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# CHAPTER 4: GOALS AND OBJECTIVES

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## **4.1 INTRODUCTION**

This chapter identifies the goals and objectives for the Santa Cruz Integrated Regional Water Management Plan (Plan). The goals and objectives provide a basis for establishing priorities, identifying strategies, and informing decision making to guide IRWM efforts. The goals and objectives represent what is hoped to be accomplished through the Plan implementation and reflect what the RWMG and stakeholders perceive to be some of the Region's most significant water resources issues that have identifiable solutions. This chapter describes the goals and objectives for the 2014 Plan that were developed through an iterative and consensus-based process led by a working group that included RWMG representatives and stakeholders with the intent to develop a shared vision of regional goals and objectives. The process included review by the IRWM Steering Committee and RWMG members and provided opportunity for stakeholder involvement.

The RWMG built upon the initial 2005 IRWM Plan through a planning process that links high-priority strategy implementation to projects that could achieve practical attainment of objectives. In 2012, as part of the Plan Update, the vision, goals, and objectives were revised through a year-long planning process to ensure objective-based decision making and strategy prioritization for the IRWM Plan. This collaborative process was led by a working group of representatives from the RWMG and stakeholders. The draft objectives were presented to the RWMG in 2012 as well as to stakeholders at a public workshop on August 16, 2012, which provided an opportunity for input.

The Santa Cruz IRWM Plan goals are intended to be a general summary of the shared vision that regional strategies are collectively working to achieve. The objectives reflect regional priorities and support the selection of resource management strategies appropriate for use in the region, guide project development, and inform the assessment and evaluation of project benefits. The objectives are also used in the evaluation and scoring of projects in the IRWM Plan; projects that address a greater number of objectives may receive a higher total score. The RWMG recognized that not all of the Region's issues can be immediately addressed, but rather the intent was to focus on the most pressing concerns, improve the region as a whole, with effective solutions, in the most efficient manner, and with an evaluation process that will inform the extent to which objectives are being met.

The process through which the Santa Cruz IRWM objectives were developed is discussed in the following sections. That discussion is followed by the current Santa Cruz IRWM vision, goals, and objectives. Finally, the consistency of those objectives with state and federal planning efforts is discussed.

## **4.2 DEVELOPMENT PROCESS FOR THE SANTA CRUZ IRWM VISION GOALS AND OBJECTIVES**

The vision, goals, and objectives for the Santa Cruz IRWM Plan form the foundation for the Plan's implementation. The goals and objectives were initially developed for the 2005 Northern Santa Cruz IRWM Plan, and were derived from numerous water resource and watershed planning documents. Since that time, the Steering Committee drafted an overarching vision for the Santa Cruz IRWM Plan and refined the goals and objectives as part of the 2009 Regional Acceptance Process. More recently, the vision, goals, and objectives were revised through a process to ensure objective-based decision making and strategy prioritization for the IRWM Plan. The following sections describe the relationship between

the vision, goals, and objectives, the processes by which they were developed, and how they have been and will continue to be used to guide implementation.

The goals and objectives originally developed for the 2005 Northern Santa Cruz IRWM Plan were based on local water resource issues and opportunities and adhered to the following key attributes:

- Ability to discriminate among strategies: An objective must be able to discriminate among different strategies. If all strategies perform similarly against a particular objective, the objective is not well-defined. Planners should be able to determine, for each individual strategy, the extent to which implementation will achieve the desired objective.
- Understandable and meaningful to decision makers: The objectives must extract the information most important to decision makers and be expressed in ways that will be meaningful to them.
- Reasonable number: The number of objectives must be sufficient to cover the issues that are truly important, and no more than that. Overlap among the objectives (i.e., having two objectives that basically measure the same thing) must be avoided. While there is no right number of objectives, it is important to recognize that more objectives introduce more complexity into the analysis and decision making.
- Reflect community concerns: The objectives must attempt to accurately reflect the issues that are important to citizens and policymakers across all stakeholder groups. This will ensure that the plan recommendations will do a good job at supporting those concerns.
- Ends oriented: The objectives must refer to real-world ends, rather than means to achieving those ends. While there are undoubtedly grey areas, the distinction is nevertheless an important one.
- Precise language: The words used to describe each objective are important. Precision is important to avoid ambiguity and later misunderstandings.

### 4.2.1 2005 PLAN GOALS AND OBJECTIVES

The RWMG began working on the first Santa Cruz IRWM Plan in 2003 in response to Proposition 50 and the establishment of the Integrated Regional Water Management planning program. The RWMG agreed early on that it was critical to carefully develop a set of goals and objectives that reflect regional priorities and that could be used to prioritize and assess the efficacy of potential projects. Accordingly, the group appointed a three-member Steering Committee that developed a set of objectives, which were then adopted by the larger RWMG. The objectives were used to classify potential projects as either high priority projects or potential future projects.

The precise wording of the objectives and implementation criteria were thoroughly discussed to ensure that each objective reflected regional priorities to the best of their ability. The main objectives were accompanied by a list of sub-objectives drawn from existing planning documents, which were intended to provide support for future expansion of the Santa Cruz IRWM Plan. The 2005 planning objectives were:

**Water Supply Reliability** - Minimize the impact of droughts, production facility failures, or groundwater overdrafts on regional water supplies. Reduce the likelihood of domestic water shortages and any future need to import water from outside the county.

