Erosion Control Structure at the Las Vegas Wash: Completion of Weir 5

($20,000,000)

WaterSMART Aquatic Ecosystem Restoration Projects for Fiscal Year 2023

Notice of Funding Opportunity No. R22AS00106

Category A Applicant

May 31, 2023

Applicant:
Southern Nevada Water Authority

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1. Technical Proposal: Executive Summary

Date: June 1, 2023

Applicant: Southern Nevada Water Authority
Southern Nevada Water Authority (SNWA) meets Category A Applicant eligibility requirements as a regional wholesale water provider in Southern Nevada. The organization is responsible for water treatment and delivery for the Las Vegas Valley (Valley), as well as acquiring and managing long-term water resources. SNWA diverts 90 percent of its water supply from the Bureau of Reclamation (Reclamation)-managed Colorado River system. SNWA receives delivery of Colorado River water from Reclamation under several contracts held by SNWA or its member agencies.

Applicant Location: 1001 South Valley View Boulevard, Las Vegas, Nevada 89153 (Clark County)

Task Area: B - Construction

Project Summary
Serving as the crucial final link in the Valley's watershed, the Las Vegas Wash (Wash) channels more than 200 million gallons of highly treated effluent, urban runoff, and shallow groundwater to Lake Mead each day, as well as carries stormwater to the lake during rain events. Wetlands in the Wash help to filter impurities from these flows and provide important animal habitat in the desert climate of Southern Nevada. These wetland areas are created by pooling from erosion control structures, or weirs, which are small dams built across the Wash to slow water flow. In the proposed project, SNWA will complete construction on Weir 5, an erosion control structure in the Lower Wash in the National Park Service (NPS) Lake Mead National Recreation Area (NRA). This project will improve habitat for wildlife, including three federally listed bird species, namely the endangered southwestern willow flycatcher and Yuma Ridgway's Rail, as well as the threatened yellow-billed cuckoo. It will also improve water quality by reducing the sediment load in the water that discharges into Lake Mead and will help protect the important spawning area for the endangered razorback sucker in Las Vegas Bay, where the Wash flows into Lake Mead. Additionally, the construction of new weirs will protect existing upstream infrastructure, such as the Lake Las Vegas Dam, the existing 21 weirs in the Upper Las Vegas Wash and the Northshore Road Bridge, a critical access point for visitors to the NRA. This project is supported by numerous stakeholders, including members of the Las Vegas Wash Coordination Committee (Coordination Committee) and Las Vegas Valley Watershed Advisory Committee (Advisory Committee). The project's actions are substantiated by the Las Vegas Wash Comprehensive Adaptive Management Plan (CAMP), which calls for efforts that stabilize the Wash to enhance the environment for fish and wildlife, manage the watershed to help protect Lake Mead, and work to reduce erosion and increase wetlands.

Length of Time and Estimated Completion Date
The proposed project encompasses activity from July 2024 through December 2028. All project work will be completed by December 2028.

Federal Facilities
The proposed project is not located on a federal facility but will involve federal land owned by NPS. The portion of the Wash in which the proposed project will take place is within the boundaries of the NRA, which is owned and managed by NPS.

2. Technical Proposal: Project Location

The proposed project location is 36.127621°N 114.892828°W, in Clark County, Nevada. A map of the proposed project area is included below as Figure 1. A map of the Wash is included as Figure 2 on page 5. A watershed map is included as Figure 3 on page 5.

Figure 1. Proposed Project Overview Map

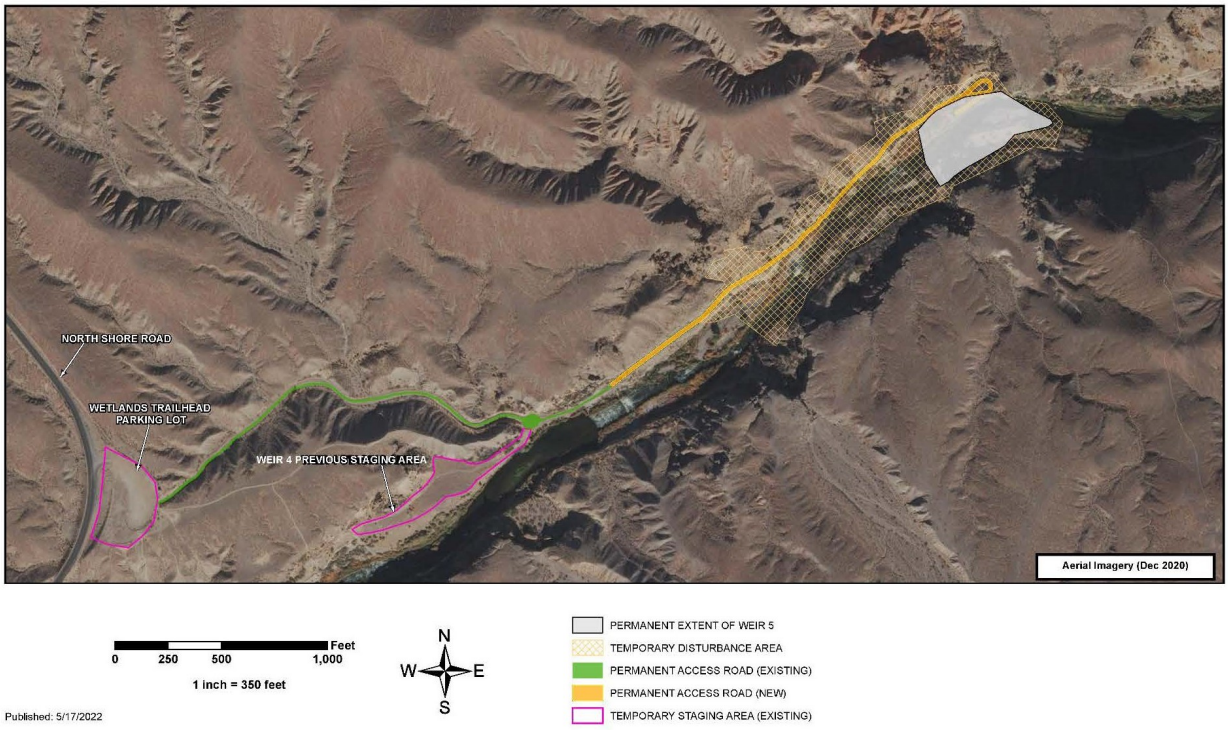


Figure 2. Wash Map

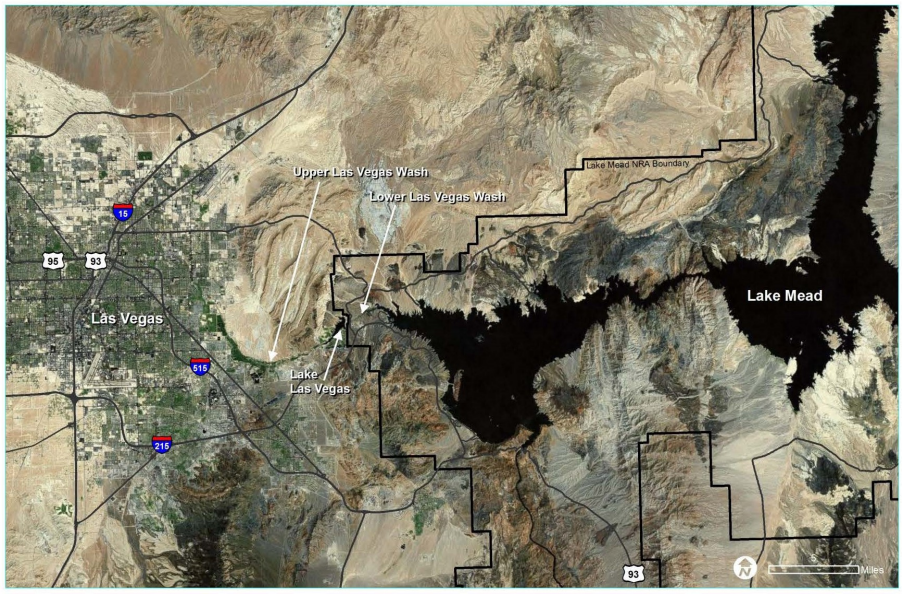
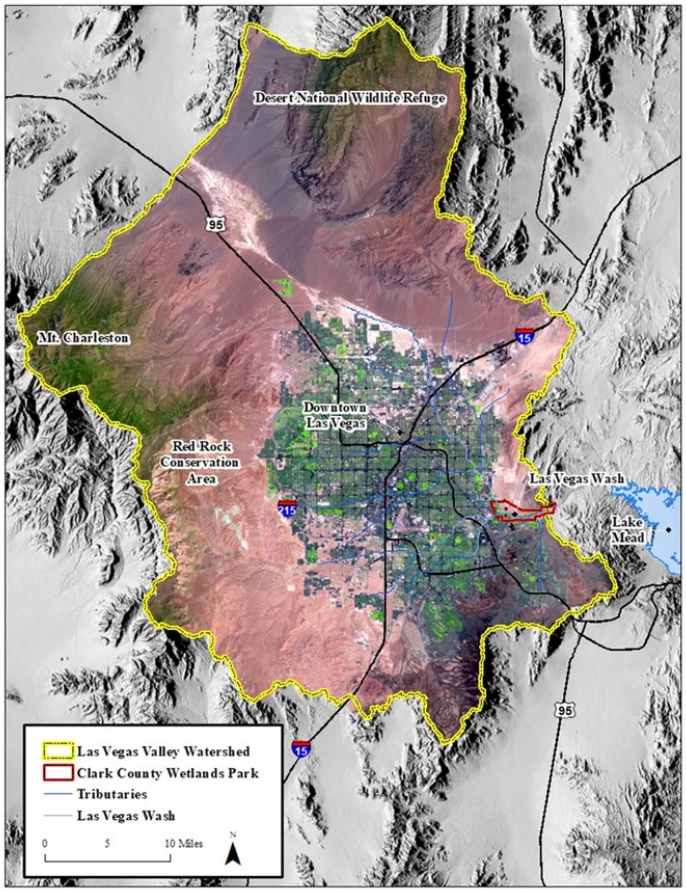


