January 7, 2015

Coachella Valley Salt and Nutrient Management Plan Stakeholder Meeting No. 4

DESERT WATER

WATER DISTRICT

Indio Water Authority
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Agenda

- Review Meeting Purpose
- Project Process and Update
- TM-2 Key Comments

  Discussion and Questions
- Next Steps: Salt Loading Tool

  Discussion and Questions
- Next Steps and Schedule

  Discussion and Questions

Meeting Purpose

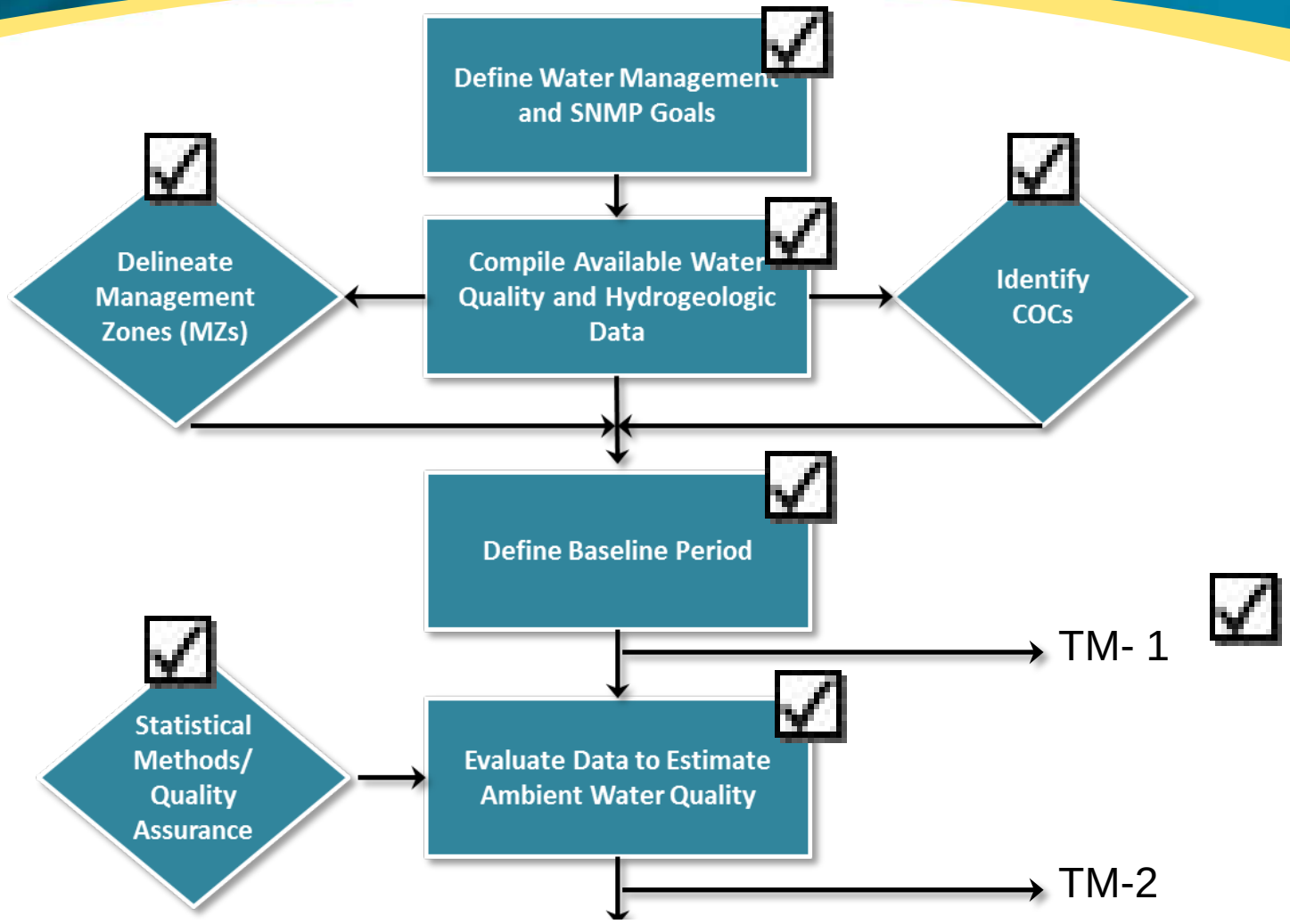
- Provide an Update on Technical Memo 2 (TM-2)
  - Stakeholder comments and responses
- Introduce Salt Loading Tool
  - What is salt loading and why is it important?
  - How the loading tool works
  - Get your help in providing information for the tool

Stakeholder Meeting No.4

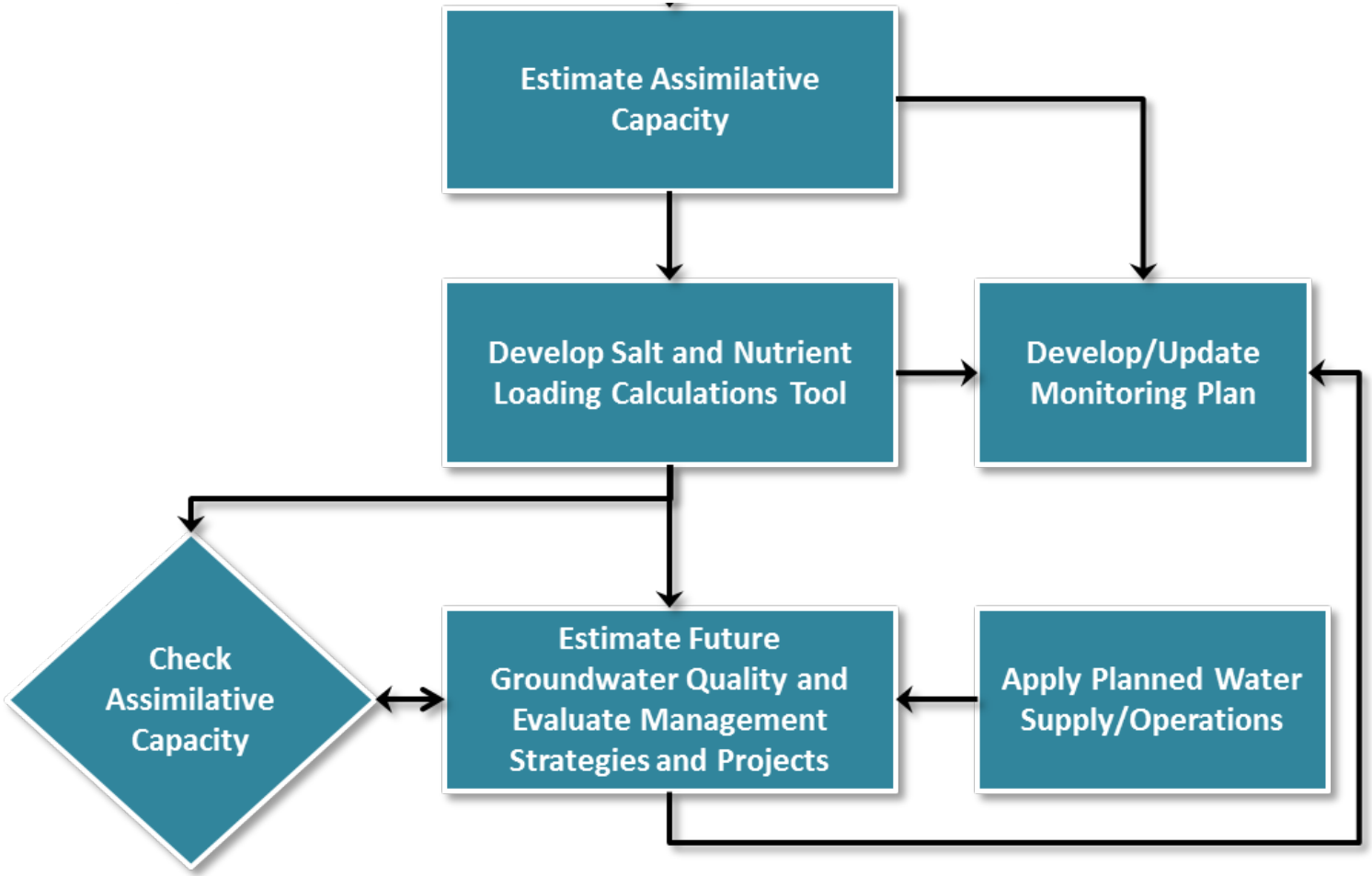
Coachella Valley Salt and Nutrient Management Plan

Project Process and Update

Project Process



Project Status — Current Process



Stakeholder Meeting No.4

Coachella Valley Salt and Nutrient Management Plan

Technical Memo 2—Stakeholder Comments and Responses

Key Issues Identified in Stakeholder Comments to be Addressed

- Quality of Data
  - What is considered sufficient data to calculate ambient water quality?
  - There are some low unrealistic values in summary tables
  - What data are being used (transparency)?
- Use of a Groundwater Flow and Transport Model
  - Is this the most accurate method to calculate ambient water quality?
- 20-Year Baseline
  - This may not consider data trends
  - Is this a current representation of ambient water quality?
    - Sufficient data is required

Key Issues (Continued)

- Management Zones (MZs)
  - Are they too large for management purposes?
  - Is the use of a single value for the MZ AWQ reasonable?
- Data Gaps and Data Collection
  - If there is not enough data, should it then be collected before proceeding?
- Shallow Aquifer Data
  - The shallow aquifer (East Valley portion of Whitewater River MZ) is likely the most impacted by surface discharges. Should this area get more consideration in the AWQ calculation?

RWQCB Comments

- Comment letter from RWQCB staff on November 5, 2014
  - Held a meeting to review comments
  - Held an additional meeting to review data
- Retraction of the comment letter on December 2, 2014

Discussion and Questions (15 minutes)

Stakeholder Meeting No.4

Coachella Valley Salt and Nutrient Management Plan

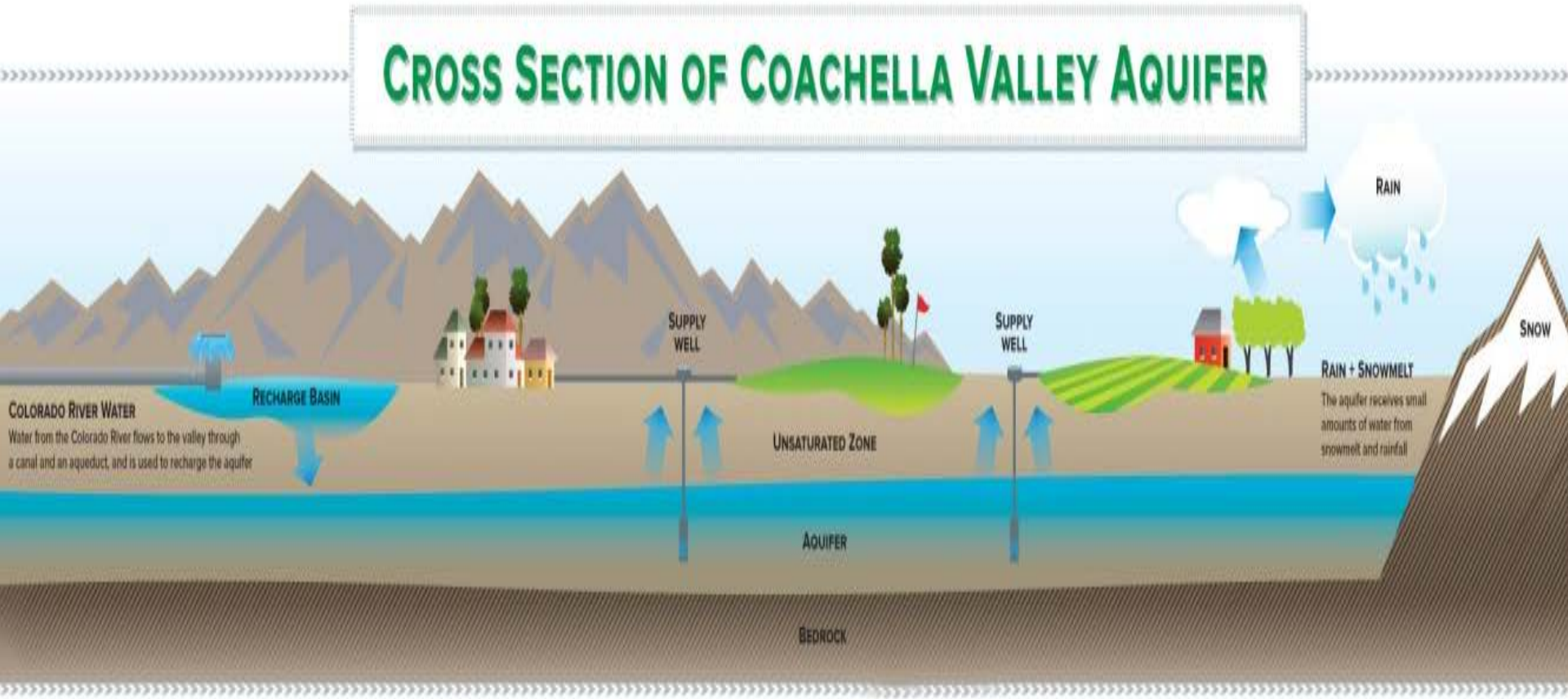
Next Step—Develop a Salt Loading Tool using Stakeholder Projects

How Does Salt/Nutrient Loading Affect Water Quality?

