las vegas wash coordination committee

2019 year-end report

Las Vegas Wash
Coordination
Committee

Desert willow flowers

LAS VEGAS WASH COORDINATION COMMITTEE

Basic Management, Inc.
Bureau of Reclamation
Citizen Members
City of Henderson
City of Las Vegas
City of North Las Vegas
Clark County Parks and Recreation
Clark County Regional Flood Control District
Clark County Water Quality
Clark County Water Reclamation District
Colorado River Commission
Conservation District of Southern Nevada
Desert Wetlands Conservancy
Lake Las Vegas Resort
Las Vegas Boat Harbor
National Park Service
Natural Resources Conservation Service
Nevada Department of Wildlife
Nevada Division of Environmental Protection
Nevada State Health Division
Southern Nevada Health District
Southern Nevada Water Authority
University of Nevada, Las Vegas
U.S. Army Corps of Engineers
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service
U.S. Geological Survey

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

American avocets and a black-necked stilt forage in the Las Vegas Wash

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mission

working to stabilize and enhance the valuable environmental resources of the Las Vegas Wash

Red-legged oil-digger

from the chair

Dear Friends:

It's hard to believe it has been over two decades since the Las Vegas Wash Coordination Committee first embarked upon the monumental task of restoring and reviving a suffering waterway.

Thanks to the tireless efforts of our partners, this once-threatened channel is now a vibrant wetlands and wildlife habitat as well as a destination and resource for our entire community.

With the completion of major construction—including 21 weirs along a 5.5-mile stretch of the Las Vegas Wash—our focus now centers on preparing for long-term operations and maintenance. Monitoring activities continue, documenting improved water quality and a rich variety of plants and animals inhabiting the area.

Of course, the Las Vegas Wash success story could not be told without the countless hours invested by our volunteers, who have helped to revegetate more than 500 acres along the banks since 2001. Our outreach and educational efforts strive to engage the next generation of environmental leaders. Whether educating hundreds of students in a World Wetlands Day science symposium or equipping fifth graders with the latest field-trip technology, we are committed to connecting our community with this important channel and its resources.

Because of your commitment, today the Las Vegas Wash is thriving, and we remain focused on ensuring its long-term welfare.

Sincerely,

Steven C. Parrish
Las Vegas Valley Watershed Advisory Committee Chair

background

As the vital final link in the Las Vegas Valley watershed, the Las Vegas Wash (Wash) channels approximately 200 million gallons of highly treated effluent, urban runoff and shallow groundwater to Lake Mead daily (along with occasional stormwater), and its wetlands filter sediment and other impurities from its flows. These flows help to sustain plants and animals that would not otherwise be found in the dry, desert environment, creating a ribbon of green in the 2,900-acre Clark County Wetlands Park (Wetlands Park).

As the valley's population grew in the 20th century, the Wash's flows increased significantly, eroding the channel's bed and banks, which threatened wildlife habitats, water quality and utility infrastructure.

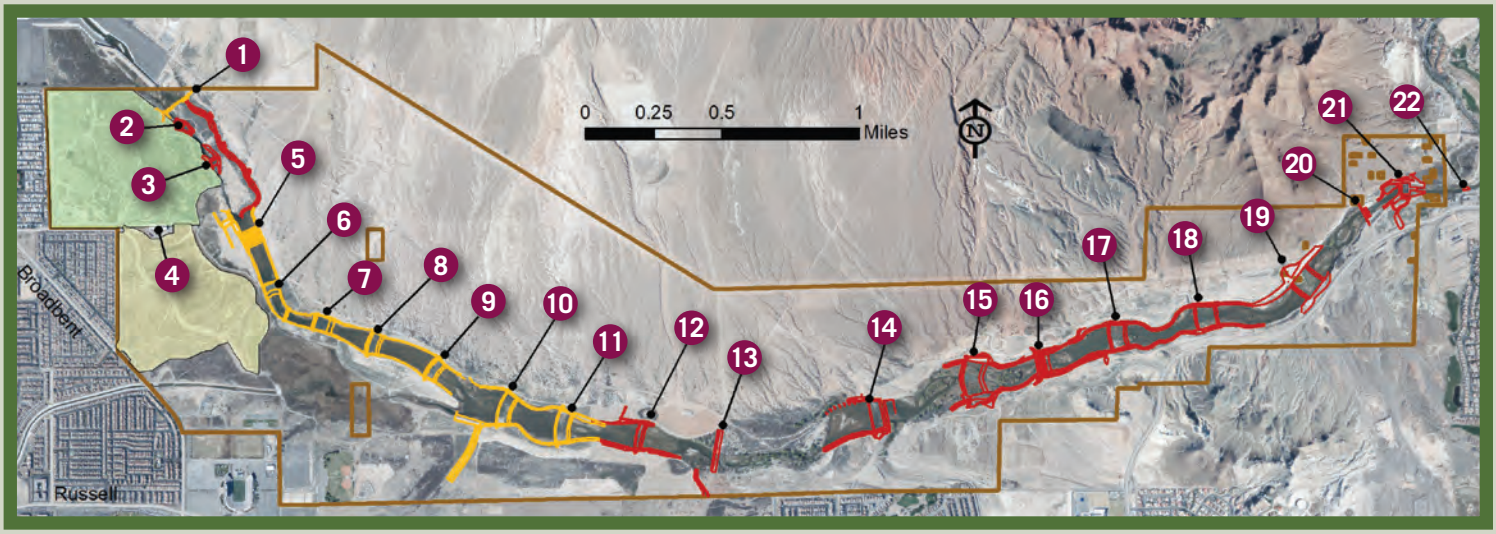
The Las Vegas Wash Coordination Committee (LVWCC) formed in 1998 to address long-term management and protection of the channel and its resources. The LVWCC developed the Las Vegas Wash Comprehensive Adaptive Management Plan (CAMP)—a blueprint that includes 44 specific action items—to address the challenges facing the Wash. The LVWCC also created study teams and an oversight committee, the Las Vegas Valley Watershed Advisory Committee (LVVWAC). The Las Vegas Wash Project Coordination Team (Wash Team) is the implementation arm of the LVWCC.

