



**Action Plan  
for  
The Las Vegas Wash Comprehensive Adaptive Management Plan**

**April 2000**

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## **Introduction**

The Las Vegas Wash Comprehensive Adaptive Management Plan (LVWCAMP) is the product of a common vision -- shared by federal, state, and local public entities, as well as members of the southern Nevada community -- for the long-term enhancement and management of the Las Vegas Wash. The Wash has long been considered a valuable resource; and for the first time, a cohesive comprehensive plan has been developed that brings together core stakeholder groups to address the issues surrounding the Las Vegas Wash. This action plan describes the strategy for the facilitation of the 44 recommended actions included in the LVWCAMP and identifies a means of providing for the long-term management of the Wash.

Following the acceptance of the LVWCAMP by the Las Vegas Wash Coordination Committee in December 1999 and by the Southern Nevada Water Authority Board of Directors in January 2000, staff prepared this document to serve as the framework for moving forward with the LVWCAMP to stabilize and enhance the Las Vegas Wash.

### Common Vision

Our vision is to develop the Las Vegas Wash into a resource for the community by stabilizing the erosion, establishing wetlands, protecting water quality, and supporting the development of the Clark County Wetlands Park.

### Initial Steps

The goals, issues, and actions addressed by the LVWCAMP are expected to evolve over time in response to changing conditions in the Wash and the ongoing work of the participants on the Las Vegas Wash Coordination Committee. As we begin implementation of the LVWCAMP our common vision will become stronger and take form in the Las Vegas Wash. These first important steps are as follows:

***Stabilize Las Vegas Wash*** – The Wash must be stabilized as quickly as possible. The action plan will include short-term (estimated to be completed within 18 months) “interim stabilization” which will involve the placement of several structures. These structures, much like the emergency structure utilized to stabilize the abandoned SNWA lateral and the recent structure installed near Lake Las Vegas, will provide a quick start to stopping the ongoing erosion. This interim stabilization will also provide time for the engineering design and construction needed to install more durable stabilization structures estimated to be complete over a five- to six-year period. Many of these structures will utilize prototype designs and bioengineering, as discussed later in the Implementation section.

***Establish Wetlands*** – The installation of the interim structures, as well as the more durable stabilization structures, will result in backwater areas which are expected to support the establishment of wetlands in the Wash channel. However, additional wetlands, in addition to what can be developed in the Wash channel, are desired in order

to provide wildlife habitat, recreational areas, as well as potential water quality benefits for shallow ground water and urban runoff. To augment these in-channel wetlands, off-channel and floating wetlands will be evaluated. These wetlands can add habitat and recreational benefits as well as provide water quality benefits (for example, sediment removal, cooling, and polishing).

***Support the Development of Clark County's Wetlands Park*** – Throughout the implementation of the LVWCAMP, efforts must be coordinated with the Clark County Department of Parks and Recreation and their development of the Wetlands Park. An effective partnership will identify opportunities for coordination and the avoidance of duplication of efforts.

***Incorporate the Resulting Recommendations from the Alternate Discharge Study with Implementation of the LVWCAMP*** – Ongoing with the implementation of the LVWCAMP is a critical study regarding the discharge of existing and future treated wastewater to Lake Mead and the Colorado River System. This study must be supported and coordinated to ensure synergy between the LVWCAMP implementation and future wastewater treatment discharge options. Part of the Implementation section is to prepare plans and programs to integrate and support both efforts.

***Water Quality Standards and Beneficial Use Designations*** – As implementation of the LVWCAMP and the Alternate Discharge Study solutions move forward, there is a possibility that our actions will result in background water quality somewhat different than what we see today. As installation of structures and the resulting wetlands develop, the changes must be reflected in beneficial use designations as appropriate. To best achieve these transitions, it will be necessary for strong communication and coordination between all stakeholders and partners as discussed throughout this document.

***Continuing and Strengthening Federal, State, Local, and Public Partnerships and Confidence*** – The Las Vegas Wash Coordination Committee and the public outreach program have made significant strides in fostering communication and coordination between agencies as well as ensuring public input. As we begin implementing the LVWCAMP, and supporting the Alternate Discharge Study, communication and partnerships between the agencies and the public must grow stronger to achieve our vision. We must communicate, assume responsibility, and respond to each other's needs to be successful in stabilizing and enhancing the Las Vegas Wash and developing the public's confidence in us, and our confidence in each other.

