# Setting Site Water Targets Informed by Catchment Context

## CASE STUDY: Santa Ana River Watershed, California

PACIFIC INSTITUTE

UN GLOBAL COMPACT

CEO Water Mandate

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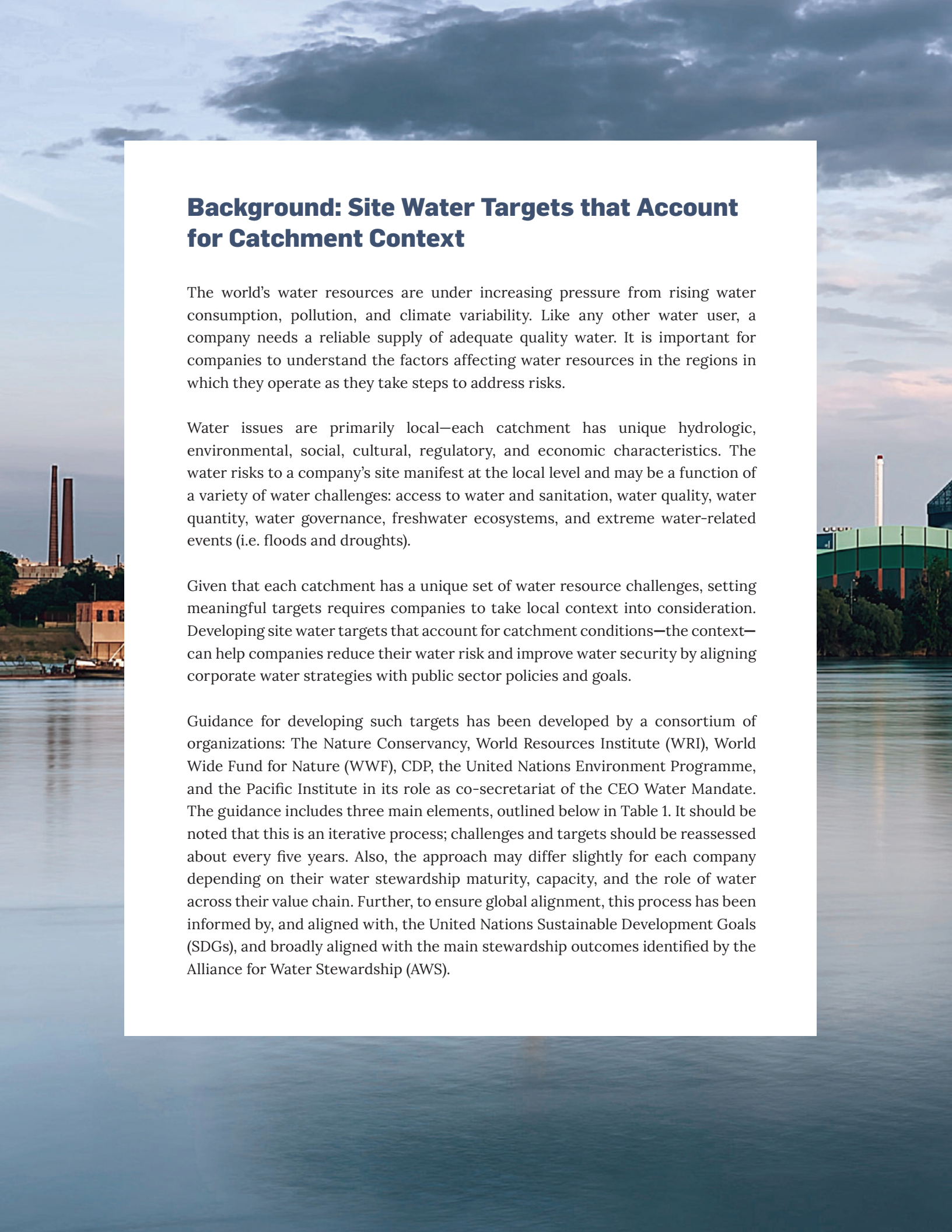


## Background: Site Water Targets that Account for Catchment Context

The world's water resources are under increasing pressure from rising water consumption, pollution, and climate variability. Like any other water user, a company needs a reliable supply of adequate quality water. It is important for companies to understand the factors affecting water resources in the regions in which they operate as they take steps to address risks.

