



MAINTAINING SUSTAINABLE
GROUNDWATER IN THE

Bear Valley Basin

Stakeholder Workshop #3: Sustainable Goal and Plan Implementation

October 21, 2021

Presenters



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Workshop Goals

- Provide an overview of the project and progress to date
- Share a draft Sustainable Management Goal and receive feedback
- Present anticipated projects and management actions to achieve the sustainable management goal
- Review Plan Implementation steps
- Identify remaining steps to completion

Workshop Agenda

- 20 min GSP Progress to Date
- 15 min Sustainable Management Goal Overview and Discussion
- 15 min Projects and Management Actions
- 5 min GSP Implementation
- 15 min What's Next and Questions



GSP Progress to Date

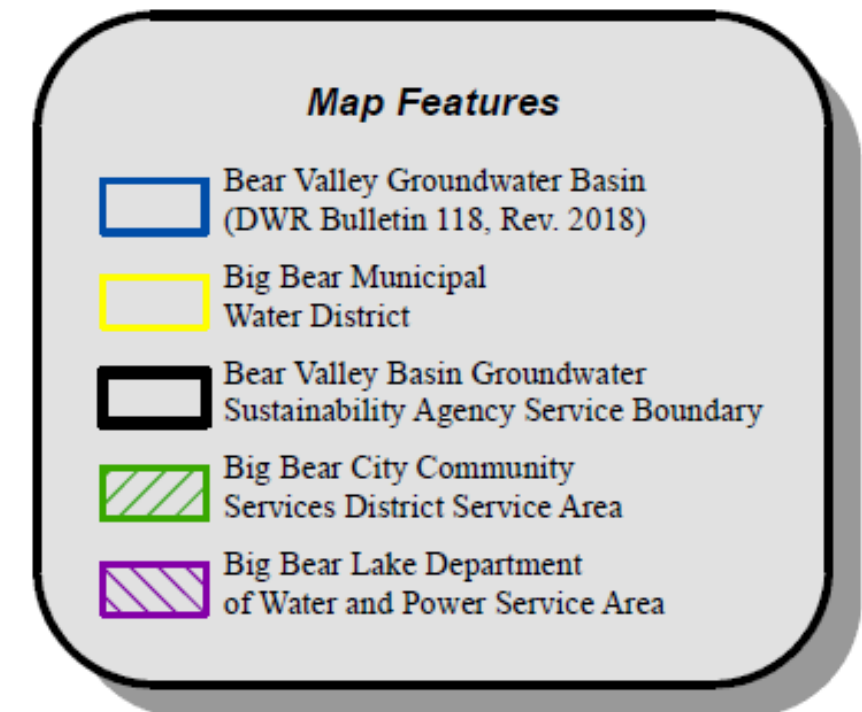
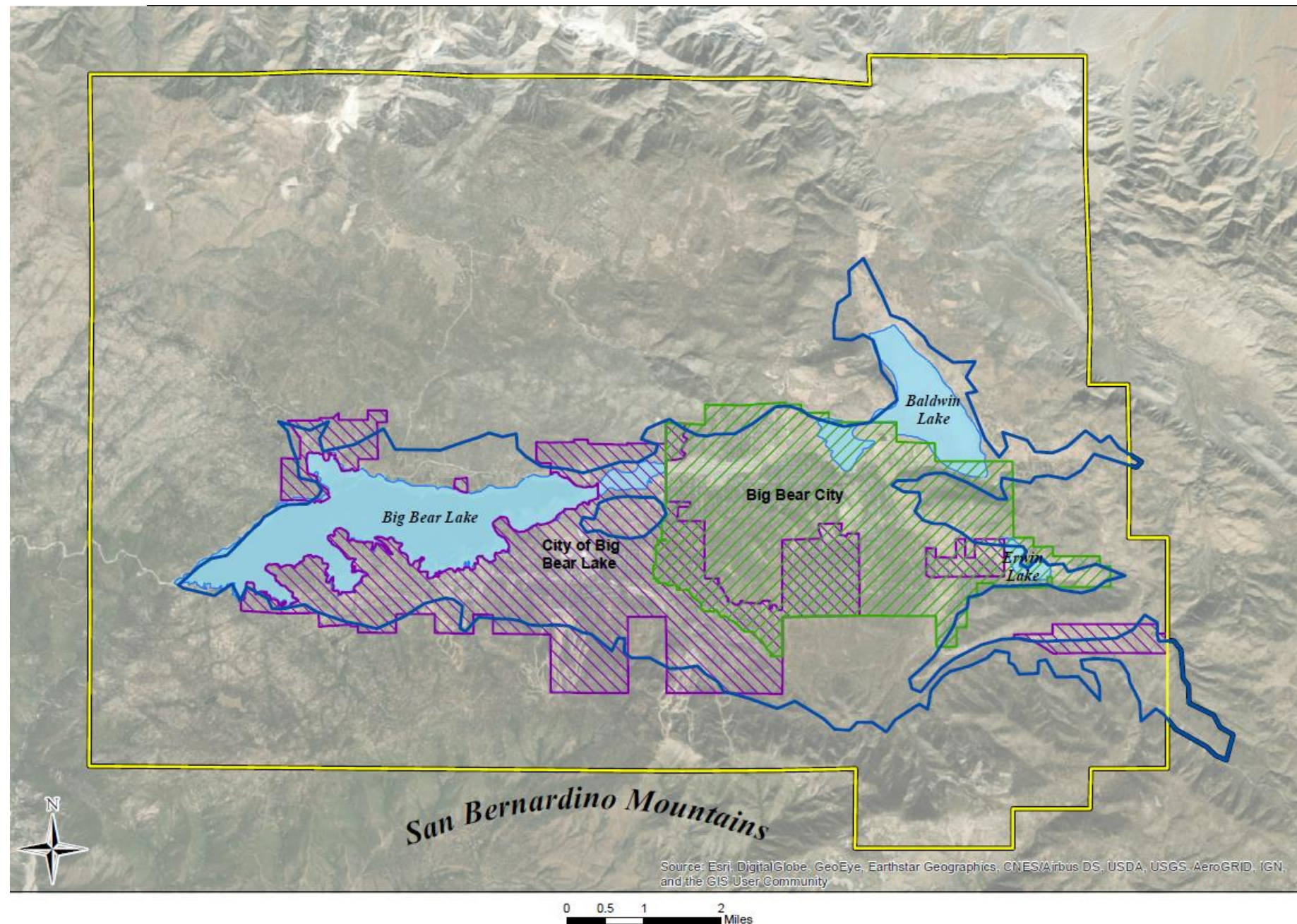
Tom Harder

Hydrogeologist, Thomas Harder & Company

An aerial photograph of a large lake with a residential area on the shore. The houses are nestled among dense evergreen trees. In the background, there are rolling hills and mountains under a clear sky. The water is calm, and some small boats are visible in the distance.

Workshop #1

Bear Valley Basin Groundwater Sustainability Agency (GSA)



The Sustainable Groundwater Management Act of 2014 (SGMA) Requires the Designation of GSAs for all CDWR Bulletin 118 Basins