## **Establishment of the Management Structure**

The establishment of the Las Vegas Wash Management Structure provides the foundation for long-term coordination of recovery efforts in the Wash. Following a series of analyses and discussions, the Jurisdictional & Regulatory Study Team concluded that implementation of the LVWCAMP should follow the Southern Nevada Strategic Planning Authority recommendation that such issues should be handled by a local entity.

The Jurisdictional & Regulatory Study Team recommended that the Southern Nevada Water Authority (SNWA) be designated the lead agency that would enter into interlocal or other agreements with various agencies as necessary to implement the LVWCAMP. Attachment A shows the organizational chart recommended for the Las Vegas Wash Management Structure comprised of SNWA as lead agency, and including Clark County, Clark County Regional Flood Control District, City of North Las Vegas, City of Las Vegas, Clark County Sanitation District, and City of Henderson and the relationship with the LVWCC and the Las Vegas Wash Citizen Advisory Committee (LVWCAC).

### Agreements Between Local Entities

To establish local administration of the comprehensive adaptive management process, interlocal and other agreements will be implemented between appropriate participating entities on the Las Vegas Wash Coordination Committee. Initial efforts will include the development of a general memorandum of understanding between affected parties, to reiterate the respective authorities of the affected parties and to clarify conceptual issues related to the comprehensive adaptive management process. This will be followed by an amendment to the SNWA Cooperative Agreement, if needed, and development of a facilities and operations agreement.

***Memorandum of Understanding*** – The initial agreement to be developed is a general memorandum of understanding among the local management structure entities which have responsibilities involving the Las Vegas Wash. The memorandum of understanding will affirm the respective authorities of the affected parties and commit those parties to working together to reach agreements and identify funding sources that will facilitate achievement of the LVWCAMP vision in the Wash. The memorandum of understanding will also identify the Southern Nevada Water Authority as the lead in coordinating the development and implementation of the appropriate agreements. The goal of this first agreement is not to establish specific milestones or authorities, but to provide a common boundary for future interactions among the participants as they move forward in the comprehensive adaptive management process.

***Amendment of SNWA Cooperative Agreement*** – To ensure the Southern Nevada Water Authority can perform any coordination or implementation duties it may be given, the existing SNWA Cooperative Agreement will be reviewed, and any necessary changes will be made. Changes may include the addition of responsibilities or any other change deemed appropriate for the purposes of the comprehensive adaptive management process.

***Facilities and Operation Agreement*** – To establish the Las Vegas Wash Management Structure, a facilities and operation agreement will be established between the Southern Nevada Water Authority, Clark County, Clark County Regional Flood Control District, City of North Las Vegas, City of Las Vegas, Clark County Sanitation District, and City of Henderson. These are the specific local entities with jurisdictions in or around the Las Vegas Wash, or with responsibilities related to land and water in and around the Wash. Conceptually, this agreement would be patterned on the existing Facilities and Operation Agreement for the Southern Nevada Water System, which details specific funding relationships, operational priorities, and other mechanisms for managing the Valley's

regional water system. Such an agreement can address day-to-day decision-making related to the Wash, provide details on assignments such as maintenance and operation of erosion control structures, and define levels of funding participation, among other things. A facilities and operation agreement would most likely follow implementation of the memorandum of understanding and amendment of the SNWA Cooperative Agreement. As part of the facilities and operation agreement a Management Advisory Committee will be established. This committee will be comprised of representatives from the Las Vegas Wash Management Structure and will be advisory to the SNWA Board and other Boards as appropriate. The Management Advisory Committee will provide guidance, help facilitate communication among agencies, and ensure that consensus is achieved on all projects. Additional members may need to be added as appropriate.

***Interlocal Agreements*** - When necessary and appropriate, interlocal agreements will be implemented to address specific actions related to comprehensive adaptive management of the Wash. For example, an interlocal agreement was established between Clark County and the Southern Nevada Water Authority to address implementation of temporary grade control structures within the Wash.

## **Implementation Plans**

The establishment of the Las Vegas Wash Management Structure and SNWA as the lead agency lays the framework for future actions. The next steps should include the initiation of priorities, timelines and budgets. Interlocal agreements will be sought with the appropriate entities. Timelines that were established by individual study teams will be revisited as the Management Structure moves forward with the implementation of the LVWCAMP. Furthermore, as the process progresses, the LVWCAMP will be revised to reflect the current wash environment. Revisions are anticipated to occur as needed, and will be made available to the public. The SNWA will continue with activities currently underway such as the planning and construction of erosion control structures, bioarmoring of the prototype erosion control structure at Three Kids and pursuing grants that expand our role in public outreach activities such as the newly created “Watch Our Wetlands Grow” program.

