

San Lorenzo Valley
Water District

Watershed Management Plan

Part II: Goals, Objectives, and Policies

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CHAPTER 1: INTRODUCTION

1.0 Introduction

“Part II: Goals, Objectives, and Policies” constitutes the second part of the District’s Watershed Management Plan. This chapter discusses the purpose of the document, summarizes the planning process used by District staff in compiling the document, and explains how the document is organized.

1.1 Purpose

Part II affirms the District’s approach of ecosystem management, defines goals, objectives and policies designed to assist the District in realizing its mission, and identifies indicators to measure the progress of these management strategies. Part II is intended as a reference for the District Board of Directors and staff to design projects that meet the agency’s management goals, and to measure the success of such projects in meeting those goals. Part II gives special consideration to addressing data gaps noted in Part I, through specific policies aimed at prioritizing the gathering of key information.

1.2 Planning process

In 2007, District staff completed the Administrative Draft of Part I of the District’s Watershed Management Plan, the Existing Conditions Report. At the request of the board, District staff circulated the draft for public and peer-review in 2007. Staff received comments, reviewed and incorporated changes after conferring with the Board’s Environmental Committee. The District Board approved the final version of Part I, Existing Conditions Report in May 2009. The final version forms the basis for Part II, in that it documents watershed conditions in the District’s land ownership and service area, and generally describes conditions within the larger San Lorenzo River watershed. Part I also clearly identifies information gaps that the District needs to address in order to better understand the existing conditions of its watershed lands.

1.3 Regulatory framework

The District is subject to many different county, state, and federal rules and regulations that affect several different areas of watershed planning, including drinking water quality, endangered species protection, cumulative impacts assessment, point and non-point source pollution, riparian protection, water rights, forest management, and wildlife and fisheries management. Each of the following chapters describes regulatory constraints applicable to its subject area. Table 1.1 summarizes these regulations.

Table 1.1. Most common regulations affecting watershed planning

What is regulated	Authority or statute	Agency
Drinking water quality	Safe Drinking Water Act, (SDWA) Surface Water Treatment Rule (SWTR); Ground Water Rule (GWA)	U.S. Environmental Protection Agency (US EPA); State Dept. of Public Health (DPH)
Point and non-point source pollution; protection of beneficial uses	Clean Water Act (federal); Porter-Cologne Water Quality Control Act (state)	US EPA; Army Corps of Engineers; State and Regional Water Quality Control Boards (SWQCB, RWQCB)
Environmental impacts assessment of development projects	California Environmental Quality Act (CEQA)	Various state agencies
Protection of endangered species	Federal Endangered Species Act (ESA); California Endangered Species Act (CESA)	US Fish and Wildlife Service (USFWS), National Oceanic and Atmospheric Administration (NOAA), California Department of Fish and Game (CDFG)
Surface water rights and allotment	State Constitution	State Water Resources Control Board (SWRCB)
Groundwater allotment	State Constitution	No statewide regulation of water extraction; managed by local agencies
Streambed alteration	State Fish and Game Code Sections 1601 & 1603	CDFG
Releases of water for fish	State Fish and Game Code Section 5937	CDFG
Local conservation of natural resources and open space	Local General Plans	County of Santa Cruz
Local erosion control	County Erosion Control Ordinance	County of Santa Cruz
Local protection of sensitive species habitat	County Sensitive Habitat Protection Ordinance	County of Santa Cruz
Fire management and prevention	State fire code; local fire ordinances; burn permits	CalFire, local fire districts
Air quality		California Air Resources Board

1.4 Document organization

Chapter 2 provides definitions and nomenclature for the goals, objectives and policies that are listed in subsequent chapters, and explains the different geographical areas that influence these strategies.

Chapters 3-7 have the same chapter titles as Chapters 3-7 of Part I, to facilitate cross-referencing between the two documents. Chapter 8 was added to address goals, objectives and policies relative to watershed administration.

The body of each chapter is organized in the following manner:

1. Summary of existing conditions from Part I (including known data gaps).
2. Summary of regulatory constraints for the chapter subject area, in terms of county, state and federal laws and agencies that may affect watershed management planning.
3. Acknowledged data gaps
4. Goals, objectives, and policies affecting the chapter subject area.

CHAPTER 2: BACKGROUND, DEFINITIONS & NAMING CONVENTIONS

2.0 Introduction

All of the District's watershed management goals are based on the District's mission statement, adopted by the Board in June 2000:

Our mission is to provide our customers and all future generations with reliable, safe and high quality water at an equitable price; to create and maintain outstanding customer service; to manage and protect the environmental health of the aquifers and watersheds; and, to ensure the fiscal vitality of the San Lorenzo Valley Water District.

2.1 Background: Original 1985 District watershed management goals

In 1985, the District Board of Directors approved the District's initial Watershed Protection Plan, which was based on the following three goals:

Goal 1: Maintain and restore surface and groundwater quality consistent with state and federal regulations

Goal 2: Maintain and enhance vegetative cover, plant diversity, wildlife habitat, and natural biotic communities

Goal 3: Allow recreational uses of watershed lands consistent with a high level of environmental protection

2.2 Basis for refining District watershed management goals

In 2008, the District began redefining its 1985 watershed management goals based on the findings of its Watershed Plan, Part I: Existing Conditions Report, which describes current conditions of District-owned lands and within the greater San Lorenzo River watershed. The report contains the following types of information, which was useful for redefining watershed management goals:

Identified gaps in information about the condition of the District's watershed land. Policies may need to be developed to address the need for further research and assessment of the District's watershed lands.

Discussed conditions in the larger watershed, which require coordination with other agencies to address. Policies may need to be developed to identify appropriate actions to take in partnership with the community and other agencies.

Identified state and federal regulations that have changed considerably since 1985 with regard to surface and groundwater quality, and with regard to threatened and endangered species. New goals, objectives and policies were needed to ensure compliance with changing regulatory requirements of the County, CCRWQCB, the federal and state Environmental Protection Agency, the state Department of Public Health, the US Fish and Wildlife Service, and National Oceanic and Atmospheric Administration.

Considered the current literature on watershed science and policy, which has changed considerably since 1985.

Reflected the public comments of the community and peer-reviewers.

2.3 Definitions

The District used the following definitions in refining its goals, objectives and policies:

Goal – The final purpose that the District seeks to achieve. A goal sets the broad framework for objectives and policies.

Objective – The route that specifies in general terms the strategy for reaching a goal; an objective indicates the kinds of actions that should be used to achieve the goal.

Policy – A course of action which, if followed, will achieve an objective. Policies can be readily translated into specific action recommendations or design proposals.

2.4 Overview of the District's goals, objectives, and policies

2.4.1 Goals

In keeping with its mission statement, the District revised and expanded its 1985 watershed management goals to include one primary goal and seven secondary goals:

Primary Goal:

Manage District watershed lands to protect and enhance ecosystem health (EH) and water quality (WQ), while managing District water sources to provide a reliable water supply in perpetuity (WS);

(In all management cases, the primary goal must be met first, even if an intended action is focused on a secondary goal.)

Secondary Goals:

Preserve and enhance cultural and historical resources of the watershed (CH);

Protect the watershed, adjacent urban areas, and the public from fire and other hazards (FH);

Continue existing compatible uses and provide opportunities for potential compatible uses on watershed lands, including educational, recreational, and scientific uses (ERS);

Provide a fiscal framework that balances financial resources and overall benefits, and an administrative framework that allows implementation of the Watershed Management Plan (ADM);

Enhance public awareness of water quality, water supply, conservation, and watershed protection issues (PA);

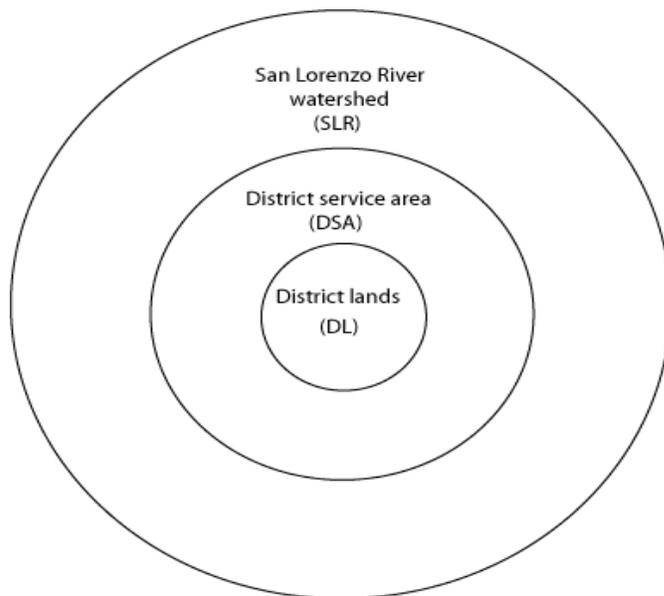
Consider climate change impacts and reduction of greenhouse gases in all watershed management decisions (CC);

Review and revise management decisions in response to changing conditions (RMD).

2.4.2 Objectives and policies

In keeping with the District's mission statement, the District seeks to achieve its watershed management goals on its own lands, within its service area, and within the context of the entire San Lorenzo River watershed. For legal and political reasons, however, the District understands the need to define and use different objectives to meet these goals in these different geographical areas. As Figure 1 shows, the District has the most control and the greatest ability to create desired conditions on its own lands. It must increasingly rely on community and agency partnerships as it seeks to attain its goals within its service area, and within the greater watershed.

Figure 2-1. Different objectives are needed for District-owned lands, District service area, and overall watershed.



While the District seeks to achieve its management goals throughout the entire San Lorenzo River watershed, it must employ different strategies on its own lands, in its service area, and with the greater watershed.

On District owned lands, the District is required to follow all applicable county, state, and federal rules and regulations, and should also adhere to best management practices. The District is a non-regulatory agency that lacks broad land use powers within its jurisdiction. The District can exercise control over the lands that it owns through policies and ordinances, such as those described in this document. This enables the District, at the discretion of its Board, and after weighing public input, to define and apply higher standards to its own lands than is required by federal, state, and county regulations.

Within the District service area, the District has limited legal powers under the California Water Code (Division 12, Part 5, Sections 31,000-31,187), which can be used to protect drinking water resources. Perhaps more importantly, the District may also provide incentives and public outreach to its customers and the community to help achieve its watershed management goals within its service area.

Within the greater San Lorenzo River watershed, the District must increasingly rely on partnerships with other agencies and community groups to achieve its goals relative to the entire watershed for the benefit all of its stakeholders. The District must also consider potential impacts to the greater watershed resulting from management decisions applied to its own lands and within its service area.

2.5 Naming conventions

Each primary and secondary goal is identified by a prefix which identifies the goal. All objectives and policies that serve that goal use that same prefix.

For example:

SECONDARY GOAL: Protect the watershed, adjacent urban areas, and the public from fire and other hazards (FH).

Objectives for achieving each goal are numbered beneath the goal and are identified by the goal's prefix plus a second prefix, which indicates whether the objective applies to District lands (DL), the District service area (DSA), or the larger San Lorenzo River watershed (SLR).

Policies for achieving each objective are numbered beneath each objective and are identified by the both the goal's prefix, the objective's prefix.

For example:

District lands (DL) objectives and policies

1. Objective FH1-DL Reduce the risk of catastrophic wildfire to persons, structures and cultural resources on District lands.

Policy FH1-DL1 Map fire hazards on District lands and conduct a wildfire risk analysis.

Policy FH1-DL2 Develop a specific emergency response readiness plan for fire.

2.6 Table listing all District watershed management goals and objectives

Table 2-1 lists all the District's watershed management goals and objectives.

Each of the subsequent chapters lists the goals, objectives, and policies that apply to the subject area of the chapter.

