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EAST BAY PLAIN SUBBASIN GROUNDWATER SUSTAINABILITY PLAN CHAPTER 5 – PLAN IMPLEMENTATION

PREPARED FOR

East Bay Municipal Utility District GSA and
City of Hayward GSA



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TABLE OF CONTENTS

5. Plan Implementation.....	5-2
5.1. Types of GSP Implementation Costs.....	5-2
5.1.1. GSA Administration	5-3
5.1.2. Stakeholder Outreach and Meetings	5-3
5.1.3. GSP Studies	5-4 <u>5-3</u>
5.1.4. GSP Implementation and Updates.....	5-4
5.1.5. Project Planning	5-5
5.1.6. Monitoring	5-5
5.1.7. Contingency.....	5-5
5.2. GSA Implementation Costs (CCR Title 23, Section 354.6)	5-6
5.2.1. East Bay Municipal Utility District	5-6
5.2.2. City of Hayward	5-6
5.3. GSP Financing	5-8
5.4. Schedule for Implementation.....	5-8
5.5. Annual Reports	5-9
5.5.1. General Information (CCR Title 23, Section (356.2(a)).....	5-10
5.5.2. Subbasin Conditions (CCR Title 23, Section 356.2(b))	5-10
5.5.3. Plan Implementation Progress (CCR Title 23, Section 356.2(b)).....	5-10
5.6. Periodic Evaluation	5-10
5.6.1. Sustainability Evaluation (CCR Title 23, Sections 356.4(a) - 356.4(d))	5-11
5.6.2. Monitoring Network Description (CCR Title 23, Section 356.4(e))	5-11
5.6.3. New Information (CCR Title 23, Section 356.4(f))	5-11
5.6.4. GSA Actions (CCR Title 23, Sections 356.4(g) - 356.4(h)).....	5-12
5.6.5. Plan Amendments, Coordination, and Other Information (CCR Title 23, Sections 356.4(i) - 356.4(k)).....	5-12
5.7. Data Management System (CCR Title 23, Sections 352.6 and 354.40)	5-12

5.7.1. Data Included in the Data Management System	5-14
5.8. References	5-14

LIST OF TABLES

Table 5-1. EBMUD GSA Implementation Costs	5-7 <u>5-6</u>
Table 5-2. Hayward GSA Implementation Costs	5-7

LIST OF FIGURES

Figure 5-1. EBP Subbasin GSP Implementation Schedule for EBMUD GSA

Figure 5-2. EBP Subbasin GSP Implementation Schedule for Hayward GSA

APPENDICES

No Appendices

LIST OF ACRONYMS AND ABBREVIATIONS

CASGEM	California State Groundwater Elevation Monitoring Program	GAMA	Groundwater Ambient Monitoring and Assessment groundwater
CCR	California Code of Regulations	GW	groundwater
DMS	Data Management System	GSA	groundwater sustainability agency
DWR	California Department of Water Resources	GSP	groundwater sustainability plan
EBMUD	East Bay Municipal Utility District	O & M	Operating and Maintenance
EBP	East Bay Plain	RMS	Representative Monitoring Sites
ft	foot, feet	SGMA	Sustainable Groundwater Management Act of 2014
FY	For Year <u>fiscal year</u>		

5. PLAN IMPLEMENTATION

This chapter describes the activities and outlines the estimated costs and schedule to implement the EBP Subbasin GSP over the ~~first~~next five years and discusses how the GSAs plan to meet these costs in accordance with GSP regulations. The implementation plan is based on the hydrogeologic conceptual model, current and projected water demands, and the projected water budget, which includes considerations of climate change and sea level rise. The estimated costs presented in this Chapter are strictly GSA-related costs (e.g., GSA senior management/staff time to manage contracts with consultants/drillers for monitoring and other field activities described in Chapter 4; GSA GSP administration and project management costs, etc.) that are in addition to costs presented in Chapter 4 (e.g., costs of field work to conduct RMS monitoring conducted by consultants or GSA staff).

The EBMUD and Hayward GSAs will regularly review the budget and update the costs and schedule as needed to ensure effective GSP implementation and ongoing sustainable groundwater management of the EBP Subbasin.

