

# SUMMARY OF RECOMMENDATIONS

This section provides all the recommendations developed as part of the Las Vegas Wash Coordination Committee (LVWCC) activities during 1998-1999. As indicated by the previous sections, the LVWCC employed study teams to tackle the large amount of activity, investigation and discussion needed to initiate the process for comprehensive management. The LVWCC focused on conceptual and strategic direction for restoration of the Las Vegas Wash, while each study team focused on issues or concerns in its specific area.

To perform their work, the study teams drew upon technical staff from existing agencies, outside experts and other sources. More than 140 individuals participated in the study team activities. Each team met at least monthly, researched its issues in depth and developed recommendations for consideration by the Las Vegas Wash Coordination Committee. The activities of each team are described in more detail in Chapters 6 through 14 of this Las Vegas Wash Comprehensive Adaptive Management Plan.

To begin meeting the challenges of stabilizing, restoring and managing the Las Vegas Wash (Wash), certain actions must precede others. Referring to the many recommendations made by the study teams, the Las Vegas Wash Project Coordination Team has identified three actions that are critical to implementing comprehensive management of the Wash.

**Form an agency to oversee and coordinate the management and restoration of the Wash.**



One of the most important steps involves organizing for a long-term recovery effort in the Wash. Following a series of analyses and discussions, the Jurisdictional & Regulatory Study Team concluded that implementation of the comprehensive adaptive management plan should follow the Southern Nevada Strategic Planning Authority's recommendations that such issues should be handled by a local entity. Administering the plan's implementation from within the local community would ensure accountability at the most immediate level. Local control would also allow for more responsive and informed decision-making. Forming this management entity is one of the first steps to be taken if the process of comprehensive adaptive management is to be realized.

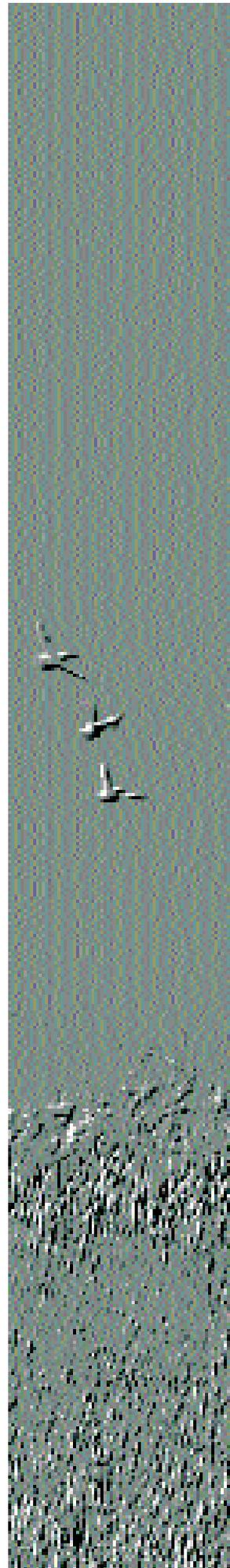
After considering several possible models, the study team narrowed its focus to two options. Option 1 was to establish a new joint powers authority whose members would be comprised of appropriate local entities such as those mentioned above. Option 2 was to utilize existing local agencies through interlocal agreements to administer and implement the comprehensive adaptive management plan.

The team identified several entities in the Las Vegas Valley with the staffing, expertise, support infrastructure or scope of activities in place to tackle many of the challenges associated with managing and restoring the Las Vegas Wash. These entities are Clark County, Clark County Regional Flood Control District, Clark County Sanitation District, Conservation District of Southern Nevada and the Southern Nevada Water Authority.

Many of the local agencies support utilization of an existing board or authority with the creation of interlocal agreements with appropriate agencies. They are recommending the Southern Nevada Water Authority be designated the lead agency which would enter into interlocal agreements with various local agencies as necessary to implement the comprehensive adaptive management plan. For example, interlocal agreements would be necessary with Clark County Parks and Recreation for construction and management of the Clark County Wetlands Park and with Clark County Regional Flood Control for flood control facilities in Las Vegas Wash.

**Stabilize the Wash.**

It is critical to take immediate steps to stabilize the existing environment in the Wash. An outline of possible actions already exists as the result of a two-day engineering workshop conducted by the Las Vegas Wash Coordination Committee in August 1999, and subsequent analysis by the Erosion and Stormwater Study Team.



This workshop brought together engineering professionals from private firms, local and regional public entities, and other organizations with an expertise in environmental restoration projects. Participants spent their time developing consensus on the issues surrounding the Wash and delving into specific methods that could be used in an overall stabilization plan for the Wash. The discussions covered types and methods of structures, development priorities, and studies needed to understand the dynamics of the Wash more fully. The workshop yielded three general conclusions:

**Erosion in the Las Vegas Wash needs immediate attention.** The Wash must be stabilized as soon as possible to implement any plan for a Wetlands Park or comprehensive management of the Wash ecosystem. Changing topography has forced the redesign of structures in the Wash and makes it difficult to design and implement any kind of facilities or management options.

**Dry weather flows (treated wastewater, shallow ground water, and urban runoff) should be considered separately from stormwater flows.** Since the dry weather flow volume (about 240 cubic feet per second) is significantly less than storm flow (ranging from 500 to >10,000 cubic feet per second), it is prudent to consider any engineering solutions based on the individual flows.

**Any reestablishment of wetland areas on a large scale must be done “off-stream,” or out of the Wash channel.** Some wetlands will be created in the channel of the Las Vegas Wash through installation of erosion control structures and the resulting ponding of water that will occur behind those structures. However, erosion and headcutting in the Wash itself will likely preclude the establishment of large areas of wetlands in the channel itself. Instead, any large area of wetlands (more than what will be created behind each structure) to be developed will need to be designed off-stream from the main wash channel.

Specific action items were developed to address each conclusion. These can be found in the recommendations from the Erosion & Stormwater Study Team.

**Make decisions regarding the amount of in- and off-stream wetlands needed.**

Given the possibility of limited wetlands development in the channel of the Las Vegas Wash as indicated above, it is critical that decisions be made concerning how many acres of wetlands (and land) are needed, both in- and off-stream. This step is essential in order to define the feasible area of wetlands that can be developed, and to ensure any ongoing actions to stabilize the Wash are complementary to the goal of wetland development.