Table 2-1: List of the District’s watershed management goals and objectives

<p>PRIMARY GOAL: Manage District watershed lands to protect and enhance ecosystem health (EH) and water quality (WQ), while managing District water sources to provide a reliable water supply in perpetuity (WS). [Chapter 3, 4]</p>
<p>District lands (DL) objectives:</p> <p>Objective WQ1-DL Protect and enhance surface water and groundwater quality on District lands consistent with state and federal regulations.</p> <p>Objective WQ2-DL Control hydrologic impacts, erosion, and sedimentation on District lands from roads, trails, and rights-of-way.</p> <p>Objective WQ3-DL Prevent or mitigate to the point of insignificance non-point source pollution from District land use.</p> <p>Objective WQ4-DL Protect riparian areas and stream channels on District lands.</p> <p>Objective WQ5-DL Control and enforce restrictions on public access to District lands.</p> <p>Objective WQ6-DL Monitor source water quality on District lands.</p> <p>Objective WQ7-DL Reduce the risk to water quality and public safety associated with seismic and geologic hazards on District lands.</p> <p>Objective EH1-DL Control, and where feasible, eradicate invasive exotic species on District lands.</p> <p>Objective EH2-DL Restrict, and where feasible, exclude use of herbicides and pesticides on District lands.</p> <p>Objective EH3-DL Protect, preserve, and where possible, enhance and restore special status plant communities on District lands.</p> <p>Objective EH4-DL Protect, preserve, and where possible, enhance and restore significant wildlife resources on District lands, including biological diversity and genetic integrity, where possible.</p> <p>Objective EH5-DL Protect, preserve, and where possible, enhance and restore significant aquatic resources on District lands.</p> <p>Objective WS1-DL Increase groundwater storage of aquifers located below District lands.</p> <p>Objective WS2-DL Maintain water supply by reducing risks to water quality.</p> <p>Objective WS3-DL Maintain sufficient flow in District water supply streams to protect aquatic resources.</p> <p>Objective WS4-DL Balance ecosystem health and water quality with reliable supply.</p> <p>Objective WS5-DL Strive for conjunctive water use.</p>
<p>District service area (DSA) objectives:</p> <p>Objective WQ1-DSA Support the protection and enhancement of surface water and groundwater quality throughout the District service area consistent with state and federal regulations.</p> <p>Objective WQ2-DSA Support the reduction of hydrologic impacts, erosion, and sedimentation from roads, trails, and rights-of-way throughout the District service area consistent with federal, state, and county regulations.</p> <p>Objective WQ3-DSA Support reduction and mitigation of non-point source pollution from land use within the District service area consistent with federal, state, and county regulation.</p> <p>Objective WQ4-DSA Support the protection of riparian areas and stream channels within the District service area consistent with federal, state, and county regulations.</p> <p style="text-align: center;"><i>(continued on next page)</i></p>

<p>Objective EH1-DSA Support the control and eradication of invasive exotic plant species within the District service area.</p> <p>Objective EH2-DSA Support only minimal and restricted use of herbicides and pesticides in the District service area.</p> <p>Objective EH3-DSA Support the protection, preservation, and where possible, the enhancement and restoration of special status plant communities within the District service area.</p> <p>Objective EH4-DSA Support the protection, preservation, and where possible, the enhancement and restoration of significant wildlife resources in the District service area.</p> <p>Objective: EH5-DSA Support the protection, preservation, and where possible, the enhancement and restoration of significant aquatic resources in the District service area.</p> <p>Objective WS1-DSA Support minimized water use within the District service area through conservation and demand management.</p> <p>Objective WS2-DSA Protect and enhance the water yield of the watershed above District surface water intakes and groundwater recharge areas</p>
<p>San Lorenzo River watershed (SLR) objectives:</p>
<p>Objective WQ1-SLR Contribute to the protection and enhancement of surface water and groundwater quality in the San Lorenzo River watershed consistent with state and federal regulations.</p> <p>Objective WQ2-SLR Contribute to the reduction of hydrologic impacts, erosion, and sedimentation from roads, trails, and rights-of-way in the San Lorenzo River watershed.</p> <p>Objective WQ3-SLR Support the reduction and mitigation of non-point source pollution from land use within the San Lorenzo River watershed.</p> <p>Objective WQ4-SLR Support the protection of riparian areas and stream channels where possible within the San Lorenzo River watershed.</p> <p>Objective EH1-SLR Contribute to the control and eradication of invasive exotic plant species within the greater San Lorenzo River watershed.</p> <p>Objective EH2-SLR Contribute to the control of herbicide and pesticide use in the greater San Lorenzo River watershed.</p> <p>Objective EH3-SLR Contribute to the protection, preservation, and where possible, the enhancement and restoration of special status plant communities within the greater San Lorenzo River watershed.</p> <p>Objective EH4-SLR Contribute to the protection, conservation, and where possible, the enhancement and restoration of significant wildlife resources in the greater San Lorenzo River watershed.</p> <p>Objective: EH5-SLR Contribute to the protection, preservation, and where possible, the enhancement and restoration of significant aquatic resources in the greater San Lorenzo River watershed.</p> <p>Objective WS1-SLR Increase groundwater storage of aquifers used by District wells.</p>
<p>SECONDARY GOAL: Protect the watershed, adjacent urban areas, and the public from fire and other hazards (FH) [Chapter 5]</p>
<p>District lands (DL) objectives:</p>
<p>Objective FH1-DL Reduce the risk of catastrophic wildfire to persons, structures, natural, and cultural resources on District lands.</p> <p>Objective FH2-DL Manage fuels on District land to reduce fire hazard.</p> <p>Objective FH3-DL Reduce the potential for fire ignitions on District lands.</p>
<p style="text-align: center;"><i>(continued on next page)</i></p>

<p>Objective FH4-DL Coordinate and monitor fire management activities that reduce fire hazard on and adjacent to District lands.</p> <p>Objective FH5-DL Reduce the risk of post-fire impacts on District lands.</p>
<p>District service area (DSA) objectives:</p>
<p>Objective FH1-DSA Support activities that reduce risk of catastrophic wildfire to persons, structures and cultural resources in the District service area.</p> <p>Objective FH2-DSA Monitor fire management activities that reduce fire hazard in the District service area.</p>
<p>San Lorenzo River watershed (SLR) objectives:</p>
<p>Objective FH1-SLR Support activities that reduce the risk of catastrophic wildfire to persons, structures, natural, and cultural resources in the greater watershed</p> <p>Objective FH2-SLR Monitor fire management activities that reduce fire hazard in the greater San Lorenzo River watershed.</p>
<p>SECONDARY GOAL: Continue existing compatible uses and provide opportunities for educational, recreational, and scientific uses (ERS) on District watershed lands that do not compromise the District’s goals for water quality and watershed protection [Chapter 6]</p>
<p>District lands (DL) objectives:</p>
<p>Objective ERS1-DL Maintain and enforce a safety and security program for District lands.</p> <p>Objective ERS2-DL Support only low-impact recreational activities that are compatible with the landscape setting, that do not adversely affect watershed resources, and that comply with the goals and policies of this plan.</p> <p>Objective ERS3-DL Ensure a high quality recreational experience on District lands by reducing user conflicts, promoting safety and courtesy, and controlling overcrowding.</p> <p>Objective ERS4-DL Promote environmental values in recreational use and management.</p>
<p>SECONDARY GOAL: Preserve and enhance cultural and historical resources on District lands (CH). [Chapter 6]</p>
<p>District-lands (DL) objectives:</p>
<p>Objective CH1-DL Identify the locations and document the significance of cultural and historical resources on District watershed lands.</p> <p>Objective CH2-DL Develop policies, as appropriate, to protect historical and cultural resources on District lands, as they are identified.</p>
<p>SECONDARY GOAL: Enhance public awareness of water quality, water supply, conservation, and watershed protection through education and public outreach (PA). [Chapter 6]</p>
<p>District lands (DL) objectives:</p>
<p>Objective PA1-DL Provide an educational outreach program to inform the public about the importance of protecting water quality and the purpose of the District’s watershed lands, resource management practices, and water conservation.</p> <p>Objective PA2-DL Promote research on watershed lands to enhance the District’s watershed resource database.</p>
<p style="text-align: center;"><i>(continued on next page)</i></p>

District service area (DSA) objectives:
Objective PA1-DSA Ensure that educational programs are compatible with water quality protection and all applicable watershed management goals and policies.
San Lorenzo River watershed (SLR) objectives:
Objective PA1-SLR Ensure that educational programs are compatible with water quality protection and all applicable watershed management goals and policies.

SECONDARY GOAL: Consider climate change impacts and reduction of greenhouse gases in all watershed management decisions (CC). [Chapter 7]
District lands (DL) objectives:
Objective CC1-DL Develop a long-term watershed management strategy that takes into account possible large-scale changes from global climate change.
Objective CC2-DL Endeavor to make the ecosystems on District lands as healthy and resilient as possible to maintain fundamental natural functions and processes in the face of unknown impacts of climate change.
Objective CC3-DL Reduce the District’s greenhouse gas emissions.
Objective CC4-DL Increase carbon sequestration on District watershed lands.
District service area (DSA) objectives:
Objective CC1-DSA Educate District customers about the potential impacts of global climate change on water resources.
San Lorenzo River watershed (SLR) objectives:
Objective CC1-SLR Coordinate with other regional agencies and non-profits to keep abreast of climate change science and policy.
SECONDARY GOAL: Provide a fiscal framework that balances financial resources and overall benefits, and an administrative framework that allows implementation of the Watershed Management Plan (WA) [Chapter 8]
Objective WA1 Assess the comprehensive financial impacts associated with Watershed Management Plan projects. Evaluate cost parameters related to initial capital expenditure, District staffing and administration requirements, initial program development costs, and long-term operation and maintenance costs.
Objective WA2 Address staffing responsibilities and training relative to Watershed Management Plan administration.
Objective WA3 Where feasible, establish funding allocation/sources to meet plan goals.
Objective WA4 Consider the costs and benefits of implementing new watershed programs, projects, and activities.
SECONDARY GOAL: Review and revise management decisions in response to changing conditions (RR) [Chapter 8]
Objective RR1 Establish measurable success criteria for all watershed management programs, projects and activities to assess whether such programs, projects and activities meet stated objectives.

CHAPTER 3: HYDROLOGY, GEOMORPHOLOGY & WATER QUALITY

3.0 Existing conditions summary

Both natural processes and human impacts have shaped the San Lorenzo River watershed. The area's steep, rugged topography, coupled with episodic storm events give the watershed a high natural background erosion rate.

Streamflow in the river is directly related to precipitation. Ninety percent of the rainfall occurs from November through April. Averaging approximately 60 inches per year at the crest of Ben Lomond Mountain, rainfall has ranged from 22 inches in 1976-77 to 111 inches in 1982-83. Winter streamflow increases after the soil is saturated, typically in December through March, and spikes after episodic rainfall.

The post-settlement period after 1800 witnessed profound human impacts from logging, mining, and development. As old-growth forests were clear-cut, roads and houses were constructed, and quarries were mined, both water quality and water supply were dramatically affected. The continued use of logging roads as residential access roads created chronic sources of erosion and sedimentation.

The pervasive road network, especially unpaved and poorly maintained roads, continues today as the most persistent sources of sedimentation to streams throughout the watershed. The District has not surveyed the roads on its watershed lands, but annually inspects and maintains its road system. The District's existing road maintenance policies for dirt roads within District-owned watershed lands emphasize minimizing disturbance. Existing roads are left undisturbed because the hardened surface helps keep erosion in check. Work crews are used as much as possible for road work. Heavy equipment is used only when necessary, to repair failing drainage or erosion control features. Roads are outsloped to allow natural drainage. On steeper roads large rolling dips are used for drainage. Large rolling dips, water bars, or other drainage features are routinely checked and repaired before the onset of the rainy season. The District uses consultants to check and maintain drainage and erosion control features throughout the year.

Following widespread slope failures from winter storms of 1982 and 1998, the District assessed resulting damage to watershed lands and facilities. The District followed FEMA procedures to secure federal grants and funding to repair much of the damage. The District codified these procedures in its Emergency Response Plan.

There is an acknowledged problem with feral pig populations causing erosion and disturbance throughout the watershed, though the extent of the problem is unknown on District land.

The San Lorenzo River is listed as impaired for sediment, nitrates and pathogens under the Clean Water Act. The District's surface water supply tributaries are relatively protected, but sediment and turbidity remain the primary water treatment concerns.

Groundwater levels have declined in the two primary aquifers that comprise the Santa Margarita Basin, reducing the available water supply for the District and other water agencies. Total

production from the Lompico Sandstone aquifer in the Pasatiempo area roughly doubled between the late 1980s and the early 2000s, resulting in fairly steady water level declines in all Lompico Sandstone wells, including the District's southern system (Johnson, 2009). Groundwater recharge to the Santa Margarita Sandstone aquifer, in the area tapped by the District's Olympia and Quail Hollow wells, is derived primarily from percolating rainfall. The recharge area for these wells is largely rural and undeveloped. Land use in the recharge area includes a closed sand quarry, undeveloped open space including timberland, and rural residential development. Because of this recharge capacity, Olympia groundwater levels have remained stable (Johnson, 2009). Due to high permeability of soils in the recharge area and residential development, the District's Quail Hollow wells are susceptible to groundwater contamination from spills.

