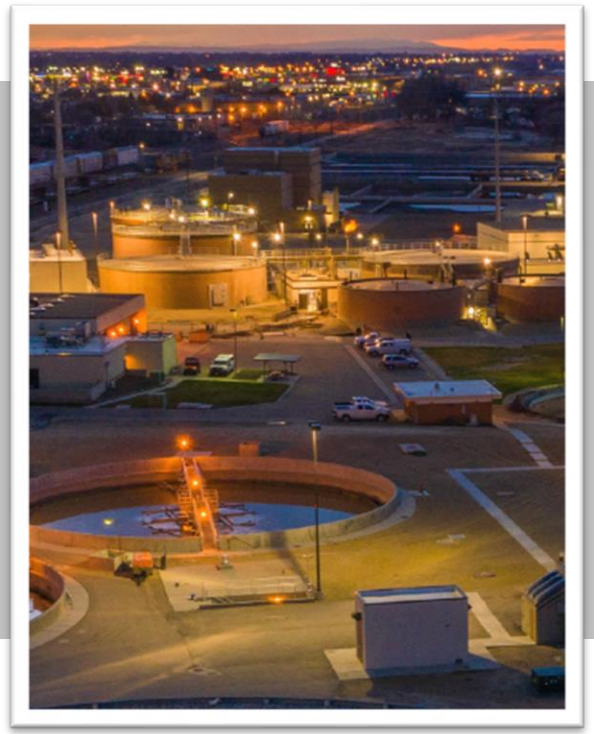
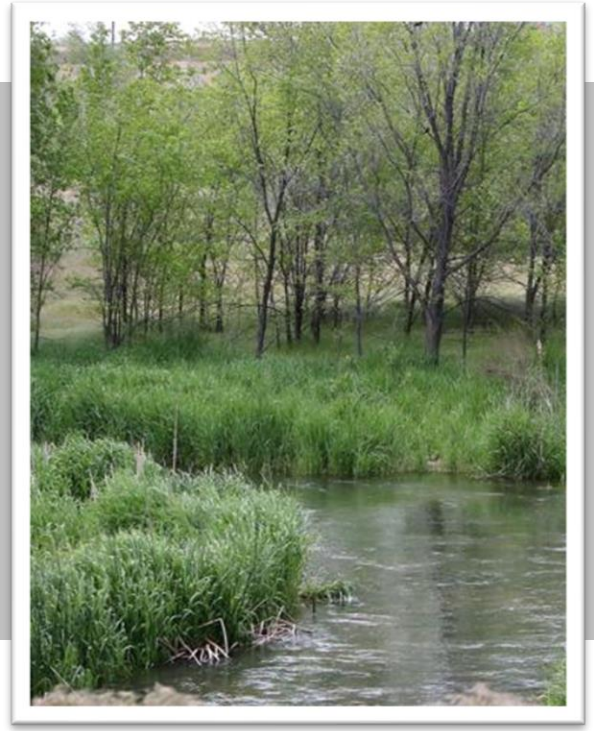
NAMPA'S PRIORITY PROJECTS





Canyon County Commissioners Meeting

August 14, 2024

Tom Points, P.E., Sr. Public Works Director

Jeff Barnes, P.E., Director of Water Resources

Crystal Craig, P.E., Director of Transportation

Nampa's Recycled Water Program

Jeff Barnes, P.E.
Director of Water Resources

Outline

- History of Nampa's Recycled Water Project
- Benefits of Recycled Water

History of Recycled Water Program

2010

EPA Issued Stringent Wastewater Requirements

- Reduce phosphorus by 2026
- Reduce temperature by 2031

Started decade long planning and funding process

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2011

Nampa Wastewater Advisory Group (NWAG) Formed

- Residents, leaders, industry, experts, staff
- Developed 20-year construction and funding plan
- Determined Recycled Water optimal strategy

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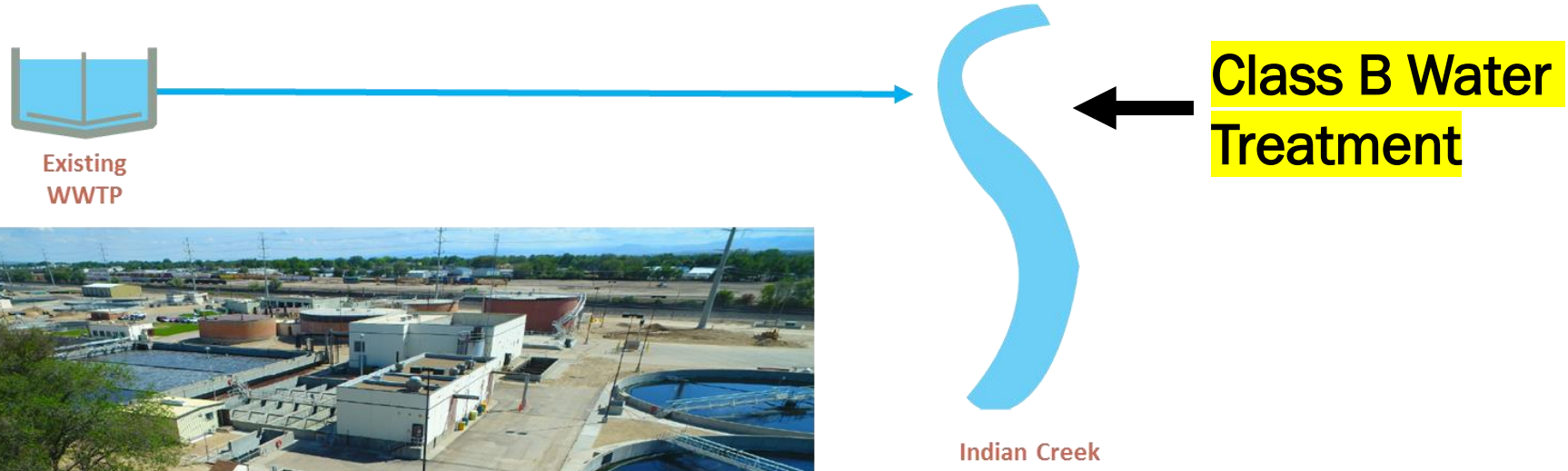
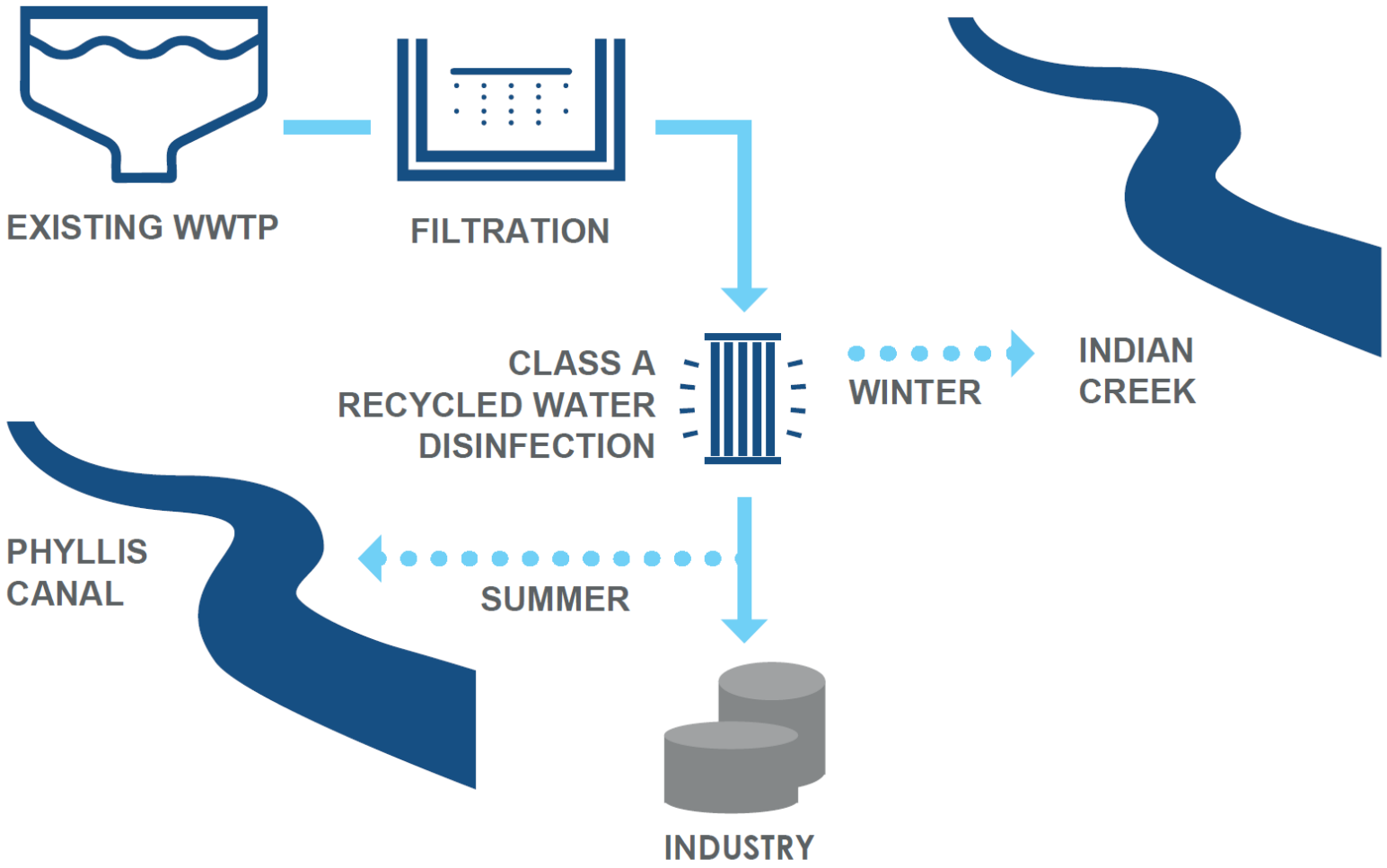
History