- All water contains salt and nutrients to varying degrees
- Salt and nutrients are added through the use of water and by natural processes
- Salts and nutrients are removed through treatment and natural processes
- Use of water for irrigation and other evaporative processes concentrate salts

Over time, salts and nutrients can accumulate affecting the beneficial use of water

Salt Sources in the Valley



What Are the Sources of Salt/Nutrients in the Valley?

Salt/Nutrient Source	TDS Range	
Precipitation	0 mg/L	20 mg/L
Local Mountain Runoff	<100 mg/L	>1,000 mg/L
Subsurface Groundwater Inflow from Other Basins	<200 mg/L	>1,000 mg/L
Imported Water		
SWP Exchange (MWD Colorado River Aqueduct)	528 mg/L	717 mg/L
Coachella Canal	625 mg/L	973 mg/L
Urban Water Use – Waste Increment	~130 mg/L	>300 mg/L
Industrial Discharges	To be evaluated	
Fertilizer Use (ag, golf, urban)	To be evaluated	
Water Treatment (chemical addition)	To be evaluated	
Animal Waste (manure)	To be evaluated	
Landfill Leachate	To be evaluated	
Saltwater Intrusion (Salton Sea and Saline GW)	To be evaluated	
Geochemical Sources (Weathering of Rocks)	To be evaluated	
Other Sources (Nitrogen fixation, etc)	To be evaluated	

What Are the Sinks (Losses) of Salt in the Valley?

- Varies by groundwater subbasin

Sink	Range	
Plant Uptake (Agricultural crops, etc.)	To be evaluated	
Subsurface Groundwater Outflow to Other Basins	<200 mg/L	>1,000 mg/L
Drain Flow to Salton Sea (East Whitewater) Varies by drain	~500 mg/L	>9,000 mg/L
Export to Landfills Outside the Region	To be evaluated	
Flowing Artesian Wells	~200-300 mg/L	
Brine Disposal (Future Desalination)	To be evaluated	
Other sinks	To be evaluated	

What is a Salt Loading Tool?

- A salt loading tool is a compilation of all sources and sinks of salt/nutrients in a management zone over a planning period

- Current and planned future projects and programs that will affect salt loading in a basin are evaluated

What is the Objective of a Salt Loading Tool?

To evaluate current and future planned projects having the potential to significantly change water quality to a management zone

- Must consider existing conditions
- Flexible to consider changing future projects, conditions, and practices
- Ability to test management strategies

How Do We Model Salt/Nutrient Loading and Water Quality?

- Water Balance:

Sum of Inflows – Sum of Outflows = Change in Storage

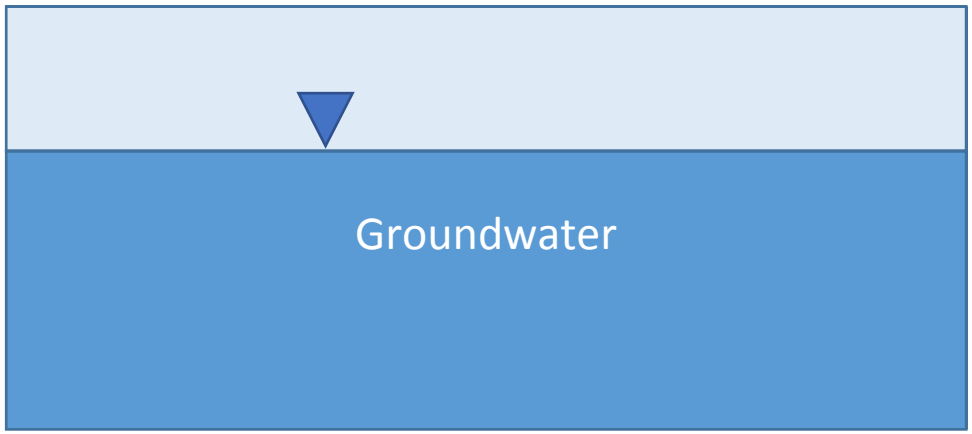
- Mass Balance

Sum of Mass In – Sum of Mass Out = Change in Mass

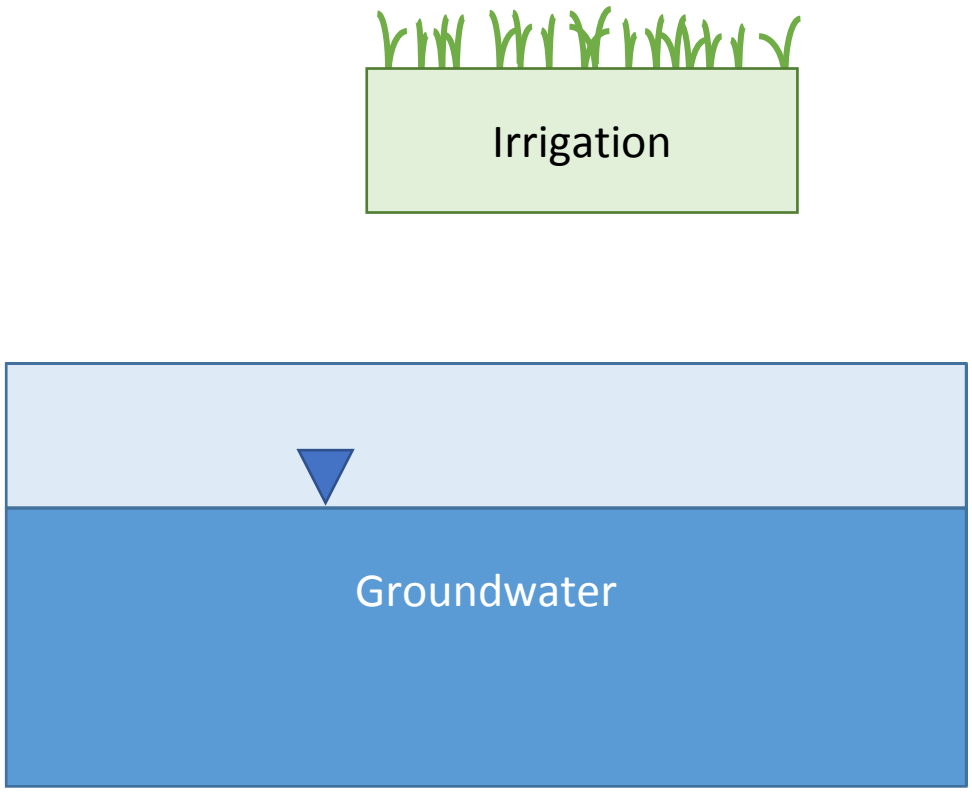
Mass = Concentration × Volume

Change in Concentration = Change in Mass / Total Volume

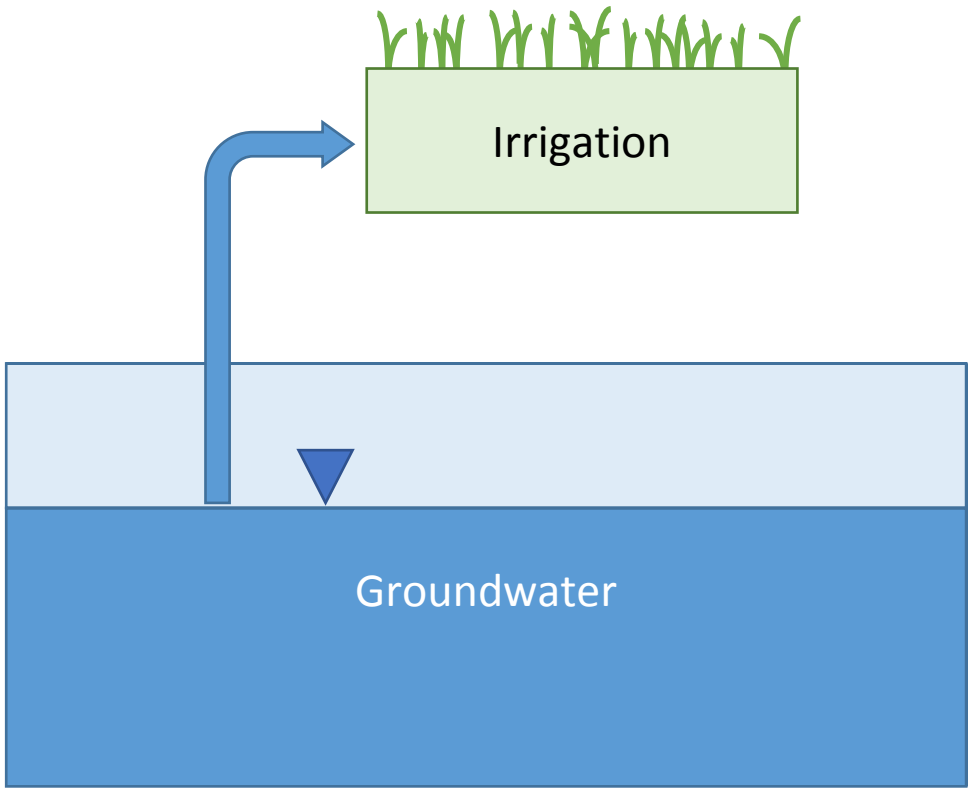
Start with Groundwater Basin



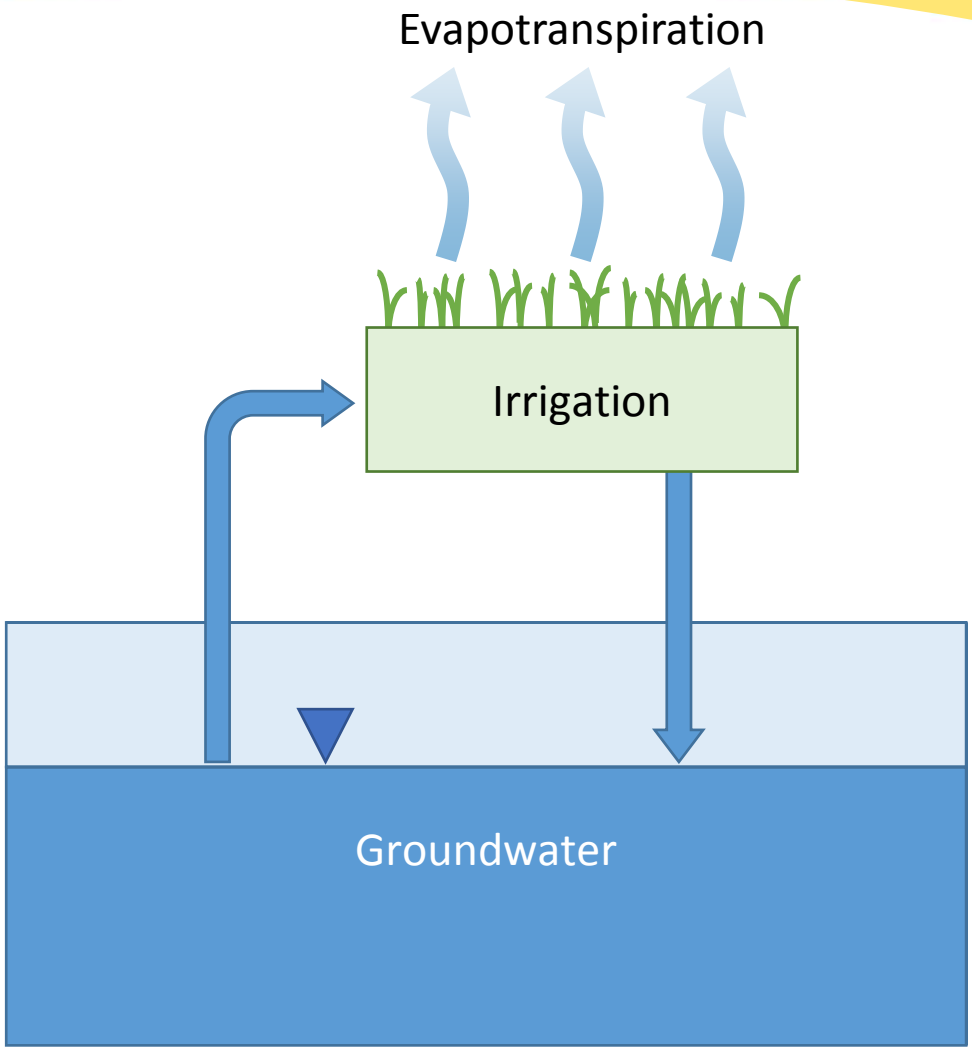
Add a Use – Irrigation



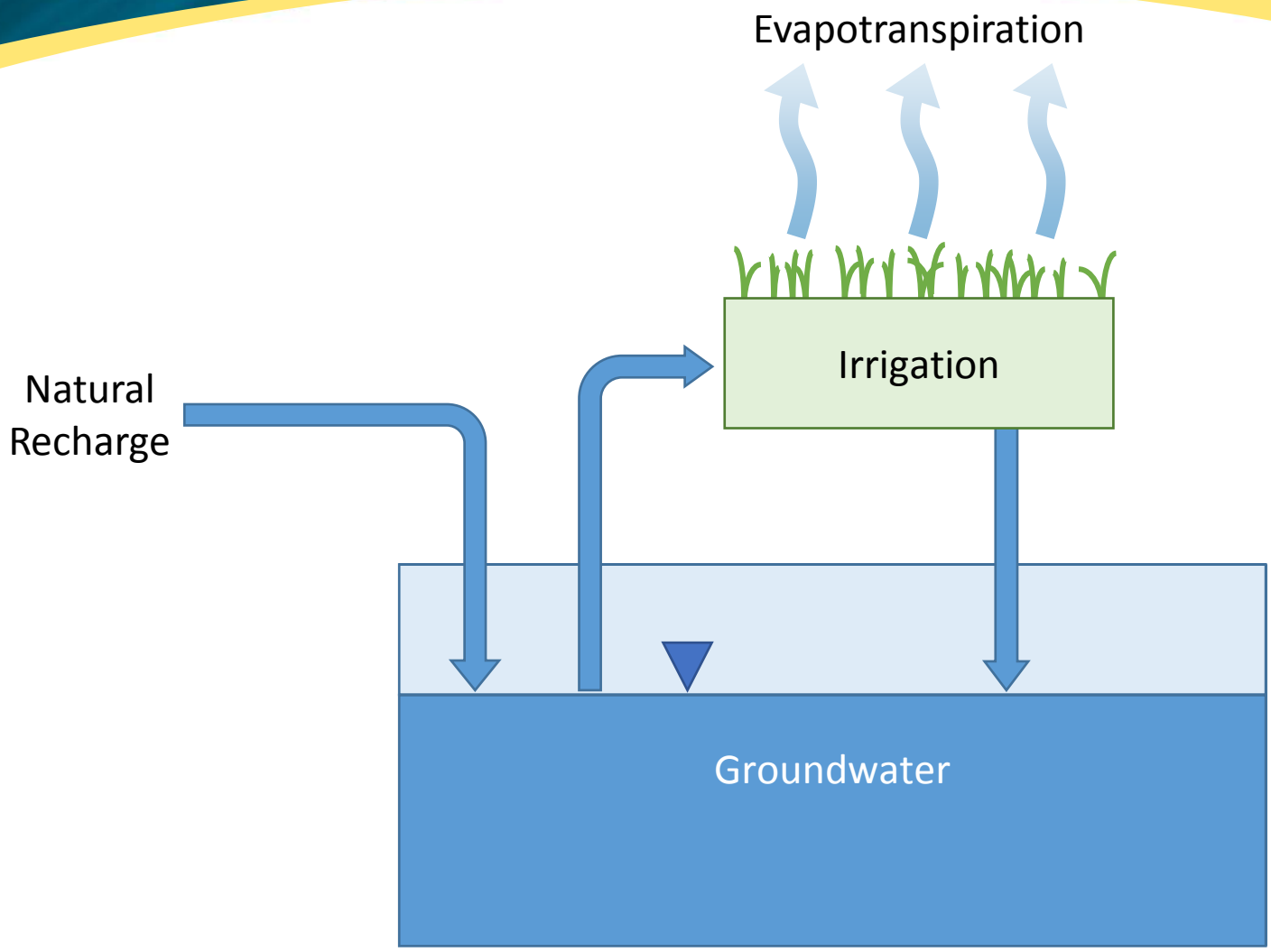
The Irrigation is Supplied by Groundwater



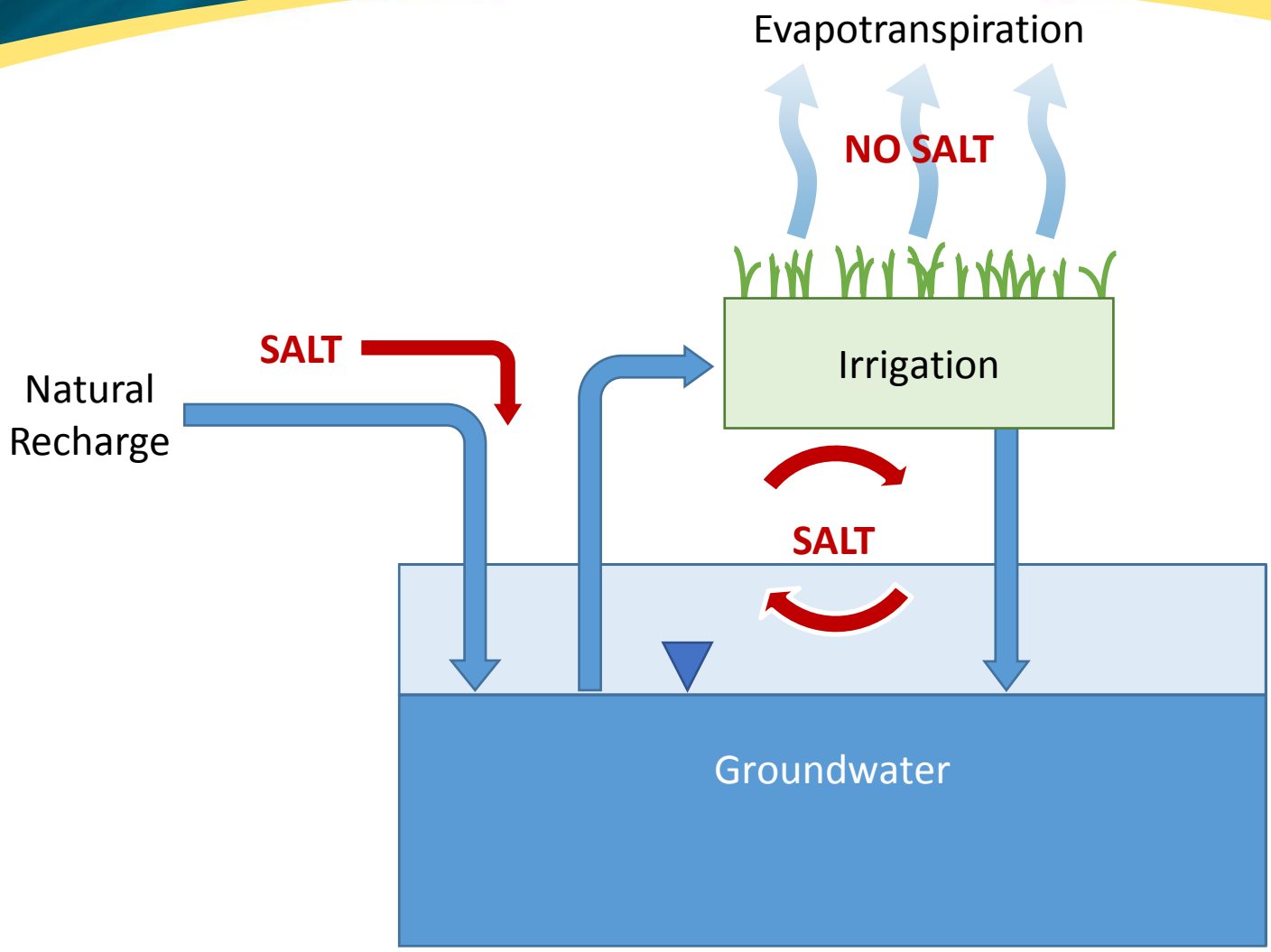
Water is Lost to Evapotranspiration and Some Percolates to Groundwater



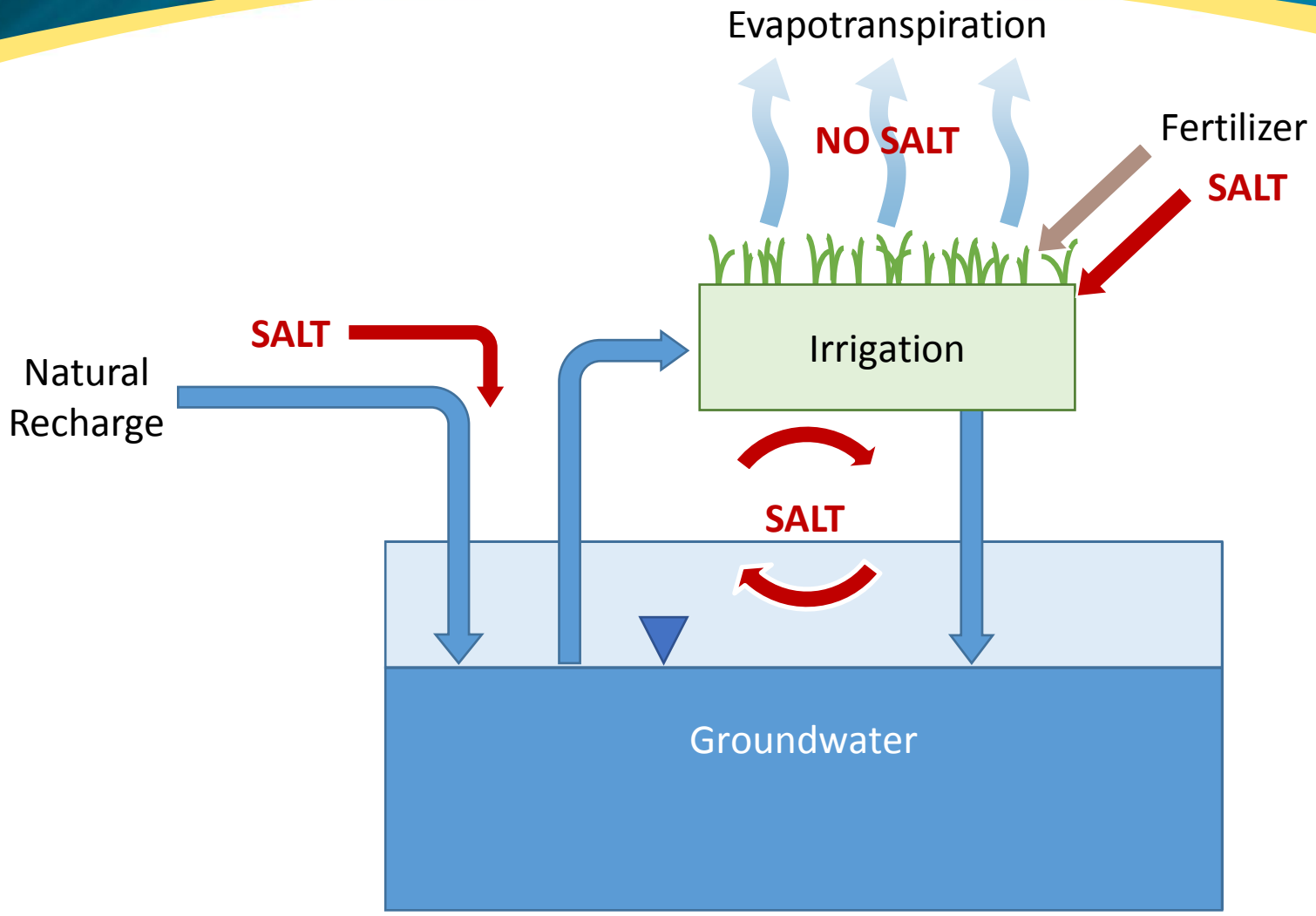
Groundwater is also Replenished by Natural Recharge



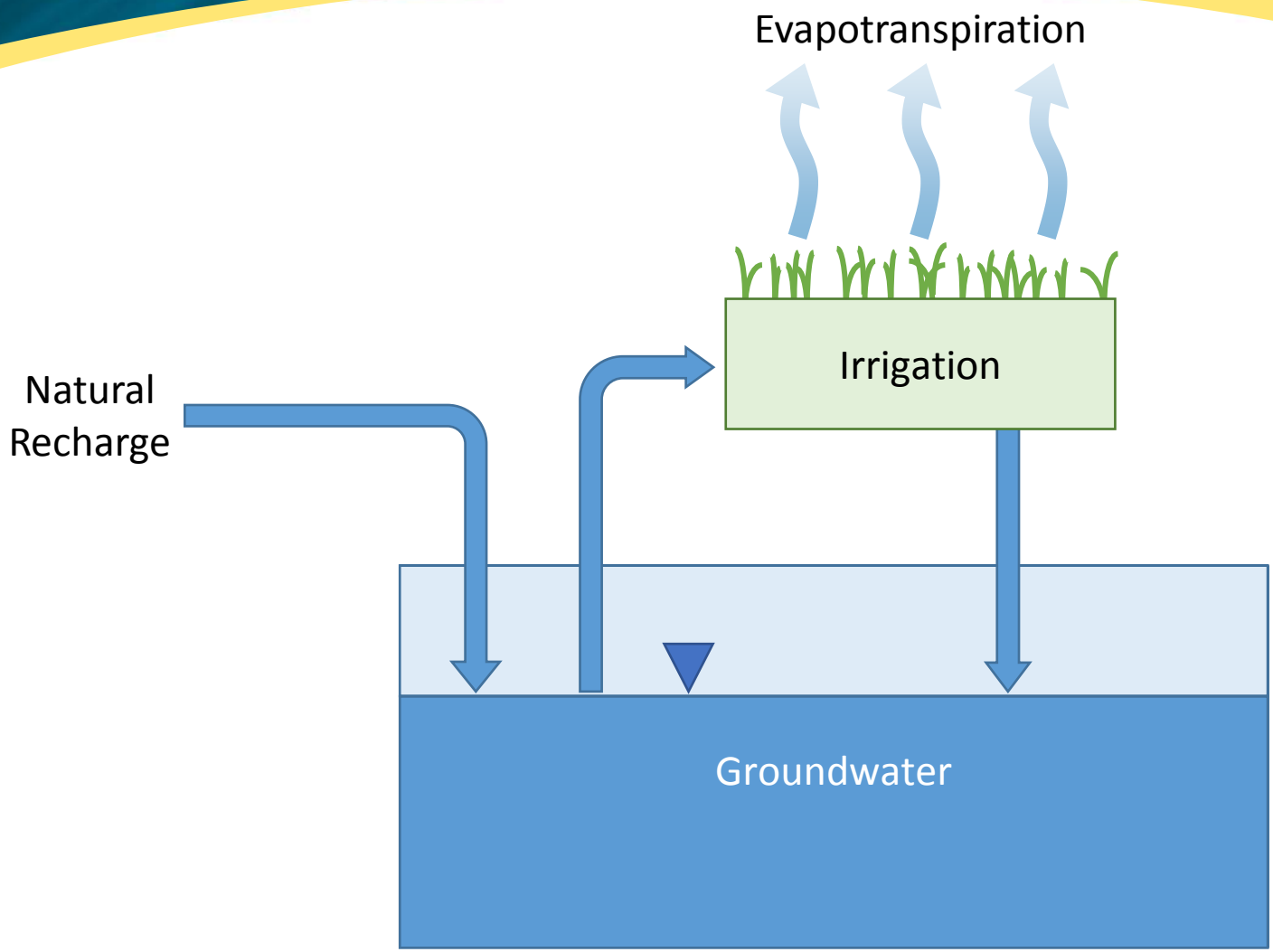
Salt Is Added through Recharge, but None Leaves through ET