**Raw Water Quality** - Maximize the quality of surface and groundwater in the county by addressing sources or conduits of contamination.

**Delivered Water Quality** - Maximize the quality of delivered drinking water as well as reclaimed water for irrigation.

**Habitat Restoration and Maintenance** - Aquatic: Restore and maintain habitats to support local aquatic species. Terrestrial: Restore and maintain habitats to support terrestrial species of local flora and fauna. Ocean: Restore and maintain habitats to support Monterey Bay marine life.

**Recreation** - Maximize the recreational value of county water resources.

**Public Health** - Minimize adverse water-related public health impacts in the county.

**Flood Management** - Minimize the adverse impacts of future flood events.

**Regional Economy** - Add maximum value to the regional economy.

**Regional Collaboration** - Continue and expand collaboration among public and private agencies to address county water-related challenges.

**Readiness to Proceed** - Be prepared to proceed with approved projects in a timely manner.

**Availability of Funding** - Ensure that sufficient local and regional funding is available to move forward with projects.

## 4.2.2 REGIONAL ACCEPTANCE PROCESS

The IRWM Plan's objectives and sub-objectives were revised as part of the 2009 Regional Acceptance Process and in response to the 2010 IRWM Program Guidelines. At that time, a vision statement was developed as a broad statement of the Plan's purpose and intent. The planning objectives were grouped into four functional areas - water supply, water quality, watershed and resource stewardship, and flood protection and stormwater management, with each having equal priority. Below are the 2009 Regional Vision, Regional Goals, and Objectives organized by management Functional Area (Functional Area).

**Santa Cruz IRWM Plan 2009 Regional Vision** - Promote comprehensive and integrated water resource use and management to support and enhance: public health and safety; ecosystem health; recreational opportunities; economic vitality; cultural heritage; and quality of life.

### **Santa Cruz IRWM Plan 2009 Regional Goals:**

- Develop and maintain an adequate, reliable, secure, and sustainable water supply that provides regional water self-sufficiency and maintains ecosystem values.
- Protect and improve surface and groundwater quality.
- Practice resource stewardship to protect, enhance, and maintain watersheds, environmental resources, and biodiversity.

- Promote flood and stormwater management to protect public health and safety, property, water quality, and hydrologic function.
- Identify and implement integrated water management strategies adaptable to a changing climate. Promote water and water-related energy conservation and efficiency strategies.
- Promote coordinated and collaborative planning and management of water and water-related resources. Provide a framework for identifying and implementing equitable policies and projects to achieve the region's near-term priorities and long-term sustainability.

#### **Santa Cruz IRWM Plan 2009 Objectives by Management Functional Area:**

##### Water Supply

- Reduce per capita water demand and increase agricultural efficiency
- Provide reliable supply to meet current and expected demand after reasonable conservation and curtailment
- Increase operational flexibility and inter-district transfers and diversify water supply portfolios
- Increase groundwater recharge and protect groundwater recharge areas

##### Water Quality

- Reduce pollutant loads to surface waters, groundwater basins and the ocean
- Protect and maintain unimpaired and high quality waters
- Reduce the volume and increase the quality of urban and agricultural runoff
- Strengthen regional monitoring and analysis programs, and evaluate management effectiveness

##### Watershed and Resources Stewardship

- Implement projects that protect, enhance and/or restore ecological functions of rivers, wetlands, and coastal lagoons
- Protect and enhance habitats for sensitive species
- Minimize erosion and sedimentation
- Improve opportunities for open space, trails, and parks consistent with environmental protection, public use, and property rights

##### Flood and Stormwater Management

- Implement flood management efforts that balance protection from flood damage with protection of environmental values
- Implement land management strategies that reduce runoff volume or delay peak flows
- Minimize damage to infrastructure and property from flooding
- Protect, restore, and enhance hydrological function of wetlands, streams, and their floodplains

### **4.2.3 SANTA CRUZ IRWM CONCEPTUAL FRAMEWORK**

Funds from an IRWM Planning Grant supported the development of a conceptual framework for the Santa Cruz IRWM Plan. The purpose of this planning effort was to build off of prior work on the goals and objectives in a way that directly linked strategy implementation with achievement of objectives and the indicators by which progress towards achievement could be measured. The final outcome of the conceptual framework process was a new set of goals and objectives for the Santa Cruz IRWM Plan

2014, developed and vetted by the RWMG through their participation and input in the process. That process, along with the final goals and objectives, is described below.

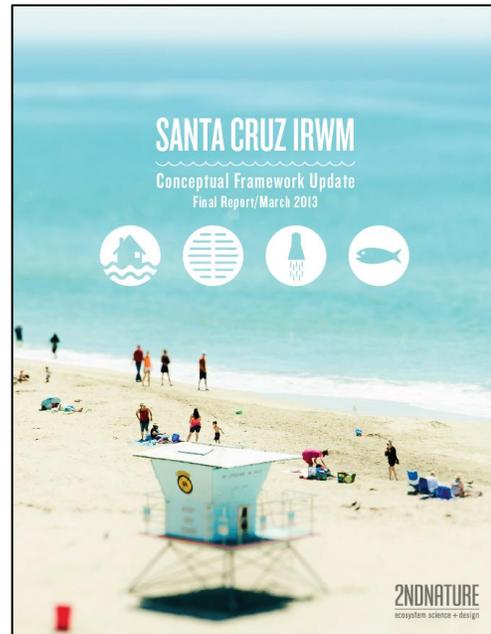
The conceptual framework consists of conceptual models that were developed for each of the four functional areas. The models were created in close collaboration with a diverse and representative group of regional stakeholders (Table 1). Most Working Group members served on at least one functional area team and reviewed and contributed to draft conceptual diagrams that included functional goal statements, diagrams, linkage tables, and draft objectives.

