

# John Day Water Reclamation Facility 2018 Community Development Block Grant Public Hearing

December 4, 2018



# Agenda

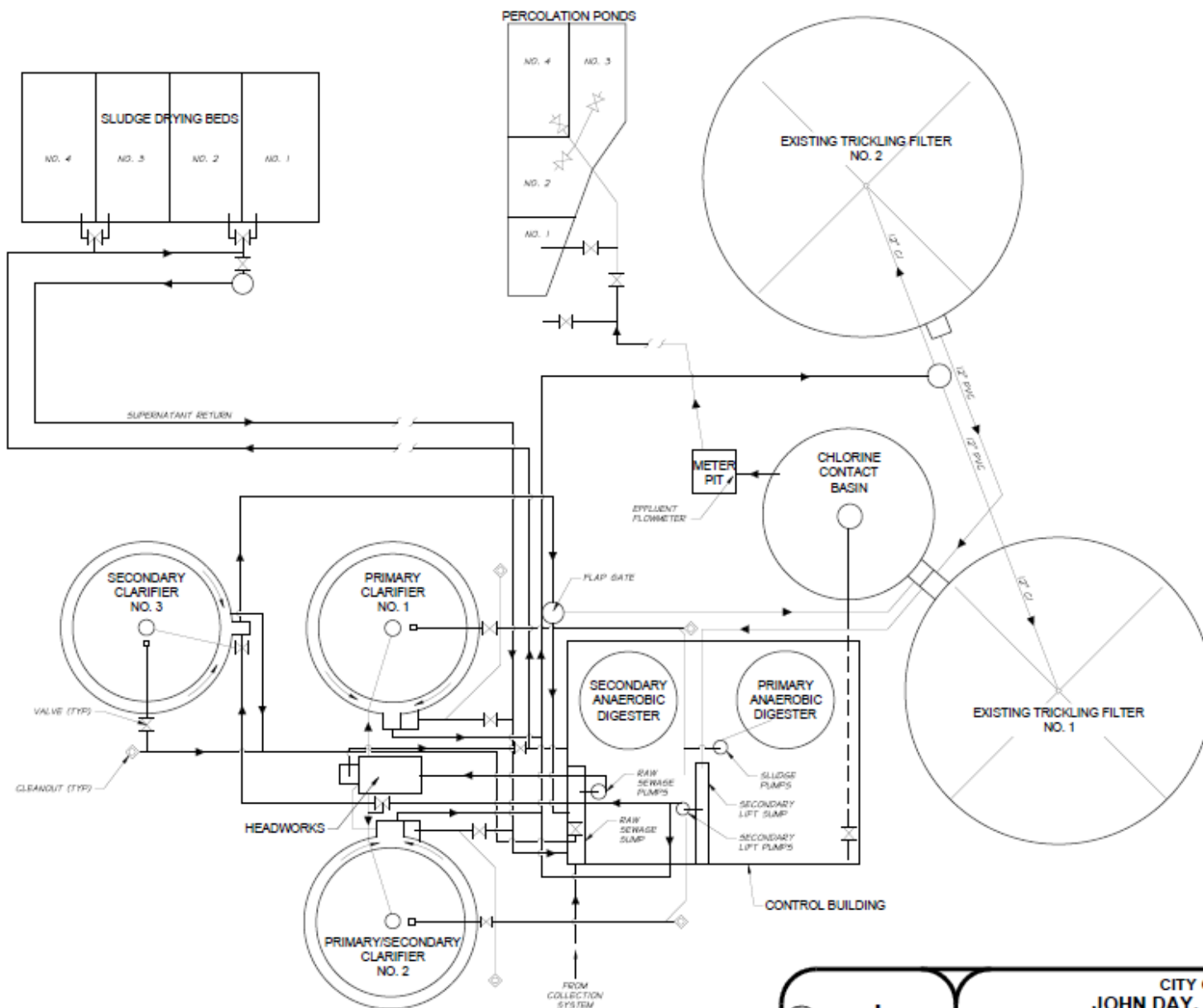
- Facility Background
- Planning
- Design Concept
- Project Financing & Timeline
- Other Housing & Community Development Projects



# Existing Wastewater Treatment Facility

- Located on the northwestern end of the City at the end of 7th Street
- Provides secondary treatment of both John Day and Canyon City's domestic wastewater
- Serves approximately 2,440 people living in an estimated 1,036 households, plus businesses, most public agencies and industries
- Mechanical treatment plant
  - Influent lift station, headworks structure, two primary clarifiers, two trickling filters, one secondary clarifier, gas chlorination and chlorine contact basin, four percolation ponds for effluent disposal, two-stage high rate anaerobic sludge digester, and four sludge drying beds
- Permit expired in 2007 (under administrative review by DEQ)







# Need for Replacement

Facility is 70-years old

## AGE

- Construction of original wastewater treatment facility completed in 1949
- Major additions to facility and collection system completed in 1970 and 1978
- Minor modifications since 1978 to maintain the facility

Facility is in need of major improvements

## INSUFFICIENT CAPACITY

- Components show severe degradation and have been in use for 40-70 years
- Will not serve the long-term treatment needs of the City
- See Chapter 3 of 2018 WWFP for specific details



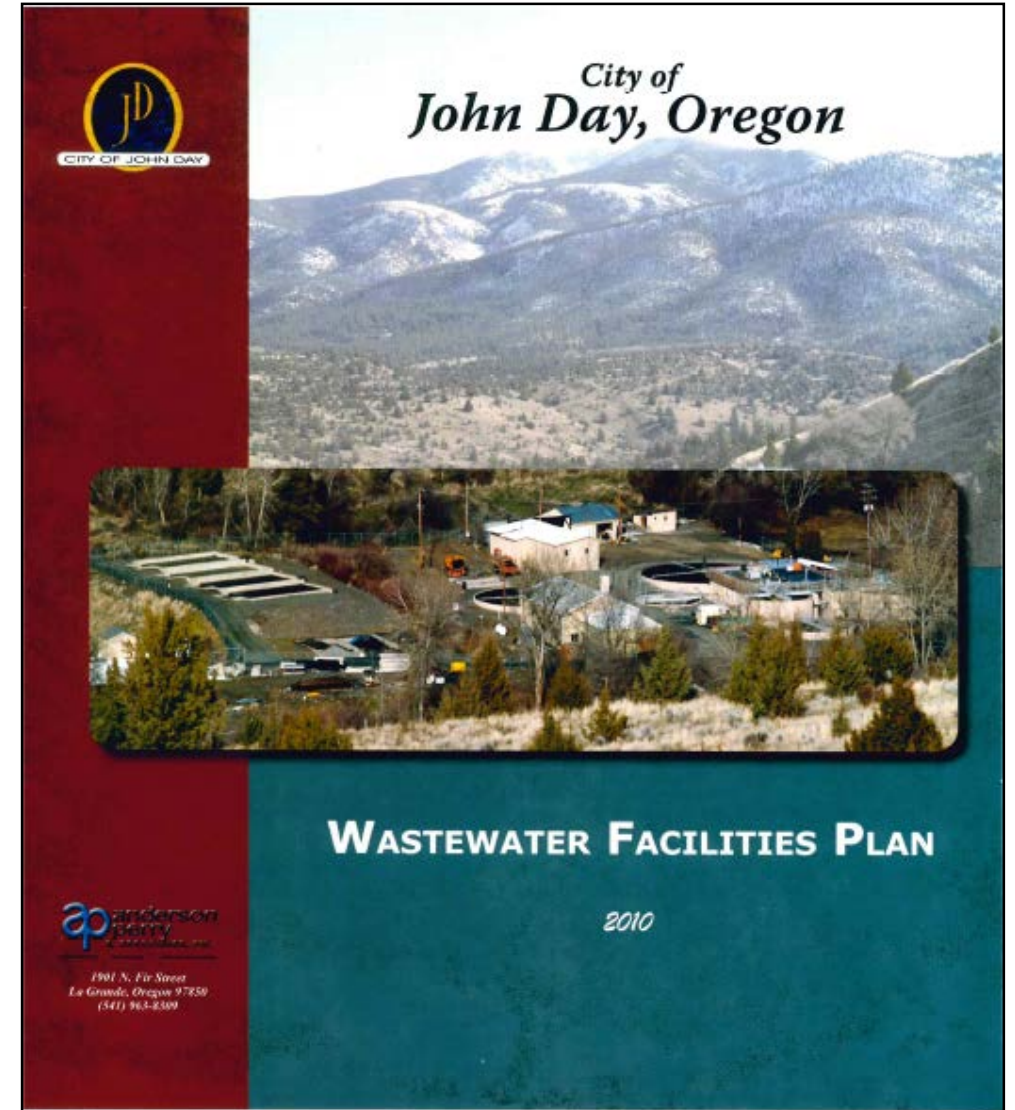
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- Design Concept
- Project Financing & Timeline
- Other Housing & Community Development Projects