This report includes maps of locations and activities; a summary of the LVWCC's progress on CAMP action items; and descriptions of project accomplishments from more than two decades, highlights from the last year and operational objectives for 2020 for eight programs.

BUDGET, 2019

Operating Budget	
Local Contribution	$747,741
Bureau of Reclamation Grants	$275,000
NV Division of Environmental Protection Grants	$37,000
Total	$1,059,741
Capital Budget	$5,533,192

Fiscal Year July 2019–June 2020



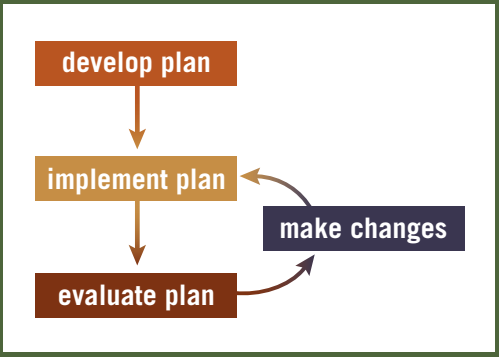
LOCATIONS and STABILIZATION MAP

1. Upper Diversion Weir, Bridge and Bypass Channel
2. Monson Weir
3. Visitor Center Weir
4. Nature Center
5. Tropicana Weir
6. DU Wetlands No. 2 Weir
7. DU Wetlands No. 1 Weir
8. Silver Bowl Weir
9. Archery Weir
10. Duck Creek Confluence Weir
11. Upper Narrows Weir
12. Sunrise Mountain Weir
13. Pabco Road Weir
14. Historic Lateral Weir
15. Bostick Weir
16. Calico Ridge Weir
17. Lower Narrows Weir
18. Homestead Weir
19. Three Kids Weir
20. Rainbow Gardens Weir
21. Powerline Crossing Weir and Bridge
22. Fire Station Weir

- Clark County Wetlands Park
- Nature Preserve
- In-lieu Fee Mitigation Wetlands
- Weirs
- Bureau of Reclamation Work

ACTIVITIES MAP

- Mainstream and Total Supended Solids/ Perchlorate Monitoring
- Tributary Sampling
- Selenium Sampling and Stream Gaging
- Real-Time Monitoring
- Shallow Groundwater Monitoring
- Mitigation Wetlands Sampling
- Marsh Bird Monitoring
- Southwestern Willow Flycatcher Survey
- Yellow-billed Cuckoo Survey
- Avian Point Count
- Mammal Camera Survey
- Reptile Survey
- Fish Survey
- Green-Up Planting
- Wash Weed Management



summary of progress on CAMP action items

The LVWCC uses an adaptive process to meet its mission and presents in this section a summary of progress on the CAMP action items for which it, the study teams and LVVWAC are responsible.

Erosion and Stormwater, administered by the Operations Study Team

1. **Install erosion control structures:** All 21 planned erosion control structures (i.e., weirs) in place.
2. **Obtain topography and geophysical data:** Collected as needed.
3. **Conduct sediment transport modeling:** Models developed and runs conducted as needed to understand system function.
4. **Establish off-stream wetlands with alternate discharge considerations:** Feasibility study concluded wetlands should primarily be established within active floodplain.
5. **Evaluate stormwater detention/retention basins:** Addressed by Clark County Regional Flood Control District (CCRFCD) master plan.

Alternate Discharge, administered by the LVVWAC, action items **6 – 10**

Deemed unnecessary for the foreseeable future.