Current Treatment Process (Class B Quality)



History

NWAG Selected Recycled Water Process (Class A Quality)



Total Project Cost

Phase I and Phase II

Phase 1 includes: • Bio-phosphorus improvements • Digester	**$38,348,775**
Phase 2 - Water Renewal Plant Expansion includes: • Clarifier • Aeration Basin • Tertiary Clean Water Improvements • 12M g/day of Class A Recycled Water to Phyllis Canal	**$207,622,341**
Total Cost	**$245,971,116**

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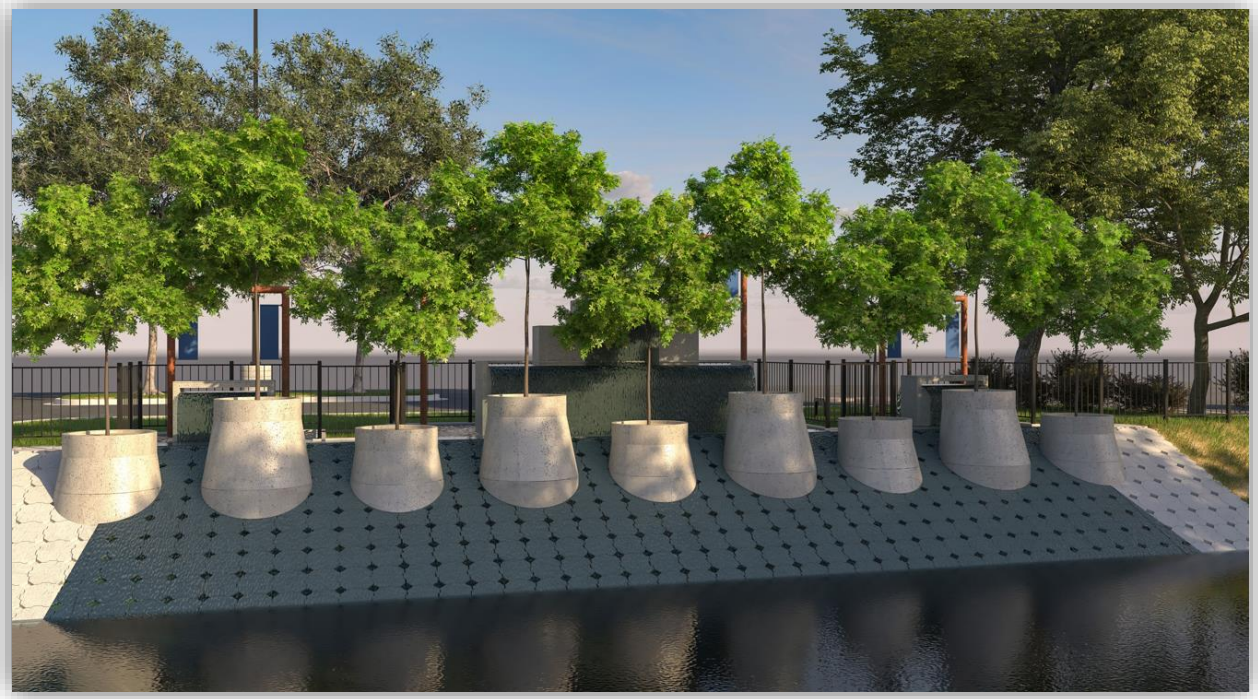
Recycled Water Outfall to Phyllis Canal

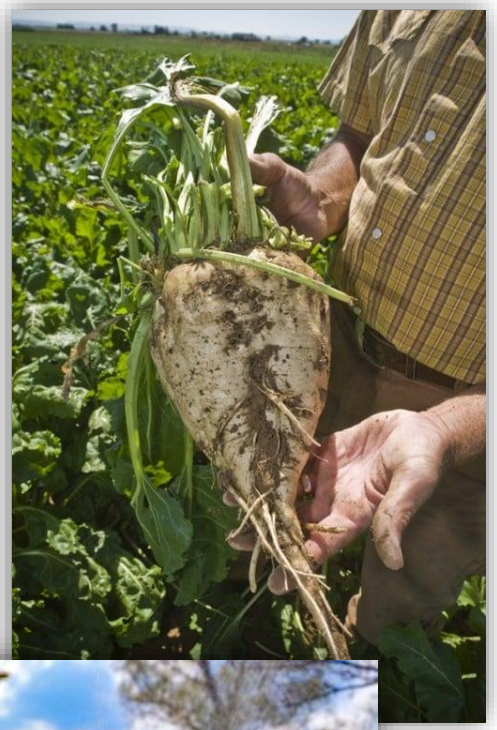
NAMPA WATER RENEWAL FACILITY

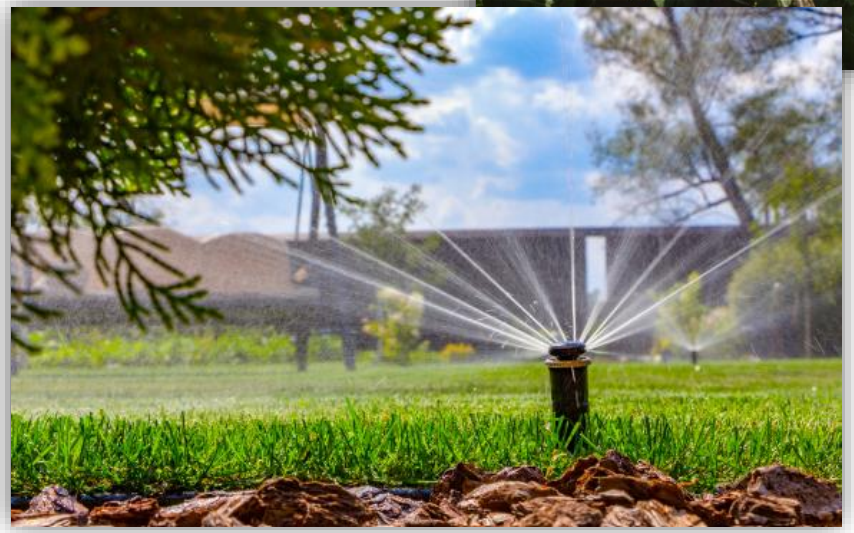


Benefits of Recycled Water

Benefits of Recycled Water

- Supplements irrigation resources by 11 million gallons per day
  - Addresses declining regional drain flows
- Protects Boise River fish and fish habitat
- Improves irrigation water quality
- Irrigation capacity for growth





