Building a Class A Reclaimed Water Program in Idaho

Meridian, Idaho

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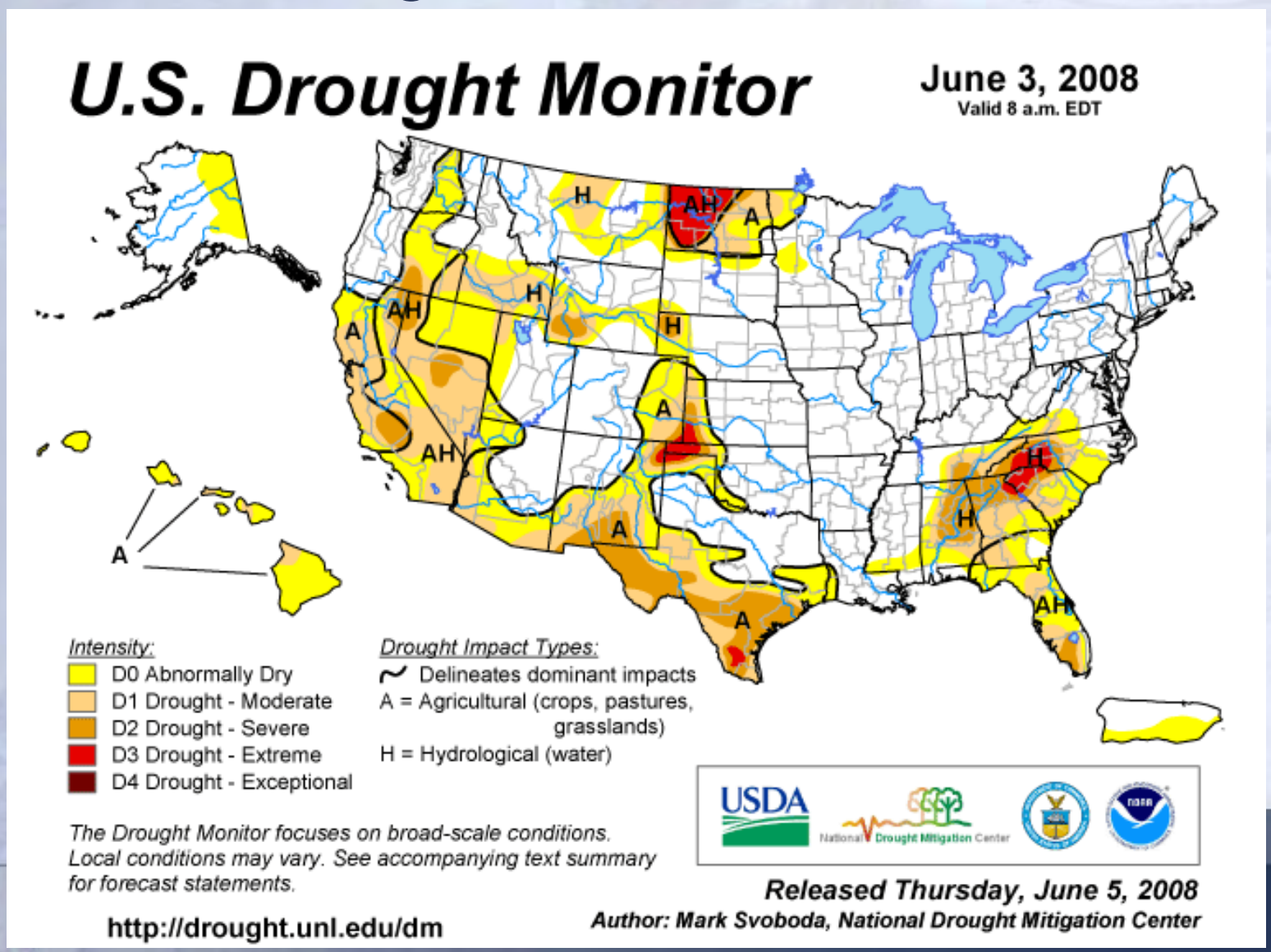
Idaho Wastewater Reuse Conference

June 18, 2008

Agenda

- History of Meridian flows and growth
- Overview of Boise River TMDL
- Water reuse demonstration (Heroes Park)
- Discussion and Q&A

2008 Drought Conditions

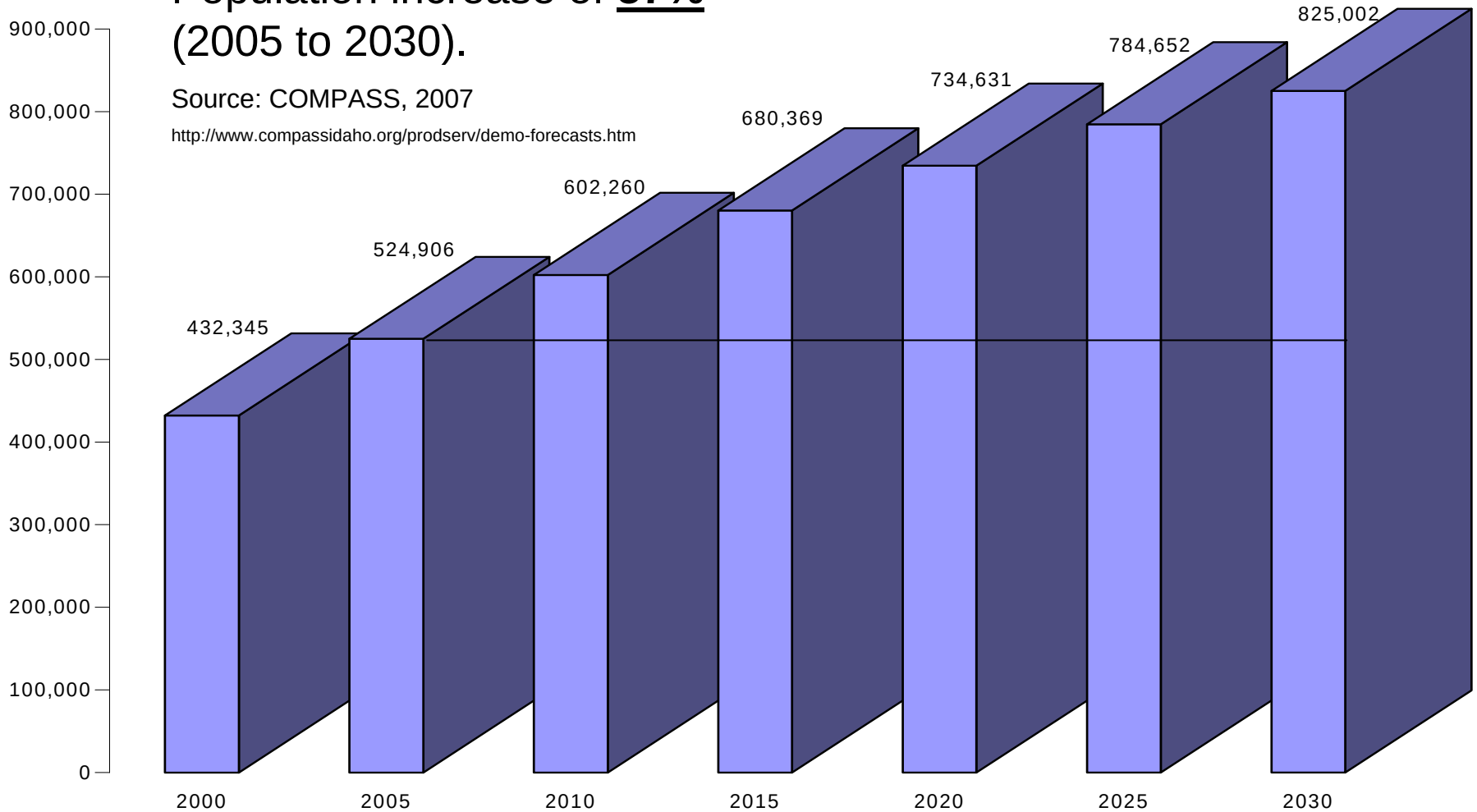


Forecast Growth in the Treasure Valley

Population increase of **57%** (2005 to 2030).

