Brown AND Caldwell

2018 PNWS AWWA Conference

Leveraging Community Input to Define an Unlikely Path to Reuse

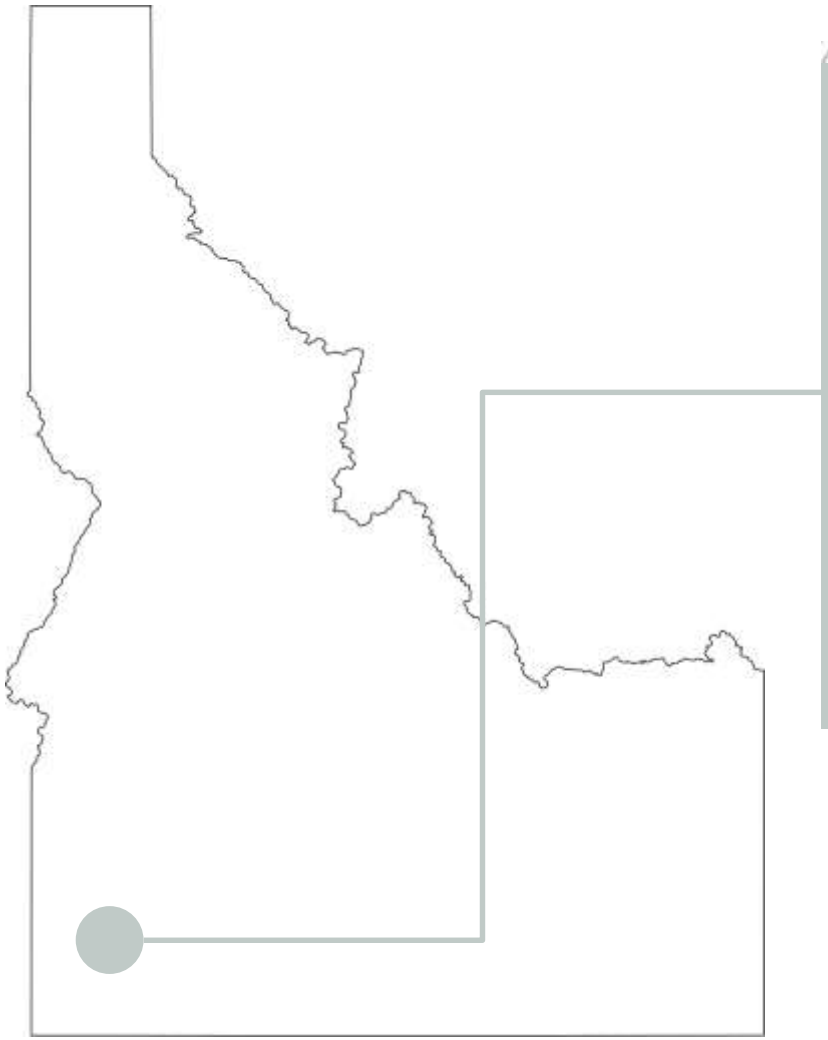
April 26| 2018

Agenda

1. Background
2. Early Engagement Efforts
3. Facility Planning and the BCE Process
4. Refreshed Engagement Efforts
5. Summary and Lessons Learned

Background

City of Nampa, ID

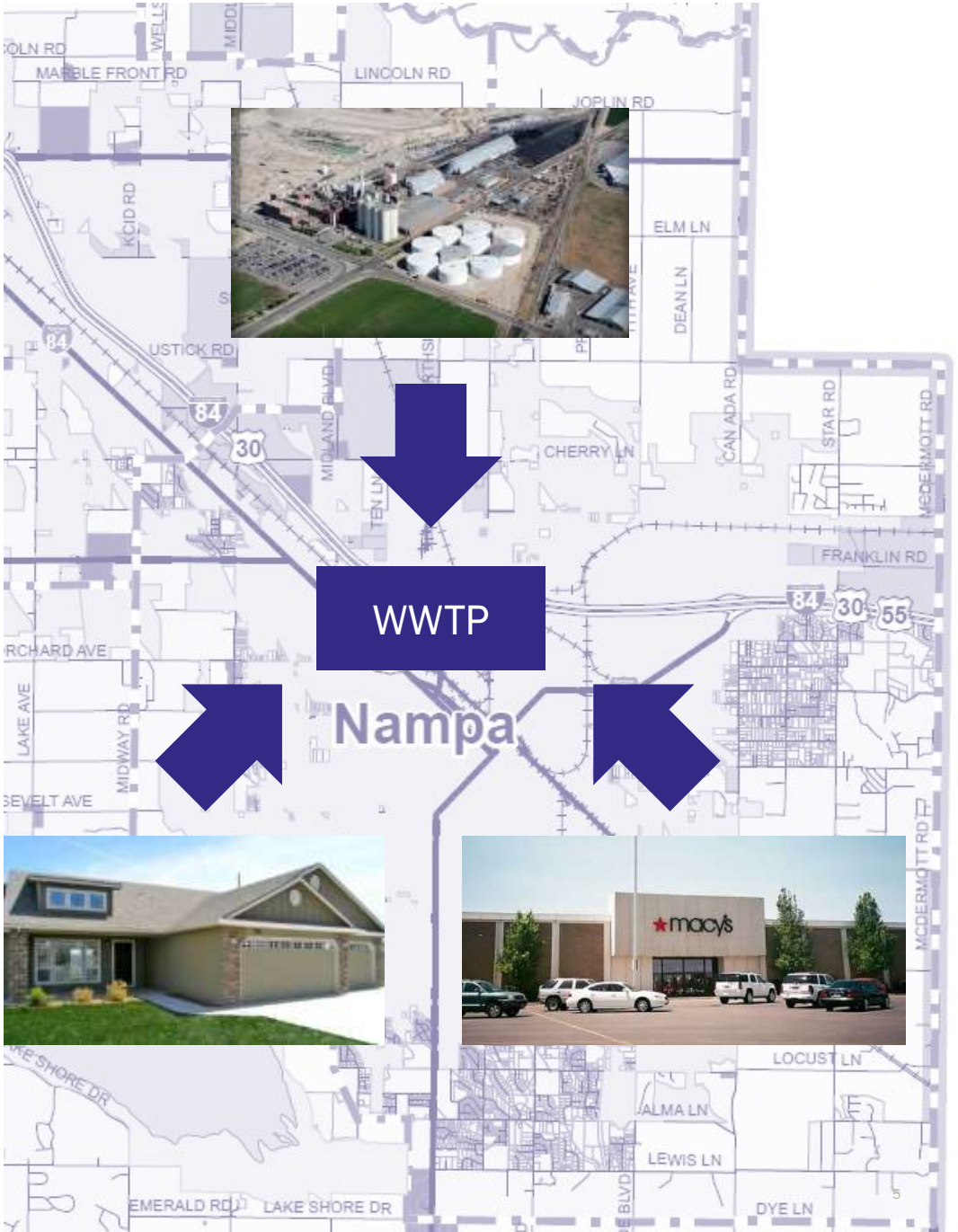


NAMPA FACTS

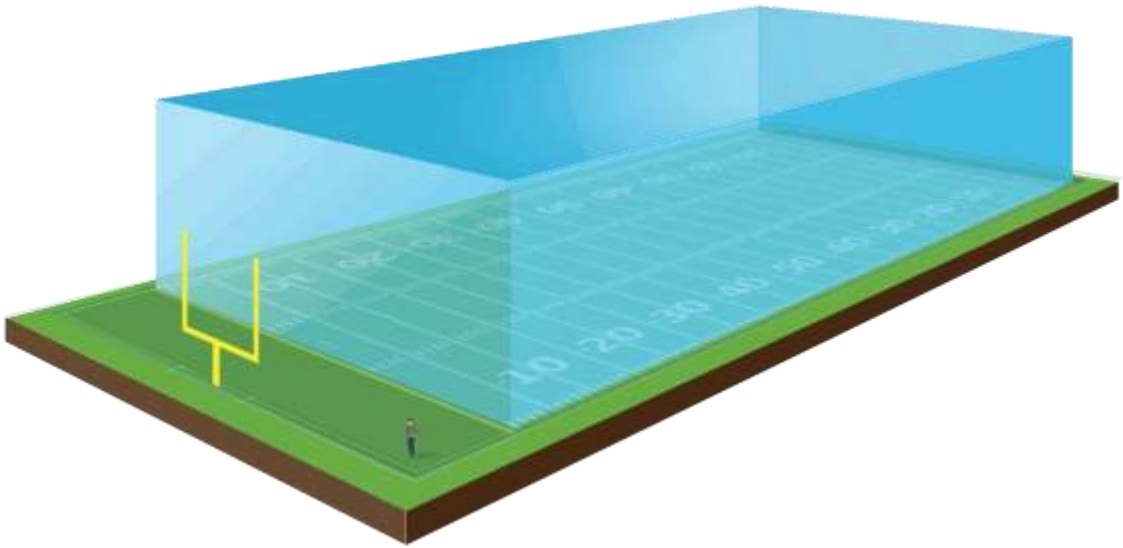
- 89,000 residents
- 3rd largest city in Idaho
- Several major food processors located within the City

The Challenge

- 11 million gallons of domestic and industrial wastewater per day
- Without treatment, raw sewage and industrial waste is discharged to Indian Creek
- Needed investments in existing assets to maintain level of service