This chapter describes:

- Estimated costs for the GSAs to administer GSP activities (not including the project-specific costs described in Chapter 4), as required by California Code of Regulations (CCR) Title 23, Section 354.6(e)
- Financing approaches
- Timeline and roadmap for implementing ~~all GSA projects~~potential future water supply development opportunities (WSDO) and ~~management~~implementation actions ~~between 2022 and 2042~~(IA)
- Monitoring and reporting, including the contents of Annual ~~and Five-Year Update~~ Reports and Periodic Evaluations that must be provided to DWR (CCR Title 23, Sections 356.2 and 356.4)
- Subbasin data management system

5.1. Types of GSP Implementation Costs

Total GSP implementation costs include both project-specific costs and costs for the GSAs to administer and implement all other aspects of the GSP. The EBMUD and Hayward GSAs will incur costs for managing GSP implementation; planning and specialized studies; ongoing monitoring and installation of new facilities; and providing general administration. Projected capital and operating costs of ~~projects~~potential future WSDO and ~~management actions~~IA are

summarized in Chapter 4 and are not repeated in this chapter. For the purposes of this chapter, each GSA's implementation costs are broken down into the following seven (7) categories:

- GSA administration
- Stakeholder outreach and meetings
- GSP studies
- GSP implementation and updates
- Project planning
- Monitoring
- Contingency

The following subsections describe the general types of costs that could fall under each category. Each GSA will allocate GSP implementation costs to cost categories that are consistent with its internal bookkeeping and accounting practices.

5.1.1. GSA Administration

Administrative costs generally include reporting, record keeping, bookkeeping, legal advice, and government relations. The GSAs will also need to continue to monitor ~~projects~~potential future WSDO and ~~management actions~~IA to assess their benefit, economic feasibility, and coordinate with other GSAs if modifications to ~~planned projects~~potential future WSDO and ~~management actions~~IA are necessary to ensure the EBP Subbasin meets the sustainability goal.

The GSAs anticipate that significant coordination and administrative tasks will be required during GSP implementation. Some ~~GSP projects~~potential future WSDO and ~~management actions~~IA require coordination between the two GSAs (e.g., measurement of Spring and Fall groundwater levels at approximately the same time), and overall Subbasin sustainability depends on continued coordination, planning, and evaluation of groundwater conditions basin-wide. In addition, each GSA will conduct general business administration, including record keeping, bookkeeping, and general management.

5.1.2. Stakeholder Outreach and Meetings

A key component of administrative costs will be continued outreach to stakeholders. The Communications and Engagement Plan will be updated to include the engagement plan during GSP implementation. The GSAs will continue to monitor ~~projects~~potential future WSDO and ~~management actions~~IA and coordinate with stakeholders if modifications to ~~planned projects~~potential future WSDO and ~~management actions~~IA are necessary to ensure the EBP Subbasin meets the sustainability goal. Each GSA will conduct public outreach/engagement to provide timely information to stakeholders regarding GSP progress and Subbasin conditions.

Each GSA will either continue to maintain a website that will be used to post data, reports, and meeting information, or alternatively, the GSAs may jointly develop a single GSP website for the EBP Subbasin to serve that purpose.

5.1.3. GSP Studies

GSP implementation will require various planning, technical, and economic/fiscal studies. These are additional costs that are not covered by the estimated costs of ~~specific projects~~potential future WSDO and ~~management actions~~IA that are described in Chapter 4.

Planning Studies. The GSAs will continue to develop planning studies to integrate the GSP with other regional water management efforts and update the GSP to ensure that the Subbasin achieves the EBP Subbasin sustainability goal and meets all sustainable management criteria. The GSAs will continue to evaluate Subbasin conditions and adjust short- and long-term Subbasin planning efforts accordingly. Other planning studies may include evaluating projects and developing other programs to support sustainable management.