3.1 Regulatory constraints

This section summarizes these regulatory constraints that apply to District goals, objectives and policies in the area of hydrology, geomorphology and water quality.

Under an agreement with the state, the US EPA delegates enforcement of the Clean Water Act to the regional water quality control boards.

For point sources of pollution, the regional boards require a permit under the National Pollution Discharge Elimination System (NPDES). For nonpoint sources, the regional boards enforce the Clean Water Act. The Total Maximum Daily Load (TMDL) addresses impaired water bodies and federal storm water regulations apply to urban areas. The Central Coast Regional Water Quality Control Board (CCRWQCB) has identified the San Lorenzo River and its tributaries as impaired under section 303(d) of the Federal Clean Water Act due to excess sediment, pathogens and nutrients.

The CCRWQCB's Waste Discharge Reduction (WDR) program addresses water quality standards for timber harvests and other projects. The CCRWQCB also requires designated urban areas to comply with a section of the Clean Water Act called the storm water regulations.

The Army Corps of Engineers also enforces parts of the Clean Water Act. The agency requires a permit for certain activities which involve alteration or filling in a waterway. Under Section 404 of the Clean Water Act, the Corps notifies other federal agencies of the intended activity and seeks consultation.

The state Department of Public Health (CDPH), previously known as the Department of Health Services (DHS) regulates drinking water quality. To comply with current regulations, the District continually tests water quality of both ground and surface raw water, and treated water. In addition, the District produces two annual water quality reports; one for the northern system and one for the southern system. The District has also completed three watershed sanitary surveys, as required by the CDPH.

The state Department of Fish and Game (CDFG) regulates water quality under Section 1600 et al. of the Fish and Game Code. The agency requires permits for any activity that could alter a streambank or deposit deleterious material in a stream. CDFG wardens are charged with enforcing the permit process. The California Department of Fish and Game (CDFG) enforces

erosion control standards in four ways: (1) by issuing Streambed Alteration Agreement Permit (SSA permit) for work in the bed or bank of streams, (2) by enforcement action against work done in streams without permit, (3) by participating in reviews of timber harvest plans; and (4) by enforcement action against the discharge of materials deleterious to fish life, including sediment discharge. CDFG must comply with the California Environmental Quality Act (CEQA) for all projects under its jurisdiction.

The California Environmental Quality Act (CEQA) is a statute that requires state and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts. A public agency, such as the District, must comply with CEQA when it undertakes an activity that may cause either a direct physical change in the environment or a reasonably foreseeable indirect change in the environment.

In addition, a general plan or community plan may also be subject to CEQA. Every development project which requires a discretionary governmental approval will require at least some environmental review pursuant to CEQA, unless an exemption applies.

Santa Cruz County (County) Environmental Health has developed a watershed management approach with the primary objective of protecting and improving water quality conditions in the area. This agency and the County Planning Department have policies, regulations, and ordinances to control improper and unauthorized activities, which can degrade water quality. The County has also developed nitrate and wastewater management plans (Camp, Dresser, McKee, 1996).

The County addresses erosion and sedimentation issues within the San Lorenzo River watershed through the County Erosion Control Ordinance (County Code Section 16.22), designed to minimize site disturbance. It requires controlling erosion at all stages of development, and requires changing any condition that results in excessive erosion. The Grading Ordinance (Section 16.20) restricts excessive grading for road construction or home sites, establishes a grading season of April 15-October 15, and requires a special permit for winter grading. No more than one acre may be cleared and no clearing is allowed in sensitive habitat or on slopes steeper than 30 percent (Camp, Dresser, McKee, 1996). The Geologic Hazards Ordinance (Section 16.10) restricts development, including roads and homes, on slopes greater than 30%. The Riparian Corridor Protection Ordinance (Section 16.30) restricts disturbance of the riparian zone. New development within riparian corridors is regulated, and set backs are established by the ordinance.

3.2 Acknowledged data gaps

As called out in Part I: Existing Conditions Report (2009), the District has acknowledged a list of data gaps that it must address in order to have an accurate assessment of the conditions of its watershed resources.

? Part I identified each of these data gaps with the icon shown to the left.

Following is a numbered list of all the data gaps called out in Part I that apply to hydrology, geomorphology and water quality.

1. The District has not yet surveyed, mapped, and assessed the existing road system on its watershed land holdings.

2. The District has not yet mapped sites of toxics or hazardous wastes, dangerous cliffs, erosion prone soils, mine shafts, pipeline and overhead power line corridors, etc. that might limit management actions and access.
3. The District has not yet conducted a Drinking Water Source Assessment for Fall Creek since the Fall Creek property and water rights were acquired from California-American Water in 2008.

Objectives and policies listed in Section 3.3.1 address these data gaps.

3.3 Goals, objectives, and policies

The following goals summarized in Chapter 2 relate to hydrology, geomorphology and water quality. Following each goal, objectives and policies for achieving the goal are listed for District Lands (DL), District service area (DSA), and the larger San Lorenzo River watershed (SLR).

3.3.1 Objectives and policies for the primary goal (ecosystem health, water quality & reliable supply).

Primary goal: Manage District watershed lands to protect and enhance ecosystem health and water quality (WQ, EH, while managing District water sources for reliable supply in perpetuity (WS).

Objectives and policies for the primary goal are listed first for District lands (DL), then for the District Service Area (DSA), and finally for the larger San Lorenzo River watershed (SLR). Each objective and policy is identified by its prefix and area ID (DL, DSA, and SLR), and numbered.

? The icon, shown to the left, flags objectives and policies that are aimed at addressing the data gaps acknowledged in Part I and in paragraph 4.1.

All primary goal objectives and policies relating to water quality are identified by the prefix “WQ,” and all relating to water supply are identified by the prefix “WS.” (See Chapter 4, Biotic Resources for primary goal objectives and policies that apply to ecosystem health, prefix “EH”).

3.3.1.1 District lands (DL) objectives and policies

1. **Objective WQ1-DL** Protect and enhance surface water and groundwater quality on District lands consistent with local, state and federal regulations.

Policy WQ1-DL1 Avoid disturbance within, avoid activities within, and monitor and control feral pig rooting within the High Water Quality Vulnerability Zone (Source Water & Wellhead Protection Program) to reduce the possibility of negative water quality impacts. When feasible, maintain a 300-foot disturbance-free buffer around all waterbodies and streams.

Policy WQ1-DL2 Minimize nutrient loading to the water supply.

Policy WQ1-DL3 Minimize the risk of metals leaching to waterbodies and prohibit dumping of metals within the watershed.

Policy WQ1-DL4 Minimize the introduction of disinfection bi-products (DBPs) to the water supply by controlling sediment sources.

Policy WQ1-DL5 Minimize the potential for hazardous materials spills into the water supply by controlling their use and transport within the watershed.

Policy WQ1-DL6 Minimize the introduction of pathogens to the water supply.

Policy WQ1-DL7 Reduce to the maximum extent feasible the introduction of herbicides, pesticides and chemicals into the water supply by minimizing and controlling the use of these constituents, implementing alternative methods for pest control, and by controlling chemical use and requiring that nontoxic, non-persistent alternatives be used where practical.

Policy WQ1-DL8 Minimize aerial broadcast spraying of chemical herbicides and pesticides as a means of vegetation management and pest control.

Policy WQ1-DL9 Protect to the maximum feasible extent the primary recharge areas on District land to prevent contamination.

? **Policy WQ1-DL10** Map sites of toxics or hazardous wastes, dangerous cliffs, erosion prone soils, mine shafts, pipeline and overhead power line corridors, etc. that might limit management actions and access.

2. Objective WQ2-DL Control hydrologic impacts, erosion, and sedimentation on District lands from roads, trails, and rights-of-way.

? **Policy WQ2-DL1** Survey, map, and assess the existing road system throughout District watershed land holdings.

Policy WQ2-DL2 Minimize the construction of new roads and trails.

Policy WQ2-DL3 Minimize and where possible restrict new easements and rights of way through the watershed land to areas of low vulnerability. Allow only existing uses, those within existing alignments, or those which do not pose a threat to water quality.

Policy WQ2-DL4 Maintain and monitor existing roads on District lands for erosion control, runoff and sediment.

Policy WQ2-DL5 Use best management practices to control the effects of erosion and sediment transport from District roads.

Policy WQ2-DL6 Where possible prohibit the creation of impervious surfaces on District watershed lands; implement BMPs to mitigate impacts of impervious surface runoff.

Policy WQ2-DL7 Implement BMPs to reduce vehicle-related contaminants in runoff from District roads, parking lots, maintenance facilities, and other sources.

3. Objective WQ3-DL Prevent or mitigate to the level of insignificance non-point source pollution from District land use.

Policy WQ3-DL1 Minimize, and where possible prohibit, land uses and activities that have the potential to cause erosion, sediment generation, and storm water runoff.

Policy WQ3-DL2 Encourage the purchase or acquisition of watershed lands that are critical to District water quality, supply, and operations.

Policy WQ3-DL3 Continue the prohibition of commercial timber harvesting on District lands.

Policy WQ3-DL4 Actively participate in local and regional government planning processes to keep abreast of new projects that may affect District lands and water quality.

? **Policy WQ3-DL5** Conduct a Drinking Water Source Assessment for all District water sources, in a timely fashion, including newly acquired surface water sources.

4. Objective WQ4-DL Protect riparian areas and stream channels on District lands.

Policy WQ4-DL1 Maintain or enhance channel stability to reduce bank erosion. Incorporate large woody material into stream bank protection projects, where appropriate.

Policy WQ4-DL2 Prohibit unauthorized fill or excavation activities in riparian zones. Achieve regulatory compliance for maintenance activities within riparian areas.

Policy WQ4-DL3 Retain, where feasible, large woody material in streams on District lands.

Policy WQ4-DL4 When bridges require replacement, use free-span designs with increased flow capacity to allow for passage of large woody material during flood events. Where bridges are not economically feasible on watercourse crossings, use appropriately sized culverts designed to accommodate 100-year storm events.

Policy WQ4-DL5 Manage forests on District watershed lands toward old growth characteristics, to maintain cool stream temperatures and provide natural water filtration.

Policy WQ4-DL6 Survey District lands to identify, monitor, and minimize feral pig disturbance.

5. Objective WQ5-DL Control and enforce restrictions on public access to District lands.

Policy WQ5-DL1 Strictly control public access to District lands through use of fencing, signs and boundary markers, security cameras, and through other public outreach efforts.

Policy WQ5-DL2 Actively enforce penalties and other standard enforcement procedures on activities on District lands that adversely affect water quality.

6. Objective WQ6-DL Monitor source water quality on District lands.

Policy WQ6-DL1 Routinely monitor upstream land uses and District source water quality to detect any decrease in water quality from sediment, nutrients, and pathogens from such activities.

7. Objective WQ7-DL Reduce the risk to water quality and public safety associated with seismic and geologic hazards.

Policy WQ7-DL1 Avoid construction of facilities in active fault zones and traces, where feasible.

Policy WQ7-DL2 Avoid construction or other disturbances in known dormant landslides, on slopes greater than 30 percent, and repeatedly used debris flow run-out tracks without proper engineering.

Policy WQ7-DL3 Inspect facilities and utilities near active landslide areas and fault traces following earthquakes and slope failures to assess their stability and integrity, and complete repairs or further monitoring as needed to prevent geohazards.

Policy WQ7-DL4 Require adequate seismic and static geohazards engineering studies for proposed facilities, infrastructure, and utilities easements within the watershed.

Policy WQ7-DL5 Require that utility pipelines within the watershed meet current seismic standards.

8. Objective WS1-DL Increase groundwater storage of aquifers located below District lands.

Policy WS1-DL1 Protect critical recharge areas on District lands through land conservation.

Policy WS1-DL2 Maintain groundwater recharge areas on District land in pristine condition to prevent soil compaction.

9. Objective WS2-DL Maintain water supply by reducing risks to water quality.

Policy WS2-DL1 Require that all reclaimed water used in the District service area meet Department of Health Services (DHS)/Regional Water Quality Control Board (RWQCB) requirements.