Figure 3. Watershed Map



3. Technical Proposal: Project Description

Stabilizing the Wash is a priority identified within the CAMP, so SNWA has worked with the Coordination Committee on achieving this goal since the plan was first published in 2000. Accomplishments during the past two decades include:

- Constructing 21 planned erosion control structures (weirs)
- Stabilizing more than 13 miles of bank with riprap
- Revegetating more than 630 acres with trees, shrubs, and emergent vegetation
- Removing more than 565 acres of non-native vegetation
- Completing extensive wildlife and water quality monitoring

This work began in the area of the Wash known as the Upper Wash, which is upstream from Lake Las Vegas. SNWA is now working on stabilizing areas of the Lower Wash, which is downstream from Lake Las Vegas, on land owned by NPS.

SNWA is requesting funding as a Task B: Construction applicant. Funding will be used to complete construction on Weir 5 in the Lower Wash. Design on the proposed project is at 100 percent and SNWA will submit design documents to that effect if requested by Reclamation.

SNWA will use a construction contractor to build a stabilizing structure called a weir, which is essentially a small dam. All required permits for the proposed project are expected to be in place in October 2023, with the initial construction phases (not funded by this request) beginning in November 2023. The weir construction site will be accessed via an existing road leading from a NPS trailhead and there will only be one-way access over the diversion channel. The decision for one-way access increases construction time and project costs but reduces environmental impacts and therefore is the preferred option.

Work will begin by establishing a Wash crossing and construction of a diversion channel. The crossing will be contracted by placing rocks into the Wash with the intent to re-route the flow of water. Next, box culverts will be placed to allow for the water to continue downstream while also allowing for equipment crossings. After the Wash crossing is installed, the diversion channel is completed by driving sheet pile into the ground and excavating the soil from between the sheet piles. The new channel allows for complete re-direct of the flow of water, akin to a roadway detour, which creates a new path for the water. This allows for the Wash channel to be dry, allowing the weir to be constructed in the dry area, often called “the dry.” The diversion channel will be 25-feet wide to accommodate various flows of water possible (storm events, etc.) over the course of construction.

In the dry, weir construction continues by excavating for the weir foundation and stilling basin. The above-grade portion of the weir will be approximately 15 feet high as structures greater than 20 feet in height or impounding 20 acre-feet or more are considered dams. As part of the weir, a series of concrete steps will be created and angled slightly downstream to control the flow of water. Riprap (large boulders) will be placed downstream of the steps and strategically along the banks of the Wash. Crews will install riparian vegetation to create new habitat for animal species primarily using pole cuttings of cottonwood and willow trees. These poles will be planted within the spaces of the riprap that will line the stabilized banks of the Wash.

Upon completion of the weir, the contractor will undo the diversion channel and allow water to flow back into the main Wash channel over the newly constructed weir. Once this happens, pooling will be created upstream of the weir, which will create new wetland habitat for animals who live in and migrate through the Wash. The proposed project will improve water quality by decreasing sediment loads, as well as restore aquatic habitat by creating wetlands, restoring riparian vegetation, removing invasive plant species, and stabilizing the Wash.

4. Technical Proposal: Evaluation Criteria

Evaluation Criterion A - Project Benefits

Sub-Criterion A1 - General Project Benefits

What are the critical issues of concern in the watershed? Provide documentation and support for how the critical issues were identified.
The Wash is a critical link in Southern Nevada's watershed. The Wash is the primary outlet for drainage from the metropolitan Valley - an area of approximately 1,600 square miles - making it the largest urban area that drains directly into the Colorado River. Daily flows are comprised of highly treated effluent, landscape and surface street runoff, and intercepted shallow groundwater. Occasional flows come from rain events. Flows in the Wash are critical to sustaining wetlands and other habitats that are home to many wildlife species.

In 1998, a Water Quality Citizens Advisory Committee recommended that SNWA organize and lead a group of stakeholders to address erosion and other water quality and environmental degradation issues on the Wash. SNWA convened the Coordination Committee, comprised of 28 stakeholders from local, state, and federal agencies; environmental groups; the University of Nevada, Las Vegas (UNLV); and community members. The group developed the CAMP, which consists of 44 recommendations or action items, including stabilizing the Wash, extensive revegetation, and management to help minimize erosion in the Wash and protect Lake Mead's water quality (https://www.lvwash.org/reports-and-studies/comprehensive-adaptive-management-plan/index.html). The Advisory Committee provides local oversight and funding for the Coordination Committee's efforts. The Advisory Committee consists of eight water, wastewater, and stormwater agencies, including municipalities representing diverse land, recreation, and environmental perspectives. SNWA is the lead agency of the Coordination Committee and houses the implementation team; it is also a member of the Advisory Committee.

In addition to the issues outlined in the CAMP over two decades ago, the aridification of the region through climate change is impacting the watershed. The U.S. Drought Monitor indicates that the watershed in which the proposed project is located is in an area of severe drought (https://www.drought.gov/watersheds/colorado). Declining water levels during this severe, persistent drought in Lake Mead have exacerbated erosion and loss of habitat in the Wash. The 2013 Environmental Assessment for the project prepared by NPS described that hydraulic analyses and sediment transport modeling for the area determined that the Wash could eventually degrade as much as 100 feet in some areas without additional stabilization measures.

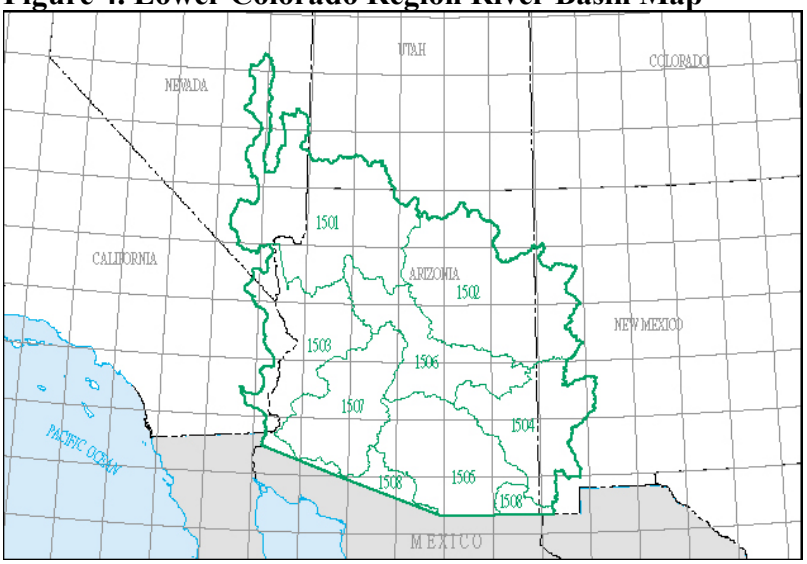
Explain how your project will benefit aquatic ecosystems, including benefits to plant and animal species, fish and wildlife habitat, riparian areas, and ecosystems. For example, will your project create new habitat, improve water quality, improve stream or riparian conditions, restore fish passage and connectivity, or otherwise benefit aquatic ecosystems.
The proposed project will benefit aquatic ecosystems in several ways, including the creation of new wetland habitat, upgrades to riparian areas, and improved water quality. Once construction of the weir is complete and water is routed back into the dry, pooling passively creates wetland habitat; the new hydrology allows emergent species to establish and expand. These wetlands provide habitat for resident bird species, including the federally endangered Yuma Ridgway's rail. This secretive marsh bird is only found at a few locations in Southern Nevada. Until 2021, there had only been a handful of detections in the Upper Wash, but now the species is identified regularly in breeding season. The wetlands offer dense cover typically in the form of cattails, common reed, and bulrush, and this vegetation attracts a wide variety of invertebrates (crayfish, dragonflies, etc.) on which many aquatic birds, including the rail, feed. The ponding of the water itself has also been shown to attract hundreds to thousands of migrating and overwintering waterfowl in the Upper Wash following the completion of weirs. Southern Nevada has few wetland habitats that can host large numbers of water birds.

Additionally, invasive tamarisk will be removed from the banks and replaced with native riparian species such as Fremont's cottonwood, Goodding's willow, and sandbar willow. This will create new habitat for the many bird species that rely on riparian areas, two key species of which are the federally endangered southwestern willow flycatcher and threatened yellow-billed cuckoo. The willow flycatcher and cuckoo are neotropical migrants, and individuals of these species have been found to both migrate through the Wash and remain through the breeding season. The proposed project will increase potentially suitable habitat for these species and the wide variety of other birds that prefer this rare habitat type. Avian point count surveys on the Upper Wash have identified nearly 250 species of bird since 2005, many of which are riparian obligates or require riparian habitat at some point in their life cycle. The portion of the Wash where the proposed project will take place does not yet have substantial wetland or riparian vegetation; consequently, the proposed project will greatly increase the size and improve the quality of these wildlife habitat types.