To facilitate implementation, the 44 recommended actions identified in the LVWCAMP have been categorized into one of eight core elements: 1) stabilize the wash, 2) environmental monitoring, 3) research and data compilation and analysis, 4) environmental restoration and pilot projects, 5) funding plans, 6) coordination and development of support programs, 7) support alternate discharge activities, and 8) support wetland park development. Attachment B demonstrates the plan implementation matrix and highlights the relationship of the eight core elements.

### **Stabilization of Las Vegas Wash**

Stabilization of Las Vegas Wash is divided into short-term goals (which are also discussed in the Introduction above) and long-term goals as follows:

It is critical to take some immediate steps to stabilize the existing Wash channel. Stabilizing the channel will allow for the long-term goals and management objectives to be achieved. The following short-term projects to stabilize the Wash are expected to improve channel stabilization and provide needed information to address the permanent, long-term plan.

***Install several interim structures*** – Installing structures at priority sites in Las Vegas Wash that were identified at the Erosion Workshop held in August 1999 would provide a means of aggressively stabilizing the Wash. As determined at the workshop, these structures would be relatively inexpensive and would provide immediate stabilization benefits. It is anticipated that 8-10 “dumped” rock structures will be installed to provide the stabilization necessary to successfully implement long-term improvement.

***Wash Scour Study*** - At present there is no comprehensive design study of the entire length of the Wash that depicts the effects of erosion and sediment scour under varying low flow and flood flow conditions, for the present or future stabilized Wash channel scenarios. Modern analysis techniques to be employed in the study will determine the location, height, and number of weir structures necessary to stabilize the Wash channel. The study will also aid in determining the most critical reaches of the Wash requiring bank stabilization to reduce the massive volumes of sediment currently being eroded. The results of the study will set a basis for proceeding with detailed design of the stabilization efforts. It is expected that the scour design study will aid in minimizing the cost of implementing stabilization while maximizing the reduction in sediment discharged into Lake Mead. Additional information from this study will include quantifying sediment by type.

***Evaluate Possible Flood Water Detention Storage Basins*** – Large flood flows have been identified as an action leading to mass discharge of sediment due to accelerated erosion of the Wash bed and banks. Erosion control structures located within the Wash must be designed and implemented to safely pass these large flood flows. The implementation and operation cost of constructing erosion control structures which safely pass flood flows is anticipated to be expensive. Several locations along the Wash have been identified as potential locations for the construction of flood water detention storage basins which would reduce flood flow discharge volumes and thereby reduce erosion potential and the cost of erosion control structure implementation and operation. An evaluation of the feasibility of acquiring, developing, and operating flood water detention storage basins will be conducted.

#### *Permanent Long-Term Goals*

The overall long-term goal includes completing the majority of the engineering and construction activities required to stabilize the Wash within a five to six year timetable.

***Capital Improvement Plan*** - An important initial step in formulating an Implementation Plan will be the development of a Wash Stabilization Capital Improvements Plan (CIP) element. This plan will define the projected implementation cost and schedule for each project of the Wash stabilization effort including grade control structures, bank stabilization programs and possibly in-channel wetlands re-establishment. The CIP element will present overall development costs including short-term design and construction as well as estimated long-term maintenance and replacement.

***Operations and Maintenance Plan*** – This step will include developing and implementing a long-term operations and maintenance program. Individual tasks will be noted and appropriate entities will be identified.

### Environmental Monitoring

Another important component to ensure long-term success of the LVWCAMP is to identify baseline data and develop and implement environmental monitoring studies for water, plants, and sediment. The plan should support ongoing efforts by other entities. The monitoring program should be developed with input from the entities that currently collect water quality or hydrogeologic data. Individual components of the monitoring program should include:

- Measuring water quality, sediment, plant tissue, and biota
- Conducting aquifer testing
- Identifying the contribution of shallow ground water inflow
- Identifying data gaps and the need for additional monitoring wells
- Developing monitoring timeframes to ensure sufficient data collection
- Understanding the role of land use practices on shallow ground water quality
- Reviewing historical photos for past land use practices

Development of long-term monitoring programs should also consider frequency of sampling, data interpretation, database maintenance, and coordination with other sampling efforts.