Land Use, administered by individual member agencies, action items **11 – 15**

Jurisdictional and Regulatory, administered by the LVVWAC and LVWCC

16. **Further investigate and define structure for local oversight of the CAMP:** Established by interlocal agreement, creating the LVVWAC; members act on behalf of their governing boards and councils. Southern Nevada Water Authority (SNWA) appointed lead agency.
17. **Ensure interagency coordination:** Regular meetings convened by managerial, technical and administrative staff.

Public Outreach, administered by the Administrative Study Team

18. **Establish a method to continue implementation of the public outreach program:** Implementation funded annually and directed by the 2013 update of the outreach plan.
19. **Continue implementation of feedback mechanisms and measurements of progress and results:** Feedback obtained at events and on **lvwash.org**. Progress measurements (e.g., website visitors, event attendees, number of events, etc.) recorded and reported to the LVWCC and in year-end reports.
20. **Provide updates to elected officials:** Member agencies use the Wash e-newsletter and year-end reports to keep elected officials informed.

Funding, administered by the Administrative Study Team

21. **Further investigate potential funding sources identified by the team:** Funding sources include local, state, federal and private contributions. Local contributions come from a portion of a quarter-cent sales tax and direct payments. State, federal and private contributions come from grants.
22. **Anticipate future funding needs:** Annual budgets detail funding needs for anticipated operating and capital expenditures.
23. **Work with the Wash management entity to review funding options:** Budgets reviewed and approved by the LVVWAC annually. Operating expenditures not reimbursed by state, federal or private grants are paid for by the City of Henderson (5.1 percent), City of Las Vegas (9.3 percent), City of North Las Vegas (3.7 percent), Clark County (10 percent), CCRFCD (10 percent), Clark County Water Reclamation District (21.9 percent) and SNWA (40 percent). Capital expenditures not paid for by grants are paid for by a portion of the quarter-cent sales tax and account loans.
24. **Develop method to identify specific projects for grant funding:** Projects vetted by the study teams and Wash Team; assessment and prioritization criteria include feasibility, cost, need for and importance of information and program benefit.
25. **Utilize existing resources and staff, whenever possible:** Regular meetings among stakeholders ensure coordination and help to prevent duplication.

Shallow Groundwater, administered by the Research and Environmental Monitoring (REM) Study Team

26. **Develop a central database:** Database developed; data added when made available.
27. **Locate and inventory existing shallow monitoring wells:** Valley wells located and inventoried using existing data and geospatial technologies.
28. **Identify issues of concern:** Ongoing monitoring programs and stakeholder data-sharing forums provide for early detection of issues of concern.
29. **Develop a long-term monitoring plan:** Plan finalized and implemented.
30. **Develop a method to identify the potential for future contaminant discovery:** Data regularly assessed to evaluate potential concerns.
31. **Develop and implement a notification plan:** Managed by outside agencies.
32. **Promote interagency coordination:** See item 17.
33. **Develop a bibliography:** Bibliography complete.

Wetlands Park, administered by Clark County, action items **34** – **39**

Environmental Resources, administered by the REM Study Team

40. **Develop long-term management and monitoring plans:** Plans complete; updates and other activities ongoing to achieve goals.
41. **Conduct additional research:** Various studies ongoing.
42. **Preserve and address cultural resource issues:** SNWA works with state, federal and tribal stakeholders to preserve cultural resources where feasible and mitigate when infeasible. A programmatic agreement was signed and executed by all parties in 2011 and is in effect until 2021. The Cultural Resources Coordinating Committee was established, and it developed a cultural resources management plan to guide activities.
43. **Identify funding needs:** Funding needs vetted by the study teams and Wash Team.
44. **Facilitate interagency coordination to ensure projects are implemented:** See item 17.

Coyote

stabilization

2019 AT A GLANCE

- **Removed spoils and vegetation, and reestablished grades at eight weirs**
- **Continued to assess facilities with consultant, finalized five-year work plan and operations and maintenance plan, and prepared letter of map revision**
- **Completed draft of the Wash's long-term operating plan**

Heavy equipment handling cleared material

PROJECT SUMMARY

More than 1,500 square miles of watershed drain into the Wash. In the past, flows from the valley tore at the Wash's bed and banks, increasing suspended solids. Weirs and bank protection reduce erosion and sediment transport, helping to improve water quality while creating aquatic habitat. The LVWCC has completed all 21 planned permanent weirs and installed more than 13 miles of bank protection between the Clark County Water Reclamation District (CCWRD) outfall and Lake Las Vegas. The National Park Service (NPS) has constructed four weirs downstream, and six more structures are needed to protect water quality and critical infrastructure, an issue being assessed by stakeholders.

Sustainable floodplain management also requires maintaining the investment in stabilization facilities. To that end, project managers have developed the Las Vegas Wash Long-Term Operating Plan (LTOP) to guide management of program assets.