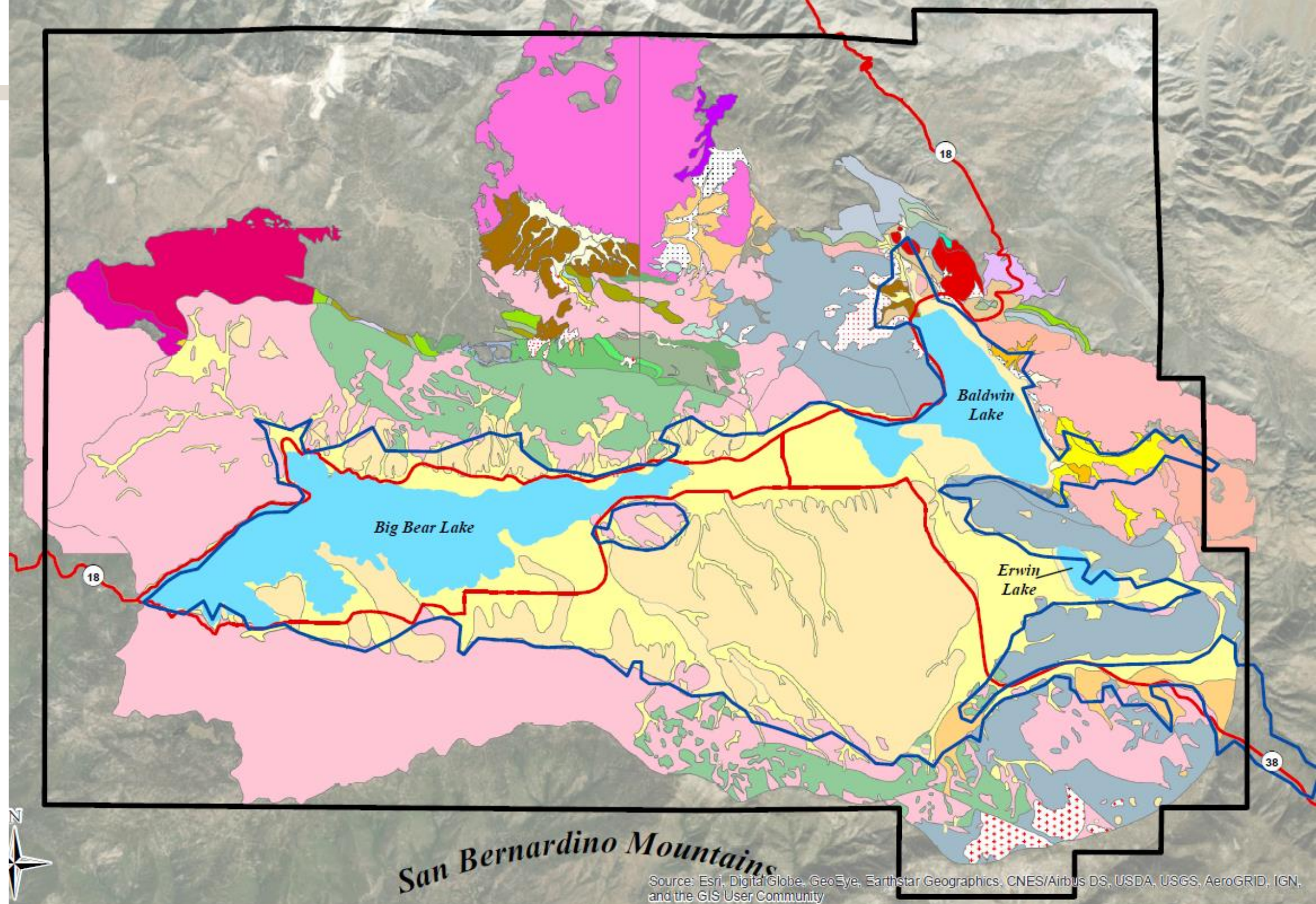


Required GSP Elements

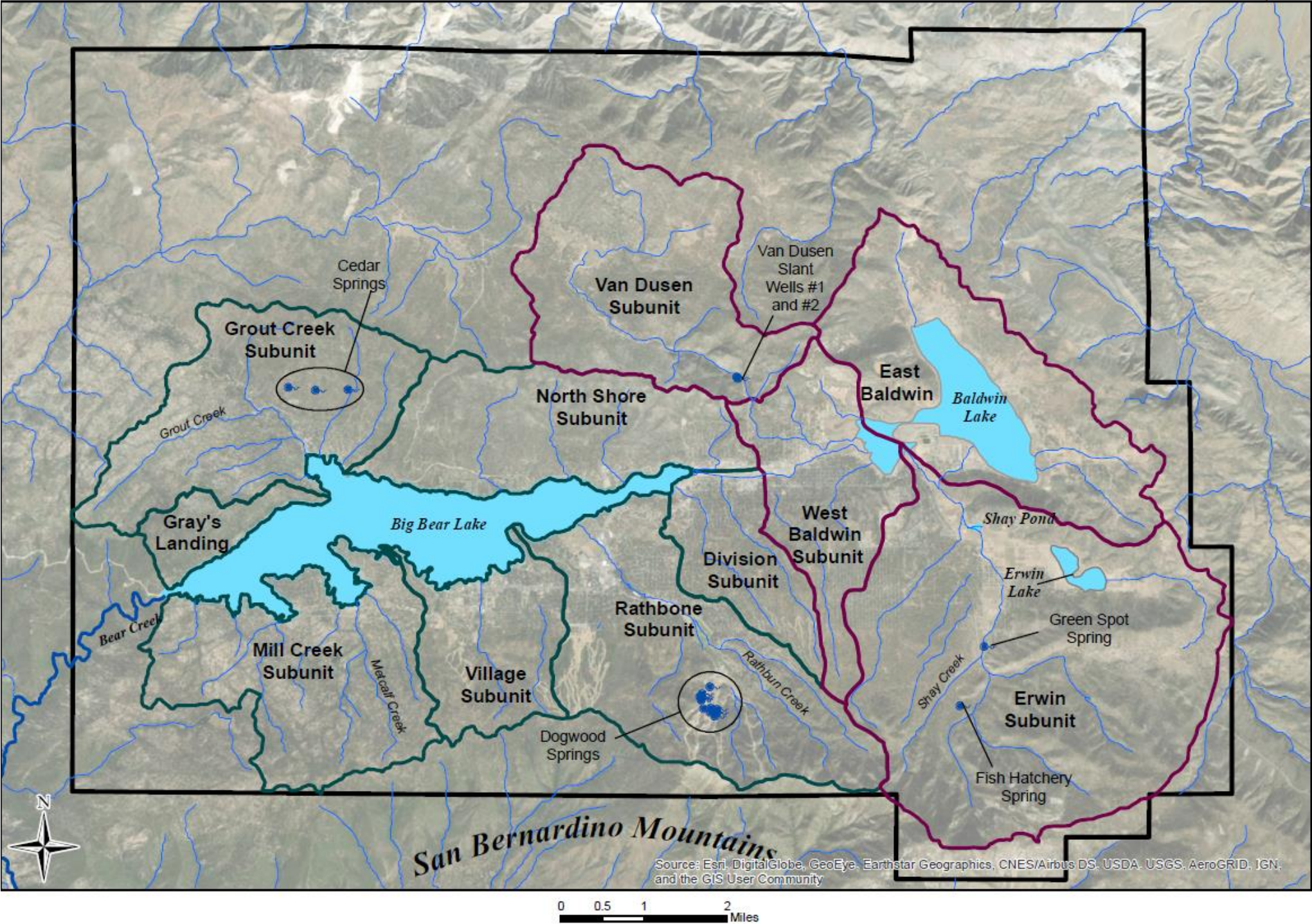
- Introduction and Administrative Information
- Basin Setting
- Sustainable Management Criteria
- Monitoring Network
- Projects and Management Actions

Hydrogeologic Conceptual Model

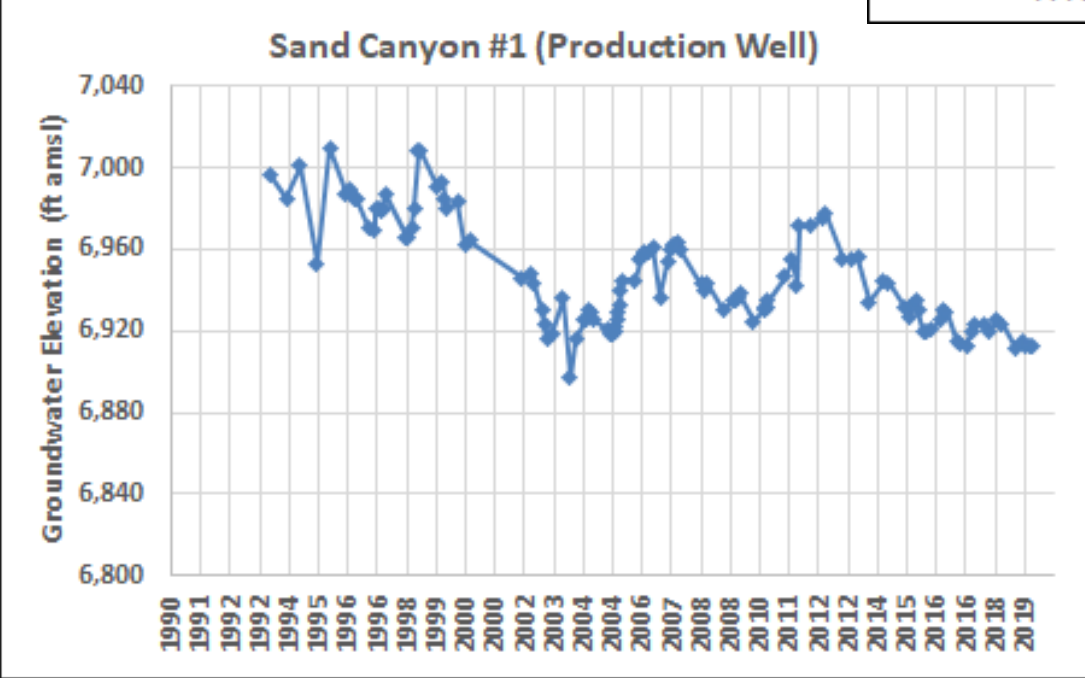
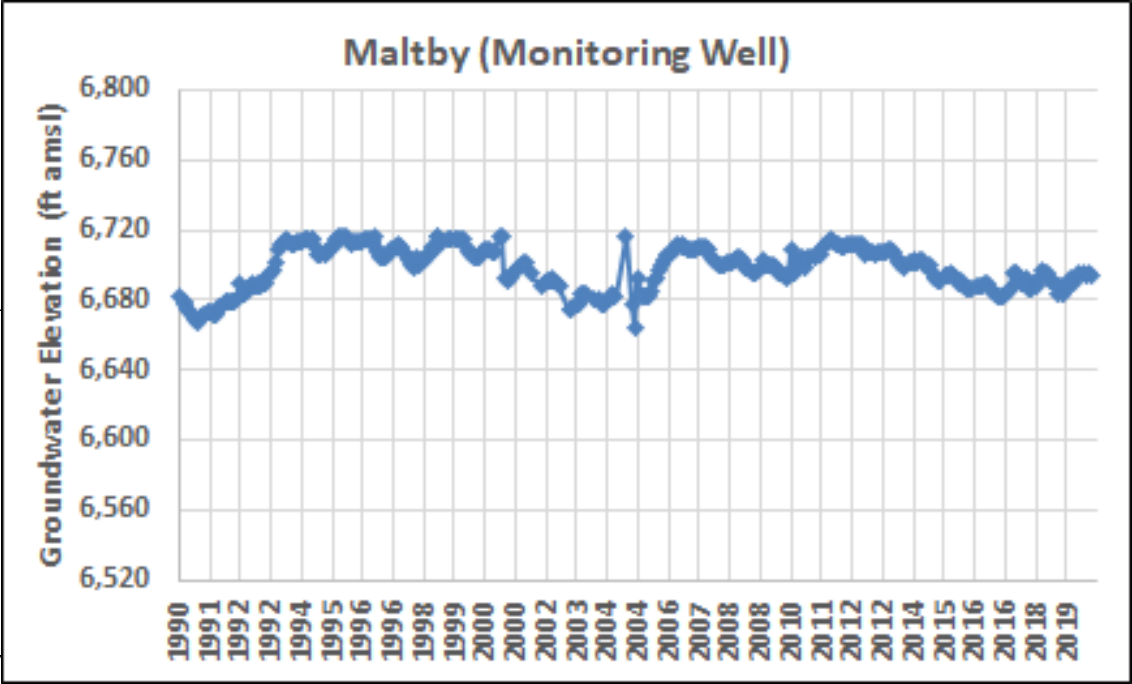
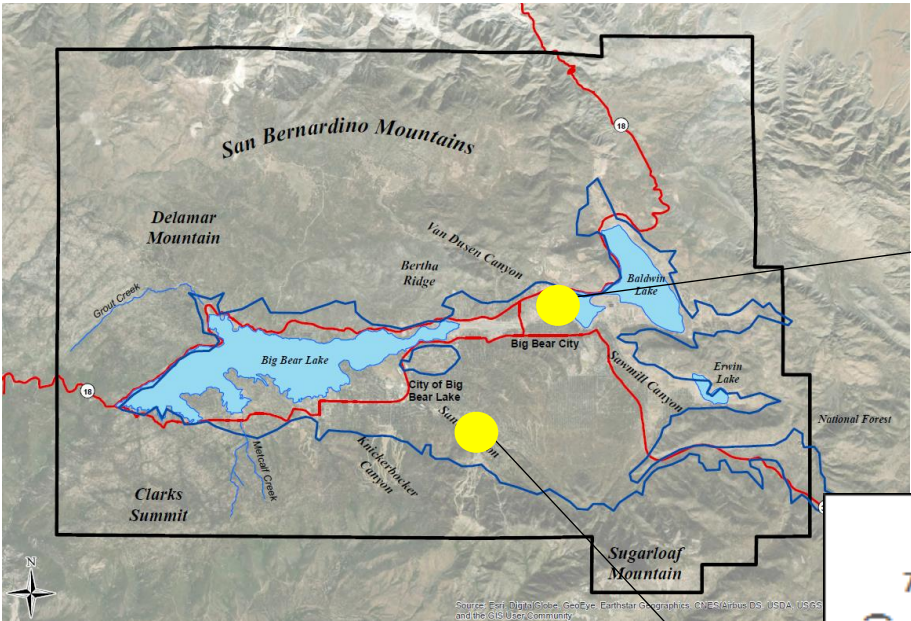
- **Geologic Setting**
- **Basin Boundaries**
- Surface Water Features
- Areas of Recharge and Discharge
- Principal Aquifers and Aquitards
- Areas of Uncertainty in the Conceptual Model



