NPDES Permit**

May - Aug '18

Application Submitted Nov '18

**Bidding & Construction**

Nov '19 - Sep '22



**LPRO Pilot Testing**

Feb - Jul '18

Extended to May '19

**Final Design  
and Permitting**

Oct '18 - Sep '19

# Alternatives Considered for Improvements to Water Supply

## Maintain Existing Cape Fear River Supply

- Abundant source of water
- Existing Infrastructure
- Advanced treatment is required to address emerging contaminants (GenX, PFAS, 1,4-Dioxane)
- Northwest WTP requires expansion to meet projected water demand

**SELECTED**

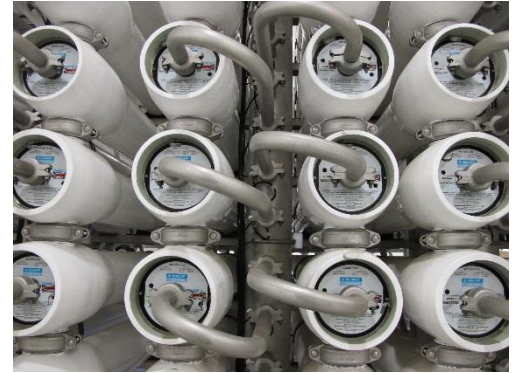
## Expand County's Groundwater Supply

- Groundwater supply is inadequate to meet the County's water needs

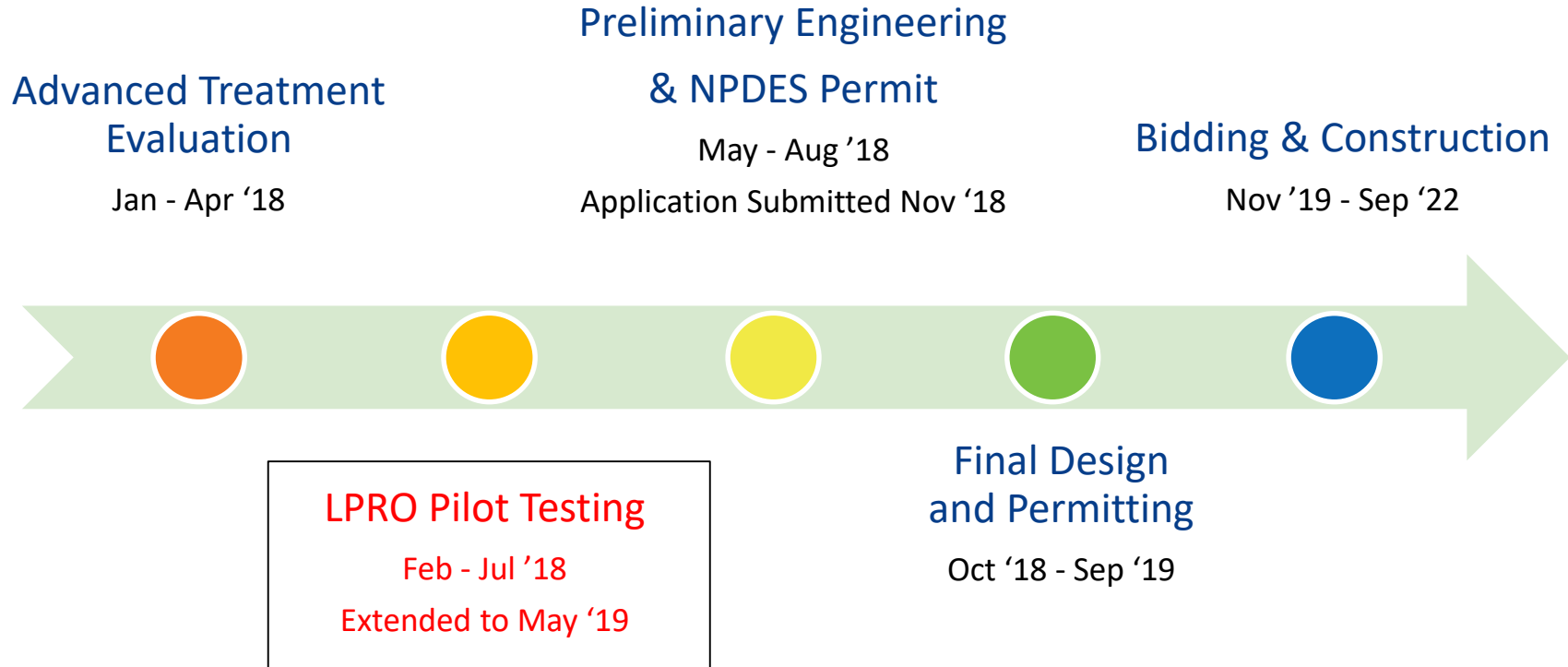
**NOT SELECTED**

# For advanced treatment, LPRO is recommended for the following reasons:

- ✓ Best removal of GenX, other PFAS and 1,4-Dioxane
- ✓ Most Cost-Effective advanced treatment technology for removing 90% or more of the Target Contaminants (25-yr NPW)
- ✓ Provides best protection against the broadest range of unidentified contaminants and spills/spikes in the Cape Fear River