Technical Evaluations. Additional technical studies and analyses may be required beyond those already described in Chapter 4. The GSAs will conduct ongoing monitoring as described in Chapters 3 and 4 to ensure sustainable management criteria are met and to prevent undesirable results. Additional monitoring facilities will be installed as described in Chapter 4, and the GSAs will evaluate and report groundwater conditions, water use, and change in groundwater storage as required. While a plan to fill data gaps over the next five to ten years has been developed and presented in this GSP, additional technical studies may be needed in the future to further support the sustainability goal.

Economic/Fiscal Analyses. The GSAs will develop economic and fiscal studies to support the implementation of ~~projects~~potential future WSDO and ~~management actions~~IA and the overall GSP. This may include cost-effectiveness assessments and preliminary investigations of potential future projects. Fiscal and economic analyses are expected to include rate studies and other analyses required to implement fees or assessments, willingness to pay, and ability to pay. The GSAs may engage legal and technical experts to help design and perform the required economic/fiscal analysis studies. Economic impact studies will be developed to evaluate GSP implementation, understand potential cost allocations to different stakeholder groups, and identify cost control methods for reducing costs during GSP implementation.

5.1.4. GSP Implementation and Updates

GSP implementation costs include internal GSA coordination, meetings, and document preparation. This cost category includes costs not covered by GSA administration and GSP

studies, in addition to costs incurred to prepare the required Annual Reports and ~~Five-Year Update Reports~~ Periodic Evaluations.

Annual Reports. CCR Title 23, Section 356.2 requires the GSAs to prepare and submit Annual Reports to DWR. The GSAs will perform any required technical analyses and data collection, including monitoring and tracking sustainable management criteria. The Annual Reports will include required data and summary documentation, including progress towards implementing the GSP, ~~projects~~ potential future WSDO and ~~management actions~~ IA as applicable, and interim milestones achieved. The GSAs expect that Annual Reports will also require inter- and intra-GSA coordination as well as stakeholder outreach.

Five-Year Update Reports. CCR Title 23, Section 356.4 requires the GSAs to conduct periodic evaluations of the GSP ~~and prepare and submit Five-Year Update Reports~~. In contrast to the Annual Report, this report requires additional evaluation of sustainability conditions, objectives, monitoring, and documentation of new information that is available since the last update to the GSP. The GSAs expect that periodic evaluations will also require significant inter- and intra-GSA coordination and stakeholder outreach.

5.1.5. Project Planning

The GSAs will incur additional costs for project planning. Project capital and operating and maintenance (O&M) costs for projects that are included in the GSP are summarized in Chapter 4. However, the GSAs may need to evaluate other project ideas proposed by stakeholders, assess the cost-effectiveness of planned projects, and evaluate the joint implementation of multiple projects to ensure the GSP continues to meet the sustainability goal. Technical studies may include feasibility assessments, environmental studies, water rights evaluations, coordination with permitting agencies, and other project planning efforts. The GSAs may evaluate land acquisition and easements, pursue grant applications, administer grants, and engage other legal and technical services.

As needed, the GSAs will coordinate on the specific studies and analyses necessary to improve understanding of Subbasin conditions. The GSAs will use new information on Subbasin conditions to improve ~~projects~~ potential future WSDO and ~~management actions~~ IA to maintain sustainability. Evaluations and updates will occur annually (Annual Report), and every five years (~~Five-Year Update Reports~~ Periodic Evaluations) as required by CCR Title 23, but the GSAs anticipate that planning, coordination, and studies will be continuous and ongoing.

5.1.6. Monitoring

The GSAs will conduct the monitoring programs outlined in Chapters 3 and 4. This will include tracking Subbasin conditions and sustainability indicators by ~~collecting groundwater extraction and injection data,~~ measuring groundwater elevations and water quality, and tracking total water use. Monitoring activities will include data management, installing and measuring monitoring wells, maintaining existing wells, ~~working with groundwater pumpers to install meters,~~ and deploying other technology. These monitoring activities will support evaluation of Subbasin conditions relative to established sustainable management criteria, and monitoring groundwater extraction and injection, and total water use will support annual reporting requirements.

Data from the monitoring programs will be routinely evaluated to ensure progress towards maintaining sustainability and the prevention of undesirable results. The GSAs will also work to ensure all data ~~are~~^{is} collected and evaluated using best management practices and applicable quality assurance and quality control guidelines.