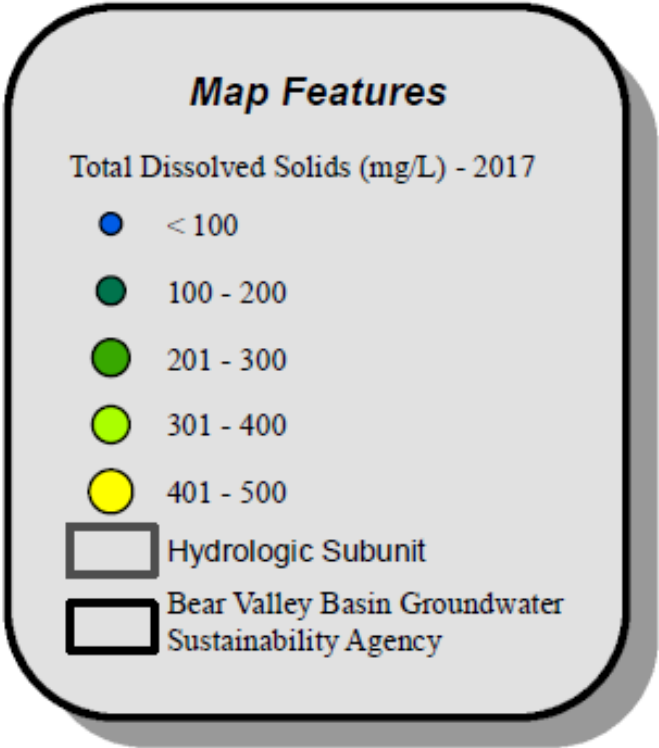
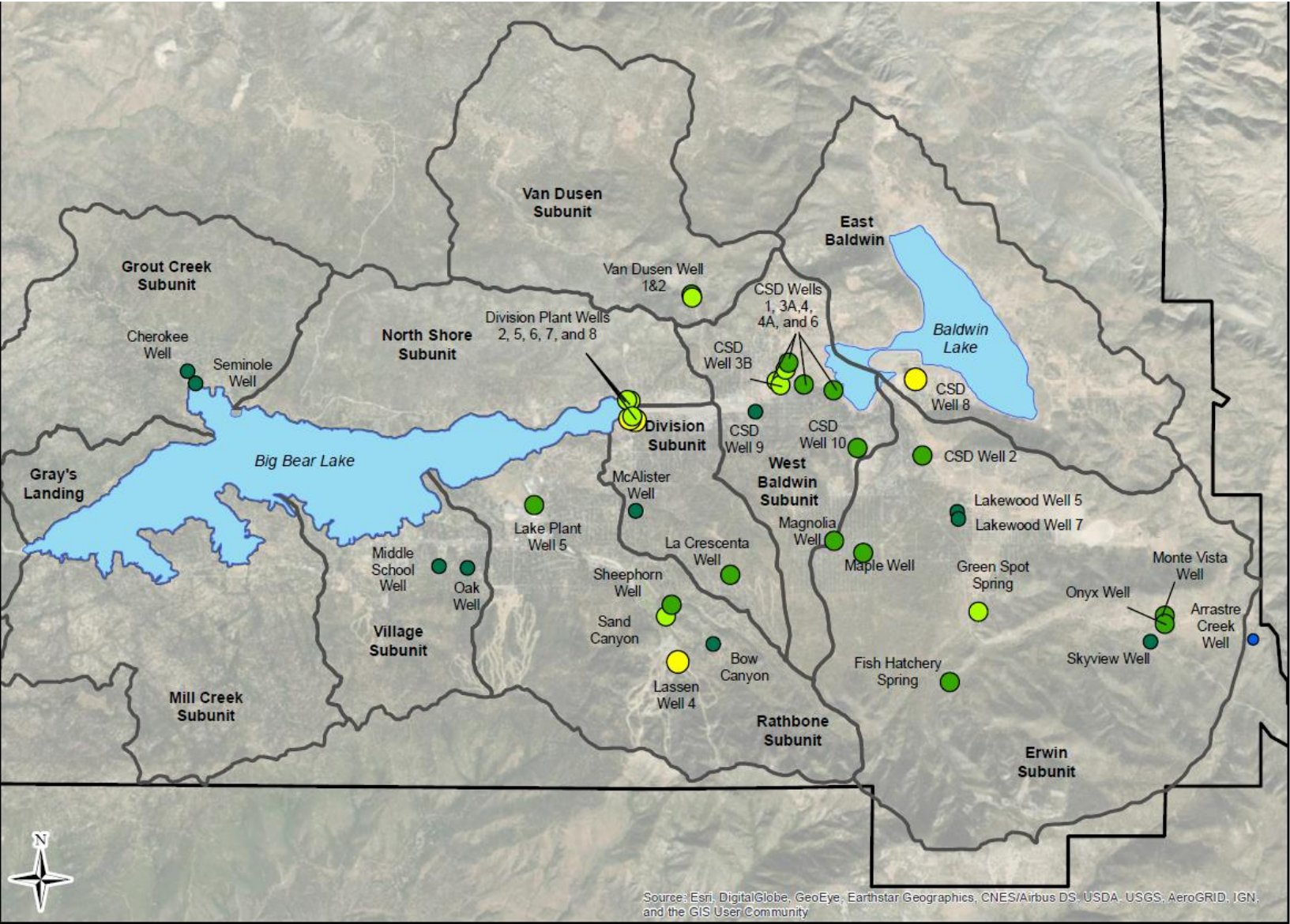
Hydrogeologic Conceptual Model



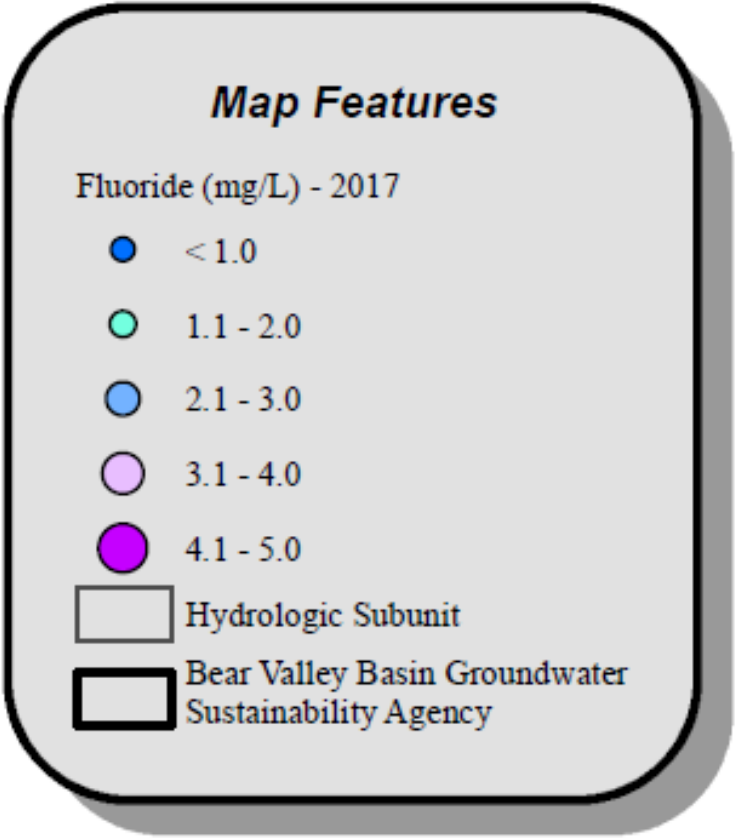
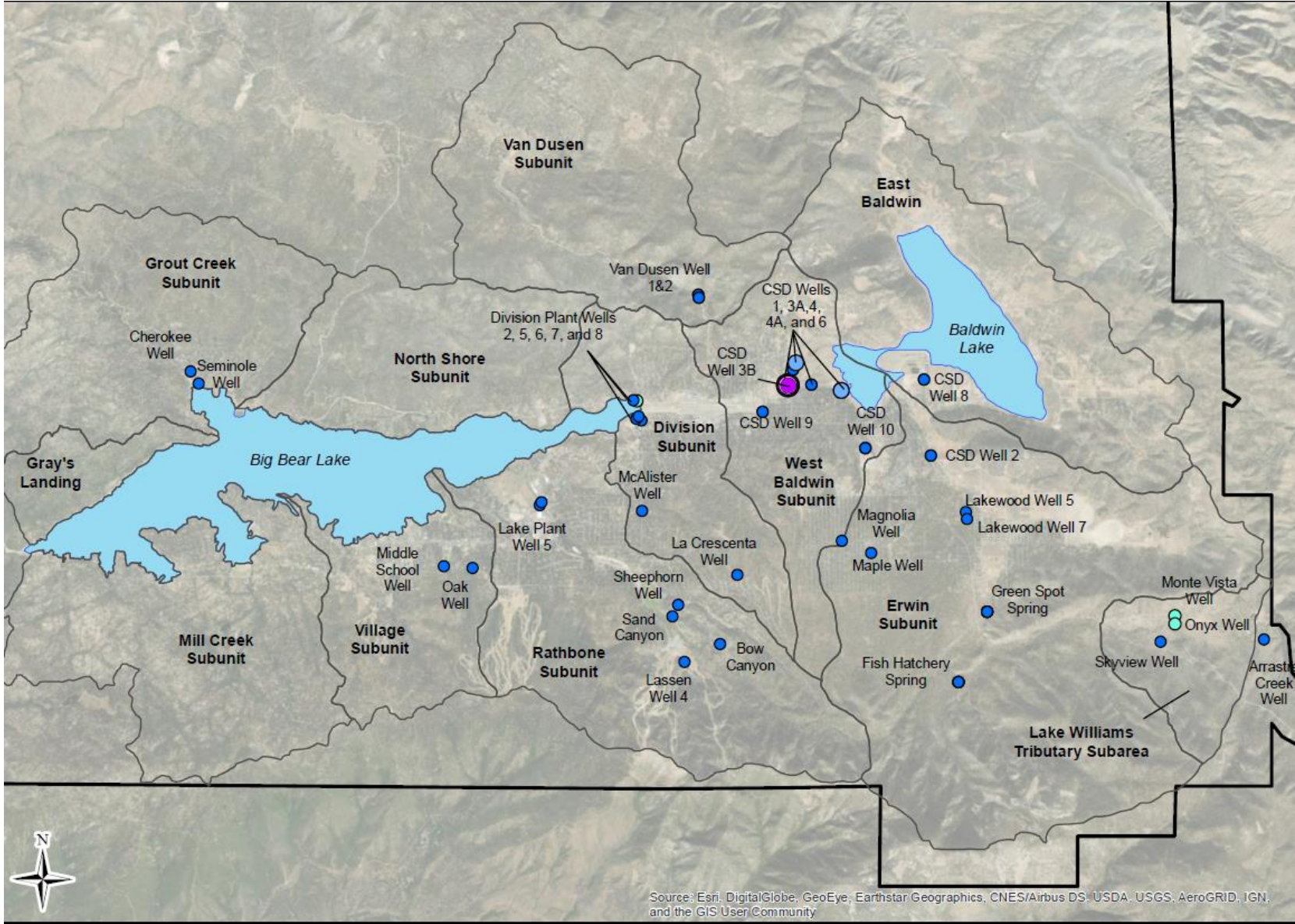
Groundwater Conditions – Groundwater Levels