10. Objective WS3-DL Maintain sufficient flow in District water supply streams to protect aquatic resources.

Policy WS3-DL1 Study methods of monitoring flows in District water supply streams especially in critical times of the year.

? Policy WS3-DL1 Study the feasibility of preparing a habitat conservation plan (HCP) for District waters diversions that potentially impact Endangered Species Act listed aquatic species.

? Policy WS3-DL2 Study methods of monitoring flows in District water supply streams, especially in critical times of the year for aquatic resources.

11. Objective WS4-DL Balance ecosystem health and water quality with reliable supply.

Policy WS4-DL1 Identify and use measurable criteria to assess ecosystem health, water quality and supply (See also Chapter 8, Watershed Administration, Objective RR1).

12. Objective WS5-DL Strive for conjunctive water use.

Policy WS5-DL1 Maintain and enhance conjunctive-use of water from District water sources to enable reliance on groundwater storage during drought.

3.3.1.2 District service area (DSA) objectives and policies

1. Objective WQ1-DSA Support the protection and enhancement of surface water and groundwater quality throughout the District service area consistent with state and federal regulations.

Policy WQ1- DSA1 Support regulatory efforts to minimize nutrient loading to the water supply.

Policy WQ1- DSA5 Support regulatory efforts to reduce the potential for hazardous materials spills into the water supply by controlling their use and transport within the District service area.

Policy WQ1- DSA6 Support regulatory efforts to minimize the introduction of pathogens to the water supply.

Policy WQ1- DSA7 Support regulatory efforts to minimize and control the use of pesticides and herbicides, implement alternative methods for pest control, and require that nontoxic, non-persistent alternatives be used where practical.

Policy WQ1- DSA8 Support regulatory efforts to restrict aerial broadcast spraying of chemical pesticides as a means of vegetation management and pest control.

Policy WQ1-DSA9 Publicize District policies and, within the District's legal authority, establish ordinances, as appropriate, to protect and enhance ecosystem health and water quality within District boundaries.

2. Objective WQ2-DSA Support the reduction of hydrologic impacts, erosion, and sedimentation from roads, trails, and rights-of-way throughout the District service area consistent with federal, state, and county regulations.

Policy WQ2-DSA1 Participate in the review of proposed projects in the District service area to minimize, and where possible, to prohibit the construction of new roads and trails.

3. Objective WQ3-DSA Support reduction and mitigation of non-point source pollution from land use within the District service area consistent with federal, state, and county regulation.

Policy WQ3-DSA1 Participate, as appropriate, in the review of projects within the District service area to mitigate, and where possible, to prohibit, activities that have the potential to cause erosion, sedimentation, and storm water runoff.

Policy WQ3-DSA2 Encourage through public outreach and support of federal, state, and county agencies, the use of erosion control best management practices (BMPs) to reduce soil erosion from pastures, corrals, and livestock paddocks.

4. Objective WQ4-DSA Support the protection of riparian areas and stream channels within the District service area consistent with federal, state, and county regulations.

Policy WQ4-DSA1 Participate in the review of projects within the District services area to maintain or improve channel stability and reduce bank erosion.

Policy WQ4-DSA2 Proactively engage with regulatory agencies to prohibit the unauthorized fill or excavation activities in riparian zones in the District service area.

Policy WQ4-DSA3 Use best management practices for District maintenance activities within riparian areas of the District service area.

Policy WQ4-DSA4 Encourage through public outreach the retention of large woody material in streams throughout the District service area.

Policy WQ4-DSA5 When bridges require replacement in the District service area, proactively engage with regulatory agencies to require use of free-span designs with increased flow capacity to allow for passage of large woody material.

Policy WQ4-DSA6 Use public outreach to encourage retention of conifer and deciduous riparian forests in riparian corridors.

Policy WQ4-DSA7 Collaborate with State Parks and other land owners to develop a feral pig eradication program incorporating the District service area.

5. Objective WS1-DSA Support minimized water use within the District service area through conservation and demand-management.

Policy WS1-DSA1 Implement incentive-based programs to promote water use efficiency.

Policy WS1-DSA2 Require conservation practices, where appropriate, to minimize water use within the District service area.

Policy WS1-DSA3 Use public outreach to educate District customers about water-saving landscape practices and indoor usage.

Policy WS1-DSA4 Encourage the use of reclaimed water, where appropriate, to minimize water use within the watershed.

6. Objective WS2-DSA Protect and enhance the water yield of the watershed above District surface water intakes and groundwater recharge areas.

Policy WS2-DSA1 Participate in the public review of any proposed project that could potentially impact the water yield of District supply sources, seeking to prohibit the project or mitigate the impacts to a degree of insignificance.

Policy WS2-DSA2 Within the District's legal authority, establish ordinances to apply within District boundaries, as appropriate, to protect water yield of District surface water sources.

3.3.1.3 Objectives and policies for the greater San Lorenzo River watershed (SLR)

1. Objective WQ1-SLR Contribute to the protection and enhancement of surface water and groundwater quality in the San Lorenzo River watershed consistent with state and federal regulations.

Policy WQ1- SLR1 Use public outreach and coordinate with other agencies to minimize nutrient loading to the water supply in the San Lorenzo River watershed.

- Policy WQ1-SLR 2** Use public outreach and coordinate with other agencies to minimize the risk of metals leaching to waterbodies and prohibit dumping of metals within the San Lorenzo River watershed.
- Policy WQ1-SLR 3** Use public outreach and coordinate with other agencies to prevent the introduction of asbestos fibers into the water supply of the San Lorenzo River watershed.
- Policy WQ1-SLR 4** Use public outreach and coordinate with other agencies to reduce the potential for hazardous materials spills into the water supply by controlling their use and transport within the San Lorenzo River watershed.
- Policy WQ1-SLR 5** Use public outreach and coordinate with other agencies to minimize the introduction of pathogens to the water supply of the San Lorenzo River watershed.
- Policy WQ1-SLR 6** Use public outreach and coordinate with other agencies to reduce the introduction of pesticides and chemicals into the water supply of the San Lorenzo River watershed.
- Policy WQ1-SLR 7** Use public outreach and coordinate with other agencies to restrict aerial broadcast spraying of chemical pesticides as a means of vegetation management and pest control in the San Lorenzo River watershed.
- 2. Objective WQ2-SLR** Contribute to the reduction of hydrologic impacts, erosion, and sedimentation from roads, trails, and rights-of-way in the San Lorenzo River watershed.
- Policy WQ2-SLR1** Use public outreach and participate in the review of proposed projects in the San Lorenzo River watershed to minimize, and where possible prohibit, the construction of new roads and trails.
- 3. Objective WQ3-SLR** Support the reduction and mitigation of non-point source pollution from land use within the San Lorenzo River watershed.
- Policy WQ3-SLR1** Encourage through public outreach the preservation and protection of stream channels and banks in the San Lorenzo River watershed to protect water quality by maintaining or improving channel stability and reducing bank erosion.
- Policy WQ3-SLR2** Discourage through public outreach the unauthorized fill or excavation activities in riparian zones in the San Lorenzo River watershed.
- Policy WQ3-SLR3** Encourage through public outreach the retention of large woody material in streams throughout the San Lorenzo River watershed.
- Policy WQ3-SLR4** When bridges require replacement in the San Lorenzo River watershed, participate in the public review process to require use of free-span designs with increased flow capacity to allow for passage of large woody material.
- Policy WQ3-SLR5** Use public outreach to encourage retention of conifer and deciduous riparian forest stands in riparian corridors throughout the San Lorenzo River watershed.

4. Objective WQ4-SLR Support protection of riparian areas and stream channels where possible within the San Lorenzo River watershed.

Policy WQ4-SLR1 Implement a public outreach program to educate agencies and private landowners throughout the San Lorenzo River watershed about the benefits of large woody material.

Policy WQ4-SLR3 Collaborate with fire management agencies to encourage best management practices to prevent erosion.

Policy WQ4-SLR4 Collaborate with adjacent jurisdictions to limit development within the riparian corridor to minimize adverse effects to water quality.

Policy WQ4-SLR5 Collaborate with State Parks and other land owners to develop a feral pig eradication program in the greater watershed.

5. Objective WS1-SLR Increase groundwater storage of aquifers used by District wells.

Policy WS1-SLR1 Actively participate in partnerships with the County and other water agencies to increase opportunities for integrated water resource management.

CHAPTER 4: BIOTIC RESOURCES

4.0 Existing conditions summary

The District owns a remarkably diverse assemblage of watershed lands, from the region's emblematic redwood forests on Ben Lomond Mountain to the rare sandhills and sand parklands, found nowhere else in the world. Redwood forests surround the District's surface water sources, while the sandhills and sand parkland communities are found in and around the District's groundwater sources. At higher elevations, redwoods transition into mixed evergreen forests, and chaparral plant communities commonly dominate the drier south-facing slopes. Other notable plant communities include riparian woodland, oak woodland, and grassland.

Since most District-owned lands have not been biologically surveyed, assessment of its biotic resources has relied on observations of staff, consultants, and findings of regional studies. Human disturbance over the last 200 years has created significant, chronic impacts to plant communities, wildlife and fisheries habitats. These impacts have, in turn, affected the natural processes that are fundamental to ecosystem function, including the hydrologic or water cycle, the carbon cycle, nutrient cycle, energy cycle, and ecological community succession.

Stands of second growth redwood forests on District land are old enough to show some old-growth characteristics, such as flat tops, snags and downed logs. Late seral-stage forests such as these provide valuable ecosystem services, including carbon sequestration, provision of clean water, and habitat for many species of mammals, birds, reptiles, amphibians, and fish.

Sudden oak death is present to some degree on District watershed lands. Invasive exotic plants, including French broom, eucalyptus and acacia, and exotic animal species such as feral pigs, are an acknowledged problem, especially on the District's Olympia watershed property.

The District acknowledges the need to control of invasive exotic species, and has periodically engaged in projects to control them, especially at the Olympia watershed property. Staff is involved in ongoing consultations with sandhills and sand parkland ecologist Jodi McGraw, invasive exotic plant eradication expert Ken Moore, and the Zayante Fire Department chief. As a result, staff secured grant funding in 2009 to control invasive species on the Olympia watershed property from the state Weed Management Area and from the USFWS.

The San Lorenzo River and its estuary are inhabited by at least 25 different species of native fish. Both coho salmon and steelhead were once common and widespread throughout Pacific coastal streams. Both species have declined; coho precipitously. In 1997, steelhead on the central coast were listed as threatened under the federal Endangered Species Act (ESA), and in 2005, coho salmon on the central coast were listed as endangered. Stream sedimentation, lack of large woody debris, water diversions, and barriers to stream passage have all contributed to the decline of these species (NOAA, 2010).

The District acknowledges that its water diversions have an impact on aquatic habitat and species, though the extent of that impact remains unknown.

4.1 Regulatory constraints

For management actions involving the potential take of federally listed species under the ESA, the USFWS or the NMFS determines conditions under which an incidental take permit could be issued.

The District's water diversions are restricted by the State Water Resources Control Board, with input from the California Department of Fish and Game.

The County Sensitive Habitat Protection Ordinance minimizes the disturbance of biotic communities, which are rare, unique or valuable due to their role in an ecosystem and could be disturbed or degraded by human activity. The Sensitive Habitat Protection Ordinance requires that biotic assessments be prepared for all development activities in areas of biotic concern, identified on County maps or by personnel.

4.2 Acknowledged data gaps

As called out in Part I: Existing Conditions Report (2009), the District has acknowledged a list of data gaps that it must address in order to have an accurate assessment of the conditions of its watershed resources.

 **Part I identified each of these data gaps with the icon shown to the left.**

Following is a numbered list of all the data gaps called out in Part I that apply to biotic resources. Each is followed by a list of policies aimed at addressing that data gap:

1. The District has not yet mapped and analyzed historical and current vegetation, natural and induced succession, current seral stages of the vegetation or sensitivities to pollution and climate change.
2. The District has not surveyed, mapped and analyzed special-status species and natural communities, including surveys, California Natural Diversity Database mapping, conservation status, sensitivities to potential management actions and climate change or values to the District and public.
3. The District has not conducted a wildlife habitat analysis, using the California Wildlife Habitat Relationships System, on its watershed lands.
4. The District has not identified, mapped, and analyzed species indicating watershed ecosystem health, with surveys, sensitivities to potential management actions and climate change.
5. The District has not fully analyzed the potential impacts of its water diversions at different times of the year on aquatic habitat and fisheries in its own streams and on the larger San Lorenzo River.
6. The District has not mapped and fully documented the impacts to biotic resources of recreational use on District lands.
7. The District has not surveyed and mapped invasive exotic species on District lands.