**Table 4-1 IRWM Conceptual Framework Work Group**

<b>Working Group Member</b>	<b>Affiliation</b>	<b>Functional Area Team</b>
Nicole Beck	2ND NATURE, LLC. (Consultant Lead)	All
Gary Conley	2ND NATURE, LLC.	All
Jeremy Sokulsky	Environmental Incentives (Consultant Lead)	All
Chris Coburn	County of Santa Cruz	All
John Ricker	County of Santa Cruz	All
Tim Carson	Regional Water Management Foundation	All
R. Duncan / T. Dufour	Soquel Creek Water District	Water Supply
Charles McNiesh	Scotts Valley Water District	Water Supply
Mike Ferry	City of Santa Cruz	Water Quality
Chris Berry	City of Santa Cruz	Water Quality
Kristen Kittleson	County of Santa Cruz	Aquatic Ecosystems
Nik Strong-Cvetich	Resource Conservation District of Santa Cruz County	Aquatic Ecosystem
Mike Cloud	County of Santa Cruz	Flood/Stormwater Management
Robert Ketley	City of Watsonville	Flood/Stormwater Management
Mike Sapanour	County of Santa Cruz	Flood/Stormwater Management
Siobhan O'Neil	City of Santa Cruz	Flood/Stormwater Management
Armand Ruby	Coastal Watershed Council	Partial participation
Bridget Hoover	Monterey Bay National Marine Sanctuary	Partial participation

The Working Group meetings included 1) a review of the 2005 and 2009 IRWM Plan and objectives to be updated, 2) an introduction to the format and development process used for the conceptual models, 3) a review and discussion of the draft conceptual models and objectives developed by each development team, and 4) a review and discussion of the draft final version of this document and selection of specific objectives that will be used to track IRWM progress in the short term. The final version of the conceptual framework includes incorporation of Working Group comments and suggestions. The quality of the content greatly benefited from the participation and commitment of the Working Group members.

The reason the RWMG chose to develop the conceptual models is because they were perceived to be effective at focusing management actions where they are most likely to have the greatest beneficial impacts on natural resources of concern. Each model contains a goal, which is supported by quantifiable objectives and condition targets that are used to track progress of the IRWM implementation. Each model represents a working hypothesis of cause and effect between the most important components of the system and management strategies. Included in these hypotheses is the concept that effective implementation of high priority strategies will result in an improvement of natural resource conditions that can be measured by changes in specific indicators over time.



#### 4.2.4 CLIMATE CHANGE

Development of the conceptual models also considered the effects of climate change on the region, including the effects of sea level rise. Climate change model predictions specific to California and the Santa Cruz region have been reviewed and incorporated into the IRWM conceptual framework in a format that is intended to be accessible and useful for regional decision makers.

The strategies identified through the conceptual framework to achieve the goals and objectives of this IRWM Plan, described below, encourage and promote projects that implement climate change mitigation and adaptation measures, including water use efficiency, energy efficiency, water recycling, and reuse of urban runoff. The project prioritization process gives preference to projects that can demonstrate climate change mitigation or adaptation measures, and/or reduced GHG emissions compared with project alternatives.

### 4.3 SANTA CRUZ IRWM PLAN VISION

The vision statement is intended to be a motivating and purpose-driven policy statement that guides the Santa Cruz IRWM Plan. In contrast to objectives, the vision statement is not intended to be quantifiable, but rather a general statement about the purpose and intent of the IRWM Plan.

**Santa Cruz IRWM Vision:**

*Promote comprehensive and integrated water resource use and management to support and enhance: public health and safety; ecosystem health; recreational opportunities; economic vitality; cultural heritage; and quality of life.*

## 4.4 SANTA CRUZ IRWM PLAN GOALS

The Santa Cruz IRWM Plan goals are intended to be a general summary of the desired state of the functional area that regional strategies are collectively working to achieve. The following are the goals for the Santa Cruz IRWM Plan:

- Provide a safe, reliable, and affordable water supply to meet current and expected regional demand without causing undesirable environmental impacts.
- Maintain and improve regional surface and groundwater quality to protect beneficial uses.
- Improve the condition of riparian and aquatic ecosystems to support the native species, watershed functions, and regional water needs.
- Reduce flood hazards and manage stormwater runoff through economical policies and projects that enhance natural hydrologic function and protect communities.

## 4.5 SANTA CRUZ IRWM PLAN OBJECTIVES

Objectives are specific statements detailing the desired outcomes of regional strategies for each functional area. These objective statements are supported by a set of strategy implementation objectives that are directly quantifiable by either a performance measure or indicator (described below). The draft goals and objectives were presented at a stakeholder workshop on August 16, 2012, which provided an opportunity for oral and written comments. The draft goals and objectives were posted to the Santa Cruz IRWM website and stakeholders were provided a 30-day window to review and comment upon the draft version prior to their finalization.