Source: COMPASS, 2007

http://www.compassidaho.org/prodserv/demo-forecasts.htm

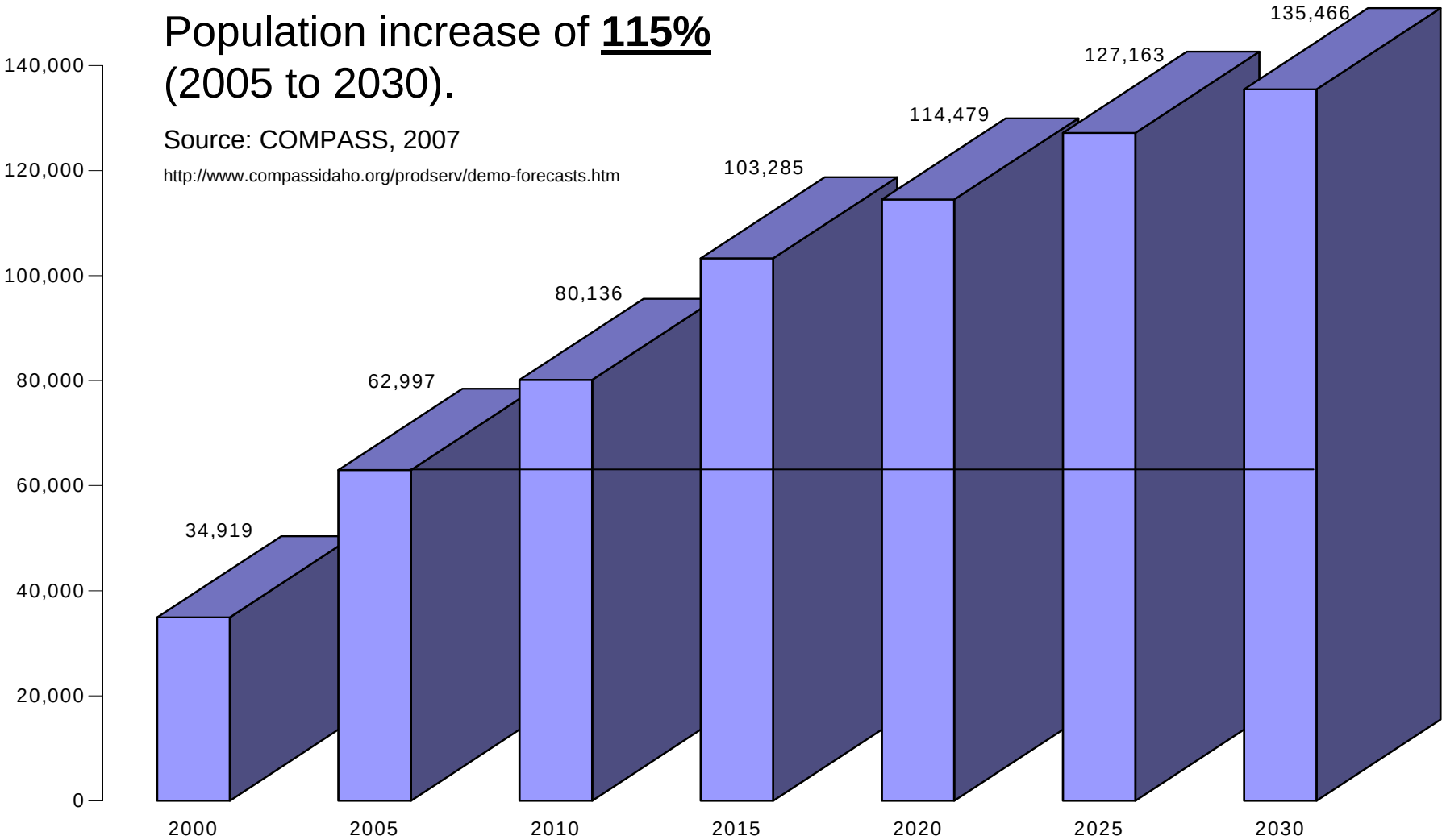


Forecast Growth in Meridian

Population increase of **115%** (2005 to 2030).