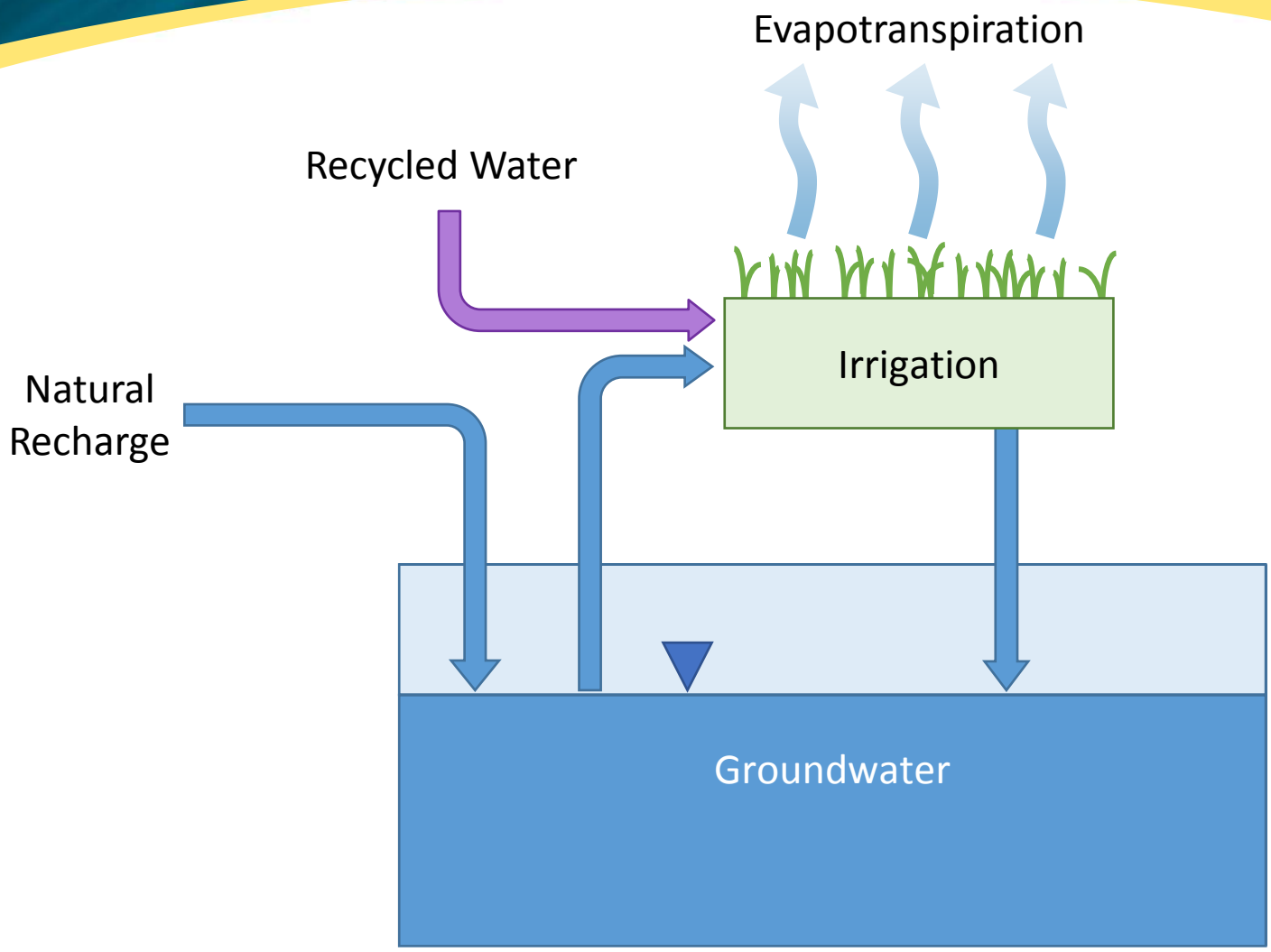
Salt May Also be Added through Fertilizer Application



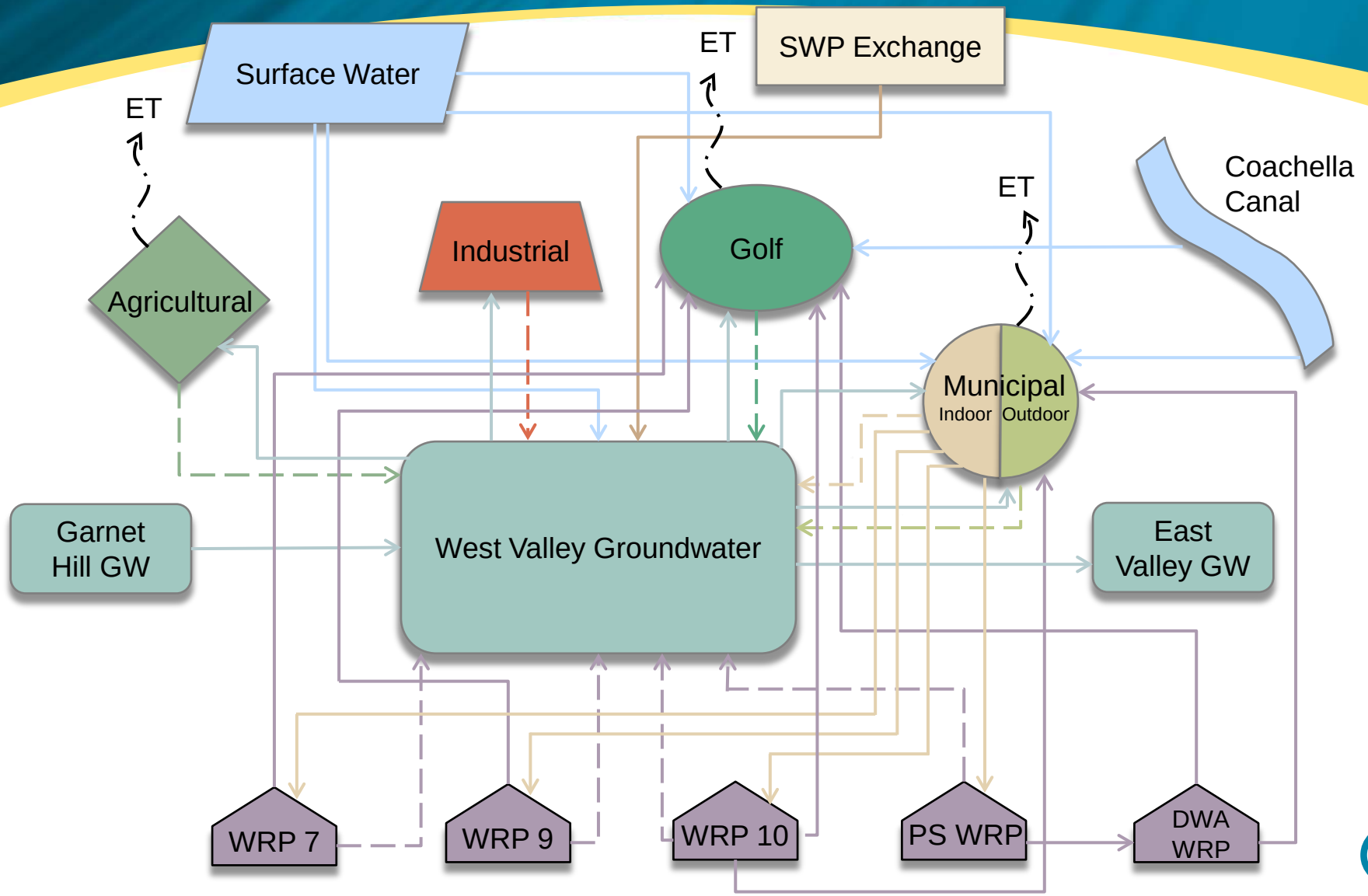
The Tool Models Groundwater Quality Over Time



Different Management Strategies and New Projects Are Modeled



West Valley Salt/Nutrient Loading Tool Components



Benefits of the Tool

- Consistent with other salt and nutrient management plans
- Meets the State Board's requirements
- Uses commonly available software
- Computation methods are transparent (spreadsheet format)
- Easily modified as new data becomes available
- Provides a means to evaluate the effect of different management scenarios on groundwater quality trends

Discussion and Questions (15 minutes)

Stakeholder Meeting No.4

Coachella Valley Salt and Nutrient Management Plan

We Need Your Input on Planned Projects That May Affect Salt and Nutrient Loading

We Have Compiled An Initial List of Projects

- Sources of Information
  - Coachella Valley Integrated Regional Water Management Plan
  - Coachella Valley Water Management Plan Update
  - Mission Creek/Garnet Hill Water Management Plan
  - Urban Water Management Plans
  - Other Sources

What Information Are We Looking For?

- Project Sponsor – Agency Name
- Project Name
- Project Description – Brief Summary (few sentence)
- Project Capacity – Acre-ft/yr for Water, Wastewater, Recycled Water Projects – Include Initial and Build-out Amounts
- Estimated Startup Year and Full Buildout Year
- Potential Effect on Salt/Nutrient Loading:
  - Increased loading – eg, a recycled water project,
  - Decreased loading – eg, stormwater BMPs, septic to sewer conversion
- Estimated Project Cost – Total Project Cost
- Project Documentation – Provide available reports on the project

We have prepared lists for each agency to review as a starting point

Example Project Listing

Organization	Project Title	Project Summary	IRWMP Functional Area
Coachella Valley Water District	Mid Valley Pipeline Phase II	The Mid Valley Pipeline is a non-potable water distribution system to convey recycled water and Colorado River water to Golf Courses for irrigation in lieu of groundwater. Colorado River water augments the recycled water supply in summer months when golf course irrigation demand exceeds recycled water supply. Phase II consists of expansion of the WRP 10 distribution system to serve 50 golf courses with an average demand of 1000 AFY each.	Water Supply

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When Do We Need Your Information?

Please Provide Any Corrections to the Existing Project List or Any New Projects by **January 23** to Patti Reyes:

preyes@cvwd.org

Please Provide a Project Contact Person's Name

We Will Follow-up With Any Questions After We Receive Your Updated Listing

What Will We Do With the Project Information?

- Estimate Changes in Water Supply and Waste Disposal Plans (Amounts of Water)
- Estimate Changes in TDS and Nitrogen Concentrations Resulting From the Project
- Combine Similar Projects into Potential Programs for Salt/Nutrient Loading Analysis
- Evaluate Effects of Programs on Groundwater Quality Using the Salt/Nutrient Loading Tool

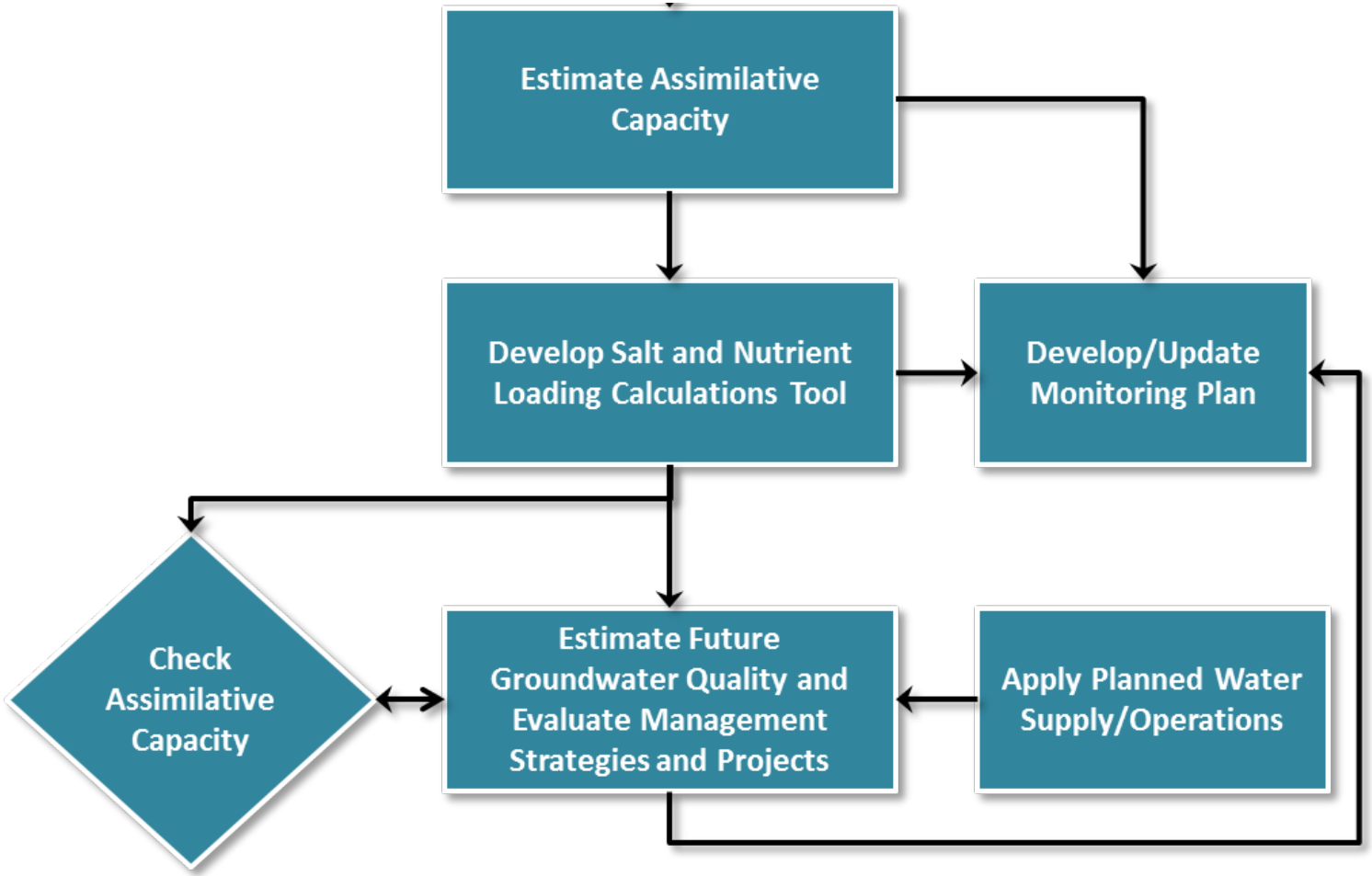
Discussion and Questions (15 minutes)

Stakeholder Meeting No.4

Coachella Valley Salt and Nutrient Management Plan

Next Steps

Project Status—Next Steps



Monitoring Plan

- Designed to determine water quality of management zones
  - Water supply wells
  - Areas of recycled water projects
- State the location, frequency, and constituent
- Responsible party
  - Conducting, compiling, and reporting
- “Reasonable and cost effective”
  - Utilize existing wells where feasible
- How will water quality be reported to the RWQCB every three years?