The Santa Cruz IRWM Plan objectives include:

### **Water Supply**

- Ensure a reliable and sustainable local water supply through strategies that diversify the supply portfolio, develop production from alternative/supplemental sources, protect and enhance surface and ground water, protect against seawater intrusion, and maximize efficient delivery and use.
- Reduce water demand as technically and economically feasible, particularly in relation to the cost of additional sources.

### **Water Quality**

- Reduce the sources of harmful pollutants (e.g., sediment, bacteria, nitrate, persistent organics and other toxic constituents) and their impacts on aquatic resources.

### **Watershed Resources**

- Increase the habitat quality and quantity of critical aquatic ecosystems (i.e., streams, tidal wetlands and freshwater wetlands).

### **Flood/Stormwater Management**

- Implement integrated flood and stormwater management strategies that reduce hazards and impacts from floods and, where feasible, provide multiple benefits (e.g., improved stormwater quality, ecosystem benefits, low impact development/redevelopment, and groundwater recharge).

Note that the IRWM Plan objectives are not prioritized. The Steering Committee and RWMG decided that, rather than prioritizing objectives, it made more sense to prioritize the *strategies* that that would achieve the objectives identified in the IRWM planning for the Region. By prioritizing some objectives over others, the RWMG felt they would effectively be prioritizing the needs of certain stakeholders over others. In order to maintain inclusivity, and to avoid the possibility of alienating certain groups of stakeholders or discouraging their participation in the IRWM planning process, the RWMG has therefore decided not to prioritize objectives. Through the work on the conceptual framework, strategies were prioritized into categories of high, moderate, and low to help direct project implementation in carrying out the Plan's objectives, as described in Chapter 5, Resource Management Strategies. The prioritized strategies are intended to ensure that projects with the greatest benefit are targeted for implementation.

## 4.6 STRATEGY OVERVIEW

This section provides a brief overview of the strategies identified in the conceptual framework along with tables that display the relationships between each objective and the high and moderate priority level strategies. The strategies are described more fully in Chapter 5, Resource Management Strategies.

**Increase water supply and reduce demand:** Water supply is not sustainable within the Santa Cruz IRWM region in normal years, a situation that is exacerbated when below-average water years occur. Surface water supply is highly dependent upon local precipitation, timing and available storage capacity. A greater volume of water is extracted annually from regional groundwater aquifers than is naturally recharged. Increased flexibility in regional water management and increased groundwater recharge are necessary to improve regional water supply reliability and improve resource conditions. The achievement of a reliable and sustainable local water supply requires both increased supply and reduced demand. The regional water supply management strategies include:

- increasing conservation measures through measures such as rebates and conservation pricing, as well as policies to minimize additional demand from new growth,
- developing alternative/supplemental sources of water to meet supply needs including the infrastructure necessary to facilitate inter-district transfers, and
- increasing production from existing sources including increased ability to capture, store, and transfer greater winter storm volumes.

Annual tracking of aquifer water surface elevations and stream flow conditions relative to desired sustainable targets will serve as the measurable indicator of benefit from these strategies.

**Bacteria and sediment source control:** Water quality impairments caused by elevated bacteria and sediment levels are among the most pressing water quality concerns in the region. Elevated bacteria levels in surface waters can limit recreational activities, create human health threats, and adverse impacts to habitat and species. A significant and controllable regional source of bacteria and nitrate to streams and the near shore is the dense and aging septic system networks in rural areas. Upgrades and maintenance to rural residential septic systems, as well as urban sewer lines and laterals, to reduce leakage, spills, and failures are priority IRWM strategies. A reducing trend of dry season bacteria levels in regional surface water may demonstrate future progress in reducing bacteria sources.

The supply of sand-sized sediment to streams significantly degrades aquatic habitat quality, resulting in negative ecosystem impacts that particularly affect the spawning and rearing habitat of sensitive salmonid species. Implementation of effective erosion control actions to reduce sediment generated from rural road networks, timber harvest activities, and agricultural lands are priority IRWM strategies. Simple methods to measure the relative risk of rural road sediment generation are being developed and could be used to track effective IRWM-supported efforts, including improvements and maintenance, on public and private roads over time.

**Riparian protection and enhancement:** Strategies aimed to acquire, enhance, and protect the riparian zones throughout the region are expected to contribute to all of the Santa Cruz IRWM Plan functional goals and reduce the region’s vulnerability to climate change. Significant opportunities exist to widen riparian corridors; increase riparian vegetation distribution and complexity; restore morphologic function; and improve overall riparian condition in watersheds throughout the region. Effective riparian enhancement strategies will vary by stream type, location, and adjacent land uses. Riparian zone acquisitions and easements or cash compensation for parcels within the floodplain could allow future land use changes, potential improvements in flood conveyance, and an associated reduction of flood hazards. Many of the regional flood-prone urban areas are located near the coast, where effective riparian enhancement actions would increase the habitat quality and quantity of tidal wetlands, which are critical habitat for rearing salmonids. Functional riparian zones have access to their floodplains, a well-established vegetation canopy, an energy-balanced morphology, and a complex physical structure. All of these attributes support natural fluvial processes that improve water quality and remove pollutants through deposition, filtering, and sorting. A riparian zone in good condition can reduce and sort fine sediment in the channel bed, thereby improving salmonid spawning habitat quality as well as benthic invertebrate abundance and diversity. Given the dependence on local surface water for potable supply, improved riparian conditions will reduce water treatment requirements, increase local recharge and retention of water volumes on the landscape, and contribute to the goal of providing a sustainable water supply.



