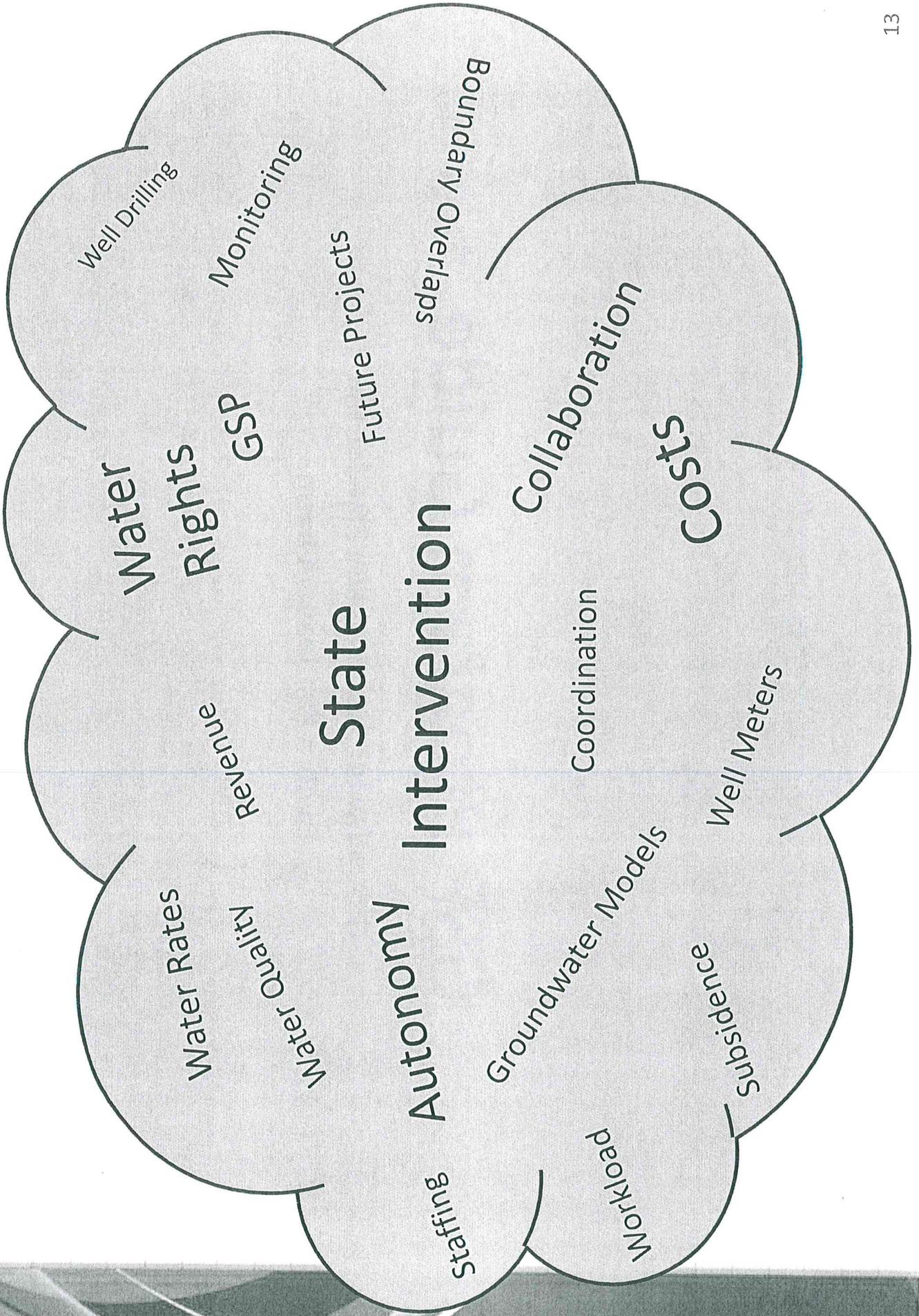




# GSP Program Guide

Groundwater Sustainability Plan for the  
Eastern San Joaquin Basin

# Everyday is a cloudy day with SGMA





# Desired Outcomes for the Presentation

- Understand the layout, organization, and potential uses of the GSP Program Guide
- Provide opinion on local vs. regional responsibility
- Provide opinion of relative cost, labor needs, and duration
- Provide a preliminary schedule for GSP development

# Proposed Scope of Work – Task 1

- Task 1: Inventory of future SGMA Regulatory Compliance Program Elements that are required, necessary, and or desired.
- Examples of program elements include monitoring, data collection and data management, regulatory reporting, conjunctive use projects, GSP development.
- Consultants shall evaluate current efforts and consider each task as a potential candidate for the regional group or the individual GSA.