Source: COMPASS, 2007

http://www.compassidaho.org/prodserv/demo-forecasts.htm

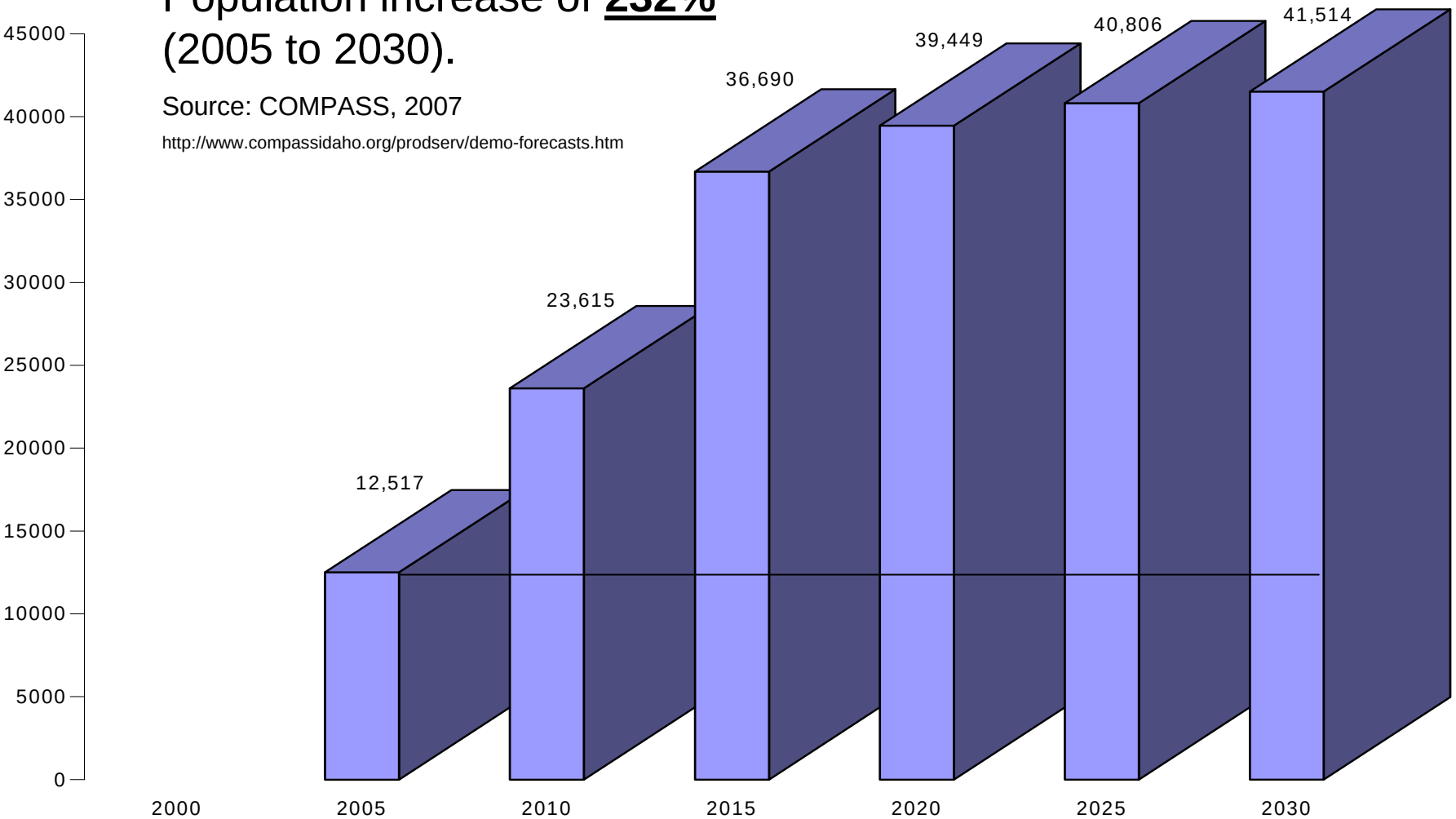


Forecast Growth in North Meridian

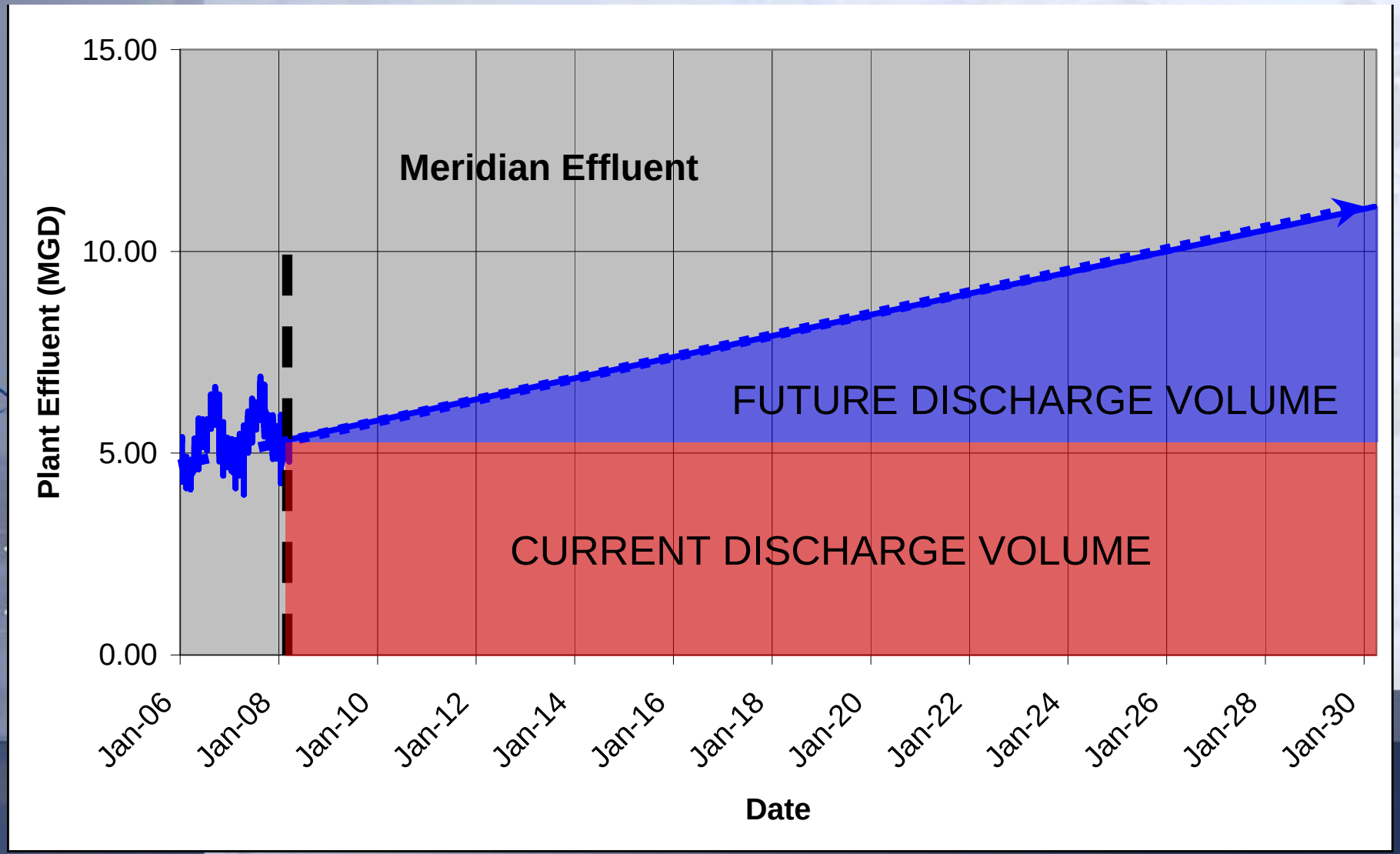
Population increase of **232%** (2005 to 2030).

Source: COMPASS, 2007

http://www.compassidaho.org/prodserv/demo-forecasts.htm



Future effluent is a “drought-proof” water supply



Evolving regulatory environment

- Pending discharge permit requirements
  - Caps ammonia and phosphorus loads
- Near-term
  - Treatment process modifications
- Long-term
  - Water quality driven permitting
  - Lower Boise River TMDL (Load Allocations)
- Fast-paced growth
  - Effluent management plan

Effluent management provides greater plant capacity to meet the demands of growth in Meridian.

Reduce Effluent Total P in 5 years and further reduction in 15 years

Lower Boise River Implementation Plan Total Phosphorus DRAFT April 2008

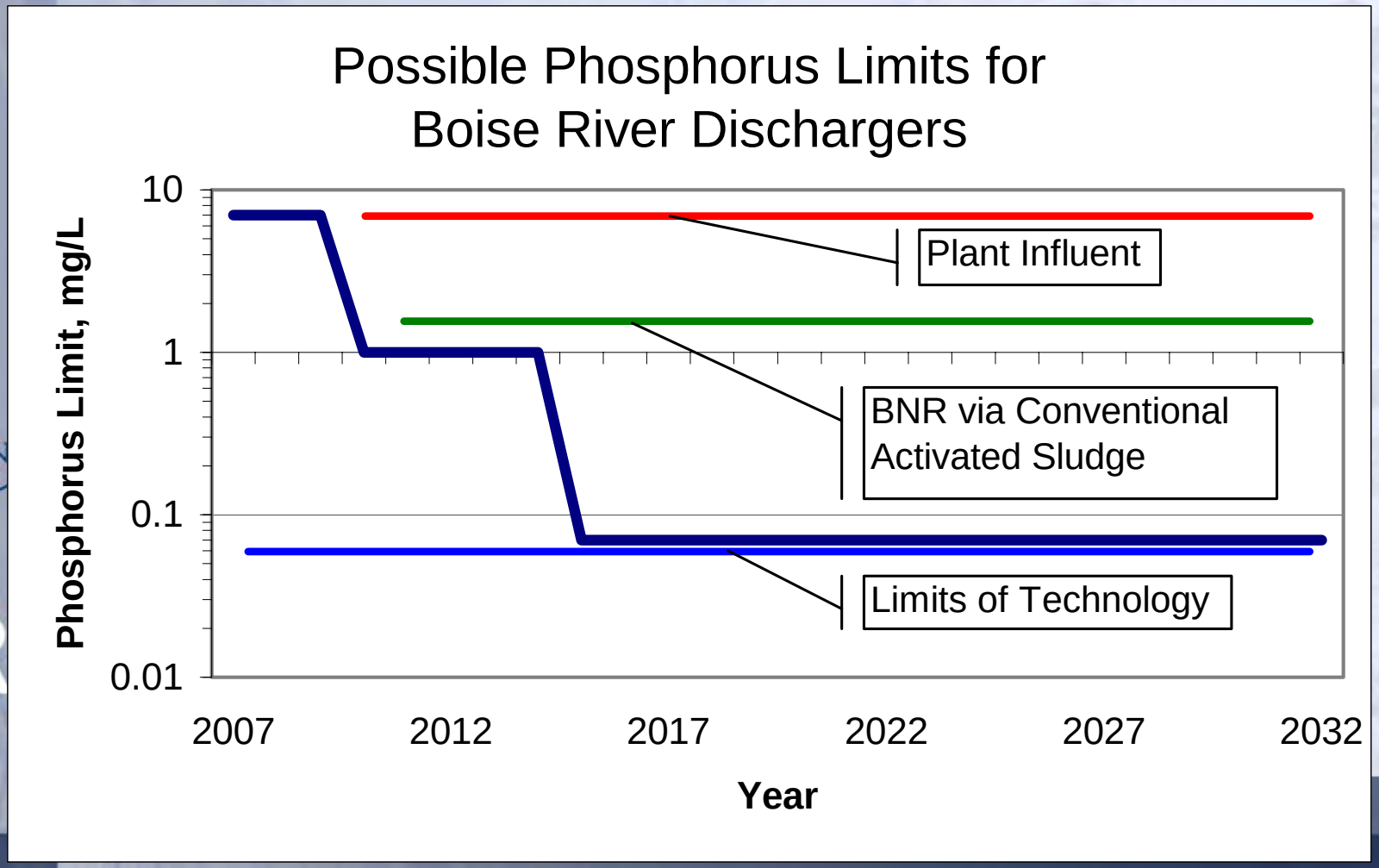
Table 20. Estimated Implementation Schedule for Point Sources Phosphorus Removal

Source Name	Current Concentration (mg/L)	1st Permit Cycle Concentration (mg/L)	2nd Permit Cycle Concentration (mg/L)	3rd Permit Cycle Concentration (mg/L)
Mainstem				
Lander Street WWTF	2.6	1.0	0.50	0.20
West Boise WWTF	4.9	1.0	0.50	0.20
Caldwell WWTF	1.2	0.50	0.20	
Tributary				
Meridian WWTF	2.6	0.50	0.50	0.20
Nampa WWTF	5.9	1.0	0.50	0.20