# Project Timeline



# Pilot Testing Has Confirmed LPRO Effectiveness

Parameter	Filtered Water Concentration	RO Treated Water	Calculated Removal %
Gen X	7 – 12 ng/L	ND	--
Nafion Byproduct 1 & 2	ND – 6 ng/L	ND	--
PFMOAA	320 – 750 ng/L	ND – 11 ng/L	98%+
PFO2HxA	12 – 26 ng/L	ND	--
PFHxA	19 – 20 ng/L	ND	--
PFPeA	16 - 17 ng/L	ND	--
PFOS + PFOA	18 - 26 ng/L	ND	--
Sum (45) of PFAS Tested	423 – 892 ng/L	ND – 11 ng/L	--

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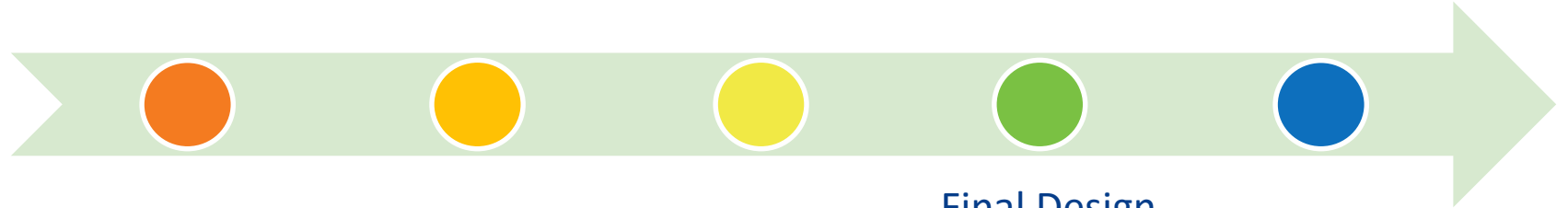
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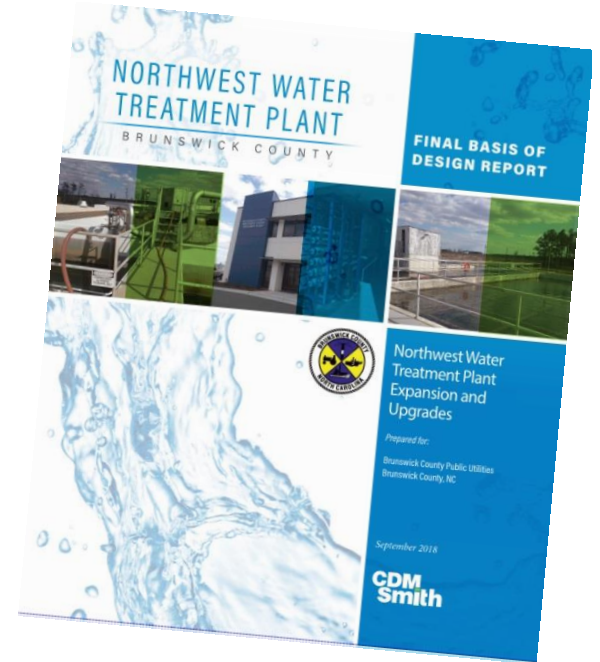
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# Preliminary Engineering Work Completed

Description	Opinion of Probable Project Cost
WTP Expansion and Improvements	\$47.5 M
RO Facility	\$82 M
Concentrate Pipeline	\$7.5 M
<b>Total</b>	<b>\$137 M</b>



✓ Selected for WIFIA Funding (up to \$73M Loan)



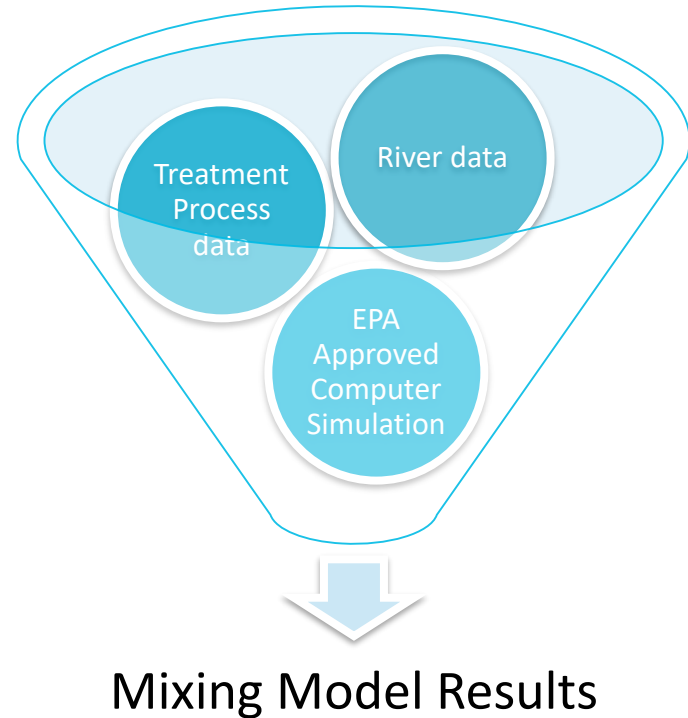
# Why is an NPDES Permit Required?