Finally, the proposed project will help stabilize the Wash, reducing erosion and slowing flows, which will help protect habitat for the endangered razorback sucker, which has one of its most successful spawning areas in Las Vegas Bay, where water from the Wash enters Lake Mead.

Does the project affect water resources management in 2 or more river basins (defined as a minimum HUC-10 level)? Explain how and identify the area benefitted (provide a map).
The proposed project will affect water resources management on one river basin, the Lower Colorado Region. See Figure 4 on the following page, which shows the Lower Colorado River Region basin. Since the Wash is the return-flow conveyance for treated Colorado River water, it helps to extend Southern Nevada's water resources an acre-foot for every acre-foot treated and returned. Armoring the channel against erosion protects this valuable resource, which is key to SNWA's permanent resources portfolio.

Figure 4. Lower Colorado Region River Basin Map



Does the project provide regional benefits, in addition to fish or habitat restoration, including:

Supporting water needs for multiple water uses (i.e., agricultural, municipal, Tribal, environmental, recreational)?
Multiple water uses will benefit from this project, including municipal, environmental, and recreational. Municipal uses benefit by the positive impact on water quality since the Wash flows into Lake Mead, which is the primary source of drinking water for 2.3 million people in Southern Nevada and tens of millions of guests (38.8 million in 2022) who visit the area annually (https://www.lvcva.com/research/visitor-statistics/). Additionally, the Wash is the return-flow conveyance for treated Colorado River water, helping to extend southern Nevada's water resources an acre-foot for every acre-foot treated and returned. Armoring the channel against erosion protects this valuable resource.

Environmental uses that will benefit from the project include the water that supports wetlands and wildlife within the project area. The proposed project is located within the NRA, which offers recreational opportunities like boating, fishing, swimming, hiking, camping, and biking. More than 5.5 million guests visited the Lake Mead NRA in 2022 (https://www.statista.com/statistics/254026/number-of-visitors-to-the-lake-mead-national-recreation-area/).

Reducing water conflicts?
The Wash is the critical link in recycling water used indoors in Southern Nevada and erosion control structures play an important part in this process of extending the resource, which helps reduce water conflicts and maintains a reliable drinking water source for millions of users. Highly treated effluent from four water treatment facilities (serving Las Vegas, Henderson, North Las Vegas, and areas of unincorporated Clark County) is the primary water source in the Wash's daily flows. Through this recycling process, the treated water is returned to Lake Mead, earning Nevada return-flow credits against the state's Colorado River allotment. This extends

Southern Nevada's water resources an acre-foot for every acre-foot treated and returned and makes the Wash a vital component to the water resources of Southern Nevada.

Providing other regional benefits, such as job creation or public safety benefits?
While the proposed project is not expected to create any new jobs, there are public safety benefits. In addition to the previously discussed water quality benefits, construction of this weir will provide protection for infrastructure, including the Lake Las Vegas Dam and the Northshore Road Bridge, a critical access point for visitors to the NRA. This project will also protect earlier stabilization efforts upstream. These other smaller weirs were installed to protect the Northshore Road Bridge by the Federal Highway Administration (FHWA) from 2002 through 2017.

Is this project a component of a broader strategy or plan to replace aging facilities with alternate facilities providing similar benefits? Describe how this project fits within the strategy or plan and how it will continue to provide benefit.
Four weirs were installed by the FHWA from 2002 to 2017 along the Lower Wash to protect the Northshore Road Bridge. Northshore Road, also known as Nevada State Highway 147, began to see erosion in the 1970s when the Wash passed through culverts under the road. The 420-foot bridge was built in 1978 to prevent erosion from impacting this important roadway. However, erosion has continued to increase to the point where the bridge is now 100 feet above the water. The lowering lake levels are increasing the rate of erosion in the Wash and additional structures are needed to protect this infrastructure. There are plans to construct three to four additional structures downstream of this proposed project.

Describe the status of the species and/or habitat that will benefit from the project:
There are five species listed under the Endangered Species Act (ESA) that will directly benefit from this project. The razorback sucker is currently listed as endangered (it was proposed for downlisting to threatened status in 2021, but the change has yet to occur). Native to the Colorado River, this species has been in decline since the construction of dams throughout the region. Populations have been holding steady over the past years which is why it is proposed to be reclassified as threatened. However, this is primarily due to active rearing and restocking efforts of state and federal agencies. There are very few natural spawning grounds for this species. One of the most productive spawning grounds is at the confluence of the Wash and Lake Mead, just downstream of this project. Declining lake levels and continued erosion are threatening the integrity of this area. Unstopped, the gravel bottoms and associated wetland vegetation that provide shelter for the young fish could be eroded away. Weirs such as the one proposed in this project will help to stabilize the Wash and reduce erosion.

There are three birds listed under the ESA that will benefit from the proposed project. The endangered Yuma Ridgway's rail is a wetland obligate bird. It prefers dense patches of cattails or similar grasses or grass-like wetland plants. These types of habitats are very rare in Southern Nevada and will be established and expanded near the project site both in the ponding upstream of the weir as well as along the banks both upstream and downstream of the structure. The stabilization that the weir provides will protect this new habitat from the impacts of erosion. The endangered southwestern willow flycatcher and threatened yellow-billed cuckoo are both riparian obligate birds. This project will remove tamarisk in the project area, which is very poor

quality due to declining water levels as well as impacts of biocontrol agents (tamarisk leaf beetle) and replace them with native cottonwood and willow trees. Again, riparian habitat is scarce in Southern Nevada, and this project will increase the quantity and quality of habitat for these species as well as the many others that use this habitat for feeding or nesting.

The threatened desert tortoise may benefit from this project. The continued erosion of the Wash is not only impacting areas along and in the water but also upland habitat adjacent to it. The area near the project site will be revegetated with native species that will provide additional food and shade that may be used by desert tortoise.

Does the project contribute to the restoration of species listed under the Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531 et seq.)?
The proposed project does contribute to the restoration of species listed under the ESA, including the endangered southwestern willow flycatcher, Yuma Ridgway's Rail, and razorback sucker, as well as the threatened yellow-billed cuckoo and desert tortoise.

Does the project contribute to the restoration of listed anadromous fish?
The proposed project does not contribute to the restoration of listed anadromous fish.

Are the species subject to a recovery plan or conservation plan under the ESA?
Yes. All the above ESA-listed species but the yellow-billed cuckoo have recovery plans, and all but the Yuma Ridgway's rail are subject to the Clark County Multiple Species Habitat Conservation Plan. A major amendment to the latter plan is expected in 2031, which will bring the rail under its coverage.

Has there been a designation of critical habitat? If so, how does the proposed action benefit such critical habitat?
Critical habitat has been designated for the southwestern willow flycatcher and the razorback sucker. The southwestern willow flycatcher's critical habitat does not specifically include the Wash. However, the recovery plan for the species states that "additional reaches may also contribute to recovery goals." The recovery goal to delist the species is 1,950 territories, geographically distributed, with protection from threats and of the needed habitat to adequately support the population. This project will create potentially suitable habitat for the species to work towards the delisting of the species.

The proposed project is within the critical habitat established for the razorback sucker. However, there have been no known detections of individuals in the project area according to the U.S. Fish & Wildlife Service (USFWS). This project will help stabilize the banks of the Wash, reduce erosion, and slow flows, which will help protect the important spawning area downstream in Las Vegas Bay.

If the species are not listed under the ESA, please describe their status. For example, are they native species, game species, at-risk species, species of greatest conservation need, species of Tribal significance, or state listed?
There are many other species that could potentially benefit from this project. More than 300 bird species have been identified along the Wash since 1998 and improving and protecting the habitat will allow greater use of this area. The Wash is also home to 45 mammal species, 19 reptiles, three amphibians, 12 fishes, and over 600 species of invertebrates.

Sub-Criterion A2 - Quantification of Specific Project Benefits

Task A – Not applicable (Applicant is Task B)

Task B - Construction Applicants

Species and Habitat Benefits: Quantify and provide metrics for the extent to which the project will benefit the species and/or habitat and provide support for your response.

To what extent will the project benefit species health and/or species populations? Quantify the benefits, including: Any projected increases in species populations or species health projected to result from your project, and to what extent will the project benefit a species listed under the ESA, or otherwise improve the status of listed species?
It is anticipated that the proposed project will benefit the species described in the previous sections. For the three listed bird species, the project will increase the extent and quality of potentially suitable habitat by removing invasive species and replacing them with native trees, shrubs, and grasses. Along the Upper Wash, annual surveys for the southwestern willow flycatcher have shown an increase in territories that corresponds with the availability of high quality potentially suitable nesting habitat related to weir construction and riparian restoration. While migrant willow flycatchers have been documented in most years since the surveys began in 1998, the first resident territory was identified in 2008, the next in 2013. Both were occupied by single territorial males. Finally, in 2021 and 2022, a male established a territory in the same patch and in 2022 attracted a female and they nested, the first documented pair and nest in 25 years of surveys. Initial surveys in 2023 have documented two territories in that same patch, a record number for the area. Perhaps more importantly, in 2021, field staff documented a southwestern willow flycatcher pair nesting in the Lower Wash during early environmental compliance work for the project. The territory was downstream of the proposed project location, in dense Goodding's willows that had passively established along the Wash channel. The pair successfully fledged at least one young.