By taking these three incremental steps, the process of actively restoring and managing the Las Vegas Wash can begin. That process will involve a number of concurrent actions tied to the recommendations of the nine study teams. These actions, in turn, will set the stage for the more long-term restoration and management activities described in the study team recommendations. The following pages provide the recommendations developed as part of the Las Vegas Wash Coordination Committee process during 1998-99.

## STUDY TEAM RECOMMENDATIONS

### Erosion & Stormwater Study Team (5 Recommendations)

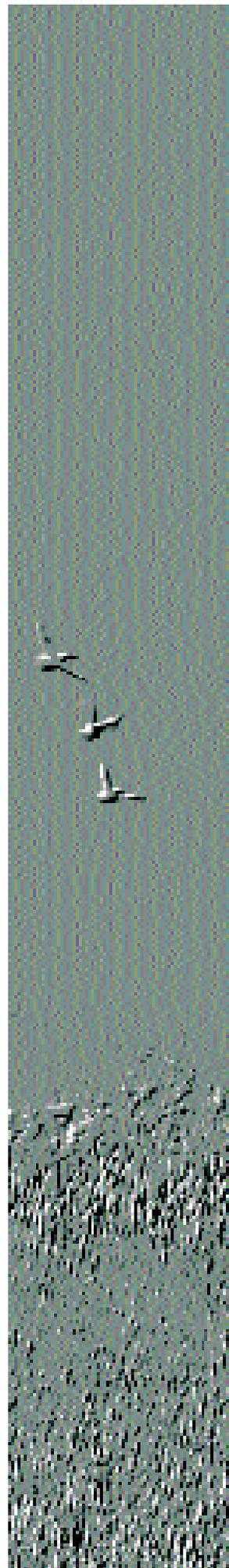
The Erosion & Stormwater Study Team developed an overall approach consisting of five recommended actions, including both short- and long-term items. The short-term items are expected to provide needed information to address the permanent or long-term plan. Many of the actions could begin immediately, and several should occur simultaneously.

#### Action 1: Install Erosion Control Structures

The study team recommended the development of prototype structures that can be installed quickly and at less expense than permanent structures, to aid in stabilizing the Wash as soon as possible. Conceptual designs include utilization of gabions, sheet pile, cellular coffer dams, inflatable dams, bio-engineered dams (using of vegetation for stabilization), rip rap filled dams and geotextile envelopes.

The team also recommended conducting sufficient engineering analysis to identify potential sites for installation of prototype structures. Preliminary studies have been conducted to prioritize locations of erosion control structures. Studies performed by Clark County Comprehensive Planning (1989), Lake Las Vegas (1991) and SNWA (1999) identified potential sites for approximately 15 erosion control structures that would result in stabilization of the channel and reduction of catastrophic erosional events.

In addition, priority sites should be identified for either, or both, prototype and/or permanent structures. Five priority locations that could potentially be incorporated into ongoing construction were identified in Chapter 6, Erosion & Stormwater Study Team. Eight other potential sites were identified by SNWA in April 1999 on the basis of a variety of criteria, including active headcut location, property ownership and suitability of the site for regulatory permitting and construction. These potential sites are also identified in Chapter 6.



**Action 2: Obtain Topography and Geophysical Data**

The study team recommended the acquisition of updated topography in one- to two-foot contours of the Wash and the establishment of permanent ground control to facilitate future topographic updates as needed.

Currently, design alternatives are being considered for a future pipeline crossing of the Wash in the area of Three Kids Wash. Updated topography was planned for this effort in the vicinity of the pipeline alignment. The SNWA saw this opportunity and amended the work plan to generate updated topography for the entire Wash from the Clark County Advanced Wastewater Treatment Plant to the Las Vegas Bay at Lake Mead.

Necessary investigations and geophysical studies to define bedrock and geologic structures needed to design long-term structures should be conducted. The United States Geological Survey, with support of the Las Vegas Valley Water District, has recently published results of gravity and seismic reflection data indicating structure and depth to bedrock of the Las Vegas Valley Shear Zone and the Las Vegas Basin. Results of this study indicate that bedrock occurs at depths of 1,500 feet to more than 3,000 feet below land surface along most of the Wash (Langeheim, 1998).

Future work required includes identification and establishment of permanent locations for cross sections for continued monitoring and evaluation. Also needed is the establishment of permanent data to monitor changes in channel geometry, an essential element in determining the most effective stabilization techniques.

**Action 3: Conduct Sediment Transport Modeling**

The study team recommended that sediment transport modeling be conducted in conjunction with storm flow analysis. A study of this type would likely include compilation of available stream hydraulics, hydrology and geologic information of the Wash, development of preliminary stabilization techniques, development of computer model of Wash stream hydraulics and channel scouring, and modeling of stabilization measures. Results of this study would include analyses of effectiveness of various stabilization techniques and determination of the best overall stabilization approach. Effectiveness of these elements would be modeled for a 100-year flood and likely flood series over a 100-year time span. The short-term changes are computed using the 100-year flood, which generally is the design criterion. The long-term impacts are simulated using the flood series that can be expected in a 100-year time span. Proposals for this work are currently being reviewed.

**Action 4: Establish Off-Stream Wetlands with Alternate Discharge Considerations**

The team supports continued work with the City of Henderson, City of Las Vegas, Clark County Sanitation District and their consultant, Black & Veatch, to help define alternate discharge options and distribution of future flows in the Wash and off-stream wetland facilities. This issue is discussed in more detail in Chapter 8, Alternate Discharge Study Team.

**Action 5: Evaluate Storm Water Detention/Retention Basins**

The study team recommended investigating the possibility of using abandoned gravel pits near the abandoned SNWA Lateral site and the Three Kids Wash site, for skimming peak stormwater flows. Also, the team believes potential sites for storm water detention/retention basins further upstream should be investigated and evaluated. Upstream sites were noted as preferable locations in the August 1999 engineering workshop.