The Challenge



4 Billion

The approximate number of gallons the city treats each year

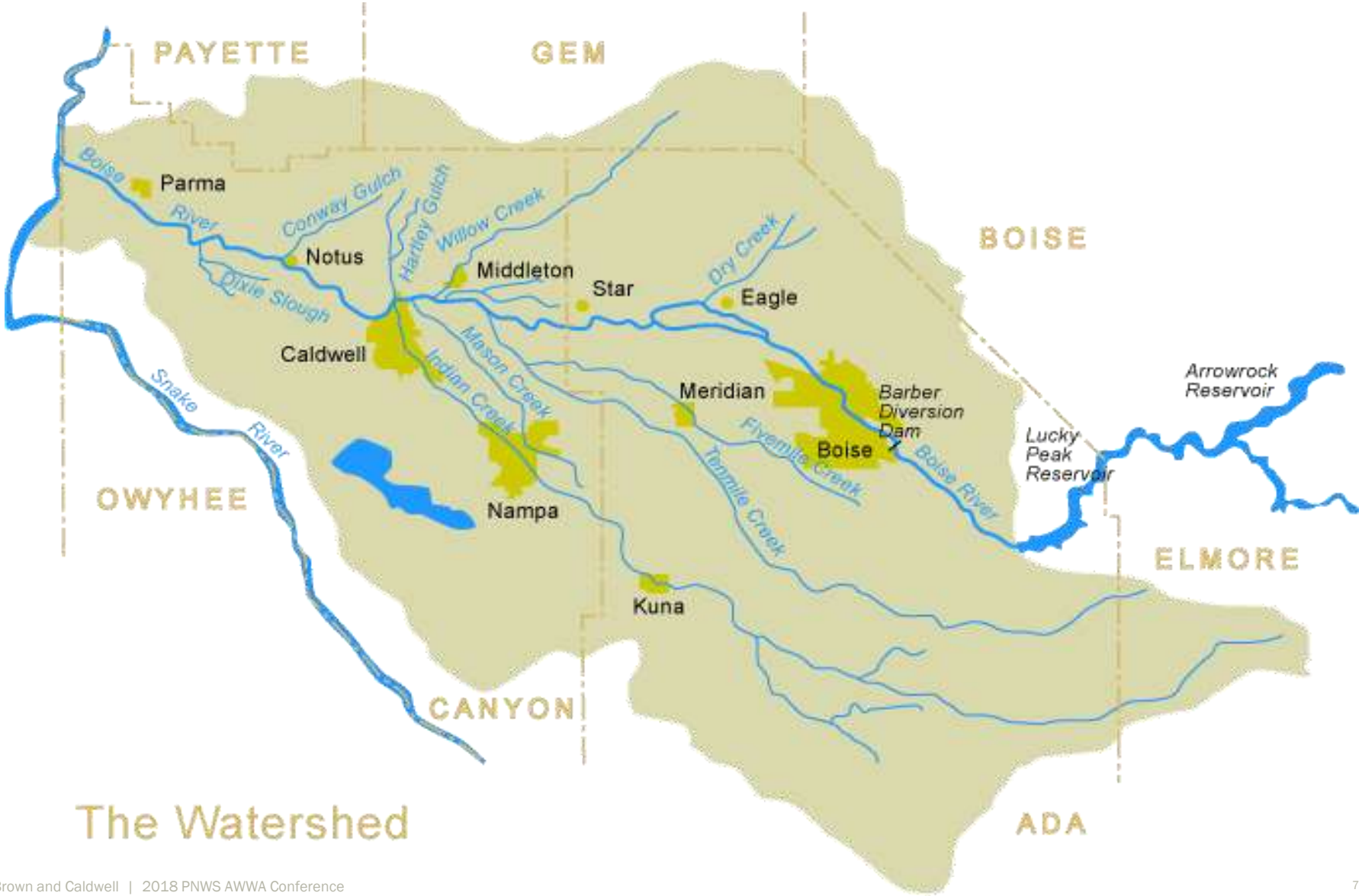
31 Feet

The approximate height of water used every day when covering a football field

By 2040

Expected to increase to over 7 billion gallons per year

Lower Boise River Watershed



Key Permit Requirements

Total Phosphorus

May 1 – September 30

100 µg/L (0.1 mg/L)

October 1 – April 30

350 µg/L (0.35 mg/L)