Along the Upper Wash, Yuma Ridgway's rail was also rare, with single detections in 1998, 2005, 2006, 2015, 2016, 2017, and 2020. Since 2021, however, field crews have detected 5–7 each breeding season. Additionally, SNWA staff identified a Yuma Ridgway's rail downstream of the proposed project location in 2021 during preliminary environmental compliance surveys.

Likewise, yellow-billed cuckoo was only detected once in the early years of the project on the Upper Wash, in 1998, before stabilization work began. Then, since 2013, after sufficient habitat

was created along the channel, field personnel have detected the species nearly annually. This makes the Wash an important site for the species in the state, as there are typically only a few detections of the yellow-billed cuckoo across Nevada each year. Also, in 2021, during the early environmental compliance surveys for the Lower Wash stabilization project, a possible cuckoo breeding territory in dense Goodding's willows was identified downstream of the project site.

The survey data from both the Upper and Lower Wash show that the three threatened and endangered bird species are present in the area and will establish territories once suitable nesting habitat is available, indicating a likelihood they will use habitat created by this project.

For the razorback sucker, the project is designed to stabilize the Wash channel and reduce erosion which will protect the important spawning habitat downstream.

Finally, on the Upper Wash, biweekly avian point count surveys have documented statistically significant increases in richness and abundance due to weir installation and associated restoration, with an average increase of 12 bird species and of more than 100 individuals per 100 acres per survey, largely due to increases in water- and wetland-dependent birds.

To what extent will the project improve habitat through restoration activities or improved fish passage?
Approximately 11 acres will be disturbed during weir construction that will be revegetated once complete. Currently, the dominant species in this area are non-native common reed and tamarisk. Much of the 11 acres has little to no vegetation at all as the area has suffered from erosion for decades, preventing substantial plant growth. The area will be revegetated using native species. In upland areas, there will be mesquites and a variety of shrubs that will offer shade, food, and shelter to desert wildlife. Near the Wash, tree species such as cottonwoods and willows will be installed (primarily as poles) to establish a riparian corridor which will increase potentially suitable habitat for ESA-listed bird species as well as many other wildlife species.

In some portions, the width of the Wash will nearly double. In addition, models from the design team working on this project show substantial reductions in velocity of the Wash both upstream and downstream of the proposed weir. This will create the platform for the passive establishment of wetland vegetation.

The control of erosion in this portion of the Wash as well as reduced velocities once the structure is in place will help protect the important spawning area for the razorback sucker located near where the Wash enters Lake Mead. Continued monitoring of the razorback sucker population at Las Vegas Bay will help document the success of this project.

<u>Watershed Benefits</u>: Quantify and provide metrics for the extent to which the project will provide watershed benefits and provide support for your response.

To what extent will the project improve water quality?
The Wash program was started in response to water quality concerns. The Wash was on the State of Nevada's 303(d) list of impaired waterways, and there were large algae blooms because of

high nutrient loads and sediment transport. The completion of 21 weirs on the Upper Wash along with four more in the Lower Wash upstream of the proposed project have improved water quality significantly. There has been a reduction of approximately 60 percent in TSS, and the Wash has been removed from the list of impaired waterways. There have been substantial reductions in the levels of nitrogen and phosphorus, which have nearly eliminated the potential for large algal blooms in Las Vegas Bay. (The last algal bloom of size in this area was in 2001.) Regular water quality monitoring by SNWA and others measures these and other water quality parameters to ensure that the program remains successful, and results are documented in annual reports. The lower portion of the Wash is experiencing high erosion due to the declining lake levels. Additional structures, such as the proposed project, are necessary to protect the Wash channel and prevent future issues with water quality. The project is expected to further reduce TSS in the system and the ponding of water upstream of the weir will allow for the settling of minerals and nutrients to prevent large loads from reaching the lake.

To what extent will the project benefit ecological function?
This project will have extensive benefits to the ecological function of the Wash. Currently stricken by substantial amounts of erosion and dominated by non-native vegetation, the Lower Wash provides poor habitat for wildlife. Only a few native trees line the banks of the Wash in the project area. Much of this is due to the high velocities of the water as well as the head cutting that has been occurring for decades, which has been sped up by the declining levels of Lake Mead. The construction of the weir will decrease flow velocities and stabilize the soils in this reach of the Wash, which will allow for the passive establishment of wetland vegetation along the banks both upstream and downstream of the weir. There may also be establishment of vegetation in the pooled water upstream of the weir. Active restoration efforts will establish riparian trees amongst and adjacent to the newly formed wetlands which will further stabilize the banks and provide higher quality habitat for a wide variety of species. In the upstream portion of the Wash where SNWA has constructed 21 similar weirs, more than 130 acres of wetlands have been established and an additional 500 acres have been revegetated adjacent to the channel. The native dominated community upstream of the proposed project location will allow for the natural recruitment of a diverse native wetland ecosystem at this project.

To what extent will the project build ecosystem resiliency?
Climate change is exacerbating the declining water levels in Lake Mead. This rapid decline is resulting in increased erosion along the Wash. The proposed project is designed to assist in decreasing the rate of erosion. This will result in the protection of habitat downstream of the project, including razorback sucker spawning areas and riparian tree stands. The project will also facilitate the creation of new wetland and riparian habitats. With more than 130 acres of wetland and riparian habitat created on the Upper Wash, this project will allow for greater continuity of habitat. This contiguous habitat is known to be very important for sensitive bird species such as the endangered southwestern willow flycatcher and threatened yellow-billed cuckoo.

This project will remove many acres of tamarisk and other non-native vegetation and replace them with native trees, shrubs, and grasses. Dense revegetation of native species in the Upper Wash has been shown to decrease the ability of invasive species to reestablish.

Water Supply Benefits: Quantify and provide metrics for the extent to which the project will increase water supply to an aquatic ecosystem and provide support for your response.

To what extent will the project make more water available, or make water available at a more advantageous time or location?
The proposed project will slow water flow, making it available to the aquatic ecosystem around the weir for a longer period of time. Currently, water flows rapidly through the site and has little time to permeate into the banks. This makes it less available for wetland and riparian species. By slowing the flow both above and below the weir, pooling water above the weir, and increasing the area covered by water, the effective water supply to the ecosystem will also be increased.

Other Quantifiable Benefits: Are there other quantifiable project benefits not addressed in the preceding questions? If so, what are these benefits? Provide support for your response, including citations to relevant studies or statistics, and other metrics.
The proposed project has multiple benefits. In addition to sediment control, erosion control, removal of invasive species, and establishment of native vegetation, the project will also further protect important and valuable infrastructure upstream. The Northshore Road Bridge is the primary thoroughfare from the southern portion to the northern portion of the Lake Mead NRA. A study by the FHWA showed that six additional structures would be needed to protect the bridge in addition to the three installed in the early 2000s. So far, only one additional structure has been built, and the rate of erosion has increased beyond what was projected by the study, which was completed in 2010. This fifth structure will both support the protection of the bridge as well as the previously built weirs.

The project location is adjacent to the "Wetlands Trail" at Lake Mead. The public has access to view the Wash at this location. There is currently no access to the site of construction due to erosion and dense tamarisk. However, once completed, the public will be able to view and enjoy the newly established wetland and riparian vegetation and the wildlife that it attracts.

Evaluation Criterion B – Prior Restoration Planning and Stakeholder Involvement and Support

Sub-Criterion B1 Task A – Not applicable (Applicant is Task B)

Sub-Criterion B2 Task B – Construction Stakeholder Support and Prior Restoration Planning

Prior Planning, Study, and Design: To be eligible for Task B: Construction, applicants must have conducted study and design activities resulting in a design package at a 60% design level. Describe the planning effort that supports your proposed project, i.e., planning that took place before you submitted your proposal.

Describe the specific planning, strategy, study, and design document(s)(plan(s)) that support your project. Explain when the plan was prepared and for what purpose.
The proposed project's actions are substantiated by the CAMP, which calls for efforts that stabilize the Wash to enhance the environment for fish and wildlife, manage the watershed to

help protect Lake Mead, and work to reduce erosion and increase wetlands (https://www.lvwash.org/reports-and-studies/comprehensive-adaptive-management-plan/index.html). Chapter 6 of the CAMP is included in Appendix A.

The CAMP was published in 2000, after a stakeholder-led process that began in the late 1990s. The community understood the importance of protecting and managing the Wash, not just because it carried water to Lake Mead, but also because the flows in the Wash are instrumental in sustaining wetlands and other habitats to a variety of species in the desert climate of Southern Nevada. Between the 1970s and 1990s, erosion had destabilized the Wash, which caused an increase in sedimentation and a decline in wetland habitat. SNWA established a Water Quality Citizens Advisory Committee in 1997, which was comprised of local citizens. This group presented recommendations in nine areas to the SNWA Board of Directors, one of which was to develop a comprehensive adaptive management plan for the Wash. They also recommended that SNWA coordinate the development of this plan. SNWA then formed the Coordination Committee and an associated stakeholder process that included more than 140 individuals who participated on study teams to create the CAMP. The CAMP has served as the guiding document for stabilization and enhancements along the Wash for more than two decades. (The Coordination Committee currently includes 28 representatives from federal, state, and local agencies; environmental groups; UNLV; and the local community.) The full CAMP is available at https://www.lvwash.org/reports-and-studies/comprehensive-adaptive-management-plan/index.html.

Meetings specific to the design of Weir 5 included NPS. The Advisory Committee members were briefed on the design and support it. While public meetings were not held specifically regarding the design, Environmental Compliance included a public comment period. Compliance included NDEP, USFWS, and the Nevada State Historic Preservation Office (SHPO). No comments in opposition were received during this process.