## Groundwater Sustainability Plan (GSP)

Administrative Information

Basin Setting

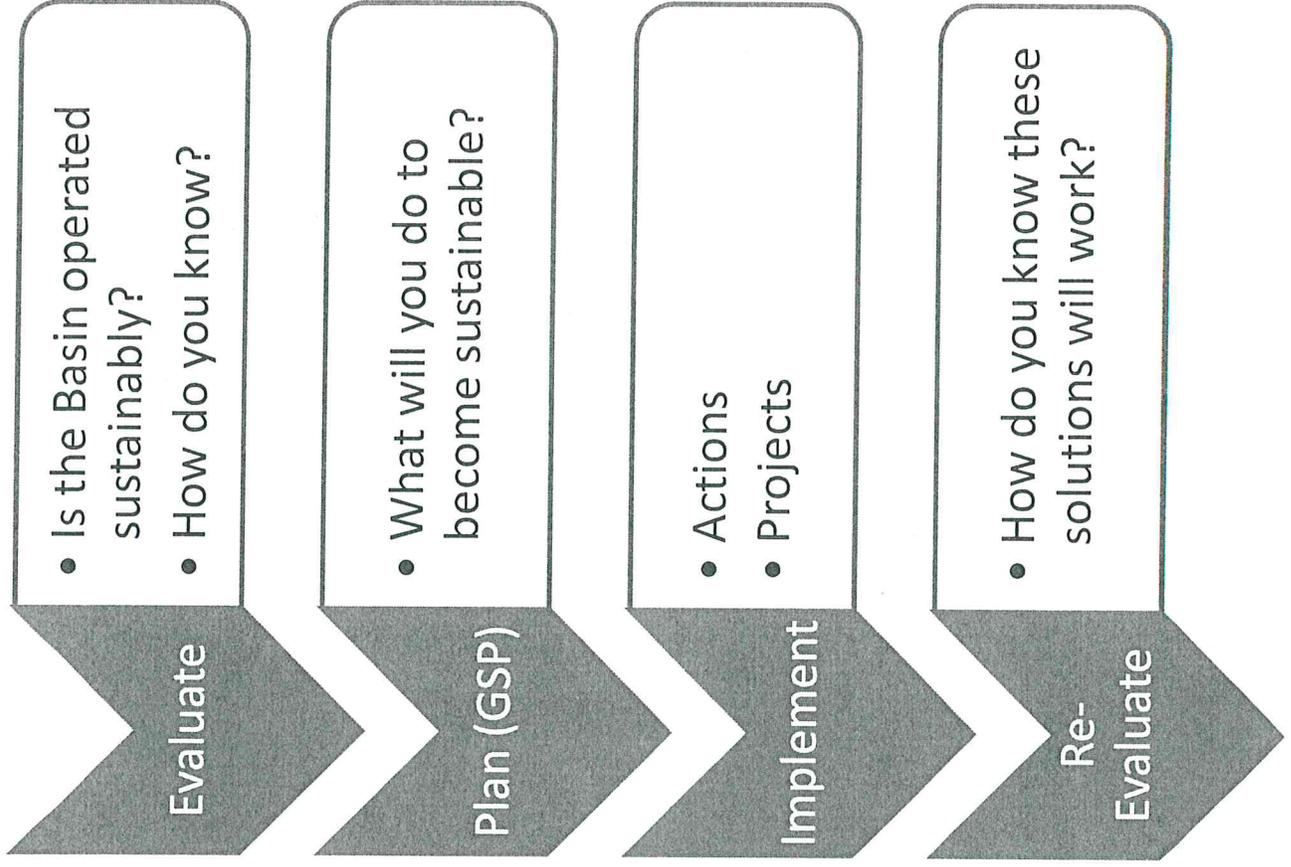
Groundwater Conditions

Water Budget

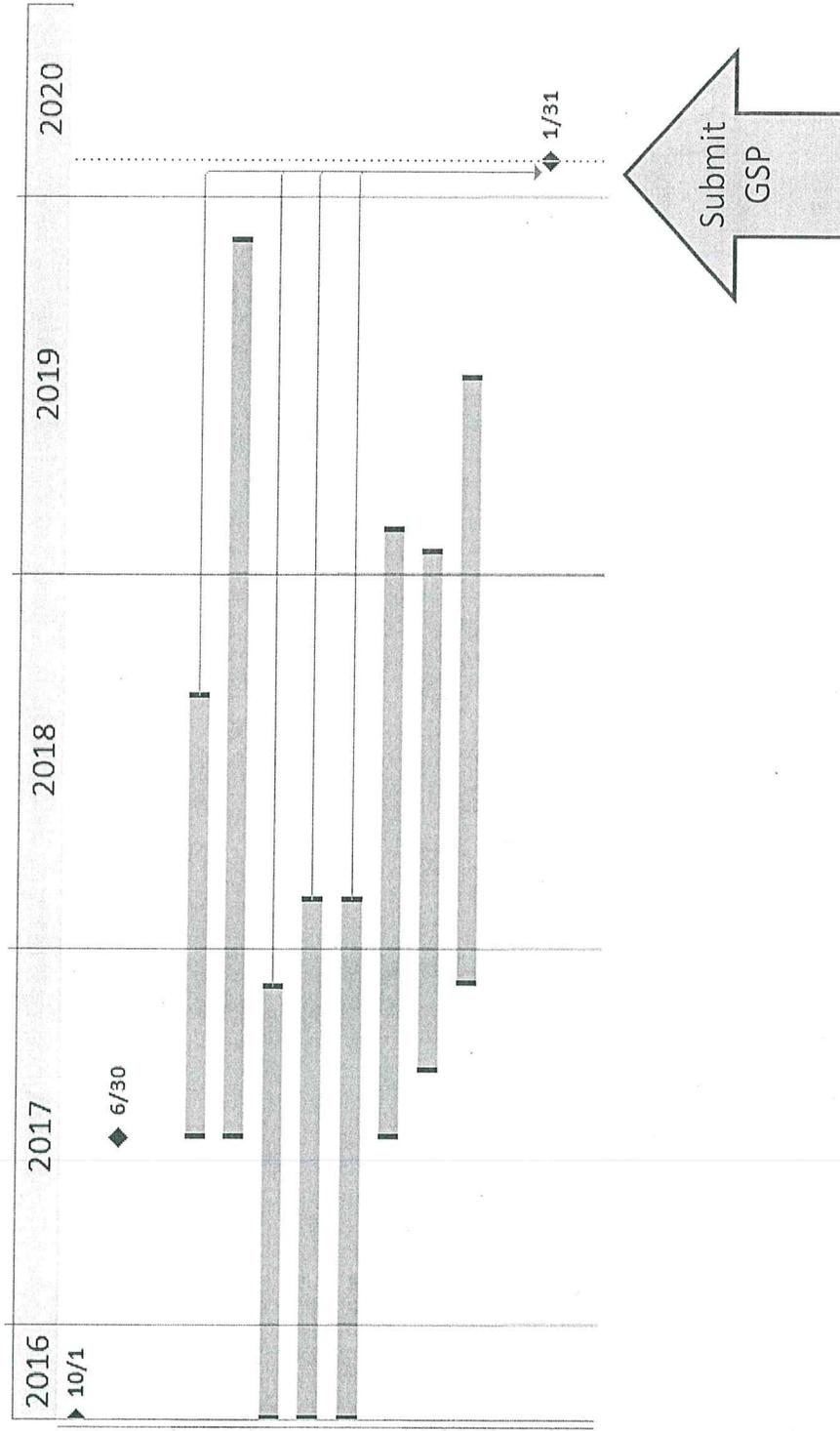
Sustainable Management Criteria

Projects and Management Actions

Monitoring Networks



# Overview Schedule

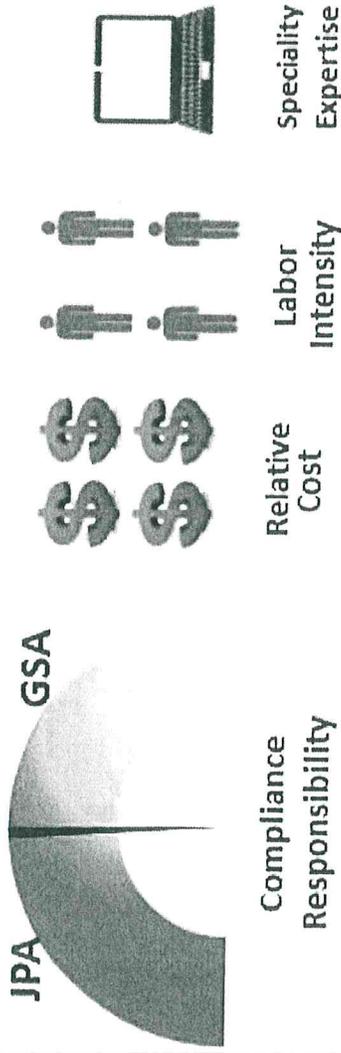


Approve Work Plan  
SSAs and JPA formed

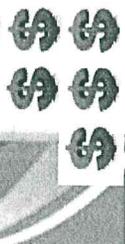
- ADMINISTRATIVE INFORMATION
- NOTIFICATIONS AND COMMUNICATIONS
- BASIN SETTING
- GROUNDWATER CONDITIONS
- WATER BUDGET
- SUSTAINABLE MANAGEMENT CRITERIA
- ESTABLISH MONITORING NETWORKS
- PROJECTS AND MANAGEMENT ACTIONS

Submit Groundwater Sustainability Plan to DWR

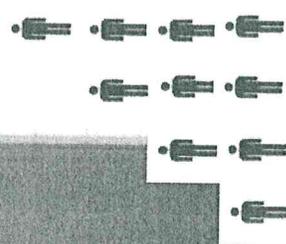
# Dashboard Key



less expensive



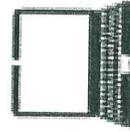
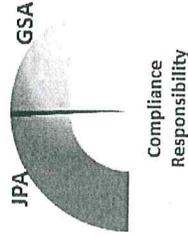
more expensive



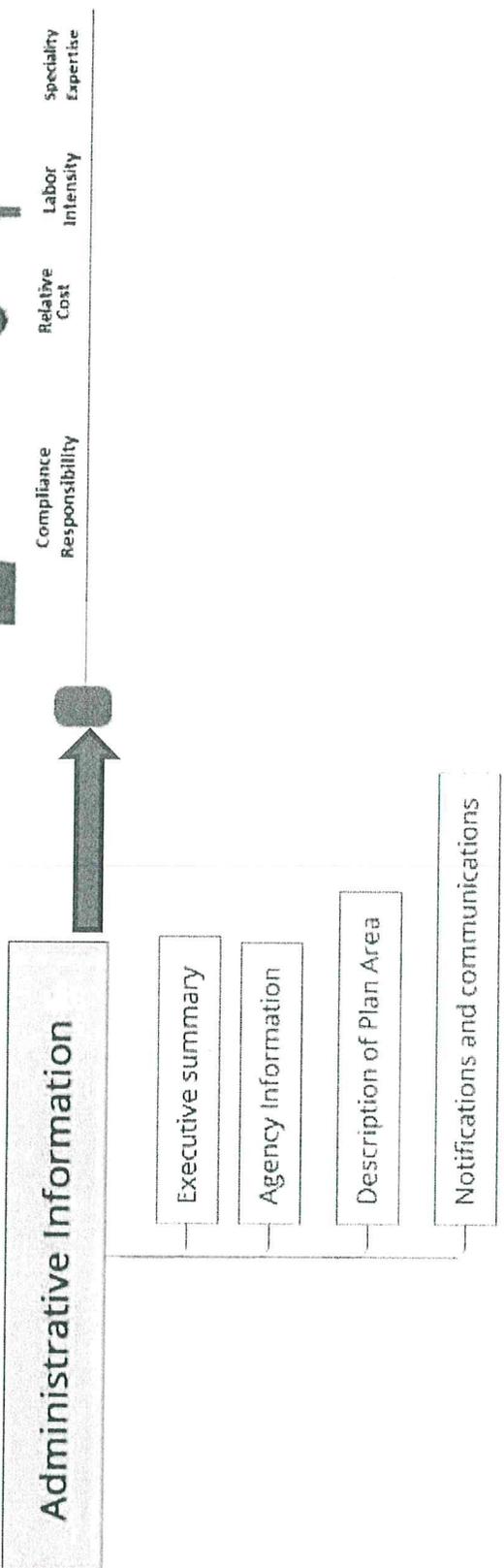
low labor needs

extensive labor needs

Suggested Regional (JPA) vs.  
Local (GSA) Responsibility



Specialty Expertise Needed



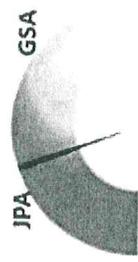
**Administrative Information**

Executive summary

Agency Information

Description of Plan Area

Notifications and communications

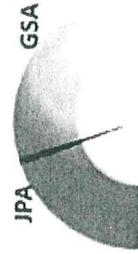


Compliance Responsibility

Relative Cost

Labor Intensity

Speciality Expertise



## Administrative Information

Approve Work Plan  
GSAs and JPA formed

### ADMINISTRATIVE INFORMATION

Agency Information  
Description of Plan Area

### NOTIFICATIONS AND COMMUNICATIONS

Perform Outreach and Communication  
Summarize Notifications and Communications  
Executive Summary