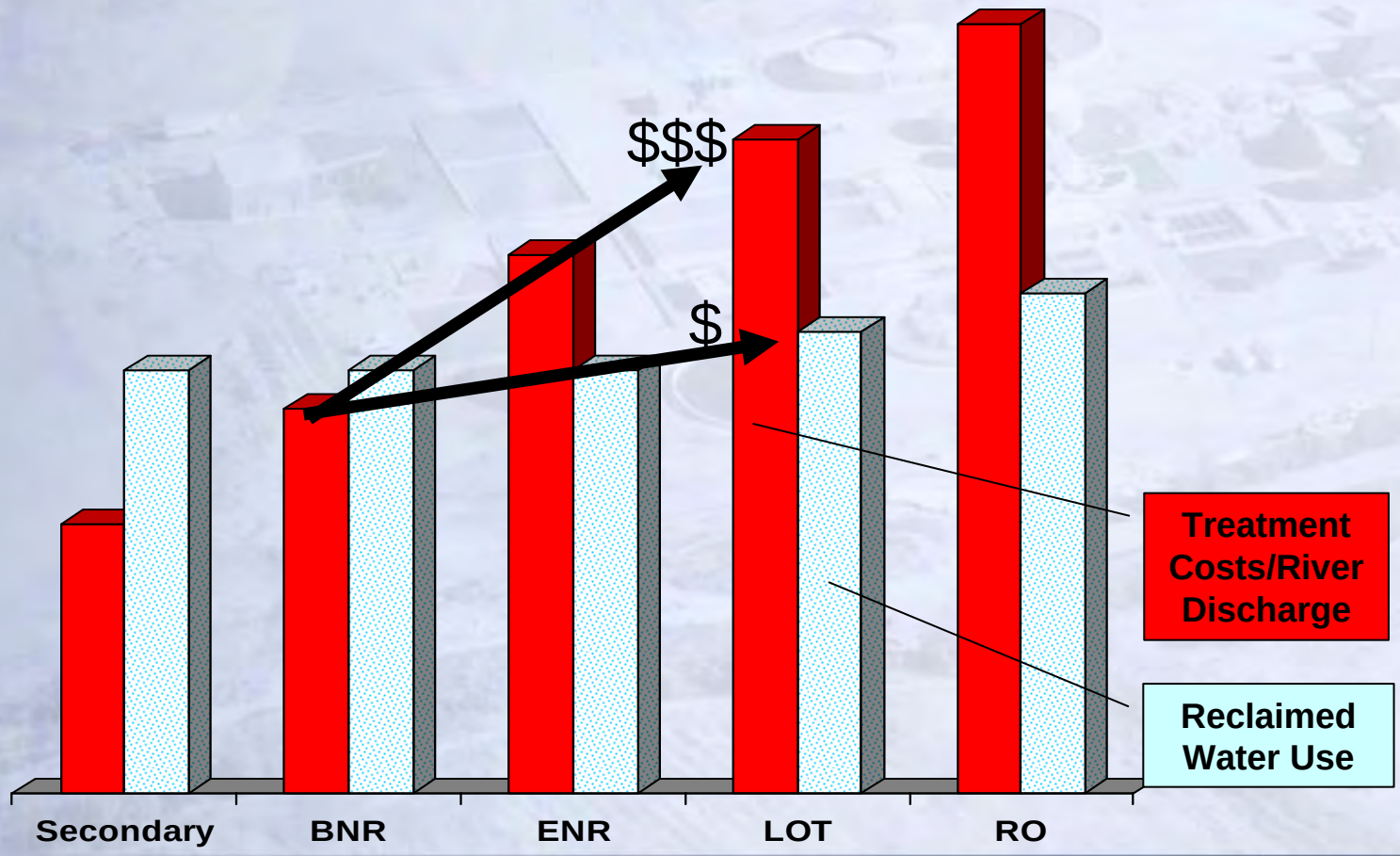
Permit cycles are expected to be approximately 5 years

Source: Lower Boise River Implementation Plan Total Phosphorus DRAFT. Public Comment Draft. April 2008 Lower Boise River Watershed Council and Idaho Department of Environmental Quality. Boise, Idaho. Page 44.

Challenges in getting to < 0.07 mg/L

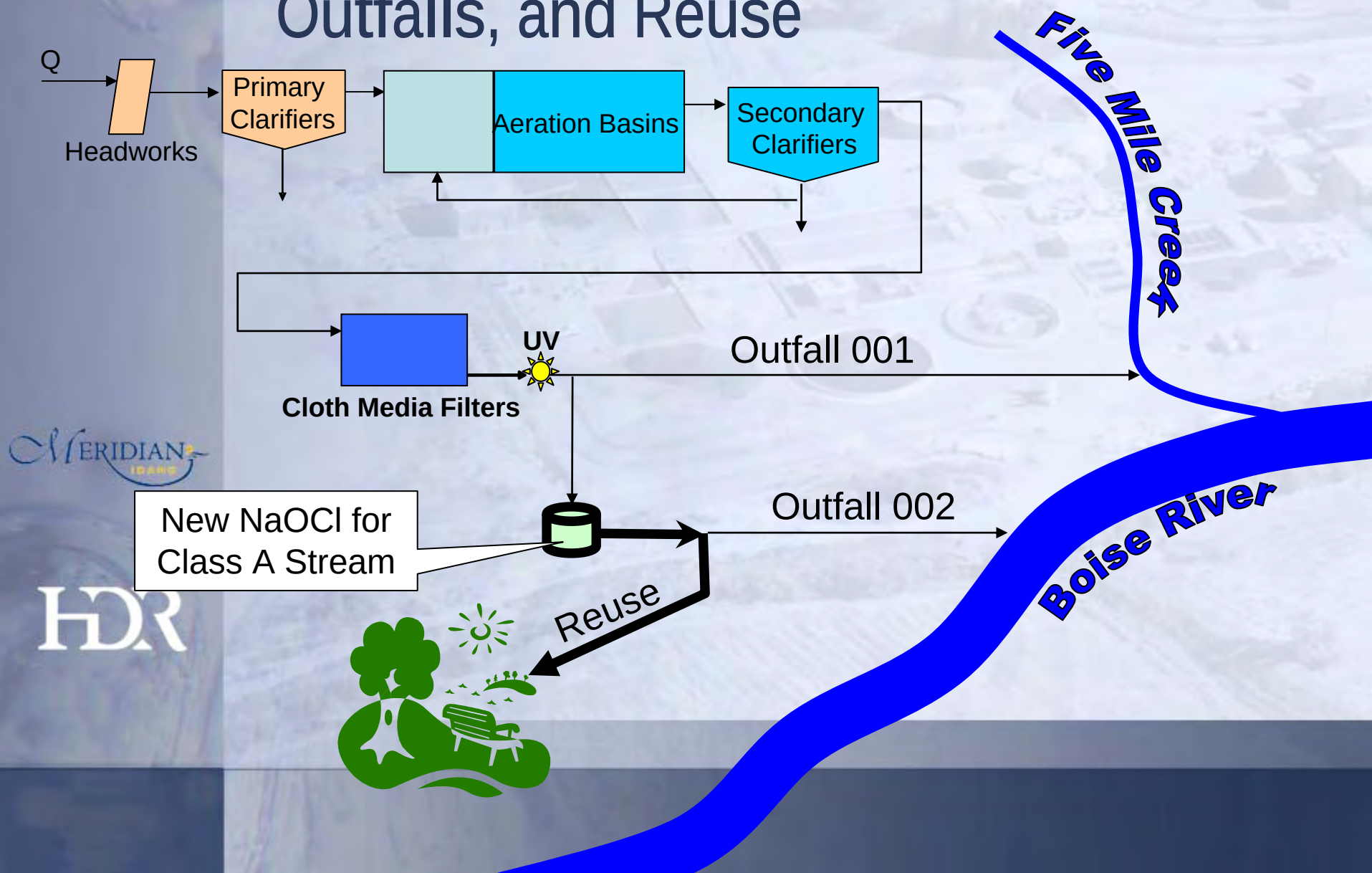


Long-Term Strategies for Cost Effective TMDL/Permit Compliance



Relative Cost Comparison for Treatment and Discharge vs Seasonal Reuse

Flow Schematic: Treatment Process, Outfalls, and Reuse



Cloth Media Filter Upgrade (2007)

