2015 Environmental Report Card

FOR LOS ANGELES COUNTY

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WATER

Overview

2013 and 2014 were extraordinary years for water. The three year extreme drought conditions led to an emergency declaration by Governor Brown and the passage of numerous drought response measures at the State Water Resources Control Board. Among those measures were requirements for water conservation statewide and monthly water use reporting. In addition, the $7.5 billion water bond, Proposition 1, passed with two thirds of the vote, providing essential resources for local water supply through water recycling, groundwater cleanup, and stormwater capture. The comprehensive California Water Action Plan was released in 2013 and the state has focused on implementing both the water supply and water quality measures within the plan.

However, despite the admirable history of water conservation in Los Angeles and the future promise of the actions of 2013 and 2014, the Los Angeles region is still experiencing many water quality and supply challenges. While we no longer have a dead zone in Santa Monica Bay, our water supplies are safe to drink, the number of sewage spills has reduced dramatically over the last decade, and our beaches are much cleaner and safer than they were in the 1990s, we still have major groundwater contamination problems, we import far too much of our water from hundreds of miles away, and the vast majority of our waterways are impaired by one or more pollutants.

The indicators we used to assess the state of our local water were: water supply sources and per capita consumption rates, drinking water quality, groundwater quality, surface water quality, discharges to surface waters, and beach water quality. Overall, the Los Angeles region has been moving in the right direction on most of these indicators, but the region has a long way to go to provide an integrated water management approach that provides a sustainable water supply and surface and groundwater quality that meets state and federal laws and is protective of aquatic and human health. Due to those challenges, our grade may seem low despite significant progress.

Water Sources and Consumption

Efforts are underway to decrease consumption and rely more on local water resources in response to multiple factors, including climate change and the current severe drought.

The Water Conservation Act of 2009 (California SBX7-7) set a goal of reducing per capita urban water use by 10% by December 31, 2015, and by 20% by December 31, 2020 (known as 20x2020). Also, last year, Governor Brown declared a drought emergency and called for immediate, voluntary 20% reductions. One example of a bold response to the Governor's declaration was city of Los Angeles Mayor Eric Garcetti's issuance of an executive order for a 20% water use reduction from 2014 consumption levels by January, 2017.

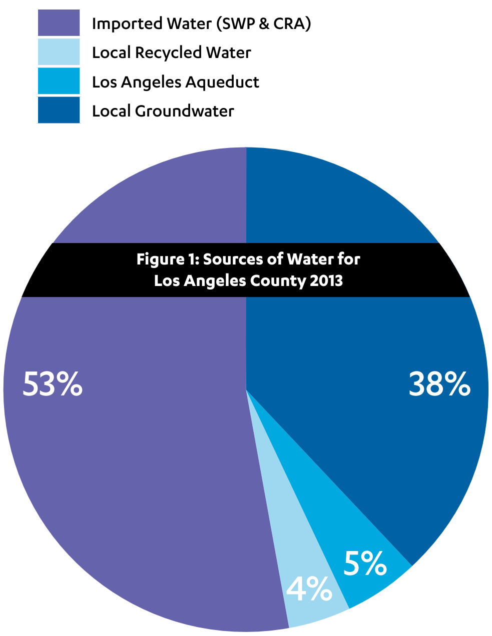


Figure 1: Sources of Water for Los Angeles County 2013

Data

For this indicator, we looked at both water sources and per capita water use. Water is supplied across LA County by approximately 100 different suppliers, including City retailers, County Water districts, County Waterworks Districts, Irrigation Districts, Investor owned utilities, and Mutual water companies. Many of these suppliers source their water through MWD, which serves 91% of the total population (>10million people) and 34% of the total area in the Los Angeles County. MWD is the regional wholesale water agency, importing water from the Bay-Delta via the State Water Project (SWP) and from the Colorado River via the Colorado River Aqueduct (CRA). Since it was infeasible to compile data from all suppliers (see data limitations), we used MWD data for LA County (provided through a data request) to understand both sources and consumptive use. The three categories of water use are: "Total Municipal and Industrial (MI) Demand" which is self-explanatory; "Potable Consumptive Demand" which is MI Demand minus recycled water – this is the value used to calculate gallons per capita per day (GPCD) water use for compliance with SBX7-7; and "Total Demand" which includes MI, agricultural, seawater barrier and groundwater replenishment. We compared 2013 levels to data from the last decade. Case studies from the Cities of LA and Long Beach are based on data from the drinking water information clearinghouse[1].

Findings

- Currently, approximately 58% of the water used in LA County is sourced from outside the region. (Fig 1)
- Countywide, 53% percent of total water demand is met by MWD service water and 5% is supplied by the Los Angeles Aqueduct (LAA, supplies City of Los Angeles only). (Fig 1)
- Groundwater resources provide 38% of total Countywide demand, and local recycled water contributes about 4%. (Fig 1)

Figure 2: Sources of Water for Los Angeles County 2000-2013, Source: MWD

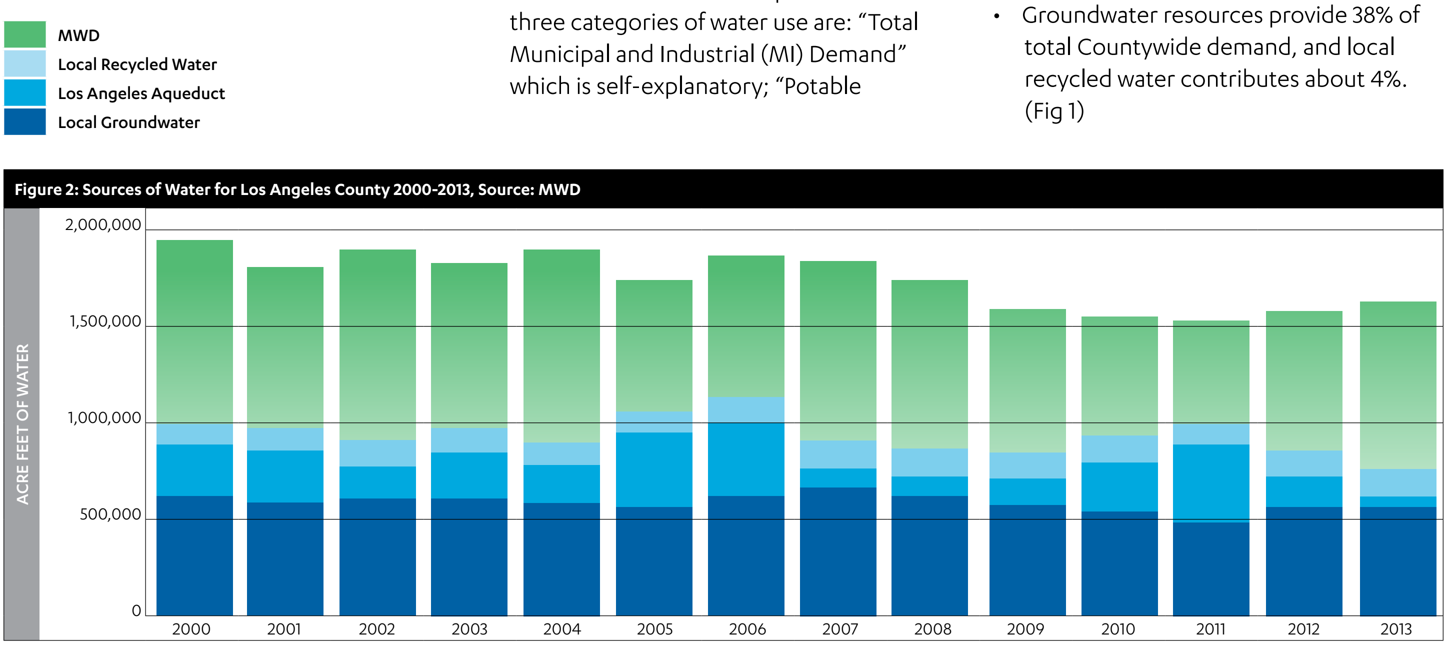
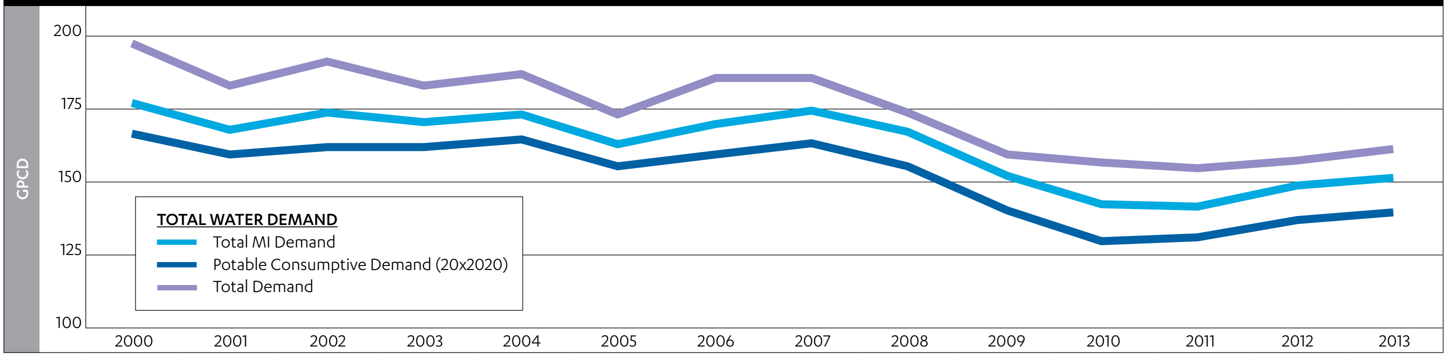


Figure 3: Total Water Demand in Los Angeles County Sourced by MWD. Source: MWD



- There is no overall trend in County water supply since 2000, but MWD is consistently the primary source. (Fig 2)

- The contribution of groundwater to LA County is fairly constant (~32% to 38%) but a small portion of that water is imported MWD water used to replenish groundwater basins. Similarly, local recycled water has been at a constant (~5% to 8%) contribution since 2000. The LAA contribution (supplies City of Los Angeles only) has decreased significantly since its maximum in the year 2011 (~24%) to its smallest level of contribution in 2013, at about 5% of total water supply. (Fig 2)

- Total MI Demand has dropped from 177 to 151 GPCD between the years 2000 and 2013, and Potable Consumptive Demand (20x2020) dropped from 168 to 139 GPCD in the same time period. (Fig 3)

- Despite the region's well documented history of successful water conservation and the current move toward increased water recycling, there have not been major gains in these areas in the last few years (Fig 3). The region's per capita water use is still twice as high as the average European city (76 GPCD)[2] .