Laguna Creek Lagoon (photo courtesy: SCWD)

**Increase infiltration and recharge:** Strategies to reduce the impact of impervious surfaces on the hydrologic function of regional watersheds were identified in each of the four functional areas. Regional opportunities to increase the amount of rainfall that is infiltrated can be realized by disconnecting impervious surfaces; increasing localized parcel-based infiltration through LID on both private and public lands; constructing and maintaining recharge basins; and preventing and/or removing impervious surfaces in known recharge zones. In order to have a measurable impact on the amount of water lost as runoff in developed areas, these strategies would have to be implemented on a vast spatial scale throughout the impervious areas within the region. Effective implementation of these strategies is collectively intended to restore the natural storm hydrograph in local tributaries and increase groundwater recharge. Increasing infiltration opportunities will retain greater annual volumes on the landscape and mitigate several projected climate change impacts, including a longer, warmer dry season and increased drought frequency.

## 4.7 OBJECTIVE INDICATORS

Quantifiable measures were identified to gauge the extent to which the objectives are achieved. For the most part, these are specific, quantifiable and time-limited statements that interpret each objective that are directly measurable and through which IRWM progress will be measured. These indicators were identified through development of the conceptual framework, and provide for a meaningful and measurable set of criteria through which plan effectiveness can be gauged. Monitoring is discussed more fully in Chapter 8 of this Plan, but the objective indicators are listed below, according to objective.

### Water Supply Objective Indicators:

- By 2030, meet or exceed target groundwater elevations or maintain increasing trends in groundwater elevations for wells that do not have targets. Indicator: Minimum groundwater elevations for selected monitoring wells by water district compared to elevation targets, and demonstrated net increasing trend in groundwater elevations. Comparisons of targets to actual groundwater elevations reported as +/- ft. Trend reported as +/- slope and statistical significance.
- Increase the annual production to meet alternative/supplemental water source supply targets established by participating water districts by 2030. Indicator: Annual alternative/supplemental source production compared to regional targets. Comparisons of targets to actual annual production reported as +/- afy and +/- % relative to regional targets.
- Reduce the number of days fish habitat flow targets are not achieved in the San Lorenzo River and North Coast streams. Indicator: Frequency that the actual mean daily streamflow is less than the flow target is to be developed in negotiations between the City of Santa Cruz and the fishery agencies. Objective can be tracked as the number of days per year where mean daily flow is less than its target and maximum % deviation of mean daily discharge (cfs) from the target as specified at each site.
- Reduce the number of days each year where streamflow in Soquel Creek is less than 4 cfs between June 1 and December 1. Indicator: Frequency that the actual mean daily streamflow is less than the 4 cfs reported as number of days per year when mean daily flow is less than target and maximum % deviation of mean daily discharge (cfs) from target by site.

- Decrease and maintain per capita consumption for commercial, residential, and agricultural customers to meet 2030 targets specified by each water district. Indicator: Regional per capita consumption (calculate per capita consumption by water district using average water production by district for previous five years divided by district average service population for same time period).

**Water Quality Objective Indicators:**

- Achieve statistically significant decreasing trends of fecal indicator bacteria and human specific fecal indicators at key locations of the San Lorenzo, Soquel, and Aptos watersheds by 2030. Indicator: Bacteria log mean trends (MPN/yr) at key locations on 3 to 5 year time steps.
- Reduce frequency of septic system overflows and failures by 30% by 2030. Performance measures: Frequency of septic system failures; number of parcels with septic systems that experience overflows and other issues annually.
- Improve the rural road condition in the San Lorenzo, Soquel, and Aptos watersheds by 40% as measured by increases in rural roads rapid assessment scores by 2030. Performance measure: Rural road condition tracking using Rural Road Rapid Assessment Method (RAM). Quantitative objective would be defined as 40% reduction in the miles of rural roads with RAM scores < 2.0 by 2030.
- Clean out 100% of urban roads and storm drain drop inlets to best achievable conditions by October 1 of each year. Performance measures: Stormwater BMP condition Oct 1; probabilistic sampling of 20-30% of urban roads and drop inlets throughout urban areas and frequency of samples with BMP RAM scores < 4. In order to achieve objective, 100% of samples must obtain BMP RAM scores > 4.

**Watershed Resources Objective Indicators:**

- Improve riparian zone condition by 40% as measured by increases in rapid riparian zone condition assessment scores by 2030. Performance measure: Riparian zone condition tracking. Quantified as miles of riparian zone at or above a desired threshold condition.
- Improve habitat conditions in streams that currently support salmonids for spawning, migration, and rearing by 40% as measured by increases in salmonid habitat condition tracking scores by 2030. Indicator: Salmonid habitat condition tracking. Quantified as miles of stream at or above a desired threshold condition.
- Increase the wetland habitat area by 30% by 2030 to support native plants and animals. Indicator: Sum of tidal and freshwater wetland habitat acreage. Hypotheses: Opportunities exist to increase the area of tidal and freshwater wetlands within the region through acquisition, protection, and restoration. Effective areal increases would include morphologic improvements that reduce the width to depth ratio of the wetted area and restoration of native vegetation.
- Reduce frequency of dissolved oxygen conditions < 3 mg/L in San Lorenzo and Aptos tidal wetlands by 30% by 2030. Indicator: Frequency of dissolved oxygen conditions < 3 mg/L.