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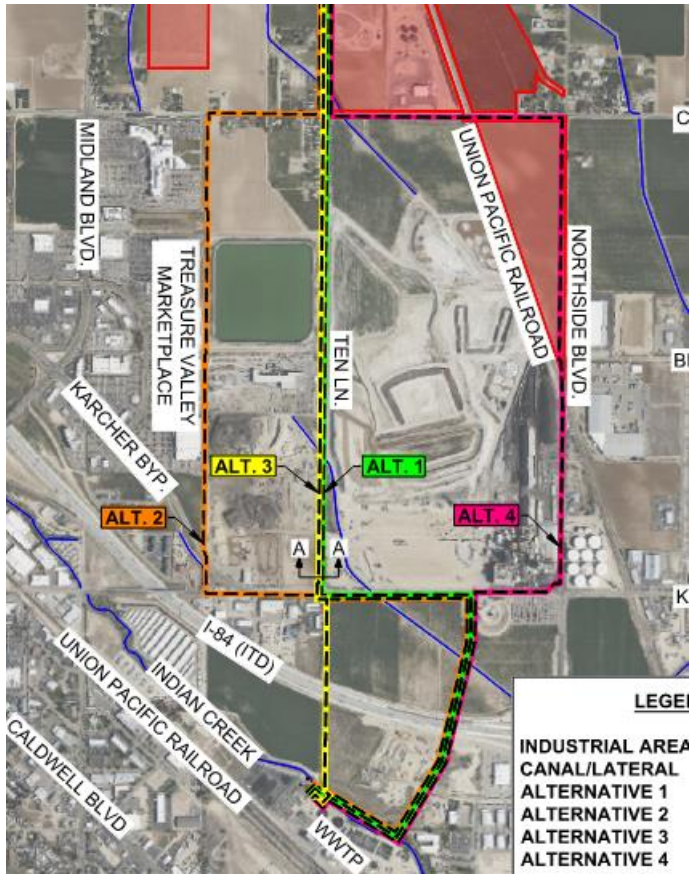
Benefits of Recycled Water

Future Industrial Reuse Opportunities

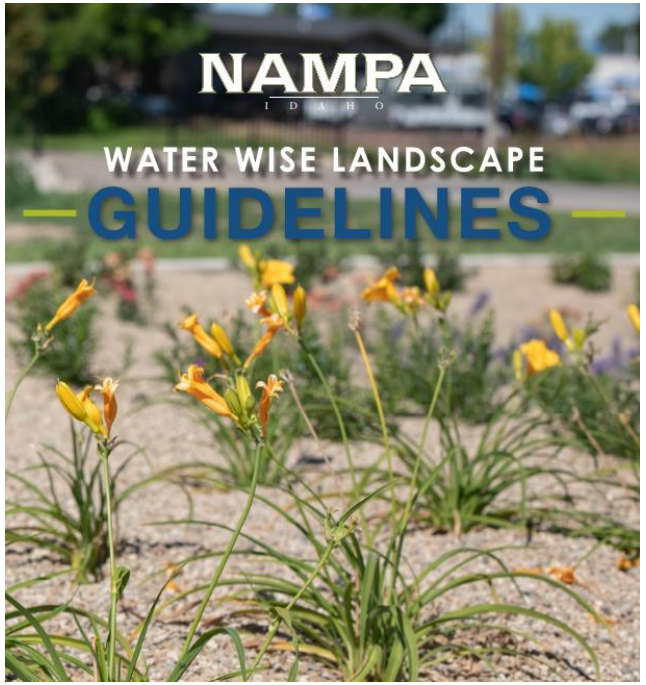


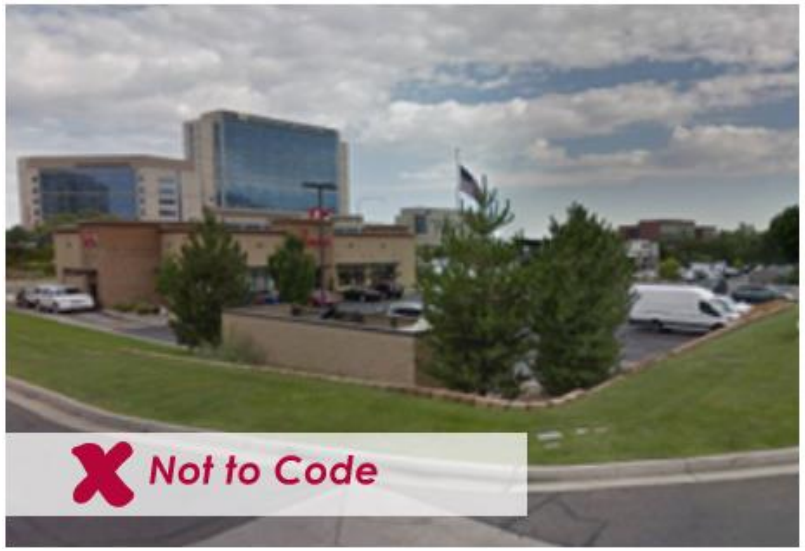
Keeps 5,000-Acre Feet Annually in Reservoirs

Benefits of Recycled Water

Supports our "One Water Plan"

- Conservation goals
- Dry scape landscape guide
- Development code changes





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Recycled Water Uses

City of Nampa's Recycled Water

	Class A	Class B	Class C	Class D
Parks, playgrounds, and schoolyards during periods of use	✓	✗	✗	✗
Residential landscape	✓	✗	✗	✗
Food corps, including all edible food crops	✓	✓	✗	✗
Golf courses	✓	✓	✗	✗
Highway medians and roadside vegetation irrigation	✓	✓	✓	✗
Cemetery irrigation	✓	✓	✓	✗
Orchards and vineyards irrigation during the fruiting season	✓	✓	✓	✗

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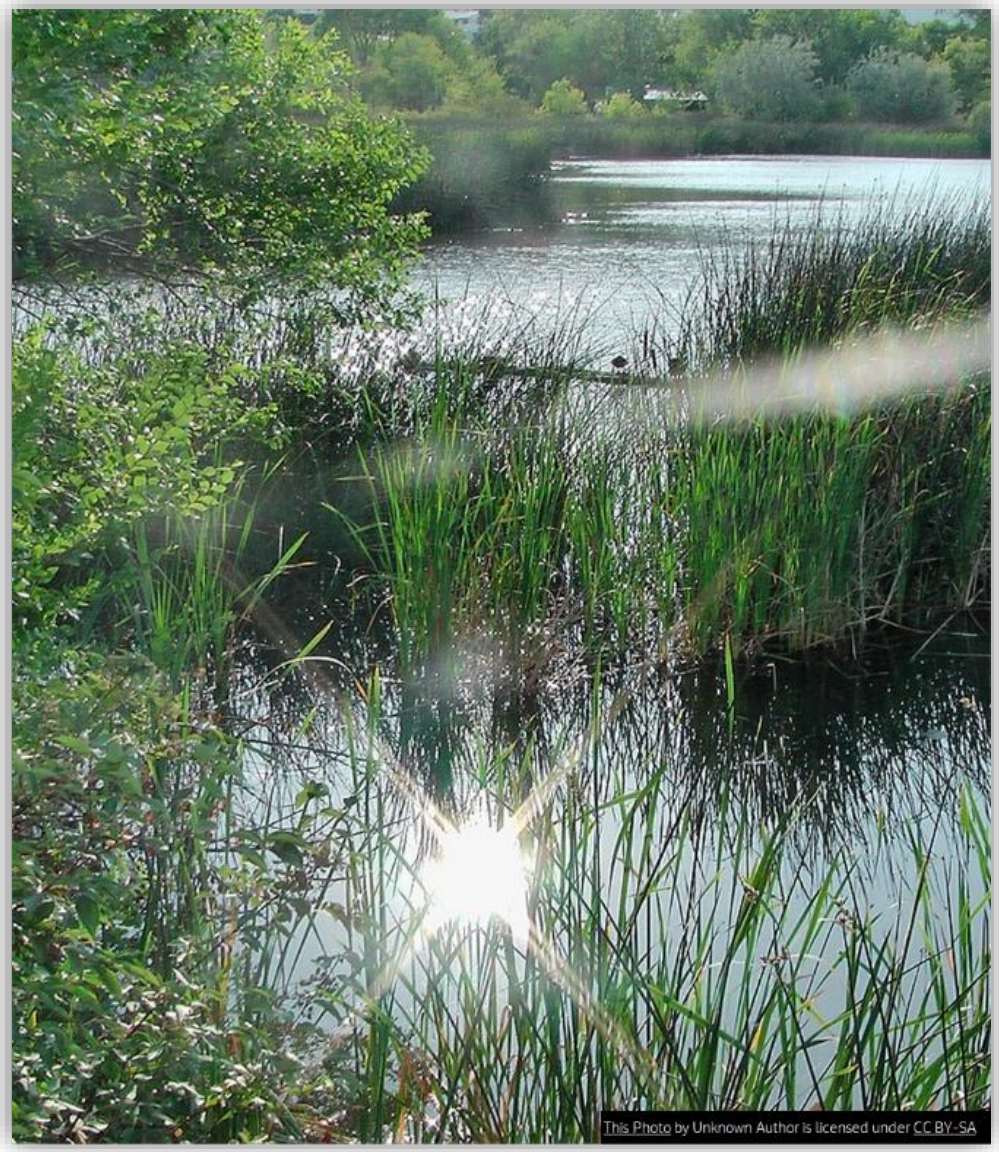
Questions