Temperature

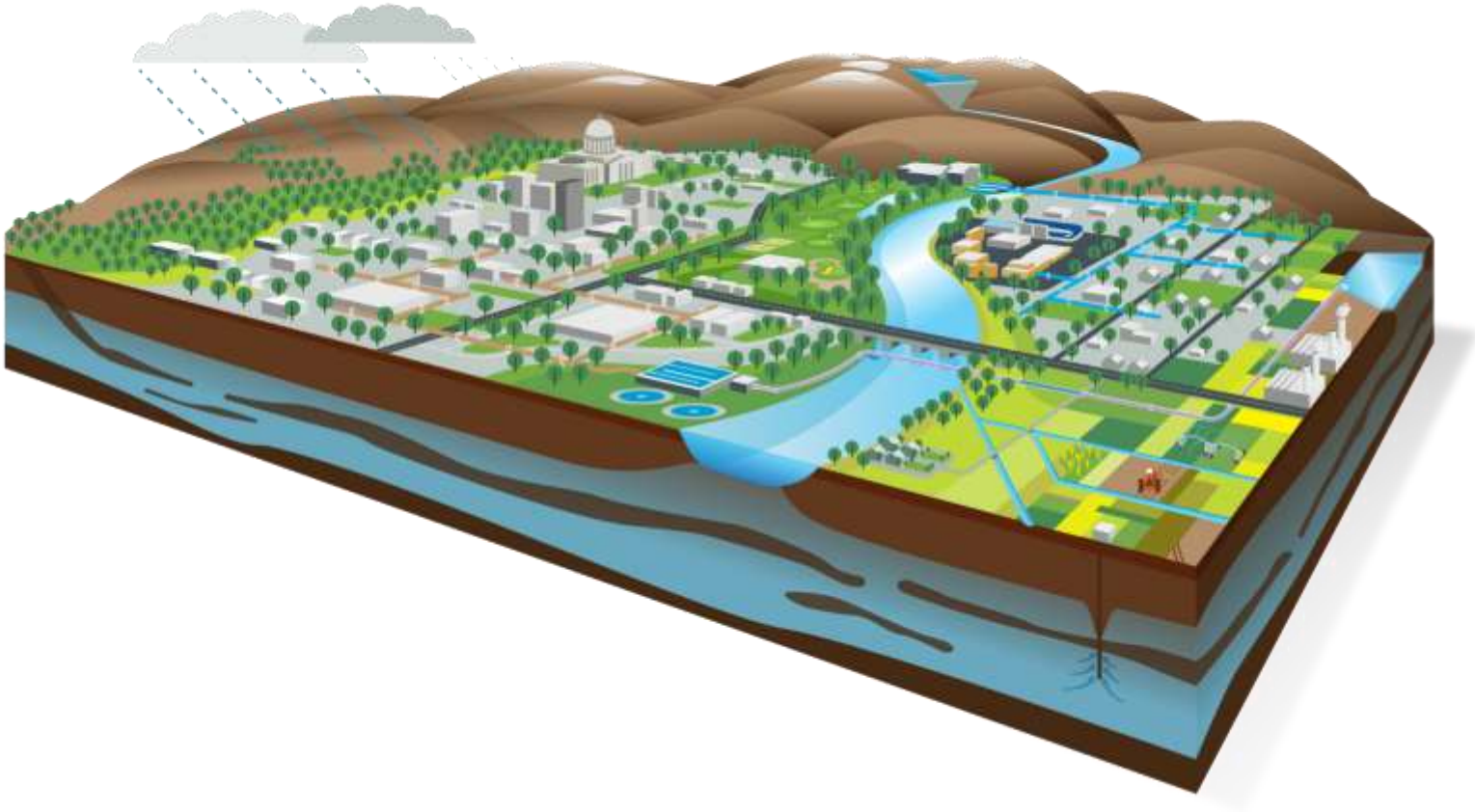
Permit Limit

19°C

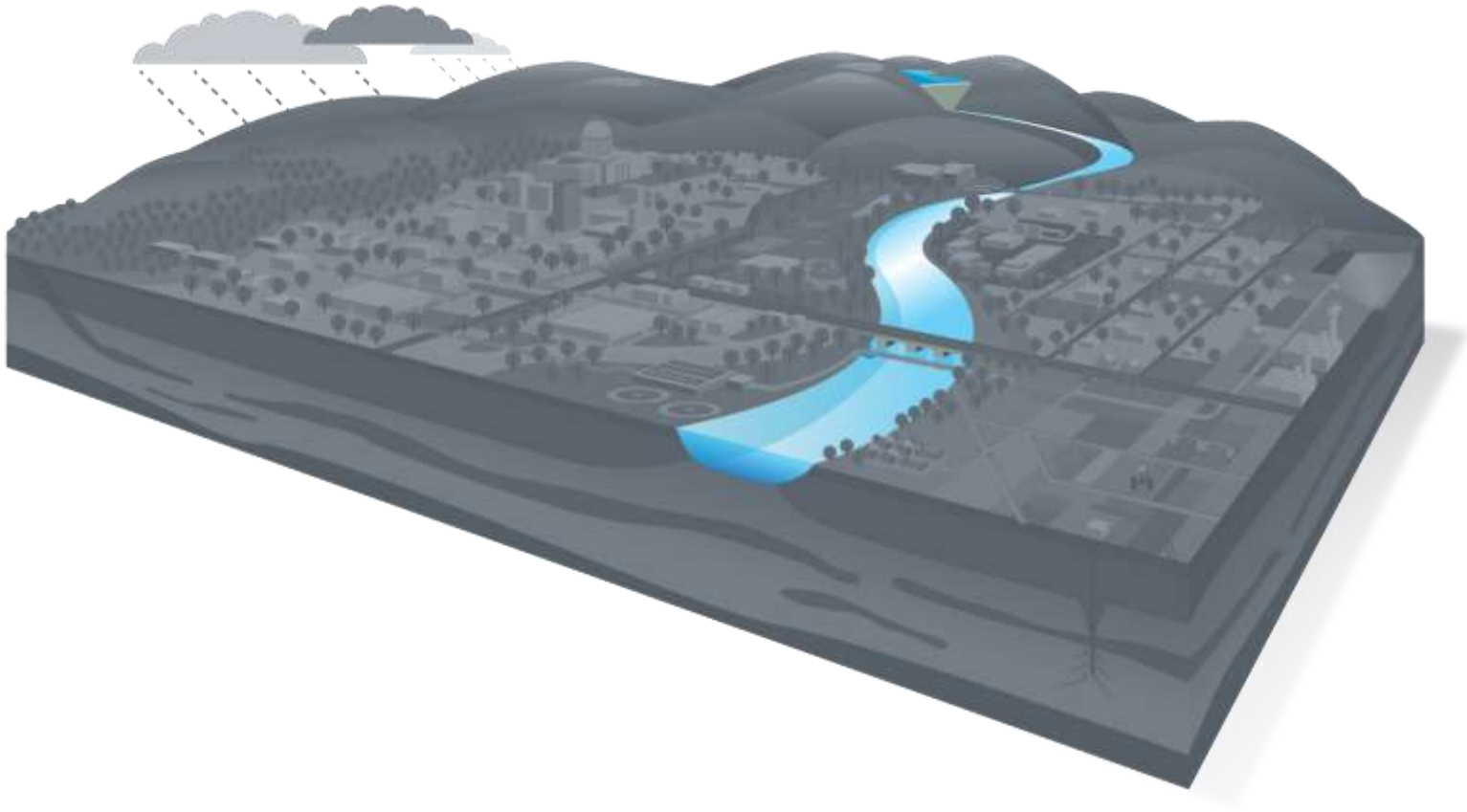
Needed reduction

↓ 5°C

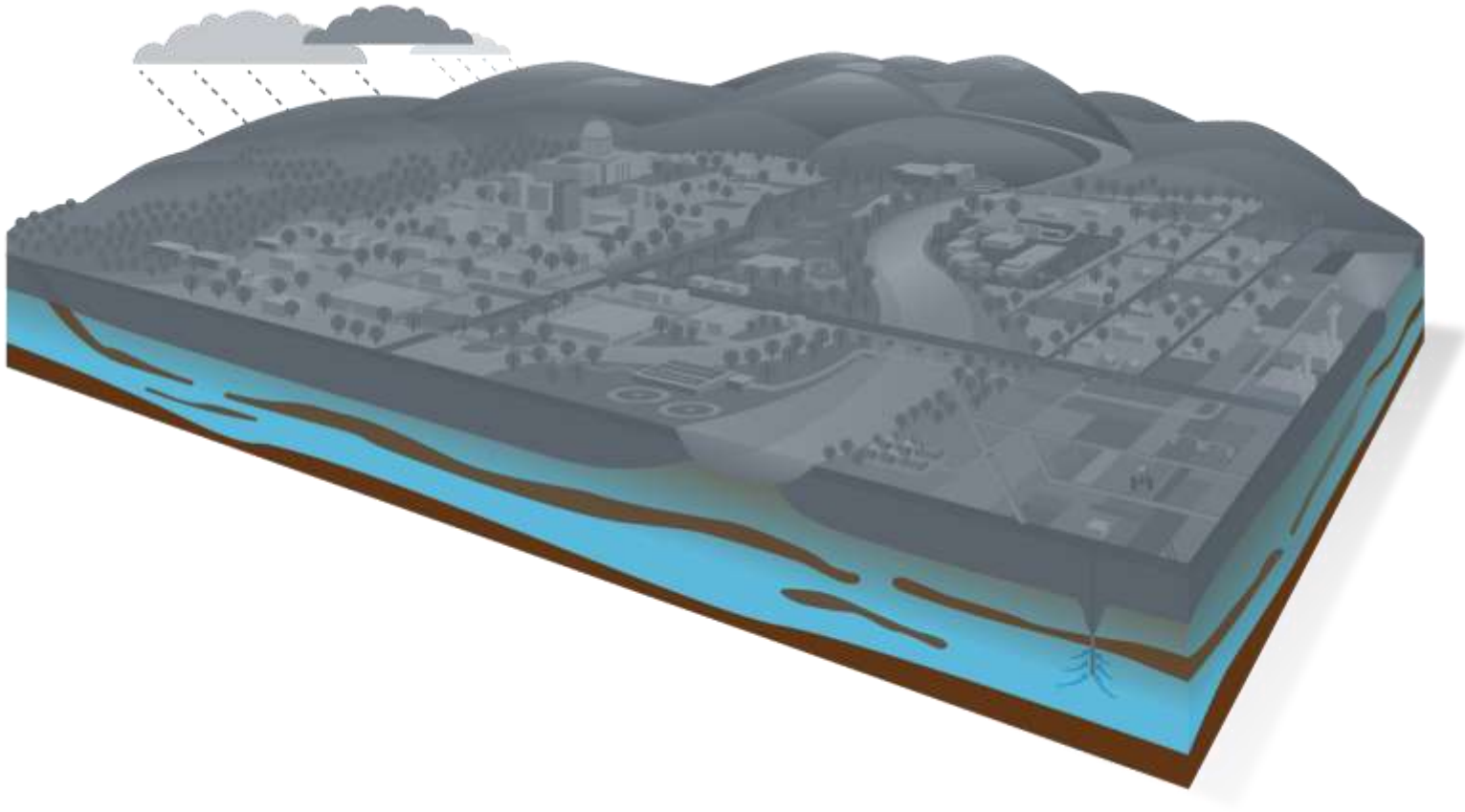
Traditional Water Reuse Drivers



Traditional Water Reuse Drivers



Traditional Water Reuse Drivers



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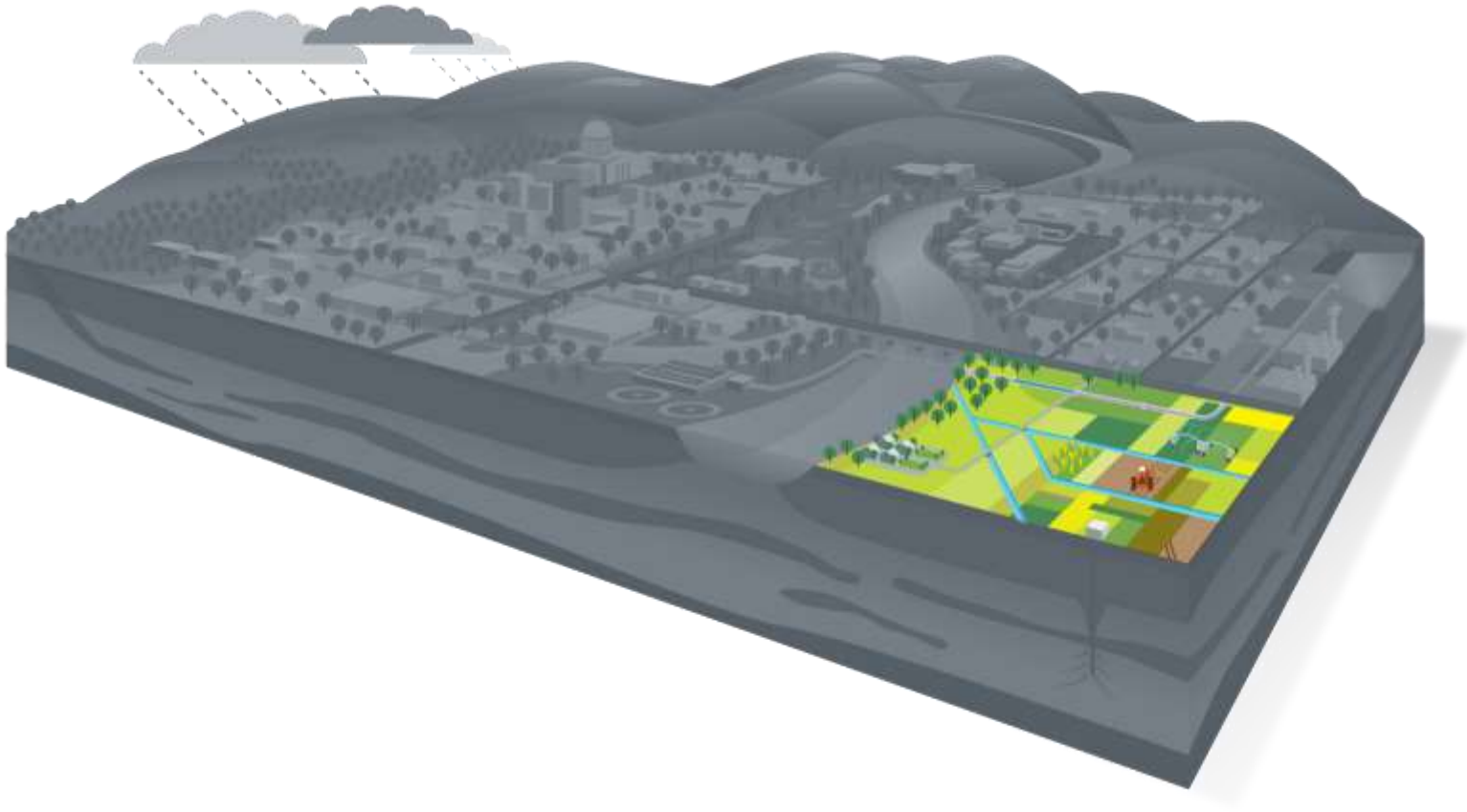
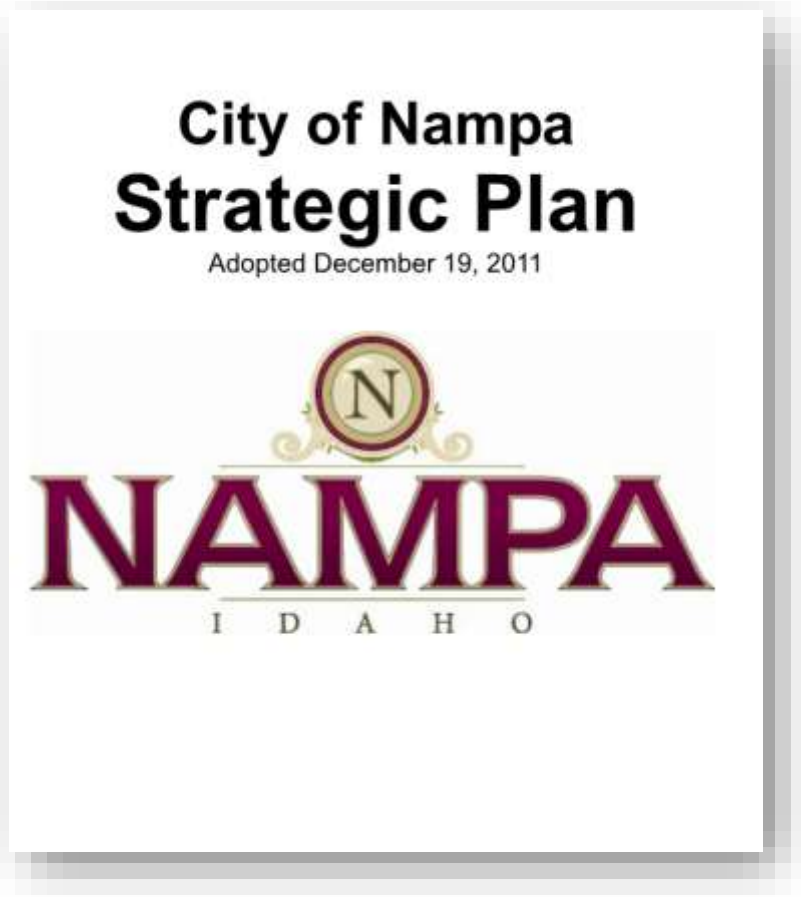


Nampa's Strategic Goals

- Focus on economically sound decisions