Objectives and policies listed in Section 4.3.1 address these data gaps.

4.3 Goals, objectives, and policies

The following goals summarized in Chapter 2 relate to biotic resources. Following each goal, objectives and policies for achieving the goal are listed for District Lands (DL), District service area (DSA), and the larger San Lorenzo River watershed (SLR).

4.3.1 Objectives and policies for the primary goal (ecosystem health, water quality and reliable supply)

Primary goal: *Manage District watershed lands to protect and enhance ecosystem health and water quality (WQ, EH), while managing District water sources for reliable supply in perpetuity (WS).*

All primary goal objectives and policies relating to ecosystem health are identified by the prefix “EH.” (For primary goal objectives and policies relating to water quality, “WQ,” and water supply “WS,” see Chapter 3, Hydrology, Geomorphology and Water Quality.)

Objectives and policies for the primary goal are listed first for District lands (DL), then for the District Service Area (DSA), and finally for the larger San Lorenzo River watershed (SLR). Each objective and policy is identified by its prefix and area ID (DL, DSA, and SLR), and numbered.

? The icon, shown to the left, flags objectives and policies that are aimed at addressing the data gaps acknowledged in Part I and in paragraph 4.2.

4.3.1.1 District lands (DL) objectives and policies

1. **Objective EH1-DL** Control, and where possible, eradicate invasive exotic plant species on District lands.

? **Policy EH1-DL1** Survey District lands to identify invasive exotic plant species.

Policy EH1-DL2 Prohibit the planting of invasive exotic plant species.

Policy EH1-DL3 Plan and implement appropriate methods to remove and dispose of invasive exotic plant species to control their spread.

Policy EH1-DL4 Control, and where possible eradicate, invasive exotic plant species using appropriate practices.

Policy EH1-DL5 Survey District lands to determine the intensity and impacts of Sudden Oak Death (*P. ramorum*) on each site.

Policy EH1-DL6 Require District employees, contractors, and consultants to utilize appropriate sanitation practices to control the movement of *P. ramorum*, especially when travelling from heavily-infected sites or onto lightly or uninfected sites.

2. **Objective EH2-DL** Restrict, and where feasible, exclude use of herbicides and pesticides on District lands.

Policy EH2-DL1 Restrict, and where feasible, exclude, the use of chemical applications (including pesticides or other poisons) that adversely affect water quality, accumulate in the food chain, and/or have adverse effects on ecological function and reproductive success of wildlife and fish. Require that the most appropriate method of pest control be used to achieve desired objectives from a range of

treatment alternatives.

3. Objective EH3-DL Protect, preserve, and where possible, enhance and restore special status plant communities on District lands.

? **Policy EH3-DL1** Survey District lands to identify special status plant communities.

? **Policy EH3-DL2** Encourage and allow investigations of special status plants and communities to further District understanding of existing vegetation and its conditions.

Policy EH3-DL3 Survey District lands to identify riparian communities.

Policy EH3-DL4 Manage woodlands and forests toward old-growth characteristics.

Policy EH3-DL5 Give priority to restoring degraded habitat rather than creating new habitat.

Policy EH3-DL6 Use controlled burns, where appropriate, to restore natural disturbance regimes required to maintain sensitive plant communities and the natural mosaic of vegetation with the landscape.

Policy EH3-DL7 Require a site-specific analysis prior to proposed facility, infrastructure, and construction projects to determine the presence of sensitive vegetation resources and the potential effects of the activity on the resource; conduct the analysis in accordance with all applicable State and Federal laws, statutes, and guidelines.

? **Policy EH3-DL8** Survey and map current vegetation noting natural and induced succession, current seral stages, and sensitivities to pollution and climate change.

Policy EH3-DL9 Consider impacts to wildlife in selection of fencing to protect special status plant communities.

4. Objective EH4-DL Protect, preserve, and where possible, enhance and restore significant wildlife resources on District lands, including biodiversity and genetic integrity, where possible.

? **Policy EH4-DL1** Survey District lands to identify and protect host plant communities supporting populations of state and federally listed animals, using sound scientific methods.

Policy EH4-DL2 Survey District lands to identify, map and protect existing native wildlife populations and their habitats. Include indicator species of watershed ecosystem health and assess sensitivities to potential management actions and climate change.

? **Policy EH4-DL3** Conduct a wildlife habitat analysis, using the California Wildlife Habitat Relationships System.

Policy EH4-DL4 Survey District lands to identify and monitor important habitat features such as mature trees with cavities, downed trees, snags, rock outcrops, cliff ledges, and caves for wildlife use.

Policy EH4-DL5 Control, and where possible eradicate, exotic wildlife species, including harmful, feral, or introduced animals.

Policy EH4-DL6 To minimize human disturbance, restrict public access and control staff access to areas supporting sensitive wildlife and sensitive wildlife habitat. Consider impacts to wildlife that could result from fencing or other methods of restricting public access.

Policy EH4-DL7 Require a site-specific analysis prior to proposed facility and infrastructure projects and proposed construction projects to determine the presence of sensitive wildlife resources and the potential effects of the activity on the resource; conduct the analysis in accordance with all applicable state and federal laws, statutes, and guidelines.

? **Policy EH4-DL8** Survey District lands to identify wildlife corridors.

? **Policy EH4-DL9** Properly site infrastructure, facilities, and public access features to maintain landscape connectivity, and minimize fragmentation and degradation of wildlife habitat.

Policy EH4-DL10 Achieve appropriate compliance, when watershed activities and operations affect regulated and legally protected species, by implementing comprehensive wildlife protection programs (such as habitat conservation plans), obtaining appropriate permits, and/or establishing conservation easements.

? **Policy EH4-DL11** Encourage and allow investigations of wildlife, including the distribution and occurrence of special status species and their habitats.

? **Policy EH4-DL12** Monitor the short- and long-term effects of District wildlife management programs for relative effectiveness and benefit to ecological integrity.

5. Objective: EH5-DL Protect, preserve, and where possible, enhance and restore significant aquatic resources on District lands.

Policy EH5-DL1 Survey District lands to identify special status aquatic species.

Policy EH5-DL2 Survey District lands to identify and control populations of exotic aquatic species that threaten special status species.

Policy EH5-DL3 Where possible, restore healthy, diverse native riparian vegetation to provide shade and cover necessary for fish spawning, rearing, and feeding areas.

Policy EH5-DL4 Prohibit the introduction of chemicals (e.g., copper sulphate, chlorine, etc.) to streams to protect aquatic resources.

Policy EH5-DL5 Prohibit artificial stocking or other introduction of non-native fish into existing watershed aquatic habitat to conserve native biodiversity.

Policy EH5-DL6 Maintain, and where possible, restore existing large woody material in streams to enhance fish habitat.

? **Policy EH5-DL7** Identify potential adverse impacts to aquatic resources caused by District water diversions, and where possible, mitigate these impacts.

Policy EH5-DL8 Retain District ownership of watershed tracts of significant size for ecological value and as potential mitigation banking to address future Endangered Species Act issues.

Policy EH5-DL9 Study the feasibility of preparing a habitat conservation plan (HCP) for District water diversions that potentially impact Endangered Species Act listed aquatic species.

Policy EH5-DL10 Require a site-specific analysis prior to proposed facility, infrastructure and construction projects on District lands to determine the presence of sensitive aquatic resources and the potential effects of the project on aquatic resources; analysis shall be conducted in accordance with all applicable State and Federal laws, statutes, and guidelines.

Policy EH5-DL11 Prohibit land use activities near and disturbance of riparian corridors on District lands.

4.3.1.2 District Service Area (DSA) objectives and policies

1. Objective EH1-DSA Support the control and eradication of invasive exotic plant species within the District service area.

Policy EH1-DSA1 On District projects within the District service area, use appropriate methods/best management practices to remove and dispose of invasive exotic plant species to control their spread.

Policy EH1-DSA2 Encourage through public outreach the control and eradication of invasive exotic plant species within the District service area.

Policy EH1-DSA3 Participate, where appropriate, in the review of proposed projects in the District service area to support control and eradication of invasive exotic plant species.

2. Objective EH2-DSA Support only minimal and restricted use of herbicides and pesticides in the District service area.

Policy EH2-DSA1 On District projects within the District service area, minimize the use of herbicides and pesticides.

Policy EH2-DSA2 Encourage through public outreach the minimal and restricted use of herbicides and pesticides in the District service area.

Policy EH2-DSA3 Participate, as appropriate, in the review of proposed projects in the District service area to minimize and restrict the use of herbicides and pesticides.

3. Objective EH3-DSA Support the protection, preservation, and where possible, the enhancement and restoration of special status plant communities within the District service area.

Policy EH3-DSA1 On District projects within the District service area, fully comply with federal, state, and local regulations to protect special status plant communities.

Policy EH3-DSA2 Encourage through public outreach the protection, preservation, and where possible, the enhancement of special status plant communities within the District service area.

Policy EH3-DSA3 Participate, as appropriate, in the review of proposed projects, in the District service area to increase protection of special status plant communities.

4. Objective EH4-DSA Support the protection, preservation, and where possible, the enhancement and restoration of significant wildlife resources in the District service area.

Policy EH4-DSA1 On District projects within the District service area, use appropriate methods/best management practices to protect and preserve significant wildlife resources.

Policy EH4-DSA2 Encourage through public outreach the protection and restoration of significant wildlife resources within the District service area.

Policy EH4-DSA3 Participate, as appropriate, in the review of proposed projects in the District service area, to increase protection and, where possible, the restoration of significant wildlife resources.

5. Objective: EH5-DSA Support the protection, preservation, and where possible, the enhancement and restoration of significant aquatic resources in the District service area.

Policy EH5-DSA1 On District projects within the District service area, use appropriate methods/best management practices to protect significant aquatic resources.

Policy EH5-DSA2 Encourage, through public outreach, the protection, preservation, and where possible, the enhancement and restoration of significant aquatic resources within the District service area.

Policy EH5-DSA3 Participate, as appropriate, in the review of proposed projects in the District service area to increase protection of significant aquatic resources.

4.3.1.3 San Lorenzo River watershed (SLR) objectives and policies

1. Objective EH1-SLR Contribute to the control and eradication of invasive exotic plant species within the greater San Lorenzo River watershed.

Policy EH1-SLR1 Participate, as appropriate, in the review of proposed projects within the greater watershed to increase the control and eradication of invasive exotic plant species.

Policy EH1-SLR2 Work collaboratively with other agencies and citizens groups within the greater watershed to control and eradicate invasive exotic plant species.

2. Objective EH2-SLR Contribute to the control of herbicide and pesticide use in the greater San Lorenzo River watershed.

Policy EH2-SLR1 Participate, as appropriate in the review of proposed projects within the greater watershed to restrict the use of herbicides and pesticides.

Policy EH2-SLR2 Work collaboratively with other agencies and citizens groups within the greater watershed to control and eradicate invasive exotic plant species.

3. Objective EH3-SLR Contribute to the protection, preservation, and where possible the enhancement and restoration of special status plant communities within the greater San Lorenzo River watershed.

Policy EH3-SLR1 Participate, as appropriate, in the review of proposed projects within the greater watershed to increase protection of special status plant communities.

Policy EH3-SLR2 Work collaboratively with other agencies and citizens groups within the greater watershed to increase protection of special status plant communities.

4. Objective EH4-SLR Contribute to the protection, conservation, and where possible, the enhancement and restoration of significant wildlife resources in the greater San Lorenzo River watershed.

Policy EH4-SLR1 Participate, as appropriate, in the review of proposed projects within the greater watershed to increase protection and, where possible, restoration of significant wildlife resources.

Policy EH4-SLR2 Work collaboratively with other agencies and citizens groups within the greater watershed to increase protection and, where possible, restoration significant wildlife resources.

5. Objective: EH5-SLR Contribute to the protection, preservation, and where possible, the enhancement and restoration of significant aquatic resources in the greater San Lorenzo River watershed.

? Policy EH5-SLR1 Work collaboratively with other agencies to protect, preserve, and where possible, to enhance aquatic habitat of streams in the hydrologic watershed.

? Policy EH5-SLR2 Work collaboratively with other agencies to seek grant funding for habitat enhancement and salmon and steelhead stream habitat improvement projects throughout the watershed.