### BASIN SETTING

### GROUNDWATER CONDITIONS

### WATER BUDGET

### SUSTAINABLE MANAGEMENT CRITERIA

### ESTABLISH MONITORING NETWORKS

### PROJECTS AND MANAGEMENT ACTIONS

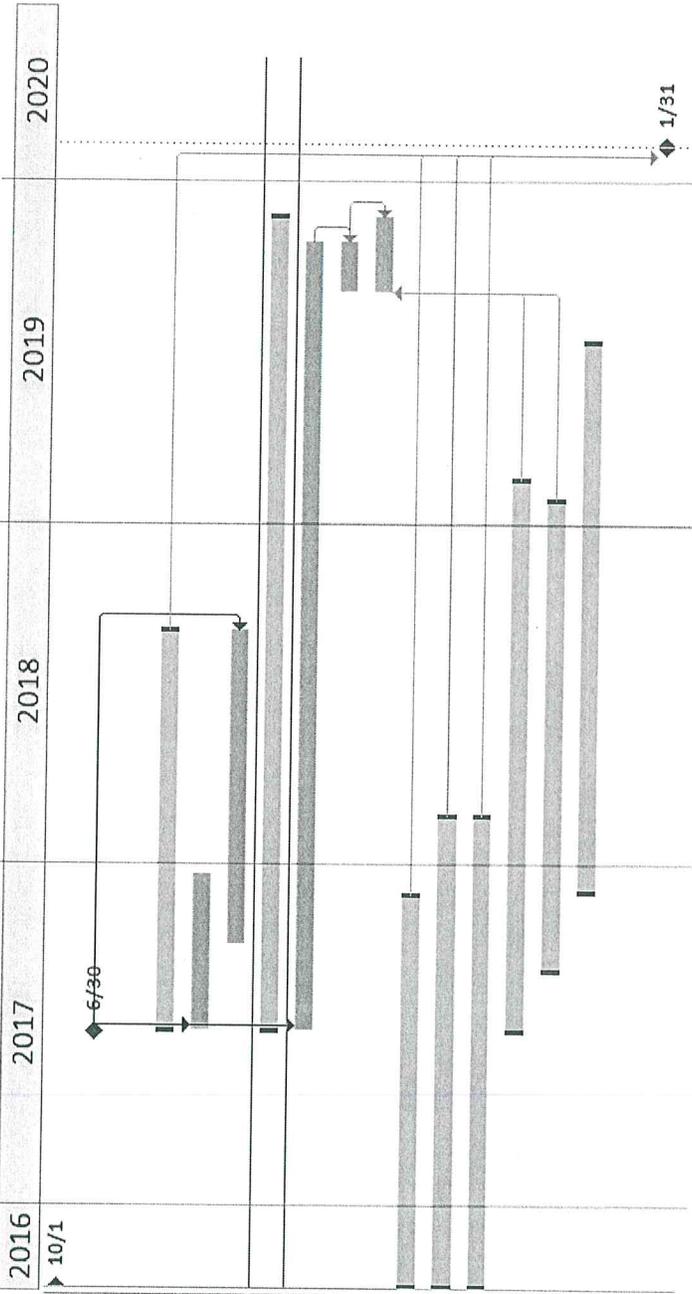
Submit Groundwater Sustainability Plan to DWR

Compliance  
Responsibility

Relative  
Cost

Labor  
Intensity

Specialty  
Expertise



Basin Setting

Physical setting and characteristics

Identification of data gaps and levels of uncertainty

Hydrogeologic Conceptual Model (HCM)

Mapping

Regional geologic and structural setting

Lateral basin boundaries, including major geologic features that significantly affect groundwater flow

Definable bottom of the basin

Principal aquifers and aquitards

Interaction of the surface water and groundwater systems in the basin



Compliance Responsibility



Relative Cost



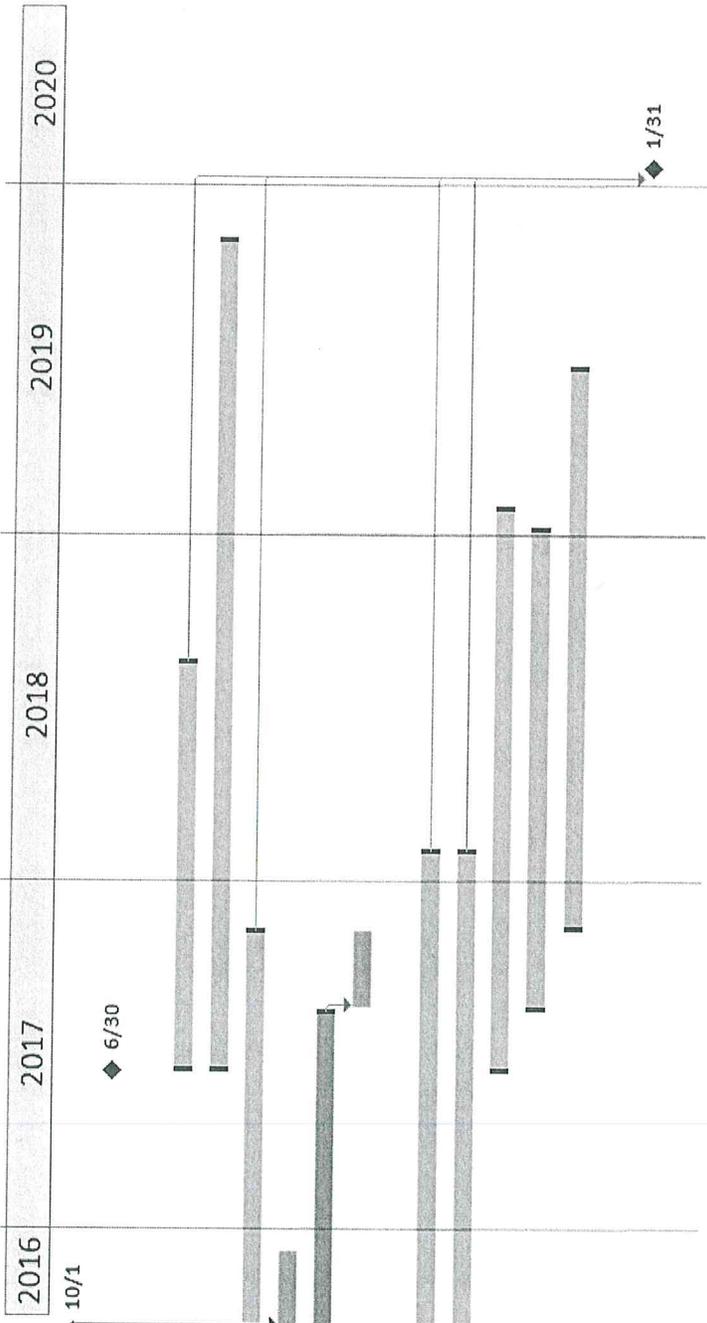
Labor Intensity



Speciality Expertise



# Basin Setting



- Approve Work Plan  
GSAs and JPA formed
- ADMINISTRATIVE INFORMATION  
NOTIFICATIONS AND COMMUNICATIONS**
- BASIN SETTING**
  - Physical Setting and Characteristics
  - Hydrogeologic Conceptual Model
  - Identification of Data Gaps and Uncertainty
- GROUNDWATER CONDITIONS  
WATER BUDGET**
- SUSTAINABLE MANAGEMENT CRITERIA  
ESTABLISH MONITORING NETWORKS  
PROJECTS AND MANAGEMENT ACTIONS**
- Submit Groundwater Sustainability Plan to DWR