- How can Wastewater Program help or hurt City's strategic goals?
- Wastewater system is the City's single, largest asset



Early Engagement Efforts

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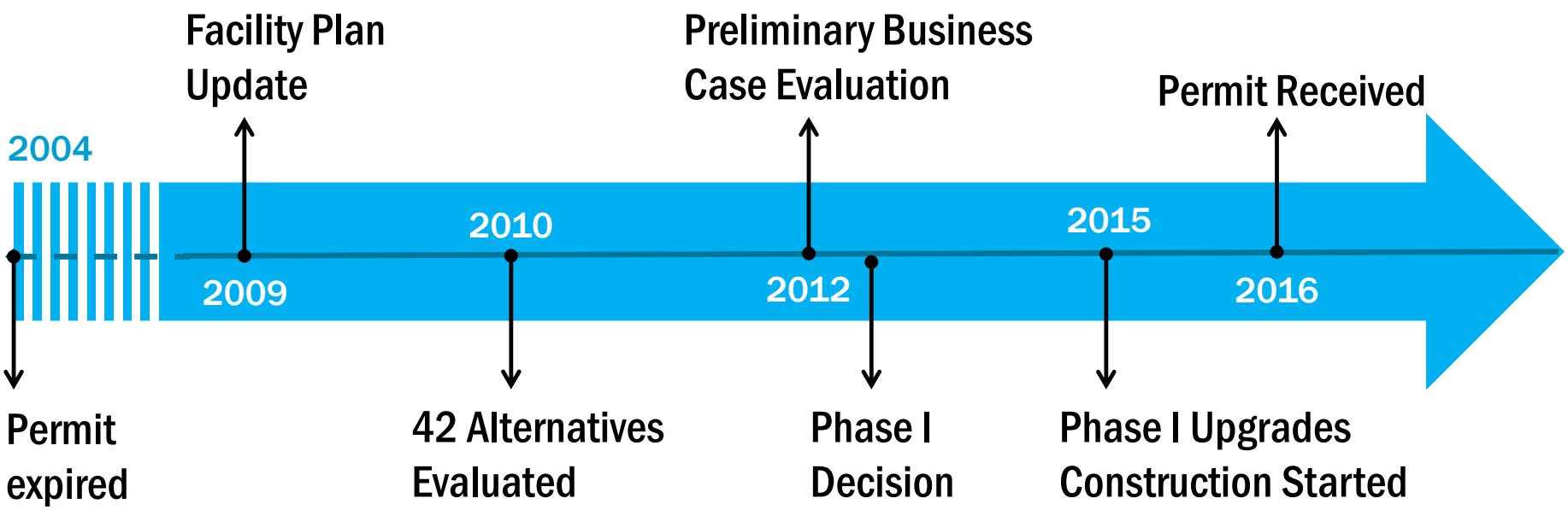
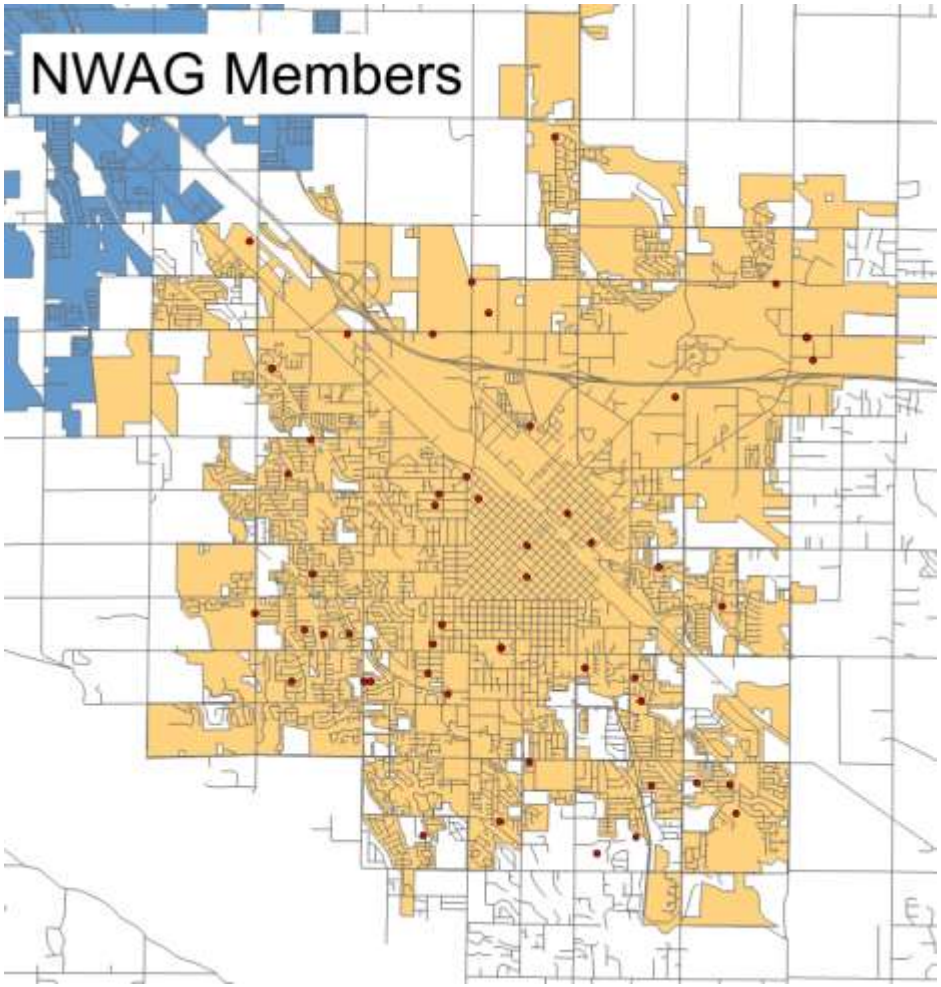
Early Evaluation Efforts



Early Engagement Efforts

- Facilitated seven meetings with 40-50 citizen advisory group members (NWAG)
- Also sought feedback from major industrial customers (IWG)
- Solicited high-level feedback from Virtual Focus Group



