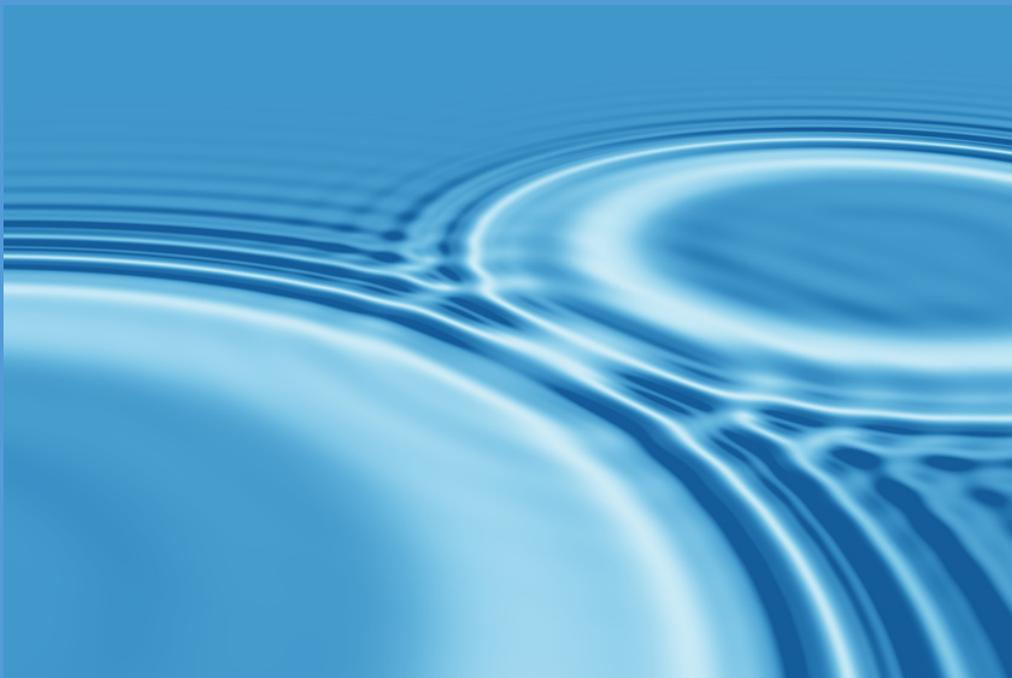


# REGIONAL WATER QUALITY PLAN ACCOMPLISHMENTS



Las Vegas Valley Watershed Advisory Committee

City of Henderson

City of Las Vegas

City of North Las Vegas

Clark County

Clark County Regional Flood Control District

Clark County Water Reclamation District

Las Vegas Valley Water District

Southern Nevada Water Authority

# 2013



### Regional Water Quality Plan Accomplishments for 2013

In January 2009, the Las Vegas Valley Watershed Advisory Committee (LVVWAC) adopted a Regional Water Quality Plan to help meet its mission to:

*Protect, preserve and enhance the quality and quantity of water resources in the Las Vegas Valley watershed and to sustain economic well-being and protect the environment for present and future generations.*

In December 2012, the LVVWAC approved a Strategy Document that further defines its goals and summarizes actions needed to fulfill the Regional Water Quality Plan.

Each LVVWAC member agency has individual responsibilities that contribute to the management of the Las Vegas Valley watershed. Following is an outline of LVVWAC's collaborative accomplishments for 2013.



**Manage the Las Vegas Valley Watershed to help protect  
Lake Mead as a source of water for Southern Nevada and downstream users**

The Las Vegas Valley accesses Nevada's Colorado River allocation through existing facilities at Lake Mead. Other inflows to Lake Mead come from the Muddy River, the Virgin River and the Las Vegas Wash. In 2013, LVVWAC member agencies monitored and responded to upstream inflows to Lake Mead through the following actions:

- Received grant funding from the Bureau of Reclamation that supported the Estuary and Lake Computer Model (ELCOM), a three-dimensional model of Lake Mead. These model runs are used to better understand the effects of climate change on Lake Mead's future water quality;
- Implemented the 2012 Lake Mead Monitoring Plan and optimized resources by sharing staff and equipment to accomplish the goals of the Plan;
- Implemented the Las Vegas Wash Surface Water Quality Monitoring and Assessment Plan;
- Conducted water-quality sampling and analysis in Lake Mead, Las Vegas Wash, Muddy River, Virgin River, and Colorado River above Lake Mead and below Hoover Dam; and
- Leveraged the Lower Colorado Water Quality Database — a database utilized by agencies in the lower Colorado River region to facilitate data sharing.