- Although there has been a general decreasing trend since 2000, all three categories of use (Total Municipal and Industrial (MI) Demand; Potable Consumptive Demand (20x2020) and Total Demand) increased from 2011 to 2013 (Fig 3). In response to the Governor's drought declaration and State Water Board and local government conservation actions, there has been a drop in countywide consumption in 2014, but the final annual statistics weren't available in time for report completion.

Case Studies

- Los Angeles Department of Water and Power (LADWP) supplies water to the City of LA from the LAA, recycled water, local groundwater and purchased imported water from MWD. Approximately 89% of the City of LA's water supply was imported from more than 200 miles away in 2013-14. Their 2012-13 GPCD consumption is 130, which is below their 2020 target of 138 GPCD, but 20% above Mayor Garcetti's recent target of 105 GPCD by 2017 (Fig 4).

- Long Beach Water Department (LBWD) supplies the water for the City of Long Beach using MWD service water and ground water from Central Basin. The city's 2013 GPCD consumption is 114, which is below their 2015 interim target of 121 (Fig 5). Long Beach's 2020 target is 107 GPCD.

- County totals calculated by drinc.ca.gov are consistent with estimates using MWD data (~ 139 GPCD in 2013 and ~137 in 2012.) (Fig 4 and 5)

Data Limitations

- The byzantine nature of the water supply system currently prevents a comprehensive analysis of total water consumption and per capita water usage in the county. There is no single agency through which to access data for all of LA County, and MWD does not have a specific 20x2020 target for LA County.

- Because the MWD category "groundwater" includes both runoff from local watersheds as well as imported water used for groundwater replenishment, it is not currently possible to accurately answer the question of how much of LA County's supply is truly local.

Figure 4: City of Los Angeles GPCD Compared to Regional Averages (2009-2013). Source: drinc.ca.gov

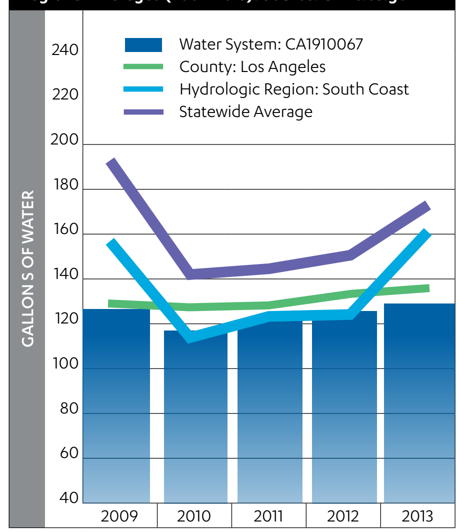
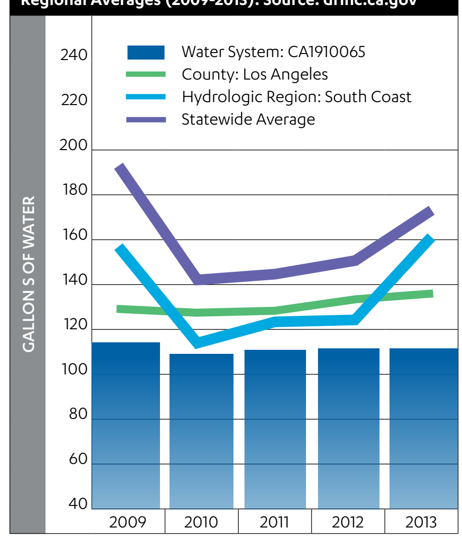


Figure 5: City of Long Beach GPCD Compared to Regional Averages (2009-2013). Source: drinc.ca.gov



Source: DRINC Portal (http://drinc.ca.gov) EAR System

- The MWD data used for LA County is sourced from MWD through a public records request and are estimates as of August 2014. Values for years 2012 may be revised as new data becomes available
- We were unable to review Urban Water Management Plans as part of this first assessment, due to time and resource limitations, but plan to include a UWMP evaluation in the next report card.

Drinking Water Quality

Drinking water quality is among the most fundamental measures of environmental condition directly impacting human health.

There are approximately 225 Community Water Systems serving LA County[3]; these are defined as water systems that serve the same people year round (e.g. in homes or businesses). A majority of these systems purchase water wholesale through the MWD which serves >10 million people in LA County, approximately 91% of the population. Water systems vary greatly in size, from LADWP with close to 4 million customers, to very small systems serving local populations of a few hundred residents. Approximately 38% of the water supply in Los Angeles County comes from groundwater. Federal and State drinking water regulations had previously been overseen by the CA Department of Public Health (CDPH), but effective July 1, 2014 the administration of the Drinking Water Program transferred to the State Water Board.

Data

We looked at two aspects of drinking water quality:

(1) Violations of drinking water regulations, specifically, violations of maximum contaminant levels (MCLs) provided in the Annual Reports issued by the California Department of Public Health (CDPH), now available on the State Water Board's website[4]. We looked at systems serving populations >100 people. We used the 2012 Annual Report for violations data because the 2013 report had not yet been released as of the time or our analysis.

(2) Exceedances of drinking water standards as identified through annual Consumer Confidence Reports (CCRs)[5] provided by water purveyors annually, by law, to all customers. For this analysis, we used a combination of random sampling and deliberate selection of providers in LA County. We randomly selected three small water companies (less than 25,000 individuals served) and three medium water companies (between 25,000 and 100,000 individuals served). We purposefully selected the two largest water purveyors in the County, as well as the City of Maywood's three water companies because of their known history of water quality exceedances. We looked at reported concentrations for 24 drinking water quality parameters, including microbial contaminants, metals, pesticides/herbicides, organic chemicals and radioactive substances. We compared reported values to both maximum contaminant limits (MCLs) and public health goals (PHGs). While most exceedances reported on the CCRs do not represent violations (because regulations are based on percentiles or averages across multiple sampling events), CCRs are the official communication mechanism

Table 2: 2012 MCL Violations

Subject	MCL	System Name	Population Affected	2012 MCL Violations
TCR – Monthly	Absence	City of Beverly Hills	44,290	1
TCR – Monthly	Absence	El Monte-City, Water Dept.	22,968	1
TCR – Acute	Absence	WM. S. Hart High / Placerita JR HS	4,000	1
Arsenic	10 ug/L	Land Project Mutual Water Co	1,500	4
TCR – Monthly	Absence	Hemlock Mutual Water Co.	985	1
TCR – Acute	Absence	Golden Sands Mobile Home Park	450	1
TCR – Monthly	Absence	Sherwood Mobile Home Park	250	1
TCR – Acute	Absence	Mettler Valley Mutual	135	1
TCR = Total Coliform Rule			**74,578**	**11**

Table 3: Total MCL Violations in L.A. County Drinking Water Systems Serving >100 People (2008-2012)

	2008	2009	2010	2011	2012
Number of MCL Violations	10	7	6	16	11
Population Affected	144,552	102,699	57,590	90,318	74,578

Table 4: Selected Water Purveyors for CCR Review

Water District	Population Served
Los Angeles Department of Water and Power	3,855,879
Long Beach Water Department	464,662
Monrovia Water Department	39,147
Crescenta Valley City Water Department	38,000
Compton Willowbrook Park Water Company Compton	27,600
Tract 349 Water Company	7,500
Amarillo Municipal Water Company	3,134
Bellflower Home Garden Water Company	1,200
Maywood Water Company #3	9,500
Maywood Water Company #2	6,700
Maywood Water Company #1	5,500
Total	**4,458,822**

Table 5: Drinking Water Contaminant Results as Reported on CCRs

Category	2008-2012	2013
Omitted From CCR	61%	65%
Range Exceeds PHG	21%	22%
Range Exceeds MCL	1.7%	2.7%
Average Exceeds MCL	0.45%	0%
No Exceedances	16%	10%

to consumers. As such, we believed it was important to evaluate the information provided, both for reported water quality and for clarity of information.

Findings

- Overall, based on publicly available data, nearly everyone in the Los Angeles County area has been provided with clean water. There were only 11 instances of violations of the Maximum Contaminant Limits in 2012, involving 8 separate systems, affecting a total of 75,578 consumers. (Table 1)
- Most violations involved coliform bacteria, but one system had four violations related to arsenic exceedances in 2012. (Table 2)
- The number of MCL violations over the past 5 years shows no clear trend. (Table 3)
- The CCR data was extremely difficult to evaluate, because monitoring requirements and violation triggers are dependent on system size, source water type and treatment type. Many systems are governed by some combination of State regulations and individual treatment system permit requirements, but the specific set of applicable monitoring requirements cannot be determined from the information provided on most CCRs, and site-specific permits are not accessible on-line.
- For the water purveyors selected for review (Table 4), monitoring results for over 60% of the pollutants were not included on the CCRs (Table 5), either due to pollutant concentrations in drinking water were below detection limits or because monitoring was required on a less-than-annual basis for those pollutants for that water system; however, we were unable to determine which reason applied to any given pollutant.
- Overall, we found CCRs to be generally poor communication tools for consumers, since they lack information on the required contaminants and frequency of monitoring for the drinking water system.