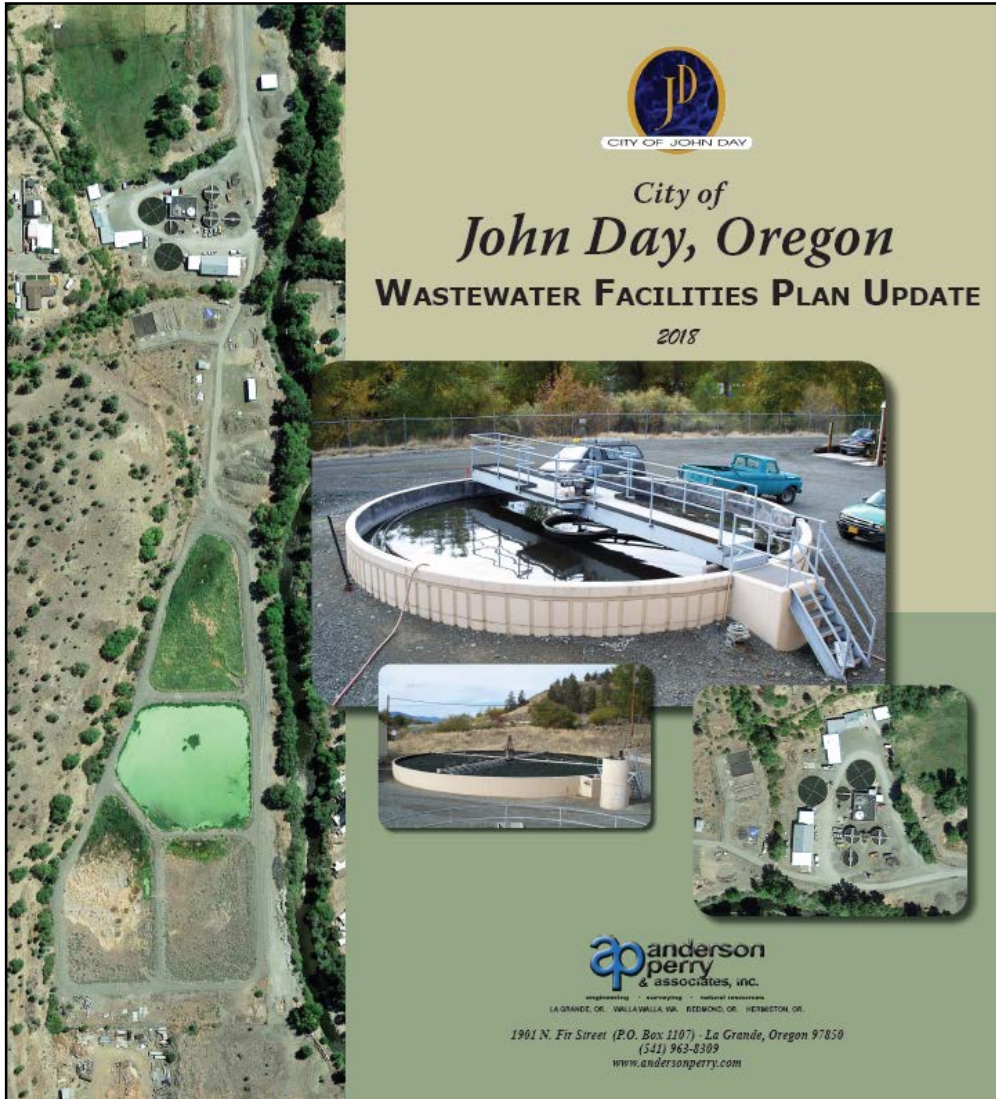
# Planning milestones

- City contracted with Anderson Perry (AP) in 2008 to create a new set of options (published in the 2010 Wastewater Facilities Plan)
- City was not prepared at the time to proceed with a new mechanical plant
  - Rates were too low
  - Insufficient reserves
  - Major financial commitment





# Planning milestones continued...



- **2015** – Documented a potential land application / irrigation option – could not secure location
- **2016** – Hired new City Manager
- **2017** – City contracted with AP and Sustainable Water to update the facility plan with a **new water reclamation option**; received \$70,000 in grant funds through Business Oregon and OWRD; **purchased Oregon Pine** for new location
- **2018** – John Day & Canyon City completed Local Income Survey to determine block grant eligibility / Facilities Plan Update published with new options

# Results of 10-Year Planning Effort

- **April 2018** – Certified as CDBG-eligible community by Business Oregon (>57% of residents in low-to-moderate income households)
- **June 2018** – City Council selected reclaimed water facility option based on “Water Hub” concept
  - Significantly reduced facility footprint
  - 100% reuse of both solid and liquid waste
  - Creates economic value through a sustainable business model
- **August 2018** – Facility Plan Update submitted to DEQ for review and approval
- **December 2018** – Application for CDBG grant funding

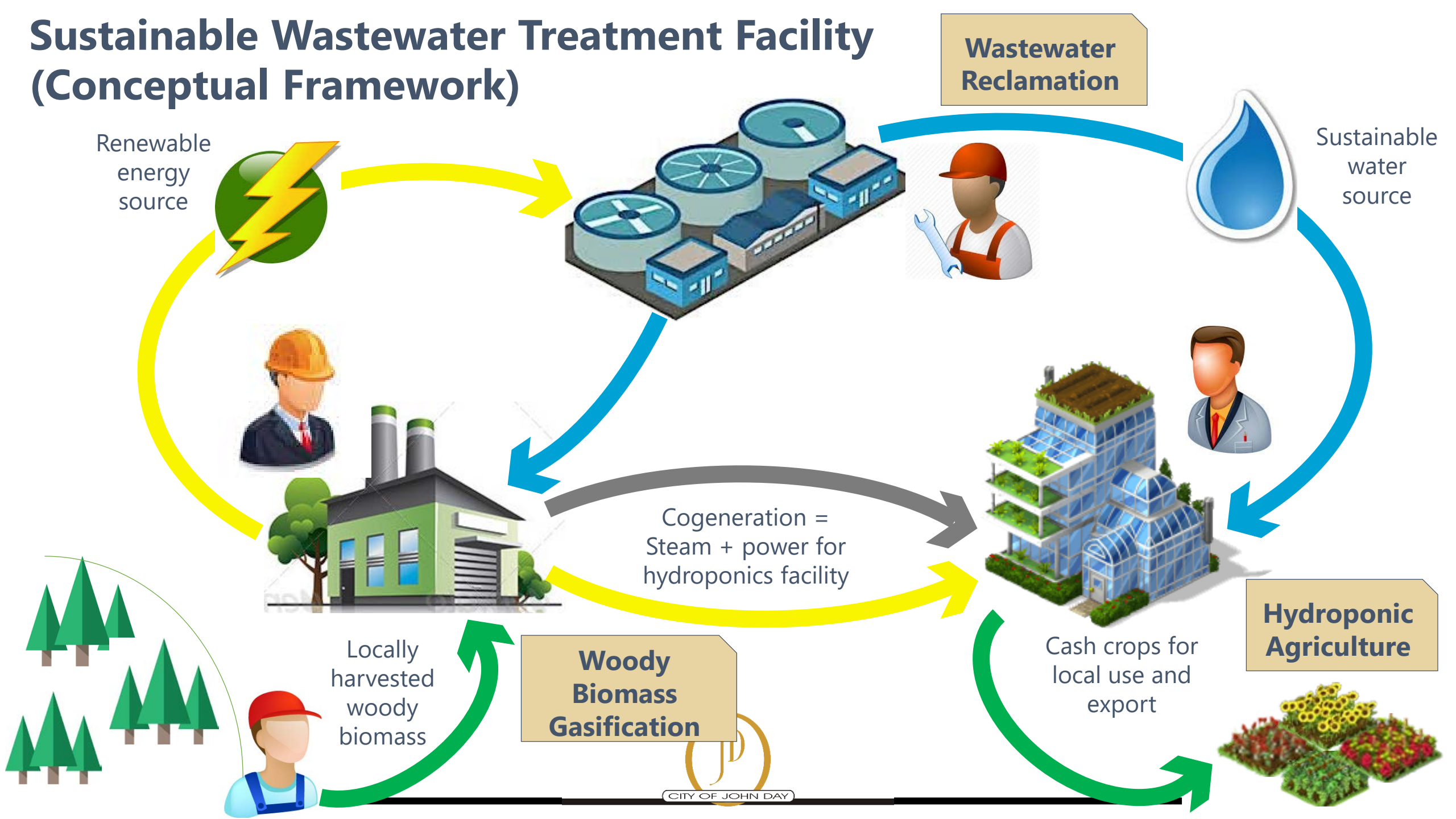


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- Community Development Projects
- Housing



# Sustainable Wastewater Treatment Facility (Conceptual Framework)



# Most Essential

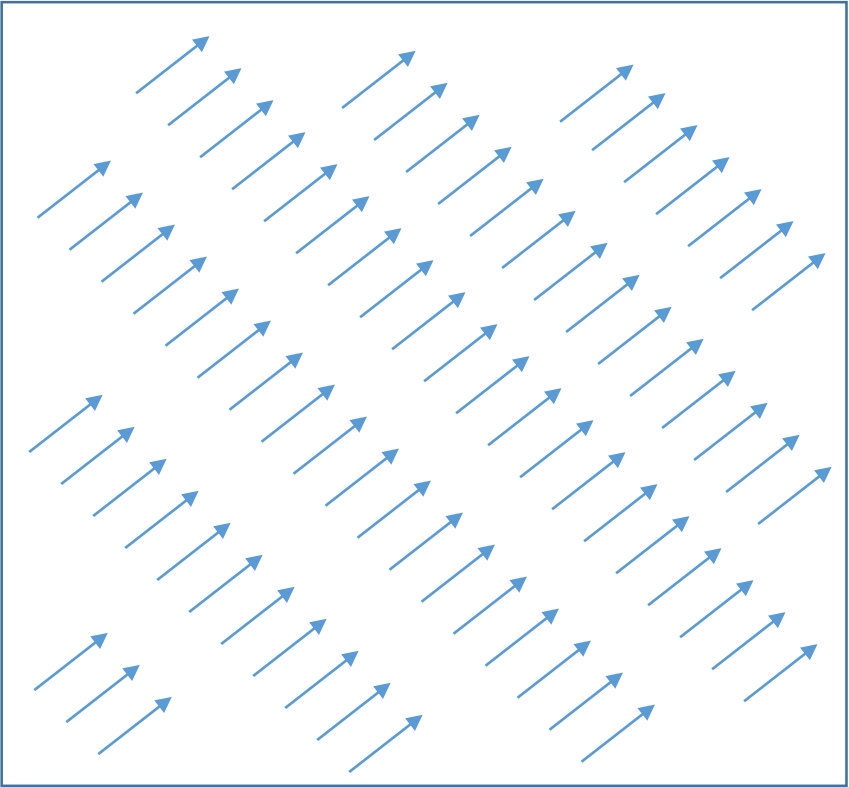
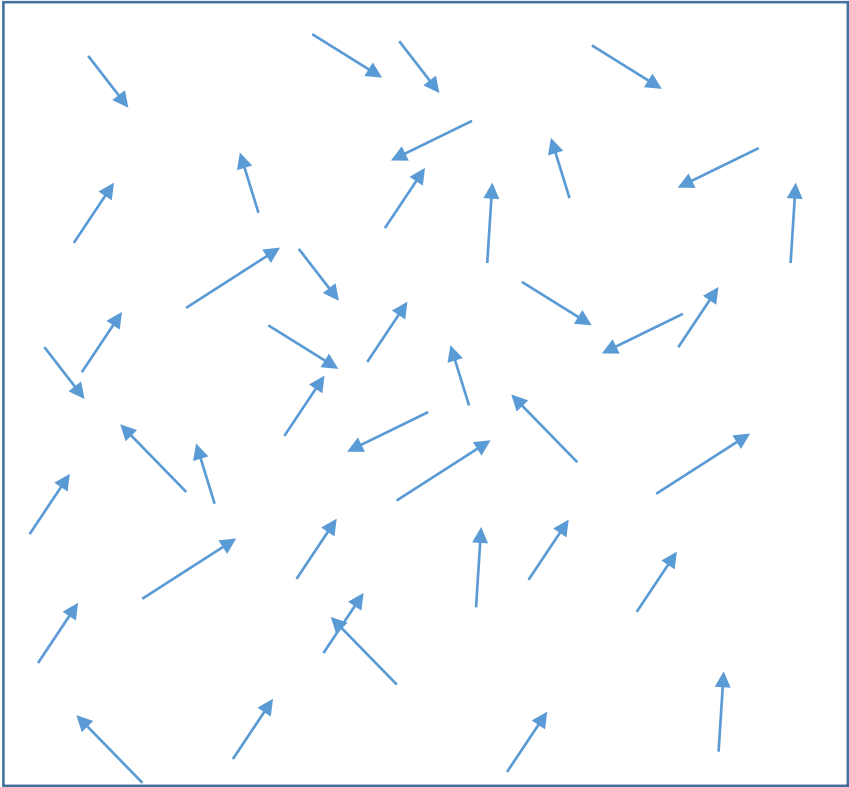
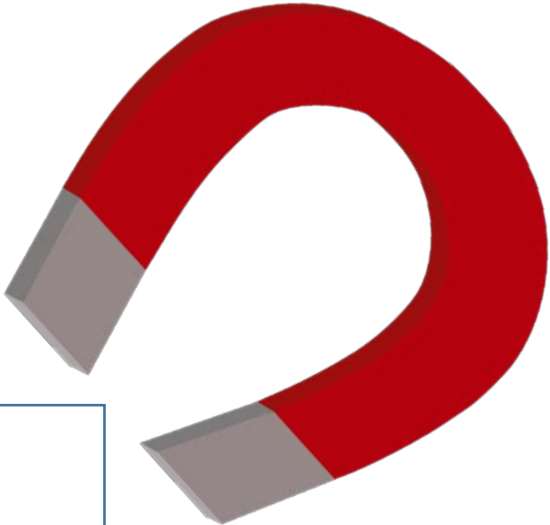
## *Capital Improvement*