2019 IN REVIEW

Early in winter, Bureau of Reclamation (Bureau) crews removed 451 loads of clean spoils and vegetation from the Upper Diversion, Tropicana, DU Wetlands No. 2, DU Wetlands No. 1, Silver Bowl, Archery, Duck Creek Confluence and Upper Narrows weirs, and hauled them to the permitted Bureau North Stockpile. In addition, 247 loads of previously staged rock riprap were placed and repositioned at these weirs to reestablish lines and grades to the originally designed and constructed positions.

Staff continued to coordinate with a consultant and stakeholders to transition from capital improvements construction to long-term operation of the Wash. The consultant produced a stabilization facilities assessment report, concluding vegetation on weir surfaces is impacting their function. Approximately 65 acres of marsh and riparian vegetation will need to be cleared from the structures and adjacent areas. Biologists engaged a consultant to identify possible revegetation enhancement and replacement areas to limit impacts to wildlife and are working with engineers to find sites outside of the zones that need to remain clear. Stabilization facilities will be returned to benchmark conditions, then regularly maintained to ensure they operate as designed. To establish a timeframe and procedures for these actions, the engineering consultant prepared a five-year work plan, as well as an operations and maintenance plan, both of which were finalized. With information from these documents, the Wash Team finished the draft LTOP, and senior SNWA managers began reviewing it with LVVWAC members at the end of the year. The consultant also prepared a letter of map revision (LOMR) for submission to the Federal Emergency Management Agency (FEMA).

2020 OBJECTIVES

Bureau crews will remove sediment and vegetation from the Pabco Road Weir to facilitate operation of the existing U.S. Geological Survey and CCRFCD gaging stations. Pending resource and time availability, the Bureau may also reconstruct additional weirs upstream, including but not limited to Upper Diversion, Upper Narrows and Duck Creek Confluence. The consultant will submit the LOMR to FEMA, and engineers will continue to work with biologists to identify areas for marsh and riparian replacement habitat outside of the zone of impact to facilities.

water quality

2019 AT A GLANCE

- **Continued surface water quality sampling in the Wash and its tributaries; Wash data show changes from prior year**
- **Monitored shallow groundwater along the Wash quarterly**
- **Continued collecting real-time water quality data from three permanent stations**
- **Uploaded results into database and improved process**
- **Met compliance needs for razorback sucker; bioassessment monitoring no longer needed**

The most upstream real-time monitoring station (at bridge), where flows are primarily comprised of urban runoff

PROJECT SUMMARY

The LVWCC has worked to improve water quality in the Wash for more than 20 years, and hydrologists have sampled the main stem and its tributaries since 2000. The data show that total suspended solids (TSS) concentrations in the Wash have decreased more than 50 percent, leading to its removal from the 303(d) list of impaired waters for the state.

In addition to comprehensive quarterly monitoring, flow data and water samples are collected monthly from 12 sites along eight tributaries, with the samples analyzed for selenium and total dissolved solids (TDS), and samples are collected monthly from 10 sites at the Wash and analyzed for perchlorate and TSS. Shallow groundwater wells are monitored quarterly, and every 20 minutes three permanent real-time monitoring stations provide valuable data from strategic locations.

Sampling agencies developed the Las Vegas Wash Surface Water Quality Monitoring and Assessment Plan in 2011 to better coordinate efforts. The plan is reviewed and updated annually. A shallow groundwater monitoring plan was also developed and implemented.

In addition to regular sampling, project scientists conducted bioassessment monitoring from 2003 through 2018 to address concerns about the razorback sucker and how the weirs may impact habitat for the endangered species downstream in Lake Mead. This sampling of water, bird eggs, fish and sediment has now been concluded.

2019 IN REVIEW

Hydrologists collected samples as scheduled and uploaded results into the Lower Colorado River Water Quality Database. With the completion of all weirs in the Wash the prior year, data had less interference from construction. Comparing 2019 with 2018, field measurements (temperature, pH, specific conductance and dissolved oxygen), TDS and boron were similar. Perchlorate and selenium decreased slightly (approximately 5-10 percent) at downstream sites. Some noticeable ammonia concentrations were detected in the upper part of the Wash. Nitrate-plus-nitrite concentrations increased slightly at most sample sites. Both orthophosphate and total phosphorous concentrations decreased approximately 20-30 percent at downstream sites, and TSS and many trace metals were dramatically reduced at most sites.

Project managers made more improvements on uploading data into the database, which allows members to upload, search and download data from both ongoing and historical monitoring programs in the Wash and its tributaries, as well as Lake Mead and the Muddy, Virgin and lower Colorado rivers.