Karcher Constructed Wetlands Project

Tom Points, P.E.
Sr. Public Works Director

Outline



1. Karcher Wetland Overview and Project Goals
2. Contaminants of Emerging Concern and Wetlands Overview
3. Grant Funding and Project Origination
4. Karcher Wetland Project Layout
5. Discussion and Questions

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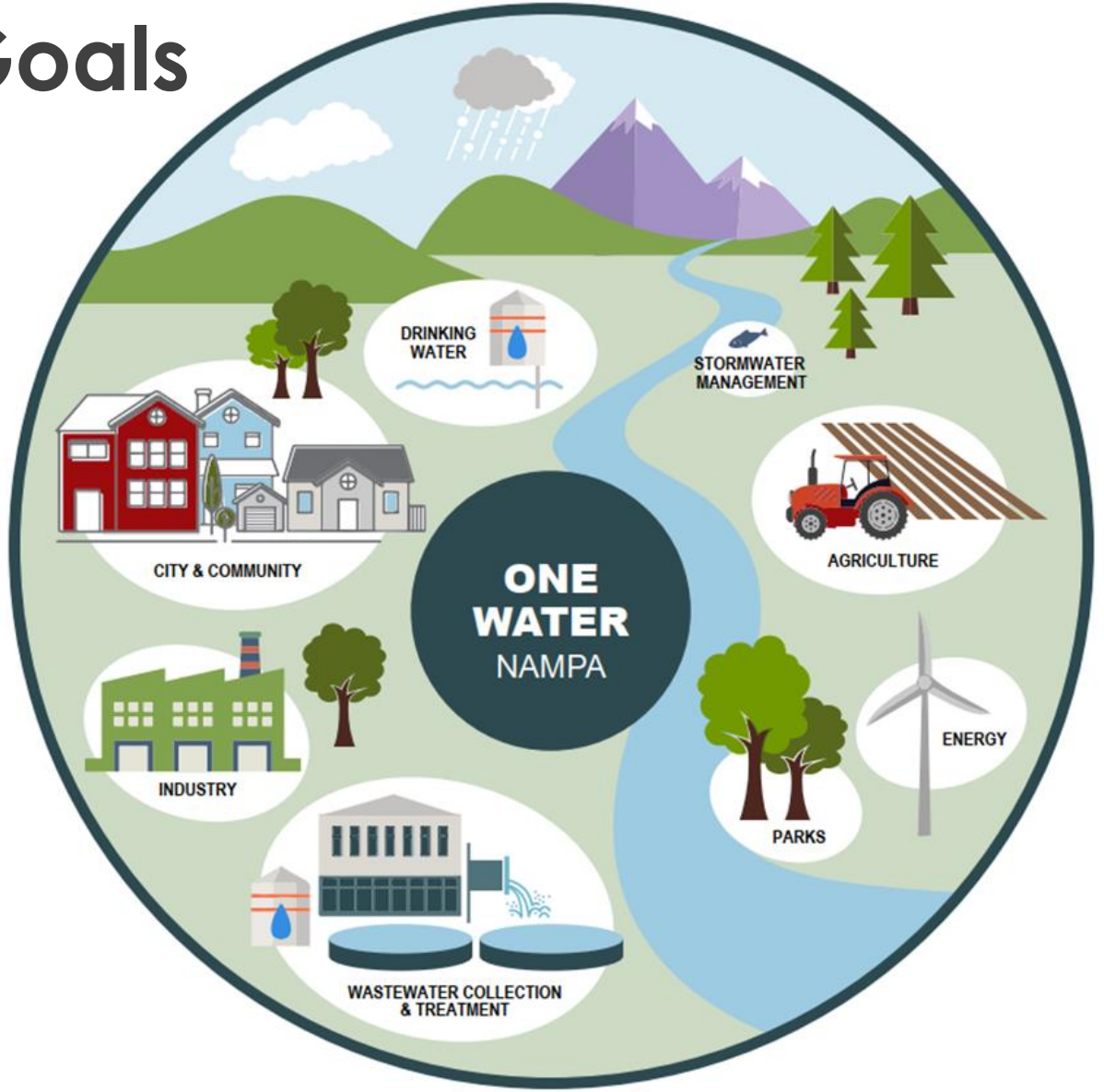
Karcher Wetland Overview and Project Goals

Karcher Wetland Primary Goals

1) **One Water** – surface, storm, treated wastewater, shallow ground water interconnection.
2) **Improve Water Quality** – above regulatory requirements.
3) **Create Demonstration Project** for others to use in their treatment goals – first in Idaho of its kind.
4) **Stormwater Treatment** – site upstream of a thousand direct discharges into Indian Creek.



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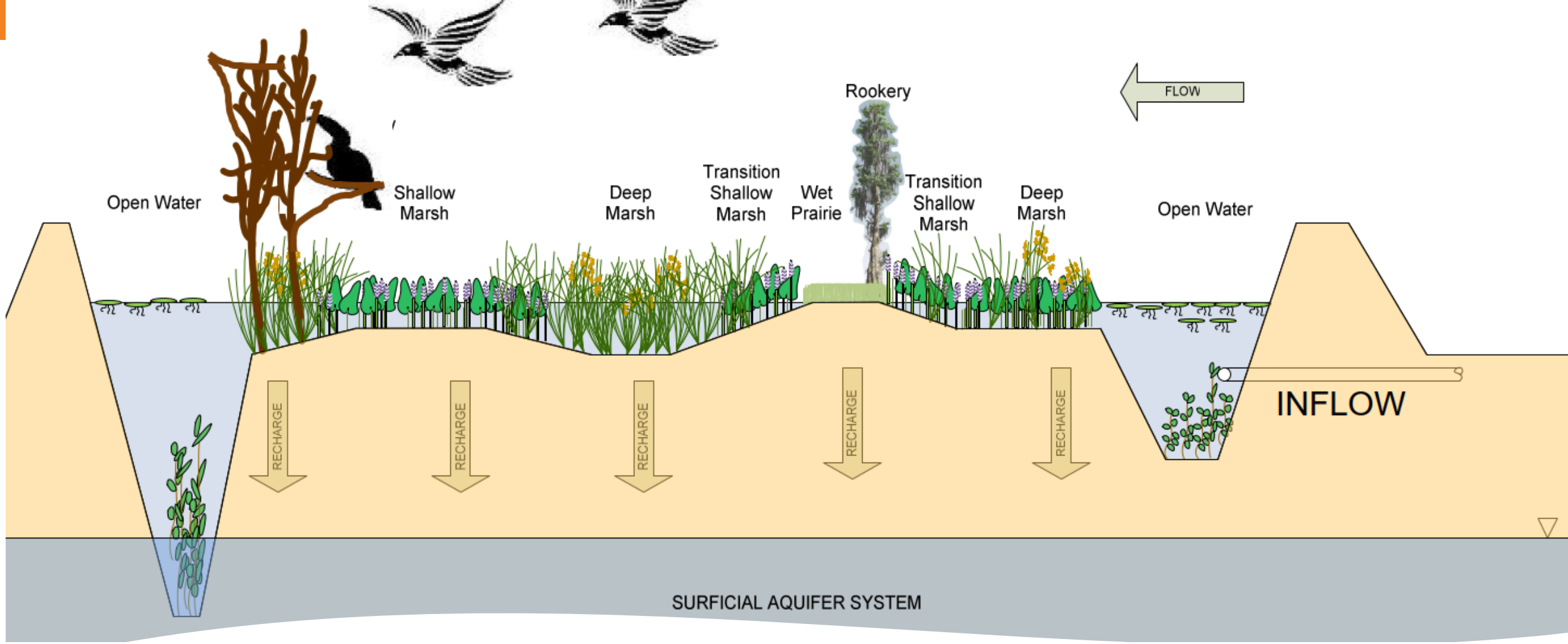

Karcher Wetland Primary Goals

5) **Groundwater and Surface Water Treatment** – hydraulically connected and same water quality
6) **Treated Effluent** – site is one mile downstream of the water renewal facility.
7) **Class A Recycled Water at Water Renewal Facility to Irrigation Canal** – allows flexibility to manage peak flows

What's Our Why?