### **New Wastewater Treatment Plant**

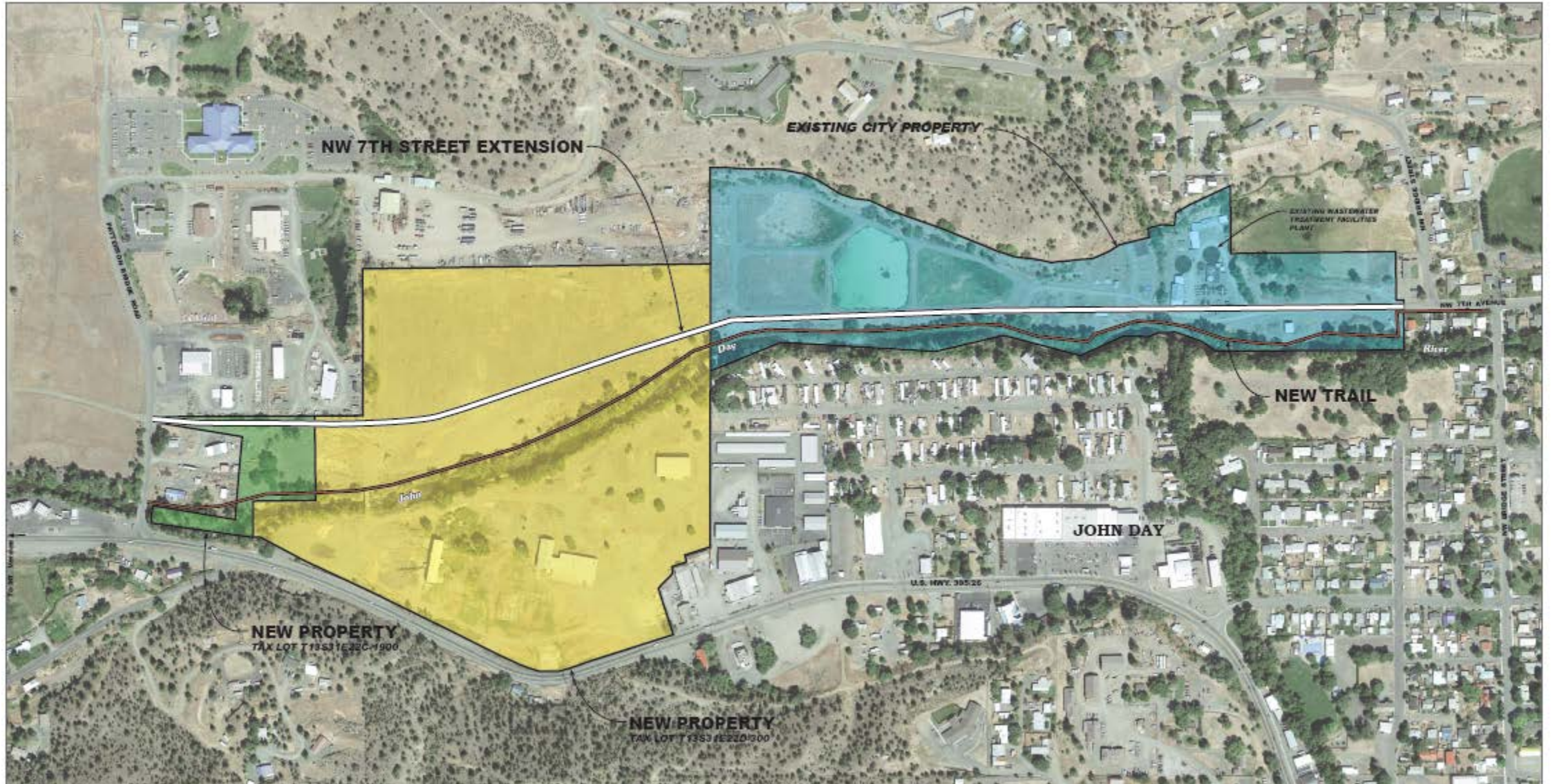
- Based on Water Hub designed by Sustainable Water for Emory University
- Mechanical wastewater treatment plant with a hydroponic component
- Potential to reclaim over 80 million gallons of water per year
- Could generate agriculture revenue and academic research opportunities



# We need a magnet investment

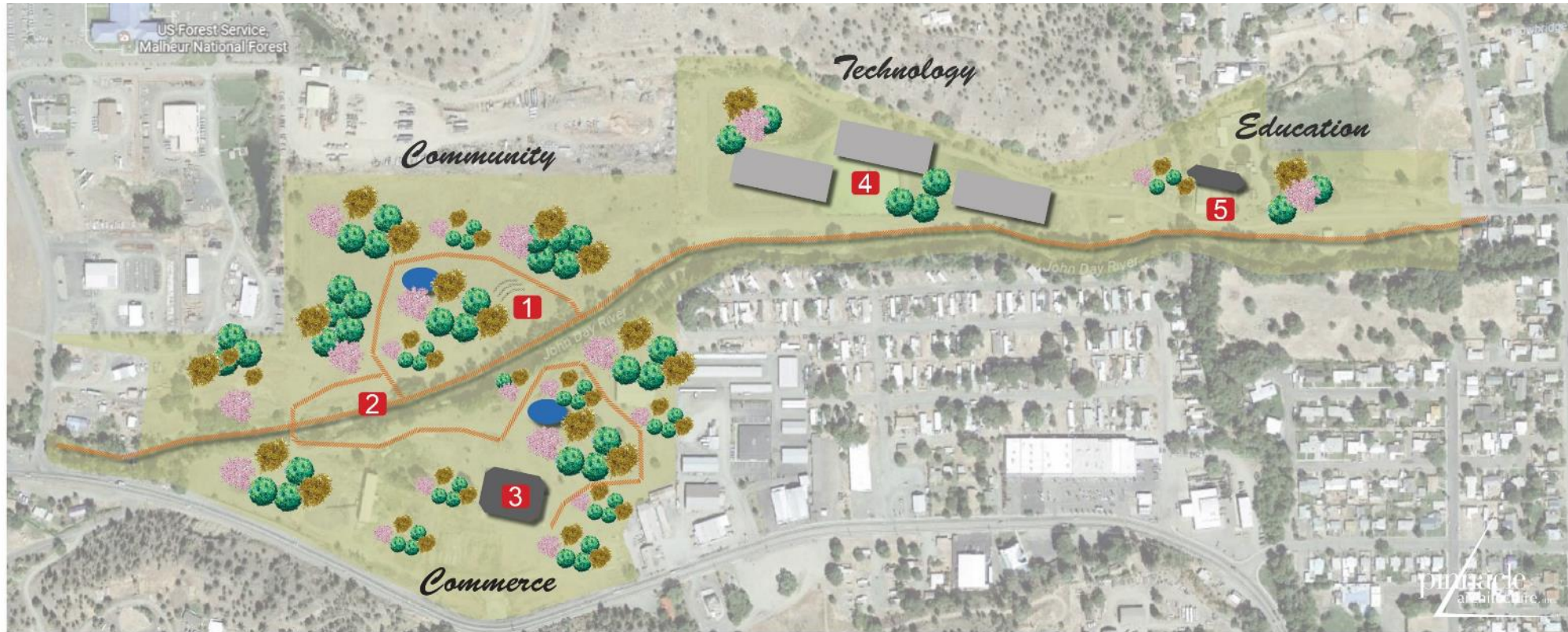


Purchase of 53-acres of Oregon Pine & DR Johnson mill sites (yellow/green)  
Adjacent to city-owned property along John Day River (blue)

