CITY OF QUINCY – Q1W PLAN
SERVER FARMS AND INDUSTRIAL WATER AND WASTEWATER USERS

• Introduction
• Water Balance 101
• Complex Closed Loop System
• Aquifer Storage and Recovery
• Permitting Pathway Including Loss of Outfall
CITY OF QUINCY – Q1W PLAN INDUSTRY ENGAGEMENT

- Small town, big industry
- 7,200 population, 13 industrial users
- Losing outfalls, water supply stressed

Microsoft             Sabey                     Intuit
Lamb Weston           Star Ranch                Quincy Fresh
Quincy Foods          Oath                      Vitalix
Vantage               Double Diamond            Imerys
Amway
WATER BALANCE 101

Gallons per Month

Month

Reuse Supply

Reuse Demand
Q1W WATER BALANCE MODEL – THE TDS EFFECT
MASS BALANCE MODEL
SCENARIO 1
SCENARIO 2
SCENARIO 3
SCENARIO 4

![Diagram showing monthly MGD Recovery and Recharge from 2022 to 2040, with labels for Reuse Demand and Effluent sources.]
SCENARIO 5
WATER BALANCE 101

Gallons per Month

Month

Reuse Supply

Reuse Demand
AQUIFER STORAGE AND RECOVERY
STORAGE OPTIONS (TANKS)

- 10,000,000 Gallon Storage Tank
- Need 12 for 120,000,000 gallons
- $10,000,000 to $15,000,000 each
- $120,000,000 to $180,000,000
- $1.0 to $1.5/gallon, 20+ times ASR
- Tanks easily managed
- More storage = more tanks = larger footprint (a tank farm)
STORAGE OPTIONS (POND/BASIN)

- 120,000,000 gallons = 368 acre-feet
- 10 foot deep pond/basin, 36.8 acres, qtr/qtr section
- Sealed (prevent leakage) and Covered (keep debris out)
- Seasonal issues
- Cost?
- More storage = bigger pond
STORAGE OPTIONS (ASR)

- Uses well(s) and the CRBG aquifer
- Capital cost: $5,000,000 to $6,000,000 (includes Phase 1) to build, test, and permit by 2022
- $0.05 to $0.06/gallon
- Small foot print (well house/discharge basin)
- Storage volume only limited by aquifer
- Unrecovered stored water benefits aquifer (an OCR goal)
THE ASR BUBBLE

- Manage Injected Q1W Water in Storage Zone
- Push Native and Mixed Q1W-Native Groundwater Away
- Recover Q1W Water

Diagram:

- **C1** = Blended Injection Water
- **C2** = Injection Water Influenced by basalt chemistry
- **C3** = Mixed Injection Water and Groundwater, Influenced by Basalt Chemistry
- **C4** = Background Groundwater

Drawing Not to Scale. During recovery, reverse arrow direction.
PERMITTING PATHWAY

- One Model
INDUSTRY ENGINEERING REPORT COORDINATION AND REVIEW

- Contact industries with requests to update individual engineering reports.
- Evaluate individual industry engineering reports with respect to meeting the requirements of WAC 173-240-130.
- Evaluate the collective industrial discharges to the IWTP/IRWTP and make recommendations regarding the need for IWTP/IRWTP improvements, and the need for pollutant discharge limits for individual industries.
**DECISION REGARDING INDUSTRIAL REUSE SWDP PERMIT**

- Various potential decisions/outcomes based on the water balance and other permitting considerations:
  - Industrial reuse becomes a part of the existing NPDES permit and the industrial reuse SWTP is cancelled. NPDES would have both a surface water component and a reuse piece that would allow discharge of RO water to the perc beds or other beneficial uses, OR
  - New industrial reuse SWDP (for muni perc beds and other beneficial uses) is issued separately from the existing NPDES permit, and the original industrial reuse SWTP is cancelled OR
  - Other permit arrangements, such as single permit with various discharges and beneficial uses
- When/if discharge to all surface waters ceases, existing NPDES permit is cancelled
CREATE INDUSTRIAL REUSE WATER TREATMENT PLANT
SHIFT TO IWTP EFFLUENT FEED
REUSE/RECYCLE WATER

- Pretreatment Permits
- Processors
- Msft
- Industry
- IWTP
- Brine Ponds
- IRWTP
- DW237
EXPAND PERCOLATION OR ASR

Diagram showing the relationship between Pretreatment Permits, Processors, Msft, Industry, IWTP, IRWTP, Brine Ponds, DW237, BU 1B, BU 2, BU 3, and BU 5.
ELIMINATE NPDES PERMIT

Pretreatment
Permits

Processors

Msft

Industry

Industrial Reuse Permit WA00xxxx-0

IWTP

IRWTP

Brine Ponds

BU 1B

BU 5

BU 6
THANK YOU!