# Groundwater Conditions

Description of current and historical groundwater conditions

Groundwater elevation contour maps

Hydrographs of long-term groundwater elevations

Historical highs and lows  
Hydraulic gradients between principal aquifers

Graph of change in groundwater in storage

Seawater Intrusion

Groundwater quality issues

Land subsidence

Interconnected surface water systems

Groundwater dependent ecosystems

Compliance Responsibility

JPA GSA

Relative Cost

Labor Intensity

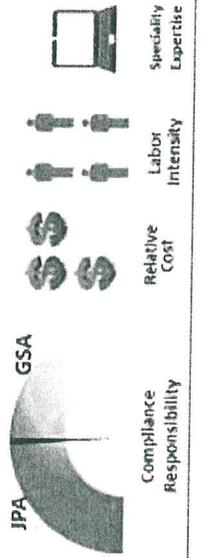
Specialty Expertise

JPA GSA

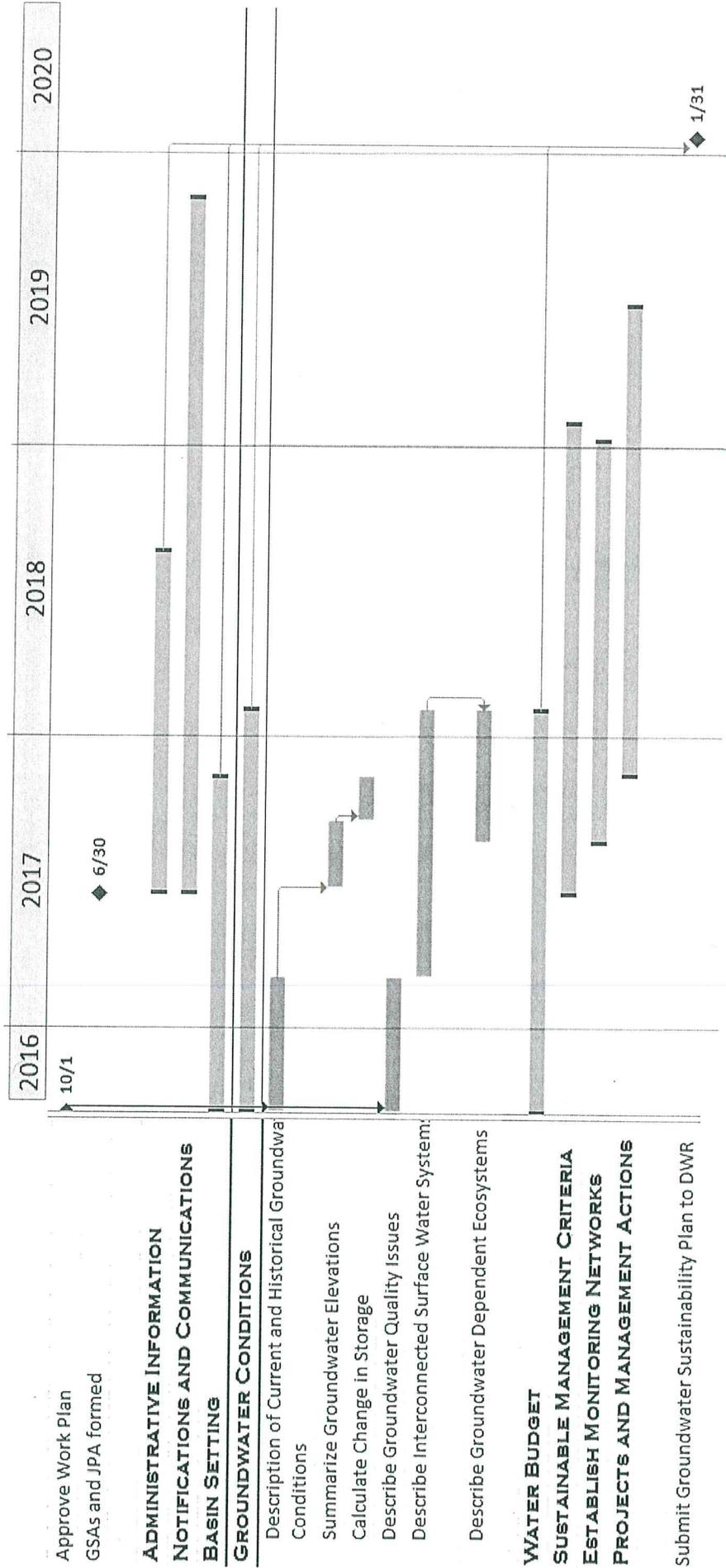
Relative Cost

Labor Intensity

Specialty Expertise



## Groundwater Conditions



# Water Budget

Water budget quantifying:

- Inflow to the groundwater system by water source type
- Outflows from the groundwater system by water use sector
- Change in the annual volume of groundwater in storage between seasonal highs
- Quantification of over-craft
- Estimate of sustainable yield

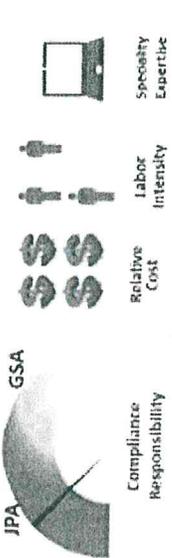
Historical water budget

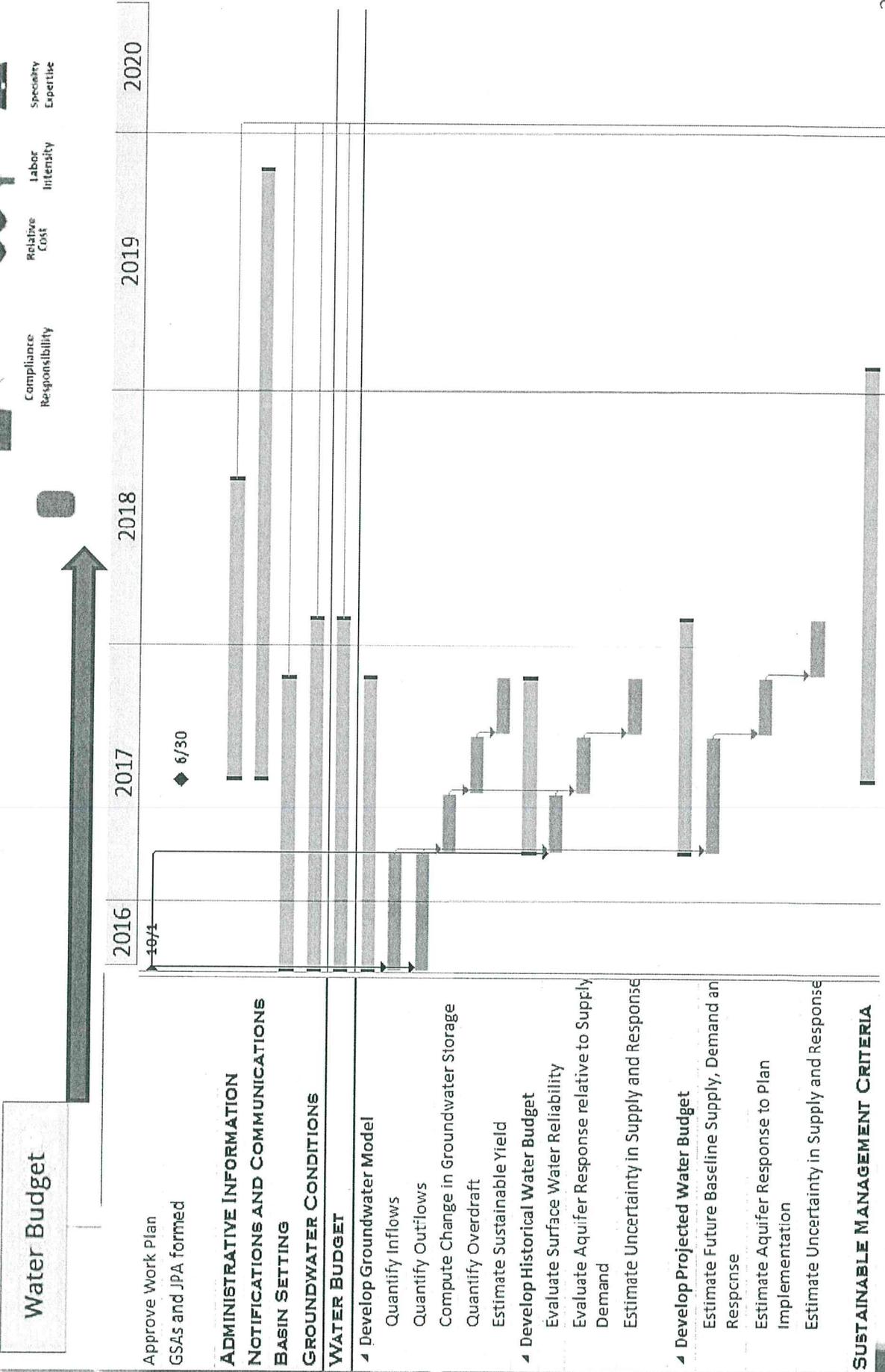
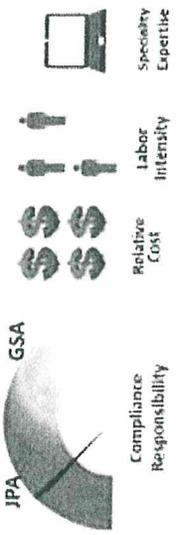
Current water budget