**Shallow Ground Water Study Team  
(8 Recommendations)**

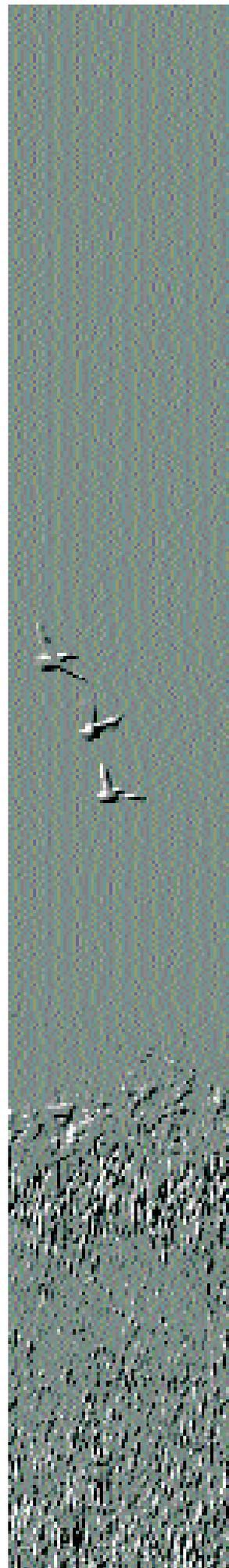
The Shallow Ground Water Study Team developed the following recommendations to facilitate understanding the shallow aquifer, its impact on the Wash, and the subsequent need for interagency coordination to manage the Wash effectively.

**Action 1: Develop a Central Database**

Currently, numerous agencies, entities and private companies have monitoring wells throughout the Las Vegas Valley, each group monitoring for constituents and parameters specific to its own need. Until now, there has been relatively little sharing of data because there is not a procedure in place for data accessibility and sharing by all agencies.

The study team recommended the development of a central database that will include all known data on the shallow ground water system. The database should include, but not be limited to, data on well construction, location (GPS coordinates), water level, water quality and aquifer test data.

The Las Vegas Wash Project Coordination Team (LVWPCT) has begun this effort by reviewing more than 100 reports produced by Basic Management Inc. (BMI) and submitted to the Nevada Division of Environmental Protection. Relevant data has been extracted from these reports and entered into a database. There are still many reports from a variety of sources to identify and review. The study team recommended that this database be made available to all entities with an interest in shallow ground water.



### **Action 2: Locate and Inventory Existing Shallow Monitoring Wells**

The study team recommended that all shallow monitoring wells be located using global positioning system technology and that this information be housed in the central database. Using GPS technology, the LVWPCT has physically located more than 200 wells located at the BMI site. Additional well locating is under way as more information is learned from reviewing the reports.

### **Action 3: Identify Issues of Concern**

The first step in minimizing the impact of the shallow aquifer on the Wash is to identify the issues of concern through characterization of both the quantity and the quality of the shallow ground water. Issues of concern identified by the study team include perchlorate, total dissolved solids, inorganics, organics and increased areal extent of the system. These issues were derived considering what data currently exists and was readily available for the team's review. Additional review and research is necessary to make this list more complete.

### **Action 4: Develop a Long-Term Monitoring Program**

The study team recommended the development and implementation of a long-term monitoring program, to be overseen by the Las Vegas Wash Management Entity. The monitoring program should be developed with input from the entities that currently collect water quality or hydrogeologic data. The team pointed out that the development of the program should consider any monitoring currently being conducted by other entities to avoid duplication of efforts.

The goals and individual components of the monitoring program should include:

- Measuring water quality
- 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 the long-term monitoring program should also consider frequency of sampling, data interpretation, database maintenance and types of data to collect.



The LVWPCT and the SNWA have conducted a significant amount of shallow ground water research that includes water quality, water level and aquifer testing. This extensive set of data is in the process of being incorporated into a central database. The study team recommended that this data be stored in the central database for access by interested parties.

**Action 5: Develop a Method to Identify the Potential for Future Contaminant Discovery**

Once a process is in place to collect and analyze the shallow ground water data, a method should be developed to identify potential concerns.

**Action 6: Develop and Implement a Notification Plan**

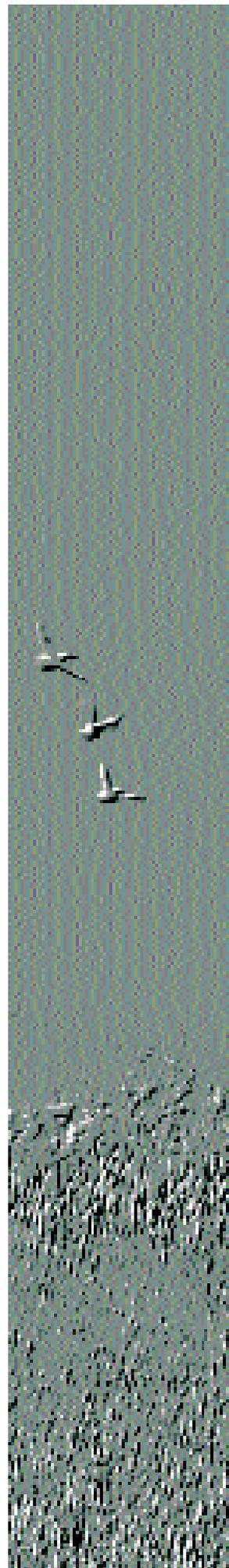
To provide a mechanism to address current and future shallow ground water quality issues of concern, the study team recommended the development and implementation of a notification plan. The notification plan would provide a summary report that would include the identification of contamination sources, site characterization and flow path identification, and the design/implementation of any monitoring and remediation plan required by the regulatory agency responsible for oversight. The report should be distributed to the affected or potentially-affected entities.

**Action 7: Promote Interagency Coordination**

The shallow ground water issues associated with the Wash transcend multiple jurisdictional authorities and have prompted the need for interagency coordination. The study team recommended that the Las Vegas Wash Management Entity establish a method of notifying and seeking input from interested parties regarding shallow ground water issues of concern. In addition, the team feels that creating this open-communication forum will promote opportunities for entities to work together to develop innovative solutions to reduce the impact of shallow ground water on the Wash.

**Action 8: Develop a Bibliography**

The team has compiled a bibliography of some existing reports and/or data available for the shallow ground water, but realized the list is not an exhaustive search of available information. See Appendix 7.1 for the bibliography developed by the Shallow Ground Water Study Team. The LVWPCT has compiled a bibliography from more than 100 reports that companies at the BMI facility produced as a requirement from the Nevada Division of Environmental Protection. In addition, bibliographies from several reports have been compiled into one source. See Appendix 7.2 for the bibliography developed by the Las Vegas Wash Project Coordination



Team. The study team recommended that a complete bibliography be developed and made available to all interested parties.