**Flood/Stormwater Management Objective Indicators:**

- Reduce the estimated regional economic cost of a 100-year discharge event by 30% by 2030. Indicator: Regional economic cost of a 100-year storm event. Hypotheses: Economic loss in flood-prone areas can be significantly reduced by either greater flood protection (i.e., reduction of flood-prone area) or reducing the economic cost of flooding in high risk areas through land-

use modifications such as the creation of riparian easements, transformation to parks or parking lots, raised structures and basement parking, etc.

- Increase the number of private and public parcels that retain the 1-inch 20-year rainstorm on site using LID principles either by retrofit or new construction by 2030. Performance measure: Percent of public/private parcels with infiltration BMPs per regional LID principles.

## 4.8 CONSISTENCY WITH CALIFORNIA WATER CODE, STATE AND FEDERAL RESOURCE PLANS

While the vision, goals, and objectives are specific to the Santa Cruz Region, they were developed with consideration of other resources and planning efforts in mind to ensure consistency, where applicable. Some of the key planning efforts reflected in the Santa Cruz IRWM Plan objectives include:

**Requirements of §10540(c):** CWC §10540(c) states that, at a minimum, IRWM Plans shall address the following:

- Protection and improvement of water supply reliability, including identification of feasible agricultural and urban water use efficiency strategies.
- Identification and consideration of the drinking water quality of communities within the area of the plan.
- Protection and improvement of water quality within the area of the plan consistent with relevant basin plan.
- Identification of any significant threats to groundwater resources from overdraft.
- Protection, restoration, and improvement of stewardship of aquatic, riparian, and watershed resources within the region.
- Protection of groundwater resources from contamination.
- Identification and consideration of water-related needs of disadvantaged communities in the area within the boundaries of the plan.

The planning objectives for the Santa Cruz IRWM region encompass all of the objectives outline above, and are therefore consistent with the requirements of CWC §10540(c), the minimum objectives that all IRWM Plan are required to address. Table 4-2 below illustrates how the Santa Cruz objectives and strategies address each of the CWC §10540(c) objectives - either directly (D) or indirectly (I).

Table 4-2 Santa Cruz IRWM Objectives and Strategies Consistency with State Planning Objectives (CWC §10540(c))

Santa Cruz IRWM Strategy	Protection and improvement of water supply reliability, including identification of feasible agricultural and urban water use efficiency strategies	Identification and consideration of the drinking water quality of communities within the area of the Plan	Protection and improvement of water quality within the area of the Plan consistent with relevant basin plan	Identification of any significant threats to groundwater resources from overdrafting	Protection, restoration, and improvement of stewardship of aquatic, riparian, and watershed resources within the region	Protection of groundwater resources from contamination	Identification and consideration of water-related needs of disadvantaged communities
	<b>OBJECTIVE: Ensure a reliable and sustainable local water supply through strategies that diversify the supply portfolio, develop production from alternative/supplemental sources, protect and enhance surface and ground water, protect against seawater intrusion, and maximize efficient delivery and use.</b>						
<i>Develop production from alternative/supplemental sources</i>	D			I	I	I	D
<i>Increase production from existing resources</i>	D			I	I	I	D
<i>Implement system inerties</i>	D			I	I	I	D
Update/replace aging infrastructure	D	D		I		I	D
<i>Construct and maintain groundwater recharge facilities</i>	D			D	I	D	I
Prevent/remove impervious coverage in recharge zones; reduce directly connected impervious area (DCIA)	I		I	D	I	D	I
<i>Shift groundwater pumping from coastal zone</i>	D	D	D	D		D	
Support low impact development (LID)/redevelopment	I	I	I	D	I	D	I

Santa Cruz IRWM Strategy	Protection and improvement of water supply reliability, including identification of feasible agricultural and urban water use efficiency strategies	Identification and consideration of the drinking water quality of communities within the area of the Plan	Protection and improvement of water quality within the area of the Plan consistent with relevant basin plan	Identification of any significant threats to groundwater resources from overdrafting	Protection, restoration, and improvement of stewardship of aquatic, riparian, and watershed resources within the region	Protection of groundwater resources from contamination	Identification and consideration of water-related needs of disadvantaged communities
<b>OBJECTIVE: Reduce water demand as technically and economically feasible, particularly in relation to the cost of additional sources.</b>							
<i>Utilize tiered rates/conservation pricing</i>	D			I	I		D
<i>Conduct education/outreach on conservation</i>	D			I	I		D
<i>Implement policies to minimize additional demand from new growth</i>	D			I	I		D
Implement groundwater mgmt. that includes non-municipal pumpers, to promote sustainable groundwater use	D		I	D		D	
Utilize temporary use restrictions as needed during critical supply shortages	D			I	I		I
Utilize rebate/retrofit programs	D			I	I		I
<i>Conduct irrigation management and water conservation</i>	D		D		I	I	

