

Groundwater Sustainability Plan for Santa Rosa Plain Groundwater Subbasin

Table of Contents

1	INTRODUCTION	1-1
1.1	Purpose of Groundwater Sustainability Plan	1-3
1.2	Guide to the Groundwater Sustainability Plan.....	1-4
1.3	Groundwater Sustainability Agency Authorities and Administrative Information ...	1-11
1.3.1	Santa Rosa Plain Groundwater Sustainability Agency	1-11
1.3.2	Santa Rosa Plain Groundwater Sustainability Agency Board and Advisory Committee.....	1-12
1.3.3	Groundwater Sustainability Agency Coordination	1-13
1.4	Stakeholder Engagement and Communication.....	1-14
1.4.1	Overview.....	1-14
1.4.2	Implementation of the Sustainable Groundwater Management Act – Phases of Work.....	1-14
2	DESCRIPTION OF PLAN AREA (23 CCR 354.8 b).....	2-1
2.1	General Setting and Jurisdictional Areas (23 CCR 354.8 b).....	2-1
2.2	General Land Use Characteristics (23 CCR 354.8 b)	2-6
2.3	Water Source Types and Water Use Sectors (23 CCR 354.8 b)	2-6
2.3.1	Groundwater	2-11
2.3.2	Imported Surface Water.....	2-13
2.3.3	Local Surface Water	2-13
2.3.4	Recycled Water	2-13
2.4	Existing Monitoring Programs and Networks (23 CCR 354.8 c, d, e).....	2-13
2.4.1	Groundwater-level Monitoring	2-13
2.4.2	Groundwater Quality Monitoring.....	2-17
2.4.3	Climate Monitoring.....	2-18
2.4.4	Surface Water Monitoring.....	2-18
2.4.5	Land Surface Subsidence Monitoring	2-21
2.5	Existing Management Programs and Studies (23 CCR 354.8 c, d, e).....	2-21
2.5.1	Santa Rosa Plain Groundwater Management Program.....	2-21

- 2.5.2 Urban Water Management Planning..... 2-22
- 2.5.3 North Coast Resource Partnership 2-24
- 2.5.4 Climate Change Studies and Planning..... 2-24
- 2.5.5 Groundwater Banking Feasibility Study..... 2-25
- 2.5.6 Water Conservation 2-25
- 2.5.7 Stormwater Management..... 2-28
- 2.6 General Plan and Related Plan Land Use Categories..... 2-30
 - 2.6.1 General Plans 2-31
 - 2.6.2 Specific Area Plans 2-36
 - 2.6.3 Sonoma County Local Agency Formation Commission 2-36
- 2.7 Well Permitting Policies and Procedures 2-36
- 3 BASIN SETTING 3-1
 - 3.1 Hydrogeologic Conceptual Model 3-1
 - 3.1.1 Topography and Geography 3-2
 - 3.1.2 Surface Water and Drainage Features 3-4
 - 3.1.3 Soil Characteristics 3-6
 - 3.1.4 Regional Geologic Setting..... 3-9
 - 3.1.5 Principal Aquifer Systems and Aquitards 3-14
 - 3.1.6 Effects of Faults on Groundwater 3-21
 - 3.1.7 Groundwater Recharge and Discharge 3-22
 - 3.1.8 Data Gaps and Uncertainty 3-24
 - 3.2 Current and Historical Groundwater Conditions..... 3-25
 - 3.2.1 Climatic Conditions and Trends 3-27
 - 3.2.2 Groundwater Elevations and Trends 3-30
 - 3.2.3 Estimated Changes in Groundwater Storage 3-57
 - 3.2.4 Land-Surface Subsidence 3-57
 - 3.2.5 Groundwater Quality Conditions and Trends 3-63
 - 3.2.6 Surface Water Conditions and Surface Water and Groundwater
Connectivity..... 3-78
 - 3.3 Water Budget..... 3-90
 - 3.3.1 Overview of Water Budget Development..... 3-90
 - 3.3.2 Overview of Model Assumptions for Water Budget Development 3-98
 - 3.3.3 Historical and Current Water Budgets 3-101