Groundwater Quality

Dwindling water resources and a growing population have increased the importance of local supplies; however, despite Superfund actions, hundreds of groundwater cleanup actions, replacement of thousands of underground storage tanks, and enormous regulatory efforts, the state of groundwater quality in the LA region is still extremely poor. Over 75 years of industrial activities, most of which were largely unregulated until the 1970s and 80s, has led to a widespread legacy of groundwater contamination that is focused, but not limited to, areas of historic and current industrial use.

As stated in the drinking water section, unsafe contaminated groundwater is not being served to customers, but the groundwater treatment plants and operating costs necessary to provide clean water cost the region billions of dollars. At the same time, those aquifers which do have high quality groundwater must be protected from degradation through regulatory policies and the salt and nutrient management plan efforts currently underway.

Data

We focused on measures of groundwater contamination. Reports were generated using the GeoTracker GAMA (Groundwater Ambient Monitoring & Assessment) database[6]. GeoTracker GAMA compiles groundwater monitoring data from multiple programs and agencies into a publicly-accessible internet database. Out of the seven major types of datasets, we used two to assess the groundwater quality in LA County: Water Supply Wells (California Department of Public Health [CDPH] database) and Environmental Monitoring Wells (State and Regional Boards). Based on recent reports on ground water quality of LA County, ten pollutants were selected for evaluation, all of which are prevalent in groundwater and are known to pose serious human health problems. Despite the fact that much of the groundwater monitoring data was from wells that do not provide drinking water, state-established Maximum Contaminant Levels (MCLs) were the basis for evaluating reported concentrations because they are the best available,

Table 6: Ground water quality for selected pollutants for the period Sep, 2013 to July, 2014. Source: GAMA

No.	Pollutant	State MCL	Total no. of Monitored Wells	% of Monitored Wells with Conc. > MCL	% of CDPH Wells with Conc. > MCL	% of Samples With Concentrations Greater Than MCL		
						>MCL	>10xMCL	>100xMCL
1	Nitrate	45 mg/L	1,635	8.4%	6.1%	6.8%	0%	0%
2	TCE	5 µg/L	3,977	20.8%	8.9%	17.3%	8.4%	3.2%
3	PCE	5 µg/L	3,988	14.9%	8.6%	13.1%	5.1%	1.2%
4	Perchlorate	6 µg/L	563	10.5%	7.9%	14.4%	0.2%	0.0%
5	Cr6+	10 µg/L	571	17.2%	12.8%	19.4%	6.6%	2.0%
6	MTBE	5 µg/L*	7,413	26.1%	0.0%	22.2%	11.0%	4.4%
7	Benzene	1 µg/L	7,652	30.7%	0.0%	26.5%	20.3%	14.3%
8	1,4 Dioxane	1 µg/L	713	43.5%	25.5%	36.5%	15.1%	5.7%
9	Vinyl Chloride	0.5 µg/L	3,826	8.4%	0.0%	6.8%	4.1%	1.7%
10	Methylene Chloride	5 µg/L	792	0%	0.0%	0	0	0

*Secondary MCL

established, health based target values that apply to groundwater quality. We looked at the percent of wells and percent of samples with concentrations above the MCL, as well as the maximum concentrations observed, for both the recent one year period and for the last decade. We also looked at GeoTracker GAMA-generated maps showing the distribution of monitoring well contamination in the lower, urbanized half of the County for the three pollutants for which there were the most exceedances of MCLs. It is important to note, that most of the groundwater monitoring data is from groundwater with known contamination problems. Also, a large portion of the data is from aquifers that do not produce drinking water.

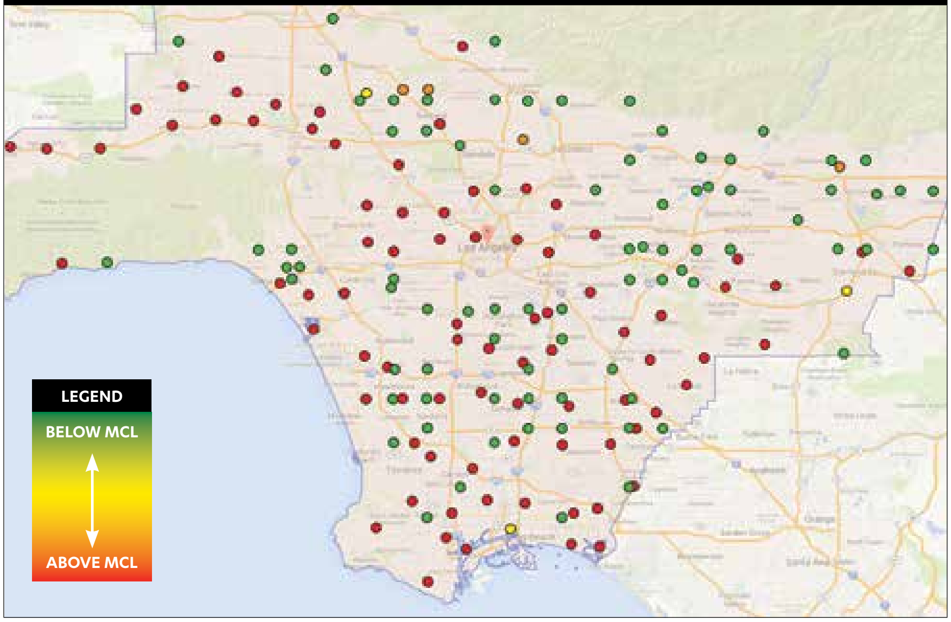
Findings

- Contamination of groundwater wells is prevalent , both in terms of the number of samples above the MCL and the extent to which the limits are exceeded. (Table 6 and Figures 6-8)
- With the exception of Methylene Chloride, all pollutants evaluated were found to exceed MCLs in at least 8% and as many as 43% of monitored wells in the period between Sept 2013 and July 2014 (Table 6).
- Benzene, MTBE and 1,4 Dioxane are the pollutants with the highest percentage of wells above the MCL (Table 6), but note that 1,4 Dioxane is monitored in less than 10% of the number of wells for which Benzene and MTBE are monitored.

Table 7: Ground water quality for selected pollutants for last decade. Source: GAMA GeoTracker

No.	Pollutant	State MCL	% of Monitored Wells with Conc. > MCL		
			Last 10 yr (Sep,2004-July,2014)	Last 3 yr (Sep,2011-July,2014)	Last 1 yr (Sep,2013-July,2014)
1	Nitrate	45 mg/L	16.4%	11.9%	8.4%
2	TCE	5 µg/L	22.4%	22.0%	20.8%
3	PCE	5 µg/L	18.3%	17.0%	14.9%
4	Perchlorate	6 µg/L	12.2%	10.4%	10.5%
5	Cr6+	10 µg/L	19.3%	16.3%	17.2%
6	MTBE	5 µg/L	42.6%	31.1%	26.1%
7	Benzene	1 µg/L	48.1%	34.8%	30.7%
8	1,4 Dioxane	1 µg/L	34.7%	38.1%	43.5%
9	Vinyl Chloride	0.5 µg/L	9.3%	8.6%	8.4%
10	Methylene Chloride	5 µg/L	0.2%	0.1%	0%

Figure 6: Wells Monitored for Benzene. Source: GAMA GeoTracker



- With the exceptions of Nitrate, Methylene Chloride, and Perchlorate, all other contaminants were present at concentrations up to 100 times the MCL in the most recent 1-year period. In the most extreme case, Benzene, over 20% of samples had concentrations 10 times higher than the MCL, and over 14% had concentrations 100 times higher (Table 6).
- Only Methylene Chloride was within the State MCL limit for all samples over the last year. (Table 6)
- Six out of ten contaminants were found in CDPH (public supply) wells in concentrations above the MCL: Nitrate, TCE, PCE, Perchlorate, CR6+ and 1,4 Dioxane. (Table 6)
- Exceedances in public supply wells ranged from 6% of the samples for Nitrate to over 25% for 1,4 Dioxane. (Table 6)
- A review of the last three and ten years of data showed decreases for most pollutants in the number of wells with concentrations greater than the MCL. While there were increases in the percent of wells exceeding the MCL for 1,4 Dioxane, Cr6+ and Perchlorate, there was also a decrease in the number of wells monitored for those pollutants over the same time period. (Table 7)
- Note that contaminant levels in public supply wells do not equate to drinking water quality. Where groundwater is used for drinking water, additional monitoring is required and the water is usually treated. Furthermore, not all groundwater is designated for drinking water supply. However, contamination of drinking water aquifers means that additional energy and resources must be expended for this local resource to replace imported water.