Next Steps

With the salt loading tool in place, we can evaluate salt and nutrient management approaches

Next Steps

- Collect project data by January 23
- Complete Salt/Nutrient Loading Tool
- Evaluate Assimilative Capacity
- Complete TM-2
- Review Projects, Strategies and Water Quality
- Complete Monitoring Plan
- Complete Draft SNMP
  - Stakeholder Meeting No.5 (Early March)
- Finalize SNMP

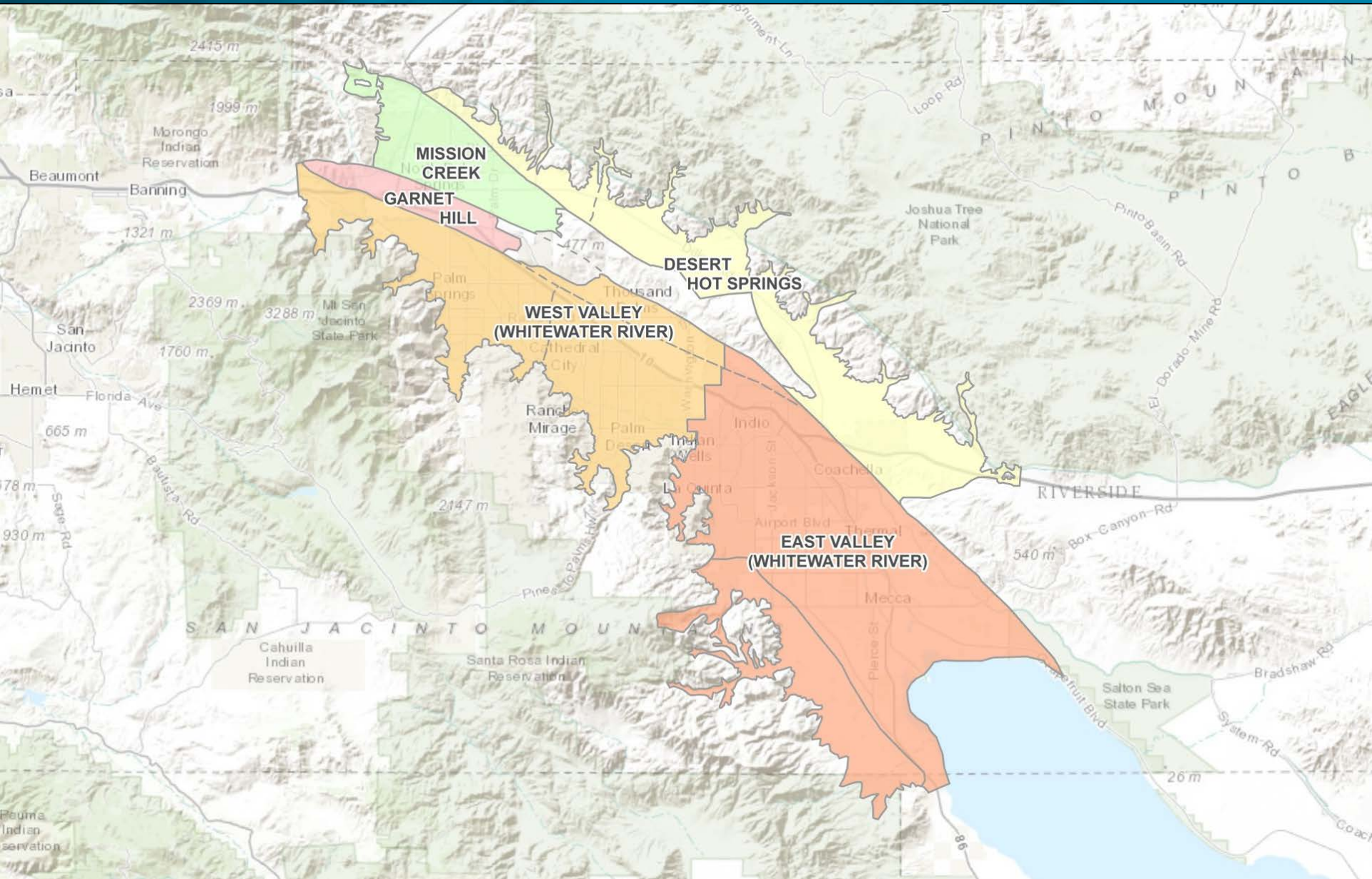
Questions and Resources

- Email questions:
  - preyes@cvwd.org
- Project website:
  - http://www.cvwd.org/snmp/

Additional Slides

Appendix

Management Zones



Salt Loading Tool

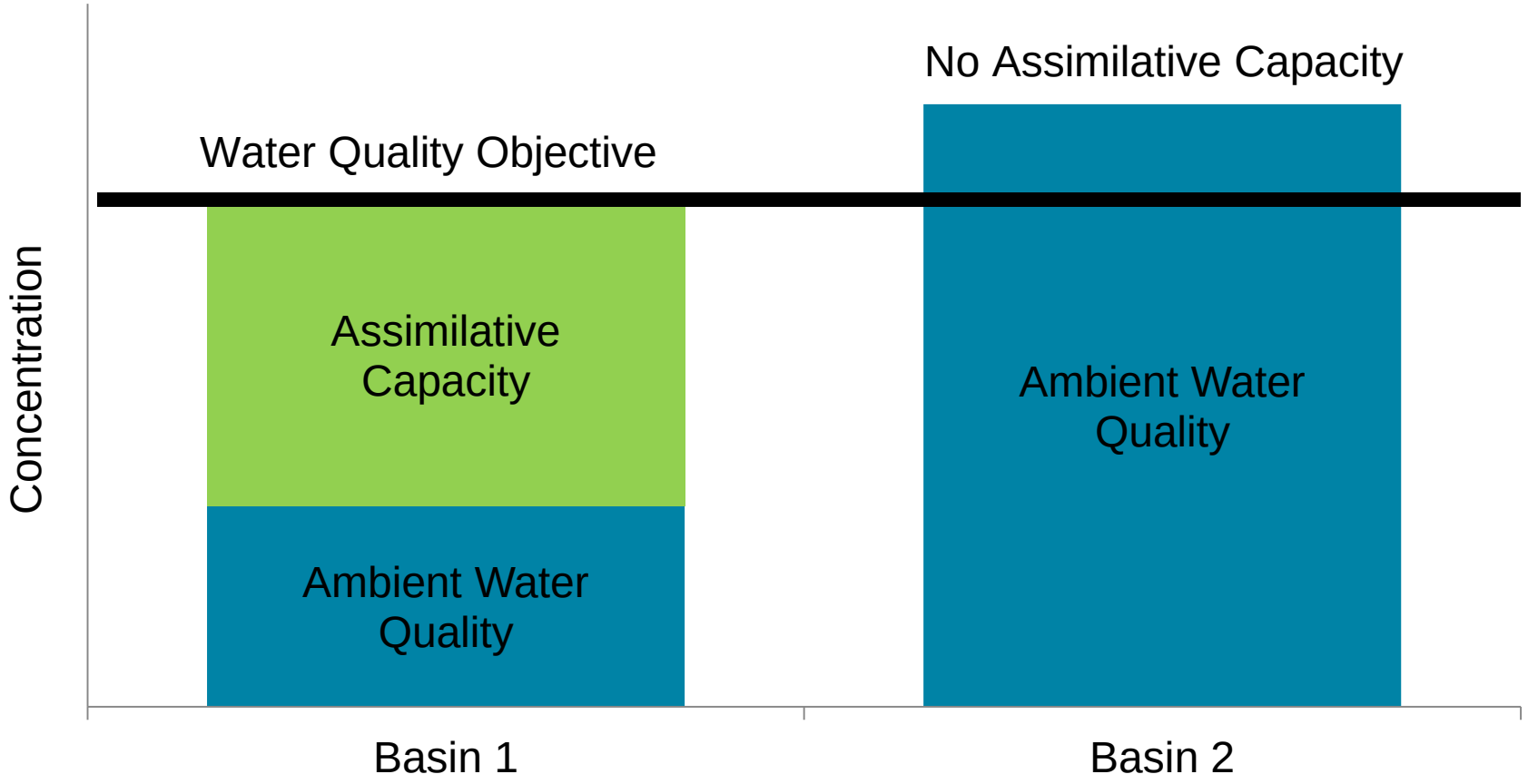
"…intent of this policy that salts and nutrients from all sources be managed on a basin-wide or watershed wide basis in a manner that ensures attainment of water quality objectives and protection of beneficial uses."

Refresher….

Ambient Water Quality – *The representative concentration of a water quality constituent within a groundwater basin or management zone*

Assimilative Capacity – *the ability of a water body to receive waste waters without deleterious effects and without negative impact to beneficial uses*