Original Alternatives

- **Alt #1** – Direct Infiltration
- **Alt #2** – Rapid Infiltration
- **Alt #3** – Treat and Offset
- **Alt #4** – Treat and Discharge
- **Alt #5** – Do Nothing More

Alt #1: Direct Infiltration

Class A recycled water pumped to infiltration site and discharged to infiltration basins (summer only)

✓ Major Benefits

- Economic Development
- Water Quality Credits
- 100% Water Reuse

⚠ Major Risks

- Background Water Quality (Total Dissolved Solids)
- Regulation of Additional GW Constituents
- Private Well Discharge Water Rights

Alt #4: Treat and Discharge to Indian Creek

Upgrade WWTP and continue discharging to Indian Creek

✓ Major Benefits

- Status quo approach

⚠ Major Risks

- Regulation of Additional Surface Water Constituents
- Year-round total phosphorus limits below 0.35 mg/L

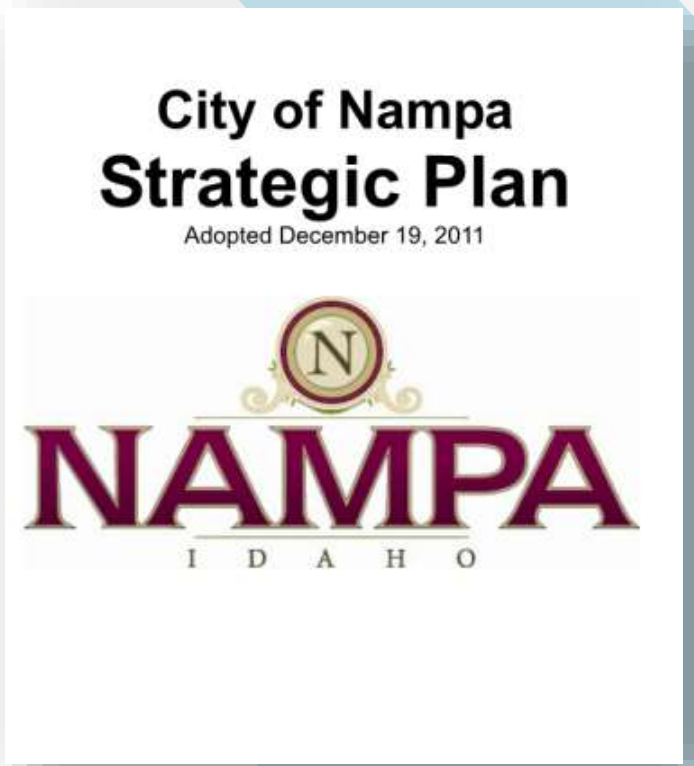
The Traditional Approach

Alternative	Capital Cost[1]	Annual O&M Cost[1]	Net Present Value[1]
1 – Direct Infiltration	$82,294,000	$2,402,000	$99,466,000
4 – Treat and Discharge	$64,464,000	$3,981,000	$96,329,000

[1] *Costs presented in 2012 dollars*

- Capital costs favor Surface Water Discharge
- O&M costs favor Aquifer Recharge
- Overall NPV within ~3%

Supporting the Strategic Plan



Be the community of choice for industry

Consider economic ramifications of environment actions

Considering Strategic Goals

"Consider economic ramifications to environmental actions and encourage economically sustainable decision making"

- What is the long-term permitting outlook for the alternatives?
  - Surface water discharge permit limits getting more stringent with each permit cycle
  - Groundwater discharge permit limits remain fairly constant

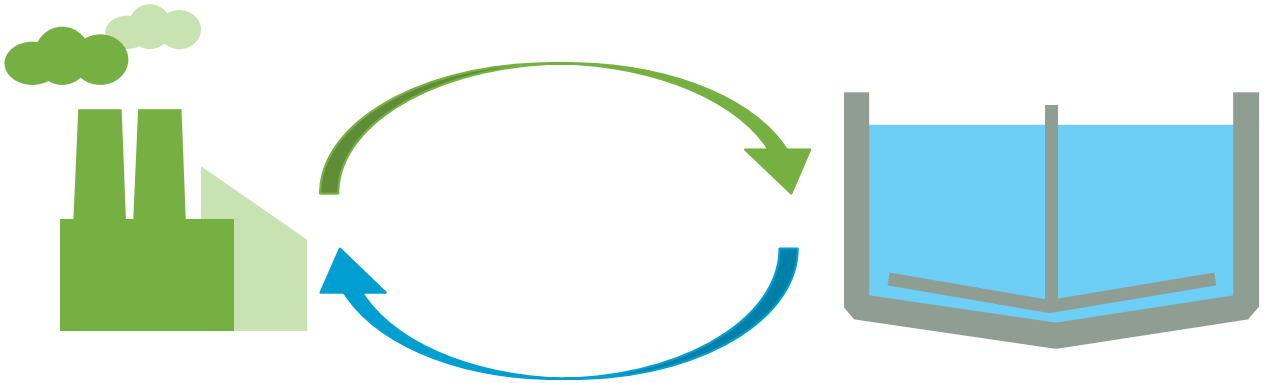
Considering Strategic Goals

Alternative	Capital + O&M NPV	Risk Costs	Net Present Value
1 – Direct Infiltration	$99,466,000	$1,056,639	$100,522,590
4 – Treat and Discharge	$96,329,000	$18,367,373	$114,694,951

- Aquifer recharge risks are front-loaded and related to design and permitting uncertainty

- Surface water discharge has more long-term risk associated with changing permit conditions

Considering Strategic Goals



"Be the community of choice in Idaho for industry and businesses"

Considering Strategic Goals

Company Type	Estimated Daily Water Usage	Annual Incentive Value of Water
Chemical Manufacturing	2,600,000 gallons	$1,445,919
Solar Cell Manufacturing	500,000 gallons	$278,061
Data Center	2,880,000 gallons	$1,602,029

Company Type	Jobs Added	Annual Economic Impact
Chemical Manufacturing	995	$1,111,696,000
Solar Cell Manufacturing	950	$537,441,000
Data Center	150	$28,721,000

Results of Early Evaluations

Alternative	Capital + O&M NPV	Total Cost of Asset Ownership NPV
1 – Direct Infiltration	$99,466,000	$32,213,994
4 – Treat and Discharge	$96,329,000	$114,694,951

- Considering risks and benefits considerably alters the financial physics of decision

- Aquifer recharge shown to more closely align with City goals
  - Allows for regulatory certainty
  - Creates a water asset that could be used as an economic development tool

Early Public Input

- Provided information to NWAG and IWG
  - Overview of the challenge
  - Connection to City priorities
  - Overview of technical analysis
  - Feedback on preferred approach
- NWAG and IWG overwhelmingly recommended pursuing Direct Infiltration
  - Limited long-term regulatory risk
  - Provided opportunities for economic development

Early Evaluations Summary

- Clear recommendation from initial technical analysis and public input process to pursue Direct Infiltration
- Subsequent technical analyses results in cost increases for Direct Infiltration
- Change in City leadership results in changes to direction for Wastewater Program

Facility Planning and the Business Case Evaluation Process

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Facility Planning Approach

Community Interest: Critical Success Factors

1. **Preserve our natural resources and our environment** to promote a caring community where people live, work, play, worship, and raise their families

2. Provide a healthy, professional environment that **empowers our employees to succeed**

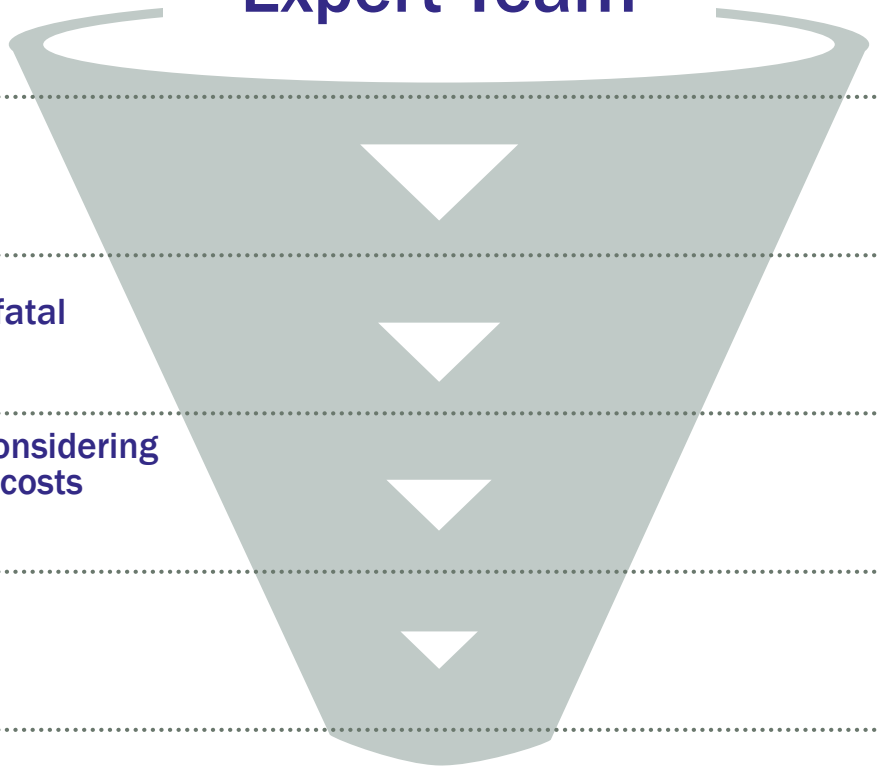
3. **Maintain affordable wastewater service** for rate payers through long-term, fiscally-sound decision-making