Water issues are primarily local—each catchment has unique hydrologic, environmental, social, cultural, regulatory, and economic characteristics. The water risks to a company's site manifest at the local level and may be a function of a variety of water challenges: access to water and sanitation, water quality, water quantity, water governance, freshwater ecosystems, and extreme water-related events (i.e. floods and droughts).

Given that each catchment has a unique set of water resource challenges, setting meaningful targets requires companies to take local context into consideration. Developing site water targets that account for catchment conditions—the context—can help companies reduce their water risk and improve water security by aligning corporate water strategies with public sector policies and goals.

Guidance for developing such targets has been developed by a consortium of organizations: The Nature Conservancy, World Resources Institute (WRI), World Wide Fund for Nature (WWF), CDP, the United Nations Environment Programme, and the Pacific Institute in its role as co-secretariat of the CEO Water Mandate. The guidance includes three main elements, outlined below in Table 1. It should be noted that this is an iterative process; challenges and targets should be reassessed about every five years. Also, the approach may differ slightly for each company depending on their water stewardship maturity, capacity, and the role of water across their value chain. Further, to ensure global alignment, this process has been informed by, and aligned with, the United Nations Sustainable Development Goals (SDGs), and broadly aligned with the main stewardship outcomes identified by the Alliance for Water Stewardship (AWS).

TABLE 1. **Three elements for setting site water targets that reflect the catchment context**

| **Elements for effective water target setting** | 1 Water targets should respond to priority water challenges within the catchment | 2 The ambition of water targets should be informed by site's contribution to water challenges and desired conditions | 3 Water targets should reduce water risk, capitalize on opportunities, and contribute to public policy priorities |
|---|---|---|---|
| **Recommended Actions** | 1.1. Understand operational risks, dependencies, and impacts | 2.1. Determine the desired condition for the priority water challenges | 3.1. Identify existing water stewardship initiatives, collective action efforts, and public policy initiatives in the catchment |
| | 1.2. Determine spatial scope | 2.2. Assess the gap between the current and desired conditions | 3.2. Set targets that, when possible, contribute to existing efforts to meet desired conditions |
| | 1.3. Prioritize water challenges within the catchment | 2.3. Determine site's contribution towards desired conditions | 3.3. Determine implementation strategies and measure progress towards meeting targets |
| **Desired Outcome** | Targets address contextual water challenges and business risks | Target ambition is proportional to the magnitude of the water challenge | Targets deliver tangible business value and drive action to meet the desired conditions |

# Piloting in the Santa Ana River Watershed

## THE PILOT

In 2018 and 2019, project partners piloted a draft approach in catchments around the world. The Pacific Institute, in its role as co-secretariat for the CEO Water Mandate, coordinated a clustered pilot in the Santa Ana River Watershed (SARW) in southern California. This was done in coordination with the Santa Ana Watershed Project Authority (SAWPA), the California Water Action Collaborative (CWAC), and several companies with facilities and operations in the watershed. Companies that participated in this pilot are Coca-Cola, Ecolab, Hilton (represented by WWF in this pilot), Nestlé USA, Nestlé Waters North America, Niagara Water, PepsiCo, and Target. Several companies participating in the pilot had also undergone or were in the process of pursuing AWS certification, and saw this pilot as a way to complement their AWS work.

The purpose of the pilot was to help participating companies understand the local water context and engage with peer companies, public sector water managers, and other stakeholders in the catchment to align on key water challenges and set meaningful site targets. This target-setting process can help companies prioritize actions and investments that address the key water challenges in the region.