Projected water budget

Plan shall rely on best available information and best available science (e.g. modeling)

Management Areas





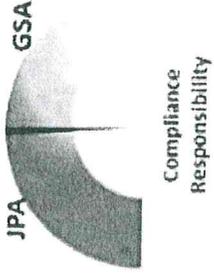
# Sustainable Management Criteria

Sustainability Goal

Undesirable Results

Minimum Thresholds

Measurable Objectives



Compliance  
Responsibility



Relative  
Cost



Labor  
Intensity



Speciality  
Expertise

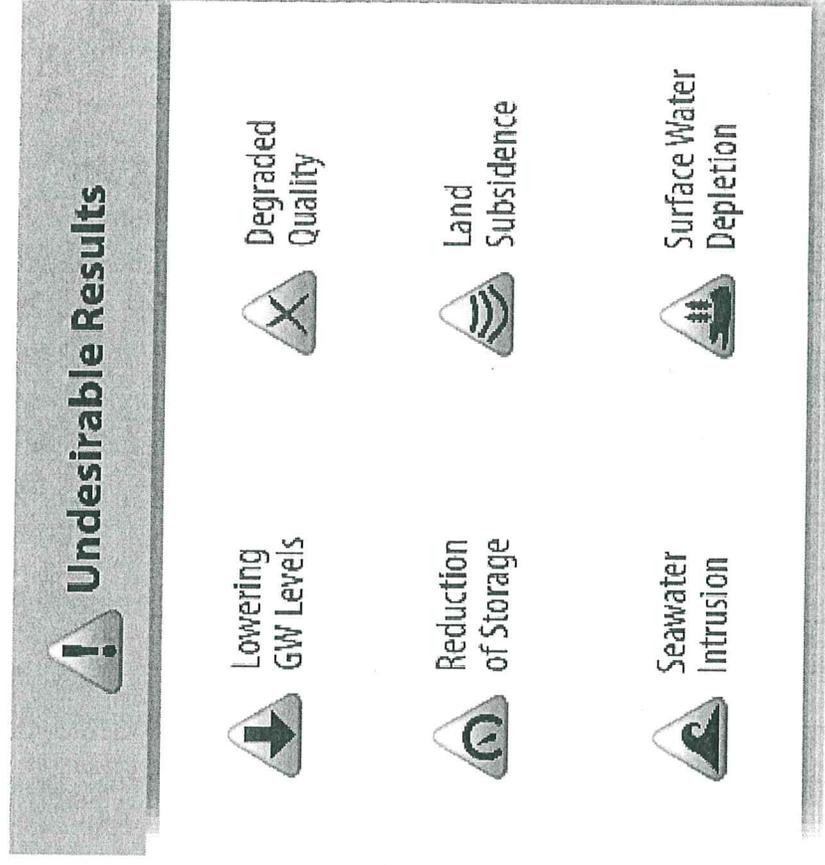


# Key SGMA Definitions

“Sustainable yield” means the maximum quantity of water – calculated over a base period representative of long-term conditions in the basin and including any temporary surplus – that can be withdrawn annually from a groundwater supply without causing an undesirable result.

“Sustainable groundwater management” means “management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results.”

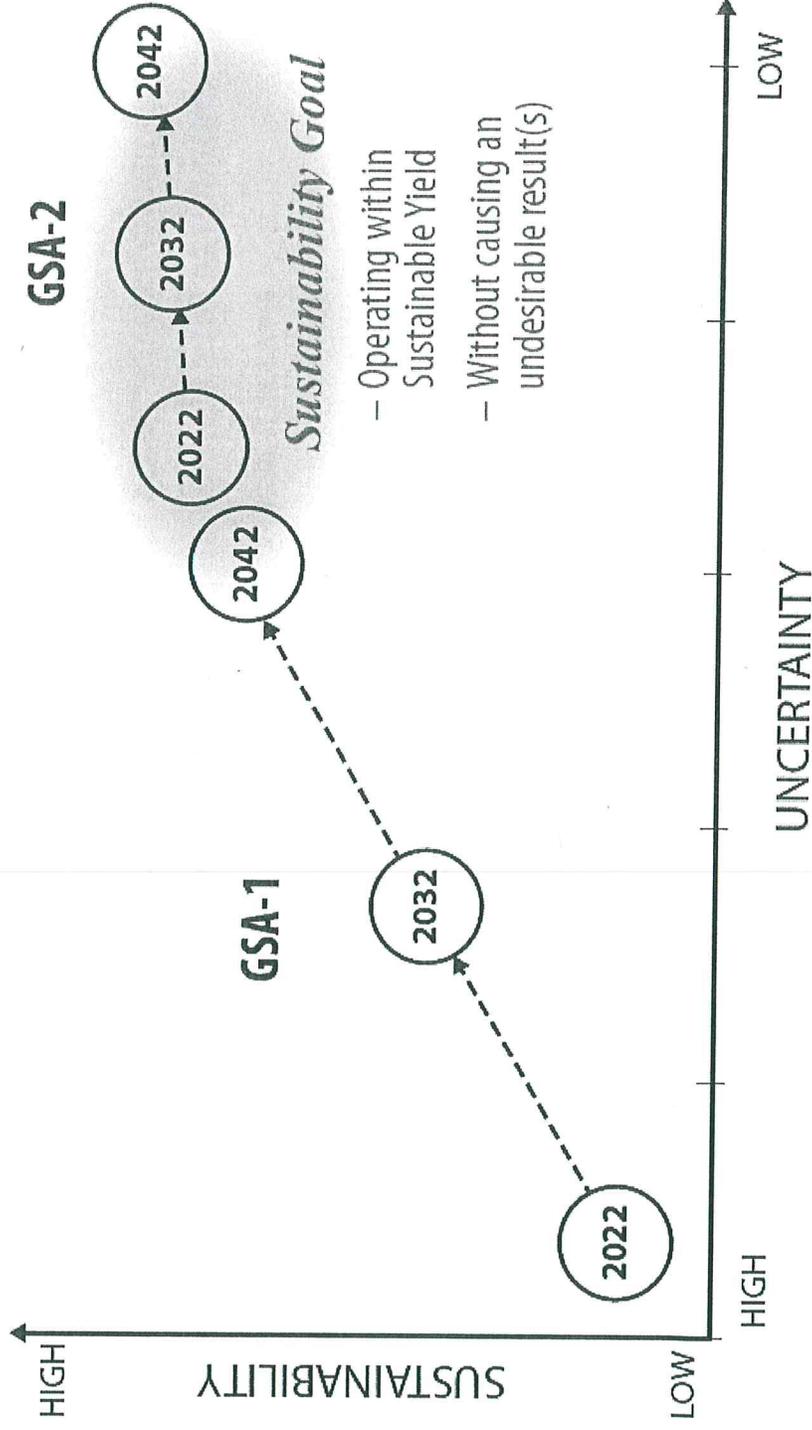
“Undesirable result” means any of the following effects caused by groundwater conditions occurring throughout the basin:



# Sustainable Management Criteria -1

## Sustainability Goal

- Culminates in the absence of undesirable results within 20 years of applicable statutory deadline
- Plan shall describe sustainability goal, including
  - Information from basin setting
  - Measures to ensure operations within sustainable yield
  - Explanation for achieving goal within 20 years of Plan implementation



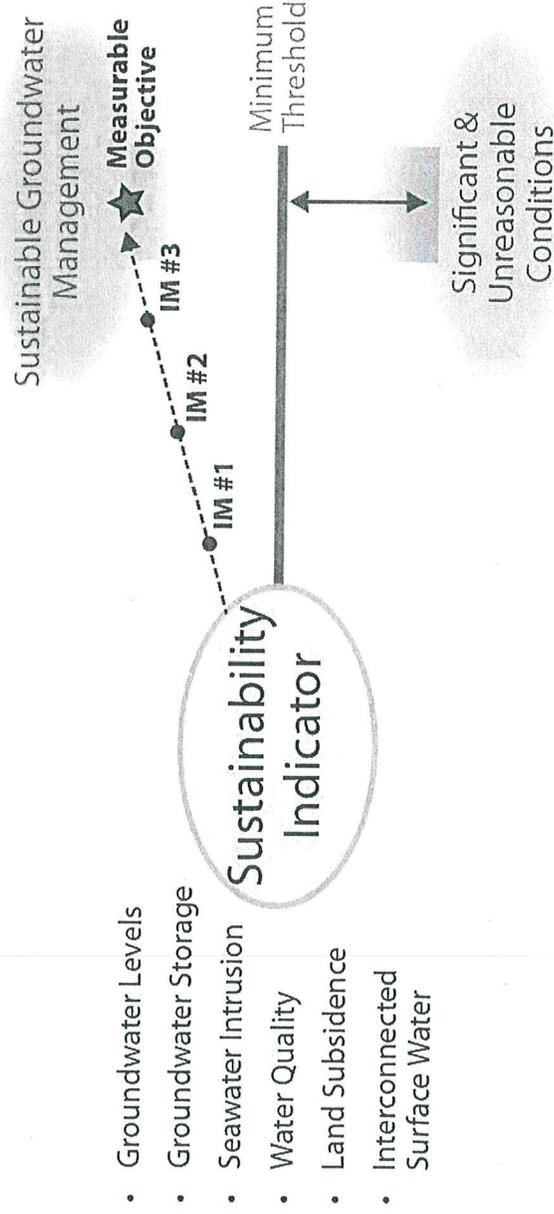
# Sustainable Management Criteria -2

## Minimum Thresholds

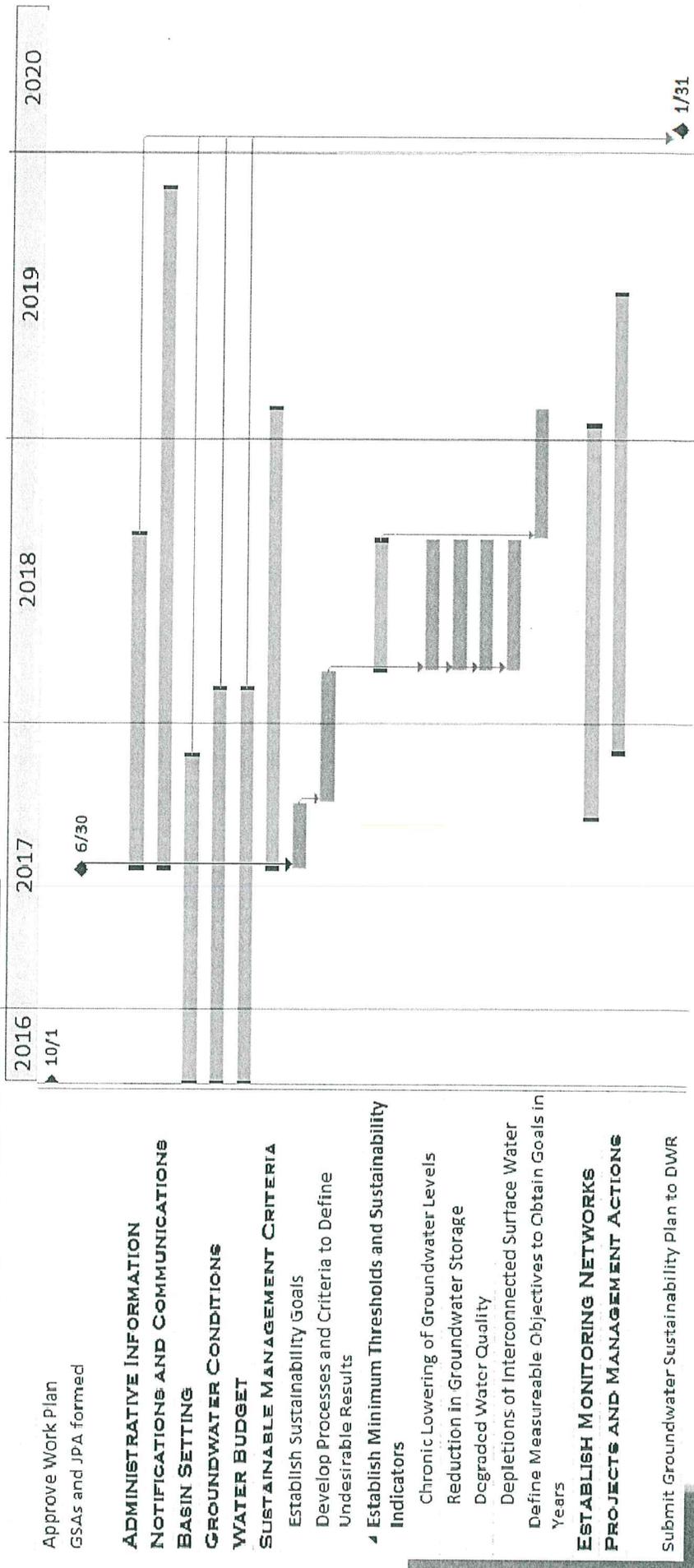
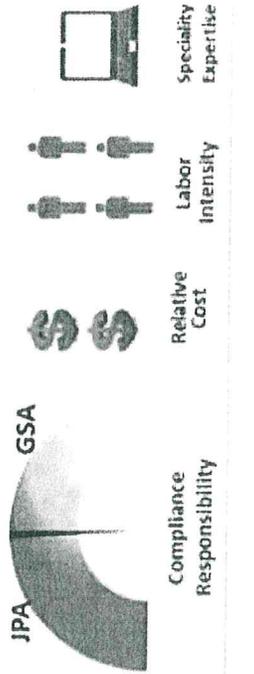
- Sustainability indicators for 6 undesirable results
- Representative minimum threshold for groundwater elevation may serve multiple sustainability indicators
- Minimum thresholds are not required for unlikely sustainability indicators

## Measurable Objectives

- Establish measurable objectives to achieve the sustainability goal within 20 years of Plan implementation, including interim milestones at 5-year intervals
- Quantitative values using the same metrics and monitoring sites as minimum thresholds
- Provide reasonable margin of operational flexibility under adverse conditions, considering historical water budgets, seasonal and long-term trends and periods of drought and uncertainty
- Representative measurable objectives for groundwater elevation may serve multiple sustainability indicators



# Sustainable Management Criteria



## Projects and Management Actions

Description of the projects and management actions the Agency has determined will achieve the sustainability goal for the basin