Figure 7: Wells Monitored for MTBE. Source: GAMA GeoTracker

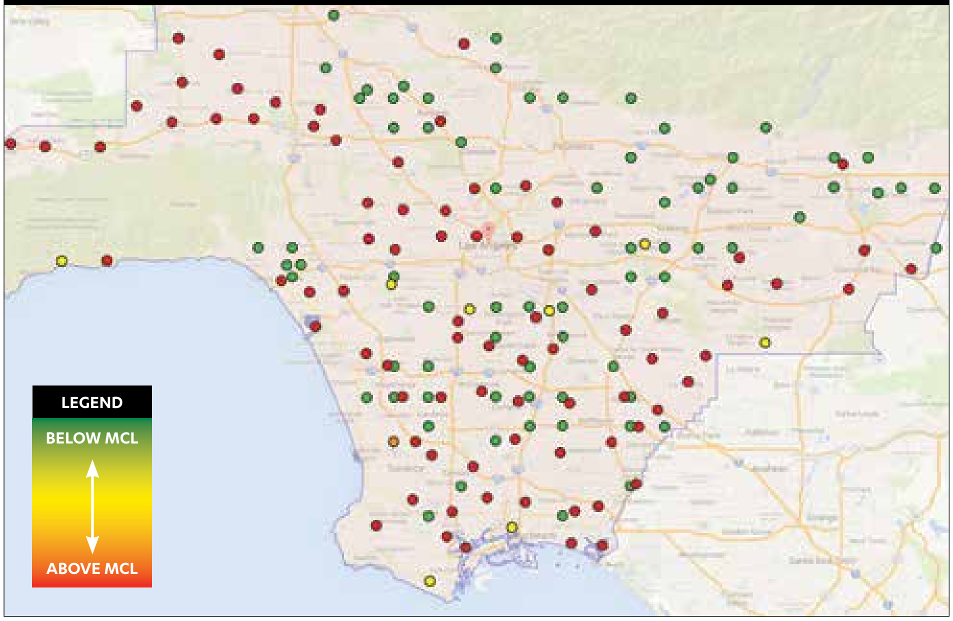
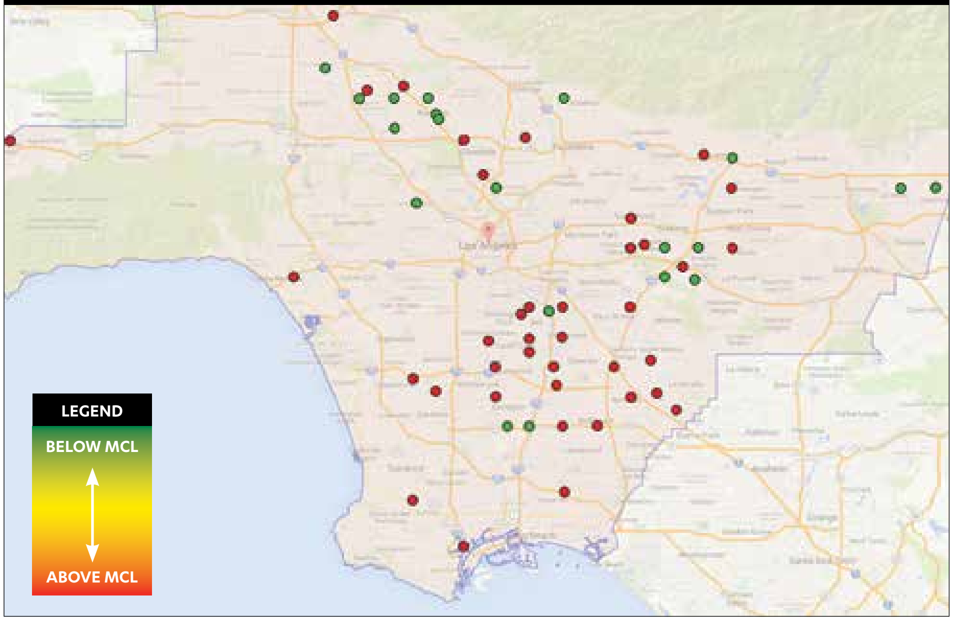


Figure 8: Wells Monitored for 1,4 Dioxane. Source: GAMA GeoTracker



Data Limitations

One of the major limitations of this data set is the lack of uniform monitoring frequency by well and by pollutant across the County. Furthermore, wells in the Environmental Monitoring program decrease in number over time once treatment achieves compliance with State standards, thereby making it challenging to evaluate trends. The GeoTracker GAMA website itself also limited our ability to obtain data for reporting periods comparable to other metrics in this report card. The search toolbar has only fixed options for data display: 1 Year, 3 Year, 10 Year and All Years. Therefore, the report time period is dependent on the date of download from the site (as opposed to by calendar year), and historic reports cannot be generated for individual selected years. While there is an option to download all monitoring well data for a given area, this results in an unmanageably large data set at the County level, with close to 1 million rows of data, therefore the search functionality of GeoTracker GAMA is critical to making this information accessible to the public. More fundamentally, the monitoring data available do not give an accurate picture of groundwater quality in a given basin because the vast majority of the wells were not installed to provide a big picture overview. As such, we can provide general geographic trends across the region, but not assessments for individual groundwater basins.

Surface Water Quality

The Clean Water Act established a process by which each state: 1) identifies beneficial uses of their surface water; 2) monitors and evaluates results against water quality objectives (WQOs) corresponding to those beneficial uses; and 3) categorizes waterbodies that do not meet WQOs as "impaired" under section 303(d).

A total maximum daily load (TMDL) for each waterbody reach that is impaired by one or more pollutant must be calculated and then enforced through permits (or other implementation actions), in order to bring these waterbodies back into compliance with WQOs, thereby meeting their beneficial uses.

Data

We used two metrics for this indicator:

(1) The extent of impaired water bodies in LA County compared to the extent assessed. These statistics were derived from the Statewide 2010 Integrated Report (303(d) List of impaired waterbodies) on the State Water Resources Control Board website[7]. Data for rivers and streams are provided in linear measures, whereas lakes, bays, etc., are provided as area measurements.

Figure 9: Los Angeles County Impaired Water Bodies based on 2010 303(d) List

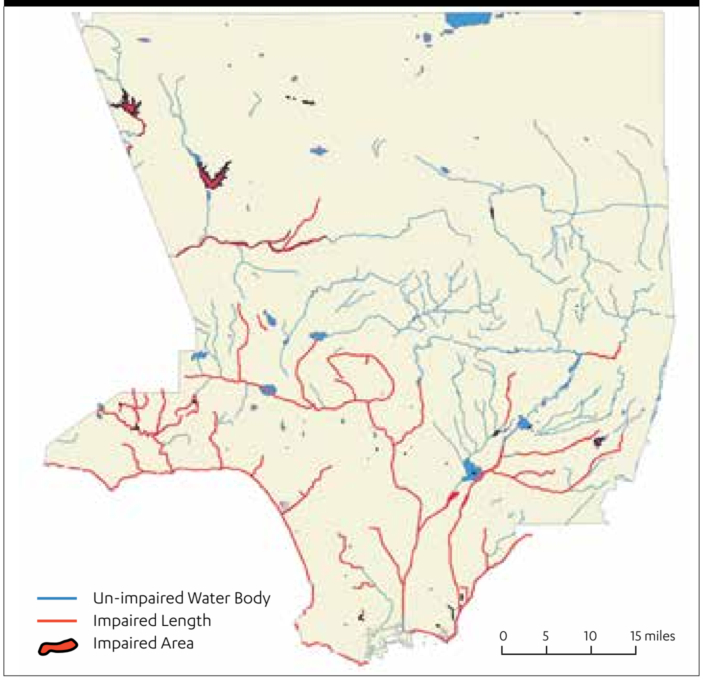


Table 8: Impaired vs. Assessed Rivers, Streams and Shorelines (in Miles) based on 2010 303(d) List			
Water Body Type	Impaired Length	Assessed Length	Percentage
Coastal & Bay Shoreline	57	63	90.4%
River & Stream	452	537	84.1%
Total	**509**	**600**	**84.8%**

Table 9: Rivers, Streams and Shoreline Impairments by Pollutant Category based on 2010 303(d) List		
Pollutant Category	Impaired Length (Miles)	Percent of Assessed Length
Pathogens	389	64.9%
Metals/Metalloids	242	40.3%
Trash	148	24.7%
Nutrients	126	21.0%
pH	117	19.6%
Salinity	94	15.7%
Other Inorganics	85	14.2%
Pesticides	60	10.0%
Benthic-Macroinvertebrate Bioassessments	60	9.9%
Nuisance	51	8.4%
Toxicity	41	6.9%
Sediment	36	6.0%
Invasive Species	36	5.9%
Hydromodification	11	1.8%
Shellfish Harvesting Advisory	2	0.4%

Table 10: Impaired vs. Assessed Bays, Harbors, Lakes and Estuaries (in Acres) based on 2010 303(d) List			
Water Body Type	Impaired Length	Assessed Length	Percentage
Bay	155,146	155,146	100.0%
Harbor	7,722	7,722	100.0%
Lake	4,351	4,351	100.0%
Reservoir	243	243	100.0%
Wetland	302	333	90.8%
Estuary	362	362	100.0%
Total	**168,127**	**168,157**	**100.0%**

Table 11: Bays, Harbors, Lakes and Estuaries by Pollutant Category based on 2010 303(d) List		
Pollutant Category	Impaired Area (Acres)	Percent of Assessed Area
Pesticides	163,322	97.1%
Other Organics	163,232	97.1%
Toxicity	162,741	96.8%
Trash	147,527	87.7%
Fish Consumption Advisory	147,036	87.4%
Metals/Metalloids	8,042	4.8%
Pathogens	4,002	2.4%
Benthic Community Effects	3,194	1.9%
Nutrients	991	0.6%
Exotic Vegetation	289	0.2%
Habitat alterations	289	0.2%
Hydromodification	289	0.2%
pH	275	0.2%
Nuisance	244	0.1%
Fish Kills	21	0.01%

(2) The percent of receiving water samples exceeding WQOs as reported in the LA County Department of Public Works annual stormwater monitoring report[8], conducted under the Municipal Stormwater Permit. Monitoring is conducted at mass emissions stations (long term) as well as at tributary locations that change periodically.

Findings

- As seen by the extent of 303d listed "impaired" waters and by the frequency of exceedances of water quality standards in receiving waters, surface water quality in Los Angeles County is poor and is not measurably improving. To date, most improvements have been seen in summer beach water quality (see beach water quality), and in ocean waters, due to low flow diversions and major improvements at coastal sewage treatment plants (see surface water discharges).
- Approximately 85% of LA County assessed rivers, streams and shorelines are impaired for one or more pollutants. The largest percentage is impacted by pathogens/ fecal indicator bacteria (65%), followed by Metals/Metalloids (40%) and Trash (25%). (Fig 9, Tables 8 and 9)
- Essentially 100% of assessed bays, harbors, lakes and estuaries are impaired for one or more pollutants. Over 97% of these waterbodies are impaired by each of: pesticides, other organics, and toxicity. Trash and fish consumption advisories each impair over 87% of these waterbodies. (Fig 9, Tables 10 and 11)
- There were numerous exceedances of water quality objectives at both stormwater mass emissions stations and tributary monitoring sites. The most common parameters exceeding WQOs at high frequency were fecal indicator bacteria (across all sites), copper and zinc (at mass emissions stations), and sulfate and TDS (at tributary sites). (Tables 12 and 13)
- Wet weather exceedances of copper and zinc at mass emissions stations showed no improvement over the last 5 years. With the exception of Malibu Creek, all watersheds showed some increasing or continued high number of metals exceedances over this time period. (Figure 10, Table 14).