Santa Cruz IRWM Strategy	Protection and improvement of water supply reliability, including identification of feasible agricultural and urban water use efficiency strategies	Identification and consideration of the drinking water quality of communities within the area of the Plan	Protection and improvement of water quality within the area of the Plan consistent with relevant basin plan	Identification of any significant threats to groundwater resources from overdrafting	Protection, restoration, and improvement of stewardship of aquatic, riparian, and watershed resources within the region	Protection of groundwater resources from contamination	Identification and consideration of water-related needs of disadvantaged communities
<b>OBJECTIVE: Reduce the sources of harmful pollutants (i.e., sediment, bacteria, nitrate, persistent organics, toxic constituents) and impacts on aquatic resources.</b>							
<b><i>Perform rural road improvements and maintenance</i></b>		I	D		D		
Implement BMPs related to timber harvest activities		I	D		D		
Implement erosion control measures		I	D		D		
Riparian acquisition or restoration		I	D		D		
<b><i>Develop and implement Farm Plans that include effective nutrient, sediment and irrigation measures</i></b>		I	D	D	D	D	I
<b><i>Implement septic system upgrades, provide incentives and/or maintenance</i></b>		I	D		D	D	I
<b><i>Perform sewer system upgrades and maintenance</i></b>		I	D		D	D	I
<b><i>Promote/implement private property sewer lateral upgrades and maintenance</i></b>		I	D		D	D	I
Removal of encampments from riparian zones		I	D		D		
Conduct street sweeping		I	D		I		
Conduct regular infrastructure cleaning and maintenance		I	D		I		
Implement riparian exclusions for livestock			D		D		
Implement livestock waste management BMPs			D	D	I		

Santa Cruz IRWM Strategy	Protection and improvement of water supply reliability, including identification of feasible agricultural and urban water use efficiency strategies	Identification and consideration of the drinking water quality of communities within the area of the Plan	Protection and improvement of water quality within the area of the Plan consistent with relevant basin plan	Identification of any significant threats to groundwater resources from overdrafting	Protection, restoration, and improvement of stewardship of aquatic, riparian, and watershed resources within the region	Protection of groundwater resources from contamination	Identification and consideration of water-related needs of disadvantaged communities
<b>OBJECTIVE: Increase the habitat quality and quantity of critical aquatic ecosystems (i.e., streams, tidal wetlands and fresh water wetlands).</b>							
<i>Reduce stream withdrawals and increase base flow at critical times to achieve streamflow targets</i>				I	D	I	
<i>Identify and eliminate illegal diversions</i>				I	D	I	
<i>Restore natural stream form and function</i>					D		
<i>Restore riparian zone through acquisition/easements</i>					D		
<i>Reduce riparian encroachment</i>					D		
<i>Reduce erosion and sedimentation from public and private roads, unpermitted grading, and other sources.</i>					D		
Preserve and enhance large woody debris (LWD) in streams and riparian zone					D		
Remove non-native species					D		
Conduct riparian revegetation					D		
Reduce riparian encroachment					D		
Remove or retrofit fish passage barriers					D		
<i>Restore lagoon / wetland structure and biotic habitat complexity</i>					D		

Santa Cruz IRWM Strategy	Protection and improvement of water supply reliability, including identification of feasible agricultural and urban water use efficiency strategies	Identification and consideration of the drinking water quality of communities within the area of the Plan	Protection and improvement of water quality within the area of the Plan consistent with relevant basin plan	Identification of any significant threats to groundwater resources from overdrafting	Protection, restoration, and improvement of stewardship of aquatic, riparian, and watershed resources within the region	Protection of groundwater resources from contamination	Identification and consideration of water-related needs of disadvantaged communities
<p><i>continued</i>  <b>Objective: Increase the habitat quality and quantity of critical aquatic ecosystems (i.e., streams, tidal wetlands and fresh water wetlands).</b></p>							
Promote natural sand bar function					D		
<b>Increase/enhance wetland edge habitat</b>					D		
Improve wetland hydrology					D		
Support education/outreach/technical training programs					I		
Support volunteer stewardship programs					I		
Support environmental education programs					I		
Reduce illegal dumping			I		D		

Santa Cruz IRWM Strategy	Protection and improvement of water supply reliability, including identification of feasible agricultural and urban water use efficiency strategies	Identification and consideration of the drinking water quality of communities within the area of the Plan	Protection and improvement of water quality within the area of the Plan consistent with relevant basin plan	Identification of any significant threats to groundwater resources from overdrafting	Protection, restoration, and improvement of stewardship of aquatic, riparian, and watershed resources within the region	Protection of groundwater resources from contamination	Identification and consideration of water-related needs of disadvantaged communities
<b>OBJECTIVE: Implement integrated flood management strategies that reduce hazards and impacts from floods and, where feasible, provide multi-benefits (e.g., improve stormwater quality, ecosystem benefits, Low Impact Development (LID) / redevelopment and groundwater recharge).</b>							
<b>Utilize riparian zones for flood management through acquisition or easement</b>			I		I		
Increase riparian setbacks					I		
Reduce riparian encroachment			I		I		
<b>Maintain/improve levees for flood management and environmental quality</b>					I		
<b>Geomorphic modifications</b>					I		
<b>Increase channel width and floodplain function</b>					I		
<b>Remove channel constrictions</b>					I		
Conduct vegetation management			I		I		
<b>Maintain storm drain conveyance efficiency</b>					I		
<b>Implement infrastructure improvements and maintenance</b>					I		
<b>Reduce directly connected impervious areas</b>				D	I		
<b>Implement low impact development/redevelopment</b>				D	I		
Conduct education and outreach on flood and stormwater issues				I	I		