? Policy EH5-SLR3 Work collaboratively with other water agencies to fund the monitoring of population trends in salmon and steelhead to assist in the success of recovery efforts under the Endangered Species Act.

Policy EH5-SLR4 Participate, as appropriate, in the review of proposed projects within the greater watershed to protect, preserve and where possible, to enhance and restore significant aquatic resources.

CHAPTER 5: FIRE MANAGEMENT

5.0 Existing conditions summary

This section summarizes the findings of Chapter 5, Fire Management in Part I: Existing Conditions Report.

5.0.1. Fire ecology

Fire is part of an important cycle of natural processes. Historic fire regimes of Native Americans included intentional burning. The San Lorenzo watershed contains substantial areas of fire-adapted vegetation, reported to burn at historical intervals of typically 40 to 80 years (Hecht and Kittleson, 1998). Fire suppression, the predominant management strategy in the San Lorenzo River watershed for the past century, is drastically altering the natural community structure of the rare sandhills plant communities, which feature many species adapted to recurring fire. In the absence of fire, the increased density of woody vegetation and accumulation of litter on the soil surface can eliminate species that require open conditions created and maintained by fire.

5.0.2 Fire vulnerability

Fire suppression has increased the chance of a major fire in the San Lorenzo River watershed, which could seriously alter local surface hydrology and sedimentation. Recently, three major wildfires have occurred in Santa Cruz County, though not in the San Lorenzo River watershed. Both the 2008 Martin fire and the 2009 Lockheed fire occurred in adjacent watersheds. Under the right conditions, a similar watershed-scale fire could result in the San Lorenzo River watershed. Such a fire could impact watershed health and water quality from altered surface hydrology, increased sedimentation, chemical impacts from fire retardants, and habitat degradation.

Critical fire weather is concentrated in July through October. Drier inland areas are more prone to fire than moister coastal forests. Late seral stage redwood forests can resist the effects of all but the most intense wildfires. Redwoods are not fire dependent; that is, they can survive and regenerate without fire. Redwoods thrive in coastal areas with summer fog, which helps to lessen fire hazard.

The District's forested watershed lands have not been professionally assessed for fire hazard or for risk of ignition. Invasive populations of French broom and acacia, especially on the District-owned Olympia watershed property, have increased the risk of catastrophic fire. CalFire, the state agency that manages wildfire, has rated most land in the District's service area on the west side of the San Lorenzo River as high fire hazard.

5.0.3. Fire management

The District currently has no formal fire management program for District lands. The District's existing policies of controlling invasive exotic species and managing its forest lands toward old growth contribute toward reducing the risk of a catastrophic fire, and the potential impacts to water quality in the aftermath of a wildfire. CalFire currently has a regional fire plan which could be updated to incorporate information about District lands. Following recent major fires in the county, CalFire has initiated the Community Wildfire Protection Plan process.

To protect District resources, fire management on District-owned lands needs to be tailored to the different plant communities, slopes, slope aspects, neighboring properties, and soil types. For its forested watershed property, the scientific literature as reviewed by Noss and others (2000) clearly demonstrates that older forest stands are less at risk than younger stands dominated by fine fuels and open canopies. This evidence supports the District's ongoing managing strategy of managing its forests toward old-growth.

Existing stands of invasive exotic species have not been surveyed and mapped on District properties. The most serious infestations of invasive exotic species, especially acacia and French broom, occur on the District's Olympia watershed property, which is also home to the Federally endangered sandhills and sand parkland communities. The combination of invasive exotic species and endangered species complicates fire management planning, yet the benefits of fire management are clear, both in terms of reducing the fuel load and in terms of enhancing the native habitats.

McGraw (2004) describes goals and aspects of fire management specific to the unique sandhills and sand parkland ecosystems:

The goal of fire management in the sandhills is to reverse the negative impacts of fire suppression and thereby enhance the natural community structure and facilitate population growth and persistence of the endangered species in the sandhills.

Managing sandhills habitat with fire involves the use of prescription burning whereby fires are deliberately ignited, actively monitored and managed, and extinguished following a specific burn plan. Developed well in advance of fire management, a burn plan details the management goals of the treatment, provides a thorough description of the treatment area, determines the constraints of burn treatments, and provides a detailed plan for the burn including thorough safety information as well as the burn prescription - a specific statement of the desired fire behavior, smoke production, and environmental conditions that will be desired for safe and effective execution of the treatment.

5.1 Regulatory constraints

With regards to the use of prescribed fire, potential benefits and risks, fire management boundaries, and potential alternatives would require consultation from experts in sandhills ecology and invasive species eradication.

Prescribed burning or other alternative methods of reducing fuel loads and eradicating invasive exotic species at the Olympia watershed property requires at least a consultation with the USFWS or an incidental take permit, or the extension of an existing incidental take permit to include the property.

On all areas of District property, burning requires a permit from CalFire, as well as a smoke permit from the California Air Quality Control Board.

5.2 Acknowledged data gaps

As called out in Part I: Existing Conditions Report (2009), the District has acknowledged a list of data gaps that it must address in order to have an accurate assessment of the conditions of its watershed resources.

? Part I identified each of these data gaps with the icon shown to the left.

Following is a numbered list of all the data gaps called out in Part I that apply to fire management.

1. The District has not completely mapped its road system, emergency access points, or fire-fighting emergency fuel breaks and facilities. While emergency response procedures are generally defined for District operations, there is no formalized fire management plan.
2. The District has not yet mapped and analyzed fire hazards more precisely than CalFire's broad maps, in order to conduct a wildfire risk analysis and develop specific emergency response readiness for fire.

Objectives and policies listed in Section 5.3.1 address these data gaps.

5.3 Goals, objectives, and policies

The following goals summarized in Chapter 2 relate to fire, fire hazard assessment, and fire risk. Following each goal, objectives and policies for achieving the goal are listed for District Lands (DL), District service area (DSA), and the larger San Lorenzo River watershed (SLR).

5.3.1 Objectives and policies for the secondary goal (protection from fire)

Secondary goal: Protect the watershed, adjacent urban areas, and the public from fire and other hazards (FH).

All objectives and policies relating to fire are identified by the prefix "FH."

Objectives and policies for this secondary goal are listed first for District lands (DL), then for the District Service Area (DSA), and finally for the larger San Lorenzo River watershed (SLR). Each objective and policy is identified by its prefix and area ID (DL, DSA, and SLR), and numbered.

? The icon, shown to the left, flags objectives and policies that are aimed at addressing the data gaps acknowledged in Part I and in paragraph 5.1.

5.3.1.1 District lands (DL) objectives and policies

1. **Objective FH1-DL** Reduce the risk of catastrophic wildfire to persons, structures, natural and cultural resources on District lands.

? Policy FH1-DL1 Identify and map fire hazards on District lands and conduct a wildfire risk analysis.

? Policy FHI-DL2 Develop a specific emergency response readiness plan for fire.

? Policy FH1-DL3 Map the road system on District lands, including emergency access points, fire-fighting emergency fuel breaks and facilities.

Policy FH1-DL4 Suppress fires on District lands that threaten life, private property, and/or public safety.

Policy FH1-DL5 Maintain existing road infrastructure to allow fire personnel to effectively respond to and suppress fires on District lands.

Policy FH1-DL6 Provide staff training to adequately detect and report on fires on District lands.

Policy FH1-DL7 Coordinate with local fire protection agencies and provide tours of District lands and facilities to familiarize them and facilitate fire suppression activities.

Policy FH1-DL8 Remove standing Sudden Oak Death-killed tanoaks in locations where they pose an elevated fire risk.

2. Objective FH2-DL Manage fuels on District land to reduce fire hazard.

Policy FH1-DL1 Create a defensible space around structures, natural and cultural resources on District lands.

Policy FH2-DL2 On District lands, use a combination of shaded fuel breaks, mechanical manipulation, and other methods, as appropriate, to control and manage fuels.

Policy FH2-DL3 Require that fuel treatment activities be conducted to retain native plants and habitat for animals to the greatest extent possible.

Policy FH2-DL4 Focus fuel management activities adjacent to developed areas, District facilities and improvements, sensitive natural and cultural resources, major egress and emergency ingress routes, areas of crown fire potential, and potential and existing fuel breaks.

Policy FH2-DL5 Control the spread of broom and other invasive exotic plant species, which are known to increase fire hazard, and eventually eradicate them from District lands.

3. Objective FH3-DL Reduce the potential for fire ignitions on District lands.

Policy FH3-DL1 Prohibit on District lands smoking, fireworks, and other activities likely to cause a fire, as well as equipment that has not been properly equipped, serviced, and maintained.

Policy FH3-DL2 Require all persons permitted to enter District lands to observe fire hazard reduction activities, and provide information on all permits about District fire safety requirements.

Policy FH3-DL5 Prohibit unsupervised access to District lands except as expressly authorized and permitted by the District, in order to reduce the risk of fire ignitions.

Policy FH3-DL6 Restrict access to District lands, implement strict fire hazard reduction practices, and initiate public information processes during periods of extreme fire hazard.

4. Objective FH4-DL Coordinate and monitor fire management activities that reduce fire hazard on and adjacent to District lands.

Policy FH4-DL1 Coordinate fire management activities that reduce fire hazard on and adjacent to District lands with CalFire and other mutual-aid fire protection agencies.

Policy FH4-DL2 Monitor the effects of fire management activities that reduce fire hazard on and adjacent to District lands.

Policy FH4-DL3 Adhere to District emergency response procedures during emergency wildfire situations.

Policy FH4-DL4 Work with neighbors who have homes within 100 feet of District lands to ensure that their properties are fire safe and that ladder fuels have been minimized.

5. Objective FH5-DL Reduce the risk of post-fire impacts on District lands.

Policy FH5-DL1 Coordinate with other agencies to collect information about minimizing post-fire impacts.

Policy FH5-DL2 Develop a post-fire response plan to reduce the potential impacts following a large-scale fire on District lands

5.3.1.2 District service area (DSA) objectives and policies

1. Objective FH1-DSA Support activities that reduce the risk of catastrophic wildfire to persons, structures and cultural resources in the District service area.

Policy FH1-DSA1 Use public outreach to encourage the creation of defensible space for structures in the District service area.

Policy FH1-DSA2 Use public outreach to encourage the control and eradication of French broom and other exotic invasive plant species within the District service area.

2. Objective FH2-DSA Monitor fire management activities that reduce fire hazard in the District service area.

Policy FH2-DSA1 Coordinate with CalFire and other mutual-aid fire protection agencies to monitor fire management activities that reduce fire hazard in the District service area.

5.3.1.3 San Lorenzo River watershed (SLR) objectives and policies

1. Objective FH1-SLR Support activities that reduce the risk of catastrophic wildfire to persons, structures and cultural resources in the greater watershed

Policy FH1-SLR1 Use public outreach and work with other agencies and citizens groups to encourage the creating of defensible space for structures in the greater watershed.

Policy FH1-SLR2 Use public outreach and work with other agencies to encourage the control and eradication of French broom and other exotic invasive plant species within the greater watershed, in order to reduce fuel load.

2. Objective FH2-SLR Monitor fire management activities that reduce fire hazard in the greater San Lorenzo River watershed.

Policy FH2-SLR1 Monitor fire management activities that reduce fire hazard in the greater watershed with CalFire and other mutual-aid fire protection agencies

CHAPTER 6: RECREATIONAL, CULTURAL, HISTORICAL & EDUCATIONAL RESOURCES

6.0 Existing conditions summary

This section summarizes the findings of Part I: Existing Conditions Report, Chapter 6: Recreational, cultural and historical, and educational resources,

6.0.1 Recreational resources

One of the District's original 1985 watershed goals was to "allow recreational uses of watershed lands consistent with a high level of environmental protection." However, the District has not historically authorized public recreational use of any kind on its watershed property, with one exception. The District's agreement with the Santa Cruz County Horseman's Association (SCCHA) allows limited use of parts of the Olympia wellfield property on marked trails. This agreement calls for an annual joint inspection of the entire trail network, but this has not occurred in recent years. The District has worked to minimize trespass and off-road use of District watershed lands. Still, there is ample evidence of illegal trespass and damage caused by recreational activities, especially off-road vehicle use and equestrian use on the Olympia wellfield property.