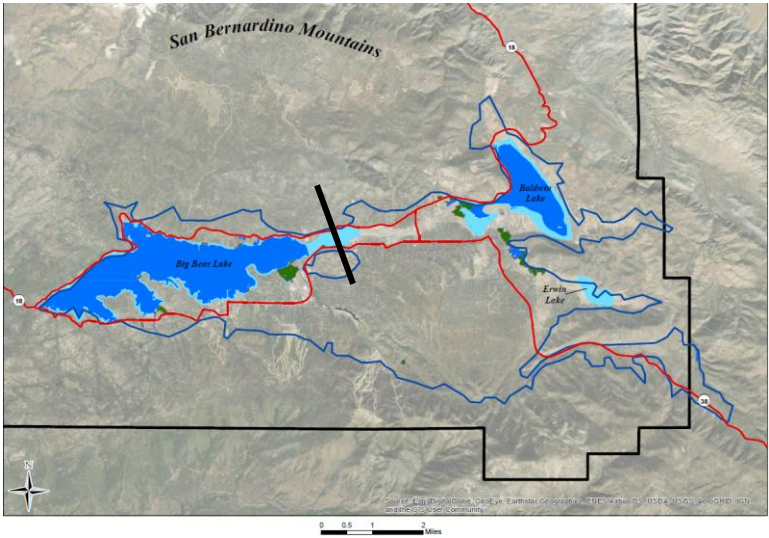
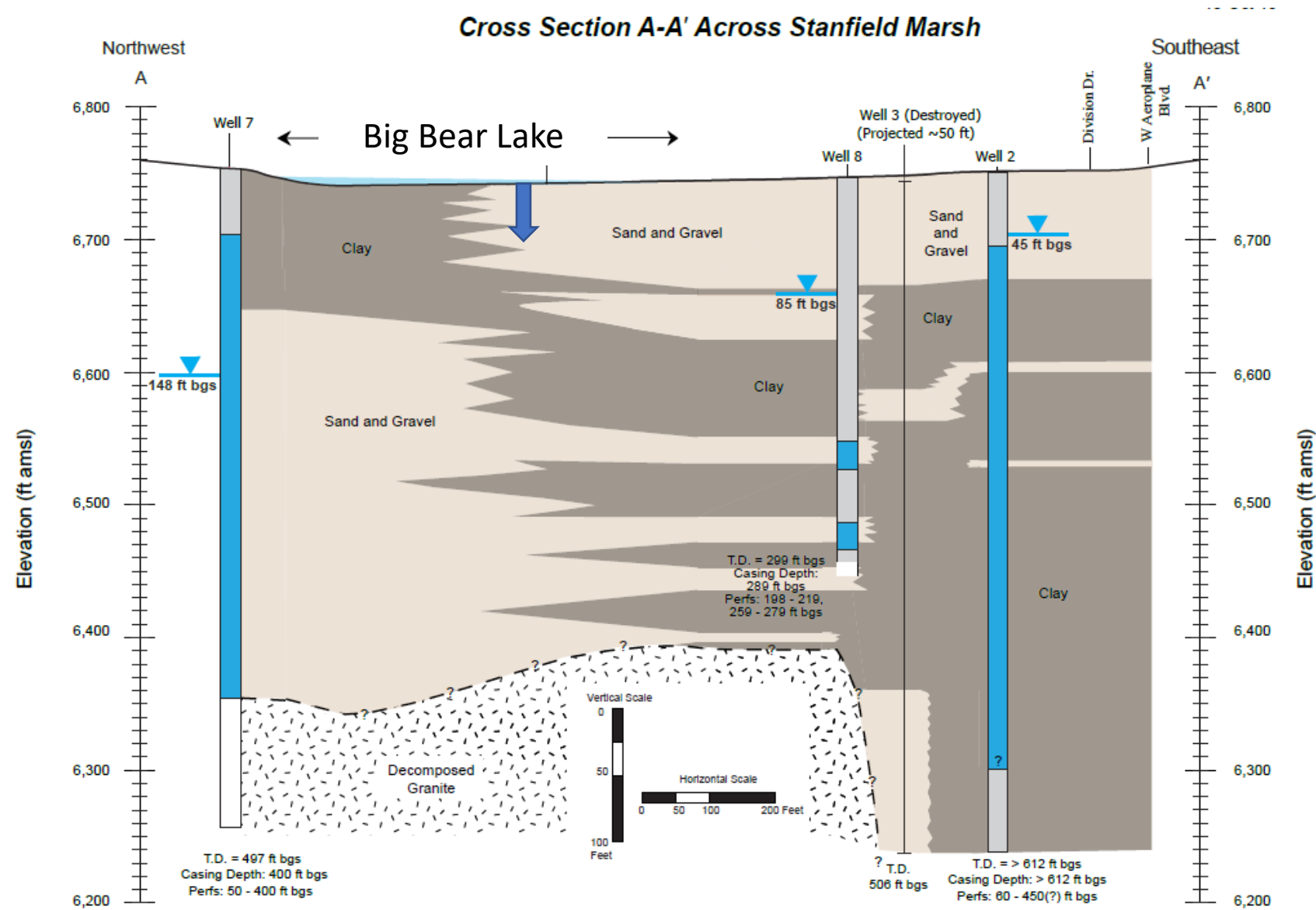
Groundwater Conditions – Groundwater Quality Total Dissolved Solids



