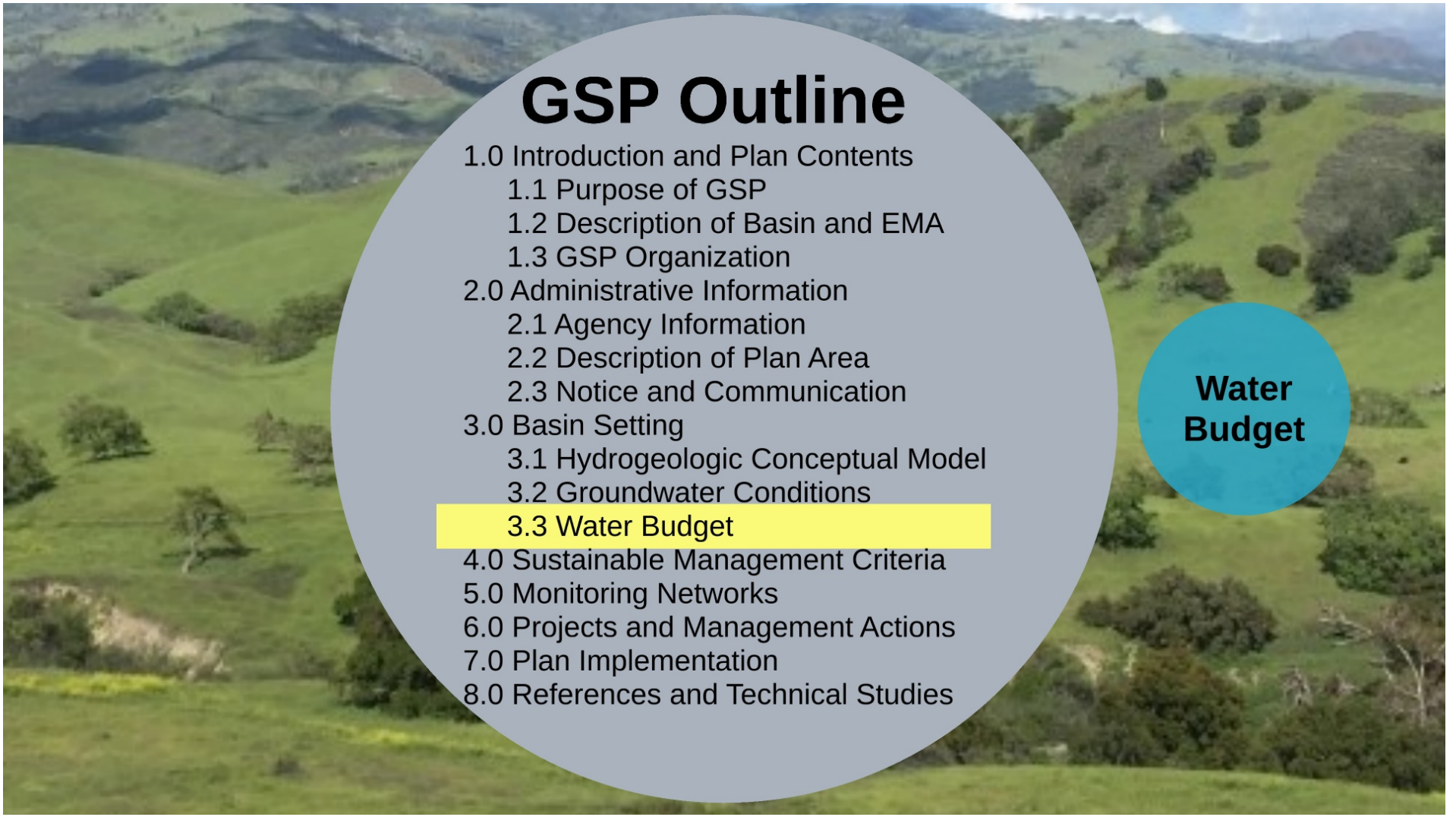
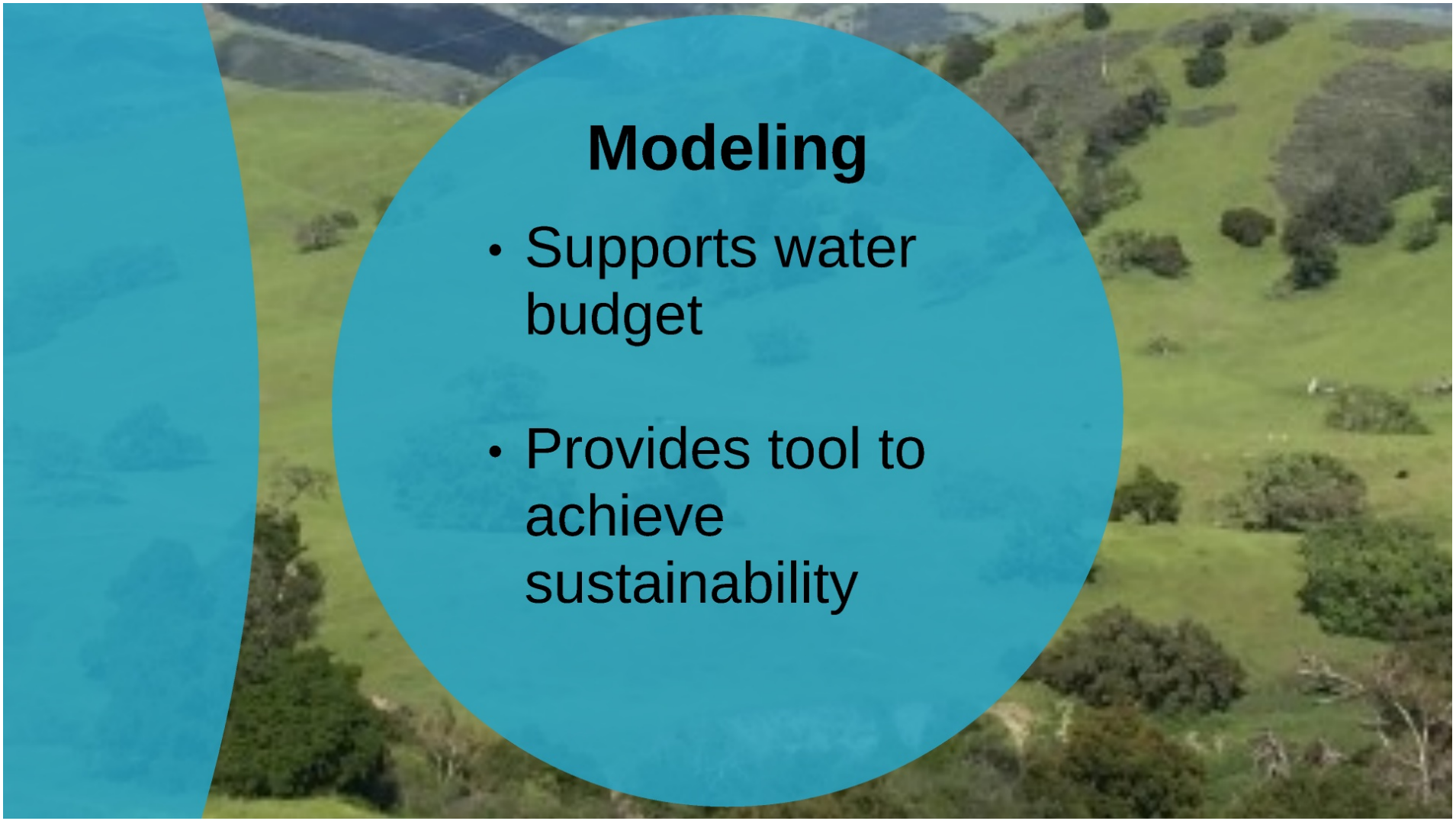

Santa Ynez Eastern Management Area
Water Budget Summary
DRAFT
Next steps
Water Budget
GSP Process
February 25, 2021
EMA
Santa Ynez River Valley Groundwater Basin
Eastern Management Area
Groundwater Sustainability Agency
GSI Water Solutions, Inc.