## THE SANTA ANA RIVER WATERSHED

The Santa Ana River Watershed was identified as an ideal pilot location because of its advanced water governance. Water resource managers in this watershed have embraced integrated regional water management (IRWM), and SAWPA has developed a "One Water, One Watershed" (OWOW) plan to advance water management in the region and assess catchment sustainability.[1] Because of this preexisting planning process and governance structure, the catchment is well-studied and water data is relatively easily available. Facilitated engagement in the process of updating the OWOW plan, including meetings with SAWPA staff, helped companies align their targets with public sector efforts. In situations and catchments where public sector management is less robust, companies may need to seek data and information from academics and consultants, or compile data independently to inform the target-setting process.

FIGURE 1: **Santa Ana River Watershed boundaries**


*Source:* SAWPA

The SARW covers a population of approximately six million people and is served by five major water wholesalers. The watershed is situated in a semi-arid climate with highly variable precipitation.

1 The full SAWPA OWOW Plan Update 2018 can be found at: https://bit.ly/2JGUsJ1

Water users depend not just on local surface and groundwater (50 percent of supply), but also on water imported from northern California and the Colorado River (30 percent of supply). Imported water from northern California has its source in the Sierra Nevada mountains and reaches the SARW via the State Water Project (California Aqueduct). Water coming from the east has its source in the Rocky Mountains and reaches the SARW via the Colorado River Aqueduct. See Figure 2 below for a map of imported water systems.

FIGURE 2: **System of water imports to southern California**


*Source:* MWDSC

## PRIORITIZE WATER CHALLENGES

The first element of setting site water targets is focused on developing an initial understanding of the relevant water challenges for participating companies.

### METHODS

A ranked list of relevant water challenges in the SARW was determined based on sites' operational water risk and on catchment water risk.

### *Operational Risk*

Each participating site was unique in operations and location, so impacts and dependencies on water resources varied across the pilot testers. The project team collected information about each site through a secure online data form and meetings with corporate water teams and site managers from each company. The information included data on volumetric water use, sources of water, water-related risks that had been identified (if any), and existing water management strategies, practices, and goals.

### *Catchment water risk*

Six water challenges—water quantity; water quality; freshwater ecosystems; water-related extreme events; access to water, sanitation, and hygiene (WASH); and water governance—were used throughout the pilot to frame the discussion around the biggest concerns and needs in the SARW. The key issues for the catchment were identified through:

- In-person convenings with participating companies, representatives from SAWPA, and other local water agencies
- Reading relevant municipal and catchment planning and governance documents; and
- Understanding relevant state water targets and regulations.

## RESULTS

Water challenges for the SARW are listed in Table 2 in order of priority, based on insights from the resources and processes described above.

This pilot process explored many water challenges and the preliminary priorities were created based on group discussions. Yet each site may rank its water challenges differently, depending on their internal challenges, capacities, and mission. For example, a health care company might have an interest in WASH because of their mission while an apparel company might have an interest in water quality because of the nature of their operations. These differences highlight the importance of accounting for both operational and catchment context when assessing and ranking water challenges.

TABLE 2. **SARW water challenges in order of initial priority**

| | Water Challenge | Key Issues |
|---|---|---|
| 1 | Water quantity | Rapid urbanization and population growth |
| | | Reliance on imported water, including for groundwater recharge |
| | | Wasteful/excessive water use |
| 2 | Water quality | Surface water contamination |
| | | Groundwater contamination |
| 3 | Freshwater ecosystems | Fragmented conservation plans |
| | | Lack of invasive species management and assessment |
| 4 | Extreme water-related events | Climate change exacerbating hydrologic extremes |
| | | Multiple crisis planning documents from multiple agencies; possibility of fragmented planning |
| 5 | Access to water, sanitation, and hygiene | Lack of data/assessment on affordability of water |
| | | Sections of population including the homeless population without access to adequate sanitation |
| 6 | Water governance | Ensuring active, equitable engagement from the multiple, diverse stakeholders |

## ANALYZE CATCHMENT'S CURRENT AND DESIRED CONDITIONS

This contextual analysis element is focused on developing a refined understanding of key water challenges. It does so by establishing the current condition—and the desired condition—of each water challenge and analyzing the gap.