Sediment quality data collected in the Wash during 2018 were evaluated and compared with results from previous studies. The Wash Team submitted the final report to the Bureau and U.S. Army Corps of Engineers (Corps), who submitted it to the U.S. Fish and Wildlife Service (FWS) in 2019. FWS concluded its informal consultation with the Corps under Section 7 of the Endangered Species Act (ESA), meaning compliance needs for the razorback sucker related to the Wash stabilization program have been met, and bioassessment monitoring will no longer be conducted.

2020 OBJECTIVES

All ground and surface water quality monitoring programs in the Wash and its tributaries will continue. No major changes are expected.

wetland demonstration projects

2019 AT A GLANCE

- **Treated and removed tamarisk, tall whitetop and five-hook bassia**
- **Mowed areas of common reed**
- **Surveyed for marsh birds in spring, completing 10th year of data collection**
- **Monitored water quality monthly**
- **Installed new flow meter at CCWRD**

Beaver activity often impacts site hydrology, requiring contractors to clear clogged pipes

PROJECT SUMMARY

The LVWCC has overseen and managed significant wetland research over the past few decades, conducting demonstration projects at the City of Henderson's wastewater treatment facility and the Pittman Wash, and supporting research publications by the Desert Research Institute and University of California, Santa Barbara.

Since 2012, efforts have focused on managing Clark County's in-lieu fee mitigation wetlands site (Mitigation Wetlands). Clark County developed the project to provide off-site wetland mitigation for construction projects throughout the Las Vegas Valley. Corps requirements for the site were met in 2018, and the permit was closed.

The Mitigation Wetlands receive tertiary-treated effluent from the CCWRD and urban runoff from the Tropicana Floodway Channel. The Wash Team monitors the flows and water quality, and surveys for marsh birds at the site to quantify changes and detect trends over time. Additionally, given the abundant water and seed sources in the area, the site requires intensive weed management.

2019 IN REVIEW

Throughout the year, the project manager coordinated maintenance activities at the Mitigation Wetlands. Activities involved treating for noxious weeds (including tall whitetop and tamarisk), conducting hand-weeding around the wetland cells to reduce five-hook bassia and removing 0.5 acres of tamarisk using the cut-stump method near cells 5 and 7. Common reed within the site is very dense, so to ensure the long-term success of the native plants that have been planted over the years, mowing of the weed has been implemented. Outfalls were also cleared regularly because of beaver damming impacts.

This spring marked 10 years of annual surveys for marsh birds at the site. While field crews did not identify the federally endangered Yuma Ridgway's rail in 2019, they did detect other target species, including Virginia rail, sora and least bittern. Abundances improved year over year, and a record 20 soras were identified.

Monthly water quality monitoring continued at the two sample locations in the Mitigation Wetlands. Staff monitored and reported TDS, nitrate as nitrogen, chloride, phosphate, sulfate and fecal coliform, and installed a new flow meter in April at the CCWRD pipeline after existing equipment failed. Flow data from the CCWRD pipeline and CCWRD-collected data are required for compliance with Clark County Parks and Recreation's National Pollutant Discharge Elimination System permit.

2020 OBJECTIVES

The project manager will continue to coordinate site maintenance activities at the Mitigation Wetlands on behalf of Clark County while the management agreement between the county and SNWA is in effect. However, the SNWA has contacted Clark County to request the conclusion of the agreement, so it likely will transition out of managing the site in 2020. The Corps permit has been closed, and Clark County will now use its own contractors to manage the site without the need for outside expertise. The Wash Team will continue to monitor water quality monthly and survey for marsh birds in the spring.

wildlife

2019 AT A GLANCE

- **Conducted surveys for threatened and endangered bird species**
- **Continued avian point counts and submitted article for publication**
- **Concluded mammal camera-trap and fish surveys**
- **Completed reptile survey**
- **Added 28 invertebrate species to inventory**
- **Finalized compliance procedures; informal consultations concluded**

Biologist checking a funnel trap during reptile surveys

PROJECT SUMMARY

Once lined by eroding banks covered with invasive tamarisk, the Wash is now a native-dominated ecosystem, home to more than 350 species of vertebrate and 530 species of invertebrate wildlife. The Wash Team developed the Las Vegas Wash Wildlife Management Plan to conserve native species, protect and enhance their habitats, and increase environmental awareness of these resources.

2019 IN REVIEW

Biologists conducted several surveys in support of the wildlife management plan. During marsh bird monitoring in the spring, they identified Virginia rail, sora and least bittern but no federally endangered Yuma Ridgway's rail. In May, field crews detected 11 migrant willow flycatchers during surveys for the endangered subspecies. In summer, they detected the threatened yellow-billed cuckoo on three occasions, concluding that these sightings represented a migrant and a possible breeding territory. Biweekly avian point counts continued, and have identified more than 220 species. The contractor and Wash Team submitted an article about the counts for publication in a peer-reviewed journal.