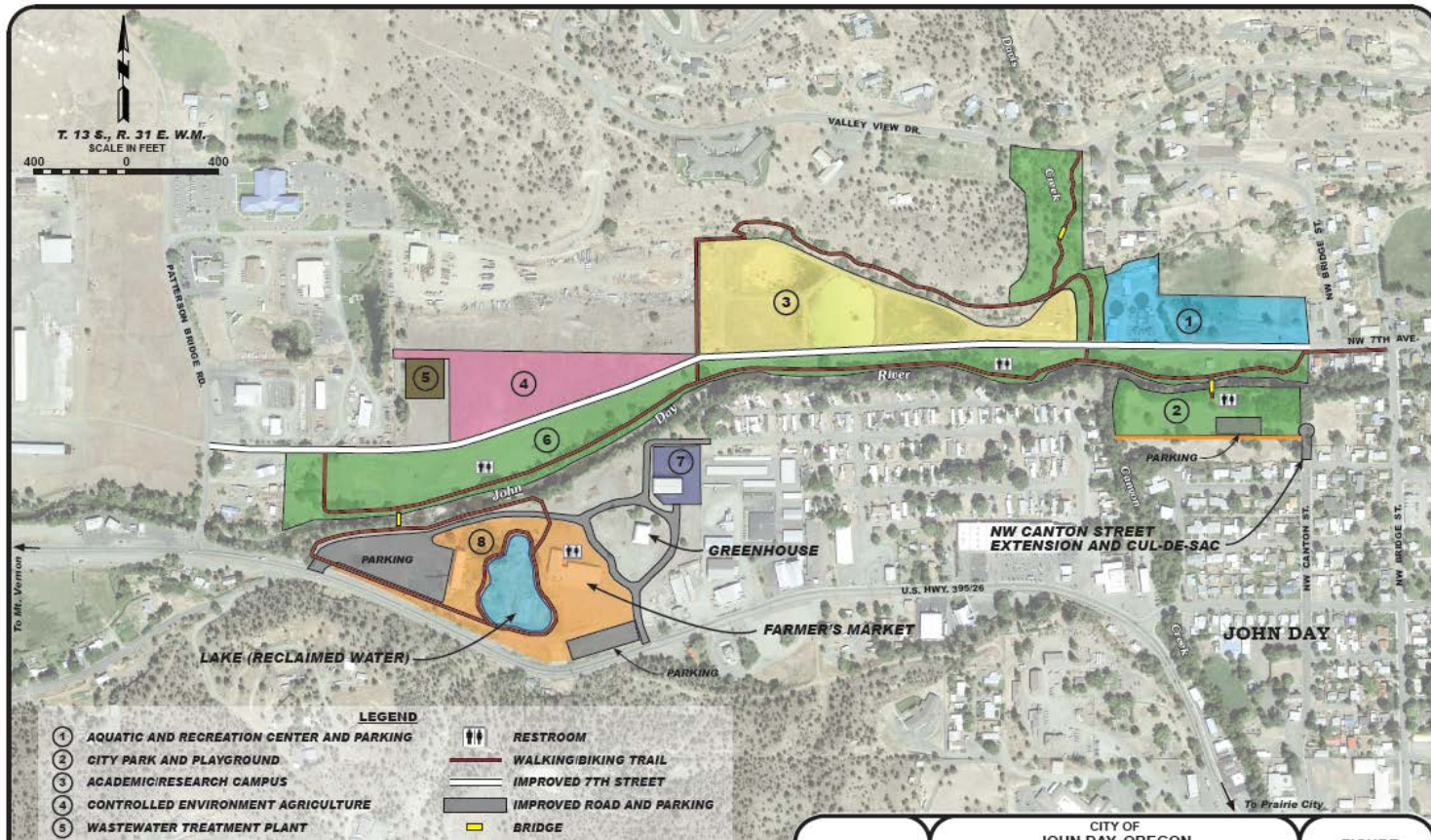


# JOHN DAY INNOVATION GATEWAY

The integration of community, technology, education, commerce and recreation.







# Innovation Gateway Investments (to-date)

- Reclaimed Water Facility
- Pilot-scale Hydroponics Greenhouse (6,000 SF)
- Riverfront trail system
- Expanded area includes Davis Creek and new park at confluence of John Day River and Canyon Creek
- Innovation Gateway Area Development Plan (Walker Macy)
- Comprehensive Economic Development Strategy (ECONorthwest)
- New Pool & Recreation Center (Counsilman-Hunsaker and Opsis Architecture)
- Kam Wah Chung Heritage Site