- 3.3.4 Subbasin Water Supply Reliability 3-119
- 3.3.5 Uncertainties in Water Budget Calculations 3-119
- 3.3.6 Projected Water Budgets 3-120
- 3.3.7 Sustainable Yield 3-146
- 3.4 Management Areas 3-148
- 4 SUSTAINABLE MANAGEMENT CRITERIA 4-1
- 4.1 Definitions 4-2
- 4.2 Sustainability Goal 4-3
- 4.3 General Process for Establishing Sustainable Management Criteria 4-5
- 4.4 Sustainable Management Criteria Summary 4-5
- 4.5 Chronic Lowering of Groundwater Levels Sustainable Management Criteria 4-9
 - 4.5.1 Locally Defined Significant and Unreasonable Conditions 4-9
 - 4.5.2 Minimum Thresholds 4-10
 - 4.5.3 Measurable Objectives 4-22
 - 4.5.4 Undesirable Results 4-23
- 4.6 Reduction in Groundwater Storage Sustainable Management Criteria 4-25
 - 4.6.1 Locally Defined Significant and Unreasonable Conditions 4-25
 - 4.6.2 Minimum Thresholds 4-25
 - 4.6.3 Measurable Objectives 4-27
 - 4.6.4 Undesirable Results 4-27
- 4.7 Seawater Intrusion Sustainable Management Criteria 4-28
- 4.8 Degraded Water Quality Sustainable Management Criteria 4-28
 - 4.8.1 Locally Defined Significant and Unreasonable Conditions 4-28
 - 4.8.2 Minimum Thresholds 4-29
 - 4.8.3 Measurable Objectives 4-39
 - 4.8.4 Undesirable Results 4-39
- 4.9 Subsidence Sustainable Management Criteria 4-41
 - 4.9.1 Locally Defined Significant and Unreasonable Conditions 4-42
 - 4.9.2 Minimum Thresholds 4-43
 - 4.9.3 Measurable Objectives 4-45
 - 4.9.4 Undesirable Results 4-46
- 4.10 Depletion of Interconnected Surface Water Sustainable Management Criteria 4-48
 - 4.10.1 Locally Defined Significant and Unreasonable Conditions 4-49

- 4.10.2 Minimum Thresholds 4-49
- 4.10.3 Measurable Objectives..... 4-54
- 4.10.4 Undesirable Results..... 4-55
- 5 MONITORING NETWORKS 5-1
- 5.1 Monitoring Network Objectives 5-1
- 5.2 Description of Monitoring Networks for GSP Implementation..... 5-1
- 5.2.1 Groundwater-level Monitoring Network 5-1
- 5.2.2 Groundwater Quality Monitoring Network 5-6
- 5.2.3 Surface Water Monitoring Network 5-8
- 5.2.4 Land Surface Elevation Monitoring Network 5-10
- 5.3 Representative Monitoring Point Networks 5-10
- 5.3.1 Representative Monitoring Point Network for Chronic Lowering of Groundwater Levels 5-10
- 5.3.2 Representative Monitoring Point Network for Degraded Water Quality 5-18
- 5.3.3 Representative Monitoring Point Network for Depletion of Interconnected Surface Water 5-24
- 5.3.4 Representative Monitoring Point Network for Land Subsidence 5-24
- 5.4 Assessment and Improvement of Monitoring Networks..... 5-24
- 5.4.1 Assessment and Identification of Data Gaps – Groundwater-level Monitoring Network..... 5-27
- 5.4.2 Assessment and Identification of Data Gaps – Surface Water Monitoring Network..... 5-33
- 6 PROJECTS AND MANAGEMENT ACTIONS 6-1
- 6.1 Identification of Projects and Management Actions 6-1
- 6.2 Project Descriptions 6-2
- 6.2.1 Water-Use Efficiency and Alternate Water Source Projects (Group 1) 6-3
- 6.2.2 Stormwater Capture and Recharge (Group 2) 6-6
- 6.2.3 Aquifer Storage and Recovery (Group 3) 6-8
- 6.3 Evaluation of Projects Through Scenario Modeling..... 6-11
- 6.4 Management Actions and Projects Requiring Additional Assessment..... 6-15
- 6.4.1 Coordination of Farm Plans with GSP Implementation 6-16
- 6.4.2 Assessment of Additional Recycled Water Opportunities..... 6-17
- 6.4.3 Assessment of Potential Policy Options for GSA Consideration 6-18

7 IMPLEMENTATION PLAN 7-1

7.1 Governance Structure and Planned Administrative Approach 7-1

7.2 GSP Implementation Components and Estimated Costs..... 7-1

7.2.1 Administration and Finance 7-2

7.2.2 Communication and Stakeholder Engagement..... 7-2

7.2.3 Annual Monitoring, Data Evaluation, and Reporting 7-3

7.2.4 Addressing Data Gaps 7-6

7.2.5 Maintaining, Updating, and Improvements to Model..... 7-10

7.2.6 Study and Implementation of Projects and Actions 7-11

7.2.7 Five-year Update to Groundwater Sustainability Plan 7-14

7.2.8 Estimated Five-year Implementation Costs 7-15

7.3 Funding 7-16

7.3.1 Fees, Grants and Other Funding Sources..... 7-17

7.4 Schedule 7-17

8 REFERENCES 8-2

8.1 Works Cited 8-2

8.2 Santa Rosa Plain GIS Data Sources..... 8-11

Appendices