5.1.7. Contingency

An additional contingency cost is included for fiscal planning purposes. This may include actions needed to implement additional management measures if Subbasin conditions start trending towards minimum threshold levels in any area.

5.2. GSA Implementation Costs (CCR Title 23, Section 354.6)

The following subsections summarize estimated costs for each GSA to implement non-project-specific costs of the GSP. Costs are presented for each of the general cost categories identified above. However, the GSAs may manage costs and expenses differently and may record costs in different categories. In addition, the GSAs are still developing operating budgets and may issue requests for proposals to engage consultant technical services, but these costs are unknown at this time.

5.2.1. East Bay Municipal Utility District

The EBMUD GSA estimates that annual implementation costs will be approximately ~~\$781,500 – \$136,000~~ per year over the next four years and ~~\$177,206,000~~ in the fifth year (Table 5-1). This does not include project and management action-specific costs described in Chapter 4. ~~EBMUD will recover GSP implementation costs through grants and local revenues that are yet to be determined. EBMUD is currently evaluating options.~~ Section 5.3 provides a general description of how EBMUD may recover GSP implementation costs.

Table 5-1. EBMUD GSA Implementation Costs

Cost Category	FY 202 27	FY 202 38	FY 202 49	FY 20 25 30	FY 20 26 31
GSA Administration	\$10,000 11,500	\$10,000 11,500	\$10,000 11,500	\$10,000 11,500	\$10,000 11,500
Stakeholder Outreach and Meetings	\$7,000 8,500	\$7,000 8,500	\$7,000 8,500	\$7,000 8,500	\$7,000 8,500
GSP Studies	\$0 35,000	\$0 35,000	\$30 35,000	\$30 35,000	\$30 35,000
GSP Implementation and Updates	\$3743 ,500	\$3743 ,500	\$3743 ,500	\$3743 ,500	\$7587 ,000
Project Planning	\$0 17,500	\$0 17,500	\$15,000 17,500	\$15,000 17,500	\$15,000 17,500
Monitoring	\$2428 ,000	\$2428 ,000	\$2428 ,000	\$2428 ,000	\$2428 ,000
Contingency	\$0 14,500	\$0 14,500	\$12 14,500	\$12 14,500	\$16,000 18,500
Total	\$78158 ,500	\$78158 ,500	\$136,000 158,500	\$136,000 158,500	\$177206 ,000

FY = fiscal year

5.2.2. City of Hayward

The Hayward GSA estimates that annual implementation costs will be approximately ~~\$23,500—\$3744~~,000 per year over the next four years and ~~\$50,000~~59,500 in the fifth year (Table 5-2). This does not include project and management action-specific costs described in Chapter 4. ~~Hayward will recover GSP implementation costs through grants and local revenues that are yet to be determined. Hayward is currently evaluating options. Section 5.3, Section 5.3, which~~ provides a general description of how Hayward may recover GSP implementation costs.

Table 5-2. Hayward GSA Implementation Costs

Cost Category	FY 202 27	FY 202 38	FY 202 49	FY 20 25 30	FY 20 26 31
GSA Administration	\$56 ,000	\$56 ,000	\$56 ,000	\$56 ,000	\$56 ,000
GSP Studies	\$06 ,000	\$06 ,000	\$56 ,000	\$56 ,000	\$56 ,000
GSP Implementation and Updates	\$1113 ,500	\$1113 ,500	\$1113 ,500	\$1113 ,500	\$2327 ,000

Project Planning	\$06,000	\$06,000	\$56,000	\$56,000	\$56,000
Monitoring	\$7,000 8,500	\$7,000 8,500	\$7,000 8,500	\$7,000 8,500	\$7,000 8,500
Contingency	\$04,000	\$04,000	\$3,500 4,000	\$3,500 4,000	\$56,000
Total	\$23,500 44,000	\$23,500 44,000	\$374,000	\$374,000	\$50,000 59,500

5.3. GSP Financing

GSP administration, monitoring, and reporting are projected to cost a total of approximately ~~\$173,000~~202,500 to ~~\$227,000~~265,500 per year. Costs are expected to be higher during years in which a ~~Five Year Update Report~~Periodic Evaluation is due, and costs are expected to be slightly lower during years in which only an Annual Report is due. The total ~~cost does~~costs do not include the capital and annual O&M costs of ~~projects~~potential future WSDO and ~~management actions~~IA (see Chapter 4).