LVVWAC accomplishments relative to managing non-point sources from the Las Vegas Valley include:

- Completed construction of Upper Narrows and Duck Creek Confluence Weirs (16 permanent erosion control structures have been completed);
- Began construction of the Three Kids Weir in the Las Vegas Wash;
- Opened construction bids for the Archery and Silver Bowl Weirs;
- Lower Narrows and Homestead Weir project was named American Public Works Association's National Environmental Project of the Year in 2013;
- Revegetated approximately 25 acres along the Las Vegas Wash to armor the banks against erosion and limit sediment and contaminant movement downstream to Lake Mead;
- Continued support of conservation initiatives in the Las Vegas Valley;
- Obtained Nevada Division of Environmental Protection (NDEP) approval for two programs intended to address surface water quality impacts posed by new development and significant redevelopment (NDSR). Development of these programs satisfied a commitment of the Storm Water Management Plan (SWMP) adopted in 2012 as required by the 2010 National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit for the Las Vegas Valley. NDSR design requirements for 1) parking lots larger than one acre and; 2) water quality features in regional detention basins were codified in an amendment to the Hydrologic Criteria and Drainage Design Manual and thus added to the comprehensive suite of existing measures detailed in the SWMP;

- Continued the execution of the Construction and Industrial Site Storm Water Inspection Program to fulfill requirements of the SWMP.
- Completed all monitoring required for the MS4 Permit and NPDES Wastewater Discharge Permits, and reported results to the State of Nevada;
- Continued participation in NDEP's Lake Mead Water Quality Forum and three of the forum's sub-committees (Selenium Sub-Committee, Lake Mead Ecosystem Monitoring Workgroup and the Algae Task Force);
- Continued participation in the Las Vegas Wash Coordination Committee and three of the committee's sub-committees (Operations Study Team, Administrative Study Team, and Research and Environmental Monitoring Study Team); and
- Continued wastewater pre-treatment programs to monitor and prevent contaminants and industrial wastes from entering the wastewater collection system.

The Clark County Water Reclamation District (CCWRD) and the cities of Henderson, Las Vegas and North Las Vegas operate and maintain the community's wastewater treatment facilities. These facilities discharge highly-treated wastewater to Lake Mead via the Las Vegas Wash. LVVWAC member agencies managed, coordinated and optimized water reclamation facilities by:

- Continued operation of state-of-the-art membrane bio-reactor treatment plant by the City of North Las Vegas and City of Henderson;
- Completed various rehabilitation and optimization efforts of the bio-reactor treatment plant, which resulted in increased energy efficiency, improved biological phosphorus removal, reduced chemical utilization, and decreased sludge hauling costs;
- Delivered reclaimed water from the Southwest Water Reclamation Facility to golf course users in the City of Henderson;
- Continued construction of a state-of-the-art membrane-filtration/ozone-disinfection project at the CCWRD to be on-line the fall of 2014;
- Commenced conversion of older treatment trains at the City of Las Vegas Water Pollution Control Facility from nitrification-only to biological nutrient removal;
- Implemented a comprehensive system-wide cleaning and inspection program for the wastewater collection system to minimize Sanitary Sewer Overflows; and
- Participated in water and wastewater treatment optimization studies.

**Meet or surpass federal, state and local standards and regulations**

Key water quality laws and regulations, such as the Clean Water Act, the Safe Drinking Water Act and the Nevada Administrative Code, are in place to safeguard local and regional water sources. While Southern Nevada's water treatment facilities are capable of addressing many source water quality challenges, proactive management of the Las Vegas Valley watershed remains key to protecting the region's overall water resources. To protect Lake Mead, the Las Vegas Wash and associated tributaries, LVVWAC member agencies:

- Continued year-round phosphorus removal at wastewater treatment facilities to meet the 334 pound-per-day Waste Load Allocation for total phosphorus surpassing permit requirements, which only require phosphorus removal between March 1 and October 31;
- Developed and exceeded internal goals for minimizing Sanitary Sewer Overflows;
- Reported storm water monitoring results to NDEP and complied with storm water quality requirements;
- Executed wet weather monitoring programs;
- Performed treatment studies that examined the removal of unregulated contaminants, such as endocrine-disrupting compounds in wastewater, which provided guidance on control strategies and the minimization of these contaminants in effluent discharges to the Las Vegas Wash and Lake Mead;
- The cities of Henderson and Las Vegas earned the National Association of Clean Water Agencies (NACWA) Platinum Peak Performance Award for years of consecutive 100 percent NPDES permit compliance;
- CCWRD earned the NACWA Gold Peak Performance Award for 100 percent NPDES permit compliance at both the Laughlin and Flamingo Water Resource Centers.

Ensuring that Southern Nevada's water meets or surpasses federal, state and local regulations is of key importance to LVVWAC's member agencies. As such, LVVWAC is proud to report that:

- Southern Nevada's drinking water quality continues to meet or surpass state and federal drinking-water regulations.
- Weekly monitoring of Lake Mead was conducted to determine the impacts of the inflows (Las Vegas Wash, Virgin River, Muddy River and Colorado River) on the Southern Nevada Water Authority (SNWA) intakes.
- Quarterly endocrine disrupting compound monitoring was conducted in the Las Vegas Wash, Lake Mead and below Hoover Dam. The effluent of CCWRD was also sampled.
- Construction continued on a new intake tunnel in Lake Mead. This new tunnel will provide better water quality and ensure reliability of the resource despite declining lake elevations.



**Preserve and enhance the natural, cultural,  
historic and recreational values of the watershed**

The Las Vegas Valley watershed includes the Lake Mead National Recreation Area and the Las Vegas Wash. These water sources and open lands present opportunities for recreation and support important environmental resources including wildlife and habitat. The following efforts were made by LVVWAC member agencies to provide for recreation and to manage wildlife and habitats:

- Continued the implementation of the Las Vegas Wash Wildlife Management Plan;
- Conducted monthly aquatic bird counts, surveyed for the federally endangered Southwestern Willow Flycatcher and Yuma Clapper Rail, and surveyed for the Yellow-Billed Cuckoo (proposed for threatened status) at the Las Vegas Wash;
- Provided and managed recreational opportunities in the Clark County Wetlands Park and Henderson Bird Viewing Preserve that are compatible with native plants and wildlife;
- Continued general invertebrate inventory on the Las Vegas Wash, identifying nearly 30 new species and conducted third year of tamarisk-feeding invertebrate survey, documenting tamarisk leaf beetle larvae for the first time;
- Paved nine miles of trail at the Clark County Wetlands Park for recreational use;
- Planted 80 native plants, shrubs, and trees as a demonstration garden at the Clark County Wetlands Park, which will be used for environmental education, recreation, and habitat; and
- Dedicated and opened the Nature Center at the Clark County Wetlands Park to provide the public with learning opportunities that relate to water quality, habitat types, land management, invasive species, and cultural resource protection.

LVVWAC supports the missions of the National Park Service and of the Clark County Parks and Recreation Department, which is to provide for the enjoyment of scenery, natural and historic objects and wildlife in a manner that will leave such resources unimpaired for future generations. LVVWAC member agencies made the following progress in minimizing impacts to cultural and historic values:

- Continued to implement the Programmatic Agreement for the Clark County Wetlands Park between the Bureau of Reclamation, Army Corp of Engineers, SNWA, Clark County, the Nevada State Historic Preservation Office and the Advisory Council on Historic Preservation to expedite the construction of erosion-control structures in the Las Vegas Wash.
- Continued to support the Cultural Resources Coordinating Committee.
- Minimized impacts to cultural and historical features by managing recreational activities at the Las Vegas Wash.
- Reconstructed the historic milk house at the Clark County Museum.
- Excavated the Beehive Rockshelter, discovering ceramic shards, ground stone pieces and bead fragments, among other artifacts.