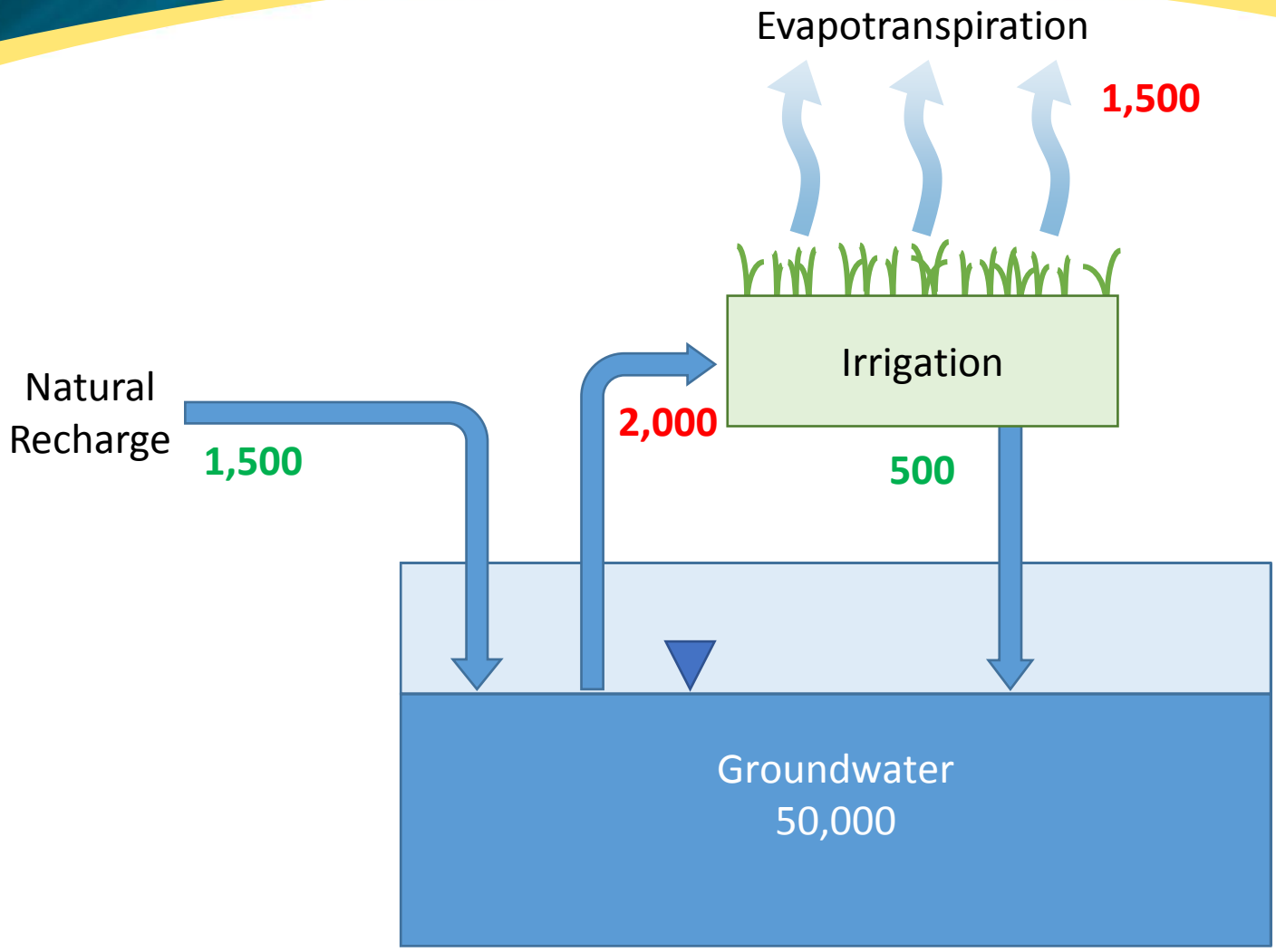
Example of Assimilative Capacity



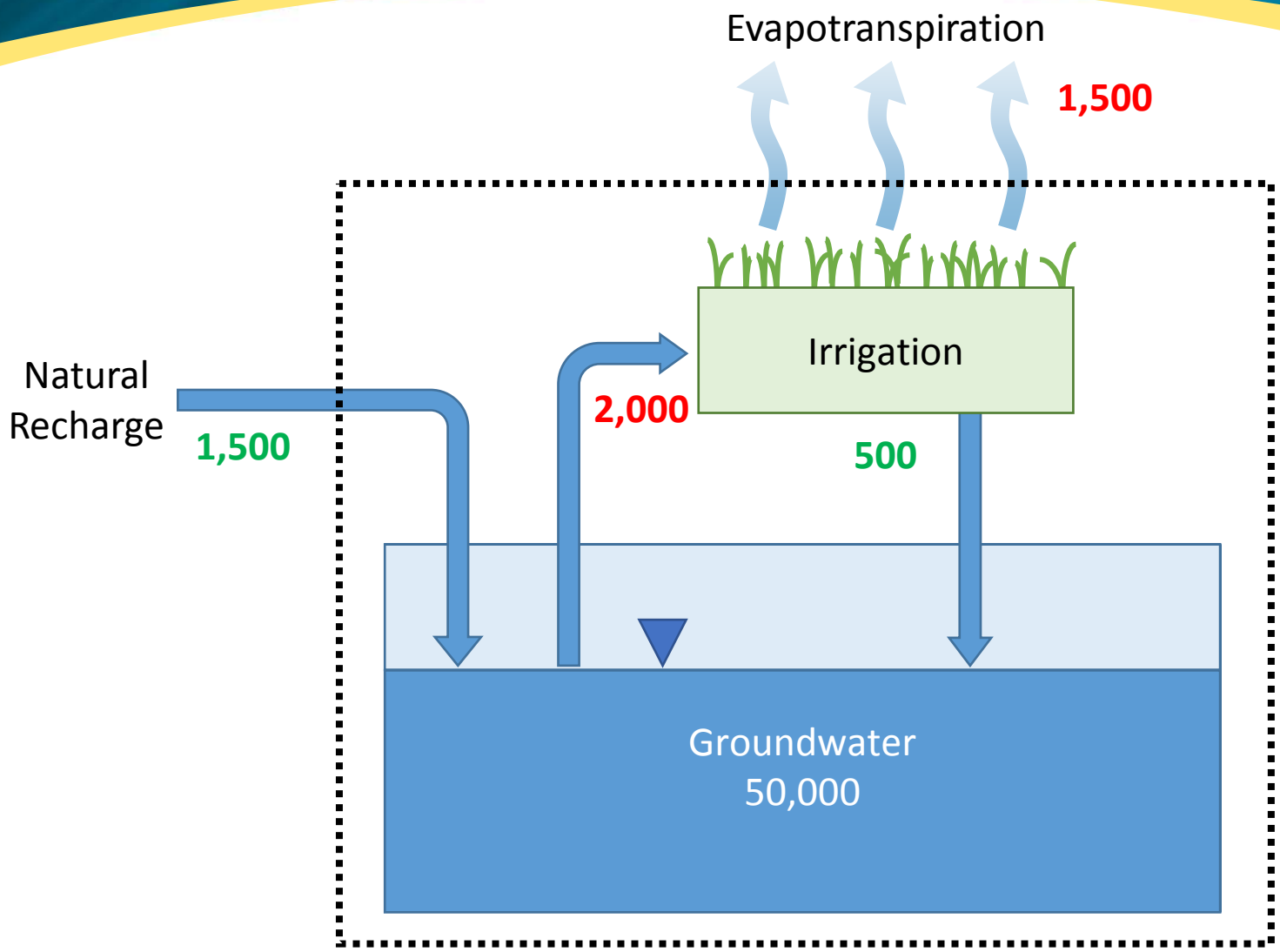
Anti-degradation Process

- ✓Identify the Beneficial Uses
- ✓Identify the water quality objectives established by the Regional Board
- Identify planned projects
- Evaluate whether the identified projects, if implemented, will significantly change the water quality of each management zone
- Determine whether any projected changes to the groundwater would exceed water quality objectives or unreasonably affect beneficial uses of the groundwater
- If needed, demonstrate whether any projected change would be consistent with the maximum benefit to the people of the State.

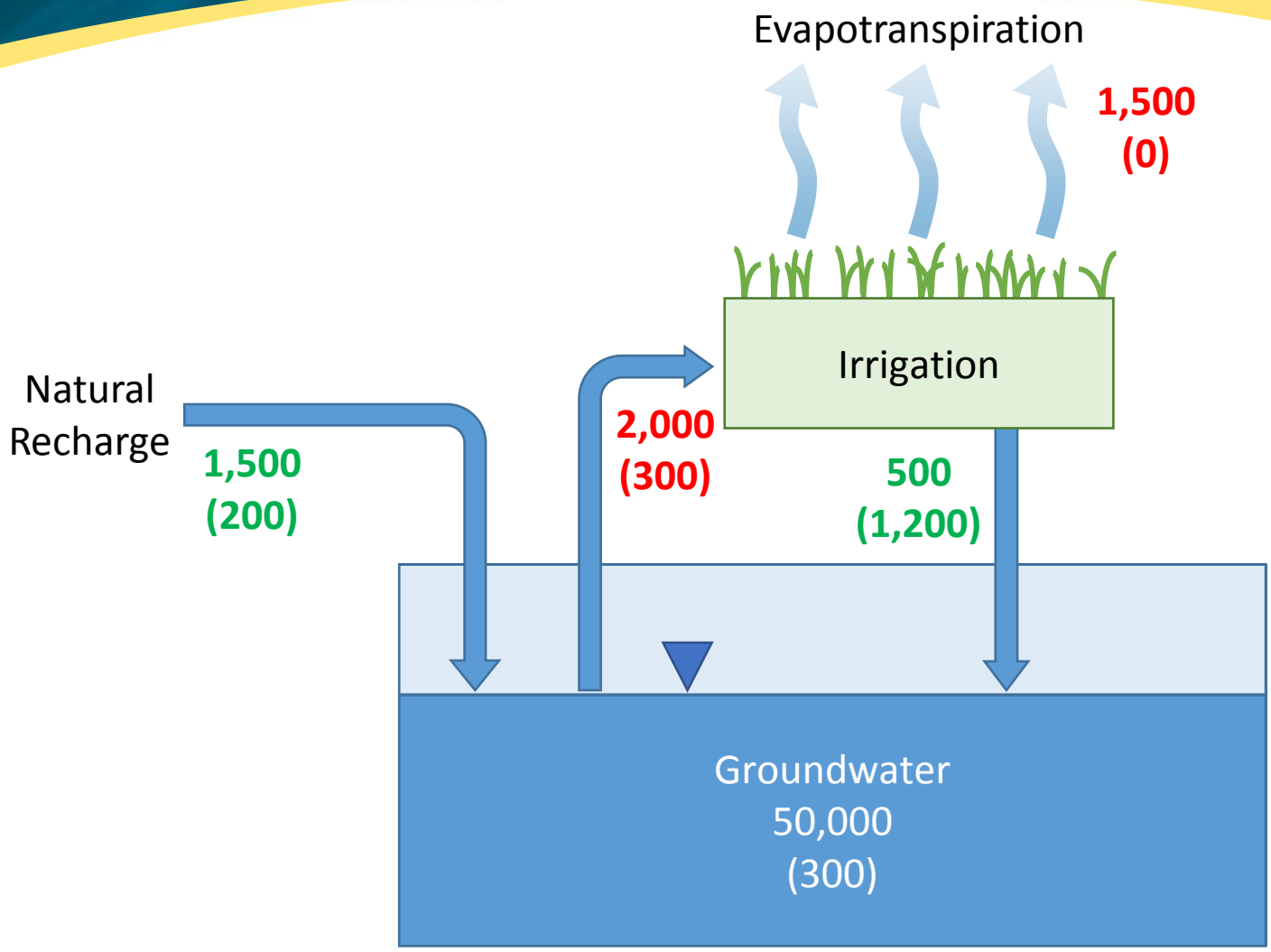
Let's assign some volumes in AF (per year if flow)



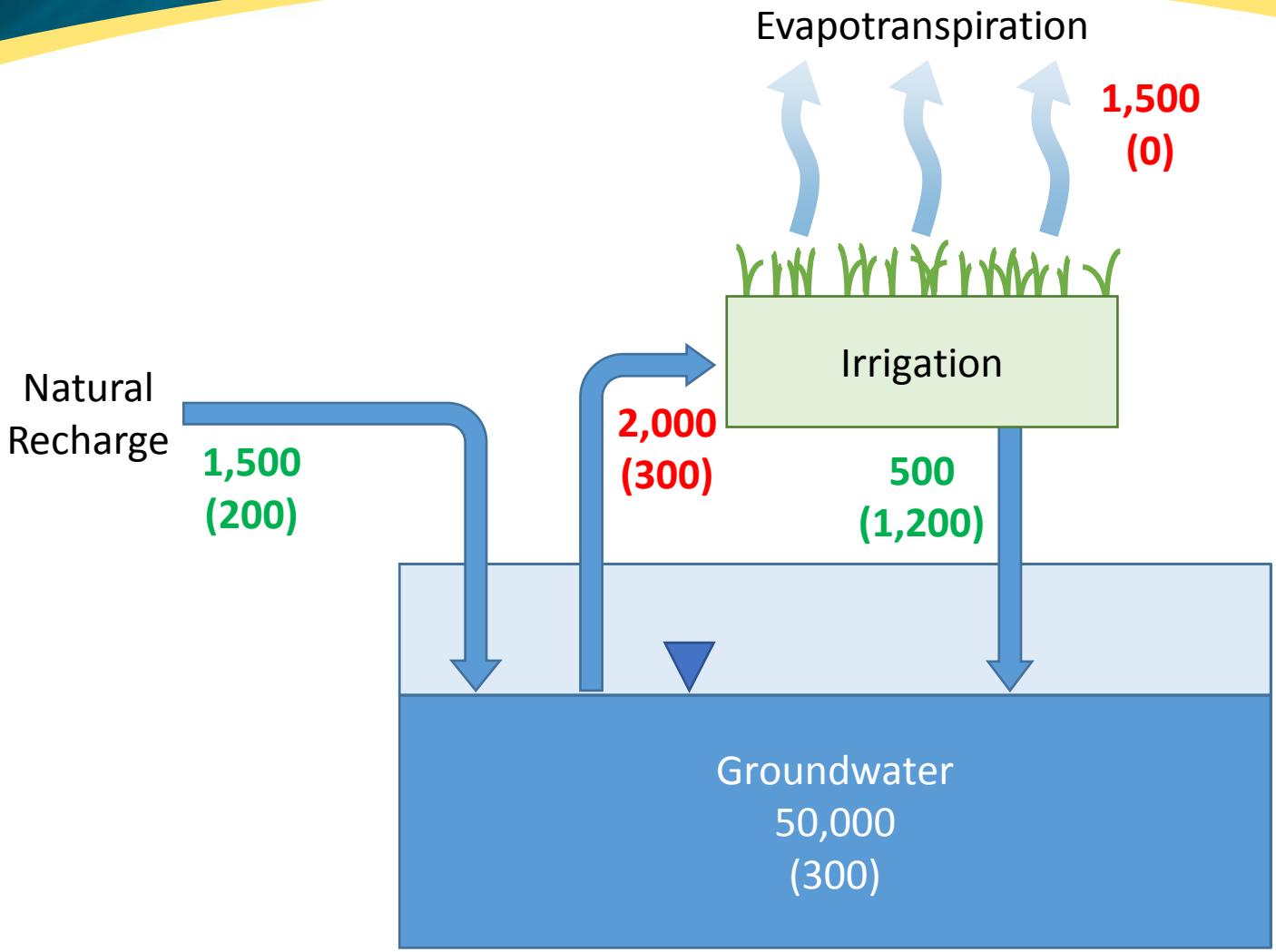
Notice that the volume of water going into the system equals that going out, system is in balance