GSP Outline
1.0 Introduction and Plan Contents
1.1 Purpose of GSP
1.2 Description of Basin and EMA
1.3 GSP Organization
2.0 Administrative Information
2.1 Agency Information
2.2 Description of Plan Area
2.3 Notice and Communication
3.0 Basin Setting
3.1 Hydrogeologic Conceptual Model
3.2 Groundwater Conditions
3.3 Water Budget
4.0 Sustainable Management Criteria
5.0 Monitoring Networks
6.0 Projects and Management Actions
7.0 Plan Implementation
8.0 References and Technical Studies
Water Budget


Water Budget
Basin Setting
Water Budget
Water Budget Development
Data Sources
Historical
Current
Future
Modeling


Modeling
• Supports water budget
• Provides tool to achieve sustainability


Water Budget
Basin Setting
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Water Budget Development
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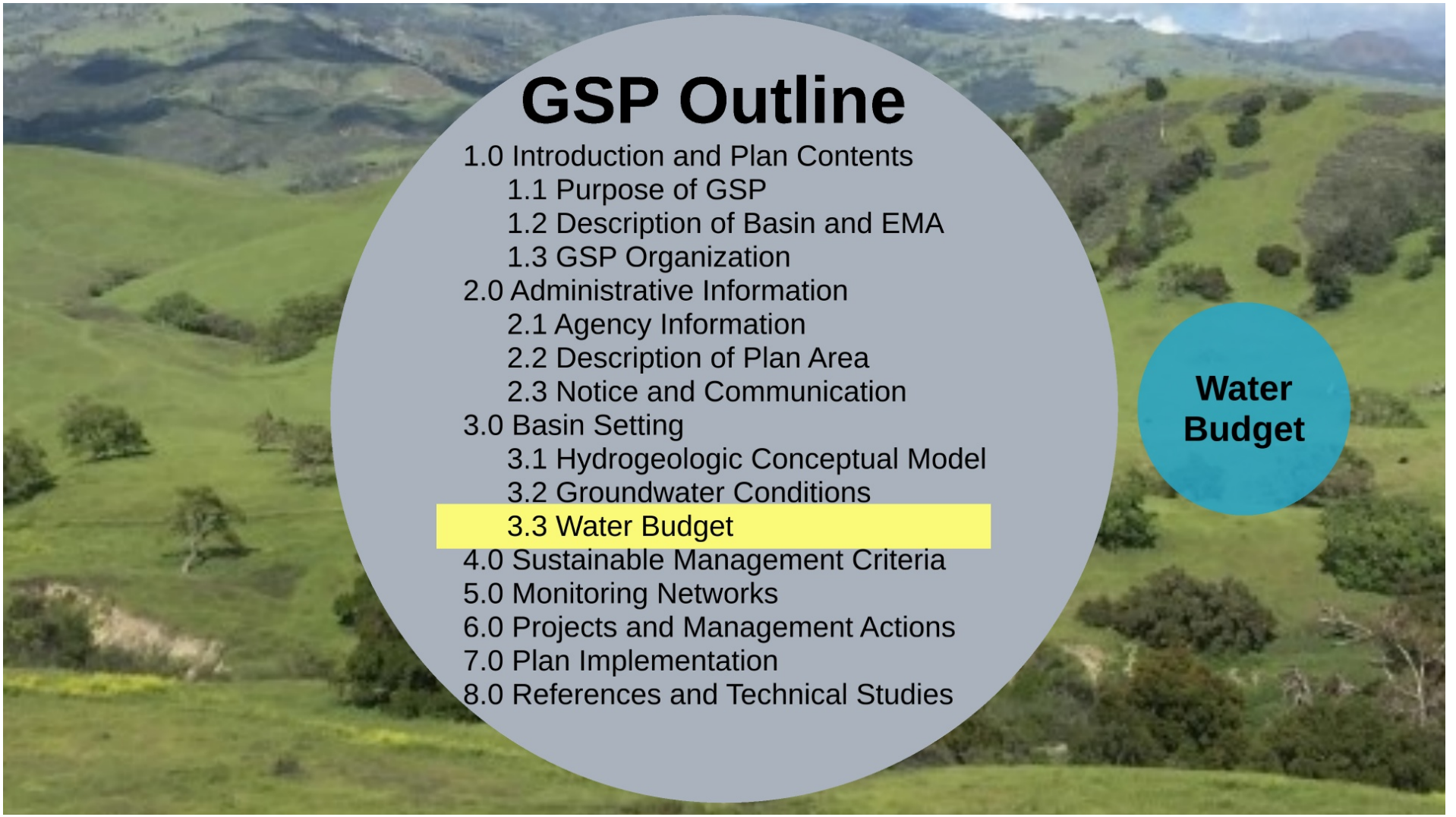
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Water Budget

Overview

Historical

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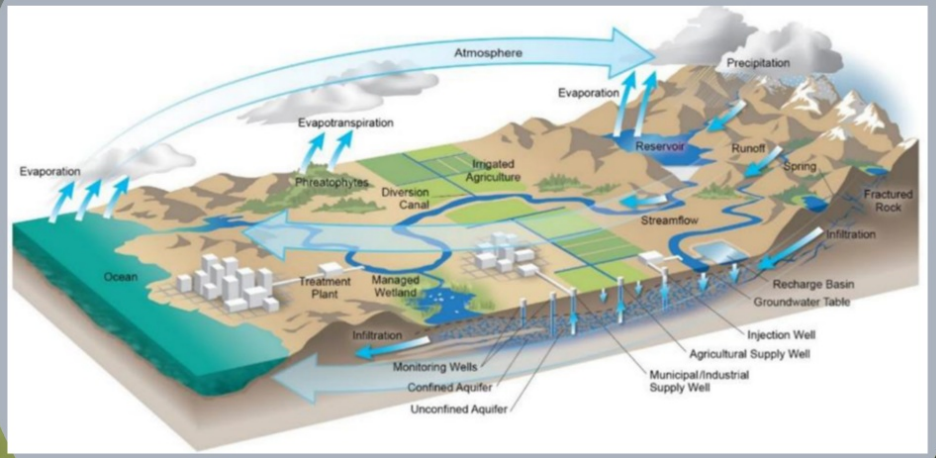
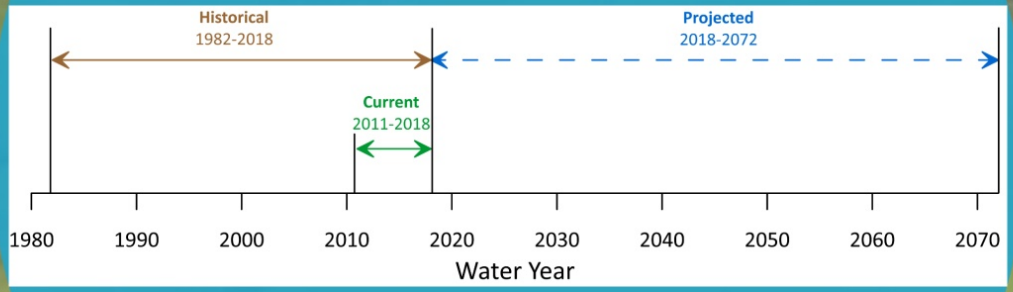