### METHODS

For each of the six water challenges, the project team developed a catchment diagnostic and stoplight analysis [See Table 3] based on baseline conditions and the desired conditions for the SARW. The intent was to refine the priorities, initially identified qualitatively, by performing quantitative analyses of each key issue whenever possible. However, in the absence of quantifiable goals, the project team came to a qualitative understanding of the desired conditions.

The desired conditions were developed with a view on alignment with public sector goals, which are established every five years in the SARW. The primary resources used were the OWOW Plan and the Santa Ana River Basin Water Quality Control Plan[2] for the SARW, along with other literature resources.

2 https://www.waterboards.ca.gov/santaana/water_issues/programs/basin_plan/

Because water users in the SARW are reliant on imported water supplies, the diagnostic included source catchments for the State Water Project and the Colorado River Aqueduct, in addition to local surface and groundwater resources. While expanding the diagnostic scope to include source catchments adds complexity to the process of identifying water challenges, it is a critical component of the SARW water context as it reveals water-related risks and vulnerabilities not captured by examining only local conditions.

In the process of developing this diagnostic, the project team realized that the vastness of the SARW, as well as the human and hydrologic diversity within it, resulted in significant variability in water challenges across different parts of the catchment. To address this, the project team created a supplementary analysis for each facility, based on the water-related context of their specific location in the catchment [See Figure 2.] This was done using city or county metrics, as opposed to catchment, wherever possible to increase the granularity and accuracy of the analysis.

## RESULTS

Water quality, water quantity, and freshwater ecosystems were identified as the greatest water challenges in the catchment diagnostic.[3] It should be noted that for this pilot, the project team assessed the baseline and desired conditions for all six water challenges, as an exercise in understanding how these diagnostics might look. Sites using this guidance to set targets independently would likely only perform the detailed diagnostic for the top two to three priority water challenges identified initially. Below is a brief overview of the water challenges in the SARW, followed by the diagnostic.

***Water Quality:*** Agricultural, commercial, and residential developments have been major sources of water pollution. Key pollutants are nutrients, nitrates, sediments, microbial contaminants, salinity and emerging contaminants.

***Water Quantity:*** The SARW is a naturally arid region and is now developed with a dense urban population with high water demands. In addition, its water users are dependent on water imported from great distances. Regular droughts add to this supply/demand imbalance and will worsen with climate change.

***Ecosystems:*** The SARW contains numerous habitats that provide ecosystems for vegetation, wildlife and birds. However, more than half of all streams in the watershed are degraded.

***Extreme Events:*** Drought is a regular feature of the SARW hydrologic condition, and future droughts will be longer and more severe due to climate change. Local flooding and wildfires are also of concern.

**WASH:** Data on WASH in the SARW is limited, so the scale of the problem is not fully known. It is known that WASH for people experiencing homelessness is a challenge in the SARW.

***Water Governance:*** Governance in the SARW is robust, but also complex. There remain data gaps, gaps in funding for infrastructure and management, and challenges around interagency collaboration.