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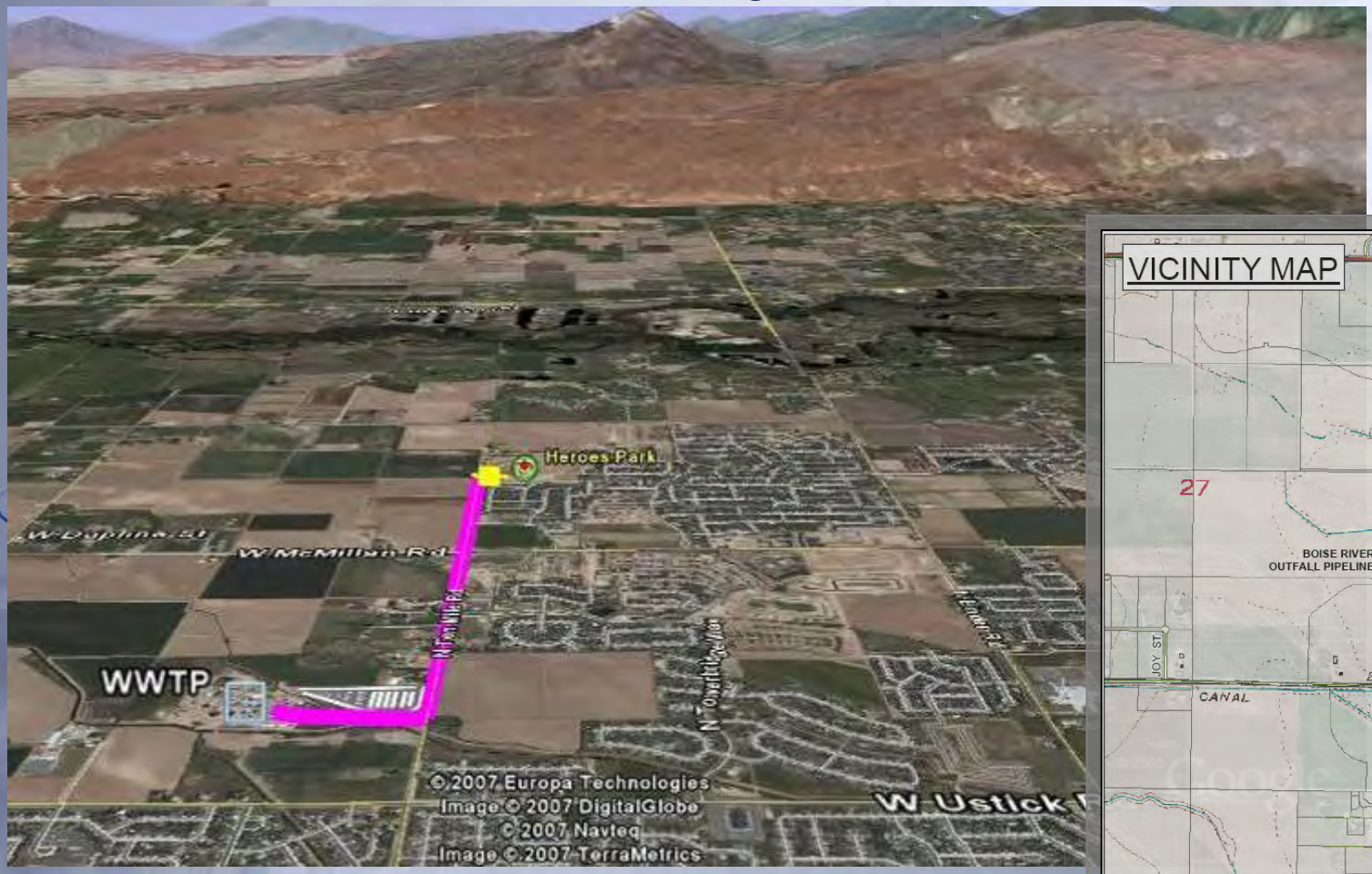
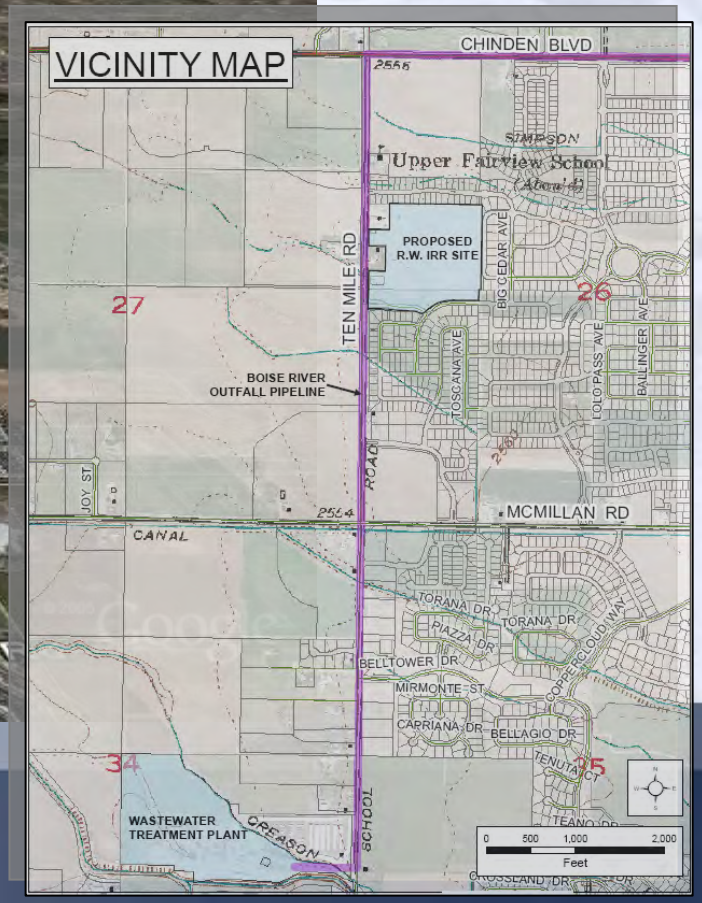
Existing UV Disinfection

- Chlorine disinfection
  - CT = 450 mg-min/L
  - > 90 minutes modal contact time during peak day dry weather flow
- Alternative disinfection
  - 5-log inactivation of virus
  - CA DHS approval

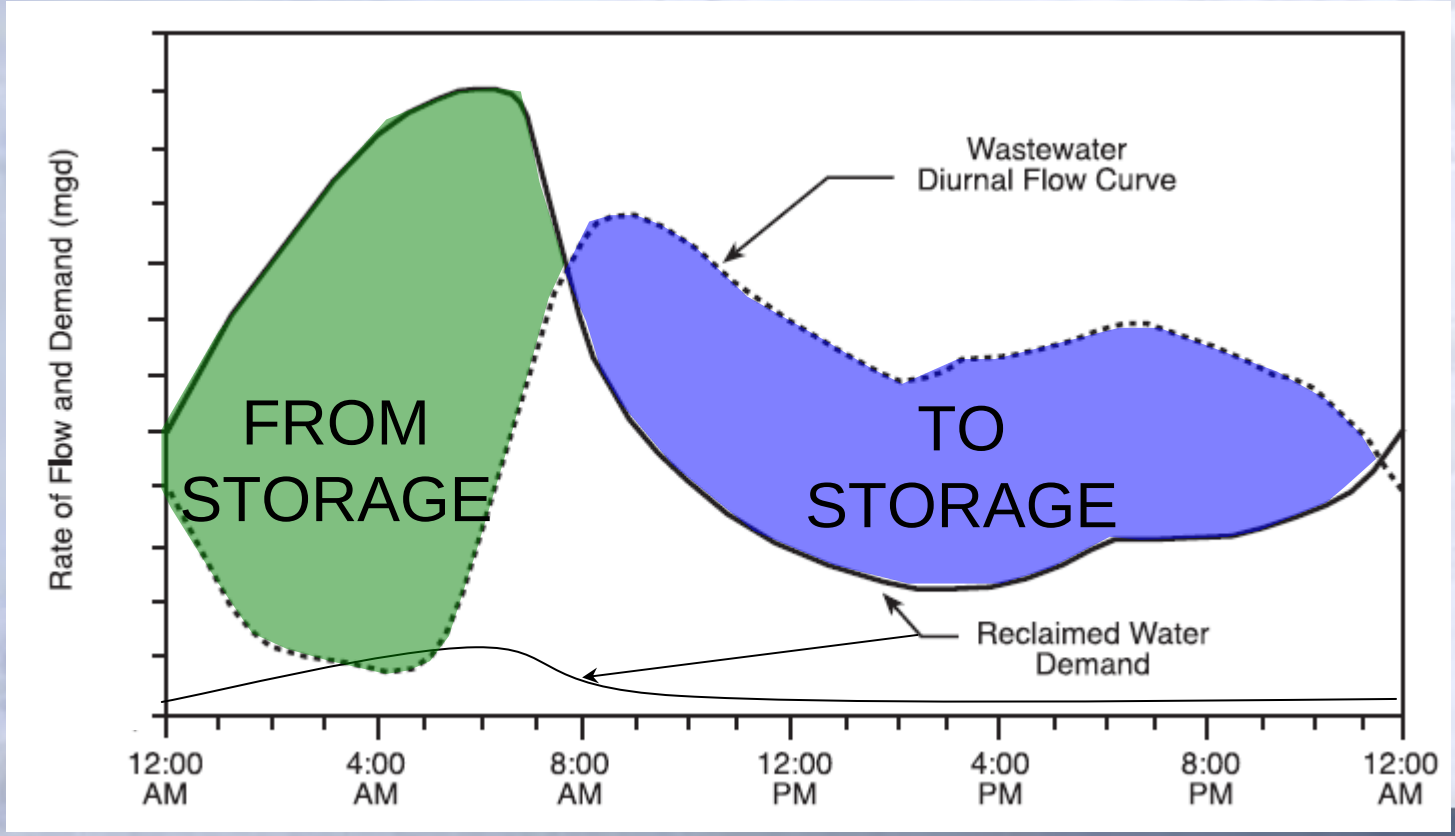
Rarely used outfall becomes reclaimed water conveyance