Development of ~~this~~the 2022 GSP was funded through a Proposition 1 Grant and contributions from individual GSAs (e.g., through in-kind staff time, or separately contracted consulting services). Individual GSAs are also funding additional, ancillary studies and implementation efforts, including the five-year GSP Periodic Evaluation and Amendment. To fund GSA operations and GSP implementation, ~~the GSAs are developing a financing plan that will include~~ one or more of the following financing approaches could be used:

- **Grants:** GSAs will continue to pursue grants to help fund planning studies and other GSA activities. However, grants are not expected to cover most GSA operating costs for GSP implementation.
- **Groundwater Extraction Charge:** A charge per acre-foot pumped could be used to fund GSP implementation activities.
- **Water Rates:** Customer water rates charged by the GSAs may be adjusted to reflect the increased costs associated with GSA activities and GSP implementation.
- **Other Fees and Charges:** This approach may include permitting fees for new wells or development, or other fees/charges. Depending on the justification and basis for a fee, it may be considered a property-related fee subject to voting requirements of Article XIII D of the California Constitution (passed by voters in 1996 as Proposition 218) or a regulatory fee exempt from such requirements.
- **Assessments:** Special benefit assessments under Proposition 218 could include a per-acre (or per-parcel) charge to cover GSA costs, or other fees under Proposition 26.
- **Taxes:** This could include general property-related taxes that are not directly related to the benefits or costs of a service (ad valorem and parcel taxes), or special taxes imposed for specific purposes related to GSA activities.

The GSAs are ~~pursuing a combined approach, currently~~ targeting available grants, and ~~considering~~may consider a combination of fees and assessments in the future to cover operating and program-specific costs. As required by statute and the Constitution, the GSAs

would complete an engineer's report, rate study, and other necessary analyses to document and justify any rate, fee, or assessment.

5.4. Schedule for Implementation

The GSP implementation schedule allows time for the GSAs to develop and implement ~~projects~~potential future WSDO and ~~management actions~~IA and maintain the sustainability goal through 2042 and beyond. While the ~~primary sustainability projects began prior to SGMA becoming law and are~~Subbasin is already ~~contributing to sustainable and meeting~~ the Subbasin sustainability goal, the GSAs ~~will begin~~began implementing other GSP implementation activities in 2022, ~~with full implementation of projects and management actions to~~will consider a potential WSDO that will maintain sustainability ~~by 2042 in the future~~. **Figures 5-1 and 5-2** illustrate the GSP implementation schedules for ~~projects~~potential future WSDO and ~~management actions~~IA to be implemented by the EBMUD and Hayward GSAs. The GSP implementation schedules also show mandatory reporting and updating for each GSA, including Annual Reports and ~~Five Year Update Reports~~Periodic Evaluations to be prepared and submitted to DWR.

The EBP Subbasin GSP implementation plan for ~~projects~~potential future WSDO and ~~management actions~~IA recognizes that potential future projects are emergency and drought-dependent with operations that are not predictable into the future; however, the ~~projects~~Hayward emergency wells are constructed, permitted, and operational as of 2022 and ready to operate in accordance with current plans outlined in the future scenario (**Appendix 4.A and 4.C**). The EBMUD Bayside injection/extraction well site lease could not be renewed, and the well was destroyed in 2026; however, it is possible the well may ultimately be redrilled on an adjacent property. The GSP implementation schedule allows time for the GSAs to collect necessary baseline data needed as the basis for setting refined and more representative ~~MOs and MTs~~Measurable Objectives and Minimum Thresholds.