Purpose

Overview



Data Sources

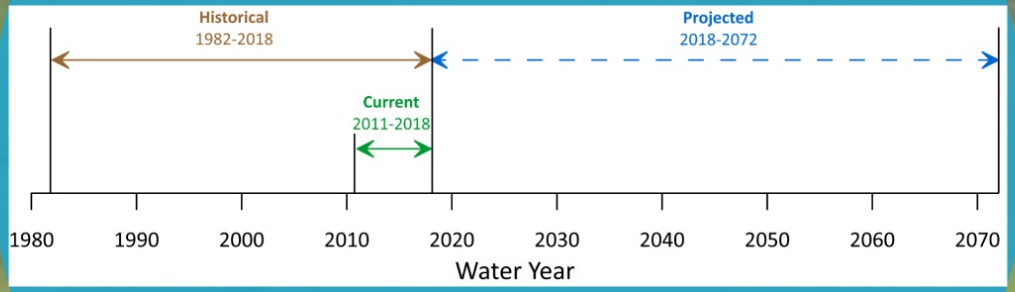
Why is a water budget important?

- Helps understand historical conditions and how future changes to supply, demand, hydrology, population, land use, and climate may affect water resources.
- Supports planning to support sustainable groundwater management, prevent overdraft, which could impact supply and increase cost.

Purpose

Overview

Data Sources



Surface Water

Groundwater

Data Sources

Groundwater

Surface Water

Surface Water Components

Data Source

- Bradbury Dam releases
- Cachuma Project
- Streamflow
- State Water Project
- Pumping from river wells
- Modeling

Water Budget Component

- Precipitation recharge
- Mountain front recharge
- Streamflow
  - Santa Ynez River
  - Tributary inflow
- Irrigation return flows
- Imported
- Septic return flows
- Pumping from river wells
- Santa Ynez River outflow
- Phreatophyte ET

Surface Water

Groundwater

Data Sources

Groundwater

Surface Water

Groundwater Components
(Santa Ynez Uplands)

Data Source

- Irrigation pumping
- Rural domestic pumping
- Municipal pumping
- Small public water systems
- Precipitation
- Mountain front recharge
- Land use surveys
- Treated wastewater volumes
- Modeling
- Phreatophyte mapping

Water Budget Component

- Agricultural irrigation pumping
- Municipal pumping
- Precipitation recharge
- Mountain front recharge
- Tributary percolation
- Subsurface outflow
- Irrigation return flows
- Septic return flows
- Phreatophyte ET

Surface Water

Groundwater

Data Sources

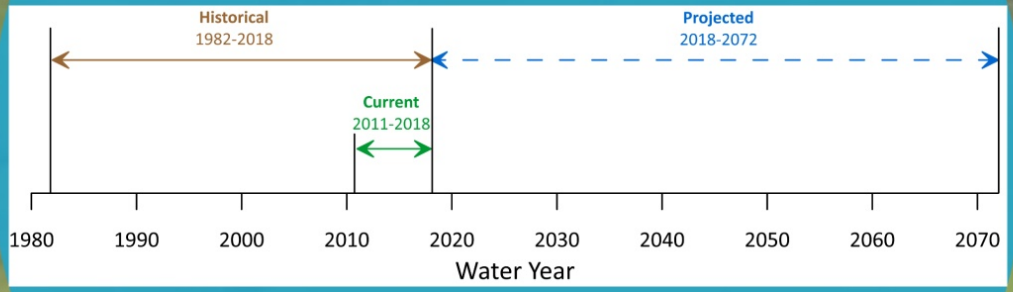
Groundwater

Surface Water

Purpose

Overview

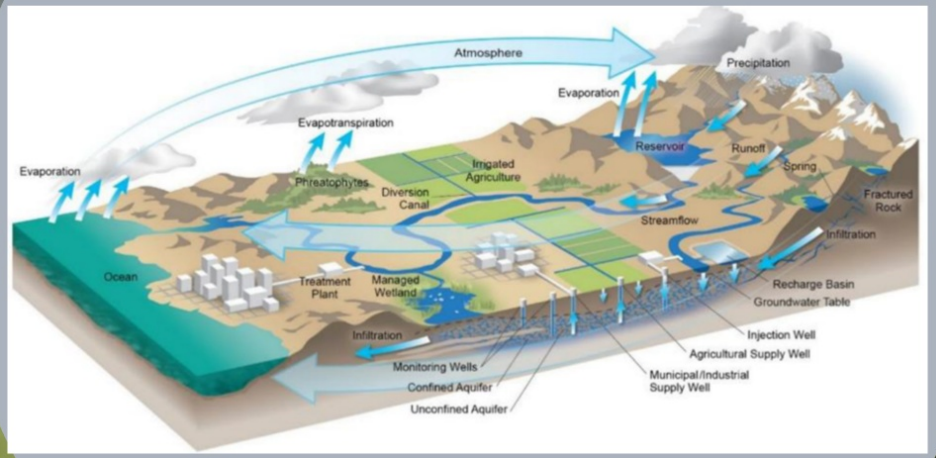
Data Sources



Overview

Water Budget

Historical



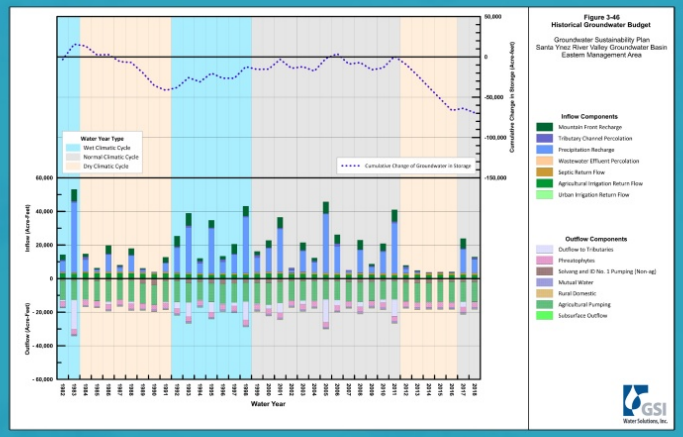
Current

Future

Surface Water

Historical Period 1982 through 2018

Groundwater



Historical Yield

Surface Water Inflow (Draft)

Surface Water Inflow, Historical Period (1982 through 2018)

(Values in acre-feet per year)

Surface Water Inflow Component		Average
Santa Ynez River Inflow		61,600
Tributary Inflow		28,500
Mountain Front Recharge		4,200
Precipitation Recharge		200
Agricultural Irrigation Return Flows		60
Septic Return Flow		10
Cachuma Project (Imported)		960
SWP Table A (Imported)		720
SWP Exchange (Imported)		1,230
	Local	94,570
	Imported	2,910
	Total	97,500

Surface Water Outflow (Draft)

Surface Water Outflow, Historical Period (1982 through 2018)