# Eco-Engineered Wastewater Reclamation & Reuse



Advanced Filtration,  
Membrane Bioreactor  
(MBR) System

Custom Designed  
Effluent to Support Agri-  
business

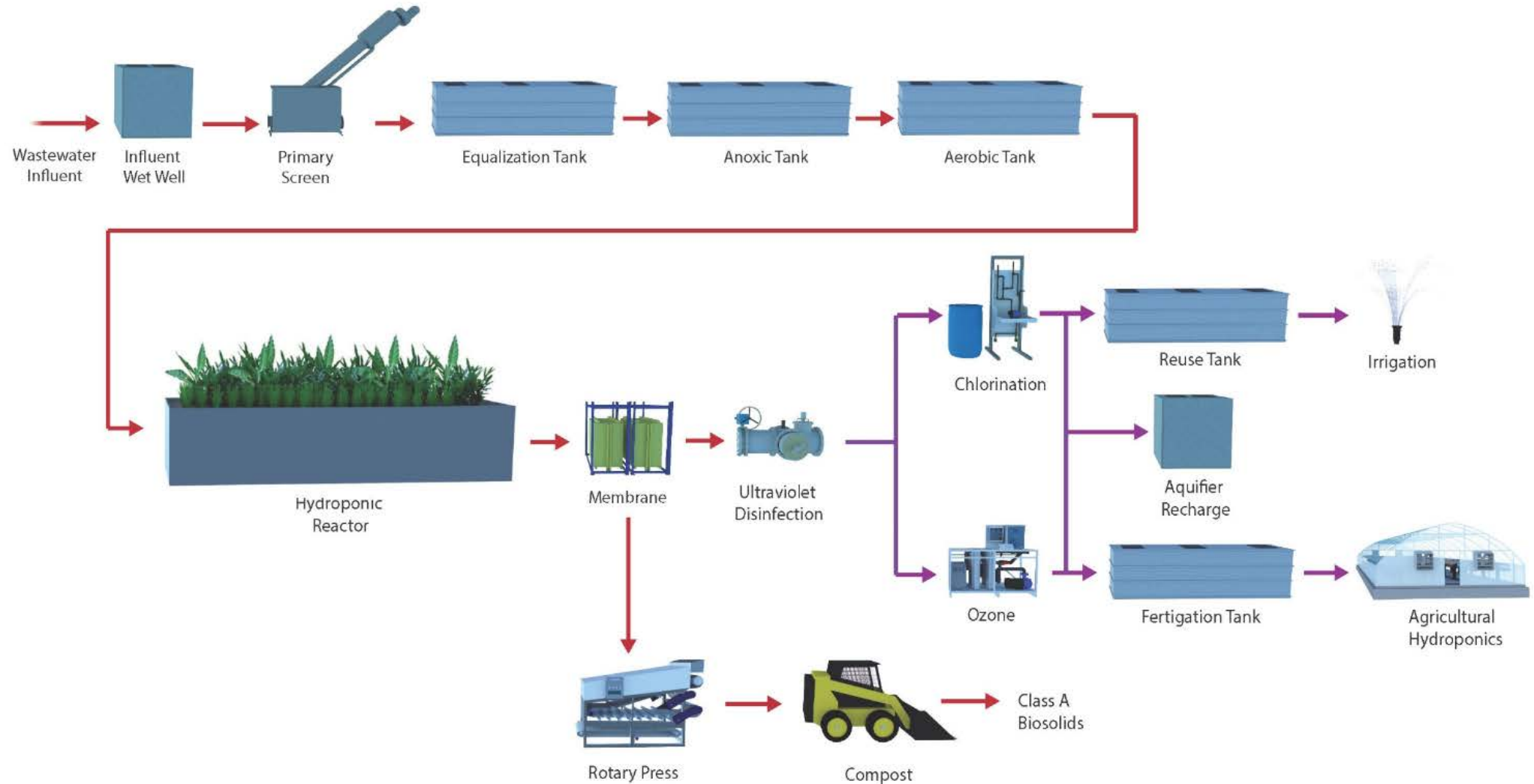
Greenhouse &  
Hydroponic Reactors

New Mechanical  
Operator Space

- Long-Term Community Water Supply Resiliency

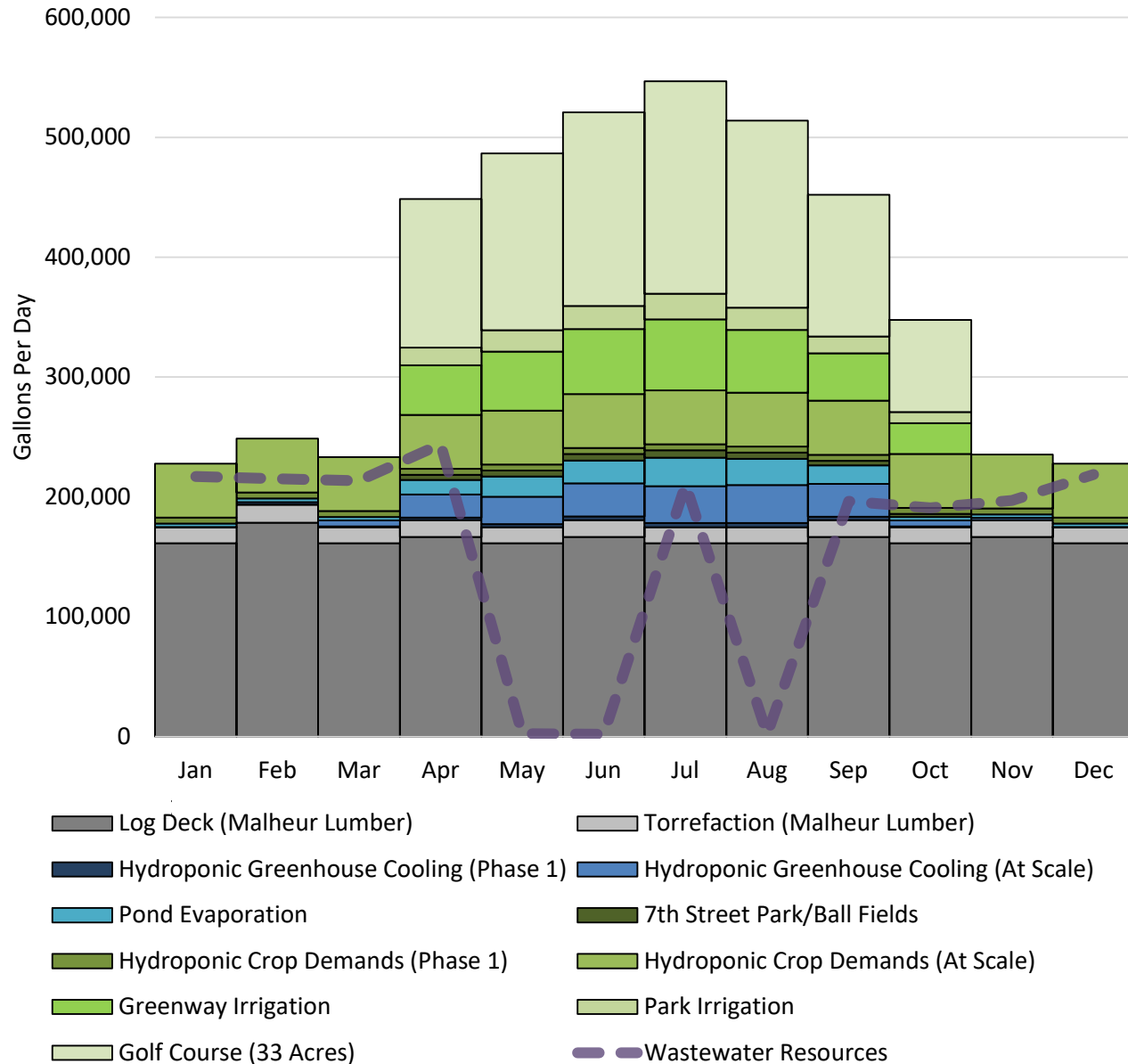


# WATERHUB PROCESS DIAGRAM





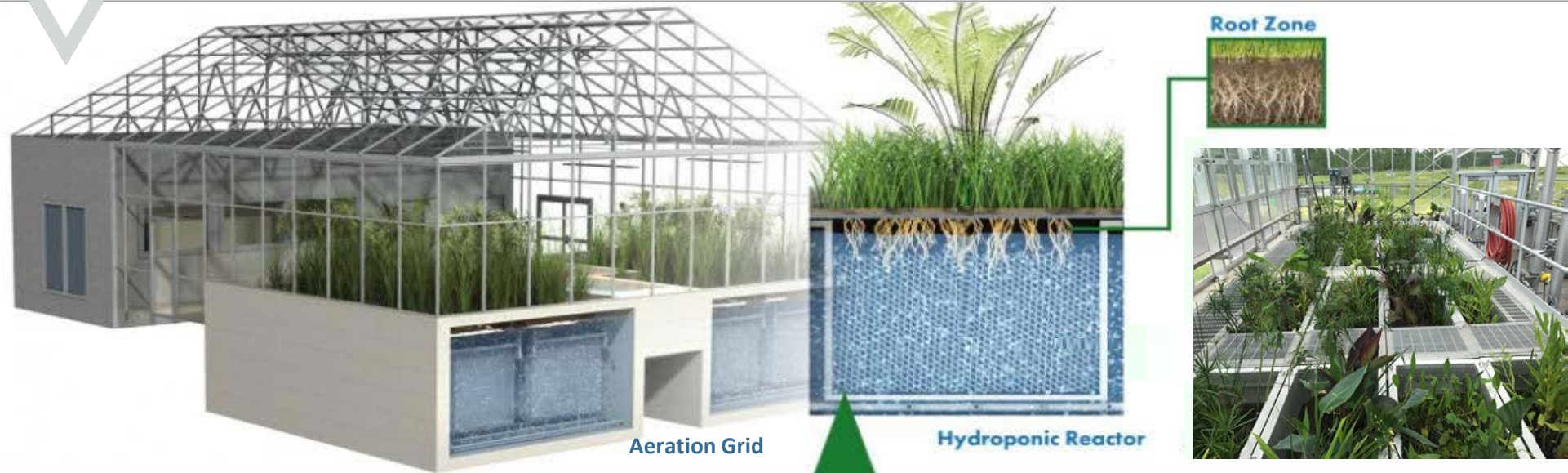
# ALL REUSE DEMANDS



Demand	Est. Annual Volume (MGY)
Log Deck (Malheur Lumber)	60.0
Torrefaction (Malheur Lumber)	5.0
Hydroponic Greenhouse Cooling (Phase 1)	0.6
Hydroponic Greenhouse Cooling (At Scale)	5.9
Pond Evaporation	3.8
7th Street Park/Ball Fields	1.0
Hydroponic Crop Demands (Phase 1)	1.8
Hydroponic Crop Demands (At Scale)	18.3
Greenway Irrigation	9.8
Park Irrigation	3.5
Golf Course (33 Acres)	29.4
<b>Total Demands</b>	<b>139.2</b>



# HYDROPONIC REACTORS



## INTEGRATED FIXED-FILM HYDROPONIC SYSTEMS



Ecologically Engineered to Produce Efficient Treatment within a Compact Footprint



# GREENHOUSE PRODUCTION



## DESCRIPTION:

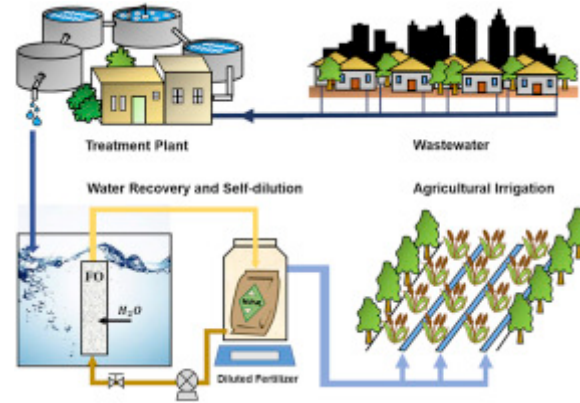
- WWT PROCESS CAN LEAVE NUTRIENTS (N + P) IN WASTEWATER EFFLUENT TO BE UTILIZED FOR HYDROPONIC PRODUCTION
- FILTRATION, UV, AND OZONE POLISHING PROVIDES PATHOGEN FREE WATER

## ADVANTAGES

- SIGNIFICANTLY REDUCES COSTS OF HYDROPONIC AG
- INTERNAL NUTRIENT RECYCLING IN JOHN DAY

## DISADVANTAGES

- SLIGHT INCREASE IN CONTROLS AND INSTRUMENTATION IN THE WWT PROCESS





# BIOSOLIDS COMPOSTING



## DESCRIPTION:

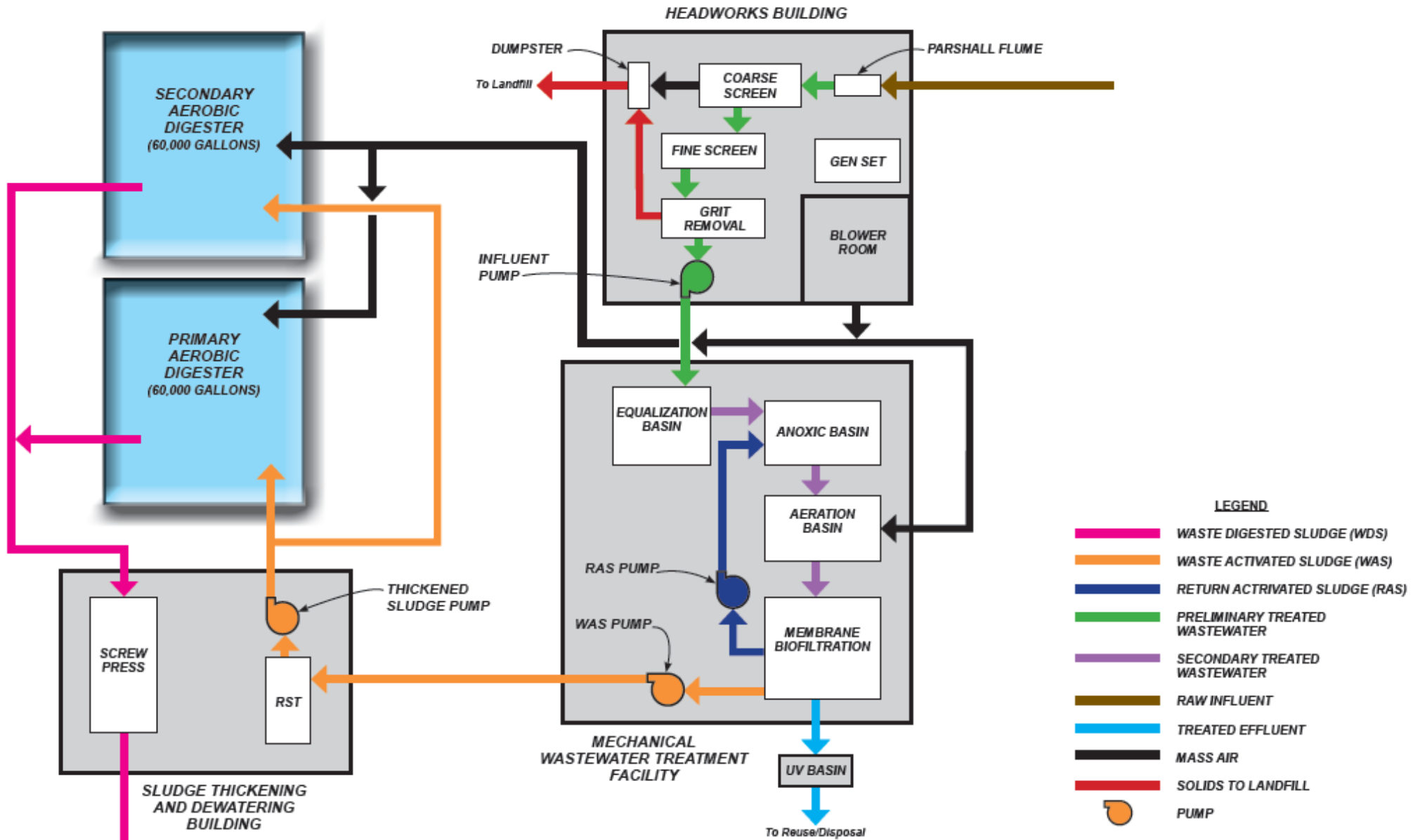
- BIOSOLIDS DEWATERED DIRECTLY FROM MBR
- BIOSOLIDS COMPOSTED WITH WOOD CHIPS TO CLASS A BIOSOLIDS

## ADVANTAGES

- REDUCED CAPITAL COST AND FOOTPRINT
- REDUCED ENERGY USE
- NUTRIENT RECYCLING IN JOHN DAY
- COMPOST CAN BE USED AS SOIL AMENDMENT IN PUBLIC AREAS

## DISADVANTAGES

- OFFSITE COMPOSTING MAY BE ADVANTAGEOUS
- MORE MANUAL LABOR REQUIRED



**PROCESS SCHEMATIC**

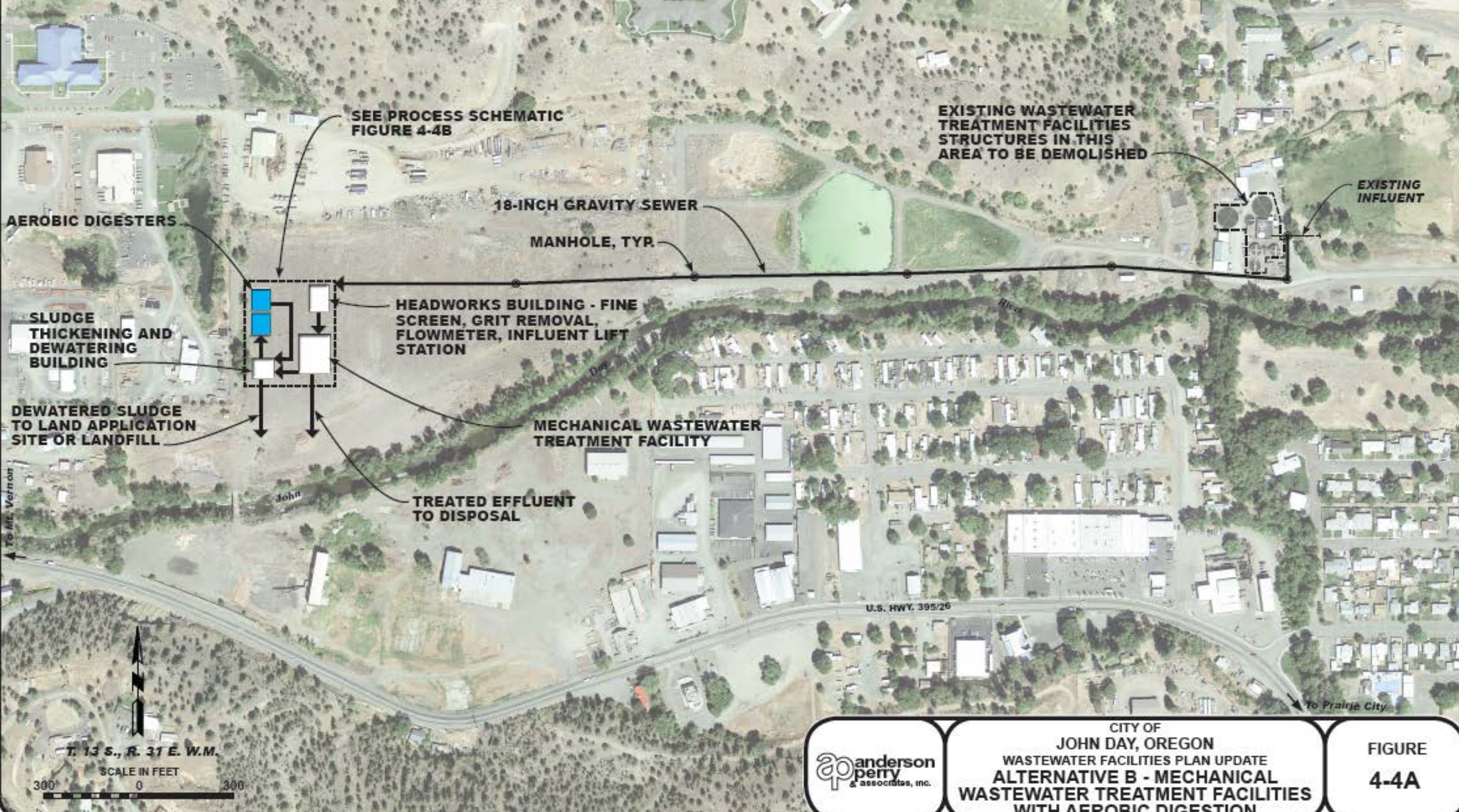


anderson  
perry  
& associates, inc.