5.5. Annual Reports

CCR Title 23, Section 356.2 requires Annual Reports to be submitted to DWR by April 1 of each year following the adoption of the GSP. The GSAs will jointly prepare Annual Reports that comply with all the requirements of CCR Title 23, Section 356.2. It is anticipated that the GSAs will need to develop independent analyses and data, as well as joint analyses (e.g., estimating the Subbasin-wide change in groundwater storage) for the Annual Reports. The GSAs will coordinate to prepare the Annual Report and will incur joint and individual costs in the process. Annual Reports must provide basic information about the Subbasin in addition to technical information, including:

- Groundwater elevation data from monitoring wells
- Hydrographs of groundwater elevations
- Total groundwater extractions for the prior water year
- Surface water supply used in the prior water year, including for groundwater recharge or other in-lieu uses
- Change in groundwater storage
- Progress towards implementing the GSP

The following subsections of the annual report provide a general outline of the information that will be provided. The Annual Reports submitted to DWR will fully comply with the requirements of CCR Title 23, Section 356.2.

5.5.1. General Information (CCR Title 23, Section 356.2(a))

General information will include an executive summary that highlights the key content of the Annual Report. This will include a description of the sustainability goal, a description of GSP projects, an updated implementation schedule, and a map of the Subbasin. Any important changes or updates since the last Annual Report will be noted and described.

5.5.2. Subbasin Conditions (CCR Title 23, Section 356.2(b))

The Subbasin Conditions section of the Annual Report will provide an update on groundwater and surface water conditions in the Subbasin. Current groundwater conditions with respect to the sustainability goal in the Subbasin will be described. The GSAs will summarize the groundwater monitoring network data and report current and change in groundwater elevation. This will include groundwater elevation contour maps for each principal aquifer in the Subbasin tailored to specific hydrogeologic conditions across the region. These will show seasonal high and low conditions within the current season and show historical data from at least January 1, 2015.

Total groundwater extractions will be summarized by water use sector, and the method of quantification will be identified (e.g., metering, satellite analysis, turf ET estimates, etc.). All data and methods used to characterize extractions and levels will follow best practices and be described in the Annual Report.

The groundwater system balance will be used to estimate the change in groundwater storage. Change in storage will be summarized in tabular form and as a map for each principal aquifer in the Subbasin. A graph will show the water year type, groundwater use, change in storage, and

cumulative change in storage for the Subbasin using historical data starting no later than January 1, 2015.

5.5.3. Plan Implementation Progress (CCR Title 23, Section 356.2(b))

The Annual Report will summarize GSP implementation of ~~projects~~potential future WSDO and ~~management actions~~IA, and other GSA-related activities, and describe progress toward established interim milestones. It will summarize sustainability conditions in the Subbasin.

5.6. Periodic Evaluation ~~(Five-Year Updates)~~

The GSAs will conduct an evaluation every five years to summarize GSP implementation, whether the GSP is meeting the sustainability goal, and summarize the implementation of ~~projects~~potential future WSDO and ~~management actions~~IA. An evaluation will also be made whenever the GSP is amended. DWR will use this evaluation to review the GSA's progress toward meeting the EBP Subbasin sustainability goal. A summary of the general information that will be included in the five-year periodic evaluation required by CCR Title 23, Section 356.4 is provided in the following subsections.

5.6.1. Sustainability Evaluation (CCR Title 23, Sections 356.4(a) - 356.4(d))

The sustainability evaluation will summarize current groundwater conditions for each sustainability indicator and describe overall progress in maintaining sustainability. A summary of interim milestones and measurable objectives will be included, along with an evaluation of sustainability indicators and groundwater conditions in relation to minimum thresholds. Implementation of all ~~projects~~potential future WSDO and ~~management actions~~IA will be documented and used to adaptively manage the Subbasin. This will include a summary of actual implementation timelines compared to the proposed timelines (**Figures 5-1 and 5-2**) and implementation schedules.

The evaluation will analyze and describe the effects of ~~projects~~potential future WSDO and ~~management actions~~IA on Subbasin sustainability indicators and compare that to the estimated gross benefits of the ~~projects~~potential future WSDO and ~~management actions~~IA presented in Chapter 4. If differences are identified, these will be described in the periodic evaluation. ~~If projects or management actions~~If potential future WSDO and IA are not performing as expected, the update will describe steps the GSAs will take to implement corrective actions, if warranted. Any changes to the implementation schedule of ~~projects~~potential future WSDO and ~~management actions~~IA will be described in the periodic evaluation.