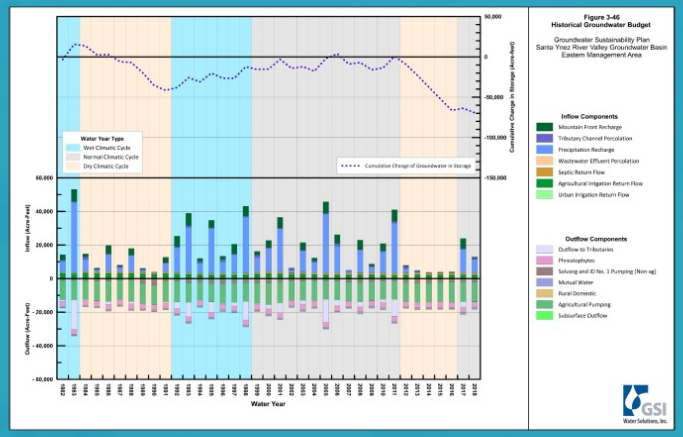
(Values in acre-feet per year)

Surface Water Outflow Component	Average
Santa Ynez River Outflow (including Zaca Creek)	85,700
Pumpage (river wells)	5,000
Subsurface Outflow	1,800
Phreatophyte ET	4,100
Total	96,600

Surface Water

Historical Period 1982 through 2018

Groundwater



Historical Yield

Groundwater Inflow (Draft)

Groundwater Inflow, Historical Period (1982 through 2018)

(Values in acre-feet per year)

Groundwater Inflow Component	Average
Deep Percolation of Direct Precipitation	11,300
Tributary Percolation	700
Subsurface Groundwater Inflow	3,100
Agricultural Irrigation Return Flow	2,400
Domestic/Urban Irrigation Return Flow	130
Septic Return Flow	900
Wastewater Effluent Percolation	40
Total	18,570

Groundwater Outflow (Draft)

Groundwater Outflow, Historical Period (1982 through 2018)

(Values in acre-feet per year)

Groundwater Outflow Component	Average
Total Groundwater Pumping	14,700
Subsurface Groundwater Outflow	2,800
Phreatophyte ET	3,100
Total	20,600

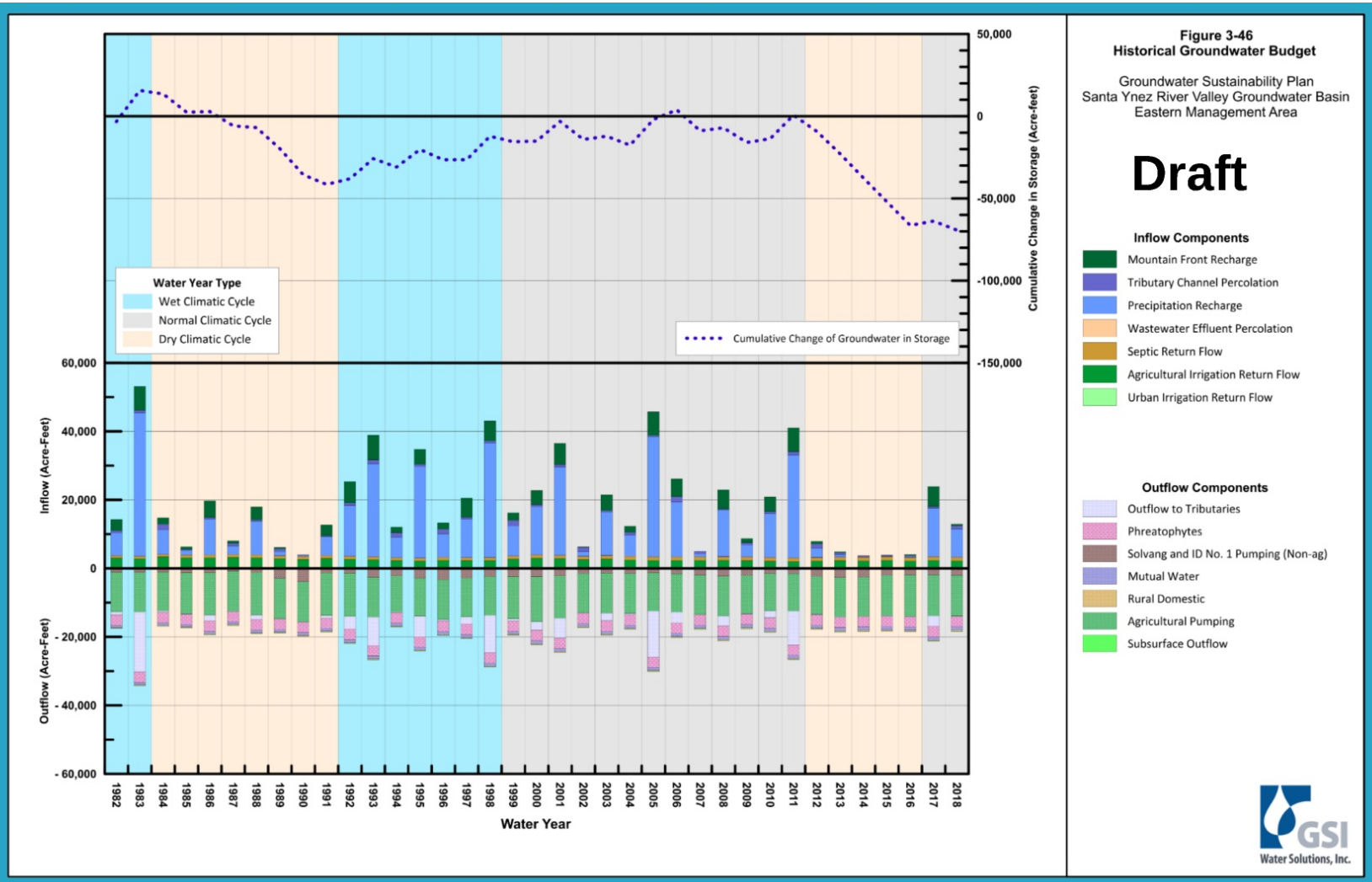
Groundwater Pumping by Water Use Sector

Groundwater Pumping by Water Use Sector, Historical Period

(Values in acre-feet per year)

Water Use Sector	Average
Agricultural	11,700
Municipal	1,940
Rural Domestic	300
Small Public Water Systems	820
Total	14,760