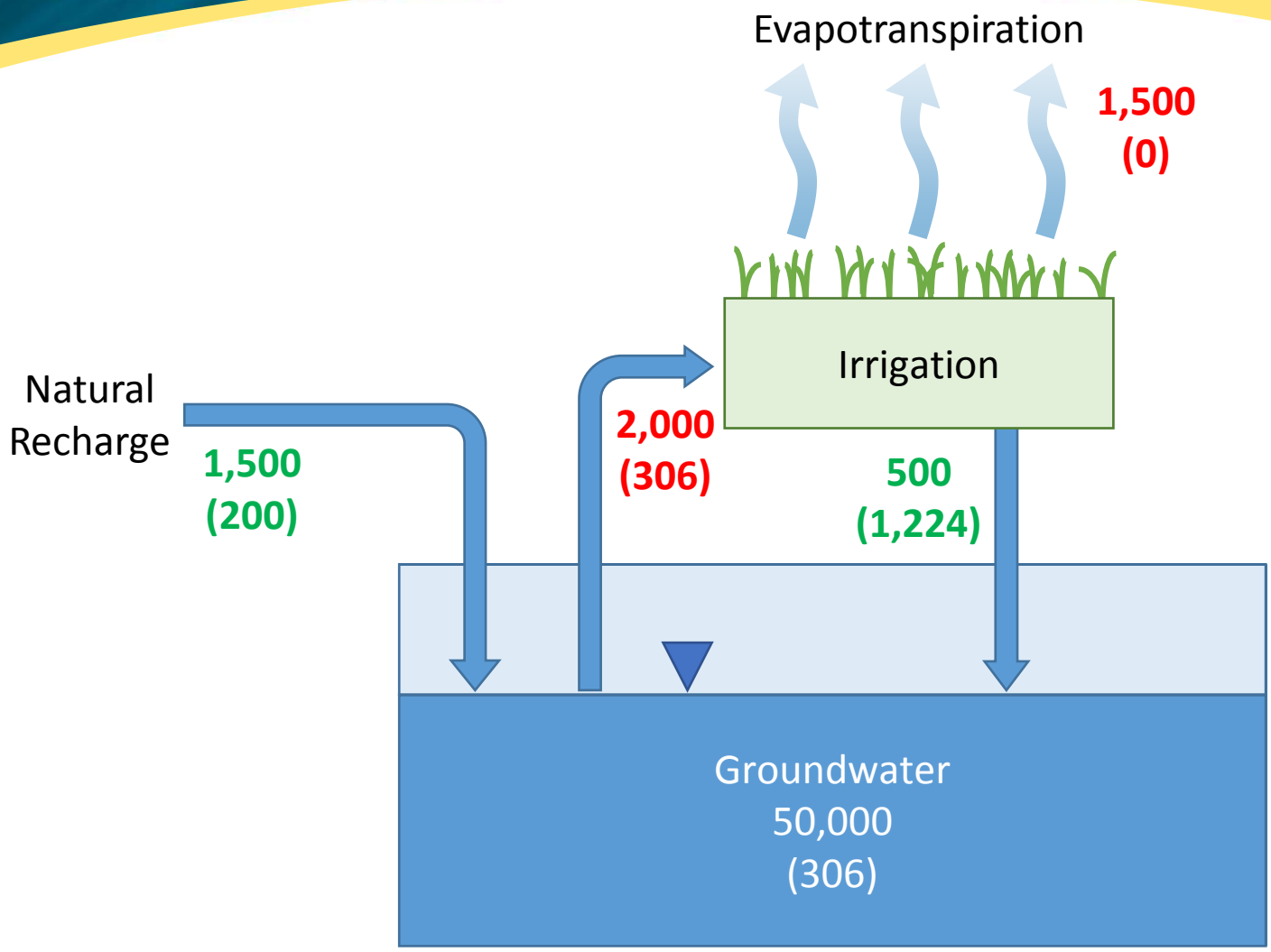
There is a water quality associated with each stream of water