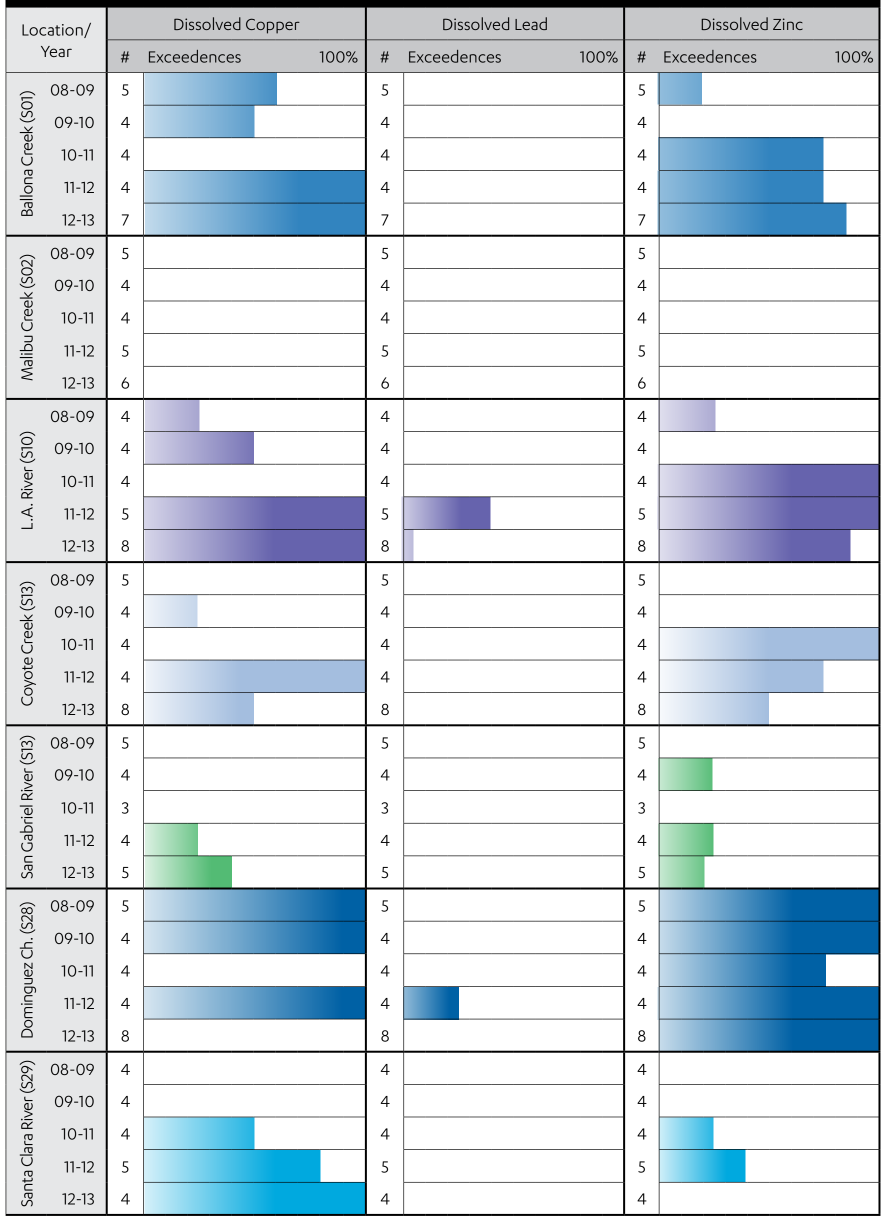
Data Limitations

- Despite the amount of data available on 303(d) listings, it was difficult to assemble the information on the extent of impairments within the County boundary. The information we needed was divided between a GIS layer and a separate spreadsheet, requiring a complex and time-consuming effort to interlink the two. Because of the level of effort required, we did not attempt to compile similar statistics for previous years, so trend data is not available at this time.
- There were only two years of data from the current tributary monitoring efforts, so trend data for metals exceedances were only provided for the mass emissions stations.

Table 12: 2012-13 Exceedances of Water Quality Objectives During LADPW Receiving Water Monitoring

Mass Emission Station / Watershed	Wet Weather		Dry Weather	
Ballona Creek (S01)	E. coli (4/6)	67%	E. coli (1/3)	33%
	D. zinc (6/7)	86%		
	D. copper (7/7)	100%		
Malibu Creek (S02)	E. coli (3/5)	60%	pH (1/2)	50%
	Sulfate (6/6)	100%	Sulfate (2/2)	100%
	TDS (1/6)	17%	TDS (1/2)	50%
Los Angeles River (S10)	E. coli (4/7)	57%	E. coli (1/2)	50%
	pH (1/8)	13%	pH (1/2)	50%
	D. copper (8/8)	100%	Cyanide (1/2)	50%
	D. lead (1/8)	13%		
	D. zinc (7/8)	88%		
Coyote Creek (S13)	E. coli (4/6)	67%	E. coli (1/2)	50%
	D. copper (4/8)	50%		
	D. zinc (4/8)	50%		
San Gabriel River (S14)	E. coli (2/5)	40%	Not sampled	
	Cyanide (1/5)	20%		
	pH (1/5)	20%		
	D. copper (2/5)	40%		
	D. zinc (1/5)	20%		
Dominguez Channel (S28)	E. coli (3/7)	43%	E. coli (2/2)	100%
	Cyanide (1/7)	14%	Cyanide (1/2)	50%
	pH (1/8)	13%	pH (1/2)	50%
	D. copper (8/8)	100%		
	D. zinc (8/8)	100%		
Santa Clara River (S29)	E. coli (4/4)	100%	pH (1/2)	50%
Tributary/Sub-Watershed	**Wet Weather**		**Dry Weather**	
Upper Las Virgenes Creek (TS25)	E. coli (5/5)	100%	E. coli (2/2)	100%
	Sulfate (1/6)	17%	Sulfate (2/2)	100%
			TDS (1/1)	100%
Cheseboro Canyon (TS26)	E. coli (5/5)	100%	E. coli (2/2)	100%
	Sulfate (1/7)	14%	Sulfate (2/2)	100%
	TDS (1/6)	17%	TDS (2/2)	100%
Lower Lindero Creek (TS27)	E. coli (5/5)	100%	E. coli (2/2)	100%
	Sulfate (2/6)	33%	Sulfate (2/2)	100%
	D. copper (1/6)	17%		
Medea Creek (TS28)	E. coli (5/5)	100%	E. coli (1/2)	50%
	Sulfate (1/7)	14%	Sulfate (2/2)	100%
			TDS (2/2)	100%
Liberty Canyon Channel (TS29)	E. coli (5/5)	100%	E. coli (2/2)	100%
	pH (1/6)	17%	Cyanide (1/2)	50%
	Sulfate (1/6)	17%	Sulfate (2/2)	100%
	D. copper (2/6)	33%	TDS (1/2)	50%
	D. zinc (1/6)	17%	D. cadmium (1/2)	50%
			D. copper (2/2)	100%
PD 728 at Foxfield Dr. (TS30)	E. coli (5/5)	100%	E. coli (1/2)	50%
			Sulfate (2/2)	100%

Figure 10: Wet Weather Metals Exceedances at Mass Emissions Stations (2009-2013)



= Number of Samples Taken

Table 13: Summary of Total Exceedances at Receiving Water Monitoring Locations (2012-2013)

Station	Wet	Dry
S01	17	1
S02	10	4
S10	21	3
S13	12	1
S14	7	Not sampled
S28	21	4
S29	4	1
TS25	6	6
TS26	7	6
TS27	8	4
TS28	6	5
TS29	10	9
TS30	5	3

Table 14: Summary of Wet Weather Metals Exceedances at Mass-Emissions Stations (2009-2013)

	Dissolved Copper	Dissolved Lead	Dissolved Zinc
2008-09	27%	0%	21%
2009-10	32%	0%	18%
2010-11	7%	0%	56%
2011-12	71%	10%	58%
2012-13	63%	2%	57%

Surface Water Discharges from Sewage Treatment Plants and Industry

Because data on receiving water quality is limited spatially and temporally, we chose to include an additional indicator focusing on the discharge of pollutants to surface waters.

Overall, we know that the quality of effluent from water treatment plants and industrial dischargers has improved dramatically over the last few decades. In particular, pollutant loads of metals and sewage solids have decreased greatly over the last 40 years. As a result, Santa Monica Bay no longer has a dead zone and fish haven't had tumors or fin rot for over twenty years. Also, the frequency of sewage spills has decreased tremedously with increased investments in sewer infrastructure and enhanced inspection and maintenance programs. These improvements have been an extraordinary success story; however, there is still work to be done.

The major categories of dischargers are publically owned treatment works (POTWs) and large industrial facilities, both of whom are regulated under the Clean Water Act through individual NPDES (National Pollutant Discharge Elimination System) Permits, and are required to conduct self-monitoring and report results to the Regional Water Board. Some NPDES permit limits reflect Total Maximum Daily Loads (TMDLs) that have been developed for impaired waterbodies to which these facilities discharge.

Data

We looked at two measures of discharges to surface waters:

NPDES Violations

We generated reports using the California Integrated Water Quality System Project (CIWQS) database for interactive violations reports[9]. We looked at Class 1 and Class 2 violations from large, individual industrial NPDES permittees in 2013 and for the previous 4 years.