### Research and Data Compilation/Analysis

Research and data compilation will require a continuing effort both in the short- and long-term. Efforts should include continuing compilation of data and input into a central database. In addition, the analysis of collected data to determine trends for the physical, chemical, and ecological conditions of Las Vegas Wash and its influence on Las Vegas Bay and Lake Mead should be designed and implemented as soon as possible. Research should also include data analysis for the purposes of improved wetland development and to determine the water quality benefits of wetlands in the Wash.

### Environmental Restoration and Pilot Projects

Designing and implementing pilot wetland projects (including floating wetlands, and in-stream and off-stream wetland demonstration projects) are a priority in the short term. Understanding



the principles of wetlands in southern Nevada will allow for the development and implementation of a restoration plan that will provide directions on several important factors including the number of wetlands/riparian zones that can be developed, what type of water quality polishing the wetlands can accomplish, and where the wetlands should be developed.

### Funding Plan

As stated in the Funding Study Team chapter of the LVWCAMP, providing for the long-term management of the Wash will not be easy or inexpensive. The SNWA, as the lead entity for the Las Vegas Wash Management Structure, will conduct an initial five-year budgetary analysis including current and future costs associated with administration, capital costs, long-term monitoring and operations and maintenance. This analysis should be reexamined on an annual basis.

A funding model should be developed to review existing funding formulas (for example, SNWA, Regional Planning Coalition, and Southern Nevada Strategic Planning Authority) and adapt them to best meet the needs of the LVWCAMP. The model should represent an equitable cost distribution and consider the impact and benefit of the project on the identified stakeholders. Potential sources of funding should be identified including grants and utilization of existing resources and staff when possible. The SNWA will continue to develop and maintain existing partnerships. These partnerships will continue to explore the options of grants to fund existing and future projects.

### Coordination and Development of Support Programs

The progress of the LVWCC can be related to the high level of commitment by the participating entities. In order to achieve the goals set forth in the LVWCAMP, and in this document, it is critical that all entities remain active in the process. It is thereby important to maintain, and create new coordination efforts as necessary.

***Water Quality Citizen Advisory Committee /Las Vegas Wash Citizens Advisory Committee-*** The current Water Quality Citizen Advisory Committee (WQCAC) has met over the past two years with their primary focus being on broad water quality issues pertaining to Las Vegas Wash, Las Vegas Bay, and Lake Mead. One of their nine recommendations was the preparation of the Comprehensive Adaptive Management Plan. It is recommended that the current WQCAC be recognized and commended for their work and a new citizens committee be formed to focus specifically on the Las Vegas Wash. This new group would advise the Management Structure on the LVWCAMP and issues/activities related to Las Vegas Wash and be named the Las Vegas Wash Citizens Advisory Committee.

***Public Outreach*** - As part of the long-term management effort, public involvement is a key component of the restoration and management efforts of the Las Vegas Wash. Recognizing this and the significant role that community participation and support play in the long-term success of the Wash, the Public Outreach Study Team developed the Public

Outreach Program. At the heart of the program are a series of actions that include a wide range of public outreach mechanism including:

- News releases, reports and displays
- Internet Web sites
- Public scoping meetings
- Media briefings
- Stakeholder awareness briefings
- Volunteer opportunities
- Speakers bureau
- Wash familiarization tours
- Children's education program
- Interested regional stakeholder outreach

The Public Outreach Program was designed to begin immediately and serve as a long-term program to both raise the public's awareness of the wash while encouraging participation. As part of the recommendations made by the Public Outreach Study Team, the Las Vegas Wash Management Structure will continue to execute the tactics defined in the program as well as continue implementing feedback mechanisms and to measure the success of the program and provide updates to the public and elected officials.

***Las Vegas Wash Coordination Committee*** - The 28-member Coordination Committee has been very successful in the development of the Las Vegas Wash Comprehensive Adaptive Management Plan. It is important to maintain the structure of this multi-agency committee for the successful implementation of the LVWCAMP. It is recommended that each entity that currently participates on the committee be invited to continue representation on the LVWCC. As we transition from the plan development phase into the implementation phase, LVWCC members will be asked to consider appointing appropriate members to participate in the implementation process to this next phase of committee activities.