## **Alternate Discharge Study Team (5 Recommendations)**

The Alternate Discharge Study Team developed the following recommended actions to support efforts of the dischargers in their plan to develop potential discharge options to address current and future wastewater flows.

### **Action 1: Implement the Dischargers Scope of Services, Alternative Discharge Study**

Because of the complexity of the technical and regulatory processes, the dischargers intend to conduct the scope of services (Appendix 8.2) in the following four phases:

- I. Develop a plan for the dischargers to find the optimal recommended plan for managing the treated effluent from a rapidly growing population.
- II. Prepare the scope for any short-term and long-term studies and the scope for the environmental analyses.
- III. Perform the recommended short and long-term studies and conduct the required environmental analyses.
- IV. Implement the selected alternative(s).

The current scope of services will focus on phases I & II and employ the following tasks:

- Project initiation.
- Compilation and assessment of existing data.
- Development of issues, constraints (leads to a workshop where the alternatives will be initially ranked and an interim list selected for further evaluation).
- Interim alternative evaluation (leads to a workshop to further rank the alternatives based on additional information and obtain “short” list of recommendations for further evaluation).
- Evaluation of the short list and implementation plan for final consideration of options.
- Concurrent with above steps, provision of public outreach support.
- Concurrent with above steps, participation in regular meetings and briefings.

### **Action 2: Incorporate Options & Selection Criteria Developed by the Alternate Discharge Study Team**

The study team recommended that the original and final list of options be considered a starting point during the initial process of identifying potential



alternative discharge options. Using this available information means the consultant can more quickly eliminate some options, and therefore provide a cost-saving benefit to the dischargers.

**Action 3: Utilize the Alternate Discharge Study Team Throughout the Process**

The Alternate Discharge Study Team represents a diverse stakeholder group with significant technical and historical background. Meeting with the team throughout the process will provide an opportunity of creative and critical thinking when developing and reviewing the discharge options. It will also promote interagency coordination.

**Action 4: Integrate Work Done by Other Study Teams into Process**

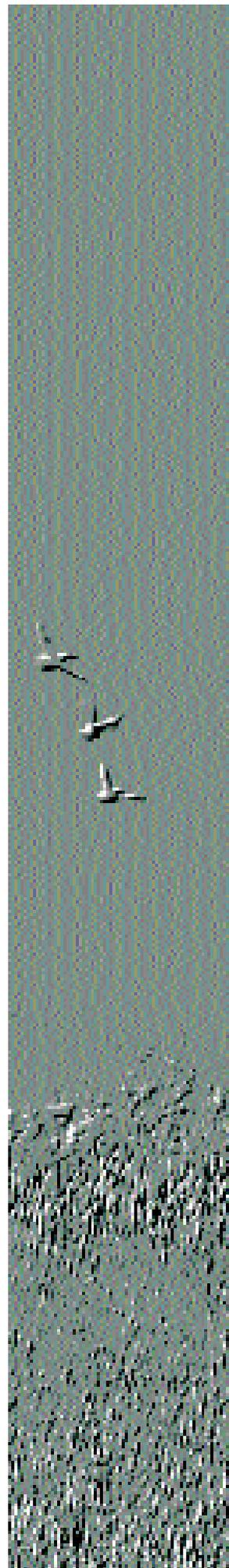
Because issues of concern in the Wash expand beyond the scope of the dischargers, the study team recommended that ideas from other study teams be incorporated whenever appropriate. For example, the Erosion & Stormwater Study Team conducted a two-day workshop to develop recommendations on ways to stabilize the Wash. One of the suggestions was that the majority of the flow in the Wash should be diverted out of the Wash, with some of the volume diverted to off-stream wetlands. Awareness of this recommendation can help direct the investigation of alternatives to determine if this is a feasible option. Conversely, if the Alternate Discharge Study Team finds that work being done by another study team is not an option worth pursuing, that information can be relayed.

**Action 5: Update Public Officials and Interested Parties Throughout the Process**

The team recognized that for this project to be successful, elected officials and other agency managers need to be updated on a regular basis throughout the process. Frequent updates also provide the opportunity to learn early on if a particular entity strongly disagrees with one of the identified alternatives.

**Wetlands Park Study Team  
(6 Recommendations)**

The objective of the Wetlands Park Study Team is to support and advise Clark County Parks & Recreation in its development and implementation of the Wetlands Park Master Plan, using the Las Vegas Wash Comprehensive Adaptive Management Plan as a vehicle. To accomplish this objective, the study team developed six recommended actions. These recommendations were not developed with the intent to conflict with or displace the goals of the master plan. Rather, they were generated with the assumption that flexibility exists within each phase and project of the



Wetlands Park, and also with the knowledge that several resources issues will require further technical support and expertise of several entities prior to development and implementation under the master plan.

### **Action 1: Identify Water Resources Needed to Maintain the Park**

Hydrology must be carefully considered when developing the Wetlands Park. Although as yet undetermined, there will be a minimum daily flow and set standards for water quality that will be required in order to meet and sustain the needs of vegetation and wildlife. Several hydrologic factors must be taken into account before extensive development occurs, such as water depths, velocity, hydroperiod, salinity, nutrient levels, sedimentation rates and levels of toxins and other chemicals. To answer these questions and guide water resource issues for the park, the following is recommended:

- Determine minimum daily in-stream flow requirements to maintain vegetation boundaries within the park.
- Identify average daily water quantity available from each source of water in the Wash.
- Determine the feasibility of securing a minimum daily in-stream flow to the park.
- Examine characteristics of wetlands within the Park, such as soils, vegetation, water depth, flow over time, and other related processes, in order to predict the impacts of wastewater and stormwater, as well as the potential for water quality enhancement.
- Develop and initiate a study to monitor the impacts of wastewater and stormwater on vegetation within the park. Use the results to adaptively manage wastewater and stormwater impacts over time.
- Identify water quality constituents and their values, in each source of water in the Wash.
- Determine, through research if possible, the range of water quality constituent values necessary to ensure and maintain the continued health and viability of vegetation within a wetlands (for example, the Wetlands Park).

### **Action 2: Develop Long-Term Monitoring Plans**

In order to coordinate the various monitoring efforts within the Wash, and ensure Clark County mitigation requirements for monitoring within the park are met, the following is recommended:

- Identify all current and proposed monitoring plans for the Wash, including monitoring as required by mitigation commitments for the park.
- Identify agencies responsible for development/implementation of each monitoring plan.
- Coordinate with other study teams to ensure full compliance and all



research needs are met.