3 The full diagnostic with data, metrics, and rankings can be downloaded at: https://bit.ly/2SrAODB

## TABLE 3. **Santa Ana River Watershed diagnostic**

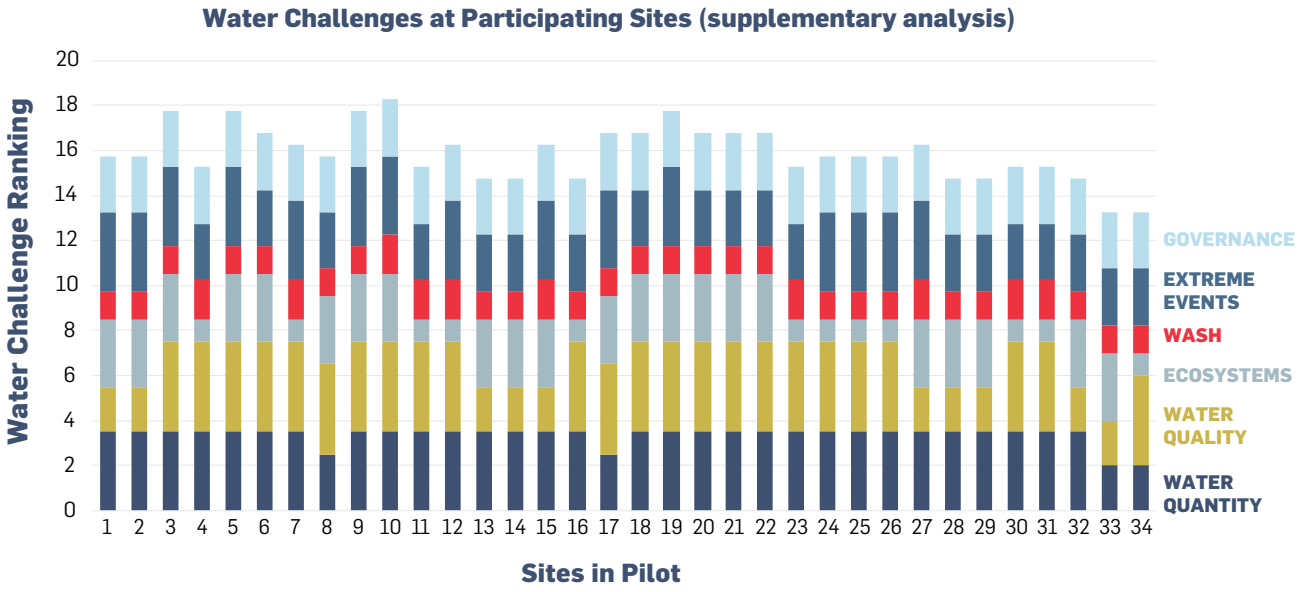
- RED = POOR condition
- ORANGE = MEDIUM condition
- YELLOW = DECENT condition
- GREEN = GOOD condition
- GRAY = not assessed (no data available)
- Merged columns indicate regional or statewide assessment

* = data assessed at more granular scale in supplementary analysis for each site

| Water Challenge | Issue/ Indicator | Metric | Water Source | | | |
|---|---|---|---|---|---|---|
| | | | Local Surface Water | Local Groundwater | State Water Project | Colorado River |
| Water quantity | Water demand | Gallons per capita daily (GPCD)* | | | | |
| | Water supply reliability | Water depletion | | | | |
| Water quality | Ambient water quality | Exceedance of maximum contamination thresholds* | | | | |
| Ecosystems | Ecosystem health | Biophysical condition of the freshwater ecosystem* | | | | |
| Extreme Events | Hydrologic extremes | Variability in precipitation patterns | | | | |
| | Crisis planning | Consideration of hydrologic extremes in water planning documents* | | | | |
| Access to water, sanitation, and hygiene (WASH) | Drinking water | Access | | | | |
| | | Safety* | | | | |
| | | Affordability | | | | |
| | Sanitation | Access | | | | |
| | | Safety | | | | |
| | | Affordability | | | | |
| Water governance | Funding | Funding for water infrastructure and management | | | | |
| | Infrastructure | Condition of water infrastructure* | | | | |
| | Integrated planning and management | Existence of document or organization dedicated to watershed management | | | | |

The supplementary analysis below demonstrates the variation in water challenges across the catchment, with the varying magnitude of challenges changing the relative priority of each challenge across sites.

FIGURE 3. **Supplementary analysis demonstrating variability across the catchment**




The intent of these two analyses was to provide a simple and clear understanding of the conditions of each water challenge in the SARW to support sites in developing targets based on the catchment context. Alignment with the public sector helps to ensure that there is collective movement towards a common desired condition. The types of metrics used varied between qualitative and quantitative, depending on data robustness and availability. For example, data on WASH in the SARW is limited, so the analysis for that challenge is incomplete. There is also overlap between the water challenges and metrics assessed in the diagnostic, given the intrinsic interconnectedness of water issues. For example, water quality and freshwater ecosystems are tightly tied, and water-related extreme events affect all other challenges, as does governance.