LVVWAC's member agencies also took the following measures to prevent and control invasive species:

- Removed nine acres of tamarisk at the Las Vegas Wash and revegetated the cleared areas with native plants;
- Removed two acres of tamarisk at the Clark County Wetlands Park that will be revegetated in 2014;
- Participated in meetings and symposiums regarding quagga mussels; and
- Monitored and evaluated quagga mussel progression in Lake Mead.

LVVWAC actively worked to support recreational uses and the health of fisheries and other water-dependent wildlife by:

- Managed nutrient inputs from wastewater treatment plants to support a healthy fishery in Lake Mead;
- Initiated a new selenium monitoring study in the Las Vegas Wash which collected macroinvertebrates, sediment, coarse particulate organic matter and water to determine how selenium is incorporated into the food web;
- Monitored selenium concentrations in Las Vegas Wash and its tributaries to establish background concentrations and determine sources; and
- Ensured that wastewater quality met the water-quality standards as determined by NDEP for recreation.

### **Sustain and coordinate water resources for future generations**

All of LVVWAC's member agencies addressed regional water quality planning and management efforts by working collectively and through participation in various regional committees and groups, such as the Las Vegas Wash Coordination Committee, the Lake Mead Water Quality Forum, the Lake Mead Ecosystem Monitoring Workgroup and the Stormwater Quality Management Committee. In 2013, significant strides were made to improve the structural integrity of the Las Vegas Wash and prevent further erosion. Accomplishments include:

- Completion of the Upper Narrows and Duck Creek Confluence Weirs;
- Completion of design and initiation of construction of the Three Kids Weir;
- Installation or repair of 6,600 feet of bank protection;
- Opening of construction bids for the Archery and Silver Bowl Weirs; and
- Continued design of erosion control structure on CCWRD property.

To optimize the use of limited water resources:

- Henderson's Southwest Water Reclamation Facility continued operation, providing reclaimed water to the southern part of the Las Vegas Valley.
- Southern Nevada Regional Water Recycling Study recommendations were implemented.
- Henderson, Las Vegas and CCWRD reclaimed 100 percent of their highly treated wastewater effluent, either by returning it to Lake Mead or distributing it to golf courses and other customers throughout the valley.
- Reclaimed water was efficiently utilized at the Clark County Wetlands Park and Henderson Bird Viewing Preserve to support plant communities and wildlife habitats.

Water and wastewater treatment and delivery processes require significant energy resources, which link the need to conserve both water and energy and develop renewable energy resources. LVVWAC member agencies have undertaken a number of renewable energy projects that reduce dependence on non-renewable and less-efficient energy sources. Progress highlights include:

- Construction was completed on plumbing necessary to introduce grease and food waste to the anaerobic digesters at the wastewater treatment plant to produce biogas as an energy source.
- Construction was completed on a 3-megawatt solar power plant. The power generated from the plant offsets a portion of the power used to treat City of Las Vegas wastewater at its main wastewater treatment facility.
- Construction was completed on the Clark County Wetlands Park Nature Center, which includes a solar-energy component.
- Completed the development of a solar photovoltaic test center at the SNWA's River Mountains Water Treatment Facility (RM). Performed in conjunction with Sandia National Lab and UNLV, the test center is currently collecting data from a new Concentrating Solar PV technology.

- Member agencies leveraged opportunities to share wastewater treatment and transmission facilities between wastewater agencies to reduce energy expenditures.

Enhancements to Energy and Water Conservation Programs include:

- SNWA/LVVWD continues to entertain opportunities for expanding its renewable energy resources, where active discussions center on a large-scale solar facility at its RM facility. The addition of this facility would make SNWA/LVVWD's overall resources derived from renewables attain a level of approximately 18 percent. By 2025, the SNWA/LVVWD intends to have 25 percent of its energy derived by renewable resources.
- The Energy Management System, which was developed under a performance contract at Alfred Merritt Smith (AMS) Water Treatment Facility in 2012, was expanded to the RM site. The system provides better environmental control while reducing energy consumption.
- The SNWA/LVVWD has completed the design for two electric vehicle charging stations. The stations were completed in summer 2013. A companion station is being developed for fleet vehicles at the Molasky Corporate Center and discussions are underway for stations at the AMS and RM facilities.
- Entities in the Las Vegas Valley maintain a number of water-conservation programs including turf limits, fountain and water feature restrictions, seasonal water restrictions, mist system restrictions, golf course water budgets, landscape codes, vehicle washing restrictions, and surface, building, and equipment washing restrictions.