- The right thing to do – protect the environment
- Create environment to treat contaminants and reduce water temperature
- Create a project that does not require power and is self-sustaining
- Have been looking for a non-point source project for years

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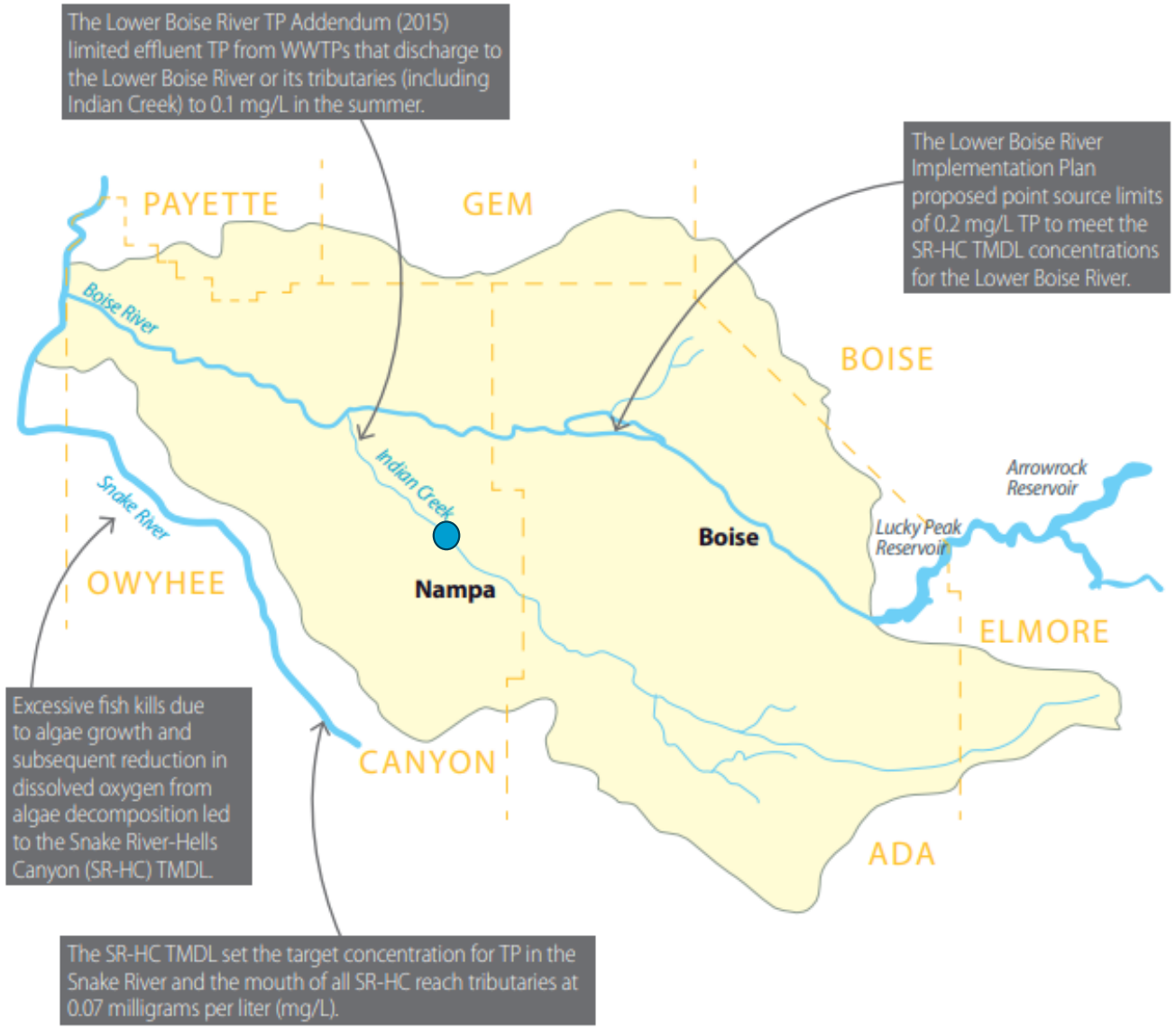
Regional Water Quality Challenges

Strategy – Treat water downstream of urban stormwater and WRF to reduce pollutant loading to Indian Creek, Boise River, and Columbia River

- All impacted by and regulated for total suspended solids (TSS), total phosphorus (TP), and bacteria such E. Coli
- CECs evaluated include pesticides, 6PPD-quinone, PFAS/PFOA, polychlorinated biphenyls (PCBs), flame retardants, dioxins, and furans



TMDL Water Quality and Total Phosphorus Effluent Requirement

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CEC and Wetlands Overview

Contaminants of Emerging Concern

What are CECs?

Chemicals or materials…whose toxicity or persistence is likely to alter the metabolism of a living being significantly (Yadav et al., 2021)

- Pesticides, phthalates, personal care products, pharmaceuticals, and surfactants

Our Urban Stormwater and Rivers

Organic loads from storm events were comparable, and oftentimes greater, than daily wastewater treatment facility discharges during storm events. (Masoner et al., 2023)

- Polycyclic aromatic hydrocarbons (PAHs), nutrients, heavy metals, bacteria

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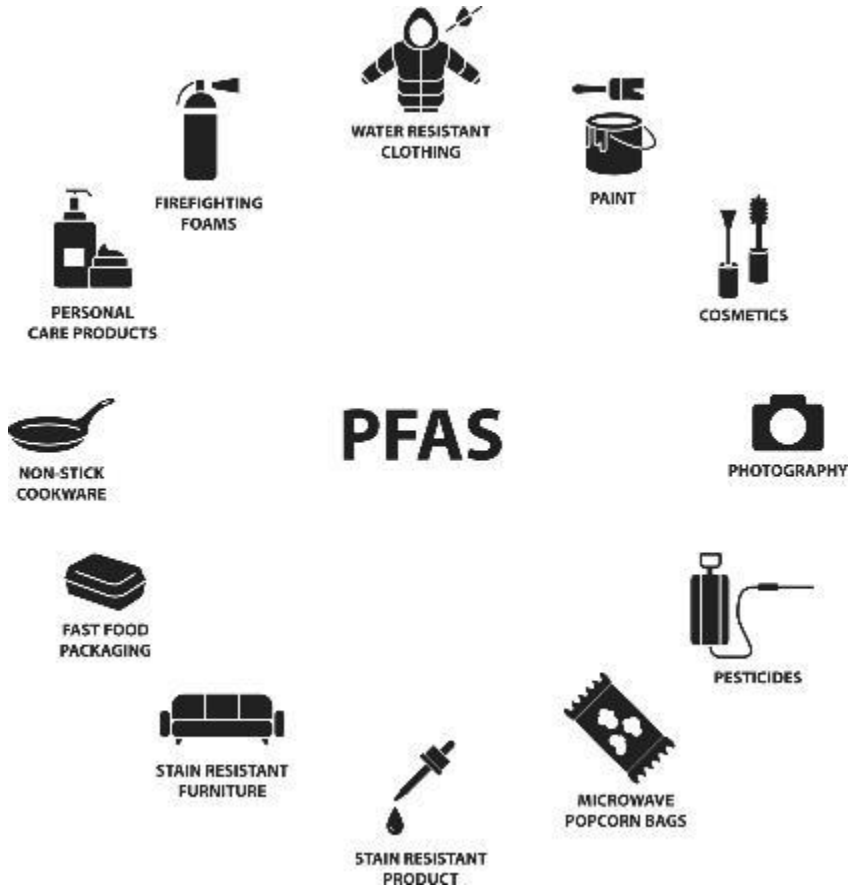
Per- and Polyfluorinated Alkyl Substances (PFAS)

- "Forever Chemicals"
- Persistent compounds that repel water and oil due to C-C and C-F bonds
- Persistent and highly toxic to humans, fish, and wildlife with a wide range of adverse health impacts (ATSDR, 2018)
- USEPA PFAS Strategic Roadmap developed national ambient water quality criteria and aquatic life criteria for specific PFAS compounds
- New USEPA Drinking Water Criteria



https://lastinghealth.com/news/what-are-pfas/

Treatment Wetlands

- Designed to treat specific contaminants through cells that provide "natural, physical, geochemical, and biological processes to mineralize organic contaminants, immobilize inorganic contaminates, and remove TSS."
- Green Infrastructure disconnects dense impervious surface from directly discharging to surface waters by providing flood mitigation, treatment, storage, and infiltration