- Determine the feasibility of developing a long-term adaptive document to encompass all monitoring plans in the Wash, monitoring objectives, study parameters, responsible agencies, data sharing guidelines, correlations between monitoring plans, etc.

### **Action 3: Develop a Long-Term Operations & Maintenance Plan**

In order to facilitate management of the park, and ensure that the three distinct, yet interrelated management goals outlined in the Master Plan (recreational and visitor operations, erosion control management, and resource policies) are addressed throughout long-term operations and maintenance of the park, the following is recommended:

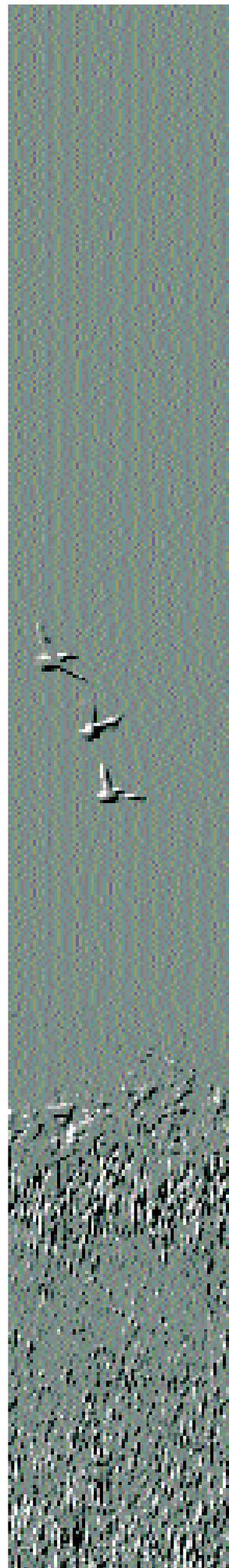
- Outline staffing and equipment operational procedures.
- Work with the Erosion & Stormwater Study Team and other affected entities to outline potential locations for placement of additional erosion control structures, as well as other measures aimed at reducing head cutting and further deterioration of the Wash.
- Identify guidelines that address the overall conservation of natural and cultural resources in the park. Address resource policies, interagency cooperation, and working with land owners in and adjacent to the park.
- Develop an adaptive document, a Long-Term Operations & Maintenance Plan, for the park.

### **Action 4: Ensure Implementation of Mitigation Measures**

Mitigation measures are required of project proponents to compensate for any unavoidable impacts on a wetland that may result from the proponents' activities. Proponents are often required to mitigate these impacts by enhancing, restoring, or creating wetlands on or near the development site, by the "permitting" agency(s).

Several mitigation measures that serve to offset short-term environmental impacts of park construction and development are outlined in existing park documents and further discussed in Chapter 9, Wetlands Park Study Team. Similar mitigation will be required for future park development and will be included in future documents such as the Program Biological Opinion and the Environmental Assessment for the Scenic Drive.

Although mitigation ideally provides a mechanism for accommodating both development and the protection of wetland functions and values, the low rate of success of wetland mitigation projects remains a subject of concern (North Carolina, 1999). For this reason, the study team recognizes that success of the park will be in good part dependent on implementation and completion of all required mitigation measures. In an effort to recognize the importance and ensure effectiveness of required mitigation for the



park, a coordinated effort between Clark County Parks & Recreation, the Las Vegas Wash Management Entity, and the Jurisdictional & Regulatory Study Team is recommended to accomplish implementation and completion of each measure.

#### **Action 5: Identify Funding Needs**

To anticipate funding needs that must be supported to sustain development of the park, the following is recommended:

- Develop a comprehensive list of funding needs specific to the park.
- Assign cost estimations to each funding need identified.
- Determine project priorities and address scheduling needs.

#### **Action 6: Ensure Interagency Coordination**

In order to establish a partnership between the various agencies involved with the Wash, and foster an effective coordination effort for all projects within the Wetlands Park, the following is recommended:

- Recognize and maintain Clark County Parks & Recreation (CCP&R) as the central “clearinghouse” for coordinating all work within the boundaries of the park.
- Identify the role of each agency involved in the Wash, and then establish a method of communication between those agencies for all projects occurring within the Wetlands Park boundaries.
- Identify specific opportunities to coordinate efforts and activities among the various entities involved in the Wash.
- Encourage CCP&R to formally solicit technical support, review, and input on individual components of the master plan, from all relevant and affected agencies involved in the Wash.
- Determine benefits of the Clark County Multiple Species Habitat Conservation Plan and the Lower Colorado River Multi-Species Conservation Plan to CCP&R’s objectives within the Wetlands Park.
- Develop incentives to encourage developer participation in the park. Likewise, foster joint-projects between CCP&R and developers, from development occurring adjacent to the park.

### **Environmental Resources Study Team (5 Recommendations)**

The objective of the study team is to protect and enhance environmental resources within the Wash. In order to accomplish this, the team developed the following five recommendations.



**Action 1: Develop Long-Term Management & Monitoring Plans**

In order to establish and coordinate monitoring efforts within the Wash, the following management and/or monitoring plans are recommended for development and implementation, and are discussed in further detail in Chapter 10, Environmental Resources Study Team:

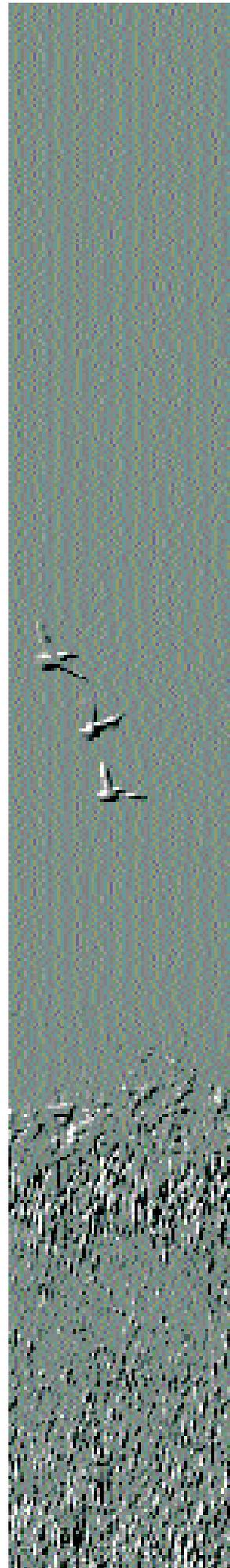
- Long-Term Vegetation Restoration & Enhancement Plan
- Long-Term Management Plan for Tamarisk and Other Non-Native Invasives
- Long-Term Fish & Wildlife Management Plan
- Long-Term Soils Monitoring Plan
- Long-Term Water Quality Monitoring Plan

**Action 2: Conduct Additional Research**

In order for the team to understand the environmental resources that have or are being addressed through past or existing research efforts, each entity involved with the Wash was contacted and a list of past, current, and planned research within the Wash was developed (Appendix 10.2). By developing this list, the team was able to recognize that many “gaps” in scientific knowledge exist regarding environmental resources in the Wash. It is recommended that these research needs be further identified and defined in order to implement pertinent research projects for the Wash in the future.