Relative Cost

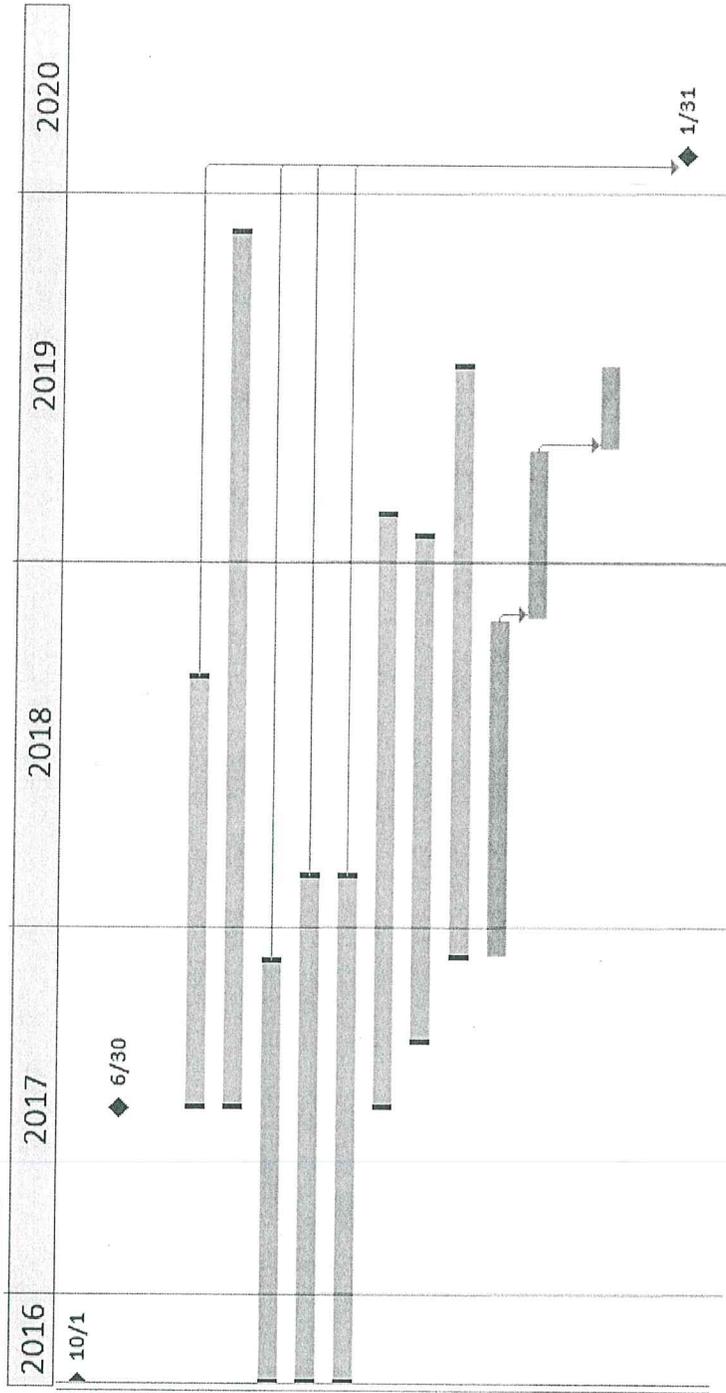
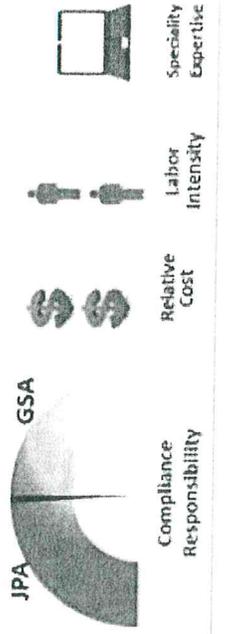