- Class 1 violations are violations that pose an immediate and substantial threat to water quality and that have the potential to cause significant detrimental impacts to human health or the environment. Violations involving recalcitrant parties who deliberately avoid compliance are also considered class I.

- Class 2 violations are violations that pose a moderate, indirect, or cumulative threat to water quality. Negligent or inadvertent noncompliance with the potential to cause or allow the continuation of unauthorized discharge or obscuring past violations are also class 2 violations.

POTW Mass Discharges

We used data from the 2013 annual reports for 12 of the largest waste water treatment plants (eight operated by the Los Angeles County Sanitation Districts and four operated by the City of Los Angeles), to calculate total mass discharges of the following pollutants: Ammonia, Nitrate+Nitrite Nitrogen, Zinc, Nickel, Copper, Arsenic, Lead, and Mercury. Data for LA County Sanitation Districts facilities were obtained from Annual Reports available through CIWQS[10]; data for City of Los Angeles facilities were obtained by request to the City Bureau of Sanitation.

Findings

NPDES Violations

- There are 38 major point source facilities in LA County regulated under the NPDES Program.
- There were no Class 1 violations in 2013, nor have there been any for the last 5 years. (Tables 15 and 16)
- There were 53 Class 2 violations in 2013. Of the 10 facilities involved, just three accounted for over 75% of the violations: Owens-Brockway Glass Container, Alamitos Generating Station and William E Warne Power Plant. (Tables 15 and 16)
- The sewage treatment plants did not have significant violations in 2013. (Table 15)
- 2013 was the first year that violations decreased since 2009 - about a 50% reduction from the previous two years, but still only slightly lower than 2009 levels. (Table 16)

Table 15: NPDES Violations by Facility, 2013

Facility	Owner/Operator	Class 1	Class 2
Owens-Brockway Glass Container	Owens-Illinois, Incorporated	0	19
Alamitos Generating Station	AES Alamitos LLC	0	12
William E Warne Power Plant	CA Dept of Water Resources Pearblossom	0	10
Scattergood Generating Station	Los Angeles City DWP	0	5
Al Larson Boat Shop	Al Larson Boat Shop	0	2
Castaic Power Plant	Los Angeles City DWP	0	1
Harbor Generating Station	Los Angeles City DWP	0	1
Haynes Generating Station	Los Angeles City DWP	0	1
Morton Salt, Inc.	Morton Salt, Inc.	0	1
Redondo Generating Station	AES Redondo Beach LLC	0	1
Southwest Terminal Area I	ExxonMobil Oil Corporation Terminal Island	0	0
Total		**0**	**53**

Table 16: Total NPDES Violations (2009-2013)

Violation Category	2009	2010	2011	2012	2013
Class 1	0	0	0	0	0
Class 2	59	94	110	101	53

POTW Mass Discharges

- The Joint Water Pollution Control Plant (JWPCP) and Hyperion Treatment Plant (HTP) each discharged over 30 million pounds of ammonia nitrogen to the ocean in 2013. The remaining ten facilities (8 are inland) discharged nitrogen primarily as Nitrate + Nitrogen, ranging from 100,000 pounds to over 550,000 pounds in 2013. (Table 17, Fig 11-12)
- Metals contributions from the 12 plants are broadly proportional to overall discharge volumes, but with notable disproportionate contributions from JWPCP for nickel; from Hyperion for copper, lead and zinc; and from San Jose Creek WRP and Donald Tillman WRP for zinc. (Table 17, Fig 13-18)

Data Limitations

- While violations are relatively easy to quantify for large facilities with individual NPDES permits, there are thousands of small industrial facilities, covered under the Industrial General Permit, whose compliance status is much harder determine. We were unable to include compliance or discharge information for these facilities, but hope to address this in a future report card.
- Due to differences in data accessibility, we were only able to provide mass discharge data for 12 of the larges treatment plants. Our analysis did not include Tapia WRF (Calabasas), Burbank WWRP, Edward C. Little WRP (El Segundo), Carson Regional WRP, or Avalon WWTF (Catalina).
- Due to time and resource limitations, we were unable to perform a historical trend analysis for this report. However, we know there have been significant improvements in nutrient discharges (including ammonia) as a result of the Basin Plan requirements and TMDLs that led to widespread implementation of nitrification/denitrification at treatment plants.

Table 17: POTW Annual Discharge Volumes and Receiving Waters TD = Total Discharge

	Treatment Facility	TD (MG)	Receiving Water
JWPCP	Joint Water Pollution Control Plant	96,265	Pacific Ocean
HTP	Hyperion Treatment Plant	92,558	Pacific Ocean
SJCTP	San Jose Creek WRP	11,968	San Gabriel River, San Jose Creek
DCTTP	Donald C. Tillman WRP	11,402	Los Angeles River, Balboa Recreation Lake, Wildlife Lake
LCTP	Los Coyotes WRP	7,738	San Gabriel River
LAGTP	Long Beach WRP	6,826	Los Angeles River
VTP	Valencia WRP	5,333	Santa Clara River
TITP	Terminal Island WRP	4,480	Los Angeles River
LBTP	Los Angeles-Glendale WRP	3,918	Coyote Creek
WNTP	Whittier Narrows WRP	3,004	San Gabriel River
STP	Saugus WRP	1,880	Santa Clara River
PTP	Pomona WRP	1,573	San Jose Creek

Figure 16: POTW Annual Discharges of Nickel (2013)

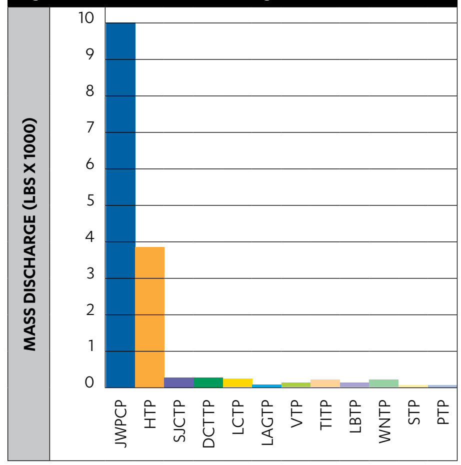


Figure 11: POTW Annual Discharges of Ammonia Nitrogen (2013)

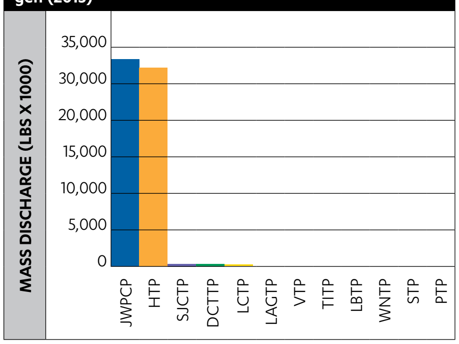


Figure 13: POTW Annual Discharges of Arsenic (2013)

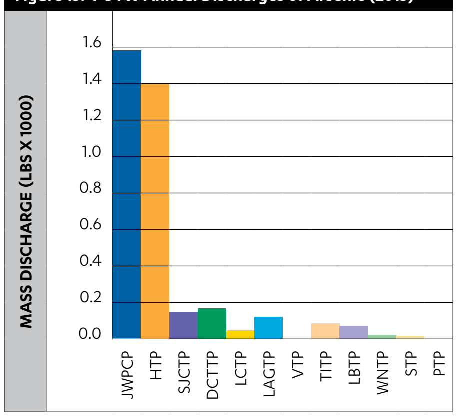


Figure 17: POTW Annual Discharges of Mercury (2013)

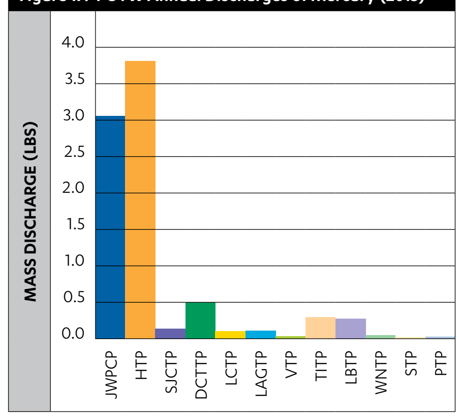


Figure 12: POTW Annual Discharges of Nitrate + Nitrate as Nitrogen (2013)

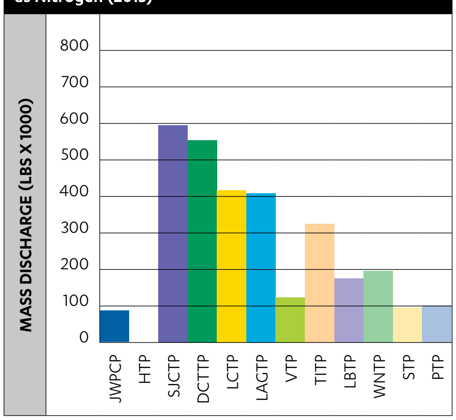


Figure 14: POTW Annual Discharges of Copper (2013)

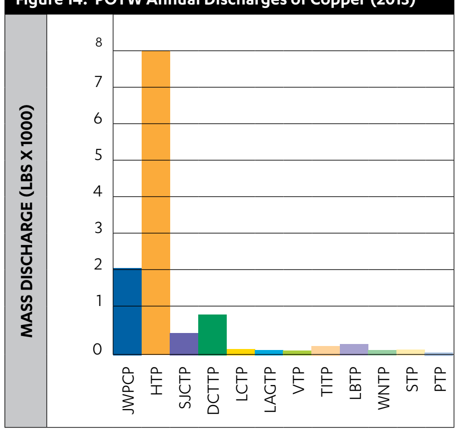


Figure 15: POTW Annual Discharges of Lead (2013)