Park conveniently located adjacent to outfall/reclaimed water pipeline

Existing, lined storage available

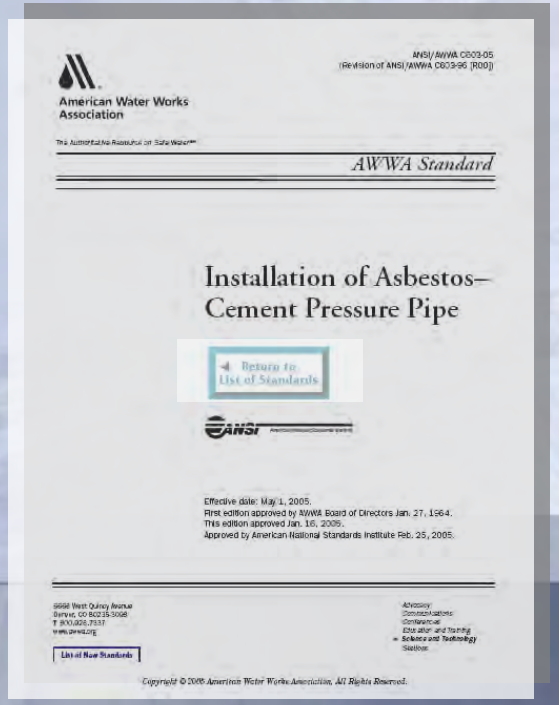


Adapted from: US EPA Guidelines for Water Reuse, EPA 625/R-04/108, September 2004.

Storage Available at Heroes Park

Pressure/Leak Testing of Pipeline

- 2X Max Operating Pressure
- Max Leakage Rate



ANSI/AWWA C603-05
(Revision of ANSI/AWWA C603-96 [R00])

American Water Works Association

The Authoritative Resource on Safe Water™

AWWA Standard

Installation of Asbestos–Cement Pressure Pipe

Return to List of Standards

Effective date: May 1, 2005.
First edition approved by AWWA Board of Directors Jan. 27, 1964.
This edition approved Jan. 16, 2005.
Approved by American National Standards Institute Feb. 25, 2005.

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List of New Standards

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Stations

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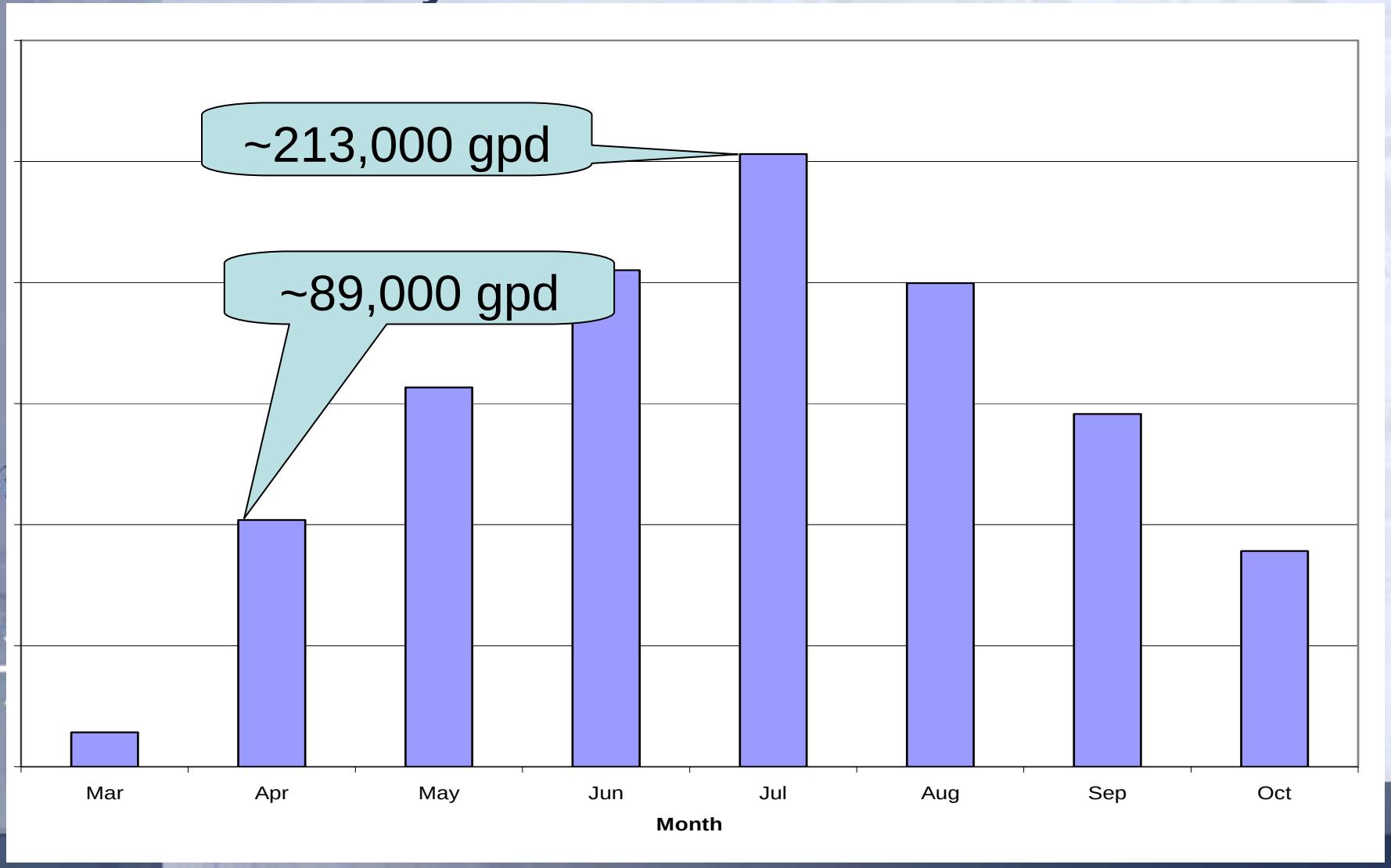
Monthly Water Balance



Constituent Loading

Crop type:	Turf Grass
Crop yield:	None
Wastewater applied to land treatment field:	30.4 million gallons per year
Land application area:	24 acres
Water nitrate:	9.28 mg/l (average)*
Water total kjeldahl nitrogen:	2.19 mg/l (average)*

* Source: City of Meridian Wastewater Treatment Plant Facility Plan Update, Table 1.2, Page 1-23 (Carollo, 2006).

Constituent Loading (cont'd)

	Permit Limit 150% of Crop Uptake	**Estimated amount of N applied**	**In compliance with permit limit?**
Nitrogen (Class A Reclaimed Water) *not including* Supplemental Fertilizer	165	30 lbs/acre	Yes
Nitrogen w/ Supplemental Fertilizer *prior to* the turf being established	165	165 lbs/acre*	Yes
Nitrogen w/ Supplemental Fertilizer *after* the turf is established	165	121 lbs/acre	Yes

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* Including supplemental fertilizer. City Parks and Recreation Department is currently applying supplemental N in fertilizer at a rate of 174 lbs/acre annually to establish new turf and will eventually lessen the rate to 121 lbs/acre annually.