CITY OF  
JOHN DAY, OREGON  
WASTEWATER FACILITIES PLAN UPDATE  
**ALTERNATIVE B - MECHANICAL  
WASTEWATER TREATMENT FACILITIES  
WITH AEROBIC DIGESTION**

FIGURE  
**4-4B**





SEE PROCESS SCHEMATIC  
FIGURE 4-4B

EXISTING WASTEWATER  
TREATMENT FACILITIES  
STRUCTURES IN THIS  
AREA TO BE DEMOLISHED

EXISTING  
INFLUENT

AEROBIC DIGESTERS

18-INCH GRAVITY SEWER

MANHOLE, TYP.

SLUDGE  
THICKENING AND  
DEWATERING  
BUILDING

HEADWORKS BUILDING - FINE  
SCREEN, GRIT REMOVAL,  
FLOWMETER, INFLUENT LIFT  
STATION

DEWATERED SLUDGE  
TO LAND APPLICATION  
SITE OR LANDFILL

MECHANICAL WASTEWATER  
TREATMENT FACILITY

TREATED EFFLUENT  
TO DISPOSAL

U.S. HWY. 395/26

To Mt. Vernon

To Prairie City

T. 13 S., R. 31 E. W.M.

SCALE IN FEET

300 0 300

anderson  
perry  
& associates, inc.

CITY OF  
JOHN DAY, OREGON  
WASTEWATER FACILITIES PLAN UPDATE  
ALTERNATIVE B - MECHANICAL  
WASTEWATER TREATMENT FACILITIES  
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FIGURE  
4-4A

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# Multiple factors affect cost / rate structure

- **Existing debt service** (land and prior improvements)
- **Total cost of the facility** (lifecycle cost)
  - Capital expenditure (CAPEX)
  - Operations, maintenance and replacement (OM&R)
- **Affordability index** (ability to pay)
- **Cost of capital & repayment duration** (interest rate at which we borrow funds and over which timeframe – typically 25-40 years)
- **Grant / loan mix** (total amount we must repay)
- **Available funding sources** (programs and requirements change)



# Project Financing

- **Existing Debt Service**

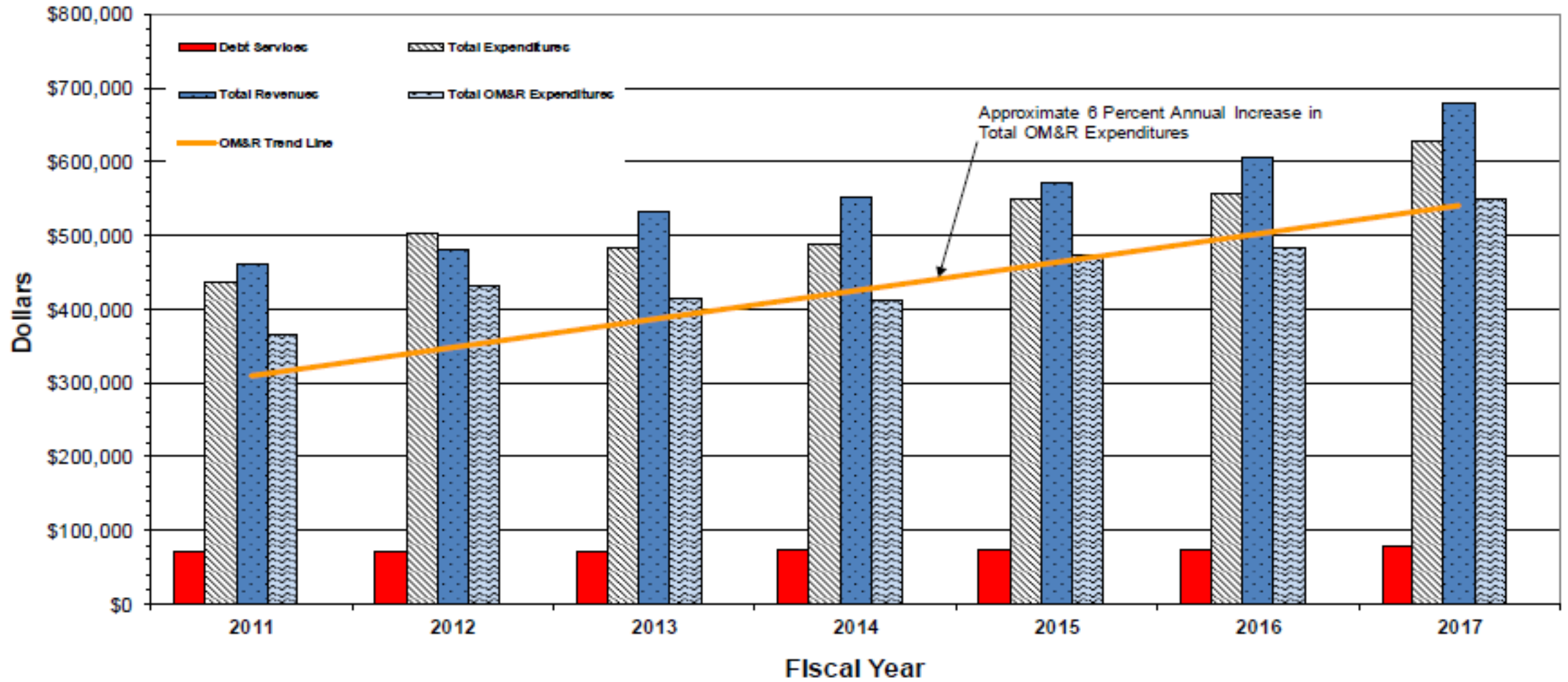
- In 2017, the City consolidated debt in the sewer fund into two loans. The first loan has an annual debt service to the sewer fund of approximately \$50,128, which is scheduled to be paid off in four years (FY 2021-22).
- Second loan was for a land purchase (Oregon Pine Mill); annual debt service to the sewer fund of \$29,217 per year (30-year loan, scheduled to be paid off FY2046)

- **Operations, Maintenance & Replacement**

- OM&R expenditures increase approximately 6 percent annually
- Equates to approximately \$616,864 in annual OM&R expenses in FY2019-20



# OM&R (FY2011 – FY2017)



Facility Cost Estimate  
= \$12.5 million

- Total cost includes facility, reclaimed water network, and storage/recovery
- Design (engineering, environmental and administrative cost) estimated at \$396,500
- City to fund apx. \$35,000 of Design Costs; balance paid by CDBG grant (if awarded)

## Capital Improvement Costs

New Mechanical Wastewater Treatment Facility with Aerobic Digestion Construction	\$ 8,068,000
Purple Pipe Network Construction	637,000
Aquifer Storage and Recovery Well Construction	<u>220,000</u>
<b>Subtotal Construction Cost</b>	<b>\$ 8,925,000</b>
Administration, Legal, Engineering, and Contingencies @ 30%	<u>2,680,000</u>
<b>Total Estimated Construction Cost</b>	<b><u>\$ 11,605,000</u></b>
<b>Other Estimated Project Costs</b>	
Funding Acquisition	\$ 30,000
Environmental Review Report	35,000
Archaeological Report	20,000
Cultural Resource Monitoring	15,000
Regulatory Agency Permitting, Reporting, and Review Fees	115,000
Biosolids Handling Truck	<u>100,000</u>
<b>Subtotal Other Project Costs (2018 Dollars)</b>	<b>\$ 315,000</b>
<b>TOTAL ESTIMATED PROJECT COST (2018)</b>	<b><u>\$ 11,920,000</u></b>
<b>TOTAL ESTIMATED PROJECT COST (2019)<sup>1</sup></b>	<b><u><u>\$ 12,516,000</u></u></b>



# Project financing continued...

- **Infrastructure Finance Authority – Affordability Index**

- Loan/grant amounts are determined by a financial analysis of the applicant's ability to afford a loan (debt capacity, repayment sources, current and projected utility rates, and other factors)
- One criterion utilized by Business Oregon finance programs is an affordability index rate (calculated by taking a City's median household income (MHI), multiplying it by 1.25 percent, and dividing by 12 months to obtain an estimated monthly cost)
- IFA affordability index puts our minimum sewer rate at \$34.66 per month (current rate is \$46/mo.)