4. **Stimulate economic development** by efficient utilization of resources and providing sufficient utility capacity

5. Anticipate future regulatory requirements by **considering economic ramifications to environmental action**

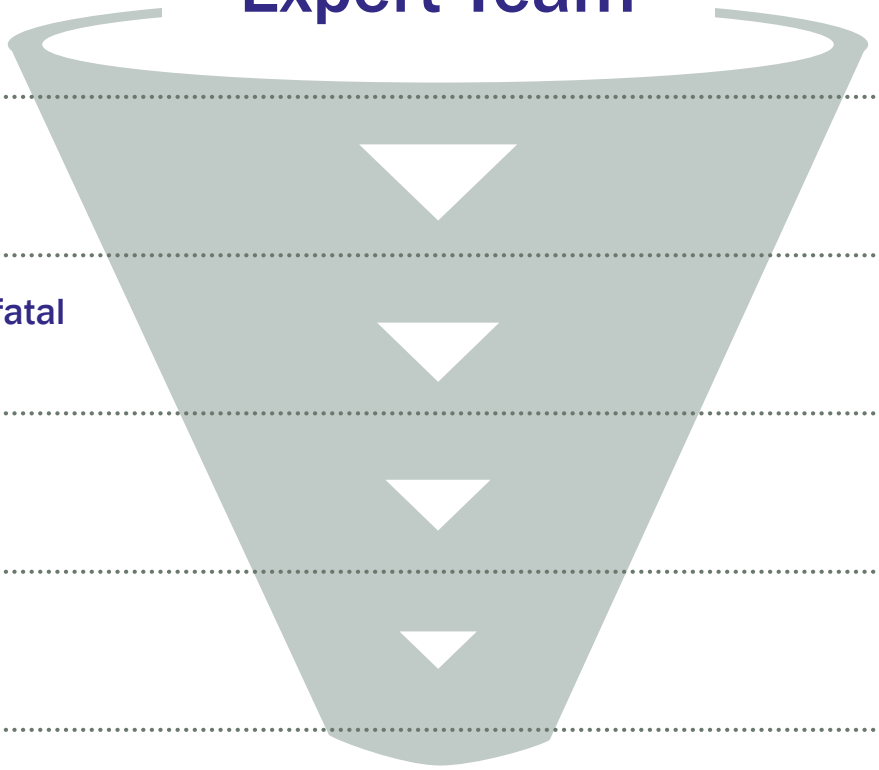
Business Case Evaluation Process Steps

1. Assemble Expert Team
2. Identify challenge and levels of service
3. Brainstorm alternatives and screen fatal flaws
4. Collect data on costs and benefits considering risk, environmental and community costs
5. Perform net present value analysis
6. Select Preferred alternative

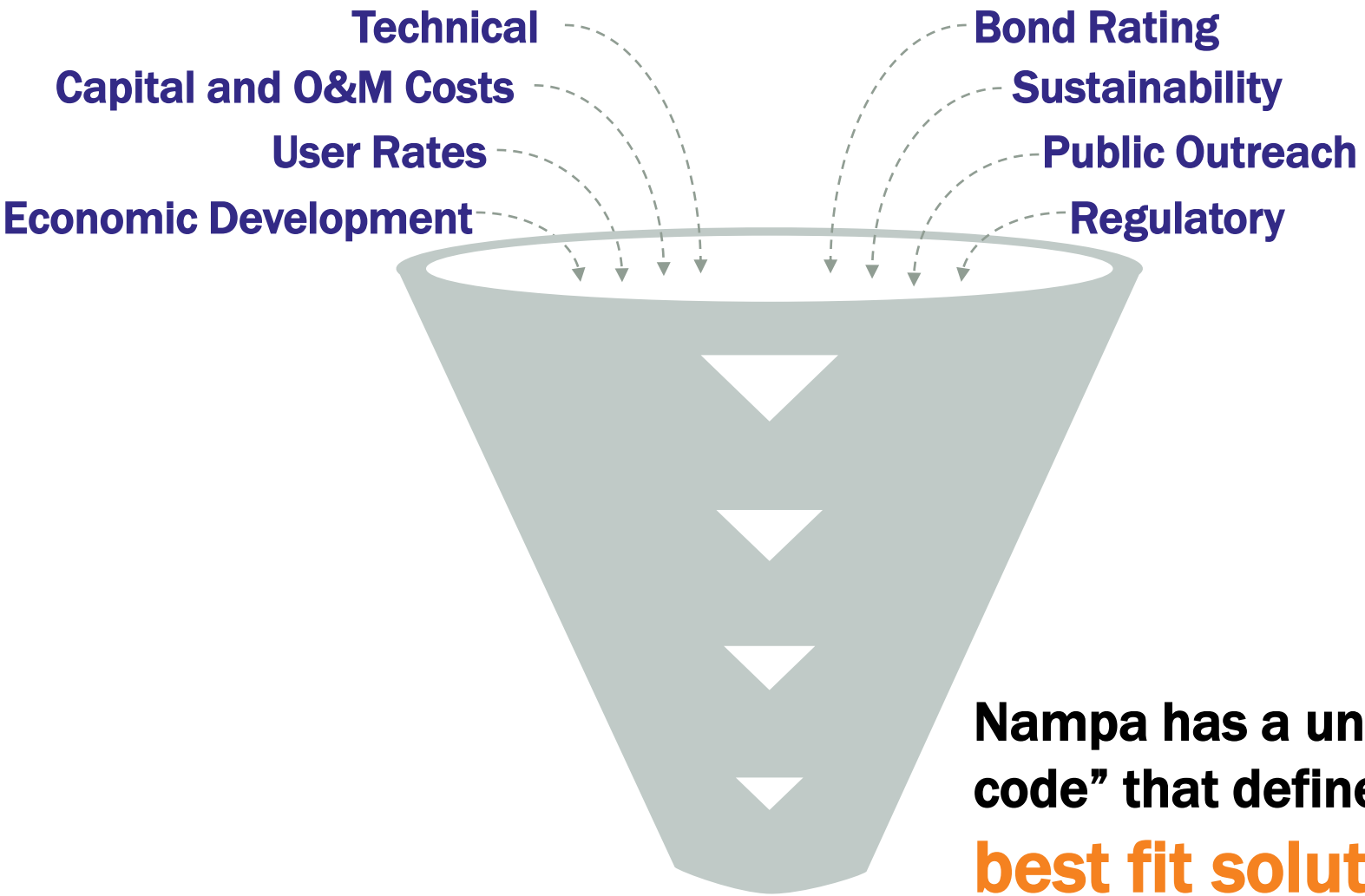


Unique Steps in the BCE Process

1. Assemble Expert Team
2. Aligning Decisions with Community Interests
3. Brainstorm alternatives and screen fatal flaws
4. Accounting for Risks and Benefits
5. Monetize the Decision Process
6. Select Preferred alternative



Finding the Best Fit for Nampa



Nampa has a unique "bar code" that defines its

best fit solution

Refreshed Engagement Efforts

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Refreshed Engagement Efforts

- Facilitated seven meetings with 40-70 citizen advisory group members (NWAG)
  - Overview of the challenge
  - Feedback on overall priorities
  - Translated feedback to evaluation results
  - Feedback on preferred approach

- Also sought feedback from major industrial customers (IWG)

Public engagement tactics largely unchanged from initial efforts

Community Interest: Critical Success Factors

1. **Preserve our natural resources and our environment** to promote a caring community where people live, work, play, worship, and raise their families

2. Provide a healthy, professional environment that **empowers our employees to succeed**

3. **Maintain affordable wastewater service** for rate payers through long-term, fiscally-sound decision-making

4. **Stimulate economic development** by efficient utilization of resources and providing sufficient utility capacity

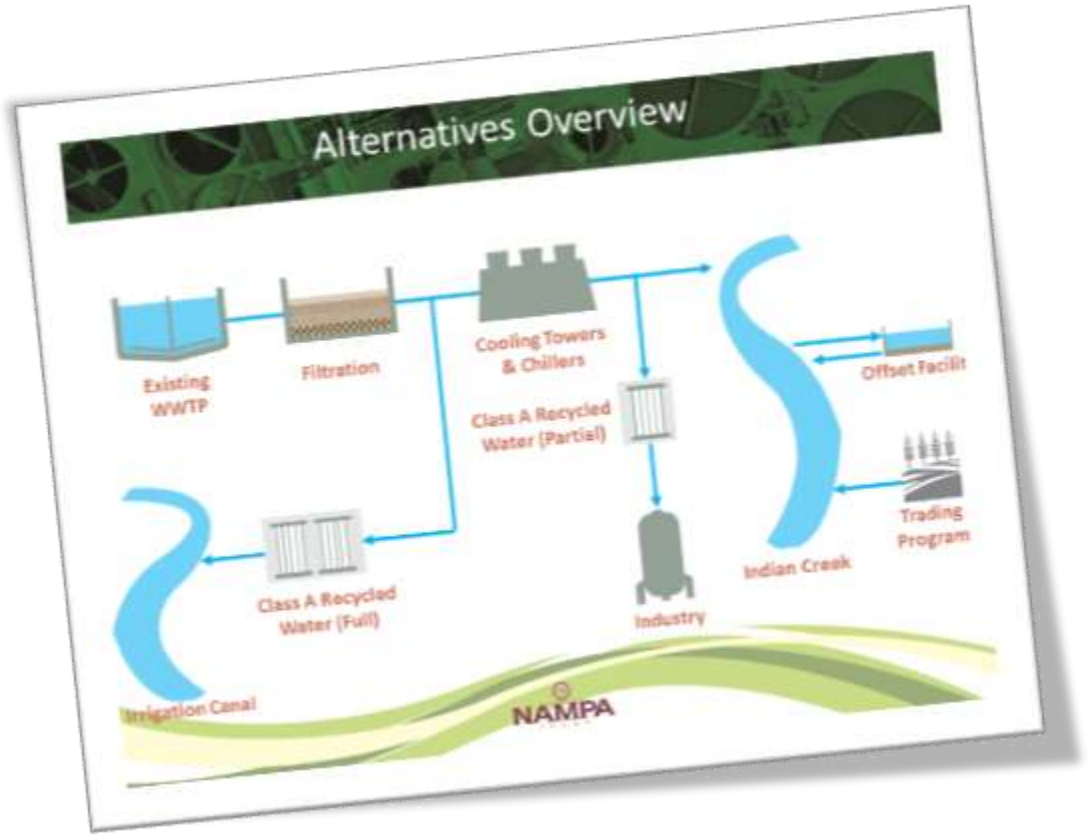
5. Anticipate future regulatory requirements by **considering economic ramifications to environmental action**