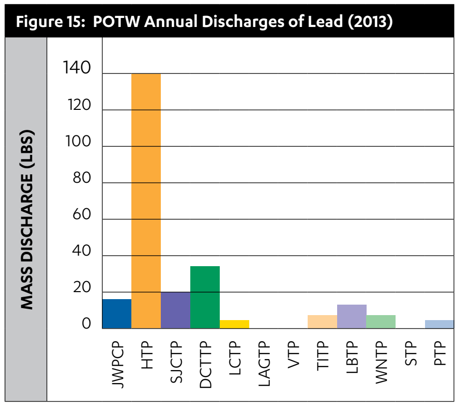
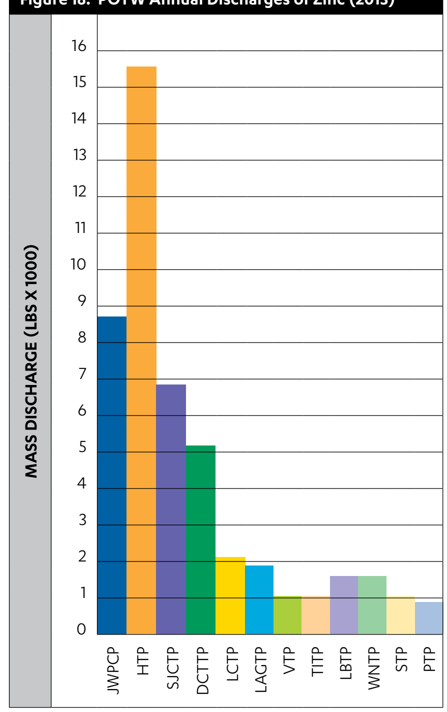


Figure 18: POTW Annual Discharges of Zinc (2013)



Beach Water Quality

Over 50 million residents and visitors enjoy swimming and surfing at LA County's beaches every year. Maintaining high levels of water quality is vital for public safety and enjoyment of these iconic landscapes.

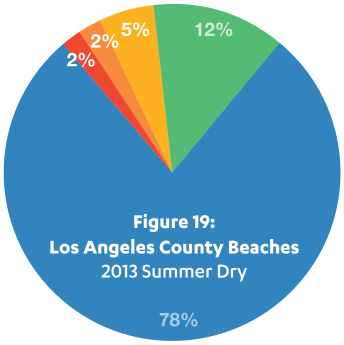


Figure 19:
Los Angeles County Beaches
2013 Summer Dry

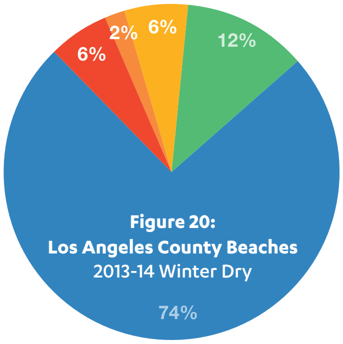


Figure 20:
Los Angeles County Beaches
2013-14 Winter Dry

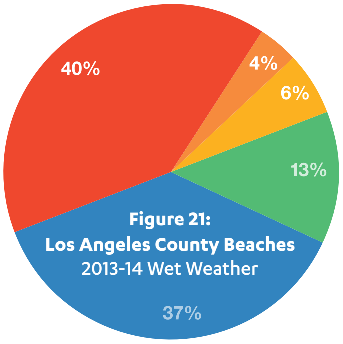


Figure 21:
Los Angeles County Beaches
2013-14 Wet Weather

Data

We used grades and analysis from Heal the Bay's 2013-2014 Beach Report Card[11].

Findings

- Summer 2013 dry weather water quality in LA County was excellent with 90% A or B grades. Summer grades continue to improve due to successful, large scale investments (over $100 million in the last fifteen years) in dry weather runoff diversions to the sewer system, and other dry weather runoff treatment and source abatement projects. (Figure 19 and 22-24, Table 18)
- Winter dry water quality was also very good with 86% A or B grades (Fig 20, Table 18), besting the five-year average of 73% A or B grades.
- Wet weather water quality continues to be an area of concern statewide. Wet weather grades in LA County are no exception, with only 50% A or B grades, and with 40% receiving F grades. (Fig 21, Table 18)
- Though wet weather grades slipped slightly from 2012-13 (when there were 57% A or B grades), they were still above the county's five-year average of 37% A or B grades. (Table 19 and 20) However, LA County's percentage of wet weather A or B grades was lower

than the statewide average of 69% A or B grades.

- LA County was host to three of the 10 beaches on the statewide Beach Bummer list for 2013-14: Santa Monica Municipal Pier, Cabrillo Beach (harborside) and Marina del Rey Mother's Beach.

Table 18: 2013 Grades, Los Angeles County

	Summer Dry	Winter Dry	Wet Weather	Totals
A	72	69	32	**173**
B	11	5	16	**32**
C	5	2	11	**18**
D	2	3	7	**12**
F	2	7	18	**27**

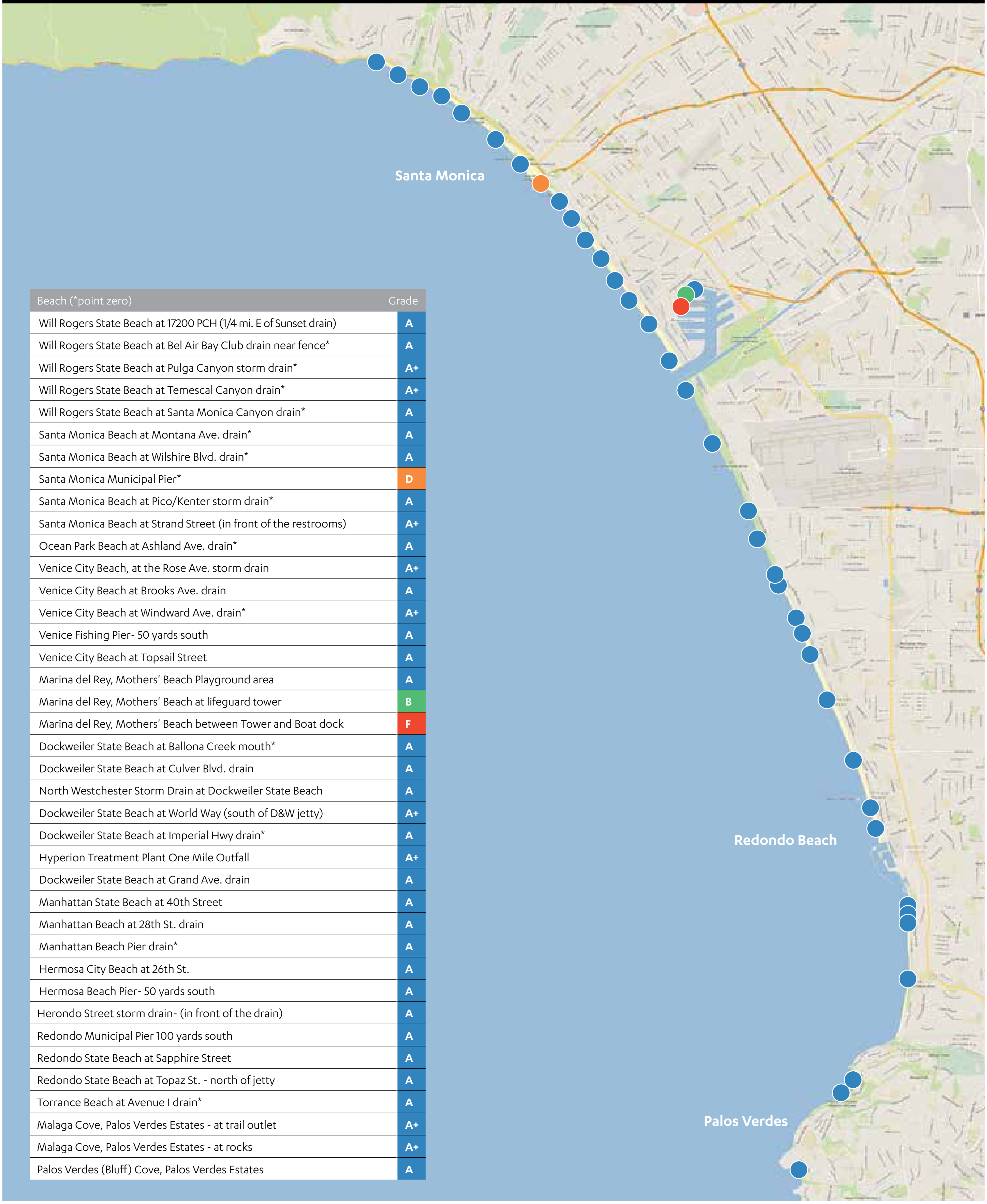
Table 19: 2012 Grades, Los Angeles County

	Summer Dry	Winter Dry	Wet Weather	Totals
A	59	56	20	**135**
B	16	13	9	**38**
C	7	6	7	**20**
D	1	5	8	**14**
F	6	5	41	**52**

Table 20: 2011 Grades, Los Angeles County

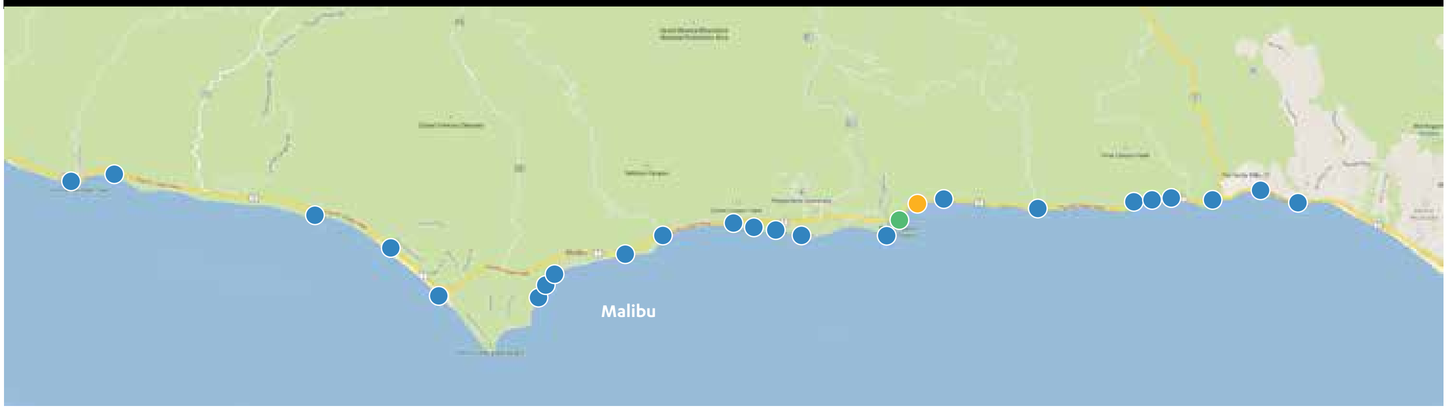
	Summer Dry	Winter Dry	Wet Weather	Totals
A	55	50	15	**120**
B	19	6	10	**35**
C	3	7	9	**19**
D	2	4	12	**18**
F	11	19	40	**70**