Wetland Benefits

Benefit	Effectiveness	Notes
Water quality	◕	Primary benefit is retention of sediment and associated pollutants; nutrient cycling in properly functioning wetlands
Water quantity/ supply	◑	Rate control, flooding mitigation, aquifer recharge.
Climate resiliency	◑	Provides carbon sequestration (81-216 metric tons of carbon per acre).
Air quality	◔	
Habitat improvement	●	Use of perennial vegetation and certain media mixes promote invertebrate communities.
Community livability	◕	Aesthetically pleasing and can be incorporated into a wide range of land use settings.
Economic savings	◕	Provides cost savings vs. conventional practices over the life of the practice.
Macroscale benefits	◑	Individual practices are typically microscale, but multiple practices, when incorporated into a landscape design, provide macroscale benefits such as wildlife corridors.
Level of benefit: ◯ - none; ◔ - small; ◑ - moderate; ◕ - large; ● - very high		

https://stormwater.pca.state.mn.us/

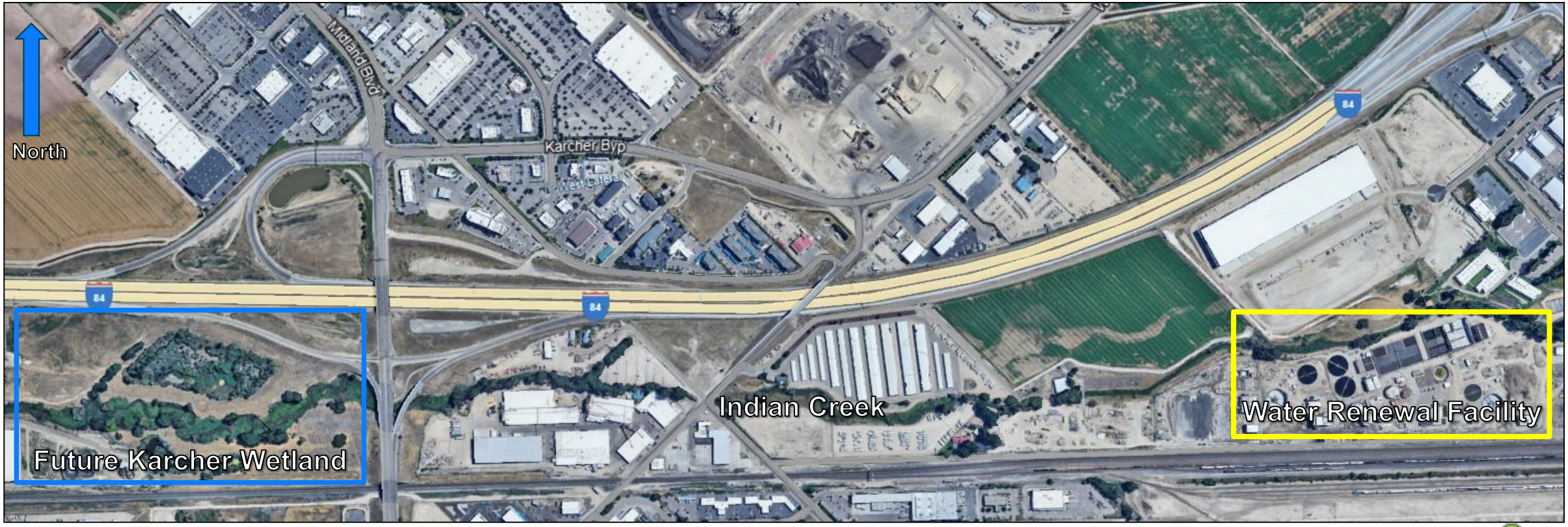
City of Albany Talking Waters Wetlands

Integrated Japanese Garden Wetlands ♦ Cools 6 mgd by 7°C

Grant Funding and Project Origination

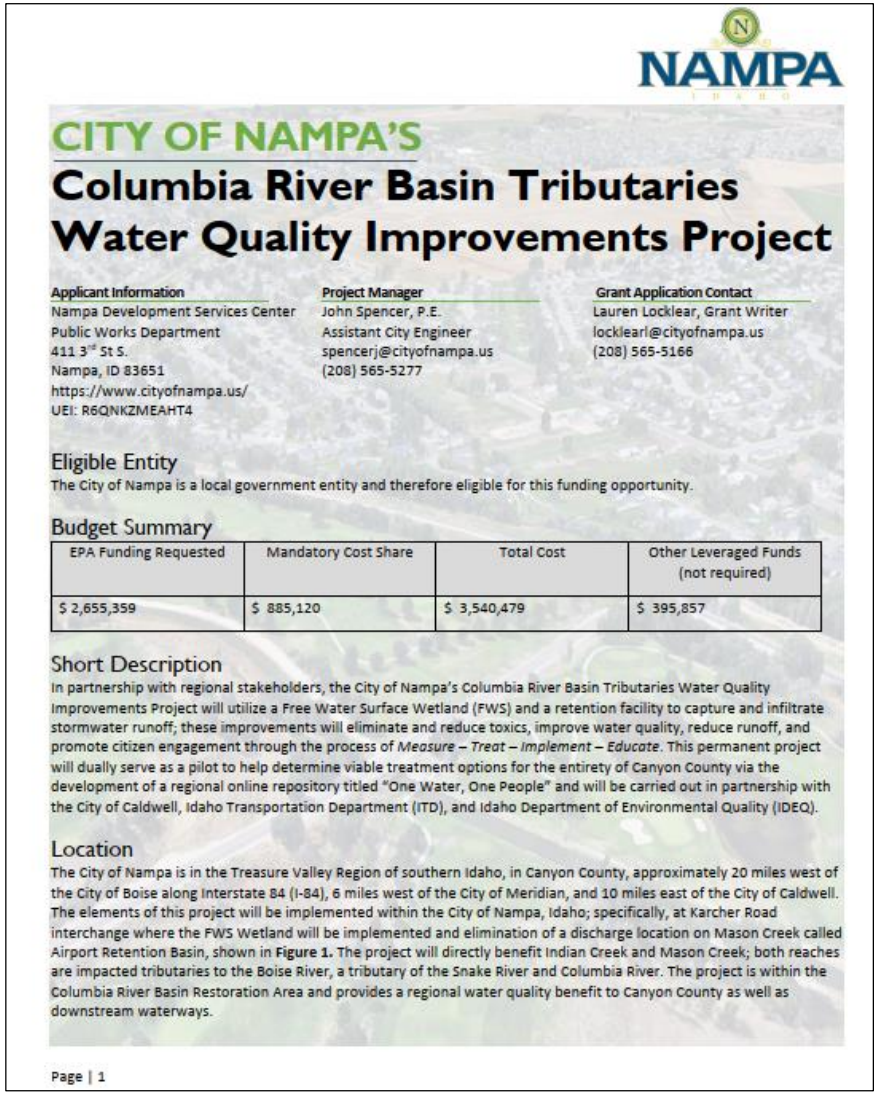
Karcher Constructed Wetland

- Idaho Transportation Department - 27 acres in middle on City; underutilized and landlocked
- ITD partnership and common stormwater goals



Karcher Wetland Funding Strategy

- USEPA Columbia River Grant - $2.5M
- IDEQ Emerging Contaminants Funds - $750k
- Local private corporations funding for Construction donations and ongoing operations costs
- Conservation foundations
- State and Federal Legislative support
- 20% minimum from City funds
- Wetland and carbon credits



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CITY OF NAMPA'S

Columbia River Basin Tributaries Water Quality Improvements Project

Applicant Information
Nampa Development Services Center
Public Works Department
411 3rd St S.
Nampa, ID 83651
https://www.cityofnampa.us/
UEI: R6QNKZMEAHT4

Project Manager
John Spencer, P.E.
Assistant City Engineer
spencerj@cityofnampa.us
(208) 565-5277

Grant Application Contact
Lauren Locklear, Grant Writer
locklearl@cityofnampa.us
(208) 565-5166

Eligible Entity
The City of Nampa is a local government entity and therefore eligible for this funding opportunity.