## SET SITE WATER TARGETS

This third and final element is focused on setting and communicating SMART (specific, measurable, achievable, relevant, and timebound) targets for how each site will contribute to meeting the desired condition for relevant water challenges.

### METHODS

The direction and ambition of targets can be informed by assessing:

(1) The gap between current and desired condition for priority water challenges;

(2) The facility's impact on those challenges; and

(3) The company's capacity and ambition to help close the gap between the current condition and desired conditions.

The project developed a database of possible targets (a measurable desired result) and intervention ideas (actions to be taken to help achieve the desired result) relating to each water challenge. Targets were designed to be specific enough to provide clear direction and connection to the local context, but general enough to be able to customize to a site's needs and take into consideration opportunities for collaboration. The project team also provided recommendations on level of ambition when there were resources and literature to back such recommendations.

This database of targets was then used to create a catered list of possible targets for each site, based on the catchment diagnostic; supplementary analysis; and site operational information collected.

## RESULTS

A summary of the site targets is shown in Table 5. There is some duplication of targets because, as discussed, the six water challenges are interconnected, and some targets can contribute to multiple water objectives. In fact, the project team encourages sites to pursue such multi-benefit approaches. Customized target suggestions were identified for each pilot testing company, representing a subset of the full database of targets created. The full database of targets includes the details necessary to make the targets SMART, as previewed in Table 4.

TABLE 4. **SMART site water target categories**

| | |
|---|---|
| **SPECIFIC** | Water challenge<br>Water target<br>Within or beyond site fenceline? |
| **MEASURABLE** | Numerical target?<br>Suggestion for level of ambition (when possible) |
| **ACHIEVABLE** | Resources for implementation<br>Intervention ideas (not exhaustive) |
| **RELEVANT** | Brief justification (based on SAWPA OWOW goals)<br>Desired Condition (based on five-year public planning horizon) |
| **TIMEBOUND** | Suggested timeline for achieving target |

One key result of the target development process was the inclusion of both within-fenceline (operationally focused) and beyond-fenceline (catchment-focused) targets. While all companies are strongly encouraged to implement best practices in water stewardship at their sites, the project team and pilot testers acknowledge that, in a catchment as large, complex and water-challenged as the SARW, within-fenceline actions alone are not sufficient to address the issues at hand. In order to make a substantial positive impact on the catchment, companies should also look to engage in collaborative projects in the communities and local waterways around their site and in their source water catchments; the full database of targets reflects that need.[4]

4 The full database of targets can be downloaded at: https://bit.ly/2MieLyE

TABLE 5. **Summary of site water targets**

| Water Challenge | Water Target |
|---|---|
| Water quality | Reduce or eliminate runoff from site (stormwater and dry-weather runoff) |
| | Monitor wastewater/effluents for emerging contaminants |
| | Wetland/meadow restoration to improve natural water filtration processes |
| | Santa Ana River restoration to improve instream water quality |
| | Reduce key pollutants in the watershed |
| Water quantity | Water use efficiency |
| | Absolute water use reduction |
| | Replenish water use |
| | Implement sub-metering (operational processes and dedicated outdoor irrigation meters) |
| Ecosystems | River restoration (Santa Ana River, local stream or tributary, source catchments) |
| | Forest restoration (Angeles, San Bernardino, Plumas, Tahoe National Forest) |
| | Wetland/meadow restoration (local or source catchments) |
| | Non-native invasive plant species removal (local or source catchments) |
| | Reduce key pollutants in the watershed |
| | Create/protect open space onsite |
| Extreme events | Support initiatives that improve climate change resilience around flood and drought |
| | Develop a storm water management plan |
| | Reduce or eliminate runoff from site (stormwater and dry-weather runoff) |
| | Absolute water use reduction |
| | Forest restoration to reduce fire-related risk (Angeles, San Bernardino, Plumas, Tahoe National Forest) |
| | Build fire resilience onsite |
| WASH | Provide WASH for homeless and others in the watershed |
| | Establish formal policy on Human Right to Water[5] for employees in their workplace and communities |
| | Provide public access to water and sanitation onsite |
| Water governance | Implement sub-metering (operational processes and dedicated outdoor irrigation meters) |
| | Work with water managers to create local commercial and industrial water management best practices guidelines |
| | Develop a working relationship with water supply agency(ies) |
| | Increase awareness of the water challenges facing the catchment and maintain transparency about site's responsive water stewardship efforts |
| | Monitor wastewater/effluents for emerging contaminants |