Groundwater Conditions – Groundwater Quality - Fluoride

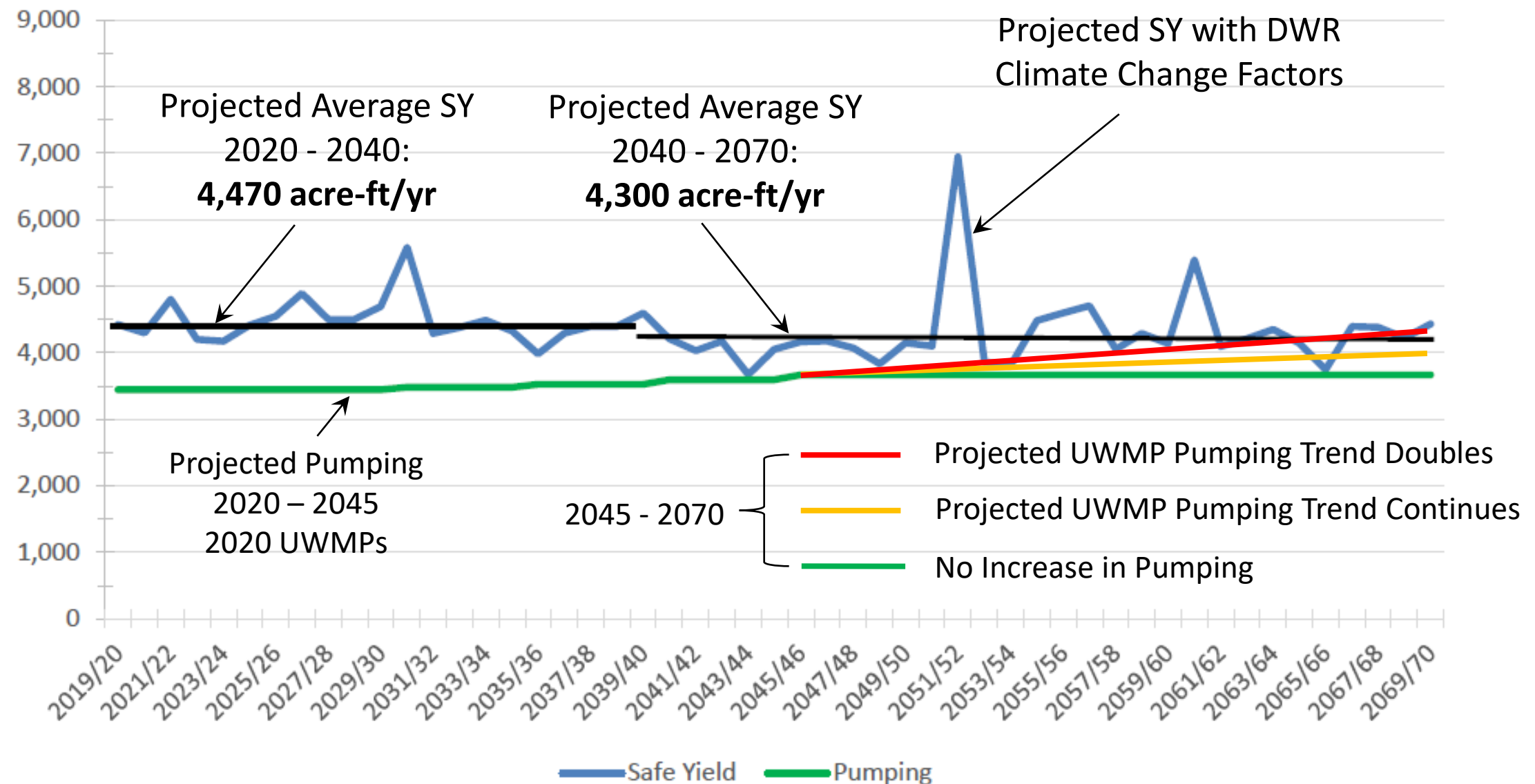


Groundwater Conditions – Interconnected Surface Water Systems

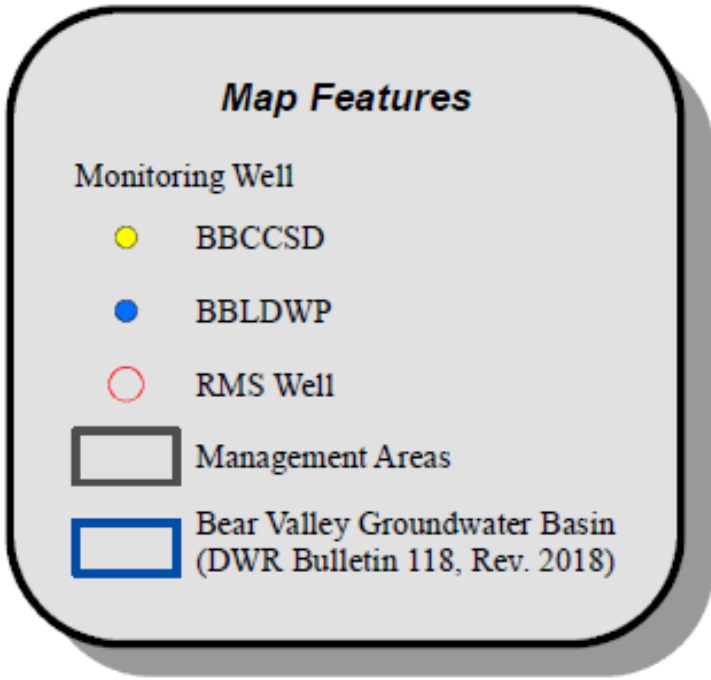
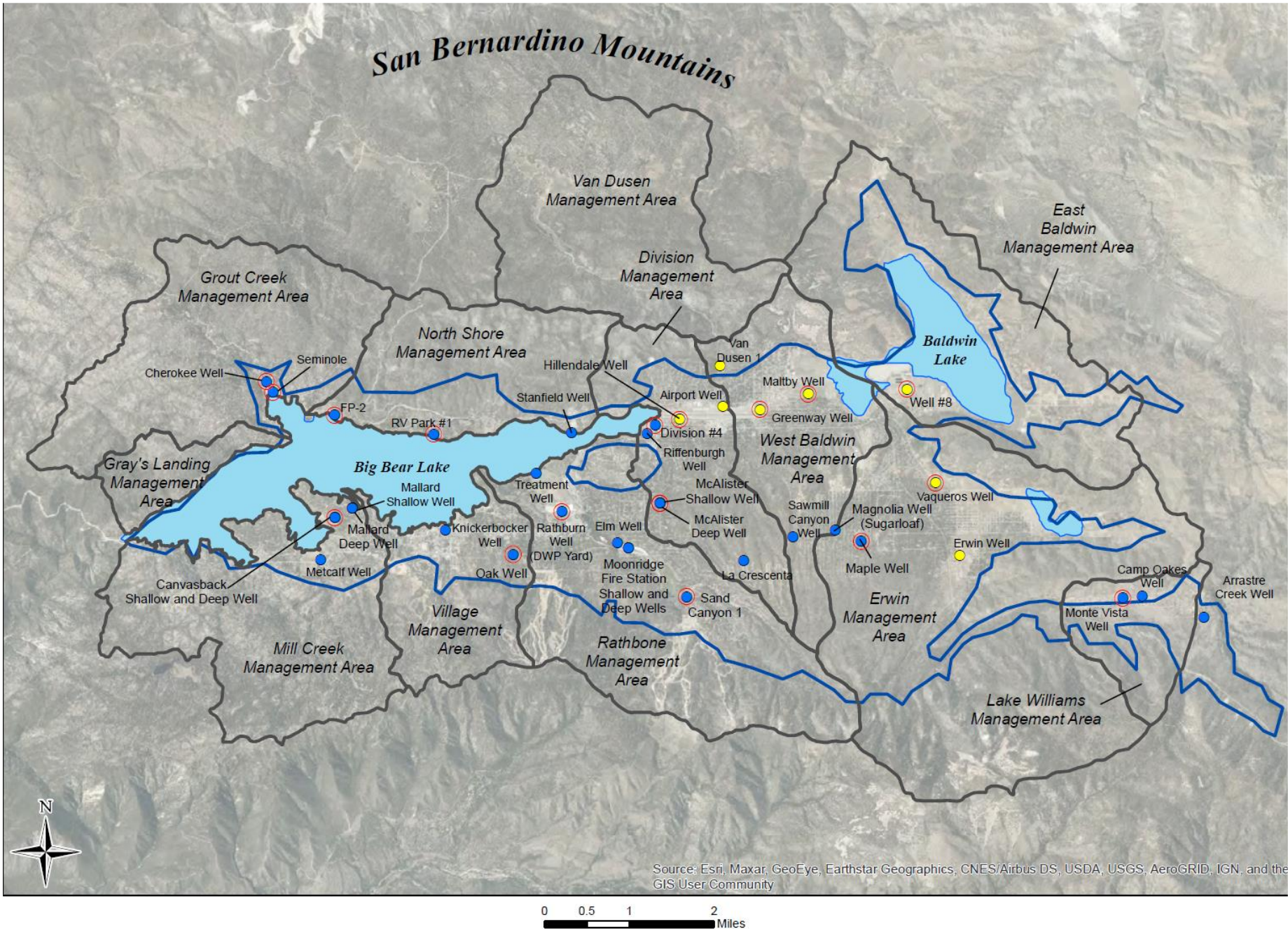


Future Sustainable Yield Is Forecast to Decrease with Climate Change

Historical Average:
4,530 acre-ft/yr



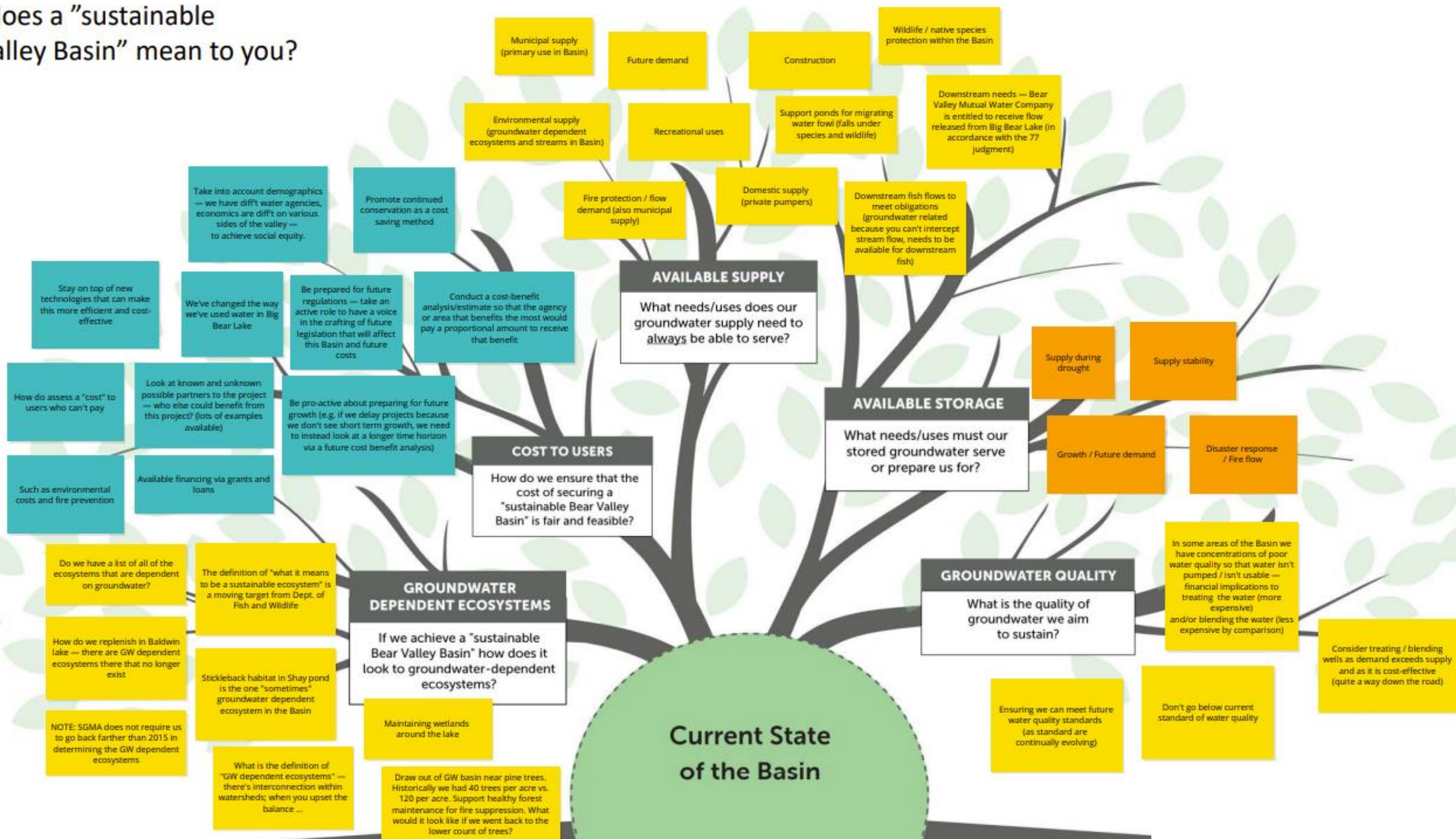
Management Areas and Monitoring Network



Stakeholder Visioning Exercise

What does a "sustainable Bear Valley Basin" mean to you?

Future State of the Basin: Groundwater Sustainability



5 Guiding Principles informing the Bear Valley Basin GSP

1

Available groundwater supply **reliably supports diverse and evolving water needs.**

2

Stored groundwater supports supply **stability and reliability to future conditions.**

3

Groundwater quality is **either maintained or further improved via treatment to support future demand.**

4

Cost of maintaining a sustainable basin is **fair, fiscally responsible. Proactive, and forward-thinking with creative financing options.**

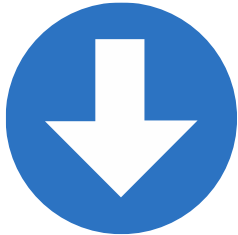

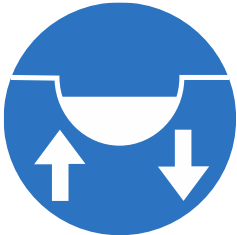



5

Groundwater levels support the **sustained and (where possible) restorative health** of groundwater dependent ecosystems.