Figure 22: 2013 Grades during Summer 2013, Santa Monica Bay. Source: Heal the Bay



Beach (*point zero)	Grade
Will Rogers State Beach at 17200 PCH (1/4 mi. E of Sunset drain)	A
Will Rogers State Beach at Bel Air Bay Club drain near fence*	A
Will Rogers State Beach at Pulga Canyon storm drain*	A+
Will Rogers State Beach at Temescal Canyon drain*	A+
Will Rogers State Beach at Santa Monica Canyon drain*	A
Santa Monica Beach at Montana Ave. drain*	A
Santa Monica Beach at Wilshire Blvd. drain*	A
Santa Monica Municipal Pier*	D
Santa Monica Beach at Pico/Kenter storm drain*	A
Santa Monica Beach at Strand Street (in front of the restrooms)	A+
Ocean Park Beach at Ashland Ave. drain*	A
Venice City Beach, at the Rose Ave. storm drain	A+
Venice City Beach at Brooks Ave. drain	A
Venice City Beach at Windward Ave. drain*	A+
Venice Fishing Pier- 50 yards south	A
Venice City Beach at Topsail Street	A
Marina del Rey, Mothers' Beach Playground area	A
Marina del Rey, Mothers' Beach at lifeguard tower	B
Marina del Rey, Mothers' Beach between Tower and Boat dock	F
Dockweiler State Beach at Ballona Creek mouth*	A
Dockweiler State Beach at Culver Blvd. drain	A
North Westchester Storm Drain at Dockweiler State Beach	A
Dockweiler State Beach at World Way (south of D&W jetty)	A+
Dockweiler State Beach at Imperial Hwy drain*	A
Hyperion Treatment Plant One Mile Outfall	A+
Dockweiler State Beach at Grand Ave. drain	A
Manhattan State Beach at 40th Street	A
Manhattan Beach at 28th St. drain	A
Manhattan Beach Pier drain*	A
Hermosa City Beach at 26th St.	A
Hermosa Beach Pier- 50 yards south	A
Herondo Street storm drain- (in front of the drain)	A
Redondo Municipal Pier 100 yards south	A
Redondo State Beach at Sapphire Street	A
Redondo State Beach at Topaz St. - north of jetty	A
Torrance Beach at Avenue I drain*	A
Malaga Cove, Palos Verdes Estates - at trail outlet	A+
Malaga Cove, Palos Verdes Estates - at rocks	A+
Palos Verdes (Bluff) Cove, Palos Verdes Estates	A

Figure 23: 2013 Grades during Summer 2013, Malibu. Source: Heal the Bay

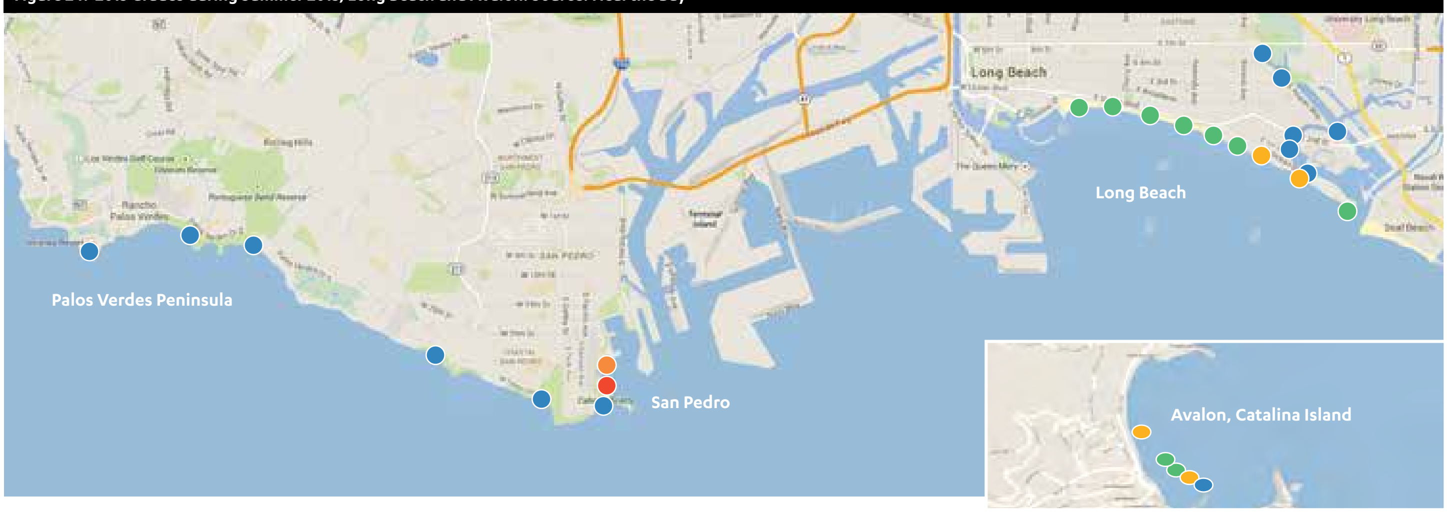


Beach (*point zero)	Grade
Leo Carrillo Beach at Arroyo Sequit Creek mouth*	A+
Nicholas Beach at San Nicholas Canyon Creek mouth*	A+
Encinal Canyon at El Matador State Beach	A
Broad Beach at Trancas Creek mouth*	A
Zuma Beach at Zuma Creek mouth*	A
Walnut Creek outlet	A+
Unnamed Creek, proj. of Zumirez Drive (Little Dume)	A+
Paradise Cove Pier at Ramirez Canyon Creek mouth*	A+
Escondido Creek, just east of Escondido State Beach	A

Beach (*point zero)	Grade
Latigo Canyon Creek mouth*	A
Solstice Canyon at Dan Blocker County Beach	A
Unnamed Creek, adj. to stairway at 24822 Malibu Rd.	A
Puerco State Beach at creek mouth*	A
Marie Canyon drain at Puerco Beach, 24572 Malibu Rd.	A
Malibu Point	A+
Surfrider Beach (breach point)	B
Malibu Pier, 50 yards east	C
Carbon Beach at Sweetwater Canyon	A

Beach (*point zero)	Grade
Las Flores State Beach at Las Flores Creek*	A
Big Rock Beach at 19948 PCH stairs	A
Pena Creek at Las Tunas County Beach	A+
Tuna Canyon	A
Topanga State Beach at creek mouth	A
Castlerock Storm Drain at Castle Rock Beach	A+
Santa Ynez drain at Sunset Blvd.	A+

Figure 24: 2013 Grades during Summer 2013, Long Beach and Avalon. Source: Heal the Bay



Beach	Grade
Long Point, Rancho Palos Verdes	A+
Abalone Cove Shoreline Park	A+
Portuguese Bend Cove, Rancho Palos Verdes	A+
Royal Palms State Beach	A
Wilder Annex, San Pedro	A+
Cabrillo Beach, oceanside	A+
Cabrillo Beach, harborside at restrooms	F
Cabrillo Beach, harborside at boat launch	D
Long Beach City Beach, projection of 5th Place	B
Long Beach City Beach, projection of 10th Place	B
Long Beach City Beach, projection of Molino Avenue	B
Long Beach City Beach, projection of Coronado Avenue	B

Beach	Grade
Belmont Pier, westside	B
Long Beach City Beach, projection of Prospect Avenue	B
Long Beach City Beach, projection of Granada Avenue	C
Alamitos Bay, 2nd Street Bridge and Bayshore	A
Alamitos Bay, shore float	A
Mother's Beach, Long Beach, north end	A
Alamitos Bay, 56th Place, on bayside	A
Long Beach City Beach, projection of 55th Place	C
Long Beach City Beach, projection of 72nd Place	B
Colorado Lagoon-north	A
Colorado Lagoon-south	A

Catalina Island (inset)	Grade
Avalon Beach - east of the Casino Arch at the steps	C
Avalon Beach - 100 feet west of the Green Pleasure Pier	B
Avalon Beach - 50 feet west of the Green Pleasure Pier	B
Avalon Beach - 50 feet east of the Green Pleasure Pier	C
Avalon Beach - 100 feet east of the Green Pleasure Pier	A

Grade for Water = C

Despite summer beach water quality improvements, continued reductions in pollutant loads from waste water treatment plants and industry, a long history of water conservation, successful water recycling efforts in much of the county, and reliable, high quality drinking water coming out of the vast majority of taps, the LA region received a C on the report card. Surface water quality impairments are prevalent county-wide, stormwater is highly polluted and not improving in quality, groundwater contamination is severe and county-wide, and the region is far too reliant on water supplies from the ecologically sensitive Colorado River, Eastern Sierra, and the Bay-Delta regions. With the passage of Proposition 1, TMDL deadlines looming, and state and local commitments to water recycling and integrated water management, the region has a tremendous opportunity to improve in the near future.

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