As ~~GSP projects~~potential future WSDO and ~~management actions~~IA are implemented, monitoring data may indicate unanticipated effects. Also, land uses, and economic conditions

may change in ways that cannot be anticipated at this time. It may be necessary to update the GSP to account for these changes. The elements of the GSP, including the basin setting, undesirable results, minimum thresholds, and measurable objectives, will be reconsidered by the GSAs during the periodic evaluations. Any proposed revisions will be documented in the periodic evaluation.

5.6.2. Monitoring Network Description (CCR Title 23, Section 356.4(e))

Chapter 3 details the planned monitoring network and protocols. The effectiveness of the monitoring network and overall GSP implementation depends on timely, accurate, and comprehensive data. The GSP includes Data Management System (DMS) protocols, as well as an expanded network of monitoring wells and data collection. However, as described in Chapter 3, existing data gaps in the Subbasin will require further expansion of the monitoring network. As data gaps are identified and filled (e.g., with additional monitoring wells), a plan will be developed to improve the monitoring network, consistent with CCR Title 23, Section 354.38.

The GSAs expect that data gaps will be further evaluated and identified in future GSP updates. The periodic evaluations of the GSP will assess changes to the monitoring program needed to acquire additional data sources and describe how the new information will be used and incorporated into any future GSP updates. The installation of new data collection facilities and the analysis of new data will be prioritized in the GSP.

5.6.3. New Information (CCR Title 23, Section 356.4(f))

The GSAs are continuing to monitor Subbasin conditions, and additional monitoring wells ~~are being~~were recently installed under a Proposition 68 grant. In addition, the DMS will allow GSAs to identify additional data gaps and implement procedures to secure additional data. The GSAs expect that new information about groundwater conditions, ~~projects~~potential future WSDO and management actions^{1A}, and the sustainable management criteria will occur during GSP implementation. An adaptive management approach will be applied to identify, review, and incorporate all new information into the GSP. Periodic evaluations will indicate whether new information warrants changes to any aspect of the GSP, including the basin setting, measurable objectives, minimum thresholds, or undesirable results.

5.6.4. GSA Actions (CCR Title 23, Sections 356.4(g) - 356.4(h))

The GSAs are continuing to monitor, manage, and collaborate to meet the sustainability goal specified in the GSP. Within their allowed authorities, the GSAs are evaluating new regulations or ordinances that could be implemented to help achieve the sustainability goal. Any changes in regulations or ordinances will be summarized in the periodic update. The effect on any aspect of

the GSP, including the basin setting, measurable objectives, minimum thresholds, or undesirable results, will be described.

The five-year periodic evaluation will include a summary of state laws and regulations, or local ordinances related to the GSP that have been implemented since the previous periodic evaluation, and address how these may require updates to the GSP. Enforcement or legal actions taken by the GSAs in relation to the GSP will be summarized along with how such actions support ongoing sustainability in the Subbasin.

5.6.5. Plan Amendments, Coordination, and Other Information (CCR Title 23, Sections 356.4(i) - 356.4(k))

Any proposed or completed amendments to the GSP will be described in the periodic evaluation. This will also include a summary of amendments that are being considered or developed at that time. Any changes to the basin setting, measurable objectives, minimum thresholds, or undesirable results will be described.

Any changes to the GSA coordination agreement will be documented and summarized. The GSAs will summarize any other information deemed appropriate to support the GSP and provide the required information to DWR for review of an amended GSP.

5.7. Data Management System (CCR Title 23, Sections 352.6 and 354.40)

The East Bay Plain Subbasin Data Management System (DMS) is implemented using the Opti platform. The DMS serves as a data-sharing portal to enable the utilization of the same data and tools for visualization and analysis to support sustainable groundwater management and transparent reporting of data and results.