An aerial photograph of a large lake with a residential area in the foreground. The houses are nestled among tall evergreen trees. In the background, there are rolling hills and mountains under a clear sky. The text "Workshop #2" is overlaid in the center of the image.

Workshop #2

Sustainable Management Criteria

| | | | | | | |
|--------------------------------------|---|---|---|---|---|---|
| |  |  |  |  |  |  |
| SUSTAINABILITY INDICATOR | CHRONIC LOWERING OF GROUNDWATER LEVELS | REDUCTION OF GROUND-WATER STORAGE | INTER-CONNECTED SURFACE WATER DEPLETIONS | WATER QUALITY DEGRADATION | LAND SUBSIDENCE | SEAWATER INTRUSION |
| METRIC(S) DEFINED IN GSP REGULATIONS | Groundwater Elevation | Total Volume | Volume or rate of surface water depletion | Maximum Contaminant Levels (MCLs) | Rate and extent of land subsidence | Chloride Concentration Isocontour |

SGMA allows all indicators except water quality to be assessed using water levels as a proxy metric for direct measurement.

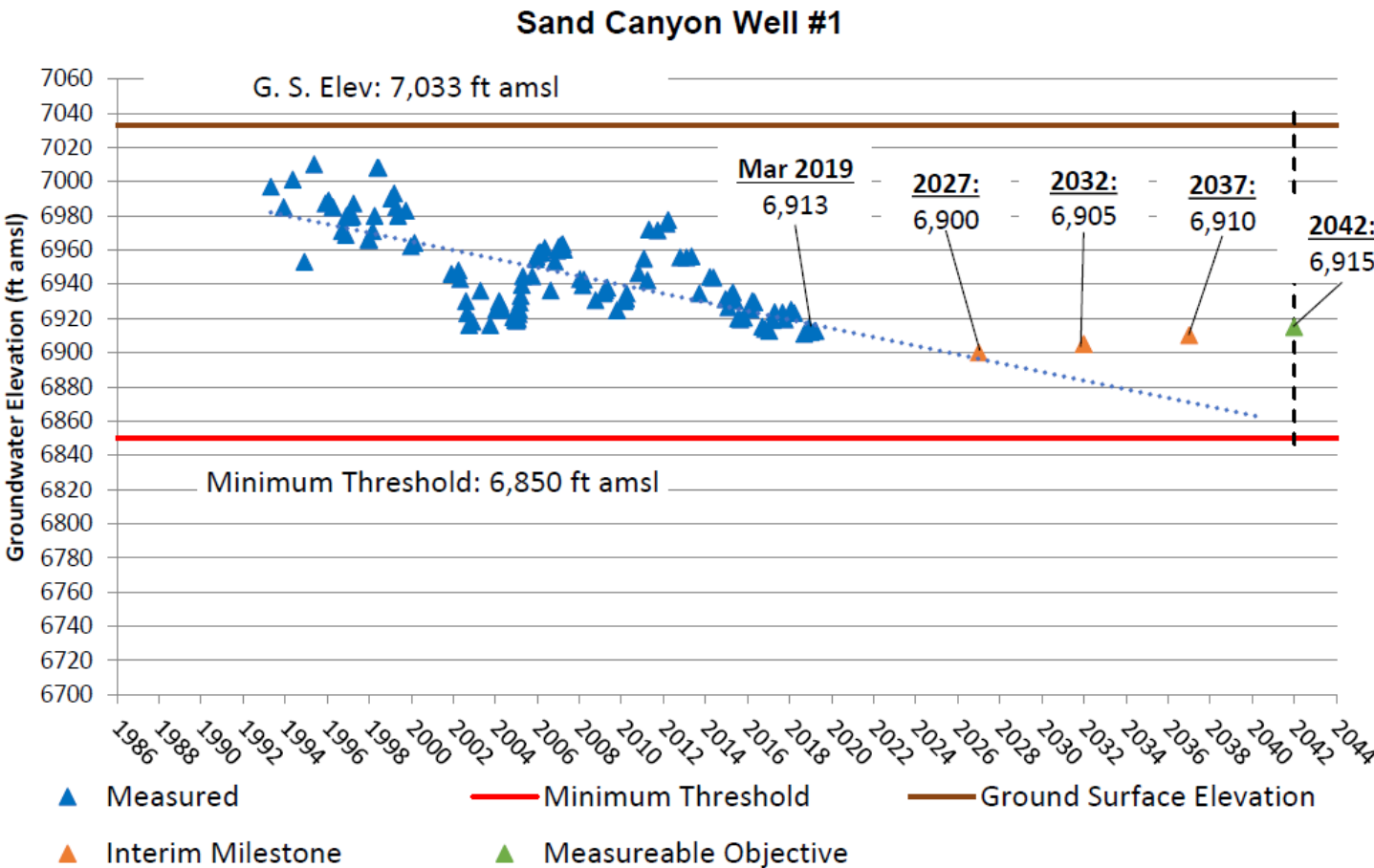
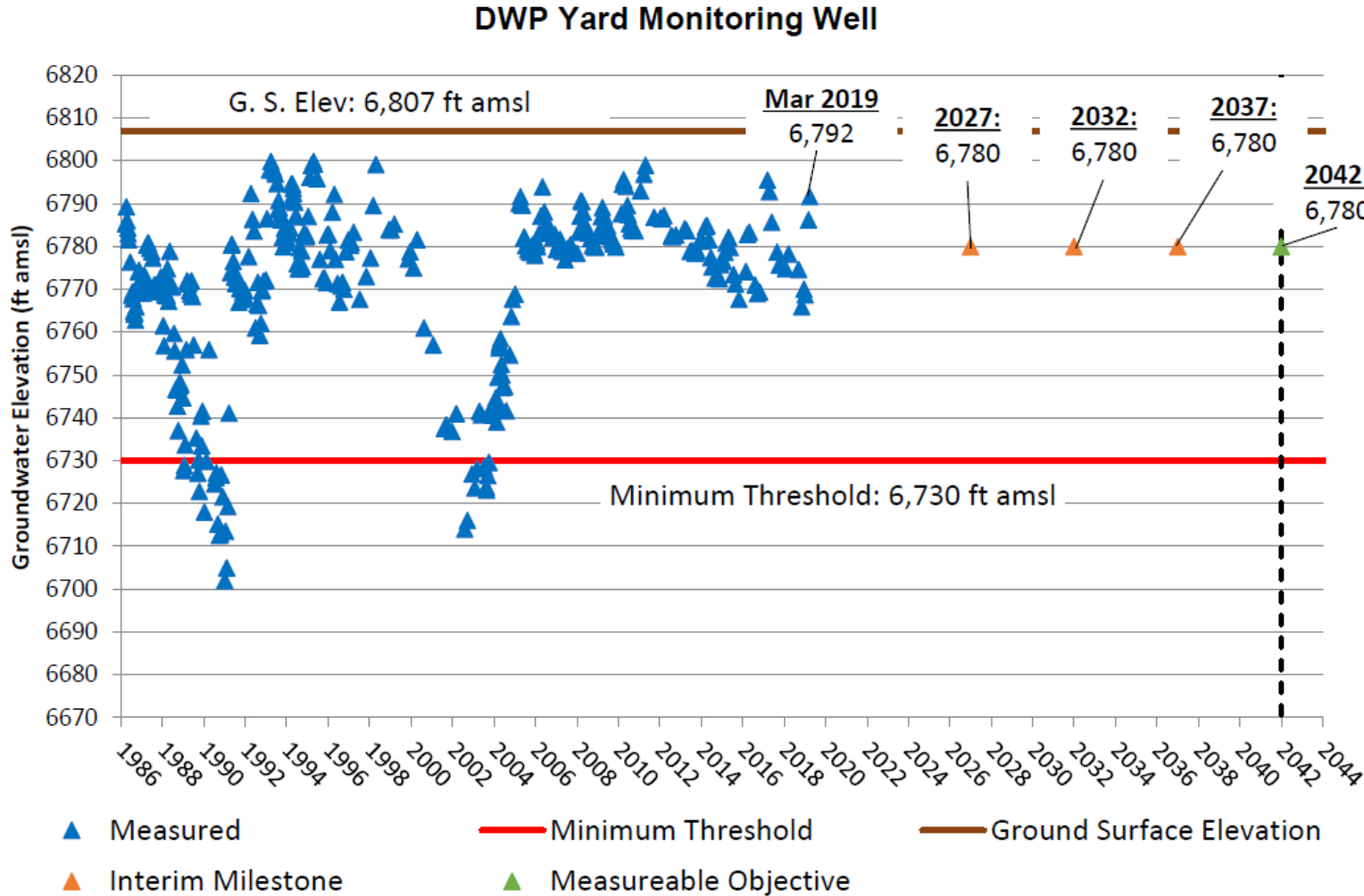
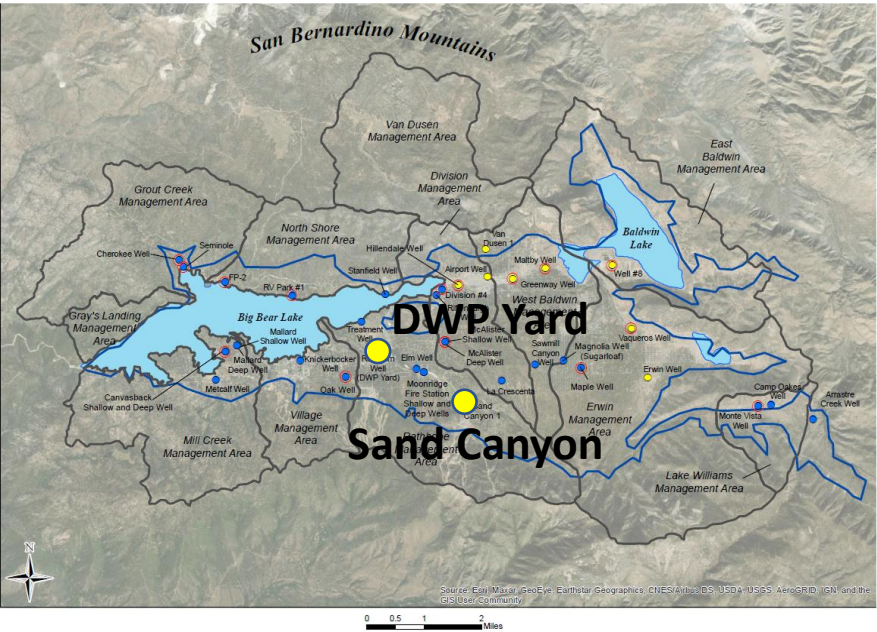
Representative Monitoring Sites

A subset of a basin's complete monitoring network, where minimum thresholds, measurable objectives, and interim milestones are set.