***Identify Partnering Agencies*** - The Las Vegas Wash Management Structure will continue to work with community representatives, including the more than two dozen local, state, and federal agencies that are represented on the Las Vegas Wash Coordination Committee. In addition, new partnerships with other entities not represented on the Las Vegas Wash Coordination Committee will be sought. We will also investigate the possibility of various public/private partnerships. Attachment C details each entity involved and the interest/benefit from the restoration of the Las Vegas Wash.

***Study Teams*** - The Study Teams have provided technical support and analytical review throughout this process. To assist the Management Structure in implementing specific actions, it is important that the Study Teams member continue to provide input to facilitate the action orientation represented in this plan. Regardless of the specific changes that will occur to the Study Teams, the comprehensive management process will

continue to rely on agencies in their respective fields of expertise to achieve the mission of the LVWCAMP.

The Coordination Committee suggested that the previous nine study teams be reconstituted into four groups. Each of the eight core elements previously discussed, and their associated tasks, could potentially be incorporated into the four study teams. These groups will focus on the following four topics.

**Operations** – This group will support engineering activities such as wash stabilization and wetland planning and development. In addition, this group will interface with Clark County Parks and Recreation and provide support regarding Wetland Park development. *(Includes the following core elements: Stabilization of the Wash, Environmental Restoration/Pilot Projects, Support Wetlands Park)*

**Research/Environmental Monitoring** – Identifying research needs and then developing monitoring programs and studies will be the focus of this group. *(Includes the following core elements: Environmental Monitoring, Research and Data Compilation)*

**Administrative** – This group will have a variety of tasks including identifying coordination opportunities, following and making recommendations on funding opportunities, and supporting public outreach efforts. *(Includes the following core elements: Funding, Coordination and Development of Support Programs)*

**Alternate Discharge** – This group will maintain the same responsibilities as the previous study team including providing support and input in identifying and implementing the preferred options for the future needs of the Las Vegas Valley Dischargers. *(Includes the following core element: Support Alternate Discharge Study)*

#### Support of Alternate Discharge Study

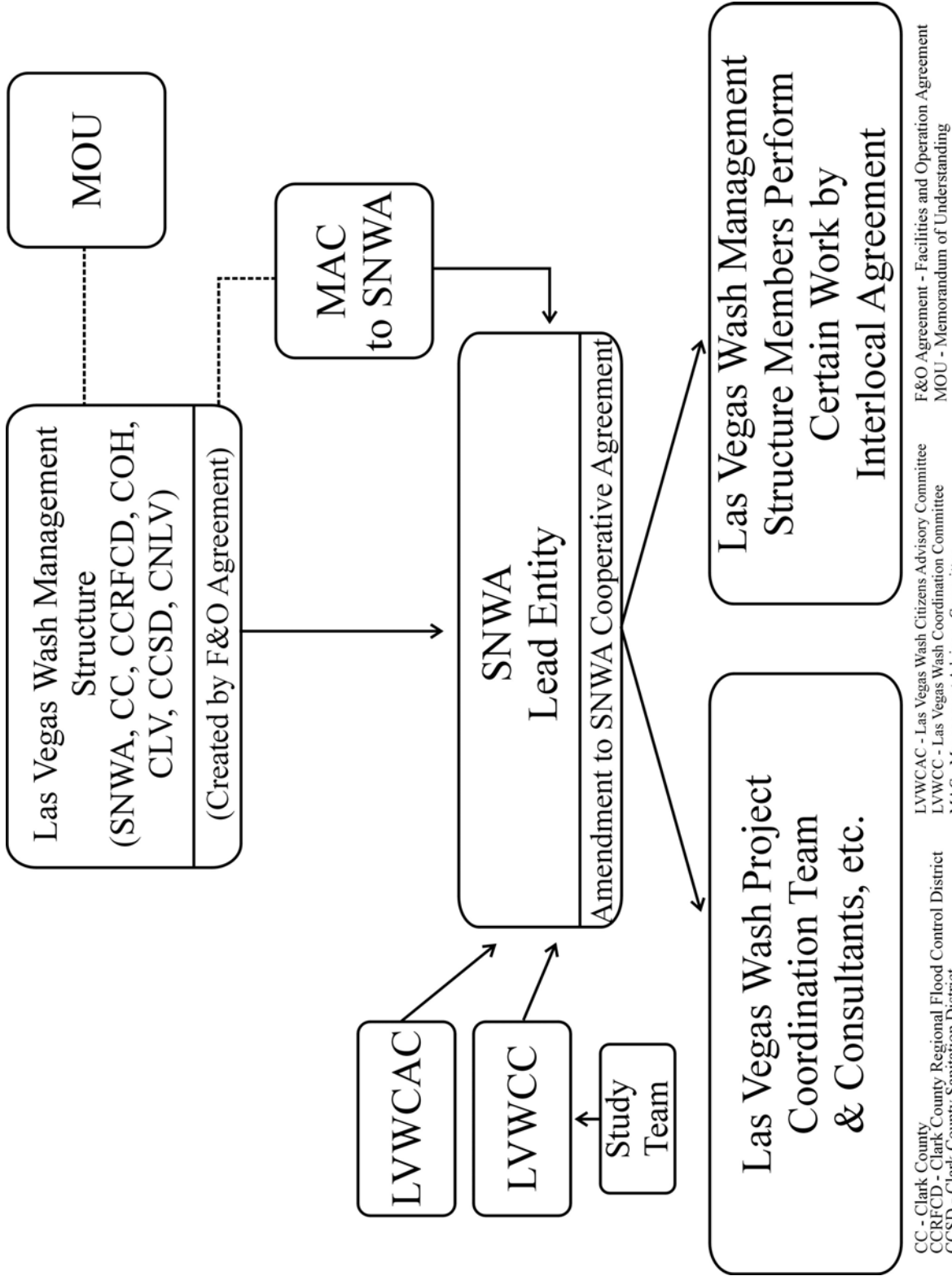
Supporting the efforts of the Las Vegas Valley Dischargers and their efforts related to the Alternate Discharge Study will provide a means of coordinating efforts in the Las Vegas Wash. The Alternate Discharge Study Team has worked with the Dischargers in the formulation of the Alternate Discharge Study and will continue to play an important role in defining and implementing the preferred options.