Given potential high costs of demonstration projects, the greatest potential for filling the gaps in scientific knowledge may lie with careful monitoring of selected types of new restoration or creation projects. Standardized methods for project evaluation and project monitoring are recommended to facilitate determination of “success” and comparisons between systems and approaches (Kusler, 1990).

Recent concerns have indicated that certain tributaries to the Wash may contain concentrations of metals (e.g., selenium) and other parameters that could have detrimental impacts to wildlife that rely on the Wash as primary habitat. Developing a monitoring plan that incorporates this concern is critical to understanding the complete ecological cycle that occurs throughout the Wash. Several items to consider when developing this plan include, 1) species that currently use the Wash as habitat, 2) the potential for species to migrate to the Wash, 3) the background health of species currently using the Wash, 4) population estimates monitored over time, 5) understanding the trophic cycle and 6) identification of water quality parameters in the Wash that may present a concern.



### **Action 3: Preserve and Address Cultural Resource Issues**

Cultural resources in the Wash present a number of opportunities for research, historic preservation, interpretation and education. Although much is known about certain specific cultural resources situated there, only about half of the overall area has been inventoried. Therefore, two steps are proposed to identify and to manage extant archaeological resources appropriately.

A cultural resource overview (Class I Inventory) was written for the Wetlands Park (Seymour 1995). Since then, several small inventories have been completed and new sites have been identified, but still much of the area remains unsurveyed. As an efficient management tool, the Class I Inventory should be updated to reflect this current knowledge as well as condition of the identified resource.

Identification of unknown resources and evaluation of previously recorded sites is proposed. An on-the-ground Class III archaeological survey should be conducted to provide information as to location, types, and number of resources present. The inventory will also provide information for evaluation for significance by the State Historic Preservation Office. This is a case where advance preparation is beneficial as only those sites deemed significant will need to be addressed in the event of future Section 106 issues, during the planning and interpretation stages.

### **Action 4: Identify Funding Needs**

In order to anticipate funding needs that must be supported to sustain and enhance wetlands and habitat within the Wash, the following is recommended:

- Develop a comprehensive list of funding needs for environmental resource projects.
- Assign cost estimations to each funding need identified.
- Determine project priorities and address scheduling needs.
- Coordinate with the Funding Study Team for funding options.

### **Action 5: Facilitate Interagency Coordination to Ensure Projects are Implemented**

In order to facilitate a partnership between the various agencies involved with the Wash and continue to achieve the objectives of the coordination committee and the team, the following is recommended:

- Evaluate environmental resource issues of concern in the Wash, prioritize them for action, and develop project statements that serve as recommended actions and alternatives to the resource issues.



- Exchange technical support, review, and input on projects occurring in the Wash, between all relevant and affected entities involved in the Wash.
- Coordinate all work and projects to be conducted within the Clark County Wetlands Park boundaries with Clark County Parks & Recreation.

### **Land Use Study Team (5 Recommendations)**

To identify land use practices that have an effect on the Wash and to provide methods of promoting informed planning decisions that reduce the impact of land use on the Wash, the Land Use Study Team developed the following five recommendations.

#### **Action 1: Focus Land Use Recommendations on the Priority Zone of Influence (1/2 mile radius of Las Vegas Wash)**

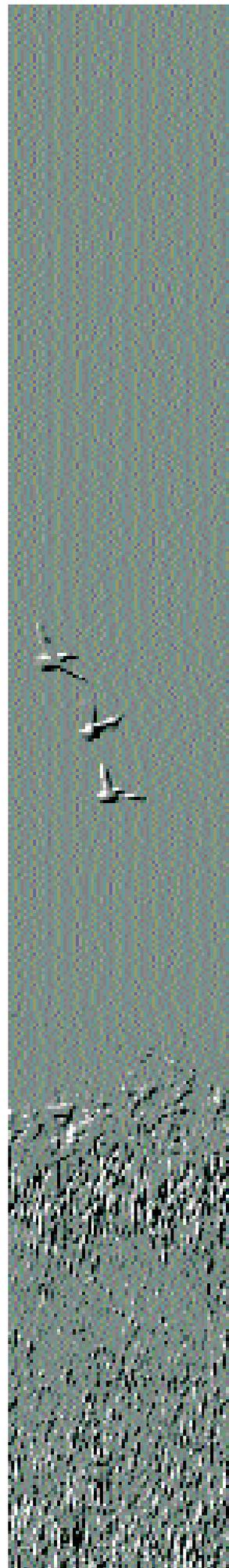
The study team developed three tiers, or zones of influence, for the Las Vegas Wash. Tier 1 is the area of land adjacent to the Las Vegas Wash running the length of the Wash from the headwaters to the Las Vegas Bay, extending from the center line of the water course one half (1/2) mile in each direction. This zone should be distinguished as the priority zone because of the obvious effect land use activities could have on the Wash.

Tier 2 is the land surface area directly above the shallow aquifer. The team determined that it was worthwhile to understand the land use practices that are allowing constituents to reach the shallow aquifer, and potentially reaching the Wash as intercepted shallow ground water, and to develop methods that could reduce the occurrence of certain pollutants.

The Bureau of Land Management's Land Disposal Boundary for the Las Vegas Valley was used to delineate the Tier 3 zone of influence. This boundary area was used because it encompasses all area that is currently developed and all area that is expected to be developed in the future. The study team realized that this area encompasses the entire urban area of the Las Vegas Valley, and recommends that this zone of influence be considered by entities from a watershed management approach whenever possible. Figure 11.2 in Chapter 11, Land Use Study Team, shows a map of the three identified zones of influence. The initial focus needs to be placed on the priority zone (1/2-mile radius of the Wash).