The District has contracted with a private security company to patrol watershed lands for trespass. Additional fencing and blocking of access with appropriate horse crossings is necessary to protect the Olympia Wellfield property on the ridge trail and adjacent to the old Olympia quarry. Research shows that among public water utilities that own watershed lands in the coast ranges of California, recreation is the predominant land use (Herbert, 2004). Public recreational access to the watershed largely determined the extent of public visibility and interest in the watershed (Herbert, 2004). Low-impact recreation may have a positive impact on protection of environmental resources, as long as it is accompanied by public outreach and education.

6.0.2 Cultural and historical resources

Some archeological evidence of the first known residents of the area is found throughout the San Lorenzo River watershed, though these resources have not been documented on District lands. The first residents of the San Lorenzo River watershed were the Ohlone Indians, who were nomadic hunters and gatherers.

Old logging equipment and large old-growth stumps are found throughout the watershed, evidence of the region's past.

Within District lands, especially on the newly acquired Felton watershed property, old limekilns and other artifacts provide historical evidence of a once thriving lime production industry. By 1878, Santa Cruz County supplied more than one-third of the state's lime production, mostly from quarries in the Felton and Santa Cruz areas.

The District has not documented or surveyed cultural and historical resources on District lands.

6.0.3 Educational resources

The San Lorenzo Valley has many educational resources, including UC Santa Cruz and San Jose State University with departments dedicated to environmental studies, watershed science, conservation biology, evolutionary biology, hydrology, and earth sciences. Other educational resources include the public libraries and the Boulder Creek Historical Society.

The District has sponsored and supported research by government agencies and academic researchers on District land. Research supports the District management of watershed lands and increases knowledge of sensitive species or habitat, including the sandhills and sand parkland ecological communities, fisheries, and wildlife habitat.

The Santa Cruz County Resource Conservation District provides workshops to increase environmental stewardship on private lands. The SCCRCD has an extensive list of publications addressing practical watershed management topics. It also hosts numerous workshops.

The District's Education Grant Program provides funding on a competitive basis for educational projects that enhance the understanding of the San Lorenzo River watershed environment or improve the watershed's environmental health. The District invites proposals from individuals, students, teachers, groups, and/or organizations for grant funding at levels set by the District board. The program gives the highest priority to projects that exhibit some or all of the following features:

- Education programs for school age children and/or adults related to the watershed, water resources, water conservation and impacts on the environment.
- Educational outreach to all watershed residents and visitors to the area.
- Enhancement of the public's awareness of issues affecting water resources and water quality within the San Lorenzo River Watershed.
- A direct and positive impact on the San Lorenzo River Watershed.

6.1 Regulatory constraints

Existence of sandhills and sand parkland habitat supporting federally endangered listed species requires the District to monitor activities to prevent unauthorized disturbance and illegal take under the ESA.

The District must ensure that it protects itself from liability issues stemming from public use or trespass on its properties.

Please refer to Part III: Implementation Plan, Appendix A for District rules and regulations that apply to District watershed property.

All policies labeled "DL" are intended to apply generally across all of the District's watershed lands, although District ordinances (Part III: Implementation Plan, Appendix A) may apply to specific pieces of property, as appropriate.



The icon, shown to the left, flags objectives and policies that are aimed at addressing the data gaps acknowledged in Part I: Existing Conditions and in paragraph 6.1 of this chapter.

6.2 Acknowledged data gaps

As called out in Part I: Existing Conditions Report (2009), the District has acknowledged a list of data gaps that it must address in order to have an accurate assessment of the conditions of its watershed resources.

? Part I identified each of these data gaps with the icon shown to the left.

Following is a numbered list of all the data gaps called out in Part I that apply to recreational, cultural, historical & educational resources.

1. The District has not marked or mapped trails authorized for use by the SCCHA, nor has it revisited the terms of the agreement with the SCCHA requiring trail maintenance.
2. The District has not fully assessed the impacts to biotic resources from recreational use on District lands.
3. The District has not mapped and analyzed potentially hazardous areas on its lands, such as sites of toxics or hazardous wastes, dangerous cliffs, erosion prone soils, mine shafts, pipelines, and overhead power lines.
4. The District has not identified, mapped and assessed the significance of the cultural and historical resources on its watershed land.

Policies to address these data gaps are listed in Section 6.3.1.

6.3 Naming conventions for goals, objectives and policies

Goals, objectives and policies relating to educational, recreational and scientific resources are identified by the prefix “ERS.” Goals, objectives and policies relating to cultural and historical resources are identified by the prefix “CH.” Goals, objectives and policies relating to increasing public awareness are identified by the prefix “PA”.

Objectives and policies for each goal are listed first for District lands (DL), then for the District Service Area (DSA), and finally for the larger San Lorenzo River watershed (SLR). Each objective and policy is identified by its prefix and area ID (DL, DSA, and SLR), and numbered.

6.4 Goals, objectives, and policies

This section lists the District’s goals, objectives, and policies that are applicable to management of its recreational, cultural, historical and educational resources.

6.4.1 Objectives and policies for secondary goal (overall for District lands)

Secondary goal: *Continue existing compatible uses and provide opportunities for educational, recreational, and scientific uses (ERS) on District watershed lands that do not compromise the District’s goals for water quality and watershed protection.*

1. **Objective ERS1-DL** Maintain and enforce a safety and security program for District lands.
Policy ERS1-DL1 Require that the District Board adopt an ordinance that defines acceptable and prohibited activities across all District watershed properties, as well as specific to each different property, as appropriate.

? **Policy ERS1-DL2** Identify and map potentially hazardous areas on District lands, such as sites of toxics or hazardous wastes, dangerous cliffs, erosion-prone soils, mine shafts, pipelines, and overhead power lines.

Policy ERS1-DL3 Require that new or expanded recreation activities on District lands address and accommodate public safety issues.

Policy ERS1-DL4 Strictly enforce, with cooperation from other authorized law enforcement agencies, all federal, state, county, and District policies, rules, and regulations to minimize illegal dumping, poaching, and other trespass and illegal activities on District lands.

Policy ERS1-DL5 Require that the types and appropriate levels of insurance coverage held by permittees be commensurate with the amount of risk and potential liability faced by the District.

Policy ERS1-DL6 Reduce the likelihood of dangerous condition liability on District lands through periodic safety inspections of improvements and facilities used by the public.

Policy ERS1-DL7 Require District permits for all non-recreational activities on District watershed lands. Past activities allowed by permit only include:

- A. Collection of plant or animal specimens.
- B. Access to existing internal roads/fire roads and trails.
- C. Research/scientific study.
- D. Educational activities.
- E. Hunting/control of pest species.
- F. Removal of vegetation.

Policy ERS1-DL8 Prohibit use of firearms, sport hunting weapons, or fishing on District property, except for persons employed by the District, the County, the State or by the United States government as permitted by law.

Policy ERS1-DL9 Establish and conform to trail maintenance standards, which ensure that public safety is optimized and safety hazards are minimized. Require annual review of all trails and trail uses on District property, and correct eroded areas and eliminate hazardous trail segments or uses.

Policy ERS1-DL10 Minimize public access and recreational facilities in areas where there is potential for trespass or where there are fire hazards on adjacent private lands.

2. Objective ERS2-DL: Support only low-impact recreational activities that are compatible with the landscape setting, that do not adversely affect watershed resources, and that comply with the goals and policies of this Plan.

? **Policy ERS2-DL1** Fully assess, where feasible, the impacts to biotic resources from existing recreational use on District lands.

Policy ERS2-DL2 Consider the addition of new public low-impact trails in zones of lesser vulnerability and risk where consistent with the goals and policies of this Plan.

Policy ERS2-DL3 Ensure that no net increase in adverse environmental effects will result from additions to or modifications of District recreation management programs.

Policy ERS2-DL4 Prohibit motorized vehicles on District lands, except by permit, and prohibit all motorized vehicles for recreational use.

Policy ERS2-DL5 Limit, where possible, open public access to recreational trails in sensitive areas of the watershed to minimize disturbance to sensitive wildlife and vegetation communities, reduce chance of fire ignition, minimize spread of weed propagules, and cause the least disruption to wildlife movement resulting from trailside fencing.

? **Policy ERS2-DL6** Ensure that all agreements with the District with regard to recreational trail use require that the permitted user group take an active and accountable role in trail maintenance and invasive species control.

Policy ERS2-DL7 Close recreational facilities as needed to protect sensitive wildlife habitat, curtail soil erosion, protect water quality, reduce fire hazards, and address other public safety concerns.

Policy ERS2-DL8 Prohibit swimming or other forms of human or domestic-animal body contact in surface waters.

3. Objective ERS3-DL: Ensure a high quality recreational experience on District lands by reducing user conflicts, promoting safety and courtesy, and controlling overcrowding.

? **Policy ERS3-DL1** Map and mark trails authorized by the District for recreational use, specifying which uses are allowed and which are not allowed.

Policy ERS3-DL2 Monitor trail use levels and modify as necessary.

Policy ERS3-DL4 To avoid conflicting uses on trails, designate different times for different uses on trails, as appropriate.

(See also **Policy ERS1-DL7**)

4. Objective ERS4-DL: Promote environmental values in recreational use and management.

Policy ERS4-DL1 Organize and support volunteer trail maintenance and invasive species control efforts on District lands.

Policy ERS4-DL2 Inform the public, through signage and/or permits, about the primary purpose of District watershed land, and the rules and regulations governing watershed activities.

Policy ERS4-DL3 Coordinate recreational programs with environmental education programs to provide recreationists with information about protecting public water supplies, source control and pollution prevention, watershed and natural resource management, and related water delivery system operations.

6.4.2 Objectives and policies for secondary goal (cultural and historical resources)

Secondary goal: *Preserve and enhance cultural and historical resources on District lands (CH).*

1. Objective CH1-DL Identify the locations and document the significance of cultural and historical resources on District watershed lands.

? Policy CH1-DL1 Identify and document existing cultural and historical resources on District lands.

? Policy CH1-DL2 When appropriate, protect the confidentiality of the location of historic resources on District lands.

? Policy CH1-DL3 Provide for appropriate research and educational uses of District lands with respect to cultural resources.

2. Objective CH2-DL Develop policies, as appropriate, to protect historical and cultural resources, on District lands, as they are identified.

6.4.3 Objectives and policies for secondary goal (public awareness)

Secondary goal: *Enhance public awareness of water quality, water supply, conservation, and watershed protection through education and public outreach (PA).*

6.4.3.1 District lands (DL) objectives and policies

1. Objective PA1-DL Provide an educational outreach program to inform the public about the importance of protecting water quality and the purpose of the District's watershed lands, resource management practices, and water conservation.

Policy PA1-DL1 Emphasize school participation in watershed restoration projects.

Policy PA1-DL2 Explore the feasibility of developing a "docent" volunteer program to supplement and support District staff in conducting environmental education programs.

Policy PA1-DL3 Incorporate interpretive information on District watershed lands

Policy PA1-DL4 In public informational materials emphasize the potential effects of human activities on watershed resources and ways to avoid or reduce adverse effects

Policy PA1-DL5 In public informational materials, emphasize special management issues facing the District (e.g., soil erosion, the impacts of land use and development on wildfire and risks of wildfire)

Policy PA1-DL6 In public informational materials, emphasize progress on special management issues facing the District, and especially within communities near District lands.

2. Objective PA2-DL Promote research on watershed lands to enhance the District's watershed resource database.

Policy PA2-DL1 Where it can be demonstrated that no negative impacts to resources will occur, allow access by permit to select areas of the District watershed generally closed to the public for scientific research by institutions, agencies and individuals. Research activity permits may include:

- A. Permits for use by qualified individuals or groups for the sole purpose of conducting research pertinent to the watershed.
- B. Water quality monitoring; botanical and wildlife studies; geophysical, paleontological, archaeological, and cultural research; restoration and enhancement efforts; and analysis of watershed ecological systems and processes.
- C. Researchers shall furnish District with a copy of all significant resource data, GIS files, results, theses, dissertations, studies, and reports for inclusion in the Watershed Management Plan.
- D. Researchers shall provide interpretive information for use in educational programs, when appropriate.
- E. Permit duration shall be dependent on specific research requirements and granted on an individual and project specific basis.

Policy PA2-DL2 Allow supervised access by permit to select areas of the District watershed lands generally closed to the public for educational activities. Educational activity permits may include:

- A. Permits for groups with the purpose of educating persons on aspects inherent to the watershed.
- B. Wildlife and wildflower observation, watershed ecological processes analysis, and volunteer restoration and enforcement efforts.
- C. Limit permits to day use only.
- D. Limit elementary through high school groups to normal class size; limit adult groups to 25.