#### Support of the Wetlands Park

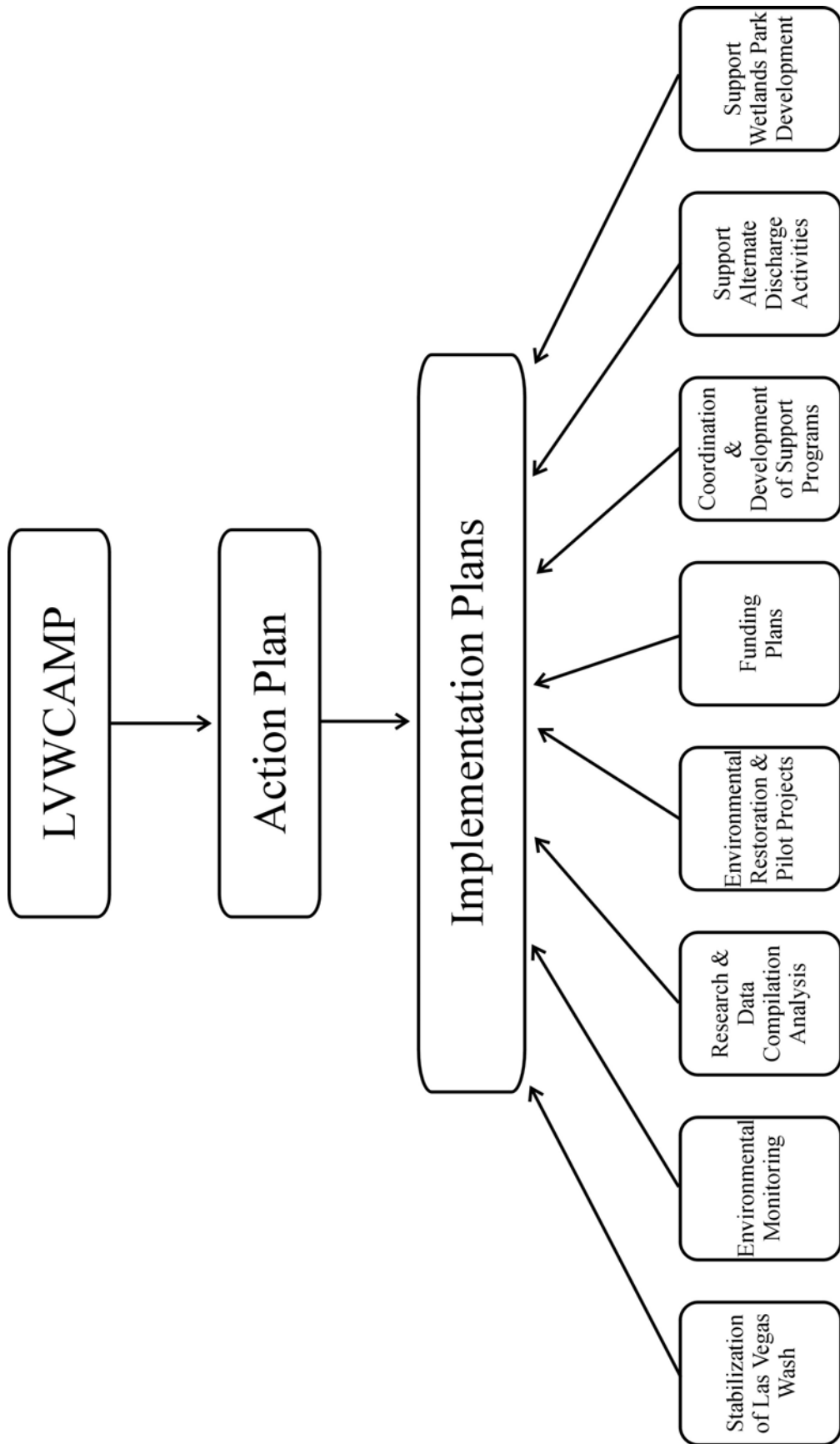
The Clark County Wetlands Park is the focal point of efforts in Las Vegas Wash. The Wetlands Park master plan, completed in 1995, was developed to protect and enhance wetlands for wildlife habitat, environmental education, and provide valley residents and visitors an expansive recreation opportunity. Supporting the Clark County Department of Parks and Recreation in their efforts to establish the Clark County Wetlands Park will result in identifying opportunities for coordination and the avoidance of duplication of efforts.