Does the proposed project contribute to a regional or watershed scale fish passage or aquatic ecosystems strategy or priority restoration efforts (e.g., Federal, State, Tribal, or other association priority plan or designated critical habitat)? If so, name and briefly describe the strategy or effort.
The razorback sucker is subject to the Lower Colorado River Multi-Species Conservation Plan, which is administered by Reclamation. Reclamation has been monitoring, rearing, and instituting conservation efforts for this fish species for over 20 years. These efforts raised awareness of the importance of the confluence of the Wash and Lake Mead to the species. Due to the success of this spawning area, the only action currently taking place is continued monitoring. The proposed project will help protect this important area for the razorback sucker.

What was the scope of the planning effort that supports your project? Describe the geographic extent and types of issues (e.g., water quantity, water quality, and/or issues related to ecosystem health or the health of species and habitat within the watershed).
The CAMP serves as an instrument to guide long-term management with full stakeholder participation. While the scope of the CAMP is related to the Wash geographically, the impacts of keeping water in the system and improving water quality have downstream benefits. Each of the nine original study teams (Jurisdictional & Regulatory, Erosion & Stormwater, Wetlands Park,

Alternate Discharge, Shallow Ground Water, Environmental Resources, Land Use, Public Outreach, and Funding) focused on different issues to ensure the CAMP was comprehensive. Each team developed two to eight recommendations, or action items, that were presented in the document.

Was the plan developed collaboratively?
The CAMP was developed collaboratively. The full list of Coordination Committee members included:

- City of Henderson
- City of Las Vegas
- City of North Las Vegas
- Clark County Sanitation District (now Clark County Water Reclamation District)
- Clark County Departments of Comprehensive Planning and Parks & Recreation
- Clark County Health District (now Southern Nevada Health District)
- Clark County Regional Flood Control District
- SNWA
- Basic Management, Inc.
- Lake Las Vegas Resort
- Las Vegas Bay Marina Owner
- Water Quality Citizens Advisory Committee (2 members)
- Friends of the Desert Wetlands Park (now Desert Wetlands Conservancy)
- UNLV
- Nevada Division of Environmental Protection (NDEP)
- Nevada State Health Division
- Conservation District of Southern Nevada
- Colorado River Commission
- NPS
- Reclamation
- U.S. Army Corps of Engineers
- U.S. Environmental Protection Agency
- USFWS
- U.S. Geological Survey
- U.S. Natural Resources Conservation Service

What stakeholders were involved in preparing the plan and do they represent diverse interests (e.g., agricultural, municipal, tribal, environmental, recreational interests)? What process was used to solicit and incorporate stakeholder input?
The CAMP was developed with the participation of more than 140 people from the stakeholder groups outlined under the prior response. These groups represent a variety of interests, including municipal, federal, environmental, recreational, and public health, among others. To develop the CAMP with full stakeholder involvement, there was a five-week public comment period which included presentations to the Coordination Committee, the Water Quality Citizens Advisory Committee, and general community workshops. The draft document was also available on the

Coordination Committee's website. More than 230 comments were reviewed and, when applicable, incorporated into the document.

If the plan was prepared by an entity other than the applicant, explain why it is applicable.
SNWA coordinated the development of the CAMP through study teams (Jurisdictional & Regulatory, Erosion & Stormwater, Wetlands Park, Alternate Discharge, Shallow Ground Water, Environmental Resources, Land Use, Public Outreach, and Funding) consisting of staff from various agencies and subject-matter experts. SNWA staff were involved throughout the collaborative process.

Please describe the process for stakeholder involvement and comment on the planning and design effort supporting your project. Describe how comments were requested, the types of comments received, and how they were considered.
In order to develop the CAMP with full stakeholder involvement, there was a five-week public comment period which included presentations to the Coordination Committee, the Water Quality Citizens Advisory Committee, and general community workshops. The draft document was also available on the Coordination Committee's website. More than 230 comments were reviewed and, when applicable, incorporated into the document.

Describe how the plan provides support for your proposed project. Does the proposed project address a goal or need identified in the plan? Describe how the proposed project is prioritized in the referenced plan.
Yes, the proposed project addresses a goal or need identified in the CAMP. In addition to stabilizing the Wash as an important initial step, Chapter 6 (Appendix A) of the CAMP, Erosion & Stormwater Study Team, is focused on management of erosion and working on a strategy for storm flows.

How did you select the proposed project from among other project alternatives? Describe the process you used to compare alternatives.
The original Erosion & Stormwater Study Team convened 48 participants for a two-day workshop in 1999 and focused on developing a stabilization plan for the Wash, as well as developing specific methods to incorporate the plan, including the types of stabilization structures needed and the best locations for these structures.

Two different types of weirs have been used on the stabilization program upstream: rock riprap and roller compacted concrete. The proposed project is a roller compacted concrete weir. With rock riprap weirs, vegetation can grow on the weir itself, making it a platform for additional wetland vegetation to establish, but continued growth of the vegetation, as well as captured sediment, result in flow changes across the weir, threatening the integrity of the structure. As a result, the vegetation needs to be removed periodically. The concrete structure type selected for the project has a substantially reduced maintenance schedule and cost, making it the preferred alternative.

Did you compare the benefits of different project alternatives (e.g., through a decision matrix, triple-bottom-line analysis, or rapid benefit indicators)? Did you do a qualitative or quantitative comparison of project benefits? If so, please describe the process and the outcomes.
Two different types of weirs were considered for the project: rock riprap and roller compacted concrete. The decision was made to construct a roller compacted concrete weir. The decision was based largely on long-term maintenance costs. While rock riprap weirs cost less to construct, they allow vegetation growth on the weir itself. Continued growth of the vegetation and captured sediment result in flow changes across the structure, threatening the integrity of the weir. As a result, the vegetation needs to be removed periodically. A roller compacted concrete structure will cost substantially more to construct but will have a significantly reduced maintenance schedule and cost since vegetation cannot grow on the weir itself. Ownership and management of the structure will be turned over to NPS once it is complete, and NPS does not have the budget for costly annual maintenance. As a result, a roller compacted concrete structure is the better choice for the long-term success of the project.

Stakeholder Support for the Proposed Task B: Construction Project

Is there widespread support for the project? Please provide specific details regarding any support and/or partners involved in the project. What is the extent of their involvement in the project?
There is widespread support for the proposed project. Landowner NPS is supportive of the project and has contributed funds to early phases of construction. As owner of the land where weirs in the Upper Wash were constructed, Clark County is also supportive of the project. SNWA presents annual updates on the Lower Wash stabilization project to the Coordination Committee, and in January 2020, the Advisory Committee officially approved its support of the project moving forward.

Please attach any relevant supporting documents (e.g., letters of support or memorandum of understanding).
A letter of support from the Advisory Committee is included in Appendix B. This letter was sent to the Nevada Congressional Delegation in support of funding for the Lower Wash Stabilization program.

Are any stakeholders contributing to the project cost-share?
While no stakeholders are contributing to the project cost share, earlier phases of construction of the Weir 5 project have received funding from Reclamation and NPS.

Reclamation agreement R22AP00466, Las Vegas Wash Erosion Control, was entered into on September 1, 2022, with the project period ending December 31, 2023. This agreement included $3 million in Reclamation funding with $602,124 in SNWA matching funds. Work funded by this agreement was entered into under CFDA No. 15.540. Funding under this agreement was used for design, and it is anticipated that the final report will be submitted with a project period ending in September 2023.

The performance period for Reclamation agreement R23AP00123 began on March 1, 2023, with the project period ending December 31, 2024. This agreement included $6 million in Reclamation funding with $4 million in SNWA matching funds and was entered into under CFDA No. 15.540. Funding under this agreement will be used for construction and supplies/materials (supplies/materials built into contractor's agreement).

NPS is also contributing $6.1 million toward construction costs from a Southern Nevada Public Land Management Act (SNPLMA) award. SNPLMA allows the Bureau of Land Management (BLM) to sell public land within specified boundaries and use the money generated to fund conservation projects. This funding will also be used for construction and supplies/materials (supplies/materials built into contractor's agreement).

Is there opposition to the proposed project effort? If so, describe the opposition and explain how it will be addressed. Opposition will not necessarily result in fewer points.
There is not any known opposition to the proposed project.

Evaluation Criterion C – Project Implementation and Readiness to Proceed

Sub-Criterion C1 Task A - Not applicable (Applicant is Task B)

Sub-Criterion C2 Task B - Construction Readiness to Proceed

Describe the implementation plan for the proposed construction project. Please include an estimated project schedule that shows the stages and duration of the proposed construction work, including major tasks, milestones, and dates. This may include, but is not limited to, design, environmental and cultural resources compliance, permitting, and construction/installation.
Table 1 below outlines the project schedule.