- **Cost of Capital & Repayment Duration**

- Target is 1-2% for loans, with a 40-year repayment window (lowers annual \$)



# Project financing continued...

- **Grant/Loan Mix** – Goal is 60/40 grant to loan or better (50/50 is typical)
- **Funding Sources (State and Federal)**
  - Community Development Block Grant Program (\$2.5 million grants for design and construction)
  - Water/Wastewater Financing Program
  - Special Public Works Fund (SPWF)
  - Clean Water State Revolving Fund Loan Program
  - USDA Rural Development loans
  - Oregon Water Resources Department loans and grants
  - U.S. Economic Development Administration (EDA) loans and grants
  - New Market Tax Credit





# Water Reclamation Facility Timeline

- **December 31, 2018** – CDBG design application due
- **January – June 2019** – Facility engineering
- **Spring 2019**
  - Decision on permitting and disposal option from DEQ
  - Financing “One-Stop” to determine grant/loan funding package
- **Fall 2019** – Bid and award construction contract
- **Winter 2019-20** – Start project construction
- **Fall 2020 – Winter 2021** – Complete project construction
- **Spring 2021** – New facility operational



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# Community Development & Housing

- City has secured \$4.5M in grant funding for community development projects (to date)
- Several projects planned for the Innovation Gateway are already funded and are in design or under construction
  - Transportation Growth Management (TGM) Area Development Plan
  - Comprehensive Economic Development Strategy (CEDS)
  - Pilot-scale greenhouse
  - Innovation Gateway Trail System
  - Charolais Heights Intersection Improvements / Trailhead access
  - Weaver building abatement
  - New home incentive program
- Other projects are planned and undergoing feasibility analysis
  - Downtown parking expansions and pocket parks
  - 7<sup>th</sup> Street Extension
  - Sidewalk improvements
  - New pool & rec center
  - New city park
  - Farmer's market / community building
  - Expanded downtown parking



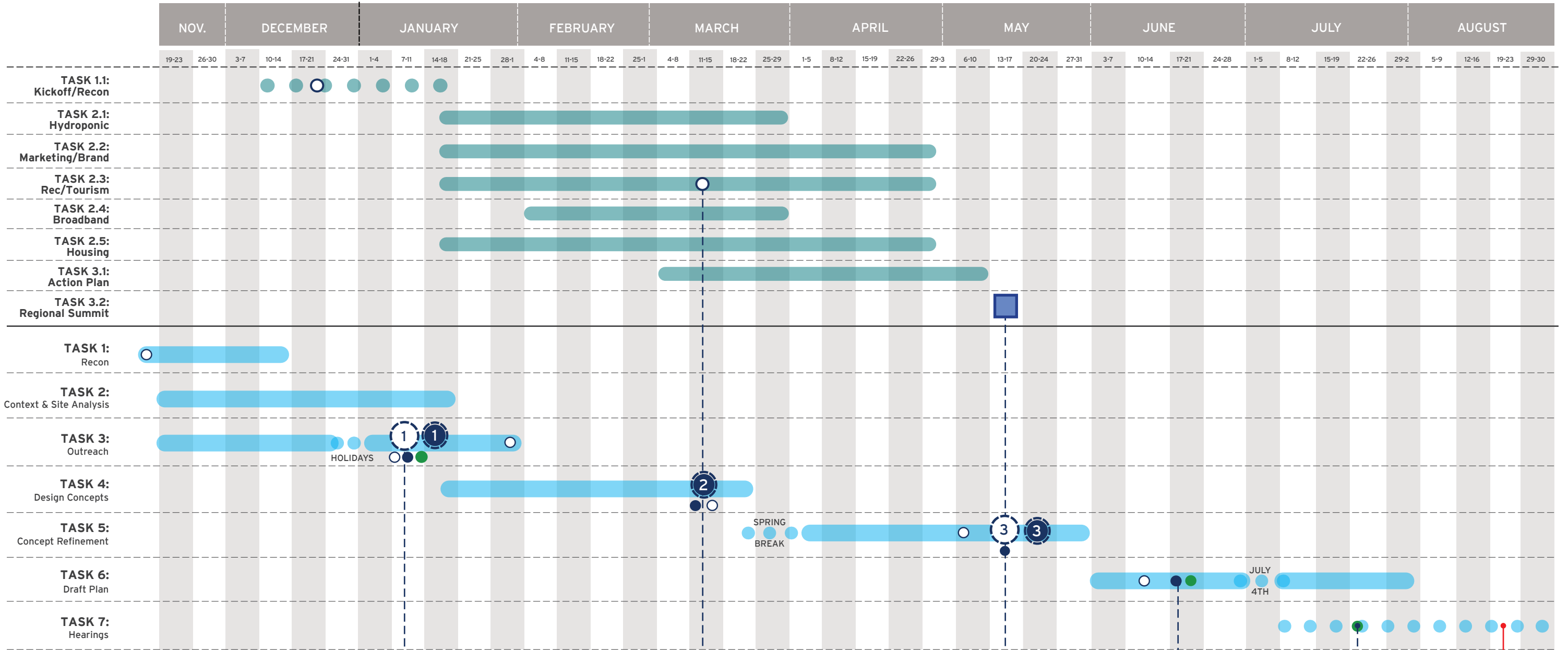
# JOHN DAY INNOVATION GATEWAY SCHEDULE

2018

2019

ECONOMIC DEVELOPMENT PROJECT  
(ECONW)

ODOT TGM GRANT-FUNDED PROJECT  
(WALKER MACY)



- PMT/SITE VISIT
- PAC/TAC
- Planning/City Commission
- Open House
- Online Open House

January 8  
PAC/TAC 1  
Open House 1

March 12  
PAC/TAC 2 (conf call)  
Online Open House 2

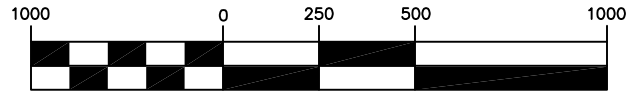
May 14  
PAC/TAC 3  
Open House 3  
Regional Summit

June 25  
CC/PC Work Session

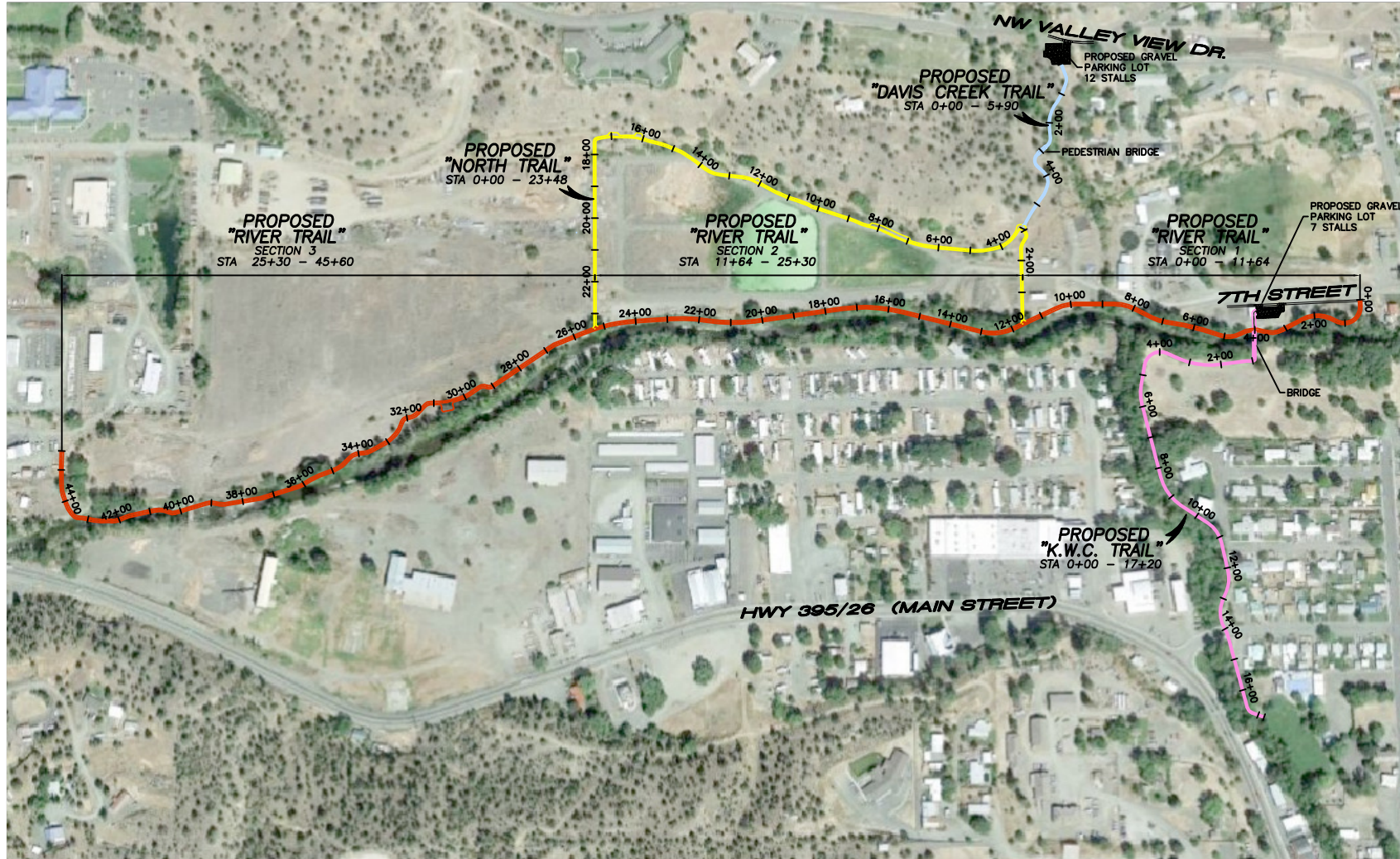
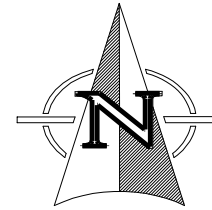
July 23  
CC/PC Hearings

FINAL REPORT

GRAPHIC SCALE



( IN FEET )  
1 inch = 500 ft.