## **Staffing**

This action plan was developed to provide a course of action for implementing the recommendations outlined in the LVWCAMP. The SNWA, as the lead entity will provide the administrative and technical expertise to support the comprehensive management of the Las Vegas Wash. The Team will be comprised of SNWA staff and consultants operating from a dedicated office area at the SNWA facilities on East Flamingo Road. In addition, sharing staffing resources among stakeholders will provide for the diversity of experience necessary to ensure a successful project. Also, as discussed above, interlocal agreements to have other entities do certain work to implement the LVWCAMP will also be implemented.



## ATTACHMENT A - Organizational Chart



**ATTACHMENT B - Implementation Matrix**

## ATTACHMENT C

### Partners

Entity	Interest/Benefit
<b>Existing Teaming Partner</b>	
City of Henderson	Discharger, land use, and land owner
City of Las Vegas	Discharger, land use
City of North Las Vegas	Land owner
Clark County Sanitation District	Discharger, land use, and land owner
Clark County Department of Comprehensive Planning	Water quality planning
Clark County Parks and Recreation	Clark County Wetlands Park
Clark County Health District	Human health
Clark County Regional Flood Control District	Master plan address long-term management of flood flows throughout valley
Southern Nevada Water Authority	Water resources
Basic Management, Inc.	Land use, land owner adjacent to wash
Lake Las Vegas Resort	Developer, land owner adjacent to wash
Las Vegas Bay Marina Owner	Private business on Lake Mead
Water Quality Citizens Advisory Committee	Public input on water quality issues
Friends of the Desert Wetlands Park	Support wetland park development
University of Nevada, Las Vegas	Environmental research
Nevada Division of Wildlife	Wildlife and species protection
Nevada Division of Environmental Protection	Environmental regulatory oversight
Nevada State Health Division	Human & environmental regulatory oversight
Conservation District of Southern	Support local environmental programs
Colorado River Commission	Water resources
National Park Service	Recreational Protection of Lake Mead
U.S. Bureau of Reclamation	Water resources, engineering projects
U.S. Corps of Engineers	Engineering projects, wetland and habitat restoration
U.S. Environmental Protection Agency	Federal regulatory oversight
U.S. Fish and Wildlife Service	Protect species and habitat
U.S. Geological Survey	Water quality research
U.S. Natural Resources Conservation Service	Environmental resources
<b>New Teaming Partners</b>	
Clark County Public Works	Maintenance of erosion control structures
FAA	Potential bird airstrikes
BLM	Land owners
NDOT	Right of ways