Draft Permit Requirements

Parameter	Draft Permit Requirement	Class A Requirement
Flow*		
Total Suspended Solids**		
Turbidity	24-hr Avg < 2 NTU Not to Exceed 5 NTU	24-hr Avg < 2 NTU Not to Exceed 5 NTU
pH*	6.0 – 9.0	6.0 – 9.0
Total Nitrogen	< 11.5 mg/L	< 30 mg/L
Biochemical Oxygen Demand	< 10 mg/L 5-day BOD	< 10 mg/L 5-day BOD
Total Coliform***	< 2.2 orgs/100 mL (median) < 23 orgs/100 mL in any one sample	< 2.2 orgs/100 mL (median) < 23 orgs/100 mL in any one sample

Public Involvement and Perception

RECLAIMED WASTEWATER

The Right Water for the Right Use

WE ARE USING WATER WISELY

MERIDIAN IDAHO

DO NOT DRINK FROM THE IRRIGATION SYSTEM

CAUTION: RECLAIMED WASTEWATER IS NOT INTENDED FOR HUMAN CONSUMPTION.
ATTENCIÓN: EL AGUA DE DESECHO RECICLADA NO ES APROPIADA PARA EL CONSUMO HUMANO.

Discussion…

THANK YOU!!

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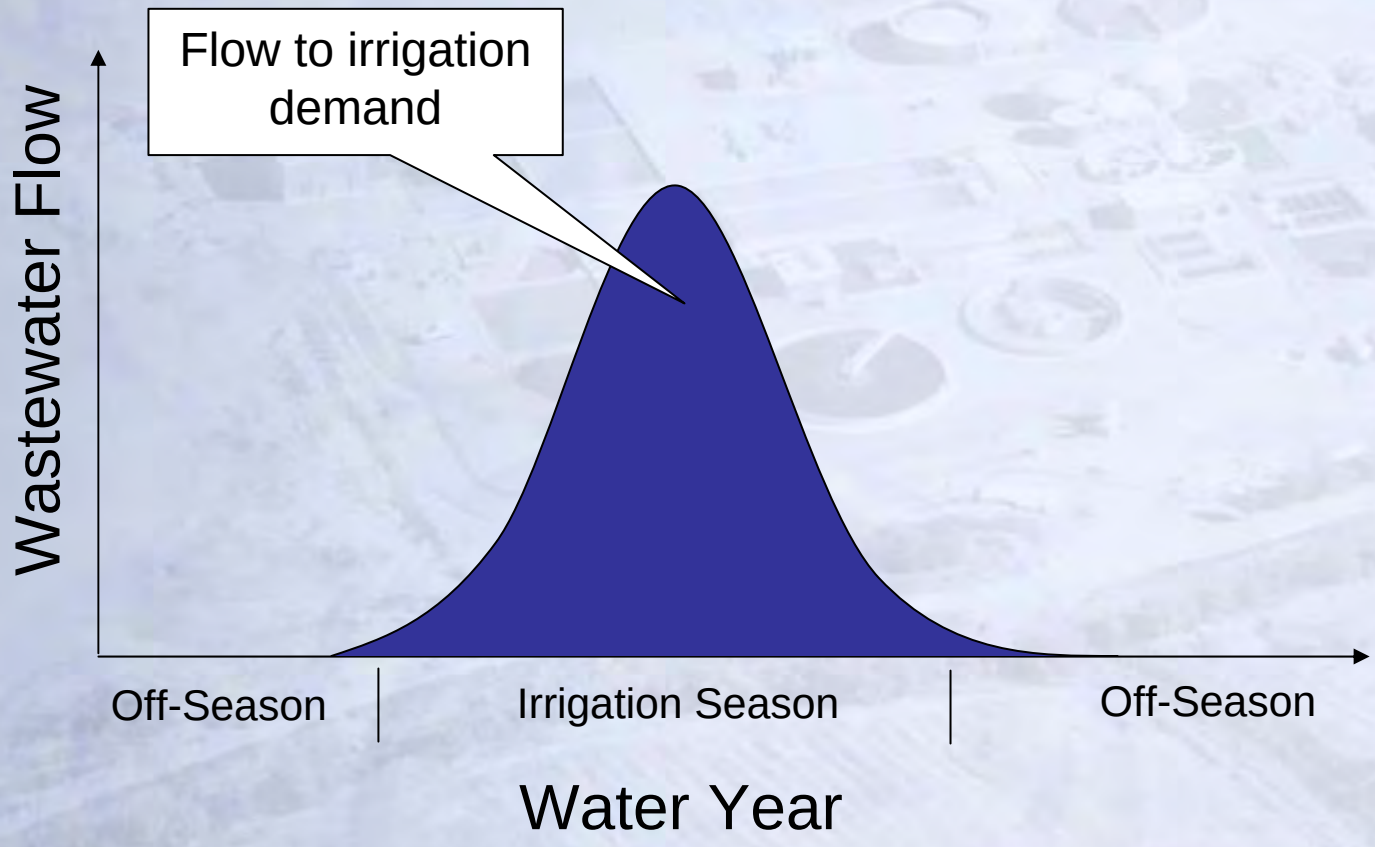
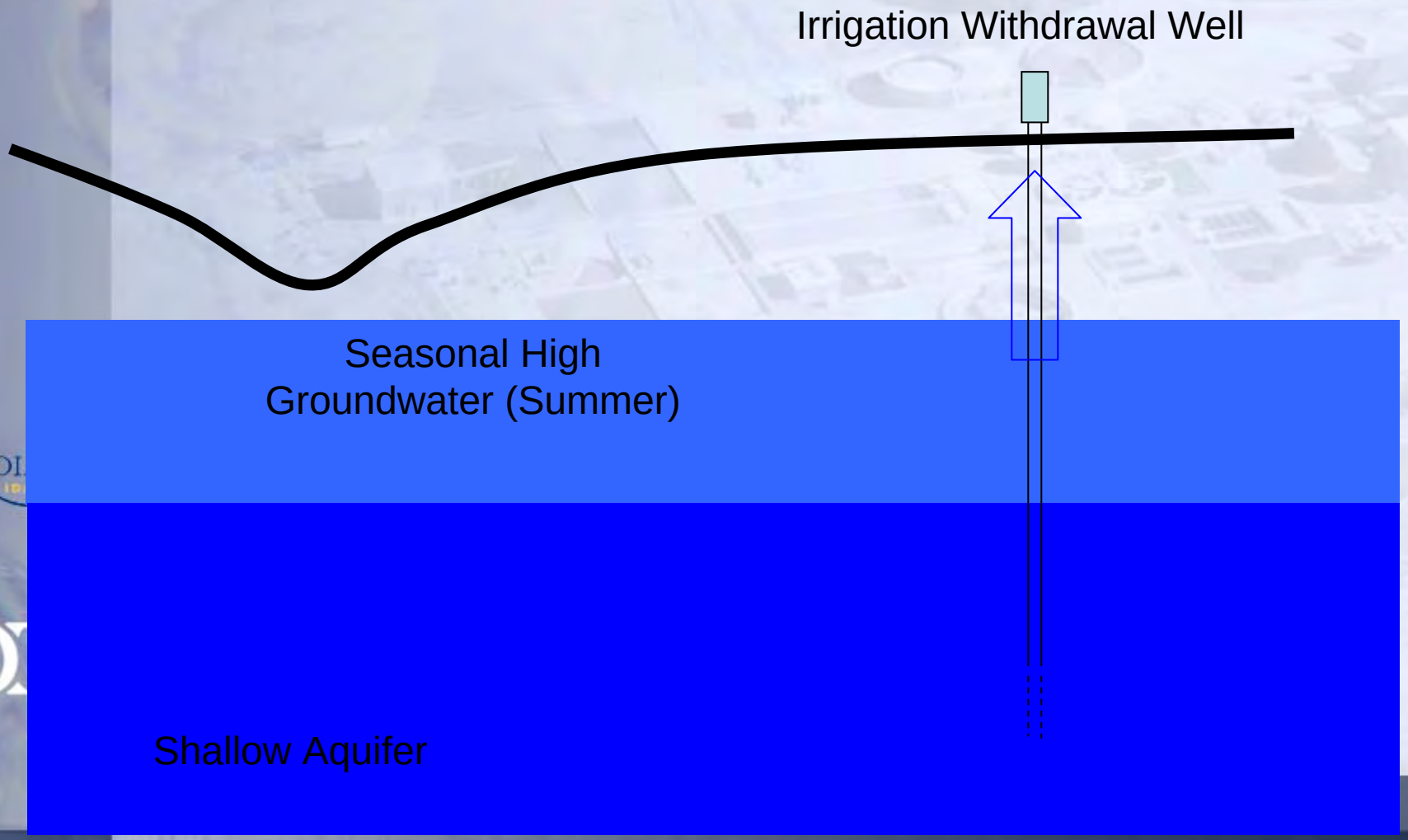
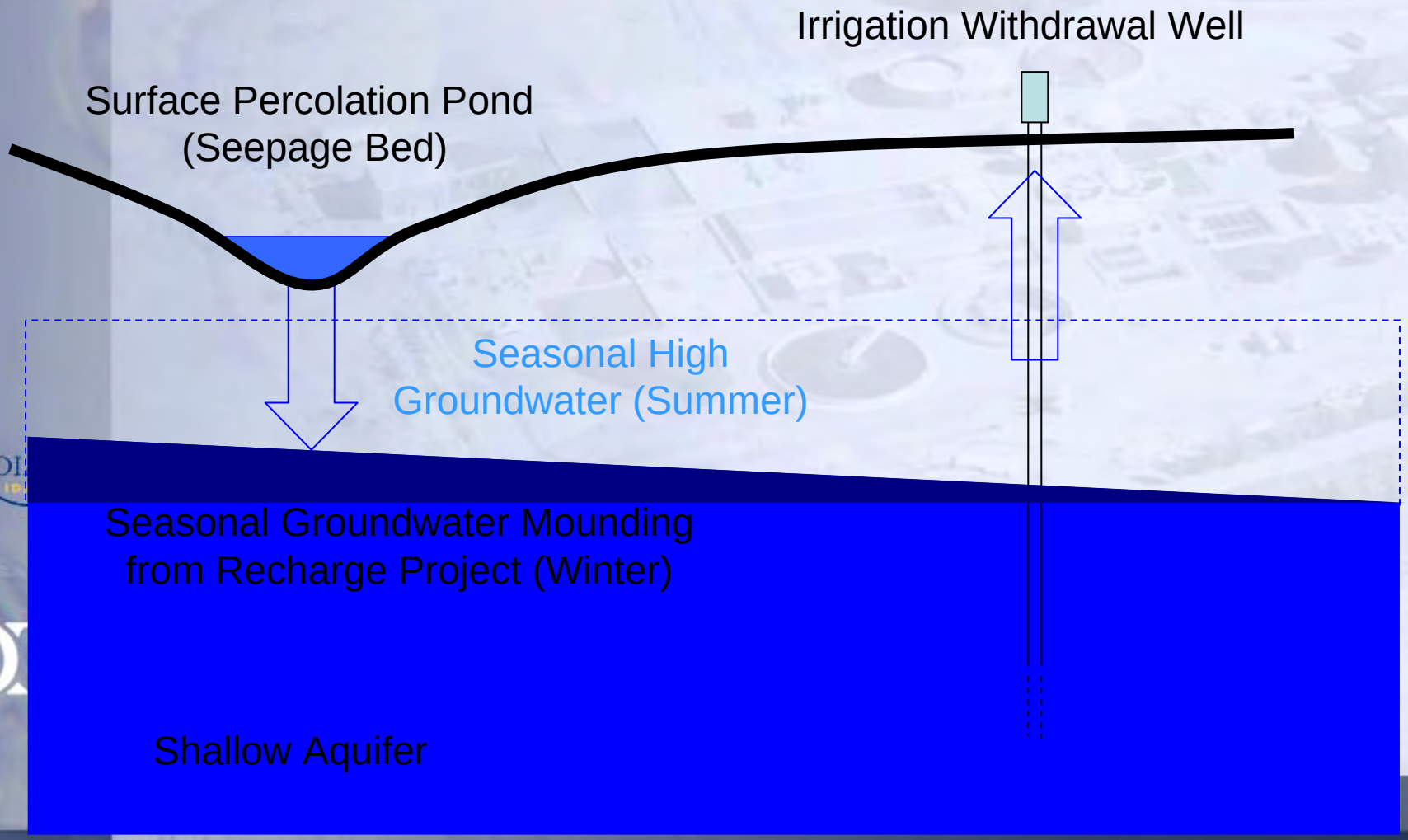
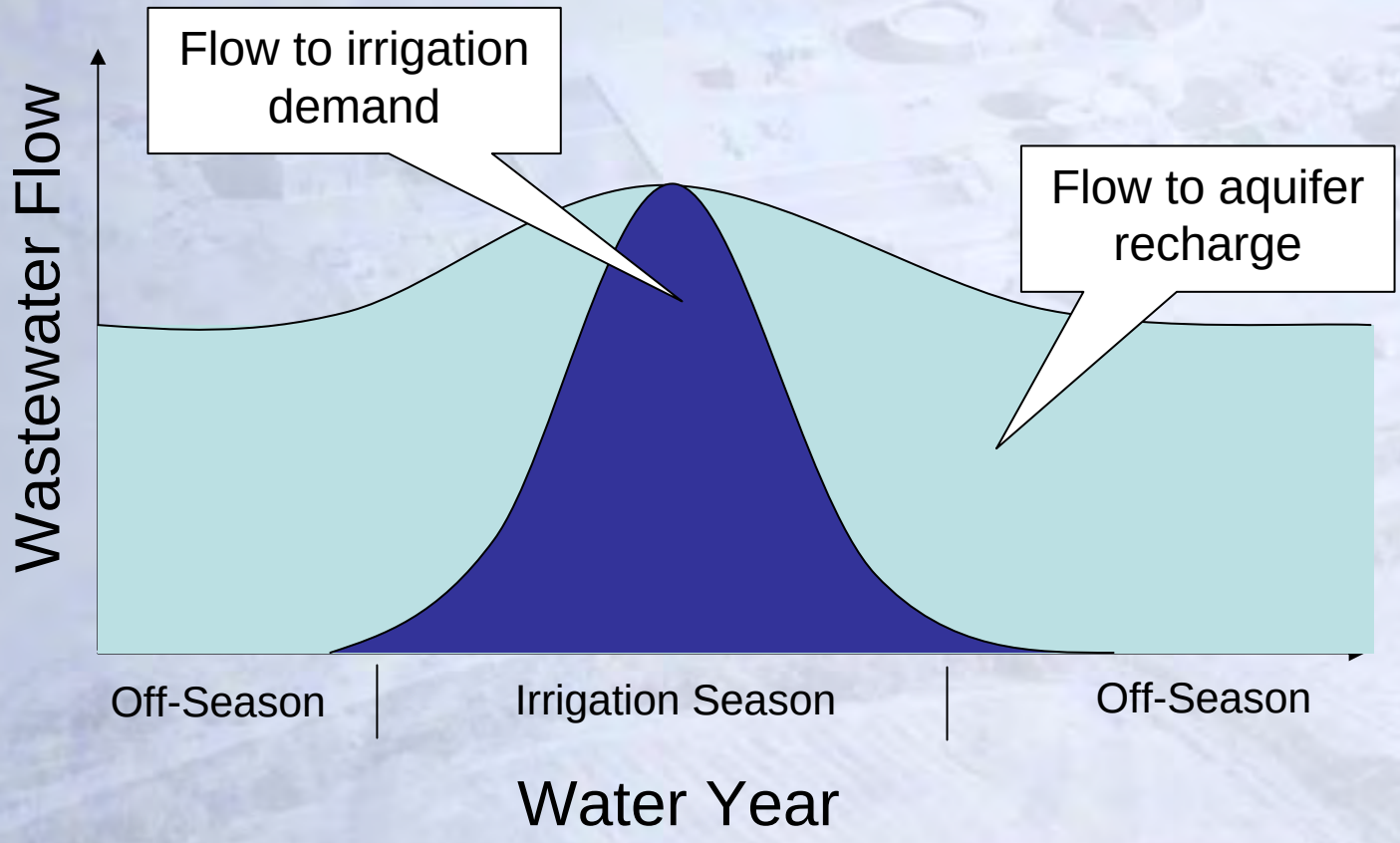
Irrigation is a Seasonal Effluent End Use Alternative



Typical Groundwater Withdrawal



Off-season Mounding of Reclaimed Water



In the Treasure Valley, Recharge is an Annual Effluent End Use Alternative