This recommendation includes recognizing that an interagency effort is necessary for this effort to be effective.

#### **Action 2: Support the Development and Implementation of a Common Environmental Review Process among Planning Entities**



The team realized that developers, or other parties seeking zoning changes on properties within different jurisdictions, often need to interact with more than one planning authority. The team suggests that a common review process would not only speed up the process for internal and external customers, but would also make clear to the party requesting the zoning change exactly what is required. Items that should be included in the environmental review include water level data, water quality data, notice to entities that may have an interest in the plan, hydrogeologic concerns and surface and subsurface drainage.

### **Action 3: Develop Best Management Practices**

The team recommends the development of structural and non-structural Best Management Practices (BMPs), to be adopted by the land use planning authorities. One method of identifying BMPs for the Las Vegas Valley is by doing a search of other communities in the southwest and determining what works best for them.

The study team realizes that many entities already provide BMPs to interested parties, but believe additional BMPs could be identified and developed and that consistency from one entity to another would be beneficial.

### **Action 4: Develop Educational Material for Developers**

Making expectations clear to the developer was the impetus behind this action item. This would also help to educate the developer as to any environmental concerns in the priority zone of influence. The educational material should include a description of the planning process, a checklist of permits/paperwork, a discussion and recommended/required best management practices and encouragement of optional best management practices.

### **Action 5: Identify Opportunities for Interagency Coordination Efforts**

The team recognizes that interagency coordination is the key to effectively developing and implementing many of its ideas. This can be accomplished by making presentations to the planning authorities and by using the coordination committee as a forum to present opportunities for coordination.

## **Jurisdictional & Regulatory Study Team (2 Recommendations)**

The Jurisdictional & Regulatory Study Team noted that local administration of implementation and management was the most desirable approach for the comprehensive adaptive management plan. It was clear that the status quo will not effectively address the long-term management of the Wash. Also clear was the fact that one oversight body (or some combina-



tion of local entities) tasked with plan implementation and management would be most effective. The following three recommendations are the result of these views.

**Action 1: Further Investigate and Define Structure for Local Oversight of the Las Vegas Wash Comprehensive Adaptive Management Plan**

To implement the comprehensive adaptive management plan successfully and manage the Wash well into the future, the study team recommends that one oversight body be identified to implement the plan and manage the Wash. In this plan, this oversight body has been referred to as the “Las Vegas Wash Management Entity.”

This action item follows the lead established by the Southern Nevada Strategic Planning Authority, which recommended that regional issues in southern Nevada be addressed locally and employ mechanisms such as interlocal agreements. Agencies throughout the Las Vegas Valley currently use interlocal agreements for various reasons, such as wastewater treatment. With this, and given the opportunities and challenges that must be addressed, the team recommends either a new joint powers agreement or an interlocal agreement to successfully manage the Wash into the future.

**Action 2: Ensure Interagency Coordination**

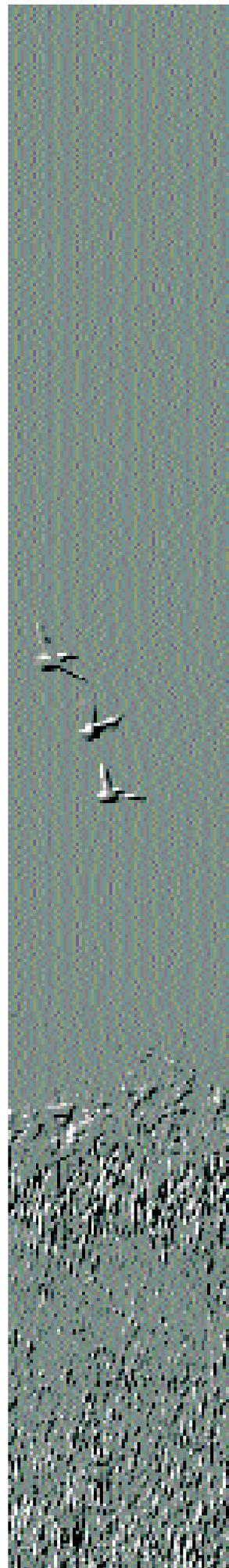
Once the management entity is established, there will be a number of opportunities for collaboration between agencies. The team noted that interagency coordination was the key to effectively informing and seeking input in the process of managing the Wash. In addition, many agencies in the Las Vegas Valley cooperate in joint study opportunities. Because these agencies have a vested interest in the outcome of many studies, it would be more expedient to work together whenever possible. Working in a collaborative manner will assure these efforts are successful.

**Public Outreach Study Team  
(3 Recommendations)**

Based on the objective and goals set forth by the Public Outreach Study Team, and giving due consideration to the information gathered from the stakeholder interviews summarized in Appendix 13.1, the study team developed the following recommendations:

**Action 1: Establish a Method to Continue Implementation of the Public Outreach Program**

The team has developed the public outreach program to facilitate outreach efforts to the community and public officials in a timely manner. This program is not meant to be exhaustive, but instead serves as an outline for an



open dialogue between stakeholders and the community, both of which are involved in this dynamic process. The study team recommends that the Las Vegas Wash Management Entity take the lead in continuing to implement the public outreach program, and amend the tactics as needed to address future communication needs for restoration and management of the Las Vegas Wash.

**Action 2: Continue Implementation of Feedback Mechanisms and Measurements of Progress and Results**

Because an important function of the public outreach program is to facilitate communication between the coordination committee and the public, various stakeholders, and other interested parties, the team recommends development of a method to provide important and necessary feedback to the coordination committee. Numerous mechanisms have been set in place to enlist participation and feedback from the community. The team recommends that the Las Vegas Wash Management Entity gauge the success of the public outreach program through such things as Web site activity from both the public and members, perceptions conveyed from public scoping meetings, follow-up stakeholder interviews and requests for presentations from the speakers' bureau.

**Action 3: Provide Updates to Elected Officials**

An invaluable aspect of public support stems from elected officials. For this purpose, the study team has utilized the speakers' bureau to target elected officials and community leaders such as local councils and commissions, foundations and trustee boards, local chambers and civic groups. The team recommends that this be an ongoing program; as such, the speakers' bureau will provide personalized updates and one-on-one communication throughout the Wash restoration and management process.