Budget Summary

EPA Funding Requested	Mandatory Cost Share	Total Cost	Other Leveraged Funds (not required)
$ 2,655,359	$ 885,120	$ 3,540,479	$ 395,857

Short Description
In partnership with regional stakeholders, the City of Nampa's Columbia River Basin Tributaries Water Quality Improvements Project will utilize a Free Water Surface Wetland (FWS) and a retention facility to capture and infiltrate stormwater runoff; these improvements will eliminate and reduce toxics, improve water quality, reduce runoff, and promote citizen engagement through the process of *Measure – Treat – Implement – Educate*. This permanent project will dually serve as a pilot to help determine viable treatment options for the entirety of Canyon County via the development of a regional online repository titled "One Water, One People" and will be carried out in partnership with the City of Caldwell, Idaho Transportation Department (ITD), and Idaho Department of Environmental Quality (IDEQ).

Location
The City of Nampa is in the Treasure Valley Region of southern Idaho, in Canyon County, approximately 20 miles west of the City of Boise along Interstate 84 (I-84), 6 miles west of the City of Meridian, and 10 miles east of the City of Caldwell. The elements of this project will be implemented within the City of Nampa, Idaho; specifically, at Karcher Road interchange where the FWS Wetland will be implemented and elimination of a discharge location on Mason Creek called Airport Retention Basin, shown in **Figure 1.** The project will directly benefit Indian Creek and Mason Creek; both reaches are impacted tributaries to the Boise River, a tributary of the Snake River and Columbia River. The project is within the Columbia River Basin Restoration Area and provides a regional water quality benefit to Canyon County as well as downstream waterways.

Page | 1

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Considerations with Other Agencies

IDEQ Permit and Trading

- Ask for 1:1 ratio with direct pipe from plant.
- Reduce chemical cost at plant with trade - $100,000's per year.

Water Rights

- Consider downstream impacts to Irrigation Districts (ID) - evaporation loss
- Develop mitigation plan with ID to avoid protests
- Declining drain flows in southwest Idaho – sign of water management needed in region

Karcher Wetland Project Layout

Creative Ideas to Increase Treatment Rate and Flux

CHALLENGE: Existing deep pit pond gains solar heat that warms groundwater which discharges heat to the creek.

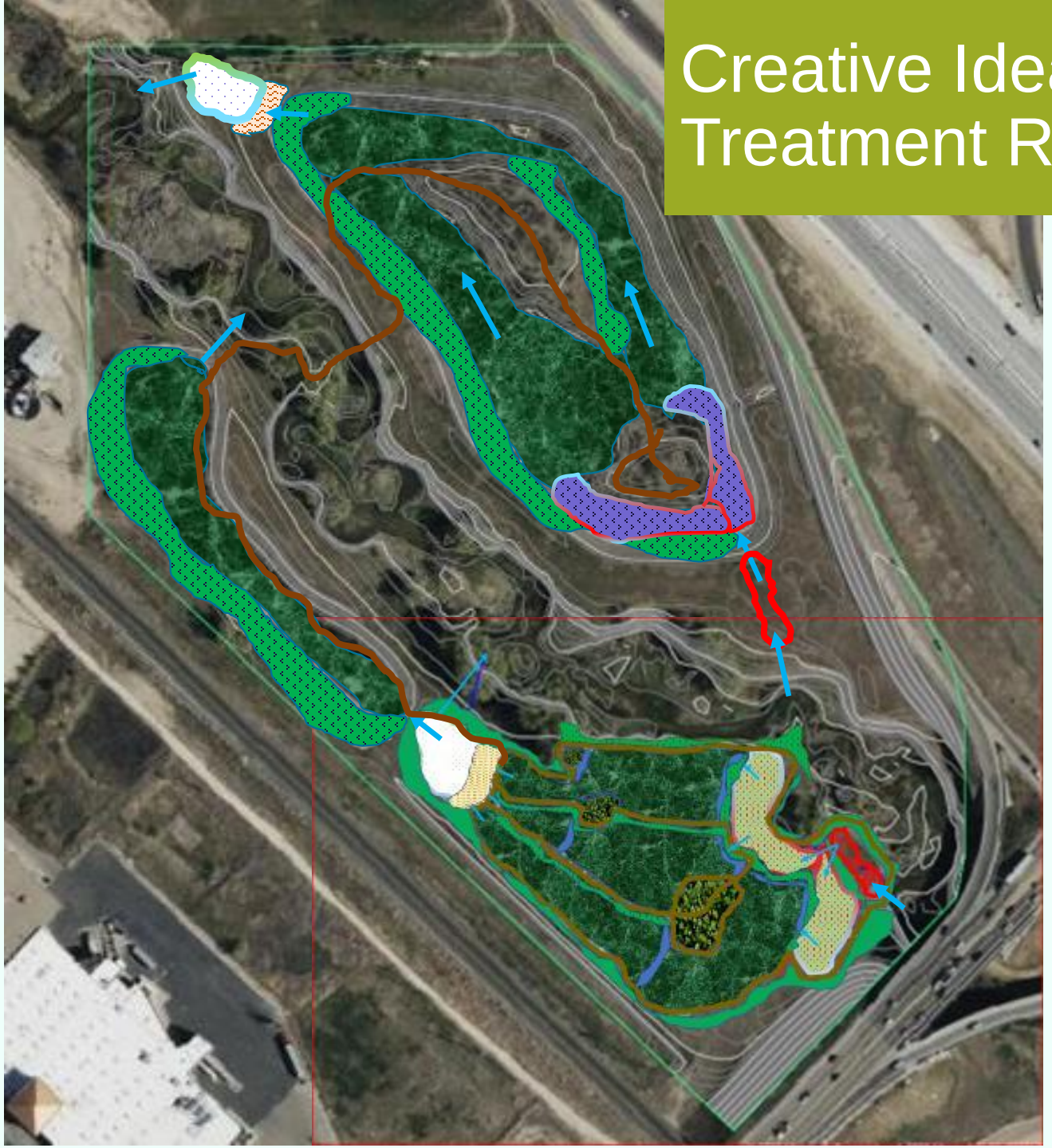
IDEA: Use excess soil from wetlands construction to fill the pond to 1' below wetland water level and create additional surface water emergent plant wetlands for additional cooling and P removal.

CHALLENGE: The existing road drainage infiltration wetland gains solar heat that warms groundwater which discharges heat to the creek.

IDEA: Connect creek flow into the wetlands for year-round water supply to augment the surface water emergent plant wetlands for additional cooling and P removal. Minimal excavation required.

OPPORTUNITY: Add riparian forest bands on the south side of all water surfaces to increase shade cooling.