- LPRO generates concentrate stream
- CDM Smith evaluated alternatives to manage concentrate

Option	Feasible	Justification
NPDES discharge to surface water	Yes	Proximity to Cape Fear River; NC DEQ has approved discharges for other RO facilities
Discharge to sewer/ wastewater system	No	Existing wastewater infrastructure in 10 mile radius not adequate
Land application	No	'Very limited' soils in the area; estimate 1,000 acres land required
Reuse/ reclaimed water	No	No existing infrastructure, low demand in area
Deep well injection	No	Not permitted by NC General Statutes

# Characteristics of Requested Discharge

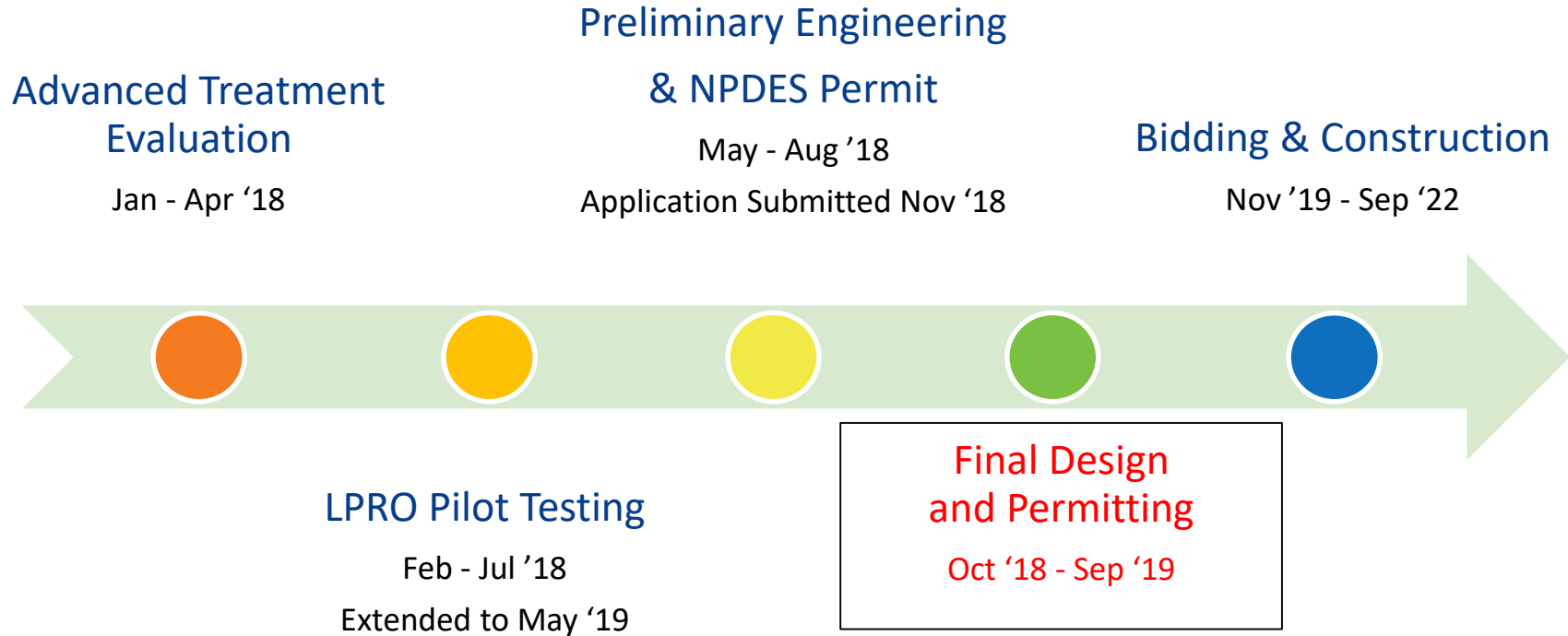
- **Discharge will meet ALL regulatory requirements**
- Expected flow range is 0.7 mgd – 4 mgd
- NPDES permit will set specific guidelines for the water being discharged
- Return compounds to the Cape Fear River that were removed from the drinking water during treatment
- No net increase in PFAS or emerging contaminants to the river



# NPDES Permit Application Status

- Application submitted Nov. 9, 2018
- Probable 6-month review/approval process
- Preliminary comments from DEQ received Dec. 14, 2018
- CDM Smith is preparing responses (Jan 2019)
- Next step: DEQ will prepare a Draft NPDES Permit
  - State and federal agency review
  - Public comment

# Project Timeline



# Final Design Status

- Final design initiated October 2018
- Final documents ready for bidding October 2019



# Construction Schedule

- WTP Contract Award January 2020
- LPRO Water Production December 2021
- WTP Construction Completion September 2022
  
- Pipeline Contract Award February 2020
- Pipeline Construction Completion June 2021



*Questions?*