**Manage flood risks**

Despite an average rainfall of only four inches per year, the region often experiences periods of intense rainfall and subsequent flash flood events. This year, LVVWAC's member agencies took the following measures to minimize the loss of life and property:

- Continued implementation of the Master Plan of Flood Control Facilities;
- Completed 10 flood control projects, such as the Flamingo Diversion – South Buffalo Branch; Flamingo Wash to Sunset Road; Pittman Wash – Upper Pitman Railroad to Santiago; Oakey Meadows Storm Drain – Phase IIB; and Las Vegas Wash – Las Vegas Boulevard to Cheyenne Avenue;
- Funded 21 projects for construction; and
- Continued design of flood control structure on CCWRD property.



**Build community awareness and support for regional watershed management**

Understanding that the public has a direct impact on the overall quality of the Las Vegas Valley's watershed, LVVWAC engaged the community to enhance awareness and support of regional watershed management. In 2013, LVVWAC's member agencies contributed to presenting a unified public education program. Initiatives included:

- Implementation of three education and outreach grants from NDEP through an interlocal agreement with Clark County on non-point source pollution entering the Las Vegas Wash and Lake Mead.
- Clark County received a non-point source grant from NDEP to install a trash boom on the Las Vegas Wash.
- The Clark County Wetlands Park continued to offer and conduct personal and self-guided interpretive and educational programs on watershed protection, wildlife habitats and environmental stewardship. Through these programs, more than 300 community members engaged in active, hands-on stewardship; more than 100 Wetlands Walker Program participants tracked their walking mileage; more than 2,000 Clark County School District students enjoyed an outdoor learning experience; and over 1,000 families participated in environmental education.
- The Clark County Regional Flood Control District, in cooperation with the cities of Henderson, Las Vegas, and North Las Vegas, and Clark County, promoted flood safety through "Flash Flood Awareness Month" with the Clark County Board of Directors; classroom presentations; a Flood Safety Awareness campaign, which used billboards, radio, television, and print media; a license plate billboard contest; a new public service announcement for television; a new smartphone application called FloodSpot that allows users to get weather updates, see flood reports, share flood photos and learn about floods and insurance; and the production of the Flood Channel (a 30-minute informational television program).
- The SNWA facilitated field trips for local schools to educate students about the water cycle in Las Vegas; held two Green-Ups and a World Wetlands Day event at the Las Vegas Wash; led tours and participated in community outreach, hosting or attending 30 outreach events throughout the year with a total participation of more than 24,000 people.
- The SNWA maintained the public website, [www.lvwash.org](http://www.lvwash.org) and a Facebook page for the Las Vegas Wash project and distributed a monthly newsletter to keep the public informed of project progress.
- The CCWRD expanded the "Medicine Disposal Program," which emphasizes the proper methods to dispose of unused medications by placing disposal boxes in all law enforcement agencies in Southern Nevada.
- The CCWRD collaborated with the Springs Preserve to provide "Pain in The Drain" education to visitors throughout 2013.
- The CCWRD partnered with the Springs Preserve for the "Holiday Cooking Oil" recycling campaign at the Preserve during the 2013 holiday season.

- The CCWRD attended numerous outreach events including Clark County Commissioner town hall meetings and Fire Department open houses to promote public education and awareness on “Pain in the Drain” and the medicine disposal initiative.

LVVWAC integrated existing stakeholder programs to specifically address watershed issues:

- All agencies promoted water conservation and water resource management through the “Be Water Smart” and “Pain in the Drain” programs.
- A special web page on the SNWA website provided enhanced accessibility to LVVWAC information ([http://www.snwa.com/wq/watershed\\_lvvwac.html](http://www.snwa.com/wq/watershed_lvvwac.html)). This page carries all LVVWAC reports and presentations, as well as posted agendas and meeting minutes.
- All agencies were linked to LVVWAC website.
- The continued linking of the Lower Colorado River Water Quality Database to the LVVWAC website provided a mechanism to access the water-quality data collected in the Las Vegas Valley.
- Presentations and updates on LVVWAC activities were given to the Las Vegas Wash Coordination Committee and the Lake Mead Water Quality Forum.