Draft


Water Year Type
Wet Climatic Cycle
Normal Climatic Cycle
Dry Climatic Cycle
Cumulative Change of Groundwater in Storage
Cumulative Change in Storage (Acre-feet)
50,000
0
-50,000
-100,000
-150,000
Inflow (Acre-Feet)
60,000
40,000
20,000
0
Outflow (Acre-Feet)
- 20,000
- 40,000
- 60,000
1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018
Water Year
Figure 3-46
Historical Groundwater Budget
Groundwater Sustainability Plan
Santa Ynez River Valley Groundwater Basin
Eastern Management Area
Draft
Inflow Components
Mountain Front Recharge
Tributary Channel Percolation
Precipitation Recharge
Wastewater Effluent Percolation
Septic Return Flow
Agricultural Irrigation Return Flow
Urban Irrigation Return Flow
Outflow Components
Outflow to Tributaries
Phreatophytes
Solvang and ID No. 1 Pumping (Non-ag)
Mutual Water
Rural Domestic
Agricultural Pumping
Subsurface Outflow
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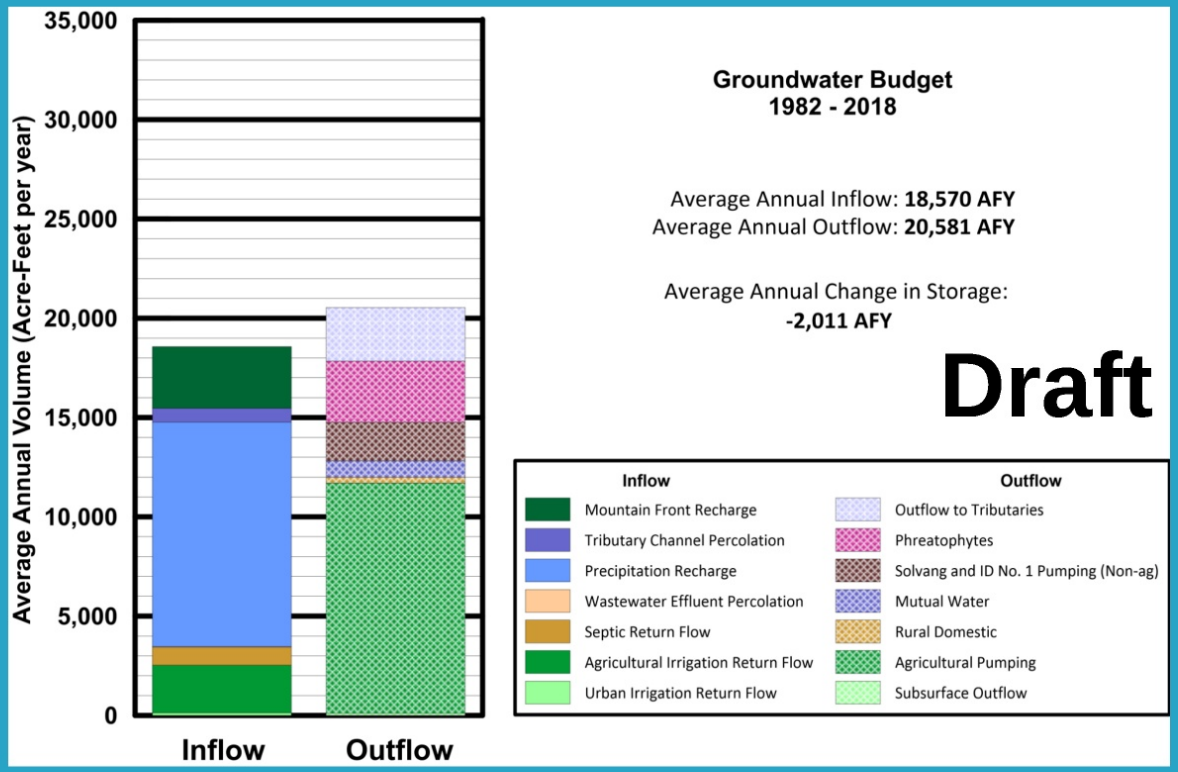
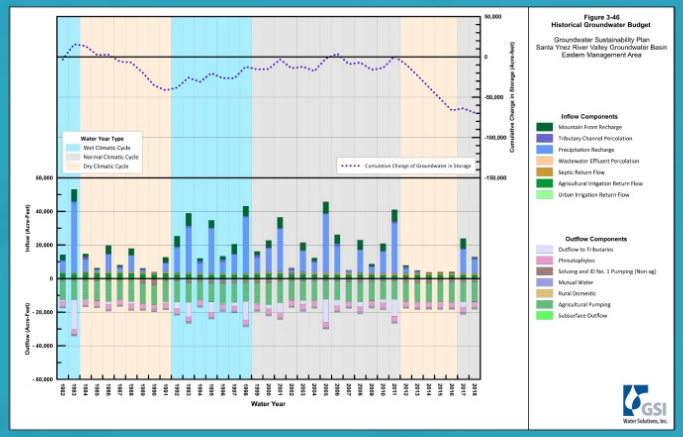
Changes in Groundwater in Storage