The DMS is web-based and publicly accessible using common web browsers. It is a flexible and open software platform that utilizes familiar Google Maps and charting tools for analysis and visualization. The DMS was publicly launched in April 2022 and can be found at <https://eastbayplainsdms.com>~~The link to the DMS will be made available once it is ready. The DMS can also be accessed through links at www.ebmud.com/sgma and <https://www.hayward-ca.gov/content/sustainable-groundwater-management>.~~

~~5.7.1. Functionality of the Data Management System~~

~~The DMS is a modular system that includes numerous tools to support GSP development and ongoing implementation, including:~~

- ~~• User and Data Access Permissions~~
- ~~• Data Entry and Validation~~

- ~~Visualization and Analysis~~
- ~~Query and Reporting~~

~~The DMS can be configured for additional tools and functionality as needs change over time. The following sections briefly describe the currently configured tools.~~

~~5.7.8.0. User and Data Access Permissions~~

~~User access permissions are controlled through several user types that have different roles in the DMS as summarized below. These user types are broken into three high-level categories:~~

- ~~**System Administrator** users manage information at a system-wide level, with access to all user accounts and entity information.~~
- ~~**Managing Entity (Administrator, Power User, User)** users are responsible for managing their entity's site/monitoring data and can independently control access to this data.~~
- ~~**Public** users may view data that are published but may not edit any information.~~

~~Monitoring sites and their associated datasets are added to the DMS by Managing Entity Administrators or Power Users.~~

~~5.7.14.0. Data Entry and Validation~~

~~The DMS allows Entity Administrators and Power Users to enter data either manually via interfaces, or through an import tool utilizing Excel templates. The data are validated by Managing Entity's Administrators or Power Users using a number of quality control checks prior to inclusion in the DMS. Data validation checks performed by the DMS include checks for duplicate measurements, inaccurate measurements, and incorrect data entry.~~

~~5.7.16.0. Visualization and Analysis~~

~~Data visualization and analysis are performed in both Map view (map-based interface) and List view (tabular interface). The DMS platform also allows for future analysis tools, including contouring, total water budget visualization, and management area tracking.~~

~~5.7.18.0. Query and Reporting~~

~~The DMS has the ability to format and export data and analysis at different levels of aggregation, and in different formats, to support local decision making and for submission to various statewide and local programs (i.e., SGMA, California Statewide Groundwater Elevation Monitoring (CASGEM), groundwater ambient monitoring and assessment (GAMA, etc.).~~

~~The DMS can be configured to support wide-ranging reporting needs through the Reports tool. Standard report formats may be generated based on a predetermined format and may be created. These report formats may be configured to match state agency requirements for submittals, including annual reporting of monitoring data that must be submitted electronically on forms provided by the DWR.~~

~~5.7.21.~~ 5.7.1. *Data Included in the Data Management System*

The DMS is configured to include a wide variety of monitoring data types and associated parameters. Based on the analysis of existing datasets within the EBP Subbasin and the GSP needs, the data types shown below were identified to be included in the DMS. Additional data types will be added in the future as the DMS grows.

- ~~Groundwater extraction~~
- ~~Groundwater~~ level
 - Depth to groundwater
 - Groundwater elevation
 - Groundwater quality
- Field parameters (e.g., temperature, pH, conductivity)
 - Key Constituents (arsenic, chloride, total dissolved solids, and nitrate)
 - Additional Constituents (e.g., bicarbonate, carbonate, sodium, and sulfate)
- Precipitation
- Streamflow
- Subsidence

The data are collected from a variety of sources, including DWR CASGEM, ~~EnviroStor,~~ ~~GeoTracker, GAMA,~~ the U.S. Geological Survey, and local data. In addition, some data from other sources (e.g., EnviroStor, GeoTracker, GAMA) has also been added to the DMS. Each dataset is reviewed for overall quality and consistency prior to consolidation and inclusion in the database. More data sources will be added in the future as necessary.

5.8. References

No References

FIGURES

Figure 5-1. EBP Subbasin GSP Implementation Schedule for EBMUD GSA

[illegible]

Figure 5-2. EBP Subbasin GSP Implementation Schedule for Hayward GSA