Revised Alternatives

- **Alt #1** – Treat and Discharge to Indian Creek
- **Alt #2** – Treat and Discharge to Indian Creek with Industrial Reuse
- **Alt #3** – Treat and Discharge Recycled Water to Irrigation
- **Alt #4** – Treat and Offset
- **Alt #5** – Treat and Trade
- **Alt #6** – Do Nothing More

Shifted Focus from How to What

- Changed mentality from disposal to product development
- Identified how each product opportunity related to community interests



Articulating the Outcomes

Preserve our natural resources and our environment to promote a caring community where people live, work, play, worship, and raise their families

Increased local control and use of local water assets

Articulating the Outcomes

BENEFITS: Additional Water Asset

WHAT: Treating water to industrial use standards provides the City with a new water resource. This becomes more important over time as water becomes more scarce.

Timing	2026	2031	2036
Probability	5%	10%	15%
Annual Benefit	$98K	$196K	$295K

The benefit was calculated assuming 2 million gallons per day of industry water is produced and the value is equal to the current potable water rate.

Articulating the Outcomes

Stimulate economic development by efficient utilization of resources and providing sufficient utility capacity

Impacts to City from **economic development resulting from industrial reuse**

Articulating the Outcomes

BENEFITS: Economic Development

WHAT: Class A recycled water creates a resource that could be used to incentivize economic development

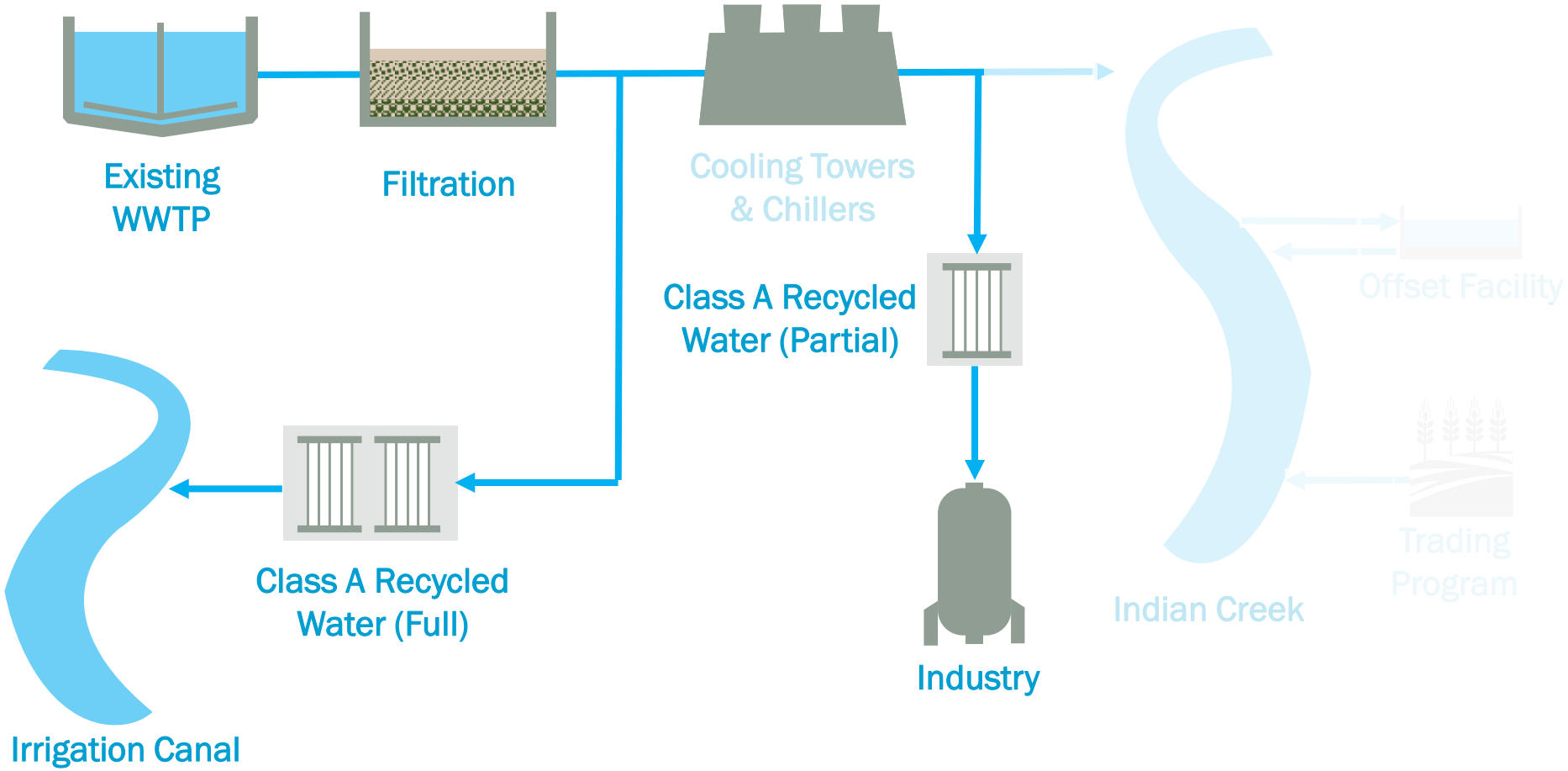
BENEFIT:

- $960,500 tax revenue from construction activities
- $789,000 annual property tax revenue

TIMING: Annual benefits may occur once Class A water becomes available to industries in 2026

The costs were developed through an economic impact analysis with an assumed likelihood of 30% for one new industry relocating to Nampa.

Alternative 2.5 – The NWAG's Alternative



Revised Alternatives

- **Alt #1** – Treat and Discharge to Indian Creek
- **Alt #2** – Treat and Discharge to Indian Creek with Industrial Reuse
- **Alt #2.5** – Treat and Discharge Recycled Water to Irrigation and Industry
- **Alt #3** – Treat and Discharge Recycled Water to Irrigation
- **Alt #4** – Treat and Offset
- **Alt #5** – Treat and Trade
- **Alt #6** – Do Nothing More

Refreshed Alternatives Analysis

Alternatives	Capital	O&M	Risks	Benefits	2040 Net Present Value
1	$115.2 M	$134.8 M	$41.2 M	$0.3 M	$381.9 M
2	$119.3 M	$139.3 M	$41.6 M	$16.0 M	$371.7 M
2.5	$120.9 M	$142.3 M	$41.5 M	$18.9 M	$372.2 M
3	$117.2 M	$137.5 M	$59.8 M	$1.2 M	$411.4 M
5	$99.9 M	$118.9 M	$92.4 M	$0.9 M	$398.8 M
6	$0	$0	$504.9 M	$0 M	$713.4 M

90% of NWAG members supported Alternative 2.5

NWAG Support

"Costs differential is minimal....let's develop a useable end product"

"Being able to provide water to industries will set Nampa apart"

"Allows water to be reused locally"

November 2017 Election

- Wastewater decisions becomes a campaign issue
- Mayor and two city council members replaced in November 2017 elections
- Shift in overall City direction and priorities