Biologists completed the second mammal camera-trap study, following the initial effort conducted from 2009-2011. The 2018-2019 study focused on riparian habitat and identified five of the eight previously documented species, plus three additional species: gray fox, bobcat and black rat (tracked for health and safety reasons). Kit fox was also confirmed during other work that was performed in the study period.

The Wash Team conducted a second reptile survey (the first was completed from 2001-2003), setting traps twice a month from April-September, using five drift fence arrays with pitfall and funnel traps. Field crews captured 194 reptiles from nine different species (seven lizards and two snakes), while the Great Basin collared lizard was observed but not trapped. The western whiptail lizard was the most abundant (72 percent of captures) and the side-blotched lizard was the second most abundant (12 percent of captures). These two species were also the most prevalent during the 2001-2003 study, when 14 species were captured (sidewinder tracks were also observed). No new species were captured or observed in 2019.

The 2017-2019 fish survey, the first since 2002-2003, also ended. Four reaches along the Wash were sampled once a season, producing 2,343 individual captures of eight fish species, all non-native. Blue tilapia and largemouth bass were new, and armored catfish, rarely found in 2002-2003, represented the largest percentage of captures.

Nearly 30 invertebrate species were added to the inventory. Many were captured in pitfall traps during the reptile survey, and several others were identified by citizen scientists using the iNaturalist app, bringing the total to 532.

Survey reports are available on **lvwash.org**.

Lastly, the Wash Team finalized compliance procedures with the FWS, Bureau and Clark County. Informal consultations for ESA-covered bird species were concluded, and only the formal consultation for the desert tortoise remains.

2020 OBJECTIVES

Biologists will continue bird surveys, conduct night searches for snakes and a second iteration of the amphibian survey, and carry out the terms and conditions of the biological opinion for the desert tortoise as needed.

vegetation enhancement and management

2019 AT A GLANCE

- **Revegetated 16.5 acres with 14,000 native plants**
- **Monitored revegetation sites for 2019**
- **Summarized 2018 vegetation monitoring data in report**
- **Treated 4.4 acres of noxious weeds**
- **Manually removed five-hook bassia and Russian thistle**

Lady beetles on baccharis blooms

PROJECT SUMMARY

The Wash landscape transitioned from invasive- to native-dominated through the intensive weed management and revegetation efforts of the LVWCC. Erosion control projects often required the removal of existing vegetation, typically comprised of tamarisk and other non-native species. After stabilization activities were completed, the areas were replanted with a variety of native trees, shrubs and grasses. Efforts were guided by the revegetation master plan and integrated weed management plan, and the improved habitat quality in the revegetated areas helps fulfill goals of the wildlife management plan.

The LVWCC has revegetated more than 500 acres along the channel, much of which was accomplished as part of the 35 Wash Green-Up volunteer planting events held since 2001. The long-term survival and sustainability of this revegetation is reliant on continued management of tamarisk and other non-native weeds. More than 95 percent of the 1,500 acres of tamarisk found along the Wash in 1998 has been removed, with less than 55 acres remaining. Other state-listed noxious weeds, including giant reed and tall whitetop, also have been significantly reduced.

Annual monitoring of revegetation sites provides project managers valuable data regarding how sites are progressing (including if weeds are encroaching again) and is used to inform management actions.

2019 IN REVIEW

A total of 16.5 acres was revegetated during two Green-Ups. The spring event on the east side of the Tropicana Weir saw volunteers revegetate 7 acres with 7,000 plants. During the fall event, volunteers planted an additional 7,000 plants on 9.5 acres on the north side of the Historic Lateral Weir, where a large expansion project completed in 2018 created new platforms for revegetation. As they mature, the variety of small- and medium-size shrubs and trees will create wildlife habitat and stabilize soils.

Staff monitored all revegetation sites and drafted the Las Vegas Wash Vegetation Monitoring Report, 2018. The report describes how biologists inventoried species in each of the 134 revegetation sites created through spring 2018 and estimated the percent cover for each species and for the site overall. Survivorship also was measured at recently planted sites. In 2018, three of the 134 revegetation sites (2.2 percent) were monitored for the first time; 96 (71.6 percent) had the same cover as in 2017; 20 (14.9 percent) increased in cover; and 15 (11.2 percent) decreased in cover.

Contractors treated 4.4 acres of noxious weeds along the Wash during 2019 (including tamarisk, giant reed and tall whitetop), and manually removed five-hook bassia and Russian thistle at the Tropicana Weir and Three Kids Weir sites.