 Representative Monitoring Site



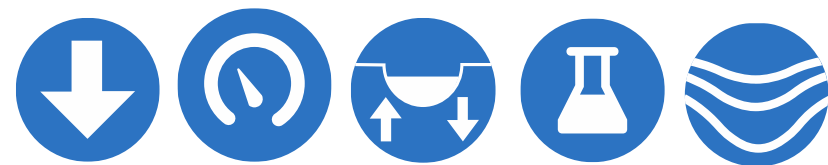
Preliminary Sustainable Management Criteria – Rathbone Management Area



Key Terms

Basinwide Sustainability Goal

Set minimum thresholds
and measurable objectives
for all Sustainable
Management Criteria



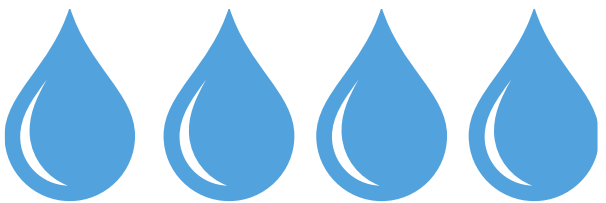
SUSTAINABLE
MANAGEMENT CRITERIA

Measure and monitor
at each representative
monitoring sites



REPRESENTATIVE
MONITORING SITES

Achieve goals using
projects and
management actions



PROJECTS &
MANAGEMENT ACTIONS

Basinwide Sustainability Goal



Sustainable Management Goal

Tom Harder

Hydrogeologist, Thomas Harder & Company

Draft Sustainability Goal Statement

The sustainability goal of the Bear Valley Basin (BVB) is the absence of undesirable results associated with groundwater pumping through a collaborative, basin-wide program of groundwater management. In adopting this GSP, it is the express goal of the BVBGSA to balance the needs of all groundwater users in the Bear Valley Basin within the sustainable limits of the basin's resources, while maintaining the unique cultural, community, and business aspects of the Bear Valley Basin.

An aerial photograph of a large, calm lake surrounded by dense evergreen forests and rolling mountains in the background. In the foreground, a residential area with several houses and docks is visible along the shoreline.

Group Discussion

Are any important elements missing from the Sustainability Goal Statement?

Any concerns about the implications of these goals?



Projects and Management Actions

Laine Carlson
Water Systems Consulting

Projects and Management Actions

The Bear Valley Basin is sustainable, but projects and management actions will help maintain groundwater sustainability over time and as basin conditions change

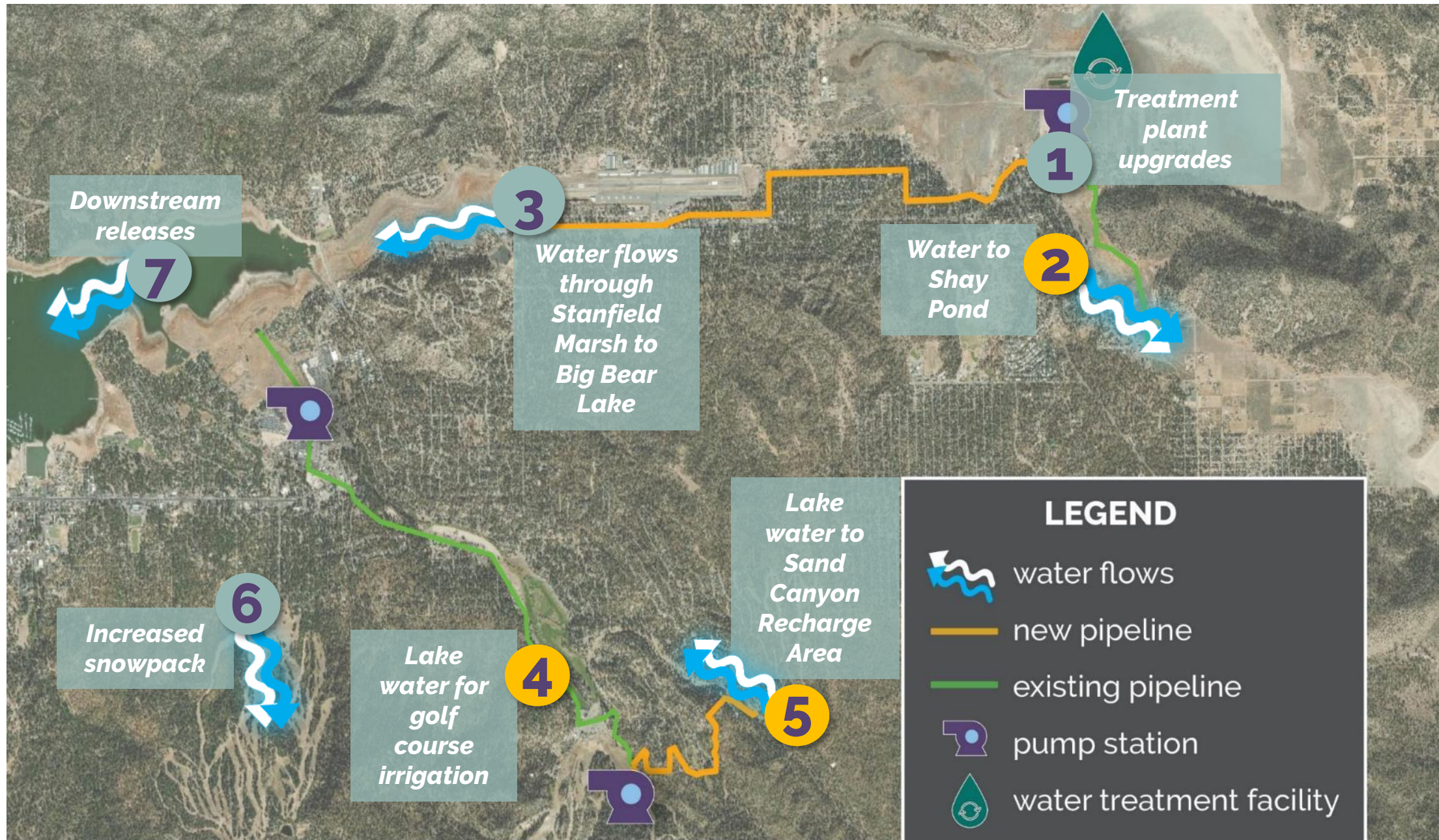
Projects

- Replenish Big Bear
- New Groundwater Wells
- Existing Groundwater Well and Pump Maintenance

Management Actions

- Technical Review Team (TRT)
- Water Use Efficiency (Demand Management Measures)
- Water Shortage Contingency Plans

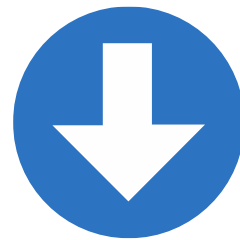
Project: Replenish Big Bear





Replenish Big Bear GSP Benefits

- Creates a new drought proof water supply to improve sustainability
- Increases groundwater levels and storage in localized areas through direct and in-lieu recharge
- Increases operational flexibility and supports adaptive management to prevent localized lowering of groundwater levels during drought
- Sustainable Management Criteria Addressed:



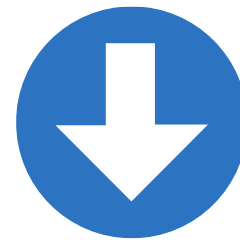
**CHRONIC LOWERING OF
GROUNDWATER LEVELS**



**REDUCTION OF
GROUNDWATER STORAGE**

Project: Groundwater Wells (New or Replacement)

- Increases or maintains operational flexibility and supports adaptive management to prevent localized decline of groundwater levels and storage during drought
- Currently planned projects:
 - New BBCCSD Well 8A
 - New BBLDWP Division Well 9
 - Multiple Well Pumping Unit Replacements
- Sustainable Management Criteria addressed:



**CHRONIC LOWERING OF
GROUNDWATER LEVELS**

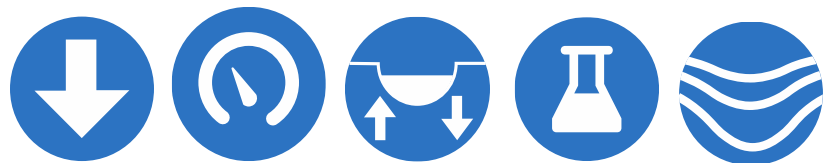


**REDUCTION OF
GROUNDWATER STORAGE**

Continued Sustainable Management Actions

Technical Review Team (Adaptive Management)

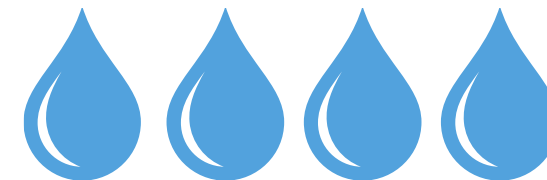
- Meets 1 or more times a year
- Review pumping and groundwater level data
- Evaluate data in context of GSP Sustainable Management Criteria
- May recommend changes in pumping locations or demand reduction, if needed



Water Use Efficiency

Demand Management Measures promote water use efficiency at all times:

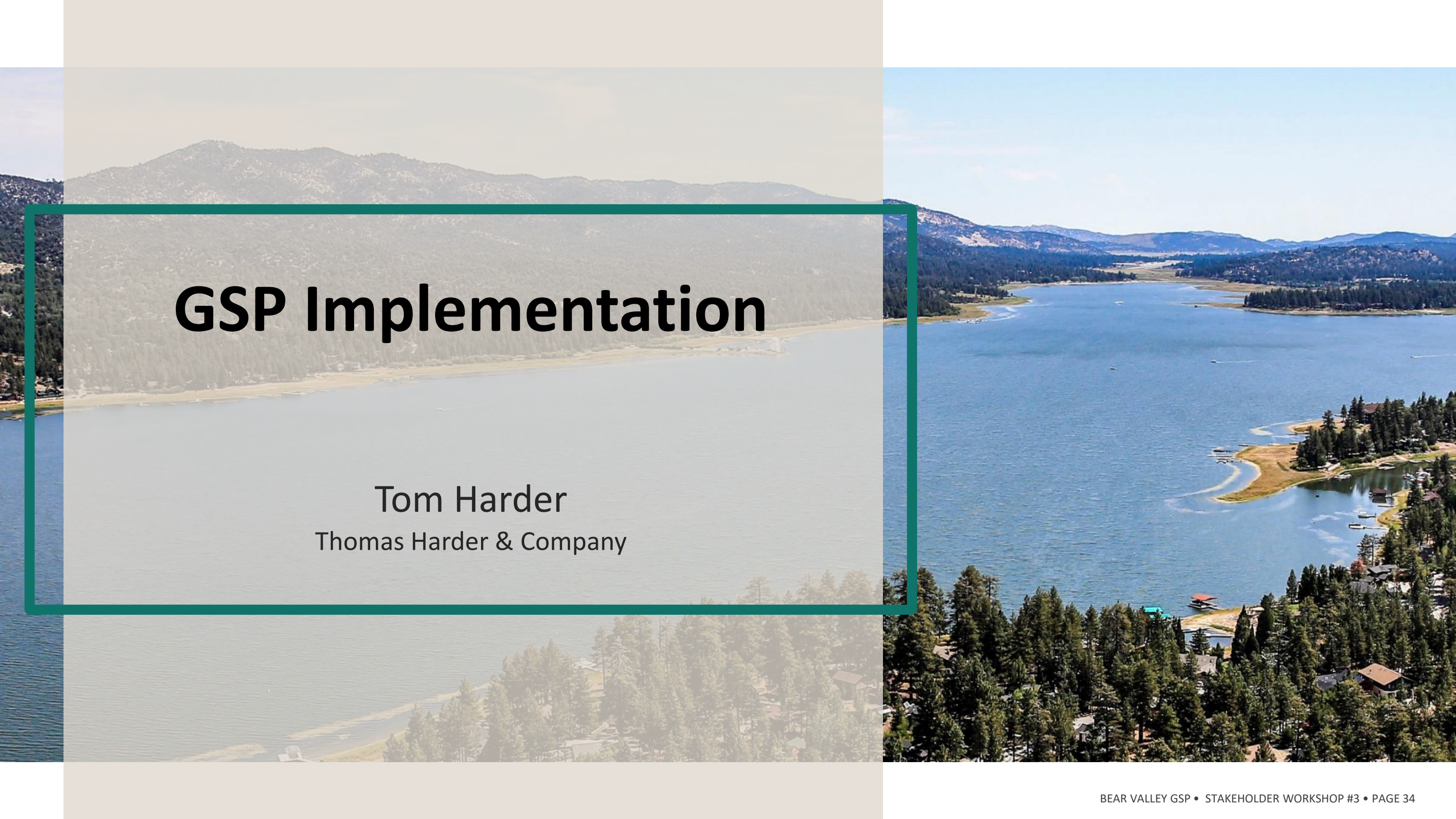
- Water Waste Prevention Ordinance
- Metered customer connections
- Conservation pricing (tiered rates)
- Public education and outreach
- Reducing water loss (main replacement and advanced metering)
- Water conservation program



Continued Sustainable Management Actions

Water Shortage Contingency Plans

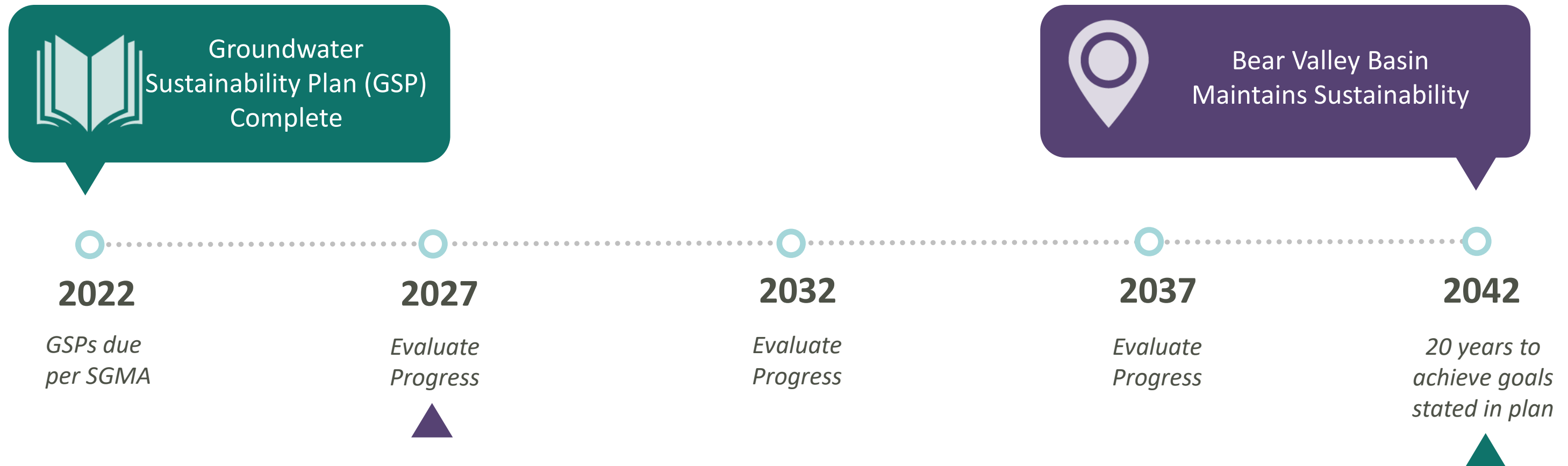
- Last updated by BBLDWP and BBCCSD in June 2021 with the 2020 Urban Water Management Plans
- Defines what actions will be taken in the event of water shortage due to drought, or other short-term supply interruption
- If a water shortage stage is enacted by the agency, appropriate shortage response actions would be implemented, such as:
 - Limiting irrigation water use
 - Increasing public outreach to encourage conservation
 - Using an intertie between BBLDWP and BBCCSD to transfer water supplies from one to another



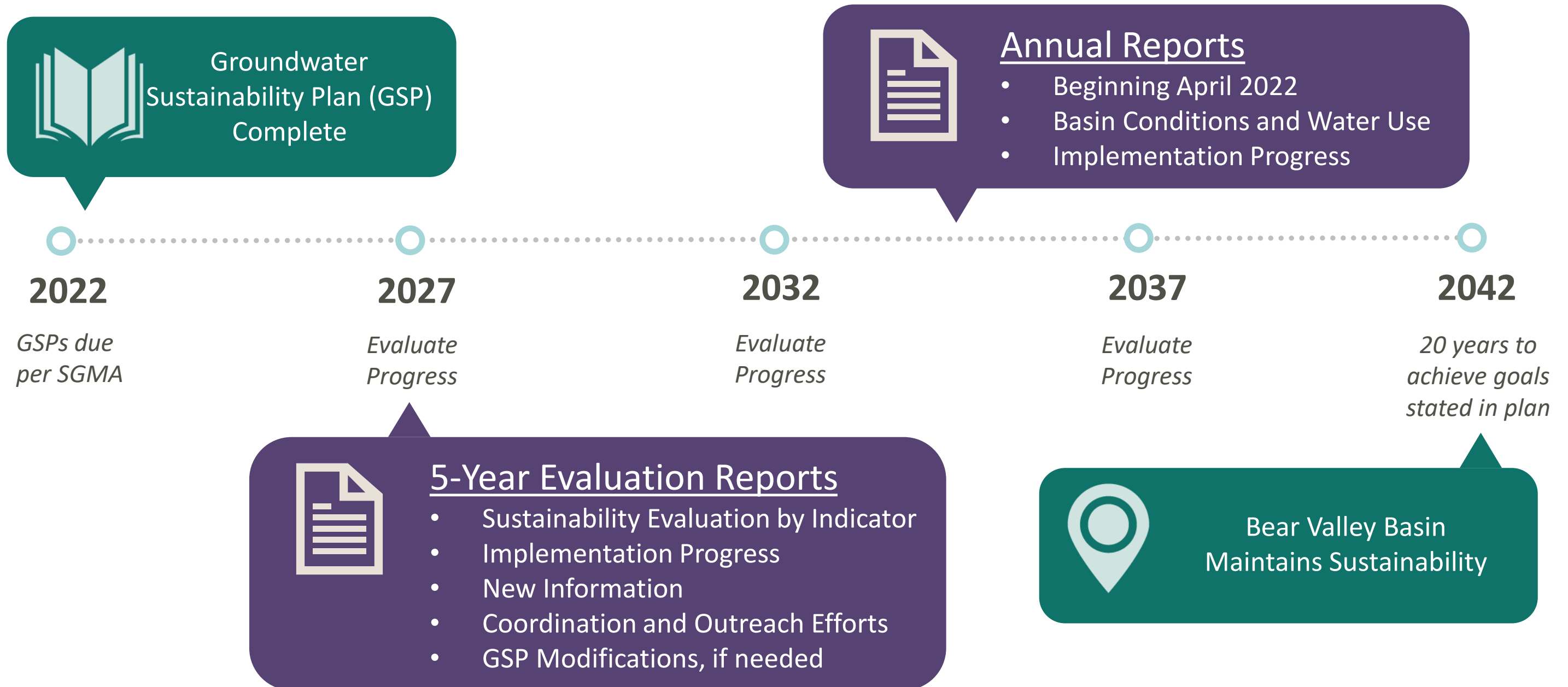
GSP Implementation

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Thomas Harder & Company

Sustainable Groundwater Management Act (SGMA) Deadlines



GSP Implementation and Reporting





What's Next

Amy Stevens
Water Systems Consulting

Steps to Completion of the GSP



Step 1.
Establish
Governance
Structure

April '17 – May '17

May 25, 2017
PUBLIC MEETING



Step 2.
Document
Basin Setting

Oct '19 – Sep '20

Sept. 23, 2020
STAKEHOLDER WORKSHOP:
Groundwater Management Vision



Step 3.
Set Sustainability
Goals

Sep '20 – Dec '20

Dec. 2, 2020
STAKEHOLDER WORKSHOP
Sustainable Goal Setting



Step 4.
Develop
Plan to Sustainability

Dec '20 – Oct '21

October 21, 2021
STAKEHOLDER WORKSHOP
*Projects & Management Actions
Implementation*



WE ARE HERE



Step 5.
Adopt
the Plan

Nov '21 — Jan '22

Nov. 2021
PUBLIC COMMENT PERIOD
Public Draft GSP

Jan. 2022
BVBGSA PUBLIC MEETING
Adoption of Final Draft GSP

An aerial photograph of a large lake with a residential area on the shore. The houses are nestled among dense evergreen trees. In the background, there are rolling hills and mountains under a clear sky. The water is calm, and some small boats are visible in the distance.

Questions?