Surface Water

Historical Period 1982 through 2018

Groundwater



Historical Yield

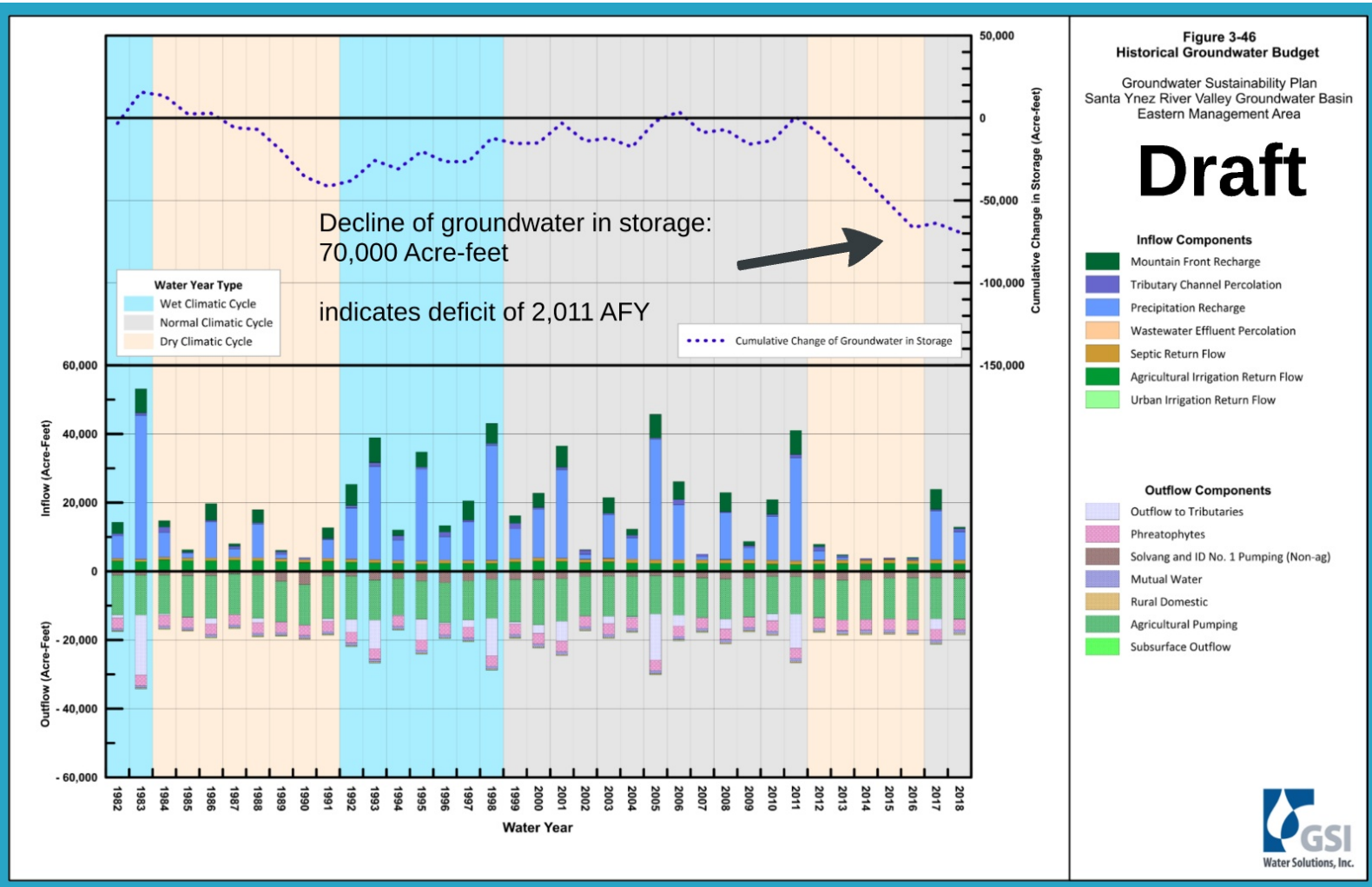


Figure 3-46
Historical Groundwater Budget
Groundwater Sustainability Plan
Santa Ynez River Valley Groundwater Basin
Eastern Management Area
Draft
Decline of groundwater in storage:
70,000 Acre-feet
indicates deficit of 2,011 AFY
Water Year Type
Wet Climatic Cycle
Normal Climatic Cycle
Dry Climatic Cycle
Cumulative Change of Groundwater in Storage
Inflow Components
Mountain Front Recharge
Tributary Channel Percolation
Precipitation Recharge
Wastewater Effluent Percolation
Septic Return Flow
Agricultural Irrigation Return Flow
Urban Irrigation Return Flow
Outflow Components
Outflow to Tributaries
Phreatophytes
Solvang and ID No. 1 Pumping (Non-ag)
Mutual Water
Rural Domestic
Agricultural Pumping
Subsurface Outflow
Inflow (Acre-Feet)
Outflow (Acre-Feet)
Cumulative Change in Storage (Acre-feet)
Water Year
GSI
Water Solutions, Inc.

Historical Yield (1982 through 2018) Draft
(Santa Ynez Uplands)

Total pumping + change in groundwater in storage

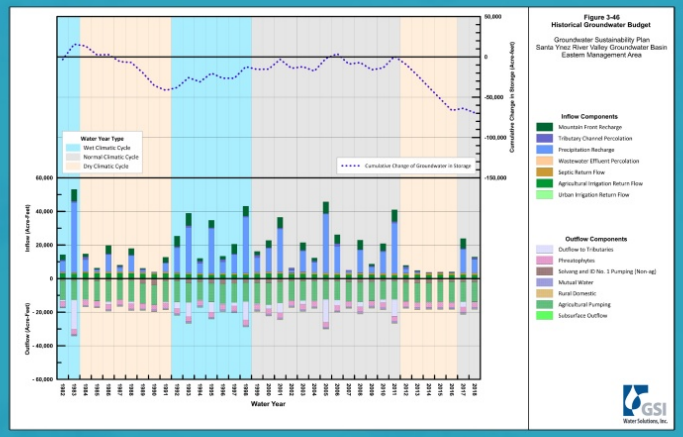
14,760 AFY + (-2,011) AFY = **12,749 AFY**

Sustainable yield that avoids undesirable results will be determined at a later date after sustainability criteria are determined.