Table 1. Project Schedule

Milestone / Task / Activity	Planned Start Date	Planned Completion Date
Grant awarded and work on agreement Complete necessary environmental compliance Receive Notice to Proceed Prepare and finalize plans for implementation Finalize permitting (Work began in early 2023) Initiate construction (Work scheduled to begin in November 2023. No pre-award costs are requested.) Prepare construction staging areas Clear and grub construction site Construct construction access roads Identify plant-material providers Procure plants Conduct biological surveys	Pre-award (Sept. 2023)	December 2023

Milestone / Task / Activity	Planned Start Date	Planned Completion Date
Finalize agreement	January 2024	January 2024
Begin initial phases of weir construction (construct water crossing, construct diversion channel, groundwater pumping)	January 2024	December 2024
Begin second phases of construction work (excavate weir location, grade Wash banks, stage riprap material, prepare onsite concrete mixing plant)	January 2025	December 2025
Complete final phases of construction work (cast concrete weir in place, place rock riprap, final stabilization of disturbed areas, remove temporary Wash crossings, return water to natural channel)	January 2026	October 2026
Hydroseed disturbed areas with native seed mix Install riparian poles and cuttings	October 2026	October 2026
Control weeds in all areas Install container plants in upland areas Conduct biological surveys	March 2027	April 2027
Control weeds in all areas Monitor vegetation Conduct biological surveys	April 2027	October 2027
Control weeds in all areas Monitor vegetation Conduct biological surveys	April 2028	October 2028
Complete biological surveys	Ongoing for five-years after the period of performance	Ongoing for five-years after the period of performance

Proposals with a budget and budget narrative that provide a reasonable explanation of project costs will be prioritized.
Proposed project costs are detailed in Attachment A, with Budget Support Information provided in Appendix C. All project costs are direct and fall into either the Construction or Other Direct Costs line items. The Project Budget section of this proposal includes the Funding Plan, Budget Proposal, and Budget Narrative sections, which begin on page 26, also provide additional detail.

Describe any additional efforts planned to engage with regional stakeholders during the final planning and construction phase of your project.
Continued discussions with NPS will take place throughout the construction of this project. The Coordination Committee and Advisory Committee will also receive regular updates throughout this project.

Identify and describe all engineering and design work that has been performed in support of the proposed project to date. As a reminder, projects must be at 60% design to be eligible for Task B: Construction funding. If additional design work is required prior to construction, describe the planned process and timeline for completing the design work.
Design work for the proposed project is 100 percent complete. The following are available in the design package:

- Geotechnical engineering
- Environmental compliance efforts
- Surveying
- Engineering designs for both a temporary geotechnical access road and the 100 percent Design of Weir 5

No additional design work is required prior to construction. The technical deliverables are construction documents (drawings and technical specifications) that were developed and sealed by a professional engineer. At the time of writing, staff are completing permitting and environmental compliance. If Reclamation contacts SNWA after the application is submitted, design products will be furnished at that time.

Describe any permits and agency approvals that will be required, along with the process and timeframe for obtaining such permits or approvals.
SNWA staff have been working to obtain the required permits, including:

- NDEP Working in Waterways (in progress)
- NPS Special Use Permit (in progress)
- NDEP 401/404 (in progress)
- NDEP – National Pollution Discharge Elimination System Individual Discharge Permit (in progress)
- NDEP Storm Water Pollution Prevention Permit (obtained)

It is anticipated that all required permits will be in place by October 2023.

If applicable, describe the projects impact on any contractual water or power supply obligations, Indian trust responsibilities, or water rights settlements. Describe any regional water quality control board, state, and/or local requirements with the potential to affect implementation of the project.
The proposed project will not have the types of impact described above. There are no local boards that could potentially affect implementation of the project.

If project construction requires access to the land or water source where the project is located, please include a description of and a timeframe for obtaining any required easements or permits. Does the applicant have access to the land or water source where the project is located? Has the applicant obtained any easements that are required for the project? If so, please provide documentation.
NPS Agreement No. G14081200001 authorizes SNWA access to the land where the proposed project is located. This agreement currently runs through mid-2024 and will be extended for the length of the project. This agreement is attached as Appendix D.

Identify whether the applicant has contacted the local Reclamation office to discuss the potential environmental and cultural resource compliance requirements for the project and the associated costs. Has a line item been included in the budget for costs associated with compliance? If a contractor will need to complete some of the compliance activities, separate line items should be included in the budget for Reclamation's costs and the contractor's costs.
Please review responses in the Environmental and Cultural Resources section. Staff discussed the proposed project generally with a representative from the local Reclamation office to set a baseline for possible environmental compliance costs. The proposed project budget includes $20,000 to cover possible costs associated with environmental and cultural resource compliance.

Describe any unresolved issues associated with implementing the proposed aquatic ecosystem restoration project, how and when such issues will be resolved, and how the project would be affected if such issues are not resolved.
Obtaining all required permits and completing compliance has taken longer than expected. At the time of writing, it is anticipated that permitting and compliance will be completed by October 2023.

Evaluation Criterion D - Presidential and Department of Interior Priorities

Climate Change

Climate Change: E.O. 14008 emphasizes the need to prioritize and take robust actions to reduce climate pollution; increase resilience to the impacts of climate change; protect public health; and conserve our lands, waters, oceans, and biodiversity.

If applicable, describe how the project addresses climate change and increases resiliency. For example, does the project help communities respond to or recover from drought or reduce flood risk?
Weirs function as miniature dams across the Wash which helps control the flow of water by slightly raising the level on the upstream side. This type of stabilization can help prevent flooding.

How will the project build long-term resilience to drought? How many years will the project continue to provide benefits? Please estimate the extent to which the project will build resilience to drought and provide support for your estimate.
Riparian areas perform vital functions in watersheds. Excavating and planting native species close to the water table and increasing patch sizes will help increase the drought resiliency of these important habitat types and the wildlife that relies on them. The riparian species proposed to be planted in this project (Goodding's willow, sandbar willow, and Fremont's cottonwood) have lifespans of up to 50 years or more, so it is expected that the benefits will last at least this long. Natural reproduction of these species may extend the timeframe of these benefits even longer.

Will the proposed project reduce greenhouse gas emissions by sequestering carbon in soils, grasses, trees, and other vegetation? Does the proposed project seek to reduce or mitigate climate pollutions such as air or water pollution? Does the proposed project contribute to climate change resiliency in other ways not described above?
The proposed project builds on the past progress of the Coordination Committee which has restored more than 630 acres of wetland, riparian, and upland habitat on the eastern edge of the Valley. These areas have been transformed from being dominated by invasive species and degraded by erosion and are now providing habitat to a variety of native wildlife species and working toward reducing the heat island effect from the adjacent municipalities.

Disadvantaged or Underserved Communities

Disadvantaged or Underserved Communities: E.O. 14008 and E.O. 13985 affirm the advancement of environmental justice and equity for all through the development and funding of programs to invest in disadvantaged or underserved communities.

Please use the Council on Environmental Quality's interactive Climate and Economic Justice Screening Tool, available online at Explore the map – Climate & Economic Justice Screening Tool (https://screeningtool.geoplatform.gov) to identify any disadvantaged communities that will benefit from your project. If applicable, describe how the project benefits those disadvantaged or underserved communities identified using the tool. For example, does the project improve water quality, provide economic growth opportunities, improve, or expand public access to nature, or provide other benefits in a disadvantaged or underserved community?
According to the screening tool, the tract where the proposed project is located would be partially recognized as disadvantaged, and the lands of Federally recognized tribes that cover less than one percent of this tract are considered disadvantaged. Throughout the SNWA service area, there are census tracks that qualify as disadvantaged. Due to the water quality benefits of the proposed project, these communities would indirectly benefit from the proposed project.

Tribal Benefits

Tribal Benefits: The Department of the Interior is committed to strengthening tribal sovereignty and the fulfillment of Federal Tribal trust responsibilities. The President's

memorandum, Tribal Consultation and Strengthening Nation-to Nation Relationships, asserts the importance of honoring the Federal government's commitments to Tribal Nations.

If applicable, describe how the project directly serves and/or benefits a Tribe, supports Tribally led conservation and restoration priorities, and/or if the project incorporates or benefits Indigenous Traditional Knowledge and practices.
While the proposed project does not incorporate traditional knowledge or practices, due to the water quality benefits, the project benefits Tribal water users in the Lower Basin, including the Fort Mojave Indian Tribe, Colorado River Indian Tribes, Chemehuevi Indian Tribe, Quechan Indian Tribe, and Cocopah Indian Tribe.

Does the proposed project support Reclamation's Tribal trust responsibilities or a Reclamation activity with a Tribe?
Due to the water quality benefits, the proposed project supports Reclamation's Tribal trust responsibilities with Tribal water users in the Lower Basin.

Evaluation Criterion E – Performance Measures

What are the desired conditions that this project contributes to and how will outcome objectives and project success be measured? Describe the performance measures that will be used to quantitatively or qualitatively define actual project benefits upon completion of the project.
The proposed project will improve water quality by decreasing sediment load, as well as restore aquatic habitat by creating wetland habitat, restoring riparian vegetation, removing invasive plant species, and stabilizing the Wash.

To quantify the actual benefits of completion of the proposed project, SNWA will evaluate the relative effectiveness of created wetlands and the overall success of the project using the following performance measures. Pooling will begin to happen once the diversion channel is removed, allowing wetland plants to establish; however, it can take some time to fully realize the benefits to animal species in the Wash. Also, it can take several years for riparian habitat to mature and be utilized by wildlife, so the full benefits of this project will not be fully realized in the construction period.

Performance measures will occur in two timeframes and across two categories. The first will occur in the five-year project period (once construction is completed) and measure planting success and other site criteria. The second will be conducted during the project period but then will continue for five years afterwards and measure benefits to wildlife. (If funds are awarded, no funding will be used for any monitoring activities, in the five-year project period or after.)

1. Measures of Planting Success and Other Site Criteria

- ***Survival Data.*** *Propagated Plants.* Survival data will be reported as the percent of living plants of the total number installed in a project site. *Poles and cuttings.* Data will be reported as the approximate percentage of installed poles or cuttings still alive at the end of the first growing season. To ensure success of the riparian restoration, a higher number

of poles and cuttings will be installed than would be necessary to establish the highly functional ecosystem. It is expected that 50–75 percent of the poles/cuttings will survive.