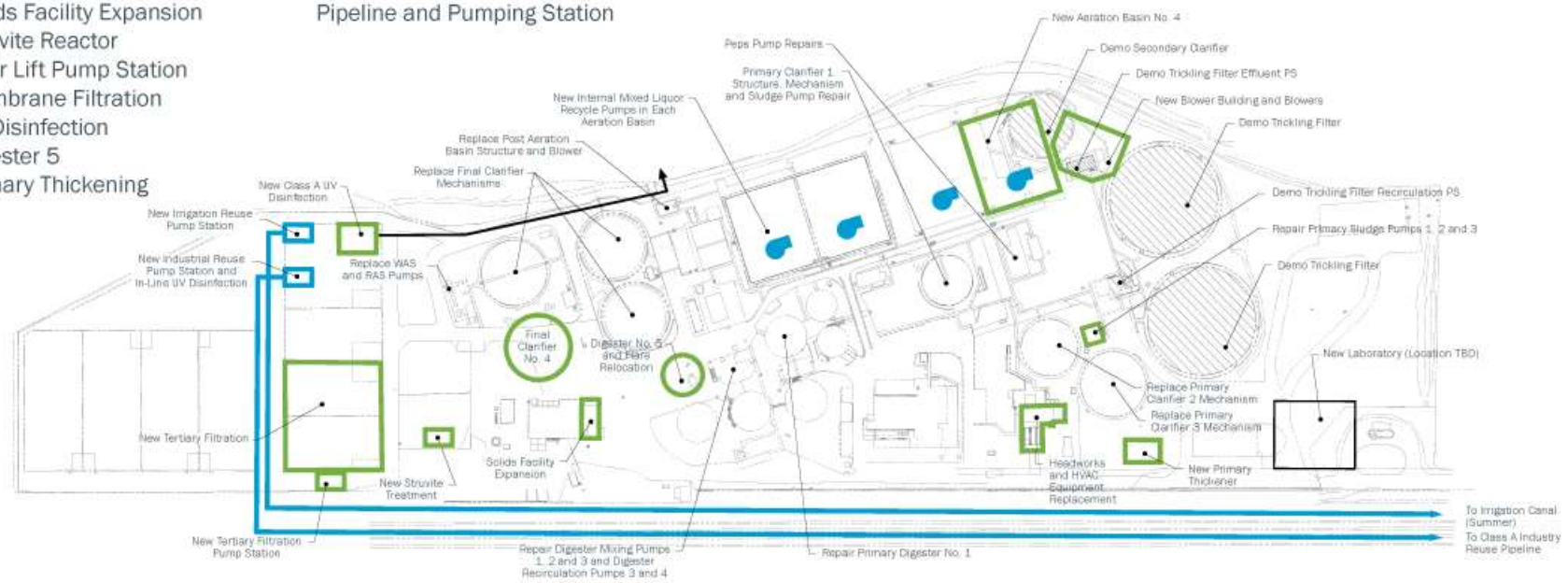
Nampa's Recycled Water Program

Phase II Upgrades

- Aeration Basin No. 4
- Blower Building
- RAS Piping and WAS Pumping
- Final Clarifier 4
- Solids Facility Expansion
- Struvite Reactor
- Filter Lift Pump Station
- Membrane Filtration
- UV Disinfection
- Digester 5
- Primary Thickening

Phase III Upgrades

- Mixed Liquor Recycle Pumps
- Class A Industrial Reuse Pipeline and Pumping Station
- Class A Irrigation Reuse Pipeline and Pumping Station



Summary and Lessons Learned

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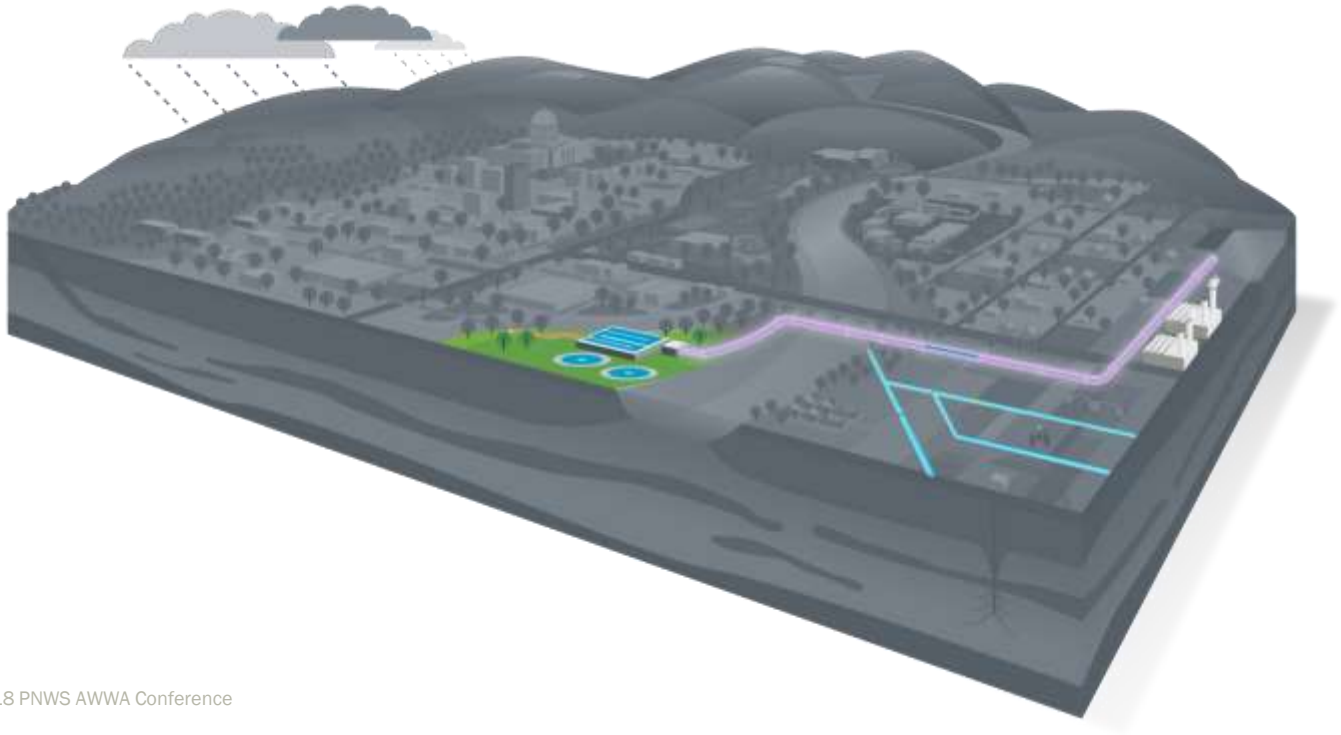
Summary

1. Community values shaped water reuse program
2. Shifted stakeholder engagement from telling to listening
3. Yielded durable solution for City's largest asset



Lessons Learned

1

Start with the fundamentals

Lessons Learned

2

Focus on the

WHAT

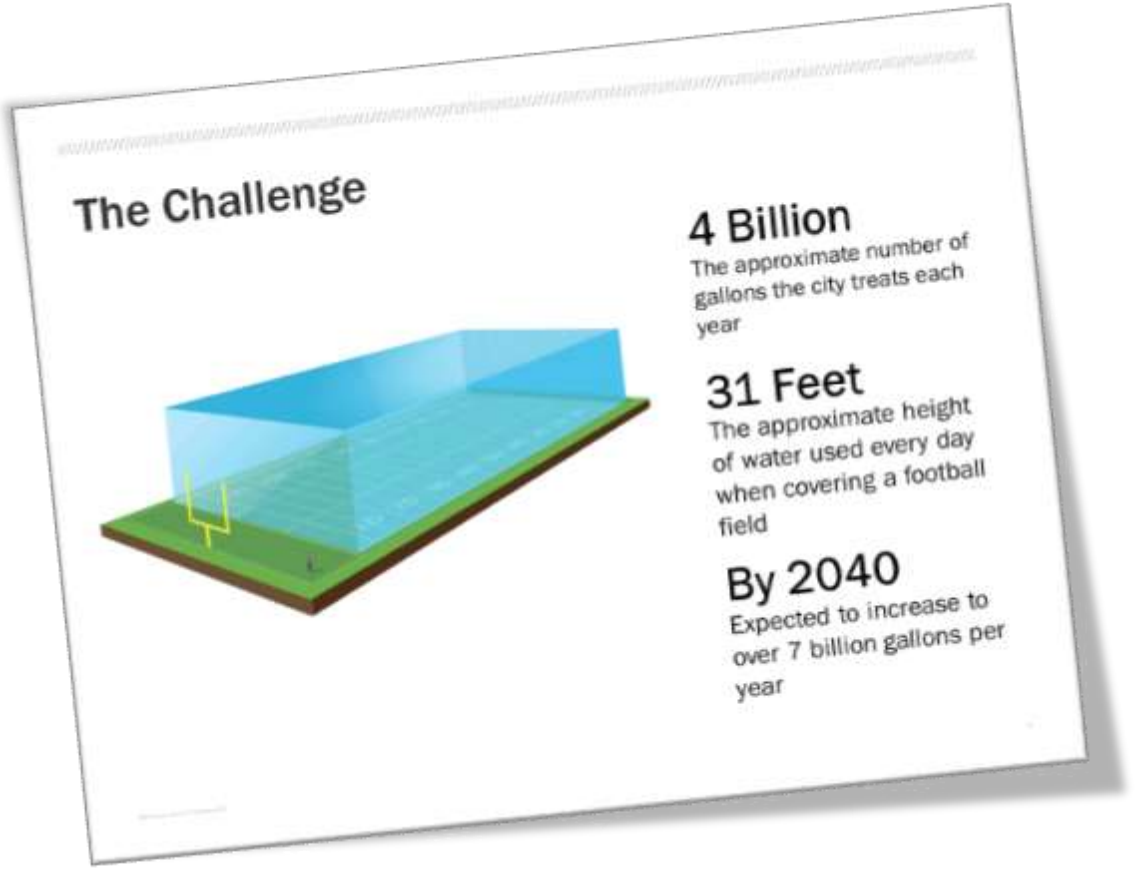
not the

HOW

Lessons Learned

3

Make the content relatable



THANK YOU!

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