**Funding Study Team (5 Recommendations)**

Based on the Jurisdictional & Regulatory Study Team's recommendation for a locally-based management entity, the Funding Study Team began to analyze the funding mechanism currently in place for SNWA and to consider potential variations for the Las Vegas Wash, given the agencies involved and the variety of issues. Considering the groundwork laid through identification of potential funding sources by the Funding Study Team, and the oversight recommendations of the Jurisdictional & Regulatory Study Team, the Funding Study Team made the following five recommendations:

**Action 1: Further Investigate Potential Funding Sources Identified by the Team**



The study team identified seven potential funding sources for management of the Wash (listed below), and recommends that these options be looked at individually to determine their potential for funding all or a portion of the Wash efforts.

- Continuing as presently done (status quo)
- Development of an impact fee assessed on new development
- Excise tax
- Quarter-cent sales tax
- Bonds
- Property tax
- Surcharge on wastewater or water bills

There was some discussion by the team regarding the newly enacted Southern Nevada Public Lands Management Act (1998) and the potential for proceeds of this program to be directed toward Wash activities. There was not sufficient information available during the period of time the team met to further investigate this option; however, the team believed the idea should be considered.

#### **Action 2: Anticipate Future Funding Needs**

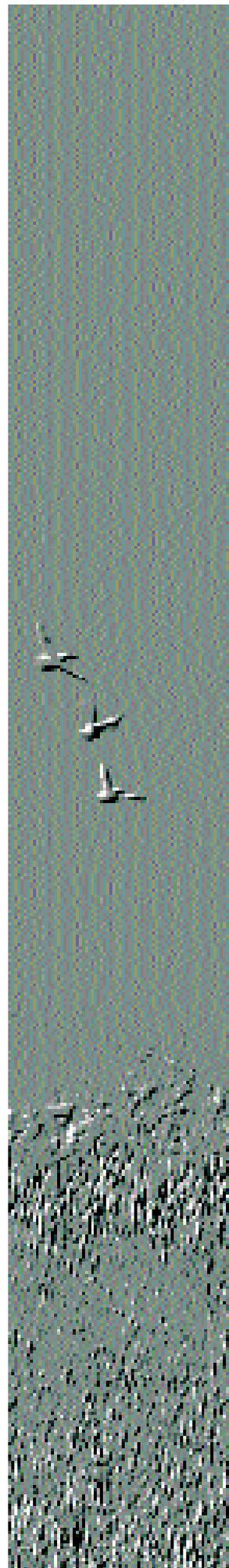
The study team recommended that future funding needs be incorporated into the planning process. For example, upcoming research projects and capital expenditures should be discussed as soon as possible.

#### **Action 3: Work with Las Vegas Wash Management Entity to Review Funding Options**

The study team recommended that a budgetary analysis be completed to determine the financial needs of the Las Vegas Wash Management Entity. This process should include the current and future costs associated with administration, capital costs and long-term monitoring. In addition, the study team recommended that the best way to develop the model is to review existing funding formulas (that is, SNWA, Regional Planning Coalition, Southern Nevada Strategic Planning Authority) and adapt them to best meet the needs of the management entity. The team also recommended that the model represent an equitable cost distribution and consider the impact and benefit of the project on the identified stakeholders.

#### **Action 4: Develop Method to Identify Specific Projects for Grant Funding**

One goal of the funding process is to identify and use as many grant sources as possible. To meet this action item, the study team developed a “Funding Request Form” (Appendix 14.2) that includes questions regard-



ing specific projects. The idea behind this form is that the party wishing to conduct the project fills it out, then the Las Vegas Wash Management Entity, with input from the study team, identifies potential funding sources in the form of grants. Projects such as wetlands demonstration, wildlife surveys and monitoring plan development may be able to be funded by grants and available resources.

#### **Action 5: Utilize Existing Resources and Staff, Whenever Possible**

As part of the planning process, consider work that could be conducted by staff from member agencies and contact the appropriate agency for input and assistance. By utilizing the talents and resources of existing agencies, the coordination committee can remain flexible and responsive in implementing the comprehensive adaptive management plan, while still meeting the needs outlined in the plan.

### **Conclusion**

Formal acceptance of these recommendations and the Las Vegas Wash Comprehensive Adaptive Management Plan, beyond that acceptance provided by the Las Vegas Wash Coordination Committee itself, has been left to the decision-making processes of the individual stakeholders involved. This acceptance may take many forms, from a resolution in support of the plan to an acceptance letter from an agency executive. But whatever its form, such acceptance is considered integral to the plan's implementation. It shows a common understanding of the challenges being faced in the Las Vegas Wash and a collective willingness to abide by the principles and actions for restoring the Wash that are outlined in the plan.

Public acceptance of the plan, as is the case with many such efforts as this, will be more difficult to characterize, quantify and maintain. Through a series of outreach meetings, workshops and other participatory techniques, the Las Vegas Wash Coordination Committee will solicit input on the plan. Feedback from these techniques will be used to modify the plan and to develop a community consensus for the plan's elements and overall approach. In addition to hands-on workshops, the LVWCC will use public information and the media to provide insight into the plan and its contents. The intent is to give the community ample opportunity to "own" the work of the committee and its study teams – a crucial step, since the Wash effort was initiated and performed for the benefit of the local community in the first place.

As the comprehensive adaptive management plan evolves over time, and as work proceeds to restore and protect the Wash, public acceptance for the plan and its modifications will be maintained through ongoing use of the techniques described above. Additional techniques, such as Web-based comment forums or other forms of interface with the general public, may be used throughout the process as well.



The Comprehensive Adaptive Management Plan is the focal point for a new beginning in the Las Vegas Wash. This document marks the start of the comprehensive management effort. It points to the goal we must reach and describes the terrain we must cross to get there. The plan is purposely driven toward flexibility and is structured to adapt readily to new ideas, new developments, and new directions.

Conditions in the natural world can change quickly. This plan – and the management process associated with it – is intended to do no less.

For the more than two dozen members of the Las Vegas Wash Coordination Committee and the dozens of participants in the Water Quality Citizens Advisory Committee and the Lake Mead Water Quality Forum, the Las Vegas Wash Comprehensive Adaptive Management Plan represents a singular accomplishment. After years of patience, study and hard work, the time to restore and protect the natural wonders of the Wash is at hand.

Let the work begin.