5 Guidance on the Human Right to Water can be found at: https://www.un.org/waterforlifedecade/pdf/human_right_to_water_and_sanitation_media_brief.pdf

## CONCLUSION AND KEY LEARNINGS

At the conclusion of the pilot, each facility was given a final packet with information on the Santa Ana River Watershed context, local water management information, site information, and site water targets with intervention ideas. This pilot helped participating companies understand the water context in which they are operating, from a hydrologic, governance, and social perspective. This in turn equips them to make informed decisions—backed by data—about the water targets set and actions taken at their site and in the catchment. Once targets are set, sites can scale the impact of their actions by working collectively with peer companies and other stakeholders. Sites can also leverage resources, such as the California Water Action Collaborative (CWAC)[6] and the Water Action Hub,[7] to find opportunities for collaboration.

Below are some learnings based on the experience of the pilot, collected from the project team and pilot testing companies.

1. **Use local water management resources (plans and people).** Local water planning documents are compendiums of critical information for understanding the catchment context. Engage water managers by inviting them to stakeholder convenings, sharing insights, and asking for their input on the site water target-setting process.

2. **Set clear end dates for site water targets and encourage public sector water managers to do the same.** There is often a lack of a clear end date for achieving water-related goals in public-sector water planning. In order to be a SMART target, there must be an established time frame.

3. **All water issues are interrelated.** The six water challenge categories are inextricably connected and therefore can be difficult to assess individually. It is important to acknowledge these connections, but also to break down the challenges into manageable pieces that can be addressed by explicit targets and actions.

4. **Site water targets and actions should go beyond the fenceline.** The project team and pilot testers acknowledge that, in a catchment as large, complex, and water-challenged as the SARW, each individual site has little impact and within-fenceline actions alone are not sufficient to address the issues at hand. In order to make a substantial positive impact on the catchment, companies should also look to engage in collaborative projects in the communities and local waterways around their site and in their source water catchments.

5. **Qualitative goals are okay.** There is a marked lack of quantitative water goals at the catchment scale in the SARW. Where there is a dearth of data or quantitative guidance on the desired condition of the catchment, it is better for a company to set qualitative targets than none at all.

6. **Depending on organizational structure, the process of setting site water targets can be led by a corporate water team or site-level management, or both.** For companies uniquely structured, undergoing organizational changes or facing resource or time constraints, it is possible to participate in site target-setting even if it is not led at the site level. For example, a company may have a water expert who sits at a regional or corporate level who may be best equipped to lead the process.

6 www.cawateraction.com

7 www.wateractionhub.org

## The CEO Water Mandate's six core elements:

### Direct Operations

Mandate endorsers measure and reduce their water use and wastewater discharge and develop strategies for eliminating their impacts on communities and ecosystems.

### Supply Chain and Watershed Management

Mandate endorsers seek avenues through which to encourage improved water management among their suppliers and public water managers alike.

### Collective Action

Mandate endorsers look to participate in collective efforts with civil society, intergovernmental organizations, affected communities, and other businesses to advance water sustainability.

### Public Policy

Mandate endorsers seek ways to facilitate the development and implementation of sustainable, equitable, and coherent water policy and regulatory frameworks.

### Community Engagement

Mandate endorsers seek ways to improve community water efficiency, protect watersheds, and increase access to water services as a way of promoting sustainable water management and reducing risks.

### Transparency

Mandate endorsers are committed to transparency and disclosure in order to hold themselves accountable and meet the expectations of their stakeholders.