Surface Water

Historical Period 1982 through 2018

Groundwater

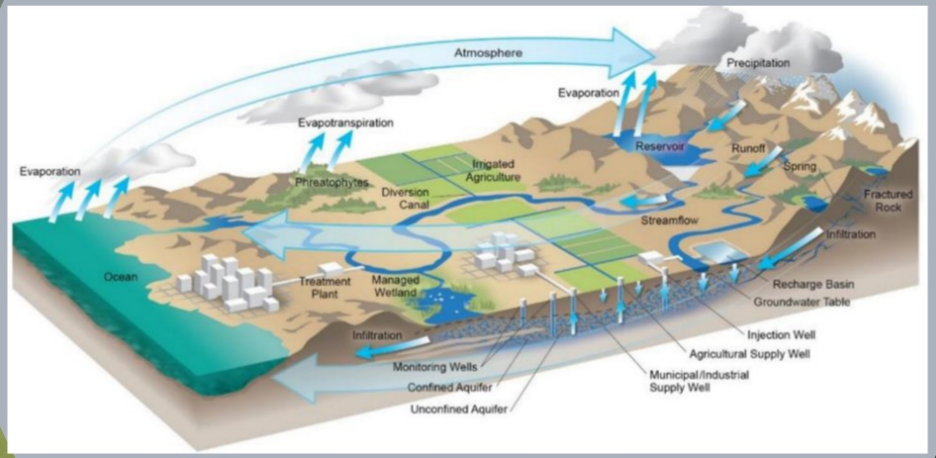


Historical Yield

Overview

Water Budget

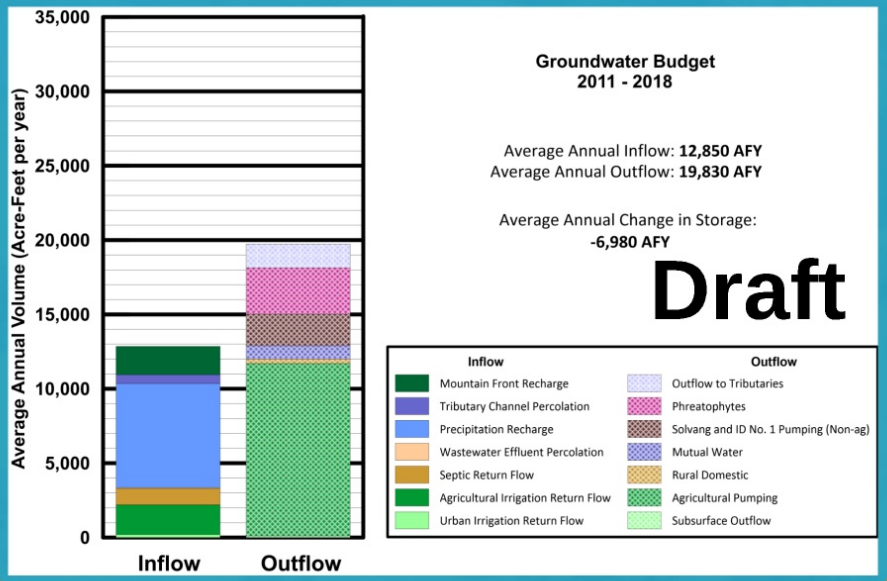
Historical



Current

Future

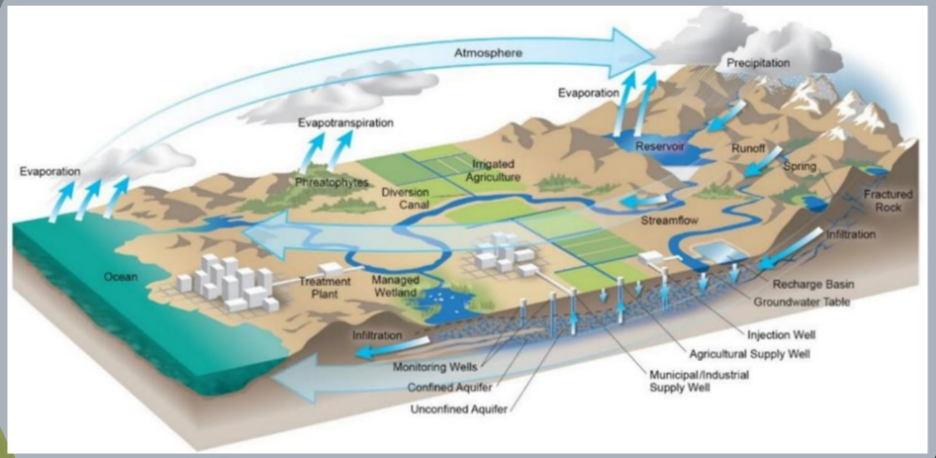
Current Period
2011 through 2018



Overview

Water Budget

Historical



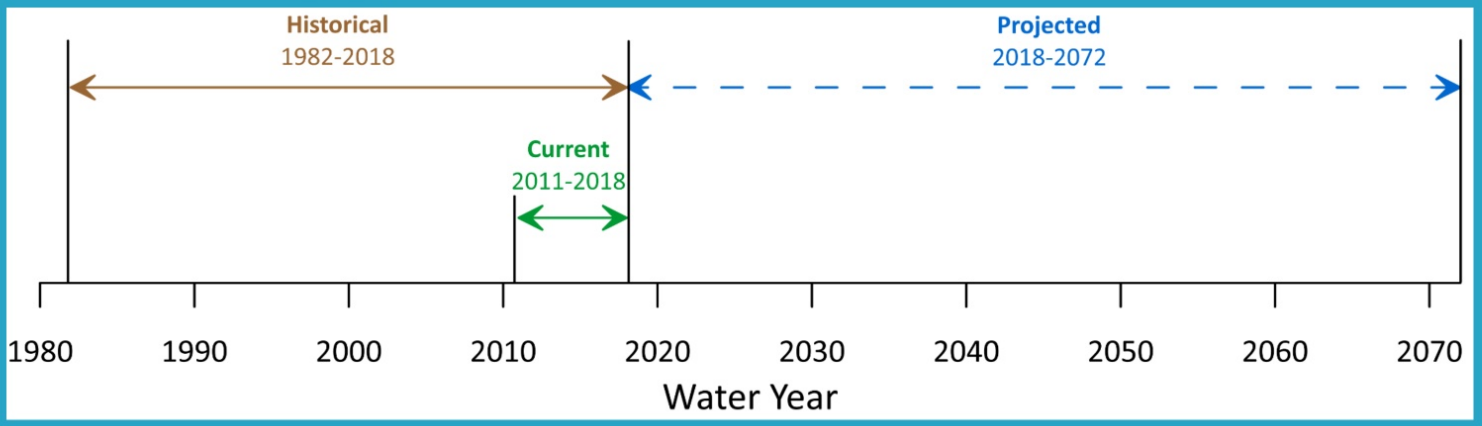
Current

Future

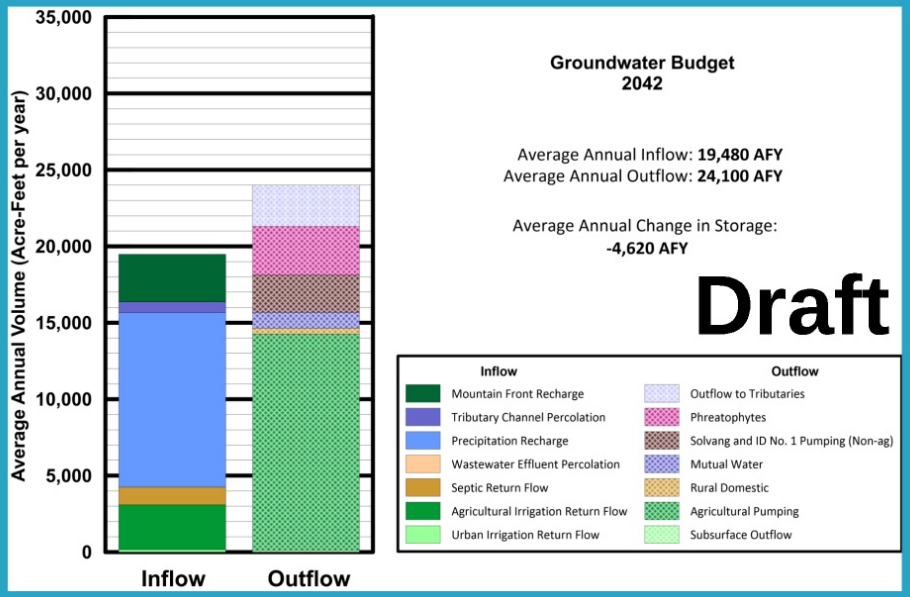
Future Water Budgets
2042 and 2072

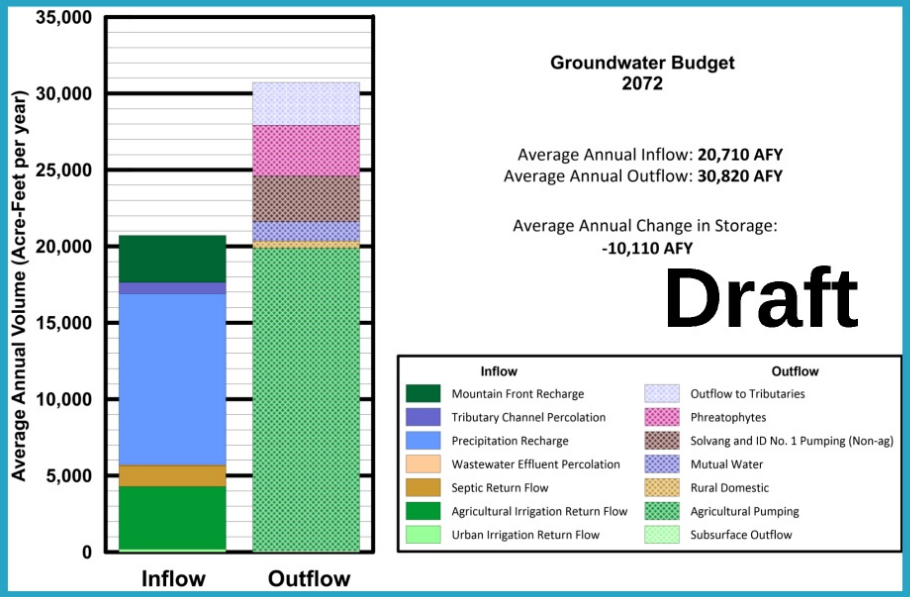
Based on historic water budget, accounting for changes in

- agricultural land use,
- population growth
- climate change



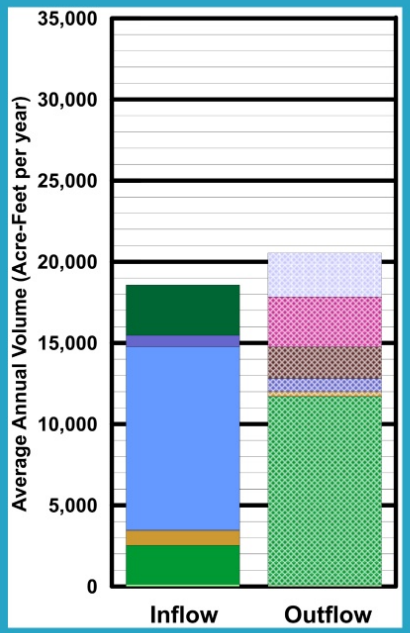
Future Water Budgets



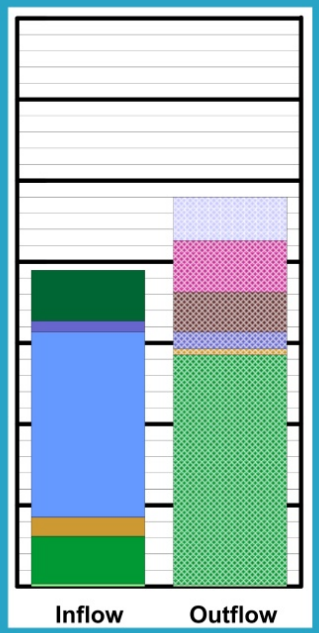


Water use increases into the future due to irrigated agriculture, climate and population trends