6.4.3.2 District service area (DSA) objectives and policies

- 1. Objective PA1-DSA** Ensure that educational programs are compatible with water quality protection and all applicable watershed management goals and policies.

Policy PA1-DSA1 Keep District educational programs and educational outreach to the District's customers consistent with the District's watershed management goals and policies.

6.4.3.3 San Lorenzo River watershed (SLR) objectives and policies

- 1. Objective PA1-SLR** Ensure that educational programs are compatible with water quality protection and all applicable watershed management goals and policies.

Policy PA1-SLR1 Keep District educational programs and educational outreach to the public consistent with the District's watershed management goals and policies.

CHAPTER 7: LOCAL CLIMATE CHANGE

7.0 Existing conditions summary

Global atmospheric concentrations of carbon dioxide, methane and nitrous oxide, known as greenhouse gases (GHG), have increased markedly as a result of human activities since 1750. GHG levels now far exceed pre-industrial values determined from ice cores spanning many thousands of years. This increase is attributed to human activities, especially the burning of fossil fuels (coal, oil, natural gas) which have been locked within the earth's crust for millions of years, and the clearing and burning of forests.

With virtual certainty, scientists have projected for this century--for most land areas in the world--that there will be warmer and fewer cold days and nights, and warmer and more frequent hot days and nights. They also project that there will very likely be more warm spells and heat waves, more heavy precipitation events, and a global mean sea level rise of 0.2 to 0.8 meters or more by 2100 (IPCC, 2007).

For California, scientists have found that a doubling of CO₂ atmospheric conditions from pre-industrial values will lead to increased temperatures of up to 4 degrees C on an annual average basis. Winters will be drier in all regions, with a slightly shorter wet season. The total amount of water in the state will decrease, water needs will increase, and the timing of water availability will be greatly perturbed.

These changes in temperature and precipitation will change vegetation patterns in watersheds and recharge areas. Increased rainfall and runoff intensity could result in more sewage overflows, and upset the basis of stormwater management plans and TMDLs.

Forests are natural sinks of carbon. There is carbon uptake into both vegetation and soils in terrestrial ecosystems. Forests absorb carbon dioxide from the atmosphere during photosynthesis, and store carbon in their biomass. Older forests store more carbon than younger forests. The declining average number of years between harvests means that less carbon is being stored in forests than in the past. While younger forests may, on average, grow at faster rates than older forests, older forests store more carbon per acre than younger ones.

California Assembly Bill 32 (AB 32), also known as the "California Global Warming Solutions Act of 2006," is the first law to comprehensively limit greenhouse gas (GHG) emissions at the state level. AB 32 was passed by Legislature, signed by the governor, and became law January 1, 2007. It establishes annual mandatory reporting of GHG emissions for significant sources and sets emission limits to cut the state's GHG emissions to 1990 levels by 2020.

The California Climate Action Registry (CCAR) is a non-profit public/private partnership that serves as a voluntary GHG registry to protect, encourage, and promote early actions to reduce GHG emissions.

The California Air Resources Board (CARB) is required to incorporate the standards and protocols developed by the CCAR when developing the state's mandatory reporting program. CCAR members who have entered their carbon emissions to CCAR standards will have their data recognized and accepted by the state's future reporting program.

The San Lorenzo Valley Water District became a member of the CCAR in August 2007. The

District began reported its GHG emissions annually to the CCAR in 2007.

CARB is also creating protocols for landowners of at least 100 acres of forestland in California to provide GHG emissions accounting, reporting, and certification guidance. Qualifying entities will be eligible to receive monetary carbon credits for preserving, reforestation or conserving their forests.

7.1 Regulatory constraints

As of December 2008, tracking and reduction of GHGs is still in the voluntary phase. Major changes to CEQA now require that all proposed projects address GHG reduction.

7.2 The District's role in addressing climate change

In September 2008, the District's board unanimously adopted Resolution No. 2 (08-09), "Climate Change and Water Resource Management," acknowledging the threat of climate change to local water and watershed resources. The resolution commits the District to take the following three actions:

1. Exercise leadership in initiatives, programs and policies that address climate change while furthering the District's mission;
2. Apply understanding of climate change and climate change impacts as appropriate in water supply plans, asset management and infrastructure plans, California Environmental Quality Act assessments and environmental impact reports, energy management plans, business plans, and strategic plans; and
3. Strive to minimize its greenhouse gas emissions, work with the community to reduce its greenhouse gas emissions related to utilization and management of water resources and enhance community understanding of climate change and how it challenges the District's mission.

In keeping with this resolution, the District has exercised leadership in programs and policies through voluntarily joining the California Climate Action Registry, and later the Climate Action Reserve, and inventorying and reporting its annual GHG emissions. The District also spearheaded an educational forum in May 2008, in coordination with other water agencies. The forum, entitled "Tools for Addressing Climate Change and Local Water Resources," featured experts in both climate change and water resources. The District addressed climate change as a focal issue in its 2009 Water Supply Master Plan, as well as in this document. The District will further address integrating climate change in its strategic planning sessions. Finally, the District has recognized that water conservation is critical to keep the District on its path of reducing GHG emissions, and continues to emphasize that message to its customers.

7.3 Goals, objectives, and policies

The following goals summarized in Chapter 2 relate to the impacts of climate change on water resources and watershed resources. Following each goal, objectives and policies for achieving the goal are listed for District Lands (DL), District service area (DSA), and the larger San Lorenzo River watershed (SLR).

7.3.1 Objectives and policies for the secondary goal (climate change consideration)

Secondary goal: *Consider climate change impacts and reduction of greenhouse gases in all watershed management decisions (CC).*

All goal objectives and policies relating to climate change are identified by the prefix “CC.”

Objectives and policies for the primary goal are listed first for District lands (DL), then for the District Service Area (DSA), and finally for the larger San Lorenzo River watershed (SLR). Each objective and policy is identified by its prefix and area ID (DL, DSA, and SLR), and numbered.

7.3.1.1 District lands (DL) objectives and policies

1. Objective CC1-DL Develop a long-term watershed management strategy that takes into account possible large-scale changes from global climate change.

Policy CC1-DL1 Participate in regional climate change studies and forums to gather data to develop a long-term strategy for managing District lands in response to climate change.

Policy CC1-DL2 Integrate information about potential climate change impacts on District watershed resources into site-specific management plans.

2. Objective CC2-DL Endeavor to make the ecosystems on District lands as healthy and resilient as possible to maintain fundamental natural functions and processes in the face of unknown impacts of climate change.

Policy CC2-DL1 Integrate information about climate change resiliency into site-specific management plans.

3. Objective CC3-DL Reduce the District’s greenhouse gas emissions.

Policy CC3-DL1 Identify sources and address reduction of greenhouse gas emissions in site-specific management plans.

Policy CC3-DL2 Implement carbon offset projects where feasible; e.g., solar panels

4. Objective CC4-DL Increase carbon sequestration on District watershed lands.

Policy CC4-DL1 Manage District forest lands toward late seral stage vegetation.

7.3.1.2 District service area (DSA) objectives and policies

1. Objective CC1-DSA Educate District customers about the potential impacts of global climate change on water resources.

Policy CC1-DSA1 Use public outreach to District customers to explain its long-term strategy for managing District lands in response to climate change.

7.3.1.3 San Lorenzo River watershed (SLR) objectives and policies

1. Objective CC1-SLR Coordinate with other regional agencies and non-profits to keep abreast of climate change science and policy.

CHAPTER 8: WATERSHED ADMINISTRATION

8.0 Background

The District is an independent district of the state, whose general legal powers are defined under Division 12, Chapter 5 of the California Water Code.

The District is governed by a five-member board of directors (Board), which is elected by registered voters within the District. The District has a full-time staff, headed by a general manager, which administers the activities of the District, including finance, engineering, watershed management, and operations. The Environmental Committee, composed of three Board members and staffed by the District General Manager, the Director of Operations, and the Administrative/ Environmental Analyst, reviews watershed management policies, and makes recommendations to the Board.

The District owns and manages more than 2,000 acres of rural watershed land, which supplies the District's surface and groundwater sources.

Watershed management activities are considered as a separate department, the Watershed Department in the District's annual budget. Half of the Administrative/Environmental Analyst's time is allocated to the Watershed Department, and half-time allocated to the Administration Department. The District Director of Operations oversees road maintenance, water quality monitoring, and trespass issues. Some watershed work is also contracted to part-time consultants.

Until 2003, the District staff position of Watershed Resources Coordinator was responsible for the management of District watershed lands, advised the Board of Directors on watershed issues, and represented the District to other local, County, City of Santa Cruz, State and Federal agencies.

The position of Administrative/Environmental Analyst was created and filled in 2006 to administer District watershed programs, including Education Program grants, watershed management planning and restoration, public outreach, and a complete re-write of the District's Watershed Management Plan.

To date, staff has administered watershed programs under existing policies, as defined in the District's initial 1985 Watershed Management Plan. Staff organized projects in consultation with local experts in the areas of endangered species, and invasive exotic species control and eradication. Staff applied for and received several grants to fund this work, from the local Weed Management Area, administered by the Santa Cruz County Resource Conservation District (SCRCRD), and from the U.S. Fish and Wildlife Service to remove invasive vegetation at the Olympia wellfield property.

8.1 Goals, objectives, and policies

The following secondary goals listed in Chapter 2 relate to the administration of the District's watershed management plan. Objectives and policies for achieving these goals are listed for District Lands (DL).

8.1.2 Objectives and policies for the secondary goal (fiscal framework)

Secondary goal: *Provide a fiscal framework that balances financial resources and overall benefits, and an administrative framework that allows implementation of the Watershed Management Plan (WA).*

All goal objectives and policies relating to watershed administration are identified by the prefix “WA.” Note that these objectives and policies are not differentiated as they are in other chapters by District lands, District service area, and San Lorenzo River watershed.

1. Objective WA1: Assess the comprehensive financial impacts associated with Watershed Management Plan projects. Evaluate cost parameters related to initial capital expenditure, District staffing and administration requirements, initial program development costs, and long-term operation and maintenance costs.

Policy WA1-1 Evaluate the personnel and maintenance requirements for administering, operating, patrolling, and supporting proposed new watershed management projects.

2. Objective WA2 Address staffing responsibilities and training relative to Watershed Management Plan administration.

Policy WA2-1 The Administrative/Environmental Analyst, under direction of the District Manager, is responsible for and provides general administration/management of watershed management policies and programs.

Policy WA2-2 Provide, as appropriate, education to District staff regarding Plan goals and policies and adequately train staff to implement, or supervise implementation of, all management actions and guidelines.

Policy WA2-3 Stay abreast of and adhere to all applicable new laws, rules, regulations, and listings by USFWS and CDFG, as well as other appropriate agencies.

Policy WA2-4 Where feasible, provide appropriate staff levels and associated support structure (e.g., materials, equipment) to facilitate the implementation of, and compliance with, all plan goals, policies, and management actions.

Policy WA2-5 Where feasible, provide District employees with relevant information regarding water quality, water conservation, natural and cultural resource protection, and District policies, initiatives, and priorities.

3. Objective WA3 Where feasible, establish funding allocation/sources to meet plan goals.

Policy WA3-1 Where feasible, provide funding for watershed programs, equipment, training, etc. at levels that are appropriate to meet all applicable plan goals, policies, and management actions.

Policy WA3-2 Where feasible, provide funding to finance the purchase of watershed lands and/or easements outside of District ownership that are critical to watershed water quality and supply, or may be used for mitigation banking in connection with habitat conservation or project related mitigation activities.

Policy WA3-3 Any revenues received from carbon credits for carbon sequestration on District watershed lands will be used to fund implementation of the watershed management plan and for projects that reduce the District's carbon footprint.

4. Objective WA4 Consider the costs and benefits of implementing new watershed programs, projects, and activities.

Policy WA4-1 Prior to making changes to existing or implementing new watershed programs, projects and activities, consider the relative costs and benefits including possible future corrective actions and/or increased maintenance costs.

8.1.2 Objectives and policies for the secondary goal (changing conditions)

Secondary goal: *Review and revise management decisions in response to changing conditions (RR)*

1. Objective RR1 Establish measurable success criteria for all watershed management programs, projects and activities to assess whether such programs, projects and activities meet stated objectives.

Policy RR1-1 Monitor conditions and the results of management actions and, if warranted, revise the management approach to best meet management plan goals and objectives.

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