2020 OBJECTIVES

Invasive weeds will continue to be monitored and controlled, and staff will prepare planting plans for projects scheduled for 2020 and 2021. The fall and spring Green-Ups will take place at the Sunrise Mountain Weir. Additional plantings are planned for the south side of the Historic Lateral Weir and will be conducted by Girl Scouts seeking their Gold Awards. The banks at Sunrise, Historic Lateral and Tropicana weirs will be planted with wetland and riparian vegetation. Finally, Wash Team biologists will continue to monitor revegetation sites to ensure that plantings are successful and provide data to permitting and granting agencies.

cultural resources

2019 AT A GLANCE

- **Received final report on lithic and obsidian analyses**
- **Hosted two meetings of the Cultural Resources Coordinating Committee**
- **Discussed role of programmatic agreement in transition to long-term operations and maintenance of stabilization facilities**
- **Selected contractor for Class III pedestrian survey of Wash archaeological district**

Archaeologists discuss excavations at the Larder site, a significant site along the Wash

PROJECT SUMMARY

Investigations into the past peoples who lived along the Wash have long been of local interest. Images from the early 1900s reveal evidence of Native American habitations, indicating the history of activity in the area. Americans moving west recognized the Wash as a resource and a byway from the Las Vegas Valley to the Colorado River. However, as the valley's population grew, water flowing through the Wash increased, and the resulting erosion threatened the channel's cultural resources, including habitations and rockshelters, early settlers' homesteads and historical mining facilities.

Throughout the 1960s and '70s, researchers examined the evidence for life along the Wash, leading to its designation as an archaeological district in 1977. The Wash Team continues that pursuit, working with stakeholders to record, protect and interpret the Wash's cultural resources.

A 2011 programmatic agreement (PA) provides guidelines for the Section 106 consultation process for cultural resources within the Wetlands Park and outlines responsibilities between the Bureau, Clark County, SNWA and other stakeholders. As part of the PA, the Cultural Resources Coordinating Committee (CRCC) was created and usually meets quarterly to review construction developments, research questions and give updates on activities. This collaboration has led to a clearer understanding of each agency's role in protecting cultural resources, which has saved time and expense.

2019 IN REVIEW

Project managers received the final report on the lithic and obsidian analyses that were performed in recent years, highlighting the technological and material diversity of the stone tools found in the Wash. The obsidian source analysis (described in detail in the 2018 year-end report) showed the Wash's interconnectedness to other sites around southern Nevada, Arizona and California.

This proved to be a transitional year for cultural resources work at the Wash and for the CRCC. The long-term research and weir construction support of the past several years has served as an example of stakeholder collaboration and best practices. The bulk of this collaboration occurred through the CRCC, which met twice in 2019 and discussed several topics, particularly the role of the PA moving forward. With the completion of weir construction in 2018, stakeholders determined that a new PA would be required for operations and maintenance of stabilization facilities. The current PA expires in spring 2021.

The CRCC also supported plans for a complete resurvey of the Wash archaeological district to determine the construction program's long-term effects on the area's sensitive cultural resources. To that end, a contractor was selected to conduct a comprehensive, systematic Class III pedestrian survey to reidentify the 27 significant sites.

2020 OBJECTIVES

Stakeholders will convene to discuss developing a new PA, which will cover operations and maintenance work on Bureau lands at the Wash. The new PA likely will start to take shape in the third quarter of 2020. The resurvey of the Wash is also planned for the first two quarters of the year, with the report's completion expected by the end of the second quarter.

education and outreach

2019 AT A GLANCE

- **Hosted two-day science symposium for World Wetlands Day, attracting nearly 230 students**
- **Conducted outreach with Mabel Hoggard Elementary School's fifth-grade classes and added mobile data collection using Seek and iNaturalist apps to field trips**
- **Updated Pocket Naturalist® guide**
- **Hosted two Wash Green-Ups, drawing 840 volunteers**
- **Participated in or hosted 30 events, reaching more than 60,000 people**

Mabel Hoggard student consults his Pocket Naturalist® field guide

PROJECT SUMMARY

The LVWCC has educated the public on the importance of the Wash and efforts to stabilize and enhance the channel and its resources for two decades. While Green-Ups are the committee's signature event and engage the local community in Wash restoration, the LVWCC participates in a wide variety of additional activities, including educational outreach with local schools. Since outreach was first initiated, staff has participated in 709 events and reached more than 314,000 people. The team also maintains an active presence online, spreading information about the LVWCC's efforts to a larger audience (see Data Resources).

To help guide activities, the Wash Team created the Las Vegas Wash Outreach Plan, 2013. The plan reaffirms past goals and establishes new ones; lays out core messages, strategies and tactics; and describes methods for measuring outreach effectiveness. Direction is also provided by the wildlife management plan.

2019 IN REVIEW

For the past several years, the LVWCC has celebrated World Wetlands Day by hosting a two-day science symposium for high school students at the Wetlands Park. The 2019 event, whose theme was "Wetlands and Climate Change," attracted nearly 230 students from seven local schools.