1. **High priority strategies in bold**; Moderate priority

2. D = directly addresses; I = Indirectly addresses

**Central Coast Regional Water Quality Control Board Basin Plan Objectives:** The Central Coast Basin Plan is the water quality control plan formulated and adopted by the Regional Water Quality Control Board (RWQCB) for the Central Coast region. The objective of the Basin Plan is to show how the quality of the surface and ground waters in the Central Coast Region should be managed to provide the highest water quality reasonably possible. The Basin Plan lists various water uses (Beneficial Uses), describes the water quality that must be maintained to allow those uses (Water Quality Objectives), and outlines an implementation plan for achieving those standards, including through the development and implementation of Total Maximum Daily Loads (TMDLs), among other regulatory programs. In addition, the Central Coast RWQCB has established the following planning goals for water quality in the Central Coast Region:<sup>1</sup>

- Protect and enhance all basin waters, surface and underground, fresh and saline, for present and anticipated beneficial uses, including aquatic environmental values.
- The quality of all surface waters shall allow unrestricted recreational use.
- Manage municipal and industrial wastewater disposal as part of an integrated system of fresh water supplies to achieve maximum benefit of fresh water resources for present and future beneficial uses and to achieve harmony with the natural environment.
- Achieve maximum effective use of fresh waters through reclamation and recycling.
- Continually improve waste treatment systems and processes to assure consistent high quality effluent based on best economically achievable technology.
- Reduce and prevent accelerated (man-caused) erosion to the level necessary to restore and protect beneficial uses of receiving waters now significantly impaired or threatened with impairment by sediment.

While the vision, goals, and objectives for the Santa Cruz IRWM Plan are locally derived and appropriate for the issues and concerns for the Region, they support and are complementary to the objectives described in the Basin Plan.

**Coho and Steelhead Recovery Planning:** In September 2012 the National Marine Fisheries Service (NMFS) division of the National Oceanic and Atmospheric Administration (NOAA) released a Recovery Plan for the Evolutionarily Significant Unit of the Central California Coast Coho Salmon.<sup>2</sup>

NMFS assessed instream and watershed conditions and threats using a method developed by The Nature Conservancy in collaboration with the World Wildlife Fund, Conservation International, Wildlife Conservation Society and others, called Conservation Action Planning (CAP). The method is a “structured approach to assessing threats, sources of threats, and their relative importance to the species’ status” and a method recommended in the Interim Guidance. The NMFS application of the CAP protocol included: 1) defining current conditions for habitat attributes across freshwater life stages believed essential for the long term survival of Central California Coast (CCC) coho salmon, and 2) identifying

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<sup>1</sup> Regional Water Quality Control Board, Central Coast Region, State Water Resources Control Board, California Environmental Protection Agency. 2011. *Water Quality Control Plan for the Central Coast Basin*. Pg. IV-2.

<sup>2</sup> National Marine Fisheries Service. 2012. Final Recovery Plan for Central California Coast coho salmon Evolutionarily Significant Unit. National Marine Fisheries Service, Southwest Region, Santa Rosa, California.

activities reasonably expected to continue, or occur, into the future that will have a direct, indirect, or negative effect on life stages, populations and the ESU (e.g., threats). Results from this assessment provided an indication of watershed health and likely threats to coho salmon survival and recovery. These results were the basis used to formulate recovery actions designed to improve current conditions (restoration strategies) and abate future threats (threats strategies).

The evaluation of current habitat conditions and ongoing and future threats led to the conclusion that summer and winter rearing survival were very low due to impaired instream habitats. These impairments were due to a lack of complexity formed by instream wood, high sediment loads, lack of refugia habitats during winter, low summer flows, and high instream temperatures. The major sources of these impairments are roads, water diversions, and impoundments, residential and commercial development, and severe weather patterns. The Santa Cruz IRWM Steering Committee conducted an analysis to determine areas of consistency and opportunities between these plans and the Santa Cruz IRWM Plan. The results of that analysis were taken into consideration in formulating the Region's goals and objectives.

**20x2020 Goals:** In February 2008, the State of California established a 20 percent reduction in per capita urban water use by the year 2020 (20x2020). Actions toward the 20x2020 goal were furthered by the passage of SBx7-7, which added agricultural water use efficiency to the urban requirement. Even before 20x2020 the Santa Cruz Region has been successful in practicing water conservation, with some of the lowest per capita use in the state. The Santa Cruz IRWM Plan water supply objective to "maximize efficient delivery and use" along with the strategy to "increase water conservation measures" directly support the state's 20x2020 goals.

**Local Plans:** The Santa Cruz IRWM Plan grew from local resource and watershed planning efforts. While the IRWM Plan reflects broader regional goals and objectives, it naturally reflects, and is consistent with, the objectives of these local plans. Consistency between the IRWM Plan and local plans is discussed in more detail in Chapter 12, Relation to Local Water and Land Use Planning.