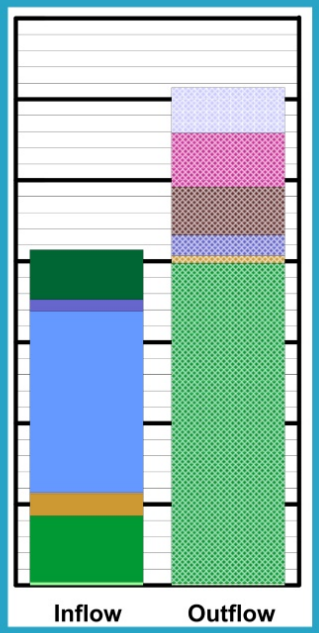
Water Budget Comparison



Historic
-2,011 AFY

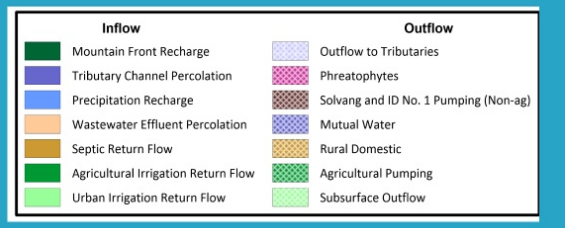


2042
-4,620 AFY



2072
-10,110 AFY

The deficit between groundwater inflow and outflow is projected to increase



Draft

Water Budget

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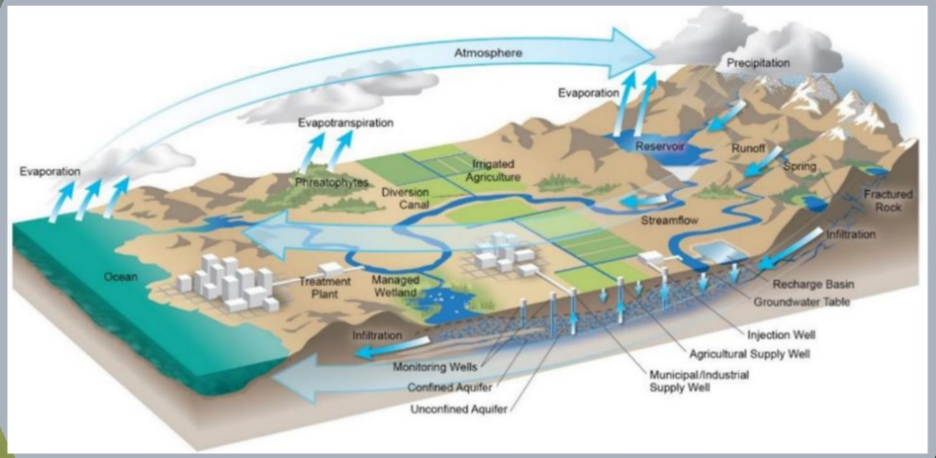


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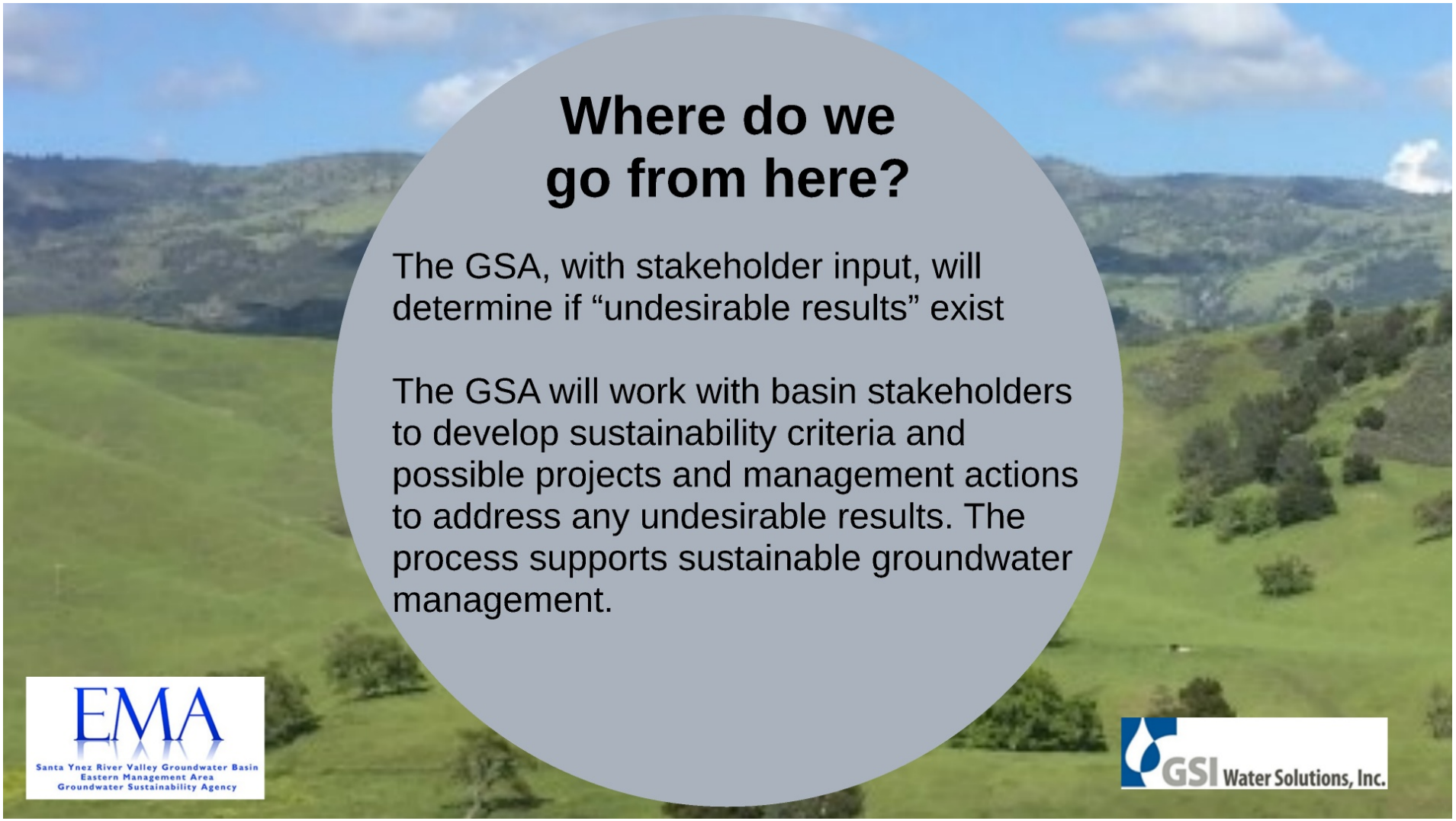
Where do we go from here?
The GSA, with stakeholder input, will determine if “undesirable results” exist
The GSA will work with basin stakeholders to develop sustainability criteria and possible projects and management actions to address any undesirable results. The process supports sustainable groundwater management.
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