The Wash Team continued its longstanding relationship with Mabel Hoggard Math and Science Magnet Elementary School, leading field trips for fifth-grade students. Staff gave an in-class introduction to the Wash, then on field-trip day, students learned about water quality and food web dynamics aboard the Desert Princess at Lake Mead. Students then visited the Wetlands Park and learned to identify and document plants and animals along the Wash using the Seek and iNaturalist apps. In a follow-up classroom visit, students analyzed this data, created graphs and presented their results to one another, helping them understand what it's like to be scientists.

Staff updated the Wash Pocket Naturalist® guide, personalizing the cover with a scenic image of the landscape and revising some of the species included. The guide is distributed during educational outreach.

The LVWCC once again hosted two Wash Green-Ups in 2019. The spring event began with rain, reducing turnout to just 227 people. Despite the inclement weather, these volunteers showed great spirit by teaming up to plant thousands of plants. The fall event was the 35th Wash Green-Up, which attracted more than 600 people, representing the second largest number of volunteers since the events began. The Nevada Division of Environmental Protection partially funds both the Mabel Hoggard and Green-Up outreach.

By year's end, the Wash Team had participated in or hosted 30 events that attracted more than 60,000 people. While this was the same number of events as in 2018, the reach increased by more than 50,000 people, thanks to large turnouts at Get Outdoors Nevada Day and the Las Vegas Science and Technology Festival.

2020 OBJECTIVES

The LVWCC will continue to participate in regular outreach activities (World Wetlands Day, Wash Green-Ups, Mabel Hoggard field trips, etc.). In addition, the Wash Team will coordinate with partners to develop educational videos in support of wildlife management plan and outreach plan objectives.

data resources

2019 AT A GLANCE

- **Hosted 33,835 unique pageviews at lvwash.org and added project reports to site**
- **Delivered monthly e-newsletter to 391 subscribers**
- **Increased Facebook followers by 20 percent, to 991**
- **Conducted 20th year of photographic comparative analysis study and processed new aerial imagery**
- **Added 92,646 lines of data to water quality database**
- **Initiated development of mobile data collection for select bird surveys**

The website and other platforms are used to attract and register volunteers for Wash Green-Ups

PROJECT SUMMARY

The LVWCC continually looks for opportunities to provide access to Wash project information and uses a variety of outlets to engage the public. The **lvwash.org** website serves as the major hub with program descriptions, reports and listings of volunteer opportunities. A monthly e-newsletter is also delivered to subscribers and contains short articles and notices of upcoming events. In addition, staff effectively uses social media—including Facebook (**facebook.com/LVWash**), as well as the SNWA's Instagram account and YouTube channel—to expand public outreach while promoting and coordinating efforts with partner agencies.

Water quality sampling by the Wash Team and other stakeholders yields a large amount of data. The Lower Colorado River Water Quality Database houses more than 4.8 million lines of data from 673 sites, measuring more than 950 parameters. Other data resources include imagery from the Wash photographic comparative analysis study, in which panoramic images have been taken at the same sites along the channel since 2000; aerial photography flown and processed at least once a year; and drone imagery that can be shot quickly and inexpensively for outreach videos or project planning.

2019 IN REVIEW

In 2019, **lvwash.org** hosted 33,835 unique pageviews, a 5 percent increase from 2018. Data managers uploaded project reports to the site's document library, and the monthly e-newsletter was delivered to 391 subscribers. Examples of articles include summaries of outreach events and highlights of some of the Wash's interesting biota, including this summer's grasshopper invasion and the southwestern willow flycatcher (SWFL) that was banded at the Wash in 2008 and then appeared at Alamo Lake, Arizona, in 2019, tying the record for oldest SWFL documented.

The Wash's Facebook page grew to 991 followers in 2019, a 20 percent increase. This page provides an easy-to-update platform to engage with the public, give updates on projects, share photos and recruit Wash Green-Up volunteers. Wash posts were also shared on the SNWA Facebook and Instagram platforms for greater exposure.

Panoramic photography was collected from 135 points at 61 sites along the Wash for the photographic comparative analysis study (its 20th year of data collection), and high-resolution aerial imagery was captured during spring so that it can be incorporated into mapping software. No drone imagery was collected in 2019.

The LVWCC continued to host and contribute to the Lower Colorado River Water Quality Database, to which members added 92,646 lines of data, recording 411 parameters collected by four agencies at 57 locations across 12 projects.

Finally, staff initiated development of mobile data collection for SWFL and yellow-billed cuckoo surveys.

2020 OBJECTIVES

Website managers will complete the long-awaited redesign of **lvwash.org** to improve site appearance and information flow. The Wash Team will continue to promote the e-newsletter at outreach events, with the goal of increasing subscribers and driving traffic to the updated website. Data managers will collect and process imagery and maintain the water quality database, and biologists will implement mobile data collection.

mission

working to stabilize and enhance the valuable environmental resources of the Las Vegas Wash

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