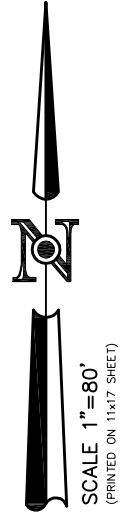
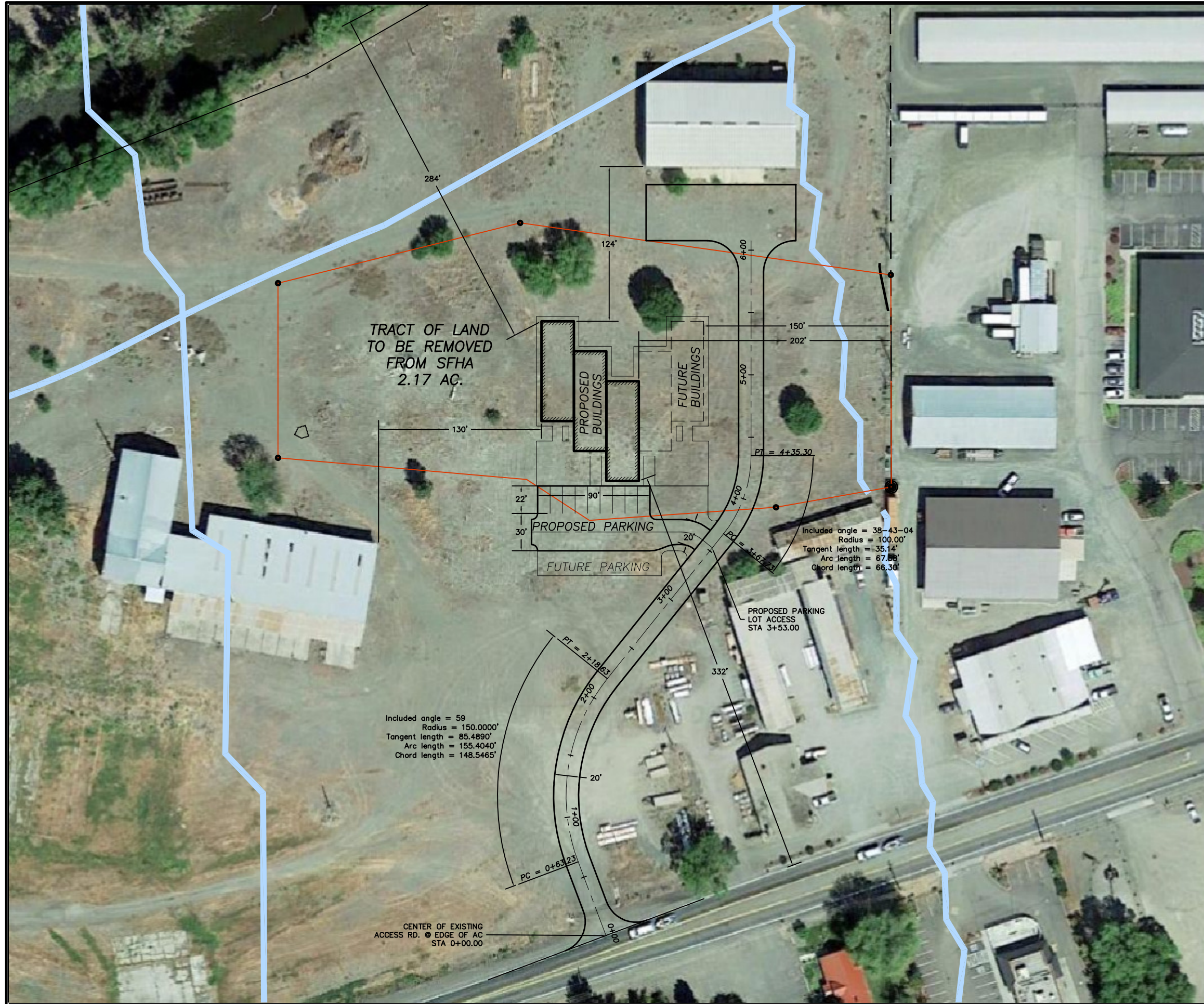
REVISIONS	BY

**PROPOSED NEW TRAIL SYSTEM**  
CITY OF JOHN DAY, OREGON

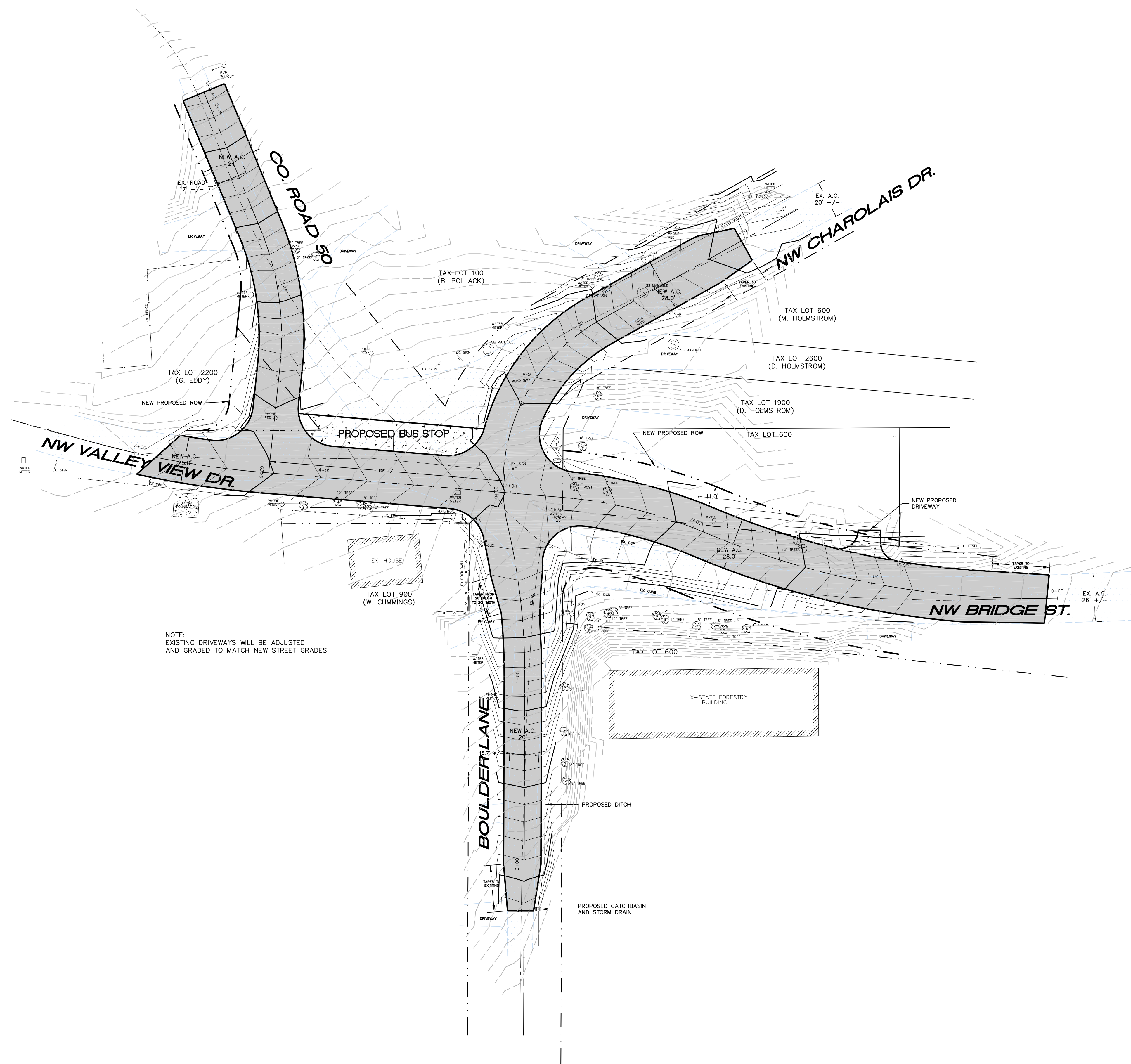
**PLAN VIEW**

**SISUL ENGINEERING**  
159 E. MAIN STREET  
JOHN DAY, OREGON 97845  
(541) 876-3777

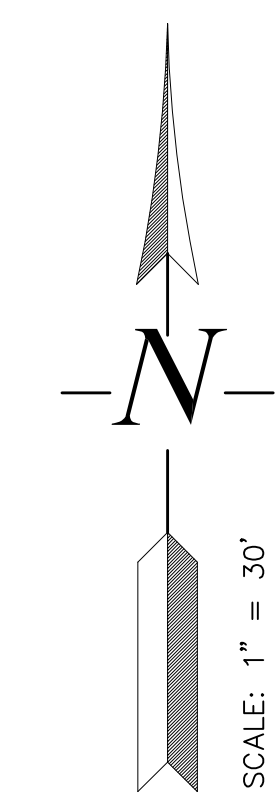
DATE	JUNE 2018
SCALE	1" = 500'
DRAWN	JH
JOB	18-
SHEET	<b>1</b>
OF 2 SHEETS	



CITY OF JOHN DAY  
 GREENHOUSE SITE PLAN



NOTE:  
EXISTING DRIVEWAYS WILL BE ADJUSTED  
AND GRADED TO MATCH NEW STREET GRADES



PRELIMINARY

REVISIONS	BY

INTERSECTION  
IMPROVEMENT PROJECT  
City of John Day

INTERSECTION PLAN VIEW

**SISUL ENGINEERING**  
158 E. MAIN STREET  
JOHN DAY, OREGON 97845  
(541) 575-8777  
DRAWING: 06-09 PRELIMINARY XX.dwg

DATE	MAY 2006
SCALE	NOTED
DRAWN	JH
JOB	02-071A
SHEET	<b>1</b>
JDB	3 SHEETS

PROJECT	DESCRIPTION	TEAM	FUNDING		
			Grants Requested	Grants Awarded	Pending
1 Annexations	Expand city boundaries to include UGB areas that are fully serviced by city utilities	City staff	n/a	n/a	n/a
2 Fire Hall Tenant Improvements	Tenant improvements for fire hall	Kirby Nagelhout	n/a	n/a	n/a
3 911 Transition	911 Transition from City to Grant County Emergency Communications Agency	State of Oregon, Grant County Emergency Communications Agency	\$420,000	\$420,000	\$0
4 New City Shop	Transfer of public works to new shop at Oregon Pine	City staff	n/a	n/a	n/a
5 Old City Hall Demolition	Create pocket park at old city hall location	OTECC	n/a	n/a	n/a
6 Greenhouse / Farmer's Market	Build 6,000 - 10,000 SF greenhouse plus partnerships; Improve planar shed to create community facility	Business Oregon, EuroMex, Ford Family Foundation	TBD	TBD	TBD
7 Comprehensive Economic Development Strategy (CEDS)	Adopt new CEDS for John Day; Integrate planning with TGM process	Business Oregon, DLCD, U.S. EDA, (Consultant TBD)	\$120,000	\$120,000	\$0
8 Innovation Gateway Area Plan (TGM)	Develop area plan for Innovation Gateway with associated transportation system improvements	ODOT, DKS, Walker Macy, JLM, Interfluve	\$174,150	\$174,150	\$0
9 Pool/Recreation Center; Kam Wah Chung Site;	Discontinue current pool; Facilitate new Kam Wah Chung site; New Park and Pool/Rec Center	OPRD, Councilman Hunsaker, Opsis	TBD	TBD	TBD
10 City Parks & Trails	Riverfront trails and new city park	OPRD, JD/CC Parks & Rec District	\$434,300	\$434,300	\$0
11 Wastewater Treatment Facility	Replace existing WWTF with new reclaimed water facility	Business Oregon, Eastern Regional Solutions, OWRD, Clean Water Services, Anderson Perry, Sustainable Water, Clean Water Services	\$435,500	\$70,000	\$365,500
12 Broadband	Build fiber optic network between John Day and Burns; expand broadband access within city and surrounding communities	State of Oregon, Grant County Digital, Commstructure Engineering	\$4,836,000	\$1,836,000	\$0
13 Main Street Revitalization	Improve downtown infrastructure and appearance	Oregon Main Street Network, DEQ	\$165,000	\$165,300	\$0
14 Housing Incentive Program (URA)	Incentivize construction of 100 new homes / 100 remodels over next 20 years	DLCD	\$38,500	\$38,500	\$0
15 Street Improvement Projects	395 S. Sidewalk Project Canton Street Improvements Charolais Heights Intersection Improvements Valley View Drive Connector Street (Gov't Road) 7th Street Extension Bridge Improvements - Oregon Pine	ODOT, Grant County, D.R. Johnson Lumber	\$1,100,000	\$1,000,000	\$0
			\$7,723,450	\$4,258,250	\$365,500