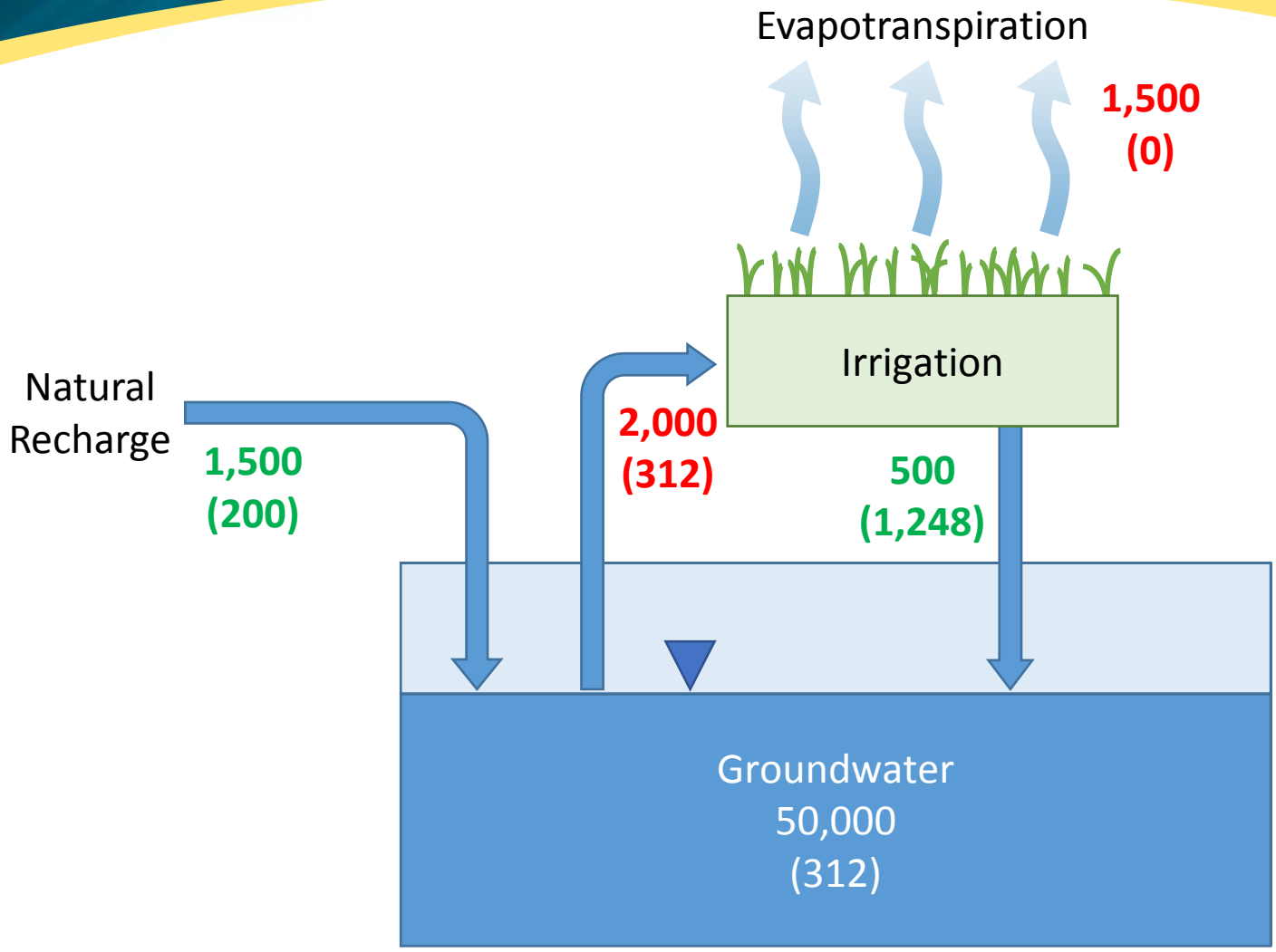
What happens over time?
Year 0



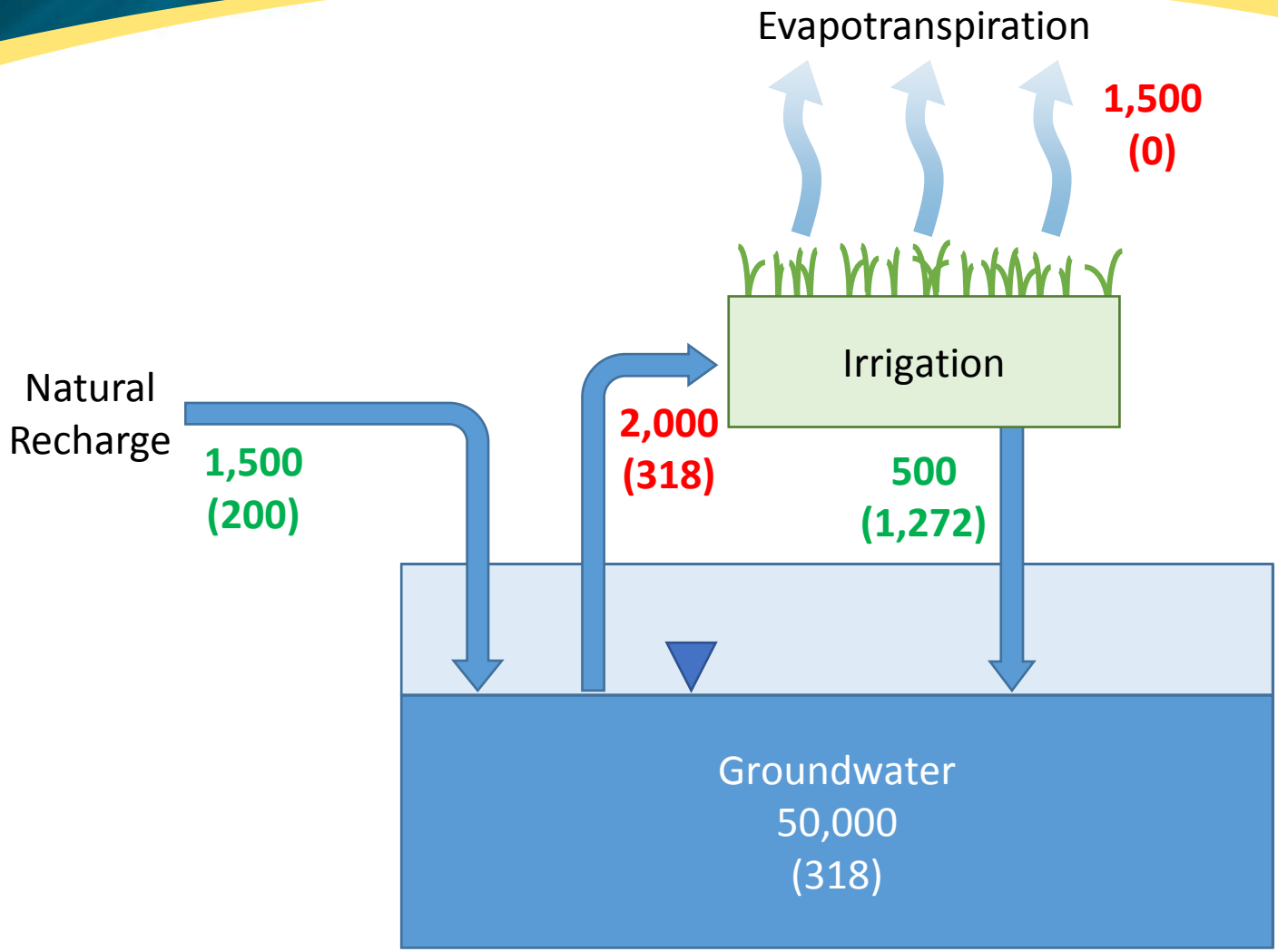
What happens over time?
Year 1



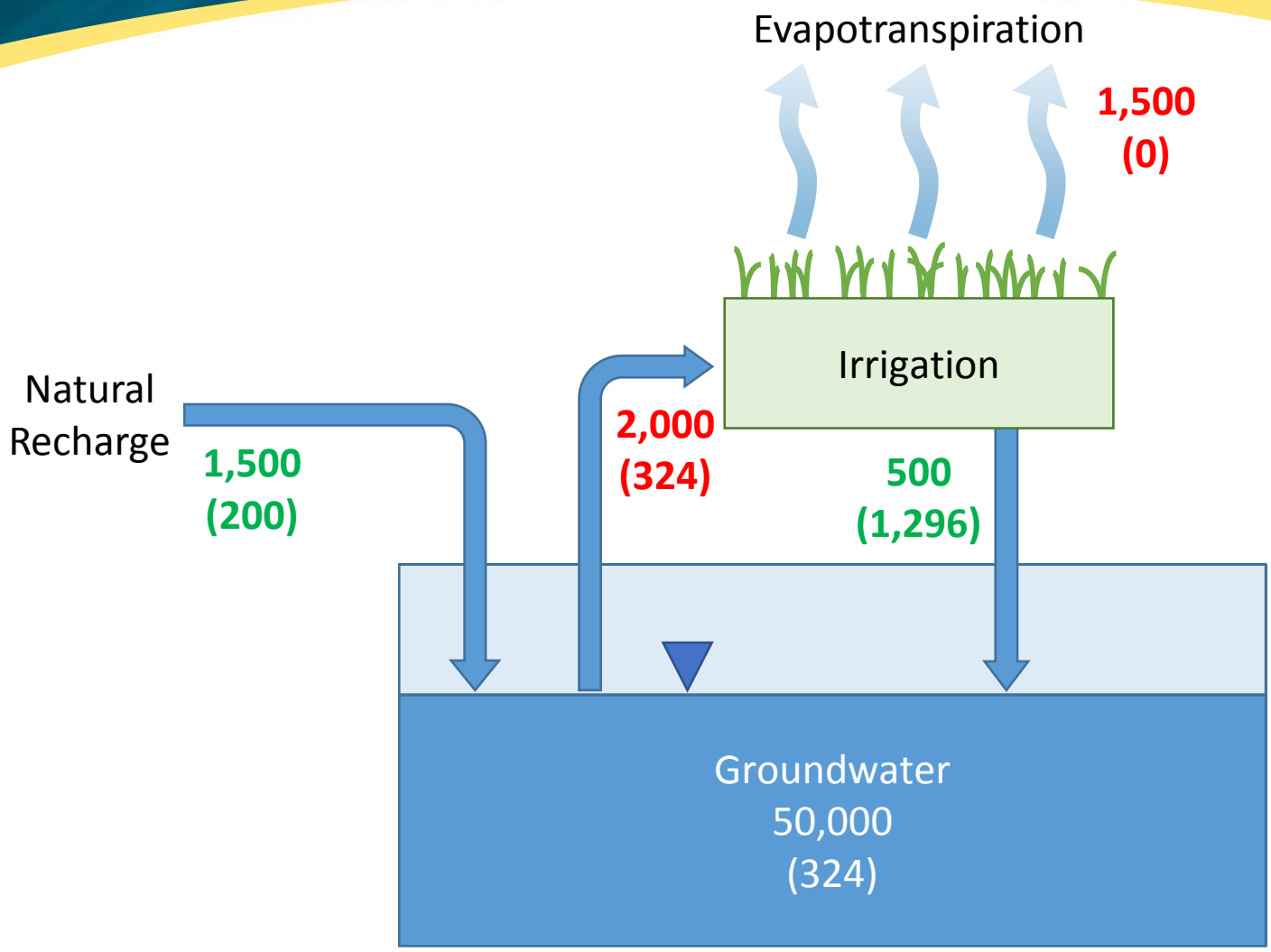
What happens over time?
Year 2



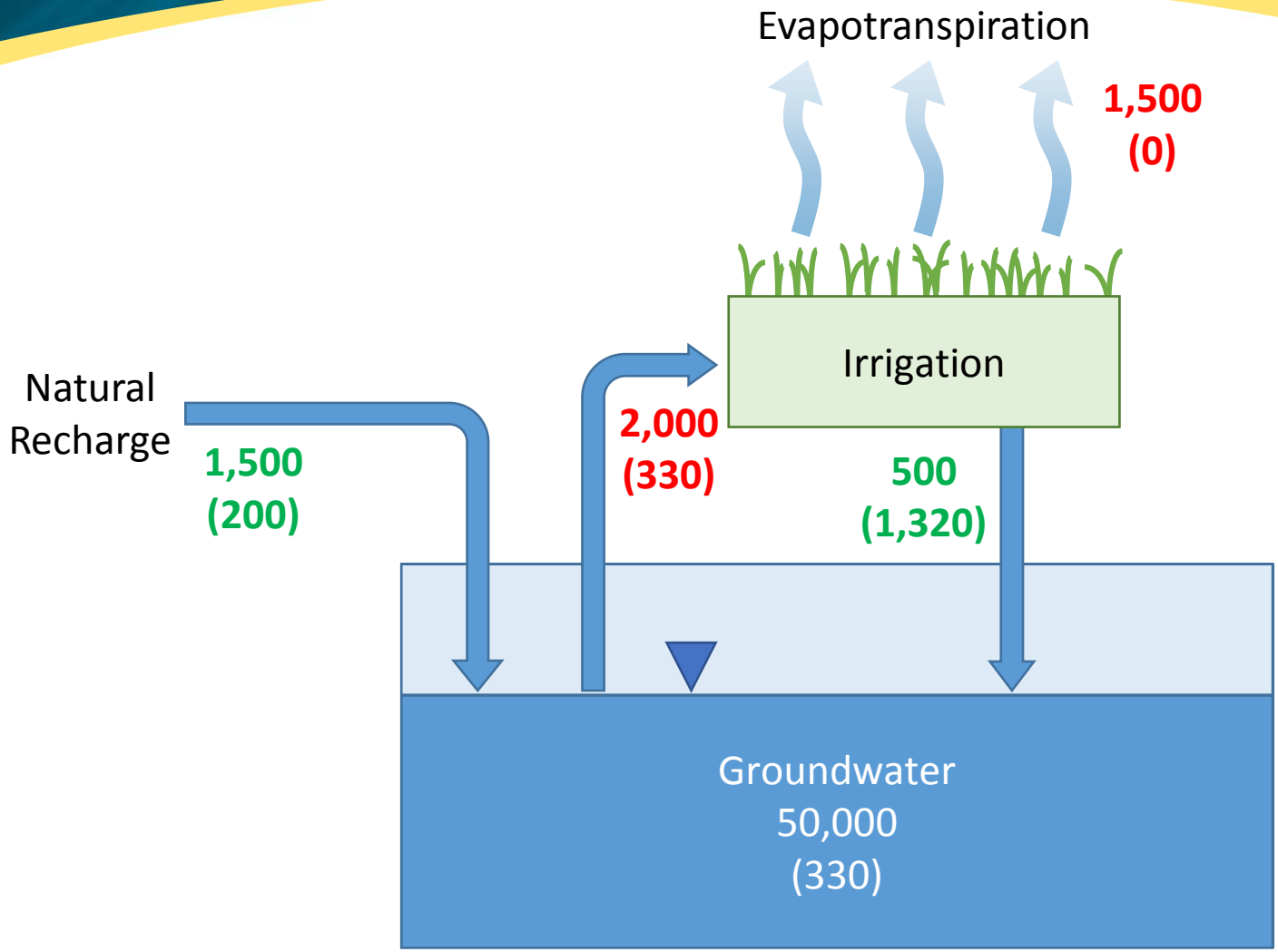
What happens over time?
Year 3



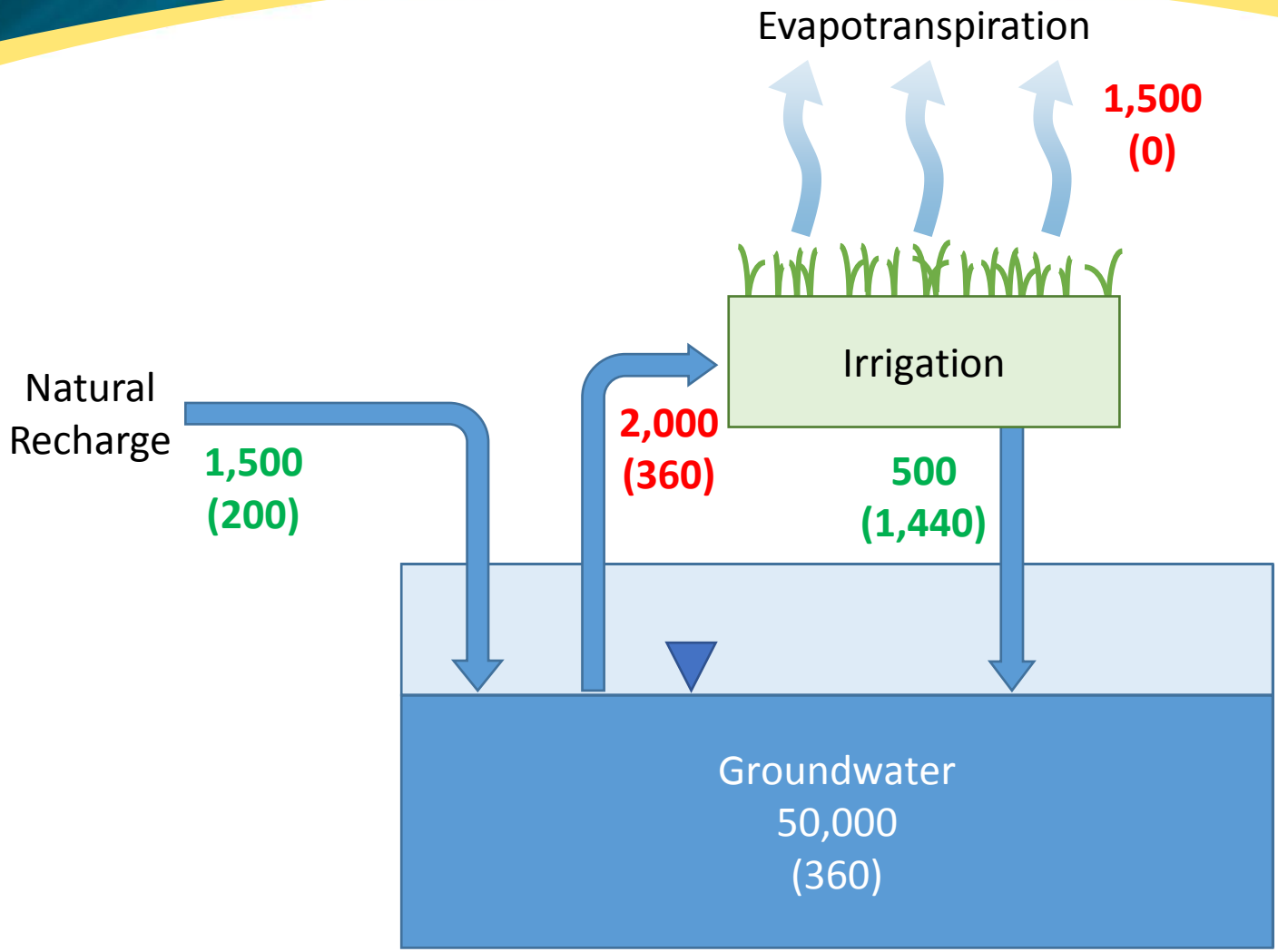
What happens over time?
Year 4



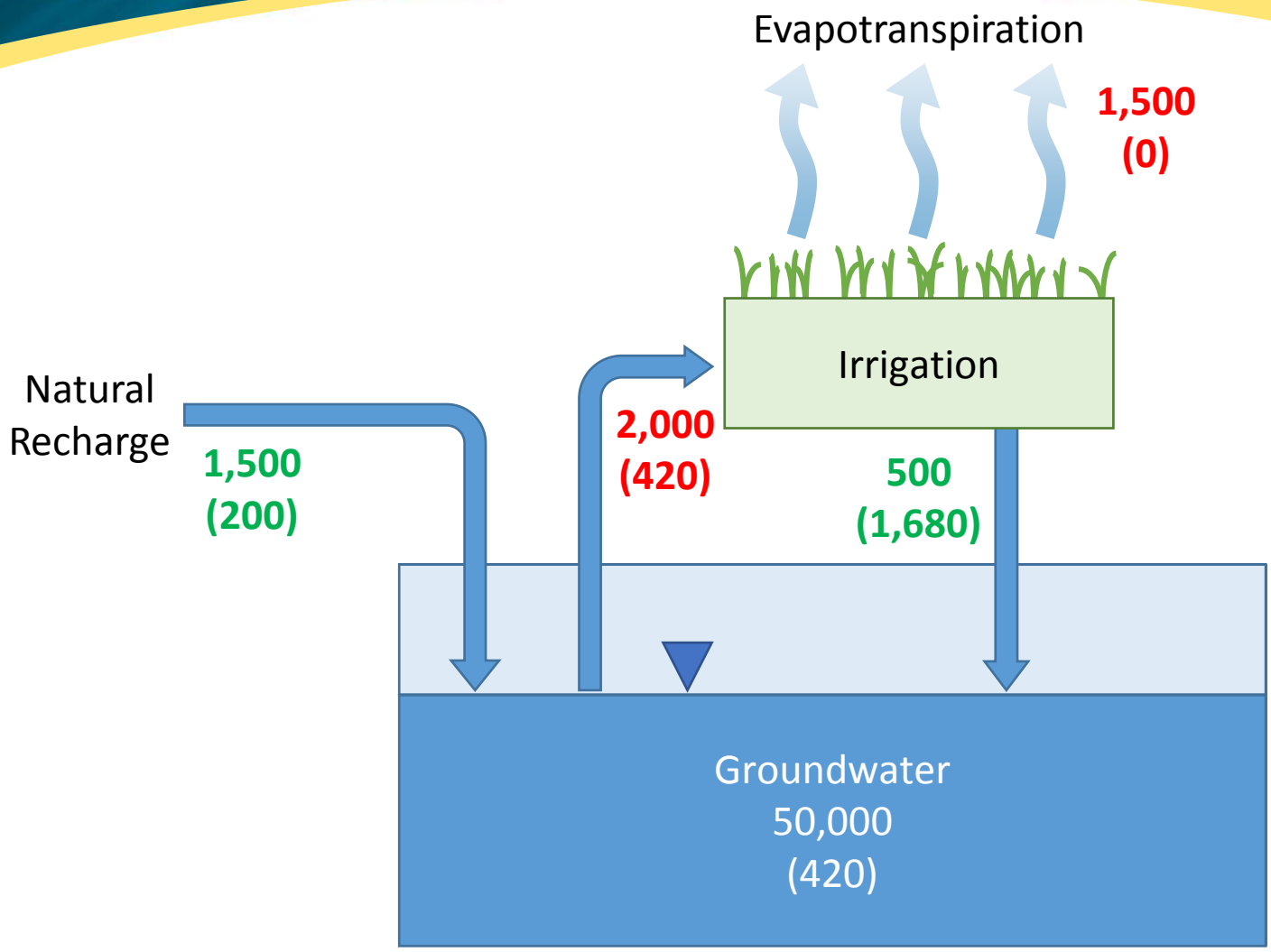
What happens over time?
Year 5



What happens over time?
Year 10



What happens over time?
Year 20



How You Can Help?

- Loading tool looks forward
  - Objective is to evaluate water quality based upon plans (planned projects)
  - Determine whether any projected changes to the groundwater would exceed water quality objectives or unreasonably affect beneficial uses of the groundwater
- Projects List
  - CVIRWMP applicable projects
  - Water management plan projects
- Identify planned projects

Planned Project List

Questions for you:

- Are these projects still planned?
- Are there other projects planned?
- What are the timeframes?
- Have we correctly identified the impact on salt loading?
- What is the goal of each project?