Labor Intensity



Specialty Expertise

# Projects and Management Actions

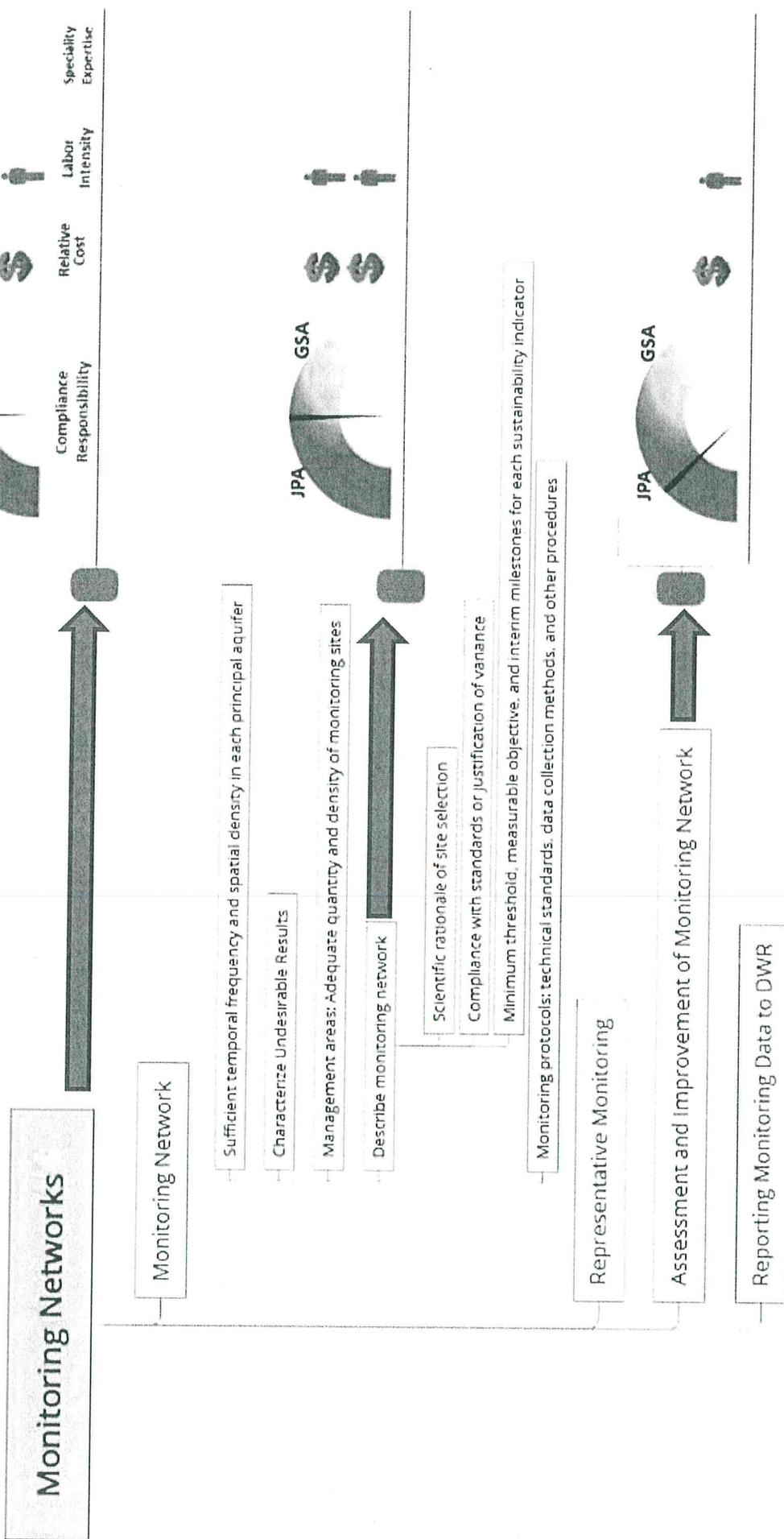


Approve Work Plan  
GSA and JPA formed

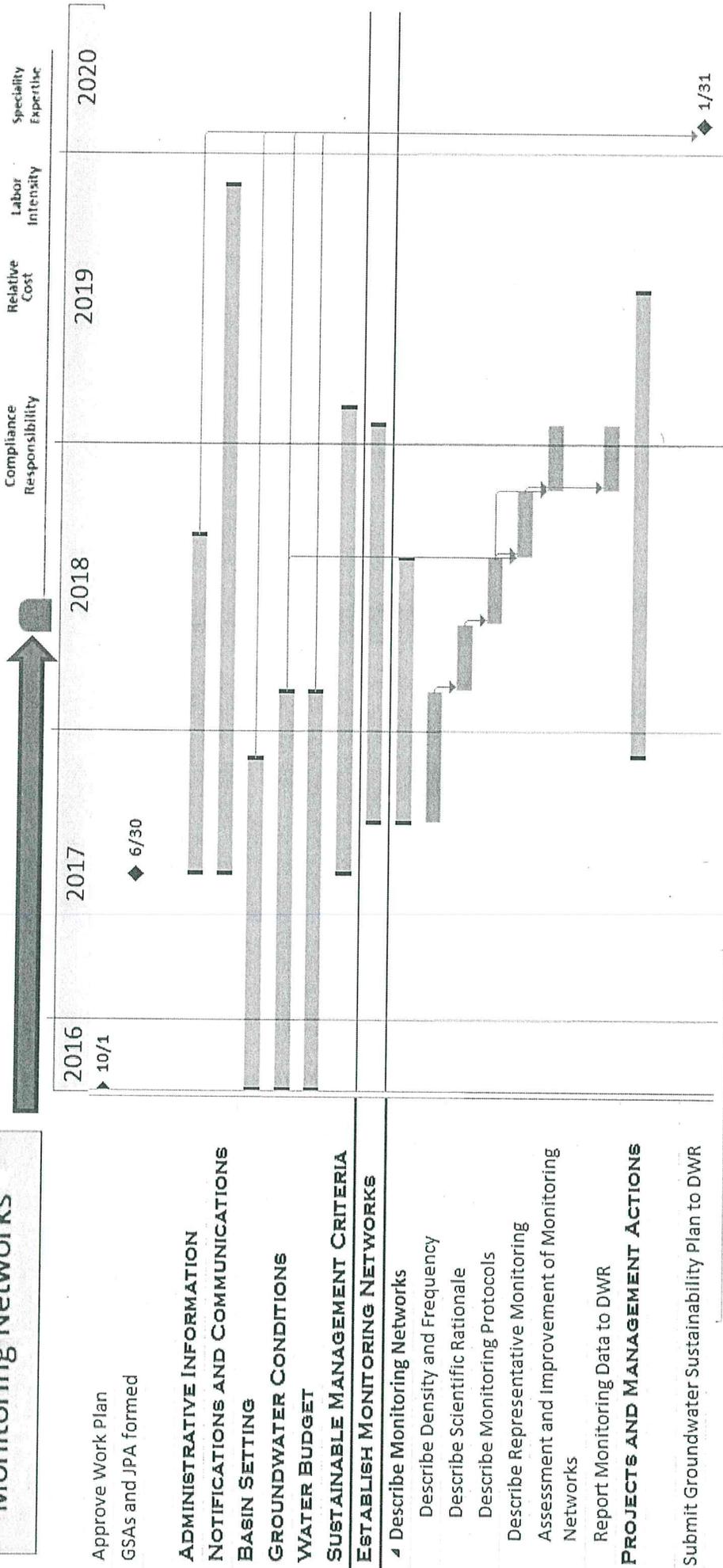
- ADMINISTRATIVE INFORMATION
- NOTIFICATIONS AND COMMUNICATIONS
- BASIN SETTING
- GROUNDWATER CONDITIONS
- WATER BUDGET
- SUSTAINABLE MANAGEMENT CRITERIA
- ESTABLISH MONITORING NETWORKS
- PROJECTS AND MANAGEMENT ACTIONS

Determine Projects and Management Actions  
Evaluate Response to Projects and Management Actions  
Describe Projects and Management Actions

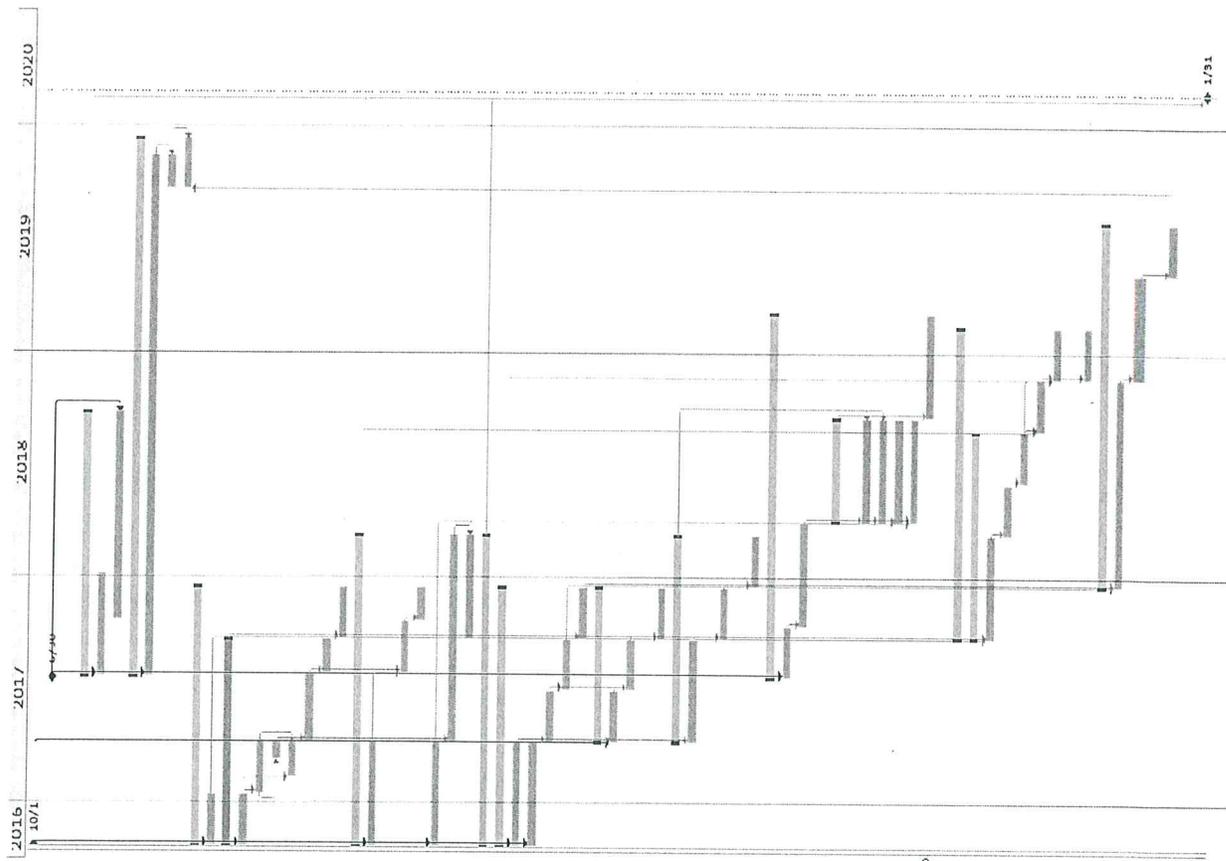
Submit Groundwater Sustainability Plan to DWR



# Monitoring Networks



# GSP Program Guide Integrated Schedule



Approve Work plan  
GSA and JPA Initiated

**ADMINISTRATIVE INFORMATION**  
Agency Information  
Description of Plan Area

**NOTIFICATIONS AND COMMUNICATIONS**  
Perform Outreach and Communication  
Summarize Notifications and Communications  
Executive Summary

**BASIN SETTING**  
Physical Setting and Characteristics  
Hydrogeologic Conceptual Model  
Physical Components  
Regional Geologic and Structural Setting  
Lateral Basin Boundaries  
Principal Aquifers and Aquitards  
Cross-Sections and Maps  
Identification of Data Gaps and Uncertainty

**GROUNDWATER CONDITIONS**  
Description of Current and Historical Groundwater  
Summarize Groundwater Elevations  
Calculate Change in Storage  
Determine Groundwater Quality Issues  
Describe Interconnected Surface Water Systems  
Describe Groundwater Dependent Ecosystems

**WATER BUDGET**  
Develop Groundwater Model  
Quantity Outflows  
Compute Change in Groundwater Storage  
Quantify Overdraft  
Estimate Sustainable Yield  
Evaluate Historical Water Reliability  
Evaluate Aquifer Response relative to Supply and Demand  
Estimate Uncertainty in Supply and Response  
Develop Projected Water Budget  
Estimate Future Baseline Supply, Demand and Response  
Estimate Aquifer Response to Plan Implementation

**SUSTAINABLE MANAGEMENT CRITERIA**  
Formulate Uncertainty in Supply and Response  
Establish Sustainability Risk  
Develop Processes and Criteria to Define Unsustainable Results  
Establish Minimum Thresholds and Sustainability Indicators  
Chronic Lowering of Groundwater Levels  
Reduction in Groundwater Storage  
Degraded Water Quality  
Depletion of Interconnected Surface Water  
Define Measurable Objectives to Obtain Goals in 20 Years

**ESTABLISH MONITORING NETWORKS**  
Monitor Monitoring Network  
Describe Density and Frequency  
Describe Scientific Rationale  
Monitor Monitoring Program  
Describe Representative Monitoring Locations and Improvement of Monitoring Networks  
Report Monitoring Data to DWR

**PROJECTS AND MANAGEMENT ACTIONS**  
Identify Project and Management Actions  
Evaluate Response to Projects and Management Actions  
Describe Projects and Management Actions  
Submit Groundwater Sustainability Plan to DWR

- Critical Path to GSP
- Must understand basin as a system to determine solutions and evaluate solution set.
- Tasks beyond 2020:
  - Monitoring
  - Annual Reporting
  - 5-year GSP Updates
  - Project Implementation