- ***Species Richness.*** Species richness is the number of species (native and non-native) at the site(s). This data will be compared to the species richness prior to the planting performed as part of this project.
- ***Photo Points.*** Photo points will be established at the project site before any work is initiated, and then photos will be taken after various treatments such as ground preparation and planting have been implemented.

2. Measures of Benefits to Wildlife

- ***Biological Surveys.*** The true measure of project benefits will be use of the new vegetation by wildlife, particularly birds. Targeted surveys are conducted for the southwestern willow flycatcher, yellow-billed cuckoo, and Yuma Ridgway's rail in the breeding season using federal protocols. For the flycatcher, standard measurements are migrant detections (unknown subspecies) and breeding territories (residents of the endangered subspecies). For the cuckoo, results are measured in detections and then in detections across survey periods, yielding possible, probable, or confirmed breeding territory designations. For the rail, results are measured in presumed number of individuals based on detection information. Other biological surveys may also occur.

3. Measures of Benefits to Water Quality

- Water samples will be collected and analyzed quarterly for major ions, heavy metals, nutrients (nitrogen and phosphorus), bacteria, perchlorate, and TSS. Field parameters (specific conductance, pH, temperature, and dissolved oxygen) will also be collected. Data can be compared to sites upstream of the project such as LW0.9 at Northshore Road Bridge or sites downstream of the project.

5. Project Budget: Funding Plan

SNWA as an organization is funded by diverse sources, including a quarter-cent sales tax, connection fees, commodity fees, and reliability charges. These revenue sources provide the organization with a mix of funding sources, which helps ensure the financial stability and capacity of the organization. Cost share for SNWA's work on erosion control structures at the Wash is funded by the quarter-cent sales tax. Since no non-federal cost share will be provided by a source other than the applicant, no letters of commitment are required.

While NPS (BLM's SNPLMA funding) and Reclamation have provided funding in support of the Weir 5 project, none of these funding sources are included as cost share in this application. Please see the "Overlap or Duplication of Effort Statement" section for additional details on these funding streams.

6. Project Budget: Budget Proposal

Table 2. Summary of Non-Federal and Federal Funding Sources Table

FUNDING SOURCES	AMOUNT
Non-Federal Entities	
1 SNWA	$15,000,000
2 Third-party contributions (volunteer labor/trees)	$0
Non-Federal Subtotal	$15,000,000
REQUESTED RECLAMATION FUNDING	$20,000,000

Table 3. Budget Proposal

Summary			
6. Budget Object Category	**Total Cost**	**Federal Estimated Amount**	**Non-Federal Estimated Amount**
a. Personnel	**$0**		
b. Fringe Benefits	**$0**		
c. Travel	**$0**		
d. Equipment	**$0**		
e. Supplies	**$0**		
f. Contractual	**$0**		
g. Construction	**$34,980,000**		
h. Other Direct Costs	**$20,000**		
i. Total Direct Costs	**$35,000,000**		
i. Indirect Charges	**$0**		
Total Costs	**$35,000,000**	**$20,000,000**	**$15,000,000**
Cost Share Percentage		**57%**	**43%**

7. Project Budget: Budget Narrative

All costs are direct and necessary for program implementation. The non-federal contribution is 43 percent; the federal contribution is 57 percent.

Salaries and Wages/ Fringe Benefits/Travel
Not applicable to the proposed project.

Equipment/Supplies and Materials
Construction Contractor will furnish all equipment.

Contractual: Construction
Las Vegas Paving was selected as the construction contractor through a Construction Manager At Risk (CMAR) request for proposal process. This firm had previous experience with SNWA and worked on weirs in the Upper Wash.

Please see Appendix C for cost support that outlines construction tasks.

Other Direct Costs: Environmental and Regulatory Compliance Costs
Please review responses in the Environmental and Cultural Resources section. Staff discussed the proposed project generally with a representative from the local Reclamation office to set a baseline for possible costs. The proposed project budget includes $20,000 to cover possible costs associated with environmental and cultural resource compliance. While it is anticipated that all compliance work will be completed prior to award, a line item is included.

Total Direct Costs
Reclamation is requested to contribute $20 million toward direct costs. SNWA will provide cost share of $15 million.

Indirect Costs
Not applicable. All direct costs align with eligible categories. SNWA does not have a federally negotiated indirect cost rate agreement. No funds are requested for indirect costs.

8. Environmental and Cultural Resources Compliance

Will the proposed project impact the surrounding environment (e.g., soil [dust], air, water [quality and quantity], animal habitat)? Please briefly describe all earth-disturbing work and any work that will affect the air, water, or animal habitat in the project area. Please also explain the impacts of such work on the surrounding environment and any steps that could be taken to minimize the impacts.
The proposed project consists of constructing Weir 5, an erosion control structure in the Lower Wash within the boundaries of the Lake Mead NRA. Severe head cutting and erosion have taken place in the Wash due to declining Lake Mead levels. The weir will stabilize this portion of the Wash to reduce the erosion. Following weir construction, the Wash will have a slower water flow velocity at the Weir 5 site, which will result in desirable upstream ponding and the deposition of sediment behind the weir. The ponding will create new aquatic habitat for fish, waterfowl, insects, and wildlife. The establishment of riparian and wetland plants, as a result of the ponding, will create a native riparian and wetland corridor, assist in filtering out water pollutants, and provide an increased benefit to aquatic habitat quality. Additionally, the weir will reduce erosion and improve downstream water quality along the Wash, which will in turn reduce the sediment transport to Lake Mead.

The proposed project area will disturb approximately 20 acres, including approximately 15.5 acres of temporary disturbance that will be restored and/or under water when the proposed project is complete, and approximately 4.68 acres of permanent disturbance for the weir and associated bank stabilization protections. The proposed project construction will occur over a three-year period beginning in November 2023. The proposed project will involve earth-disturbing work beginning with building temporary access roads to access the construction site.

Vegetation will be removed from all areas where construction will occur. A diversion channel will be constructed to move the Wash water around the construction site. Excavation and grading would be required prior to installing the concrete weir. Rock riprap will be installed upstream and downstream of the weir along the banks of the Wash. Upland areas disturbed by the construction activities will have final stabilization measures installed including rock for dust suppression and/or revegetation in the form of hydroseeding and container planting, where appropriate. Medium to heavy construction equipment, including: backhoe, compactor, paddlewheel scraper, forklift, water truck, sheet pile driving machine, 100-ton crane, concrete pump truck, graders, side dumps, dozers, excavators, loaders, rollers, rock trucks, drilling rigs (either track-mounted or truck-mounted), rock drills, pumping equipment for construction water, pumping equipment for dewatering, cranes, service trucks, generators, and on-highway trucks (dirt material import/export) will be used at the site, as appropriate.

Since soils exposed by project activities would be susceptible to wind and water erosion. A dust control permit from Clark County will be obtained. Water from the Wash will be used to control dust during earth-disturbing activities; however, additional chemical dust suppression may also be required in accordance with the permit. Rice straw wattles (weed-free) will be installed to prevent soil sediment from entering the water. Impacts to soil and air quality will be minimal and temporary. Although weir construction and resulting soil erosion may have limited short-term adverse impacts to downstream water quality and aquatic life, the long-term impacts will be beneficial due to expanded wetland and riparian areas that reduce erosion, improve water quality, and provide aquatic and wildlife habitat. Because water from the Wash will be pumped out for use as dust control during construction activities, there will be limited, short-term adverse impacts to downstream water quantity, but no long-term impacts are expected. The proposed project will temporarily increase ambient noise levels during construction activities, but sound guard enclosures would be used, and no long-term impacts are expected. To reduce short-term impacts on bird species, earth-disturbing work will either be conducted outside the bird breeding season and/or a biologist would conduct clearance surveys prior to the work and establish a buffer if an active nest was found. While some of the Weir 5 construction work may have negative impacts in the short-term, the long-term impacts would be positive. Following revegetation of the construction area and passive establishment of wetland and riparian habitat around the ponding area upstream of the weir, these newly created riparian and wetland areas will expand potentially suitable nesting habitat and improve habitat quality for bird species. Replacing non-native vegetation such as tamarisk (Tamarix ramosissima) with native vegetation will have beneficial impacts to both wildlife habitat and aquatic habitat. Reduced sediment transport and improved water quality will benefit aquatic life as well.

Are you aware of any species listed or proposed to be listed as a Federal threatened or endangered species, or designated critical habitat in the project area? If so, would they be affected by any activities associated with the proposed project?
USFWS conducted an informal consultation for the effects on this project on the following species: the federally endangered razorback sucker (Xyrauchen texanus) and its designated critical habitat, threatened desert tortoise (Gopherus agassizii), endangered southwestern willow flycatcher (Empidonax traillii extimus), endangered Yuma Ridgway's rail (Rallus obsoletus yumanensis), and threatened yellow-billed cuckoo (Coccyzus americanus). The consultation was conducted in accordance with section 7 of the Endangered Species Act of 1973, as amended. On

December 14, 2022, a concurrence letter and informal consultation form was issued stating that the project may affect but is not likely to adversely affect the species.

Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as "Waters of the United States?" If so, please describe and estimate any impacts the proposed project may have.
The proposed project area is within the Wash which is a "Waters of the United States." Clean Water Act permits will be obtained prior to the start of work. A Section 404 permit from the U.S. Army Corps of Engineers is in progress, a Section 401 State Water Quality Certification permit would be obtained from NDEP is progress, and a permit for Working in Waterways in Nevada from NDEP is in progress. Construction activities will have a direct negative impact on water quality due to the soil excavation and grading activities in the water channel itself. This will be monitored closely to not allow the amount of soil sediment entering the water to exceed permitted levels under the NDEP permit for Working in Waterways in Nevada. The negative impacts to water quality are temporary and there are no negative long-term impacts to water quality.

When was the water delivery system constructed?
The Wash is a natural ephemeral channel that developed prior to the mid-twentieth century. From the 1950s to the 1970s, rapid urban development in the valley resulted in increased stormwater, urban runoff, and treated wastewater discharges that caused the establishment of extensive wetland and riparian areas along the Wash. By the 1980s, increasing base flows and periodic flood flows in the Wash contributed to extensive erosion, as well as loss of aquatic habitat, loss of wetlands, loss of property, damage to infrastructure, water quality degradation, and excessive sediment transport to Lake Mead.

The Wash is the primary conveyance for stormwater flows from the Valley watershed, and it is critically important for this system to be perpetually managed for these purposes. As such, in the late 1990s the Las Vegas Wash Coordination Committee was formed, a long-term plan was created, and in 2000 implementation of the CAMP began to prevent further degradation of the Wash. Today, the Wash includes natural channels as well as control structures built over the last 20 years.

Will the proposed project result in any modification of or effects to, individual features of an irrigation system (e.g., headgates, canals, or flumes)?
The proposed project would not result in the modification of an irrigation system.

Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places?
There are no buildings, structures, or features within the proposed project area that are eligible for listing on the National Register of Historic Places. No cultural sites are located within the proposed project area.

Are there any known archeological sites in the proposed project area?
SHPO reviewed documents prepared by NPS for this project and consulted in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended. SHPO concurred

with a NPS finding of No Adverse Effect with one condition: "During consultation with Tribal Governments, the Moapa Band of Paiutes identified a possible effect to the Salt Song Trail. If NPS' continuing consultation with the Moapa Band of Paiutes results in the identification of effects, additional consultation with SHPO is required" (SHPO consultation dated April 26, 2023).

Will the proposed project have a disproportionately high and adverse effect on low income and minority populations?
The proposed project will not have a disproportionately high nor adverse effect on low income and minority populations.

Will the proposed project limit access to and ceremonial use of Indian sacred sites or result in other impacts to tribal lands?
There will be no direct benefits or adverse effects to Indian tribes by the proposed project. The proposed project will not limit access to and ceremonial use of Indian sacred sites and will not result in any impacts on tribal lands.

Will the proposed project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?
The proposed project will remove noxious and non-native invasive weed species and therefore reduce seed sources for these species in the project area. Equipment will be free of noxious weeds and non-native invasive species prior to arriving at the proposed project area and prior to departing. Materials installed to prevent soil sediment from entering the water, such as rice straw wattles, will be weed-free. The construction of the weir will result in the decrease of noxious weeds in this portion of the Wash, since there is a large population of tamarisk near the Weir 5 site that will be removed to construct the weir. Following construction, this area would be replaced by native riparian vegetation both passively and through active planting/seeding. Therefore, the proposed project will not contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species.

9. Required Permits or Approvals

As discussed in Evaluation Criterion D, SNWA engineering and Wash Team staff have been working to obtain the required permits, including:

- NDEP Working in Waterways (in progress)
- NPS Special Use Permit (in progress)
- NDEP 401/404 (in progress)
- NDEP – National Pollution Discharge Elimination System Individual Discharge Permit (in progress)
- NDEP Storm Water Pollution Prevention Permit (obtained)

It is anticipated that all required permits will be in place by October 2023.

10. Overlap or Duplication of Effort Statement

Earlier phases of the full Weir 5 project have received funding from Reclamation and NPS. The proposed project is the final construction phases of Weir 5 along the Wash.

Reclamation agreement R22AP00466, Las Vegas Wash Erosion Control, was entered into on September 1, 2022, with the project period ending December 31, 2023. This agreement included $3 million in Reclamation funding with $602,124 in SNWA matching funds. Work funded by this agreement was entered into under CFDA No. 15.540. Funding under this agreement is being used for design and it is anticipated that the final report will be submitted with a project period ending in September 2023.

The performance period for Reclamation agreement R23AP00123 began on March 1, 2023, with the project period ending December 31, 2024. This agreement included $6 million in Reclamation funding with $4 million in SNWA matching funds and was entered in under CFDA No. 15.540. Funding under this agreement will be used for construction and supplies/materials (supplies/materials built into contractor's agreement).

NPS is also contributing $6.1 million toward construction costs from a SNPLMA award. SNPLMA allows the BLM to sell public land within in specified boundaries and use the money generated to fund conservation projects. This funding will also be used for construction and supplies/materials (supplies/materials built into contractor's agreement).

Funds requested for the proposed project will not overlap with work from previous requests as this request is related to completing construction in mid-2024 through 2027. Monitoring will continue through the end of the project performance period in 2028; however, no grant funding will be used for monitoring activities.

11. Conflict of Interest Disclosure

To the best of our knowledge, no actual or potential conflict of interest exists at the time of submission. If awarded, SNWA will disclose, in writing, any conflicts of interest that may arise during the life of the award.

12. Uniform Audit Reporting Statement

SNWA was required to complete a Single Audit for the fiscal year ending June 30, 2021. SNWA's EIN is 88-0278492 and the report is available through the Federal Audit Clearinghouse website.

13. SF-LLL Disclosure of Lobbying Activities

As SNWA retains a lobbyist, an SF-LLL form was submitted with this application.

14. Letter of Support

Attached in Appendix B.

15. Official Resolution

An official resolution authorizing the submission of this proposal and confirming the subject matching requirements will go before the SNWA Board of Directors at its July 20, 2023, meeting. A copy will be forwarded to Reclamation at that time, as communicated to the Program Coordinator.

16. Unique Entity Identifier

SNWA maintains an active registration in SAM.gov. Its Cage Code is 3NRT9. SNWA's SAM Unique Identifier is SM1CPB4X7E88.

17. Supporting Documents: Appendices A-D

All appendices are included as attachments via grants.gov.

Appendix B

Letter of Support

Southern Nevada Water Authority
Erosion Control Structure at the Las Vegas Wash: Completion of Weir 5

WaterSMART Aquatic Ecosystem Restoration Projects for Fiscal Year 2023 Application

Las Vegas Valley Watershed Advisory Committee

August 14, 2017

The Honorable Catherine Cortez Masto
United States Senate
204 Russel Senate Office Building
Washington, D.C. 20515-2803

SUBJECT: LOWER LAS VEGAS WASH STABILIZATION PROGRAM, LAKE MEAD NATIONAL RECREATION AREA, NEVADA

Dear Senator Masto:

The Las Vegas Valley Watershed Advisory Committee (LVVWAC) is comprised of southern Nevada water and wastewater agencies, including the City of Henderson, City of North Las Vegas, City of Las Vegas, Clark County, Clark County Regional Flood Control District, Clark County Water Reclamation District, Las Vegas Valley Water District, and the Southern Nevada Water Authority. The LVVWAC was formed to address water management practices and to protect the Las Vegas Valley's watershed resources, including municipal drinking water supplies, wildlife habitat and recreation. As part of these responsibilities, the LVVWAC continues to strongly support completion of grade control structures (weirs) on the Las Vegas Wash. As described in the enclosed status summary, completion of erosion protection structures on the Lower Las Vegas Wash within the Lake Mead National Recreation Area continues to be a critical component of the overall Las Vegas Wash stabilization program.

The Lower Las Vegas Wash experiences high rates of erosion and channel degradation when Lake Mead's water surface is low. The significant lowering of Lake Mead, due to ongoing drought on the Colorado River, has exacerbated erosion on the Wash. If the current rates of erosion are left unchecked, the Wash channel will degrade to depths which will threaten the stability of the Northshore Road bridge, and ultimately affect the integrity of the Lake Las Vegas dam and surrounding residential community. While the National Park Service has initiated efforts to stabilize the Lower Las Vegas Wash, they are constrained by budgetary limitations and have not identified any plan or schedule to complete the remaining six weirs. As you can see in the attached summary, the LVVWAC estimates that with full funding, the remaining weirs could be completed within approximately five years. Therefore, the LVVWAC continues to request that full funding and prioritization be provided to expedite completion of the remaining weirs to insure stabilization of Northshore Road bridge and protect the upstream Lake Las Vegas community.

The members of the LVVWAC, including myself, are available to discuss this very important issue at your convenience, and will provide any assistance necessary to support expediting the stabilization program. Thank you for your consideration.

Sincerely,

Zane L. Marshall
Chairman, Las Vegas Valley Watershed Advisory Committee

LL/KK/ll

Enclosure: Lower Las Vegas Wash Stabilization Program Status Summary – 2017 Update

cc: Lizette Richardson, Superintendent Lake Mead National Recreation Area, National Park Service

Las Vegas Valley Watershed Advisory Committee Members
Priscilla Howell, City of Henderson
Steve Parrish, Clark County Regional Flood Control District
Randy Tarr, Clark County
David Mendenhall, City of Las Vegas
Tom Minwegen, Clark County Water Reclamation District
David L. Johnson, Las Vegas Valley Water District
Randall De Vaul, City of North Las Vegas
Brandon Barrow, U.S. Bureau of Reclamation