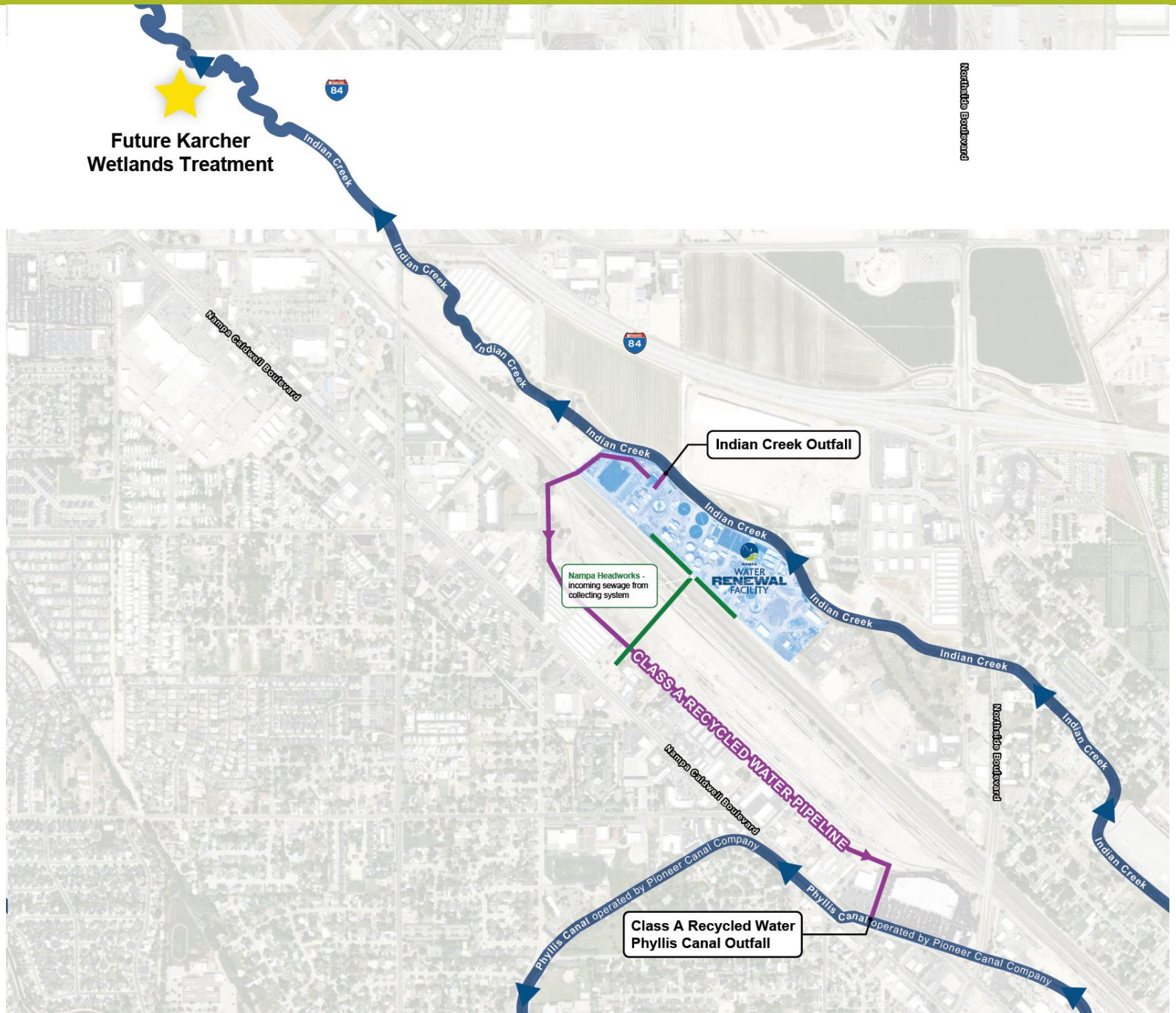
OPPORTUNITY: The public access path could cross the creek and connect all features.



BENEFITS

- ✓ Potential to **DOUBLE** total volume of creek water treated
- ✓ Potential to **DOUBLE** free water surface wetlands footprint and cooling capacity
- ✓ Potential to **DOUBLE** phosphorus removal rate
- ✓ **INCREASE** PFAS and CEC removal rate
- ✓ Hyporheic discharge of cooled water provides **ADDITIONAL TREATMENT** of E coli., TSS, P, PCB, dioxin, metals, mercury, and agricultural chemicals
- ✓ Potential to **DOUBLE** length of public access path

Future pipeline from Water Renewal Facility to Karcher Wetlands



Questions

SH-16 Southerly Connection

Crystal Craig, P.E.
Director of Transportation

Project Area

Area from Robinson Road to McDermott Road &
I-84 to Airport Road

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Purpose of Study

The East Nampa Access Study addresses the following concerns:

- Insufficient transportation network south of I-84 and east of Robinson Rd
- Significant projected growth
- SH-16 connection to I-84
- Potential redevelopment
- Comprehensive Plan land use update
- Future connectivity to Airport Road extensions (ACHD project)
- Property owners' concerns

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Project Goals

- Support mobility, efficiency and accessibility
- Enhance economic vitality
- Support land use/transportation interactions to connect people to work, commerce, and recreation
- Identify appropriate ROW
- Amend City's Long Range Transportation Plan

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Parametrix

EAST NAMPA ACCESS STUDY
EXHIBIT 1: PROPOSED ALIGNMENT

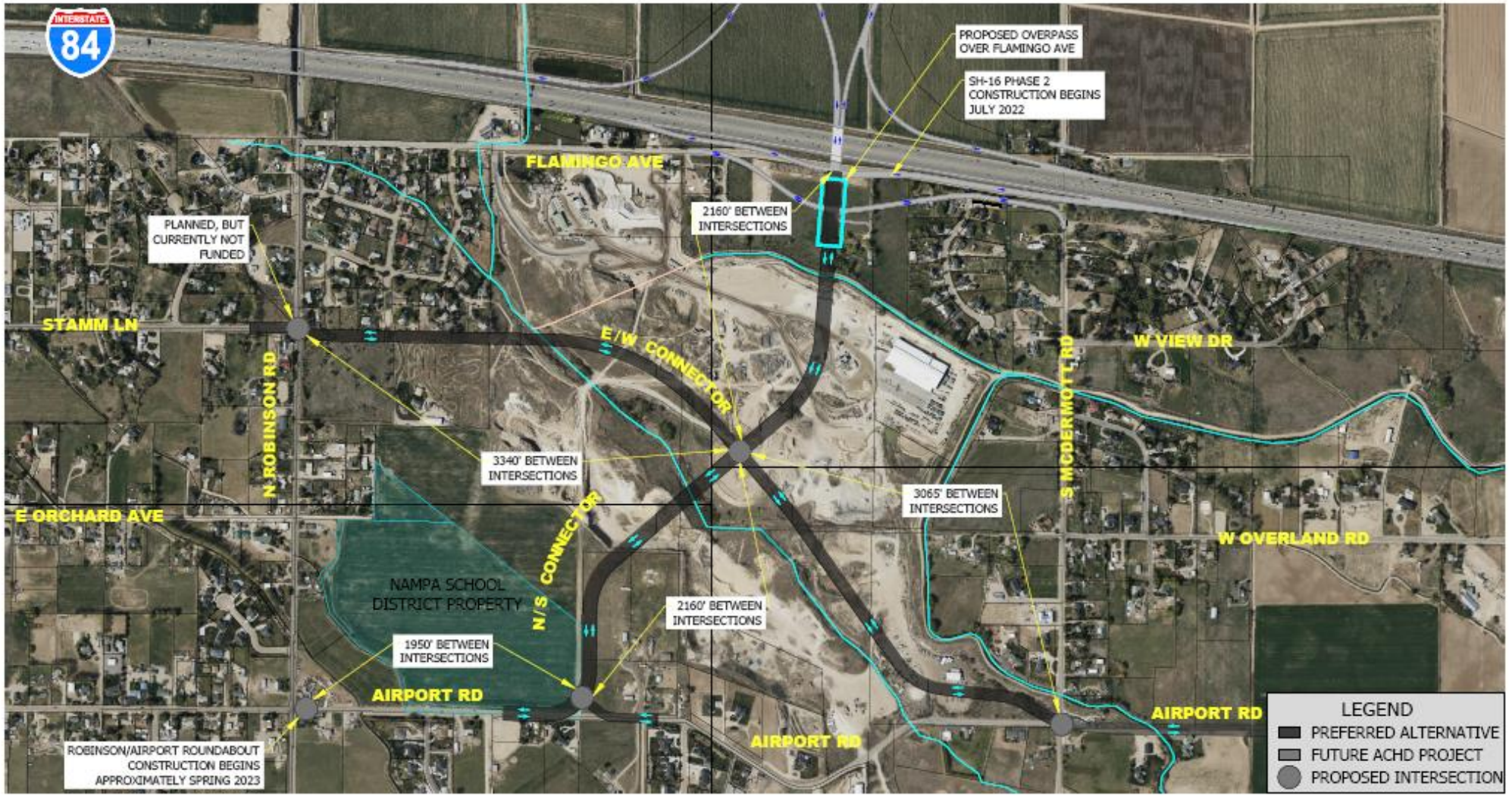
NAMPA

Image Year: 2022

N

Scale (Feet)

SEPTEMBER 2022



SH-16 SOUTHERLY CONNECTION

Currently:

- Parametrix developing Scope of Work for IMR/NEPA
- 24-month timeline
- Estimated cost of $1.1M (City budget)
- Agency partners
- Invitation for input

State Highway 16

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SH-16 SOUTHERLY CONNECTION

Future:

- Estimated total project cost at $70M-$80M
- Identify Funding
  - Development Impact Fees
  - Grants
  - Other
- Right-of-Way

State Highway 16

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Questions


PROPOSED OVERPASS OVER FLAMINGO AVE
SH-16 PHASE 2 CONSTRUCTION BEGINS JULY 2022
FLAMINGO AVE
2160' BETWEEN INTERSECTIONS
E/W CONNECTOR
3340' BETWEEN INTERSECTIONS
N/S CONNECTOR
3065' BETWEEN INTERSECTIONS
S MCDERMOTT RD
2160' BETWEEN INTERSECTIONS
AIRPORT RD